Philadelphia Coke Co., Inc.

REMEDIAL INVESTIGATION REPORT AND CLEANUP PLAN

REVISION 1

Former Philadelphia Coke Plant
Philadelphia, Pennsylvania
PADEP eFACTS Site ID #833593
& Facilities ID #609978
EPA ID #PAD000427906

May 2022

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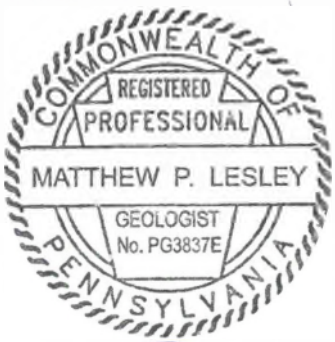

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2 1992 RCRA Closure Report

3 Delineation of Fuel Oil Contaminated Site at the Former Philadelphia Coke Company Site

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5 Photographs of Soil Sampling Intervals

ACRONYMS AND ABBREVIATIONS

µg/L	micrograms per liter
µg/m^3	micrograms per cubic meter
AMSL	above mean sea level
ASTM	American Society Testing and Materials
BaA	benz(a)anthracene
BaP	benzo(a)pyrene
BbF	benzo(b)fluoranthene
bgs	below ground surface
BMPs	best management practices
BPB	BP Bridesburg LLC
BTEX	benzene, toluene, ethylbenzene, and total xylenes
cm/sec	centimeters per second
CFR	Code of Federal Regulations
cfs	cubic feet per second
COCs	constituents of concern
COPEC	constituent of potential ecological concern
CSM	conceptual site model
DNAPL	dense non-aqueous phase liquid
DRBC	Delaware River Basin Commission
E&SC	Erosion and Sedimentation Control
EPA	United State Environmental Protection Agency
EPC	exposure point concentrations
ESBs	ecotoxicological screening benchmarks
ES	ecological screening
ft/day	feet per day
g/cm^3	grams per cubic centimeter
GC/FID	gas chromatography with flame ionization detector
GC/TCD	gas chromatography with thermal conductivity detector
GEI	GEI Consultants Inc.

GPS	global positioning system
GW	groundwater
HASP	Health and Safety Plan
HAZWOPER	Hazardous Waste Operations & Emergency Response Regulations in 29 CFR 1910.120
HDPE	high-density polyethylene
HHRA	human health risk assessment
HQ	hazard quotient
HSA	hollow-stem auger
HWMU	RCRA Hazardous Waste Management Unit
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MSCs	medium-specific concentrations
MTBE	methyl-tert-butyl ether
NAD 83	North American Datum of 1983 State Plane of Pennsylvania-South
NAPL	non-aqueous phase liquid
NAVD 88	North American Vertical Datum of 1988
NTUs	Nephelometric Turbidity Units
NIR	Notice of Intent to Remediate
OSHA	Occupational Safety and Health Administration
PFBC	Pennsylvania Fish and Boat Commission
PADEP	Pennsylvania Department of Environmental Protection
PADER	Pennsylvania Department of Environmental Resources (predecessor of PADEP)
PADNR	Pennsylvania Department of Natural Resources
PAHs	polycyclic aromatic hydrocarbons
PCBs	polychlorinated biphenyls
PCC	Philadelphia Coke Company, Inc.
PennDOT	Pennsylvania Department of Transportation’s
PID	photoionization detector
PIP	Public Involvement Plan
PNDI	Pennsylvania Natural Diversity Inventory
PP	Priority Pollutant

PPE	personal protective equipment
PRCP	post-remediation care plan
PS&S	Paulus, Sokolowski and Sartor, Engineering, PC
PVC	polyvinyl chloride
QA/QC	quality assurance and quality control
QD	Quick Domenico
RCRA	Resource Conservation and Recovery Act
RI	Remedial Investigation
RSL	Regional Screening Levels
RR ROW	railroad track right-of-way
S-GW	soil-to-groundwater MSCs for a non-residential used aquifer with TDS less than or equal to 2,500 ppm
SHS	Statewide Health Standards
SMD	scientific/management decision
SRI	Supplemental Remedial Investigation
SVOCs	semi-volatile organic compounds
SWMU	RCRA Solid Waste Management Units
TAL	Target Analyte List
TCE	trichloroethene
TCL	Target Compound List
TDS	total dissolved solids
TGM	PADEP Technical Guidance Manual for Vapor Intrusion into Buildings from Groundwater and Soil Under Act 2 (PADEP 2021)
TSCA	Toxic Substances Control Act
TPH	Total Petroleum Hydrocarbon
USACE	United States Army Corps of Engineers
USCS	Unified Soil Classification System
USGS	United States Geologic Survey (USGS)
USDOT	United States Department of Transportation
UST	underground storage tank
USFWS	United States Fish and Wildlife Service
VI	vapor intrusion

VOCs	volatile organic compounds
WCC	Woodward-Clyde Consultants

EXECUTIVE SUMMARY

On behalf of Philadelphia Coke, Co., Inc., Arcadis U.S. Inc. (Arcadis) has prepared this Remedial Investigation (RI) Report and Cleanup Plan for the Former Philadelphia Coke Plant location in the Bridesburg Borough of Philadelphia, Pennsylvania (the Site). The Site is located at 4501 Richmond Street between Orthodox Street and Buckius Street and is adjacent to the Delaware River. The Site is approximately 63 acres in size and is currently unoccupied. The Site is overgrown with vegetation and only remnants of the former operating structures, foundations, and concrete pads remain. All former structures at the Site have been demolished to ground level. A mix of residential, industrial, and commercial uses surrounds the Site. Plans are currently being prepared for Site redevelopment and use for commercial warehousing (see Exhibit 1).

Site operations concluded in 1989. Resource Conservation and Recovery Act (RCRA) Closure actions were conducted at the plant in the late 1980s to address source area contamination located at specific RCRA Hazardous Waste Management Units. Extensive soil remediation was performed as part of the RCRA closure with nearly 39,000 tons of soil transported offsite for treatment/disposal. In addition, bioremediation was performed in a former fuel blending area and former underground storage tanks and residual oil in piping removed. Periodic (typically quarterly) groundwater monitoring began in April 1985 to evaluate groundwater conditions at the Site. The Certificate of Completion for RCRA Site Closure was issued by the United States Environmental Protection Agency (EPA) on December 28, 1994 (WCC 1994). Following receipt of the Certificate of Completion, PCC continued to monitor groundwater quarterly, until the Pennsylvania Department of Environmental Protection (PADEP) authorized termination of the groundwater monitoring program in a July 26, 1999 letter. No outstanding closure responsibilities associated with the RCRA Corrective Action remain. The Site has not been occupied since 1991. Other than the Site investigations discussed herein and site investigations conducted for Site redevelopment (under a Site-specific health and safety plan), no other Site activities or operations besides routine mowing and maintenance of the perimeter chain-link fence have been conducted since the RCRA Closure.

RI Activities and Results

The RI was undertaken to assess the nature and extent of residual Site-related environmental impacts, if any, and evaluate the risks posed to human health and the environment by those impacts. The RI was performed in two major phases: (1) the Initial RI activities from 2003 through 2006; and (2) the Supplemental RI activities from 2018 and 2019. When combined, work activities performed for the RI consisted of the following:

- Excavating 197 test pits and collecting soil samples from 145 test pits.
- Installing 179 soil borings and collecting soil samples from 150 soil borings.
- Installing and sampling 33 shallow groundwater monitoring wells, 13 deep groundwater monitoring wells, and 7 hydropunch borings.
- Analyzing approximately 540 soil samples and 112 groundwater samples for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), inorganics, cyanide, pesticides, and/or polychlorinated biphenyls (PCBs).

- Collecting 21 soil gas samples and one ambient air sample for VOCs (via Method TO-15), Naphthalene (via GC/MS in the full scan mode) methane, and fixed gases (via American Society Testing and Materials Method D-1946).
- Performing sediment probing in the Delaware River and a visual reconnaissance of the shoreline for sheens, tar-like material, elevated photoionization detector readings, or other observable indications of Site-related impacts.

The results of the RI provide adequate coverage across the Site to: (1) identify and delineate residual environmental conditions; (2) support a Risk Assessment Report; (3) develop a Cleanup Plan; and (4) support Site redevelopment.

Based on observations of soil samples recovered from soil borings across the Site, there are three hydrogeological units above weathered metamorphic schist bedrock. Nearest the ground surface is a layer of man-made fill materials that generally meets the description of historic fill as defined in Pennsylvania Department of Environmental Protection's Management of Fill Policy (Document #258-2182-773) dated January 1, 2020. A confining unit of silt and clay material underlies the fill materials and underneath that confining unit is a sand and gravel unit. Groundwater at the Site is separated into a shallow and deep zone by the silt and clay layer. Shallow groundwater is located within the historic fill and mounds in the central/southern portion of the Site and flows radially outward from the mound. The shallow groundwater zone was formed by the historical placement of fill above native surface soils. Due to the presence and characteristics of the historic fill, it is not suitable for use. Deep groundwater is located within the sand and gravel unit flows eastward toward the Delaware River. Groundwater does not appear to be tidally influenced or affected by the presence of the municipal Upper Delaware Connecting Sewer (reportedly 11-foot-3-inch to 12-foot-3-inch diameter) that bisects the western portion of the Site, other than a limited tidal influence on deep groundwater (generally less than 1 foot) nearest to the Delaware River. The Upper Delaware Collecting Sewer conveys regional storm water deep beneath the Site; however, it does not collect any storm water from the Site itself.

Soil analytical results and visual impacts (e.g., viscous tar, oil-like material, and solidified tar) indicate the presence of localized impacts in the center of the Site and at isolated locations on the remainder of the Site. In general, visual impacts are associated with the former process piping and foundations, except for impacts found in the vicinity of a former aboveground storage tank farm (east of Former Byproducts Building). Visual impacts are limited to the fill layer or the top few feet of the silt and clay layer and were not observed to have penetrated the confining unit. Based on the observed variations between original and revisited sampling locations from the Initial RI to the Supplemental RI, viscous tar and oil-like material appear to be limited to isolated pockets and not reproduceable from the original sampling event (i.e., not as extensive and/or contiguous as the Initial RI indicates). Additionally, groundwater analytical results do not indicate the presence of source material onsite.

Areas of the Site exhibiting elevated concentrations of chemical constituents and visual impacts have been delineated for purposes of cleanup plan development. Laboratory analytical results of soil, groundwater, and soil gas samples are summarized below:

- Surface soil was found to contain polycyclic aromatic hydrocarbons (PAHs), arsenic, and lead at concentrations exceeding non-residential direct contact medium-specific concentrations (MSCs). PAHs, arsenic, and lead are commonly associated with urban/historic fill, which is encountered

throughout the Site. The PAHs identified at concentrations exceeding MSCs consist of 2-methyl-naphthalene, benz(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, dibenzofuran, and naphthalene at isolated locations in the center of the Site and at two locations near the Site perimeter (i.e., PCTP-66 and S-151). Arsenic was identified at concentrations above MSCs at limited locations. Lead at concentrations not typical of urban fill was identified in surface soil samples from the Fuel Blending Area and two locations in the center of the Site. No pesticides or PCBs were identified in surface soil at concentrations exceeding non-residential, direct contact or soil-to-groundwater MSCs. However, benzene, several SVOCs, and metals were identified in surface soil at concentrations exceeding the non-residential soil-to-groundwater MSCs.

- Subsurface soil was found to contain a small subset of SVOCs, consisting of 1,1-biphenyl, 2-methyl-naphthalene, and naphthalene, at concentrations exceeding non-residential direct contact MSCs. These SVOCs were identified primarily in the center of the Site where viscous tar and oil-like materials were observed. No VOCs, inorganics, PCBs, pesticides, or other SVOCs were identified in subsurface soil at concentrations exceeding the non-residential direct contact MSCs. Several VOCs, SVOCs, and metals (primarily benzene, PAHs, lead and arsenic) were identified in subsurface soil at concentrations exceeding the non-residential soil-to-groundwater MSCs.
- Groundwater impacts are generally limited to areas where viscous tar and oil-like materials were observed. Groundwater monitoring wells installed downgradient of these areas indicate that Site-related groundwater impacts do not extend offsite. Outside of these isolated areas, groundwater is unimpacted by former Site operations; existing groundwater conditions are typical of groundwater in urban/historic fill. Groundwater impacts are primarily within the shallow zone. The underlying (deep) aquifer is relatively unimpacted.
- When compared to applicable non-residential vapor intrusion (VI) standards, soil and groundwater analytical results indicate the potential for soil related VI in future buildings in certain areas onsite in the absence of remediation or mitigation. However, soil gas analytical results did not exceed the sub-slab VI screening values, indicating that the VI potential may be over-predicted by the soil and groundwater analytical results.

The COCs related to Site operations include: several PAHs and lead in surface soil; several VOCs, SVOCs, and inorganics in subsurface soil; and benzene, several SVOCs, and inorganics in groundwater. Site-related impacts in soil and groundwater have been delineated for purposes of developing a cleanup plan.

From a risk perspective, there are currently no complete exposure pathways for human receptors. Soil exposure is controlled by Site use (i.e., the Site is vacant), Site fencing, vegetation, and the presence of non-permeable surface covers (e.g., old asphalt parking lots). No current exposure pathways are complete for groundwater or soil vapor.

Future use of the Site will be restricted to non-residential by use of an environmental covenant. Potentially complete future exposure pathways could exist via soil, groundwater, and VI. However, groundwater is not used or anticipated to be used for potable purposes at the Site and in the surrounding area. Pathway elimination strategies will be integrated with the Site development plans to mitigate

potentially complete future exposure pathways to ensure protection of human health and the environment.

Potentially complete exposure pathways for ecological receptors are direct contact and incidental ingestion of surface soil, and ingestion of contaminated prey. Direct contact to the historic fill is most likely to occur from burrowing mammals or small mammals that may incidentally ingest soil as part of their dietary exposure to prey items in the existing leaf litter. Larger wildlife (e.g., deer) may forage on the vegetation present, but would have limited dietary exposure to surface soil. Similar to the means for addressing human exposure, capping and/or limited removal of COCs as part of a protective cleanup plan will effectively eliminate potential ecological exposure to surface soil at the Site.

Cleanup Plan Summary

Based on the RI results, Philadelphia Coke Co., Inc. proposes to pursue a release of liability under the Act 2 Site-Specific Standard via a “pathway elimination” cleanup approach. Potentially complete future exposure pathways will be eliminated using engineering and institutional controls. The Cleanup Plan has been developed and presents the proposed methods to prevent further migration and eliminate potentially complete future exposure pathways. Although source material (e.g., non-aqueous phase liquid), was not encountered in the RI, the Cleanup Plan also includes provisions for addressing source material if encountered in the future. The remedial strategies presented in the Cleanup Plan will be integrated with Site development plans, once finalized. Conceptual development plans are currently being prepared and include commercial warehouse buildings, parking lots, access roads, driveways, and various landscape features, as shown in Exhibit 1.

The proposed remediation will achieve the Site cleanup objectives to protect human health by mitigating identified future exposure pathways with soils and groundwater impacted by applicable Site COCs. The Cleanup Plan:

- Provides methods to achieve pathway elimination for soils using engineering controls (i.e., capping of soils with structures, roadways, parking lots, and landscaping).
- Provides methods to achieve pathway elimination for vapor intrusion using engineering controls (i.e., use of a vapor barrier specifically designed, manufactured, and installed for use in VOC mitigation) within areas of potential VI concern.
- Outlines procedures and plans to allow for safe execution of future Site remediation and/or redevelopment activities.
- Specifies institutional controls to be implemented (i.e., deed notice, restrictions, or other appropriate vehicles).
- Outlines a Post-Remediation Care Plan.

The remedial goals for soil will be to allow historic fill and impacted soils to remain in place or be reused onsite (e.g., as subsurface fill), to the extent possible, while mitigating potentially complete exposure pathways via engineering and institutional controls.

The engineering controls will consist of: (1) caps(s) overlaying areas where potential pathways exist for direct contact exposure; and (2) VI mitigation system(s) within areas of potential VI concern identified by initial VI screening (as specified within this report) or a building-specific VI risk assessment addressing

any potential future development. The proposed cap may include concrete floor slabs/foundations for new buildings; asphalt pavement and/or concrete for driveways, parking areas, and sidewalks; and/or 2-feet of clean soil (e.g., in landscaped areas) to eliminate potential direct contact exposure scenarios. With the exception of the existing railroad, the entire Site will be capped by various methods to meet the Site-Specific Standard via “pathway elimination”. Asphalt pavement and buildings will significantly reduce and limit infiltration across much of the Site; stormwater runoff will be collected and conveyed offsite to the river.

Engineering controls (e.g., vapor barriers) will be used, where appropriate, to mitigate the potential VI pathway for COCs. Although not needed in certain areas of the Site (e.g., the western portion of the Site along Richmond Street), the current redevelopment plans are to install VI mitigation systems for all proposed occupied structures onsite. Alternatively, the Site-Specific Standard may also be pursued through completion of a cumulative VI risk assessment and/or additional soil-gas sampling to demonstrate that VI mitigation is not needed.

An environmental covenant with deed restrictions/notifications will be incorporated as an institutional control. The Site will be restricted to non-residential use to limit potential future receptors, and groundwater use will be prohibited to eliminate potential future groundwater exposure pathways. In addition, institutional controls will stipulate inspection, periodic maintenance/repair activities, and reporting requirements for soil caps and VI mitigation systems, as appropriate. Following implementation of the remedy included in the approved Cleanup Plan, a Final Report will be prepared in accordance with Act 2 requirements to obtain a release of environmental liability for the Site.

1 INTRODUCTION

On behalf of Philadelphia Coke Co., Inc. (PCC), Arcadis U.S. Inc (Arcadis) has prepared this Remedial Investigation (RI) Report and Cleanup Plan for the Former Philadelphia Coke Plant location in the Bridesburg borough of Philadelphia, Pennsylvania (the Site). This RI Report and Cleanup Plan was prepared in accordance with Pennsylvania's Land Recycling Program Technical Guidance Manual updated on March 27, 2021, the medium-specific concentrations (MSCs) updated on November 20, 2021, the Land Recycling and Environmental Remediation Standards Act (Act 2), and its enabling regulations, 25 PA Code, Chapter 250. This report provides:

- A summary of the RI activities performed to delineate the nature and extent of Site-related chemical constituents (constituents of concern [COCs]) at the Site.
- An Ecological Screening to evaluate potential exposure of environmental receptors at the Site.
- An assessment of potentially complete exposure pathways (current and future) associated with the COCs.
- A Cleanup Plan for affected media at the Site to mitigate the potentially complete future exposure pathways based on identified conditions.
- A Post-Remediation Care Plan (PRCP) to ensure that no future exposure pathways to remaining COCs at the Site exist.

A Notice of Intent to Remediate (NIR) was submitted to Pennsylvania Department of Environmental Protection (PADEP) on November 19, 2018 (Appendix A). The NIR stated that PCC is seeking a release of liability under the Act 2 Site-Specific Standard.

The objective of the Act 2 Site-Specific Standard is to develop and evaluate detailed site information to provide a protective cleanup standard unique to that site. The Site-Specific Standard is a risk management approach (PADEP 2021). For the purposes of this Site, the proposed Site-Specific Standard will generally be the "pathway-elimination" approach, which means that potentially completed future exposure pathways will be eliminated using engineering and institutional controls. Engineering controls that may be implemented at the Site include covering impacted soils with asphalt/concrete paving, building structures and/or a minimum 2-foot thick clean soil covers to prevent direct contact exposure to Site COCs and installation of barriers or vapor mitigation systems to mitigate potential vapor intrusion (VI) into future buildings constructed on the property. Institutional controls that could be considered include deed restrictions/environmental covenants: (1) prohibiting use of groundwater at the Site; (2) limiting future soil disturbance in areas with engineering controls; (3) limiting future development in specific areas of the Site; and/or (4) requiring a Soil Management Plan that stipulates inspection, periodic maintenance/repair activities, and reporting requirements for engineering controls, as appropriate (PADEP 2021).

The information presented in this RI Report and Cleanup Plan reflects, in part, the information provided in a March 5, 2019 Kick-Off Meeting and March 8, 2021 Project Update Meeting with PADEP and the United States Environmental Protection Agency (EPA). The RICP has been revised based on December 16, 2021 and January 3, 2022 calls with EPA, a January 14, 2022 PADEP Disapproval Letter (providing

PADEP RICP Comments #1 through #7), and January 31, March 1, March 24, and March 28, 2022 calls with PADEP.

Remedial alternatives based on the future development of the Site as an industrial and/or commercial property are presented in the Cleanup Plan. Remedial strategies presented in the Cleanup Plan will be integrated with Site development plans, once finalized by the purchaser/developer of the property. Conceptual development plans are currently being prepared and include commercial warehouse buildings, parking lots, access roads, driveways, and various landscape features, as shown in Exhibit 1. The Cleanup Plan presents the general approach and typical methods that will be used to mitigate potentially complete exposure pathways in accordance with Act 2.

1.1 Report Organization

The organization of this RI Report and Cleanup Plan is presented below.

Table 1-1: Report Organization

Section		Purpose
Section 1	Introduction	Provides information relevant to the development of this report and the objectives of this report.
Section 2	Site Information	Presents a description of the Site setting, production history, and historical investigations and remediation.
Section 3	Remedial Investigation	Describes the field investigation to evaluate the extent of former Site-related environmental impacts and the findings of that investigation.
Section 4	Groundwater Models	Evaluates the extent of constituent migration in groundwater in the absence of any remedial activities.
Section 5	Conceptual Site Model	Evaluates the risks posed to human health and the environment by Site-related impacts. This section summarizes the potential current and future migration and exposure pathways for the identified impacts.
Section 6	Ecological Screening	Evaluates the potential exposure of environmental receptors at the Site.
Section 7	Public Benefits to Remediation and Reuse	Presents a summary of public benefits of the redevelopment and reuse of the property. Industrial and commercial development benefits are evaluated.
Section 8	Remedial Investigation Conclusions	Presents a summary of the RI and the Site-related environmental impacts.

Section		Purpose
Section 9	Cleanup Plan	Presents the proposed cleanup objective and process, project personnel, selected remedial standards, the public participation, the cleanup actions to attain the remedial standards, and the post-remediation activities.
Section 10	Summary and Conclusions	Presents a summary of the proposed cleanup actions to address the impacts.
Section 11	Signatures	Provides a signature of the Site owner's representative.
Section 12	References	Presents a list of the references cited in the RI Report and Cleanup Plan.

1.2 Objectives

The overall objective of this RI Report is to define the nature and extent of residual Site-related environmental impacts, if any, and evaluate the risks posed to human health and the environment by those impacts. The RI identifies the potential human exposure pathways and environmental risks in sufficient detail to support the proposed Site remedial approach and non-residential use redevelopment scenario. The RI objectives were met by filling data gaps from previous investigations and cleanup activities.

The RI results are used to develop a conceptual Cleanup Plan for the property. The Cleanup Plan has been developed to meet the Act 2 Site-Specific Standard. Based on the RI findings, the cleanup objective for the Site is to protect human health by mitigating identified exposure pathways with soil and groundwater impacted by select volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), and inorganics in locations where COC concentrations exceed the respective non-residential MSCs.

Following implementation of the remedial alternatives included in the approved Cleanup Plan, a Final Report will be prepared in accordance with Act 2 requirements to obtain a release of environmental liability for the Site.

2 SITE INFORMATION

This section presents relevant background information used to develop the RI scope. The Site location and history are described below, followed by a summary of previous investigations and remediation activities.

2.1 Location and Description

The Site is located on 4501 Richmond Street between Orthodox Street and Buckius Street in the Bridesburg borough of Philadelphia, Pennsylvania. The Site is bounded to the west by Richmond Street, Lefevre Street, and Garden Street; to the north by Buckius Street; to the south by Orthodox Street; and to the east by the Delaware River[1]. The Site is approximately 63 acres in size and is currently unoccupied. The Site is overgrown with vegetation and only remnants of the former operating structures, foundations, and concrete pads remain. All former structures at the Site have been demolished to ground level, and the Site is currently vacant and unoccupied. The Site is secured by a perimeter chain-link fence that is routinely inspected and repaired, as needed. The Site will remain unoccupied until redevelopment. The Site location is shown on Figure 1.

The Delaware River is the primary hydrologic feature within the region. The river is classified by PADEP as a warm-water fish designated use river/stream. The Delaware River flows north to south to the Atlantic Ocean at the Delaware Bay. Surface flow onsite drains southeast into the Delaware River. A watershed map of the Lower Delaware River Watershed is included as Figure 2.

A large municipal storm sewer identified as the “Upper Delaware Collecting Sewer” (reportedly 11-foot-3-inch to 12-foot-3-inch diameter) extends across the western portion of the Site, from the intersection of Bath Street with Orthodox Street to the south and Buckius Street to the north but does not collect or convey stormwater from the Site. The invert elevation of this sewer was estimated to be at least 29 feet below ground surface (bgs; equivalent to 15.79 feet below mean sea level). An active utility corridor and the inactive Philadelphia Beltway Railroad extend through the eastern portion of the Site.

A mix of residential, industrial, and commercial properties surround the Site. To the west (along Richmond Street) is a mix of commercial enterprises and residential housing. To the south (along Orthodox Street) and to the north (along Buckius Street) are commercial and industrial properties. To the east is the Delaware River.

Ground surface elevations vary throughout the property. The ground surface is lowest near the bulkhead at the Delaware River (at elevations ranging from 5-6.5 feet above mean sea level [AMSL]) and then rises slightly to the west to approximately 8-9 feet AMSL near the utility corridor. West of the utility corridor, the ground surface elevation changes significantly, advancing into the upland areas of the Site in a westerly and northerly direction towards the Site center. The highest ground surface is near former tar holders in the approximate center of the Site, and in the southeast corner of the Site. The ground surface elevations west of the utility corridor range from approximately 10 to 21 feet above AMSL.

[1] For purposes of this report, north (i.e., plant north) is perpendicular to Buckius Street (55 degrees each of the true north shown on the Site figures.

2.2 History

The Site was developed in the mid-1920s to provide manufactured gas to the City of Philadelphia (the City). Facility operations from January 1929 to May 1982 focused on the production of metallurgical coke by the Philadelphia Coke Co., Inc. Principal processes included coal and coke storage, coke production, tar storage, by-product operations, and iron oxide storage. The Site also included an iron oxide waste area and tar plain area. A fuel oil blending facility operated on the eastern 2.5 acres of the Site from approximately 1969 through 1989 by Patterson Oil Co. and Eastern Gas Co.

Coal and Coke Storage Areas were located in the northern portion of the Site. The main Coking Operations Area was in the center of the Site and consisted of the coke ovens, the by-products building, tar storage, and oxide boxes. The facility had two aboveground storage tanks (ASTs) that were used to store product coal tar with estimated capacities of 500,000 and 1,000,000 gallons. Additionally, there was one tank farm with concrete secondary containment for four ASTs and a second tank farm with two fuel oil tanks surrounded with an earthen berm (Woodward-Clyde Consultants [WCC] 1992a). The Main Operations Area is where Resource Conservation and Recovery Act (RCRA) closure activities were implemented and included the Spent Iron Oxide Storage and Tar Plain Areas. The Fuel Blending Area was in the eastern portion of the Site and consisted mainly of aboveground storage and below ground piping. The overall layout of the Former Philadelphia Coke Plant is shown on Figure 3. Historical aerial photographs, Sanborn maps, and other Site plans, including a generalized process flow diagram, are included as Electronic Attachment 1.

The facility carbonized coal in coke ovens. Bituminous coal and limited amounts of anthracite coal were used as raw materials to make metallurgical coke. When combined with limestone and iron ore at high temperatures, metallurgical coke is used to form iron and steel. Metallurgical coke is both fuel and a reactant essential for steelmaking.

During its active years, the facility produced upwards of 220,000 tons of metallurgical coke annually. The facility formerly operated as a large quantity generator of hazardous waste under EPA number PAD000427906. The facility also operated under a National Pollutant Discharge Elimination permit number PAD0011401.

The primary waste materials (residual tar, spent iron oxide, etc.) generated by the coal carbonization process resulted from coal gas cleaning and cooling systems. During the coal carbonization process and subsequent gas cleaning and cooling operations, various heavy hydrocarbons were generated and combined with fine coal or coke solids in the gas stream. This combination then settled in the tar decanters, which principally functioned as tar/water separators. Periodically, the settled mixture in the decanters (decanter tank sludge), as well as waste material in the iron oxide waste storage area, was removed for offsite disposal. The facility manufactured and generated several types of products and wastes. Former Site operations and waste generated is summarized in the Engineer's and Owner's Certification of Closure for Waste Management Units, prepared by WCC in December 1992 (RCRA Closure Report; WCC 1992b) which is included in Electronic Attachment 2.

In the early days of plant operation, discharge to surface water from the Site occurred through a single outfall into the Delaware River (Outfall 001). On March 13, 1951, the Philadelphia Coke Company was issued a discharge permit from the Pennsylvania Department of Health. While no documentation was identified regarding the installation of the oil skimmer leading to Outfall 001, it is assumed that it was installed in the early 1950s. In 1975, a substantial portion of the plant's process water was diverted to the

City's sanitary sewer system on Orthodox St. According to a June 28, 1982 letter, Outfall 001 was plugged following the end of Site operations.

The former Fuel Oil Blending Area supported a process whereby Number 2 and Number 6 fuel oils were brought to the Site by barge and off-loaded. The oil was stored and blended prior to local distribution by tanker truck.

All above-ground structures have been demolished to ground level.

2.3 Historical Investigations and Cleanups

Prior to the RI, various investigations were performed at the Site from the mid-1980s through 2001. The initial investigations were conducted in conjunction with Site closure activities under the federal RCRA program. The results of these investigations are summarized in the RCRA Closure Report (WCC 1992b; Electronic Attachment 2). The RCRA Closure actions conducted at the plant in the late 1980s addressed source area contamination located at specific RCRA Hazardous Waste Management Units. A series of limited investigations of the Fuel Blending Area were also conducted from 1988 to 1993 and in 2001.

As part of these historical investigations, cleanup activities were performed. Approximately 39,000 tons of material were transported for offsite treatment and disposal. A timeline of historical cleanup activities is provided in the table below, and a discussion of these investigations and cleanups is provided in the following paragraphs.

Table 2-1: Historical Cleanups

Year	Cleanup Description
1982-1988	Removed RCRA waste management units
1988	Removed approximately 9,370 tons of soil impacted with decanter tank tar sludge and spent iron oxide
1988-1993	Removed approximately 29,400 tons of soil impacted with coke breeze, paving material, and coal tar
1992-1993	Performed in-situ soil bioremediation in Fuel Blending Area
1991-2001	Removed underground storage tanks (USTs) and residual oil from pipe segments

2.3.1 RCRA Closure Investigation and Remediation

The initial RCRA investigation was conducted in October 1986. The results indicated that coal tar-related base neutral organic compounds were reported above standards in soil and groundwater in the former operational areas.

2.3.1.1 Historical Groundwater Evaluation

Six onsite shallow groundwater monitoring wells (MW-1 through MW-6[2]) and one deep groundwater monitoring well MW-2D were installed in the central portion of the Site as shown on Figure 4. These wells were generally sampled on a quarterly basis for 14 years, from April 1985 through November 1998, for a total of approximately 40 sampling events. After November 1998, the frequency of groundwater monitoring was decreased to annual monitoring events. In a July 26, 1999 letter, PADEP approved the termination of RCRA groundwater monitoring based on the continuous decreasing trend of constituent concentrations.

The monitoring wells were located in the center of the Site and downgradient from the RCRA soil removal areas. Potentiometric surface maps from the 1980s indicate groundwater flow originating near MW-2 (in the Spent Iron Oxide Storage Area in the center of the Site) and flowing radially west to Garden Street, south to Orthodox Street, and east towards the Delaware River. No monitoring wells were installed north of MW-2 to evaluate groundwater flow to Richmond Street or Buckius Street. Historical potentiometric surface maps are provided in Appendix B.

Groundwater analytical results from the sampling events generally indicated the presence of benzene, toluene, ethylbenzene, and SVOCs. In addition, trichloroethene (TCE), 1,1-dichloroethane, and cis-1,2-dichloroethene were periodically detected at elevated levels onsite. VOC and SVOC impacts were primarily observed at MW-1 (located downgradient from the Former Tar Plain, near the existing PCMW-10 cluster) and MW-2. Benzene, toluene, ethylbenzene, xylene, (BTEX) and EPA's 16 priority pollutant polycyclic aromatic hydrocarbons (PAHs) were not detected in monitoring wells MW-3 or MW-4. MW-3 is located in the eastern half of the Site between the Site center and the former Fuel Blending Area, and MW-4 is located on the western property boundary near the Garden Street properties. Some general water quality parameters (i.e., total base neutral extractables and total VOCs) were slightly elevated in MW-3 and MW-4, but those impacts were attributed to fill materials rather than plant-related activities.

During the final year of groundwater monitoring (1998), benzene and naphthalene remained at concentrations greater than the Maximum Contaminant Levels[3] (5 and 20 micrograms per liter [5 µg/L], respectively) in MW-2R (replacement for well MW-2). In 1998, PAH results (including naphthalene results) were lower than the current applicable groundwater MSCs (i.e., PADEP Non-Residential MSCs for Used Aquifers containing Total dissolved solids [TDS] ≤ 2,500 milligrams per liter [mg/L]).

In the July 26, 1999 letter, PADEP indicated that benzene and naphthalene have not migrated to downgradient wells (MW-1 and MW-3) and that these compounds were not found to be at "any appreciable levels" (according to the PADEP) in MW-2D, MW-4, MW-5, or MW-6 since 1994. Therefore, PADEP indicated that groundwater impacts for these compounds were localized and have been since 1994.

In the July 26, 1999 letter, PADEP also indicated that concentrations of the VOC and SVOC constituents have "significantly decreased from 1985 and 1998". Upon termination of the groundwater program, PADEP acknowledged that concentrations of iron, manganese, specific conductance, potassium, sodium,

[2] Wells identified above as MW-1 through MW-6 were originally identified as W-1 through W-6 in the RCRA closure documentation.
[3] The Maximum Contaminant Levels are from the federal and state Safe Drinking Water Act standards available at the time of the July 26, 1999 letter.

calcium, magnesium, sulfate, and chloride remained elevated. However, PADEP attributed these elevated levels as a natural phenomenon (i.e., related to the fill material). In 1999, PADEP concluded that groundwater impacts at the Site were localized, delineated, and stable and that PCC was no longer subject to any additional groundwater monitoring at that time.

2.3.1.2 RCRA Closure Activities

Closure activities, consisting of excavation and offsite disposal of soil contaminated with decanter tank tar sludge from coking operations (RCRA Waste Code K087), and spent iron oxide (RCRA Waste Code D003) were initiated on July 12, 1988. In total, five RCRA Hazardous Waste Management Units (HWMU) were closed, and 9,370 tons of hazardous waste were removed. Hazardous waste material originated from the tar storage tanks, waste liquor pit, tar plains, tar decanters, and the iron oxide boxes and pile. Hazardous waste removal activities were mostly complete by December 30, 1988.

Following closure of the HWMU, four RCRA Solid Waste Management Units (SWMU) were closed from 1988 to 1992. The SWMUs consisted of a trash pile, clean oxide, wood trays, and process piping throughout the Site. Generated waste consisted of three non-hazardous waste streams: coke breeze, paving material, and coal tar-impacted soil. Approximately 29,400 tons of the coal tar-contaminated soils were removed from the Site and disposed as residual waste at the G.R.O.W.S. landfill facility between February 19 and July 24, 1992. Additionally, approximately 439,800 gallons of groundwater were transported offsite for treatment.

In all closure areas, post-closure sampling demonstrated that the sum of benz(a)anthracene (BaA), benzo(a)pyrene (BaP), benzo(b)fluoranthene (BbF), chrysene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene was less than the 50 milligrams per kilogram (mg/kg) cleanup criteria and none of these constituents were detected at a concentration greater than 15 mg/kg. At the time, these six PAHs were considered to be suspected carcinogens. The results of the post-closure sampling indicated that the cleanup criteria had been achieved.

In 1993, a sixth HWMU was closed. Approximate 20 cubic yards of soil hazardous for benzene were removed from the former seal pot for offsite incineration. The seal pot was in the Former Byproducts Building piping trench. The seal pot was discovered during excavation activities and cleaned in September 1992. Seal pot closure activities were completed on October 19, 1993.

The RCRA excavation areas are shown on Figure 3. The excavation depths were based on visual characterization and varied based on former Site operation locations, as summarized below:

- Decanter Area – excavation depth ranged from 10-13 feet bgs (averaging at 12 feet bgs).
- Oxide Box and Wash Area – excavation depth ranged from 3-10 feet bgs (average 8 feet bgs)
- Tar Plains – excavation depth averaged 11 feet bgs.

The Certificate of Completion for RCRA Site Closure was issued on December 28, 1994 (WCC 1994). No outstanding closure responsibilities associated with the RCRA Corrective Action remain. The Site has not been occupied since the conclusion of the RCRA Site Closure. Other than the Site investigations discussed herein, no other Site activities or operations (besides the routine mowing and maintenance of the perimeter chain-link fence) have been conducted since the RCRA Closure.

2.3.2 Fuel Blending Area Investigation

In 1988, oily residue was observed on surface soils near a former pump house in the Fuel Blending Area. This observation prompted the initiation of a series of limited investigations between 1988 and 1991. Total Petroleum Hydrocarbon (TPH) concentrations ranging from 1,000 to 250,000 mg/kg were reported in various locations within the Fuel Blending Area. The highest concentrations were reported from the unsaturated zone in the fill layer.

Cleanup activities in the Fuel Blending Area were initiated in 1992. These activities included the excavation and disposal of potential fuel oil sources consisting of subsurface piping between the former aboveground tanks and the pump house and oily residues present in the basement of the former pump house. A bioremediation project was conducted for almost two years and reported moderate success in reducing hydrocarbon concentrations in the surface soils (0 to 3 feet bgs), but only limited success with deeper contamination. The project was discontinued in late 1993 and the above-grade facilities were dismantled and removed in early 1998.

In 2001, Miller Environmental Group, Inc. removed oil from the transport pipe that extended from the pier to the fuel oil tanks. No. 2 fuel oil was encountered in the piping and removed for appropriate offsite disposal. During pipe removal, oil was reported floating on the perched groundwater near the western terminus of the pipe segments.

URS Corporation (URS) completed a test pit investigation in 2001 to delineate fuel oil impacts in the Fuel Blending Area observed during the pipe cleaning. A total of 18 test pits were excavated. Based on the observations during the investigation, a relatively thin zone of fuel oil impacts was encountered from 1 and 2 feet above the observed water table to 1 and 2 feet below the water table in the six test pits completed inside the Fuel Oil Blending Area berm. Sheens were observed in an additional five test pits. Impacts were not observed in the test pits completed outside this berm near the Delaware River. The results of the test pit investigation are summarized in a December 13, 2002 URS letter report (Electronic Attachment 3).

2.3.3 Underground Storage Tank Removals

Seven USTs were removed from the Site in July 1991. These USTs were registered with the Pennsylvania Department of Environmental Resources (PADER) at the time of the authorization and assigned Facility Identification No. 51-44990. The UST removals were performed under the oversight of PADER and the City of Philadelphia Department of Licenses and Inspections. According to PADEP Region 1 Office, the UST closures were approved by PADER on June 22, 1992. A description of the USTs removed, including the UST locations and the results of post-excavation soil sampling and analysis, are summarized below.

- Four 1,000-gallon gasoline USTs were removed from the Buckius Street Garage Area (Building 12 on Figure 3, likely in the vicinity of the RI soil boring location PCSB-01). TPH levels reported from the eight post-excavation soil samples ranged from non-detect to 190 mg/kg. A total xylene concentration of 0.019 mg/kg was reported in one of the eight samples. No BTEX were reported in any of the other samples. The excavation was backfilled with clean fill.
- One 1,000-gallon gasoline UST was removed from the Machine Shop Area (Building 12 on Figure 3). TPH levels reported from the three final post-excavation soil samples ranged from non-detect to 180

mg/kg. BTEX concentrations reported in the bottom sample ranged from 0.007 mg/kg (toluene) to 0.037 mg/kg (benzene). BTEX concentrations reported in the wall samples ranged from 0.007 mg/kg (toluene) to 0.18 mg/kg (benzene). Groundwater samples were also collected from seeps entering the excavation at three locations. Benzene was the only BTEX compound detected in the groundwater samples. Benzene was detected at 7 and 8 µg/L. A TPH concentration of 200 µg/L was reported in one sample. The excavation was backfilled with clean fill.

- Two 3,500-gallon diesel USTs were removed from the former scale house area (the scale house could not be located on historical figures). Post-excavation soil sampling indicated that TPH concentrations ranged from not detected to 220 mg/kg. No groundwater was observed in the excavation. The excavation was backfilled with clean fill.

2.4 EPA Environmental Indicator Determinations

In April 2013, EPA completed two Environmental Indicator Determinations concluding that both human exposures and impacted groundwater migration are under control at the Site. The Environmental Indicator process was initiated in response to a notification to PCC Land Company, Inc. (PCC) from EPA Region III on April 18, 2011. The notification included an attached letter dated June 22, 2010 prepared by PADEP requesting information regarding the status of the Site in relation to RCRA Corrective Action. In response to the notification, PCC conducted an August 11, 2011 site walk with PADEP and EPA's representative from Michael Baker International (Baker).

Based on the initial Site walk and file review, Baker prepared a January 2012 Environmental Indicator Inspection Report for the Site. Following the report, EPA issued the following RCRA Environmental Indicator Forms on April 10, 2013:

- CA-725: Current Human Exposures Under Control
- CA-750: Migration of Contaminated GW Under Control

The RCRA Environmental Indicator Forms concluded that both human exposures and impacted groundwater migration are under control at the Site. The RCRA Environmental Indicator Forms are provided as Appendix C. Any further work needed will be performed to satisfy the requirements of PADEP Act 2.

3 REMEDIAL INVESTIGATION

The RI was performed in two major phases. An initial phase of RI activities was performed by Paulus, Sokolowski and Sartor, Engineering, PC (PS&S) from 2003 through 2006 (hereinafter referred to as the Initial RI activities). Additional investigation activities were implemented by Arcadis in 2018 and 2019 (hereinafter referred to as the Supplemental Remedial Investigation [SRI] Activities). Each phase of the RI involved two or more rounds of fieldwork, with the scope of each round developed based on the results of preceding round(s). Between the Initial RI and SRI, the Site was unoccupied, and no activities were performed onsite other than periodic mowing of vegetation or maintenance of the perimeter fence.

The Initial RI activities consisted of sample collection from various media, including surface soil, subsurface soil, groundwater, soil gas, and ambient air to evaluate the nature and extent of impacts at the Site. Initial sampling locations were selected based on a review of available environmental database reports, Sanborn maps, aerial photographs, the RCRA Closure Report (including the associated soil and groundwater data), and other historical documents and figures. Test pit excavations and resulting soil samples were obtained from all areas of the Site, with the sampling locations generally biased towards the former operation areas. Subsequent phases of the Initial RI activities were developed to: (1) further delineate identified COCs; (2) complete characterization of the former operational areas; and (3) establish general Site conditions.

The SRI activities consisted of installing and sampling additional monitoring wells, soil borings, and test pits to: (1) confirm prior results, and that Site conditions had not significantly changed since samples were collected as part of the Initial RI activities; (2) fill identified data gaps from previous investigation and remedial activities and delineate the extent of impacts for purposes of developing a Cleanup Plan; and (3) assess current groundwater conditions.

The RI activities are summarized in Section 3.1 below and the RI findings are presented in Section 3.2.

3.1 Remedial Investigation Activities

The Initial and Supplemental RI activities consisted of the following:

- Excavating 197 test pits to characterize surface and shallow subsurface soil, evaluate subsurface structures, and assess geotechnical conditions. Soil samples from 145 test pits were collected for laboratory analysis.
- Installing 179[4] soil borings to characterize subsurface soils and Site stratigraphy. Soil samples from 150 soil borings were collected for laboratory analysis.
- Installing, developing, and sampling 33 shallow groundwater monitoring wells and 13 deep groundwater monitoring wells to characterize groundwater quality and evaluate groundwater flow.
- Drilling 7 hydropunch borings for a preliminary evaluation of groundwater conditions where visual impacts were observed.

[4] Count includes borings drilled for the monitoring wells installed in 2018 and 2019 because soil was characterized during drilling for the well installations.

- Collecting and analyzing approximately 540 soil samples and 112 groundwater samples for a combination of Target Compound List (TCL) VOCs, TCL SVOCs, Priority Pollutant (PP) metals, Target Analyte List (TAL) inorganics, cyanide, pesticides, and polychlorinated biphenyls (PCBs) to evaluate the nature and extent of environmental impacts in Site media.
- Collecting 21 soil gas samples and one ambient air sample to evaluate the potential for soil VI in future building development.
- Performing sediment probing in the Delaware River and a visual reconnaissance of the shoreline to evaluate nearshore conditions adjacent to the Site.
- Collecting data to support an ecological screening (ES; Section 6).

The test pit, soil boring, monitoring well, hydropunch boring, and soil gas sampling locations are shown on Figure 5. A summary of the laboratory analyses performed on soil samples collected from each soil boring and test pit is presented in Table 1, and a summary of the laboratory analyses performed on groundwater samples collected from each monitoring well and hydropunch location is presented in Table 2.

Sample collection was performed in accordance with PADEP guidelines and Act 2 requirements. The work conducted on the Site was performed in accordance with a site-specific Health and Safety Plan (HASP). The sampling activities, including techniques and analytical testing used to conduct this RI are presented below.

3.1.1 Initial Remedial Investigation Activities (2003-2006)

The Initial RI activities were performed through an iterative process from 2003 through 2006. These activities included the installation of test pits, soil borings, groundwater probes, and monitoring wells and the collection of soil, soil gas, and groundwater samples for laboratory analysis. To obtain data to characterize Site conditions a preliminary test pit and soil sampling program was conducted in March 2003 and additional field investigation activities were conducted from February through March 2005, and July 2005 through March 2006.

During the Initial RI activities, Earth Engineering Incorporated (EEI) also drilled soil borings and excavated test pits to collect soil samples for geotechnical testing. Based upon field observations and/or field instrumentation, select soil samples were also collected during the geotechnical investigation for laboratory analysis for Site-related COCs to aid in the Site characterization.

The components of the Initial RI activities are summarized in the table below.

Table 3-1: Overview of Initial RI Activities

Dates	Consultant	Sample Numbers	RI Activity
March 2003	PS&S	PSSTP-1 to PSSTP-30	Preliminary test pit investigation.
February 2005	EEI and PS&S	PC-B1 to PC-B15	Soil borings for geotechnical testing. Soil samples were collected for laboratory analysis at select locations, based on visible impacts.
February 2005	PS&S	PCTP-01 to PCTP-60	Second test pit investigation.
March 2005	EEI and PS&S	TP-01 to TP-78	Test pits for geotechnical testing. Soil samples were collected for laboratory analysis at select locations, based on visible impacts.
March 2005	PS&S	PCHP-01 to PCHP-07	Hydropunch sampling.
February and March 2005	PS&S	PCSB-01 to PCSB-25	Soil boring investigation.
July and August 2005	PS&S	PCSB-26 to PCSB-60	Additional soil boring investigation.
September 2005	PS&S	PCTP-61 to PCTP-79	Third test pit investigation.
August to October 2005	PS&S	PCMW-01 to PCMW-20S/D	Monitoring well installation.
November 2005 and January/ February 2006	PS&S	PCMW-01 to PCMW-20S/D	Groundwater investigations.
January 2006	PS&S	PCSV-01 to PCSV-22	Soil gas investigation.

The groundwater and soil samples were analyzed by Hampton-Clarke, Veritech Laboratories (Veritech), a PADEP certified laboratory (laboratory certification number #68-463), in accordance with EPA SW-846 methods. Approximately 350 soil samples were collected for laboratory analysis for TCL VOCs, TCL SVOCs, PP Metals, and total cyanide. Approximately 140 of these samples were also analyzed for PCBs and pesticides. A total of 7 groundwater samples from hydropunch borings and 66 groundwater samples from monitoring wells (obtained during two rounds of sampling the 33 monitoring wells) were collected and analyzed for TCL VOCs, TCL SVOCs, PP Metals (total and dissolved), PCBs and pesticides (monitoring well samples only).

Soil gas samples were analyzed by Air Toxics LTD, located in Folsom, California. The laboratory performed analyses via Modified EPA Compendium Method TO-15, plus Naphthalene, using GC/MS in

the full scan mode, as well as a Modified American Society Testing and Materials (ASTM) Method D-1946 for methane and fixed gases in air using gas chromatography with flame ionization detector (GC/FID) or gas chromatography with thermal conductivity detector (GC/TCD). Soil gas samples were analyzed in accordance with current methodologies that are consistent with the PADEP Technical Guidance Manual for Vapor Intrusion into Buildings from Groundwater and Soil Under Act 2 (PADEP 2021; TGM).

Details of the Initial RI fieldwork are provided in the subsections below.

3.1.1.1 Initial Soil Investigation

During the Initial RI activities conducted from 2003 to 2006, surface soil sampling (0 to 2 feet bgs) and a combination of test pits and soil borings to facilitate subsurface soil sampling (>2 feet bgs) were used to evaluate soil conditions. The test pit and soil boring locations are shown on Figure 5. The test pit and soil boring locations where soil samples were collected for laboratory analysis are shown on Figure 6.

Test Pits

The purpose of this test pit program was to:

- Characterize the horizontal and vertical extent of fill across the Site.
- Identify COCs in the various fill areas.
- Identify subsurface utilities that may have been abandoned in-place in former areas of operation.

PS&S conducted a preliminary test pit evaluation in March 2003 during which 30 test pits were excavated in the Former Coke Operations Area and the Fuel Blending Area. The geotechnical investigation involved advancing an additional 78 test pits. Based upon the findings of the initial round, subsequent investigations consisting of characterization and delineation of COCs were implemented. An additional 60 test pits were excavated from February 2005 through March 2005. From August through September 2005, 19 additional test pits were excavated to provide additional Site perimeter characterization data.

Long-reach backhoes were used to excavate test pits to define the depth of the fill areas prior to initiating the boring program. Test pits were located based upon review of Site historical maps, aerial photographs, and previous investigations.

Generally, soil samples were collected from the ground surface (0 to 6 inches) and at the fill and native soil interface (determined based upon visual and physical description). The test pit soil samples were collected using a dedicated polyethylene scoop and placed into laboratory-supplied sample containers. Two soil samples were typically collected from each test pit, although additional samples were collected at some locations based on visual observations.

Soil samples collected from the test pits were handled as follows: (1) screened for volatile organic vapors using a photoionization detector (PID); (2) observed for the presence of staining, discoloration, non-aqueous phase liquid (NAPL), ash, and tar; and (3) logged by a geologist using the Unified Soil Classification System (USCS). The information gathered during the test pit program was documented on test pit logs provided in Appendix D and summarized in Table 3.

Following completion of the test pits and the collection of soil samples, the test pits were backfilled with the excavated material and restored to the original grade. Upon backfilling of the test pits, material that

was not retained for laboratory analysis or placed back in the excavation was transferred to a roll-off container and disposed of in accordance with applicable federal, state and local regulations.

Soil Borings

The objectives of the soil boring program were to:

- Supplement the test pit program to further characterize the horizontal and vertical extent of fill material and to investigate the nature and extent of potential impacts to the native soils.
- Characterize the subsurface soils within the Former Coke Operations Area and Fuel Blending Area.
- Characterize Site stratigraphy.
- Identify physical characteristics of the subsurface soils.
- Identify potential physical and Site-related impacts in the Site soils resulting from the former Site operations.

Between February 2005 and October 2005, PS&S advanced a total of 60 soil borings. PCSB-01 to PCSB-25 were advanced in February and March 2005 using a conventional hollow-stem auger (HSA) drill rig and PCSB-26 to PCSB-60 were advanced in July and August 2005 using a GeoProbe direct push rig. Most borings were located within the RCRA Closure Areas, the Former Coke Operation Area, and the Fuel Blending Area. In February and March 2005, the soil borings were advanced through a silt and clay layer and into an underlying sand and gravel layer (between approximately 18 and 50 feet bgs). Three soil borings (PCSB-05, PCSB-13, and PCSB-16) were advanced through the sand and gravel layer and into bedrock. Based on observations from these soil borings, it was concluded that a silt and clay layer was continuous across the Site and acting as a confining unit for subsurface soil impacts. Therefore, soil borings drilled after March 2005 were only advanced into the silt and clay layer (i.e., confining unit). The geotechnical investigation consisted of the advancement of an additional 14 soil borings.

Subsurface soil samples were collected using a decontaminated split-spoon sampler advanced by the conventional HSA drill rig or macro-core liner advanced by the direct-push drill rig. In those instances where the HSA was used to penetrate the sand and gravel layer into the underlying confining unit, steel casing was used to prevent vertical migration of contaminants from the material within the fill layer.

Soil boring locations were selected to supplement the coverage provided by the test pits. The recovered soil samples were handled as follows: (1) screened for volatile organic vapors using a PID; (2) observed for the presence of staining, discoloration, NAPL, ash, and tar; (3) checked for odors; and (4) logged by a geologist using the USCS. The information gathered during the soil boring program was documented on soil boring logs which are contained in Appendix D and summarized in Table 3.

Generally, soil samples were collected from two or more depth intervals from each boring. The depth of the soil samples was based primarily upon field observations (i.e., visual observations, field screening results, etc.) that indicated potential impacts. In general, soil samples were collected at one or more of the above conditions:

- Surficial soils (the upper 0- to 2-foot interval).
- At the bottom of the encountered fill material or at the upper 2-foot interval of the native soils.
- A 6-inch interval (0- to 6-inches) immediately above the water table.

- Immediately above and below the silt and clay confining unit.
- At visually impacted zones and/or elevated PID readings.
- At the completion depth of the boring.

Following completion of the boreholes and the collection of soil samples, the boreholes were grouted to the surface using a cement-bentonite grout. All borings were finished to match pre-disturbance grades. Recovered soil sample material that was not retained for laboratory analysis was placed in a roll-off container and disposed of in accordance with applicable federal, state and local regulations.

3.1.1.2 Initial Groundwater Investigation

During the Initial RI activities, PS&S installed and sampled 20 shallow groundwater monitoring wells and 13 deep groundwater monitoring wells to characterize groundwater quality and evaluate groundwater flow. In addition, seven hydropunch borings were advanced and sampled to evaluate groundwater conditions. The hydropunch borings and monitoring well locations are shown on Figure 7.

Hydropunch Sampling

Following completion of the February and March 2005 test pit and soil boring program, initial groundwater sampling was conducted on March 24 and 25, 2005. A groundwater probe, or hydropunch, was advanced at seven locations in areas where visual impacts were observed during the initial soil investigation. The goal of the hydropunch sampling was to gather groundwater data to identify and generally characterize the constituents present in the shallow groundwater located in the fill above the confining silt and clay layer.

The groundwater samples were collected by driving hydropunch rods to the bottom of the designated sample depth interval and retracting 4 feet of the outer steel casing to expose a decontaminated stainless-steel screen. Actual sample intervals were determined based on observed field conditions (i.e., soil visual observations, soil field screening results, etc.).

The water collected in the sampling rod was poured directly into the laboratory-provided sample containers. The hydropunch rods were decontaminated between each sampling location. Any evidence of odors, sheens, or the presence of NAPL was noted. The observations and results were logged in project field forms. Upon completion of the sampling, each probe hole was left to naturally collapse into itself. All probe holes were restored at grade with the same material that was originally in place.

Monitoring Well Installation

Following completion of the test pit and soil boring phase of the Initial RI activities, a total of 33 monitoring wells were installed from August through October 2005 in accordance with the applicable PADEP Groundwater Monitoring Guidance Manual at the time. The monitoring wells were installed upgradient and downgradient of impacts identified during the soil boring and test pit program and at the property boundaries to serve as “point of compliance” locations. The geology at the monitoring wells was not documented (i.e., continuous soil samples providing soil classification by USCS were not collected from the soil borings drilled at the monitoring well locations; geology informing well construction was interpolated from observations at nearby borings and soil cuttings observed during drilling at the well locations). The wells were constructed as either shallow or deep wells based upon their screened depth in relation to the confining unit. The screen interval for shallow groundwater monitoring wells was installed

within the fill material above the confining unit, and the screen interval for deep groundwater monitoring wells was installed within the sand and gravel layer below the confining unit.

Of the 33 wells, seven were installed on the riverward portion of the Site and consisted of only shallow wells. The remaining 26 wells were comprised of 13 well clusters, each consisting of a shallow well and a deep well. Shallow wells are generally screened from 1 to 10 feet bgs near the river and from 5 to 15 feet bgs for the remainder of the Site. The deep wells are generally screened below the bottom of the silt and clay layer with a 10-foot screen between 18 and 40 feet bgs, depending on the depth of the silt and clay layer.

The shallow monitoring well construction consisted of 2-inch and 4-inch diameter casings. The 4-inch diameter wells were installed in the riverward portion of the Site. The deep monitoring wells were constructed as double cased wells. Six-inch steel casings were placed approximately 10 feet into the confining clay layer, through the overlying fill material, and grouted in-place. Following a minimum of 24 hours set time, the remaining depth of the boreholes for deep wells was drilled, and the wells were constructed from 2-inch diameter casings. The deep and shallow monitoring well were constructed with polyvinyl chloride (PVC) 20-slot well screens and PVC Schedule 40 casing. Typically, the monitoring well screen length was 10 feet and the casing extended from the top of the screen to grade.

A No. 2-grade sand pack was installed in the annular space from the bottom of the monitoring well screen to approximately one to three feet above the top of the well screen, except for shallow wells where the top of the screen was within one foot of the ground surface. In these shallow wells, the sand pack extends up to the concrete surface seal. A bentonite seal was placed into the annulus above the gravel pack. A bentonite/grout slurry was pumped into the annulus via a tremie pipe, from the top of the bentonite seal to the surface. The monitoring wells were protected and secured with above-grade (“stick-up”) locking steel casings. Well construction details are summarized in Table 4. Monitoring well construction logs are provided in Appendix D.

Following installation, the groundwater monitoring wells were developed by purging with a submersible pump. The development process continued until the turbidity readings were at or below 50 Nephelometric Turbidity Units (NTUs) or a two-hour development period, whichever occurred first. Development water was temporarily containerized onsite in 55-gallon steel drums. After waste characterization, containerized liquids were removed from the Site for proper offsite transportation and disposal.

Soil cuttings generated during the installation of each well were placed into a roll-off container and properly disposed of in accordance with applicable federal, state and local regulations.

Groundwater Sampling

The first round of groundwater sampling from the permanent monitoring wells was conducted approximately two weeks after well development in November 2005. A second round of groundwater sampling was completed in January/February 2006.

The monitoring wells were sampled using a “low-flow” sampling protocol. As part of the protocol, wells were purged at a low pumping rate using a Grundfos Rediflo® submersible pump or peristaltic pump and dedicated tubing. Prior to sample collection, groundwater was circulated through a flow-through cell to record pH, specific conductance, temperature, turbidity, dissolved oxygen, and oxidation-reduction potential. Following stabilization of the field parameters, groundwater was collected in laboratory-supplied sample containers. In those instances where a peristaltic pump was used to purge the well, the VOC

fraction of the sample was obtained using a dedicated bailer. The water level meters, submersible pump, peristaltic pump and flow cell were decontaminated prior to each use. Completed low-flow groundwater monitoring and purge logs are provided as Appendix E.

Water Level Measurements

During the above-identified groundwater sampling events, a complete round of groundwater level measurements was collected from the monitoring wells before sampling. Additional rounds of groundwater level measurements were collected in December 2005 and March 2006. The groundwater level measurement process documented the presence/absence of NAPL and the groundwater depth in each monitoring well. Groundwater depths were measured using a Solinst water level indicator to an accuracy of 0.01 feet. A Solinst oil/water interface probe, cotton string, and disposable bailers were used to determine if any NAPL was present in the monitoring wells. No measurable NAPL was identified during the two rounds of groundwater sampling other than an apparent emulsion at PCMW-05. Groundwater level data is discussed in Section 3.2.2. Water level measurements are presented in Table 5.

Hydraulic Conductivity Testing and Other Soil Physical Parameters

During the RI field program monitoring well installation activities, select soil samples were collected from the three Site strata to obtain the physical characteristics of this material through laboratory testing. Samples were collected in glass containers and Shelby tubes of the fill material, silt and clay layer, and sand and gravel layers. The samples were analyzed in the PS&S geotechnical laboratory for grain size, bulk density, permeability, and porosity. The data for these parameters were used to calculate hydraulic conductivity for each stratum. A copy of the soil physical parameter data is included as Appendix F.

3.1.1.3 Soil Gas Investigation

A total of 21 soil gas samples and one ambient air sample were collected at onsite locations in January 2006. The sampling locations were biased toward areas where visual observations and/or concentrations of VOCs and SVOCs were identified in Site soils and groundwater during the Initial RI activities. The sampling locations were concentrated toward the center, northeast corner, and eastern portions of the Site (see Figure 5 for the sampling locations). Soil gas samples were collected in unsaturated soil (i.e., fill) above the water table. The soil gas sampling locations were biased toward areas where visual impacts and/or elevated VOC or SVOC concentrations were identified in soil and groundwater. However, these locations may not have been ideal for soil gas sample collection because the water table was less than 5 feet bgs and the ground surface was not covered with an impermeable material (e.g., the ground surface at these locations consisted of soil or deteriorated asphalt).

The soil gas samples were obtained using a stainless-steel sampling system that uses driving rods (shaft sections) equipped with a small diameter hollow-tip sampling point (shield point). Teflon tubing was installed to allow extraction of soil gas samples. The shaft sections were driven into the ground to a depth of approximately one foot above the observed groundwater table. Due to the shallow groundwater at the Site, soil gas samples were generally collected at depths less than 5 feet bgs. The probe was then removed, leaving the expendable shield point and tubing in place allowing the collection of the soil gas sample.

The probe hole was sealed with bentonite to prevent intrusion of ambient “surface” air. Prior to the collection of soil gas, a vacuum pump was used to purge the line of ambient air at a rate of 0.1 to 0.2

liters/minute. Continuous or excessive pumping was avoided so that the soil gas would not be diluted with surface air.

Samples were extracted using Summa canisters attached to Teflon sample lines that extend from the shield points. Summa canisters were supplied by Air Toxics Limited (Air Toxics LTD) and evacuated to a vacuum pressure of approximately 30 inches of mercury. The pressure gradient between the vacuum in the canister and the subsurface atmosphere provided the driving force for sample flow and gas collection. The canisters were equipped with flow controllers with an integral vacuum gauge adjusted to provide a nominal one-hour integrated sample collection period (approximately 0.1 liters/minute). A vacuum gauge was used to measure the initial and final vacuum in the canister to document sample integrity. Following sample collection, real-time instrument readings were recorded for the presence of hydrogen sulfide, oxygen, carbon dioxide, and methane.

Soil gas sample integrity was maintained by using experienced field personnel, good sampling techniques, proper sampling equipment, and adequate documentation. Pre- and post-sample vacuum checks conducted in the field and at the laboratory demonstrated that leakage had not occurred before or after sample collection and provided documentation of sample integrity.

A field “replicate” soil gas sample was taken at two locations (one replicate for every 11 samples) to provide an assessment of the compositional consistency of the soil gas samples. One ambient air sample was also taken at a central location (adjacent to PCSV-22) for quality assurance and quality control (QA/QC) purposes.

After sampling was completed, the sample canisters were shipped overnight to Air Toxics LTD, located in Folsom, California for analysis. The laboratory performed analyses via the Modified EPA Compendium Method TO-15, plus Naphthalene, using GC/MS in the full scan mode, as well as a Modified ASTM Method D-1946 for Methane and fixed gases in air using GC/FID or GC/TCD. Analysis of a laboratory blank was performed by the laboratory as an internal QA/QC check.

3.1.2 Supplemental Remedial Investigation Activities (2018-2019)

The SRI Activities were performed in multiple phases from 2018 through 2019 to confirm the results and fill data gaps from the Initial RI work. Activities included additional groundwater and soil investigations, a Delaware River reconnaissance, and sediment probing in the nearshore area adjacent to the Site at low tide. As part of an interim Site review and inspection (performed between the Initial RI and SRI), GEI Consultants Inc. (GEI) performed Site walks on June 21, 2011 and July 12, 2011 to review current Site conditions. For purposes of this report, GEI’s activities and those activities performed by Herpetological Associates, Inc. as part of a July 2021 Phase 1 Aquatic and Nesting Habitat Survey for the new site owner, BP Bridesburg LLC (BPB) are presented together with the SRI Activities in Subsection 3.1.2.4. Most of the supplemental groundwater investigation was performed in 2018, and the supplemental soil investigation and sediment probing were performed in 2019. The components of the SRI Activities are summarized in the table below.

Table 3-2: Overview of SRI Activities

Dates	Sample Numbers	RI Activity
March 2018	MW-5, MW-6, and the 21 available PCMW- wells	Phase 1 groundwater investigation.
May 2018	MW-101 to MW-107, and seven PCMW- wells	Phase 2 groundwater investigation.
August 2018	PCMW-10D, PCMW-15S	Groundwater sampling for free cyanide.
March 2019	MW-107, PCMW-05, PCMW-16D	Groundwater sampling for total metals, dissolved metals, and TDS.
April and May 2019	S-101 through S-162, revisited 28 Initial RI Soil Sampling Locations (suffix “R” added to designate a revisited sampling location)	Phase 1 soil investigation.
April 2019	Not applicable	Delaware River reconnaissance and sediment probing.
September 2019	S-163 to S-173, MW-108 to MW-113, and PCTP-07R	Phase 2 soil investigation. Additional groundwater monitoring well installation.
October 2019	MW-108 to MW-113	Phase 3 groundwater investigation (groundwater sampling).

The groundwater and soil samples were analyzed by SGS North America Incorporated Laboratories of Dayton, New Jersey (SGS), a PADEP certified laboratory in accordance with the EPA SW-846 methods. A total of 186 soil samples were collected and analyzed for a combination of TCL VOCs, TCL SVOCs, TAL inorganics, total cyanide, pesticides, and PCBs. A total of 48 groundwater samples were collected and analyzed for a combination of TCL VOCs, TCL SVOCs, TAL inorganics (total and dissolved), total cyanide, pesticides, and PCBs. The laboratory analytical reports are provided in Electronic Attachment 4.

In addition, three groundwater samples were analyzed for free cyanide by TestAmerica, located in Amherst New York. The laboratory performed analyses via EPA SW-846 Method 9016.

3.1.2.1 Supplemental Groundwater Investigation

The supplemental groundwater investigation was performed to:

- Evaluate potential changes to groundwater conditions, if any, since the Initial RI activities and provide additional data to fully characterize the onsite extent of any impacts in Site groundwater (both shallow and deep groundwater zones).
- Help further refine the focus of the soil investigation (e.g., soil sampling targeted where groundwater impacts were observed).
- Fill data gaps that have been identified based on comparison of the Initial RI Activity data to the updated PADEP MSCs.

During the SRI, not all groundwater monitoring wells previously installed as part of the Initial RI or earlier investigations could be found or repaired for use in groundwater sampling. However, the existing wells that were found and the additional wells installed as part of the SRI provide sufficient coverage for evaluating groundwater flow patterns and water quality across the Site.

The first phase (Phase 1) of the SRI groundwater investigation fieldwork was performed between February 26, 2018 and March 23, 2018, and included land surveying, monitoring well integrity surveys, monitoring well redevelopment, water-level gauging, groundwater sampling and analysis, and a storm sewer reconnaissance.

The second phase (Phase 2) was conducted between May 8 and 31, 2018 to fill data gaps from Phase 1, including: (1) where certain previously-installed monitoring wells could not be located and sampled (the wells are considered lost or destroyed); and (2) where there were no previously-installed wells to evaluate conditions (e.g., downgradient from a former soil removal area and in certain areas where Initial RI soil investigation data suggested that residuals may remain).

The third phase (Phase 3) of the SRI groundwater investigation was performed on October 3 and 4, 2019 to evaluate groundwater conditions at: (1) locations where the SRI soil investigation identified a combination of visual impacts (e.g., coal tar-like material) and COCs at concentrations an order of magnitude or higher than potentially applicable PADEP MSCs; and (2) at the Site property boundaries and areas downgradient of Site-related impacts.

Monitoring Well Integrity Surveys and Redevelopment

Arcadis conducted well integrity surveys on February 26 and 27, 2018 to assess the condition of the existing groundwater monitoring wells at the Site (as those wells were installed more than 12 years earlier). Arcadis located 23 of the 33 stickup monitoring wells (wells identified by the prefix “PCMW-”), plus two of the nine monitoring wells that were of “unknown construction” (wells identified with the ID “MW-”). Based on the well integrity surveys, 23 of the 25 identified wells were found to be intact and usable for the groundwater investigation. Monitoring wells PCMW-7 and PCMW-12S were both found, but inspections with a downhole camera revealed that the well screens were damaged and blocked by roots and not usable for groundwater sampling. During Phase 2 investigation activities, the roots in monitoring wells PCMW-7 and PCMW-12S could not be cleared with available drilling equipment without irreparably damaging the wells. The monitoring well integrity survey forms are included in Appendix G.

The locations of the monitoring wells at the Site, with color-coding identifying those that were or were not found, are shown on Figure 7. As indicated by the figure, the usable existing wells in combination with the newly installed wells provided suitable coverage to evaluate the groundwater conditions across the Site.

Arcadis redeveloped existing monitoring wells on February 28, 2018 and March 5, 2018. This included monitoring wells where soft sediment was identified in the bottom of the well and where the measured depth of the well was less than the reported installation depth. Fine sands and silts were observed entering certain wells during redevelopment. The surging portion of the redevelopment process was discontinued at these wells to limit the potential for additional sediment accumulation in the wells.

Monitoring Well Installation

Arcadis installed monitoring wells MW-101 through MW-107 as part of the Phase 2 supplemental groundwater investigation and monitoring wells MW-108 through MW-113 as part of the Phase 3 supplemental groundwater investigation. These newly installed monitoring wells are in the shallow groundwater (water table) zone and screened within the fill material above the confining unit.

Phase 2 groundwater wells were installed from May 14 to 16, 2018 to provide coverage in the following areas of the Site:

- Where impacts were previously identified but the corresponding monitoring wells could not be located during the Phase 1 RI groundwater investigation.
- Downgradient from areas where Initial RI soil investigation data suggests that residuals may remain (e.g., soil containing NAPL and/or elevated concentrations of PAHs).
- Downgradient from a former soil removal area and near or along part of the property boundary where groundwater quality had not previously been evaluated.

Monitoring wells installed during the SRI to replace initial RI monitoring wells are identified in the table below.

Table 3-3: Replacement Wells

Initial RI Monitoring Well	Replacement Well	Notes on Location
PCMW-14S	MW-101	Slightly downgradient of PCMW-14S.
PCMW-13S	MW-103	Upgradient of PCMW-13S. Approximately hallway between PCMW-13S and PCMW-14S.
PCMW-16S	MW-105	In immediate vicinity of PCMW-16S.
PCMW-02	MW-106	In immediate vicinity of PCMW-02.

Phase 3 groundwater wells were installed on September 24 and 25, 2019 to provide coverage in and downgradient from areas where Site-related impacts were identified in soil and groundwater conditions were unknown.

The soil boring for MW-101 was advanced using conventional HSA drilling method, and soil samples from the boring were collected using a 2-foot-long, 2-inch-outside-diameter, split spoon sampling device. Based on the soil conditions observed at MW-101, Arcadis determined that using direct-push techniques would achieve good soil recovery and increase investigation efficiency. Therefore, soil borings for the remainder of the monitoring wells were advanced using the direct-push method and associated soil samples were continuously collected using a 5-foot macro-core liner. After the direct-push borings were completed, the borings were over-drilled using the HSA drilling method to enable installation of monitoring wells. This change was accomplished “on-the-fly” (without delay) using a drilling rig equipped with tooling for both methods. Monitoring well installation and boring logs are included in Appendix D.

The new groundwater monitoring wells were constructed using 2-inch-diameter Schedule 40 PVC pipe with a 0.010-inch slotted screen. The top of the screen was positioned approximately 1 foot above the water table, with the filter pack extending 1 foot above the top of the screen, a 1-foot thick bentonite seal above the filter pack, and at least 4 feet of solid PVC pipe extending below the ground surface. Screen lengths varied depending on the thickness of saturated shallow soil above the confining unit. The wells were protected at the surface using a 4-inch steel "stick-up" casing with a locking cap. The protective casings extend approximately 2.2 to 2.5 feet above ground surface and were set in concrete. Monitoring well construction details are presented in Table 4.

Soil Sampling

Soil samples recovered from the monitoring well borings were handled as follows: (1) screened for volatile organic vapors using a PID; (2) inspected for the presence of staining, odor, discoloration, NAPL, ash, and tar; and (3) characterized by a geologist (i.e., via soil classification by the USCS). The information gathered during the soil boring program was documented on soil boring logs which are contained in Appendix D and summarized in Table 3. Soil samples were collected from the borings during installation of MW-102, MW-103, MW-108, and MW-111 for laboratory analysis for the following reasons:

- MW-102 – A sample was collected to characterize a white plaster-like material that was encountered in the soil sample.
- MW-103 – Soil samples were collected at the water table and at the interface of the fill and silt and clay layer to evaluate soil conditions near sampling location PCTP-75 (adjacent to Buckius Street) where soil from 10-12 feet bgs was previously characterized (during Initial RI) as having an oil-like material and found to contain high concentrations of naphthalene.
- MW-108 and MW-111 – Soil samples were collected where the presence of coal tar-like material was observed and at the first interval without visual impacts or odors.

Soil samples were analyzed for TCL VOCs, TCL SVOCs, and TAL inorganics (including cyanide). The soil samples from MW-102 and MW-103 were also characterized for PCBs and pesticides.

Groundwater Sampling

Arcadis collected groundwater samples using low-flow methods on the following dates and at the following locations:

- *March 19 to 23, 2018* – groundwater samples were collected from the 23 monitoring wells that were found to be intact and usable during well surveying.
- *May 29 to 31, 2018* – groundwater samples were collected from monitoring wells MW-101 through MW-107, PCMW-04, PCMW-05, PCMW-06, PCMW-08S, PCMW-09S, PCMW-16D, and PCMW-19S.
- *July 27, 2018* – groundwater samples were collected from PCMW-10D and PCM-15S.
- *March 28, 2019* – groundwater samples were collected from MW-107, PCMW-05, and PCMW-16D.
- *October 4, 2019* – groundwater samples were collected from MW-108 through MW-113.

Field parameters (pH, conductivity, dissolved oxygen, temperature, turbidity, and oxidation-reduction potential) were monitored every five minutes during purging. After turbidity levels decreased to below the

50 NTU goal (where possible) and parameters stabilized, groundwater samples were collected for laboratory analysis. Groundwater sampling logs are included in Appendix E.

The groundwater samples collected in March 2018, May 2018, March 2019, and October 2019 were submitted to SGS Accutest of Dayton, New Jersey where they were analyzed as follows:

- Each groundwater sample was analyzed for TAL inorganic constituents, including total cyanide, except the May 30, 2018 groundwater sample collected from PCMW-16D.
- Each 2019 groundwater sample was analyzed for dissolved inorganics.
- March 2018, May 2018, and October 2019 groundwater samples were analyzed for TCL VOCs and TCL SVOCs.
- Each 2018 groundwater sample was analyzed for PCBs and pesticides.
- Select 2019 samples were analyzed for TDS.

The May 30, 2018 groundwater sample from PCMW-16D and the July 27, 2018 groundwater samples from PCMW-10D and PCMW-15S were submitted to Test America of Amherst, New York where they were analyzed for free cyanide. The free cyanide analysis was performed to evaluate the fraction of free cyanide present in the total cyanide concentration previously identified in samples from the respective wells. A sampling summary identifying each monitoring well and the corresponding sampling dates and laboratory analyses is presented in Table 2.

Water Level Measurements

Arcadis collected three synoptic rounds of groundwater level measurements on the following dates: (1) March 19, 2018 from 8:30 to 10:00 am, finishing approximately at low tide; (2) May 29, 2018 from approximately 9:00 to 11:00 am finishing approximately one hour after low tide; and (3) October 3, 2019 from 9:00 am to 1:00 pm finishing at low tide. Groundwater level measurements referenced to the North American Vertical Datum of 1988 (NAVD 88) are presented in Table 5. Groundwater potentiometric surface maps developed for the shallow and deep zones (for the above dates) are shown on Figures 8 through 12.

The groundwater flow patterns are consistent with those observed during the Initial RI activities. As indicated by Figures 8 through 10, shallow groundwater mounds in the central/southern portion of the Site and flows radially outward from the mound in all directions. As indicated by Figures 11 and 12, groundwater flow in the deep zone is eastward, toward the Delaware River.

3.1.2.2 Storm Sewer Reconnaissance

Existing site mapping shows a large City storm sewer identified as the “Upper Delaware Collecting Sewer” (reportedly 11-foot-3-inch to 12-foot-3-inch diameter) extending across the western portion of the Site, from the intersection of Bath Street with Orthodox Street to the south and Buckius Street to the north. The Upper Delaware Collecting Sewer conveys regional storm water deep beneath the Site. The sewer does not collect any storm water from the Site. The depth and construction of this sewer and the potential interaction (if any) between the sewer and shallow groundwater (whether groundwater may be infiltrating into the sewer, or the sewer may be leaking) were unknown prior to conducting the Phase 1 groundwater investigation.

Arcadis identified a manhole in the western portion of the Site (MH-4) within the approximate alignment of this sewer as shown on site mapping. The manhole location is approximately 175 feet south of the intersection of LeFevre Street and Garden Street, as shown on Figure 7. Arcadis observed a wire extending down in the manhole. Aboveground, the wire appeared to extend from MH-4 toward a nearby power pole with an elevated control box. The power pole is labelled, “Philadelphia Water Department, CSO Site, H07”. Downhole camera photos of MH-4 are shown below.

Figure 3-1: Downhole Photos of MH-4

Water was observed in the manhole at a depth of 26.5 bgs (equivalent to negative 13.29 feet NAVD 88). Groundwater elevations beneath the Site within the vicinity of the Upper Delaware Collecting Sewer range from approximately positive 6 to 8 feet NAVD 88, which is approximately 19 feet above the water level in the sewer. Based on this large head difference and as indicated in the existing shallow zone potentiometric surface maps, the Upper Delaware Collecting Sewer appears to have little or no influence on groundwater flow patterns at the Site. Accordingly, any groundwater collected by the sewer would be negligible.

3.1.2.3 Supplemental Soil Investigation

The supplemental soil investigation was performed to:

- Confirm that soil conditions have not changed since the Initial RI data were collected (i.e., that the existing data continue to be representative) and that Initial RI analytical data are still usable for developing the conceptual site model (CSM) and site cleanup plan.
- Delineate known impacted areas to assist in defining the limits of potential cleanup activities.

- Evaluate the elevation of the silt and clay confining unit to further assess the migration potential of any dense non-aqueous phase liquid (DNAPL) in the shallow groundwater zone.
- Investigate soil conditions along the property boundary to evaluate the potential for offsite migration of site-related constituents or DNAPL.

The first phase (Phase 1) of the soil investigation fieldwork was performed between March 25 and May 3, 2019, and included land surveying, subsurface utility clearance, soil borings, and test pit installation.

The second phase (Phase 2) was conducted between September 19 and 25, 2019 to fill data gaps from Phase 1, where: (1) soil exhibited a combination of visual impacts (e.g., coal tar-like material) and COCs at concentrations an order of magnitude or higher than potentially applicable PADEP MSCs; and (2) data for nearby locations were insufficient to evaluate extent of the impacted soil requiring removal/in-situ treatment.

Soil samples were collected from soil borings or test pits, depending on the purpose of each sampling location, and submitted for laboratory analysis. Soil borings were used more frequently to achieve sampling depths to the confining unit. Test pits were used in locations where subsurface structures were expected and where a broader evaluation of shallow subsurface soil was desired.

Soil Borings

Arcadis advanced a total of 80 soil borings during Phase 1 and a total of 12 soil borings during Phase 2. These numbers are in addition to the soil borings drilled to install monitoring wells MW-101 through MW-113. To confirm Initial RI soil analytical results, approximately 10% of the Initial RI soil sampling locations were revisited and sampled. In total, 25 soil borings revisited previous soil sampling areas, 21 of which were originally test pit sampling locations. Revisited sampling locations were selected to: (1) provide spatial coverage across the site; and (2) represent a range of conditions (e.g., highest concentrations, medium concentrations, and lowest concentrations, with approximately equal focus on each concentration range). Revisited sampling locations were also selected to provide site-wide information on the elevation of the confining silt and clay layer.

Soil borings were drilled into the silt and clay layer using direct-push methods. Soil samples were continuously collected from the borings using a 4-foot-long, 1.5-inch-inside-diameter macro-core sampling device. Recovered soil samples were visually characterized (for color, texture, and moisture content) and were screened using a PID. The presence of visible impacts (e.g., tar-like material, sheens) and obvious odors encountered in the soil were documented. The information gathered during the soil boring program was documented on soil boring logs which are contained in Appendix D and summarized in Table 3.

One or more soil samples were collected from 86 of the soil borings drilled for laboratory analysis. Selection of soil samples for laboratory analysis was primarily based on visual observations and data from nearby Initial RI sampling locations. The proposed sample depths were generally selected for laboratory analysis following one of the scenarios below:

- *Scenario 1* – For revisited sampling locations, samples were collected at approximately the same depth intervals as the Initial RI samples. As needed, additional samples were collected from these locations based on visual observations and at the discretion of the onsite geologist overseeing the work (e.g., if the geologist observed visual impacts, obvious odors, or elevated PID readings not previously documented at the sampling location).

- *Scenario 2* – For sampling locations where visible staining, tar-like material, obvious odors, or elevated PID readings were identified, one sample was collected from the "worst-case" sampling interval and a second sample was collected from the first apparent "clean" interval underlying the impacted materials.

- *Scenario 3* – For perimeter sampling locations where no visible staining, NAPL, obvious odors, or elevated PID readings were identified, one surface soil sample (0-0.5 feet bgs) and one shallow subsurface soil sample (0.5-2 feet bgs) were collected for laboratory analysis.

- *Scenario 4* – If the scenarios above did not apply, two samples were collected from depths selected based on nearby Initial RI sampling locations and identified data gaps.

Soil samples were not collected from below the water table (as identified by saturated soil in the soil boring) for the Phase 2 soil investigation.

Soil samples collected for laboratory analysis were generally analyzed for TCL VOCs, TCL SVOCs, and TAL inorganics including cyanide, except as indicated:

- Samples from S-101 through S-104 were only analyzed for TCL VOCs and SVOCs.
- Samples from S-138 through S-140 were only analyzed for PCBs.

Surface soil samples from PCSB-30R, PCSB-41R, and PCTP-73R and revisited sampling locations from the Initial RI's PSSTP- series were also analyzed for PCBs and pesticides. A summary of the laboratory analyses performed in soil from each soil boring is presented in Table 1.

Test Pits

Arcadis excavated nine test pits during Phase 1 of the supplemental soil investigation. No test pits were excavated during Phase 2. To confirm Initial RI soil analytical results, three of the test pits were excavated at revisited sampling locations, one of which was originally a soil boring location.

Test pits were excavated using a rubber-tire backhoe. Soil excavated from each 2-foot depth interval was visually characterized (for color, texture, and moisture content) and screened using a PID. The presence of visible impacts and obvious odors encountered in the soil was documented. The information gathered during the test pit excavations is documented on the logs included in Appendix D and summarized in Table 3.

One or more soil samples were collected from eight test pits for laboratory analysis. Selection of soil samples for laboratory analysis was primarily based on visual observations and data from nearby Initial RI sampling locations and in general, followed the same sampling scenarios as the soil borings.

Soil samples collected for laboratory analysis were generally analyzed for TCL VOCs, TCL SVOCs, and TAL inorganics including cyanide, except one of two soil samples from S-142 (i.e., from 6-6.5 feet bgs) was only analyzed for cyanide because of the potential presence of purifier waste. An underlying sample from S-142 (7-8 feet bgs) was analyzed for TCL VOCs, TCL SVOCs, and TAL inorganics including cyanide. Additionally, soil samples from PCSB-26R and PCTP-66R were analyzed for PCBs and pesticides. A summary of the laboratory analyses performed in soil from each soil boring is presented in Table 1.

3.1.2.4 Delaware River Reconnaissance and Sediment Probing

To evaluate potential impacts from the Site to the Delaware River, Arcadis performed reconnaissance activities along the shoreline adjacent to the Site. Initial evaluations of the shoreline were performed on March 25 and April 8, 2019. Additional evaluations of the shoreline were performed on May 3 and November 12, 2019. During these site visits, the shoreline was assessed for sheens, tar-like material, elevated PID readings, or other observable indications of Site-related impacts, and the current shoreline conditions were photo-documented during the low tide.

The shoreline was found to contain a rubble-armored seawall (i.e., riprap-like material), two dilapidated piers, and a narrow sandy/gravel area. Additionally, a shopping cart, three submerged vehicles, and other trash were observed along the shoreline. From reconnaissance conducted along the tidal shoreline habitat at low tide, no visible impacts (e.g., sheens) to sediment were observed.

Arcadis evaluated potential habitat for the northern red-bellied cooter during a November 12, 2019 site visit. The northern red-bellied cooter had been identified by the Pennsylvania Fish and Boat Commission (PFBC) as a threatened species in the area of the Site. Arcadis did not encounter prime habitat for the red-bellied cooter or any rare plant or wildlife communities. Observations indicated limited basking habitat areas along the near-shoreline tidal areas. Bohler Engineering performed an additional habitat survey on May 25, 2021, and findings from the survey were developed into a Phase 1 Aquatic and Nesting Habitat Evaluation (Exhibit 2).

Arcadis visually assessed and surveyed Outfall 001 south of the southernmost pier and a potential transfer pipe on north side of northern pier. GEI had also assessed Outfall 001 during its Site walks and found no impacts. Outfall 001 is constructed of concrete and approximately two feet in diameter. At low tide the pipe is fully exposed, except where it is silted in with surrounding sand, gravel, and debris. The potential transfer pipe is constructed from steel and approximately 8 to 12 inches in diameter. This pipe is level with the top of the pier and is not expected to be submerged at any point of the tidal schedule. No discharges were observed during Arcadis' or GEI's Site visits. A photograph of Outfall 001 at low tide is shown as Figure 3-2. No site-related environmental impacts were observed at Outfall 001.

Sediment probing was performed on the shoreline adjacent to the Site on May 3, 2019 during low tide. Probing was done from south of the northernmost pier to the southern property boundary and extended approximately 20 feet

Figure 3-2: Outfall 001

from the shore into the Site. Probing was performed approximately every 2 feet in this area to evaluate the presence of any sheens, seeps, or other indications of Site-related impacts. The sediment was soft and silty. A metal rod was commonly advanced 3 to 4 feet in the sediment and at some locations up to 5 feet into the sediment. No oil-like sheens, elevated PID readings, or noticeable odors were observed. Volatile organics were not detected (i.e., PID readings were 0.0 parts per million [ppm]) at these film locations. Based on the probing observations, sediment was not further evaluated.

3.1.3 Ecological Evaluation

Arcadis performed an ecological evaluation to support the development of the Ecological Screening (Section 6). The evaluation generally consisted of the following three parts:

- An onsite wetland delineation.
- A formal review of potential threatened and endangered species that may be on or in the vicinity of the Site from Pennsylvania Department of Natural Resources (PADNR) in conjunction with United States Fish and Wildlife Service (USFWS) in response to a request from Arcadis in the form or a Pennsylvania Natural Diversity Inventory (PNDI) receipt submitted on October 3, 2019.
- An onsite habitat delineation.

Findings of the ecological evaluation are provided in Section 6.1.

3.1.4 Decontamination

Sampling equipment was decontaminated before implementing sampling, probing, and drilling activities and between boring locations. Excavation and drilling equipment, including augers and split spoon samplers, were decontaminated using a steam cleaner or hot water pressure washer over a temporary decontamination pad or 55-gallon drum. Non-dedicated sampling equipment was decontaminated between each use by steam cleaning and/or thoroughly washing with alconox and water, using a brush to remove particulate matter or surface film, followed by a thorough rinsing with tap water. Liquids generated from the decontamination process were pumped into 55-gallon steel drums and disposed of in accordance with federal, state and local regulations.

3.1.5 Air Monitoring

During the Initial RI, a PID, quad gas meter and dust monitor (data RAM) were used to monitor volatile organic vapors, hazardous vapors and soil particulates, respectively, in the breathing zone during ground intrusive activities. During field activities that used the HSA drilling method or during test pit excavation activities, calibrated air monitoring instruments were also employed to monitor for potential releases of VOCs and dust at upwind and downwind air monitoring stations. The monitoring instruments were calibrated on at least a daily basis. Equipment calibration was documented in the project field forms and instrument calibration logs. The results of the perimeter air monitoring showed no exceedances of VOC levels or levels of particulate matter with a diameter less than 10 microns as a result of the ground intrusive activities.

Based on the observations during the Initial RI activities, monitoring during the SRI was conducted only in the worker breathing zone for volatile organic vapors using a PID. Perimeter air monitoring was not performed during the SRI. No elevated PID readings were observed in the work breathing zone.

3.1.6 Surveying

During the Initial RI activities, the locations, measuring point and surface elevations of test pits, new monitoring wells, soil probes/borings, and groundwater probes were either surveyed by a licensed surveyor or documented using a field global positioning system (GPS) unit and placed on a georeferenced base map. Top of casing and associated ground surface elevations were surveyed. These data were used in determining groundwater elevations.

Arcadis's survey subcontractor, Paul James Olszewski, PLS, PLLC (PJ Olszewski), established three semi-permanent survey control points at the Site relative horizontally to the North American Datum of 1983 State Plane of Pennsylvania-South (NAD 83) State Plane of Pennsylvania-South and vertically to NAVD 88. Each semi-permanent survey monument was tied into at least three planimetric features. Using the semi-permanent survey control points, PJ Olszewski resurveyed the located monitoring wells that remained from the Initial RI. The top of outer casing, top of inner casing, and ground surface elevations for each groundwater monitoring well were surveyed relative to NAVD 88. PJ Olszewski also surveyed the horizontal location and rim elevation of the Upper Delaware Collecting Sewer manhole MH-4 and subsurface piping and structures encountered at the Site. The horizontal location and ground surface elevation of each soil sampling location were also surveyed relative to NAD 83 and NAVD 88. The groundwater monitoring well, soil boring, test pit, MH-4, and subsurface pipe coordinates and elevations are presented in Table 6.

Before implementing the supplemental soil investigation, PJ Olszewski laser-scanned four preliminary soil delineation areas and associated building foundation areas. Laser technology measures distance with laser "time of flight" and then verifies the space with "wave technology" to generate a point cloud of data that is subsequently overlain by high-definition black and white photographs. The combination of the technologies and smart software tools allows for survey quality measurements of an entire area. The scanned areas were selected based on review of the Initial RI activities. Laser scanning technologies provided detailed survey ("point cloud" data) of the primary areas of interest at the Site in areas where the most significant impacts were suspected to be present. The survey and site photographs were used to evaluate/select SRI sampling locations based on surface condition, vegetation density, and proximity to remaining site features.

Arcadis used a handheld Trimble Geo 7X GPS to survey water and wetlands boundaries. A handheld Trimble R1 GPS was used to survey other points of ecological interest, Outfall 001, and the potential intake pipe.

3.1.7 Data Management and Quality Control

The data quality objective was to obtain valid data to be used to determine the nature, extent and sources of COCs at the Site. For the SRI, the QA/QC samples were collected in accordance with the most recent version of National Grid's generic Field Sampling Plan/Quality Assurance Project Plan. In addition, Arcadis performed a Tier 2 validation for each sample delivery group. Findings of the validation process are documented in the Data Usability Summary Reports included in Appendix H.

To document data quality in the soil and groundwater analyses, several types of QA/QC measures were implemented. QA/QC samples were collected (field blanks, matrix spikes and matrix spike duplicates) at a rate of 1 per 20 environmental samples (soil and groundwater). Trip blanks accompanied shipments of water samples that required volatile organic analysis. Samples for organic analyses were spiked with surrogate and/or internal standard compounds in order to determine the integrity/reliability of the sample results.

To determine the comparability of the sample results, matrix spikes and matrix spike duplicates were analyzed. In addition, specific laboratory QA/QC measures were taken during analysis (i.e., calibrations, blanks, control samples, spiked blanks, etc.), as required by the analytical methods.

3.1.8 Waste Management

All investigation-derived waste was contained onsite for waste characterization before offsite disposal. Soil cuttings, personal protective equipment (PPE), and spent disposable sampling materials were segregated by waste type and placed in United States Department of Transportation- (USDOT-) approved 55-gallon steel drums. Decontamination water, purged groundwater, and drilling water was stored in 55-gallon drums.

During the SRI Activities, a total of 13 drums of non-hazardous liquids (consisting of purge, decontamination, and well-development water), 5 drums of non-hazardous solids (consisting of drill cuttings, decontamination pad materials, and probe liners), and 4 drums of lead-hazardous soil mixture (EPA waste code D008) were generated. Drums were managed and removed from the Site under the direction of National Grid's Waste Management subcontractor, Capital Environmental. Waste characterization and disposal documentation is presented in Appendix I.

3.2 Remedial Investigation Findings

This section presents the findings of the RI activities described in Section 3.1. Visual impacts, PID headspace readings, and laboratory analytical results are used together to form a "weight of evidence" to evaluate Site-related impacts and cleanup requirements. A discussion of regional geology in the vicinity of the Site is presented below, followed by a discussion of the Site geology and hydrogeology, distribution of visual impacts, and sampling results for soil, groundwater, and soil vapor.

3.2.1 Physical Setting and Geology

The Site is situated on the westernmost margin of the Atlantic Coastal Plain Physiographic Province. The Coastal Plain is a narrow strip of land in southeastern Pennsylvania. The entire area is about 45 miles long and up to five miles wide and runs parallel to the Delaware River. Most of the Coastal Plain deposits are sand, gravel, silt and clay, which drape over crystalline igneous and metamorphic rocks. The Coastal Plain deposits range in thickness from a thin film at edge of the Coastal Plain to over 6,000 feet beneath the mouth of Delaware Bay (PADEP 2001).

The Site is within the Lower Delaware River Watershed (Hydrologic Unit Code 02040202), which encompasses approximately 1,151 square miles. The watershed is primarily characterized as urban, industrial, and agricultural lands. The region is characterized by sands and gravels storing large quantities of water with extensive streams and wetlands present. Precipitation is primarily adsorbed through direct

infiltration processes into surface soils or absorbed through root uptake by vegetation. As mentioned in Section 2.1, vegetation cover exists throughout a large portion of the Site, and limits potential for dust generation or migration to downgradient areas.

According to the Soil Survey of Bucks and Philadelphia Counties (USDA 1975), soil in the vicinity of the Site is characterized as Urban Land. Areas characterized as Urban Land are often so disturbed by construction that identification is not practical. Native soils are typically displaced by fill material during construction activities. Subsurface investigations confirm the presence of substantial fill materials above native soils at the Site. Fill materials consist of cinders, metal, glass, brick, concrete rubble, coal, ash, and cinders comingled with varying amounts of sand and gravel. The fill material at the Site generally meets the definition of historic fill described in Pennsylvania Department of Environmental Protection's Management of Fill Policy (Document #258-2182-773) dated January 1, 2020. The fill material at the Site ranges in thickness from approximately 10- to 20-feet and is thickest in the northeast portion of the Site. In general, the fill thickness decreases from north to southeast, where it pinches out near the Delaware River. The regional geography near the Site is shown on Figure 13.

An organic-rich silt and clay layer underlies the fill material beneath the entire Site. The silt and clay layer was the original land surface prior to filling and development of the area and was likely deposited in a flood-plain/marshy area of the Delaware River. The silt and clay ranges in thickness from approximately 5- to 45- feet and is thickest in the eastern portion of the Site, near the Delaware River. This confining unit was determined to be the separation between the shallow and deep groundwater at the Site and for practicable purposes prevents the movement of groundwater between the shallow and deep groundwater zones at the Site.

Fine-to-coarse sand and gravel of the Pennsauken Formation is observed beneath the silt and clay. Only two Site borings (PCSB-05 and PCSB-16) penetrated the sand and gravel unit, and the thickness of the sand and gravel at these locations was approximately 40 and 60 feet bgs, respectively. Weathered metamorphic schist (saprolite) of the Wissahickon Formation was observed at borings PCSB-05 and PCSB-16 at approximately 70 and 85 feet bgs, respectively. At boring PCSB-13, the sand and gravel unit was estimated to be 10 feet thick and schist was encountered at 36 feet bgs. A cross-section location map and two geologic cross-sections are provided on Figures 14 through 16.

3.2.2 Hydrogeology

Regional groundwater generally flows from the northwest to the southeast, toward the Delaware River. Groundwater elevation data at the Site was measured on October 31, 2005, December 30, 2005, January 30, 2006, March 14, 2006, March 19, 2018, May 29, 2018, and October 3, 2019. The March 14, 2006 data include groundwater elevation data collected during both high and low tides in the Delaware River to assess tidal influence on the shallow and deep groundwater at the Site. The monitoring conducted to date does not indicate a tidal influence on the Site other than at select deep monitoring well locations where levels change by generally less than 1 foot between low and high tides. The groundwater measurements are presented in Table 5. Groundwater contour maps for the shallow and deep groundwater are shown on Figures 8 through 12.

Three hydrostratigraphic units exist at the site: the fill, silt and clay, and sand and gravel. Hydrostratigraphic units are defined based on formations that have similar hydraulic properties. The water table is encountered in the urban/historic fill unit across the site at depths of approximately 2- to 12- feet

bgs. Based on regional groundwater information, this shallow groundwater zone is a perched aquifer that was created by the placement of fill over the native silt and clay layer. Composition of this groundwater zone is expected to be heavily influenced by the urban/historic fill, and therefore, the groundwater is not suitable for use. As shown on Figures 8, 9, and 10, groundwater in the fill is mounded in the central/southern portion of the Site and flows radially outward from the mound. The horizontal hydraulic gradient in the fill is approximately 0.005 to 0.01, depending on location. It appears that flow in the fill is largely controlled by the topography of the underlying silt and clay. That is, where the silt and clay unit has a higher topographic relief, the water table is also higher in elevation. A small amount of groundwater is expected to leak downward and into the silt and clay unit, as demonstrated by a downward hydraulic gradient that exists between the fill and sand and gravel of approximately 0.27. The hydraulic conductivity of the fill ranges from approximately $1.47x10^{-4}$ to $2.93x10^{-3}$ centimeters per second (cm/sec)[5].

Groundwater flow within the silt and clay is expected to be minimal due to its low permeability. The hydraulic conductivity of the silt and clay is calculated to be approximately $8.76x10^{-8}$ to $1.38x10^{-7}$ cm/sec. Flow within this unit is both horizontal and downward into the sand and gravel.

The potentiometric surface within the sand and gravel of the deep aquifer zone is observed at approximately 9- to 17-feet bgs. The deep aquifer is the primary groundwater aquifer for the Philadelphia region. Groundwater elevations in the sand and gravel do not appear to vary as much as those in the fill, likely because of hydraulic connection with the Delaware River. As indicated by Figures 11 and 12, groundwater in the sand and gravel flows eastward, toward the Delaware River. The horizontal hydraulic gradient in the sand and gravel is approximately 0.00043. The sand and gravel is the most permeable hydrostratigraphic unit beneath the site and has a hydraulic conductivity of $2.73x10^{-3}$ to $1.79x10^{-1}$ cm/sec.

3.2.2.1 Local Wells and Groundwater Use Around the Site

Per the Philadelphia Water Department Records, residents around the Site consume city water. However, according to the Pennsylvania Groundwater Information System (accessed via the internet on October 13, 2020), there are a total of 65 groundwater wells within a ½-radius around the Site boundaries. Groundwater wells within a ½-mile radius around the Site boundaries are shown on Figure 13 and local well details are presented in Appendix J. Per well type, the number of local wells around the Site are as follows:

- 55 Unused/Abandoned/Destroyed Wells
- 6 Groundwater Monitoring Wells
- 1 Unknown Withdrawal Well
- 1 “Domestic Withdrawal Well”
- 2 Other Withdrawal Wells

A total of 38 of the 65 wells around the Site are directly related to the environmental investigation and cleanup efforts at the former Rohm and Haas Chemical Company Facility (Pennsylvania Facility ID 742771 and NIR number 61614). This facility is approximately 1/3 mile north of the Site. Three monitoring

[5] Hydraulic conductivity values were calculated based on slug test data reported by WCC (WCC 1986) and laboratory soil testing results reported by PSS.

wells, the two “other withdrawal wells”, and the one “unknown withdrawal well” appear to be directly related to the former Rohm and Haas Chemical Company environmental investigation and cleanup.

The one “domestic well” located near the Site is also listed as a monitoring well. This well is located on 3099 Orthodox Street immediately south of the Site at a facility with an active environmental cleanup (Facility ID 609536). This well appears to be related to a former diesel spill from a UST (Pennsylvania Notification of Contamination Form number 33352). For this reason, it is likely that the well is only used for monitoring.

The cluster of wells on the south side of Orthodox Street (immediately south of the Site) appear to be related to an environmental cleanup effort for USF Holland Inc (Pennsylvania Facility IDs 608210/832196 and NIR number 69661).

In conclusion, groundwater around the Site is not used for potable purposes and groundwater wells installed around the Site are generally only used for environmental investigations and clean-ups.

3.2.3 Visual Observations / Headspace Readings

Soil samples collected from soil borings and test pits underwent visual inspection and field screening with a PID. The observed Site-related impacts were characterized by degree of impact. For purposes of characterizing visual observations in the soil, three categories are used to describe the observed impacts as follows (ordered from most impacted to least impacted):

- *Viscous tar or oil-like material* – Viscous or tacky substance that is in a liquid or partially liquid phase. Viscous tar or oil-like material was sometimes observed throughout the soil sample and in the pore space around soil granules. The magnitude of the observed tar was also described (e.g., coated, stringers or blebs).
- *Solidified tar or tar-like material* – Residual tar or similar material that is in a semi-solid to solid phase.
- *Sheen* – Soil and/or groundwater exhibiting an iridescent or rainbow petroleum-like sheen.

Based on the three categories above, 118 of the 377 test pits and soil borings exhibit visual impacts from former Site operations. Visible staining was observed in soil from an additional 15 sampling locations. Pockets of viscous tar or oil-like material were observed in 20 test pits and soil borings. Solidified tar or tar-like material was observed in 43 test pits and soil borings. Sheens were observed in soil from 77 test pits and soil borings. Odors were noticed at approximately 135 test pits and soil borings. Field observations are summarized in Table 3. Photographs of soil sampling intervals collected from the SRI are included as Electronic Attachment 5.

The Site-related visual impacts were predominately encountered within the central portion of the Site surrounding the Former Coke Operations Area and structures (i.e., former tar storage area, former by-products building and former oxide boxes). Isolated areas of visual soil impacts were encountered at locations on the remainder of the Site. The observed visual impacts in the central portion of the Site were generally associated with the former process piping and foundations, except for impacts found near the former AST farms, east of Former Byproducts Building (later in this RI Report referred to as Area 4). Table 3 summarizes the impacts encountered at the soil boring and test pit locations and identifies the general area of the site where each boring/test pit was completed. Additionally, the extent of Site-related

visual impacts and the designated color scheme representing the three categories above (e.g., viscous tar or oil-like material, solidified tar or tar-like material, and sheen) are shown on Figure 17.

Occurrences of viscous tar or oil-like material are limited to the central portion of the Site surrounding the Former Coke Operation Area, except at the following locations: PCSB-01, PCTP-66, PCTP-75, PSSTR-04R, and S-151. The quantity of viscous tar or oil-like material was not well documented during the Initial RI. For the SRI, viscous tar was generally only observed as stringers or blebs, except at sampling locations PCTP-17R, S-160, and S-161 where lenses of coal-tar like material were encountered in available pore space. Sampling locations with viscous tar or oil-like material have been revisited, and viscous tar or oil-like material in surrounding soil has been delineated. Viscous tar or oil-like material in the center of the Site have also been delineated.

Visual impacts are limited to the fill layer or the top two feet of the silt and clay layer, except at soil boring location PCTP-17R near the Former Tar Holders where visual impacts were observed 8 feet into the silt and clay layer. Based on observations at PCSB-09 (located approximately 30 feet northeast of PCTP-17R), the silt and clay layer is approximately 25 feet thick at PCTP-17R. Both PCSB-09 and PCTP-17R are shown on cross-section A-A' (Figure 15). If visual impacts were encountered in a soil boring, the soil boring was advanced to at least the first "clean" interval where no visual impacts or odors were observed. No impacts were observed penetrating the confining silt and clay layer. Within the fill layer, the depths of the visual impacts ranged from surface soils to the bottom of the layer (up to 22 feet bgs) depending on location. Odors were noted at depths up to 26 feet bgs.

For the revisited sampling locations, the visual observations from the SRI Activities are generally consistent with or indicate lesser degree of impacts than those originally documented during the Initial RI activities. In total, seven sampling locations where PS&S observed viscous tar or oil-like material were revisited, and Arcadis only confirmed the presence of this material at one location (PCTP-17). In addition, Arcadis encountered viscous tar or oil-like material at a revisited sampling location (PSSTP-04R) where PS&S did not observe this impact during the Initial RI Activity. The variation between locations where viscous tar and oil-like material were observed during the Initial RI and SRI indicate that viscous tar and oil-like material is not as extensive and/or contiguous as the Initial RI indicates. Therefore, locations with viscous tar and oil-like material are likely limited in size and were not reproduceable.

Generally consistent observations of solidified tar, staining, and sheens were observed between original and revisited sampling locations. For the revisited sampling locations, the reported top of clay surface depths (when encountered) were generally within 1 to 3 feet of that reported for the original boring, except for PCTP-10 and PCTP-32 where the clay surface depths are reported with an 8-foot and 10.5-foot difference, respectively (neither of these locations exhibit viscous tar or oil-like material). In addition, the reported groundwater depths at each soil sampling location were generally reported within 1 to 4 feet from Initial RI and SRI activities. The difference in observations from the Initial RI and SRI Activities is potentially due to a combination of factors, including the potential difference in sampling method (test pits vs. soil borings), survey discrepancies[6], changes in location because of access issues (e.g., because of vegetation or terrain), difference in precipitation and infiltration at the time of sampling, and interpretation

[6] A horizontal datum was not referenced during the Initial RI activities. When revisiting the sampling locations, Arcadis used the horizontal coordinates available in PS&S notes and from their existing Geographic Information System map.

of conditions by different onsite geologists. To help distinguish between the SRI and the Initial RI sample locations, the SRI sample locations are shaded in gray on Table 3, and the SRI data for a revisited sampling location is presented immediately after the Initial RI data.

PID headspace readings greater than zero ppm are also presented in Table 3. Figure 17 also indicates locations where PID headspace readings are greater than or equal to 100 ppm. Although there is no regulatory screening value for PID readings, the observations are used in conjunction with visual impacts to gather a "weight of evidence" of Site-related impacts to inform the Site cleanup and redevelopment plan. Additional information about the PID readings is provided below.

A total of 12 sampling locations with visual impacts also had volatile organic vapors at concentrations greater than 100 ppm. However, PID headspace readings greater than 100 ppm were also encountered at 13 sampling locations where no visual impacts were observed. The highest PID readings were encountered at PCSB-01R which is in the northeast-most corner of the Site. At this location, the PID identified volatile organic vapors greater than 15,000 ppm (instrument maximum) from 16 to 17 feet bgs. The elevated PID readings immediately dropped to 23.1 ppm at the next interval. The initial interval with an elevated PID reading at PCSB-01R was from 14 to 15 feet bgs at 111.8 ppm. Initial RI PID Readings from PCSB-01 peaked at 1,050 ppm from 14.5 to 15 feet bgs. The second highest PID reading was observed at SRI boring location S-144 (458.9 ppm from 14 to 15 feet bgs) which is a step-out delineation boring beyond PSCB-01R, and the third highest PID reading was observed at PCSB-45 (349.2 ppm) which is in the Fuel Blending Area where URS encountered fuel oil impacts in 2001.

3.2.3.1 Potential Purifier and Spent Iron Oxide Waste

During soil sampling activities, bluish-green colored material (possibly wood chips interspersed in soil) was observed at four locations and conservatively interpreted in the field to be potential purifier waste. Purifier wastes are typically composed of lime or an iron-impregnated cellulose-based matrix (like sawdust or wood chips) and often contain cyanide (commonly as insoluble, complexed ferrocyanide salts). Cyanide complexes in purifier waste typically color the waste bright blue (Prussian Blue), making it easy to detect in the field. However, cyanide analytical results did not indicate the presence of purifier wastes (i.e., detected cyanide concentrations in samples collected from the stained material ranged from 0.11 to 20 mg/kg, whereas cyanide concentrations in purifier wastes are typically in the 10,000 to 30,000 mg/kg range [Young and Theis, 1991]). The detected cyanide concentrations were also below the non-residential direct contact and non-residential soil-to-groundwater MSCs (1,900 and 200 mg/kg, respectively).

These observations are consistent with the historical characterization of bluish-green colored material observed onsite in 1981 and 1982. At that time, purifier waste and spent iron oxide were combined with tar decanter sludge, and conservatively managed as a characteristic hazardous waste for reactivity (Waste Code D003), although laboratory analytical results for waste characterization samples of this material did not exhibit the characteristic of reactivity. Additional blue-colored material was identified during excavation in 1990. As indicated in a June 15, 1990 letter from WCC to PADER, the blue-colored material underwent separate RCRA hazardous waste characterization sampling and analysis. Based on the laboratory analytical results, the blue-colored material did not exhibit the hazardous characteristic of reactivity and was therefore subsequently scraped and combined with other materials for offsite disposal as a non-hazardous waste.

Both the visual characterization information provided on the test pit/soil boring logs and the corresponding laboratory analytical data for cyanide support that there is no purifier and/or spent oxide wastes that would require remediation and that the material does not exhibit the hazardous characteristic of reactivity.

3.2.4 Soil Quality Evaluation

This section summarizes the quality of surface and subsurface soil at the Site based on the analytical results for the soil samples collected during the RI.

Approximately 540 soil samples were collected from the 150 soil borings and 145 test pits completed as part of the RI activities. Up to five soil samples were collected from a soil boring or test pit. As described in Section 3.1, soil samples were submitted for laboratory analysis for a combination of VOCs, SVOCs, inorganics including cyanide, pesticides, and PCBs.

For the purposes of evaluating the soil analytical results, the results have been compared to the following PADEP Statewide Heath Standards (SHS) established in Title 25 of the Pennsylvania Code Chapter 250, Administration of the Land Recycling Program:

1. The non-residential direct contact MSC for surface soil (if appliable).
2. The non-residential direct contact MSC for subsurface soil (if appliable).
3. The soil-to-groundwater MSCs for a non-residential used aquifer with TDS less than or equal to 2,500 ppm. The higher of the 100 X groundwater MSC or generic value is used. However, groundwater is not used for potable purposes at the Site and in the surrounding area, and groundwater impacts are generally limited to isolated areas of the perched groundwater zone.

These SHS are potentially applicable to the Site given the anticipated current and future site use. The property is currently zoned as industrial, and as indicated in the Cleanup Plan, the property will be deed restricted to non-residential use only. Please note, that the soil results are compared to VI screening values in Section 3.2.6.

A separate evaluation of the applicability of the Toxic Substances Control Act (TSCA) PCB regulations to PCBs identified in soil at the Site was submitted to the EPA on May 12, 2021, and EPA's response is provided in a July 8, 2021 letter to Arcadis (refer to Appendix K for copies of the evaluation and EPA's response). As indicated by EPA's response, EPA agrees that PCBs identified in soil samples collected at the Site, except in the southeast corner (Historic Tar Plains/Fill Area), are related to pre-April 1978 release(s) and are therefore not regulated under TSCA. Accordingly, PCC submitted to EPA a December 1, 2021 Self-Implementing Cleanup Notification for PCB Remediation Waste for material in this limited area at the southeast corner of the Site. EPA accepted the Self-Implementing Cleanup Notification in a January 5, 2022 approval letter. The Self-Implementing Cleanup Notification and EPA's approved letter are provided in Appendix K. PCB impacts outside the Historic Tar Plains/Fill Area will be addressed in accordance with the Cleanup Plan contained in Section 9 of this document.

To make the soil analytical results more manageable, the attached data tables (Tables 7 through 13) separate the soil analytical results into surface soils, unsaturated subsurface soils, and saturated subsurface soils. A soil sample was considered saturated if its elevation was below the higher of either: (1) the groundwater elevation encountered in the soil boring and test pit; or (2) the groundwater surface elevation from the highest potentiometric surface map (January 30, 2006 for Initial RI samples and March 2018 for SRI samples). Therefore, the saturated soil dataset also includes soil samples collected from the

anticipated capillary fringe area. Surface soil analytical results for detected constituents are presented in Tables 7 and 8, and surface soil sampling locations with results exceeding the non-residential direct contact MSCs are highlighted on Figure 18. Subsurface soil analytical results for detected constituents are presented in Tables 9 through 12 and subsurface soil sampling locations with constituent concentrations exceeding the non-residential direct contact MSCs are highlighted on Figure 19. Table 13 presents a statistical summary table for the soil analytical data.

Additionally, detail figures are provided for four areas of the Site where the sampling density is high (delineation areas) as follows:

- ***Area 1:*** *Eastern Part of Former Coal Storage Area*. Sampling locations PCTP-75 and PSSTP-04 where revisited and environmental impacts around these locations were delineated. Additionally, Arcadis installed four new monitoring wells in this area (MW-103, MW-108, MW-109, and MW-110).
- ***Area 2:*** *North/Northwest of Former Tar Storage Area*. Environmental impacts in soil around the Former Tar Storage Area have been delineated. Additionally, sampling locations PCTP-12 and PCTP-17 were revisited.
- ***Area 3:*** *South of Former Tar Storage Area*. Sampling locations PCTP-66 and TP-15 were revisited and environmental impacts around these locations were delineated.
- ***Area 4:*** *Former AST Farm East of Former Byproducts Operations*. Environmental impacts in soil near the former AST farm have been delineated. Sampling location TP-63 was revisits. Additionally, Arcadis installed three new monitoring wells in this area (MW-111 through MW-113).

The four above-identified areas are shown in Figure 20, and sampling locations with visual impacts in those areas are highlighted on Figures 21 through 24.

For the PSSTP- test pit series, please note that the sample IDs with the …A and …B suffix originate from the same sampling location and just represent different depth intervals (e.g., PSSTP-01A was a surface or shallow soil sample and PSSTP-01B was a subsurface sample collected from test pit sampling location PSSTP-01).

During the Initial RI activities, PS&S labelled the blind duplicate samples with “fake” sample IDs. Arcadis could not identify a key or table linking the duplicate samples with their associated parent samples. However, it appears that, in general, PS&S labelled the duplicate samples with a “2” in front of the parent sample ID (e.g., the parent for PCTP-260 (0.5) is PCTP-60 (0.5)). However, in some cases, the sample depth does not match that of the parent sample. In these cases, the blind duplicate data are not presented with a parent sample, the duplicate is not associated with a sample location in this RI Report’s figures, and the duplicate is counted as a separate sample but not a separate sampling location when presenting statistics[7]. Duplicate sample IDs without parent samples are limited to only the following: PCTP-214 (7.5), PCTP-236 (7), and TP-278 (9).

[7] During statistical discussions in this RI Report, duplicate samples with identified parents are counted as one sample.

3.2.4.1 Surface Soil Analytical Results

A total of 104 surface soil samples from 102 sampling locations[8] were collected and analyzed for VOCs, SVOCs, and inorganics. In addition, 93 samples were also collected for pesticides analysis, and 101 samples were collected for PCB analysis. For sampling locations S-138 through S-140, soil samples were only analyzed for PCBs (two samples from each boring for a total of six samples). Surface soil samples were generally collected throughout the Site, but with a higher density of samples from the Fuel Blending Area. Pesticides and PCBs were not detected in surface soil at concentrations greater than non-residential direct contact or soil-to-groundwater MSCs. Therefore, the discussion of surface soil analytical results below focuses on VOC, SVOCs, and inorganics. The locations of surface soils and associated MSC exceedances are shown on Figure 18.

Surface Soil Analytical Results for VOCs

No VOCs were detected in surface soil at concentrations greater than the non-residential direct contact MSCs. Other than benzene, no VOCs were detected in surface soil above the non-residential soil-to-groundwater MSC. Benzene was detected at a concentration greater than the 0.5 mg/kg soil-to-groundwater MSC at only four locations (PCSB-41R [0.5-2 feet bgs], PCTP-66 [0.5 feet bgs], PSSTP-22 [1-2 feet bgs], and S-113B [1-3 feet bgs]). The highest benzene concentration identified in surface soil was 29 mg/kg in the sample from PCTP-66 located in the southwest corner of the Site. As part of the SRI Activities, PCTP-66 was revisited and surrounded by delineation sampling locations. Benzene was not detected in the surface soil sample from PCTP-66R or surface soil samples from the four delineation sampling locations (S-119 through S-122). Benzene was detected at a concentration of 6.32 mg/kg in the sample from PCSB-41R located near the northern portion of the railroad tracks. Benzene concentrations at the other two locations (PCTP-22A in the center of the Site and S-113B in Area 2) were both below 1 mg/kg. VOCs in soil around the locations have been delineated.

Surface Soil Analytical Results for SVOCs

SVOCs were not detected at concentrations greater than the non-residential direct contact MSCs or the non-residential soil-to-groundwater MSCs in surface soil samples from 92 of 102 sampling locations. At the remaining 10 sampling locations, several PAHs common in urban/historic fill were generally detected at concentrations slightly higher than non-residential soil-to-groundwater MSCs. Of these 10 sampling locations, 8 sampling locations contained PAH concentrations exceeding the non-residential direct contact MSCs.

BaP concentrations exceeding direct contact MSCs were encountered at 9 of the 10 surface soil sampling locations where MSC exceedances were identified. 1,1-Biphenyl, BaA, BbF, dibenzofuran, indeno(1,2,3-cd)pyrene, and naphthalene were most frequently detected above MSCs (at three locations or more).

Multiple PAHs were identified at concentrations exceeding MSCs in surface soil collected from sampling locations PCTP-66 (0.5 feet bgs), PCTP-68 (0.5 feet bgs), S-151 (0.5-2), and S-163 (0.5-2 feet bgs). The highest PAH concentrations were identified at location PCTP-66 in the southwest corner of the Site. As indicated above, PCTP-66 was revisited during the SRI. 2-Methylnaphthalene, BaA, BaP, BbF, dibenz(a,h)anthracene, and naphthalene were detected in the surface soil sample collected from PCTP-

[8] Location count does not include sampling locations S-138 through S-140 where soil samples were only analyzed for PCBs.

66 at concentrations up to two orders of magnitude greater than non-residential direct contact MSCs. PAHs in soil around PCTP-66 were delineated during the SRI. Solidified tar was found on a cobble at PCTP-66R. Only 1,1-bipheny1[9], BaP, and BbF were detected at concentrations exceeding MSCs in the surface soil sample collected from PCTP-66R. Additionally, No SVOC were detected at concentrations exceeding MSCs from the delineation soil samples around PCTP-66.

PAH concentrations from PCTP-68, S-151, and S-163 are an order of magnitude less than those detected in PCTP-66, except naphthalene at PCTP-68. The location of PCTP-68 is in the center of the Site. S-151 is located near the northern portion of the railroad tracks, and S-163 is located in Area 2. PAHs in soil around these locations have been delineated.

Surface Soil Analytical Results for Inorganics

Inorganic constituents were not detected at concentrations greater than non-residential direct contact MSCs in surface soil from 81 of 102 sampling locations. Arsenic and lead were the most frequently detected inorganic constituents encountered at concentrations greater than MSCs in surface soil. Arsenic MSC exceedances in surface soil appear to be randomly distributed across the Site. Lead MSC exceedances in surface soil are mostly located in the Fuel Blending Area and at select locations in the center of the Site. Arsenic and lead impacts do not appear to be collocated with one another.

Arsenic concentrations in surface soil exceed the 61 mg/kg non-residential direct contact MSC at 13 sampling locations and the 29 mg/kg soil-to-groundwater MSC at 22 sampling locations. The highest arsenic concentrations are 170 mg/kg at PSSTP-30A, 120 mg/kg at PCTP-70, and 105 mg/kg at S-120. Outside these locations, arsenic concentrations are 100 mg/kg or less.

Lead concentrations in surface soil exceed the 1,000 mg/kg non-residential direct contact MSC at 12 sampling locations and the 450 mg/kg soil-to-groundwater MSC at 30 sampling locations. The highest lead concentrations were identified in surface soil samples collected from the Fuel Blending Area. The highest lead concentrations are 14,000 mg/kg at PCSB-36 (0.5 feet bgs), 6,200 mg/kg at PCSB-55 (0.5 feet bgs), and 5,400 mg/kg at PCSB-44 (0.5 feet bgs). Outside of the Fuel Blending Area, lead concentrations exceeding non-residential direct contact MSCs were only identified at two sampling locations: PCTP-78 (just west of the utility corridor at 1,100 mg/kg) and PSSTP-22 (near the middle of the Site at 1,130 mg/kg). Although lead concentrations may exceed the soil-to-groundwater MSCs, lead was not detected in any filtered groundwater samples at concentrations greater than the 5 µg/L residential and non-residential MSC.

Mercury is the only other inorganic that exceeds the 10 mg/kg soil-to-groundwater MSC. Mercury only exceeds the soil-to-groundwater MSC in surface soil collected from PCSB-06 (17 mg/kg), which is located in the Fuel Blending Area. Mercury was not identified in any groundwater samples at concentrations greater than the 2 µg/L residential and non-residential groundwater MSC.

3.2.4.2 Subsurface Soil Analytical Results

In total, subsurface soil samples from 283 sampling locations were analyzed for a combination of VOCs, SVOCs, inorganic constituents, pesticides, and PCBs. The sample count includes 39 sampling locations where both saturated and unsaturated soil samples were collected.

[9] The Initial RI soil sample collected from PCTP-66 was not analyzed for 1,1-biphenyl.

In the unsaturated zone, 77 subsurface soil samples from 75 sampling locations were collected and analyzed for VOCs, SVOCs, and inorganics. Of those 77 samples, 17 samples were also analyzed for pesticides and PCBs.

In the saturated zone, 354 subsurface soil samples from 249 sampling locations were collected and analyzed for VOCs and SVOCs. Of those 354 samples, 349 samples were also analyzed for metals, and 59 samples were analyzed for It pesticides and PCBs.

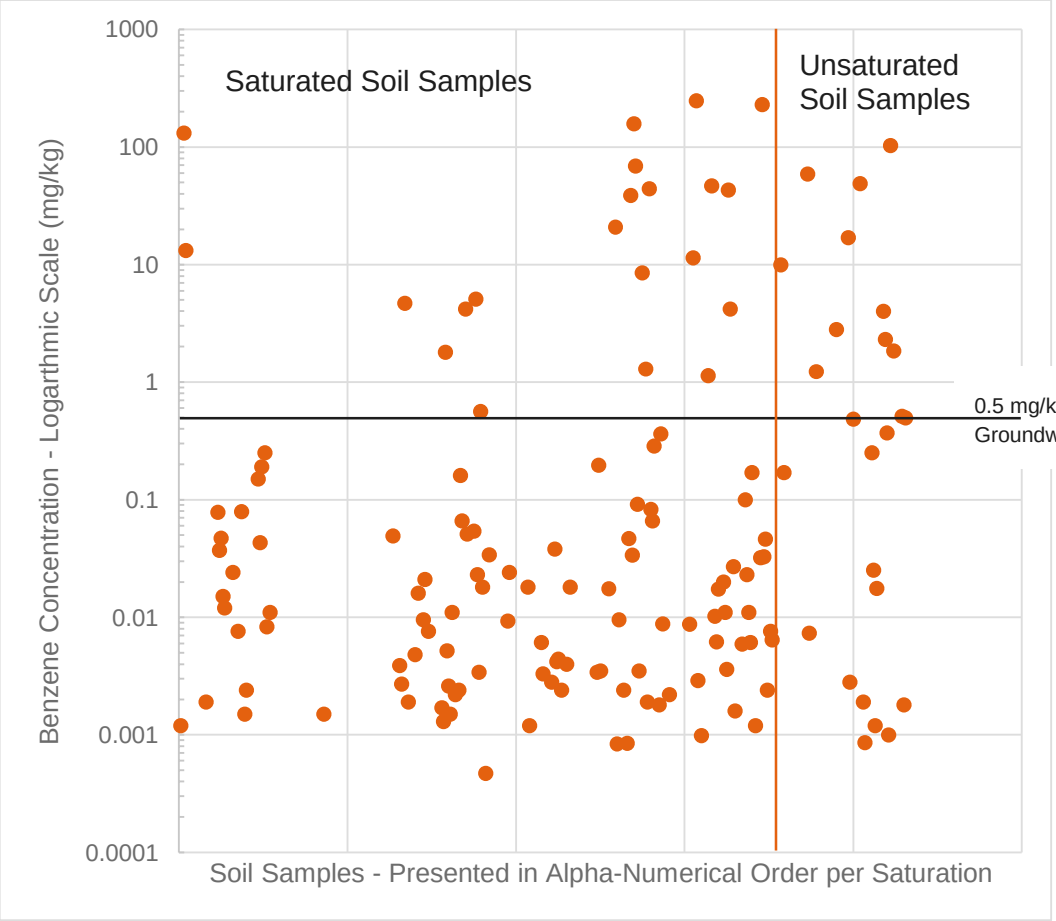
Similar to surface soil samples, pesticides and PCBs were not detected at concentrations exceeding the non-residential soil-to-groundwater MSCs. Therefore, the discussion of subsurface impacts below focuses on VOCs, SVOCs, and inorganic results exceeding non-residential soil-to-groundwater MSCs.

Subsurface Soil Analytical Results for VOCs

VOCs were not detected at concentrations exceeding the non-residential direct contact MSCs for subsurface soil in any of the subsurface soil samples collected from the Site; however, VOCs were detected at concentrations greater than the non-residential soil-to-groundwater MSCs in subsurface soil samples from 31 of 283 subsurface sampling locations. From these 31 subsurface soil sampling locations, several VOCs were detected at concentrations greater than the soil-to-groundwater MSCs in 11 unsaturated and 23 saturated soil samples (three sampling locations contained both unsaturated and saturated soil samples with VOCs exceeding the MSCs). Benzene was the only VOC detected in unsaturated soil at concentrations greater than the corresponding MSC. In saturated soil, benzene was detected at a concentration exceeding the MSC at each location that exhibited a VOC exceedance, except S-122 (Area 3B) and TP-33 (Former Coke Operations Area) where dichloromethane was the only VOC detected at a concentration greater than MSCs.

In general, subsurface soil sampling locations with higher concentrations of benzene also had higher concentrations of other VOCs. The highest benzene concentrations were detected in saturated soil in Area 4 (Former AST Farm East of Former Byproducts Operations): 247 mg/kg at S-155 (10-12 feet bgs), 230 mg/kg at TP-63 (8 feet bgs), and 157 mg/kg at S-125 (7 to 9 feet bgs). The highest benzene concentration in unsaturated soil is 103 mg/kg at S-161 from 5 to 7 feet bgs (also in Area 4). The distribution of benzene concentrations in unsaturated and saturated subsurface soil is shown on Figure 3-3 below. TP-63 had the most VOCs detected at concentrations greater than MSCs and S-155 had the second most VOCs detected at concentrations greater than MSCs. Viscous tar or oil-like material was observed at both locations (blebs at S-155; the quantity of viscous tar at TP-63 was not documented). TP-63 and S-155 are both located within Area 4. The viscous tar or oil-like material in Areas 4 has been delineated as part of the SRI Activities.

Figure 3-3: Distribution of Benzene Concentrations in Subsurface Soil Samples



Note: Data are presented in logarithmic scale on y-axis. Each sample where benzene was detected is represented by an orange dot. As illustrated above, most data are below the S-GW MSC for benzene of 0.5 mg/kg.

Chlorobenzene, dichloromethane, ethylbenzene, styrene, and toluene exceedances in saturated subsurface soil are collocated with benzene, except as noted above. Locations where each of these VOCs was found to exceed the corresponding soil-to-groundwater MSCs are summarized below:

- Chlorobenzene concentrations exceeded the 10 mg/kg MSC in subsurface soil samples from three sampling locations (S-125 [47.5 and 19 mg/kg], S-155 [40.7 mg/kg], and TP-63 [53 mg/kg]).
- Dichloromethane concentrations exceeded the 0.5 mg/kg MSC in subsurface soil samples from five sampling locations (PCTP-42 [0.91 mg/kg], PCTP-46 [1.2 mg/kg], S-122 [0.829 mg/kg], TP-15 [1.8 mg/kg], and TP-33 [3.2 mg/kg]).
- Ethylbenzene concentrations exceeded the 70 mg/kg MSC in subsurface soil samples from three sampling locations (PCTP-42 [180 mg/kg], S-155 [76 mg/kg], and TP-63 [140 mg/kg]).
- Styrene concentrations exceeded the 24 mg/kg MSC in subsurface soil samples from two sampling locations (MW-111 [29.5 mg/kg] and TP-63 [47 mg/kg]).

- The toluene concentration exceeded the 100 mg/kg MSC in the subsurface soil sample from one sampling location (TP-63 [140 mg/kg]).

No other VOCs were detected in subsurface soil at the Site at concentrations exceeding the non-residential soil-to-groundwater MSCs. Chlorobenzene, dichloromethane, ethylbenzene, styrene, and toluene were not detected in any groundwater samples at concentrations greater than applicable residential and non-residential groundwater MSCs.

Subsurface Soil Analytical Results for SVOCs

SVOCs were not detected at concentrations greater than the non-residential subsurface direct contact MSCs for soil samples collected from 244 of 283 sampling locations. From the remaining 41 subsurface soil sampling locations, the following SVOCs were detected at concentrations greater than the non-residential subsurface soil MSCs:

- Naphthalene was detected in subsurface soil samples collected from each of the 41 sampling locations at concentrations greater than the 77 mg/kg non-residential direct contact MSCs. Naphthalene was detected at concentrations two orders of magnitude or more above the non-residential MSCs in subsurface soil samples collected from the sampling locations MW-108, PCTP-12, PCTP-17, PCTP-46, PSSTP-04R, S-106, TP-15, and TP-63. Viscous tar or oil-like material was observed at each of these locations, and each of these locations is fully delineated in one of the four identified areas shown in Figures 21 through 24.
- 2-Methylnaphthalene was detected in subsurface soil samples collected from 18 sampling locations at concentrations greater than the 40 mg/kg non-residential direct contact MSCs. 2-Methylnaphthalene was detected at concentrations two orders of magnitude or more above the non-residential MSCs in subsurface soil samples collected from the sampling locations PCTP-12, PCTP-17, PCTP-46, and TP-63.
- 1,1-Biphenyl was detected in subsurface soil samples collected from 10 sampling locations[10] at concentrations greater than the 40 mg/kg non-residential direct contact MSCs. The highest detected 1,1-biphenyl concentrations are 331 mg/kg at S-106 from 2 to 4 feet bgs (unsaturated), 310 mg/kg at MW-108 from 5 to 7 feet bgs (unsaturated), and 301 mg/kg at PSSTP-04R at feet bgs (unsaturated).

Naphthalene was detected in subsurface soil at a concentration exceeding the direct contact MSC at each sampling location that exhibited a non-residential subsurface direct contact MSC exceedance. In total, naphthalene was detected at concentrations exceeding the non-residential subsurface direct contact MSCs in 14 unsaturated and 29 saturated soil samples. The subsurface soil sampling locations where results exceed the non-residential direct contact MSCs are shown on Figure 19. Naphthalene, 2-methylnaphthalene, and 1,1-biphenyl were detected in select groundwater samples at concentrations greater than applicable residential and non-residential groundwater MSCs.

SVOCs exceeded non-residential soil-to-groundwater MSCs in subsurface soil samples from 52 of 283 sampling locations (at 11 additional locations from where the subsurface direct contact MSCs were exceeded). 1,1-Biphenyl, 2-methylnaphthalene, BaP, and naphthalene were the most frequently detected SVOCs at concentrations greater than the non-residential soil-to-groundwater MSCs. The full list of

[10] 1,1-Biphenyl was only an analyte during the SRI activities. 1-1-Biphenyl was not analyzed for during the Initial RI activities.

SVOCs detected at concentrations greater than the non-residential soil-to-groundwater MSCs is presented in Table 3-5 of subsection 3.2.4.4.

In general, locations with higher naphthalene concentrations also had higher concentrations of other SVOCs. To evaluate the variability and magnitude of SVOC results, it is helpful to compare the total PAH concentrations[11]. Sampling locations exhibiting the highest total PAH concentrations are within the four delineation areas (Areas 1 through 4). Additionally, the SRI sampling results indicate that PAH concentrations at these locations are at least an order of magnitude less than the Initial RI results, indicating likely natural attenuation through degradation and other processes. Viscous tar or oil-like material was commonly observed at locations with elevated PAH concentrations.

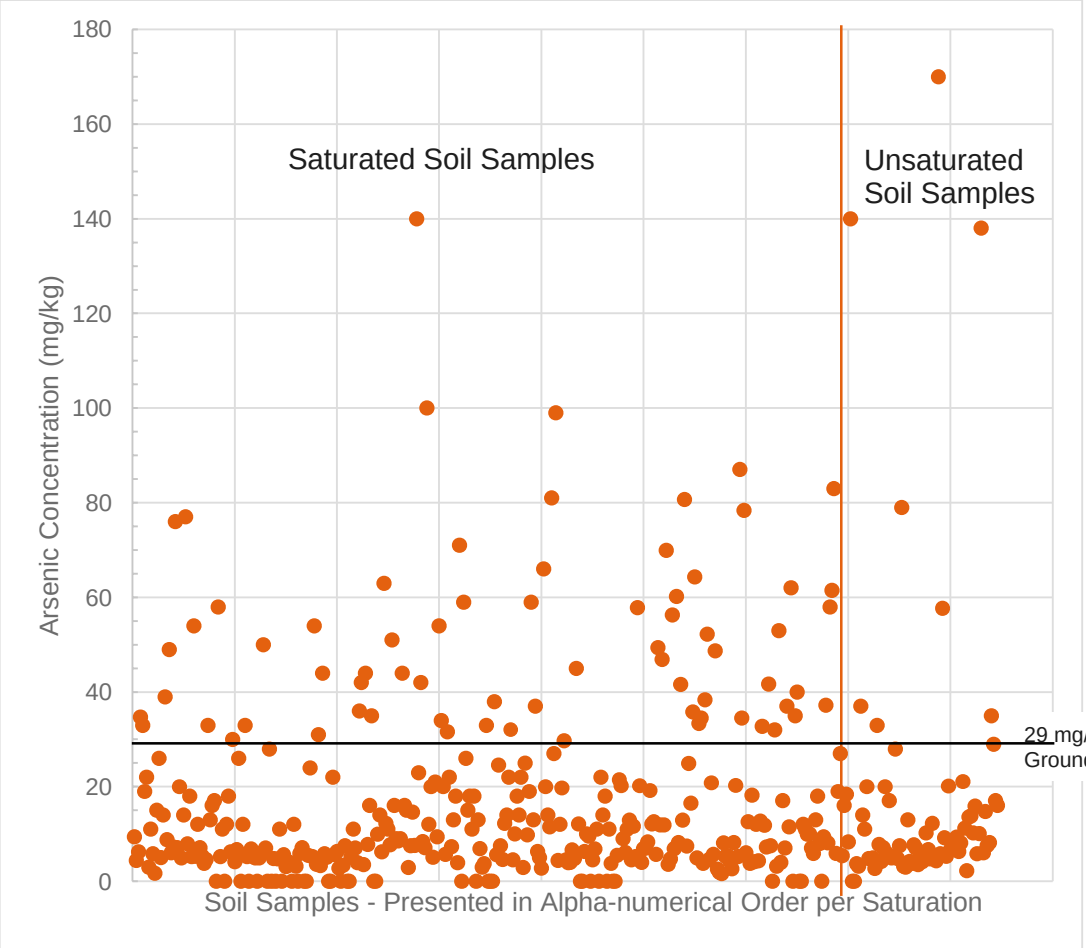
Subsurface Soil Analytical Results for Inorganics

Inorganics were not detected at concentrations exceeding the non-residential direct contact MSCs for subsurface soil in any of the subsurface soil samples collected from the Site; however, inorganic constituents were detected in subsurface soil samples from 107 of 281 sampling locations at concentrations greater than non-residential soil-to-groundwater MSCs. Similar to surface soil analytical results, arsenic and lead were the inorganic constituents most frequently detected in subsurface soil at concentrations greater than non-residential soil-to-groundwater MSCs. In addition, antimony, cyanide, mercury, nickel, and selenium were detected at select sampling locations (three or fewer separate sampling locations for each constituent) at concentrations greater than the non-residential soil-to-groundwater MSCs. Arsenic concentrations greater than non-residential soil-to-groundwater MSCs in subsurface soil are distributed across the Site. Lead concentrations greater than non-residential soil-to-groundwater MSCs in subsurface soil are mostly located in the Fuel Blending Area and at select locations elsewhere onsite. Arsenic and lead impacts do not appear to be collocated with one another. Antimony, cyanide, mercury, nickel, and selenium were detected at concentrations greater than non-residential soil-to-groundwater MSCs at subsurface sampling locations where lead was generally also detected at concentrations greater than the MSC, but these constituents are not collocated among themselves.

Arsenic concentrations exceed the 29 mg/kg soil-to-groundwater MSC at 76 sampling locations (8 unsaturated samples and 70 saturated samples). The highest detected arsenic concentrations are 170 mg/kg at S-105 from 2 to 4 feet bgs (unsaturated), 140 mg/kg at PCSB-30 at 2 feet bgs (unsaturated), and 140 mg/kg at PCTP-19 at feet bgs (saturated). The distribution of arsenic concentrations in subsurface soil is shown on Figure 3-4 below. Arsenic impacts appear to be randomly distributed across the Site.

[11] For purposes of this RI Report, total PAH is considered the sum of EPA 16 priority pollutant PAHs and 2-methylnaphthalene.

Figure 3-4: Distribution of Arsenic Concentrations in Subsurface Soil Samples



Note: Each sample is represented by an orange dot. As illustrated above, most data are below the S-GW MSC for arsenic of 29 mg/kg.

Lead concentrations exceed the 450 mg/kg soil-to-groundwater MSC at 58 sampling locations (14 unsaturated samples and 45 saturated samples). The highest detected lead concentrations are 62,000 mg/kg at PCTP-28 at 7 feet bgs (saturated), 26,000 mg/kg at PCSB-08 at 10.5 feet bgs (saturated), and 9,600 mg/kg at TP-44 at 4 feet bgs (unsaturated). PCTP-28 and PCSB-08 are located in the center of the Site. TP-44 is located in the Fuel Blending Area. Sampling locations PCTP-28 and TP-44 were revisited during the SRI. Lead concentrations at PCTP-28R did not exceed the soil-to-groundwater MSC. Lead concentrations at TP-44R exceeded the soil-to-groundwater MSC at one of three sampling intervals (2,840 mg/kg at 5-7 feet bgs). As discussed in Section 3.2.5, lead was not detected in any filtered groundwater samples at concentrations greater than the 5 µg/L residential and non-residential MSC.

Antimony, cyanide, mercury, nickel, and selenium exceedances are summarized below:

- Antimony concentrations exceeded the 27 mg/kg MSC in subsurface soil samples from three sampling locations (PCTP-09 [92 mg/kg], PCTP-12 [33 mg/kg], and PCTP-41[34 mg/kg]).

- Cyanide concentrations exceeded the 200 mg/kg MSC in subsurface soil samples from three sampling locations (PCTP-12 [340 mg/kg], PCTP-17 [670 mg/kg], and TP-64 [789 mg/kg]). No other inorganic constituents were detected in subsurface soil from TP-64 at concentrations greater than MSCs.
- The mercury concentration exceeded the 10 mg/kg MSC at one location (31 mg/kg at PCTP-68).
- The nickel concentration exceeded the 650 mg/kg MSC at one location (2,480 mg/kg at PSSTP-04R).
- The selenium concentration exceeded the 26 mg/kg MSC at one location (29 mg/kg at PCSB-30).

No other inorganic constituents were detected in subsurface soil at the Site at concentrations greater than the non-residential soil-to-groundwater MSCs. Cyanide (free), mercury, and selenium were not identified in any groundwater samples at concentrations greater than the applicable residential and non-residential MSC.

3.2.4.3 Comparison of Initial RI and SRI Results for Revisited Sampling Locations

Similar to the outcome of the visual characterization comparison between the Initial RI and SRI soil samples (which showed fewer visual impacts in SRI soil samples), laboratory analytical results show that most of the revisited sampling locations had lower concentrations than those identified at the original sampling locations, sometimes by an order of magnitude or more. Therefore, the Initial RI data may be biased (i.e., potentially focusing on small blebs or pockets of impacted material and not representing overall conditions at the sampling location). Considered alone, the Initial RI data likely over-predicts the magnitude of Site-related impacts as the impacts were often not reproduced in the revisited sampling locations. However, the site-wide distributions of soil impacts are generally consistent between the Initial RI and SRI results, and the overall site model is unchanged by the SRI data.

The differences in concentrations from the Initial RI and SRI Activities are potentially due to a combination of factors, including survey discrepancies, location adjustments because of access issues (e.g., due to vegetation or terrain), natural attenuation/degradation processes, and selection of soil samples by different onsite geologists (different bias). Additionally, Initial RI concentrations may be higher than SRI concentrations because the majority of the initial RI subsurface soil samples were collected from test pits instead of borings, and test pits may expose more potentially impacted soil for sample selection.

3.2.4.4 Soil Investigation Conclusion

In total, 104 surface and more than 430 subsurface samples were collected for laboratory analysis to characterize the nature and extent of Site-related impacts. The number and density of samples is more than sufficient to complete delineation of the Site COCs and advance the project into cleanup.

No surface or subsurface samples exceed the non-residential direct contact or soil-to-groundwater MSCs for pesticides and PCBs. Therefore, cleanup activities will be focused on areas where the VOC, SVOC, and inorganic concentrations exceed MSCs.

Constituents in surface soil exceeding non-residential direct contact MSCs are limited to select SVOCs, arsenic, and lead. The SVOC and arsenic concentrations found in surface soil are typical of urban/historic fill, except SVOC results at surface soil sampling location PCTP-66 which was resampled during the SRI. SVOC impacts in surface soil around PCTP-66 have been delineated. SVOC impacts in surface soil at

PCTP-66 are collocated with solidified tar or tar-like material. Surface soil containing lead concentrations greater than non-residential direct contact MSCs are in the Fuel Blending Area and at two locations in the center of the Site. COCs in surface soil are listed in Table 3-4 below.

Table 3-4: Soil Constituents in Surface Soil Exceeding Non-Residential Direct Contact MSCs

Analyte	CAS Number	Direct Contact Exceedance Frequency
Semi-Volatile Organic Compounds		
2-Methylnaphthalene	91-57-6	1/104
Benz(a)anthracene	56-55-3	3/104
Benzo(a)pyrene	50-32-8	3/104
Benzo(b)fluoranthene	205-99-2	8/104
Benzo(k)fluoranthene	207-08-9	2/104
Chrysene	218-01-9	1/104
Dibenz(a,h)anthracene	53-70-3	3/104
Indeno(1,2,3-cd)pyrene	193-39-5	3/104
Naphthalene	91-20-3	3/104
Metals		
Arsenic	7440-38-2	13/104
Lead	7439-92-1	12/104

VOCs and inorganics were not identified in subsurface soil at concentrations exceeding non-residential direct contact MSCs for subsurface soil. 1,1-Biphenyl, 2-methylnaphthalene, and naphthalene were the only SVOCs detected in subsurface soil at concentrations exceeding non-residential direct contact MSCs, as listed in Table 3-5.

Table 3-5: Soil Constituents in Subsurface Soil Exceeding Non-Residential Direct Contact MSCs

Analyte	CAS Number	Direct Contact Exceedance Frequency
Semi-Volatile Organic Compounds		
1,1-Biphenyl	92-52-4	11/150
2-Methylnaphthalene	91-57-6	18/431
Naphthalene	91-20-3	43/431

The subsurface soil sampling locations exhibiting the highest VOC and SVOC concentration also have the highest benzene and naphthalene concentrations. The highest VOC concentrations in subsurface soil are in Area 4 and the highest SVOC concentrations in subsurface soil are in the four delineation areas (Areas 1 through 4). Elevated VOC and SVOC concentrations are typically collocated with visual impacts (e.g., pockets of viscous tar, oil-like material, and solidified tar). VOC and SVOC concentrations have been delineated. Similar to surface soil findings, arsenic and lead are the primary inorganic COCs in subsurface soil. Additionally, groundwater is characterized throughout the Site (as discussed in Section 3.2.5), and many of the constituents detected in soil at concentrations greater than the S-GW MSC were not detected in groundwater samples at concentrations greater than applicable residential and non-

residential groundwater MSCs. Furthermore, groundwater impacts are generally limited to isolated areas in the perched groundwater zone, and there is a limited presence of site-related constituents in the underlying deep groundwater aquifer, as discussed in Subsection 3.2.5.

This includes the following constituents: chlorobenzene, dichloromethane, ethylbenzene, styrene, toluene, 1,1-biphenyl, 2-methylnaphthalene, 4-methylphenol, anthracene, fluoranthene, fluorene, phenanthrene, phenol, pyrene, cyanide, lead, mercury, and selenium. The COCs in surface and subsurface soil are identified in Table 3-6 below.

Table 3-6: Soil Constituents Exceeding Non-Residential Soil-to-Groundwater MSCs

Analyte	CAS Number	S-GW Exceedance Frequency	Concentration in GW Above Applicable GW MSCs (discussed in Section 3.2.5)
Volatile Organic Compounds			
Benzene	**71-43-2**	**36/530**	**Yes**
Chlorobenzene	108-90-7	4/530	No
Dichloromethane	75-09-2	5/530	No
Ethylbenzene	100-41-4	3/529	No
Styrene (Monomer)	100-42-5	2/470	No
Toluene	108-88-3	1/532	No
Semi-Volatile Organic Compounds			
1,1-Biphenyl	**92-52-4**	**28/168**	**Yes**
2-Methylnaphthalene	**91-57-6**	**30/535**	**Yes**
4-Methylphenol	106-44-5	1/296	No
Anthracene	120-12-7	15/535	No
Benz(a)anthracene	**56-55-3**	**15/535**	**Yes**
Benzo(a)pyrene	**50-32-8**	**39/535**	**Yes**
Benzo(b)fluoranthene	**205-99-2**	**22/535**	**Yes**
Benzo(g,h,i)perylene	**191-24-2**	**13/535**	**Yes**
Benzo(k)fluoranthene	**207-08-9**	**6/535**	**Yes**
Carbazole	**86-74-8**	**18/535**	**Yes**
Chrysene	**218-01-9**	**18/535**	**Yes**
Dibenz(a,h)anthracene	**53-70-3**	**2/535**	**Yes**
Dibenzofuran	**132-64-9**	**16/535**	**Yes**
Fluoranthene	206-44-0	8/535	No
Fluorene	86-73-7	4/535	No
Naphthalene	**91-20-3**	**54/535**	**Yes**
Phenanthrene	85-01-8	4/535	No
Phenol	108-95-2	2/535	No
Pyrene	129-00-0	6/535	No
Metals			
Antimony	**7440-36-0**	**3/527**	**Yes**
Arsenic	**7440-38-2**	**101/527**	**Yes**

Analyte	CAS Number	S-GW Exceedance Frequency	Concentration in GW Above Applicable GW MSCs (discussed in Section 3.2.5)
Cyanide	57-12-5	3/333	No
Lead	7439-92-1	89/527	No
Mercury	7439-97-6	2/525	No
Nickel	**7440-02-0**	**1/527**	**Yes**
Selenium	7782-49-2	1/527	No

Notes: S-GW indicates the soil-to-groundwater MSCs for a non-residential used aquifer with TDS less than or equal to 2,500 ppm; GW = groundwater.

3.2.5 Groundwater Quality Evaluation

This section summarizes the groundwater quality at the Site based on analytical results of groundwater samples collected from monitoring wells and hydropunch sampling locations during the RI.

During the Initial RI activities, groundwater samples were collected from 33 monitoring wells and 7 hydropunch locations. The 33 monitoring wells were sampled in November 2005 and January/February 2006 for VOCs, SVOCs, total metals, dissolved metals, pesticides, and PCBs, except PCMW-08S which was only sampled in November 2005. Groundwater samples collected from the hydropunch locations were analyzed for VOCs, SVOCs, and total metals.

During the monitoring well integrity survey performed as part of the SRI Activities, Arcadis located 23 of the 33 Initial RI monitoring wells (wells identified by the prefix “PCMW-”) as shown on Initial RI site maps, plus two of the nine pre-2003 monitoring wells (wells identified with the ID “MW-”). As listed in Table 3-3 (Subsection 3.1.2.1), Arcadis installed four monitoring wells to replace Initial RI monitoring wells that could not be located in 2018. Arcadis also installed nine additional monitoring wells in areas where groundwater was not sufficiently characterized by the Initial RI monitoring well network, including Areas 1 and 4 where the most impacted soils were observed.

During the SRI Activities, Arcadis sampled groundwater from 23 existing wells (including two wells of unknown construction) and 13 new SRI monitoring wells for a combination of VOCs, SVOCs, total inorganics, dissolved inorganics, total cyanide, free cyanide, TDS, pesticides, and PCBs.

The groundwater analytical results have been compared to the PADEP Non-Residential MSCs for Used Aquifers containing TDS ≤ 2,500 mg/L. These MSCs are applicable to the Site given the anticipated current and future site use for commercial or industrial purposes. Groundwater is not used for potable purposes at the Site and in the surrounding area. For documentation purposes, the groundwater analytical results are also compared in this Section to the PADEP Residential MSCs for Used Aquifers containing TDS ≤ 2,500 mg/L. Please note that the groundwater results are compared to VI screening values in Section 3.2.6.

Groundwater analytical results for hydropunch locations are presented in Table 14. Groundwater analytical results for monitoring wells are presented in Tables 15 through 17. A statistical summary of groundwater analytical data for samples collected from the monitoring wells is presented in Table 18.

Additionally, groundwater analytical results exceeding the above-identified MSCs are shown in Figures 25 and 26.

During the Initial RI activities, PS&S labelled the blind duplicate samples with “fake” sample IDs. Arcadis could not identify a key or table linking the duplicate samples with their associated parent samples. However, it appears that, in general, PS&S labelled the duplicate samples with a “2” in front of the parent sample ID (e.g., the parent for PCMW-214D (11/9/05) is PCMW-14D (11/9/05)). However, in some cases, the duplicate ID does not indicate if the sample was collected from the deep or shallow well in the cluster. In these cases, the blind duplicate data are not included in the discussion below. Duplicate sample IDs without parent samples are limited to only the following: PCMW-211 (2/2/2006) and PCMW-212 (2/1/2006). However, results for these duplicate samples are included in the statistics in Table 18.

3.2.5.1 Hydropunch Groundwater Sampling Results

In general, hydropunch samplers were advanced in the areas where soil impacts were observed in the Initial RI. The analytical results for groundwater samples collected from hydropunch locations are summarized below:

- VOCs and SVOCs were not detected in any of the hydropunch groundwater samples at concentrations exceeding the MSCs, except the sample from PCHP-03 which is located in the center of the Site. At PCHP-03, benzene was detected at a concentration of 290 µg/L vs the 5 µg/L on-residential MSC and select PAHs were detected at concentrations up to 6.3 µg/L (BaA at 6 µg/L, BaP at 4.6 µg/L, BbF at 6.3 µg/L, benzo(g,h,i) perylene at 2.8 µg/L, benzo(k)fluoranthene at 1.8 µg/L, chrysene at 5.1 µg/L, and indeno(1,2,3-cd)pyrene at 2.5 µg/L vs. non-residential MSCs of 4.9, 0.2, 1.2, 0.26, 0.55, 1.9, and 2.3 µg/L, respectively). No other VOCs or SVOCs were detected above MSCs in the hydropunch groundwater samples. Groundwater impacts around PCHP-03 have been delineated by PCHP -01, PCHP-06, PCHP-07, PCMW-14S/MW-101 and PCMW-15S.
- Amenable cyanide was not detected in any of the hydropunch groundwater samples at concentrations exceeding the MSCs.
- Metals were detected at concentrations exceeding the MSCs in unfiltered groundwater samples collected from 6 of the 7 hydropunch locations. Elevated metal concentrations are likely the result of the sample collection method. Hydropunch samples are not collected using standard low-flow methods through a developed monitoring well and typically have very high turbidity biasing metal results to be high due to entrained solids.

3.2.5.2 Shallow Groundwater Sampling Results

A total of 35 monitoring wells are screened in the shallow groundwater zone located within the historic fill unit, including 20 wells installed during the Initial RI activities, 13 wells installed during the SRI activities, and two wells installed sometime before 2003 (i.e., those two wells were found and sampled in 2018). Except for the observation of emulsified petroleum in PCMW-05 during the Initial RI, NAPL was not encountered in any shallow groundwater monitoring wells. This emulsion was not observed during the SRI.

During both the Initial RI and SRI, pesticides and PCBs were not detected at concentrations greater than the applicable MSCs (i.e., residential or non-residential MSCs for used aquifers with TDS ≤2,500 mg/L) in

any of the groundwater samples collected from the shallow monitoring wells. Therefore, the discussion of shallow groundwater analytical results below focuses on VOC, SVOCs, and inorganics. The shallow groundwater analytical results are summarized below.

Shallow Groundwater Sampling Results for VOCs

When combining the Initial RI and SRI data, VOCs were not detected at concentrations greater than the MSCs in 28 of the 35 shallow groundwater monitoring wells. SRI groundwater analytical results indicate that groundwater quality has improved onsite since the Initial RI investigation, demonstrated by the decreasing benzene concentrations. VOCs were detected above MSCs at the following locations:

- *PCMW-10S, PCMW-14S, PCMW-15S, & PCMW-17S* – During the Initial RI, benzene was detected in groundwater at concentrations greater than the 5 µg/L non-residential and residential MSCs in each of these four monitoring wells. However, benzene was not detected above the 5 µg/L MSCs in groundwater collected from these wells (or MW-14S replacement well MW-101) during the SRI.
- *MW-107* - Methyl-tert-butyl ether (MTBE) was detected in the May 30, 2018 groundwater sample from this well at a concentration of 20.7 µg/L which is slightly greater than the 20 µg/L residential and non-residential MSC. MTBE was not evaluated in groundwater samples collected during the Initial RI groundwater samples and is not considered to be related to Site operations.
- *MW-111* – Based on the SRI results, the highest benzene concentration (686 µg/L) was detected in a groundwater sample collected from this well on October 4, 2019. Benzene was not detected above laboratory detection limits in groundwater downgradient from MW-111 (i.e., MW-112 or MW-113 to the east of MW-111) during the same event. Therefore, benzene groundwater impacts are limited to the vicinity of MW-111.
- *MW-5* –TCE was detected in the March 19, 2018 groundwater sample from this well at a concentration of 6.1 µg/L which is slightly higher than the 5 µg/L residential and non-residential MSC. TCE was not identified in the Initial RI groundwater samples collected from any of the wells at the Site. TCE was not detected elsewhere onsite during the March 2018 event.

Shallow Groundwater Sampling Results for SVOCs

SVOCs were not detected in 29 of the 35 shallow groundwater monitoring wells at concentrations greater than the MSCs. SVOCs were detected above MSCs at the following locations:

- *MW-102* – Bis(2-ethylhexyl) phthalate was detected in the May 31, 2018 groundwater sample from this well at a concentration of 11.3 µg/L which is greater than the 6 µg/L residential and non-residential MSC. However, since bis (2-ethylhexyl) phthalate was not detected in the duplicate sample collected from this well, the detection is potentially indicative of laboratory contamination. Groundwater samples were not collected from this well on any other date.
- *MW-107* – Multiple low-level PAHs were detected in the May 30, 2018 groundwater sample from this well at concentrations slightly greater than one or both groundwater MSCs. Low-level PAHs are typically associated with urban/historic fill such as the fill observed onsite. BbF was identified in this well at the highest concentration of any PAHs exceeding MSCs (1.7 µg/L vs. 1.2 µg/L non-residential MSC). BaP and benzo(g,h,i)perylene were also detected above the non-residential MSCs (1.2 and 0.95 µg/L vs. MSCs of 0.2 and 0.26 µg/L, respectively). Groundwater samples were not collected from this well on any other date.

- *MW-111* – The highest PAH concentrations in groundwater were detected in the October 4, 2019 groundwater sample collected from this well. The two PAHs with the highest concentrations at this well were naphthalene (973 µg/L vs. 100 µg/L non-residential MSC) and carbazole (189 µg/L vs. 140 µg/L non-residential MSC). PAHs were not detected above MSCs in groundwater downgradient from MW-111 (i.e., MW-112 or MW-113 to the east of MW-111).
- *PCMW*-05 – 2-Methylnaphthalene was detected in the November 2, 2005 groundwater sample from this well at a concentration of 34 µg/L, which is greater than the 26 µg/L non-residential MSC. The 2-methylnaphthalene concentration was 8.1 µg/L in the January 31, 2006 groundwater sample from this well, and 2-methylnaphthalene was not detected above the 1.0 µg/L laboratory reporting limit in the March 23, 2018 groundwater sample from this well.
- *PCMW-16S* – Multiple low-level PAHs were detected in the February 1, 2006 groundwater sample from PCMW-16S at concentrations slightly greater than one or both groundwater MSCs. PAHs were not detected at concentrations greater than MSCs in the replacement monitoring well for PCMW-16S (MW-105) sampled on May 30, 2018.
- *PCMW-17S* – 2-Methylnaphthalene was detected in the February 3, 2006 groundwater sample from this well at a concentration of 48 µg/L which is greater than the 26 µg/L non-residential MSC. The 2-methylnaphthalene concentration was 20 µg/L in the November 11, 2005 groundwater sample from this well, and 2-methylnaphthalene was not detected above the 1.0 µg/L laboratory reporting limit in the March 22, 2018 groundwater sample from this well.

Shallow Groundwater Sampling Results for Inorganics

Inorganics that are commonly present in urban/historic fill or considered naturally occurring minerals were detected in the groundwater samples from across the Site at concentrations exceeding the MSCs[12]. Some of the samples collected were turbid and contained suspended particulates that are the likely source of the elevated metals concentrations. For this reason, groundwater samples collected from 27 of the 35 shallow groundwater monitoring wells (18 wells during the Initial RI only, 7 wells during the SRI only, and 2 wells during both the Initial RI and SRI) were also filtered in the laboratory and analyzed for dissolved inorganic constituents. After groundwater sample filtration, only six inorganic constituents (antimony, arsenic, manganese, and nickel) were identified in the shallow groundwater at concentrations greater than MSCs. The total and dissolved laboratory analytical results for constituents exceeding MSCs are summarized below:

- Antimony was detected at concentrations slightly exceeding the 6 µg/L residential/non-residential MSC in three unfiltered and one filtered groundwater samples collected from the shallow groundwater monitoring wells. This includes unfiltered groundwater samples from PCMW-07 (6.4 µg/L on November 3, 2005), PCMW-08S (9.9 µg/L on March 22, 2018), and PCMW-13S (6.4 µg/L on November 9, 2005) and a filtered groundwater sample from PCMW-11S (7.8 µg/L on November 7, 2005). As indicated above, each groundwater sample containing antimony exceeding the MSC was collected from a separate groundwater monitoring well.
- Arsenic, a common groundwater constituent in urban/historic fill, was detected at concentrations greater than the 10 µg/L MSC in unfiltered groundwater samples collected from 9 of the 35 shallow

[12] Note that there is no difference between residential and non-residential MSCs for the detected inorganics.

groundwater monitoring wells (concentrations ranging from 12 to 160 µg/L). Dissolved arsenic was only detected at concentrations greater than MSCs in filtered groundwater collected from the two monitoring wells exhibiting the highest concentration of total arsenic, including PCMW-08S (21 µg/L on November 3, 2005) and PCMW-19S (11 µg/L on November 14, 2005).

- Total cyanide was identified at concentrations exceeding the 200 µg/L residential/non-residential MSC for free cyanide in SRI groundwater samples collected from three shallow groundwater monitoring wells, including MW-104 (670 µg/L on May 30, 2018), MW-113 (an estimated 380 µg/L October 4, 2019), and PCMW-15S (an estimated 210 µg/L March 20, 2018). There is no MSC for total cyanide. Initial RI groundwater samples were not analyzed for total cyanide. A July 27, 2018 groundwater sample from PCMW-15S was analyzed for free cyanide, and the free cyanide concentration was 9.0 µg/L which is two orders of magnitude below the 200 µg/L MSC, indicating that only a small fraction of total cyanide is free (i.e., bioavailable).
- Lead was identified at concentrations exceeding the 5 µg/L residential/non-residential MSC in groundwater samples from 21 of the 35 shallow monitoring wells. Lead concentrations were generally consistent between Initial RI samples and SRI samples. Lead was not detected in the filtered groundwater samples at concentrations greater than the MSC, indicating that lead impacts are related to turbidity.
- Nickel was detected at concentrations exceeding the 100 µg/L residential/non-residential MSC in groundwater samples (unfiltered or filtered) from only one well (PCMW-05, which is in the former Fuel Blending Area). Nickel was identified in three of four unfiltered samples from PCMW-05 (250 µg/L on January 1, 2006, 450 µg/L on March 23, 2018, and 524 µg/L on May 30, 2018) and one filtered sample from PCMW-05 (210 µg/L on January 31, 2006). This indicates that nickel impacts in groundwater are isolated.

Additionally, naturally occurring mineral constituents, manganese and zinc, were detected in groundwater at concentrations greater than MSCs. Manganese was detected at concentrations most frequently above the MSCs (in 25 of 28 monitoring wells sampled for total manganese and 8 of 9 wells sampled for dissolved manganese[13]). Zinc was detected at concentrations greater than MSCs in one of the 30 monitoring wells sampled for zinc (PCMW-05), but dissolved zinc was not detected above MSCs.

3.2.5.3 Deep Groundwater Sampling Results

A total of 13 monitoring wells were installed below the silt and clay confining unit and screened in the deep groundwater zone (wells PCMW-08D through PCMW-20D). NAPL was not encountered in any deep groundwater monitoring wells. Similar to the groundwater analytical results for the shallow monitoring wells, pesticides and PCBs were not detected at concentrations greater than the residential or non-residential MSCs, except dieldrin (an organochloride insecticide[14]) at PCMW-17D which was detected at a concentration of 0.046 µg/L in the March 22, 2018 groundwater sample (greater than the 0.041 µg/L residential MSC but less than the 0.17 µg/L non-residential MSC). Dieldrin was also detected in the

[13] Initial RI groundwater samples were not analyzed for manganese which is why the count of sampled wells differs from the previous discussion.
[14] Dieldrin was produced as an insecticide from the 1950s to 1970, and was widely used as pesticide for corn, cotton, and citrus crops. Dieldrin was also used to control termites until 1989.

March 22, 2018 groundwater sample collected from PCMW-16D at 0.038 µg/L. Dieldrin was not detected in any groundwater samples collected during the Initial RI, and it was not detected in groundwater samples collected from monitoring wells located in the primary production area of the Site or at the downgradient point-of-compliance wells. Therefore, it is likely that the presence of dieldrin in deep groundwater at the two wells identified above is due to background conditions and not site related. Additionally, there is no documented use or production of dieldrin in former Site operations. A discussion of the VOCs, SVOCs, and inorganics detected in the deep groundwater aquifer is below.

Deep Groundwater Sampling Results for VOCs

VOCs were not detected in 12 of 13 deep groundwater monitoring wells at concentrations greater than the MSCs. Tetrachloroethene was the only VOC identified in the deep groundwater samples at a concentration greater than its corresponding residential/non-residential MSC (5 µg/L) and only during the initial RI. Tetrachloroethene was detected in the November 8, 2005 groundwater sample from PCMW-11D at a concentration of 37 µg/L. Tetrachloroethene was detected at a concentration of 4 µg/L when well PCMW-11D was resampled in 2006. PCMW-11D could not be located for resampling during the SRI. Tetrachloroethene was not identified above 5 µg/L in any of the other deep groundwater samples. Based on Site history and soil analytical results, tetrachloroethene is not a Site-related constituent.

Deep Groundwater Sampling Results for SVOCs

SVOCs were not detected in 11 of 13 deep groundwater monitoring wells at concentrations greater than the MSCs. SVOCs were detected above MSCs at the following locations:

- *PCMW-09D* – BaA, BaP, BbF, and chrysene were detected in the January 31, 2006 groundwater sample from this well at concentrations slightly greater than the corresponding residential and/or non-residential groundwater MSCs. Of these four PAHs, BbF was detected at the highest concentration at 2.5 µg/L (the corresponding non-residential MSC is 1.2 µg/L). The four PAHs were not detected above laboratory detection limits in the previous groundwater sample from this monitoring well, which was collected approximately three months earlier, on November 7, 2005. Comparing groundwater gauging records from October 31, 2005 to December 30, 2005 reveals that approximately 6.5 feet of sediment filled in the screened interval between the two events likely blocking the portion of the screened interval within the transmissive sand and gravel unit. The lack of water produced by PCMW-09D during the January 31, 2006 sampling event required the field team to collect the sample with a bailer. That sample was very turbid (130 NTUs) compared to the sample collected from the well using low-flow techniques[15] during the November 7, 2005 sampling event (assumed 0 NTUs as the sampling log indicates -4.4 NTUs). Therefore, the November 7, 2005 sample from PCMW-09D is reliable while the January 31, 2006 sample from this well is not. PCMW-09D could not be located for resampling during the SRI.
- *PCMW-16D* – 2,4-Dinitroluene was detected in the March 19, 2018 groundwater sample from this well at a concentration of 13.3 µg/L, which is greater than the 2.1 µg/L residential and 8.8 µg/L non-residential MSCs. This constituent was not detected in any of the other SRI groundwater samples. Initial RI groundwater samples were not analyzed for 2,4-dinitrolouene. The presence of 2,4-dinitroluene in groundwater appears to be isolated to this area near the intersection of Orthodox

[15] PCMW-09D sustained a purge rate of 300 milliliters per minute with approximately 0.3 feet of drawdown during the November 7, 2005 sampling event.

Street and Casper Street. The deep zone potentiometric surface map in the vicinity of PCMW-16D indicates that groundwater is flowing primarily parallel to Orthodox Street with a component of groundwater flow directed easterly to the Site from offsite. Therefore, it is not likely that the groundwater impacts from PCMW-16D are Site-related but are likely due to background conditions. Additionally, 2,4-dinitroluene is not related to former Site operations.

Deep Groundwater Sampling Results for Inorganics

Similar to the analytical results for groundwater samples collected from the shallow monitoring wells, inorganics that are commonly present in urban fill or considered naturally occurring minerals were detected at concentrations exceeding the MSCs in groundwater samples collected from the deep wells across the Site. Some of the samples collected were turbid and contained suspended particulates that are the likely source of the elevated metals. For this reason, samples from the deep groundwater monitoring wells were also filtered in the laboratory and analyzed for dissolved inorganic constituents. After groundwater sample filtration, only arsenic and manganese were identified in the deep groundwater at concentrations greater than MSCs. Therefore, beryllium, lead, and cyanide in the deep groundwater zone appear to be attributed to suspended particulates. The total and dissolved laboratory analytical results for inorganic constituents exceeding MSCs are summarized below:

- Arsenic was detected at concentrations greater than the 10 µg/L MSC in unfiltered groundwater samples collected from 6 of 13 deep groundwater monitoring wells. Dissolved arsenic was only detected at concentrations greater than the 10 µg/L MSC in one filtered groundwater sample (i.e., the November 14, 2005 sample from PCMW-20D at a concentration of 11 µg/L).
- Beryllium and lead were detected at concentrations greater than their corresponding MSCs (4 µg/L and 5 µg/L, respectively) in the January 31, 2006 groundwater sample from PCMW-09D (concentrations of 5.1 µg/L and 170 µg/L, respectively). Similar to PAHs at PCMW-09D, neither beryllium nor lead was detected in the November 7, 2005 groundwater sample collected from PCMW-09D, and therefore the presence of these inorganics is likely associated with the high turbidity of the January 31, 2006 sample. Beryllium and lead were not detected in the filtered groundwater samples from any of the deep groundwater monitoring wells.
- Total cyanide was identified at a concentration exceeding the 200 µg/L residential/non-residential MSC for free cyanide in groundwater from only one deep monitoring well (350 µg/L in the March 22, 2018 groundwater sample collected from PCMW-10D). There is no MSC for total cyanide. Initial RI groundwater samples were not analyzed for total cyanide. A July 27, 2018 groundwater sample from PCMW-10D was analyzed for free cyanide, and the free cyanide concentration was 4.1 µg/L. Additionally, free cyanide was detected in the May 30, 2018 groundwater sample from PCMW-16D at an estimated concentration of 9.1 µg/L (18 µg/L in the duplicate sample from the well).
- Manganese, a naturally occurring mineral constituent, was detected at concentrations greater than the 300 µg/L MSC in groundwater samples collected from 8 of the 13 monitoring wells. Dissolved manganese was only detected at a concentration greater than MSCs in the March 28, 2019 filtered groundwater sample from PCMW-16D (3,130 µg/L).

3.2.5.4 Groundwater Investigation Conclusions

In addition to the extensive groundwater investigation performed from April 1985 through November 1998, the RI groundwater investigation provides sufficient data for evaluating groundwater quality across the Site. Groundwater analytical results indicate that groundwater quality at the Site is relatively unimpacted by former site operations and that source material is not present onsite. Select VOCs and SVOCs were identified in groundwater samples from 13 of 50 monitoring wells at concentrations exceeding applicable MSCs. However, the results indicate that VOCs and SVOCs were: (1) detected at concentrations within an order of magnitude of MSCs in the most-recent monitoring event in all but one location (MW-111); and (2) detected at much lower concentrations during the SRI then the Initial RI at the same well or a replacement well. The extent of VOCs and SVOCs in shallow groundwater downgradient from MW-111 is delineated by the samples from downgradient monitoring wells (MW-112 and MW-113, both located east of MW-111). Based on groundwater data from point-of-compliance wells, COCs are not migrating offsite at concentrations above residential MSCs.

Inorganic constituents were identified at concentrations exceeding applicable groundwater MSCs. However, these constituents are commonly present in urban/historic fill or considered naturally occurring minerals and are not necessarily attributed to former Site operations. Additionally, most inorganic constituents were not detected at concentrations above the corresponding MSC in groundwater samples that were filtered in the laboratory to evaluate dissolved concentrations of inorganics.

When reviewing the groundwater and soil analytical data together, the groundwater analytical results in Areas 1 and 2 indicate that residual soil impacts are not affecting the groundwater as follows:

- ***Area 1:*** *Eastern Part of Former Coal Storage Area*. SVOCs were not detected at concentrations greater than either the residential or non-residential MSCs in groundwater samples from any monitoring well in this area (MW-103, MW-108, MW-109, and MW-110).
- ***Area 2:*** *North/Northwest of Former Tar Storage Area*. SVOCs were not detected at concentrations greater than either the residential or non-residential MSCs in groundwater samples from any monitoring wells in this area (MW-101, PCMW-11S/D, PCMW-14S/D, and PCMW-17S/D) during the SRI.

Additionally, lead was not detected in any filtered groundwater samples at concentrations greater than the 5 µg/L MSCs indicating that lead concentrations in soil are not impacting groundwater.

The COCs in deep and shallow groundwater are identified in Table 3-7 below.

Table 3-7: Groundwater Constituents Exceeding Residential and Non-Residential MSCs

Analyte	CAS Number	Residential MSC Exceedance Frequency	Non-Residential MSC Exceedance Frequency
Volatile Organic Compounds			
Benzene	71-43-2	8/103	8/103
Methyl-tert-butylether	1634-04-4	1/36	1/36
Tetrachloroethene	127-18-4	1/103	1/103
Trichloroethene	79-01-6	1/103	1/103
Semi-Volatile Organic Compounds			
1,1-Biphenyl	92-52-4	1/36	1/36
2,4-Dinitrotoluene	121-14-2	1/36	1/36
2-Methylnaphthalene	91-57-6	6/103	3/103
Benz(a)anthracene	56-55-3	4/103	0/103
Benzo(a)pyrene	50-32-8	4/103	4/103
Benzo(b)fluoranthene	205-99-2	4/103	4/103
Benzo(g,h,i)perylene	191-24-2	3/103	3/103
Benzo(k)fluoranthene	207-08-9	3/103	2/103
bis(2-Ethylhexyl)phthalate	117-81-7	1/103	1/103
Carbazole	86-74-8	2/103	1/103
Chrysene	218-01-9	3/103	3/103
Dibenz(a,h)anthracene	53-70-3	1/103	0/103
Dibenzofuran	132-64-9	1/103	0/103
Indeno(1,2,3-cd)pyrene	193-39-5	3/103	0/103
Naphthalene	91-20-3	1/103	1/103
Metals (Dissolved)			
Antimony	7440-36-0	1/76	1/76
Arsenic	7440-38-2	3/76	3/76
Manganese	7439-96-5	8/9	8/9
Nickel	7440-02-0	1/76	1/76
Vanadium	7440-62-2	1/9	0/9
Pesticides			
Dieldrin	60-57-1	1/97	0/97

3.2.6 Soil Gas Quality

This section summarizes the quality of soil gas at the Site based on comparison of soil gas analytical results and existing soil and groundwater data to the screening values presented in the TGM.

3.2.6.1 Soil Gas Results

During the Initial RI activities, soil gas samples were collected from 21 locations to evaluate the potential for VI in future building development (see Figure 27). Due to the shallow water table, 20 of the 21 soil gas samples were collected from depths less than the desired depth of 5 feet bgs. The cover material at most of the soil gas sampling locations consisted of gravel or deteriorated asphalt pavement (not impervious surfaces). The soil gas sample data set is limited for use in VI evaluation in that only one round of soil gas data was collected (the TGM specifies two rounds) and the data were collected from shallower intervals than prescribed (i.e., intervals less than 5 feet below pervious surfaces can result in atmospheric air being introduced into the samples). Therefore, when paired with soil and groundwater data, the soil gas data are used herein as a semi-quantitative screening tool to aid in identifying areas that could potentially exhibit vapor intrusion concerns.

In response to the above circumstances, the soil gas analytical results were conservatively compared to residential and non-residential sub-slab soil gas SHS VI screening values (SV_{SS}) instead of near-source soil gas SHS VI screening values (SV_{NS}) for qualitative screening assessment purposes. The SV_{SS} screening values are much lower than the SV_{NS} screening values. As presented in Table 19, no VOCs were detected above the non-residential SV_{SS} in any of the soil gas samples. At sampling location PCSV-11, 1,4-dioxane was detected at a concentration of 440 micrograms per cubic meter (µg/m^3) which exceeds the 120 µg/m^3 residential SVss, but not the 3,100 µg/m^3 non-residential SVss. No other constituents exceed the residential SVss in any of the soil gas samples. More information on soil gas quality compared to residential standards is provided in Subsection 3.2.6.4.

3.2.6.2 Soil Analytical Results Compared to Vapor Intrusion Standards

The existing unsaturated soil analytical results were compared to the residential and non-residential VI standards from the TGM to evaluate the potential for VI concerns for future development. The soil analytical results compared to VI screening values are presented in Table 20.

From a total of 152 sampling locations where unsaturated soil samples were collected for laboratory analysis, soil analytical results exceed the non-residential VI screening values at 24 sampling locations and soil analytical results exceed the residential VI screening values at 26 sampling locations (two additional sampling locations compared to the non-residential standards). Benzene and naphthalene are the constituents that most frequently exceed the residential and non-residential VI screening values. Toluene, 1,1-biphenyl, and 2-methylnaphthalene also exceed the residential and non-residential VI screening values at select locations but were identified at the same locations where benzene and/or naphthalene exceedances were observed, with one minor exception. 1,1-Biphenyl was detected in the duplicate soil sample collected from PCTP-66R where no other constituents were detected above MSCs. Benzene, 1,1-biphenyl, 2-methylnaphthalene, and naphthalene were detected at concentrations an order of magnitude above the non-residential VI standards in soil. However, 1,1-biphenyl, 2-methylnaphthalene, and naphthalene concentrations in soil gas are limited by the soil saturation level (31.1 mg/kg, 1,000 mg/kg, and 73.2 mg/kg, respectively). Soil saturation levels are estimated based on site-specific information and chemical properties at an assumed soil/groundwater temperature of 62.6°F. Therefore, soil PAH concentrations have limited VI potential.

Dichloromethane exceeds the residential VI screening levels at three locations (but not the non-residential VI screening levels), and at two of these locations, dichloromethane was the only constituent

exceeding VI screening values. Most of the exceedances are within one of the four delineation areas (Areas 1 through 4), the Fuel Blending Area, or in the Site center near the Former Coke Operations Area. Soil sampling locations where constituents have been identified in vadose zone soil at concentrations greater than non-residential VI screening values are shown on Figure 28.

3.2.6.3 Groundwater Analytical Results Compared to Vapor Intrusion Standards

Groundwater samples collected from monitoring wells screened in the shallow groundwater zone were compared to applicable VI standards. At monitoring wells where groundwater was never observed to be within 5 feet of the ground surface, Arcadis compared the existing groundwater analytical results to the residential and non-residential VI standards. Per the TGM, Arcadis used the PADEP residential MSCs for used aquifers containing TDS ≤ 2,500 mg/L as the VI screening value for any wells where groundwater was at one point observed within 5 feet of the ground surface. Groundwater has been observed within 5 feet of the ground surface in 20 of 33 shallow monitoring wells. For the shallow groundwater zone, the groundwater analytical results compared to VI screening values are presented in Table 21.

Groundwater analytical results exceed the applicable non-residential VI screening values at 5 of 33 shallow monitoring wells (i.e., the same wells where groundwater was found to be impacted with constituents at concentrations exceeding MSCs for groundwater, as described in Subsection 3.2.5). Groundwater analytical results exceed the applicable residential VI screening values at 6 of 33 shallow monitoring wells (i.e., one additional monitoring well compared to the VI exceedance of the non-residential standard). Based on the SRI groundwater analytical results, potential VI concerns associated with groundwater appear to be limited to only three monitoring well locations (MW-5, MW-107, and MW-111). VOC and SVOC concentrations in groundwater samples collected from MW-5 and MW-107 are generally consistent with or only slightly greater than VI screening values in groundwater samples collected from MW-5 and MW-107. Based on the groundwater analytical results for wells located downgradient of MW-111 (i.e., MW-112 and MW-113), potential vapor concerns from groundwater impacts are isolated to the immediately vicinity of MW-111 (Area 4). Groundwater monitoring wells where constituents have been identified at concentrations greater than VI screening values are shown on Figure 29.

3.2.6.4 Offsite Soil Vapor Evaluation

To evaluate the potential for VI concerns off-site, the soil-gas, soil, and groundwater analytical data were compared to the applicable residential VI screening values, as introduced in the previous subsections. Based on available data, there are no potential VI concerns for the residential properties adjacent to the Site.

When comparing the analytical data to residential VI standards, one soil-gas sampling location, two additional soil sampling locations, and one additional groundwater monitoring well are added to areas of potential VI concern that had been identified based on comparison to non-residential VI standards. Where applicable residential VI screening values are exceeded, proximity distances were used to evaluate the potential for VI concerns offsite in accordance with the TGM. Proximity distances of 30 feet for petroleum constituents and 100 feet for non-petroleum constituents are specified in the TGM.

Most sampling locations or monitoring wells where constituents were identified at concentrations exceeding applicable VI standards are near the center of the Site and would not affect offsite properties.

However, 100-foot proximity distances around sampling locations PCTP-66 and S-156 extend offsite for non-petroleum constituents, but the proximity distances do not extend below offsite buildings. These locations are not adjacent to, or across the street from, residential properties. Sampling location PCTP-66 is across the street from a commercial/industrial property where clothing is sold and printed with custom prints. Sampling location S-156 is across the street from a car impoundment lot that appears to be loose gravel. The proximity distances for sampling locations and monitoring wells where constituents exceed the residential VI screening values are shown on Figure 30. In conclusion, there are no potential VI concerns offsite from conditions onsite.

3.2.6.5 Soil Vapor Constituents of Concern

When compared to applicable non-residential VI standards, soil and groundwater analytical results indicate the potential for soil VI in future buildings in certain limited areas onsite in the absence of remediation or mitigation. Benzene is the constituent most frequently detected above non-residential VI standards in both soil and groundwater samples. PAHs also frequently exceed the non-residential VI standards in soil but are limited by the soil saturation levels. Therefore, PAHs in soil have limited VI potential. However, soil gas sampling results did not exceed any of the sub-slab VI screening values indicating that the VI potential is likely over predicted by the soil and groundwater analytical results. The COCs potentially causing VI concerns are identified in Table 3-8 below.

Table 3-8: Groundwater Constituents Exceeding Residential and Non-Residential VI Screening Values

Analyte	CAS Number	VI Screening Values for Soil Exceedance Frequency	VI Screening Values for GW Exceedance Frequency
Volatile Organic Compounds			
Benzene	71-43-2	20/175	5/103
Methyl-tert-butyl ether	1634-04-4	0/53	1/36
Toluene	108-88-3	3/177	0/103
Trichloroethene	79-01-6	0/136	1/103
Semi-Volatile Organic Compounds			
1,1-Biphenyl	92-52-4	3/54	0/36
2-Methylnaphthalene	91-57-6	1/179	0/103
Naphthalene	91-20-3	19/179	0/103

Note: GW = groundwater.

4 GROUNDWATER MODELS

Fate and transport and mass flux modeling was conducted upon completion of the groundwater sampling to assess the groundwater conditions at the Site and at the property boundaries. The objective is to develop groundwater models for the Site that can be used as a basis for predicting the current and potential future extent of groundwater concentrations for select VOCs and SVOCs at Site boundaries above MSCs. Results of the models are used to estimate the movement of the constituents over time and assess the potential for impacts due to constituent mass migration and discharge to the Delaware River.

The fate and transport model evaluates the constituent concentrations in shallow groundwater at the property boundaries. The mass flux calculation evaluates the mixing concentration of PAHs from deep groundwater onsite to the Delaware River using data from PCMW-09D.

A summary of the hydrogeological setting and relevant surface water comparison values is below followed by the fate and transport model. The mass flux calculations are presented in Section 4.4.

4.1 Hydrogeologic Setting

As discussed in Section 3.2.2, three hydrostratigraphic units exist at the Site: the fill, silt and clay, and sand and gravel, and groundwater at the Site is separated into a shallow and deep zone by the silt and clay layer.

4.1.1 Shallow and Deep Groundwater Zones

The shallow groundwater is encountered in the urban/historic fill unit across the Site at depths of approximately 2- to 12- feet bgs. Based on regional groundwater information, this shallow groundwater zone is a perched aquifer that was created by the placement of fill over the native silt and clay layer. As shown on Figures 8, 9, and 10, groundwater in the fill is mounded in the central/southern portion of the Site and flows radially outward from the mound. The hydraulic conductivity of the fill ranges from approximately $1.47x10^{-4}$ to $2.93x10^{-3}$ centimeters per second (cm/sec)[16].

The deep aquifer zone is observed at approximately 9- to 17-feet bgs in the sand and gravel unit. On average the sand and gravel unit was encountered at 20.25 feet bgs. As indicated by Figures 11 and 12, groundwater in the sand and gravel flows eastward, toward the Delaware River. The sand and gravel is the most permeable hydrostratigraphic unit beneath the Site and has a hydraulic conductivity of $2.73x10^{-3}$ to $1.79x10^{-1}$ cm/sec.

4.1.2 Hydraulic and Hydrologic Boundaries

The Site is in the Lower Delaware River Watershed and borders the Delaware River to the southeast. Frankfort Creek and the Tookany/Tacony-Frankford watershed is approximately 2,000 feet southwest of the Site (from Site boundary). The Bridesburg Channel (which aerials indicate was the historical course of Frankford Creek), is north of the Site. Both Frankford Creek and the Bridesburg Channel drain to the Delaware River. The shallow groundwater, which mounds in the center of the Site and flows radially

[16] Hydraulic conductivity values were calculated based on slug test data reported by WCC (WCC 1986) and laboratory soil testing results reported by PSS.

outward, is expected to drain to the Delaware River via Frankford Creek, Bridesburg Channel, or other local drainage features between the Site and these water bodies. Deep groundwater at the Site flows directly to the Delaware River.

As indicated in Subsection 3.2.2.1, a groundwater use survey was conducted in the vicinity of the Site to confirm that no known or suspected users of groundwater exist in the regulatory-required survey area. A total of 65 wells were located within a ½-mile radius of the Site. All the wells surrounding the Site are, or are suspected to be, unused, abandoned, or only used for environmental investigations and clean-ups. A total of 4 wells surrounding the Site are listed as withdrawal wells. The withdrawal wells appear to be related to the environmental investigation and cleanup efforts at the former Rohm and Haas Chemical Company Facility (Pennsylvania Facility ID 742771 and NIR number 61614). This facility is approximately 1/3 mile north of the Site.

4.2 Relevant Surface Water Comparison Values

At the point-of-compliance wells closest to the Delaware River (MW-107 for shallow groundwater and PCMW-09D for deep groundwater), the SVOCs that exceed groundwater MSCs were also compared to the following surface water criteria:

1. Delaware River Basin Commission (DRBC) Surface Water Criteria (recorded from Tables 3 through 7 of the Administrative Manual - Part III Water Quality Regulations with Amendments through December 4, 2013: 18 CFR Part 410 for the DRBC).
2. PADEP Surface Water Criteria for Fish and Aquatic life from 25 Pa. Code § 93.8c Table 5.
3. PADEP Surface Water Criteria for Human Health from 25 Pa. Code § 93.8c Table 5.

Although 25 PA Code § 93.9e defines the portion of the Delaware River adjacent to the Site (Tidal Portions from River-Mile 108.3 to Big Timber Creek) for warm water fish (maintenance only) and migratory fish (passage only), the human health criteria were used as the edge criterion when modeling to be conservative. This portion of the Delaware River is also DRBC Water Quality Zone 3.

4.3 Fate and Transport Model

The purpose of the groundwater fate and transport modeling was to evaluate: (1) the extent of constituent migration in groundwater in the absence of any remedial activities (i.e., baseline conditions); and (2) the potential to either achieve equilibrium/stabilization or a reduction of constituent concentrations. Model development, analysis, and documentation were performed in accordance with the guidelines provided in Pennsylvania's Land Recycling Program Technical Guidance Manual. Results of the fate and transport simulations are used to estimate the movement of the constituents over time, and to assess the potential for impacts due to constituent mass migration and discharge to adjacent surface waters.

This section documents the fate and transport modeling effort, provides an evaluation of model applicability, and reports the results of the fate and transport simulations.

4.3.1 Constituents and Monitoring Wells Selected for Modeling

As discussed in Section 3.2.5, groundwater quality at the Site is relatively unimpacted by former Site operations and source material is not present onsite. Only the SRI groundwater data was considered for

fate and transport analysis because the Initial RI data is more than 12 years old, and the SRI groundwater data indicates that VOCs and SVOCs were detected at much lower concentrations during the SRI then the Initial RI at the same wells (or installed replacement wells). Additionally, fate and transport analysis was only performed on groundwater impacts identified in point-of-compliance monitoring wells, defined herein as the most downgradient well in that area of the Site.

During the SRI, select VOCs and SVOCs were identified in groundwater samples from three point-of-compliance monitoring wells at concentrations exceeding applicable MSCs (MW-5, MW-102, and MW-107). The point-of-compliance monitoring wells are screened in the fill layer and sample the shallow groundwater zone. The constituents that exceed MSCs and were considered for Fate and Transport analysis at these monitoring wells are listed on Table 4-1 below:

Table 4-1: Groundwater Constituents Considered for Modeling

Monitoring Well	Date	Constituent	Concentration (µg/L)	MSC (µg/L)	Modelled (Y/N)
MW-5	3/19/18	Trichloroethene	6.1	5	Y
MW-102	5/31/18	Bis(2-ethylhexyl)phthalate	<2.4 [11.3]	6	Y
MW-107	5/30/18	Methyl-tert-butyl ether	20.7	20	N
MW-107	5/30/18	Benzo(a)pyrene	1.2	0.2	Y
MW-107	5/30/18	Benzo(b)fluoranthene	1.7	1.2	Y
MW-107	5/30/18	Benzo(g,h,i)perylene	0.95	0.26	N

Notes: MSCs are the soil-to-groundwater MSCs for a non-residential used aquifer with TDS less than or equal to 2,500 ppm. Bis(2-ethylhexyl)phthalate) was not detected above the 2.4 µg/L laboratory detection limit in the parent sample from MW-102, but the constituent was detected at 11.3 µg/L in the duplicate sample collected from the same location.

TCE, bis(2-ethylhexyl)phthalate, BaP, and BbF were selected for modeling. Methyl-tert-butyl ether and benzo(g,h,i)perylene were not modeled because surface water criteria has not been established for these constituents. BaP and BbF concentrations at MW-107 exceed the surface water criteria as indicated in Table 4-2 below:

Table 4-2: MW-107 Groundwater Constituents Exceeding MSCs Surface Water Criteria

Constituent	PADEP Human Health Surface Water Criteria	DRBC Water Quality Criteria		MW-107
		Marine Objective - Fish Ingestion Only	Max	5/30/18
Methyl-tert-butyl ether	- -	- -	- -	20.7
Benzo(a)pyrene	0.0001	0.018	0.2	**1.2**
Benzo(b)fluoranthene	0.001	0.18	- -	**1.7**
Benzo(g,h,i)perylene	- -	- -	- -	0.95 J

Notes: The bolded values indicate that the constituent's concentration at MW-107 exceeds the criteria. All concentrations reported in µg/L. "- -" indicates constituent not listed in guidance document.

4.3.2 Analytical Models

Domenico analysis was used to model the groundwater impacts for the constituents listed in Table 4-1 (Domenico 1987). The Domenico Model was chosen as per Pennsylvania's Land Recycling Program Technical Guidance Manual because there is little variation in conditions over the model domain, with a simple plume geometry and conceptual model. The spreadsheets used were downloaded from the PADEP website following link: https://www.dep.pa.gov/Business/Land/LandRecycling/Standards-Guidance-Procedures/Guidance-Technical-Tools/Pages/Fate-and-Transport-Analysis-Tool.aspx

Both spreadsheets are based on the following equation:

$$C(x,y,z,t) = \left(\frac{C_o}{8}\right)\exp\left\{\frac{x}{2\alpha_x}\left[1-\left(1+\frac{4\lambda\alpha_x}{v}\right)^{\frac{1}{2}}\right]\right\} erfc\left\{\left[x - vt\left(\sqrt{1+\frac{4\lambda\alpha_x}{v}}\right)\right]/2\sqrt{\alpha_x vt}\right\}$$
$$\left\{erf\left[(y+Y/2)/2\sqrt{\alpha_y x}\right] - erf\left[(y-Y/2)/2\sqrt{\alpha_y x}\right]\right\}\left\{erf\left[(z+Z/2)2\sqrt{\alpha_z x}\right] - erf\left[(z-Z/2)/2\sqrt{\alpha_z x}\right]\right\}$$

where:

C(x,y,z,t) = the concentration of the constituent at location x, y, z from the source at time t.

C_o = source concentration – the highest concentration of the constituent in the groundwater at the source (derived from site-specific data).

α_x = longitudinal dispersivity (well- / location- specific data).

α_y = transverse dispersivity (well- / location- specific data).

α_z = vertical dispersivity (default value of 0.001 foot).

K = hydraulic conductivity (calibrated data).

i = hydraulic gradient (well- / location- specific data).

f_{oc} = fraction of organic carbon expressed as a decimal (default value of 0.005).

p_b = bulk density (laboratory soil testing results).

n_e = effective porosity (calibrated data).

K_{OC} = the organic carbon partition coefficient (default value from Table 5 in PA Code Title 25, Chapter 250).

R = retardation factory (calculated as $1+((K_{OC}*f_{oc}*p_b)/n_e)$).

v = constituent velocity (calculated as v_s/R).

v_s = seepage velocity (calculated as $v_s = Ki/n_e$).

λ = first order decay constant (default value from Table 5 in PA Code Title 25, Chapter 250).

Y = width of source area (well- / location- specific data).

Z = depth of source area (well- / location- specific data).

x,y,z = spatial coordinates in the horizontal, transverse and vertical directions.

t = time since the plume started moving.

Groundwater impacts originating from MW-5 and MW-102 were modeled using PADEP's Quick Domenico (QD) spreadsheet to evaluate groundwater concentrations of the selected constituents at the property boundary. Groundwater impacts originating from MW-107 were modeled using PADEP's SWLoad5B spreadsheet to estimate the mass loading of the selected constituents from groundwater to the Delaware River.

The results were loosely calibrated to available data from the MW-111 to MW-112 monitoring well pair.

4.3.2.1 Quick-Domenico Model

The QD application spreadsheet calculates the concentration anywhere in a plume of impacts at any time after a continuous, source becomes active. The QD model is intended for dissolved organic constituents whose fate and transport can be described or influenced by first order decay and reaction with organic carbon in the soil. The model assumes a constant source of a user-defined width which contributes impacts to the groundwater system, which has a defined constant flow velocity and direction, dispersion, linear isotherm adsorption (retardation), and first-order decay. All parameters are assumed constant in space and time. The QD mode also calculates the concentrations in a two-dimensional 5x10 grid whose length and width are set by the user.

Quick-Domenico Model Limitations

The major limitation of the QD model is that steady, uniform, one dimensional groundwater flow is assumed. The QD model is limited so that it should not be utilized for sites where flow and transport parameters vary significantly in direction or magnitude over the model domain. The QD model is intended for use in unconsolidated aquifers with reasonably uniform physical and hydrogeologic properties. The QD model does not simulate the transformation of parent compounds into daughter compounds, nor does it consider reactions between compounds. The mounding groundwater flow at this Site is simplified by isolating constituent concentrations (as supported by available groundwater data) to portions of the water table where flow is uniform and one dimensional.

4.3.2.2 SWLoad

The SWLoad spreadsheet uses a rearrangement of the Domenico equation to calculate concentrations at different points in the cross section of a plume at a distance from a continuous finite source. The concentrations are then added and multiplied by the groundwater flux and can be used to estimate the mass loading of a particular constituent from diffuse groundwater flow to a stream or surface water body. SWLoad assumes that the calculated loading is discharged to the subject stream.

SWLoad is intended to provide an estimate of the mass loading and is intended as screening tool. Therefore, if the mass loading is within the neighborhood of 30-50% of the level that would violate a stream standard, more rigorous in-stream sampling, monitoring and modelling efforts should be considered.

SWLoad Model Limitations

SWLoad has the same limitations as the QD model and is primarily intended for use in unconsolidated (soil) aquifers with reasonably uniform physical and hydrogeologic properties.

4.3.3 Groundwater Flow Model Construction and Parameters

As indicated in Section 4.3.2 model parameters were selected based on a combination of literature values, site-specific data, and calibration. Parameters obtained using the QD model were also used for SWLoad.

4.3.3.1 Literature Values

The chemical specific values (i.e., first order decay constant [λ] and the organic carbon partition coefficient [K_{OC}]) were those provided in Table 5a of PA Code Title 25, Chapter 250. Additionally, the default value of 0.5% organic carbon was used.

4.3.3.2 Laboratory Soil Testing Results

Site-specific parameters were estimated via laboratory soil testing performed on soil samples collected from the borings drilled to install monitoring wells PCMW-14D and PCMW-16D. Laboratory soil samples were collected from each hydrostratigraphic unit. Soil samples were not collected from the monitoring wells selected for modelling (MW-5, MW-102, or MW-107). Therefore, physical parameters of soil samples collected from monitoring wells PCMW-14D and PCMW-16D were used as starting points for calibrating the model. Parameters relevant to modelling provided by laboratory soil testing are hydraulic conductivity, porosity, and soil bulk density. For the fill unit, laboratory soil tests provided the following value range for each of these parameters:

- Hydraulic Conductivity (K): 0.417 to 8.31 feet per day (ft/day: $1.47x10^{-4}$ to $2.93x10^{-3}$ cm/sec).
- Porosity (n_e): 0.519 to 0.529.
- Density (p_b): 1.19 to 1.29 grams per cubic centimeter (g/cm^3).

The results of the laboratory soil testing are included in Appendix F. As a note, hydraulic conductivity, porosity, and bulk density are used to calculate constituent velocity used in the Domenico equation. Therefore, infinite combinations of these parameters could result in the same velocity and, thus, the same results.

4.3.3.3 Well- / Location- Specific Data

Many of the parameters in the Domenico equation are based on well location or the site-specific conditions in the vicinity of that well. These parameters include the hydraulic gradient, dispersivity, and source dimensions. As noted on the QD information sheet, longitudinal dispersivity (αx) is derived by dividing the distance from the source to the point of concern (property boundary) by 10 and the transverse dispersivity (αy) is calculated by dividing longitudinal dispersivity by 10. Vertical dispersivity selected was 0.001 feet, as suggested as a conservative value in the SWLoad Instructions. Source dimensions were roughly selected based on soil data. The hydraulic gradients used in the QD model were estimated using the groundwater contour maps (Figures 8 through 10) and averaging the approximate hydraulic gradient for each event. Well- and location- specific physical parameters selected for modelling are provided in Table 4-3 below.

Table 4-3: Well- / Location- Specific Parameters

Monitoring Well	Hydraulic Gradient (ft/ft)	Dispersivity (feet)		Source Width (feet)	Source Depth (feet)
		ax	ay		
Calibration Pair					
MW-111 to MW-112	0.0101	20.4	2.4	200	10
Modeled Wells					
MW-5	0.00855	13.8	1.38	200	10
MW-102	0.00506	30	3	200	10
MW-107	0.00294	7	0.7	160	10

4.3.3.4 Calibration

During the SRI, monitoring wells cluster MW-108 through MW-110 and cluster MW-111 through MW-113 were installed to investigate groundwater concentrations at and downgradient from potential source areas. Downgradient wells, MW-109, MW-110, MW-112, and MW-113, indicate that groundwater is not migrating offsite from the source areas at concentrations exceeding MSCs. Furthermore, most VOC and PAH constituents were not detected in groundwater at these downgradient monitoring wells above laboratory detection limits.

Benzene in well cluster MW-111 through MW-113 was selected for calibration. This well cluster is approximately 1,260 feet from MW-5, 1,240 feet from MW-102, and 600 feet from MW-107. Groundwater direction at the calibration well cluster is most similar to the groundwater direction at MW-102.

Benzene was detected in groundwater from MW-111 at a concentration of 686 µg/L, and benzene was not detected above the 0.5 µg/L laboratory detection limit in groundwater from the downgradient wells (i.e., MW-112, MW-113). For calibration purposes, a benzene concentration half the laboratory detection limit (0.25 µg/L) was modeled at downgradient wells.

For calibration, a time of 37 years was used because the groundwater data was collected in 2019 which is approximately 37 years since Site closure in 1982. The lowest laboratory values for porosity (0.519) and bulk soil density (1.19 g/cm^3) were used as a conservative measure to provide the fastest constituent velocity. A 0.005 organic carbon fraction was used as recommended in the SWLoad Construction Manual (PADEP 2008). Additionally, the October 3, 2019 shallow groundwater potentiometric surface is different than the previous shallow groundwater potentiometric surfaces in this immediate area. Therefore, the model was calibrated twice: first using the March 19, 2018 shallow groundwater flow direction; and second using the October 3, 2019 shallow groundwater flow direction. Benzene isoconcentration maps modelled based on both flow directions are shown on Figures 31 and 32.

Hydraulic conductivity was the only parameter further calibrated. The hydraulic conductivity for the March 19, 2018 groundwater model was 1.185 ft/day, and the hydraulic conductivity for the October 3, 2019 groundwater model was 1.317 ft/day. Both calibrated values for hydraulic conductivity fall within the 0.417 to 8.31 ft/day range established by laboratory soil testing. The 1.317 ft/day hydraulic conductivity was used for modelling at MW-5, MW-102, and MW-107.

4.3.4 Predictive Simulations

The QD model was adjusted to determine concentrations at the point of compliance (property line) in 5, 10, 15 and 30-year durations. The SWLoad model assumes a near infinite time (when concentrations at boundary locations would be the highest for a constant source). Copies of the results of the QD and SWLoad models are included as Appendix L. For some models, please note that the constituent concentration was inputted as µg/L opposed to the default mg/L to provide a cleaner presentation of the results (i.e., to limit the use of scientific notation for results much less than 0). Unit changes are noted in PDF edits for the model. The modeling results are presented below:

- *TCE at MW-5* – The 30-year (highest) modeled concentration for TCE is 1 µg/L at the Site boundary. Modelling indicates that the constituent would not leave the Site in groundwater at concentrations greater than the 5 µg/L MSC.
- *Bis(2-ethylhexyl)phthalate at MW-102* – The modeled concentration for bis(2-ethylhexyl)phthalate is 0 µg/L at the Site boundary for each of the timeframes modelled. Modelling indicates that the constituent would not leave the Site in groundwater.
- *Benzo(a)pyrene and benzo(b)fluoranthene at MW-107* – The modeled concentrations for both these constituents indicate that groundwater conditions at the Site boundary would not exceed surface water criteria. The estimated concentrations are many orders of magnitude less than the conservative PADEP Surface Water Criteria for Human Health. At the Site boundary, the predicted concentrations for both these constituents are rounded to zero in the model causing a #DIV/0! error in the spreadsheet when outputting the mass loading estimate.

When combined with the groundwater data at point-of-compliance wells, fate and transport modeling results indicate that COCs are not currently, and are not predicted in the future, to migrate offsite in groundwater.

4.4 Mass Flux Evaluation

This section presents mass flux calculations for BaA, BaP, BbF, and chrysene from the deep groundwater zone around monitoring well PCMW-09D to the Delaware River. As discussed in Subsection 3.2.5.3, these four constituents were identified at concentrations exceeding the residential and/or non-residential groundwater MSCs in the January 31, 2006 groundwater sample collected from monitoring well PCMW-09D.

The mass flux evaluation presented herein uses the January 31, 2006 groundwater data from monitoring well PCMW-09D, Initial RI laboratory soil testing data, Site-specific geologic/hydrogeologic, and streamflow data from the United States Geologic Survey (USGS). The calculations in this evaluation are considered conservative for several reasons as detailed in the discussion that follows.

The most conservative assumption is that the January 31, 2006 groundwater analytical data from PCMW-09D are representative of the PAH concentrations throughout the deep aquifer at the interface with the Delaware River. These PAHs generally adsorb to organic carbon in soil and are mostly immobile in groundwater. As described in Subsection 3.2.5.3, this is the only monitoring well where PAHs have been detected in deep groundwater at concentrations exceeding the MSCs. These PAHs were not detected above laboratory detection limits in the November 17, 2005 groundwater sample collected from PCMW-

09D. Therefore, the PAH concentrations detected in the January 31, 2006 groundwater sample from PCMW-09D are likely attributed to sample turbidity and biased high. Considering the information above, this assumption represents a worse-case scenario for PAH mass loading into the Delaware River.

4.4.1 Calculation of Groundwater Flow

The first step to calculating mass flux of dissolved phase constituents in the deep aquifer to the Delaware River is to estimate the approximate groundwater flow into the river from the sand and gravel unit using the following equation:

Groundwater flow, QGW, from the Site to the river was calculated using revised Darcy's Law:

$$Q_{GW} = L * B * K * i$$

where:

L = length (perpendicular to groundwater flow) of the sand and gravel unit along the river that is assumed to discharge to the river (length).

B = average saturated thickness of the sand and gravel unit assumed to discharge to the river (length).

K = hydraulic conductivity of the sand and gravel unit (length/time).

I = average horizontal gradient of groundwater in the sand and gravel unit (length/length).

The cross-sectional length selected for this calculation was based on groundwater flow patterns and observed geology at the Site. Groundwater flow patterns in the sand and gravel unit are predominately toward the Delaware River, and it is assumed that all the groundwater flow in the unit discharges into the river. The sand and gravel unit is continuous across the Site. Therefore, the maximum width of the Site of approximately 1,500 feet (the approximate distance tracing the utility corridor from Buckius Street to Orthodox Street) was used for the length of the cross-sectional flow.

The sand and gravel unit at the Site is a confined aquifer. The average distance between the top of the underlying bedrock and the bottom of the overlying organic silt and clay units were used to calculate the average saturated thickness of the sand and gravel unit. The average depth to the top bedrock and to the bottom of the silt and clay unit are 77.50 feet and 30.25 feet bgs respectively[17]. Therefore, the average saturated thickness of the sand and gravel unit is 47.25 feet. Based on the average saturated thickness and the length of the cross-sectional flow, a cross-sectional area of 70,875 square feet was used for these calculations.

Hydraulic conductivity values (K) were calculated for the sand and gravel unit during the Initial RI by sieve (grain) size analysis. The geometric mean K-value from the two sieve size analyses from borings adjacent to PCMW-09D (borings PCMW-10D and PCMW-14D) were used for the groundwater flow calculations. The K value used for the groundwater flow equation was 318 feet/day.

Groundwater elevations measured in wells screened across the sand and gravel unit between October 2005 and March 2006 were used to calculate the hydraulic gradient of the deep unit. The average

[17] Observations at PCSB-13 were not used for the mass flux calculation. The deeper bedrock and thicker sand and gravel unit observed at the other wells assumes a larger cross-sectional area of the deep aquifer which biases high the Site's influence on the Delaware River. This a conservative assumption.

groundwater elevation across the five measurement events were used for each well. The gradients (difference in head between two wells divided by the distance between the wells) between PCMW-09D and eight upgradient wells were calculated. The 0.00043 feet/feet average hydraulic gradient of the deep aquifer was used for these calculations.

Using the above-described variables, the groundwater flow rate through the sand and gravel unit to the Delaware River is 9,691 cubic feet/day or 50.3 gallons/minute. Table 4-4 lists each variable and input value used to calculate groundwater flow.

Table 4-4: Site-Specific Parameters

Input Parameters	Input Values
Aquifer Length (ft)	1,500
Aquifer Thickness (ft)	47.25
Aquifer Cross Sectional Area (ft^2)	70,875
Geometric Mean Hydraulic Conductivity (ft/day)	318
Horizontal Hydraulic Gradient (ft/ft)	0.00043
Groundwater Flow to The River (ft^3/Day)	9,691
Groundwater Flow to The River (gallons/minute)	50.3

4.4.2 Mass Flux from Site to Delaware River

The maximum historical PAH concentrations at PCMW-09D were used to calculate mass fluxes for each of the three PAHs. Mass flux was calculated using the following equation:

$$M = Q_{GW} * C_{GW}$$

where:

Q_{GW} = groundwater flow from the Site into the Delaware River (calculated above) (volume/time).

C_{GW} = maximum groundwater PAH concentration in PCMW-09D.

The PAH groundwater concentrations from PCMW-09D and calculated mass fluxes are presented in Table 4-5 below.

Table 4-5: PAH Mass Flux

Constituent	PCMW-09D 1/31/06 (µg/L)	Mass Flux (pounds/day)
Benz(a)anthracene	2.0	0.0012
Benzo(a)pyrene	1.7	0.0010
Benzo(b)fluoranthene	2.5	0.0015
Chrysene	2.0	0.0012

4.4.3 Mixing Concentration

The following equation was used to calculate the mixing concentration, C_{Riv} (mass/volume):

$$C_{Riv} = M / (Q_{GW} + Q_{Riv})$$

where:

M = the mass flux of each constituent (mass/time)

$\boldsymbol{Q_{GW}}$ = the groundwater flow rate to the river through the sand and gravel unit along the cross-sectional area (volume/time)

$\boldsymbol{Q_{Riv}}$ = the river flow rate adjacent to the Site (volume/time)

As a conservative measure, the 7Q10 flow for the river was used for Q_{Riv}. The 7Q10 is the lowest 7-day average flow that occurs (on average) once every 10 years. The USGS software SWToolbox was used to calculate the 7Q10 based on the USGS gauging data recorded from February 1, 1913 through February 8, 2022 at the Delaware River gauging station in Trenton, New Jersey. The software calculated the 7Q10 at the Trenton, New Jersey location at 1,771 cubic feet per second (cfs). Per the procedure described in the EPA Low Flow Statistics Tools Handbook (EPA, 2018), Arcadis calculated the 7Q10 flow (volume/time) of the section of the Delaware River adjacent to the Site using the following equation:

$$7Q10_{Riv} = 7Q10_{Gauge} * \frac{A_{Riv}}{A_{Gauge}}$$

where:

$\boldsymbol{7Q10_{Riv}}$ = the 7Q10 discharge of the river adjacent to the Site (volume/time)

$\boldsymbol{7Q10_{Gauge}}$ = the 7Q10 discharge of the river adjacent to the Site (volume/time)

$\boldsymbol{A_{Riv}}$ = Drainage area of the river adjacent to the Site (area)

$\boldsymbol{A_{Gauge}}$ = Drainage area of the river at the gauging station (area)

Based on drainage areas of 7,920 and 6,780 miles^2 for the area adjacent to the Site and the gauging station respectively, the 7Q10 value of the section of the river adjacent to the Site is 2,068 cfs.

The calculated mixing concentrations are presented in Table 4-6 along with comparisons to the surface water criteria presented in Section 4.2.

Table 4-5: Delaware River Mixing Calculations

Constituent	PADEP Human Health Surface Water Criteria	DRBC Water Quality Criteria		Delaware River Mixing Concentration
		Marine Objective - Fish Ingestion Only	Max	
Benz(a)anthracene	0.001	0.18	- -	0.00011
Benzo(a)pyrene	0.0001	0.018	0.2	0.000092
Benzo(b)fluoranthene	0.001	0.18	- -	0.0014
Chrysene	0.12	18	- -	0.00011

Notes: All concentrations reported in µg/L. "- -" indicates constituent not listed in guidance document.

4.4.4 Conclusion

Mixing concentrations of BaA, BaP, BbF, and chrysene were calculated using groundwater flow data, mass fluxes, and 7Q10 flow of the Delaware River. The calculations were based on onsite and offsite groundwater sampling data. Based on calculations and comparisons presented in Table 4-5, actual mixing concentrations for the selected PAHs are below the applicable and conservative surface water standard values. Therefore, PCC proposes to prepare an Act 2 Final Report for groundwater upon approval of this RI Report and Cleanup Plan.

5 CONCEPTUAL SITE MODEL

This section presents the CSM which has been prepared in accordance with the PA Code Title 25, Chapter 250.404 and follows EPA (1989) guidance. The CSM outlines potential source areas, release and transport mechanisms, environmental media that currently show or may show the presence of COCs in the future, possible exposure pathways to potentially exposed human populations, and potential exposure routes. It considers current Site conditions and surrounding land use, as well as the most likely future conditions upon redevelopment for future commercial or industrial land use.

The primary exposure source is onsite soil that contains COCs common in urban/historic fill and/or residual COCs from former Site-related activities. Figure 33 contains a graphic illustration of the CSM for the Site. As shown in the figure, the primary exposure source is onsite soil. Table 22 includes information on pathway elimination for both current and future Site receptors.

A complete exposure pathway is composed of the following four elements (EPA 1989):

- A source and mechanism of COC release.
- Retention or transport media.
- A potential contact point with an affected medium.
- An exposure route (i.e., ingestion, dermal contact, inhalation) at the potential contact point.

If any of the elements are or will be missing, the exposure pathway is incomplete, and there is no potential for exposure or health risk. This is the premise behind “pathway elimination” cleanup strategy. Exposure pathways are depicted as potentially complete where it has not been confirmed that any of the elements of an exposure pathway are missing.

5.1 Current Exposure Pathways

The Site is currently vacant; therefore, based on the current use of the Site there are no potential human receptor populations that may contact COCs onsite. In the event that the Site is redeveloped, and buildings are constructed, there are potentially complete future VI pathways.

5.1.1 Current Soil Pathways

The Site is currently vacant and access to the impacted areas of soil onsite is currently restricted by a chain-link fence that encloses the entire Site. In addition, most of the Site is either densely vegetated (woodlands and mowed grass) or covered by impervious surfaces such as pavement or remaining building structures or features such as concrete pads or footings, which limit the ability of surface soils to be eroded or mobilized and encountered by human receptors.

Outdoor maintenance workers mow herbaceous vegetation at the Site a few times a year and mow to a grass height of 6 inches or higher. Subsurface utility work is not anticipated because subsurface utilities were disconnected as part of Site demolition activities, except for the Upper Delaware Collecting Sewer which extends beneath the Site and can be accessed from a manhole near the western end of the Site. Additionally, any Site workers must follow the HASP and use personal protective equipment (PPE) that will mitigate soil exposure pathways. Site worker (both outdoor worker and utility worker) exposure to soils

are eliminated by the presence of vegetation and impervious surfaces, as well as the adherence of safe work practices as prescribed in the HASP. Therefore, there are no potential receptors for onsite soil dermal contact or ingestion and this pathway is incomplete.

5.1.2 Current Groundwater Pathways

Drinking water in Philadelphia is solely sourced from the Delaware and Schuylkill Rivers. Groundwater is not used for drinking water in Philadelphia. As shown in Figure 13 and presented in Appendix J, there are no active groundwater wells at the Site or in the immediate Site area. Therefore, the current exposure pathway for groundwater as potable water or industrial water is incomplete. In the future, as part of the Site redevelopment, institutional controls will be established that prohibit groundwater use.

There are no groundwater seeps at the Site, so there is no pathway to groundwater exposure unless intrusive work is performed below the water table. There is only one active manhole which provides access to the Upper Delaware Collecting Sewer. All other utilities were disconnected during previous Site demolition/decommissioning activities. The Upper Delaware Collecting Sewer does not collect any storm water from the Site. No installation, maintenance, or repair of underground utilities is anticipated under current conditions.

5.1.3 Current Vapor Intrusion Pathways

There are no buildings currently onsite; therefore, the current VI pathways via onsite groundwater and soil are incomplete.

5.2 Future Exposure Pathways

The following hypothetical potential human receptor populations were identified and the potential for their exposure was evaluated under the future exposure scenario:

- Construction workers
- Utility workers who may install or maintain utilities on the Site
- Outdoor workers
- Building occupants and indoor workers
- Residents, if Site use is not restricted
- Recreational users
- Trespassers

Biota may be exposed to COCs in surface soil (top 2 feet) via direct contact, ingestion, inhalation, and food-web transfer. Potential risks from inhalation or dermal exposures are typically not quantified for wildlife because of the lack of acceptable methodology to quantify exposure.

5.2.1 Future Soil Pathways

Future exposure pathways via direct contact with soils for incidental ingestion, dermal contact and/or inhalation of fugitive dusts or COCs volatilized from soils would be complete in scenarios where the

Cleanup Plan is not implemented. Future soil exposure pathways would include the following individuals who may encounter COCs in surface and subsurface soil via incidental ingestion, dermal contact, and the inhalation of VOCs and/or particulates in windblown soil:

- Residents.
- Recreational users.
- Building occupants and indoor workers.
- Construction and utility workers.
- Outdoor workers (such as lawn maintenance personnel).
- Trespassers.

5.2.2 Future Groundwater Exposure Pathways

The depth to groundwater ranges from approximately 2 to 15 feet bgs across the Site, except at one isolated location, PCMW-12S, where groundwater (likely perched) was observed at a depth of 0.78 feet bgs. Therefore, similar to future soil exposure pathways, future exposure pathways via direct contact with groundwater for incidental ingestion, dermal contact, and/or inhalation of COCs volatilized from groundwater may potentially exist for future residents, construction workers, and utility workers. There is a complete exposure pathway for utility workers and residents who may be exposed to COCs in shallow groundwater, via dermal contact and inhalation of VOCs while performing utilities installation or maintenance on the Site or using groundwater (without restrictions or treatment) for drinking water. Volatile constituents in groundwater may volatilize into utility trenches. Construction workers are potential candidates for exposure to COCs in groundwater, if excavation dewatering is performed during Site redevelopment. If fill material were to be placed in areas of the Site with a shallow groundwater table prior to building construction, this may limit excavation below the water table (e.g., for installation of utilities).

As previously discussed, groundwater is not used as potable water in Philadelphia. However, a potential future pathway is conservatively evaluated because an official Non-Use aquifer determination has not been made for the immediate area of the Site or Philadelphia. Since there is no official non-use aquifer determination for portion of the city around the Site, this pathway hypothetically could be considered potentially complete in the future in the absence of an environmental covenant restricting groundwater use for the following receptors:

- Indoor workers via ingestion, dermal contact, or inhalation if potable wells are installed in the absence of an environmental covenant restricting groundwater use onsite.
- Hypothetical future onsite residents via ingestion, dermal contact, and inhalation of groundwater in the absence of a deed restriction restricting the property to industrial/commercial use.

5.2.3 Future Vapor Intrusion Pathway

Based on the results of the RI Activities discussed in Section 3, in potential VI source areas (i.e., Areas 1 through 4, and select locations in the center of the Site and in the northern portion of the Fuel Blending Area), there could be complete exposure pathways for indoor workers via VI exposure from soil and groundwater if future buildings are constructed onsite without some mitigation, although these risks may

be over-predicted (see Section 3.2.6). In these areas, the VOC concentrations identified in vadose zone soil and groundwater at the Site may have the potential to cause VI concerns. Therefore, future buildings will be evaluated prior to construction to determine if a VI risk assessment and/or VI mitigation system is necessary. The results of a VI risk assessment and/or additional soil gas characterization may demonstrate or eliminate the need to install a VI mitigation system in certain areas. Alternatively, a VI mitigation system (e.g., vapor barrier) may be installed to address the potential VI pathway in lieu of performing a risk assessment. Implementation of institutional controls will provide assurance that the VI pathway is eliminated in future Site development.

6 ECOLOGICAL SCREENING

The ES evaluates potential exposure of environmental receptors at the Site. It focuses on potentially complete exposure pathways for terrestrial receptors that may be impacted by constituents of potential ecological concern (COPECs). The ES evaluates environmental conditions at the Site in accordance with the PADEP Ecological Screening Process presented in the PADEP Land Recycling Program Technical Guidance Manual (PADEP 2021). The procedure follows EPA interim final guidance on *Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments* (EPA 1997). This procedure uses eight discrete steps, with a decision option after Step 2 or Step 7 to determine whether a substantial impact has resulted from regulated substances. The information provided in this ES includes Step 1 (Fundamental Concepts) and Step 2 (Preliminary Exposure Estimate and Risk Estimate). The ES supports the use of pathway elimination as part of the scientific/management decision (SMD) concluded after Step 2. No further ecological evaluation is recommended beyond Step 2 as explained below. Under the future CSM, capping soils impacted by COPECs during site redevelopment would effectively eliminate potential ecological exposure at the Site. The requirements for Step 1 are provided in the section below, and the following section presents the findings of Step 2.

6.1 Step 1 – Fundamental Concepts

Step 1 describes the fundamental components of the Site and the environmental setting. To support Step 1, a Site visit was conducted, online ecological databases were reviewed, and appropriate regulatory agencies were consulted (via the Pennsylvania Natural Diversity Inventory receipt). Step 1 evaluates the site environmental settings and potential species and habitats of concern. The CSM is developed as part of Step 1.

6.1.1 Site Environmental Setting – Vegetation, Wetland, and Aquatic Communities

The Site environmental setting, including Site location, history, geomorphology, hydrogeology, and characterization are provided in Sections 2 and 3 of this report. The supplemental information below is provided to support the ES. It describes the vegetation and wetland communities in more detail.

Signs of observable impacts to environmentally sensitive natural areas or species were not present during the Site reconnaissance. No indication of stressed vegetation, seeps, free-product discharges, or short-term effects on biota were observed.

The vegetative communities that exist within the project area consist mostly of early successional grasslands which are dominated by invasive species, with intermittent hardwood forest mix scattered throughout the Site. Dominant vegetation within the project area includes mugwort (*Artemisia vulgaris*), orchard grass (*Dactylis glomerate*), big bluestem (*Andropogon gerardii*), eastern cottonwood (*Populus deltoides*), common reed (*Phragmites australis*), stickywilly (*Galium apartine*), and poison ivy (*Toxicodendron radicans*). A listing of vegetative species observed throughout the plant communities found at the Site is provided in Table 23.

A wetland delineation was performed at the Site on May 1, 2019. Wetlands and waters of the U.S. were identified in the field using the 1987 “U.S. Army Corps of Engineers Wetland Delineation Manual”

(USACE Manual) and the associated regional supplement for the Atlantic and Gulf Coastal Plain Region (USACE 2010). Areas within the defined project limits exhibiting wetland characteristics were flagged in the field with sequentially numbered survey tape or pin flags. The flag locations were surveyed with a handheld Trimble Geo 7X GPS. The hydrology, soils, and vegetation conditions were documented.

Six isolated wetland complexes were identified at the Site. These wetland features receive hydrology primarily from surface water flows due to their low topographic position within the landscape. Surface hydrology onsite is controlled by fill material historically placed onsite resulting in a shallow impermeable layer ranging from approximately 8 to 14 inches below the surface. Four of the wetlands are present on the western portion of the Site within a mosaic of upland and palustrine forested and emergent wetlands. A fifth palustrine emergent wetland exists as an isolated depression within the upland topography and located in the eastern portion of the Site. A sixth wetland is located within a man-made ditch associated with a retired railroad on the eastern portion of the Site. A figure showing the location of wetlands and adjacent uplands is provided in Figure 34.

Shoreline habitat at the Site consists of both man-made debris (e.g., brick, fill), former bulkhead materials, old dock cribbing, and a section of mudflat to the northern portion of the site within a man-made cove. The shoreline habitat outside of the mudflat is primarily composed of rock and gravel, with various fill materials and scatted industrial debris. The exposed mudflat is primarily covered in surface silts and no submerged aquatic vegetation was observed. Spatterdock (*Nuphar advena*) was found sparsely within the northernmost portion of the inlet feeding the cove. These shoreline habitats may provide potential habitat to common Delaware River freshwater and migratory aquatic and wildlife species (PEC 2009, PARS, 2022) such as:

- Fish species: alewife (*Alosa pseudoharengus*), blueback herring (*Alosa aestivalis*), white perch (*Morone americana*), yellow perch (*Perca flavescens*), mummichog (*Fundulus heteroclitus*), eastern silvery minnow (*Hybognathus regius*), American eel (*Anguilla rostrata*), white catfish (*Ameiurus catus*)
- Invertebrates: eastern elliptio (*Elliptio complanata*), Asian clam (*Corbicula fluminea*)
- Amphibians and reptiles: green frog (*Lithobates clamitans*), northern water snake (*Nerodia sipedon sipedon*), snapping turtle (*Chelydra serpentina*)
- Shoreline and Wading birds: great blue heron (*Ardea herodias*), spotted sandpiper (*Actitis macularius*), ring-billed gull (*Larus delawarensis*)
- Waterfowl: common merganser (*Mergus merganser*), mallard (*Anas platyrhynchos*)
- Mammals: raccoon (*Procyon lotor*), red fox (*Vulpes vulpes*)

6.1.2 Potential Species and Habitats of Concern

As introduced in Section 3.1.3, an evaluation of the potential occurrence of threatened, endangered, and/or special concern species or resources onsite was initiated through consultation with PADNR and USFWS.

The PNDI search was submitted online through the PADNR which identified the Delaware River Shoreline as a Natural Heritage Area. This habitat indicated potential species of concern "…are only found in specific areas where tidal habitat remains protected and in a few of the more naturally managed park areas." A formal review for the Site was provided by PADNR on October 2, 2019. From review of

PNDI records, the PFBC[18] indicated one threatened species of turtle (northern red-bellied cooter, *Pseudemys rubriventris*) may potentially utilize habitats occurring at the Site. PFBC indicated two unnamed endangered aquatic species. PFBC concluded in their October 30, 2019 response letter that the current Site conditions pose no adverse impacts to the species of concern. Further consultation with PFBC, via e-mail (February 2, 2022) from Arcadis, and their subsequent February 7, 2022 response letter indicated the endangered species as Atlantic sturgeon and shortnose sturgeon. Further discussion of these two species and their potential to utilize the site shoreline habitat is provided in Subsection 6.1.2.2. No other species of concern were indicated by PADNR agencies or USFWS. In their February 7, 2022 response, PFBC concluded that there will be no adverse impact to these sturgeon species from the site cleanup and identifies recommended best management practices (BMPs) to prevent potential sediment releases or changes to water quality in the waterway. The PADNR and PFBC consultation correspondence (including the 2022 correspondence) is provided in Appendix M. Following Site development, species or habitats of concern will be further protected from remaining environmental residuals at the Site.

6.1.2.1 Northern Red-Bellied Cooter Habitat Evaluation

On November 12, 2019, Arcadis performed a cover-type and habitat evaluation, searching for potential northern red-bellied cooter habitat. Observations were documented in a field book and accompanied by a photograph log (Appendix N). Active red-bellied cooters and indications of this species' presence (e.g., nests) were not identified during the survey. Site observations indicated limited basking habitat areas along the near-shoreline tidal areas. Based on the nature of the historic fill found throughout the surface layer of the upland portions of the Site, suitable nesting habitat of sandy and silty loam soils was not identified.

Subsequent ecological evaluation performed by a consultant for BPB [Herpetological Associates, Inc.] is summarized in a Phase 1 Aquatic and Nesting Habitat Survey Report. Herpetological Associates, Inc. performed the habitat survey on May 25, 2021, during the cooter's nesting season. The evaluation followed the stepwise process outlined in PADEP Land Recycling Program Technical Guidance Manual and EPA interim final guidance. Active red-bellied cooters and indications of this species' presence (e.g., nests) were not identified during the survey. The evaluation revealed potential core aquatic habitat within the Delaware River and limited basking habitat in near-shore areas. It identified three limited upland areas that are potentially suitable nesting habitat areas. These limited nesting areas appear to have marginal value and limited exposed sands. Use of pre-construction BMPs, such as turtle exclusion fencing along the entire eastern limit of redevelopment disturbance will prevent turtle nesting within active construction areas. An additional BMP, such as performing construction after the nesting season, may be used when capping the eastern portion of the former fuel blending area (i.e., the area between the railroad tracks and the Delaware River). The Phase 1 Aquatic and Nesting Habitat Survey Report is provided in Exhibit 2.

6.1.2.2 Sturgeon Habitat Evaluation

Both sturgeon species are classified as diadromous, which means that they use both fresh and saline waters during their life span. The following provides life histories and potential usage of the Delaware River habitats and likelihood to utilize the site shoreline (i.e., limited mudflat habitat).

[18] The PFBC has jurisdiction for aquatic species in Pennsylvania.

Atlantic sturgeon are hatched in the freshwater of rivers, and head out to sea as sub-adults, and return to their birthplace to spawn, or lay eggs, when they reach adulthood (ASSRT 2007). Atlantic sturgeon typically spawn between April and May in the mid-Atlantic region (CWFNJ 2022a). In the Delaware River, Atlantic sturgeon are known to spawn as far upstream as Levittown to near Morrisville, PA (CWFNJ 2022a), which are approximately 17 to 22 nautical miles upstream from the Site. Within rivers, the prime spawning areas consist primarily of cobble gravel, coarse sand, and bedrock outcrops, which occur in rapids (ASMFC 2022). This habitat provides Atlantic sturgeon with well-oxygenated water, clean substrates for egg adhesion, crevices that serve as shelter for post-hatch larvae, and macroinvertebrates for food (ASMFC 2022). After spawning occurs, adults migrate back out to brackish and saline coastal waters. Post-larval and juveniles (those less than 2 years old) migrate down or inhabit estuarine waters, with the stretch of river between the Marcus Hook Anchorage and the mouth of the Schuylkill River, PA known as a critical concentration area (CWFNJ 2022a). The upper most portion of this rearing habitat area is approximately 11 nautical miles south of the Site.

Juveniles have been found mostly over sand substrates, but also over rocks, cobble, and mud (ASMFC 2022). Juveniles tend to congregate in deep waters, particularly in the summertime (ASMFC 2022). Young sturgeon primarily use brackish water habitats and large juveniles are found in areas where the salinity exceeds 3 parts per thousand (ppt) (ASMFC 2022). Dissolved oxygen is a very important water quality parameter for Atlantic sturgeon because they show unusually high susceptibility to low oxygen (ASMFC 2022).

Shortnose sturgeon can be classified more specifically as a freshwater amphidromous species. This means that it spawns and remains in freshwater for most of its life cycle but spends some of their time in saline waters (CWFNJ 2022b). River mouths, tidal rivers, estuaries, and bays serve as prime habitat for the shortnose sturgeon (CWFNJ 2022b). Spawning typically occurs during late March into May (depending on the water temperature), when adults move to the Delaware River's non-tidal water near Scudder Falls, just north of Trenton, NJ (NJFW 2005), approximately 22 nautical miles upstream from the Site. Adults leave the spawning grounds while the young remain in the upper freshwater portion of the river for up to two weeks, then drift downstream until they reach a slow flow area suitable for feeding (NJFW 2005). Their travel continues downstream until they reach the adult foraging area in the lower part of the river (NJFW 2005), which is the tidal portion of the river near Philadelphia where they remain through May (CWFNJ 2022b). By the end of June, the sturgeon may move upstream to the area near Trenton, NJ and remain there for the summer and winter (CWFNJ 2022b). Additionally, more recent studies suggest that some shortnose sturgeon are using a second overwintering area, located in the lower portion of the river below Wilmington, DE (CWFNJ 2022b). In addition, results from a preliminary tracking study of juvenile shortnose sturgeon suggest that the entire lower Delaware River from Philadelphia (approx. rkm1 161) to below Artificial Island (rkm 79) may be used as an overwintering area by juvenile shortnose sturgeon (ERC 2006). Habitat utilization found from the study capture areas used to collect juvenile shortnose sturgeon, indicated preference to deeper stratum (i.e., 8.1-15.2 meters) (ERC 2006).

Based on the sturgeon species use of the Delaware River, adult and juvenile movements, and habitat utilization information, the potential for usage of the mudflat in front of the Site is expected to be insignificant. In addition, since in-water construction activities are not planned for the site development, potential impacts to the species are not expected.

6.1.3 Ecological Conceptual Site Model

The CSM identifies exposure pathways and potential receptor populations that may be exposed to COPECs in environmental media. Potential ecological receptors can be exposed directly or indirectly (i.e., through the food web) to COPECs if a complete exposure pathway exists. A complete exposure pathway includes the following elements: (1) constituent source; (2) release mechanism to the environment; (3) transport medium; (4) receptor contact at the exposure point; and (5) exposure route. If an element is missing, the exposure pathway is considered incomplete and is generally excluded from evaluation. Important features that need to be considered when evaluating whether an exposure pathway is complete include the COPEC concentrations in different media and their respective locations, the physical and chemical properties of the COPECs, and the locations of environmentally sensitive areas.

The CSM identifies ecological receptors and potential exposure pathways (e.g., ingestion of constituents in soil or food, direct contact with impacted media). For wildlife (i.e., birds and mammals), oral exposures are predominantly considered. Potential risks from substances via inhalation or dermal exposures are typically not quantified for wildlife because of the lack of acceptable methodology to quantify exposure.

Preliminary ecological exposure pathways were evaluated during the Site visits. No visible seeps and/or springs were observed within the upland portion of the Site. No significant surface water drainages are present. No significant surface erosion patterns in surface soils are present. Surface water runoff from the Site into the river is also limited by the relatively flat topography and vegetated surfaces near the shoreline, which also protect river surface water quality. Therefore, shallow groundwater, surface water, and subsurface soil (defined as greater than 2 feet bgs) are not considered complete exposure pathways and are not part of the CSM, leaving surface soil as the only potential pathway. Additionally, an evaluation of COPECs that may have migrated from upland source areas to sediment were not evaluated as part of the CSM because probing revealed no observable impacts to the sediment from organics. Inorganics found in sediments are expected to be consistent with Delaware River nominal background concentrations within this industrialized section of the tidal river. As shown in the CSM diagram (Figure 35), only terrestrial habitats were evaluated per existing complete or potentially complete exposure pathways from surface soils.

Under future conditions, it is expected that sources of environmental contaminants will be isolated or removed during redevelopment, thereby mitigating potential ecological exposure pathways.

6.1.3.1 Ecological Receptors

Limited wildlife species (i.e., ecological receptors) were observed onsite. Based on the disturbed nature of the habitat and industrial setting surrounding the Site, the primary wildlife species that may utilize the Site include those common species adapted to fragmented habitats found in urban landscapes (e.g., common grackle, crow, deer mice, house finch, meadow voles, mourning dove, rabbits, raccoons, robins, squirrels, and woodchucks). Species observed during the Site visits are summarized in Table 24. The following ecological receptor groups are identified for evaluating potential exposure within the current CSM:

- Plants
- Soil invertebrates
- Wildlife (e.g., American robin, meadow vole, short-tailed shrew, red fox, red-tailed hawk)

6.1.3.2 Ecological Exposure Pathways

Potential exposure routes associated with surface soil, as defined as the top 2 feet within the PADEP Ecological Screening Process, include direct contact, ingestion, inhalation, and food-web transfer. The COPECs identified in soil each possess varying degrees of potential for exposure depending on chemical-specific parameters. The following complete or potentially complete exposure pathways were identified:

- Direct contact with COPECs in soil is a potentially complete exposure pathway for wildlife and a complete exposure pathway for terrestrial plants and soil invertebrates. However, soil chemistry and nature of historical fill components may limit the potential bioavailability for some COPECs. Wildlife may have direct exposure to soil while burrowing and/or preening; however, fur or feathers greatly reduces the potential exposure.
- Incidental ingestion of COPECs in soil is a potentially complete exposure pathway for soil invertebrates and a complete exposure pathway for wildlife. Soil-bound COPECs may be ingested during foraging or grooming activities.
- For COPECs in soil that are potentially bioaccumulative, food-web transfer is a potentially complete exposure pathway. These COPECs can accumulate in soil invertebrates and plants, potentially allowing constituents to accumulate in lower trophic level organisms. In turn, mammalian and avian wildlife could consume these COPECs in their diet.

Under the future CSM, exposure routes associated with impacted surface soil would be addressed during the remedial design process and subsequent redevelopment phase, thereby eliminating the current exposure pathways.

6.2 Step 2 – Preliminary Exposure Estimate and Risk Assessment

Step 2 is the Preliminary Exposure Estimate and Risk Estimate. Under Step 2, surface soil data are compared to ecotoxicological screening benchmarks (ESBs) to evaluate the exposure and risk to ecological receptors.

Surface soil data are compared to ESBs to evaluate the exposure and risk to ecological receptors. The ecological screening process identified a total of 62 potential COPECs, including 17 metals (including cyanide), 6 pesticides, 9 VOCs, 26 SVOCs (primarily PAHs and phenol), and PCBs. The initial COPEC screening of available surface soil data collected at the Site is provided in Appendix O.

A risk characterization was conducted by comparing COPEC exposure point concentrations (EPCs) to conservative ESBs. The derived value is identified as a hazard quotient (HQ). An HQ less than or equal to 1 indicates the potential for adverse effects to ecological receptors is absent or minimal and additional evaluation is likely not necessary. An HQ greater than 1 indicates a potential for adverse effects to ecological receptors may exist and that additional evaluation of potential risks may be necessary. Using the ESBs derived for plants, soil invertebrates, and wildlife the highest HQs for COPECs were found for metals (aluminium, chromium, cyanide, iron, lead, mercury, and zinc), individual PAHs (anthracene, benzo(a) pyrene, fluoranthene, phenanthrene, and pyrene), and total PCB Aroclors. For each COPEC identified, the HQ values is provided in Appendix O.

6.3 Conclusions

Under the PADEP ES Process framework, a SMD is made to determine if:

1. The ES should be continued to develop a site-specific clean-up goal, or to reduce uncertainty in the evaluation of risk and impact.
2. The preliminary screening is adequate to determine that no substantial risk exists.
3. There is substantial impact and remediation can eliminate or reduce exposure to an acceptable level.

The results of the ES indicate potentially complete exposure pathways for ecological receptors exposed to COPECs in surface soil. However, through pathway elimination as provided in the Cleanup Plan, future ecological exposure would generally be eliminated. Therefore, no further ecological evaluation is recommended or required to reach this remedial decision.

7 PUBLIC BENEFITS TO REMEDIATION AND REUSE

The Site is ideal for a variety of commercial or industrial uses and Site development will benefit the public in various ways. The Site is being considered for commercial warehousing (see preliminary plans in Exhibit 1). The primary economic and health benefits gained by Site redevelopment are directly related to returning the property to a functional use. Site development will generate the following benefits to the Bridesburg area:

- Increased employment opportunities for the Bridesburg borough and the surrounding communities. Per a September 2019 US Bureau of Labor Statistics Report, Philadelphia County has the highest unemployment rate in the Philadelphia-Camden-Wilmington Metropolitan Area.
- Increased revenues to the Bridesburg borough. The Site is in a Federally Qualified Opportunity Zone. Opportunity Zones are a community investment tool established by Congress in the Tax Cuts and Jobs Act of 2017 to encourage long-term investments in low-income urban and rural communities nationwide.

8 REMEDIAL INVESTIGATION CONCLUSIONS

The RI was undertaken to assess the nature and extent of Site-related environmental impacts remaining after the extensive soil remediation performed as part of the RCRA closure from 1982 to 1994. The RI evaluates the risks posed to human health and the environment by those remaining impacts that will be addressed in the Cleanup Plan.

The Initial RI activities were performed by PS&S from 2003 through 2006. Based on a review of the Initial RI results, Arcadis performed a supplemental investigation in 2018 and 2019 to: (1) confirm that Site soil conditions have not significantly changed since samples were collected as part of the Initial RI activities; (2) fill identified data gaps from previous investigation and remedial actions for purposes of developing a Cleanup Plan; and (3) assess current groundwater conditions. The Site is unoccupied, and no Site use or redevelopment activities were performed between the Initial RI and the SRI. When combined, work activities performed for the RI consisted of the following:

- Excavating 197 test pits and collecting soil samples from 145 test pits.
- Installing 179 soil borings and collecting soil samples from 150 soil borings.
- Installing and sampling 33 shallow groundwater monitoring wells, 13 deep groundwater monitoring wells, and 7 hydropunch borings.
- Analyzing approximately 540 soil samples and 112 groundwater samples for a combination of TCL VOCs, TCL SVOCs, PP metals, TAL inorganics, cyanide, pesticides, and PCBs.
- Collecting 21 soil gas samples and one ambient air.
- Performing sediment probing in the Delaware River and a visual reconnaissance of the shoreline for sheens, tar-like material, elevated photoionization detector readings, or other observable indications of Site-related impacts.

The RI results provide adequate data coverage across the Site to: (1) identify and delineate the environmental conditions; (2) support a CSM; (3) develop a cleanup plan; and (4) support Site redevelopment. Based on the RI results, site-related impacts are relatively limited to the center of the Site and at isolated locations on the remainder of the Site.

Based on observations of soil samples recovered from soil borings across the Site, there are three hydrogeological units above weathered metamorphic schist bedrock. Nearest the ground surface is a layer of man-made fill materials that generally meets the description of historic fill as defined in PADEP's Management of Fill Policy (Document #258-2182-773) dated January 1, 2020. The fill layer is where most soil samples were collected and where most groundwater wells are screened. A confining unit of silt and clay material underlies the fill materials and underneath that confining unit is a sand and gravel unit. Groundwater at the Site is separated into a shallow and deep zone by the silt and clay layer. The shallow groundwater zone was formed by the historical placement of fill above native surface soils. Due to the presence and characteristics of the historic fill, it is not suitable for use.

Based on the RI results, several PAHs and lead were detected throughout the Site in surface soil at concentrations typical of urban/historic fill and, at select locations, at concentrations exceeding the non-residential direct contact MSCs. 1,1-Biphenyl, 2-methylnaphthalene, and naphthalene have been identified in subsurface soil at the Site at concentrations exceeding non-residential direct contact MSCs.

Soil containing viscous tar, oil-like material, and solidified tar was observed at isolated and limited locations at the Site. Visually impacted material was generally collocated with locations exhibiting SVOCs at concentrations greater than non-residential direct contact MSCs. These limited areas have been delineated. Additionally, select VOCs, SVOCs, and inorganics were detected in soil at concentrations greater than non-residential soil-to-groundwater MSCs. Groundwater monitoring wells were installed and sampled within and downgradient of areas with soil impacts to assess the potential impact to groundwater from soil.

Outside of these isolated areas, shallow groundwater is relatively unimpacted by former Site operations. In the shallow zone, existing groundwater conditions are typical of groundwater in urban/historic fill. Groundwater impacts were generally not observed in point-of-compliance wells downgradient from impacted areas, and fate and transport modelling indicates that the limited residual groundwater impacts in the shallow groundwater zone are not migrating offsite. The absence or limited presence of site-related constituents in deep groundwater at concentrations exceeding MSCs, coupled with the mass flux evaluation, show that groundwater from the Site is not adversely affecting river surface water quality.

Taken together, the RI soil and groundwater analytical results indicate the presence of stable, residual impacts limited to defined areas within the boundaries of the Site. Based on these RI findings, PCC will prepare an Act 2 Final Report for groundwater upon PADEP's approval of the RICP.

VOCs were not detected above the screening values for non-residential, sub-slab, soil gas samples collected during the Initial RI. Additionally, a comparison of existing unsaturated soil and groundwater data to residential VI standards from the TGM indicate there are no potential VI concerns for the residential properties adjacent to the Site. However, the existing unsaturated soil and groundwater results indicate the potential for VI in future Site buildings.

The COCs for the Site are listed in Table 8-1 below.

Table 8-1: COC For Each Environmental Medium

Analyte	CAS Number	Surface Soil COC (Yes/No)	Subsurface Soil COC (Yes/No)	GW COC (Yes/No)	VI COC (Yes/No/na)
Volatile Organic Compounds					
Benzene	71-43-2	No	**Yes**	**Yes**	**Yes**
Chlorobenzene	108-90-7	No	**Yes**	No	No
Dichloromethane	75-09-2	No	**Yes**	No	No
Ethylbenzene	100-41-4	No	**Yes**	No	No
Methyl-tert-butylether	1634-04-4	No	No	**Yes**	**Yes**
Styrene (Monomer)	100-42-5	No	**Yes**	No	No
Tetrachloroethene	127-18-4	No	No	**Yes**	No
Toluene	108-88-3	No	**Yes**	No	**Yes**
Trichloroethene	79-01-6	No	No	**Yes**	**Yes**
Semi-Volatile Organic Compounds					
1,1-Biphenyl	92-52-4	No	**Yes**	**Yes**	**Yes**
2,4-Dinitrotoluene*	121-14-2	No	No	**Yes**	No
2-Methylnaphthalene	91-57-6	**Yes**	**Yes**	**Yes**	**Yes**

Analyte	CAS Number	Surface Soil COC (Yes/No)	Subsurface Soil COC (Yes/No)	GW COC (Yes/No)	VI COC (Yes/No/na)
4-Methylphenol	106-44-5	No	**Yes**	No	No
Anthracene	120-12-7	No	**Yes**	No	No
Benz(a)anthracene	56-55-3	**Yes**	**Yes**	**Yes**	na
Benzo(a)pyrene	50-32-8	**Yes**	**Yes**	**Yes**	na
Benzo(b)fluoranthene	205-99-2	**Yes**	**Yes**	**Yes**	na
Benzo(g,h,i)perylene	191-24-2	No	**Yes**	**Yes**	na
Benzo(k)fluoranthene	207-08-9	**Yes**	**Yes**	**Yes**	na
bis(2-Ethylhexyl)phthalate	117-81-7	No	No	**Yes**	na
Carbazole	86-74-8	No	**Yes**	**Yes**	na
Chrysene	218-01-9	**Yes**	**Yes**	**Yes**	na
Dibenz(a,h)anthracene	53-70-3	**Yes**	**Yes**	**Yes**	na
Dibenzofuran	132-64-9	No	**Yes**	**Yes**	na
Fluoranthene	206-44-0	No	**Yes**	No	na
Fluorene	86-73-7	No	**Yes**	No	na
Indeno(1,2,3-cd)pyrene	193-39-5	**Yes**	No	**Yes**	na
Naphthalene	91-20-3	**Yes**	**Yes**	**Yes**	**Yes**
Phenanthrene	85-01-8	No	**Yes**	No	na
Phenol	108-95-2	No	**Yes**	No	na
Pyrene	129-00-0	No	**Yes**	No	na
Inorganics					
Antimony	7440-36-0	No	**Yes**	**Yes**	na
Arsenic	7440-38-2	**Yes**	**Yes**	**Yes**	na
Cyanide	57-12-5	No	**Yes**	No	na
Lead	7439-92-1	**Yes**	**Yes**	No	na
Manganese	7439-96-5	No	No	**Yes**	na
Mercury	7439-97-6	No	**Yes**	No	na
Nickel	7440-02-0	No	**Yes**	**Yes**	na
Selenium	7782-49-2	No	**Yes**	No	na
Vanadium	7440-62-2	No	No	**Yes**	na
Pesticides					
Dieldrin*	60-57-1	No	No	**Yes**	na

Notes: na = not applicable analyte does not readily volatilize; GW = groundwater; the inorganics shown for groundwater are based on dissolved-phase analytical results. * = 2,4-Dinitrotoluene and dieldrin concentrations are attributed to background conditions.

Currently, there is no complete exposure pathway to impacted soil and groundwater. Future exposure pathways via direct contact with Site soil or groundwater for incidental ingestion, direct dermal contact and/or inhalation of windblown particulates (fugitive dusts) or volatilized COCs will potentially be complete if no controls are implemented.

Based on the concentrations of select COCs in unsaturated soil and groundwater, there is potential for a complete VI exposure pathway when buildings are constructed onsite in the future. The potentially complete exposure pathway would be for indoor occupants, residents, and workers via VI from soil and

groundwater if future buildings are constructed onsite in the absence of engineering and institutional controls.

The findings of the RI provide the basis for performing a “pathway elimination” cleanup approach.

9 CLEANUP PLAN

The NIR was submitted to PADEP stating that PCC is seeking a release of liability under the Act 2 Site-Specific Standard (Appendix A). Current potentially complete exposure pathways and hypothetical future exposure pathways (without engineering and institutional controls) are presented in Section 5 and summarized in Table 9-1 below:

Table 9-1: Summary of Current and Hypothetical Future Exposure Pathways

Current and/or Future Exposure Pathway	Potential Current Receptors	Potential Future Receptors without Remedy
Incidental Soil and GW Ingestion, Dermal Contact, and Inhalation of VOCs and Particulates	1. Utility/Construction Worker 2. Outdoor Worker	1. Resident 2. Recreational User 3. Building Occupant 4. Utility/Construction Worker 5. Outdoor Worker 6. Trespasser
Potable Water Ingestion and Use	None	1.Resident 2.Building Occupant 3.Indoor Worker
Soil Vapor Intrusion	None	1. Resident 2. Building Occupant 3. Indoor Worker

Based on the characterization data for soils and groundwater presented in Section 3 and review of migration pathways and potential receptors, the remedial action objective for the Site is to protect human health by eliminating identified exposure pathways with soils and groundwater impacted by VOCs, SVOCs, and inorganics. The Cleanup Plan:

- Provides methods to achieve pathway elimination for impacted soils using engineering controls (e.g., capping of soils with structures, roadways, parking lots, and landscaping).
- Outlines procedures and plans to allow for safe execution of proposed Site redevelopment activities.
- Specifies institutional controls to be implemented (i.e., Environmental Covenants, restrictions, or other appropriate vehicles).
- Outlines a PRCP.

The proposed Site-Specific Standard for this Site generally consists of “pathway-elimination,” which means that potentially complete future exposure pathways will be mitigated using engineering and/or institutional controls. Details of site-specific engineering controls will be updated in the future if and as Site development occurs. Engineering controls proposed in this Cleanup Plan include:

1. Covering impacted soils with asphalt/concrete pavement, building structures, and/or a minimum 2-foot thick clean soil cover to prevent direct contact exposure and/or to mitigate potential migration of constituents from soil-to-groundwater. The soil cap will cover areas where constituent concentrations in soil exceed the non-residential direct-contact standards and the soil-to-groundwater MSCs. With

the exception of the existing railroad, the entire Site will be capped by various methods to meet the Site-Specific Standard via a "pathway elimination".

2. Employing VI mitigation measures for future buildings constructed onsite if and where needed. An initial screening of areas with potential VI concerns is provided as Figure 36. Additional soil gas characterization and/or a cumulative risk assessment may demonstrate that mitigation measures are not needed.

Proposed institutional controls are a deed restriction/environmental covenant that: (1) prohibits use of groundwater at the Site; (2) restricts the Site to non-residential use; and (3) requires a PRCP that stipulates inspection, periodic maintenance/repair activities, and reporting requirements for engineering controls, as appropriate. These restrictions will be embodied in a recorded and enforceable Environmental Covenant.

This Cleanup Plan may be implemented in conjunction with Site redevelopment. Surface elements of redevelopment, such as paving, building foundations and slabs may be used to form an integral part of the planned final cap for the Site and eliminate potential exposure pathways. The Cleanup Plan may be implemented using an iterative process that results in elimination of potential exposure pathways as any potential redevelopment is conducted; however, the general remedial scheme will be implemented even in the absence of redevelopment.

PCC sold the property to BPB on March 30, 2022. BPB will be redeveloping the Site in conjunction with PCC's site cleanup.

9.1 List of Contacts

Table 9-2: Site Contacts

Name/Affiliation	Address	Contact Information
PADEP		
Ms. Sarah Pantelidou PADEP Case Manager	2 East Main Street Norristown, PA 19401	T: 484 250-5778 spantelido@state.pa.us
EPA		
Mr. Kevin Bilash, P.E. Environmental Engineer	1650 Arch Street Philadelphia, PA 19103	T: 215 814-2796 bilash.kevin@epa.gov
BP Bridesburg LLC – Owner / Redeveloper / Remediator		
Mr. Jim Marshall Senior Director, Development	One Gatehall Drive, Suite 201 Parsippany, NJ 07054	T: 862 247-4932 jmarshall@bridgeindustrial.com
PCC – Remediator		
Michael E. Guerin Director, Property Strategy & Transactions	40 Sylvan Road 1st Floor East Waltham, MA 02451	T: 781 907-1741 michael.guerin@nationalgrid.com
Arcadis U.S., Inc. – Project Consultant		

Name/Affiliation	Address	Contact Information
Daniel P. Sheehan, P.E. Principal Engineer	824 N Market Street, STE 820, Wilmington, Delaware 19801-4939	T: 302 884-6919 daniel.sheehan@arcadis.com

9.2 Site Maps

The following figures are referenced as part of the Cleanup Plan:

- Figure 1: Site Location Map
- Figure 17: Soil Boring Observations
- Figure 18: Surface Soil Analytical Results
- Figure 19: Subsurface Soil Analytical Results
- Figure 20: Soil Delineation Areas
- Figure 25: Groundwater Analytical Results – VOCs and SVOCs Exceeding MSCs
- Figure 26: Groundwater Analytical Results – Dissolved Inorganics Exceeding MSCs
- Figure 28: Soil Sampling Locations Exhibiting Potential Vapor Intrusion Concerns in Vadose Zone
- Figure 29: Groundwater Monitoring Wells Exhibiting Potential Vapor Intrusion Concerns
- Figure 36: Site Locations with Potential Vapor Intrusion Concerns
- Figure 37: Soil Cap Limits
- Figure 38: Location of TSCA Regulated Soils

A comprehensive list of report figures is included in the table of contents, and figures are referred to throughout the text.

9.3 Remedial Goals

Based on the analysis of remedial alternatives presented herein, the remedial goals for soil will be to allow historic fill and impacted soils to remain in place with capping (e.g., asphalt/concrete pavement, building structures, a minimum 2-foot thick clean soil cover), to the extent practicable, and provide new cover/capping across the Site to meet the Site-Specific Standard, as discussed below.

9.4 Remedial Alternatives

The technical guidance recommends the identification of remediation alternatives, and an evaluation of the effectiveness of the selected remedy to achieve the Site-Specific Standards, based on the factors set forth in Section 304(j) of Act 2. The evaluation should consider: 1) the long-term risks and effectiveness; 2) the ability of the remedy(ies) to reduce the toxicity, mobility or volume of regulated substance; 3) the short-term risks and effectiveness; 4) the ease or difficulty of implementation; 5) the cost of the remedial measure; and 6) the incremental health and economic benefits of the remedy.

9.4.1 Selection of Remedial Alternatives

General response actions are broad categories of remedial technologies that can potentially be used to meet remedial action objectives. The general response actions typically include:

- Institutional Controls
- Containment
- Treatment
- Removal and Disposal

Institutional controls and containment processes reduce the risk of exposure, but do not remove or destroy the COCs.

Containment technology options are those that control the release or minimize the potential for contact. Examples of containment approaches include surface capping, vertical barriers, and horizontal barriers.

Treatment technology options are those that reduce the mobility, toxicity, or volume of the source of impacts. Treatment can employ physical, chemical, or biological methods and can be applied in-situ (in place) or ex-situ (following removal from the source location).

Removal and disposal options remove impacted media from an area of concern and relocate it to a more secure area. An example of a removal and disposal option is excavation of impacted soil and disposal in a permitted landfill.

9.4.2 Evaluation of Remedial Alternatives

The selection of an acceptable remedial alternative requires the establishment of comparison criteria that address the major factors required for successful remedial action. Additionally, a mechanism to rank the various factors is also important.

The criteria used to evaluate the retained remedial alternatives are those described in Section 304(j) of Act 2, summarized as follows:

- "Long-term Risks and Effectiveness" – The magnitude of residual risk following implementation of the alternatives are evaluated. The type, degree and duration of post-remediation care, potential for exposure, and adequacy and reliability of controls are also considered.
- "Reduction of Toxicity, Mobility or Volume" – This criterion addresses hazardous constituents, treated contaminants and residuals remaining after the remedial alternative is implemented. The degree of reduction in toxicity, mobility and volume is evaluated.
- “Short-Term Risks and Effectiveness" – During implementation, potential short-term impacts to onsite workers, adjacent residents, and the environment are considered.
- "Implementability" – Ability to construct, operate, monitor, maintain and obtain regulatory approvals for an alternative are considered. The evaluation also includes availability of technologies, equipment, trained personnel and offsite disposal services.
- "Cost" – Capital, operation and maintenance costs are estimated and evaluated. In generating these calculations, Arcadis has assumed that some construction requirements are applicable to all

remedies associated with the potential reuse of the property for development. Therefore, costs such as sediment and erosion control for each remedy would be essentially equal.

- "Incremental Health and Economic Benefits" – The long-term economic benefits are evaluated for each of the potential remedies.

The selected soil remedy, groundwater, and soil vapor remedies are summarized in the Sections 9.6 through 9.8.

9.5 Community Participation

The selected remedial alternative will be adjusted, as appropriate, based on community feedback. A Public Involvement Plan (PIP) has been prepared for the Site that defines procedures for community engagement and the communication of findings from ongoing Site remediation in accordance with the latest updates to Act 2 and the TGM. The PIP establishes the framework for educating interested parties about past and ongoing Site environmental remediation efforts and enables communication between the public, PCC, the site developers, PADEP, EPA, Philadelphia Department of Public Health, and other Philadelphia Departments and elected officials. The PIP:

- Provides public access to project documents at convenient locations.
- Designates a central point of contact to address questions from the community.
- Identifies a location for public hearings and meetings near the Site.

The PIP is available to the public at the Frankford Library and online at: http://www.4501richmondstreet.com/.

9.6 Selected Soil Remedy

The following COCs have been reported as detected in surface soil at concentrations above the non-residential direct contact MSCs for surface soil:

- SVOCs: 2-Methylnaphthalene, BaA, BaP, BbF, benzo(k)flouranthene, chrysene, dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene, and naphthalene.
- Metals: arsenic and lead.

The sampling locations where constituents have been detected in soil at concentrations greater than the non-residential direct contact MSCs are shown in Figures 18 and 19. 1,1-Biphenyl, 2-methylnaphthalane, and naphthalene were detected in subsurface soil at concentrations above the non-residential direct contact MSCs in subsurface soil. The subsurface soil COCs are presented in Table 9-3 (constituents that exceeded the non-residential and/or the soil-to-groundwater MSCs in soil samples. The number of non-residential soil-to-groundwater exceedances for each constituent is also presented vs. the total number of soil samples collected. In general, visual impacts and elevated PID readings were also observed at the same soil sampling locations that contained the highest concentrations of constituents. Figure 17 shows sampling locations where visual impacts or elevated PID readings were observed.

Table 9-3: Subsurface Soil COCs

Analyte	CAS Number	S-GW Exceedance Frequency
Volatile Organic Compounds		
Benzene	71-43-2	36/530
Chlorobenzene	108-90-7	4/530
Dichloromethane	75-09-2	5/530
Ethylbenzene	100-41-4	3/529
Styrene (Monomer)	100-42-5	2/470
Toluene	108-88-3	1/532
Semi-Volatile Organic Compounds		
1,1-Biphenyl	92-52-4	28/168
2-Methylnaphthalene	91-57-6	30/535
4-Methylphenol	106-44-5	1/296
Anthracene	120-12-7	15/535
Benz(a)anthracene	56-55-3	15/535
Benzo(a)pyrene	50-32-8	39/535
Benzo(b)fluoranthene	205-99-2	22/535
Benzo(g,h,i)perylene	191-24-2	13/535
Benzo(k)fluoranthene	207-08-9	6/535
Carbazole	86-74-8	18/535
Chrysene	218-01-9	18/535
Dibenz(a,h)anthracene	53-70-3	2/535
Dibenzofuran	132-64-9	16/535
Fluoranthene	206-44-0	8/535
Fluorene	86-73-7	4/535
Naphthalene	91-20-3	54/535
Phenanthrene	85-01-8	4/535
Phenol	108-95-2	2/535
Pyrene	129-00-0	6/535
Metals		
Antimony	7440-36-0	3/527
Arsenic	7440-38-2	101/527
Cyanide	57-12-5	3/333
Lead	7439-92-1	89/527
Mercury	7439-97-6	2/525
Nickel	7440-02-0	1/527
Selenium	7782-49-2	1/527

Note: S-GW indicates the soil-to-groundwater MSCs for a non-residential used aquifer with TDS less than or equal to 2,500 ppm

Due to the relatively low levels of COCs identified at the Site and the scattered and often isolated locations across the Site, the selected remedial alternative will be capping and/or covering of the impacted areas.

This selected remedy will:

- Significantly reduce the risk of exposure following installation of the remedy.
- Minimize the type and duration of post remediation care required.
- Significantly reduce the potential exposure to human and ecological receptors.
- Be accomplished in a reasonable period of time at a realistic cost.

While the proposed remedy does not reduce the toxicity or volume of impacted soils, the mobility of the impacted soils is significantly reduced by the proposed capping system. In addition, as noted above, the concentrations of these COCs are generally low and often isolated.

Site characteristics that may affect the implementation or effectiveness of the remedial action are as follows:

- The location of the impacted soils will dictate the mechanism for soils capping. The identified impacted soils are generally at depths less than 15 ft bgs.
- The locations of impacted soil areas will be marked prior to implementation of remedial activities in that area. Additional care will be taken if these areas need to be excavated and the disposition of excavated materials from these areas will be documented.

The short-term risks are minimal to construction workers and will be further reduced by onsite monitoring of the soil removal as discussed in Subsection 9.5.1. The short-term effectiveness of the remedy has been proven in numerous applications of a cap as a remedial alternative. The ease of implementation of the remedy has been proven in many prior instances. Commercially available equipment will be used along with established construction practices. The incremental health and economic benefits gained by implementation of the selected remedy include returning the property to a functional use with associated benefits to the community.

An Erosion and Sedimentation Control Plan (E&SC documents) will be prepared; remedial activities will not proceed without approved E&SC documents.

9.6.1 Detailed Description of Remedial Action for Soil

The selected remedial action for soils with reported detections above the non-residential MSCs will be capping of the impacted soil areas. As per the redevelopment plans, with the exception of the railroad track right-of-way (RR ROW), the entire site will be capped by new buildings, asphalt-paved driveways and parking areas, concrete sidewalks, or a minimum 2 feet of imported clean fill (for areas not covered by impervious surfaces). Asphalt pavement and buildings will significantly reduce and limit infiltration across much of the Site; stormwater runoff will be collected and conveyed offsite to the river. Potentially complete exposure pathways remain on the RR ROW, and a human health risk assessment (HHRA) has been prepared to consider these pathways. The HHRA, which is provided as Appendix P and summarized in Section 9.6.1.4, shows that there are no unacceptable risks to potential receptors. The limits of the soil cap are shown in Figure 37.

Any soil that needs to be excavated from impacted areas associated with grading, utility, or foundation installation, will be relocated and will be capped, as appropriate. If immobile tar or tar-like material is encountered during construction requiring removal from its present location, the material will be characterized and may remain onsite if found to be non-hazardous. During implementation of the remedial work (and any Site redevelopment if applicable), specific environmental controls, decontamination, health and safety requirements, and soil management, handling, and disposal requirements will need to be followed. Work conducted on the Site will be in accordance with the procedures defined in a site-specific HASP. The HASP requires construction workers that have the potential to contact impacted soil to be: (1) trained as required by Occupational Safety and Health Administration (OSHA) Regulation in 29 CFR 1910.120 (HAZWOPER); (2) medically cleared to work at the Site; and (3) medically monitored as per OSHA at 29 CFR 1910.120(f). These construction workers must use PPE to mitigate soil exposure pathways. The proposed remedial actions and associated construction requirements are summarized below.

Prior to starting any excavation at the Site, the planned excavation activities will be reviewed to evaluate if the proposed excavation will occur in areas known to contain impacts and/or areas that have the potential to contain impacts. The proposed ground-intrusive activities will be monitored if the excavation likely will encounter, or holds the potential to encounter, impacted soil. Additionally, the Site will be surveyed and staked/marked to identify areas (Areas 1 through 4 shown on Figure 20) and sampling locations where viscous tar or tar-like material was previously observed. Soil screening will be performed for visual impacts, odors, or elevated PID readings during excavations into known or potentially impacted material.

9.6.1.1 Earthwork Preparation and General Procedures

Site grading or excavation activities within marked areas will be documented to identify the relocation of any impacted soil. Soil onsite can be reused as fill in areas that will be covered as part of site redevelopment. Fill material removed from the Site, including historic fill, will be managed in accordance with PADEP's Management of Fill Policy (Document #258-2182-773), unless otherwise indicated in Subsection 9.6.1.2. Potential waste materials are discussed in Subsection 9.6.1.2.

E&SC measures will include silt fencing and/or hay bales that will be installed in appropriate locations in and around the remedial work area to minimize surface soil in the disturbed areas from potentially being transported, via wind and/or surface water, to areas outside of the limits of disturbance. If staged, impacted soil will be placed on plastic sheeting (minimum 6 mil thickness) adjacent to the excavation area and kept covered with appropriately anchored tarps when inactive, unless otherwise indicated in Subsection 9.6.1.2. Imported clean fill will be placed where necessary to suppress odors. A stockpile of clean material will be kept onsite for this use.

9.6.1.2 Soil Management

Soil that is undisturbed during Site redevelopment may remain in-place. Soil that needs to be excavated from impacted areas for site grade adjustment, utility installation, or foundation construction will be relocated and capped, as appropriate.

As indicated below, some soil and waste may need to be disposed offsite. Any soil disposed offsite will be managed in accordance with all local, State, and Federal regulations. Small quantities of waste, along with drums of used PPE and similar small debris type items, may be stored in labeled USDOT

Specification containers before onsite reuse or offsite disposal. For any materials disposed offsite, disposal quantities and associated documentation will be reported to the PADEP in the Final Report. This documentation will include waste profiles, test results, facility acceptance letters, manifests, bills of lading, and facility receipts. Waste records will contain a summary of transport tonnage and list the disposal destination. The waste manifests will be maintained onsite until submitted in the Final Report.

The handling of waste materials that may potentially be encountered during Site redevelopment is summarized by material type below.

Management of Tar/NAPL Saturated Soils

As stated in the RI, limited quantities of subsurface Site soils are impacted by viscous tar or oil-like material and associated SVOCs. The goal is to achieve Site-Specific Standards through pathway elimination to these impacted soils. Soil impacted with tar- and oil-like material remaining onsite will be left in-place unless encountered or disturbed during redevelopment activities. This material may be encountered in certain locations during grading or excavation for site redevelopment (for the installation of utilities, drainage features, and/or foundations). Sampling locations that contained viscous tar or oil-like material are shown on Figure 14.

If encountered during construction, tar-like material will be visually characterized and evaluated for the presence of free liquid by Method 9095 (paint filter liquids test), in accordance with Title 25 Chapter 287.1 of the Pennsylvania Code. The paint filter test will be performed at temperature exceeding 25°C (77°F), as recommended in EPA Method 9095B. The results of the paint filter test will inform material management, as follows:

- If no separate phase liquid is present (indicating immobile tar or tar-like material) and the material requires removal from its present location, the material will be sampled for RCRA waste characteristics. The material may remain onsite if found to be non-hazardous.
- If separate phase liquid is present (indicating potentially mobile tar or tar-like material), the tar/soil mixture will be segregated and transferred to a material staging area constructed with a low-permeability liner system (e.g., high-density polyethylene [HDPE]) extending over the prepared ground surface and formed sidewalls. The stockpiled material will be characterized to determine disposal requirements and subsequently disposed of offsite in accordance with 25 Pa. Code Sections 250.3(a).

TSCA-Regulated Waste

As discussed in Section 3.2.4, an EPA approved Self-Implementing Cleanup Notification for PCB Remediation Waste was prepared for the Historical Tar Plains/Fill Area. Soil within the Historical Tar Plains/Fill Area will be managed in accordance with the Self-Implementing Cleanup Notification. At a minimum, any soil that needs to be excavated from the Historical Tar Plains / Fill Area because of grade adjustment, utility installation, or foundation work will be relocated, consolidated, and capped within the Historical Tar Plains / Fill Area. Soil originating from the Historical Tar Plains / Fill Area will not be relocated outside the limits of this area for consolidation. If soil needs to be removed from the Site (e.g., from the area of PSSTP-01A, for geotechnical reasons), it will be characterized and disposed of at a facility permitted to accept the material. Any soil leaving the Historical Tar Plans / Fill Area will be characterized for PCBs. Based on analytical data, geotechnical data, and current redevelopment plans,

soil in the Historical Tar Plains / Fill Area will not need to be excavated. The location of the Historical Tar Plains / Fill Area is shown on Figure 38.

Former Operations Piping

If required during redevelopment activities, former operation piping will be removed and placed in appropriate waste management containers or transferred to a material staging area constructed with a low-permeability liner system (e.g., HDPE) extending over the prepared ground surface and formed sidewalls, to contain potential liquids. Sludges, residues, or fluids other than groundwater will be removed from the piping by gravity draining into appropriate waste management containers and taken offsite. The removed material will then be disposed offsite at an appropriate disposal facility in accordance with all local, state, and federal regulations.

Any discovered tar or tar-like material from pipe material will be handled as detailed earlier in this subsection. If analytical results identify an unknown or unexpected source material, the results will be promptly communicated by phone to PADEP's Project Manager.

The location, description, management, and disposal of any subsurface piping discovered during redevelopment will be noted in the Final Report (submitted to the PADEP).

9.6.1.3 Soil Capping System

When constructing the soil cap, soil sampling locations that contain COCs at concentrations greater than direct contact MSCs will be surveyed and marked, as appropriate. The capping of impacted soil areas, either by asphalt/concrete paving, building slabs, or soil cover will be documented. The soil cap will be Site-wide, and at a minimum will extend across areas of the Site where: (1) COCs are in soil at concentrations greater than the non-residential soil-to-groundwater and direct contact MSCs (see Figures 18 and 19); and (2) excavated soil impacted by COCs is reused onsite (unless laboratory analytical data demonstrates that COCs do not exceed non-residential direct-contact MSCs for surface soil). Final cap across the Site will be constructed in accordance with the PADEP draft guidance entitled, "The Use of Caps as Activity and Use Limitations" and consist of:

- Two feet of clean fill, including landscaping topsoil, in the greenspace and other landscaped areas underlain by a geotextile fabric to serve as a visual distinction between the clean fill cap and the existing impacted soil; or
- Site paving, building foundations and floor slabs.

The minimum 2-foot cap thickness will be verified by use of land surveying to document that cap design elevations and grades are achieved across the site consistent with grading plans. The soil cover will be placed and compacted under the supervision of a licensed geotechnical engineer to ensure long term settlement will not exceed tolerances required to provide a minimum of 2 feet of soil at all times.

A minimum 2-foot thick cap transition to the property boundaries and railroad right of way will be installed as shown in Exhibit 4. The cap transition involves grading existing soil so that when 2 feet of clean fill is placed, the surface elevation of the new cap matches the ground surface elevation at the property boundary. The cap thickness will be 2 feet within the entire transition area. Grading to achieve this transition will require removing existing soil from the cap boundaries. Removed soil will be managed as discussed in subsection 9.6.1.1.

A wetland mitigation area is being created near the southeast corner of the Site, as shown in Exhibit 5. This wetland will be established by over-excavating the existing soil to install two feet of clean capping material that will support wetland vegetation. Additionally, a wetland in the northeast corner of the Site is being covered by 2 feet of soil and reestablished. This wetland may be over-excavated to install 2 feet of clean fill to maintain appropriate Site grading. The wetland will be constructed in accordance with applicable permits submitted to and approved by the PADEP Bureau of Waterways Engineering and Wetlands.

A PRCP (institutional control) has been developed for long-term care and maintenance of the final cap(s), and it is presented as Exhibit 3.

9.6.1.4 RR ROW HHRA Summary

An HHRA has been prepared for the RR ROW where the existing ground surface will be unimproved as per an easement that must permit the continuous operation of the Philadelphia Beltway Railroad, although the railroad is currently inactive. The HHRA is provided in Appendix P. The HHRA evaluated anticipated future potential human health exposure to COCs in surface soils at the RR ROW. The analytical results for surface soils collected within 30 feet of the RR ROW were compared to the USEPA Regional Screening Levels (RSL) for industrial soil at total risk levels of $1x10^{-6}$ and total hazard quotient of 0.1. Benzene, PAHs, metals, and Aroclor 1260 were detected at concentrations exceeding RSLs and identified as COCs. Utilized EPCs were the calculated 95% upper confidence limits or maximum detection depending on each COC dataset. Outdoor site workers and adolescent trespassers were evaluated as the future site receptors in the HHRA. A toxicity assessment was performed following PADEP and EPA recommended hierarchy. A combination of default and conservative site-specific exposure assumptions were identified for each receptor (e.g., exposure frequency = 50 days/year; adolescent exposure duration = 9 years or age range 12 to 21). Risk characterization and calculations were conducted following methodology consistent with PADEP Act 2 and EPA approaches to human health risk assessment. Carcinogenic risks for the adolescent trespasser and outdoor site worker were within EPA's target risk range of $1x10^{-6}$ to $1x10^{-4}$. Non-cancer hazards for the adolescent trespasser and the outdoor worker were all less than the USEPA target of 1.

Although not considered for this cleanup plan, potential exposure pathways along the RR ROW are anticipated to be the eliminated as part of Pennsylvania Department of Transportation's (PennDOT) Delaware Avenue Extension project. As early as 2024, PennDOT intends to construct a new road and railroad. PennDOT plans to build the new infrastructure on imported fill and limit excavations as much as possible. To support the project, PennDOT has contracted with CDM Smith to facilitate a soil and geotechnical investigation along the proposed alignment of the new infrastructure. Project work will be conducted by 40-hour OSHA Hazwoper trained personal following the most current draft of the PRCP. A map showing the proposed Delaware Avenue extension and railroad alignment is provided as Exhibit 6. The proposed layout includes a new 150-foor ROW for the road and a new alignment for the RR ROW.

9.6.1.5 Shoreline Improvements

The rubble-armored seawall at the waterfront will be improved. R-5 riprap stone will be used to stabilize the area above the existing shoreline wall. This stone will be placed at the top of the wall and will cover an area that extends 6 feet back from the top of the wall. BPB is currently planning to excavate and remove the existing concrete outfall pipe and replace it with a 36-inch diameter HDPE pipe in the same

trench/alignment. The outfall of the new HDPE pipe will be set inland approximately 50 feet from the current outfall location so that it will not disturb the mudflat area. Outlet protection will be installed, consisting of a custom headwall surrounded by a rip-rap (rock) apron. The new outfall pipe will be equipped with backflow prevention and a trash rack. Outfall details are presented in Drawing 3 of Exhibit 7.

Additionally, BPB is planning a greenspace setback of approximately 350 feet or more from the shoreline which exceeds the 100-meter setback recommended in the 2008 Natural Heritage Inventory of Philadelphia County (Inventory; Pennsylvania Natural Heritage Program 2008). The Inventory also recommends that the existing small tidal marsh (wetland) between the northern pier and marina to the north is “enhanced by removing obstructions to flooding in this low-lying area, increasing the potential for tidal marsh development.” BPB is proposing to establish a new wetland in the southeast corner of the Site that will be tidally connected to the mudflats area, increasing the current ecological value in the shoreline area.

9.6.1.6 Stormwater Management

BPB has used the Permit Application Consultation Tool PACT and submitted a “draft” National Pollutant Discharge Elimination System NPDES permit to PADEP, seeking approval to manage the stormwater, wetlands, and waterway requirements onsite. As part of the permitting effort, BPB is developing a stormwater management plan for the proposed redevelopment. Stormwater runoff will be collected in permanent lined basins (lined with a 30 mil geomembrane) and conveyed offsite (stormwater management will not rely on infiltration). In addition, the former main production area will be covered by the building and parking lots, including the area near and upgradient from PCMW-09D where deep groundwater may be impacted. Therefore, the potential pathway for soil impacts to migrate to groundwater will be further limited by the proposed site redevelopment.

During redevelopment, temporary sediment basins will be installed at the approximate location of the planned permanent stormwater basins. The temporary basins will be lined with a 30-mil geomembrane meeting the same requirements as the liner used for the future permanent basins. The temporary stormwater basins will be inspected monthly and after rainfall events exceeding 3 inches within 24 hours for indications of a compromise to remedial measure integrity (e.g., excessive settlement, erosion). The inspections will be documented on an inspection log and maintained at the construction site. Required repairs will be made by qualified personnel and recorded on an Intrusive Work Notification and Documentation form. Completed forms will be maintained in onsite files. A narrative description and/or plan mark-up depicting the cross sections and details of the remedial measures will be documented in the inspection logs for any necessary repairs. The temporary basins will remain in place for a period of 10 to 14 months before being converted to permanent stormwater basins. The process of conversion will occur in series over a period of 4 to 6 weeks in which all sediment will continue to be managed onsite according to Philadelphia Water Department and PADEP best management practices.

9.6.1.7 Best Management Practices for Ecological Receptors

Using PFBC’s recommendations, the construction plan will include standard BMPs to be implemented to address runoff to surrounding waters. The BMPs to be implemented during construction will be protective of potential habitat for threatened or endangered species that may use this area. BMPs such as turtle exclusion fencing along the entire eastern limit of redevelopment disturbance will prevent turtle nesting

within active construction areas. An additional BMP, such as performing construction after the nesting season, may be used when capping the eastern portion of the former fuel blending area (i.e., the area between the railroad tracks and the Delaware River).

9.6.1.8 Work Under the Soil Cap

Future work activities beneath the cap will be performed in accordance with a PRCP (Exhibit 3). For ground intrusive work below the cap, a HASP will be followed to prevent exposure to future workers (for repairs to utilities, building expansion, etc.). The HASP would require construction workers that have the potential to contact impacted soil to be: (1) trained as required by occupational safety and health administration (OSHA) Regulation in 29 CFR 1910.120 (HAZWOPER); (2) medically cleared to work at the Site; and (3) medically monitored as per OSHA at 29 CFR 1910.120(f).

Alternatively, an HHRA may be developed that evaluates potential risks to construction workers. The results of an HHRA would evaluate the required safety procedures required for subsurface work under the cap and whether ground-intrusive work can be performed without 40-hour OSHA Hazwoper training.

Utility workers installing or maintaining subsurface utilities are reasonably anticipated future receptors and may be exposed to soil underneath the capping system. Therefore, the PRCP includes an HHRA for the utility worker performing 10 days of work each year under the soil cover. Site-wide analytical data for surface soil (future subsurface soil underneath the capping system) and unsaturated subsurface soil were compared to the USEPA Regional Screening Levels (RSL) for industrial soil at total risk levels of $1x10^{-5}$ and total hazard quotient of 1. Several VOCs, SVOCs, metals, and PCBs were detected at concentrations exceeding RSLs and identified as COCs. Version 5.1 of EPA's pro-UCL software was utilized to calculate the upper confidence limits for the COC list. A toxicity assessment and risk calculations were performed following PADEP and EPA guidance. The HHRA concludes that total excess lifetime cancer risks are below the target risk of 1×10^{-5} and that total non-cancer hazards are less than the USEPA target of 1.

9.7 Selected Groundwater Remedy

The following have been reported as detected in groundwater at concentrations above the PADEP non-residential MSCs for Used Aquifers containing TDS ≤ 2,500 mg/L:

- VOCs: benzene, MTBE, tetrachloroethene, TCE
- SVOCs: 1,1-biphenyl, 2,4-dinitrotoluene, 2-methylnaphthalene, BaP, BbF, benzo(g,h,i)perylene, benzo(k)fluoranthene, bis(2-ethylhexyl)phthalate, carbazole, and chrysene.
- Total Metals: antimony, arsenic, beryllium, lead, manganese, nickel, and zinc.
- Dissolved Metals: antimony, arsenic, manganese, and nickel.

VOCs and SVOCs detected in groundwater at concentrations greater than MSCs are shown in Figure 25, and dissolved inorganics detected in groundwater at concentrations greater than MSCs are shown in Figure 26. In general, SRI groundwater data indicates that groundwater conditions are improving across the Site, especially in regard to VOCs and SVOCs in replacement wells, and groundwater impacts are isolated and limited in extent.

Due to the relatively low levels of COCs identified at the Site and groundwater data from point-of-compliance wells showing that impacted groundwater is not migrating offsite, an Environmental Covenant prohibiting onsite groundwater use for any purpose is the selected remedy. The EC will also restrict Site use to non-residential use. Such a restriction will ensure that exposure to groundwater from beneath the Site does not occur. With groundwater use prohibited, there will be no future complete exposure pathway to groundwater at the Site. Appropriate institutional controls are proposed to effectively mitigate the complete exposure pathways listed in Section 5.

This selected remedy will:

- Significantly reduce the risk of exposure following establishment of the institutional controls.
- Minimize the type and duration of post-remediation care required.
- Significantly reduce the potential exposure to human and ecological receptors.
- Be accomplished in a reasonable period of time at a reasonable cost.

Construction or utility workers may encounter shallow groundwater during utility excavations for installation, maintenance, or repair of underground utilities. Volatile constituents in groundwater may volatilize into the utility trench. If future excavation were to be required to the depth of the perched water or groundwater table, the procedures listed in Subsection 9.6.1.8 will be followed to limit construction worker exposure from groundwater impacts.

Groundwater monitoring wells will be decommissioned using the grout-in-place method in accordance with applicable regulatory requirements. Upon approval of this RI Report and Cleanup Plan, an Act 2 Final Report for groundwater will be prepared

9.8 Soil Vapor Remedy

VOCs were not detected at concentrations above the non-residential sub-slab screening values in subsurface soil gas samples collected during the Initial RI. As discussed in Section 3.2.6, soil and groundwater analytical results likely overpredict VI potential because the soil gas sampling results did not exceed any of the sub-slab VI screening values. However, a comparison of existing unsaturated soil and groundwater data to non-residential VI standards from the TGM indicates the potential for soil VI if buildings are constructed in the future. The following constituents have been detected in soil and/or groundwater samples at concentrations above non-residential VI standards: benzene, MTBE, TCE, toluene, 1,1-biphenyl, 2-methylnaphthalene, and naphthalene. A detailed analysis of the VI COCs is included in the VI Evaluation provided as 3.2.6.

Unsaturated soil sampling locations where COCs have been identified at concentrations exceeding the non-residential VI standards are shown in Figure 28 and groundwater sampling locations where COCs have been identified at concentrations exceeding the non-residential VI standards (or for groundwater within 5 feet of the ground surface, the non-residential MSCs for used aquifers containing TDS ≤ 2,500 mg/L) are shown on Figure 29. In summary, based on the TGM VI guidance, the locations where VI is a potential concern at the Site are shown on Figure 36.

For buildings installed in locations where VI is a potential concern, the selected soil vapor remedy will be pathway elimination via the installation of a vapor barrier designed and manufactured for use in VOC mitigation. Alternatively, the results of a VI risk assessment and/or additional soil gas characterization may eliminate the need to install a VI mitigation system in certain areas. To achieve pathway elimination,

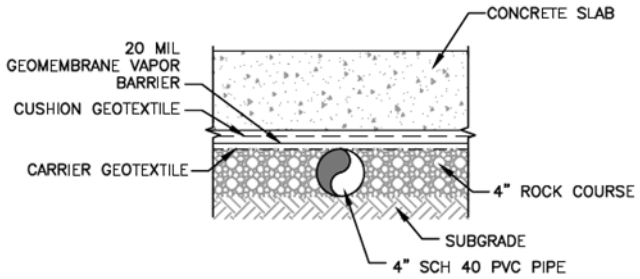
the vapor barrier material will be chemically resistant and have demonstrated low permeability for the VOCs present. Additionally, the EC will prohibit construction of basements in areas of potential VI concern. The selected vapor barrier remedy will:

- Significantly reduce the risk of potential exposure to human receptors in the proposed future building.
- Be accomplished in a reasonable period of time at a reasonable cost.

The two proposed buildings shown in Exhibit 1 (i.e., a 148,611 square-foot building located in the northern portion of the Site and a 740,701 square-foot building located in the central portion of the Site) were evaluated for VI potential. The proposed vapor barrier will be installed beneath both proposed buildings. The vapor barrier proposed for the new buildings is VaporBlock® Plus™ VBP20 Underslab Vapor Retarder/Gas Barrier, as manufactured by Raven Industries, Inc. This is a 20-mil nominal thickness, seven-layer co-extruded barrier constructed using polyethylene and ethylene vinyl alcohol resin. A manufacturer cut sheet for the vapor barrier is provided in Appendix Q. Please note that the attached cut sheet serves as the basis of design for the vapor barrier. However, the manufacturer and final product are subject to change based on market factors. The vapor barrier ultimately used in construction will be an equivalent or better product achieving the specifications in the attached cut sheet. The vapor barrier will be installed and tested in accordance with manufacturer's recommendations.

The vapor barrier will be installed over a carrier geotextile, which in turn, overlies a 4-inch-thick rock course (i.e., gas permeable layer comprised of recycled concrete aggregate/stone subbase in which 4-inch diameter Schedule 40 PVC soil vapor vent piping will be installed to convey sub-slab vapors from beneath the building floor slab to vent riser piping). A cushion geotextile will be installed over the proposed vapor barrier for protection during construction of the concrete floor slab of the proposed building (installation of reinforcement and pouring of concrete). The proposed vapor mitigation components are shown in the cross-section below.

Figure 9-1: Typical Vapor Barrier and Extraction System Cross-Section



While not needed from a vapor risk protection perspective, to be pro-active and conservative, a passive sub-slab ventilation system will be installed beneath both buildings in general accordance with American National Standards Institute's 2018 Standard Soil Gas Control System in New Construction Buildings (ANSI/AARST CC-1000) as an additional protective measure. The passive sub-slab ventilation system will include:

- 4-inch rock course layer (recycled concrete aggregate/stone subbase) to allow for vapor conductance beneath the vapor barrier.

- 4-inch perforated schedule 40 polyvinyl chloride (PVC) horizontal collection piping in the rock course to passively extract soil gas from beneath the vapor barrier and convey the soil gas to 6-inch PVC riser pipes.
- 6-inch PVC riser pipes extending from the horizontal collection piping to convey soil gas collected by the horizontal 4-inch diameter vent piping to an exhaust location at the roof.
- 6-inch wind-driven turbine ventilator at the top of each riser pipe, positioned at least 3-feet above the top of the roof, to increase air flow.

Additional vapor mitigation system details are provided in Exhibit 8.

9.9 Post-Remediation Care Plan

9.9.1 Soil

A PRCP has been developed and is presented as Exhibit 3. In addition, the PRCP will be listed in the environmental covenant because engineering and institutional controls are needed to achieve the site-specific standard. Remedial measures incorporate capping of residual soil impacts. As discussed in Subsection 9.6.1.8, the PRCP specifies the procedures to follow when working in soils underneath the soil cap. Additionally, the following provisions are detailed in the PRCP to assure continued function of the engineering controls:

- Inspecting the engineered caps on a periodic basis. During the first year, the soil cover will be inspected quarterly and after significant rainfall events. Once vegetation is established, the cap will be inspected on an annual basis or as required by any subsequent permit. The visual inspection will include the evaluation of settlement against rigid structures (e.g., buildings, retaining walls, storm structures). If settlement is perceived, a further inspection will be performed which may include intrusive testing (i.e., measuring of total thickness by limited spot excavation) or surveying by a professional surveyor. Additional soil will be added, if needed, to re-establish the 2-foot minimum cap thickness.
- Maintaining the engineered cap and repairing any identified deterioration of the cap units regularly, as encountered. Repairs to the cover system will be made promptly and the corrective action will be documented for inclusion in the Compliance Report. Only certified clean fill as defined by the PADEP Management of Fill Policy will be used to repair the soil cover system.
- Documenting and recording where and when the inspection and maintenance is being conducted.
- Reporting inspection/maintenance results to the PADEP as provided in the environmental covenant (to be developed) in the Periodic Compliance Reports.

Inspection records, documentation associated with any necessary modifications/repairs and copies of notification letters will be maintained by the property owner.

As a component of the Final Report, an environmental covenant will be developed that requires the identification, and long-term inspection and maintenance of those areas where a cap must be maintained.

9.9.2 Groundwater

A site-wide deed restriction prohibiting groundwater use will be incorporated into an Environmental Covenant and recorded with the Philadelphia County Recorder of Deeds.

9.9.3 Vapor Intrusion

The EC will require that a vapor barrier will be installed beneath any inhabited structures constructed onsite and tested and maintained in accordance with the manufacturer's specifications. Alternatively, the requirements for a VI mitigation system beneath a given structure may be eliminated if a VI risk assessment (approved by PADEP) demonstrates that a VI mitigation system is not needed.

9.10 Final Report

Following completion of remediation/redevelopment activities at the Site, an Act 2 Final Report will be prepared for submittal to PADEP. The Final Report will be signed and sealed by a PADEP Professional Geologist or Professional Engineer licensed in Pennsylvania. The report will contain the following:

- A discussion of the remedial activities performed.
- Proof of submissions and notifications of the Final Report.
- All necessary fees.
- Chronological summary of the remediation work performed.
- A list identifying the quantity of materials removed from the Site, and transport bills of lading and/or manifests generated.
- A discussion of any deviations from this Cleanup Plan.
- Relevant permits issued.
- Analytical data generated.
- The Post-Remediation Care Plan.
- Contact information.
- Documentation of the field remedial/redevelopment activities.
- As-built drawings.

Upon approval of the Final Report, an Environmental Covenant that defines the long-term maintenance requirements for any onsite engineering controls and documents the institutional controls requirements that will be needed for remaining soil and groundwater impacts will be recorded.

10 CLEANUP PLAN SUMMARY

The RI was undertaken to assess the nature and extent of Site-related environmental impacts and evaluate the risks posed to human health and the environment by those impacts. The RI results provide adequate data coverage across the Site to: (1) identify and delineate the environmental conditions; (2) support an CSM; (3) develop a cleanup plan; and (4) support Site redevelopment. Based on the RI results, site-related impacts are relatively limited to the center of the Site and at isolated locations on the remainder of the Site.

Currently, there is no complete exposure pathway to impacted soil and groundwater. Future exposure pathways via direct contact with Site soil or groundwater for incidental ingestion, direct dermal contact and/or inhalation of windblown particulates (fugitive dusts) or volatilized COCs will potentially be complete if no controls were to be implemented. Additionally, there is potential for a complete VI exposure pathway when buildings are constructed onsite in the future.

The future exposure pathways can be mitigated via "pathway-elimination" pursuant to an Act 2 Site-Specific Standard. The Site-Specific Standard is a risk management approach. Potentially complete future exposure pathways will be eliminated using engineering and/or institutional controls. Engineering controls proposed for the Site to prevent direct contact exposure include capping impacted soils with asphalt pavement, concrete, building structures and/or clean soil. The Engineering control proposed to prevent potential VI into future buildings on the property includes installing a vapor barrier specifically designed and manufactured for use in VOC mitigation below buildings constructed in areas of potential VI concern unless a VI risk assessment demonstrates that such a control is not needed. Proposed institutional controls include use of deed restriction/environmental covenant prohibiting use of groundwater at the Site. The future exposure pathways and how the proposed remedy eliminates these pathways is summarized in Table 10-1 below.

Table 10-1: Summary of Pathway-Elimination Remedy

Current and/or Future Exposure Pathway	Potential Current Receptors	Potential Future Receptors without Remedy	Proposed Remedy	Potential Future Receptors with Remedy
Incidental Soil and GW Ingestion, Dermal Contact, and Inhalation of VOCs and Particulates	1. Utility/ Construction Worker 2. Outdoor Worker	1. Resident 2. Recreational User 3. Building Occupant 4. Utility/Construction Worker 5. Outdoor Worker 6. Trespasser	• Soil Cap(s) • Institutional Controls	Utility/Construction Workers (i.e., during ground-intrusive activities. Managed in accordance with the PRCP)
Potable Water Ingestion and Use	None	1. Resident 2. Building Occupant 3. Indoor Worker	• GW Use Restrictions	None
Soil Vapor Intrusion	None	1. Resident 2. Building Occupant 3. Indoor Worker	• Vapor Barrier Specific for Site COCs • VI Risk Assessment	None

Note: GW = groundwater

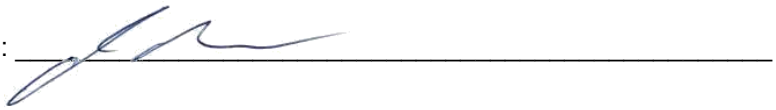
The future use of the property will be restricted to non-residential purposes. The remedial goals for soil will be to allow historic fill and impacted soils to remain in place or be reused onsite underneath a cap (e.g., asphalt/concrete pavement, building structures, a minimum 2-foot thick clean soil cover, etc.), to the extent practicable, and provide cover/capping to the disturbed soil across the Site.

The Cleanup Plan has been developed and details the proposed methods to prevent further migration and eliminate potentially complete exposure pathways.

11 SIGNATURES

Mr. Jim Marshall, Bridge Industrial, One Gatehall Drive, Suite 201
Parsippany, NJ 07054

Relationship to the Site: Authorized Representative for current Site Owner

Signature: 

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TABLES

Table 1
Soil Sample Locations and Laboratory Analysis Summary

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Philadelphia, Pennsylvania

Location	Sample Date	Sample Depth	Saturation	TCL VOCs	TCL SVOCs	Metals	Cyanide	Pesticides	PCBs
MW-102	5/16/2018	12-13	Saturated	X	X	X	X	X	X
MW-103	5/16/2018	6-7	Unsaturated	X	X	X	X	X	X
		15-16	Saturated	X	X	X	X	X	X
MW-108	9/24/2019	5-7	Unsaturated	X	X	X	X		
		10-12	Unsaturated	X	X	X	X		
MW-111	9/23/2019	11-13	Saturated	X	X	X	X		
		13-15	Saturated	X	X	X	X		
PC-B8	2/9/2005	15.5-16	Saturated	X	X	X			
PC-B13	2/10/2005	15-17	Saturated	X	X	X			
PC-B14	2/11/2005	15-17	Saturated	X	X	X			
PCSB-01	2/18/2005	14.5-15	Saturated	X	X	X			
		18.5-19	Saturated	X	X	X			
PCSB-01R	4/5/2019	14-16	Saturated	X	X	X	X		
		18-20	Saturated	X	X	X	X		
PCSB-02	3/4/2005	16	Saturated	X	X	X	X		
PCSB-03	3/4/2005	14	Saturated	X	X	X	X		
		25	Saturated	X	X	X	X		
PCSB-04	3/7/2005	4	Saturated	X	X	X	X		
		12	Saturated	X	X	X	X		
		25	Saturated	X	X	X	X		
PCSB-06	3/7/2005	13	Saturated	X	X	X	X		
		18	Saturated	X	X	X	X		
		23.5	Saturated	X	X	X	X		
PCSB-07	3/8/2005	14	Saturated	X	X	X	X		
		21.5	Saturated	X	X	X	X		
PCSB-08	3/9/2005	10.5	Saturated	X	X	X	X		
		19	Saturated	X	X	X	X		
PCSB-09	3/9/2005	10	Saturated	X	X	X	X		
		15.5	Saturated	X	X	X	X		
	3/10/2005	27.5	Saturated	X	X	X	X		
PCSB-10	3/22/2005	16.5	Saturated	X	X	X			
		20	Saturated	X	X	X			
PCSB-11	3/10/2005	17.5	Saturated	X	X	X	X		
		23.5	Saturated	X	X	X	X		
PCSB-12	3/16/2005	9	Saturated	X	X	X	X		
		21.5	Saturated	X	X	X	X		
PCSB-13	3/15/2005	17.5	Saturated	X	X	X	X		
PCSB-14	3/16/2005	11	Saturated	X	X	X			
	3/17/2005	25	Saturated	X	X	X			
PCSB-15	3/11/2005	4-5	Saturated	X	X	X	X		
PCSB-17	3/17/2005	4	Unsaturated	X	X	X			
		18	Saturated	X	X	X			
PCSB-18	3/14/2005	13	Saturated	X	X	X	X		
PCSB-19	3/21/2005	19	Saturated	X	X	X			
		26.5	Saturated	X	X	X			
PCSB-20	3/22/2005	17	Saturated	X	X	X			
		22	Saturated	X	X	X			
PCSB-21	3/11/2005	10-11	Saturated	X	X	X	X		
		14-15	Saturated	X	X	X			
		38-40	Saturated	X	X	X			
PCSB-22	3/15/2005	8.5	Saturated	X	X	X	X		
		23	Saturated	X	X	X	X		
PCSB-23	3/14/2005	8.5	Saturated	X	X	X	X		
		21	Saturated	X	X	X	X		
PCSB-24	3/18/2005	9	Saturated	X	X	X			
		15	Saturated	X	X	X			
		26.5	Saturated	X	X	X			

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PCSB-25	3/18/2005	8	Saturated	X	X	X			
		13	Saturated	X	X	X			
PCSB-26	7/26/2005	0.5	Unsaturated	X	X	X		X	X
		6	Saturated	X	X	X		X	X
		8	Saturated	X	X	X		X	X
PCSB-26R	4/19/2019	0.5-2	Unsaturated	X	X	X	X	X	X
PCSB-27	7/26/2005	0.5	Unsaturated	X	X	X		X	X
		1.5	Unsaturated	X	X	X		X	X
		10.5	Saturated	X	X	X		X	X
PCSB-28	7/26/2005	0.5	Unsaturated	X	X	X		X	X
		2	Saturated	X	X	X		X	X
		15	Saturated	X	X	X		X	X
PCSB-29	7/26/2005	0.5	Unsaturated	X	X	X		X	X
		2	Saturated	X	X	X		X	X
		11.5	Saturated	X	X	X		X	X
PCSB-30	7/26/2005	0.5	Unsaturated	X	X	X		X	X
		2	Unsaturated	X	X	X		X	X
		15	Saturated	X	X	X		X	X
PCSB-30R	4/19/2019	0.5-2	Unsaturated	X	X	X	X	X	X
PCSB-31	7/28/2005	0.5	Unsaturated	X	X	X		X	X
		3.5	Saturated	X	X	X			
		10.5	Saturated	X	X	X			
PCSB-32	7/28/2005	0.5	Unsaturated		X	X		X	X
		3.5	Saturated	X	X	X			
		11.5	Saturated	X	X	X			
	8/1/2005	0.5	Unsaturated	X					
PCSB-33	7/28/2005	0.5	Unsaturated	X	X	X		X	X
		4	Saturated	X	X	X			
		11.5	Saturated	X	X	X			
PCSB-34	7/27/2005	0.5	Unsaturated	X	X	X		X	X
		5	Saturated	X	X	X		X	X
		16.5	Saturated	X	X	X		X	X
PCSB-35	8/2/2005	0.5	Unsaturated	X	X	X		X	X
		2.5	Saturated	X	X	X			
		15.5	Saturated	X	X	X			
PCSB-36	7/27/2005	0.5	Unsaturated	X	X	X		X	X
		4	Saturated	X	X	X		X	X
		16	Saturated	X	X	X		X	X
PCSB-37	8/3/2005	0.5	Unsaturated	X	X	X		X	X
		4	Saturated	X	X	X			
		10.5	Saturated	X	X	X			
PCSB-38	7/27/2005	0.5	Unsaturated	X	X	X		X	X
		3.5	Saturated	X	X	X		X	X
		9.5	Saturated	X	X	X		X	X
PCSB-39	7/27/2005	0.5	Unsaturated	X	X	X		X	X
		4	Saturated	X	X	X			
		11	Saturated	X	X	X			
PCSB-40	7/28/2005	0.5	Unsaturated	X	X	X		X	X
		4	Saturated	X	X	X			
		10.5	Saturated	X	X	X			
PCSB-41	7/28/2005	0.5	Unsaturated	X	X	X		X	X
		3.5	Saturated	X	X	X			
		9.5	Saturated	X	X	X			
PCSB-41R	4/22/2019	0.5-2	Unsaturated	X	X	X	X	X	X
		9-11	Saturated	X	X	X	X		
PCSB-42	8/1/2005	0.5	Unsaturated	X	X	X		X	X
		2.5	Saturated	X	X	X			
		13	Saturated	X	X	X			

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PCSB-43	8/1/2005	0.5	Unsaturated	X	X	X		X	X
		3.5	Saturated	X	X	X			
		9	Saturated	X	X	X			
PCSB-44	8/3/2005	0.5	Unsaturated	X	X	X		X	X
		4.5	Saturated	X	X	X			
		11.5	Saturated	X	X	X			
PCSB-45	8/3/2005	0.5	Unsaturated	X	X	X		X	X
		3	Saturated	X	X	X			
		10.5	Saturated	X	X	X			
PCSB-46	7/27/2005	0.5	Unsaturated	X	X	X		X	X
		4	Unsaturated	X	X	X			
		13	Saturated	X	X	X			
PCSB-47	8/3/2005	0.5	Unsaturated	X	X	X		X	X
		4	Unsaturated	X	X	X			
		10.5	Saturated	X	X	X			
PCSB-48	8/3/2005	0.5	Unsaturated	X	X	X		X	X
		4	Unsaturated	X	X	X			
		11	Saturated	X	X	X			
PCSB-49	8/3/2005	0.5	Unsaturated	X	X	X		X	X
		4	Saturated	X	X	X			
		11	Saturated	X	X	X			
PCSB-49R	4/19/2019	3-5	Saturated	X	X	X	X		
		10-12	Saturated	X	X	X	X		
PCSB-50	8/3/2005	0.5	Unsaturated	X	X	X		X	X
		4	Saturated	X	X	X			
		12.5	Saturated	X	X	X			
PCSB-51	8/3/2005	0.5	Unsaturated	X	X	X		X	X
		3	Unsaturated	X	X	X			
PCSB-52	8/2/2005	0.5	Unsaturated	X	X	X		X	X
		5.5	Saturated	X	X	X			
		15.5	Saturated	X	X	X			
PCSB-53	8/1/2005	0.5	Unsaturated	X	X	X			
		3.5	Unsaturated	X	X	X			
		16.5	Saturated	X	X	X			
PCSB-54	8/3/2005	0.5	Unsaturated	X	X	X		X	X
		4.5	Saturated	X	X	X			
		11.5	Saturated	X	X	X			
PCSB-55	8/3/2005	0.5	Unsaturated	X	X	X		X	X
		3.5	Saturated	X	X	X			
		11	Saturated	X	X	X			
PCSB-56	8/15/2005	0.5	Unsaturated	X	X	X		X	X
		2	Unsaturated	X	X	X			
		6.5	Saturated	X	X	X			
PCSB-57	8/15/2005	0.5	Unsaturated	X	X	X		X	X
		2.5	Unsaturated	X	X	X			
		5.5	Saturated	X	X	X			
PCSB-58	8/15/2005	0.5	Unsaturated	X	X	X		X	X
		5	Unsaturated	X	X	X			
		11	Saturated	X	X	X			
PCSB-59	8/15/2005	0.5	Unsaturated	X	X	X		X	X
		5.5	Saturated	X	X	X			
		10.5	Saturated	X	X	X			
PCSB-60	8/15/2005	0.5	Unsaturated	X	X	X		X	X
		4	Saturated	X	X	X			
		11	Saturated	X	X	X			
PCTP-01	2/8/2005	6	Unsaturated	X	X	X			
PCTP-01R	4/5/2019	5-7	Unsaturated	X	X	X	X		
PCTP-02	2/8/2005	5	Unsaturated	X	X	X			
PCTP-02R	4/5/2019	4-6	Unsaturated	X	X	X	X		
PCTP-03	2/15/2005	11.5	Saturated	X	X	X	X		

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PCTP-04	2/15/2005	12	Saturated	X	X	X	X		
PCTP-05	2/15/2005	11.5	Saturated	X	X	X	X		
PCTP-06	2/16/2005	16	Saturated	X	X	X	X		
PCTP-07	2/17/2005	12	Saturated	X	X	X			
		14	Saturated	X	X	X			
PCTP-07R	9/20/2019	10-12	Saturated	X	X	X	X		
PCTP-08	2/15/2005	10.5	Saturated	X	X	X	X		
PCTP-08R	4/9/2019	10-12	Saturated	X	X	X	X		
PCTP-09	2/9/2005	7	Saturated	X	X	X			
PCTP-10	2/9/2005	8	Saturated	X	X	X			
PCTP-10R	4/9/2019	7-9	Saturated	X	X	X	X		
PCTP-11	2/9/2005	4	Saturated	X	X	X			
PCTP-12	2/9/2005	3	Unsaturated	X	X	X	X		
PCTP-12R	4/12/2019	2-4	Unsaturated	X	X	X	X		
		9-11	Saturated	X	X	X	X		
PCTP-13	2/10/2005	8	Saturated	X	X	X	X		
PCTP-14	3/3/2005	2.5	Unsaturated	X	X	X	X		
PCTP-214	3/3/2005	7.5	NA	X	X	X	X		
PCTP-15	3/3/2005	3.5	Saturated	X	X	X	X		
PCTP-16	2/10/2005	2	Unsaturated	X	X	X			
PCTP-17	2/10/2005	8	Saturated	X	X	X	X		
PCTP-17R	4/15/2019	5-6	Unsaturated	X	X	X	X		
		7-9	Saturated	X	X	X	X		
		9-11	Saturated	X	X	X	X		
		18-20	Saturated	X	X	X	X		
		24-25	Saturated	X	X	X	X		
PCTP-18	2/16/2005	6	Unsaturated	X	X	X			
PCTP-19	2/18/2005	6	Saturated	X	X	X	X		
		11	Saturated	X	X	X	X		
PCTP-20	3/2/2005	20	Saturated	X	X	X	X		
PCTP-21	2/11/2005	4	Saturated	X	X	X			
PCTP-22	3/2/2005	4.5	Saturated	X	X	X	X		
PCTP-23	3/2/2005	7	Saturated	X	X	X	X		
		10	Saturated	X	X	X	X		
PCTP-24	2/11/2005	19.5	Saturated	X	X	X			
PCTP-25	2/18/2005	5	Saturated	X	X	X	X		
PCTP-26	2/18/2005	12	Saturated	X	X	X	X		
PCTP-27	2/16/2005	11	Saturated	X	X	X			
PCTP-28	2/17/2005	7	Saturated	X	X	X			
PCTP-28R	4/11/2019	6-8	Saturated	X	X	X	X		
		11-12	Saturated	X	X	X	X		
PCTP-29	2/18/2005	13	Saturated	X	X	X			
PCTP-30	2/22/2005	7	Saturated	X	X	X	X		
PCTP-31	2/11/2005	11	Saturated	X	X	X			
PCTP-32	3/2/2005	7	Saturated	X	X	X	X		
PCTP-32R	4/9/2019	6-8	Saturated	X	X	X	X		
PCTP-33	3/2/2005	12	Saturated	X	X	X	X		
PCTP-34	2/28/2005	10	Saturated	X	X	X	X		
		14	Saturated	X	X	X	X		
PCTP-35	2/16/2005	6	Saturated	X	X	X			
PCTP-36	2/18/2005	6	Unsaturated	X	X	X	X		
PCTP-236	2/18/2005	7	NA	X	X	X	X		
PCTP-37	2/17/2005	3	Unsaturated	X	X	X			
PCTP-38	2/22/2005	10	Saturated	X	X	X	X		
		12	Saturated	X	X	X	X		
PCTP-39	2/24/2005	8	Saturated	X	X	X	X		
PCTP-40	2/14/2005	9	Saturated	X	X	X	X		
		10	Saturated	X	X	X			
PCTP-41	2/24/2005	6.5	Saturated	X	X	X	X		
PCTP-42	2/23/2005	13.5	Saturated	X	X	X	X		

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PCTP-43	2/23/2005	7	Saturated	X	X	X	X		
PCTP-44	2/14/2005	4	Saturated	X	X	X	X		
		9	Saturated	X	X	X	X		
PCTP-45	2/14/2005	10	Saturated	X	X	X	X		
PCTP-46	2/22/2005	9	Saturated	X	X	X	X		
		10.5	Saturated	X	X	X	X		
PCTP-47	2/17/2005	6	Unsaturated	X	X	X			
PCTP-47R	4/9/2019	5-7	Unsaturated	X	X	X	X		
PCTP-49	2/23/2005	9	Saturated	X	X	X	X		
PCTP-49R	4/16/2019	8-10	Saturated	X	X	X	X		
		10-11	Saturated	X	X	X	X		
PCTP-50	2/23/2005	11	Saturated	X	X	X	X		
PCTP-51	2/22/2005	11	Saturated	X	X	X	X		
PCTP-51R	4/18/2019	10-12	Saturated	X	X	X	X		
PCTP-52	2/22/2005	7	Saturated	X	X	X			
PCTP-53	2/22/2005	10	Saturated	X	X	X			
PCTP-54	2/28/2005	8	Saturated	X	X	X	X		
PCTP-55	2/28/2005	7	Saturated	X	X	X	X		
PCTP-56	2/28/2005	8	Saturated	X	X	X			
PCTP-57	2/25/2005	12	Saturated	X	X	X	X		
PCTP-58	2/24/2005	2	Unsaturated	X	X	X	X		
PCTP-59	2/25/2005	5	Saturated	X	X	X	X		
		7	Saturated	X	X	X	X		
PCTP-60	2/25/2005	2	Saturated	X	X	X	X		
PCTP-61	9/8/2005	0.5	Unsaturated	X	X	X		X	X
		7.5	Unsaturated	X	X	X		X	X
PCTP-62	9/8/2005	0.5	Unsaturated	X	X	X			X
		10.5	Saturated	X	X	X		X	X
PCTP-63	9/8/2005	0.5	Unsaturated	X	X	X		X	X
		10.5	Saturated	X	X	X		X	X
PCTP-64	9/8/2005	0.5	Unsaturated	X	X	X		X	X
		7	Unsaturated	X	X	X		X	X
PCTP-65	9/8/2005	0.5	Unsaturated	X	X	X		X	X
		7.5	Unsaturated	X	X	X		X	X
PCTP-66	9/8/2005	0.5	Unsaturated	X	X	X		X	X
		7.5	Saturated	X	X	X		X	X
PCTP-66R	4/24/2019	0-0.5	Unsaturated	X	X	X	X	X	X
		0.5-2	Unsaturated	X	X	X	X	X	X
		8-10	Saturated	X	X	X	X	X	X
PCTP-66R-HC	4/4/2019	0-2	Unsaturated	X	X	X	X	X	X
		2-4	Unsaturated	X	X	X	X	X	X
PCTP-67	9/12/2005	0.5	Unsaturated	X	X	X		X	X
		8	Saturated	X	X	X		X	X
PCTP-68	9/9/2005	0.5	Unsaturated	X	X	X		X	X
		6	Saturated	X	X	X		X	X
PCTP-69	9/9/2005	0.5	Unsaturated	X	X	X		X	X
		17.5	Saturated	X	X	X		X	X
PCTP-70	9/9/2005	0.5	Unsaturated	X	X	X			X
		18	Saturated	X	X	X		X	X
PCTP-71	9/9/2005	0.5	Unsaturated	X	X	X		X	X
		17.5	Saturated	X	X	X		X	X
PCTP-72	9/9/2005	0.5	Unsaturated	X	X	X		X	X
		12	Saturated	X	X	X		X	X

Table 1
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Location	Sample Date	Sample Depth	Saturation	TCL VOCs	TCL SVOCs	Metals	Cyanide	Pesticides	PCBs
PCTP-73	9/9/2005	0.5	Unsaturated	X	X	X		X	X
		9.5	Saturated	X	X	X		X	X
PCTP-73R	4/10/2019	0-0.5	Unsaturated	X	X	X	X	X	X
PCTP-74	9/9/2005	0.5	Unsaturated	X	X	X		X	X
		12.5	Saturated	X	X	X		X	X
PCTP-75	9/9/2005	0.5	Unsaturated	X	X	X		X	X
		11	Unsaturated	X	X	X		X	X
PCTP-75R	4/11/2019	10-12	Unsaturated	X	X	X	X		
		14-16	Saturated	X	X	X	X		
PCTP-76	9/12/2005	0.5	Unsaturated	X	X	X		X	X
		6.5	Unsaturated	X	X	X		X	X
PCTP-77	9/12/2005	0.5	Unsaturated	X	X	X		X	X
		10.5	Saturated	X	X	X		X	X
PCTP-78	9/12/2005	0.5	Unsaturated	X	X	X		X	X
		9.5	Saturated	X	X	X		X	X
PCTP-79	9/12/2005	0.5	Unsaturated	X	X	X		X	X
		10	Saturated	X	X	X		X	X
PCTP-80	9/12/2005	8	Unsaturated	X	X	X		X	X
PSSTP-01A	3/11/2003	1-2	Unsaturated	X	X	X		X	X
PSSTP-01B	3/11/2003	5-6	Unsaturated	X	X	X		X	X
PSSTP-01R	4/10/2019	5-6	Unsaturated	X	X	X	X	X	X
PSSTP-02A	3/11/2003	1-2	Unsaturated	X	X	X		X	X
PSSTP-02B	3/11/2003	5-6	Unsaturated	X	X	X		X	X
PSSTP-03A	3/11/2003	1-2	Unsaturated	X	X	X		X	X
PSSTP-03B	3/11/2003	8-9	Saturated	X	X	X		X	X
PSSTP-04A	3/11/2003	1-2	Unsaturated	X	X	X		X	X
PSSTP-04B	3/11/2003	8-9	Saturated	X	X	X		X	X
PSSTP-04R	4/11/2019	1-2	Unsaturated	X	X	X	X	X	X
		7-8	Unsaturated	X	X	X	X	X	X
		8-9	Saturated	X	X	X	X	X	X
		16-17	Saturated	X	X	X	X	X	X
PSSTP-05A	3/11/2003	1-2	Unsaturated	X	X	X		X	X
PSSTP-05B	3/11/2003	5-6	Saturated	X	X	X		X	X
PSSTP-06A	3/11/2003	1-2	Unsaturated	X	X	X		X	X
PSSTP-06B	3/11/2003	5-6	Saturated	X	X	X		X	X
PSSTP-07A	3/11/2003	1-2	Unsaturated	X	X	X		X	X
PSSTP-07B	3/11/2003	8-9	Saturated	X	X	X		X	X
PSSTP-07R	4/18/2019	0.5-2	Unsaturated	X	X	X	X	X	X
		8-9	Saturated	X	X	X	X	X	X
		20-22	Saturated	X	X	X	X		
PSSTP-08A	3/11/2003	1-2	Unsaturated	X	X	X		X	X
PSSTP-08B	3/11/2003	6-7	Unsaturated	X	X	X		X	X
PSSTP-09A	3/12/2003	1-2	Unsaturated	X	X	X		X	X
PSSTP-09B	3/12/2003	6-7	Unsaturated	X	X	X		X	X
PSSTP-10A	3/12/2003	1-2	Unsaturated	X	X	X		X	X
PSSTP-10B	3/12/2003	8-9	Saturated	X	X	X		X	X
PSSTP-10R	4/16/2019	1-2	Unsaturated	X	X	X	X	X	X
		8-9	Saturated	X	X	X	X	X	X
PSSTP-11A	3/12/2003	1-2	Unsaturated	X	X	X		X	X
PSSTP-11B	3/12/2003	8-9	Saturated	X	X	X		X	X
PSSTP-12A	3/12/2003	1-2	Unsaturated	X	X	X		X	X
PSSTP-12B	3/12/2003	7-8	Saturated	X	X	X		X	X
PSSTP-13A	3/12/2003	1-2	Unsaturated	X	X	X		X	X
PSSTP-13B	3/12/2003	7-8	Saturated	X	X	X		X	X
PSSTP-14A	3/12/2003	1-2	Unsaturated	X	X	X		X	X
PSSTP-14B	3/12/2003	7-8	Saturated	X	X	X		X	X
PSSTP-15A	3/12/2003	1-2	Unsaturated	X	X	X		X	X
PSSTP-15B	3/12/2003	8-9	Saturated	X	X	X		X	X
PSSTP-16A	3/12/2003	1-2	Unsaturated	X	X	X		X	X
PSSTP-16B	3/12/2003	5-6	Saturated	X	X	X		X	X

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Location	Sample Date	Sample Depth	Saturation	TCL VOCs	TCL SVOCs	Metals	Cyanide	Pesticides	PCBs
PSSTP-17A	3/12/2003	1-2	Unsaturated	X	X	X		X	X
PSSTP-17B	3/12/2003	8-9	Saturated	X	X	X		X	X
PSSTP-18A	3/12/2003	1-2	Unsaturated	X	X	X		X	X
PSSTP-18B	3/12/2003	6-7	Saturated	X	X	X		X	X
PSSTP-19A	3/12/2003	1-2	Unsaturated	X	X	X		X	X
PSSTP-19B	3/12/2003	7-8	Saturated	X	X	X		X	X
PSSTP-20A	3/13/2003	1-2	Unsaturated	X	X	X		X	X
PSSTP-20B	3/13/2003	8-9	Saturated	X	X	X		X	X
PSSTP-21A	3/13/2003	1-2	Unsaturated	X	X	X		X	X
PSSTP-21B	3/13/2003	8-9	Saturated	X	X	X		X	X
PSSTP-22A	3/13/2003	1-2	Unsaturated	X	X	X		X	X
PSSTP-22B	3/13/2003	6-7	Saturated	X	X	X		X	X
PSSTP-22R	4/24/2019	0.5-2	Unsaturated	X	X	X	X	X	X
		4-6	Unsaturated	X	X	X	X		
PSSTP-23A	3/13/2003	1-2	Unsaturated	X	X	X		X	X
PSSTP-23B	3/13/2003	7-8	Unsaturated	X	X	X		X	X
PSSTP-24A	3/13/2003	1-2	Unsaturated	X	X	X		X	X
PSSTP-24B	3/13/2003	7-8	Saturated	X	X	X		X	X
PSSTP-25A	3/13/2003	1-2	Unsaturated	X	X	X		X	X
PSSTP-25B	3/13/2003	7-8	Unsaturated	X	X	X		X	X
PSSTP-26A	3/13/2003	1-2	Unsaturated	X	X	X		X	X
PSSTP-26B	3/13/2003	7-8	Saturated	X	X	X		X	X
PSSTP-27A	3/13/2003	1-2	Unsaturated	X	X	X		X	X
PSSTP-27B	3/13/2003	5-6	Saturated	X	X	X		X	X
PSSTP-28A	3/13/2003	1-2	Unsaturated	X	X	X		X	X
PSSTP-28B	3/13/2003	5-6	Saturated	X	X	X		X	X
PSSTP-29A	3/13/2003	1-2	Unsaturated	X	X	X		X	X
PSSTP-29B	3/13/2003	5-6	Saturated	X	X	X		X	X
PSSTP-30A	3/13/2003	1-2	Unsaturated	X	X	X		X	X
PSSTP-30B	3/13/2003	5-6	Saturated	X	X	X		X	X
S-101	4/10/2019	10-12	Saturated	X	X				
		14.5-16.5	Saturated	X	X				
S-102	4/10/2019	10-12	Saturated	X	X				
		13.5-15.5	Saturated	X	X				
S-103	4/11/2019	10-12	Saturated	X	X				
		13-15	Saturated	X	X				
S-104	4/10/2019	10-12	Saturated	X	X				
		15.5-17.5	Saturated	X	X				
S-105	4/12/2019	2-4	Unsaturated	X	X	X	X		
		8-10	Saturated	X	X	X	X		
S-106	4/12/2019	2-4	Unsaturated	X	X	X	X		
		8-10	Saturated	X	X	X	X		
S-107	4/23/2019	2-4	Unsaturated	X	X	X	X		
		4-5.5	Saturated	X	X	X	X		
S-108	4/15/2019	2-4	Unsaturated	X	X	X	X		
		8-10	Saturated	X	X	X	X		
		15-17	Saturated	X	X	X	X		
S-109	4/15/2019	2-4	Unsaturated	X	X	X	X		
		8-10	Saturated	X	X	X	X		
S-110	4/12/2019	2-4	Unsaturated	X	X	X	X		
		8-10	Saturated	X	X	X	X		
S-111	4/23/2019	2-4	Unsaturated	X	X	X	X		
		4.5-6.5	Saturated	X	X	X	X		
S-112	4/12/2019	2-4	Saturated	X	X	X	X		
		8-10	Saturated	X	X	X	X		

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Location	Sample Date	Sample Depth	Saturation	TCL VOCs	TCL SVOCs	Metals	Cyanide	Pesticides	PCBs
S-113	4/23/2019	0-1	Unsaturated	X	X	X	X		
S-113B	4/24/2019	1-3	Unsaturated	X	X	X	X		
		10-12	Saturated	X	X	X	X		
		13-15	Saturated	X	X	X	X		
		15-17	Saturated	X	X	X	X		
S-114	4/15/2019	2-4	Unsaturated	X	X	X	X		
		8-10	Saturated	X	X	X	X		
		14-15	Saturated	X	X	X	X		
		23-25	Saturated	X	X	X	X		
S-115	4/16/2019	4-6	Saturated	X	X	X	X		
S-116	4/16/2019	4-6	Saturated	X	X	X	X		
S-117	4/16/2019	4-6	Saturated	X	X	X	X		
S-118	4/16/2019	4-6	Saturated	X	X	X	X		
S-119	4/12/2019	0-1	Unsaturated	X	X	X	X		
S-120	4/24/2019	0-1	Unsaturated	X	X	X	X		
S-121	4/12/2019	0-1	Unsaturated	X	X	X	X		
S-122	4/12/2019	0-1	Unsaturated	X	X	X	X		
	4/9/2019	10-12	Saturated	X	X	X	X		
S-123	4/18/2019	7-9	Saturated	X	X	X	X		
		13-15	Saturated	X	X	X	X		
S-124	4/18/2019	7-9	Saturated	X	X	X	X		
		10-12	Saturated	X	X	X	X		
S-125	4/18/2019	7-9	Saturated	X	X	X	X		
		11-13	Saturated	X	X	X	X		
		13-15	Saturated	X	X	X	X		
S-126	4/17/2019	7-9	Saturated	X	X	X	X		
		13-15	Saturated	X	X	X	X		
S-127	4/17/2019	2-4	Unsaturated	X	X	X	X		
		6-8	Saturated	X	X	X	X		
		13-15	Saturated	X	X	X	X		
S-128	4/18/2019	2-4	Unsaturated	X	X	X	X		
		10-12	Saturated	X	X	X	X		
		13-15	Saturated	X	X	X	X		
S-129	4/18/2019	2-4	Unsaturated	X	X	X	X		
		8-10	Saturated	X	X	X	X		
		10-12	Saturated	X	X	X	X		
S-130	4/17/2019	2-4	Unsaturated	X	X	X	X		
		7-8	Saturated	X	X	X	X		
		10-12	Saturated	X	X	X	X		
		13-15	Saturated	X	X	X	X		
S-131	4/17/2019	2-4	Saturated	X	X	X	X		
		7-9	Saturated	X	X	X	X		
S-132	4/17/2019	2-4	Unsaturated	X	X	X	X		
		8-10	Saturated	X	X	X	X		
S-133	4/17/2019	2-4	Unsaturated	X	X	X	X		
		7-9	Saturated	X	X	X	X		
		13-15	Saturated	X	X	X	X		
S-135	4/22/2019	4-6	Saturated	X	X	X	X		
		8-10	Saturated	X	X	X	X		
S-136	4/22/2019	4-6	Saturated	X	X	X	X		
		7-9	Saturated	X	X	X	X		
S-138	4/5/2019	0-0.5	Unsaturated						X
		0.5-2	Unsaturated						X
S-139	4/10/2019	0-0.5	Unsaturated						X
		0.5-2	Unsaturated						X
S-140	4/10/2019	0-0.5	Unsaturated						X
		0.5-2	Unsaturated						X

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Location	Sample Date	Sample Depth	Saturation	TCL VOCs	TCL SVOCs	Metals	Cyanide	Pesticides	PCBs
S-142	4/25/2019	6-6.5	Saturated				X		
		7-8	Saturated	X	X	X	X		
S-144	4/24/2019	15-17	Saturated	X	X	X	X		
		22-24	Saturated	X	X	X	X		
S-146	4/25/2019	14-16	Unsaturated	X	X	X	X		
		17-19	Saturated	X	X	X	X		
S-147	4/25/2019	12-14	Saturated	X	X	X	X		
		18-20	Saturated	X	X	X	X		
S-148	4/25/2019	8-10	Unsaturated	X	X	X	X		
		16-18	Saturated	X	X	X	X		
S-149	4/25/2019	8-10	Unsaturated	X	X	X	X		
		18.5-20.5	Saturated	X	X	X	X		
S-151	4/25/2019	0.5-2	Unsaturated	X	X	X	X		
		3-5	Saturated	X	X	X	X		
S-153	4/26/2019	7-9	Saturated	X	X	X	X		
		13.5-15	Saturated	X	X	X	X		
S-154	4/26/2019	9-11	Saturated	X	X	X	X		
		12-14	Saturated	X	X	X	X		
S-155	4/26/2019	10-12	Saturated	X	X	X	X		
		13-15	Saturated	X	X	X	X		
S-156	5/3/2019	3-5	Unsaturated	X	X	X	X		
		7.5-9.5	Unsaturated	X	X	X	X		
		14-16	Saturated	X	X	X	X		
S-157	5/3/2019	7-9	Saturated	X	X	X	X		
		23-25	Saturated	X	X	X	X		
S-158	4/26/2019	11-13	Saturated	X	X	X	X		
		18-20	Saturated	X	X	X	X		
S-159	4/26/2019	11-13	Saturated	X	X	X	X		
		18-20	Saturated	X	X	X	X		
S-160	5/3/2019	10-12	Saturated	X	X	X	X		
		13-15	Saturated	X	X	X	X		
S-161	5/3/2019	5-7	Unsaturated	X	X	X	X		
		10-12	Saturated	X	X	X	X		
S-162	5/3/2019	5-7	Saturated	X	X	X	X		
		15-17	Saturated	X	X	X	X		
S-163	9/19/2019	0.5-2	Unsaturated	X	X	X	X		
		2-4	Saturated	X	X	X	X		
S-164	9/19/2019	4-6	Saturated	X	X	X	X		
S-167	9/20/2019	7-9	Unsaturated	X	X	X	X		
S-168	9/19/2019	6-8	Unsaturated	X	X	X	X		
S-171	9/19/2019	5-7	Unsaturated	X	X	X	X		
S-172	9/19/2019	5-7	Unsaturated	X	X	X	X		
S-173	9/19/2019	5-7	Unsaturated	X	X	X	X		
TP-11	3/7/2005	14	Saturated	X	X	X	X		
TP-13	3/8/2005	14	Saturated	X	X	X	X		
TP-14	3/8/2005	18	Saturated	X	X	X	X		
TP-15	3/8/2005	5.5	Saturated	X	X	X	X		
TP-15R	4/16/2019	5-7	Saturated	X	X	X	X		
		10.5-12.5	Saturated	X	X	X	X		
TP-16	3/9/2005	6	Saturated	X	X	X	X		
TP-21	3/10/2005	8	Saturated	X	X	X	X		
TP-23	3/10/2005	7	Saturated	X	X	X	X		
TP-25	3/11/2005	5	Saturated	X	X	X			
TP-30	3/14/2005	2	Unsaturated	X	X	X	X		
		12	Saturated	X	X	X	X		
TP-32	3/14/2005	6.5	Saturated	X	X	X	X		
TP-33	3/14/2005	9	Saturated	X	X	X	X		
TP-34	3/14/2005	4	Saturated	X	X	X	X		
TP-35	3/15/2005	4	Unsaturated	X	X	X	X		
TP-36	3/15/2005	7	Saturated	X	X	X	X		

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TP-37	3/15/2005	8	Saturated	X	X	X	X		
		9	Saturated	X	X	X	X		
TP-39	3/16/2005	9	Saturated	X	X	X	X		
TP-44	3/16/2005	4	Unsaturated	X	X	X			
TP-44R	4/22/2019	3-5	Unsaturated	X	X	X	X		
		5-7	Saturated	X	X	X	X		
		7-9	Saturated	X	X	X	X		
TP-58	3/18/2005	11	Saturated	X	X	X			
TP-59	3/18/2005	12	Saturated	X	X	X			
TP-60	3/18/2005	18	Saturated	X	X	X			
TP-63	3/21/2005	8	Saturated	X	X	X	X		
TP-63R	4/18/2019	7-9	Saturated	X	X	X	X		
		11-13	Saturated	X	X	X	X		
TP-64	3/21/2005	3	Unsaturated	X	X	X	X		
		7	Saturated	X	X	X	X		
TP-68A	3/21/2005	9	Saturated	X	X	X	X		
TP-70	3/22/2005	12	Saturated	X	X	X	X		
TP-71	3/22/2005	10	Saturated	X	X	X			
TP-75	3/23/2005	7	Saturated	X	X	X			
TP-78	3/23/2005	7	Saturated	X	X	X			
TP-278	3/23/2005	9	NA	X	X	X			

Notes:

1. The consultant responsible for collecting each sample can be identified by series as follows:
   "PSSTP-" Series in 2003 - Samples were collected by Paulus Sokolowski and Sartor Engineering, PC (PS&S).
   "PC-B" Series in 2005 - Soil borings were advanced by Earth Engineering Incorporated (EEI) and samples were collected by PS&S.
   "PCSB-" Series in 2005 - Samples were collected by PS&S.
   "PCTP-" Series in 2005 - Samples were collected by PS&S.
   "TP-" Series in 2005 - Test pits were excavated by EEI and samples were collected by PS&S.
   "MW-" Series in 2018 and 2019 - Samples were collected by Arcadis U.S., Inc. (Arcadis).
   "S-" Series in 2019 - Samples were collected by Arcadis.
   "..R" Revisited Locations in 2019 - Samples were collected by Arcadis.
2. Sample depth is reported in feet below ground surface.
3. 2003 and 2005 samples were analyzed by Hampton-Clarke, Veritech Laboratories of Fairfield, New Jersey (Veritech).
4. 2018 and 2019 samples were analyzed by SGS North America Incorporated Laboratories of Dayton, New Jersey (SGS).
5. Samples were submitted for laboratory analysis for one or more of the following constituent groups, as indicated above.
   - Target Compound List (TCL) volatile organic compounds (VOC) using United States Environmental Protection Agency (USEPA) SW-846 Method 8260.
   - TCL semi-volatile organic compounds (SVOC) using USEPA SW-846 Method 8270.
   - Metals using USEPA SW-846 Methods 6010 and 7471.
   - Cyanide using USEPA SW-846 Method 9010 (Veritech) or 9012B (SGS).
   - Pesticides using USEPA SW-846 Method 8081.
   - Polychlorinated biphenyls (PCBs) using USEPA SW-846 Method 8082.
6. An **X** indicates analysis was conducted.
7. Saturated indicates that the soil sample is underneath the water table or within the bounds of the capillary fringe area.
8. A soil sample was considered saturated if its elevation was below the higher of either: (1) the groundwater elevation encountered in the soil boring/test pit or (2) the groundwater surface elevation from the highest potentiometric surface map (January 30, 2006 for remedial investigation samples and March 2018 for supplemental samples).
9. NA = Saturation could not be determine because the parent sample for this duplicate sample is not available.
10. Revisited sampling locations were renamed with the suffix "R", and represent the same location as the historical sampling locations without the suffix "R".

Table 2
Groundwater Sample Locations and Laboratory Analysis Summary

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Location	Sample Date	TCL VOCs	TCL SVOCs	Total Metals	Dissolved Metals	Cyanide, Total	Cyanide, Free	Total Dissolved Solids	Pesticides	PCBs
MW-102	5/31/2018	X	X	X		X			X	X
MW-103	5/31/2018	X	X	X		X			X	X
MW-104	5/30/2018	X	X	X		X			X	X
MW-107	5/30/2018	X	X	X		X			X	X
	3/28/2019				X			X		
MW-108	10/4/2019	X	X	X	X	X		X		
MW-109	10/4/2019	X	X	X	X	X				
MW-110	10/4/2019	X	X	X	X	X				
MW-111	10/4/2019	X	X	X	X	X		X		
MW-112	10/4/2019	X	X	X	X	X				
MW-113	10/4/2019	X	X	X	X	X				
MW-5	3/19/2018	X	X	X		X			X	X
MW-6	3/22/2018	X	X	X		X			X	X
PCHP-01	3/24/2005	X	X	X						
PCHP-02	3/25/2005	X	X	X						
PCHP-03	3/24/2005	X	X	X						
PCHP-04	3/25/2005	X	X	X						
PCHP-05	3/25/2005	X	X	X						
PCHP-06	3/25/2005	X	X	X						
PCHP-07	3/25/2005	X	X	X						
PCMW-01	11/1/2005	X	X	X	X				X	X
	1/30/2006	X	X	X	X				X	X
	3/19/2018	X	X	X		X			X	X
PCMW-02 / MW-106*	11/1/2005	X	X	X	X				X	X
	1/30/2006	X	X	X	X				X	X
	5/29/2018	X	X	X		X			X	X
PCMW-03	11/2/2005	X	X	X	X				X	X
	1/30/2006	X	X	X	X				X	X
PCMW-04	11/2/2005	X	X	X	X				X	X
	1/30/2006	X	X	X	X				X	X
	3/19/2018	X	X	X		X			X	X
	5/30/2018			X						
PCMW-05	11/2/2005	X	X	X	X				X	X
	1/31/2006	X	X	X	X				X	X
	3/23/2018	X	X	X		X			X	X
	5/30/2018			X						
	3/28/2019				X			X		
PCMW-06	11/3/2005	X	X	X	X				X	X
	1/31/2006	X	X	X	X				X	X
	3/23/2018	X	X	X		X			X	X
	5/30/2018			X						
PCMW-07	11/3/2005	X	X	X	X				X	X
	1/31/2006	X	X	X	X				X	X
PCMW-08S	11/3/2005	X	X	X	X				X	X
	3/22/2018	X	X	X		X			X	X
	5/31/2018			X						
PCMW-08D	11/4/2005	X	X	X	X				X	X
	1/31/2006	X	X	X	X				X	X
	3/22/2018	X	X	X		X			X	X
PCMW-09S	11/4/2005	X	X	X	X				X	X
	1/31/2006	X	X	X	X				X	X
	3/19/2018	X	X	X		X			X	X
	5/31/2018			X						

Table 2
Groundwater Sample Locations and Laboratory Analysis Summary

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location	Sample Date	TCL VOCs	TCL SVOCs	Total Metals	Dissolved Metals	Cyanide, Total	Cyanide, Free	Total Dissolved Solids	Pesticides	PCBs
PCMW-09D	11/7/2005	X	X	X	X				X	X
	1/31/2006	X	X	X	X				X	X
PCMW-10S	11/7/2005	X	X	X	X				X	X
	2/1/2006	X	X	X	X				X	X
	3/22/2018	X	X	X		X			X	X
PCMW-10D	11/7/2005	X	X	X	X				X	X
	2/1/2006	X	X	X	X				X	X
	3/22/2018	X	X	X		X			X	X
	7/27/2018						X			
PCMW-11S	11/7/2005	X	X	X	X				X	X
	2/2/2006	X	X	X	X				X	X
	3/23/2018	X	X	X		X			X	X
PCMW-11D	11/8/2005	X	X	X	X				X	X
	2/2/2006	X	X	X	X				X	X
PCMW-211	2/2/2006	X	X	X	X				X	X
PCMW-12S	11/8/2005	X	X	X	X				X	X
	2/1/2006	X	X	X	X				X	X
PCMW-12D	11/8/2005	X	X	X	X				X	X
	2/1/2006	X	X	X	X				X	X
PCMW-212	2/1/2006	X	X	X	X				X	X
PCMW-13S	11/9/2005	X	X	X	X				X	X
	2/2/2006	X	X	X	X				X	X
PCMW-13D	11/9/2005	X	X	X	X				X	X
	2/2/2006	X	X	X	X				X	X
PCMW-14S / MW-101*	11/9/2005	X	X	X	X				X	X
	2/3/2006	X	X	X	X				X	X
	5/30/2018	X	X	X		X			X	X
PCMW-14D	11/9/2005	X	X	X	X				X	X
	2/3/2006	X	X	X	X				X	X
PCMW-15S	11/10/2005	X	X	X	X				X	X
	2/3/2006	X	X	X	X				X	X
	3/20/2018	X	X	X		X			X	X
	7/27/2018						X			
PCMW-15D	11/10/2005	X	X	X	X				X	X
	2/3/2006	X	X	X	X				X	X
	3/20/2018	X	X	X		X			X	X
PCMW-16S / MW-105*	11/10/2005	X	X	X	X				X	X
	2/1/2006	X	X	X	X				X	X
	5/30/2018	X	X	X		X			X	X
PCMW-16D	11/10/2005	X	X	X	X				X	X
	2/1/2006	X	X	X	X				X	X
	3/19/2018	X	X	X		X			X	X
	5/30/2018						X			
	3/28/2019				X			X		
PCMW-17S	11/11/2005	X	X	X	X				X	X
	2/3/2006	X	X	X	X				X	X
	3/22/2018	X	X	X		X			X	X
PCMW-17D	11/11/2005	X	X	X	X				X	X
	2/3/2006	X	X	X	X				X	X
	3/22/2018	X	X	X		X			X	X
PCMW-18S	11/11/2005	X	X	X	X				X	X
	2/2/2006	X	X	X	X				X	X
	3/23/2018	X	X	X		X			X	X
PCMW-18D	11/11/2005	X	X	X	X				X	X
	2/2/2006	X	X	X	X				X	X
	3/23/2018	X	X	X		X			X	X

Table 2
Groundwater Sample Locations and Laboratory Analysis Summary

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location	Sample Date	TCL VOCs	TCL SVOCs	Total Metals	Dissolved Metals	Cyanide, Total	Cyanide, Free	Total Dissolved Solids	Pesticides	PCBs
PCMW-19S	11/14/2005	X	X	X	X				X	X
	2/2/2006	X	X	X	X				X	X
	3/22/2018	X	X	X		X			X	X
	5/29/2018			X						
PCMW-19D	11/14/2005	X	X	X	X				X	X
	2/2/2006	X	X	X	X				X	X
	3/22/2018	X	X	X		X			X	X
PCMW-20S	11/14/2005	X	X	X	X				X	X
	2/1/2006	X	X	X	X				X	X
	3/22/2018	X	X	X		X			X	X
PCMW-20D	11/14/2005	X	X	X	X				X	X
	2/1/2006	X	X	X	X				X	X
	3/22/2018	X	X	X		X			X	X

Notes:

1. Samples from 2005 and 2006 were collected by Paulus Sokolowski and Sartor Engineering, PC. Samples from 2018 and 2019 were collected by Arcadis U.S., Inc.
2. 2005 and 2006 samples were analyzed by Hampton-Clarke, Veritech Laboratories of Fairfield, New Jersey (Veritech).
3. 2018 and 2019 samples were analyzed by SGS North America Incorporated Laboratories of Dayton, New Jersey (SGS), except free cyanide samples which were analyzed by TestAmerica of Amherst, New York.
4. Samples were submitted for laboratory analysis for one or more of the following constituent groups, as indicated above.
   - Target Compound List (TCL) volatile organic compounds (VOC) using United States Environmental Protection Agency (USEPA) SW-846 Method 8260.
   - TCL semi-volatile organic compounds (SVOC) using USEPA SW-846 Method 8270.
   - Metals using USEPA SW-846 Methods 200.7 (Veritech), 245.1 (Veritech), 6010 (SGS), and 7470 (SGS). Dissolved metals were analyzed using the same methodology but were filtered prior to analysis.
   - Total cyanide using USEPA Method 335.1 (Veritech) or 335.4 (SGS).
   - Free cyanide using USEPA SW-846 Method 9016.
   - Total dissolved solids using American Society for Testing and Materials Method SM2540 C-11.
   - Pesticides using USEPA SW-846 Method 8081.
   - Polychlorinated biphenyls (PCBs) using USEPA SW-846 Method 8082.
5. An **X** indicates analysis was conducted.
6. * indicates that the groundwater monitoring well was installed to replace the missing historical well also listed in the monitoring well ID.

Table 3
Soil Boring and Test Pit Summary Table

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Sample ID	Sample Date	Location Type	Depth Interval (ft bgs)	Observations of Staining, Sheens, Coal Tar, Purifier Waste, and/or Odors	PID Reading (ppm)	Total PAH (ppm)	Depth to Saturated Interval (ft bgs)	Top of Clay (ft bgs)	Boring/ Test Pit Depth (ft bgs)	Site Location
B-1	10/15/86	SB	0-2	Oily sheen, strong odor	31	NA	4.3	9	12	Central Site
			2-4	Oily sheen, strong odor	36	NA				
			4-6	Oily sheen, strong odor	60	NA				
			6-9	Oily sheen, strong odor	37	NA				
B-2	10/15/86	SB	0-2	*-- No visual impacts or coal tar-like odors --*	15	NA	6.5	8	12	Central Site
			2-4	*-- No visual impacts or coal tar-like odors --*	14	NA				
			4-8	Oily sheen	27	NA				
			8-12	*-- No visual impacts or coal tar-like odors --*	32	NA				
B-3	10/16/86	SB	0-3	*-- No visual impacts or coal tar-like odors --*	1.0	NA	6	6	9	RCRA Area
			3-6	*-- No visual impacts or coal tar-like odors --*	1.0	NA				
B-5	10/16/86	SB	7-9	Strong odor	N/A	NA	5.5	12	14	RCRA Area
			9-11	Oily sheen	N/A	NA				
			11-12	Viscous, tar-like material	N/A	NA				
B-6	10/16/86	SB	6-8	Oily sheen, strong odor	N/A	NA	4.5	8	10	RCRA Area
B-7	10/16/86	SB	3-7	Strong odor	N/A	NA	5.5	9	12	Central Site
B-8	10/17/86	SB	0-2	*-- No visual impacts or coal tar-like odors --*	2.0	NA	6.5	9	12	RCRA Area
			2-4	*-- No visual impacts or coal tar-like odors --*	2.0	NA				
			4-7	*-- No visual impacts or coal tar-like odors --*	70	NA				
			7-9	Oily sheen, odor	70	NA				
B-9	10/17/86	SB	0-2	*-- No visual impacts or coal tar-like odors --*	3.0	NA	5.5	--	10	RCRA Area
			2-4	*-- No visual impacts or coal tar-like odors --*	11	NA				
			4-9	*-- No visual impacts or coal tar-like odors --*	4.0	NA				
			9-10	Very strong odor	4.0	NA				
PC-B4	2/15/05	SB	6-6.5	Burnt petroleum-like odor (slight)	4.5	NA	12	16	57	Central Site
PC-B7	2/8/05	SB	0-6	Slight petroleum-like odor	0.0	NA	6	20	37	Central Site
PC-B8	2/9/05	SB	6-10	*-- No visual impacts or coal tar-like odors --*	0.4, 0.8	NA	5	15	41	Central Site
			15-17	Possible burnt petroleum-like odor mixed with organics odor; sample collected 15.5-16'	0.7	17.5				
			20-22	*-- No visual impacts or coal tar-like odors --*	0.8	NA				
PC-B9	2/9/05	SB	15-17	Sheen; petroleum-like odor	1.9	NA	inconclusive	20	50.5	Central Site
			20-22	*-- No visual impacts or coal tar-like odors --*	2.9	NA				
PC-B10	2/17/05	SB	2-4	4" hardened tar lens; petroleum-like odor	6.9	NA	6	16	47	FBA
PC-B13	2/10/05	SB	15-17	Sheen; moderate petroleum-like odor	0.0	210	5.5	15	52	Area 2 / Misc.
PC-B14	2/11/05	SB	8-10	*-- No visual impacts or coal tar-like odors --*	3.4	NA	5.5	20	87	Misc.
			15-17	Light petroleum-like odor	0.0	20.9				
MW-101	5/14/18	SB	All Depths	*-- No visual impacts or coal tar-like odors --*	0.0	NA	4	14	16	Central Site
MW-102	5/16/18	SB	12-13	*-- No visual impacts or coal tar-like odors --*	0.0	2.91	10.5	11	20	Misc.
MW-103	5/16/18	SB	6-7	*-- No visual impacts or coal tar-like odors --*	0.0	17.3	7	16	20	Area 1A
			15-16	*-- No visual impacts or coal tar-like odors --*	0.0	0.177				
MW-104	5/15/18	SB	All Depths	*-- No visual impacts or coal tar-like odors --*	0.0	NA	5	11	15	Perimeter
MW-105	5/15/18	SB	All Depths	*-- No visual impacts or coal tar-like odors --*	0.0	NA	5.5	13.2	15	Perimeter
MW-106	5/15/18	SB	All Depths	*-- No visual impacts or coal tar-like odors --*	0.0	NA	5	8.6	15	FBA: Perimeter
MW-107	5/15/18	SB	All Depths	*-- No visual impacts or coal tar-like odors --*	0.0	NA	5	--	15	FBA: Perimeter
MW-108	9/24/19	SB	5-6	*-- No visual impacts or coal tar-like odors --*	0.0	27,700	11	16.4	20	Area 1B
			6-7	Tacky coal tar-like material; purifier material (at 6.1'); strong petroleum-like odor.	88.7					
			7-8	Tacky coal tar-like material; purifier material (at 6.1'); strong petroleum-like odor.	120.8	NA				
			8-9	Petroleum-like odor.	69.9	NA				
			10-12	Petroleum-like odor.	0.9, 1.1	3.20				
			12-13	*-- No visual impacts or coal tar-like odors --*	3.3	NA				
MW-109	9/25/19	SB	0-3	Slight petroleum-like odor.	1.8, 2.1, 0.9	NA	10	13	19	Area 1B
			5-8	*-- No visual impacts or coal tar-like odors --*	0.1, 24.1, 11	NA				
MW-110	9/25/19	SB	0-3	*-- No visual impacts or coal tar-like odors --*	38.1, 29.7, 24.3	NA	6.9	15.6	22	Area 1B

Sample ID	Sample Date	Location Type	Depth Interval (ft bgs)	Observations of Staining, Sheens, Coal Tar, Purifier Waste, and/or Odors	PID Reading (ppm)	Total PAH (ppm)	Depth to Saturated Interval (ft bgs)	Top of Clay (ft bgs)	Boring/ Test Pit Depth (ft bgs)	Site Location
MW-111	9/23/19	SB	0-3	-- No visual impacts or coal tar-like odors --	0.4, 9.9, 5.7	NA	15.8	12.5	22	Area 4
			5-8	-- No visual impacts or coal tar-like odors --	2.8, 1.6, 1.1	NA				
			10-11	-- No visual impacts or coal tar-like odors --	1.9	NA				
			11-13	Soil lightly "coated" with coal tar-like material (at 12.2'); sheen (at 12.2'); naphthalene-like odor (from 12.2-12.4')	83.7, 183.8	14,300				
			13-15	-- No visual impacts or coal tar-like odors --	19.3	37.9				
			15-19	-- No visual impacts or coal tar-like odors --	2.9 - 5.9	NA				
MW-112	9/24/19	SB	2-3	-- No visual impacts or coal tar-like odors --	1.5	NA	5	12.8	22	Area 4
MW-113	9/23/19	SB	All depths	-- No visual impacts or coal tar-like odors --	0 - 7.1	NA	8	11	22	Area 4
OB-1	3/15/90	SB	0-1.5	Possible hardened product	N/A	NA	5	11	12	Unknown
			1.5-4	Brown to black oil staining	N/A	NA				
OB-2	3/15/90	SB	2-4	Possible product	N/A	NA	5	--	14	Unknown
PCSB-01	2/18/05	SB	12-14.5	Oil-like material throughout, moderate petroleum-like odor	244	NA	14	18	44	Northern Corner
			14.5-15	Strong petroleum-like odor	1,050	5.30				
			15-18	Strong petroleum-like odor	308	NA				
			18.5-19	-- No visual impacts or coal tar-like odors --	0.0	< 0.059				
PCSB-01R	4/5/19	SB	14-15	Heavy staining (14.5-15'); petroleum-like odor(14.5-15')	111.8	0.887	11.5	16	20	Northern Corner
			15-16	Heavy staining; petroleum-like odor	440.8					
			16-17	-- No visual impacts or coal tar-like odors --	>15,000	NA				
			17-18	-- No visual impacts or coal tar-like odors --	23.1	NA				
			18-20	-- No visual impacts or coal tar-like odors --	6.6, 5.9	<0.037				
PCSB-02	3/4/05	SB	15-16	-- No visual impacts or coal tar-like odors --	0.0	16.6	5	16	50	Misc.
			16-17	Strong hydrogen sulfide odor	0.0					
			17-26	Strong hydrogen sulfide odor	0.0	NA				
PCSB-03	3/4/05	SB	13-14	-- No visual impacts or coal tar-like odors --	0.0	56.1	6	14	50	Misc.
			14-15	Moderate petroleum-like odor	4.1					
			15-16	Moderate petroleum-like odor	4.1	NA				
			16-20	Moderate petroleum-like odor	4.1	NA				
			22-24	-- No visual impacts or coal tar-like odors --	3.4	NA				
			24-26	-- No visual impacts or coal tar-like odors --	0.0	0.666				
PCSB-04	3/7/05	SB	3-4	-- No visual impacts or coal tar-like odors --	0.0	1,160	3	22	50	Area 2
			4-5	Blue-green coloration of soil	0.0					
			5-8	Blue-green coloration of soil	0.0	NA				
			12-14	Slight petroleum-like odor	1.4	1,110				
			14-24	Slight petroleum-like odor	2.1	NA				
			24-26	Slight petroleum-like odor	0.0	24.1				
PCSB-05	3/2/05	SB	0-25	-- No visual impacts or coal tar-like odors --	0.0	NA	6	18	92	FBA
			25-26	-- No visual impacts or coal tar-like odors --	6.0	NA				
			26-92	-- No visual impacts or coal tar-like odors --	0.0	NA				
PCSB-06	3/7/05	SB	12-14	Moderate petroleum-like odor	2.9	360	2	16	50	Area 2
			14-16	Moderate petroleum-like odor	2.9	NA				
			17-19	-- No visual impacts or coal tar-like odors --	0.7	31.8				
			22.5-24.5	-- No visual impacts or coal tar-like odors --	0.0	1.80				
PCSB-07	3/8/05	SB	13-14	-- No visual impacts or coal tar-like odors --	0.0	121	4	--	34	Central Site
			14-15	Sheen, slight petroleum-like odor	0.0					
			15-16	Sheen, slight petroleum-like odor	0.0	NA				
			20.5-22.5	-- No visual impacts or coal tar-like odors --	0.0	1.49				
PCSB-08	3/9/05	SB	9.5-11.5	-- No visual impacts or coal tar-like odors --	5.9	23.2	8	16	40	Central Site
			18-20	-- No visual impacts or coal tar-like odors --	0.0	1.88				
PCSB-09	3/9/05	SB	9-11	-- No visual impacts or coal tar-like odors --	0.0	10.1	6	12	40	Area 2
			14-14.5	Slight naphthalene-like odor	8.4	NA				
			14.5-16.5	Slight naphthalene-like odor	8.4	2,200				
			16.5-24	Slight naphthalene-like odor	3.1	NA				
			26.5-28.5	-- No visual impacts or coal tar-like odors --	0.0	4.12				
PCSB-10	3/22/05	SB	13-14	Slight naphthalene-like odor	2.5	NA	4	--	38	Area 2
			15.5-17.5	Slight naphthalene-like odor	4.0	459				
			19-21	-- No visual impacts or coal tar-like odors --	0.0	14.9				
PCSB-11	3/10/05	SB	14-16.5	Slight petroleum-like odor	0.6	NA	8.5	12	39.3	RCRA Area
			16.5-18.5	Slight petroleum-like odor	9.0	40.2				
			18.5-22	Slight petroleum-like odor	0.0	NA				
			22.5-24.5	-- No visual impacts or coal tar-like odors --	0.0	0.182				

Table 3
Soil Boring and Test Pit Summary Table

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Philadelphia, Pennsylvania

Sample ID	Sample Date	Location Type	Depth Interval (ft bgs)	Observations of Staining, Sheens, Coal Tar, Purifier Waste, and/or Odors	PID Reading (ppm)	Total PAH (ppm)	Depth to Saturated Interval (ft bgs)	Top of Clay (ft bgs)	Boring/ Test Pit Depth (ft bgs)	Site Location
PCSB-12	3/16/05	SB	6-8	*-- No visual impacts or coal tar-like odors --*	1.0	NA	6	18	40	RCRA Area
			8-10	*-- No visual impacts or coal tar-like odors --*	13	38.2				
			10-12	*-- No visual impacts or coal tar-like odors --*	9.0	NA				
			20.5-22.5	*-- No visual impacts or coal tar-like odors --*	0.0	< 0.098				
PCSB-13	3/15/05	SB	10-12	*-- No visual impacts or coal tar-like odors --*	1.0	NA	6	18	40	RCRA Area
			16.5-18.5	*-- No visual impacts or coal tar-like odors --*	0.0	0.395				
PCSB-14	3/16/05	SB	10-12	Tar-like material throughout, strong petroleum-like odor	9.0	45.2	6	21	38	Misc.
			12-14	Tar-like material throughout, strong petroleum-like odor	41	NA				
			14-16	Sheen, moderate petroleum-like odor	0.0	NA				
			16-18	Moderate petroleum-like odor	2.1	NA				
			18-22	Slight petroleum-like odor	2.7	NA				
			24-26	*-- No visual impacts or coal tar-like odors --*	0.0	0.310				
PCSB-15 (A/B/C/D)	3/11/05	SB	4-5	Tar-like material, moderate naphthalene-like odor	1.4	3,470	6	--	6	Misc.
			5-6	Tar-like material, moderate naphthalene-like odor	1.4	NA				
PCSB-16	3/2/05	SB	All Depths	*-- No visual impacts or coal tar-like odors --*	0.0	NA	14	18	87	Misc.
PCSB-17	3/17/05	SB	0-3	Slight petroleum-like odor	7.4	NA	6	14	36	Central Site
			3-5	Slight petroleum-like odor	12.5	8,010				
			5-10	Slight petroleum-like odor	0.3	NA				
			17-19	*-- No visual impacts or coal tar-like odors --*	0.0	3.27				
PCSB-18	3/14/05	SB	12-14	*-- No visual impacts or coal tar-like odors --*	0.4	26.8	7	14	40	Central Site
PCSB-19	3/21/05	SB	12-18	Slight petroleum-like odor	1.6	NA	6	19	40	RCRA Area
			18-19	Slight petroleum-like odor	4.8	65.5				
			19-20	*-- No visual impacts or coal tar-like odors --*	4.8					
			25.5-27.5	*-- No visual impacts or coal tar-like odors --*	0.0	0.698				
PCSB-20	3/22/05	SB	16-18	Slight petroleum-like odor	7.0	29.5	10	18	40	Central Site
			21-23	*-- No visual impacts or coal tar-like odors --*	0.0	0.150				
PCSB-21	3/11/05	SB	6-8	*-- No visual impacts or coal tar-like odors --*	0.4	NA	6	10	40	Central Site
			14-15	Slight petroleum-like odor	4.5	48.4				
			15-17	Slight petroleum-like odor	4.5	NA				
			27-29	*-- No visual impacts or coal tar-like odors --*	0.5	NA				
			38-40	*-- No visual impacts or coal tar-like odors --*	0.0	0.146				
PCSB-22	3/15/05	SB	6-7.5	Moderate petroleum-like odor	12.1	NA	7	12	40	Area 4
			7.5-8	Moderate petroleum-like odor	12.1	286				
			8.5-9.5	Petroleum-like sheen, moderate petroleum-like odor	5.1					
			9.5-12	Petroleum-like sheen, moderate petroleum-like odor	4.9	NA				
			12-16	Moderate petroleum-like odor	9.7	NA				
			16-20	*-- No visual impacts or coal tar-like odors --*	1.7	NA				
			22-24	*-- No visual impacts or coal tar-like odors --*	0.0	2.89				
PCSB-23	3/14/05	SB	6-7.5	*-- No visual impacts or coal tar-like odors --*	2.2	NA	4	16	40	RCRA Area
			7.5-9.5	*-- No visual impacts or coal tar-like odors --*	50.2	40.4				
			9.5-12	*-- No visual impacts or coal tar-like odors --*	25	NA				
			12-16	*-- No visual impacts or coal tar-like odors --*	3.5	NA				
			16-17	*-- No visual impacts or coal tar-like odors --*	0.6	NA				
			20-22	*-- No visual impacts or coal tar-like odors --*	0.0	< 0.110				
PCSB-24	3/18/05	SB	8-10	Moderate petroleum-like odor, staining	14	21.0	8	14	36	Central Site
			10-14	Sheen, slight petroleum-like odor	0.0	NA				
			14-16	Sheen, moderate petroleum-like odor	0.4	107				
			16-18	Sheen, slight petroleum-like odor	0.7	NA				
			18-20	Slight petroleum-like odor	0.3	NA				
			20-22	*-- No visual impacts or coal tar-like odors --*	0.3	NA				
			25.5-27.5	*-- No visual impacts or coal tar-like odors --*	0.0	0.680				
PCSB-25	3/18/05	SB	6-6.5	Sheen, strong petroleum-like odor	0.0	NA	5	14	40	Area 4
			6.5-7	Tar-like material throughout, strong petroleum-like odor	0.0	NA				
			7-9	Tar-like material throughout, strong petroleum-like odor	0.0	28.5				
			9-10	Sheen, strong petroleum-like odor	0.0	NA				
			12-14	*-- No visual impacts or coal tar-like odors --*	0.0	26.9				
PCSB-26	7/26/05	SB	0-1	*-- No visual impacts or coal tar-like odors --*	7.8	32.8	7	4	12	FBA: Perimeter
			5-7	*-- No visual impacts or coal tar-like odors --*	0.0	0.480				
			7-9	*-- No visual impacts or coal tar-like odors --*	0.0	0.430				
PCSB-26R	4/19/19	TP	0.5-2	*-- No visual impacts or coal tar-like odors --*	0.0	1.53	4	5	10	FBA: perimeter
PCSB-27	7/26/05	SB	0-1	*-- No visual impacts or coal tar-like odors --*	0.0	101	2	10	12	FBA: Perimeter
			1-2	*-- No visual impacts or coal tar-like odors --*	0.0	0.465				
			9.5-11.5	*-- No visual impacts or coal tar-like odors --*	0.0	1.12				

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PCSB-28	7/26/05	SB	0-1	-- No visual impacts or coal tar-like odors --	0.0	28.4	2	14.5	16	FBA: Perimeter
			1-3	-- No visual impacts or coal tar-like odors --	0.0	< 0.061				
			14-16	-- No visual impacts or coal tar-like odors --	0.0	0.110				
PCSB-29	7/26/05	SB	0-1	-- No visual impacts or coal tar-like odors --	0.0	0.852	2.5	11	12	FBA: Perimeter
			1-3	-- No visual impacts or coal tar-like odors --	0.0	0.682				
			10.5-12.5	-- No visual impacts or coal tar-like odors --	0.0	0.116				
PCSB-30	7/26/05	SB	0-1	-- No visual impacts or coal tar-like odors --	0.0	8.14	2.5	14	16	FBA: Perimeter
			1-3	-- No visual impacts or coal tar-like odors --	0.0	< 0.086				
			14-16	-- No visual impacts or coal tar-like odors --	0.0	0.144				
PCSB-30R	4/19/19	SB	0.5-2	-- No visual impacts or coal tar-like odors --	0.0	0.302	4	11	15	FBA: Perimeter
PCSB-31	7/28/05	SB	0-1	-- No visual impacts or coal tar-like odors --	0.0	0.236	4	10	12	FBA
			2.5-4.5	-- No visual impacts or coal tar-like odors --	0.0	41.9				
			9.5-11.5	-- No visual impacts or coal tar-like odors --	0.0	0.772				
PCSB-32	7/28/05	SB	0-1	-- No visual impacts or coal tar-like odors --	0.0	0.466	4	11	12	FBA
			2.5-4.5	-- No visual impacts or coal tar-like odors --	0.0	< 0.061				
			11-12	-- No visual impacts or coal tar-like odors --	0.0	13.9				
PCSB-33	7/28/05	SB	0-1	-- No visual impacts or coal tar-like odors --	0.0	3.25	4.5	11	12	FBA
			3-5	-- No visual impacts or coal tar-like odors --	0.0	0.463				
			11-12	-- No visual impacts or coal tar-like odors --	0.0	0.942				
PCSB-34	7/27/05	SB	0-1	-- No visual impacts or coal tar-like odors --	0.0	181	5.5	16	20	FBA
			4-6	-- No visual impacts or coal tar-like odors --	0.0	0.240				
			15.5-17.5	-- No visual impacts or coal tar-like odors --	0.0	1.05				
PCSB-35	8/2/05	SB	0-1	-- No visual impacts or coal tar-like odors --	0.0	6.78	3	15	20	FBA: RR
			1.5-3	-- No visual impacts or coal tar-like odors --	0.0	4.82				
			3-3.5	Slight petroleum-like odor	12.4					
			3.5-12	Slight petroleum-like odor	22.9	NA				
			12-12.5	-- No visual impacts or coal tar-like odors --	41.5	NA				
			14.5-16.5	-- No visual impacts or coal tar-like odors --	0.0	0.360				
			17-20	-- No visual impacts or coal tar-like odors --	3.4	NA				
PCSB-36	7/27/05	SB	0-1	-- No visual impacts or coal tar-like odors --	0.0	125	4.5	16	17.5	FBA
			3-5	-- No visual impacts or coal tar-like odors --	0.0	4.38				
			15-17	-- No visual impacts or coal tar-like odors --	0.0	0.180				
PCSB-37	8/2/05	SB	0-1	-- No visual impacts or coal tar-like odors --	1.2	25.9	5	10	11	FBA: RR
			3-5	-- No visual impacts or coal tar-like odors --	0.0	0.056				
			10-11	-- No visual impacts or coal tar-like odors --	0.0	0.093				
PCSB-38	7/27/05	SB	0-1	-- No visual impacts or coal tar-like odors --	0.0	5.27	4	9	10	FBA
			2.5-4.5	-- No visual impacts or coal tar-like odors --	0.0	< 0.065				
			9-10	-- No visual impacts or coal tar-like odors --	0.0	2.91				
PCSB-39	7/27/05	SB	0-1	-- No visual impacts or coal tar-like odors --	0.0	3.91	4.5	10	12	FBA
			3-5	-- No visual impacts or coal tar-like odors --	0.0	< 0.064				
			10-12	-- No visual impacts or coal tar-like odors --	0.0	0.330				
PCSB-40	7/28/05	SB	0-1	-- No visual impacts or coal tar-like odors --	0.0	0.105	4.5	10	12	FBA
			3-5	-- No visual impacts or coal tar-like odors --	0.0	59.0 [37.1]				
			9.5-11.5	-- No visual impacts or coal tar-like odors --	0.0	0.205				
PCSB-41	7/28/05	SB	0-1	-- No visual impacts or coal tar-like odors --	0.0	84.9	4	9	12	FBA: RR
			2.5-4.5	-- No visual impacts or coal tar-like odors --	0.0	3.83				
			8.5-10.5	-- No visual impacts or coal tar-like odors --	0.0	0.820				
PCSB-41R	4/22/19	SB	0.5-2	Little tar; rainbow sheen	244.7, 349.2	595	3	8	15	FBA: RR
			2-7	Rainbow sheen	0.0 - 176	NA				
			9-11	-- No visual impacts or coal tar-like odors --	0.0	<0.046				
PCSB-42	8/1/05	SB	0-1	-- No visual impacts or coal tar-like odors --	0.0	16.5 [2.83]	3	8.5	16	FBA
			1.5-2	-- No visual impacts or coal tar-like odors --	0.0	45.1				
			2-3.5	Slight petroleum-like odor	0.0					
			3.5-4.5	Slight petroleum-like odor	260	NA				
			4.5-8	Slight petroleum-like odor	0.0	NA				
			8-8.5	Slight petroleum-like odor	29	NA				
			12-14	-- No visual impacts or coal tar-like odors --	10	0.130				
PCSB-43	8/1/05	SB	0-1	-- No visual impacts or coal tar-like odors --	0.0	24.6	4	8.5	12	FBA
			1.5-2.5	Slight petroleum-like odor	0.0	NA				
			2.5-4.5	Slight petroleum-like odor	275	55.9				
			4.5-8	Slight petroleum-like odor	0.0	NA				
			8-8.5	Slight petroleum-like odor	9.2	0.370				
			8.5-10	-- No visual impacts or coal tar-like odors --	0.0					

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PCSB-44	8/3/05	SB	0-1	-- No visual impacts or coal tar-like odors --	0.0	16.8	5	9	15	FBA
			1-3.5	Slight petroleum-like odor	0.0	NA				
			3.5-5.5	Slight petroleum-like odor	117	24.7				
			5.5-10	Slight petroleum-like odor	0.0	NA				
			10.5-12.5	-- No visual impacts or coal tar-like odors --	0.0	0.400				
PCSB-45	8/3/05	SB	0-1	-- No visual impacts or coal tar-like odors --	0.0	11.6 [20.4]	3.5	9.5	15	FBA
			1-2	Slight petroleum-like odor	0.0	NA				
			2-4	Slight petroleum-like odor	45	41.8				
			4-9.5	Slight petroleum-like odor	370	NA				
			9.5-11.5	-- No visual impacts or coal tar-like odors --	0.3	0.850				
PCSB-46	7/27/05	SB	0-1	-- No visual impacts or coal tar-like odors --	0.0	8.38	4.5	13	16	FBA
			3-5	-- No visual impacts or coal tar-like odors --	0.0	< 0.064				
			12-14	-- No visual impacts or coal tar-like odors --	0.0	< 0.097				
PCSB-47	8/3/05	SB	0-1	-- No visual impacts or coal tar-like odors --	0.0	6.91	4.5	9	15	FBA
			1-3	Moderate petroleum-like odor	0.0	NA				
			3-5	Moderate petroleum-like odor	102	26.6				
			5-9.5	Moderate petroleum-like odor	0.0	NA				
			9.5-10	Moderate petroleum-like odor	0.0	0.710				
			10-11.5	-- No visual impacts or coal tar-like odors --	0.0					
PCSB-48	8/3/05	SB	0-1	-- No visual impacts or coal tar-like odors --	0.0	0.632	5	10	15	FBA
			1-3	Moderate petroleum-like odor	0.0	NA				
			3-5	Moderate petroleum-like odor	186	43.5				
			5-10	Moderate petroleum-like odor	46	NA				
			10-12	-- No visual impacts or coal tar-like odors --	0.0	0.190				
PCSB-49	8/3/05	SB	0-1	-- No visual impacts or coal tar-like odors --	0.0	1.79	5	10	15	FBA
			1-3	Moderate petroleum-like odor	0.0	NA				
			3-4	Tar-like material throughout, moderate petroleum-like odor	102	127				
			4-5	-- No visual impacts or coal tar-like odors --	0.0					
			5-10	Moderate petroleum-like odor	34	NA				
			10-12	-- No visual impacts or coal tar-like odors --	0.0	0.480				
PCSB-49R	4/19/19	SB	3-5	-- No visual impacts or coal tar-like odors --	0.0	1.99	4	13	15	FBA
			10-12	-- No visual impacts or coal tar-like odors --	0.0	0.223				
PCSB-50	8/3/05	SB	0-1	-- No visual impacts or coal tar-like odors --	0.0	34.2	5	11	15	FBA
			1-3	Slight petroleum-like odor	100.7	NA				
			3-5	Slight petroleum-like odor	0.0	28.8				
			5-10	Slight petroleum-like odor	128	NA				
			10-11	Tar-like material throughout, moderate petroleum-like odor	55	NA				
			11.5-13.5	-- No visual impacts or coal tar-like odors --	0.0	0.380				
PCSB-51	8/2/05	SB	0-1	-- No visual impacts or coal tar-like odors --	0.0	25.7	3.5	--	20	FBA: RR
			2-4	-- No visual impacts or coal tar-like odors --	1.8	5.02				
			5-10	Sheen, moderate petroleum-like odor	51	NA				
			11-15	Moderate petroleum-like odor	74	NA				
PCSB-52	8/2/05	SB	0-1	-- No visual impacts or coal tar-like odors --	0.0	75.8	6	15	20	FBA
			2-2.5	-- No visual impacts or coal tar-like odors --	1.3	NA				
			4.5-6.5	-- No visual impacts or coal tar-like odors --	0.0	16.5				
			14.5-16.5	-- No visual impacts or coal tar-like odors --	0.0	< 0.062				
PCSB-53	8/1/05	SB	0-1	-- No visual impacts or coal tar-like odors --	0.0	18.3	4	12	20	FBA
			2-2.5	Strong petroleum-like odor	0.0	NA				
			2.5-4.5	Strong petroleum-like odor	107	16.7				
			4.5-6	Strong petroleum-like odor	0.0	NA				
			7.5-8	-- No visual impacts or coal tar-like odors --	58	NA				
			6-6.5	Petroleum-like sheen and staining, strong petroleum-like odor	0.0	NA				
			8-9	Strong petroleum-like odor	0.0	NA				
			15.5-17.5	-- No visual impacts or coal tar-like odors --	1.3	0.25				
PCSB-54	8/2/05	SB	0-1	-- No visual impacts or coal tar-like odors --	0.0	56.8	5	10.5	15	FBA
			3.5-5.5	-- No visual impacts or coal tar-like odors --	0.0	0.970				
			10.5-12.5	-- No visual impacts or coal tar-like odors --	0.0	2.58				
PCSB-55	8/3/05	SB	0-1	-- No visual impacts or coal tar-like odors --	0.0	42.2	4	10	15	FBA
			2-2.5	Moderate petroleum-like odor	0.0	NA				
			2.5-4.5	Moderate petroleum-like odor	127	47.4				
			10-12	-- No visual impacts or coal tar-like odors --	0.0	0.872				

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PCSB-56	8/15/05	SB	0-1	-- No visual impacts or coal tar-like odors --	0.0	5.47	5	5.5	10	FBA
			1-3	-- No visual impacts or coal tar-like odors --	0.0	33.1				
			5.5-7.5	-- No visual impacts or coal tar-like odors --	0.0	18.5				
PCSB-57	8/15/05	SB	0-1	-- No visual impacts or coal tar-like odors --	0.0	78.4	3	5	10	FBA
			1.5-3.5	-- No visual impacts or coal tar-like odors --	0.0	54.3				
			4.5-6.5	-- No visual impacts or coal tar-like odors --	0.0	21.2				
PCSB-58	8/15/05	SB	0-1	-- No visual impacts or coal tar-like odors --	0.0	14.6	5.5	10	15	FBA
			4-6	-- No visual impacts or coal tar-like odors --	0.0	15.0				
			10-12	-- No visual impacts or coal tar-like odors --	0.0	0.318				
PCSB-59	8/15/05	SB	0-1	-- No visual impacts or coal tar-like odors --	0.0	16.2	6	10	15	FBA
			4.5-5	-- No visual impacts or coal tar-like odors --	0.0	29.3				
			5-6.5	Slight petroleum-like odor	2.8					
			6.5-10	Slight petroleum-like odor	0.0	NA				
			10-11	-- No visual impacts or coal tar-like odors --	0.0	2.91				
PCSB-60	8/15/05	SB	0-1	-- No visual impacts or coal tar-like odors --	0.0	19.7 [16.9]	5	7	15	FBA
			3-5	-- No visual impacts or coal tar-like odors --	0.0	17.1				
			10-12	-- No visual impacts or coal tar-like odors --	0.0	2.23				
PCTP-01	2/8/05	TP	5-7	-- No visual impacts or coal tar-like odors --	0.0	596	--	--	15	Northern Corner
PCTP-01R	4/5/19	SB	5-7	-- No visual impacts or coal tar-like odors --	0.0	54.8	17.5	15	20	Northern Corner
			14-15	-- No visual impacts or coal tar-like odors --	0.2	NA				
PCTP-02	2/8/05	TP	4-6	-- No visual impacts or coal tar-like odors --	0.0	41.8	6	--	12	Misc.
PCTP-02R	4/5/19	SB	4-6	-- No visual impacts or coal tar-like odors --	0.0	<0.036	10	14.5	20	Misc.
			10-11	-- No visual impacts or coal tar-like odors --	0.8	NA				
PCTP-03	2/15/05	TP	6-8	-- No visual impacts or coal tar-like odors --	2.4	NA	6	12	12	Misc.
			11-12	-- No visual impacts or coal tar-like odors --	3.8	3.45				
PCTP-04	2/15/05	TP	4-6	-- No visual impacts or coal tar-like odors --	2.4	NA	--	12.5	13	Perimeter
			11-13	-- No visual impacts or coal tar-like odors --	3.8	< 0.053				
PCTP-05	2/15/05	TP	10.5-12.5	-- No visual impacts or coal tar-like odors --	0.0	8.06	10	13	13	Misc.
PCTP-06	2/16/05	TP	5-7	-- No visual impacts or coal tar-like odors --	1.1	NA	10	22	22	Area 1A
			10-11	Sheen on groundwater	1.1	NA				
			11-15	Moderate petroleum-like odor and slight tar-like odor	24	NA				
			15-17	Moderate petroleum-like odor and slight tar-like odor	24	65.2				
			17-20	Moderate petroleum-like odor and slight tar-like odor	0.0	NA				
PCTP-07	2/17/05	TP	3-5	Slight combusted petroleum-like odor	0.0	NA	8	13	14	Area 1B
			8-10	Sheen, strong petroleum odor	0.0	NA				
			10-11	Layer of solidified tar, sheen, strong petroleum odor	0.0	NA				
			11-13	Sheen, strong petroleum odor	28.1	29.5				
			13-14	-- No visual impacts or coal tar-like odors --	0.0	82.9				
PCTP-07R	9/20/19	SB	5-10	-- No visual impacts or coal tar-like odors --	2.9 - 12.9	NA	5	11.6	20	Area 1B
			10-12	-- No visual impacts or coal tar-like odors --	39.5, 20.1	8.00				
			12-14	-- No visual impacts or coal tar-like odors --	23.7, 10.6	NA				
PCTP-08	2/15/05	TP	9.5-11.5	-- No visual impacts or coal tar-like odors --	0.0	3.36	5	11	12	Misc.
PCTP-08R	4/9/19	SB	10-12	-- No visual impacts or coal tar-like odors --	0.0	0.771	8	13.5	15	Misc.
PCTP-09	2/9/05	TP	0.5-3	Combusted petroleum-like odor	0.0	NA	6	--	10	Misc.
			6-8	Combusted petroleum-like odor	0.0	32.3				
PCTP-10	2/9/05	TP	0-2	Slight petroleum-like odor	0.0	NA	8	10	11	Central Site
			8-9	Slight petroleum-like odor	0.0	227				
			9-10	Sheen on groundwater	0.0	NA				
PCTP-10R	4/9/19	SB	5-7	Black staining	0.7, 0.2	NA	7	18	20	Central Site
			7-8	Black staining	0.2	11.5				
			8-9	-- No visual impacts or coal tar-like odors --	0.1					
			17-18	-- No visual impacts or coal tar-like odors --	1.1	NA				
PCTP-11	2/9/05	TP	3-5	-- No visual impacts or coal tar-like odors --	0.0	4.67	2.5	6	12	Misc.
PCTP-12C	2/9/05	TP	2-4	Black viscous tar, moderate naphthalene-like odor	7.9	83,600	7	--	8	Area 2
			4-8	Slight naphthalene-like odor	1.4	NA				
PCTP-12R	4/12/19	SB	2-4	-- No visual impacts or coal tar-like odors --	0.0	607	5	11	15	Area 2
			9-11	-- No visual impacts or coal tar-like odors --	0.0	5.67				
PCTP-13	2/10/05	TP	1-3	Slight combusted petroleum-like odor	0.0	NA	8	--	13	Area 2
			7-9	Sheen on groundwater	0.0	10.6				
			9-12	Slight combusted petroleum-like odor	0.0	NA				
PCTP-14	3/3/05	TP	0.5-1	Hardened tar layer	0.0	NA	5	11	11	Area 2
			1.5-3.5	-- No visual impacts or coal tar-like odors --	0.0	216				
PCTP-14A	2/10/05	TP	0-1	Hardened tar layer, strong tar-like odor, strong naphthalene-like odor	24	NA	--	--	1	Area 2
PCTP-15	3/3/05	TP	3.5-5	Bluish-green Soil	0.0	17.5	6	14	15	Area 2

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PCTP-16	2/10/05	TP	1-3	*-- No visual impacts or coal tar-like odors --*	0.0	53.1	8	--	12	Area 2 / RCRA Area
PCTP-17	2/10/05	TP	6-7	Slight petroleum-like odor	0.0	NA	8	--	10	Area 2
			7-9	Tar with a strong tar-like odor, strong naphthalene-like odor	4.2	132,000				
			9-10	Slight petroleum-like odor	4.2	NA				
PCTP-17R	4/15/19	SB	5-6	Coal tar (5.25-5.5'); strong coal tar-like odor (5-6')	37.4	1,100	6	11	25	Area 2
			7-8	*-- No visual impacts or coal tar-like odors --*	0.7	0.318				
			8-9	*-- No visual impacts or coal tar-like odors --*	0.0					
			9-11	*-- No visual impacts or coal tar-like odors --*	0.3, 0.7	7.39				
			11-15	Faint petroleum-like odor	3.2 - 22.1	NA				
			15-17	Coal-tar like odor	22.3, 72.9	NA				
			17-18	Liquid coal tar-like material; coal-tar like odor	21.3	NA				
			18-19	Liquid coal tar-like material; coal-tar like odor	26.4	17.9				
			19-20	Coal-tar like odor	83.4					
			24-25	*-- No visual impacts or coal tar-like odors --*	1.0	0.890				
PCTP-18	2/16/05	TP	1-5	Slight combusted petroleum-like odor	0.0	NA	10	21	22	Central Site
			5-7	Slight combusted petroleum-like odor	0.0	29.3				
			7-8	Slight combusted petroleum-like odor	0.0	NA				
			8-9	Water entering test pit exhibits a sheen	0.0	NA				
			10-19	Slight combusted petroleum-like odor	0.0	NA				
PCTP-19	2/18/05	TP	5-7	Moderate petroleum-like odor	1.3	14.0	6	21	22	Central Site
			7-8	Slight combusted petroleum-like odor	1.3	NA				
			8-9	Sheen on groundwater	0.0	NA				
			10-12	*-- No visual impacts or coal tar-like odors --*	0.6	9.96				
PCTP-20	2/2/05	TP	4-6	*-- No visual impacts or coal tar-like odors --*	0.5	NA	10	20	22	Area 2
			10-11	Slight petroleum-like odor	0.5	NA				
			11-12	Sheen on groundwater	1.1	NA				
			19-21	Moderate petroleum-like odor	6.0	69.3				
			21-22	Moderate petroleum-like odor	6.0	NA				
PCTP-21	2/11/05	TP	3-5	*-- No visual impacts or coal tar-like odors --*	0.0	9.83	3	--	6.5	Misc.
PCTP-22	2/2/05	TP	4-5	Moderate petroleum-like odor	3.3	792	7	--	16	RCRA Area
			10-12	*-- No visual impacts or coal tar-like odors --*	0.4	NA				
PCTP-23	2/2/05	TP	5-6	*-- No visual impacts or coal tar-like odors --*	1.1	NA	7	20	21	Area 2
			6-8	*-- No visual impacts or coal tar-like odors --*	3.8	898				
			9-11	*-- No visual impacts or coal tar-like odors --*	1.7	20.5				
PCTP-24	2/11/05	TP	7-8	Sheen on groundwater	0.0	NA	7	19.5	20	Area 2
			8-9	Soils stained, slight petroleum-like odor	0.0	NA				
			9-11	Slight combusted petroleum-like odor	0.0	NA				
			19-20	*-- No visual impacts or coal tar-like odors --*	0.0	1,240				
PCTP-25	2/18/05	TP	2-3	Solid tar fragments	0.0	NA	4	--	9	Area 2
			4-5	Sheen on groundwater	0.0	107				
			5-6	Solid tar fragments	0.0					
			6-8	Solid tar fragments	0.0	NA				
PCTP-26	2/18/05	TP	9-11	*-- No visual impacts or coal tar-like odors --*	1.7	NA	8	12	13	Central Site
			11-13	*-- No visual impacts or coal tar-like odors --*	20.7	102				
PCTP-27	2/16/05	TP	10-12	Woody debris with creosote-like odor	0.0	35.3	7	21	22	Central Site
			12-21	Woody debris with creosote-like odor	0.0	NA				
PCTP-28	2/17/05	TP	0.5-1	Strong tar-like odor	0.0	NA	5	14	16	Central Site
			6-8	*-- No visual impacts or coal tar-like odors --*	0.0	34.2				
PCTP-28R	4/11/19	SB	6-8	Possible purifier waste (6.5-8')	0.1	96.6	6	17.5	20	Central Site
			8-8.5	Possible purifier waste	0.1	NA				
			11-12	Light rainbow sheens; petroleum-like odor	75.8	1.40				
			12-12.5	Light rainbow sheens; petroleum-like odor	33.2	NA				
			15-16	Very light rainbow sheen	4.3	NA				

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PCTP-29	2/18/05	TP	3-5	-- No visual impacts or coal tar-like odors --	0.3	NA	10	--	15	Central Site
			10-11	-- No visual impacts or coal tar-like odors --	1.2	NA				
			11-12	Sheen	16.9	NA				
			12-14	Sheen, moderate petroleum-like odor	16.9	46.5				
			14-15	Moderate petroleum-like odor	28.5	NA				
PCTP-30	2/22/05	TP	4.5-6	Sheen, staining, strong petroleum-like odor	0.0	NA	6	--	8	RCRA Area
			6-8	Slight tar-like odor, slight naphthalene-like odor	0.0	52.1				
PCTP-31	2/11/05	TP	10.5-11.5	Soils stained, moderate petroleum-like odor	0.0	32.0	6	--	11.5	RCRA Area
PCTP-32	2/2/05	TP	6-8	Sheen, strong petroleum-like odor	29.5	1,680	8	18	19	Central Site
			11-13	-- No visual impacts or coal tar-like odors --	0.6	NA				
PCTP-32R	4/9/19	SB	2-3	-- No visual impacts or coal tar-like odors --	14.4	NA	5	7.5	15	Central Site
			3-4	Petroleum like odor	1.6	NA				
			5-6	Light rainbow sheen; strong petroleum-like odor (at 5.5')	1.1	NA				
			6-8	Faint petroleum-like odor	0.9, 0.6	8.31				
			8-10	Faint petroleum-like odor	0.4, 0.5	NA				
			10-11	Light rainbow sheen (at 10.5'); faint petroleum-like odor	1.1	NA				
			11-15	Faint petroleum-like odor	1.6 - 3.7	NA				
PCTP-33	2/2/05	TP	3-6	Slight petroleum-like odor	0.0	NA	6	16	17	Central Site
			6-11	Slight petroleum-like odor	0.0	NA				
			11-13	Moderate petroleum-like odor	0.0	961				
PCTP-34	2/28/05	TP	9-11	-- No visual impacts or coal tar-like odors --	1.7	1.34	7	17	18	Misc.
			11-13	Slight petroleum-like odor	1.7	NA				
			13-15	Slight petroleum-like odor	2.4	884				
PCTP-35	2/16/05	TP	5-7	-- No visual impacts or coal tar-like odors --	0.0	35.1	6	--	9	Central Site
PCTP-36	2/18/05	TP	5-7	-- No visual impacts or coal tar-like odors --	0.0	0.149	7	14	16	Central Site
			9-11	-- No visual impacts or coal tar-like odors --	0.5	NA				
PCTP-37	2/17/05	TP	1-2	Combusted petroleum-like odor	0.0	NA	6	6	12	Central Site
			2-4	Combusted petroleum-like odor	0.0	5.79				
PCTP-38	2/22/05	TP	3-5	-- No visual impacts or coal tar-like odors --	0.5	NA	8	--	13	Central Site
			9-11	-- No visual impacts or coal tar-like odors --	1.0	8.55				
			11-13	-- No visual impacts or coal tar-like odors --	0.8	10.8				
PCTP-39	2/24/05	TP	5-7	Sheen, slight petroleum-like odor	1.7	NA	8	10	11	Area 4
			7-8	Sheen, slight petroleum-like odor	1.7	176				
			8-9	-- No visual impacts or coal tar-like odors --	0.0					
PCTP-40	2/14/05	TP	2-5	Combusted petroleum-like odor	1.7	NA	5.5	--	12	RCRA Area
			5-8.5	Sheen, combusted petroleum-like odor	1.7	NA				
			8.5-9	Sheen, combusted petroleum-like odor	3.7	22.7				
			9-9.5	-- No visual impacts or coal tar-like odors --	3.7					
			9.5-10.5	-- No visual impacts or coal tar-like odors --	13.9	26.4				
PCTP-41	2/24/05	TP	5.5-7.5	-- No visual impacts or coal tar-like odors --	0.7	3.04	8	11	12	Central Site
PCTP-42	2/23/05	TP	8-10	-- No visual impacts or coal tar-like odors --	0.2	NA	6	13.5	14	Area 4
			11-13.5	Lenses of viscous tar-like material, moderate Naphthalene-like odor	75.5	NA				
			13.5-14	-- No visual impacts or coal tar-like odors --	0.0	7,540				
PCTP-43	2/23/05	TP	4-6	-- No visual impacts or coal tar-like odors --	1.4	NA	4	12	13	Misc.
			6-7	-- No visual impacts or coal tar-like odors --	2.2	5.20				
			7-8	Slight petroleum-like odor	2.2					
			8-12	Slight petroleum-like odor	2.2	NA				
			12-13	-- No visual impacts or coal tar-like odors --	2.4	NA				
PCTP-44	2/14/05	TP	3-5	Spent iron oxide material	0.0	0.079	5	--	12	Misc.
			5-7	Spent iron oxide material	1.3	NA				
			7-8	Slight petroleum-like odor	1.7	NA				
			8-10	Slight petroleum-like odor	1.7	10.5				
			10-12	Slight petroleum-like odor	1.7	NA				
PCTP-45	2/14/05	TP	4-5	Solidified tar layer, strong tar-like odor	0.0	NA	9	--	12	Area 4
			9-11	-- No visual impacts or coal tar-like odors --	0.0	0.593				
PCTP-46	2/22/05	TP	4-7	Tar-like material throughout, sheen, strong petroleum-like odor, soils stained	0.0	NA	8	10	12	Area 4
			7-8	Tar-like material throughout, sheen, strong petroleum-like odor, soils stained	5.4	NA				
			8-10	Sheen on groundwater	5.4	605				
			10-11	Tar-like material, strong tar-like odor, strong naphthalene-like odor	21.5	96,000				
PCTP-47	2/17/05	TP	5-7	-- No visual impacts or coal tar-like odors --	0.0	7.97	6	--	12.5	Central Site

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PCTP-47R	4/9/19	SB	5-7	-- No visual impacts or coal tar-like odors --	0.0, 0.3	16.6	7	12	15	Central Site
			12-13	-- No visual impacts or coal tar-like odors --	0.7	NA				
PCTP-49	2/23/05	TP	8-10	Moderate petroleum-like odor	1.1	1,140	8	--	10	RCRA Area
PCTP-49R	4/16/19	SB	8-10	-- No visual impacts or coal tar-like odors --	0.0	5.97	7	11	15	RCRA Area
			10-11	Moderately strong petroleum-like odor	47.9	NA				
			11-14	Faint petroleum-like odor	1.8, 3.2, 1.5	31.7				
PCTP-50	2/23/05	TP	5-7	-- No visual impacts or coal tar-like odors --	0.3	NA	8	12	12	Perimeter
			8-10	-- No visual impacts or coal tar-like odors --	1.7	NA				
			10-12	-- No visual impacts or coal tar-like odors --	8.1	12.1				
PCTP-51	2/22/05	TP	8-10	-- No visual impacts or coal tar-like odors --	1.1	NA	4	12	13	RCRA Area
			10-12	Slight petroleum-like odor	5.2	8.02				
PCTP-51R	4/18/19	SB	10-12	-- No visual impacts or coal tar-like odors --	0.0	10.9	4	13	15	RCRA Area
PCTP-52	2/22/05	TP	6-8	-- No visual impacts or coal tar-like odors --	0.1	129	7	14	15	RCRA Area
PCTP-53	2/22/05	TP	3-5	-- No visual impacts or coal tar-like odors --	0.5	NA	8	12	13	Area 4
			7-9	-- No visual impacts or coal tar-like odors --	0.9	NA				
			9-11	Sheen, stained soil, slight petroleum-like odor	0.8	28.8				
PCTP-54	2/28/05	TP	5.5-7	Sheen, slight petroleum-like odor	2.1	NA	5	9.5	10.5	FBA
			7-9	Sheen, slight petroleum-like odor	2.1	110				
PCTP-55	2/28/05	TP	0-6	Sheen, strong petroleum-like odor	50.6	NA	3	9	10	FBA
			6-8	Sheen, strong petroleum-like odor	66.1	16.6				
			8-9	Moderate petroleum-like odor	16.4	NA				
PCTP-56	2/28/05	TP	2-3	Sheen on groundwater	0.0	NA	2	12	13	FBA: RR
			5-7	-- No visual impacts or coal tar-like odors --	2.1	NA				
			7-9	Sheen, moderate creosote-like odor	0.0	28.4				
			9-10	Sheen, moderate creosote-like odor	0.0	NA				
PCTP-57	2/25/05	TP	11-13	-- No visual impacts or coal tar-like odors --	0.0	11.7	2	13	14	FBA
PCTP-58	2/24/05	TP	1-3	-- No visual impacts or coal tar-like odors --	3.6	46.3	4	7	8	FBA
PCTP-59	2/25/05	TP	3-4	Sheen, moderate petroleum-like odor	10.4	NA	6	8	9	FBA
			4-6	Sheen, moderate petroleum-like odor	10.4	12.4				
			6-8	Sheen, moderate petroleum-like odor	6.3	13.7				
PCTP-60	2/25/05	TP	1-3	-- No visual impacts or coal tar-like odors --	0.0	6.06	5	7.5	9	FBA: Perimeter
PCTP-61	9/8/05	TP	0-1	-- No visual impacts or coal tar-like odors --	0.0	12.0 [12.0]	8	--	8	Perimeter
			7-8	-- No visual impacts or coal tar-like odors --	0.0	0.085				
PCTP-62	9/8/05	TP	0-1	-- No visual impacts or coal tar-like odors --	0.0	666	11	--	12	Perimeter
			9.5-11.5	-- No visual impacts or coal tar-like odors --	0.0	13.6				
PCTP-63	9/8/05	TP	0-1	-- No visual impacts or coal tar-like odors --	0.0	217	11	--	11	RCRA Area
			10-11	-- No visual impacts or coal tar-like odors --	0.0	22.3				
PCTP-64	9/8/05	TP	0-1	-- No visual impacts or coal tar-like odors --	0.0	124	7.5	--	10	Perimeter
			6-8	-- No visual impacts or coal tar-like odors --	0.0	6.12				
PCTP-65	9/9/05	TP	0-1	-- No visual impacts or coal tar-like odors --	0.0	88.7	8	--	9	Perimeter
			6.5-8.5	-- No visual impacts or coal tar-like odors --	0.0	20.4				
PCTP-66	9/9/05	TP	0-1	Liquid tar-like material entering into test pit	0.0	38,500	8	--	8	Area 3B
			7-8	-- No visual impacts or coal tar-like odors --	0.0	9.61				
PCTP-66R	4/24/19	TP	0-0.5	Trace coal tar	3.6	120 [1,230]	10	8	10	Area 3B
			0.5-2.0	-- No visual impacts or coal tar-like odors --		5.24				
			8-10	Moderately strong petroleum-like odor	21.6	2,730				
PCTP-66R-HC	4/5/19	HA	0-2	Tar on cobble	N/A	112	--	--	5	Area 3B
			2-4	-- No visual impacts or coal tar-like odors --	N/A	187				
PCTP-67	9/12/05	TP	0-1	-- No visual impacts or coal tar-like odors --	0.0	16.3 [11.4]	8.5	--	8.5	Perimeter
			7.5-8.5	-- No visual impacts or coal tar-like odors --	0.0	9.69				
PCTP-68	9/9/05	TP	0-1	Semi-solidified tar-like material	79	6,160	6.5	--	6.5	Central Site
			5.5-6.5	-- No visual impacts or coal tar-like odors --	0.0	42.1				
PCTP-69	9/9/05	TP	0-1	-- No visual impacts or coal tar-like odors --	0.0	26.1	18	12	18	Misc.
			17-18	-- No visual impacts or coal tar-like odors --	0.0	< 0.066				
PCTP-70	9/9/05	TP	0-1	-- No visual impacts or coal tar-like odors --	0.0	11.3	18.5	--	18.5	Perimeter
			17.5-18.5	-- No visual impacts or coal tar-like odors --	0.0	< 0.061				
PCTP-71	9/9/05	TP	0-1	-- No visual impacts or coal tar-like odors --	0.0	17.1	18	--	18	Perimeter
			17-18	-- No visual impacts or coal tar-like odors --	0.0	0.364				
PCTP-72	9/9/05	TP	0-1	-- No visual impacts or coal tar-like odors --	0.0	27.7	12.5	--	13	Perimeter
			11-13	-- No visual impacts or coal tar-like odors --	0.0	19.0				
PCTP-73	9/9/05	TP	0-1	-- No visual impacts or coal tar-like odors --	0.0	13.2	10	--	10	Perimeter
			9-10	-- No visual impacts or coal tar-like odors --	0.0	11.6				
PCTP-73R	4/10/19	SB	0-0.5	-- No visual impacts or coal tar-like odors --	0.0	8.61	9	15	20	Perimeter
PCTP-74	9/9/05	TP	0-1	-- No visual impacts or coal tar-like odors --	0.0	32.9	13	--	13	Perimeter
			12-13	-- No visual impacts or coal tar-like odors --	0.0	1.90				

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PCTP-75	9/9/05	TP	0-1	*-- No visual impacts or coal tar-like odors --*	0.0	8.16	12	--	13	Area 1A
			10-11.5	Slight to moderate yellow-brown oil-like material throughout	12.1	3,080				
			11.5-12	Slight to moderate yellow-brown oil-like material throughout	0.0					
PCTP-75R	4/11/19	SB	6.0-7.0	Possible purifier waste	1.9	NA	11	16	20	Area 1A
			10-11	Light rainbow sheen; faint petroleum-like odor	0.5	6.05				
			11-12	Faint petroleum-like odor	0.2					
			12-14	Faint petroleum-like odor	0.0	NA				
			14-15	Faint petroleum-like odor	0.0	0.918				
			15-16	*-- No visual impacts or coal tar-like odors --*	0.0					
PCTP-76	9/12/05	TP	0-1	*-- No visual impacts or coal tar-like odors --*	0.0	12.8	--	--	6.5	Central Site
			5.5-6.5	*-- No visual impacts or coal tar-like odors --*	0.0	552				
PCTP-77	9/12/05	TP	0-1	*-- No visual impacts or coal tar-like odors --*	0.0	100	11	--	11	Misc.
			10-11	*-- No visual impacts or coal tar-like odors --*	0.0	8.88				
PCTP-78	9/12/05	TP	0-1	*-- No visual impacts or coal tar-like odors --*	0.0	20.2	10	--	10	Misc.
			9-10	*-- No visual impacts or coal tar-like odors --*	0.0	77.4				
PCTP-79	9/12/05	TP	0-1	*-- No visual impacts or coal tar-like odors --*	0.0	31.8	10.5	--	10.5	Misc.
			9.5-10.5	*-- No visual impacts or coal tar-like odors --*	0.0	8.03				
PCTP-80	9/12/05	TP	7.5-8.5	*-- No visual impacts or coal tar-like odors --*	0.0	40.9	8.5	--	8.5	Misc.
PSSTP-01	3/11/03	TP	1-2	*-- No visual impacts or coal tar-like odors --*	0.0	31.1	--	--	6	Northern Corner
			2-6	Black staining, slight petroleum-like odor	0.0	NA				
			5-6	*-- No visual impacts or coal tar-like odors --*	0.0	87.6				
PSSTP-01R	4/10/19	SB	5-6	Bluish-gray sand; green stained textile	21.5	141	13	13	15	Northern Corner
			6-7		38.4	NA				
			8-9	Possible purifier waste	38.4	NA				
PSSTP-02	3/11/03	TP	1-2	*-- No visual impacts or coal tar-like odors --*	0.0	50.6	--	--	6	Misc.
			4-6	Black staining	0.0	NA				
			5-6	Black staining	0.0	43.8				
PSSTP-03	3/11/03	TP	1-2	*-- No visual impacts or coal tar-like odors --*	0.0	87.1	9	--	9	Misc.
			2-9	Black staining	0.0	NA				
			8-9	Black staining	0.0	61.6				
PSSTP-04	3/11/03	TP	1-2	*-- No visual impacts or coal tar-like odors --*	0.0	542	--	--	9	Area 1B
			2-9	Black staining, coal and hardened tar fragments	0.0	NA				
			8-9	*-- No visual impacts or coal tar-like odors --*	5.3	1,480				
PSSTP-04R	4/11/19	SB	1-2	*-- No visual impacts or coal tar-like odors --*	0.1	30.8	10	17	20	Area 1B
			7-8	Viscous coal tar-like material; moderately strong coal tar-like material	58.7	27,200				
			8-9	Moderately strong coal tar-like odor	7.5	4,290				
			9-10	Moderately strong coal tar-like odor	12.5	NA				
			10-11	Sheen	0.9	NA				
			11-14	Very faint petroleum-like odor (11.5-13.5')	4.3, 1.0, 1.2	NA				
			16-17	Trace liquid coal tar stringers; sheen	4.2	5.17				
PSSTP-05	3/11/03	TP	1-2	*-- No visual impacts or coal tar-like odors --*	0.0	266	6	--	6	Area 3A
			2-5	Black staining	0.0	NA				
			5-6	*-- No visual impacts or coal tar-like odors --*	0.0	2.55				
PSSTP-06	3/11/03	TP	0-1	Black staining	0.0	NA	6	--	6	Misc. / RCRA Area
			1-2	Black staining	0.0	18.1				
			5-6	*-- No visual impacts or coal tar-like odors --*	0.0	0.788				
PSSTP-07	3/11/03	TP	1-2	*-- No visual impacts or coal tar-like odors --*	0.0	77.9	9	--	9	Misc.
			8-9	*-- No visual impacts or coal tar-like odors --*	0.0	5.50				
PSSTP-07R	4/18/19	SB	0.5-2	*-- No visual impacts or coal tar-like odors --*	NA	11.1 [11.2]	10	22	25	Misc.
			8-9	*-- No visual impacts or coal tar-like odors --*	0.0	0.372				
			20-22	Sheen	0.0	1.86				
PSSTP-08	3/11/03	TP	1-2	*-- No visual impacts or coal tar-like odors --*	0.0	157	7	--	7	RCRA Area
			8-9	*-- No visual impacts or coal tar-like odors --*	0.0	34.5				
PSSTP-09	3/12/03	TP	1-2	*-- No visual impacts or coal tar-like odors --*	0.0	5.33	7	--	7	RCRA Area
			6-7	*-- No visual impacts or coal tar-like odors --*	0.0	60.7				
PSSTP-10	3/12/03	TP	0-1	*-- No visual impacts or coal tar-like odors --*	0.2	NA	9	--	10	Misc.
			1-2	*-- No visual impacts or coal tar-like odors --*	0.4	19.1				
			2-3	*-- No visual impacts or coal tar-like odors --*	0.4	NA				
			8-9	*-- No visual impacts or coal tar-like odors --*	0.0	38.4				

Table 3
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Sample ID	Sample Date	Location Type	Depth Interval (ft bgs)	Observations of Staining, Sheens, Coal Tar, Purifier Waste, and/or Odors	PID Reading (ppm)	Total PAH (ppm)	Depth to Saturated Interval (ft bgs)	Top of Clay (ft bgs)	Boring/ Test Pit Depth (ft bgs)	Site Location
PSSTP-10R	4/16/19	SB	1-2	*-- No visual impacts or coal tar-like odors --*	0.0	19.1	8	15	20	Misc.
			8-9	*-- No visual impacts or coal tar-like odors --*	0.0	1.66				
PSSTP-11	3/12/03	TP	1-2	Coal and hardened tar fragments	0.1	31.8	9	--	9	Misc.
			2-3	Coal and hardened tar fragments	0.3	NA				
			8-9	*-- No visual impacts or coal tar-like odors --*	0.0	0.044				
PSSTP-12	3/12/03	TP	1-2	*-- No visual impacts or coal tar-like odors --*	0.0	609	4	--	8	Misc.
			7-8	*-- No visual impacts or coal tar-like odors --*	0.0	2.04				
PSSTP-13	3/12/03	TP	1-2	*-- No visual impacts or coal tar-like odors --*	0.3	15.9	8	--	8	Misc.
			7-8	*-- No visual impacts or coal tar-like odors --*	0.0	9.37				
PSSTP-14	3/12/03	TP	1-2	*-- No visual impacts or coal tar-like odors --*	0.0	17.0	8	--	8	Area 2
			7-8	*-- No visual impacts or coal tar-like odors --*	0.0	8.25				
PSSTP-15	3/12/03	TP	1-2	*-- No visual impacts or coal tar-like odors --*	0.0	33.7	9	--	9	Area 2
			8-9	*-- No visual impacts or coal tar-like odors --*	4.0	45.8				
PSSTP-16	3/12/03	TP	1-2	*-- No visual impacts or coal tar-like odors --*	0.0	17.2	2	--	6	RCRA Area
			2-3	Sheen on groundwater and strong tar-like odor	0.0	NA				
			3-5	Black staining	0.0	NA				
			5-6	Black staining	0.0	6.17				
PSSTP-17	3/12/03	TP	1-2	*-- No visual impacts or coal tar-like odors --*	0.0	15.3	8	--	11	Misc.
			8-9	*-- No visual impacts or coal tar-like odors --*	0.0	28.8				
PSSTP-18	3/12/03	TP	1-2	*-- No visual impacts or coal tar-like odors --*	0.0	20.9	3	--	7	RCRA Area
			6-7	Black staining	0.0	24.2				
PSSTP-19	3/12/03	TP	1-2	*-- No visual impacts or coal tar-like odors --*	0.0	3.63	5	--	9	Area 4 / Misc.
			5-7	Black staining	0.0	NA				
			7-8	Black staining	120	64.5				
PSSTP-20	3/13/03	TP	1-2	*-- No visual impacts or coal tar-like odors --*	0.0	18.4	9	--	9	Misc.
			8-9	*-- No visual impacts or coal tar-like odors --*	0.0	< 0.39				
PSSTP-21	3/13/03	TP	1-2	*-- No visual impacts or coal tar-like odors --*	0.0	48.0	9	--	9	Central Site
			8-9	*-- No visual impacts or coal tar-like odors --*	0.0	16.4				
PSSTP-22	3/13/03	TP	1-2	*-- No visual impacts or coal tar-like odors --*	0.0	935	4	--	8	Central Site
			6-6.2	Layer of tar	0.0	425				
			6.2-7	*-- No visual impacts or coal tar-like odors --*	0.0					
PSSTP-22R	4/24/19	SB	0.5-1	Faint tar-like odor	0.0	NA	4	20	25	Central Site
			1-2	*-- No visual impacts or coal tar-like odors --*	0.0	777				
			2-4	Faint tar-like odor	0.0, 32.9	NA				
			4-6	Faint tar-like odor	1.0, 0.0	805				
PSSTP-23	3/13/03	TP	1-2	*-- No visual impacts or coal tar-like odors --*	0.0	1.68	8	--	9	Central Site
			7-8	*-- No visual impacts or coal tar-like odors --*	0.0	105.3				
PSSTP-24	3/13/03	TP	1-2	*-- No visual impacts or coal tar-like odors --*	0.0	94.1	8	--	8	Central Site
			7-8	Black staining	0.0	29.1				
PSSTP-25	3/13/03	TP	1-2	*-- No visual impacts or coal tar-like odors --*	0.0	185	8	--	8	Central Site
			7-8	*-- No visual impacts or coal tar-like odors --*	0.0	37.4				
PSSTP-26	3/13/03	TP	1-2	*-- No visual impacts or coal tar-like odors --*	0.0	69.9	8	--	8	Area 4
			6-7	Hardened tar fragments	0.0	NA				
			7-8	Hardened tar fragments	0.0	58.4				
PSSTP-27	3/13/03	TP	1-2	*-- No visual impacts or coal tar-like odors --*	0.0	670	6	--	8	FBA
			5-6	Sheen, strong petroleum-like odor	0.0	5.77				
			6-8	Sheen, strong petroleum-like odor	0.0	NA				
PSSTP-28	3/13/03	TP	1-2	Sheen, slight petroleum-like odor	0.0	118	4	--	6	FBA
			2-5	Sheen, slight petroleum-like odor	0.0	NA				
			5-6	Sheen, slight petroleum-like odor	0.0	13.2				
PSSTP-29	3/13/03	TP	0-1	Sheen, slight petroleum-like odor	0.0	NA	4	--	6	FBA
			1-2	Sheen, slight petroleum-like odor	0.0	56.8				
			2-5	Sheen, slight petroleum-like odor	0.0	NA				
			5-6	Sheen, slight petroleum-like odor	0.0	93.8				
PSSTP-30	3/13/03	TP	0-1	Sheen, slight petroleum-like odor	0.0	NA	4	--	6	FBA
			1-2	Sheen, slight petroleum-like odor	0.0	24.4				
			2-5	Sheen, slight petroleum-like odor	0.0	NA				
			5-6	Sheen, slight petroleum-like odor	0.0	10.8				
S-101	4/10/19	SB	10-12	*-- No visual impacts or coal tar-like odors --*	1.0, 0.0	4.76	10	16.5	20	Area 1A
			14.5-16.5	*-- No visual impacts or coal tar-like odors --*	0.0	1.92				

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S-102	4/10/19	SB	5-6	Moderately strong petroleum-like odor	4.1	NA	7	15.5	20	Area 1A
			6-7	Moderately strong petroleum-like odor	66.7	NA				
			7-8	Moderately strong petroleum-like odor	0.9	NA				
			10-12	*-- No visual impacts or coal tar-like odors --*	1.0, 0.5	55.6				
			13.5-15.5	*-- No visual impacts or coal tar-like odors --*	0.0	43.3				
S-103	4/11/19	SB	10-12	Light rainbow sheen; faint petroleum-like odor	0.8, 0.5	3.39	9	15	20	Area 1A
			12-13	Faint petroleum-like odor	0.0	NA				
			13-15	Faint petroleum-like odor	0.0	0.808				
S-104	4/10/19	SB	3.5-8	Possible purifier waste	0.0	NA	10	17.5	20	Area 1A
			10-12	*-- No visual impacts or coal tar-like odors --*	1.0, 0.0	8.61				
			15.5-17.5	*-- No visual impacts or coal tar-like odors --*	0.0	0.334				
S-105	4/12/19	SB	2-4	*-- No visual impacts or coal tar-like odors --*	0.0	86.7	6	11	15	Area 2
			8-10	*-- No visual impacts or coal tar-like odors --*	0.0	0.678				
S-106	4/12/19	SB	1-2	Coal tar-like material; coal-tar like odor	282.6	NA	4	11.5	15	Area 2
			2-3	Coal tar-like odor	16.9	31,200				
			3-4	*-- No visual impacts or coal tar-like odors --*	9.4					
			8-10	*-- No visual impacts or coal tar-like odors --*	1.6, 0.6	5.34				
S-107	4/23/19	TP	2-3	*-- No visual impacts or coal tar-like odors --*	18.8	81.0	3.5	--	5.5	Area 2
			3-4	Coal tar and strong coal-tar like odor						
			4-5.5	*-- No visual impacts or coal tar-like odors --*	0.4	43.3				
S-108	4/15/19	SB	2-4	*-- No visual impacts or coal tar-like odors --*	0.0	64.8 [54.8]	5	13.5	20	Area 2
			8-10	*-- No visual impacts or coal tar-like odors --*	0.4, 0.9	8.93				
			10-12	Faint petroleum-like odor; light black staining	1.2, 4.4	NA				
			12-13.5	Faint petroleum-like odor; light black staining; light rainbow sheen (at 12.5')	2.1, 2.0	NA				
			15-17	Light staining; faint petroleum-type odor	71.4, 129.6	1,120				
			17-18	Light staining; faint petroleum-type odor	20.1	NA				
S-109	4/15/19	SB	2-4	*-- No visual impacts or coal tar-like odors --*	0.0	460	8	12	15	Area 2
			8-10	Trace liquid coal tar; faint coal tar-like odor	0.8, 1.0	21.2				
			11-12	Light rainbow sheen (at 11.5')	1.4	NA				
S-110	4/12/19	SB	2-4	*-- No visual impacts or coal tar-like odors --*	0.0	11.0	5	--	15	Area 2
			8-10	*-- No visual impacts or coal tar-like odors --*	0.0	4.96				
S-111	4/23/19	TP	2-4	*-- No visual impacts or coal tar-like odors --*	0.2	64.3	5	--	6.5	Area 2
			4.5-6.5	*-- No visual impacts or coal tar-like odors --*	0.1	1.63				
S-112	4/12/19	SB	2-4	*-- No visual impacts or coal tar-like odors --*	0.0	0.816	3	13	15	Area 2
			8-10	*-- No visual impacts or coal tar-like odors --*	0.0	0.685				
S-113	4/23/19	TP	0-1	*-- No visual impacts or coal tar-like odors --*	0.0	1,300	1.5	--	1.67	Area 2
S-113B	4/24/19	SB	1-3	*-- No visual impacts or coal tar-like odors --*	0.3, 0.0	785	3	11	20	Area 2
			3-4	Green-blue soil (potential purifier waste)	0.0	NA				
			10-12	*-- No visual impacts or coal tar-like odors --*	9.3, 20	1,210				
			12-13	Coal tar-like material; strong coal tar-like odor	8.6	NA				
			13-15	*-- No visual impacts or coal tar-like odors --*	8.8, 9.6	88.3				
			15-17	*-- No visual impacts or coal tar-like odors --*	0.1, 0.1	0.312				
S-114	4/15/19	SB	2-4	*-- No visual impacts or coal tar-like odors --*	0.0	6.81	5	15	25	Area 2
			7-8	Trace liquid coal tar stringers (at 7.5')	1.0	NA				
			8-10	*-- No visual impacts or coal tar-like odors --*	0.4, 0.0	384				
			10-14	Coal tar like odor	0.4 - 2.8	NA				
			14-15	Viscous liquid coal tar blebs	166.7	12,300				
			15-22	Coal tar like odor	7.8 - 63.2	NA				
			23-25	*-- No visual impacts or coal tar-like odors --*	0.9, 0.6	0.324				

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S-115	4/16/19	SB	4-6	*-- No visual impacts or coal tar-like odors --*	0.0	27.0 [44.0]	5	12.5	15	Area 3A
			8-9	*-- No visual impacts or coal tar-like odors --*	4.6	NA				
S-116	4/16/19	SB	2-3	Solidified coal tar-like material (at 2.5')	42.5	NA	5	12	15	Area 3A
			4-6	*-- No visual impacts or coal tar-like odors --*	9.2, 3.1	56.8				
S-117	4/16/19	SB	4-6	*-- No visual impacts or coal tar-like odors --*	0.0	69.2	6	13	15	Area 3A
			13-14	*-- No visual impacts or coal tar-like odors --*	4.1	NA				
S-118	4/16/19	SB	4-6	*-- No visual impacts or coal tar-like odors --*	0.0	660	6	13	15	Area 3A
			13-14	Faint petroleum-like odor (at 13')	4.6	NA				
S-119	4/12/19	SB	0-1	*-- No visual impacts or coal tar-like odors --*	0.3	22.9	8	9.5	15	Area 3B
S-120	4/24/19	TP	0-1	*-- No visual impacts or coal tar-like odors --*	0.2	5.70	9.5	7.5	10	Area 3B
			7.5-10	Faint petroleum-like odor	3.0	NA				
S-121	4/12/19	SB	0-1	*-- No visual impacts or coal tar-like odors --*	0.0	6.31	7.5	16.5	20	Area 3B
S-122	4/9/19 4/12/19	SB	0-1	*-- No visual impacts or coal tar-like odors --*	0.0	7.73	8	9	15	Area 3B
			10-12	Light rainbow sheen (at 10.5'); faint petroleum-like odor throughout	10.8, 2.7	454				
			13-15	Faint petroleum-like odor	2.3, 1.5	NA				
S-123	4/18/19	SB	7-9	*-- No visual impacts or coal tar-like odors --*	0.0	6.25	7	13	15	Area 4
			13-15	*-- No visual impacts or coal tar-like odors --*	0.0	0.374				
S-124	4/18/19	SB	6-7	Light rainbow sheen	0.0	NA	5	9.5	15	Area 4
			7-9	Light rainbow sheen	0.0	0.689				
			9-9.5	Light rainbow sheen	0.0	NA				
			10-12	*-- No visual impacts or coal tar-like odors --*	0.0	2.23				
S-125	4/18/19	SB	7-9	Light rainbow sheen	0.0	142	8	12	15	Area 4
			10-11	Light rainbow sheen	2.6	NA				
			11-12	Light rainbow sheen	150.6	1,320				
			12-13	Moderately heavy rainbow sheen	115					
			13-15	*-- No visual impacts or coal tar-like odors --*	0.0	3.00				
S-126	4/17/19	SB	7-9	*-- No visual impacts or coal tar-like odors --*	0.0	1.38	6	10	15	Area 4
			13-15	*-- No visual impacts or coal tar-like odors --*	0.1	48.1				
S-127	4/17/19	SB	2-4	*-- No visual impacts or coal tar-like odors --*	0.7, 0.1	1,000 [1,640]	4	8	15	Area 4
			6-8	Rainbow sheen; coal tar-like material	9.7, 1.1	923				
			11-12	Rainbow sheen	0.7	NA				
			13-15	*-- No visual impacts or coal tar-like odors --*	0.7, 0.1	20.2				
S-128	4/18/19	SB	2-4	*-- No visual impacts or coal tar-like odors --*	0.0	64.8	6	13	15	Area 4
			9-10	Potential purifier waste; light rainbow sheen	2.0	NA				
			10-12	Light rainbow sheen	2.5, 0.2	3,210				
			13-15	*-- No visual impacts or coal tar-like odors --*	0.0	17.1				
S-129	4/18/19	SB	2-4	*-- No visual impacts or coal tar-like odors --*	0.0	39.7	7	10	15	Area 4
			8 - 9	*-- No visual impacts or coal tar-like odors --*	5.9	9,440				
			9-10	Coal tar-like substance	3.2					
			10-12	*-- No visual impacts or coal tar-like odors --*	0.0	7.60				
S-130	4/17/19	SB	2-4	*-- No visual impacts or coal tar-like odors --*	0.0	8.01	5	8	15	Area 4
			7-8	*-- No visual impacts or coal tar-like odors --*	0.0	13.2				
			8-10	Coal tar-like odor	0.6, 0.9	NA				
			10-12	Blebs of coal tar-like material	0.2, 0.4	39.6				
			13-15	*-- No visual impacts or coal tar-like odors --*	0.0	9.70				
S-131	4/17/19	SB	2-4	*-- No visual impacts or coal tar-like odors --*	0.0	0.0576	5	7	10	Area 4
			7-9	*-- No visual impacts or coal tar-like odors --*	0.0	56.4				
S-132	4/17/19	SB	2-4	*-- No visual impacts or coal tar-like odors --*	0.1	417	6	8	10	Area 4
			8-10	*-- No visual impacts or coal tar-like odors --*	0.0	3.45				
S-133	4/17/19	SB	2-4	*-- No visual impacts or coal tar-like odors --*	0.0, 0.1	21.5	6	8	15	Area 4
			7-8	Sheen	0.0	3.99				
			8-9	*-- No visual impacts or coal tar-like odors --*	0.0					
			13-15	*-- No visual impacts or coal tar-like odors --*	0.0	11.6				
S-134	4/9/19	SB	All Depths	*-- No visual impacts or coal tar-like odors --*	0.0	NA	7	14	15	Perimeter
S-135	4/22/19	SB	4-5	Moderately strong petroleum-like odor	108.9	2.43	4	6	10	Misc.
			5-6	Faint petroleum-like odor	7.4					
			8-10	*-- No visual impacts or coal tar-like odors --*	0.0	0.412				
S-136	4/22/19	SB	4-6	Blue/rainbow sheen (at 4.5')	7.5, 0.0	1.53	5	4.5	10	Perimeter
			7-9	*-- No visual impacts or coal tar-like odors --*	0.0	<0.04				
S-137	4/19/19	SB	All Depths	*-- No visual impacts or coal tar-like odors --*	0.0	NA	8	12.5	15	Perimeter
S-138	4/5/19	SB	All Depths	*-- No visual impacts or coal tar-like odors --*	0.0 - 0.3	NA	11	11	15	Perimeter
S-139	4/10/19	SB	All Depths	*-- No visual impacts or coal tar-like odors --*	0.0	NA	11.5	18	20	Perimeter

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S-140	4/10/19	SB	All Depths	*-- No visual impacts or coal tar-like odors --*	0.0	NA	5	16	20	Perimeter
S-141	4/25/19	TP	All Depths	*-- No visual impacts or coal tar-like odors --*	0 - 0.2	NA	2.5	6	7	Area 2
S-142	4/25/19	TP	4-6	Wood debris & chips; potential purifier waste (5.5-6.0')	0.3	NA	7.5	8	11	Area 2
			6-7	Wood debris & chips; potential purifier waste (6.0-6.5')	0.4	(1.3 cyanide)				
			7-8	*-- No visual impacts or coal tar-like odors --*		2.65				
S-144	4/24/19	SB	14-15	*-- No visual impacts or coal tar-like odors --*	458.9	NA	14	18	25	Northern Corner
			15-17	Purple/black staining; petroleum-like odor	13.8, 69	0.166				
			17-18	Purple/black staining; petroleum-like odor	4.8	NA				
			22-24	*-- No visual impacts or coal tar-like odors --*	0.0	<0.036				
S-145	4/25/19	SB	All Depths	*-- No visual impacts or coal tar-like odors --*	0.0 - 0.5	NA	14	17	25	Northern Corner
S-146	4/25/19	SB	14-16	Light black staining; faint petroleum-like odor	7.8, 5.1	<0.039	15	16	25	Northern Corner
			17-19	*-- No visual impacts or coal tar-like odors --*	0.0	<0.039				
S-147	4/25/19	SB	9-10	Dense coal-tar like material	38.5	NA	9	18	20	Area 1B
			12-14	Light rainbow sheen (at 12.5')	2.9, 56.9	5.88				
			15-18	Light rainbow sheen	1.0, 0.1, 0.0	NA				
			18-20	*-- No visual impacts or coal tar-like odors --*	0.0	0.657				
S-148	4/25/19	SB	6-8	Black coal tar-like material; strong coal tar-like odor	22.9, 63	NA	11	15	20	Area 1B
			8-9	Black coal tar-like material; strong coal tar-like odor	61.8	14,800				
			9-10	Black coal tar-like material; strong coal tar-like odor	101.9					
			12-14	Rainbow sheen	1.8, 2.3	NA				
			16-18	*-- No visual impacts or coal tar-like odors --*	0.0	0.204				
S-149	4/25/19	SB	4-5	Potential purifier waste; faint burnt odor	0.2	NA	10	18.5	25	Area 1B
			7-8	*-- No visual impacts or coal tar-like odors --*	14.8	3,070				
			8-10	Dense coal tar-like material (at 8.5')	11.3, 9.9	NA				
			18.5-20.5	*-- No visual impacts or coal tar-like odors --*	0.2, 0.2, 0.1	0.095				
S-150	4/24/19	SB	All Depths	*-- No visual impacts or coal tar-like odors --*	0.0	NA	4	--	5	FBA: RR
S-151	4/24/19	SB	0.5-2	Liquid coal-tar like material (1-1.5')	284	1,760	4	--	5	FBA: RR
			3-5	*-- No visual impacts or coal tar-like odors --*	0.1, 0.0	1.59 [0.132]				
S-152	4/25/19	SB	All Depths	*-- No visual impacts or coal tar-like odors --*	0.0	NA	4	--	5	FBA: RR
S-153	4/26/19	SB	7-9	Coal tar-like odor	4.0, 6.1	17.4	6.5	9	15	Area 4
			9-10	Moderately fluid tar-like material	0.8	NA				
			10-11	Faint coal tar-like odor	6.8	NA				
			11-12	Blebs of liquid coal tar-like material; faint coal tar-like odor	4.9	NA				
			12-13	Faint coal tar-like odor	2.8	NA				
			13-13.5	Blebs of liquid coal tar-like material; faint coal tar-like odor	2.8	NA				
			13.5-15	*-- No visual impacts or coal tar-like odors --*	2.8, 0.8	9.18 [16.3]				
S-154	4/26/19	SB	9-11	Light rainbow sheen (9.75-11')	1.1, 0.7	31.8	5	11	15	Area 4
			12-14	*-- No visual impacts or coal tar-like odors --*	0.0	20.4 [18.1]				
S-155	4/26/19	SB	10-11	Blebs of viscous liquid coal tar-like material; light rainbow sheen; coal tar-like odor	3.4	2,390	10	10	15	Area 4
			11-12	*-- No visual impacts or coal tar-like odors --*	33.6					
			13-15	*-- No visual impacts or coal tar-like odors --*	0.0	9.09				
S-156	5/3/19	SB	3-5	Black coal tar-like material; strong coal tar-like odor	40.8, 80.7	8,000	7.5	13.5	20	Area 1B
			5-5.5	Black coal tar-like material; strong coal tar-like odor	83.2	NA				
			5.5-7	Black staining; light petroleum-like odor	83.2, 8.3	NA				
			7.5-9.5	Light rainbow sheen; light black staining; faint petroleum-like odor	84.3, 60.9, 6.0	11.5				
			9.5-10	Light rainbow sheen; light black staining; faint petroleum-like odor	6.0	NA				
			14-16	*-- No visual impacts or coal tar-like odors --*	0.1, 0.4	0.386 [0.240]				

Table 3
Soil Boring and Test Pit Summary Table

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Sample ID	Sample Date	Location Type	Depth Interval (ft bgs)	Observations of Staining, Sheens, Coal Tar, Purifier Waste, and/or Odors	PID Reading (ppm)	Total PAH (ppm)	Depth to Saturated Interval (ft bgs)	Top of Clay (ft bgs)	Boring/ Test Pit Depth (ft bgs)	Site Location
S-157	5/3/19	SB	4.5-7	Rainbow sheen; petroleum-like odor (5-7')	14.7, 11, 80	NA	4.5	11	25	Area 1B
			7-9	Rainbow sheen; petroleum-like odor	29.9, 82.6	0.977				
			9-11	Rainbow sheen; petroleum-like odor	32.6, 66.2	NA				
			11-19	Petroleum-like odor; black staining	1.5 - 7.1	NA				
			23-25	*-- No visual impacts or coal tar-like odors --*	0.0	<0.036				
S-158	4/26/19	SB	10-11	Low viscosity tar-like material; strong coal-tar like odor	0.9	NA	10	14	20	Area 1B
			11-12	Light blue and rainbow sheen	38.6	769				
			12-13	*-- No visual impacts or coal tar-like odors --*	1.7					
			18-20	*-- No visual impacts or coal tar-like odors --*	0.0	0.572				
S-159	4/26/19	SB	11-13	Light rainbow sheen	0.3, 4.9	35.5	5	18	20	Area 1B
			13-14	*-- No visual impacts or coal tar-like odors --*	38.6	NA				
			18-20	*-- No visual impacts or coal tar-like odors --*	0.0	<0.047				
S-160	5/3/19	SB	10-11	Liquid coal tar-like material	27.5	29,500	8	11	15	Area 4
			11-12	*-- No visual impacts or coal tar-like odors --*	3.5					
			13-15	*-- No visual impacts or coal tar-like odors --*	0.1	2.25				
S-161	5/3/19	SB	5-6	Low viscosity coal tar-like material	23.3	4,480	7	11	15	Area 4
			6-7	*-- No visual impacts or coal tar-like odors --*	1.0					
			10-12	*-- No visual impacts or coal tar-like odors --*	0.0	22.5				
S-162	5/3/19	SB	5-6	Black coal tar-like material; potential purifier waste;	8.9	106	9	15	20	Area 4
			6-7	strong coal tar-like odor	4.1					
			15-17	*-- No visual impacts or coal tar-like odors --*	0.0	12.2				
S-163	9/19/19	SB	0.5-2	*-- No visual impacts or coal tar-like odors --*	0.0	2,410	5	11.4	15	Area 2
			2-4	*-- No visual impacts or coal tar-like odors --*	0.0	23.6				
S-164	9/19/19	SB	2-4	Petroleum-like odor (3.1-4')	0.0, 96.4	NA	6	--	10	FBA: RR
			4-6	Petroleum-like odor	98.1, 4.6	3.69				
			6-9	*-- No visual impacts or coal tar-like odors --*	2.0, 0.1	NA				
S-165	9/19/19	SB	All Depths	*-- No visual impacts or coal tar-like odors --*	0.0	NA	Inconclusive	--	2	FBA: RR
S-166	9/19/19	SB	All Depths	*-- No visual impacts or coal tar-like odors --*	0.0	NA	8	13	15	Area 1B
S-167	9/20/19	SB	5-7	*-- No visual impacts or coal tar-like odors --*	0.8, 2.2	NA	10	15	20	Area 1B
			7-9	*-- No visual impacts or coal tar-like odors --*	13.4, 8.3	29.3				
			9-13	*-- No visual impacts or coal tar-like odors --*	0.2 - 0.8	NA				
S-168	9/19/19	SB	6-8	*-- No visual impacts or coal tar-like odors --*	284.7, 1.6	29.3	10	10.8	15	Area 4
			8-13	*-- No visual impacts or coal tar-like odors --*	0.4 - 4.4	NA				
S-169	9/19/19	SB	All Depths	*-- No visual impacts or coal tar-like odors --*	0.0	NA	10	12.2	15	Area 4
S-170	9/19/19	SB	All Depths	*-- No visual impacts or coal tar-like odors --*	0.0	NA	12.7	12.7	15	Area 4
S-171	9/19/19	SB	5-7	*-- No visual impacts or coal tar-like odors --*	0.0	22.4	10	12	15	Area 4
S-172	9/19/19	SB	5-7	*-- No visual impacts or coal tar-like odors --*	0.0	47.5	10	13	15	Area 4
S-173	9/19/19	SB	5-7	*-- No visual impacts or coal tar-like odors --*	0.0	65.4	Inconclusive	11.5	15	Area 4
TP-10	3/7/05	TP	16-19	Slight petroleum-like odor	0.0	NA	5	16	19	Misc.
TP-11	3/7/05	TP	3-7	*-- No visual impacts or coal tar-like odors --*	0.7	NA	12	--	20	Central Site
			13-15	Coal-tar like blebs; sheen; naphthalene-like odor	24.7	49.6				
TP-12	3/8/05	TP	2-19	Sheen on water, slight petroleum-like odor	0.0	NA	10	--	20	Central Site
TP-13	3/8/05	TP	11-13	Sheen on water	N/A	NA	12	19	20	Central Site
			13-15	Slight sheen; Petroleum-like odor	N/A	19.6				
TP-14	3/8/05	TP	0-2	Slight petroleum-like odor	N/A	NA	--	9	20	Misc.
			17-19	Sheen on soil; moderate petroleum-like odor	N/A	834				
TP-15	3/8/05	TP	4.5-6.5	*-- No visual impacts or coal tar-like odors --*	N/A	43,500	--	15	20	Area 3A
TP-15R	4/16/19	SB	5-6	Coal tar-like odor	0.2	1,510	5	12.5	15	Area 3A
			6-7	Solidified coal tar-like material (at 7'); coal tar-like odor	86.2					
			10.5-12.5	*-- No visual impacts or coal tar-like odors --*	0.0	5.86				
TP-16	3/9/05	TP	5-6.5	*-- No visual impacts or coal tar-like odors --*	9.5	1,800	3	6.5	20	Misc.
TP-18	3/9/05	TP	2-7	Slight sheen	0.1	NA	--	11	20	Misc.
TP-21	3/10/05	TP	7-9	Sheen on water; creosote-like odor	N/A	24.9 [25.3]	8	11	20	Central Site
TP-23	3/10/05	TP	6-8	*-- No visual impacts or coal tar-like odors --*	43.7	57.8	5	10	13	FBA
TP-24	3/11/05	TP	6-12	Slight creosote-like odor	N/A	NA	6	8	12	FBA
TP-25	3/11/05	TP	2-3	Tar, staining	N/A	NA	5	9	14	FBA
			3-5	Strong petroleum-like odor	N/A	43.6				
TP-30	3/14/05	TP	1-2	*-- No visual impacts or coal tar-like odors --*	N/A	17.9	--	4	17	Area 2
			11-13	*-- No visual impacts or coal tar-like odors --*	N/A	26.1				
TP-32	3/14/05	TP	5.5-7.5	Light sheen; petroleum-like odor	N/A	89.2	--	15	20	Misc.
TP-33	3/14/05	TP	8-10	Strong petroleum-like odor	109	3,680	--	12	20	Misc.
TP-34	3/14/05	TP	3-5	Sheen; slight petroleum-like odor	N/A	55.7	3	8	17	Area 4
TP-35	3/15/05	TP	3-5	Sheen; petroleum-like odor	N/A	467	--	--	6	RCRA Area
TP-36	3/15/05	TP	6-8	Sheen; slight petroleum-like odor	N/A	104	--	--	8	RCRA Area

Table 3
Soil Boring and Test Pit Summary Table

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Sample ID	Sample Date	Location Type	Depth Interval (ft bgs)	Observations of Staining, Sheens, Coal Tar, Purifier Waste, and/or Odors	PID Reading (ppm)	Total PAH (ppm)	Depth to Saturated Interval (ft bgs)	Top of Clay (ft bgs)	Boring/ Test Pit Depth (ft bgs)	Site Location
TP-37	3/15/05	TP	4-5	2" Hardened tar above slag	N/A	NA	--	12	20	Area 2
			8-9	Sheen, tar-like odor	N/A	402				
			9-10	Sheen, tar-like odor	N/A	288				
TP-37A	3/15/05	TP	12	Tar; structures	N/A	NA	10	10	12	Area 2
TP-39	3/16/05	TP	8-10	Tar-like material; strong tar-like odor; strong petroleum-like odor; staining	7.4	410	6	10	18	Central Site
TP-42/ TP-42A	3/16/05	TP	1-5	Sheen; three 2" steel pipes	N/A	NA	--	9	20	Central Site
TP-44	3/16/05	TP	2-3	Tar	1.5	NA	3	--	9	FBA
			3-5	3" PVC pipe wrapped in fabric	35	87.9				
			5-8	*-- No visual impacts or coal tar-like odors --*	7.5	NA				
TP-44R	4/22/19 4/24/19	TP	3.0-4.5	*-- No visual impacts or coal tar-like odors --*	1.6	6.28	4	8	10	FBA
			4.5-5.0	Petroleum-like odor	62.1					
			5-7	Rainbow sheen	31.8	2.75				
			7-9	*-- No visual impacts or coal tar-like odors --*	0.0	0.044				
TP-57	3/19/05	TP	7-9	Slight odor	N/A	NA	9	17	20	Central Site
TP-58	3/18/05	TP	10-12	Free product	N/A	58.1	11	17	20	Central Site
TP-59	3/18/05	TP	11-13	Sheen	N/A	7.96	8	12	20	Central Site
TP-60	3/18/05	TP	5-8	Sheen, slight petroleum-like odor	N/A	NA	6	21	22	Area 1A
			17-19	Product, sheen	N/A	233				
TP-63	3/21/05	TP	4-8	*-- No visual impacts or coal tar-like odors --*	9.4	NA	7	11	20	Area 4
			8-8.5	Tar, sheen, strong tar-like odor	47.2	95,000				
TP-63R	4/18/19	SB	7-9	*-- No visual impacts or coal tar-like odors --*	0.0	292	4	11	15	Area 4
			11-13	*-- No visual impacts or coal tar-like odors --*	0.0	0.201				
TP-64	3/21/05	TP	2-4	Tar	1.8	3,520	6	15	20	Area 4
			6-7	Sheen; moderate petroleum-like odor	0.0	NA				
			7-10	Sheen; moderate petroleum-like odor	4.5	6.27				
TP-67	3/21/05	TP	5-7	Slight sheen	N/A	NA	5	7	19	Central Site
TP-68/68A	3/21/05	TP	0-5	Very hard tar; moderate tar-like odor; 12' cast-iron pipe containing tar	N/A	NA	--	14	14	Central Site
			8-10	Sheen; moderate tar-like odor	N/A	71.4				
TP-69	3/22/05	TP	5-12	Slight petroleum-like odor	N/A	NA	5	18	22	RCRA Area
TP-70	3/22/05	TP	11-13	*-- No visual impacts or coal tar-like odors --*	N/A	956 [2,380]	6	9	20	Area 2
TP-71	3/22/05	TP	9-11	Moderate petroleum-like odor	N/A	1,200	6	9	20	Area 2
TP-75	3/23/05	TP	3-7	Sheen; PVC pipes in gravel bed	11.4	NA	5	7	14	FBA
			7-14	Heavy sheen; strong petroleum-like odors	12.9	1.14				FBA
TP-78	3/23/05	TP	6-8	Slight petroleum-like odor	N/A	35.3	5	15	20	FBA
W-3	3/26/85	TP	7-8	Bad odor	18	NA	3.5	7	14	Central Site
			8-10	Bad odor	880	NA				
			10-12	Bad odor	>1000	NA				
			12-14	*-- No visual impacts or coal tar-like odors --*	220	NA				
W-4	3/25/85	TP	6-8	*-- No visual impacts or coal tar-like odors --*	350	NA	6	14.5	16	Perimeter
			8-11	*-- No visual impacts or coal tar-like odors --*	520	NA				
			11-13	*-- No visual impacts or coal tar-like odors --*	680	NA				
			13-15	*-- No visual impacts or coal tar-like odors --*	220	NA				
			15-16	*-- No visual impacts or coal tar-like odors --*	160	NA				
W-5	10/15/86	TP	2-4	*-- No visual impacts or coal tar-like odors --*	1.0	NA	6.5	10	16	Misc.
			8-10	*-- No visual impacts or coal tar-like odors --*	2.0	NA				
			12-14	*-- No visual impacts or coal tar-like odors --*	16	NA				
			14-16	*-- No visual impacts or coal tar-like odors --*	1.0	NA				

Table 3
Soil Boring and Test Pit Summary Table

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Sample ID	Sample Date	Location Type	Depth Interval (ft bgs)	Observations of Staining, Sheens, Coal Tar, Purifier Waste, and/or Odors	PID Reading (ppm)	Total PAH (ppm)	Depth to Saturated Interval (ft bgs)	Top of Clay (ft bgs)	Boring/ Test Pit Depth (ft bgs)	Site Location
W-6	10/15/86	TP	0-2	*-- No visual impacts or coal tar-like odors --*	198	NA	5	10	14	Area 2
			2-4	*-- No visual impacts or coal tar-like odors --*	59	NA				
			4-6	*-- No visual impacts or coal tar-like odors --*	180	NA				
			6-8	*-- No visual impacts or coal tar-like odors --*	20	NA				
			8-10	*-- No visual impacts or coal tar-like odors --*	16	NA				
			10-12	*-- No visual impacts or coal tar-like odors --*	12	NA				
			12-14	*-- No visual impacts or coal tar-like odors --*	14	NA				

Notes:

1. Table presents sample intervals where visual impacts and coal tar-like odors were observed. Table also presents the sample intervals with photoionization detector (PID) headspace readings above 0.0 parts per million (ppm) and sample intervals analyzed for polycyclic aromatic hydrocarbons (PAHs). Even if there are no visual impacts, soil samples analyzed for PAHs, or elevated PID readings, 2018 and 2019 soil borings and test pits are summarized within to document the observed saturation depth and silty-clay layer contact depth.
2. The consultant responsible for performing soil borings and test pits can be identified by series as follows:
   "W-" Series in 1985 and 1986 - Monitoring wells were installed and logged by Woodward-Clyde Consultants (WCC).
   "B-" Series in 1986 - Soil borings advanced and logged by WCC.
   "PSSTP-" Series in 2003 - Test pits excavated and logged by Paulus Sokolowski and Sartor Engineering, PC (PS&S).
   "PC-B" Series in 2005 - Soil borings were advanced by Earth Engineering Incorporated (EEI) and logged by PS&S.
   "PCSB-" Series in 2005 - Soil borings were advanced and logged by PS&S.
   "PCTP-" Series in 2005 - Test pits were excavated and logged by PS&S.
   "TP-" Series in 2005 - Test pits were excavated by EEI and logged by PS&S.
   "MW-" Series in 2018 and 2019 - Monitoring wells were installed and logged by Arcadis U.S., Inc. (Arcadis).
   "S-" Series in 2019 - Soil borings and test pits were performed by Arcadis.
   "..R" Revisited Locations in 2019 - Soil borings and test pits were performed by Arcadis.
3. Depths are measured in feet below ground surface (ft bgs).
4. Gray shading and black borders indicate that the test pit or soil boring was performed in 2018 or 2019.
5. PID headspace screening results are reported in ppm.
6. If the presented sample interval had more than three PID readings, the range of PID readings is presented from minimum to maximum for that interval.
7. Total PAH is the sum of the 16 priority pollutant PAHs identified by the United States Environmental Protection Agency (USEPA) and 2-methylnaphthalene.
8. Duplicate values are presented in brackets [ ].
9. SB = Soil boring.
10. TP = Test pit.
11. HA = Hand auger.
12. N/A = Not available.
13. NA = Not analyzed for PAHs.
14. -- = Not encountered.
15. Revisited sampling locations were renamed with the suffix "R", and represent the same location as the historical sampling locations without the suffix "R".
16. Site locations are further described below:
    Area 1A = Eastern part of former coal storage area (around PCTP-75R).
    Area 1B = East of former coal storage area (around PSSTP-04R).
    Area 2 = North/Northwest of former tar storage area.
    Area 3A = South of former tar storage area (around TP-15).
    Area 3B = South of former tar storage area (around PCTP-66).
    Area 4 = East of former byproducts building.
    Central Site = General region between Areas 1, 2, and 3.
    FBA = Fuel blending area.
    FBA: Perimeter = Perimeter location within the fuel blending area.
    FBA: RR = Fuel blending area: near inactive railroad track (around PCSB-41R).
    Northern Corner = Northern corner of the Site near intersection of Buckius and Richmond Streets (around PCSB-01R).
    Perimeter = Perimeter location outside of the fuel blending area.
    RCRA Area = 1990's Resource Conservation and Recovery Act soil removal area.
    Misc. = Sample location that is outside the above mentioned areas.

Table 4
Monitoring Well Construction Details

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID	Date Completed	Top of Outer Casing Elevation (feet NAVD 88)	Top of PVC Pipe Elevation (feet NAVD 88)	Ground Surface Elevations (feet NAVD 88)	Inner Casing Diameter (inches)	Stickup Length (feet ags)	Screened Interval (feet bgs)	
							Top	Bottom
PCMW-01	8/4/2005	10.56	10.19	7.37	4	3.19	1	9
PCMW-04	8/5/2005	12.65	11.89	8.32	4	4.33	1	9
PCMW-05	8/5/2005	12.08	11.70	7.50	4	4.58	1	10
PCMW-06	8/5/2005	12.28	11.20	8.11	4	4.17	2	10
PCMW-07	8/18/2005	12.24	11.34	9.55	4	2.69	1	10
PCMW - 08S	8/30/2005	19.00	18.49	15.77	2	3.23	5	15
PCMW - 08D	10/26/2005	17.83	17.21	15.79	2	2.04	26	36
PCMW - 09S	8/31/2005	19.43	18.80	16.09	2	3.34	4	14
PCMW - 10S	8/23/2005	15.85	15.22	12.85	2	3.00	5	15
PCMW - 10D	9/28/2005	14.54	13.80	12.73	2	1.81	23	33
PCMW - 11S	8/30/2005	19.51	18.89	16.45	2	3.06	5	15
PCMW - 12S	8/19/2005	14.60	13.82	11.27	2	3.32	2	10
PCMW - 15S	8/25/2005	18.68	18.08	15.19	2	3.49	5	15
PCMW - 15D	10/14/2005	17.24	16.82	15.00	2	2.24	31	41
PCMW - 16D	10/24/2005	13.42	12.92	11.39	2	2.03	23	33
PCMW - 17S	8/29/2005	14.98	14.44	11.75	2	3.23	4	14
PCMW - 17D	10/20/2005	14.89	14.27	11.33	2	3.56	30	40
PCMW - 18S	8/29/2005	21.26	20.61	18.84	2	2.42	5	20
PCMW - 18D	10/10/2005	19.95	19.00	18.22	2	1.73	27	37
PCMW - 19S	8/24/2005	15.25	14.75	11.83	2	3.42	3	13
PCMW - 19D	10/11/2005	14.18	13.24	11.56	2	2.62	27	37
PCMW - 20S	8/23/2005	15.68	15.18	12.73	2	2.95	3	13
PCMW - 20D	10/7/2005	14.54	14.27	12.85	2	1.69	18	28
MW - 5	10/23/1986	13.95	13.77	11.86	2	2.09	4	14
MW - 6	10/23/1986	13.43	13.21	11.95	2	1.48	3	13
MW-101	5/14/2018	15.19	14.84	12.84	2	2.35	4	14
MW-102	5/16/2018	17.20	16.92	14.83	2	2.37	8	18
MW-103	5/16/2018	16.36	16.09	13.83	2	2.53	6	16
MW-104	5/15/2018	14.06	13.93	11.64	2	2.42	4	11
MW-105	5/15/2018	14.35	13.99	12.14	2	2.22	4	14
MW-106	5/15/2018	9.22	9.03	6.81	2	2.41	4	10
MW-107	5/15/2018	10.35	10.11	7.98	2	2.38	4	10
MW-108	9/24/2019	17.46	16.96	14.65	2	2.81	9	19
MW-109	9/25/2019	13.35	13.19	10.88	2	2.48	9	19
MW-110	9/25/2019	11.22	10.86	8.38	2	2.84	4	14
MW-111	9/25/2019	19.73	19.32	16.71	2	3.02	9	19
MW-112	9/24/2019	12.63	12.08	9.48	2	3.14	4	14
MW-113	9/25/2019	18.41	18.37	16.13	2	2.29	7	17

Notes:

1. NAVD 88 = North American Vertical Datum of 1988.
2. ags = above gound surface.
3. bgs = below gound surface.
4. Monitoring wells were completed with steel stick-up protective casings.
5. Monitoring wells were constructed with polyvinyl chloride inner casings.
6. Monitoring wells were not installed with a sump (i.e., well depths are equal to screen depths), except MW-111 which has a 1-foot sump underneath the screened interval and MW-5 which has a 2-foot sump underneath the screened interval.
7. Each deep well (well ID contains suffix D) has a steel casing extending through the fill layer.
8. The following wells are destroyed or could not be found during any of the 2018 groundwater sampling events:
   - PCMW-02
   - PCMW-03
   - PCMW-09D
   - PCMW-11D
   - PCMW-12D
   - PCMW-13D
   - PCMW-13S
   - PCMW-14D
   - PCMW-14S
   - PCMW-16S
9. The screen intervals for both MW-5 and MW-6 were estimated based on the downhole camera footage.

Table 5
Groundwater Elevation Data

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location	Reference Point Elevation (NAVD 88, except as shaded)	Depth to Groundwater (feet bmp)							
		10/31/05	12/30/05	1/30/06	3/14/06 at high tide	3/14/06 at low tide	3/19/18 between 0830-1000 EDT	5/29/18 between 0900-1100 EST	10/3/19 between 0900-1100 EST
PCMW-01	10.19	5.81	5.71	5.42	6.00	6.00	6.02	NM	7.21
PCMW-02	10.11	5.82	5.73	5.46	5.98	5.99	MISSING/DESTROYED		
MW-106	9.03	--	--	--	--	--	--	4.19	5.87
PCMW-03	6.75	2.61	2.52	2.24	2.66	2.67	MISSING/DESTROYED		
PCMW-04	11.89	7.12	6.81	6.35	7.18	7.14	6.64	6.80	8.96
PCMW-05	11.70	6.60	6.16	5.71	6.55	6.53	5.98	6.12	8.73
PCMW-06	11.20	6.26	5.86	5.32	6.25	6.25	5.54	6.73	8.24
PCMW-07	11.34	6.40	5.88	5.09	6.17	6.16	MISSING/DESTROYED		
PCMW-08S	18.49	12.06	11.06	9.94	11.28	11.21	9.83	10.45	13.45
PCMW-08D	17.21	17.90	16.32	17.55	16.25	17.55	16.77	16.43	17.35
PCMW-09S	18.80	12.05	10.67	9.74	10.80	10.78	9.72	10.31	12.96
PCMW-09D	17.52	16.99	17.25	18.18	16.61	NM	MISSING/DESTROYED		
PCMW-10S	15.22	10.55	9.97	9.12	10.27	10.25	8.97	9.39	12.26
PCMW-10D	13.80	12.90	12.92	13.74	13.00	13.93	13.00	12.91	NM
PCMW-11S	18.89	12.07	10.65	9.78	10.70	10.71	9.82	10.41	12.50
PCMW-11D	17.74	17.16	16.78	17.59	16.81	17.75	MISSING/DESTROYED		
PCMW-12S	13.82	5.23	4.00	3.25	4.32	4.31	3.40	3.37	Obstructed
PCMW-12D	13.29	12.44	12.38	12.78	12.43	12.98	MISSING/DESTROYED		
PCMW-13S	15.75	10.57	10.17	9.1	10.28	10.22	MISSING/DESTROYED		
PCMW-13D	13.94	12.31	12.26	11.49	12.19	12.4	MISSING/DESTROYED		
PCMW-14S	15.39	8.47	7.76	6.88	7.21	7.77	MISSING/DESTROYED		
MW-101	14.84	--	--	--	--	--	--	6.83	9.61
PCMW-14D	13.83	12.81	12.29	12.81	12.48	13.2	MISSING/DESTROYED		
PCMW-15S	18.08	9.86	9.21	8.34	9.29	9.26	8.63	9.15	11.70
PCMW-15D	16.82	16.10	15.78	15.90	15.90	16.21	15.32	15.13	15.91
PCMW-16S	14.35	9.87	8.92	7.49	8.48	8.51	MISSING/DESTROYED		
MW-105	13.99	--	--	--	--	--	--	8.40	Obstructed
PCMW-16D	12.92	12.11	12.20	12.31	12.35	12.29	11.77	11.11	12.06
PCMW-17S	14.44	6.70	5.98	4.75	5.98	6.03	4.20	5.27	9.69
PCMW-17D	14.27	13.29	13.25	13.18	13.36	13.39	12.62	12.58	13.10
PCMW-18S	20.61	18.38	18.50	17.61	18.03	18.10	16.75	18.55	17.67
PCMW-18D	19.00	17.30	17.46	16.61	17.20	17.19	15.95	17.27	16.90
PCMW-19S	14.75	6.99	7.05	6.49	7.41	7.41	6.63	7.80	9.03
PCMW-19D	13.24	11.97	12.03	11.61	11.99	11.95	11.02	11.66	11.43
PCMW-20S	15.18	8.19	8.04	7.47	8.45	8.43	7.75	NM	10.36
PCMW-20D	14.27	13.05	13.22	12.91	13.26	13.20	12.30	12.79	12.72
MW-5	13.77	--	--	--	--	--	6.47	NM	8.72
MW-6	13.21	--	--	--	--	--	3.95	NM	NM
MW-102	16.92	--	--	--	--	--	--	10.60	12.27
MW-103	16.09	--	--	--	--	--	--	10.49	12.88
MW-104	13.93	--	--	--	--	--	--	6.55	9.39
MW-107	10.11	--	--	--	--	--	--	5.15	7.20
MW-108	16.96	--	--	--	--	--	--	--	13.27
MW-109	13.19	--	--	--	--	--	--	--	9.52
MW-110	10.86	--	--	--	--	--	--	--	7.43
MW-111	19.32	--	--	--	--	--	--	--	12.84
MW-112	12.08	--	--	--	--	--	--	--	7.90
MW-113	18.41	--	--	--	--	--	--	--	12.34

Table 5
Groundwater Elevation Data

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location	Reference Point Elevation (NAVD 88, except as shaded)	Water Level Elevation (feet NAVD 88, except as shaded)							
		10/31/05	12/30/05	1/30/06	3/14/2006 at high tide	3/14/2006 at low tide	3/19/18 between 0830-1000 EDT	5/29/18 between 0900-1100 EST	10/3/19 between 0900-1100 EST
PCMW-01	10.19	4.38	4.48	4.77	4.19	4.19	4.17	NM	2.98
PCMW-02	10.11	4.29	4.38	4.65	4.13	4.12	MISSING/DESTROYED		
MW-106	9.03	--	--	--	--	--	--	4.84	3.16
PCMW-03	6.75	4.14	4.23	4.51	4.09	4.08	MISSING/DESTROYED		
PCMW-04	11.89	4.77	5.08	5.54	4.71	4.75	5.25	5.09	2.93
PCMW-05	11.70	5.10	5.54	5.99	5.15	5.17	5.72	5.58	2.97
PCMW-06	11.20	4.94	5.34	5.88	4.95	4.95	5.66	4.47	2.96
PCMW-07	11.34	4.94	5.46	6.25	5.17	5.18	MISSING/DESTROYED		
PCMW-08S	18.49	6.43	7.43	8.55	7.21	7.28	8.66	8.04	5.04
PCMW-08D	17.21	-0.69	0.89	-0.34	0.96	-0.34	0.44	0.78	-0.14
PCMW-09S	18.80	6.75	8.13	9.06	8.00	8.02	9.08	8.49	5.84
PCMW-09D	17.52	0.53	0.27	-0.66	0.91	NM	MISSING/DESTROYED		
PCMW-10S	15.22	4.67	5.25	6.10	4.95	4.97	6.25	5.83	2.96
PCMW-10D	13.80	0.90	0.88	0.06	0.80	-0.13	0.80	0.89	NM
PCMW-11S	18.89	6.82	8.24	9.11	8.19	8.18	9.07	8.48	6.39
PCMW-11D	17.74	0.58	0.96	0.15	0.93	-0.01	MISSING/DESTROYED		
PCMW-12S	13.82	8.59	9.82	10.57	9.50	9.51	10.42	10.45	Obstructed
PCMW-12D	13.29	0.85	0.91	0.51	0.86	0.31	MISSING/DESTROYED		
PCMW-13S	15.75	5.18	5.58	6.65	5.47	5.53	MISSING/DESTROYED		
PCMW-13D	13.94	1.63	1.68	2.45	1.75	1.54	MISSING/DESTROYED		
PCMW-14S	15.39	6.92	7.63	8.51	8.18	7.62	MISSING/DESTROYED		
MW-101	14.84	--	--	--	--	--	--	8.01	5.23
PCMW-14D	13.83	1.02	1.54	1.02	1.35	0.63	MISSING/DESTROYED		
PCMW-15S	18.08	8.22	8.87	9.74	8.79	8.82	9.45	8.93	6.38
PCMW-15D	16.82	0.72	1.04	0.92	0.92	0.61	1.50	1.69	0.91
PCMW-16S	14.35	4.48	5.43	6.86	5.87	5.84	MISSING/DESTROYED		
MW-105	13.99	--	--	--	--	--	--	5.59	Obstructed
PCMW-16D	12.92	0.81	0.72	0.61	0.57	0.63	1.15	1.81	0.86
PCMW-17S	14.44	7.74	8.46	9.69	8.46	8.41	10.24	9.17	4.75
PCMW-17D	14.27	0.98	1.02	1.09	0.91	0.88	1.65	1.69	1.17
PCMW-18S	20.61	2.23	2.11	3.00	2.58	2.51	3.86	2.06	2.94
PCMW-18D	19.00	1.70	1.54	2.39	1.80	1.81	3.05	1.73	2.10
PCMW-19S	14.75	7.76	7.70	8.26	7.34	7.34	8.12	6.95	5.72
PCMW-19D	13.24	1.27	1.21	1.63	1.25	1.29	2.22	1.58	1.81
PCMW-20S	15.18	6.99	7.14	7.71	6.73	6.75	7.43	NM	4.82
PCMW-20D	14.27	1.22	1.05	1.36	1.01	1.07	1.97	1.48	1.55
MW-5	13.77	--	--	--	--	--	7.30	NM	5.05
MW-6	13.21	--	--	--	--	--	9.26	NM	NM
MW-102	16.92	--	--	--	--	--	--	6.32	4.65
MW-103	16.09	--	--	--	--	--	--	5.60	3.21
MW-104	13.93	--	--	--	--	--	--	7.38	4.54
MW-107	10.11	--	--	--	--	--	--	4.96	2.91
MW-108	16.96	--	--	--	--	--	--	--	3.69
MW-109	13.19	--	--	--	--	--	--	--	3.67
MW-110	10.86	--	--	--	--	--	--	--	3.43
MW-111	19.32	--	--	--	--	--	--	--	6.48
MW-112	12.08	--	--	--	--	--	--	--	4.18
MW-113	18.41	--	--	--	--	--	--	--	6.07

Table 5
Groundwater Elevation Data

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Notes:

1. Gray shading indicates that the elevations is referenced to feel above mean sea level. For these locations, the vertical datum is unknown because the wells were not resurveyed during the supplemental investigation. The reference point elevation used for these wells is the elevation reporting during the initial investigation, and the vertical datum was not indicated in the initial investigatior
2. NAVD 88 = North American Vertical Datum of 1988.
3. MW = monitoring well.
4. bmp = below measuring point.
5. MISSING/DESTROYED = monitoring well was unable to be found, destroyed, or inaccessible.
6. Obstructed = monitoring well was obstructed
7. DRY = monitoring well was void of water except on the surface of the base of the well.
8. -- = Not applicable. Well wasn't installed.
9. NM = Not measured.

Table 6
Supplemental Investigation Survey Data

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID	Northing	Easting	Elevation
Monitoring Wells			
MW-101	252827.23	2719591.58	12.84
MW-102	253136.11	2719717.00	14.83
MW-103	252910.10	2720099.58	13.83
MW-104	252335.78	2719009.41	11.64
MW-105	251956.05	2719250.38	12.14
MW-106	251683.60	2720437.09	6.81
MW-107	252078.66	2720497.81	7.98
MW-108	252645.00	2720170.13	14.65
MW-109	252689.06	2720267.00	10.88
MW-110	252610.93	2720324.17	8.38
MW-111	251899.94	2719793.69	16.71
MW-112	251769.62	2719952.29	9.48
MW-113	251714.62	2719797.94	16.13
Soil Borings			
PCSB-01R	253971.60	2719455.73	18.20
PCSB-26R	252024.52	2720514.31	6.40
PCSB-30R	251555.74	2720384.85	6.16
PCSB-41R	252342.54	2720479.81	6.60
PCSB-49R	251905.00	2720226.12	8.20
PCTP-01R	253846.11	2719304.52	19.40
PCTP-02R	253544.74	2719225.22	13.60
PCTP-07R	252570.87	2720182.98	15.43
PCTP-08R	253248.40	2719480.63	12.30
PCTP-10R	252937.01	2719331.86	11.70
PCTP-12R	252733.41	2719180.85	10.47
PCTP-17R	252632.81	2719340.24	15.50
PCTP-28R	252748.92	2719804.49	16.90
PCTP-32R	252335.44	2719414.99	12.06
PCTP-47R	252251.58	2719972.35	16.75
PCTP-49R	252309.92	2719106.31	12.00
PCTP-51R	251732.63	2719602.76	15.72
PCTP-73R	253343.04	2719870.71	10.53
PCTP-75R	252910.91	2720140.44	11.91
PSSTP-01R	253854.17	2719541.79	17.46
PSSTP-04R	252671.14	2720191.55	13.60
PSSTP-07R	251966.78	2719374.33	12.93
PSSTP-10R	252849.69	2718912.52	11.10
PSSTP-22R	252669.10	2719644.65	13.00
S-101	252928.37	2720126.29	12.32
S-102	252920.43	2720154.80	11.53
S-103	252883.47	2720152.72	12.55
S-104	252897.78	2720119.40	13.07
S-105	252873.56	2719221.60	11.83
S-106	252786.56	2719274.61	11.55
S-108	252671.78	2719388.25	15.00
S-109	252593.44	2719444.95	14.40
S-110	252774.87	2719155.17	11.22
S-112	252707.17	2719145.13	9.13
S-113B	252631.18	2719223.82	10.50
S-114	252583.33	2719328.47	16.71
S-115	252567.82	2719016.27	11.90
S-116	252562.04	2719049.41	11.52
S-117	252536.11	2719009.37	12.21
S-118	252528.55	2719045.01	11.60
S-119	252707.32	2718720.72	12.96
S-121	252675.80	2718720.66	13.99
S-122	252666.86	2718748.63	12.92
S-123	252189.01	2719742.16	15.25
S-124	252103.95	2719788.02	15.36
S-125	252033.99	2719772.34	15.10
S-126	252209.32	2719572.37	15.70
S-127	252071.41	2719629.06	14.80
S-128	252010.70	2719731.31	14.11
S-129	251986.50	2719691.70	14.54
S-130	252137.45	2719550.64	12.80

Location ID	Northing	Easting	Elevation
Soil Borings			
S-131	252040.34	2719592.18	11.43
S-132	251996.03	2719614.36	13.00
S-133	251960.68	2719644.74	15.20
S-134	253007.61	2718965.40	14.69
S-135	252356.76	2720186.16	9.38
S-136	251591.03	2719840.54	8.10
S-137	251505.65	2719571.15	9.73
S-138	253728.59	2719645.19	16.69
S-139	253603.37	2719720.02	14.60
S-140	253290.84	2719920.43	11.72
S-144	253980.81	2719432.91	18.25
S-145	253992.72	2719462.63	18.04
S-146	253953.28	2719470.60	18.29
S-147	252690.27	2720204.08	13.74
S-148	252648.54	2720196.18	14.30
S-149	252668.42	2720168.16	14.00
S-150	252338.70	2720459.97	7.00
S-151	252337.23	2720498.02	7.00
S-152	252360.18	2720468.29	7.20
S-153	251954.43	2719678.23	14.34
S-154	251965.09	2719707.52	14.62
S-155	251986.66	2719755.27	15.07
S-156	252703.97	2720281.99	15.81
S-157	252624.28	2720252.45	14.88
S-158	252608.44	2720098.04	16.29
S-159	252751.01	2720148.79	14.00
S-163	252797.48	2719336.70	10.99
S-164	252313.50	2720528.29	6.74
S-165	252295.43	2720502.78	6.54
S-166	252682.90	2720115.39	15.57
S-167	252762.09	2720248.62	10.05
S-168	251954.16	2719839.39	16.99
S-169	251902.70	2719877.12	19.65
S-170	251876.84	2719818.66	19.72
S-171	251848.49	2719745.96	16.96
S-172	251823.86	2719691.72	17.55
S-173	251870.67	2719657.29	17.60
TP-15R	252547.94	2719031.29	11.41
TP-63R	252076.87	2719747.86	14.88
Test Pits			
PCTP-66R	252684.90	2718734.42	13.32
S-107	252712.27	2719326.97	11.96
S-111	252763.19	2719235.19	11.54
S-113	252632.51	2719225.09	10.50
S-120	252697.55	2718757.32	12.34
S-141	252617.92	2719194.75	10.63
S-142	252843.78	2719300.54	11.27
TP-44R	252287.87	2720365.63	11.00
Subsurface Utilites			
MH-4	253149.45	2719309.57	13.29
PIPE-12-1	252638.81	2719221.94	10.60
PIPE-12-1	252629.45	2719227.59	10.50
PIPE-12-1	252616.03	2719204.74	10.30
PIPE-12-1	252726.87	2719169.00	10.70
PIPE-24-1	252618.84	2719216.97	10.40
PIPE-24-1	252626.53	2719232.06	10.50
PIPE-24-1	252642.17	2719223.63	10.60
PIPE-24-1	252741.28	2719171.98	10.80
PIPE-24-1	252768.68	2719198.95	10.61

Notes:

1. Northing and Eastings are in feet referenced to the North American Datum of 1983, State Plane of Pennsylvania-South.
2. Elevations are in feet referenced to the North American Vertical Datum of 1988.
3. Revisited sampling locations were renamed with the suffix "R", and represent the same location as the historical sampling locations without the suffix "R".
4. Reported monitoring well, soil boring, and test pit elevations are the ground surface. Reported subsurface utility elevations are the top of pipe, except for MH-4 where the reported elevation is the ground surface.

Table 7
Surface Soil Analytical Results – Detected VOCs, SVOCs, and Inorganics (mg/kg)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID: / Sample Depth (ft): / Date Collected:	CAS Number	Soil Standards or PQLs: S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	Soil Standards or PQLs: DC Non-Res Surf Soil (Exceedances Shaded)	PCSB-26 0.5 7/26/05	PCSB-26R 0.5-2 4/19/19	PCSB-27 0.5 7/26/05	PCSB-27 1.5 7/26/05	PCSB-28 0.5 7/26/05	PCSB-29 0.5 7/26/05	PCSB-30 0.5 7/26/05	PCSB-30R 0.5-2 4/19/19	PCSB-31 0.5 7/28/05	PCSB-32 0.5 7/28/05 / 8/1/05	PCSB-33 0.5 7/28/05	PCSB-34 0.5 7/27/05
Volatile Organic Compounds															
Acetone	67-64-1	8,800	10,000	0.034	0.0087 J	< 0.013	< 0.006	< 0.013	< 0.0059	< 0.006	0.0252	< 0.0074	< 0.0072	< 0.0066	< 0.0064
Benzene	71-43-2	0.5	280	< 0.00083	< 0.00058	< 0.0013	< 0.00058	< 0.0012	< 0.00057	< 0.00057	< 0.00092	< 0.00071	< 0.00069	< 0.00064	< 0.00061
Carbon Disulfide	75-15-0	620	10,000	< 0.0011	< 0.0023	< 0.0016	< 0.00074	< 0.0015	< 0.00072	< 0.00073	< 0.0037 J	< 0.0009	< 0.00088	< 0.00081	< 0.00078
Cyclohexane	110-82-7	6,900	10,000	NA	< 0.0023	NA	NA	NA	NA	NA	< 0.0037	NA	NA	NA	NA
Dichloromethane	75-09-2	0.5	10,000	0.018 B	< 0.0058	0.021 B	0.013 B	0.017 B	0.013 B	0.0058 B	< 0.0092	0.038 B	0.021 B	0.028 B	0.0093 B
Ethylbenzene	100-41-4	70	880	< 0.0012	< 0.0012	< 0.0019	< 0.00085	< 0.0018	< 0.00083	< 0.00084	< 0.0018	< 0.001	< 0.001	< 0.00093	< 0.0009
Isopropylbenzene	98-82-8	2,500	10,000	NA	< 0.0023	NA	NA	NA	NA	NA	< 0.0037	NA	NA	NA	NA
m&p-Xylenes	ARC-mpXyl	- -	- -	< 0.0018	< 0.0012	< 0.0028	< 0.0013	< 0.0026	< 0.0012	< 0.0012	< 0.0018	< 0.0015	< 0.0015	< 0.0014	< 0.0013
Methyl Acetate	79-20-9	9,700	10,000	NA	< 0.0058	NA	NA	NA	NA	NA	< 0.0092	NA	NA	NA	NA
Methylcyclohexane	108-87-2	- -	- -	NA	< 0.0023	NA	NA	NA	NA	NA	< 0.0037	NA	NA	NA	NA
o,p-Xylene	136777-61-2	- -	- -	< 0.00076	NA	< 0.0012	< 0.00053	< 0.0011	< 0.00052	< 0.00053	NA	< 0.00065	< 0.00063	< 0.00058	< 0.00056
o-Xylene	95-47-6	- -	- -	NA	< 0.0012	NA	NA	NA	NA	NA	< 0.0018	NA	NA	NA	NA
Styrene (Monomer)	100-42-5	24	10,000	< 0.001	< 0.0023	< 0.0016	< 0.0007	< 0.0015	< 0.00069	< 0.0007	< 0.0037	< 0.00086	< 0.00084	< 0.00078	< 0.00075
Toluene	108-88-3	100	10,000	< 0.0012	< 0.0012	< 0.0019	< 0.00086	< 0.0018	< 0.00084	< 0.00085	< 0.0018	< 0.001	< 0.001	< 0.00094	< 0.00091
Total Xylenes	1330-20-7	1,000	7,900	NA	< 0.0012	NA	NA	NA	NA	NA	< 0.0018	NA	NA	NA	NA
Semi-Volatile Organic Compounds															
1,1-Biphenyl	92-52-4	1.5	34	NA	< 0.077	NA	NA	NA	NA	NA	< 0.089	NA	NA	NA	NA
2,4-Dimethylphenol	105-67-9	190	10,000	< 0.052	< 0.19	< 0.27	< 0.032	< 0.055	< 0.031	< 0.052	< 0.22	< 0.039	< 0.038	< 0.035	< 0.28
2-Methylnaphthalene	91-57-6	100	240	0.12	< 0.038	0.73	< 0.065	0.78	0.072	0.36	< 0.045	< 0.079	< 0.076	0.14	0.74
2-Methylphenol	95-48-7	490	160,000	< 0.18	< 0.077	< 0.92	< 0.14	< 0.19	< 0.14	< 0.18	< 0.089	< 0.17	< 0.17	< 0.16	< 0.96
3-Methylphenol, 4-Methylphenol	65794-96-9	--	--	NA	< 0.077	NA	NA	NA	NA	NA	< 0.089	NA	NA	NA	NA
4-Methylphenol	106-44-5	49	16,000	< 0.2	NA	< 1	< 0.14	< 0.21	< 0.14	< 0.2	NA	< 0.17	< 0.16	< 0.15	< 1.1
4-Nitroaniline	100-01-6	14	4,600	NA	< 0.19	NA	NA	NA	NA	NA	< 0.22	NA	NA	NA	NA
Acenaphthene	83-32-9	4,700	190,000	0.16	< 0.038	< 0.081	< 0.0062	0.079	< 0.0061	< 0.016	< 0.045	< 0.0076	< 0.0073	< 0.0069	< 0.084
Acenaphthylene	208-96-8	6,600	190,000	0.23	< 0.038	1.7	< 0.0057	0.35	< 0.0056	0.1	< 0.045	< 0.007	< 0.0067	0.072	2.3
Acetophenone	98-86-2	970	10,000	NA	< 0.19	NA	NA	NA	NA	NA	< 0.22	NA	NA	NA	NA
Anthracene	120-12-7	350	190,000	0.61	< 0.038	1.6	< 0.0075	0.47	< 0.0073	0.22	< 0.045	< 0.0092	< 0.0088	< 0.0082	4.2
Benz(a)anthracene	56-55-3	340	130	3.8	0.134	9.2	0.046	2.4	0.067	0.68	0.0283 J	< 0.0065	0.052	0.23	16
Benzaldehyde	100-52-7	--	--	NA	< 0.19	NA	NA	NA	NA	NA	< 0.22	NA	NA	NA	NA
Benzo(a)pyrene	50-32-8	46	91	3.1	0.154	8.8	0.042	2.1	0.055	0.41	0.0339 J	< 0.0077	0.051	0.24	14
Benzo(b)fluoranthene	205-99-2	170	76	4.8	0.211	11	0.13	4	0.12	0.97	0.0478	0.07	0.087	0.45	19
Benzo(g,h,i)perylene	191-24-2	180	190,000	2.3	0.102	7.3	< 0.0054	2	0.045	0.39	0.0281 J	< 0.0067	< 0.0064	0.23	13
Benzo(k)fluoranthene	207-08-9	610	76	1.8	0.0702	4.1	0.046	0.94	< 0.013	0.24	< 0.045	< 0.016	< 0.016	0.12	7.4
bis(2-Ethylhexyl)phthalate	117-81-7	130	6,500	0.11	< 0.077	< 0.17	< 0.024	0.27	0.1	0.55	< 0.089	0.077	0.1	0.18	0.23
Butyl benzyl phthalate	85-68-7	10,000	10,000	< 0.015	< 0.077	< 0.078	< 0.01	< 0.016	< 0.01	0.13	< 0.089	< 0.013	< 0.012	< 0.011	< 0.081
Carbazole	86-74-8	89	4,600	0.18	0.0116 J	0.46	< 0.0073	0.19	< 0.0071	< 0.011	< 0.089	< 0.0089	< 0.0085	< 0.008	0.75
Chrysene	218-01-9	230	760	3.9	0.142	9.6	0.085	3	0.099	0.99	0.0272 J	0.053	0.065	0.36	16
Dibenz(a,h)anthracene	53-70-3	270	22	0.8	0.0326 J	2.5	< 0.0069	0.85	< 0.0068	0.16	< 0.045	< 0.0085	< 0.0081	0.062	4.3
Dibenzofuran	132-64-9	250	3,200	0.16	< 0.077	0.44	< 0.049	0.35	< 0.048	0.22	< 0.089	< 0.06	< 0.057	0.056	0.83
Diethyl phthalate	84-66-2	7,800	10,000	< 0.01	< 0.077	< 0.053	< 0.0089	< 0.011	< 0.0087	< 0.01	< 0.089	< 0.011	< 0.01	< 0.0098	< 0.055
Di-n-butyl phthalate	84-74-2	4,000	10,000	< 0.0085	< 0.077	< 0.043	0.039 B	0.054 B	< 0.0075	< 0.0084	< 0.089	< 0.0094	< 0.009	0.045	< 0.045
Di-n-octyl phthalate	117-84-0	10,000	10,000	< 0.0089	< 0.077	< 0.046	< 0.013	< 0.0094	< 0.013	< 0.0088	< 0.089	< 0.016	< 0.015	< 0.014	< 0.047

Table 7
Surface Soil Analytical Results – Detected VOCs, SVOCs, and Inorganics (mg/kg)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID: / Sample Depth (ft): / Date Collected:	CAS Number	Soil Standards or PQLs: S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	Soil Standards or PQLs: DC Non-Res Surf Soil (Exceedances Shaded)	PCSB-26 0.5 7/26/05	PCSB-26R 0.5-2 4/19/19	PCSB-27 0.5 7/26/05	PCSB-27 1.5 7/26/05	PCSB-28 0.5 7/26/05	PCSB-29 0.5 7/26/05	PCSB-30 0.5 7/26/05	PCSB-30R 0.5-2 4/19/19	PCSB-31 0.5 7/28/05	PCSB-32 0.5 7/28/05 / 8/1/05	PCSB-33 0.5 7/28/05	PCSB-34 0.5 7/27/05
Semi-Volatile Organic Compounds (cont'd)															
Fluoranthene	206-44-0	3,200	130,000	3.7	0.243	17	0.049	3.9	0.12	1.1	0.0452	0.058	0.084	0.41	30
Fluorene	86-73-7	3,800	130,000	0.17	< 0.038	0.41	< 0.0091	0.12	< 0.0089	< 0.0095	< 0.045	< 0.011	< 0.011	< 0.01	1.3
Indeno(1,2,3-cd)pyrene	193-39-5	18,000	76	2.1	0.107	6.2	< 0.0064	1.8	< 0.0063	0.39	0.0286 J	< 0.0078	< 0.0075	0.19	11
Naphthalene	91-20-3	25	66	0.16	< 0.038	1.2	< 0.0037	0.69	0.054	0.42	< 0.045	< 0.0045	< 0.0043	0.067	1
Phenanthrene	85-01-8	10,000	190,000	1.8	0.121	5.6	< 0.0084	1.7	0.11	0.93	0.0215 J	< 0.01	0.048	0.29	15
Phenol	108-95-2	200	16,000	< 0.058	< 0.077	< 0.3	< 0.063	< 0.06	< 0.061	< 0.057	< 0.089	< 0.077	< 0.073	< 0.069	< 0.31
Pyrene	129-00-0	2,200	96,000	3.2	0.21	14	0.067	3.2	0.11	0.78	0.0413 J	0.055	0.079	0.39	26
Total PAHs and 2-Methylnaphthalene	-	- -	- -	32.8	1.53	101	0.465	28.4	0.852	8.14	0.302	0.236	0.466	3.25	181
Metals															
Aluminum	7429-90-5	- -	190,000	NA	10,800	NA	NA	NA	NA	NA	1,140	NA	NA	NA	NA
Antimony	7440-36-0	27	1,300	8	< 12 J	2.6	< 2.3	9.6	< 2.2	< 2.2	< 2.6	< 2.8	< 2.7	< 2.5	3.4
Arsenic	7440-38-2	29	61	***64***	15.2	27	< 2.3	***99***	2.4	4.3	5.2	3	< 2.7	< 2.5	7
Barium	7440-39-3	8,200	190,000	390	116	110	39	640	20	28	7.1 J	< 14	< 13	< 12	80
Beryllium	7440-41-7	320	6,400	1.4	0.27	0.81	< 0.68	1.1	< 0.67	0.8	< 0.26	< 0.83	< 0.8	< 0.75	6.3
Cadmium	7440-43-9	38	1,600	2.6	3.7	< 0.7	< 0.68	< 0.71	< 0.67	< 0.67	< 0.65	< 0.83	< 0.8	< 0.75	< 0.72
Calcium	7440-70-2	- -	- -	NA	785	NA	NA	NA	NA	NA	430 J	NA	NA	NA	NA
Chromium	7440-47-3	190,000	190,000	34	162	8.7	21	15	< 5.6	11	1.6	< 6.9	< 6.7	< 6.2	50
Cobalt	7440-48-4	130	960	NA	56.7	NA	NA	NA	NA	NA	0.60 J	NA	NA	NA	NA
Copper	7440-50-8	43,000	100,000	200	250	82	26	260	22	20	6.7	< 6.9	9.3	11	690
Cyanide	57-12-5	200	1,900	NA	1.1 J	NA	NA	NA	NA	NA	< 0.36	NA	NA	NA	NA
Iron	7439-89-6	- -	190,000	NA	93,300	NA	NA	NA	NA	NA	3,720	NA	NA	NA	NA
Lead	7439-92-1	450	1,000	***3,000***	***768 J***	440	13	***3,200***	29	21	15.4	7.6	7	< 6.2	***1,200***
Magnesium	7439-95-4	- -	- -	NA	522 J	NA	NA	NA	NA	NA	297 J	NA	NA	NA	NA
Manganese	7439-96-5	2,000	190,000	NA	536 J	NA	NA	NA	NA	NA	11.1	NA	NA	NA	NA
Mercury	7439-97-6	10	510	***17***	0.44 J	< 0.097	< 0.095	1.8	< 0.093	< 0.094	0.037 J	< 0.12	< 0.11	< 0.1	< 0.1
Nickel	7440-02-0	650	64,000	42	243	14	14	22	< 5.6	11	1.6 J	< 6.9	< 6.7	< 6.2	39
Potassium	7440-09-7	- -	- -	NA	682 J	NA	NA	NA	NA	NA	462 J	NA	NA	NA	NA
Selenium	7782-49-2	26	16,000	4	5.7 J	4.2	< 2	4.3	< 2	2.1	< 2.6	< 2.5	< 2.4	< 2.2	2.9
Silver	7440-22-4	84	16,000	< 2.8	2.4 J	< 2.9	< 2.8	< 3	< 2.8	< 2.8	< 0.65	< 3.5	< 3.3	< 3.1	< 3
Sodium	7440-23-5	- -	- -	NA	< 1,200	NA	NA	NA	NA	NA	665 J	NA	NA	NA	NA
Vanadium	7440-62-2	620	220	NA	26.1	NA	NA	NA	NA	NA	4.1 J	NA	NA	NA	NA
Zinc	7440-66-6	12,000	190,000	730	2,300	130	73	340	19	24	7.9	< 14	22	14	1,200

Table 7
Surface Soil Analytical Results – Detected VOCs, SVOCs, and Inorganics (mg/kg)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID: / Sample Depth (ft): / Date Collected:	CAS Number	Soil Standards or PQLs: S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	Soil Standards or PQLs: DC Non-Res Surf Soil (Exceedances Shaded)	PCSB-35 0.5 8/2/05	PCSB-36 0.5 7/27/05	PCSB-37 0.5 8/3/05	PCSB-38 0.5 7/27/05	PCSB-39 0.5 7/27/05	PCSB-40 0.5 7/28/05	PCSB-41 0.5 7/28/05	PCSB-41R 0.5-2 4/22/19	PCSB-42 0.5 8/1/05	PCSB-43 0.5 8/1/05	PCSB-44 0.5 8/3/05
Volatile Organic Compounds														
Acetone	67-64-1	8,800	10,000	0.018	< 0.0062	< 0.0059	< 0.0065	< 0.0069	< 0.0071	< 0.0058	< 1.4	< 0.0055 [< 0.0056]	< 0.0056	0.028
Benzene	71-43-2	0.5	280	< 0.00053	< 0.00059	< 0.00057	< 0.00062	< 0.00066	< 0.00068	< 0.00055	***6.32***	< 0.00053 [< 0.00054]	< 0.00054	< 0.00053
Carbon Disulfide	75-15-0	620	10,000	< 0.00068	< 0.00076	< 0.00072	< 0.00079	< 0.00084	< 0.00087	< 0.00071	< 0.28	< 0.00067 [< 0.00068]	< 0.00069	< 0.00068
Cyclohexane	110-82-7	6,900	10,000	NA	NA	NA	NA	NA	NA	NA	4.89	NA	NA	NA
Dichloromethane	75-09-2	0.5	10,000	0.011 B	0.0067 B	0.0023 B	0.009 B	0.018 B	0.036 B	0.011 B	< 0.7	0.014 B [0.014 B]	0.014 B	0.01 B
Ethylbenzene	100-41-4	70	880	< 0.00078	< 0.00087	< 0.00083	< 0.00091	< 0.00097	< 0.00099	< 0.00081	12.3	< 0.00077 [< 0.00079]	< 0.00079	< 0.00078
Isopropylbenzene	98-82-8	2,500	10,000	NA	NA	NA	NA	NA	NA	NA	0.943	NA	NA	NA
m&p-Xylenes	ARC-mpXyl	- -	- -	< 0.0011	< 0.0013	< 0.0012	< 0.0013	< 0.0014	< 0.0015	< 0.0012	51.9	< 0.0011 [< 0.0012]	< 0.0012	< 0.0011
Methyl Acetate	79-20-9	9,700	10,000	NA	NA	NA	NA	NA	NA	NA	< 0.7	NA	NA	NA
Methylcyclohexane	108-87-2	- -	- -	NA	NA	NA	NA	NA	NA	NA	8.78	NA	NA	NA
o,p-Xylene	136777-61-2	- -	- -	< 0.00049	< 0.00054	< 0.00052	< 0.00057	< 0.00061	< 0.00062	< 0.00051	NA	< 0.00048 [< 0.00049]	< 0.0005	< 0.00049
o-Xylene	95-47-6	- -	- -	NA	NA	NA	NA	NA	NA	NA	19.1	NA	NA	NA
Styrene (Monomer)	100-42-5	24	10,000	< 0.00065	< 0.00072	< 0.00069	< 0.00076	< 0.00081	< 0.00083	< 0.00067	< 0.28	< 0.00064 [< 0.00065]	< 0.00066	< 0.00065
Toluene	108-88-3	100	10,000	< 0.00079	< 0.00088	< 0.00084	< 0.00092	< 0.00098	< 0.001	< 0.00082	53.4 D	< 0.00078 [< 0.00079]	< 0.0008	< 0.00079
Total Xylenes	1330-20-7	1,000	7,900	NA	NA	NA	NA	NA	NA	NA	71	NA	NA	NA
Semi-Volatile Organic Compounds														
1,1-Biphenyl	92-52-4	1.5	34	NA	NA	NA	NA	NA	NA	NA	***6.43 D***	NA	NA	NA
2,4-Dimethylphenol	105-67-9	190	10,000	< 0.14	< 0.27	< 0.15	< 0.034	< 0.037	< 0.038	< 0.25	< 0.2	< 0.04 [< 0.041]	< 0.15	< 0.029
2-Methylnaphthalene	91-57-6	100	240	0.11 J	1.3	3.8	0.13	0.56	< 0.076	0.47	22.8 D	0.11 [< 0.036]	1.4	0.093
2-Methylphenol	95-48-7	490	160,000	< 0.5	< 0.92	< 0.53	< 0.15	< 0.16	< 0.17	< 0.86	< 0.081	< 0.077 [< 0.078]	< 0.51	< 0.13
3-Methylphenol, 4-Methylphenol	65794-96-9	--	--	NA	NA	NA	NA	NA	NA	NA	< 0.081	NA	NA	NA
4-Methylphenol	106-44-5	49	16,000	< 0.55	< 1	< 0.59	< 0.15	< 0.16	< 0.16	< 0.96	NA	< 0.094 [< 0.095]	< 0.56	< 0.13
4-Nitroaniline	100-01-6	14	4,600	NA	NA	NA	NA	NA	NA	NA	< 0.2	NA	NA	NA
Acenaphthene	83-32-9	4,700	190,000	< 0.043	0.47	0.81	< 0.0067	< 0.0071	< 0.0073	0.3	66.2 DJ	< 0.012 [< 0.013]	0.13	0.059
Acenaphthylene	208-96-8	6,600	190,000	< 0.024	1.9	< 0.026	0.072	0.068	< 0.0067	1.3	1.15	0.17 [0.052]	< 0.025	0.075
Acetophenone	98-86-2	970	10,000	NA	NA	NA	NA	NA	NA	NA	< 0.2	NA	NA	NA
Anthracene	120-12-7	350	190,000	< 0.027	3.5	0.58	0.079	< 0.0086	< 0.0088	1.3	28.1 D	0.4 [0.052]	0.48	0.37
Benz(a)anthracene	56-55-3	340	130	0.58	11	1.2	0.37	0.23	< 0.0062	7.6	19.4 D	1.2 [0.29]	2.2	1.6
Benzaldehyde	100-52-7	--	--	NA	NA	NA	NA	NA	NA	NA	< 0.2	NA	NA	NA
Benzo(a)pyrene	50-32-8	46	91	0.61	9.4	1.4	0.39	0.24	< 0.0074	7.5	14.4 D	1.3 [0.26]	2.2	1.6
Benzo(b)fluoranthene	205-99-2	170	76	0.88	13	1.7	0.71	0.42	0.056	10	17.8 D	1.8 [0.36]	2.8	2.1
Benzo(g,h,i)perylene	191-24-2	180	190,000	0.53	8.1	1.8	0.32	0.2	< 0.0064	7.1	8.46 D	1.1 [0.2]	2.1	1.1
Benzo(k)fluoranthene	207-08-9	610	76	0.25	3.5	0.67	0.21	0.13	< 0.016	2.5	6.97 D	0.5 [0.1]	0.86	0.83
bis(2-Ethylhexyl)phthalate	117-81-7	130	6,500	0.12	0.41	0.55	0.22	0.39	0.1	0.26	< 0.081	0.17 [0.22]	< 0.096	0.06
Butyl benzyl phthalate	85-68-7	10,000	10,000	< 0.042	< 0.078	< 0.045	< 0.011	< 0.012	< 0.012	< 0.073	< 0.081	< 0.014 [< 0.014]	< 0.043	< 0.0094
Carbazole	86-74-8	89	4,600	< 0.031	0.91	< 0.033	0.049	< 0.0083	< 0.0085	< 0.054	9.89 D	0.081 [< 0.012]	< 0.032	0.12
Chrysene	218-01-9	230	760	0.7	11	1.8	0.59	0.36	< 0.013	7.1	17.7 D	1.3 [0.27]	1.9	1.6
Dibenz(a,h)anthracene	53-70-3	270	22	0.17	2.9	0.55	0.11	0.076	< 0.0081	2.3	2.69	0.3 [0.036]	0.56	0.39
Dibenzofuran	132-64-9	250	3,200	< 0.13	0.99	0.84	0.064	0.18	< 0.057	0.22 J	32.5 D	0.13 [< 0.061]	0.28	0.075
Diethyl phthalate	84-66-2	7,800	10,000	< 0.029	< 0.053	< 0.031	< 0.0096	< 0.01	< 0.01	< 0.05	< 0.081	< 0.0082 [< 0.0084]	< 0.029	< 0.0082
Di-n-butyl phthalate	84-74-2	4,000	10,000	< 0.023	< 0.043	0.31	< 0.0082	< 0.0088	< 0.009	< 0.041	< 0.081	< 0.0077 [< 0.0079]	< 0.024	0.042
Di-n-octyl phthalate	117-84-0	10,000	10,000	< 0.025	< 0.046	< 0.026	< 0.014	< 0.015	< 0.015	< 0.043	< 0.081	< 0.0081 [< 0.0083]	< 0.025	< 0.012

Location ID: / Sample Depth (ft): / Date Collected:	CAS Number	Soil Standards or PQLs: S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	Soil Standards or PQLs: DC Non-Res Surf Soil (Exceedances Shaded)	PCSB-35 0.5 8/2/05	PCSB-36 0.5 7/27/05	PCSB-37 0.5 8/3/05	PCSB-38 0.5 7/27/05	PCSB-39 0.5 7/27/05	PCSB-40 0.5 7/28/05	PCSB-41 0.5 7/28/05	PCSB-41R 0.5-2 4/22/19	PCSB-42 0.5 8/1/05	PCSB-43 0.5 8/1/05	PCSB-44 0.5 8/3/05
Semi-Volatile Organic Compounds (cont'd)														
Fluoranthene	206-44-0	3,200	130,000	1.2	20	2	0.67	0.31	0.049	15	97.9 D	2.7 [0.43]	3.3	2.3
Fluorene	86-73-7	3,800	130,000	< 0.026	1.4	1.4	< 0.0097	< 0.01	< 0.011	0.23	48.5 D	0.18 [< 0.0075]	0.16	0.062
Indeno(1,2,3-cd)pyrene	193-39-5	18,000	76	0.45	7	1.2	0.28	0.18	< 0.0075	6.2	9.14 D	0.87 [0.15]	1.6	0.98
Naphthalene	91-20-3	25	66	< 0.024	1.8	2.1	0.13	0.27	< 0.0043	0.59	14.1 D	0.08 [< 0.0067]	0.59	0.1
Phenanthrene	85-01-8	10,000	190,000	0.54	12	2.9	0.54	0.56	< 0.0099	4.4	158 D	1.9 [0.22]	1.8	1.4
Phenol	108-95-2	200	16,000	< 0.16	< 0.3	< 0.17	< 0.067	< 0.072	< 0.073	< 0.28	< 0.081	< 0.034 [< 0.035]	< 0.16	< 0.057
Pyrene	129-00-0	2,200	96,000	0.76	17	2	0.67	0.31	< 0.01	11	61.6 D	2.6 [0.41]	2.5	2.1
Total PAHs and 2-Methylnaphthalene	-	- -	- -	6.78	125	25.9	5.27	3.91	0.105	84.9	595	16.5 [2.83]	24.6	16.8
Metals														
Aluminum	7429-90-5	- -	190,000	NA	NA	NA	NA	NA	NA	NA	7,590	NA	NA	NA
Antimony	7440-36-0	27	1,300	< 2.1	17	8.7	< 2.4	< 2.6	< 2.7	14	20.6	< 2.1 [< 2.1]	< 2.1	2.5
Arsenic	7440-38-2	29	61	13	20	20	***41***	< 2.6	3.2	13	19.5	5.2 [10]	***57***	23
Barium	7440-39-3	8,200	190,000	63	780	74	75	16	< 13	88	175	37 [49]	390	750
Beryllium	7440-41-7	320	6,400	< 0.62	1.1	< 0.67	< 0.73	< 0.78	< 0.8	0.68	0.91	< 0.62 [< 0.63]	< 0.64	< 0.62
Cadmium	7440-43-9	38	1,600	0.92	3.7	3.6	< 0.73	< 0.78	< 0.8	2.5	1.4	< 0.62 [< 0.63]	1.4	3.3
Calcium	7440-70-2	- -	- -	NA	NA	NA	NA	NA	NA	NA	11,500	NA	NA	NA
Chromium	7440-47-3	190,000	190,000	24	16	110	9.5	< 6.5	< 6.7	59	26.0	16 [22]	25	21
Cobalt	7440-48-4	130	960	NA	NA	NA	NA	NA	NA	NA	7.8	NA	NA	NA
Copper	7440-50-8	43,000	100,000	51	840	610	66	17	15	120	193	21 [25]	100	220
Cyanide	57-12-5	200	1,900	NA	NA	NA	NA	NA	NA	NA	0.53	NA	NA	NA
Iron	7439-89-6	- -	190,000	NA	NA	NA	NA	NA	NA	NA	28,300	NA	NA	NA
Lead	7439-92-1	450	1,000	130	***14,000***	420	230	11	< 6.7	***930***	***986***	160 [88]	***1,900***	***5,400***
Magnesium	7439-95-4	- -	- -	NA	NA	NA	NA	NA	NA	NA	4,570	NA	NA	NA
Manganese	7439-96-5	2,000	190,000	NA	NA	NA	NA	NA	NA	NA	552	NA	NA	NA
Mercury	7439-97-6	10	510	0.27	1.2	0.47	0.13	< 0.11	< 0.11	1.6	0.34 J	0.15 [0.14]	0.64	3.3
Nickel	7440-02-0	650	64,000	18	26	97	18	< 6.5	< 6.7	39	38.4	16 [18]	87	28
Potassium	7440-09-7	- -	- -	NA	NA	NA	NA	NA	NA	NA	1,120 J	NA	NA	NA
Selenium	7782-49-2	26	16,000	< 1.9	3.6	2.4	2.7	< 2.3	< 2.4	3.3	< 4.8	< 1.9 [< 1.9]	2.1	2.3
Silver	7440-22-4	84	16,000	< 2.6	< 2.9	< 2.8	< 3	< 3.2	< 3.3	< 2.7	< 1.2	< 2.6 [< 2.6]	< 2.7	< 2.6
Sodium	7440-23-5	- -	- -	NA	NA	NA	NA	NA	NA	NA	208 J	NA	NA	NA
Vanadium	7440-62-2	620	220	NA	NA	NA	NA	NA	NA	NA	32.1	NA	NA	NA
Zinc	7440-66-6	12,000	190,000	140	6,300	540	100	25	14	290	530	85 [95]	1,300	2,900

Table 7
Surface Soil Analytical Results – Detected VOCs, SVOCs, and Inorganics (mg/kg)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID: / Sample Depth (ft): / Date Collected:	CAS Number	Soil Standards or PQLs: S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	Soil Standards or PQLs: DC Non-Res Surf Soil (Exceedances Shaded)	PCSB-45 0.5 8/3/05	PCSB-46 0.5 7/27/05	PCSB-47 0.5 8/3/05	PCSB-48 0.5 8/3/05	PCSB-49 0.5 8/3/05	PCSB-50 0.5 8/3/05	PCSB-51 0.5 8/3/05	PCSB-52 0.5 8/2/05	PCSB-53 0.5 8/1/05	PCSB-54 0.5 8/3/05	PCSB-55 0.5 8/3/05	PCSB-56 0.5 8/15/05
Volatile Organic Compounds															
Acetone	67-64-1	8,800	10,000	0.036 [0.022]	< 0.006	0.036	0.3	0.019	< 0.41	< 0.0056	< 0.0057	< 0.0057	< 0.0062	0.024	< 0.006
Benzene	71-43-2	0.5	280	< 0.00054 [< 0.00054]	< 0.00058	< 0.00055	< 0.0027	< 0.00053	< 0.031	< 0.00054	< 0.00055	< 0.00055	< 0.0006	< 0.00055	< 0.00057
Carbon Disulfide	75-15-0	620	10,000	< 0.00068 [< 0.00069]	< 0.00074	< 0.00071	< 0.0034	< 0.00068	< 0.049	< 0.00068	< 0.0007	< 0.0007	< 0.00076	< 0.00071	< 0.00073
Cyclohexane	110-82-7	6,900	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichloromethane	75-09-2	0.5	10,000	0.012 B [0.009 B]	0.015 B	0.008 B	0.07 B	0.01 B	0.22 B	0.0026 B	0.013 B	0.017 B	0.0024 B	0.014 B	0.041 B
Ethylbenzene	100-41-4	70	880	< 0.00079 [< 0.00079]	< 0.00085	< 0.00081	< 0.0039	< 0.00078	< 0.06	< 0.00079	< 0.0008	< 0.0008	< 0.00088	< 0.00081	< 0.00084
Isopropylbenzene	98-82-8	2,500	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
m&p-Xylenes	ARC-mpXyl	- -	- -	< 0.0012 [< 0.0012]	< 0.0013	< 0.0012	< 0.0058	< 0.0011	< 0.063	< 0.0012	< 0.0012	< 0.0012	< 0.0013	< 0.0012	< 0.0012
Methyl Acetate	79-20-9	9,700	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylcyclohexane	108-87-2	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
o,p-Xylene	136777-61-2	- -	- -	< 0.00049 [< 0.0005]	< 0.00053	< 0.00051	< 0.0025	< 0.00049	< 0.039	< 0.00049	< 0.0005	< 0.0005	< 0.00055	< 0.00051	< 0.00053
o-Xylene	95-47-6	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene (Monomer)	100-42-5	24	10,000	< 0.00065 [< 0.00066]	< 0.0007	< 0.00067	< 0.0033	< 0.00065	< 0.013	< 0.00065	< 0.00067	< 0.00067	< 0.00073	< 0.00067	< 0.0007
Toluene	108-88-3	100	10,000	< 0.00079 [< 0.0008]	< 0.00086	< 0.00082	< 0.004	< 0.00079	< 0.02	< 0.00079	< 0.00081	< 0.00081	< 0.00089	< 0.00082	< 0.00085
Total Xylenes	1330-20-7	1,000	7,900	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Semi-Volatile Organic Compounds															
1,1-Biphenyl	92-52-4	1.5	34	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	105-67-9	190	10,000	< 0.048 [< 0.049]	< 0.052	< 0.031	< 0.03	< 0.029	< 0.049	< 0.15	< 0.15	< 0.15	< 0.16	< 0.05	< 0.052
2-Methylnaphthalene	91-57-6	100	240	0.68 [0.52]	1.3	0.18	< 0.06	< 0.059	1.4	0.33	0.35	1.5	1.3	0.46	0.11
2-Methylphenol	95-48-7	490	160,000	< 0.17 [< 0.17]	< 0.18	< 0.14	< 0.13	< 0.13	< 0.17	< 0.5	< 0.51	< 0.51	< 0.56	< 0.17	< 0.18
3-Methylphenol, 4-Methylphenol	65794-96-9	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methylphenol	106-44-5	49	16,000	< 0.19 [< 0.19]	< 0.2	< 0.13	< 0.13	< 0.13	< 0.19	< 0.56	< 0.57	< 0.57	< 0.62	< 0.19	< 0.2
4-Nitroaniline	100-01-6	14	4,600	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	83-32-9	4,700	190,000	0.079 [0.14]	0.082	0.057	< 0.0058	< 0.0057	1.9	< 0.044	0.35	< 0.045	0.28	0.48	< 0.016
Acenaphthylene	208-96-8	6,600	190,000	0.077 [0.13]	0.14	0.087	< 0.0053	0.035	0.32	0.4	0.21	< 0.025	0.61	0.09	0.039
Acetophenone	98-86-2	970	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	120-12-7	350	190,000	0.28 [0.5]	0.13	0.13	< 0.0069	0.044	1.5	0.59	1.7	0.39	1.5	1.5	0.11
Benz(a)anthracene	56-55-3	340	130	0.9 [1.8]	0.48	0.54	0.052	0.14	2.1	2.2	7.5	1.3	4.9	3.8	0.43
Benzaldehyde	100-52-7	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	50-32-8	46	91	0.89 [1.6]	0.3	0.53	0.059	0.15	2.1	2	6.7	1.4	3.6	3.2	0.43
Benzo(b)fluoranthene	205-99-2	170	76	1.2 [2]	0.67	0.79	0.069	0.2	2.8	2.9	9.5	1.6	5.8	4.2	0.75
Benzo(g,h,i)perylene	191-24-2	180	190,000	0.74 [1.1]	0.33	0.43	0.055	0.19	1.6	2	4.1	1.4	2.7	2.1	0.37
Benzo(k)fluoranthene	207-08-9	610	76	0.43 [0.9]	0.21	0.27	< 0.012	0.066	1.1	1	2	0.73	1.6	1.6	0.27
bis(2-Ethylhexyl)phthalate	117-81-7	130	6,500	0.039 [0.038]	0.23	0.059	< 0.022	0.039	0.12	0.15	< 0.097	0.18	1.1	< 0.033	0.59
Butyl benzyl phthalate	85-68-7	10,000	10,000	< 0.014 [< 0.014]	< 0.015	< 0.0098	< 0.0095	< 0.0094	< 0.014	< 0.042	< 0.043	< 0.043	0.31	< 0.015	0.34
Carbazole	86-74-8	89	4,600	0.098 [0.18]	0.085	0.068	< 0.0067	0.035	< 0.011	0.13	0.4	0.14	0.52	0.75	0.037
Chrysene	218-01-9	230	760	0.95 [1.6]	0.76	0.6	0.065	0.16	2.1	2.2	7.3	1.6	4.5	3.9	0.57
Dibenz(a,h)anthracene	53-70-3	270	22	0.29 [0.47]	0.15	0.13	< 0.0064	< 0.0064	0.55	0.63	1.9	0.33	1.1	0.76	0.099
Dibenzofuran	132-64-9	250	3,200	0.098 [0.17]	0.55	0.074	< 0.045	< 0.045	0.92	0.25	0.27	0.27	0.81	0.48	0.053
Diethyl phthalate	84-66-2	7,800	10,000	< 0.0096 [< 0.0097]	< 0.01	< 0.0085	< 0.0083	< 0.0082	< 0.0097	< 0.029	< 0.03	< 0.03	< 0.032	< 0.0099	0.043
Di-n-butyl phthalate	84-74-2	4,000	10,000	0.042 [< 0.0079]	0.079	< 0.0073	< 0.0071	< 0.007	< 0.0079	0.14 B	< 0.024	< 0.024	0.19 B	0.054	0.074 B
Di-n-octyl phthalate	117-84-0	10,000	10,000	< 0.0083 [< 0.0084]	< 0.0089	< 0.012	< 0.012	< 0.012	< 0.0084	< 0.025	< 0.025	< 0.025	< 0.028	< 0.0086	< 0.0088

Table 7
Surface Soil Analytical Results – Detected VOCs, SVOCs, and Inorganics (mg/kg)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID: / Sample Depth (ft): / Date Collected:	CAS Number	Soil Standards or PQLs: S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	Soil Standards or PQLs: DC Non-Res Surf Soil (Exceedances Shaded)	PCSB-45 0.5 8/3/05	PCSB-46 0.5 7/27/05	PCSB-47 0.5 8/3/05	PCSB-48 0.5 8/3/05	PCSB-49 0.5 8/3/05	PCSB-50 0.5 8/3/05	PCSB-51 0.5 8/3/05	PCSB-52 0.5 8/2/05	PCSB-53 0.5 8/1/05	PCSB-54 0.5 8/3/05	PCSB-55 0.5 8/3/05	PCSB-56 0.5 8/15/05
Semi-Volatile Organic Compounds (cont'd)															
Fluoranthene	206-44-0	3,200	130,000	1.7 [3.7]	0.74	1	0.098	0.26	4.5	4.1	13	2.4	9.4	6.4	0.5
Fluorene	86-73-7	3,800	130,000	0.096 [0.22]	< 0.0096	0.053	< 0.0084	< 0.0083	1.9	< 0.027	0.48	0.2	0.78	0.43	0.038
Indeno(1,2,3-cd)pyrene	193-39-5	18,000	76	0.67 [1]	0.29	0.36	0.037	0.11	1.5	1.6	3.9	1	2.5	2	0.33
Naphthalene	91-20-3	25	66	0.25 [0.25]	0.86	0.17	< 0.0034	< 0.0034	0.98	0.36	0.22	0.8	1.3	0.54	0.13
Phenanthrene	85-01-8	10,000	190,000	1.1 [2.1]	1.4	0.63	0.067	0.17	4.5	2.1	5.6	1.6	7.3	5.2	0.43
Phenol	108-95-2	200	16,000	< 0.053 [< 0.054]	< 0.058	< 0.06	< 0.058	< 0.057	< 0.054	< 0.16	< 0.16	< 0.16	< 0.18	< 0.055	< 0.057
Pyrene	129-00-0	2,200	96,000	1.3 [2.4]	0.54	0.95	0.13	0.26	3.3	3.3	11	2	7.6	5.5	0.86
Total PAHs and 2-Methylnaphthalene	-	- -	- -	11.6 [20.4]	8.38	6.91	0.632	1.79	34.2	25.7	75.8	18.3	56.8	42.2	5.47
Metals															
Aluminum	7429-90-5	- -	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	7440-36-0	27	1,300	< 2.1 [3.3]	< 2.3	2.6	< 2.1	< 2.1	< 2.1	3.8	< 2.2	< 2.2	3	3.9	3.5
Arsenic	7440-38-2	29	61	***33 [79]***	7.3	***100***	4.2	7.2	27	8.2	18	22	27	***75***	13
Barium	7440-39-3	8,200	190,000	140 [130]	31	73	31	46	100	73	140	130	83	770	63
Beryllium	7440-41-7	320	6,400	< 0.63 [< 0.64]	< 0.68	< 0.65	< 0.63	< 0.62	< 0.64	< 0.63	< 0.65	< 0.65	< 0.71	< 0.65	< 0.67
Cadmium	7440-43-9	38	1,600	< 0.63 [0.78]	< 0.68	< 0.65	< 0.63	< 0.62	< 0.64	1.1	0.71	< 0.65	0.83	3.7	0.76
Calcium	7440-70-2	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	7440-47-3	190,000	190,000	21 [31]	< 5.7	26	16	18	15	43	39	25	22	18	55
Cobalt	7440-48-4	130	960	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	7440-50-8	43,000	100,000	73 [110]	14	76	20	23	62	150	73	58	90	250	100
Cyanide	57-12-5	200	1,900	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	7439-89-6	- -	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	7439-92-1	450	1,000	***670 [670]***	6.9	260	110	50	***490***	180	***470***	***650***	240	***6,200***	130
Magnesium	7439-95-4	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	7439-96-5	2,000	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	7439-97-6	10	510	0.37 [0.37]	< 0.095	0.25	0.12	0.19	0.44	0.24	0.69	0.28	< 0.098	< 0.091	0.36
Nickel	7440-02-0	650	64,000	20 [33]	7.6	26	13	26	17	25	23	22	19	27	49
Potassium	7440-09-7	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	7782-49-2	26	16,000	< 1.9 [2.6]	2.3	2	< 1.9	< 1.9	< 1.9	< 1.9	< 1.9	< 1.9	< 2.1	2.1	4
Silver	7440-22-4	84	16,000	< 2.6 [< 2.7]	< 2.8	< 2.7	< 2.6	< 2.6	< 2.7	< 2.6	< 2.7	< 2.7	< 2.9	< 2.7	< 2.8
Sodium	7440-23-5	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	7440-62-2	620	220	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	7440-66-6	12,000	190,000	450 [420]	15	220	51	93	390	260	420	340	260	2,700	190

Location ID: / Sample Depth (ft): / Date Collected:	CAS Number	Soil Standards or PQLs: S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	Soil Standards or PQLs: DC Non-Res Surf Soil (Exceedances Shaded)	PCSB-57 0.5 8/15/05	PCSB-58 0.5 8/15/05	PCSB-59 0.5 8/15/05	PCSB-60 0.5 8/15/05	PCTP-61 0.5 9/8/05	PCTP-62 0.5 9/8/05	PCTP-63 0.5 9/8/05	PCTP-64 0.5 9/8/05	PCTP-65 0.5 9/8/05	PCTP-66 0.5 9/8/05
Volatile Organic Compounds													
Acetone	67-64-1	8,800	10,000	< 0.006	< 0.0058	< 0.0058	0.02 [0.019]	< 0.0038 [< 0.006]	< 0.0038	< 0.0036	< 0.0059	< 0.0059	< 0.79
Benzene	71-43-2	0.5	280	< 0.00058	< 0.00056	< 0.00056	< 0.00055 [< 0.00055]	< 0.00027 [< 0.00057]	< 0.00027	< 0.00026	< 0.00057	< 0.00057	***29***
Carbon Disulfide	75-15-0	620	10,000	< 0.00074	< 0.00071	< 0.00071	< 0.00071 [< 0.00071]	< 0.00057 [< 0.00073]	< 0.00057	< 0.00054	< 0.00072	< 0.00072	< 0.095
Cyclohexane	110-82-7	6,900	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichloromethane	75-09-2	0.5	10,000	0.034 B	0.018 B	0.019 B	0.018 B [0.017 B]	0.011 B [0.019 B]	0.0095 B	0.0078 B	0.0087 B	0.011 B	< 0.22
Ethylbenzene	100-41-4	70	880	< 0.00085	< 0.00082	< 0.00082	< 0.00081 [< 0.00081]	< 0.00076 [< 0.00084]	< 0.00075	< 0.00071	< 0.00083	< 0.00083	< 0.12
Isopropylbenzene	98-82-8	2,500	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
m&p-Xylenes	ARC-mpXyl	- -	- -	< 0.0013	< 0.0012	< 0.0012	< 0.0012 [< 0.0012]	< 0.00091 [< 0.0012]	< 0.0009	< 0.00085	< 0.0012	< 0.0012	8.2
Methyl Acetate	79-20-9	9,700	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylcyclohexane	108-87-2	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
o,p-Xylene	136777-61-2	- -	- -	< 0.00053	< 0.00051	< 0.00051	< 0.00051 [< 0.00051]	< 0.0002 [< 0.00053]	< 0.00019	< 0.00018	< 0.00052	< 0.00052	2.2
o-Xylene	95-47-6	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene (Monomer)	100-42-5	24	10,000	< 0.0007	< 0.00068	< 0.00068	< 0.00067 [< 0.00067]	< 0.00017 [< 0.0007]	< 0.00017	< 0.00016	< 0.00069	< 0.00069	2.4
Toluene	108-88-3	100	10,000	< 0.00086	< 0.00083	< 0.00083	< 0.00082 [< 0.00082]	< 0.00021 [< 0.00085]	< 0.0002	< 0.00019	< 0.00084	< 0.00084	22
Total Xylenes	1330-20-7	1,000	7,900	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Semi-Volatile Organic Compounds													
1,1-Biphenyl	92-52-4	1.5	34	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	105-67-9	190	10,000	< 0.16	< 0.051	< 0.051	< 0.05 [< 0.05]	< 0.052 [< 0.052]	< 1.5	< 0.48	< 0.51	< 0.15	< 94
2-Methylnaphthalene	91-57-6	100	240	0.38	0.68	0.43	0.55 [0.49]	0.13 [0.09]	5.8	< 0.45	< 0.48	< 0.14	***1,300***
2-Methylphenol	95-48-7	490	160,000	< 0.54	< 0.17	< 0.17	< 0.17 [< 0.17]	< 0.18 [< 0.18]	< 5.3	< 1.7	< 1.8	< 0.53	< 320
3-Methylphenol, 4-Methylphenol	65794-96-9	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methylphenol	106-44-5	49	16,000	< 0.6	< 0.19	< 0.19	< 0.19 [< 0.19]	< 0.2 [< 0.2]	< 5.9	< 1.9	< 2	< 0.59	***180 J***
4-Nitroaniline	100-01-6	14	4,600	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	83-32-9	4,700	190,000	0.16	0.13	0.23	0.18 [0.23]	0.16 [0.13]	2.2	1.8	0.41	< 0.046	180
Acenaphthylene	208-96-8	6,600	190,000	0.8	0.074	0.1	0.15 [0.13]	0.048 [0.042]	4.5	0.51	1.2	0.54	2,000
Acetophenone	98-86-2	970	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	120-12-7	350	190,000	1.6	0.33	0.39	0.4 [0.4]	0.38 [0.34]	32	8.7	2.6	1.2	***1,800***
Benz(a)anthracene	56-55-3	340	130	7.7	1.1	1.3	1.6 [1.5]	0.93 [0.95]	53	18	10	8.4	***1,800***
Benzaldehyde	100-52-7	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	50-32-8	46	91	7.2	0.92	1.3	1.6 [1.4]	0.89 [0.95]	34	14	10	9.8	***1,300***
Benzo(b)fluoranthene	205-99-2	170	76	12	1.8	1.8	2.3 [1.8]	1.2 [1.3]	41	20	15	12	***1,600***
Benzo(g,h,i)perylene	191-24-2	180	190,000	3.6	0.59	0.94	1.1 [1]	0.66 [0.73]	19	9.8	8.3	8.5	***850***
Benzo(k)fluoranthene	207-08-9	610	76	2.8	0.47	0.66	0.71 [0.75]	0.47 [0.52]	18	5.1	5.3	2.9	***690***
bis(2-Ethylhexyl)phthalate	117-81-7	130	6,500	0.48	0.61	0.19	0.34 [0.34]	0.15 [0.1]	< 1	1.1	0.85	< 0.1	< 61
Butyl benzyl phthalate	85-68-7	10,000	10,000	0.39	0.1	< 0.015	0.12 [0.16]	< 0.015 [< 0.015]	< 0.45	< 0.14	0.7	< 0.045	< 27
Carbazole	86-74-8	89	4,600	0.78	0.12	0.17	0.19 [0.15]	0.14 [0.12]	12	3.2	0.87	0.19	***970***
Chrysene	218-01-9	230	760	6.8	1.3	1.3	1.6 [1.2]	0.97 [0.98]	41	16	10	7.8	***1,500***
Dibenz(a,h)anthracene	53-70-3	270	22	1.4	0.3	0.4	0.44 [0.43]	0.21 [0.28]	7.5	4	2.7	2.5	270
Dibenzofuran	132-64-9	250	3,200	0.36	0.3	0.17	0.2 [0.19]	0.22 [0.16]	14	2.1	0.46 J	0.11 J	***1,600***
Diethyl phthalate	84-66-2	7,800	10,000	< 0.031	< 0.01	0.041	< 0.0099 [0.064]	< 0.01 [< 0.01]	< 0.31	< 0.096	< 0.1	< 0.031	< 19
Di-n-butyl phthalate	84-74-2	4,000	10,000	< 0.025	0.046 B	< 0.0082	0.067 B [0.11 B]	0.045 [< 0.0084]	< 0.25	< 0.079	< 0.083	< 0.025	< 15
Di-n-octyl phthalate	117-84-0	10,000	10,000	< 0.027	< 0.0087	< 0.0087	< 0.0086 [< 0.0086]	< 0.0088 [< 0.0088]	< 0.26	< 0.083	< 0.087	< 0.026	< 16

Table 7
Surface Soil Analytical Results – Detected VOCs, SVOCs, and Inorganics (mg/kg)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID: / Sample Depth (ft): / Date Collected:	CAS Number	Soil Standards or PQLs: S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	Soil Standards or PQLs: DC Non-Res Surf Soil (Exceedances Shaded)	PCSB-57 0.5 8/15/05	PCSB-58 0.5 8/15/05	PCSB-59 0.5 8/15/05	PCSB-60 0.5 8/15/05	PCTP-61 0.5 9/8/05	PCTP-62 0.5 9/8/05	PCTP-63 0.5 9/8/05	PCTP-64 0.5 9/8/05	PCTP-65 0.5 9/8/05	PCTP-66 0.5 9/8/05
Semi-Volatile Organic Compounds (cont'd)													
Fluoranthene	206-44-0	3,200	130,000	11	1.5	1.4	1.9 [1.6]	1.8 [1.7]	97	31	18	9.9	***3,800***
Fluorene	86-73-7	3,800	130,000	0.51	0.16	0.23	0.25 [0.25]	0.12 [0.099]	31	4.4	0.97	0.24	2,600
Indeno(1,2,3-cd)pyrene	193-39-5	18,000	76	3.2	0.56	0.85	0.98 [0.87]	0.57 [0.63]	18	9.1	7	6.8	750
Naphthalene	91-20-3	25	66	0.88	0.8	0.24	0.3 [0.27]	0.12 [0.1]	12	< 0.083	0.43	0.28	***6,000***
Phenanthrene	85-01-8	10,000	190,000	5.4	1.7	1.7	1.6 [1.5]	1.5 [1.2]	140	33	10	4.8	7,700
Phenol	108-95-2	200	16,000	< 0.17	< 0.056	< 0.056	< 0.055 [< 0.055]	< 0.057 [< 0.057]	< 1.7	< 0.53	< 0.56	< 0.17	***210***
Pyrene	129-00-0	2,200	96,000	13	2.2	2.9	4 [3.1]	1.8 [2]	110	42	22	13	***4,400***
Total PAHs and 2-Methylnaphthalene	-	- -	- -	78.4	14.6	16.2	19.7 [16.9]	12.0 [12.0]	666	217	124	88.7	38,500
Metals													
Aluminum	7429-90-5	- -	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	7440-36-0	27	1,300	4	5.2	3.3	2.7 [3]	< 2.2 [< 2.2]	2.3	5.4	2.5	< 2.2	< 2
Arsenic	7440-38-2	29	61	19	28	***39***	***35 [32]***	12 [11]	13	9.5	17	6.7	2.8
Barium	7440-39-3	8,200	190,000	250	61	190	140 [130]	96 [90]	140	180	140	58	15
Beryllium	7440-41-7	320	6,400	< 0.68	< 0.66	< 0.66	< 0.65 [< 0.65]	0.86 [0.79]	< 0.67	0.74	0.76	< 0.67	< 0.61
Cadmium	7440-43-9	38	1,600	1.7	< 0.66	1.5	2.5 [2.2]	< 0.67 [< 0.67]	< 0.67	1.4	2.2	< 0.67	< 0.61
Calcium	7440-70-2	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	7440-47-3	190,000	190,000	29	53	31	24 [23]	25 [21]	16	24	25	9.7	< 5.1
Cobalt	7440-48-4	130	960	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	7440-50-8	43,000	100,000	210	94	130	85 [75]	83 [73]	65	170	170	58	12
Cyanide	57-12-5	200	1,900	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	7439-89-6	- -	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	7439-92-1	450	1,000	***1,600***	180	***960***	***710 [600]***	***680 [1,100]***	400	***810***	230	150	30
Magnesium	7439-95-4	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	7439-96-5	2,000	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	7439-97-6	10	510	1.3	0.24	0.66	0.46 [0.52]	0.99 [4.8]	0.55	1.2	0.27	0.38	< 0.085
Nickel	7440-02-0	650	64,000	33	35	27	21 [25]	21 [19]	12	21	26	20	< 5.1
Potassium	7440-09-7	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	7782-49-2	26	16,000	4.8	6.4	3.1	2.8 [2.9]	2.7 [2.7]	< 2	2	4	< 2	< 1.8
Silver	7440-22-4	84	16,000	< 2.8	< 2.7	< 2.7	< 2.7 [< 2.7]	< 2.8 [< 2.8]	< 2.8	< 2.6	< 2.8	< 2.8	< 2.6
Sodium	7440-23-5	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	7440-62-2	620	220	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	7440-66-6	12,000	190,000	960	51	1,300	3,700 [2500]	290 [240]	160	650	430	220	20

Table 7
Surface Soil Analytical Results – Detected VOCs, SVOCs, and Inorganics (mg/kg)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID:	CAS Number	Soil Standards or PQLs		PCTP-66R		PCTP-66R-HC	PCTP-67	PCTP-68	PCTP-69	PCTP-70	PCTP-71	PCTP-72	PCTP-73
Sample Depth (ft):		S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	DC Non-Res Surf Soil (Exceedances Shaded)	0-0.5	0.5-2	0-2	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Date Collected:				4/24/19	4/24/19	4/4/19	9/12/05	9/9/05	9/9/05	9/9/05	9/9/05	9/9/05	9/9/05
Volatile Organic Compounds													
Acetone	67-64-1	8,800	10,000	< 0.02 [0.0199]	< 0.012	R	< 0.0059 [< 0.0058]	< 0.028	< 0.0056	< 0.0059	< 0.0055	< 0.0039	< 0.0038
Benzene	71-43-2	0.5	280	< 0.0010 [< 0.00095]	< 0.00062	R	< 0.00057 [< 0.00056]	0.006	< 0.00054	< 0.00057	< 0.00053	< 0.00028	< 0.00027
Carbon Disulfide	75-15-0	620	10,000	< 0.0041 [< 0.0038]	< 0.0025	R	< 0.00072 [< 0.00071]	< 0.0034	< 0.00068	< 0.00072	< 0.00067	< 0.00058	< 0.00057
Cyclohexane	110-82-7	6,900	10,000	< 0.0041 [< 0.0038]	< 0.0025	R	NA	NA	NA	NA	NA	NA	NA
Dichloromethane	75-09-2	0.5	10,000	< 0.01 [< 0.0095]	< 0.0062	R	0.0048 B [0.0065 B]	0.03 B	0.0075 B	0.013 B	0.0058 B	0.0091 B	0.01 B
Ethylbenzene	100-41-4	70	880	< 0.0020 [< 0.0019]	< 0.0012	R	< 0.00083 [< 0.00082]	0.0083	< 0.00079	< 0.00083	< 0.00077	< 0.00077	< 0.00075
Isopropylbenzene	98-82-8	2,500	10,000	< 0.0041 [< 0.0038]	< 0.0025	R	NA	NA	NA	NA	NA	NA	NA
m&p-Xylenes	ARC-mpXyl	- -	- -	< 0.0020 [< 0.0019]	< 0.0012	R	< 0.0012 [< 0.0012]	0.19	< 0.0012	< 0.0012	< 0.0011	< 0.00092	< 0.0009
Methyl Acetate	79-20-9	9,700	10,000	< 0.01 [< 0.0095]	< 0.0062	R	NA	NA	NA	NA	NA	NA	NA
Methylcyclohexane	108-87-2	- -	- -	< 0.0041 [< 0.0038]	< 0.0025	R	NA	NA	NA	NA	NA	NA	NA
o,p-Xylene	136777-61-2	- -	- -	NA	NA	NA	< 0.00052 [< 0.00051]	0.1	< 0.00049	< 0.00052	< 0.00048	< 0.0002	< 0.00019
o-Xylene	95-47-6	- -	- -	< 0.0020 [< 0.0019]	< 0.0012	R	NA	NA	NA	NA	NA	NA	NA
Styrene (Monomer)	100-42-5	24	10,000	< 0.0041 [< 0.0038]	< 0.0025	R	< 0.00069 [< 0.00068]	< 0.0033	< 0.00065	< 0.00069	< 0.00064	< 0.00017	< 0.00017
Toluene	108-88-3	100	10,000	< 0.0020 [< 0.0019]	< 0.0012	R	< 0.00084 [< 0.00083]	0.022	< 0.00079	< 0.00084	< 0.00078	< 0.00021	< 0.0002
Total Xylenes	1330-20-7	1,000	7,900	< 0.0020 [< 0.0019]	< 0.0012	R	NA	NA	NA	NA	NA	NA	NA
Semi-Volatile Organic Compounds													
1,1-Biphenyl	92-52-4	1.5	34	0.226 J ***[4.33 J]***	0.0185 J	0.211	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	105-67-9	190	10,000	< 0.21 [< 1]	< 0.17	< 0.2	< 0.15 [< 0.062]	< 12	< 0.03	< 0.051	< 0.047	< 0.052	< 0.051
2-Methylnaphthalene	91-57-6	100	240	0.486 J [10.5 J]	0.106	0.502	0.13 J [0.16]	***230***	0.16	< 0.048	0.057	0.075	0.06
2-Methylphenol	95-48-7	490	160,000	< 0.083 [< 0.42]	< 0.07	< 0.079	< 0.53 [< 0.27]	< 52	< 0.13	< 0.18	< 0.16	< 0.18	< 0.18
3-Methylphenol, 4-Methylphenol	65794-96-9	--	--	0.0370 J [< 0.42]	< 0.07	< 0.079	NA	NA	NA	NA	NA	NA	NA
4-Methylphenol	106-44-5	49	16,000	NA	NA	NA	< 0.59 [< 0.27]	< 52	< 0.13	< 0.2	< 0.18	< 0.2	< 0.2
4-Nitroaniline	100-01-6	14	4,600	< 0.21 [< 1]	< 0.17	< 0.2	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	83-32-9	4,700	190,000	0.244 J [4.39 J]	0.0787	0.234	0.11 [< 0.012]	22	0.14	0.079	0.23	0.31	0.077
Acenaphthylene	208-96-8	6,600	190,000	2.64 J [45.6 DJ]	0.116	2.9	< 0.026 [0.18]	85	0.62	0.068	< 0.0079	0.064	0.079
Acetophenone	98-86-2	970	10,000	0.0329 J [< 1]	< 0.17	< 0.2	NA	NA	NA	NA	NA	NA	NA
Anthracene	120-12-7	350	190,000	4.16 J [70.9 DJ]	0.143	5.81 DJ	0.26 [0.15]	250	0.99	0.17	0.52	0.73	0.31
Benz(a)anthracene	56-55-3	340	130	8.88 DJ [77.6 DJ]	0.393	8.24 D	1.5 [0.89]	220	2.3	1	1.5	2.3	1.1
Benzaldehyde	100-52-7	--	--	0.0297 J [< 1]	< 0.17	< 0.2	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	50-32-8	46	91	9.2 DJ ***[67.8 DJ]***	0.515	8.36 D	1.5 [1]	**190**	1.9	0.99	1.3	2.1	1.1
Benzo(b)fluoranthene	205-99-2	170	76	11.7 DJ [85.6 DJ]	0.681	10.4 D	1.8 [1.6]	***250***	3.6	1.5	1.5	2.7	1.5
Benzo(g,h,i)perylene	191-24-2	180	190,000	5.99 DJ [38.1 DJ]	0.421	5.36 DJ	1.3 [0.77]	91	1	0.72	0.97	1.5	0.87
Benzo(k)fluoranthene	207-08-9	610	76	2.66 J [27 DJ]	0.251	4.16 D	0.8 [0.49]	79	1.2	0.54	0.62	1.1	0.62
bis(2-Ethylhexyl)phthalate	117-81-7	130	6,500	0.172 J [< 0.42]	< 0.07	0.149	< 0.1 [0.092]	< 8.9	0.092	0.08	0.074	0.3	1.2
Butyl benzyl phthalate	85-68-7	10,000	10,000	< 0.083 [< 0.42]	< 0.07	< 0.079	< 0.045 [< 0.02]	< 3.8	< 0.0095	< 0.015	0.13	< 0.015	< 0.015
Carbazole	86-74-8	89	4,600	1.44 J [19.7]	0.0300 J	1.59	0.12 [< 0.014]	***140***	0.19	0.11	0.28	0.29	0.11
Chrysene	218-01-9	230	760	8.37 DJ [65.7 DJ]	0.373	8.31 D	1.4 [1.2]	210	2.6	1.1	1.4	2.4	1.1
Dibenz(a,h)anthracene	53-70-3	270	22	1.45 J [10.1]	0.105	1.66	0.37 [0.24]	31	0.39	0.28	0.38	0.59	0.33
Dibenzofuran	132-64-9	250	3,200	1.56 J [39.8 DJ]	0.0495 J	1.39	0.13 J [0.078 J]	230	0.18	0.038 J	0.13	0.16	0.089
Diethyl phthalate	84-66-2	7,800	10,000	< 0.083 [< 0.42]	< 0.07	< 0.079	< 0.031 [< 0.017]	< 3.3	< 0.0083	< 0.01	< 0.0094	< 0.01	< 0.01
Di-n-butyl phthalate	84-74-2	4,000	10,000	< 0.083 [< 0.42]	< 0.07	< 0.079	< 0.025 [< 0.015]	< 2.8	< 0.0071	0.04 B	< 0.0077	0.068	< 0.0083
Di-n-octyl phthalate	117-84-0	10,000	10,000	< 0.083 [< 0.42]	< 0.07	< 0.079	< 0.026 [< 0.025]	< 4.8	< 0.012	< 0.0087	< 0.0081	< 0.0089	< 0.0087

Location ID: / Sample Depth (ft): / Date Collected:	CAS Number	Soil Standards or PQLs		PCTP-66R		PCTP-66R-HC	PCTP-67	PCTP-68	PCTP-69	PCTP-70	PCTP-71	PCTP-72	PCTP-73
		S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	DC Non-Res Surf Soil (Exceedances Shaded)	0-0.5 4/24/19	0.5-2 4/24/19	0-2 4/4/19	0.5 9/12/05	0.5 9/9/05	0.5 9/9/05	0.5 9/9/05	0.5 9/9/05	0.5 9/9/05	0.5 9/9/05
Semi-Volatile Organic Compounds (cont'd)													
Fluoranthene	206-44-0	3,200	130,000	19.8 DJ [200 DJ]	0.624	17.3 D	2 [1.6]	700	3.8	1.5	2.1	3.4	1.7
Fluorene	86-73-7	3,800	130,000	3.11 [76.2 DJ]	0.0866	2.79 J	< 0.028 [< 0.018]	320	0.14	0.079	0.25	0.28	0.094
Indeno(1,2,3-cd)pyrene	193-39-5	18,000	76	6.39 DJ [42.9 DJ]	0.444	5.97 DJ	1 [0.66]	88	1.1	0.64	0.81	1.3	0.73
Naphthalene	91-20-3	25	66	0.782 J [11.2]	0.0294 J	0.643	0.21 [0.15]	***1,900***	0.56	0.043	0.18	0.14	0.14
Phenanthrene	85-01-8	10,000	190,000	18.3 DJ [296 DJ]	0.348	15 D	1.4 [0.73]	1,000	1.4	0.77	2.2	3	1.2
Phenol	108-95-2	200	16,000	0.0364 J [0.111 J]	< 0.07	< 0.079	< 0.17 [< 0.12]	< 23	< 0.058	< 0.056	< 0.052	< 0.058	< 0.056
Pyrene	129-00-0	2,200	96,000	15.7 DJ [147 DJ]	0.523	14.6 D	2.5 [1.6]	490	4.2	1.8	3.1	5.7	2.2
Total PAHs and 2-Methylnaphthalene	-	- -	- -	120 [1,280]	5.24	112	16.3 [11.4]	6,160	26.1	11.3	17.1	27.7	13.2
Metals													
Aluminum	7429-90-5	- -	190,000	7,560 J [6,890 J]	8,310 J	6,260	NA	NA	NA	NA	NA	NA	NA
Antimony	7440-36-0	27	1,300	2.8 J [3.0 J]	< 2.2 J	2.6	9.9 [6.9]	< 2.1	< 2.1	< 2.2	< 2.1	< 2.3	< 2.2
Arsenic	7440-38-2	29	61	***66.6 [60.7]***	6.7	***35.7***	27 ***[31]***	5.8	***44***	***120***	***100***	7.9	4.2
Barium	7440-39-3	8,200	190,000	204 J [99.0 J]	42.9 J	79.4	150 [150]	51	71	88	70	87	70
Beryllium	7440-41-7	320	6,400	1.1 [0.90]	0.60	0.68	< 0.67 [< 0.66]	< 0.63	0.76	< 0.67	0.77	0.8	< 0.67
Cadmium	7440-43-9	38	1,600	3.0 [2.8]	0.10 J	1.9	4.8 [3.4]	< 0.63	0.69	< 0.67	< 0.62	< 0.68	< 0.67
Calcium	7440-70-2	- -	- -	8,670 J [5,280 J]	527 J	3,170	NA	NA	NA	NA	NA	NA	NA
Chromium	7440-47-3	190,000	190,000	23.2 [23.9]	19.2	19.8	40 [48]	12	17	15	14	25	14
Cobalt	7440-48-4	130	960	6.0 J [6.4]	7.5	5.8	NA	NA	NA	NA	NA	NA	NA
Copper	7440-50-8	43,000	100,000	217 [217]	17.2	127	480 [200]	110	110	33	46	75	1,400
Cyanide	57-12-5	200	1,900	0.54 J [1.1 J]	1.2 J	0.14 J	NA	NA	NA	NA	NA	NA	NA
Iron	7439-89-6	- -	190,000	12,400 [13,600]	24,400	18,900	NA	NA	NA	NA	NA	NA	NA
Lead	7439-92-1	450	1,000	392 [386]	26.8	323	***470 [500]***	58	290	71	370	280	130
Magnesium	7439-95-4	- -	- -	3,560 J [2,390 J]	1,430 J	1,640	NA	NA	NA	NA	NA	NA	NA
Manganese	7439-96-5	2,000	190,000	595 [375]	209	279	NA	NA	NA	NA	NA	NA	NA
Mercury	7439-97-6	10	510	0.20 J [0.34 J]	0.030 J	0.23	< 0.093 [< 0.092]	< 0.088	0.29	0.27	0.14	0.93	0.5
Nickel	7440-02-0	650	64,000	32.1 [32.3]	12.1	23.8	54 [41]	13	21	18	13	18	12
Potassium	7440-09-7	- -	- -	890 J [858 J]	1,430	740 J	NA	NA	NA	NA	NA	NA	NA
Selenium	7782-49-2	26	16,000	0.88 J [< 2.6]	< 4.4	< 2.3	7 [4.9]	3	2.6	< 2	< 1.9	< 2	< 2
Silver	7440-22-4	84	16,000	0.22 J [0.22 J]	< 1.1	0.33 J	< 2.8 [< 2.7]	< 2.6	< 2.6	< 2.8	< 2.6	< 2.8	< 2.8
Sodium	7440-23-5	- -	- -	180 J [375 J]	< 1,100	130 J	NA	NA	NA	NA	NA	NA	NA
Vanadium	7440-62-2	620	220	27.1 [28.4]	22.9	20.5	NA	NA	NA	NA	NA	NA	NA
Zinc	7440-66-6	12,000	190,000	490 J [501 J]	60.0 J	339	860 [970]	72	220	270	180	190	130

Table 7
Surface Soil Analytical Results – Detected VOCs, SVOCs, and Inorganics (mg/kg)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID: / Sample Depth (ft): / Date Collected:	CAS Number	Soil Standards or PQLs: S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	Soil Standards or PQLs: DC Non-Res Surf Soil (Exceedances Shaded)	PCTP-73R 0-0.5 4/10/19	PCTP-74 0.5 9/9/05	PCTP-75 0.5 9/9/05	PCTP-76 0.5 9/12/05	PCTP-77 0.5 9/12/05	PCTP-78 0.5 9/12/05	PCTP-79 0.5 9/12/05	PSSTP-01A 1-2 3/11/03	PSSTP-02A 1-2 3/11/03	PSSTP-03A 1-2 3/11/03	PSSTP-04A 1-2 3/11/03	PSSTP-04R 1-2 4/11/19
Volatile Organic Compounds															
Acetone	67-64-1	8,800	10,000	< 0.012	< 0.0058	< 0.0055	< 0.0057	< 0.0037	< 0.0036	< 0.0036	< 0.022	< 0.023	< 0.024	< 0.023	0.0232
Benzene	71-43-2	0.5	280	< 0.00061	< 0.00055	< 0.00053	< 0.00055	< 0.00026	< 0.00026	< 0.00026	0.0059	0.0082 B	< 0.0012	< 0.0011 B	< 0.00052
Carbon Disulfide	75-15-0	620	10,000	< 0.0025	< 0.00071	< 0.00067	< 0.0007	< 0.00055	< 0.00054	< 0.00054	< 0.056	< 0.0057	< 0.006	< 0.0057	< 0.0021
Cyclohexane	110-82-7	6,900	10,000	< 0.0025	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.0021
Dichloromethane	75-09-2	0.5	10,000	< 0.0061	0.0048 B	0.0034 B	0.013 B	0.01 B	0.011 B	0.009 B	0.0072 B	0.0082 B	0.0097 B	0.0076 B	< 0.0052
Ethylbenzene	100-41-4	70	880	< 0.0012	< 0.00081	< 0.00077	< 0.0008	< 0.00073	< 0.00072	< 0.00072	< 11	< 0.0011	< 0.0012	< 0.0011	< 0.0010
Isopropylbenzene	98-82-8	2,500	10,000	< 0.0025	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.0021
m&p-Xylenes	ARC-mpXyl	- -	- -	< 0.0012	< 0.0012	< 0.0011	< 0.0012	< 0.00087	< 0.00086	< 0.00086	NA	NA	NA	NA	< 0.0010
Methyl Acetate	79-20-9	9,700	10,000	< 0.0061	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.0052
Methylcyclohexane	108-87-2	- -	- -	< 0.0025	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.0021
o,p-Xylene	136777-61-2	- -	- -	NA	< 0.00051	< 0.00048	< 0.0005	< 0.00019	< 0.00019	< 0.00019	NA	NA	NA	NA	NA
o-Xylene	95-47-6	- -	- -	< 0.0012	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.0010
Styrene (Monomer)	100-42-5	24	10,000	< 0.0025	< 0.00067	< 0.00064	< 0.00067	< 0.00016	< 0.00016	< 0.00016	NA	NA	NA	NA	< 0.0021
Toluene	108-88-3	100	10,000	< 0.0012	< 0.00082	< 0.00078	< 0.00081	< 0.0002	< 0.00019	< 0.00019	0.0015	< 0.0011	< 0.0012	< 0.0011	< 0.0010
Total Xylenes	1330-20-7	1,000	7,900	< 0.0012	NA	NA	NA	NA	NA	NA	0	0	0	0	< 0.0010
Semi-Volatile Organic Compounds															
1,1-Biphenyl	92-52-4	1.5	34	0.0131 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0462 J
2,4-Dimethylphenol	105-67-9	190	10,000	< 0.21	< 0.031	< 0.029	< 0.03	< 0.3	< 0.03	< 0.15	< 0.37	< 1.9	< 2	< 19	< 0.19
2-Methylnaphthalene	91-57-6	100	240	0.0404 J	< 0.062	0.12	0.097	0.91	0.044 J	< 0.14	0.22 J	< 1.9	0.35 J	3.7 J	0.0951
2-Methylphenol	95-48-7	490	160,000	< 0.085	< 0.14	< 0.13	< 0.13	< 1.3	< 0.13	< 0.51	NA	NA	NA	NA	< 0.075
3-Methylphenol, 4-Methylphenol	65794-96-9	--	--	< 0.085	NA	NA	NA	NA	NA	NA	< 0.37	< 1.9	< 2	< 19	< 0.075
4-Methylphenol	106-44-5	49	16,000	NA	< 0.13	< 0.13	< 0.13	< 1.3	< 0.13	< 0.56	NA	NA	NA	NA	NA
4-Nitroaniline	100-01-6	14	4,600	< 0.21	NA	NA	NA	NA	NA	NA	< 0.37	< 1.9	< 2	< 19	< 0.19
Acenaphthene	83-32-9	4,700	190,000	0.0445	0.27	0.058	0.26	2	0.24	0.29	0.47	< 1.9	1.2 J	12 J	0.348
Acenaphthylene	208-96-8	6,600	190,000	0.137	0.082	0.12	< 0.0054	0.8	0.086	0.12	0.17 J	< 1.9	1.48 J	< 19	0.229
Acetophenone	98-86-2	970	10,000	< 0.21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.19
Anthracene	120-12-7	350	190,000	0.226	1.2	0.16	0.55	4.3	0.51	0.69	1.2	0.7 J	3.3	23	0.871
Benz(a)anthracene	56-55-3	340	130	0.742	2.9	0.66	1.1	7.8	1.7	2.5	2.8	5.9	7.6	45	2.79
Benzaldehyde	100-52-7	--	--	0.0489 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.19
Benzo(a)pyrene	50-32-8	46	91	0.742	2.4	0.61	0.77	6.7	1.7	2.6	2.3	4.6	5.9	35	2.37
Benzo(b)fluoranthene	205-99-2	170	76	0.981	3.4	1.2	0.94	8.9	2.2	3.3	3.8	7.4	7.3	42	2.85
Benzo(g,h,i)perylene	191-24-2	180	190,000	0.507	1.3	0.41	0.38	3.6	1	2.1	0.52	1.4 J	3.3	12 J	1.35 J
Benzo(k)fluoranthene	207-08-9	610	76	0.341	1	0.36	0.27	3.2	0.73	1	1.2	2.6	2.9	18 J	1.01
bis(2-Ethylhexyl)phthalate	117-81-7	130	6,500	0.182	0.13	0.13	< 0.023	< 0.23	0.13	< 0.096	< 0.37	< 1.9	0.79 J	< 19	< 0.075
Butyl benzyl phthalate	85-68-7	10,000	10,000	0.0846 J	< 0.0098	< 0.0093	< 0.0097	< 0.097	0.19	< 0.043	< 0.37	< 1.9	< 2	< 19	< 0.075
Carbazole	86-74-8	89	4,600	0.0768 J	0.18	0.06	0.17	1.3	0.23	0.36	0.47	0.45 J	1.2	10 J	0.344
Chrysene	218-01-9	230	760	0.741	2.7	0.76	1.1	7.5	1.7	2.7	2.8	5.6	5.6	37	2.59
Dibenz(a,h)anthracene	53-70-3	270	22	0.137	0.42	0.14	0.14	1.2	0.31	0.57	0.23 J	0.56 J	1 J	6 J	0.421
Dibenzofuran	132-64-9	250	3,200	0.0403 J	0.12	0.088	0.13	1.7	0.1	0.18	0.38	< 1.9	0.75 J	7.6 J	0.316
Diethyl phthalate	84-66-2	7,800	10,000	< 0.085	< 0.0085	< 0.0081	< 0.0084	< 0.084	< 0.0083	< 0.029	NA	NA	NA	NA	< 0.075
Di-n-butyl phthalate	84-74-2	4,000	10,000	< 0.085	< 0.0073	< 0.007	< 0.0073	< 0.073	0.041	< 0.024	0.18 J	< 1.9	< 2	< 19	< 0.075
Di-n-octyl phthalate	117-84-0	10,000	10,000	< 0.085	< 0.012	< 0.012	< 0.012	< 0.12	< 0.012	< 0.025	< 0.37	< 1.9	< 2	< 19	< 0.075

Table 7
Surface Soil Analytical Results – Detected VOCs, SVOCs, and Inorganics (mg/kg)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID: / Sample Depth (ft): / Date Collected:	CAS Number	Soil Standards or PQLs: S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	Soil Standards or PQLs: DC Non-Res Surf Soil (Exceedances Shaded)	PCTP-73R 0-0.5 4/10/19	PCTP-74 0.5 9/9/05	PCTP-75 0.5 9/9/05	PCTP-76 0.5 9/12/05	PCTP-77 0.5 9/12/05	PCTP-78 0.5 9/12/05	PCTP-79 0.5 9/12/05	PSSTP-01A 1-2 3/11/03	PSSTP-02A 1-2 3/11/03	PSSTP-03A 1-2 3/11/03	PSSTP-04A 1-2 3/11/03	PSSTP-04R 1-2 4/11/19
Semi-Volatile Organic Compounds (cont'd)															
Fluoranthene	206-44-0	3,200	130,000	1.34	6.7	1.1	1.8	17	3.1	4.8	4.7	9.6	16	86	5.45 D
Fluorene	86-73-7	3,800	130,000	0.0577	0.31	0.07	0.2	2.3	0.2	0.26	0.69	< 1.9	1.3 J	13 J	0.472
Indeno(1,2,3-cd)pyrene	193-39-5	18,000	76	0.525	1.2	0.38	0.34	3.3	0.92	1.7	0.61	1.7 J	3.4	16 J	1.27 J
Naphthalene	91-20-3	25	66	0.0552	0.071	0.27	0.084	1.6	0.064	< 0.025	0.36 J	< 1.9	0.5 J	9 J	0.16
Phenanthrene	85-01-8	10,000	190,000	0.732	3.5	0.54	2.5	16	2.2	3.7	3.8	2.3	12	85	4.19 D
Phenol	108-95-2	200	16,000	< 0.085	< 0.06	< 0.057	< 0.059	< 0.59	< 0.059	< 0.16	1.5	< 1.9	< 2	1.7	< 0.075
Pyrene	129-00-0	2,200	96,000	1.26	5.4	1.2	2.3	13	3.5	5.5	5.2	8.2	14	99	4.33 D
Total PAHs and 2-Methylnaphthalene	-	- -	- -	8.61	32.9	8.16	12.8	100	20.2	31.8	31.1	50.6	87.1	542	30.8
Metals															
Aluminum	7429-90-5	- -	190,000	8,940	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	13,500
Antimony	7440-36-0	27	1,300	1.4 J	< 2.2	< 2.1	< 2.2	< 2.2	< 2.1	3.2	< 2.2	3.2	< 7.4	< 2.3	< 2.3
Arsenic	7440-38-2	29	61	5.3	4.4	2.8	4.8	5.6	9	5.5	5.3	6.2	3.6	5.2	5.8
Barium	7440-39-3	8,200	190,000	83.1	69	45	69	110	280	120	120	110	220	100	80.1
Beryllium	7440-41-7	320	6,400	0.42	< 0.65	< 0.62	< 0.65	< 0.65	< 0.64	< 0.64	< 0.67	< 0.69	< 0.72	< 0.69	0.64
Cadmium	7440-43-9	38	1,600	1.2	< 0.65	< 0.62	< 0.65	< 0.65	0.7	< 0.64	< 0.67	< 0.69	< 0.72	< 0.69	0.38 J
Calcium	7440-70-2	- -	- -	26,700	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	21,200
Chromium	7440-47-3	190,000	190,000	19.8	19	9.6	23	25	23	23	23	26	21	28	23.8
Cobalt	7440-48-4	130	960	5.4 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	7.2
Copper	7440-50-8	43,000	100,000	75.1	31	34	28	41	52	55	38	190	22	43	49.3
Cyanide	57-12-5	200	1,900	0.45	NA	NA	NA	NA	NA	NA	< 0.28	< 0.29	0.9	0.72	0.23 J
Iron	7439-89-6	- -	190,000	14,400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	19,700
Lead	7439-92-1	450	1,000	248	250	73	150	220	***1,100***	430	230	***970***	250	170	***523***
Magnesium	7439-95-4	- -	- -	7,550	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	9,490
Manganese	7439-96-5	2,000	190,000	200	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	286
Mercury	7439-97-6	10	510	0.48	0.8	0.13	< 0.09	0.47	0.36	0.2	0.58	1.2	0.71	0.41	0.71
Nickel	7440-02-0	650	64,000	19.7	14	14	17	17	15	17	18	19	10	15	14.9
Potassium	7440-09-7	- -	- -	1,230	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,560
Selenium	7782-49-2	26	16,000	< 2.5	2.6	2.3	2.6	2.2	< 1.9	2.6	< 2	< 2.1	< 2.2	< 2.1	< 2.3
Silver	7440-22-4	84	16,000	< 0.62	< 2.7	< 2.6	< 2.7	< 2.7	< 2.7	< 2.7	< 2.8	< 2.9	< 3	< 2.9	< 0.57
Sodium	7440-23-5	- -	- -	187 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	121 J
Vanadium	7440-62-2	620	220	37.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	32.9
Zinc	7440-66-6	12,000	190,000	234	86	63	89	180	510	380	130	190	250	130	126

Table 7
Surface Soil Analytical Results – Detected VOCs, SVOCs, and Inorganics (mg/kg)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID: / Sample Depth (ft): / Date Collected:	CAS Number	Soil Standards or PQLs		PSSTP-05A	PSSTP-06A	PSSTP-07A	PSSTP-07R	PSSTP-08A	PSSTP-09A	PSSTP-10A	PSSTP-10R	PSSTP-11A	PSSTP-12A
		S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	DC Non-Res Surf Soil (Exceedances Shaded)	1-2 3/11/03	1-2 3/11/03	1-2 3/11/03	0.5-2 4/18/19	1-2 3/11/03	1-2 3/12/03	1-2 3/12/03	1-2 4/16/19	1-2 3/12/03	1-2 3/12/03
Volatile Organic Compounds													
Acetone	67-64-1	8,800	10,000	< 0.024	< 0.025	< 0.025	< 0.01 [0.0095 J]	< 0.025	< 0.026	< 0.023	0.394	< 0.023	< 0.024
Benzene	71-43-2	0.5	280	< 0.12	< 0.0013	< 0.0012	0.00089 J [0.0034 J]	< 0.0012	< 0.0013	< 0.0011	< 0.00063	< 0.0011	< 0.0012
Carbon Disulfide	75-15-0	620	10,000	0.0061	< 0.0063	< 0.0062	< 0.0021 [< 0.0023]	< 0.0062	< 0.0065	< 0.0057	< 0.0025	< 0.0057	< 0.006
Cyclohexane	110-82-7	6,900	10,000	NA	NA	NA	< 0.0021 [< 0.0023]	NA	NA	NA	< 0.0025	NA	NA
Dichloromethane	75-09-2	0.5	10,000	0.067 B	0.0046 JB	0.0099 B	< 0.0052 [< 0.0057]	0.0057 JB	0.0041 JB	0.0036 JB	< 0.0063	0.0046 JB	< 0.006
Ethylbenzene	100-41-4	70	880	< 0.0012	< 0.0013	< 0.0012	< 0.0010 [< 0.0011]	< 0.012	< 0.0013	< 0.0011	< 0.0013	< 0.0011	< 0.0012
Isopropylbenzene	98-82-8	2,500	10,000	NA	NA	NA	< 0.0021 [< 0.0023]	NA	NA	NA	< 0.0025	NA	NA
m&p-Xylenes	ARC-mpXyl	- -	- -	NA	NA	NA	< 0.0010 [< 0.0011]	NA	NA	NA	< 0.0013	NA	NA
Methyl Acetate	79-20-9	9,700	10,000	NA	NA	NA	< 0.0052 [< 0.0057]	NA	NA	NA	0.0061 J	NA	NA
Methylcyclohexane	108-87-2	- -	- -	NA	NA	NA	< 0.0021 [< 0.0023]	NA	NA	NA	< 0.0025	NA	NA
o,p-Xylene	136777-61-2	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
o-Xylene	95-47-6	- -	- -	NA	NA	NA	< 0.0010 [< 0.0011]	NA	NA	NA	< 0.0013	NA	NA
Styrene (Monomer)	100-42-5	24	10,000	NA	NA	NA	< 0.0021 [< 0.0023]	NA	NA	NA	< 0.0025	NA	NA
Toluene	108-88-3	100	10,000	0.0013	< 0.0013	< 0.0012	< 0.0010 [< 0.0011]	< 0.0012	< 0.0013	< 0.0011	< 0.0013	< 0.0011	< 0.0012
Total Xylenes	1330-20-7	1,000	7,900	0.0067 B	0	0	< 0.0010 [< 0.0011]	0	0	0	< 0.0013	0	0
Semi-Volatile Organic Compounds													
1,1-Biphenyl	92-52-4	1.5	34	NA	NA	NA	0.0107 J [0.0085 J]	NA	NA	NA	0.0132 J	NA	NA
2,4-Dimethylphenol	105-67-9	190	10,000	< 7.8	< 1.9	< 4.2	< 0.21 [< 0.19]	< 4.1	< 0.43	< 0.38	< 0.18	< 0.38	< 8
2-Methylnaphthalene	91-57-6	100	240	1.4	0.054 J	< 4.2	0.0195 J [0.0151 J]	0.86 J	< 0.43	< 0.38	0.0273 J	0.06 J	1.9 J
2-Methylphenol	95-48-7	490	160,000	NA	NA	NA	< 0.083 [< 0.075]	NA	NA	NA	< 0.074	NA	NA
3-Methylphenol, 4-Methylphenol	65794-96-9	--	--	< 7.8	< 0.42	< 4.2	< 0.083 [< 0.075]	< 4.1	< 0.43	< 0.38	< 0.074	< 0.38	< 8
4-Methylphenol	106-44-5	49	16,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	100-01-6	14	4,600	< 7.8	< 1.9	< 4.2	< 0.21 [< 0.19]	< 4.1	0.17 J	< 0.38	< 0.18	< 0.38	< 8
Acenaphthene	83-32-9	4,700	190,000	< 7.8	< 0.42	1.2 J	0.125 [0.0906]	1.1 J	0.56 J	< 0.38	0.0284 J	< 0.38	1.8 J
Acenaphthylene	208-96-8	6,600	190,000	8.1	0.28 J	< 4.2	0.0720 [0.0886]	6.6	< 0.43	< 0.38	0.266	0.51	11
Acetophenone	98-86-2	970	10,000	NA	NA	NA	< 0.21 [< 0.19]	NA	NA	NA	< 0.18	NA	NA
Anthracene	120-12-7	350	190,000	9.9	0.33 J	3.6 J	0.321 [0.346]	7.4	0.16 J	< 0.38	0.608	0.83	12
Benz(a)anthracene	56-55-3	340	130	21	1.8	6.4	0.939 [0.983]	15	0.41 J	0.17 J	1.76	3.7	50
Benzaldehyde	100-52-7	--	--	NA	NA	NA	0.0221 J [0.0177 J]	NA	NA	NA	< 0.18	NA	NA
Benzo(a)pyrene	50-32-8	46	91	18	1.5	5	0.979 [0.987]	10	0.37 J	0.14 J	1.31	2.3	41
Benzo(b)fluoranthene	205-99-2	170	76	23	2.7	7	1.21 [1.21]	15	0.6	0.22 J	1.97	3.5	67
Benzo(g,h,i)perylene	191-24-2	180	190,000	7.8 J	0.08 J	1.8 J	0.626 [0.558]	3.9 J	0.1 J	0.1 J	0.909	1	13
Benzo(k)fluoranthene	207-08-9	610	76	11	0.95	2.1 J	0.481 [0.401]	3.8 J	0.26 J	0.089 J	0.781	1.6	20
bis(2-Ethylhexyl)phthalate	117-81-7	130	6,500	< 7.8	0.082 J	0.64 J	0.191 [0.11]	< 4.1	1.7 B	< 0.38	< 0.074	< 0.38	< 8
Butyl benzyl phthalate	85-68-7	10,000	10,000	< 7.8	< 0.42	0.46 J	< 0.083 [< 0.075]	< 4.1	< 0.43	< 0.38	< 0.074	< 0.38	< 8
Carbazole	86-74-8	89	4,600	3.1 J	0.087 J	1.8 J	0.139 [0.102]	2.4 J	0.061 J	< 0.38	0.218	0.17 J	3.6 J
Chrysene	218-01-9	230	760	20	1.5	6.6	0.847 [0.907]	10	0.37 J	0.21 J	1.72	3.4	56
Dibenz(a,h)anthracene	53-70-3	270	22	2.6 J	0.36 J	0.66 J	0.132 [0.135]	1.7 J	< 0.43	< 0.38	0.354	0.46	5.1 J
Dibenzofuran	132-64-9	250	3,200	3.4 J	0.057 J	0.8 J	0.0676 J [0.0596 J]	6.1	< 0.43	< 0.38	0.115	0.25 J	2.9 J
Diethyl phthalate	84-66-2	7,800	10,000	NA	NA	NA	< 0.083 [< 0.075]	NA	NA	NA	< 0.074	NA	NA
Di-n-butyl phthalate	84-74-2	4,000	10,000	< 7.8	0.053 JB	0.42 JB	0.343 [0.294]	< 4.1	0.044 JB	< 0.38	< 0.074	< 0.38	< 8
Di-n-octyl phthalate	117-84-0	10,000	10,000	< 7.8	< 0.42	< 4.2	< 0.083 [< 0.075]	< 4.1	< 0.43	< 0.38	< 0.074	< 0.38	< 8

Table 7
Surface Soil Analytical Results – Detected VOCs, SVOCs, and Inorganics (mg/kg)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID: / Sample Depth (ft): / Date Collected:	CAS Number	Soil Standards or PQLs: S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	Soil Standards or PQLs: DC Non-Res Surf Soil (Exceedances Shaded)	PSSTP-05A 1-2 3/11/03	PSSTP-06A 1-2 3/11/03	PSSTP-07A 1-2 3/11/03	PSSTP-07R 0.5-2 4/18/19	PSSTP-08A 1-2 3/11/03	PSSTP-09A 1-2 3/12/03	PSSTP-10A 1-2 3/12/03	PSSTP-10R 1-2 4/16/19	PSSTP-11A 1-2 3/12/03	PSSTP-12A 1-2 3/12/03
Semi-Volatile Organic Compounds (cont'd)													
Fluoranthene	206-44-0	3,200	130,000	49	2.8	15	1.71 [1.82]	27	0.76	0.31 J	3.21	5.6	100
Fluorene	86-73-7	3,800	130,000	5.5 J	0.069 J	1.4 J	0.136 [0.128]	8.8	0.048 J	< 0.38	0.203	0.31 J	8.1
Indeno(1,2,3-cd)pyrene	193-39-5	18,000	76	7.5 J	1	1.7 J	0.66 [0.633]	3.7 J	0.093 J	0.095 J	1.03	1.1	13
Naphthalene	91-20-3	25	66	2.5 J	0.23 J	0.48 J	0.0321 J [0.0192 J]	4.7	< 0.43	< 0.38	0.0813	0.11 J	3.5 J
Phenanthrene	85-01-8	10,000	190,000	38	1.2	12	1.2 [1.21]	14	0.61	0.15 J	2.25	2.6	86
Phenol	108-95-2	200	16,000	< 1.5	< 0.42	< 1.6	< 0.083 [< 0.075]	< 4.1	< 0.43	< 0.38	< 0.074	1.7	< 1.5
Pyrene	129-00-0	2,200	96,000	41	3.2	13	1.59 [1.68]	23	0.99	0.26 J	2.56	4.7	120
Total PAHs and 2-Methylnaphthalene	-	- -	- -	266	18.1	77.9	11.1 [11.2]	157	5.33	1.74	19.1	31.8	609
Metals													
Aluminum	7429-90-5	- -	190,000	NA	NA	NA	11,100 [7,460]	NA	NA	NA	5,430 J	NA	NA
Antimony	7440-36-0	27	1,300	4.3	< 2.5	< 2.5	< 2.6 J [< 2.4 J]	6.6	2.7	< 2.3	0.56 J	< 2.3	5.4
Arsenic	7440-38-2	29	61	15	4	4.4	6.6 [6.9]	12	6.7	10	7.9	< 2.3	***100***
Barium	7440-39-3	8,200	190,000	55	36	320	110 [146]	230	95	68	42.5	96	88
Beryllium	7440-41-7	320	6,400	< 0.71	< 0.76	< 0.75	0.52 [0.37]	0.78	0.96	< 0.68	0.40	< 0.68	0.76
Cadmium	7440-43-9	38	1,600	< 0.71	< 0.76	0.95	0.39 J [0.74]	2.4	< 0.78	< 0.68	0.32 J	< 0.68	1.2
Calcium	7440-70-2	- -	- -	NA	NA	NA	22,400 [27,600]	NA	NA	NA	519 J	NA	NA
Chromium	7440-47-3	190,000	190,000	15	< 6.3	11	18.0 [20.0]	32	68	12	19.5 J	< 5.7	20
Cobalt	7440-48-4	130	960	NA	NA	NA	5.3 J [5.0 J]	NA	NA	NA	5.2 J	NA	NA
Copper	7440-50-8	43,000	100,000	99	32	20	17.7 [28.1]	250	51	54	63.1	20	150
Cyanide	57-12-5	200	1,900	13	4.1	0.35	0.33 J [0.37 J]	2	0.85	< 0.28	< 0.27 J	0.53	2.8
Iron	7439-89-6	- -	190,000	NA	NA	NA	17,000 [16,000]	NA	NA	NA	13,300	NA	NA
Lead	7439-92-1	450	1,000	150	41	340	158 J [201 J]	***930***	85	100	153	52	310
Magnesium	7439-95-4	- -	- -	NA	NA	NA	4,540 J [4,260 J]	NA	NA	NA	1,540	NA	NA
Manganese	7439-96-5	2,000	190,000	NA	NA	NA	316 J [297 J]	NA	NA	NA	202 J	NA	NA
Mercury	7439-97-6	10	510	0.4	0.15	0.37	0.19 J [0.23 J]	2.1	0.24	0.18	0.24 J	0.13	0.6
Nickel	7440-02-0	650	64,000	27	6.6	< 6.2	11.1 [11.6]	25	14	12	10	5.8	30
Potassium	7440-09-7	- -	- -	NA	NA	NA	978 J [895 J]	NA	NA	NA	798 J	NA	NA
Selenium	7782-49-2	26	16,000	< 2.1	< 2.3	< 2.2	< 2.6 [< 2.4]	< 2.2	< 2.3	< 2	< 2.3	< 2	< 2.2
Silver	7440-22-4	84	16,000	< 2.9	< 3.2	< 3.1	< 0.65 [< 0.60]	< 3.1	< 3.2	< 2.8	< 0.58	< 2.8	< 3
Sodium	7440-23-5	- -	- -	NA	NA	NA	121 J [118 J]	NA	NA	NA	< 1,200	NA	NA
Vanadium	7440-62-2	620	220	NA	NA	NA	18.0 [15.3]	NA	NA	NA	12.5	NA	NA
Zinc	7440-66-6	12,000	190,000	200	39	380	127 [164]	820	310	120	99.8 J	31	430

Table 7
Surface Soil Analytical Results – Detected VOCs, SVOCs, and Inorganics (mg/kg)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID: / Sample Depth (ft): / Date Collected:	CAS Number	Soil Standards or PQLs: S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	Soil Standards or PQLs: DC Non-Res Surf Soil (Exceedances Shaded)	PSSTP-13A 1-2 3/12/03	PSSTP-14A 1-2 3/12/03	PSSTP-15A 1-2 3/12/03	PSSTP-16A 1-2 3/12/03	PSSTP-17A 1-2 3/12/03	PSSTP-18A 1-2 3/12/03	PSSTP-19A 1-2 3/12/03	PSSTP-20A 1-2 3/13/03	PSSTP-21A 1-2 3/13/03	PSSTP-22A 1-2 3/13/03	PSSTP-22R 0.5-2 4/24/19
Volatile Organic Compounds														
Acetone	67-64-1	8,800	10,000	< 0.022	< 0.029	< 0.024	< 0.024	< 0.024	< 0.024	< 0.024	< 0.023	< 0.025	< 2.9	< 0.013
Benzene	71-43-2	0.5	280	< 0.0011	< 0.0014	< 0.0012	< 0.0012	< 0.012	< 0.0012	< 0.0012	< 0.0012	< 0.0013	***0.68***	0.0010
Carbon Disulfide	75-15-0	620	10,000	0.0012 J	< 0.0071	< 0.0061	< 0.0061	< 0.006	< 0.0059	< 0.006	< 0.0058	< 0.0063	< 0.73	0.0012 J
Cyclohexane	110-82-7	6,900	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.0026
Dichloromethane	75-09-2	0.5	10,000	0.0035 JB	< 0.0071	0.002 JB	0.0021 JB	0.0021 JB	< 0.0059	< 0.006	0.0072 B	0.0052 JB	0.28 J	< 0.0064
Ethylbenzene	100-41-4	70	880	<	< 0.0014	< 0.0012	< 0.0012	< 0.0012	< 0.0012	< 0.0012	< 0.0012	< 0.0013	< 0.15	< 0.0013
Isopropylbenzene	98-82-8	2,500	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.0026
m&p-Xylenes	ARC-mpXyl	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0029
Methyl Acetate	79-20-9	9,700	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.0064 J
Methylcyclohexane	108-87-2	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.0026
o,p-Xylene	136777-61-2	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
o-Xylene	95-47-6	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00085 J
Styrene (Monomer)	100-42-5	24	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.0026
Toluene	108-88-3	100	10,000	< 0.0011	< 0.0014	< 0.0012	< 0.0012	< 0.0012	< 0.0012	< 0.0012	< 0.0012	< 0.0013	0.9	0.0016
Total Xylenes	1330-20-7	1,000	7,900	0	0	0	0	0	JB	0	0	0	1.22	0.0038
Semi-Volatile Organic Compounds														
1,1-Biphenyl	92-52-4	1.5	34	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	***1.99***
2,4-Dimethylphenol	105-67-9	190	10,000	< 0.37	< 0.48	< 0.41	< 0.41	< 0.4	< 0.39	< 0.4	< 0.39	< 0.42	< 19	0.181 J
2-Methylnaphthalene	91-57-6	100	240	< 0.37	< 0.48	0.35 J	0.051 J	0.14 J	0.076 J	< 0.4	0.092 J	0.82	11 J	10.9 D
2-Methylphenol	95-48-7	490	160,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0797 J
3-Methylphenol, 4-Methylphenol	65794-96-9	--	--	< 0.37	< 0.48	< 0.41	< 0.41	< 0.4	< 0.39	< 0.4	< 0.39	< 0.42	< 19	0.304
4-Methylphenol	106-44-5	49	16,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	100-01-6	14	4,600	< 0.37	< 0.48	< 0.41	< 0.41	< 0.4	< 0.39	< 0.4	< 0.39	< 0.42	< 19	< 0.4
Acenaphthene	83-32-9	4,700	190,000	0.045 J	< 0.48	0.64	0.2 J	0.24 J	0.21 J	0.1 J	0.16 J	0.25 J	2.7 J	1.98
Acenaphthylene	208-96-8	6,600	190,000	< 0.37	0.11 J	0.075 J	0.073 J	0.074 J	0.21 J	< 0.4	0.18 J	0.93	8.5 J	17.7 D
Acetophenone	98-86-2	970	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0245 J
Anthracene	120-12-7	350	190,000	0.27 J	0.079 J	1.2	0.53	0.54 J	0.8	0.35 J	0.46	1.1	39	31.1 D
Benz(a)anthracene	56-55-3	340	130	1.4	1.5	2.8	1.5	1.3	1.9	0.31 J	1.7	4.3	81	58 D
Benzaldehyde	100-52-7	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.4
Benzo(a)pyrene	50-32-8	46	91	1.2	1.9	2.4	1.3	1	1.5	0.5	1.5	3.7	***53***	***48.6 D***
Benzo(b)fluoranthene	205-99-2	170	76	1.5	4.3	4	2.1	1.7	2.6	0.099 J	2.4	7.1	82	71.4 D
Benzo(g,h,i)perylene	191-24-2	180	190,000	0.73	1.3	0.75	0.39 J	0.36 J	0.42	0.14 J	0.55	1.3	27	31 D
Benzo(k)fluoranthene	207-08-9	610	76	0.54	1.3	1.6	0.62	0.58	0.77	< 0.4	0.83	2.9	35	6.68
bis(2-Ethylhexyl)phthalate	117-81-7	130	6,500	< 0.37	< 0.48	< 0.41	< 0.41	< 0.4	< 0.39	< 0.4	< 0.39	< 0.42	< 19	< 0.16
Butyl benzyl phthalate	85-68-7	10,000	10,000	< 0.37	< 0.48	< 0.41	< 0.41	0.045 J	0.053 J	< 0.4	< 0.39	< 0.42	< 19	< 0.16
Carbazole	86-74-8	89	4,600	0.12 J	< 0.48	0.7	0.25 J	0.23 J	0.37 J	0.043 J	0.24 J	0.5	11 J	9.74 D
Chrysene	218-01-9	230	760	1.6	2	2.9	1.6	1.3	1.8	0.38 J	1.8	4.8	75	52.3 D
Dibenz(a,h)anthracene	53-70-3	270	22	0.21 J	0.5	0.3 J	0.15 J	0.14 J	0.17 J	< 0.4	0.23 J	0.53	11 J	6.44
Dibenzofuran	132-64-9	250	3,200	0.1 J	< 0.48	0.48	0.12 J	0.19 J	0.17 J	< 0.4	0.11 J	0.54	22	18.1 D
Diethyl phthalate	84-66-2	7,800	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.16
Di-n-butyl phthalate	84-74-2	4,000	10,000	< 0.37	< 0.48	0.06 J	< 0.41	0.11 J	0.049 J	< 0.4	0.045 J	0.14 J	< 19	< 0.16
Di-n-octyl phthalate	117-84-0	10,000	10,000	< 0.37	< 0.48	0.076 J	< 0.41	0.047 J	< 0.39	< 0.4	< 0.39	< 0.42	< 19	< 0.16

Location ID: / Sample Depth (ft): / Date Collected:	CAS Number	Soil Standards or PQLs: S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	Soil Standards or PQLs: DC Non-Res Surf Soil (Exceedances Shaded)	PSSTP-13A 1-2 3/12/03	PSSTP-14A 1-2 3/12/03	PSSTP-15A 1-2 3/12/03	PSSTP-16A 1-2 3/12/03	PSSTP-17A 1-2 3/12/03	PSSTP-18A 1-2 3/12/03	PSSTP-19A 1-2 3/12/03	PSSTP-20A 1-2 3/13/03	PSSTP-21A 1-2 3/13/03	PSSTP-22A 1-2 3/13/03	PSSTP-22R 0.5-2 4/24/19
Semi-Volatile Organic Compounds (cont'd)														
Fluoranthene	206-44-0	3,200	130,000	3.3	1.2	4.8	3	2.4	3.6	0.66	3	6.2	160	139 D
Fluorene	86-73-7	3,800	130,000	0.19 J	< 0.48	0.59	0.22 J	0.23 J	0.32 J	< 0.4	0.18 J	0.43	30	18.9 D
Indeno(1,2,3-cd)pyrene	193-39-5	18,000	76	0.66	1.4	0.83	0.44	0.41	0.48	0.12 J	0.61	1.5	29	35.3 D
Naphthalene	91-20-3	25	66	< 0.37	0.11 J	1.9	0.08 J	0.77	0.17 J	< 0.4	0.16 J	1.7	21	18.5 D
Phenanthrene	85-01-8	10,000	190,000	1.2	0.31 J	4	2.2	1.9	2.6	0.39 J	1.8	4.1	140	122 D
Phenol	108-95-2	200	16,000	< 0.37	< 0.48	< 0.41	< 0.41	< 0.4	< 0.39	< 0.4	< 0.39	1.6	1.7	0.212
Pyrene	129-00-0	2,200	96,000	3.1	0.99	4.6	2.7	2.2	3.3	0.58	2.7	6.3	130	107 D
Total PAHs and 2-Methylnaphthalene	-	- -	- -	15.9	17.0	33.7	17.2	15.3	20.9	3.63	18.4	48.0	935	777
Metals														
Aluminum	7429-90-5	- -	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	12,300 J
Antimony	7440-36-0	27	1,300	< 2.2	< 2.9	< 2.4	< 2.4	2.7	< 2.4	< 2.4	< 2.3	2.7	2.7	2.2 J
Arsenic	7440-38-2	29	61	3.6	< 2.9	6.1	6	7.4	6.3	6.8	***47***	5.5	16	13.5
Barium	7440-39-3	8,200	190,000	17	36	180	120	150	97	72	65	60	120	286 J
Beryllium	7440-41-7	320	6,400	< 0.67	< 0.86	< 0.73	< 0.73	1.7	< 0.71	< 0.72	< 0.7	< 0.76	0.88	0.91
Cadmium	7440-43-9	38	1,600	< 0.67	< 0.86	< 0.73	< 0.73	< 0.72	< 0.71	< 0.72	< 0.7	< 0.76	< 0.7	1.0
Calcium	7440-70-2	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	15,800 J
Chromium	7440-47-3	190,000	190,000	9.2	< 7.1	24	23	24	24	19	9.8	12	22	28.4
Cobalt	7440-48-4	130	960	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	10.6
Copper	7440-50-8	43,000	100,000	7.6	25	34	55	100	31	48	57	70	61	549
Cyanide	57-12-5	200	1,900	< 0.28	< 0.36	< 0.3	0.68	< 0.3	0.29	< 0.3	2.3	2.2	5.5	8.1 J
Iron	7439-89-6	- -	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	34,900
Lead	7439-92-1	450	1,000	13	58	380	280	270	180	200	240	130	190	***1,130***
Magnesium	7439-95-4	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	6,530 J
Manganese	7439-96-5	2,000	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,050
Mercury	7439-97-6	10	510	< 0.94	0.17	0.7	0.63	0.53	0.54	0.6	0.41	0.37	8.1	0.17 J
Nickel	7440-02-0	650	64,000	7.5	< 7.1	13	18	17	14	14	14	14	13	35.2
Potassium	7440-09-7	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2,550
Selenium	7782-49-2	26	16,000	< 2	< 2.6	< 2.2	< 2.2	< 2.2	< 2.1	< 2.2	< 2.1	< 2.3	< 2.1	< 4.9
Silver	7440-22-4	84	16,000	< 2.8	< 3.6	< 3	< 3	< 3	< 2.9	< 3	< 2.9	< 3.2	< 2.9	0.73 J
Sodium	7440-23-5	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	229 J
Vanadium	7440-62-2	620	220	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	38.7
Zinc	7440-66-6	12,000	190,000	32	< 14	200	260	570	130	110	240	170	95	438 J

Table 7
Surface Soil Analytical Results – Detected VOCs, SVOCs, and Inorganics (mg/kg)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID: / Sample Depth (ft): / Date Collected:	CAS Number	Soil Standards or PQLs		PSSTP-23A	PSSTP-24A	PSSTP-25A	PSSTP-26A	PSSTP-27A	PSSTP-28A	PSSTP-29A	PSSTP-30A	S-113	S-113B	S-119
		S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	DC Non-Res Surf Soil (Exceedances Shaded)	1-2 3/13/03	1-2 3/13/03	1-2 3/13/03	1-2 3/13/03	1-2 3/13/03	1-2 3/13/03	1-2 3/13/03	1-2 3/13/03	0-1 4/23/19	1-3 4/24/19	0-1 4/12/19
Volatile Organic Compounds														
Acetone	67-64-1	8,800	10,000	< 0.024	< 0.024	< 0.024	< 0.024	< 0.023	< 0.11	< 0.022	< 0.026	< 0.016	< 2.5	0.0428
Benzene	71-43-2	0.5	280	< 0.0012	< 0.0012	< 0.0012	< 0.012	< 0.0012	< 0.0057	< 0.0011	< 0.0013	< 0.00082	***0.935***	< 0.00097
Carbon Disulfide	75-15-0	620	10,000	< 0.006	< 0.006	< 0.0061	< 0.0061	< 0.0058	< 0.029	< 0.0056	< 0.0066	< 0.0033	< 0.5	< 0.0039
Cyclohexane	110-82-7	6,900	10,000	NA	NA	NA	NA	NA	NA	NA	NA	< 0.0033	< 0.5	< 0.0039
Dichloromethane	75-09-2	0.5	10,000	0.0095 B	0.0053 JB	0.0056 JB	0.0091 B	0.0035 JB	0.035 B	0.0043 JB	< 0.0046 JB	< 0.0082	< 1.3	< 0.0097
Ethylbenzene	100-41-4	70	880	< 0.0012	< 0.0012	< 0.0012	< 0.0012	< 0.0012	0.0095	< 0.0011	< 0.0013	< 0.0016	< 0.25	< 0.0019
Isopropylbenzene	98-82-8	2,500	10,000	NA	NA	NA	NA	NA	NA	NA	NA	< 0.0033	< 0.5	< 0.0039
m&p-Xylenes	ARC-mpXyl	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	< 0.0016	0.29	< 0.0019
Methyl Acetate	79-20-9	9,700	10,000	NA	NA	NA	NA	NA	NA	NA	NA	< 0.0082	< 1.3	0.0039 J
Methylcyclohexane	108-87-2	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	< 0.0033	< 0.5	< 0.0039
o,p-Xylene	136777-61-2	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
o-Xylene	95-47-6	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	< 0.0016	< 0.25	< 0.0019
Styrene (Monomer)	100-42-5	24	10,000	NA	NA	NA	NA	NA	NA	NA	NA	< 0.0033	< 0.5	< 0.0039
Toluene	108-88-3	100	10,000	< 0.0012	< 0.0012	< 0.0012	< 0.0012	< 0.0012	0.012	< 0.0011	< 0.0013	< 0.0016	0.546	< 0.0019
Total Xylenes	1330-20-7	1,000	7,900	0	0	0	0	0	0.048	0	0	< 0.0016	0.29	< 0.0019
Semi-Volatile Organic Compounds														
1,1-Biphenyl	92-52-4	1.5	34	NA	NA	NA	NA	NA	NA	NA	NA	1.2	0.177 J	0.0202 J
2,4-Dimethylphenol	105-67-9	190	10,000	< 0.4	< 1.2	< 8.1	< 1.2	< 19	< 7.7	< 1.1	< 1.3	0.158 J	< 0.4	< 0.21
2-Methylnaphthalene	91-57-6	100	240	< 0.4	0.24 J	< 8.1	0.35 J	2 J	17	0.5 J	4.8	2.99	0.522 J	0.0629
2-Methylphenol	95-48-7	490	160,000	NA	NA	NA	NA	NA	NA	NA	NA	0.195	< 0.16	< 0.086
3-Methylphenol, 4-Methylphenol	65794-96-9	--	--	< 0.4	< 1.2	< 8.1	< 1.2	< 19	< 7.7	< 1.1	< 1.3	0.61	< 0.16	< 0.086
4-Methylphenol	106-44-5	49	16,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	100-01-6	14	4,600	< 0.4	< 1.2	< 8.1	< 1.2	< 19	< 7.7	< 1.1	< 1.3	< 0.41	< 0.4	< 0.21
Acenaphthene	83-32-9	4,700	190,000	< 0.4	< 1.2	< 8.1	1.1 J	8.8 J	8.7	1.1	0.29 J	1.98	0.817 J	0.0451
Acenaphthylene	208-96-8	6,600	190,000	< 0.4	0.83 J	1.3 J	0.32 J	3.2 J	< 7.7	0.35 J	0.4 J	32.3 D	16.9 D	0.494
Acetophenone	98-86-2	970	10,000	NA	NA	NA	NA	NA	NA	NA	NA	0.128 J	< 0.4	< 0.21
Anthracene	120-12-7	350	190,000	< 0.4	4.7	3.4 J	2.5	31	7 J	2.8	0.44 J	52.7 D	24 D	0.63
Benz(a)anthracene	56-55-3	340	130	0.19 J	11	18	6	51	7 J	4.7	1.1 J	101 D	65.9 D	1.96
Benzaldehyde	100-52-7	--	--	NA	NA	NA	NA	NA	NA	NA	NA	< 0.41	< 0.4	0.212
Benzo(a)pyrene	50-32-8	46	91	0.16 J	6.6	14	5.4	42	3.4 J	3.4	1.1 J	***82.9 D***	***55.2 D***	2.26
Benzo(b)fluoranthene	205-99-2	170	76	0.24 J	11	29	8.3	67	3.4 J	5.2	2.6	107 D	76.6 D	2.81
Benzo(g,h,i)perylene	191-24-2	180	190,000	0.099 J	2.5	< 8.1	1.7	11 J	1.4 J	0.95 J	0.59 J	53.1 D	31.1 D	1.48
Benzo(k)fluoranthene	207-08-9	610	76	0.074 J	4.4	8 J	2.7	21	0.97 J	1.2	0.68 J	43 D	23.1 D	0.891
bis(2-Ethylhexyl)phthalate	117-81-7	130	6,500	< 0.4	< 1.2	< 8.1	0.87 J	< 19	< 7.7	0.13 J	< 1.3	< 0.16	< 0.16	0.181
Butyl benzyl phthalate	85-68-7	10,000	10,000	< 0.4	< 1.2	< 8.1	< 1.2	< 19	< 7.7	< 1.1	< 1.3	< 0.16	< 0.16	< 0.086
Carbazole	86-74-8	89	4,600	< 0.4	1.3	1.5 J	1.2	4.5 J	< 7.7	1.1 J	0.3 J	9.79 D	1.82 J	0.14
Chrysene	218-01-9	230	760	0.18 J	12	23	5.7	47	6.7 J	4.1	2.2	90.9 D	57 D	1.81
Dibenz(a,h)anthracene	53-70-3	270	22	< 0.4	1.1 J	3.4 J	0.6 J	3.2 J	< 7.7	0.35 J	0.17 J	17.1 D	9.6 D	0.349
Dibenzofuran	132-64-9	250	3,200	< 0.4	0.42 J	0.97 J	0.65 J	5.8 J	3.4 J	1 J	0.59 J	10.2 D	2.81 J	0.0873
Diethyl phthalate	84-66-2	7,800	10,000	NA	NA	NA	NA	NA	NA	NA	NA	< 0.16	< 0.16	< 0.086
Di-n-butyl phthalate	84-74-2	4,000	10,000	0.063 J	< 1.2	< 8.1	< 1.2	< 19	< 7.7	< 1.1	0.15 J	< 0.16	< 0.16	0.0187 J
Di-n-octyl phthalate	117-84-0	10,000	10,000	< 0.4	< 1.2	< 8.1	< 1.2	< 19	< 7.7	< 1.1	< 1.3	< 0.16	< 0.16	< 0.086

Location ID: / Sample Depth (ft): / Date Collected:	CAS Number	Soil Standards or PQLs		PSSTP-23A	PSSTP-24A	PSSTP-25A	PSSTP-26A	PSSTP-27A	PSSTP-28A	PSSTP-29A	PSSTP-30A	S-113	S-113B	S-119
		S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	DC Non-Res Surf Soil (Exceedances Shaded)	1-2 3/13/03	1-2 3/13/03	1-2 3/13/03	1-2 3/13/03	1-2 3/13/03	1-2 3/13/03	1-2 3/13/03	1-2 3/13/03	0-1 4/23/19	1-3 4/24/19	0-1 4/12/19
Semi-Volatile Organic Compounds (cont'd)														
Fluoranthene	206-44-0	3,200	130,000	0.33 J	16	34	11	120	4 J	9.1	1.8	266 D	179 D	3.36
Fluorene	86-73-7	3,800	130,000	< 0.4	0.71 J	< 8.1	1.2 J	12 J	11	1.5	0.55 J	22.3 D	11 D	0.187
Indeno(1,2,3-cd)pyrene	193-39-5	18,000	76	0.09 J	2.7	8.5	1.7	11 J	0.87 J	1 J	0.56 J	49.6 D	36.4 D	1.41
Naphthalene	91-20-3	25	66	< 0.4	0.66 J	1.8 J	0.77 J	< 19	7.9	0.63 J	2.4	7.76	1.08 J	0.127
Phenanthrene	85-01-8	10,000	190,000	0.047 J	6.7	16	8.6	110	13	11	2.5	183 D	63.4 D	1.74
Phenol	108-95-2	200	16,000	1.6	< 1.2	2	< 1.2	< 1.5	2.5	< 1.1	< 1.3	0.646	< 0.16	< 0.086
Pyrene	129-00-0	2,200	96,000	0.27 J	13	25	12	130	26	8.9	2.2	187 D	133 D	3.26
Total PAHs and 2-Methylnaphthalene	-	- -	- -	1.68	94.1	185	69.9	670	118	56.8	24.4	1,300	785	22.9
Metals														
Aluminum	7429-90-5	- -	190,000	NA	NA	NA	NA	NA	NA	NA	NA	3,340 J	8,490 J	6,540
Antimony	7440-36-0	27	1,300	< 2.4	3.7	2.8	< 2.4	2.8	3.3	2.3	16	4.9 J	2.5 J	< 2.7
Arsenic	7440-38-2	29	61	10	13	12	5.2	11	***54***	20	***170***	10.7	10.9	***57.4***
Barium	7440-39-3	8,200	190,000	66	53	43	380	97	260	120	340	154 J	275 J	92.8
Beryllium	7440-41-7	320	6,400	8.1	< 0.72	< 0.73	< 0.73	< 0.7	< 0.69	< 0.67	0.79	0.24	0.65	0.68
Cadmium	7440-43-9	38	1,600	< 0.71	< 0.72	1.4	< 0.73	< 0.7	< 0.69	< 0.67	< 0.79	0.40 J	0.40 J	1.8
Calcium	7440-70-2	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	1,620 J	6,740 J	4,320
Chromium	7440-47-3	190,000	190,000	25	10	31	15	26	11	27	31	27.1	38.6	19.3
Cobalt	7440-48-4	130	960	NA	NA	NA	NA	NA	NA	NA	NA	2.9 J	4.6 J	6.8
Copper	7440-50-8	43,000	100,000	24	55	96	27	62	57	56	190	80.2	183	132
Cyanide	57-12-5	200	1,900	< 0.3	1.3	2.6	0.46	< 0.29	0.91	< 0.28	0.64	125 J	9.8 J	1.6
Iron	7439-89-6	- -	190,000	NA	NA	NA	NA	NA	NA	NA	NA	19,500	21,700	14,600
Lead	7439-92-1	450	1,000	21	69	91	***1,000***	150	***960***	***560***	***1,600***	***460***	445	253
Magnesium	7439-95-4	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	602 J	2,050 J	1,730
Manganese	7439-96-5	2,000	190,000	NA	NA	NA	NA	NA	NA	NA	NA	112	147	303
Mercury	7439-97-6	10	510	0.17	< 0.1	0.19	0.9	0.22	0.35	0.44	1.2	0.50 J	0.30 J	0.21
Nickel	7440-02-0	650	64,000	39	11	33	9.4	16	30	18	33	8.3	18.8	23.4
Potassium	7440-09-7	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	1,010 J	857 J	< 1,300
Selenium	7782-49-2	26	16,000	< 2.1	2.7	< 2.2	< 2.2	< 2.1	< 2.1	< 2	< 2.4	2.1 J	1.8 J	< 2.7
Silver	7440-22-4	84	16,000	< 3	< 3	< 3	< 2.3	< 2.9	< 2.9	< 2.8	< 3.3	< 0.60	< 0.65	< 0.67
Sodium	7440-23-5	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	244 J	< 1,300	< 1,300
Vanadium	7440-62-2	620	220	NA	NA	NA	NA	NA	NA	NA	NA	13.7	32.6	22.5
Zinc	7440-66-6	12,000	190,000	61	37	540	560	180	370	260	590	98.4 J	173 J	362

Location ID: / Sample Depth (ft): / Date Collected:	CAS Number	Soil Standards or PQLs		S-120	S-121	S-122	S-151	S-163
		S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	DC Non-Res Surf Soil (Exceedances Shaded)	0-1 4/24/19	0-1 4/12/19	0-1 4/12/19	0.5-2 4/25/19	0.5-2 9/19/19
Volatile Organic Compounds								
Acetone	67-64-1	8,800	10,000	< 0.028	< 0.023	< 0.011	< 2.8	< 1.7
Benzene	71-43-2	0.5	280	< 0.0014	< 0.0012	< 0.00055	< 0.14	< 0.087
Carbon Disulfide	75-15-0	620	10,000	< 0.0055	< 0.0047	< 0.0022	< 0.57	< 0.35
Cyclohexane	110-82-7	6,900	10,000	< 0.0055	< 0.0047	< 0.0022	< 0.57	0.158 J
Dichloromethane	75-09-2	0.5	10,000	< 0.014	< 0.012	< 0.0055	< 1.4	< 0.87
Ethylbenzene	100-41-4	70	880	< 0.0028	< 0.0023	< 0.0011	< 0.28	< 0.17
Isopropylbenzene	98-82-8	2,500	10,000	< 0.0055	< 0.0047	< 0.0022	< 0.57	< 0.35
m&p-Xylenes	ARC-mpXyl	- -	- -	< 0.0028	< 0.0023	< 0.0011	< 0.28	0.286
Methyl Acetate	79-20-9	9,700	10,000	< 0.014	< 0.012	< 0.0055	< 1.4	< 0.87
Methylcyclohexane	108-87-2	- -	- -	< 0.0055	< 0.0047	< 0.0022	< 0.57	0.409
o,p-Xylene	136777-61-2	- -	- -	NA	NA	NA	NA	NA
o-Xylene	95-47-6	- -	- -	< 0.0028	< 0.0023	< 0.0011	< 0.28	0.161 J
Styrene (Monomer)	100-42-5	24	10,000	< 0.0055	< 0.0047	< 0.0022	< 0.57	< 0.35
Toluene	108-88-3	100	10,000	< 0.0028	< 0.0023	< 0.0011	< 0.28	0.311
Total Xylenes	1330-20-7	1,000	7,900	< 0.0028	< 0.0023	< 0.0011	< 0.28	0.447
Semi-Volatile Organic Compounds								
1,1-Biphenyl	92-52-4	1.5	34	0.0109 J	0.0090 J	0.0088 J	NA	***3.19***
2,4-Dimethylphenol	105-67-9	190	10,000	< 0.19	< 0.22	< 0.2	< 0.37	< 0.94
2-Methylnaphthalene	91-57-6	100	240	0.0360 J	0.0209 J	0.0226 J	22.1 D	15.3
2-Methylphenol	95-48-7	490	160,000	< 0.074	< 0.089	< 0.079	< 0.15	0.131 J
3-Methylphenol, 4-Methylphenol	65794-96-9	--	--	< 0.074	< 0.089	< 0.079	0.119 J	0.485
4-Methylphenol	106-44-5	49	16,000	NA	NA	NA	NA	NA
4-Nitroaniline	100-01-6	14	4,600	< 0.19	< 0.22	< 0.2	< 0.37	< 0.94
Acenaphthene	83-32-9	4,700	190,000	0.0228 J	< 0.044	0.0155 J	5.08	2.96
Acenaphthylene	208-96-8	6,600	190,000	0.115	0.0828	0.109	40.3 D	36 D
Acetophenone	98-86-2	970	10,000	< 0.19	< 0.22	< 0.2	NA	< 0.94
Anthracene	120-12-7	350	190,000	0.122	0.102	0.126	78.8 D	85.4 D
Benz(a)anthracene	56-55-3	340	130	0.417 J	0.484	0.631	93.1 D	201 D
Benzaldehyde	100-52-7	--	--	0.0111 J	0.0123 J	0.0206 J	NA	< 0.94
Benzo(a)pyrene	50-32-8	46	91	0.516 J	0.821	0.848	***86.4 D***	***156 D***
Benzo(b)fluoranthene	205-99-2	170	76	0.638	0.821	1.01	101 D	***218 D***
Benzo(g,h,i)perylene	191-24-2	180	190,000	0.407 J	0.663	0.598	64.7 D	79.6 D
Benzo(k)fluoranthene	207-08-9	610	76	0.253	0.29	0.307	40.3 D	66.1 D
bis(2-Ethylhexyl)phthalate	117-81-7	130	6,500	0.0397 J	0.0786 J	0.0546 J	< 0.15	< 0.37
Butyl benzyl phthalate	85-68-7	10,000	10,000	< 0.074	< 0.089	< 0.079	< 0.15	< 0.37
Carbazole	86-74-8	89	4,600	0.0420 J	0.0282 J	0.0396 J	29.4 D	10.2
Chrysene	218-01-9	230	760	0.443	0.507	0.663	77 D	174 D
Dibenz(a,h)anthracene	53-70-3	270	22	0.0964	0.117	0.137	16.4 D	23.8 D
Dibenzofuran	132-64-9	250	3,200	0.0364 J	< 0.089	0.0199 J	52.6 D	42 D
Diethyl phthalate	84-66-2	7,800	10,000	< 0.074	< 0.089	< 0.079	< 0.15	< 0.37
Di-n-butyl phthalate	84-74-2	4,000	10,000	< 0.074	< 0.089	< 0.079	< 0.15	< 0.37
Di-n-octyl phthalate	117-84-0	10,000	10,000	< 0.074	< 0.089	< 0.079	< 0.15	< 0.37

Location ID: Sample Depth (ft): Date Collected:	CAS Number	Soil Standards or PQLs		S-120 0-1 4/24/19	S-121 0-1 4/12/19	S-122 0-1 4/12/19	S-151 0.5-2 4/25/19	S-163 0.5-2 9/19/19
		S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	DC Non-Res Surf Soil (Exceedances Shaded)					
Semi-Volatile Organic Compounds (cont'd)								
Fluoranthene	206-44-0	3,200	130,000	0.772 J	0.616	1.01	305 D	477 D
Fluorene	86-73-7	3,800	130,000	0.0544	0.0204 J	0.0275 J	91.9 D	69.3 D
Indeno(1,2,3-cd)pyrene	193-39-5	18,000	76	0.406 J	0.604	0.557	56.9 D	95.1 D
Naphthalene	91-20-3	25	66	0.114	0.0591	0.0505	***100 D***	***37.2 D***
Phenanthrene	85-01-8	10,000	190,000	0.574 J	0.312	0.468	354 D	324 D
Phenol	108-95-2	200	16,000	< 0.074	< 0.089	< 0.079	0.0928 J	0.404
Pyrene	129-00-0	2,200	96,000	0.713 J	0.789	1.15	227 D	353 D
Total PAHs and 2-Methylnaphthalene	-	- -	- -	5.70	6.31	7.73	1,760	2,410
Metals								
Aluminum	7429-90-5	- -	190,000	5,780 J	5,600	4,670	6,750	11,400
Antimony	7440-36-0	27	1,300	2.3 J	< 2.7	< 2.3	0.87 J	< 2.2
Arsenic	7440-38-2	29	61	***105***	***69.3***	***75.0***	6.9	7.6
Barium	7440-39-3	8,200	190,000	249 J	106	67.5	84.3	217
Beryllium	7440-41-7	320	6,400	0.59	0.88	0.52	0.75	1.2
Cadmium	7440-43-9	38	1,600	2.7	1.8	1.1	0.31 J	< 0.54
Calcium	7440-70-2	- -	- -	2,650 J	9,920	2,290	17,500 J	41,400
Chromium	7440-47-3	190,000	190,000	15.2	21.0	16.1	16.7	17.4
Cobalt	7440-48-4	130	960	5.6 J	< 6.9	< 5.8	3.3 J	< 5.4
Copper	7440-50-8	43,000	100,000	134	135	102	25.5	20.7
Cyanide	57-12-5	200	1,900	1.4 J	0.68	0.95	0.72 J	0.96
Iron	7439-89-6	- -	190,000	17,200	11,300	14,200	11,600	10,300
Lead	7439-92-1	450	1,000	329	241	359	102 J	34.5
Magnesium	7439-95-4	- -	- -	1,100 J	2,760	1,120	3,890	15,400
Manganese	7439-96-5	2,000	190,000	229	266	245	350 J	1,710
Mercury	7439-97-6	10	510	0.29 J	0.12	0.24	0.12 J	< 0.035
Nickel	7440-02-0	650	64,000	18.7	25.2	13.8	9.4	8.6
Potassium	7440-09-7	- -	- -	651 J	< 1,400	< 1,200	853 J	1,980
Selenium	7782-49-2	26	16,000	< 2.4	< 2.7	< 2.3	0.74 J	< 2.2
Silver	7440-22-4	84	16,000	< 0.60	< 0.69	< 0.58	< 0.55	< 0.54
Sodium	7440-23-5	- -	- -	< 1,200	< 1,400	< 1,200	273 J	< 1,100
Vanadium	7440-62-2	620	220	19.5	24.7	21.6	13.7	41.3
Zinc	7440-66-6	12,000	190,000	774	355	247	49.0	25.2

Table 7
Surface Soil Analytical Results – Detected VOCs, SVOCs, and Inorganics (mg/kg)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Notes:

1. Samples prior to 2019 were collected by Paulus, Sokolowski, and Sartor Engineering, PC on the dates indicated. Samples in 2019 were collected by Arcadis on the dates indicated.
2. Sample depth is reported in feet below ground surface.
3. 2003 and 2005 samples were analyzed by Hampton-Clarke, Veritech Laboratories of Fairfield, New Jersey (Veritech).
4. 2019 samples were analyzed by SGS North America Incorporated Laboratories of Dayton, New Jersey (SGS).
5. Samples were submitted for laboratory analysis for one or more of the following constituent groups, as indicated above.
   - Target Compound List (TCL) volatile organic compounds (VOC) using United States Environmental Protection Agency (USEPA) SW-846 Method 8260.
   - TCL semi-volatile organic compounds (SVOC) using USEPA SW-846 Method 8270.
   - Metals using USEPA SW-846 Methods 6010 and 7471.
   - Cyanide using USEPA SW-846 Method 9010 (Veritech) or 9012B (SGS).
6. Only compounds detected in one or more samples are shown in this table.
7. < = constituent not detected at a concentration above the reported detection limit. These results are also reported in gray.
8. NA = Not Analyzed.
9. Concentrations reported in milligrams per kilogram (mg/kg) or parts per million (ppm).
10. Soil standards obtained from the Pennsylvania Department of Environmental Protection (PADEP) Medium Specific Concentrations (MSCs) established in Title 25 of the Pennsylvania Code Chapter 250, Administration of the Land Recycling Program (Act 2 cleanup standards) updated on November 20, 2021, and include:
    (a) The soil to groundwater MSCs for a non-residential used aquifer with total dissolved solids (TDS) less than or equal to 2,500 parts per million (ppm). The higher of the 100 X groundwater MSC or generic value is used.
    (b) The non-residential direct contact MSC for surface soil.
11. Shading indicates that the result exceeds the PADEP non-residential direct contact MSC (for surface soil).
12. Italics and bolding indicates that the result exceeds the PADEP soil to groundwater MSC (for a non-residential used aquifer with TDS ≤ 2,500 ppm).
13. - - = No PADEP MSC.
14. - = No actual Chemical Abstracts Service (CAS) number is available.
15. Brackets indicate the reported concentration of a duplicate sample.
16. The MSCs reported for chromium is for trivalent chromium. The reported chromium results are for total chromium.
17. The MSCs reported for cyanide are for free cyanide. The reported cyanide results are for total cyanide.
18. Total polycyclic aromatic hydrocarbons (PAHs) are the sum of the 16 priority pollutant PAHs identified by the USEPA and 2-methylnaphthalene.
19. Qualifier Definitions:
    B = Analyte is an estimated value between the instrument detection limit and the Reporting Limit.
    D = Concentration is based on a diluted sample analysis.
    J = Analyte is an estimated value.
    R = Data rejected during validation.
20. Data from 2019 have undergone a Tier II validation. Data prior to 2019 have not been validated.

Table 8
Surface Soil Analytical Results – Detected Pesticides and PCBs (mg/kg)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID: / Sample Depth (ft): / Date Collected:	CAS Number	Soil Standards or PQLs		PCSB-26	PCSB-26R	PCSB-27		PCSB-28	PCSB-29	PCSB-30	PCSB-30R	PCSB-31	PCSB-32	PCSB-33	PCSB-34	PCSB-35	PCSB-36
		S-GW Used Aquifer TDS≤ 2,500 Non-Res (No Exceedances)	DC Non-Res Surf Soil (No Exceedances)	0.5 7/26/05	0.5-2 4/19/19	0.5 7/26/05	1.5 7/26/05	0.5 7/26/05	0.5 7/26/05	0.5 7/26/05	0.5-2 4/19/19	0.5 7/28/05	0.5 7/28/05	0.5 7/28/05	0.5 7/27/05	0.5 8/2/05	0.5 7/27/05
Pesticides																	
4,4-DDD	72-54-8	120	380	< 0.0057	< 0.00075	< 0.0058	< 0.0057	< 0.006	< 0.0056	< 0.0056	0.0037	< 0.0069	< 0.0067	< 0.0063	< 0.006	0.012	< 0.0058
4,4-DDE	72-55-9	170	270	< 0.0057	< 0.00075	< 0.0058	< 0.0057	0.0074	< 0.0056	< 0.0056	0.0029	< 0.0069	< 0.0067	< 0.0063	< 0.006	0.017	< 0.0058
4,4-DDT	50-29-3	330	270	0.029	< 0.00075	0.056	< 0.0057	0.066	< 0.0056	0.022	0.0155	< 0.0069	< 0.0067	< 0.0063	< 0.006	< 0.0052	< 0.0058
Aldrin	309-00-2	1.9	5.4	< 0.0057	< 0.00075	< 0.0058	< 0.0057	< 0.006	< 0.0056	< 0.0056	< 0.00083	< 0.0069	< 0.0067	< 0.0063	< 0.006	< 0.0052	< 0.0058
Beta-BHC	319-85-7	0.88	51	< 0.0057	< 0.00075	< 0.0058	< 0.0057	< 0.006	< 0.0056	< 0.0056	< 0.00083	< 0.0069	< 0.0067	< 0.0063	< 0.006	< 0.0052	< 0.0058
Chlordane	57-74-9	49	260	< 0.011	NA	< 0.012	< 0.011	< 0.012	< 0.011	< 0.011	NA	< 0.014	< 0.013	< 0.013	< 0.012	< 0.01	< 0.012
Dieldrin	60-57-1	0.47	5.7	< 0.0057	< 0.00075	< 0.0058	< 0.0057	< 0.006	< 0.0056	< 0.0056	< 0.00083	< 0.0069	< 0.0067	< 0.0063	< 0.006	< 0.0052	< 0.0058
Endosulfan I	959-98-8	260	19,000	< 0.0057	< 0.00075	< 0.0058	< 0.0057	< 0.006	< 0.0056	< 0.0056	< 0.00083	< 0.0069	< 0.0067	< 0.0063	< 0.006	< 0.0052	< 0.0058
Endosulfan II	33213-65-9	260	19,000	< 0.0057	< 0.00075	< 0.0058	< 0.0057	< 0.006	< 0.0056	< 0.0056	< 0.00083	< 0.0069	< 0.0067	< 0.0063	< 0.006	< 0.0052	< 0.0058
Endosulfan sulfate	1031-07-8	70	19,000	< 0.0057	< 0.00075	< 0.0058	< 0.0057	< 0.006	< 0.0056	< 0.0056	< 0.00083	< 0.0069	< 0.0067	< 0.0063	< 0.006	< 0.0052	< 0.0058
Endrin	72-20-8	5.5	960	< 0.0057	< 0.00075	< 0.0058	< 0.0057	< 0.006	< 0.0056	< 0.0056	< 0.00083	< 0.0069	< 0.0067	< 0.0063	< 0.006	< 0.0052	< 0.0058
Endrin aldehyde	7421-93-4	- -	- -	< 0.0057	< 0.00075	< 0.0058	< 0.0057	< 0.006	< 0.0056	< 0.0056	< 0.00083	< 0.0069	< 0.0067	< 0.0063	< 0.006	< 0.0052	< 0.0058
Endrin ketone	53494-70-5	- -	- -	< 0.0057	< 0.00075	< 0.0058	< 0.0057	< 0.006	< 0.0056	< 0.0056	< 0.00083	< 0.0069	< 0.0067	< 0.0063	< 0.006	< 0.0052	< 0.0058
Heptachlor epoxide	1024-57-3	1.1	10	< 0.0057	< 0.00075	< 0.0058	< 0.0057	< 0.006	< 0.0056	< 0.0056	< 0.00083	< 0.0069	< 0.0067	< 0.0063	< 0.006	< 0.0052	< 0.0058
Methoxychlor	72-43-5	630	16,000	< 0.0057	< 0.0015	< 0.0058	< 0.0057	< 0.006	< 0.0056	< 0.0056	< 0.0017	< 0.0069	< 0.0067	< 0.0063	< 0.006	< 0.0052	< 0.0058
Toxaphene	8001-35-2	1.2	83	< 0.028	< 0.019	< 0.029	< 0.028	< 0.03	< 0.028	< 0.028	< 0.021	< 0.035	< 0.033	< 0.031	< 0.03	< 0.026	< 0.029
trans-chlordane	5103-74-2	- -	- -	NA	< 0.00075	NA	NA	NA	NA	NA	0.00059 J	NA	NA	NA	NA	NA	NA
Polychlorinated Biphenyls																	
Aroclor 1242	53469-21-9	17	46	< 0.028	< 0.038	< 0.029	< 0.028	< 0.03	< 0.028	< 0.028	< 0.042	< 0.035	< 0.033	< 0.031	< 0.03	< 0.026	< 0.029
Aroclor 1248	12672-29-6	67	46	< 0.028	< 0.038	< 0.029	< 0.028	< 0.03	< 0.028	< 0.028	< 0.042	< 0.035	< 0.033	< 0.031	< 0.03	< 0.026	< 0.029
Aroclor 1254	11097-69-1	380	64	< 0.028	< 0.038	< 0.029	< 0.028	< 0.03	< 0.028	< 0.028	< 0.042	< 0.035	< 0.033	< 0.031	< 0.03	< 0.026	< 0.029
Aroclor 1260	11096-82-5	630	46	< 0.028	< 0.038	< 0.029	< 0.028	< 0.03	< 0.028	< 0.028	< 0.042	< 0.035	< 0.033	< 0.031	0.084	0.066	0.18
Aroclor 1262	37324-23-5	- -	- -	NA	< 0.038	NA	NA	NA	NA	NA	< 0.042	NA	NA	NA	NA	NA	NA
Total PCBs	-	- -	- -	<0.028	<0.038	<0.029	<0.028	<0.03	<0.028	<0.028	<0.042	<0.035	<0.033	<0.031	0.084	0.066	0.18

Table 8
Surface Soil Analytical Results – Detected Pesticides and PCBs (mg/kg)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID: / Sample Depth (ft): / Date Collected:	CAS Number	Soil Standards or PQLs		PCSB-37	PCSB-38	PCSB-39	PCSB-40	PCSB-41	PCSB-41R	PCSB-42	PCSB-43	PCSB-44	PCSB-45	PCSB-46	PCSB-47
		S-GW Used Aquifer TDS≤ 2,500 Non-Res (No Exceedances)	DC Non-Res Surf Soil (No Exceedances)	0.5 8/3/05	0.5 7/27/05	0.5 7/27/05	0.5 7/28/05	0.5 7/28/05	0.5-2 4/22/19	0.5 8/1/05	0.5 8/1/05	0.5 8/3/05	0.5 8/3/05	0.5 7/27/05	0.5 8/3/05
Pesticides															
4,4-DDD	72-54-8	120	380	< 0.0056	0.02	< 0.0065	< 0.0067	0.085	0.0044 JN	0.0091 [< 0.0053]	< 0.0053	< 0.0052	< 0.0053 [< 0.0053]	< 0.0057	< 0.0054
4,4-DDE	72-55-9	170	270	0.026	0.022	< 0.0065	< 0.0067	0.15	0.0054	0.015 [< 0.0053]	0.012	< 0.0052	< 0.0053 [< 0.0053]	0.014	< 0.0054
4,4-DDT	50-29-3	330	270	0.17	0.058	< 0.0065	< 0.0067	0.1	0.0056	< 0.0052 [< 0.0053]	< 0.0053	0.016	0.039 [0.03]	< 0.0057	< 0.0054
Aldrin	309-00-2	1.9	5.4	< 0.0056	< 0.0061	< 0.0065	< 0.0067	< 0.0054	< 0.00079 J	< 0.0052 [< 0.0053]	< 0.0053	< 0.0052	< 0.0053 [< 0.0053]	< 0.0057	< 0.0054
Beta-BHC	319-85-7	0.88	51	< 0.0056	< 0.0061	< 0.0065	< 0.0067	< 0.0054	< 0.00079	< 0.0052 [< 0.0053]	< 0.0053	< 0.0052	< 0.0053 [< 0.0053]	< 0.0057	< 0.0054
Chlordane	57-74-9	49	260	< 0.011	< 0.012	< 0.013	< 0.013	< 0.011	NA	< 0.01 [< 0.011]	< 0.011	< 0.01	< 0.011 [< 0.011]	< 0.011	< 0.011
Dieldrin	60-57-1	0.47	5.7	0.095	< 0.0061	< 0.0065	< 0.0067	< 0.0054	< 0.00079	< 0.0052 [< 0.0053]	< 0.0053	< 0.0052	< 0.0053 [< 0.0053]	< 0.0057	< 0.0054
Endosulfan I	959-98-8	260	19,000	< 0.0056	< 0.0061	< 0.0065	< 0.0067	< 0.0054	< 0.00079	< 0.0052 [< 0.0053]	< 0.0053	< 0.0052	< 0.0053 [< 0.0053]	< 0.0057	< 0.0054
Endosulfan II	33213-65-9	260	19,000	0.016	< 0.0061	< 0.0065	< 0.0067	< 0.0054	< 0.00079	< 0.0052 [< 0.0053]	< 0.0053	< 0.0052	< 0.0053 [< 0.0053]	< 0.0057	< 0.0054
Endosulfan sulfate	1031-07-8	70	19,000	< 0.0056	< 0.0061	< 0.0065	< 0.0067	< 0.0054	< 0.00079	< 0.0052 [< 0.0053]	< 0.0053	< 0.0052	< 0.0053 [< 0.0053]	< 0.0057	< 0.0054
Endrin	72-20-8	5.5	960	< 0.0056	< 0.0061	< 0.0065	< 0.0067	< 0.0054	< 0.00079	< 0.0052 [< 0.0053]	< 0.0053	< 0.0052	< 0.0053 [< 0.0053]	< 0.0057	< 0.0054
Endrin aldehyde	7421-93-4	- -	- -	< 0.0056	< 0.0061	< 0.0065	< 0.0067	< 0.0054	< 0.00079	< 0.0052 [< 0.0053]	< 0.0053	< 0.0052	< 0.0053 [< 0.0053]	< 0.0057	< 0.0054
Endrin ketone	53494-70-5	- -	- -	< 0.0056	< 0.0061	< 0.0065	< 0.0067	< 0.0054	< 0.00079	< 0.0052 [< 0.0053]	< 0.0053	< 0.0052	< 0.0053 [< 0.0053]	< 0.0057	< 0.0054
Heptachlor epoxide	1024-57-3	1.1	10	< 0.0056	< 0.0061	< 0.0065	< 0.0067	< 0.0054	< 0.00079	< 0.0052 [< 0.0053]	< 0.0053	< 0.0052	< 0.0053 [< 0.0053]	< 0.0057	< 0.0054
Methoxychlor	72-43-5	630	16,000	< 0.0056	< 0.0061	< 0.0065	< 0.0067	< 0.0054	< 0.0016	< 0.0052 [< 0.0053]	< 0.0053	< 0.0052	< 0.0053 [< 0.0053]	< 0.0057	< 0.0054
Toxaphene	8001-35-2	1.2	83	< 0.028	< 0.03	< 0.032	< 0.033	< 0.027	< 0.02	< 0.026 [< 0.026]	< 0.027	< 0.026	< 0.026 [< 0.027]	< 0.028	< 0.027
trans-chlordane	5103-74-2	- -	- -	NA	NA	NA	NA	NA	< 0.00079	NA	NA	NA	NA	NA	NA
Polychlorinated Biphenyls															
Aroclor 1242	53469-21-9	17	46	< 0.028	< 0.03	< 0.032	< 0.033	< 0.027	< 0.039	< 0.026 [< 0.026]	< 0.027	< 0.026	< 0.026 [< 0.027]	< 0.028	< 0.027
Aroclor 1248	12672-29-6	67	46	< 0.028	< 0.03	< 0.032	< 0.033	0.1	< 0.039	< 0.026 [< 0.026]	< 0.027	< 0.026	< 0.026 [< 0.027]	< 0.028	< 0.027
Aroclor 1254	11097-69-1	380	64	< 0.028	< 0.03	< 0.032	< 0.033	< 0.027	< 0.039	< 0.026 [< 0.026]	< 0.027	< 0.026	< 0.026 [< 0.027]	< 0.028	0.34
Aroclor 1260	11096-82-5	630	46	1	0.11	< 0.032	0.053	0.33	< 0.039	0.051 [< 0.026]	0.16	0.12	0.13 [0.13]	0.046	< 0.027
Aroclor 1262	37324-23-5	- -	- -	NA	NA	NA	NA	NA	< 0.039	NA	NA	NA	NA	NA	NA
Total PCBs	-	- -	- -	1	0.11	<0.032	0.053	0.43	<0.039	0.051 [< 0.026]	0.16	0.12	0.13 [0.13]	0.046	0.34

Table 8
Surface Soil Analytical Results – Detected Pesticides and PCBs (mg/kg)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID: / Sample Depth (ft): / Date Collected:	CAS Number	Soil Standards or PQLs		PCSB-48	PCSB-49	PCSB-50	PCSB-51	PCSB-52	PCSB-54	PCSB-55	PCSB-56	PCSB-57	PCSB-58	PCSB-59	PCSB-60	PCTP-61
		S-GW Used Aquifer TDS≤ 2,500 Non-Res (No Exceedances)	DC Non-Res Surf Soil (No Exceedances)	0.5 8/3/05	0.5 8/3/05	0.5 8/3/05	0.5 8/3/05	0.5 8/2/05	0.5 8/3/05	0.5 8/3/05	0.5 8/15/05	0.5 8/15/05	0.5 8/15/05	0.5 8/15/05	0.5 8/15/05	0.5 9/8/05
Pesticides																
4,4-DDD	72-54-8	120	380	< 0.0053	< 0.0052	< 0.0053	0.04	< 0.0054	< 0.0059	< 0.0054	< 0.0056	< 0.0057	< 0.0055	< 0.0055	< 0.0054 [< 0.0054]	< 0.0056 [< 0.0056]
4,4-DDE	72-55-9	170	270	< 0.0053	< 0.0052	< 0.0053	0.02	< 0.0054	0.027	< 0.0054	0.013	< 0.0057	0.013	< 0.0055	< 0.0054 [< 0.0054]	< 0.0056 [< 0.0056]
4,4-DDT	50-29-3	330	270	< 0.0053	0.011	0.078	0.05	< 0.0054	0.059	< 0.0054	< 0.0056	0.043	0.057	0.029	< 0.0054 [< 0.0054]	< 0.0056 [< 0.0056]
Aldrin	309-00-2	1.9	5.4	< 0.0053	< 0.0052	< 0.0053	< 0.0053	< 0.0054	< 0.0059	< 0.0054	< 0.0056	< 0.0057	< 0.0055	< 0.0055	< 0.0054 [< 0.0054]	< 0.0056 [< 0.0056]
Beta-BHC	319-85-7	0.88	51	< 0.0053	< 0.0052	< 0.0053	< 0.0053	< 0.0054	< 0.0059	< 0.0054	< 0.0056	< 0.0057	< 0.0055	< 0.0055	< 0.0054 [< 0.0054]	< 0.0056 [< 0.0056]
Chlordane	57-74-9	49	260	< 0.011	< 0.01	< 0.011	0.047	< 0.011	0.12	< 0.011	< 0.011	0.056	< 0.011	0.041	< 0.011 [< 0.011]	0.041 [0.044]
Dieldrin	60-57-1	0.47	5.7	< 0.0053	< 0.0052	0.024	< 0.0053	< 0.0054	< 0.0059	< 0.0054	0.032	< 0.0057	< 0.0055	< 0.0055	< 0.0054 [< 0.0054]	< 0.0056 [< 0.0056]
Endosulfan I	959-98-8	260	19,000	< 0.0053	< 0.0052	< 0.0053	< 0.0053	< 0.0054	< 0.0059	< 0.0054	< 0.0056	< 0.0057	< 0.0055	< 0.0055	< 0.0054 [< 0.0054]	< 0.0056 [< 0.0056]
Endosulfan II	33213-65-9	260	19,000	< 0.0053	< 0.0052	< 0.0053	< 0.0053	< 0.0054	< 0.0059	< 0.0054	< 0.0056	< 0.0057	< 0.0055	< 0.0055	< 0.0054 [< 0.0054]	< 0.0056 [< 0.0056]
Endosulfan sulfate	1031-07-8	70	19,000	< 0.0053	< 0.0052	< 0.0053	< 0.0053	< 0.0054	< 0.0059	< 0.0054	< 0.0056	< 0.0057	< 0.0055	< 0.0055	< 0.0054 [< 0.0054]	< 0.0056 [< 0.0056]
Endrin	72-20-8	5.5	960	< 0.0053	< 0.0052	< 0.0053	< 0.0053	< 0.0054	< 0.0059	< 0.0054	< 0.0056	< 0.0057	< 0.0055	< 0.0055	< 0.0054 [< 0.0054]	< 0.0056 [< 0.0056]
Endrin aldehyde	7421-93-4	- -	- -	< 0.0053	< 0.0052	< 0.0053	< 0.0053	< 0.0054	< 0.0059	< 0.0054	< 0.0056	< 0.0057	< 0.0055	< 0.0055	< 0.0054 [< 0.0054]	< 0.0056 [< 0.0056]
Endrin ketone	53494-70-5	- -	- -	< 0.0053	< 0.0052	< 0.0053	< 0.0053	< 0.0054	< 0.0059	< 0.0054	< 0.0056	< 0.0057	< 0.0055	< 0.0055	< 0.0054 [< 0.0054]	< 0.0056 [< 0.0056]
Heptachlor epoxide	1024-57-3	1.1	10	< 0.0053	< 0.0052	< 0.0053	< 0.0053	< 0.0054	< 0.0059	< 0.0054	< 0.0056	< 0.0057	< 0.0055	< 0.0055	< 0.0054 [< 0.0054]	< 0.0056 [< 0.0056]
Methoxychlor	72-43-5	630	16,000	< 0.0053	< 0.0052	< 0.0053	< 0.0053	< 0.0054	< 0.0059	< 0.0054	< 0.0056	< 0.0057	< 0.0055	< 0.0055	< 0.0054 [< 0.0054]	< 0.0056 [< 0.0056]
Toxaphene	8001-35-2	1.2	83	< 0.026	< 0.026	< 0.027	< 0.026	< 0.027	< 0.029	< 0.027	< 0.028	< 0.028	< 0.027	< 0.027	< 0.027 [< 0.027]	< 0.028 [< 0.028]
trans-chlordane	5103-74-2	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Polychlorinated Biphenyls																
Aroclor 1242	53469-21-9	17	46	< 0.026	< 0.026	< 0.027	< 0.026	< 0.027	< 0.029	< 0.027	< 0.028	< 0.028	< 0.027	< 0.027	< 0.027 [< 0.027]	< 0.028 [< 0.028]
Aroclor 1248	12672-29-6	67	46	< 0.026	< 0.026	< 0.027	< 0.026	< 0.027	< 0.029	< 0.027	1.7	< 0.028	< 0.027	< 0.027	< 0.027 [< 0.027]	< 0.028 [< 0.028]
Aroclor 1254	11097-69-1	380	64	< 0.026	< 0.026	< 0.027	< 0.026	< 0.027	0.32	< 0.027	< 0.028	0.11	0.13	0.21	0.5 [0.25]	< 0.028 [< 0.028]
Aroclor 1260	11096-82-5	630	46	< 0.026	0.053	0.14	0.12	0.12	< 0.029	0.069	< 0.028	< 0.028	< 0.027	< 0.027	< 0.027 [< 0.027]	1.3 [0.54]
Aroclor 1262	37324-23-5	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total PCBs	-	- -	- -	<0.026	0.053	0.14	0.12	0.12	0.32	0.069	1.7	0.11	0.13	0.21	0.5 [0.25]	1.3 [0.54]

Table 8
Surface Soil Analytical Results – Detected Pesticides and PCBs (mg/kg)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID: / Sample Depth (ft): / Date Collected:	CAS Number	Soil Standards or PQLs		PCTP-62	PCTP-63	PCTP-64	PCTP-65	PCTP-66	PCTP-66R	PCTP-66R	PCTP-66R-HC	PCTP-67	PCTP-68	PCTP-69	PCTP-70
		S-GW Used Aquifer TDS≤ 2,500 Non-Res (No Exceedances)	DC Non-Res Surf Soil (No Exceedances)	0.5 9/8/05	0.5 9/8/05	0.5 9/8/05	0.5 9/8/05	0.5 9/8/05	0-0.5 4/24/19	0.5-2 4/24/19	0-2 4/4/19	0.5 9/12/05	0.5 9/9/05	0.5 9/9/05	0.5 9/9/05
Pesticides															
4,4-DDD	72-54-8	120	380	NA	< 0.0053	< 0.0056	< 0.0056	< 0.0034	< 0.00075 [< 0.00078]	< 0.00069	< 0.00078	< 0.028 [< 0.027]	< 0.0035	< 0.0053	NA
4,4-DDE	72-55-9	170	270	NA	< 0.0053	< 0.0056	< 0.0056	< 0.0034	0.0047 J [0.0047 J]	< 0.00069	0.0030	< 0.028 [< 0.027]	< 0.0035	< 0.0053	NA
4,4-DDT	50-29-3	330	270	NA	< 0.0053	< 0.0056	< 0.0056	< 0.0034	0.0184 J [0.0222]	< 0.00069	0.0113	< 0.028 [0.073]	< 0.0035	< 0.0053	NA
Aldrin	309-00-2	1.9	5.4	NA	< 0.0053	< 0.0056	< 0.0056	< 0.0034	< 0.00075 [< 0.00078]	< 0.00069	< 0.00078	< 0.028 [< 0.027]	< 0.0035	< 0.0053	NA
Beta-BHC	319-85-7	0.88	51	NA	< 0.0053	< 0.0056	< 0.0056	< 0.0034	< 0.00075 [< 0.00078]	< 0.00069	< 0.00078	< 0.028 [< 0.027]	< 0.0035	< 0.0053	NA
Chlordane	57-74-9	49	260	NA	< 0.011	< 0.011	< 0.011	< 0.0068	NA	NA	NA	< 0.056 [< 0.055]	< 0.007	< 0.011	NA
Dieldrin	60-57-1	0.47	5.7	NA	< 0.0053	< 0.0056	< 0.0056	< 0.0034	< 0.00075 J [0.0043 J]	< 0.00069	< 0.00078	< 0.028 [< 0.027]	< 0.0035	< 0.0053	NA
Endosulfan I	959-98-8	260	19,000	NA	< 0.0053	< 0.0056	< 0.0056	< 0.0034	< 0.00075 [< 0.00078]	< 0.00069	< 0.00078	< 0.028 [< 0.027]	< 0.0035	< 0.0053	NA
Endosulfan II	33213-65-9	260	19,000	NA	< 0.0053	< 0.0056	< 0.0056	< 0.0034	< 0.00075 [< 0.00078]	< 0.00069	< 0.00078	< 0.028 [< 0.027]	< 0.0035	< 0.0053	NA
Endosulfan sulfate	1031-07-8	70	19,000	NA	< 0.0053	< 0.0056	< 0.0056	< 0.0034	0.0136 J [< 0.00078 J]	< 0.00069	< 0.00078	< 0.028 [< 0.027]	< 0.0035	< 0.0053	NA
Endrin	72-20-8	5.5	960	NA	< 0.0053	< 0.0056	< 0.0056	< 0.0034	< 0.00075 [< 0.00078]	< 0.00069	< 0.00078	< 0.028 [< 0.027]	< 0.0035	< 0.0053	NA
Endrin aldehyde	7421-93-4	- -	- -	NA	< 0.0053	< 0.0056	< 0.0056	< 0.0034	< 0.00075 [< 0.00078]	< 0.00069	< 0.00078	< 0.028 [< 0.027]	< 0.0035	< 0.0053	NA
Endrin ketone	53494-70-5	- -	- -	NA	< 0.0053	< 0.0056	< 0.0056	< 0.0034	< 0.00075 [< 0.00078]	< 0.00069	< 0.00078	< 0.028 [< 0.027]	< 0.0035	< 0.0053	NA
Heptachlor epoxide	1024-57-3	1.1	10	NA	< 0.0053	< 0.0056	< 0.0056	< 0.0034	< 0.00075 [0.0011 J]	< 0.00069	< 0.00078	< 0.028 [< 0.027]	< 0.0035	< 0.0053	NA
Methoxychlor	72-43-5	630	16,000	NA	< 0.0053	< 0.0056	< 0.0056	< 0.0034	< 0.0015 [< 0.0016]	< 0.0014	< 0.0016	< 0.028 [< 0.027]	< 0.0035	< 0.0053	NA
Toxaphene	8001-35-2	1.2	83	NA	< 0.026	< 0.028	< 0.028	< 0.017	< 0.019 [< 0.019]	< 0.017	< 0.02	< 0.14 [< 0.14]	< 0.018	< 0.026	NA
trans-chlordane	5103-74-2	- -	- -	NA	NA	NA	NA	NA	< 0.00075 [< 0.00078]	< 0.00069	< 0.00078	NA	NA	NA	NA
Polychlorinated Biphenyls															
Aroclor 1242	53469-21-9	17	46	< 0.028	< 0.026	< 0.028	< 0.028	< 0.017	< 0.037 [< 0.039]	< 0.035	< 0.2	< 0.028 [< 0.027]	< 0.018	< 0.026	< 0.028
Aroclor 1248	12672-29-6	67	46	0.15	0.11	< 0.028	< 0.028	< 0.017	< 0.037 [< 0.039]	< 0.035	< 0.2	< 0.028 [< 0.027]	< 0.018	< 0.026	< 0.028
Aroclor 1254	11097-69-1	380	64	< 0.028	< 0.026	< 0.028	< 0.028	< 0.017	< 0.037 [< 0.039]	< 0.035	< 0.2	< 0.028 [< 0.027]	< 0.018	1.3	< 0.028
Aroclor 1260	11096-82-5	630	46	0.43	0.12	0.36	< 0.028	< 0.017	< 0.037 [< 0.039]	< 0.035	0.369	0.25 [0.2]	< 0.018	< 0.026	< 0.028
Aroclor 1262	37324-23-5	- -	- -	NA	NA	NA	NA	NA	0.249 [0.336]	< 0.035	< 0.2	NA	NA	NA	NA
Total PCBs	-	- -	- -	0.58	0.23	0.36	<0.028	<0.017	0.249 [0.336]	<0.035	0.369	0.25 [0.2]	<0.018	1.3	<0.028

Table 8
Surface Soil Analytical Results – Detected Pesticides and PCBs (mg/kg)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID: / Sample Depth (ft): / Date Collected:	CAS Number	Soil Standards or PQLs		PCTP-71	PCTP-72	PCTP-73	PCTP-73R	PCTP-74	PCTP-75	PCTP-76	PCTP-77	PCTP-78	PCTP-79	PSSTP-01A	PSSTP-02A	PSSTP-03A	PSSTP-04A
		S-GW Used Aquifer TDS≤ 2,500 Non-Res (No Exceedances)	DC Non-Res Surf Soil (No Exceedances)	0.5 9/9/05	0.5 9/9/05	0.5 9/9/05	0-0.5 4/10/19	0.5 9/9/05	0.5 9/9/05	0.5 9/12/05	0.5 9/12/05	0.5 9/12/05	0.5 9/12/05	1-2 3/11/03	1-2 3/11/03	1-2 3/11/03	1-2 3/11/03
Pesticides																	
4,4-DDD	72-54-8	120	380	< 0.0052	< 0.0057	< 0.0056	< 0.00076	< 0.0054	< 0.0052	< 0.0054	< 0.0054	< 0.027	< 0.027	0.011	0.057	< 0.004	0.047
4,4-DDE	72-55-9	170	270	< 0.0052	0.0081	< 0.0056	0.0165 J	< 0.0054	< 0.0052	< 0.0054	< 0.0054	0.055	< 0.027	0.002	0.012	< 0.004	< 0.0038
4,4-DDT	50-29-3	330	270	< 0.0052	< 0.0057	< 0.0056	0.0347 JN	0.027	< 0.0052	< 0.0054	0.026	< 0.027	< 0.027	0.0052	0.012	< 0.004	0.073
Aldrin	309-00-2	1.9	5.4	< 0.0052	< 0.0057	< 0.0056	< 0.00076	< 0.0054	< 0.0052	< 0.0054	< 0.0054	< 0.027	< 0.027	< 0.0037	< 0.0038	< 0.004	< 0.0038
Beta-BHC	319-85-7	0.88	51	< 0.0052	< 0.0057	< 0.0056	< 0.00076	< 0.0054	< 0.0052	< 0.0054	< 0.0054	< 0.027	< 0.027	< 0.0037	< 0.0038	< 0.004	< 0.0038
Chlordane	57-74-9	49	260	< 0.01	0.056	< 0.011	NA	0.056	0.053	< 0.011	< 0.011	4.5 E	0.29	< 0.0075	< 0.0038	< 0.008	< 0.0077
Dieldrin	60-57-1	0.47	5.7	< 0.0052	< 0.0057	< 0.0056	< 0.00076	< 0.0054	< 0.0052	0.014	< 0.0054	< 0.027	< 0.027	< 0.0037	0.01	< 0.004	< 0.0038
Endosulfan I	959-98-8	260	19,000	< 0.0052	< 0.0057	< 0.0056	< 0.00076	< 0.0054	< 0.0052	< 0.0054	< 0.0054	< 0.027	< 0.027	< 0.0037	< 0.0038	< 0.004	0.012
Endosulfan II	33213-65-9	260	19,000	< 0.0052	< 0.0057	< 0.0056	< 0.00076	< 0.0054	< 0.0052	< 0.0054	< 0.0054	< 0.027	< 0.027	< 0.0037	< 0.0038	< 0.004	< 0.0038
Endosulfan sulfate	1031-07-8	70	19,000	< 0.0052	< 0.0057	< 0.0056	< 0.00076	< 0.0054	< 0.0052	< 0.0054	< 0.0054	< 0.027	< 0.027	< 0.0037	< 0.0038	< 0.004	0.04
Endrin	72-20-8	5.5	960	< 0.0052	< 0.0057	< 0.0056	< 0.00076	< 0.0054	< 0.0052	< 0.0054	< 0.0054	< 0.027	< 0.027	< 0.0037	< 0.0038	< 0.004	< 0.0038
Endrin aldehyde	7421-93-4	- -	- -	< 0.0052	< 0.0057	< 0.0056	0.0388	< 0.0054	< 0.0052	< 0.0054	< 0.0054	< 0.027	< 0.027	< 0.0037	< 0.0038	0.034	0.058
Endrin ketone	53494-70-5	- -	- -	< 0.0052	< 0.0057	< 0.0056	0.0091	< 0.0054	< 0.0052	< 0.0054	< 0.0054	< 0.027	< 0.027	< 0.0037	< 0.0038	< 0.004	< 0.0038
Heptachlor epoxide	1024-57-3	1.1	10	< 0.0052	< 0.0057	< 0.0056	0.0069 JN	< 0.0054	< 0.0052	< 0.0054	< 0.0054	< 0.027	< 0.027	< 0.0037	< 0.0038	< 0.004	0.012
Methoxychlor	72-43-5	630	16,000	< 0.0052	< 0.0057	< 0.0056	< 0.0015	< 0.0054	< 0.0052	< 0.0054	< 0.0054	< 0.027	< 0.027	< 0.0037	< 0.0038	< 0.004	< 0.0038
Toxaphene	8001-35-2	1.2	83	< 0.026	< 0.028	< 0.028	< 0.019	< 0.027	< 0.026	< 0.027	< 0.027	< 0.13	< 0.13	< 0.019	< 0.019	< 0.02	< 0.019
trans-chlordane	5103-74-2	- -	- -	NA	NA	NA	< 0.00076	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Polychlorinated Biphenyls																	
Aroclor 1242	53469-21-9	17	46	< 0.026	< 0.028	< 0.56	< 0.038	< 0.027	< 0.026	< 0.027	< 0.027	< 0.027	< 0.027	< 0.019	< 0.019	0.12	0.12
Aroclor 1248	12672-29-6	67	46	< 0.026	< 0.028	< 0.56	< 0.038	< 0.027	< 0.026	< 0.027	0.053	< 0.027	< 0.027	< 0.019	< 0.019	< 0.02	< 0.02
Aroclor 1254	11097-69-1	380	64	0.21	< 0.028	7.9	0.932	< 0.027	< 0.026	< 0.027	< 0.027	< 0.027	< 0.027	0.08	< 0.019	< 0.02	0.49
Aroclor 1260	11096-82-5	630	46	< 0.026	0.3	< 0.56	< 0.038	< 0.027	0.055	0.37	0.39	< 0.027	0.27	< 0.019	0.43	0.094	< 0.02
Aroclor 1262	37324-23-5	- -	- -	NA	NA	NA	< 0.038	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total PCBs	-	- -	- -	0.21	0.3	7.9	0.932	<0.027	0.055	0.37	0.443	<0.027	0.27	0.08	0.43	0.214	0.61

Table 8
Surface Soil Analytical Results – Detected Pesticides and PCBs (mg/kg)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID: / Sample Depth (ft): / Date Collected:	CAS Number	Soil Standards or PQLs		PSSTP-04R	PSSTP-05A	PSSTP-06A	PSSTP-07A	PSSTP-07R	PSSTP-08A	PSSTP-09A	PSSTP-10A	PSSTP-10R	PSSTP-11A	PSSTP-12A
		S-GW Used Aquifer TDS≤ 2,500 Non-Res (No Exceedances)	DC Non-Res Surf Soil (No Exceedances)	1-2 4/11/19	1-2 3/11/03	1-2 3/11/03	1-2 3/11/03	0.5-2 4/18/19	1-2 3/11/03	1-2 3/12/03	1-2 3/12/03	1-2 4/16/19	1-2 3/12/03	1-2 3/12/03
Pesticides														
4,4-DDD	72-54-8	120	380	< 0.00074	< 0.0039	< 0.0042	< 0.0043	0.0025 [0.0016]	< 0.0041	< 0.0043	< 0.0038	< 0.00073	< 0.0038	< 0.04
4,4-DDE	72-55-9	170	270	< 0.00074	0.027	< 0.0042	< 0.0043	< 0.00080 [< 0.00072]	< 0.0041	< 0.0043	< 0.0038	< 0.00073 J	< 0.0038	< 0.04
4,4-DDT	50-29-3	330	270	0.0414 J	0.098	0.021	< 0.0043	0.0076 [0.0049]	0.025	< 0.0043	0.017	< 0.00073	< 0.0038	0.48
Aldrin	309-00-2	1.9	5.4	0.0152 JN	< 0.0039	< 0.0042	< 0.0043	< 0.00080 [< 0.00072]	< 0.0041	< 0.0043	< 0.0038	< 0.00073	< 0.0038	< 0.04
Beta-BHC	319-85-7	0.88	51	< 0.00074	0.012	< 0.0042	< 0.0043	< 0.00080 [< 0.00072]	< 0.0041	< 0.0043	< 0.0038	< 0.00073	< 0.0038	< 0.04
Chlordane	57-74-9	49	260	NA	< 0.0078	< 0.0084	0.067	NA	< 0.0082	0.025	< 0.0076	NA	< 0.0076	< 0.08
Dieldrin	60-57-1	0.47	5.7	0.0176	< 0.0039	< 0.0042	< 0.0043	< 0.00080 [< 0.00072]	< 0.0041	< 0.0043	< 0.0038	< 0.00073	< 0.0038	< 0.04
Endosulfan I	959-98-8	260	19,000	< 0.00074	< 0.0039	< 0.0042	< 0.0043	< 0.00080 [< 0.00072]	< 0.0041	< 0.0043	< 0.0038	< 0.00073	< 0.0038	< 0.04
Endosulfan II	33213-65-9	260	19,000	< 0.00074	0.04	< 0.0042	< 0.0043	< 0.00080 [< 0.00072]	< 0.0041	< 0.0043	< 0.0038	< 0.00073	< 0.0038	< 0.04
Endosulfan sulfate	1031-07-8	70	19,000	< 0.00074	0.0083	< 0.0042	< 0.0043	< 0.00080 [< 0.00072]	< 0.0041	< 0.0043	< 0.0038	< 0.00073	< 0.0038	< 0.04
Endrin	72-20-8	5.5	960	< 0.00074	< 0.0039	< 0.0042	< 0.0043	< 0.00080 [< 0.00072]	< 0.0041	< 0.0043	< 0.0038	< 0.00073	< 0.0038	< 0.04
Endrin aldehyde	7421-93-4	- -	- -	0.0179 JN	< 0.0039	< 0.0042	< 0.0043	< 0.00080 [< 0.00072]	< 0.0041	0.02	< 0.0038	< 0.00073	< 0.0038	< 0.04
Endrin ketone	53494-70-5	- -	- -	< 0.00074	< 0.0039	< 0.0042	< 0.0043	< 0.00080 [< 0.00072]	< 0.0041	< 0.0043	< 0.0038	< 0.00073	< 0.0038	< 0.04
Heptachlor epoxide	1024-57-3	1.1	10	0.0111 JN	< 0.0039	< 0.0042	< 0.0043	0.0012 J [0.00099]	< 0.0041	< 0.0043	< 0.0038	< 0.00073	< 0.0038	< 0.04
Methoxychlor	72-43-5	630	16,000	< 0.0015	< 0.0039	< 0.0042	< 0.0043	< 0.0016 [< 0.0014]	< 0.0041	< 0.0043	< 0.0038	< 0.0015	< 0.0038	< 0.04
Toxaphene	8001-35-2	1.2	83	< 0.018	0.02 HD	< 0.021	< 0.042	< 0.02 [< 0.018]	< 0.021	< 0.022	< 0.019	< 0.018	< 0.019	< 0.2
trans-chlordane	5103-74-2	- -	- -	< 0.00074	NA	NA	NA	0.0015 JN [0.0012 J]	NA	NA	NA	< 0.00073 J	NA	NA
Polychlorinated Biphenyls														
Aroclor 1242	53469-21-9	17	46	< 0.037	< 0.02	< 0.021	< 0.021	< 0.04 [< 0.036]	< 0.021	< 0.022	< 0.019	< 0.037	< 0.019	< 0.02
Aroclor 1248	12672-29-6	67	46	< 0.037	< 0.02	< 0.021	< 0.021	< 0.04 [< 0.036]	< 0.021	< 0.022	< 0.019	< 0.037	< 0.019	0.098
Aroclor 1254	11097-69-1	380	64	1.27 J	< 0.02	< 0.021	< 0.021	< 0.04 [0.0610]	< 0.021	< 0.022	< 0.019	< 0.037	< 0.019	< 0.02
Aroclor 1260	11096-82-5	630	46	< 0.037	0.83	0.11	0.18	< 0.04 [< 0.036]	0.12	0.05	< 0.019	< 0.037	< 0.019	0.32
Aroclor 1262	37324-23-5	- -	- -	< 0.037	NA	NA	NA	< 0.04 [< 0.036]	NA	NA	NA	< 0.037	NA	NA
Total PCBs	-	- -	- -	1.27	0.83	0.11	0.18	< 0.04 [0.0610]	0.12	0.05	<0.019	<0.037	<0.019	0.418

Table 8
Surface Soil Analytical Results – Detected Pesticides and PCBs (mg/kg)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID: / Sample Depth (ft): / Date Collected:	CAS Number	Soil Standards or PQLs		PSSTP-13A 1-2 3/12/03	PSSTP-14A 1-2 3/12/03	PSSTP-15A 1-2 3/12/03	PSSTP-16A 1-2 3/12/03	PSSTP-17A 1-2 3/12/03	PSSTP-18A 1-2 3/12/03	PSSTP-19A 1-2 3/12/03	PSSTP-20A 1-2 3/13/03	PSSTP-21A 1-2 3/13/03	PSSTP-22A 1-2 3/13/03	PSSTP-22R 0.5-2 4/24/19	PSSTP-23A 1-2 3/13/03
		S-GW Used Aquifer TDS≤ 2,500 Non-Res (No Exceedances)	DC Non-Res Surf Soil (No Exceedances)												
Pesticides															
4,4-DDD	72-54-8	120	380	< 0.0037	< 0.0048	< 0.0041	< 0.02	< 0.04	< 0.0039	< 0.004	< 0.0039	< 0.0042	< 0.0039	0.0306 J	< 0.004
4,4-DDE	72-55-9	170	270	< 0.0037	< 0.0048	< 0.0041	< 0.02	< 0.04	< 0.0039	< 0.004	< 0.0039	< 0.0042	< 0.0039	< 0.00075	< 0.004
4,4-DDT	50-29-3	330	270	< 0.0037	< 0.0048	< 0.0041	< 0.02	< 0.04	0.013	0.018	0.01	0.045	0.053	< 0.00075	< 0.004
Aldrin	309-00-2	1.9	5.4	< 0.0037	< 0.0048	0.0074	< 0.02	< 0.04	< 0.0039	< 0.004	< 0.0039	< 0.0042	< 0.0039	< 0.00075	< 0.004
Beta-BHC	319-85-7	0.88	51	< 0.0037	< 0.0048	< 0.0041	< 0.02	< 0.04	< 0.0039	< 0.004	< 0.0039	< 0.0042	< 0.0039	< 0.00075	< 0.004
Chlordane	57-74-9	49	260	< 0.0075	< 0.0095	< 0.0081	0.16	0.45	0.083	< 0.08	< 0.0078	< 0.0084	< 0.0078	NA	< 0.0079
Dieldrin	60-57-1	0.47	5.7	< 0.0037	< 0.0048	0.046	0.024	0.18	0.026	< 0.004	< 0.0039	< 0.0042	< 0.0039	< 0.00075	< 0.004
Endosulfan I	959-98-8	260	19,000	< 0.0037	< 0.0048	< 0.0041	< 0.02	< 0.04	< 0.0039	< 0.004	< 0.0039	< 0.0042	< 0.0039	< 0.00075	< 0.004
Endosulfan II	33213-65-9	260	19,000	< 0.0037	< 0.0048	< 0.0041	< 0.02	< 0.04	< 0.0039	< 0.004	< 0.0039	< 0.0042	0.016	< 0.00075	< 0.004
Endosulfan sulfate	1031-07-8	70	19,000	< 0.0037	< 0.0048	< 0.0041	< 0.02	< 0.04	< 0.0039	< 0.004	< 0.0039	< 0.0042	0.088	< 0.00075	< 0.004
Endrin	72-20-8	5.5	960	< 0.0037	< 0.0048	< 0.0041	< 0.02	< 0.04	< 0.0039	< 0.004	< 0.0039	< 0.0042	< 0.0039	< 0.00075	< 0.004
Endrin aldehyde	7421-93-4	- -	- -	< 0.0037	< 0.0048	< 0.0041	< 0.02	< 0.04	< 0.0039	< 0.004	< 0.0039	< 0.0042	< 0.0039	< 0.00075	< 0.004
Endrin ketone	53494-70-5	- -	- -	< 0.0037	< 0.0048	< 0.0041	< 0.02	< 0.04	< 0.0039	< 0.004	< 0.0039	< 0.0042	< 0.0039	< 0.00075	< 0.004
Heptachlor epoxide	1024-57-3	1.1	10	< 0.0037	< 0.0048	< 0.0041	< 0.02	< 0.04	< 0.0039	< 0.004	< 0.0039	< 0.0042	< 0.0039	< 0.00075	< 0.004
Methoxychlor	72-43-5	630	16,000	< 0.0037	< 0.0048	< 0.0041	< 0.02	< 0.04	< 0.0039	< 0.004	< 0.0039	< 0.0042	< 0.0039	< 0.0015	< 0.004
Toxaphene	8001-35-2	1.2	83	< 0.019	< 0.024	< 0.02	< 0.1	< 0.2	< 0.02	< 0.02	< 0.019	< 0.021	< 0.019	< 0.019	< 0.02
trans-chlordane	5103-74-2	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.00075	NA
Polychlorinated Biphenyls															
Aroclor 1242	53469-21-9	17	46	< 0.019	< 0.024	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.019	< 0.021	< 0.019	< 0.037	< 0.02
Aroclor 1248	12672-29-6	67	46	< 0.019	< 0.024	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.019	< 0.021	< 0.019	< 0.037	< 0.02
Aroclor 1254	11097-69-1	380	64	< 0.019	< 0.024	0.096	< 0.02	0.25	< 0.02	< 0.02	0.11	< 0.021	< 0.019	< 0.037	< 0.02
Aroclor 1260	11096-82-5	630	46	< 0.019	< 0.024	< 0.02	0.63	< 0.02	0.12	0.23	< 0.019	0.25	< 0.019	< 0.037	< 0.02
Aroclor 1262	37324-23-5	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.037	NA
Total PCBs	-	- -	- -	<0.019	<0.024	0.096	0.63	0.25	0.12	0.23	0.11	0.25	<0.019	<0.037	<0.02

Table 8
Surface Soil Analytical Results – Detected Pesticides and PCBs (mg/kg)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID:		Soil Standards or PQLs		PSSTP-24A	PSSTP-25A	PSSTP-26A	PSSTP-27A	PSSTP-28A	PSSTP-29A	PSSTP-30A	S-138		S-139		S-140	
Sample Depth (ft):				1-2	1-2	1-2	1-2	1-2	1-2	1-2	0-0.5	0.5-2	0-0.5	0.5-2	0-0.5	0.5-2
Date Collected:	CAS Number	S-GW Used Aquifer TDS≤ 2,500 Non-Res (No Exceedances)	DC Non-Res Surf Soil (No Exceedances)	3/13/03	3/13/03	3/13/03	3/13/03	3/13/03	3/13/03	3/13/03	4/5/19	4/5/19	4/10/19	4/10/19	4/10/19	4/10/19
Pesticides																
4,4-DDD	72-54-8	120	380	< 0.004	< 0.0041	< 0.041	0.067	0.011	< 0.0037	0.086	NA	NA	NA	NA	NA	NA
4,4-DDE	72-55-9	170	270	< 0.004	< 0.0041	< 0.041	< 0.0039	< 0.038	< 0.0037	0.021	NA	NA	NA	NA	NA	NA
4,4-DDT	50-29-3	330	270	< 0.004	< 0.0041	< 0.041	0.044	< 0.038	0.02	0.098	NA	NA	NA	NA	NA	NA
Aldrin	309-00-2	1.9	5.4	< 0.004	< 0.0041	< 0.041	< 0.0039	< 0.038	< 0.0037	< 0.0044	NA	NA	NA	NA	NA	NA
Beta-BHC	319-85-7	0.88	51	< 0.004	< 0.0041	< 0.041	< 0.0039	< 0.038	< 0.0037	< 0.0044	NA	NA	NA	NA	NA	NA
Chlordane	57-74-9	49	260	< 0.008	< 0.0081	0.52	< 0.0078	0.016	< 0.0075	< 0.0088	NA	NA	NA	NA	NA	NA
Dieldrin	60-57-1	0.47	5.7	< 0.004	< 0.0041	< 0.041	< 0.0039	< 0.038	< 0.0037	0.016	NA	NA	NA	NA	NA	NA
Endosulfan I	959-98-8	260	19,000	< 0.004	< 0.0041	< 0.041	< 0.0039	< 0.038	< 0.0037	< 0.0044	NA	NA	NA	NA	NA	NA
Endosulfan II	33213-65-9	260	19,000	< 0.004	< 0.0041	< 0.041	< 0.0039	< 0.038	< 0.0037	< 0.0044	NA	NA	NA	NA	NA	NA
Endosulfan sulfate	1031-07-8	70	19,000	< 0.004	< 0.0041	< 0.041	< 0.0039	0.02	< 0.0037	0.039	NA	NA	NA	NA	NA	NA
Endrin	72-20-8	5.5	960	< 0.004	< 0.0041	< 0.041	< 0.0039	0.0057	< 0.0037	0.015	NA	NA	NA	NA	NA	NA
Endrin aldehyde	7421-93-4	- -	- -	0.0071	< 0.0041	0.32	< 0.0039	< 0.038	< 0.0037	< 0.0044	NA	NA	NA	NA	NA	NA
Endrin ketone	53494-70-5	- -	- -	< 0.004	< 0.0041	< 0.041	< 0.0039	< 0.038	< 0.0037	< 0.0044	NA	NA	NA	NA	NA	NA
Heptachlor epoxide	1024-57-3	1.1	10	< 0.004	< 0.0041	< 0.041	< 0.0039	< 0.038	< 0.0037	< 0.0044	NA	NA	NA	NA	NA	NA
Methoxychlor	72-43-5	630	16,000	< 0.004	< 0.0041	< 0.041	< 0.0039	0.014	< 0.0037	< 0.0044	NA	NA	NA	NA	NA	NA
Toxaphene	8001-35-2	1.2	83	< 0.02	< 0.02	< 0.2	< 0.019	< 19	< 0.019	< 0.022	NA	NA	NA	NA	NA	NA
trans-chlordane	5103-74-2	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Polychlorinated Biphenyls																
Aroclor 1242	53469-21-9	17	46	< 0.02	< 0.02	< 0.02	< 0.097	< 0.019	< 0.019	< 0.023	< 0.036	< 0.034	< 0.036	< 0.035	< 0.041	< 0.038
Aroclor 1248	12672-29-6	67	46	< 0.02	< 0.02	< 0.02	< 0.097	< 0.019	< 0.019	< 0.023	< 0.036	< 0.034	< 0.036	< 0.035	< 0.041	< 0.038
Aroclor 1254	11097-69-1	380	64	< 0.02	< 0.02	< 0.02	< 0.097	< 0.019	< 0.019	< 0.023	0.159	0.426	0.406	0.171	0.0256 J	< 0.038
Aroclor 1260	11096-82-5	630	46	< 0.02	0.081	0.092	0.2	< 0.019	0.077	< 0.023	< 0.036	< 0.034	< 0.036	< 0.035	< 0.041	< 0.038
Aroclor 1262	37324-23-5	- -	- -	NA	NA	NA	NA	NA	NA	NA	< 0.036	< 0.034	< 0.036	< 0.035	< 0.041	< 0.038
Total PCBs	-	- -	- -	<0.02	0.081	0.092	0.2	<0.019	0.077	<0.023	0.159	0.426	0.406	0.171	0.0256	<0.038

Notes:

1. Samples prior to 2019 were collected by Paulus, Sokolowski, and Sartor Engineering, PC on the dates indicated. Samples in 2019 were collected by Arcadis on the dates indicated.
2. Sample depth is reported in feet below ground surface.
3. 2003 and 2005 samples were analyzed by Hampton-Clarke, Veritech Laboratories of Fairfield, New Jersey.
4. 2019 samples were analyzed by SGS North America Incorporated Laboratories of Dayton, New Jersey.
5. Samples were submitted for laboratory analysis for one or more of the following constituent groups, as indicated above.
   - Pesticides using United States Environmental Protection Agency (USEPA) SW-846 Method 8081.
   - Polychlorinated biphenyls (PCBs) using USEPA SW-846 Method 8082.
6. Only compounds detected in one or more samples are shown in this table.
7. < = constituent not detected at a concentration above the reported detection limit. These results are also reported in gray.
8. NA = Not Analyzed.
9. Concentrations reported in milligrams per kilogram (mg/kg) or parts per million (ppm).
10. Soil standards obtained from the Pennsylvania Department of Environmental Protection (PADEP) Medium Specific Concentrations (MSCs) established in Title 25 of the Pennsylvania Code Chapter 250, Administration of the Land Recycling Program (Act 2 cleanup standards) updated on November 20, 2021, and include:
    (a) The soil to groundwater MSCs for a non-residential used aquifer with total dissolved solids (TDS) less than or equal to 2,500 parts per million (ppm). The higher of the 100 X groundwater MSC or generic value is used.
    (b) The non-residential direct contact MSC for surface soil.
11. No results exceed the PADEP non-residential direct contact MSC (for surface soil) or the PADEP soil to groundwater MSC (for a non-residential used aquifer with TDS ≤ 2,500 ppm).
12. - - = No PADEP MSC.
13. - = No actual Chemical Abstracts Service (CAS) number is available.
14. Brackets indicate the reported concentration of a duplicate sample.
15. Qualifier Definitions:
    E = Serial dilution results not within 10%. Applicable only if analyte concentration is at least 50X the IDL in original sample.
    HD = Unknown. Potential ND mistranscribed. Laboratory analytical report not available.
    J = Analyte is an estimated value.
    N = There is presumptive evidence to make a tentative identification of this compound.
16. Data from 2019 have undergone a Tier II validation. Data prior to 2019 have not been validated.

Table 9
Unsaturated Soil Analytical Results – Detected VOCs, SVOCs, and Inorganics (mg/kg)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID: / Sample Depth (ft): / Date Collected:	CAS Number	Soil Standards or PQLs: S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	Soil Standards or PQLs: DC Non-Res Subsurf Soil (Exceedances Shaded)	MW-103 6-7 5/16/18	MW-108 5-7 9/24/19	MW-108 10-12 9/24/19	PCSB-17 4 3/17/05	PCSB-30 2 7/26/05	PCSB-46 4 7/27/05	PCSB-47 4 8/3/05	PCSB-48 4 8/3/05	PCSB-51 3 8/3/05	PCSB-53 3.5 8/1/05	PCSB-56 2 8/15/05	PCSB-57 2.5 8/15/05	PCSB-58 5 8/15/05
Volatile Organic Compounds																
1,1,1-Trichloroethane	71-55-6	20	10,000	< 0.0020	< 17	< 0.0047	< 0.0004	< 0.00038	< 0.00028	< 0.0014	< 0.027	< 0.00035	< 0.00028	< 0.00032	< 0.00029	< 0.00032
1,1-Dichloroethane	75-34-3	16	1,600	< 0.0010	< 8.5	< 0.0024	< 0.0012	< 0.0011	< 0.00085	< 0.0042	< 0.044	< 0.0011	< 0.00085	< 0.00098	< 0.00087	< 0.00098
1,2,3-Trichlorobenzene	87-61-6	- -	- -	< 0.0051	< 43	< 0.012	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	120-82-1	27	190	< 0.0051	< 43	< 0.012	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	541-73-1	61	10,000	< 0.0010	< 8.5	R	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	106-46-7	10	230	< 0.0010	< 8.5	R	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Butanone (MEK)	78-93-3	400	10,000	< 0.01	< 85	< 0.024	< 0.0013	< 0.0012	< 0.00088	< 0.0043	< 0.062	< 0.0011	< 0.00088	< 0.001	< 0.0009	< 0.001
Acetone	67-64-1	8,800	10,000	0.0380 J	< 85	0.0163 J	0.048	< 0.008	< 0.006	0.18	< 0.44	0.05	0.023	< 0.0069	< 0.0061	< 0.0069
Benzene	71-43-2	0.5	330	< 0.00051	***9.98***	< 0.0012	0.17	< 0.00077	< 0.00057	< 0.0028	< 0.033	< 0.00072	< 0.00057	< 0.00066	< 0.00059	< 0.00066
Carbon Disulfide	75-15-0	620	10,000	< 0.0020	8.42 J	< 0.0047	0.0019	< 0.00098	< 0.00073	< 0.0036	< 0.053	< 0.00092	< 0.00073	< 0.00084	< 0.00075	< 0.00084
Carbon Tetrachloride	56-23-5	0.5	430	< 0.0020	< 17	< 0.0047	< 0.0014	< 0.0013	< 0.00095	< 0.0047	< 0.034	< 0.0012	< 0.00095	< 0.0011	< 0.00098	< 0.0011
Chloroform	67-66-3	8	110	< 0.0020	< 17	< 0.0047	< 0.00073	< 0.00069	< 0.00051	< 0.0025	< 0.031	< 0.00064	< 0.00051	< 0.00059	< 0.00052	< 0.00059
cis-1,2-Dichloroethene	156-59-2	7	10,000	< 0.0010	< 8.5	< 0.0024	< 0.00077	< 0.00072	< 0.00054	< 0.0026	< 0.025	< 0.00067	< 0.00054	< 0.00062	< 0.00055	< 0.00062
Cyclohexane	110-82-7	6,900	10,000	< 0.0020	< 17	0.0054	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichloromethane	75-09-2	0.5	10,000	0.0035 J	< 43	< 0.012	0.014 B	0.017 B	0.014 B	0.06 B	0.29 B	0.0038 B	0.016 B	0.048 B	0.035 B	0.03 B
Ethylbenzene	100-41-4	70	1,000	< 0.0010	< 8.5	< 0.0024 J	0.0092	< 0.0011	< 0.00084	< 0.0041	< 0.064	< 0.0011	< 0.00084	< 0.00097	< 0.00086	< 0.00097
m&p-Xylenes	ARC-mpXyl	- -	- -	< 0.0010	36.9	< 0.0024 J	0.23	< 0.0017	< 0.0012	< 0.0061	< 0.067	< 0.0016	0.0026	< 0.0014	< 0.0013	< 0.0014
Methyl Acetate	79-20-9	9,700	10,000	< 0.0051	< 43	< 0.012	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylcyclohexane	108-87-2	- -	- -	< 0.0020	< 17	0.0148	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
o,p-Xylene	136777-61-2	- -	- -	NA	NA	NA	0.095	< 0.00071	< 0.00053	< 0.0026	< 0.042	< 0.00066	0.0016	< 0.00061	< 0.00054	< 0.00061
o-Xylene	95-47-6	- -	- -	< 0.0010	14.4	0.0016 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene (Monomer)	100-42-5	24	10,000	< 0.0020	< 17	< 0.0047 J	< 0.001	< 0.00094	< 0.0007	< 0.0034	< 0.014	< 0.00087	< 0.0007	< 0.00081	< 0.00071	< 0.00081
Toluene	108-88-3	100	10,000	< 0.0010	12.5	< 0.0024 J	0.16	< 0.0011	< 0.00085	< 0.0042	< 0.021	< 0.0011	< 0.00085	< 0.00098	< 0.00087	< 0.00098
Total Xylenes	1330-20-7	1,000	9,100	< 0.0010	51.3	0.0040 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene	10061-02-6	- -	- -	< 0.0020	< 17	< 0.0047	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	79-01-6	0.5	180	< 0.0010	< 8.5	< 0.0024	< 0.00098	< 0.00093	< 0.00069	< 0.0034	< 0.029	< 0.00086	< 0.00069	< 0.00079	< 0.0007	< 0.00079
Semi-Volatile Organic Compounds																
1,1-Biphenyl	92-52-4	1.5	40	0.0223 J	***310 D***	0.0439 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4,5-Tetrachlorobenzene	95-94-3	13	190,000	< 0.2	< 5.2	< 0.23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,3,4,6-Tetrachlorophenol	58-90-2	4,500	190,000	< 0.2	< 5.2	< 0.23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	120-83-2	2	190,000	< 0.2	< 5.2	< 0.23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	105-67-9	190	10,000	< 0.2	94.9	< 0.23	< 19	< 0.043	< 0.032	< 0.16	< 0.64	< 0.065	< 0.16	< 0.06	< 0.16	< 0.06
2-Methylnaphthalene	91-57-6	100	270	0.0604	***1,610 D***	0.27	***250***	< 0.086	< 0.064	14	3.7	0.24	1.8	0.12	0.25	0.58
2-Methylphenol	95-48-7	490	190,000	< 0.081	37.3	< 0.09	< 35	< 0.19	< 0.14	< 0.69	< 2.8	< 0.22	< 0.53	< 0.21	< 0.55	< 0.21
3-Methylphenol, 4-Methylphenol	65794-96-9	- -	- -	< 0.081	75.8	< 0.09	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methylphenol	106-44-5	49	190,000	NA	NA	NA	< 43	< 0.19	< 0.14	< 0.69	< 2.8	< 0.25	< 0.6	< 0.23	< 0.61	< 0.23
Acenaphthene	83-32-9	4,700	190,000	0.291	160 D	0.0485	30	< 0.0083	< 0.0062	2.5	8	0.44	< 0.047	0.043	0.61	0.13
Acenaphthylene	208-96-8	6,600	190,000	0.0945	305 D	0.0363 J	110	< 0.0076	< 0.0057	< 0.028	< 0.11	< 0.011	< 0.026	0.48	0.12	0.062
Acetophenone	98-86-2	970	10,000	< 0.2	6.88	< 0.23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	120-12-7	350	190,000	0.708	***1,010 D***	0.0766	***540***	< 0.01	< 0.0074	0.75	2.2	0.32	1.2	0.42	2.2	0.46
Benz(a)anthracene	56-55-3	340	190,000	1.34	***1,050 D***	0.118	***410***	< 0.007	< 0.0052	< 0.026	< 0.11	0.34	0.53	3.4	4.7	1.2

Location ID: / Sample Depth (ft): / Date Collected:	CAS Number	Soil Standards or PQLs: S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	Soil Standards or PQLs: DC Non-Res Subsurf Soil (Exceedances Shaded)	MW-103 6-7 5/16/18	MW-108 5-7 9/24/19	MW-108 10-12 9/24/19	PCSB-17 4 3/17/05	PCSB-30 2 7/26/05	PCSB-46 4 7/27/05	PCSB-47 4 8/3/05	PCSB-48 4 8/3/05	PCSB-51 3 8/3/05	PCSB-53 3.5 8/1/05	PCSB-56 2 8/15/05	PCSB-57 2.5 8/15/05	PCSB-58 5 8/15/05
Semi-Volatile Organic Compounds (cont'd)																
Benzaldehyde	100-52-7	- -	- -	0.0248 J	< 5.2	< 0.23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	50-32-8	46	190,000	1.21	***681 D***	0.108	***290***	< 0.0084	< 0.0062	< 0.031	< 0.13	0.31	0.57	3.3	4.1	0.94
Benzo(b)fluoranthene	205-99-2	170	190,000	1.45	***903 D***	0.14	***390***	< 0.014	< 0.01	< 0.051	0.81	0.39	0.45	5.1	6	1.5
Benzo(g,h,i)perylene	191-24-2	180	190,000	0.776	***321 D***	0.0798	96	< 0.0073	< 0.0054	< 0.027	< 0.11	0.21	0.44	2	1.4	0.56
Benzo(k)fluoranthene	207-08-9	610	190,000	0.482	320 D	0.0536	130	< 0.018	< 0.013	< 0.065	< 0.27	0.17	0.14	1.7	1.6	0.43
bis(2-Ethylhexyl)phthalate	117-81-7	130	10,000	< 0.081	< 2.1	< 0.09	< 4.3	< 0.032	0.049	< 0.12	< 0.48	0.053	< 0.1	0.37	< 0.1	1.3
Butyl benzyl phthalate	85-68-7	10,000	10,000	< 0.081	< 2.1	< 0.09	< 6.5	< 0.014	< 0.01	< 0.05	< 0.21	< 0.019	< 0.045	< 0.017	< 0.046	1.6
Caprolactam	105-60-2	- -	- -	< 0.081	< 2.1	< 0.09	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbazole	86-74-8	89	190,000	0.236	***594 D***	0.0436 J	***200***	< 0.0097	< 0.0072	0.22	< 0.15	< 0.014	< 0.033	0.15	0.99	0.11
Chrysene	218-01-9	230	190,000	1.38	***927 D***	0.148	***400***	< 0.014	< 0.011	< 0.053	< 0.22	0.45	0.93	3.1	4.4	1.3
Dibenz(a,h)anthracene	53-70-3	270	190,000	0.191	119 D	< 0.045	45	< 0.0092	< 0.0069	< 0.034	< 0.14	0.055	< 0.039	0.78	0.49	0.28
Dibenzofuran	132-64-9	250	190,000	0.179	***1,270 D***	0.103	***340***	< 0.065	< 0.048	< 0.24	0.91 J	< 0.06	< 0.14	0.11	0.45	0.21
Diethyl phthalate	84-66-2	7,800	10,000	< 0.081	< 2.1	< 0.09	< 3.8	< 0.012	< 0.0088	< 0.044	< 0.18	< 0.013	< 0.031	< 0.012	< 0.032	< 0.012
Dimethyl phthalate	131-11-3	- -	- -	< 0.081	< 2.1	< 0.09	< 8	< 0.0087	< 0.0065	< 0.032	< 0.13	< 0.011	< 0.025	< 0.0098	< 0.026	< 0.0098
Di-n-butyl phthalate	84-74-2	4,000	10,000	< 0.081	< 2.1	< 0.09	< 3.6	< 0.01	< 0.0076	< 0.037	< 0.15	< 0.011	< 0.025	0.14 B	< 0.026	0.045 B
Di-n-octyl phthalate	117-84-0	10,000	10,000	< 0.081	< 2.1	< 0.09	< 3.7	< 0.017	< 0.013	< 0.063	< 0.26	< 0.011	< 0.027	< 0.01	< 0.027	< 0.01
Fluoranthene	206-44-0	3,200	190,000	2.93	2,470 D	0.241	1,100	< 0.0083	< 0.0062	0.41	1.4	0.5	0.69	3.3	9.5	2
Fluorene	86-73-7	3,800	190,000	0.342	1,940 D	0.127	500	< 0.012	< 0.009	2.3	8.4	< 0.012	2.7	0.099	0.87	0.22
Indeno(1,2,3-cd)pyrene	193-39-5	18,000	190,000	0.836	377 D	0.0718	140	< 0.0086	< 0.0064	< 0.031	< 0.13	0.18	0.21	1.9	1.3	0.52
Naphthalene	91-20-3	25	77	0.189	***8,500 D***	1.06	***1,200***	< 0.0049	< 0.0036	< 0.018	< 0.074	0.18	2.2	0.35	0.55	0.49
Pentachlorophenol	87-86-5	5	190,000	< 0.16	< 4.1	< 0.18	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	85-01-8	10,000	190,000	2.33	5,220 D	0.363	1,600	< 0.011	< 0.0083	5.9	17	0.53	3	1.4	7.1	1.9
Phenol	108-95-2	200	18,000	< 0.081	24.8	< 0.09	< 16	< 0.083	< 0.062	< 0.31	< 1.3	< 0.072	< 0.17	< 0.066	< 0.18	< 0.066
Pyrene	129-00-0	2,200	190,000	2.72	1,760 D	0.254	780	< 0.012	< 0.0086	0.73	2	0.7	1.8	5.6	9.1	2.4
Total PAHs and 2-Methylnaphthalene	-	- -	- -	17.3	27,700	3.20	8,010	< 0.086	< 0.064	26.6	43.5	5.02	16.7	33.1	54.3	15.0
Metals																
Aluminum	7429-90-5	- -	190,000	9,660	1,100	20,600	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	7440-36-0	27	190,000	< 2.4	2.6	< 2.7	< 2.4	11	< 2.2	< 2.2	< 2.3	< 2.8	< 2.2	4.8	3.2	3.5
Arsenic	7440-38-2	29	190,000	5.4	16.0	18.4	8.3	***140***	< 2.2	< 2.2	3.7	3.2	***37***	14	11	20
Barium	7440-39-3	8,200	190,000	118	194	189	85	450	13	69	220	66	27	100	99	120
Beryllium	7440-41-7	320	190,000	0.53	< 0.25	1.2	< 0.71	1.4	< 0.67	< 0.67	< 0.68	< 0.85	< 0.67	< 0.78	< 0.69	< 0.78
Cadmium	7440-43-9	38	190,000	< 0.61	< 1.3	< 1.3	< 0.71	15	< 0.67	0.67	< 0.68	< 0.85	< 0.67	1.2	< 0.69	< 0.78
Calcium	7440-70-2	- -	- -	16,100	2,190	3,280	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	7440-47-3	190,000	190,000	22.9	185	107	27	28	7.2	12	14	7.5	< 5.6	28	31	28
Cobalt	7440-48-4	130	190,000	6.2	< 6.3	13.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	7440-50-8	43,000	190,000	36.2	92.4	80.9	66	440	7.5	16	23	66	19	180	170	270
Cyanide	57-12-5	200	190,000	0.25	12.8	0.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	7439-89-6	- -	190,000	17,500	28,400	42,200	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	7439-92-1	450	190,000	229	145	150	150	***2,100***	< 5.6	35	***1,100***	160	42	360	310	160
Magnesium	7439-95-4	- -	- -	4,000	< 630	5,470	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	7439-96-5	2,000	190,000	228	116	640	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 9
Unsaturated Soil Analytical Results – Detected VOCs, SVOCs, and Inorganics (mg/kg)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID:		Soil Standards or PQLs		MW-103	MW-108		PCSB-17	PCSB-30	PCSB-46	PCSB-47	PCSB-48	PCSB-51	PCSB-53	PCSB-56	PCSB-57	PCSB-58
Sample Depth (ft):				6-7	5-7	10-12	4	2	4	4	4	3	3.5	2	2.5	5
Date Collected:	CAS Number	S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	DC Non-Res Subsurf Soil (Exceedances Shaded)	5/16/18	9/24/19	9/24/19	3/17/05	7/26/05	7/27/05	8/3/05	8/3/05	8/3/05	8/1/05	8/15/05	8/15/05	8/15/05
Metals (cont'd)																
Mercury	7439-97-6	10	190,000	0.30	3.5	0.50	2	0.53	< 0.094	0.25	0.22	0.2	< 0.094	0.28	0.38	0.15
Nickel	7440-02-0	650	190,000	14.3	32.6	33.2	11	48	5.7	25	11	8.3	7.6	44	20	27
Potassium	7440-09-7	- -	- -	1,260	< 1,300	2,770	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	7782-49-2	26	190,000	< 2.4	< 5.0	< 5.3	3.3	***29***	< 2	< 2	< 2	< 2.5	< 2	3.6	3.7	3.4
Silver	7440-22-4	84	190,000	< 0.61	< 1.3	1.4	< 3	6	< 2.8	< 2.8	< 2.8	< 3.5	< 2.8	< 3.2	< 2.9	< 3.2
Sodium	7440-23-5	- -	- -	< 1,200	< 1,300	< 1,300	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	7440-28-0	14	190,000	< 1.2	< 2.5	< 2.7	< 1.4	< 1.8	< 1.3	< 1.3	< 1.4	< 1.7	< 1.3	< 1.6	< 1.4	< 1.6
Vanadium	7440-62-2	680	190,000	23.3	8.7	37.9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	7440-66-6	12,000	190,000	169	94.0	445	190	3,900	13	330	170	< 14	45	500	350	94

Location ID: / Sample Depth (ft): / Date Collected:	CAS Number	Soil Standards or PQLs: S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	Soil Standards or PQLs: DC Non-Res Subsurf Soil (Exceedances Shaded)	PCTP-01 6 2/8/05	PCTP-01R 5-7 4/5/19	PCTP-02 5 2/8/05	PCTP-02R 4-6 4/5/19	PCTP-12 3 2/9/05	PCTP-12R 2-4 4/12/19	PCTP-14 2.5 3/3/05	PCTP-214 7.5 3/3/05	PCTP-16 2 2/10/05	PCTP-17R 5-6 4/15/19	PCTP-18 6 2/16/05	PCTP-36 6 2/18/05	PCTP-236 7 2/18/05
Volatile Organic Compounds																
1,1,1-Trichloroethane	71-55-6	20	10,000	< 0.00055	R	< 0.00053	R	< 1.1	< 0.0023	< 0.0014	< 0.00082	< 0.00082	< 1.6	< 0.00078	< 0.00096	< 0.00095
1,1-Dichloroethane	75-34-3	16	1,600	< 0.00047	R	< 0.00046	R	< 1.6	< 0.0011	< 0.0014	< 0.00084	< 0.00071	< 0.79	< 0.00067	< 0.00098	< 0.00097
1,2,3-Trichlorobenzene	87-61-6	- -	- -	NA	R	NA	R	NA	< 0.0056	NA	NA	NA	< 3.9	NA	NA	NA
1,2,4-Trichlorobenzene	120-82-1	27	190	NA	R	NA	R	NA	< 0.0056	NA	NA	NA	< 3.9	NA	NA	NA
1,3-Dichlorobenzene	541-73-1	61	10,000	NA	R	NA	R	NA	< 0.0011	NA	NA	NA	< 0.79	NA	NA	NA
1,4-Dichlorobenzene	106-46-7	10	230	NA	0.0020 J	NA	R	NA	< 0.0011	NA	NA	NA	< 0.79	NA	NA	NA
2-Butanone (MEK)	78-93-3	400	10,000	< 0.0029	0.0179 J	< 0.0028	R	< 22	< 0.011	< 0.0023	< 0.0013	< 0.0044	< 7.9	< 0.0041	< 0.0016	< 0.0016
Acetone	67-64-1	8,800	10,000	0.044	0.142 J	0.068	0.0110 J	< 4.9	0.0672	< 0.01	< 0.0061	< 0.003	< 7.9	< 0.0028	< 0.0072	< 0.0071
Benzene	71-43-2	0.5	330	< 0.00019	R	< 0.00018	R	***59***	0.0073	< 0.00074	< 0.00044	< 0.00028	***1.23***	< 0.00026	< 0.00051	< 0.00051
Carbon Disulfide	75-15-0	620	10,000	< 0.00034	0.0053 J	< 0.00033	R	< 0.92	< 0.0023	< 0.0015	< 0.00091	< 0.00051	< 1.6	< 0.00048	0.0057	< 0.0011
Carbon Tetrachloride	56-23-5	0.5	430	< 0.00049	R	< 0.00048	R	< 0.91	< 0.0023	< 0.0027	< 0.0016	< 0.00074	< 1.6	< 0.00069	< 0.0019	< 0.0019
Chloroform	67-66-3	8	110	< 0.00098	R	< 0.00095	R	< 2.1	< 0.0023	0.0056	0.0034	< 0.0015	< 1.6	0.0018	< 0.00053	< 0.00053
cis-1,2-Dichloroethene	156-59-2	7	10,000	< 0.0003	R	< 0.00029	R	< 1.3	< 0.0011	< 0.0011	< 0.00064	< 0.00045	< 0.79	< 0.00043	< 0.00075	< 0.00074
Cyclohexane	110-82-7	6,900	10,000	NA	R	NA	R	NA	< 0.0023	NA	NA	NA	< 1.6	NA	NA	NA
Dichloromethane	75-09-2	0.5	10,000	0.016 B	R	0.016 B	R	< 1.8	< 0.0056	0.05 B	0.023 B	0.013 B	< 3.9	0.021 B	0.021 B	0.021 B
Ethylbenzene	100-41-4	70	1,000	< 0.00066	R	< 0.00065	R	5.8	< 0.0011	< 0.002	< 0.0012	< 0.001	< 0.79	< 0.00094	< 0.0014	< 0.0014
m&p-Xylenes	ARC-mpXyl	- -	- -	< 0.00073	R	< 0.00071	R	86	< 0.0011	< 0.0024	< 0.0014	< 0.0011	3.88	< 0.001	< 0.0017	< 0.0017
Methyl Acetate	79-20-9	9,700	10,000	NA	R	NA	R	NA	< 0.0056	NA	NA	NA	< 3.9	NA	NA	NA
Methylcyclohexane	108-87-2	- -	- -	NA	R	NA	R	NA	< 0.0023	NA	NA	NA	< 1.6	NA	NA	NA
o,p-Xylene	136777-61-2	- -	- -	< 0.00024	NA	< 0.00023	NA	23	NA	< 0.00053	< 0.00031	< 0.00036	NA	< 0.00034	< 0.00037	< 0.00036
o-Xylene	95-47-6	- -	- -	NA	R	NA	R	NA	< 0.0011	NA	NA	NA	1.74	NA	NA	NA
Styrene (Monomer)	100-42-5	24	10,000	< 0.00018	R	< 0.00017	R	4.8	< 0.0023	< 0.00046	< 0.00027	< 0.00026	< 1.6	< 0.00025	< 0.00032	< 0.00032
Toluene	108-88-3	100	10,000	< 0.00033	0.00072 J	< 0.00032	R	75	0.0016	< 0.00055	< 0.00033	< 0.0005	1.65	< 0.00047	< 0.00038	< 0.00038
Total Xylenes	1330-20-7	1,000	9,100	NA	R	NA	R	< 1.2	< 0.0011	NA	NA	NA	5.62	NA	NA	NA
trans-1,3-Dichloropropene	10061-02-6	- -	- -	NA	R	NA	R	248.8	NA	NA	NA	NA	< 1.6	NA	NA	NA
Trichloroethene	79-01-6	0.5	180	< 0.00032	R	< 0.00031	R	253.6	NA	< 0.0014	< 0.00085	< 0.00048	< 0.79	< 0.00046	< 0.001	< 0.00098
Semi-Volatile Organic Compounds																
1,1-Biphenyl	92-52-4	1.5	40	NA	0.0526 J	NA	< 0.073	NA	0.599	NA	NA	NA	***8.64 D***	NA	NA	NA
1,2,4,5-Tetrachlorobenzene	95-94-3	13	190,000	NA	< 0.2	NA	< 0.18	NA	< 0.98	NA	NA	NA	< 0.18	NA	NA	NA
2,3,4,6-Tetrachlorophenol	58-90-2	4,500	190,000	NA	< 0.2	NA	< 0.18	NA	< 0.98	NA	NA	NA	< 0.18	NA	NA	NA
2,4-Dichlorophenol	120-83-2	2	190,000	NA	< 0.2	NA	< 0.18	NA	< 0.98	NA	NA	NA	< 0.18	NA	NA	NA
2,4-Dimethylphenol	105-67-9	190	10,000	< 5.8	< 0.2	< 0.19	< 0.18	< 890	< 0.98	< 0.28	< 1.2	< 0.93	2.27 D	< 0.2	< 0.028	< 0.12
2-Methylnaphthalene	91-57-6	100	270	< 2.1	0.142	0.62	< 0.036	***5,500***	2.41	0.41 J	< 2.9	0.33 J	56.2 D	0.14	< 0.07	< 0.058
2-Methylphenol	95-48-7	490	190,000	< 3.5	< 0.078	< 0.11	< 0.073	< 540	< 0.39	< 1.2	< 4.8	< 0.56	1.65	< 0.12	< 0.12	< 0.1
3-Methylphenol, 4-Methylphenol	65794-96-9	- -	- -	NA	< 0.078	NA	< 0.073	NA	0.285 J	NA	NA	NA	4.7 D	NA	NA	NA
4-Methylphenol	106-44-5	49	190,000	< 3.7	NA	< 0.12	NA	< 570	NA	< 1.5	< 6	< 0.6	NA	< 0.13	< 0.15	< 0.099
Acenaphthene	83-32-9	4,700	190,000	< 0.25	1.64	1	< 0.036	1,300	1.66	< 0.11	< 0.45	< 0.04	4.55 D	0.053	< 0.011	< 0.012
Acenaphthylene	208-96-8	6,600	190,000	7.3	0.0873	0.14	< 0.036	1,600	15.2	2.7	7	0.45	29.6 D	0.5	< 0.012	< 0.01
Acetophenone	98-86-2	970	10,000	NA	< 0.2	NA	< 0.18	NA	0.0573 J	NA	NA	NA	< 0.18	NA	NA	NA
Anthracene	120-12-7	350	190,000	16	1.73	1.8	< 0.036	***3,000***	21.8	4	13	1.5	67.8 D	0.78	< 0.01	< 0.0081
Benz(a)anthracene	56-55-3	340	190,000	58	4.39 D	3.1	< 0.036	***2,800***	52.8	23	45	4.7	57.2 D	2.6	< 0.013	0.075

Table 9
Unsaturated Soil Analytical Results – Detected VOCs, SVOCs, and Inorganics (mg/kg)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID: / Sample Depth (ft): / Date Collected:	CAS Number	Soil Standards or PQLs: S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	Soil Standards or PQLs: DC Non-Res Subsurf Soil (Exceedances Shaded)	PCTP-01 6 2/8/05	PCTP-01R 5-7 4/5/19	PCTP-02 5 2/8/05	PCTP-02R 4-6 4/5/19	PCTP-12 3 2/9/05	PCTP-12R 2-4 4/12/19	PCTP-14 2.5 3/3/05	PCTP-214 7.5 3/3/05	PCTP-16 2 2/10/05	PCTP-17R 5-6 4/15/19	PCTP-18 6 2/16/05	PCTP-36 6 2/18/05	PCTP-236 7 2/18/05
Semi-Volatile Organic Compounds (cont'd)																
Benzaldehyde	100-52-7	- -	- -	NA	0.0406 J	NA	< 0.18	NA	< 0.98	NA	NA	NA	< 0.18	NA	NA	NA
Benzo(a)pyrene	50-32-8	46	190,000	43	4.61 D	2.4	< 0.036	***1,800***	40	19	39	4.3	41.1 D	2.7	< 0.0088	0.055
Benzo(b)fluoranthene	205-99-2	170	190,000	68	5.59 D	3.3	< 0.036	***2,000***	56.5	27	58	6.6	49 D	3.5	0.085	0.14
Benzo(g,h,i)perylene	191-24-2	180	190,000	23	2.66	1.2	< 0.036	***620***	21.7	16	28	2.4	20.5 D	1.6	< 0.012	0.045
Benzo(k)fluoranthene	207-08-9	610	190,000	24	2.14 D	1.3	< 0.036	***730***	12.8	11	15	1.5	18.9 D	1.1	< 0.014	0.046
bis(2-Ethylhexyl)phthalate	117-81-7	130	10,000	< 2.1	0.185	1.4 B	< 0.073	< 320	< 0.39	< 0.23	< 0.97	< 0.34	< 0.073	< 0.073	< 0.024	< 0.011
Butyl benzyl phthalate	85-68-7	10,000	10,000	< 0.27	< 0.078	< 0.0087	< 0.073	< 41	< 0.39	< 0.12	< 0.5	< 0.043	< 0.073	< 0.0094	< 0.012	< 0.0088
Caprolactam	105-60-2	- -	- -	NA	0.125	NA	< 0.073	NA	< 0.39	NA	NA	NA	< 0.073	NA	NA	NA
Carbazole	86-74-8	89	190,000	5.2	0.962	1	< 0.073	***1,500***	2.35	0.71	2.4	0.62	28.8 D	0.22	< 0.0093	< 0.0057
Chrysene	218-01-9	230	190,000	49	4.27 D	2.7	< 0.036	***1,800***	46	22	46	4.2	48 D	2.6	0.064	0.15
Dibenz(a,h)anthracene	53-70-3	270	190,000	8.8	0.78	0.42	< 0.036	210	6.72	6.3	12	0.94	6.99 D	0.54	< 0.015	< 0.013
Dibenzofuran	132-64-9	250	190,000	5	0.489	0.95	< 0.073	***3,700***	3.91	0.76 J	2.5 J	0.24	49.9 D	0.21	< 0.099	0.051 J
Diethyl phthalate	84-66-2	7,800	10,000	< 0.19	< 0.078	0.049	< 0.073	< 30	< 0.39	< 0.13	< 0.52	< 0.031	< 0.073	< 0.0068	0.041 B	0.05
Dimethyl phthalate	131-11-3	- -	- -	< 0.36	0.0206 J	< 0.012	< 0.073	< 55	< 0.39	< 0.1	< 0.43	< 0.057	< 0.073	< 0.013	< 0.01	< 0.011
Di-n-butyl phthalate	84-74-2	4,000	10,000	< 0.15	< 0.078	0.083	< 0.073	< 23	< 0.39	0.68	< 0.47	< 0.024	< 0.073	0.058	< 0.012	< 0.007
Di-n-octyl phthalate	117-84-0	10,000	10,000	< 0.25	0.33	0.048	< 0.073	< 38	< 0.39	< 0.11	< 0.47	< 0.04	< 0.073	< 0.0086	< 0.012	< 0.0068
Fluoranthene	206-44-0	3,200	190,000	110	8.81 D	7.5	< 0.036	***7,500***	141	29	63	10	138 D	4.6	< 0.013	0.1
Fluorene	86-73-7	3,800	190,000	7.3	1.02	1.7	< 0.036	***5,200***	9.78	1.4	4	0.29	77.2 D	0.23	< 0.013	< 0.01
Indeno(1,2,3-cd)pyrene	193-39-5	18,000	190,000	25	2.97	1.3	< 0.036	620	19.5	14	26	2.6	22 D	1.7	< 0.012	0.046
Naphthalene	91-20-3	25	77	6.6	0.266	0.74	< 0.036	***29,000***	9.89	1.4	3.2	0.43	***146 D***	0.25	< 0.0084	0.048
Pentachlorophenol	87-86-5	5	190,000	NA	< 0.16	NA	< 0.15	NA	< 0.78	NA	NA	NA	< 0.15	NA	NA	NA
Phenanthrene	85-01-8	10,000	190,000	54	6.49 D	7.2	< 0.036	***14,000***	54.6	9	37	5.1	219 D	2.3	< 0.014	0.053
Phenol	108-95-2	200	18,000	< 3.4	< 0.078	< 0.11	< 0.073	< 520	0.257 J	< 0.28	< 1.2	< 0.55	2.79	< 0.12	< 0.028	< 0.048
Pyrene	129-00-0	2,200	190,000	96	7.25 D	5.4	< 0.036	***5,900***	94.7	30	77	7.8	95.6 D	4.1	< 0.011	0.16
Total PAHs and 2-Methylnaphthalene	-	- -	- -	596	54.8	41.8	< 0.036	83,600	607	216	473	53.1	1,100	29.3	0.149	0.918
Metals																
Aluminum	7429-90-5	- -	190,000	NA	6,460	NA	9,610	NA	6,840	NA	NA	NA	7,830 J	NA	NA	NA
Antimony	7440-36-0	27	190,000	< 2.4	1.3 J	< 2.4	< 2.2	***33***	< 2.3	< 2.4	3.4	5.7	< 2.3	< 2.6	< 2.4	< 2.4
Arsenic	7440-38-2	29	190,000	4.8	4.7	4.9	2.7	***33***	7.8	4.2	7.1	20	5.8	17	4.9	5.1
Barium	7440-39-3	8,200	190,000	160	125	130	28.6	70	81.1	530	720	87	23.5	79	150	180
Beryllium	7440-41-7	320	190,000	< 0.73	0.32	< 0.71	0.31	1.3	0.49	< 0.72	< 0.75	< 0.71	0.31	< 0.77	< 0.73	0.89
Cadmium	7440-43-9	38	190,000	< 0.73	0.84	< 0.71	< 0.55	14	< 0.59	< 0.72	< 0.75	1.1	< 1.1	< 0.77	< 0.73	< 0.72
Calcium	7440-70-2	- -	- -	NA	47,500	NA	475 J	NA	939	NA	NA	NA	176 J	NA	NA	NA
Chromium	7440-47-3	190,000	190,000	8.6	15.1	11	9.7	71	21.6	12	29	24	17.3 J	7.8	6.3	8.1
Cobalt	7440-48-4	130	190,000	NA	4.0 J	NA	3.6 J	NA	< 5.9	NA	NA	NA	4.2 J	NA	NA	NA
Copper	7440-50-8	43,000	190,000	40	19.9	17	4.9	3,200	82.6	60	97	140	19.3	59	29	40
Cyanide	57-12-5	200	190,000	NA	< 0.27	NA	< 0.27	***340***	0.77	8.5	13	NA	8.3 J	NA	0.54	1.7
Iron	7439-89-6	- -	190,000	NA	19,000	NA	9,460	NA	17,500	NA	NA	NA	33,600 J	NA	NA	NA
Lead	7439-92-1	450	190,000	200	111	290	6.3	***2,100***	274	110	200	240	6.6 J	160	< 6.1	6.3
Magnesium	7439-95-4	- -	- -	NA	3,730	NA	1,230	NA	1,380	NA	NA	NA	1,720	NA	NA	NA
Manganese	7439-96-5	2,000	190,000	NA	187	NA	112	NA	121	NA	NA	NA	102 J	NA	NA	NA

Table 9
Unsaturated Soil Analytical Results – Detected VOCs, SVOCs, and Inorganics (mg/kg)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID: / Sample Depth (ft): / Date Collected:	CAS Number	Soil Standards or PQLs: S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	Soil Standards or PQLs: DC Non-Res Subsurf Soil (Exceedances Shaded)	PCTP-01 6 2/8/05	PCTP-01R 5-7 4/5/19	PCTP-02 5 2/8/05	PCTP-02R 4-6 4/5/19	PCTP-12 3 2/9/05	PCTP-12R 2-4 4/12/19	PCTP-14 2.5 3/3/05	PCTP-214 7.5 3/3/05	PCTP-16 2 2/10/05	PCTP-17R 5-6 4/15/19	PCTP-18 6 2/16/05	PCTP-36 6 2/18/05	PCTP-236 7 2/18/05
Metals (cont'd)																
Mercury	7439-97-6	10	190,000	0.25	< 0.031	0.93	0.16	0.41	0.39	2.3	2.5	0.29	0.46 J	0.43	< 0.1	< 0.1
Nickel	7440-02-0	650	190,000	9.8	13.7	7.6	9.2	42	12.3	9.2	16	18	20.3	11	16	18
Potassium	7440-09-7	- -	- -	NA	1,370	NA	798 J	NA	< 1,200	NA	NA	NA	813 J	NA	NA	NA
Selenium	7782-49-2	26	190,000	3.1	< 2.4	< 2.1	< 2.2	5.9	< 2.3	3.3	3.8	4.3	< 4.6	2.9	3.1	4.2
Silver	7440-22-4	84	190,000	< 3	0.25 J	< 3	< 0.55	< 4.4	< 0.59	< 3	< 3.1	< 2.9	< 1.1	< 3.2	< 3	< 3
Sodium	7440-23-5	- -	- -	NA	158 J	NA	< 1,100	NA	< 1,200	NA	NA	NA	< 1,100	NA	NA	NA
Thallium	7440-28-0	14	190,000	< 1.5	< 1.2	< 1.4	< 1.1	< 2.1	< 1.2	< 1.4	< 1.5	< 1.4	< 2.3	< 1.5	< 1.5	< 1.4
Vanadium	7440-62-2	680	190,000	NA	14.1	NA	10.2	NA	16.0	NA	NA	NA	19.8 J	NA	NA	NA
Zinc	7440-66-6	12,000	190,000	160	115	150	28.9	2,800	102	67	150	190	28.0	210	< 12	< 12

Table 9
Unsaturated Soil Analytical Results – Detected VOCs, SVOCs, and Inorganics (mg/kg)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID: / Sample Depth (ft): / Date Collected:	CAS Number	Soil Standards or PQLs: S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	Soil Standards or PQLs: DC Non-Res Subsurf Soil (Exceedances Shaded)	PCTP-37 3 2/17/05	PCTP-47 6 2/17/05	PCTP-47R 5-7 4/9/19	PCTP-58 2 2/24/05	PCTP-61 7.5 9/8/05	PCTP-64 7 9/8/05	PCTP-65 7.5 9/8/05	PCTP-66R-HC 2-4 4/4/19	PCTP-75 11 9/9/05	PCTP-75R 10-12 4/11/19	PCTP-76 6.5 9/12/05	PCTP-80 8 9/12/05
Volatile Organic Compounds															
1,1,1-Trichloroethane	71-55-6	20	10,000	< 0.00062	< 0.0013	< 0.0023	< 0.00057	< 0.00027	< 0.0003	< 0.00033	R	< 0.0014	< 0.0042	< 0.0005	< 0.00054
1,1-Dichloroethane	75-34-3	16	1,600	< 0.00063	< 0.0013	< 0.0012	< 0.00058	< 0.00081	< 0.0009	< 0.001	R	< 0.0043	< 0.0021	< 0.00051	< 0.00055
1,2,3-Trichlorobenzene	87-61-6	- -	- -	NA	NA	< 0.0058	NA	NA	NA	NA	R	NA	< 0.011	NA	NA
1,2,4-Trichlorobenzene	120-82-1	27	190	NA	NA	< 0.0058	NA	NA	NA	NA	R	NA	< 0.011	NA	NA
1,3-Dichlorobenzene	541-73-1	61	10,000	NA	NA	< 0.0012	NA	NA	NA	NA	R	NA	< 0.0021	NA	NA
1,4-Dichlorobenzene	106-46-7	10	230	NA	NA	< 0.0012	NA	NA	NA	NA	R	NA	< 0.0021	NA	NA
2-Butanone (MEK)	78-93-3	400	10,000	< 0.001	< 0.0021	< 0.012	< 0.00093	< 0.00084	< 0.00093	< 0.001	R	< 0.0044	< 0.021	< 0.00082	< 0.00088
Acetone	67-64-1	8,800	10,000	0.023	< 0.0096	0.0259	< 0.0042	< 0.0057	0.042	0.043	R	0.11	0.0523	< 0.0038	0.041
Benzene	71-43-2	0.5	330	< 0.00033	< 0.00069	< 0.00058	< 0.0003	< 0.00055	< 0.00061	< 0.00068	R	***2.8***	< 0.0011	< 0.00027	< 0.00029
Carbon Disulfide	75-15-0	620	10,000	< 0.00069	< 0.0014	0.0012 J	< 0.00063	< 0.0007	< 0.00077	< 0.00087	R	< 0.0037	< 0.0042	< 0.00056	< 0.0006
Carbon Tetrachloride	56-23-5	0.5	430	< 0.0012	< 0.0025	< 0.0023	< 0.0011	< 0.00091	< 0.001	< 0.0011	R	< 0.0048	< 0.0042	< 0.001	< 0.0011
Chloroform	67-66-3	8	110	< 0.00034	< 0.00071	< 0.0023	< 0.00031	< 0.00049	< 0.00054	< 0.0006	R	< 0.0025	< 0.0042	< 0.00028	< 0.0003
cis-1,2-Dichloroethene	156-59-2	7	10,000	< 0.00048	< 0.001	< 0.0012	< 0.00044	< 0.00051	< 0.00057	< 0.00064	R	< 0.0027	< 0.0021	< 0.00039	0.0016
Cyclohexane	110-82-7	6,900	10,000	NA	NA	< 0.0023	NA	NA	NA	NA	R	NA	< 0.0042	NA	NA
Dichloromethane	75-09-2	0.5	10,000	0.012 B	0.028 B	< 0.0058	0.0095 B	0.01 B	0.014 B	0.0086 B	R	0.03 B	< 0.011	0.01 B	0.015 B
Ethylbenzene	100-41-4	70	1,000	< 0.00091	< 0.0019	< 0.0012	< 0.00083	< 0.0008	< 0.00089	< 0.00099	R	2.4	< 0.0021	< 0.00074	< 0.00079
m&p-Xylenes	ARC-mpXyl	- -	- -	< 0.0011	< 0.0023	< 0.0012	< 0.001	< 0.0012	< 0.0013	< 0.0015	R	0.1	< 0.0021	< 0.00089	< 0.00095
Methyl Acetate	79-20-9	9,700	10,000	NA	NA	< 0.0058	NA	NA	NA	NA	R	NA	< 0.011	NA	NA
Methylcyclohexane	108-87-2	- -	- -	NA	NA	< 0.0023	NA	NA	NA	NA	R	NA	< 0.0042	NA	NA
o,p-Xylene	136777-61-2	- -	- -	< 0.00024	< 0.00049	NA	< 0.00022	< 0.0005	< 0.00056	< 0.00062	NA	0.23	NA	< 0.00019	< 0.00021
o-Xylene	95-47-6	- -	- -	NA	NA	< 0.0012	NA	NA	NA	NA	R	NA	< 0.0021	NA	NA
Styrene (Monomer)	100-42-5	24	10,000	< 0.00021	< 0.00043	< 0.0023	< 0.00019	< 0.00067	< 0.00074	< 0.00083	R	< 0.0035	< 0.0042	< 0.00017	< 0.00018
Toluene	108-88-3	100	10,000	< 0.00025	< 0.00051	< 0.0012	< 0.00023	< 0.00081	< 0.0009	< 0.001	0.0687 J	0.028	< 0.0021	< 0.0002	< 0.00022
Total Xylenes	1330-20-7	1,000	9,100	NA	NA	< 0.0012	NA	NA	NA	NA	R	< 0.0034	< 0.0021	NA	NA
trans-1,3-Dichloropropene	10061-02-6	- -	- -	NA	NA	< 0.0023	NA	NA	NA	NA	R	5.558	NA	NA	NA
Trichloroethene	79-01-6	0.5	180	< 0.00064	< 0.0013	< 0.0012	< 0.00059	< 0.00066	< 0.00073	< 0.00081	R	5.668	NA	< 0.00052	< 0.00056
Semi-Volatile Organic Compounds															
1,1-Biphenyl	92-52-4	1.5	40	NA	NA	0.0138 J	NA	NA	NA	NA	0.677	NA	0.0255 J	NA	NA
1,2,4,5-Tetrachlorobenzene	95-94-3	13	190,000	NA	NA	< 0.19	NA	NA	NA	NA	< 0.17	NA	< 0.23	NA	NA
2,3,4,6-Tetrachlorophenol	58-90-2	4,500	190,000	NA	NA	< 0.19	NA	NA	NA	NA	< 0.17	NA	< 0.23	NA	NA
2,4-Dichlorophenol	120-83-2	2	190,000	NA	NA	< 0.19	NA	NA	NA	NA	< 0.17	NA	< 0.23	NA	NA
2,4-Dimethylphenol	105-67-9	190	10,000	< 0.031	< 0.029	< 0.19	< 0.2	< 0.03	< 0.055	< 0.061	< 0.17	< 39	< 0.23	< 1	< 0.16
2-Methylnaphthalene	91-57-6	100	270	0.15	0.047 J	0.0417	0.65	< 0.061	0.11	1.4	1.96	***340***	0.0866	1.4	0.25
2-Methylphenol	95-48-7	490	190,000	< 0.13	< 0.12	< 0.076	< 0.12	< 0.13	< 0.19	< 0.21	< 0.069	< 130	< 0.091	< 3.5	< 0.56
3-Methylphenol, 4-Methylphenol	65794-96-9	- -	- -	NA	NA	< 0.076	NA	NA	NA	NA	< 0.069	NA	< 0.091	NA	NA
4-Methylphenol	106-44-5	49	190,000	< 0.16	< 0.15	NA	< 0.13	< 0.13	0.071 J	0.17 J	NA	< 150	NA	< 3.9	< 0.62
Acenaphthene	83-32-9	4,700	190,000	0.13	< 0.011	0.111	0.079	< 0.0059	0.31	0.86	0.616	< 12	0.0867	4.7	0.81
Acenaphthylene	208-96-8	6,600	190,000	0.063	0.062	0.11	0.78	< 0.0054	0.06	0.16	7.04 D	< 6.5	0.0453 J	< 0.17	< 0.027
Acetophenone	98-86-2	970	10,000	NA	NA	< 0.19	NA	NA	NA	NA	< 0.17	NA	< 0.23	NA	NA
Anthracene	120-12-7	350	190,000	0.11	0.083	0.364	0.71	< 0.0071	0.24	0.59	8.17 D	< 7.4	0.254	20	1.6
Benz(a)anthracene	56-55-3	340	190,000	0.47	0.7	1.64	3.4	< 0.005	0.39	1.2	13 D	< 4.9	0.437	46	3.1

Table 9
Unsaturated Soil Analytical Results – Detected VOCs, SVOCs, and Inorganics (mg/kg)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID: / Sample Depth (ft): / Date Collected:	CAS Number	Soil Standards or PQLs: S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	Soil Standards or PQLs: DC Non-Res Subsurf Soil (Exceedances Shaded)	PCTP-37 3 2/17/05	PCTP-47 6 2/17/05	PCTP-47R 5-7 4/9/19	PCTP-58 2 2/24/05	PCTP-61 7.5 9/8/05	PCTP-64 7 9/8/05	PCTP-65 7.5 9/8/05	PCTP-66R-HC 2-4 4/4/19	PCTP-75 11 9/9/05	PCTP-75R 10-12 4/11/19	PCTP-76 6.5 9/12/05	PCTP-80 8 9/12/05
Semi-Volatile Organic Compounds (cont'd)															
Benzaldehyde	100-52-7	- -	- -	NA	NA	< 0.19 J	NA	NA	NA	NA	< 0.17	NA	< 0.23	NA	NA
Benzo(a)pyrene	50-32-8	46	190,000	0.46	0.7	1.43	3.1	< 0.006	0.34	1.3	12.5 D	< 6.5	0.417	37	2.9
Benzo(b)fluoranthene	205-99-2	170	190,000	0.69	1.3	1.67	7.4	< 0.01	0.4	1.3	15.3 D	< 8.4	0.482	44	3.6
Benzo(g,h,i)perylene	191-24-2	180	190,000	0.35	0.49	0.908	1.9	< 0.0051	0.19	0.81	8.24 D	< 5.3	0.277	22	2
Benzo(k)fluoranthene	207-08-9	610	190,000	0.16	0.31	0.721	2.3	< 0.013	0.15	0.47	6.32 D	< 9.1	0.185	12	1.3
bis(2-Ethylhexyl)phthalate	117-81-7	130	10,000	< 0.026	< 0.024	0.142 J	0.21	< 0.023	0.056	0.068	< 0.069	< 25	0.0533 J	< 0.66	0.28
Butyl benzyl phthalate	85-68-7	10,000	10,000	< 0.013	< 0.012	< 0.076	< 0.0091	< 0.0097	< 0.016	< 0.018	< 0.069	< 11	< 0.091	< 0.29	< 0.047
Caprolactam	105-60-2	- -	- -	NA	NA	< 0.076	NA	NA	NA	NA	< 0.069	NA	< 0.091	NA	NA
Carbazole	86-74-8	89	190,000	< 0.01	< 0.0094	0.159	0.44	< 0.0069	0.29	0.16	2.41	< 8.3	0.12	3.9	0.82
Chrysene	218-01-9	230	190,000	0.62	0.83	1.72	5.1	< 0.01	0.38	1.3	11.3 D	< 5.8	0.524	44	2.9
Dibenz(a,h)anthracene	53-70-3	270	190,000	0.12	0.18	0.247	0.78	< 0.0066	0.052	0.26	2.24	< 9.8	0.0825	8.5	0.64
Dibenzofuran	132-64-9	250	190,000	< 0.11	< 0.1	0.0651 J	0.53	< 0.046	0.11	0.24	5.28 D	< 36	0.0831 J	6.1	0.61
Diethyl phthalate	84-66-2	7,800	10,000	0.066 B	0.056 B	< 0.076	< 0.0065	< 0.0084	< 0.011	< 0.012	< 0.069	< 7.7	< 0.091	< 0.2	< 0.032
Dimethyl phthalate	131-11-3	- -	- -	< 0.012	< 0.011	< 0.076	< 0.012	< 0.0062	< 0.009	< 0.01	< 0.069	< 6.4	< 0.091	< 0.17	< 0.027
Di-n-butyl phthalate	84-74-2	4,000	10,000	< 0.013	< 0.012	< 0.076	< 0.0051	< 0.0073	0.051	0.07	< 0.069	< 6.3	< 0.091	< 0.16	< 0.026
Di-n-octyl phthalate	117-84-0	10,000	10,000	< 0.013	< 0.012	< 0.076	< 0.0083	< 0.012	< 0.0094	< 0.01	< 0.069	< 6.6	< 0.091	< 0.17	< 0.028
Fluoranthene	206-44-0	3,200	190,000	0.64	1	2.6	7.7	0.044	0.55	1.8	28.9 D	< 8.1	0.764	86	6.6
Fluorene	86-73-7	3,800	190,000	0.052	< 0.014	0.11	0.19	< 0.0086	0.32	0.69	9.19 D	< 7.1	0.115	7.2	1
Indeno(1,2,3-cd)pyrene	193-39-5	18,000	190,000	0.28	0.44	0.912	2.4	< 0.0061	0.17	0.64	8.58 D	< 3.9	0.258	20	1.9
Naphthalene	91-20-3	25	77	0.2	0.48	0.0707	0.77	< 0.0035	0.98	3.3	1.76	***2,700***	0.184	1.4	0.6
Pentachlorophenol	87-86-5	5	190,000	NA	NA	< 0.15	NA	NA	NA	NA	< 0.14	NA	< 0.18	NA	NA
Phenanthrene	85-01-8	10,000	190,000	0.34	0.38	1.36	3.3	< 0.008	0.38	1.4	29.7 D	35	1.11	98	5.9
Phenol	108-95-2	200	18,000	< 0.031	< 0.029	< 0.076	< 0.11	< 0.059	0.12	< 0.068	< 0.069	< 43	< 0.091	< 1.1	< 0.18
Pyrene	129-00-0	2,200	190,000	0.95	0.97	2.54	5.7	0.041	1.1	2.9	22.5 D	< 6.5	0.739	100	5.8
Total PAHs and 2-Methylnaphthalene	-	- -	- -	5.79	7.97	16.6	46.3	0.085	6.12	20.4	187	3,080	6.05	552	40.9
Metals															
Aluminum	7429-90-5	- -	190,000	NA	NA	11,000 J	NA	NA	NA	NA	4,950	NA	1,770	NA	NA
Antimony	7440-36-0	27	190,000	< 2.7	< 2.5	2.2 J	5.8	< 2.2	< 2.4	< 2.7	< 2.1	< 2.2	< 2.8	5.7	3.3
Arsenic	7440-38-2	29	190,000	28	4.8	7.5	***79***	3.2	3	13	4.2	3.8	7.7	7	3.5
Barium	7440-39-3	8,200	190,000	81	39	97.9	220	21	39	45	28.1	46	34.0	160	140
Beryllium	7440-41-7	320	190,000	1.3	< 0.74	0.59	< 0.74	< 0.65	< 0.71	< 0.8	0.44	< 0.67	0.37	< 0.66	< 0.71
Cadmium	7440-43-9	38	190,000	< 0.81	< 0.74	0.39 J	< 0.74	< 0.65	< 0.71	2.5	0.11 J	< 0.67	0.18 J	< 0.66	< 0.71
Calcium	7440-70-2	- -	- -	NA	NA	37,500	NA	NA	NA	NA	364 J	NA	1,510	NA	NA
Chromium	7440-47-3	190,000	190,000	10	< 6.2	20.6	< 6.2	15	33	39	12.8	7.4	4.1	42	27
Cobalt	7440-48-4	130	190,000	NA	NA	6.0	NA	NA	NA	NA	6.0	NA	5.7 J	NA	NA
Copper	7440-50-8	43,000	190,000	39	28	265	120	31	21	26	8.5	< 5.6	16.0	95	88
Cyanide	57-12-5	200	190,000	NA	NA	0.20 J	0.37	NA	NA	NA	0.13 J	NA	0.41	NA	NA
Iron	7439-89-6	- -	190,000	NA	NA	19,000 J	NA	NA	NA	NA	13,100	NA	6,180	NA	NA
Lead	7439-92-1	450	190,000	320	17	359	***1,000***	34	48	120	25.8	6.6	31.9	***740***	***520***
Magnesium	7439-95-4	- -	- -	NA	NA	12,500	NA	NA	NA	NA	1,140	NA	307 J	NA	NA
Manganese	7439-96-5	2,000	190,000	NA	NA	299 J	NA	NA	NA	NA	203	NA	23.9	NA	NA

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Metals (cont'd)															
Mercury	7439-97-6	10	190,000	0.19	< 0.1	0.53	< 0.1	< 0.09	0.32	0.38	0.046	< 0.094	0.043	0.63	1.6
Nickel	7440-02-0	650	190,000	13	< 6.2	12.8	7.8	6.8	13	17	8.4	13	11.8	20	16
Potassium	7440-09-7	- -	- -	NA	NA	1,460	NA	NA	NA	NA	982 J	NA	152 J	NA	NA
Selenium	7782-49-2	26	190,000	2.9	2.6	< 2.4	2.8	< 1.9	2.3	< 2.4	< 2.1	2.9	1.5 J	2.6	< 2.1
Silver	7440-22-4	84	190,000	< 3.4	< 3.1	0.48 J	< 3.1	< 2.7	< 3	< 3.3	< 0.53	< 2.8	< 0.70	< 2.7	< 2.9
Sodium	7440-23-5	- -	- -	NA	NA	135 J	NA	NA	NA	NA	< 1,100	NA	< 1,400	NA	NA
Thallium	7440-28-0	14	190,000	< 1.6	< 1.5	< 1.2	< 1.5	< 1.3	< 1.4	< 1.6	< 1.1	< 1.3	< 1.4	< 1.3	< 1.4
Vanadium	7440-62-2	680	190,000	NA	NA	27.0	NA	NA	NA	NA	13.4	NA	6.8 J	NA	NA
Zinc	7440-66-6	12,000	190,000	280	< 12	244	110	35	190	810	47.3	22	61.0	250	210

Table 9
Unsaturated Soil Analytical Results – Detected VOCs, SVOCs, and Inorganics (mg/kg)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID: / Sample Depth (ft): / Date Collected:	CAS Number	Soil Standards or PQLs		PSSTP-01B 5-6 3/11/03	PSSTP-01R 5-6 4/10/19	PSSTP-02B 5-6 3/11/03	PSSTP-04R 7-8 4/11/19	PSSTP-08B 6-7 3/11/03	PSSTP-09B 6-7 3/12/03	PSSTP-22R 4-6 4/24/19	PSSTP-23B 7-8 3/13/03	PSSTP-25B 7-8 3/13/03	S-105 2-4 4/12/19	S-106 2-4 4/12/19
		S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	DC Non-Res Subsurf Soil (Exceedances Shaded)											
Volatile Organic Compounds														
1,1,1-Trichloroethane	71-55-6	20	10,000	NA	< 0.0033	NA	< 38	NA	NA	< 0.3	NA	NA	< 0.0025	< 5.4
1,1-Dichloroethane	75-34-3	16	1,600	NA	< 0.0017	NA	< 19	NA	NA	< 0.15	NA	NA	< 0.0012	< 2.7
1,2,3-Trichlorobenzene	87-61-6	- -	- -	NA	0.0019 J	NA	< 94	NA	NA	< 0.76	NA	NA	< 0.0062	< 14
1,2,4-Trichlorobenzene	120-82-1	27	190	NA	< 0.0083	NA	< 94	NA	NA	< 0.76	NA	NA	< 0.0062	< 14
1,3-Dichlorobenzene	541-73-1	61	10,000	NA	< 0.0017	NA	< 19	NA	NA	< 0.15	NA	NA	< 0.0012	< 2.7
1,4-Dichlorobenzene	106-46-7	10	230	NA	< 0.0017	NA	< 19	NA	NA	< 0.15	NA	NA	< 0.0012	< 2.7
2-Butanone (MEK)	78-93-3	400	10,000	NA	< 0.017	NA	< 190	NA	NA	< 1.5	NA	NA	< 0.012	< 27
Acetone	67-64-1	8,800	10,000	< 0.024	0.0668	0.08	< 190	< 0.027	< 0.025	< 1.5	< 0.022	< 0.027	0.0214	< 27
Benzene	71-43-2	0.5	330	0.0073 B	< 0.00083	< 0.0013	***16.9***	0.0028	< 0.0012	0.482	< 0.0011	< 0.0013	< 0.00062	***48.9***
Carbon Disulfide	75-15-0	620	10,000	< 0.0059	0.0048	< 0.0065	< 38	< 0.0067	< 0.0062	< 0.3	< 0.0056	< 0.0067	< 0.0025	3.72 J
Carbon Tetrachloride	56-23-5	0.5	430	NA	< 0.0033	NA	< 38	NA	NA	< 0.3	NA	NA	< 0.0025	< 5.4
Chloroform	67-66-3	8	110	NA	< 0.0033	NA	< 38	NA	NA	< 0.3	NA	NA	< 0.0025	< 5.4
cis-1,2-Dichloroethene	156-59-2	7	10,000	NA	< 0.0017	NA	< 19	NA	NA	< 0.15	NA	NA	< 0.0012	< 2.7
Cyclohexane	110-82-7	6,900	10,000	NA	< 0.0033	NA	< 38	NA	NA	< 0.3	NA	NA	< 0.0025	< 5.4
Dichloromethane	75-09-2	0.5	10,000	0.0073 B	< 0.0083	0.0085 B	< 94	0.0053 JB	0.0023 JB	< 0.76	0.0049 JB	0.0077 B	< 0.0062	< 14
Ethylbenzene	100-41-4	70	1,000	< 0.0012	< 0.0017	< 0.0013	< 19	< 0.0013	< 0.0012	0.17	< 0.0011	< 0.0013	< 0.0012	3.85
m&p-Xylenes	ARC-mpXyl	- -	- -	NA	< 0.0017	NA	73.5	NA	NA	3.2	NA	NA	< 0.0012	93.5
Methyl Acetate	79-20-9	9,700	10,000	NA	< 0.0083 J	NA	< 94	NA	NA	< 0.76	NA	NA	< 0.0062	< 14
Methylcyclohexane	108-87-2	- -	- -	NA	< 0.0033	NA	< 38	NA	NA	< 0.3	NA	NA	< 0.0025	< 5.4
o,p-Xylene	136777-61-2	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
o-Xylene	95-47-6	- -	- -	NA	< 0.0017	NA	26.5	NA	NA	1.11	NA	NA	< 0.0012	35.3
Styrene (Monomer)	100-42-5	24	10,000	NA	< 0.0033	NA	< 38	NA	NA	< 0.3	NA	NA	< 0.0025	20.4
Toluene	108-88-3	100	10,000	< 0.0012	< 0.0017	< 13	34.5	0.0015	< 0.0012	1.09	< 0.0011	< 0.0013	< 0.0012	67
Total Xylenes	1330-20-7	1,000	9,100	0	< 0.0017	0.0089 J	100	0	0	4.31	0	0	< 0.0012	129
trans-1,3-Dichloropropene	10061-02-6	- -	- -	NA	< 0.0033	NA	< 38	NA	NA	< 0.3	NA	NA	< 0.0025	< 5.4
Trichloroethene	79-01-6	0.5	180	NA	< 0.0017	NA	< 19	NA	NA	< 0.15	NA	NA	< 0.0012	< 2.7
Semi-Volatile Organic Compounds														
1,1-Biphenyl	92-52-4	1.5	40	NA	0.262	NA	***301 D***	NA	NA	***6.85 D***	NA	NA	0.0737 J	***331***
1,2,4,5-Tetrachlorobenzene	95-94-3	13	190,000	NA	< 0.41	NA	< 3	NA	NA	< 0.21	NA	NA	< 0.19	< 4.8
2,3,4,6-Tetrachlorophenol	58-90-2	4,500	190,000	NA	R	NA	< 3	NA	NA	< 0.21	NA	NA	< 0.19	< 4.8
2,4-Dichlorophenol	120-83-2	2	190,000	NA	R	NA	< 3	NA	NA	< 0.21	NA	NA	< 0.19	< 4.8
2,4-Dimethylphenol	105-67-9	190	10,000	< 2	R	< 0.43	58.3	< 1.3	< 2.1	0.437 J	< 3.7	< 1.3	< 0.19	185
2-Methylnaphthalene	91-57-6	100	270	0.34 J	0.861	1.3	***1,780 D***	0.19 J	0.21 J	31.9 D	0.4 J	0.26 J	0.269	***1,760***
2-Methylphenol	95-48-7	490	190,000	NA	R	NA	52.5 D	NA	NA	0.173	NA	NA	< 0.075	189
3-Methylphenol, 4-Methylphenol	65794-96-9	- -	- -	< 2	R	0.086	136 D	< 1.3	< 2.1	0.304	< 3.7	< 1.3	< 0.075	476
4-Methylphenol	106-44-5	49	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	83-32-9	4,700	190,000	1.5 J	2.13	2.7	142 D	0.35 J	1.1 J	3.78	< 3.7	< 1.3	0.142	161
Acenaphthylene	208-96-8	6,600	190,000	< 2	0.0544 J	0.24 J	354 D	0.25 J	< 2.1	13.4 D	5.2	0.19 J	2.73	1,430
Acetophenone	98-86-2	970	10,000	NA	< 0.41	NA	13.3	NA	NA	0.0407 J	NA	NA	0.0239 J	< 4.8
Anthracene	120-12-7	350	190,000	27	6.15	2.1	***883 D***	1.4	2.4	38.9 D	2.3 J	0.86 J	2.36	***1,350***
Benz(a)anthracene	56-55-3	340	190,000	5.3	10.4 D	2.5	***819 D***	3.2	5.4	39.8 D	9.2	4.1	7.11	***1,180***

Location ID: / Sample Depth (ft): / Date Collected:	CAS Number	Soil Standards or PQLs: S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	Soil Standards or PQLs: DC Non-Res Subsurf Soil (Exceedances Shaded)	PSSTP-01B 5-6 3/11/03	PSSTP-01R 5-6 4/10/19	PSSTP-02B 5-6 3/11/03	PSSTP-04R 7-8 4/11/19	PSSTP-08B 6-7 3/11/03	PSSTP-09B 6-7 3/12/03	PSSTP-22R 4-6 4/24/19	PSSTP-23B 7-8 3/13/03	PSSTP-25B 7-8 3/13/03	S-105 2-4 4/12/19	S-106 2-4 4/12/19
Semi-Volatile Organic Compounds (cont'd)														
Benzaldehyde	100-52-7	- -	- -	NA	0.0270 J	NA	< 3	NA	NA	< 0.21	NA	NA	< 0.19	< 4.8
Benzo(a)pyrene	50-32-8	46	190,000	3.8	7.67	1.9	***566 D***	2.1	4.2	34.9 D	6.9	3.5	7.46	***956***
Benzo(b)fluoranthene	205-99-2	170	190,000	5.6	11.2 D	2.8	***723 D***	3.4	6	49.2 D	13	5.7	8.45	***1,070***
Benzo(g,h,i)perylene	191-24-2	180	190,000	1.1 J	5	0.9	***267 DJ***	0.97 J	1.4 J	18.6 D	4.1	< 1.3	4.62	***538***
Benzo(k)fluoranthene	207-08-9	610	190,000	1.9 J	4.29 D	1	261 D	1.2 J	2.4	15.7 D	4.3	2.2	2.4	374
bis(2-Ethylhexyl)phthalate	117-81-7	130	10,000	< 2	3.3	8.5	< 1.2	0.55 J	< 2.1	< 0.083	< 3.7	< 1.3	< 0.075	< 1.9
Butyl benzyl phthalate	85-68-7	10,000	10,000	< 2	< 0.16	0.85	< 1.2	< 1.3	< 2.1	< 0.083	< 3.7	< 1.3	< 0.075	< 1.9
Caprolactam	105-60-2	- -	- -	NA	< 0.16	NA	< 1.2	NA	NA	< 0.083	NA	NA	< 0.075	< 1.9
Carbazole	86-74-8	89	190,000	0.74 J	2.55	1.8	***573 D***	0.51 J	1.1 J	18.8 D	0.81	0.29 J	0.409	***677***
Chrysene	218-01-9	230	190,000	5.4	9.78 D	2.3	***701 D***	2.7	5.3	36.5 D	11	4.7	7.11	***956***
Dibenz(a,h)anthracene	53-70-3	270	190,000	0.42 J	1.28	0.29 J	106 DJ	0.32 J	0.59 J	5.68 D	1.6 J	0.81 J	1.11	149
Dibenzofuran	132-64-9	250	190,000	0.77 J	1.82	1.4	***1,220 D***	0.35 J	0.62 J	32.5 D	0.61 J	0.25 J	0.196	***1,280***
Diethyl phthalate	84-66-2	7,800	10,000	NA	< 0.16	NA	< 1.2	NA	NA	< 0.083	NA	NA	< 0.075	< 1.9
Dimethyl phthalate	131-11-3	- -	- -	NA	< 0.16	NA	< 1.2	NA	NA	< 0.083	NA	NA	< 0.075	< 1.9
Di-n-butyl phthalate	84-74-2	4,000	10,000	< 2	< 0.16	0.41 JB	< 1.2	< 1.3	0.22 J	< 0.083	< 3.7	< 1.3	< 0.075	< 1.9
Di-n-octyl phthalate	117-84-0	10,000	10,000	< 2	< 0.16	1.5	< 1.2	< 1.3	< 2.1	< 0.083	< 3.7	< 1.3	< 0.075	< 1.9
Fluoranthene	206-44-0	3,200	190,000	11	25.2 D	6.4	2,710 D	5.7	11	107 D	18	5.3	14	***3,290***
Fluorene	86-73-7	3,800	190,000	1.7 J	2.92	2.2	2,020 D	0.51 J	1.2 J	54.2 D	0.85 J	0.15 J	0.462	2,120
Indeno(1,2,3-cd)pyrene	193-39-5	18,000	190,000	1.2 J	4.97	0.74	274 DJ	0.95 J	1.6 J	20.7 D	4.4	1.9	3.63	515
Naphthalene	91-20-3	25	77	0.37 J	0.577	3	***9,350 D***	0.26 J	0.37 J	***103 D***	1.4 J	0.32 J	0.411	***7,730***
Pentachlorophenol	87-86-5	5	190,000	< 2	R	< 0.43	< 2.4	< 1.3	< 2.1	< 0.17	< 3.7	< 1.3	< 0.15	< 3.9
Phenanthrene	85-01-8	10,000	190,000	11	29 D	7.7	4,730 D	4.9	8.8	152 D	8.6	3	8.22	5,410
Phenol	108-95-2	200	18,000	< 1.5	0.183 J	2.6	69 D	< 1.3	1.6	0.115	< 1.4	1.7	< 0.075	***296***
Pyrene	129-00-0	2,200	190,000	10	19.5 D	5.7	1,490 D	6.1	8.7	80.2 D	14	4.4	16.2	2,190
Total PAHs and 2-Methylnaphthalene	-	- -	- -	87.6	141	43.8	27,200	34.5	60.7	805	105	37.4	86.7	31,200
Metals														
Aluminum	7429-90-5	- -	190,000	NA	10,900	NA	1,090	NA	NA	9,590 J	NA	NA	8,650	1,560
Antimony	7440-36-0	27	190,000	3.2	3.6	< 2.6	20.6	< 2.7	2.7	1.1 J	< 2.2	< 2.7	< 2.2	< 2.3
Arsenic	7440-38-2	29	190,000	5.2	4.1	5.6	10.2 J	6.7	4.7	12.2	5.1	4.3	***170***	5.8
Barium	7440-39-3	8,200	190,000	520	77.9	45	74.4	58	160	209 J	50	94	99.1	37.4
Beryllium	7440-41-7	320	190,000	< 0.71	0.56	< 0.78	< 0.25	< 0.8	< 0.74	0.73	< 0.67	< 0.8	0.62	0.34
Cadmium	7440-43-9	38	190,000	< 0.71	0.33 J	0.8	0.68	< 0.8	1	0.84	< 0.67	< 0.8	< 0.56	< 0.57
Calcium	7440-70-2	- -	- -	NA	86,800	NA	3,650	NA	NA	13,200 J	NA	NA	9,490	< 570
Chromium	7440-47-3	190,000	190,000	22	28.4	9.8	791	6.7	23	18.8	13	11	21.6	7.5
Cobalt	7440-48-4	130	190,000	NA	5.5 J	NA	12.5	NA	NA	4.4 J	NA	NA	9.2	< 5.7
Copper	7440-50-8	43,000	190,000	61	33.3	43	452	42	80	250	53	50	72.2	13.4
Cyanide	57-12-5	200	190,000	0.49	0.58	1.2	2.7	5.5	< 0.31	8.3 J	15	0.75	3.2	3.9
Iron	7439-89-6	- -	190,000	NA	13,900	NA	71,400	NA	NA	22,700	NA	NA	31,100	2,860
Lead	7439-92-1	450	190,000	260	300	140	78.6	27	230	***477***	170	140	***504***	27.1
Magnesium	7439-95-4	- -	- -	NA	5,480	NA	218 J	NA	NA	6,960 J	NA	NA	2,560	< 570
Manganese	7439-96-5	2,000	190,000	NA	235	NA	351	NA	NA	575	NA	NA	253	16.4

Table 9
Unsaturated Soil Analytical Results – Detected VOCs, SVOCs, and Inorganics (mg/kg)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID: / Sample Depth (ft): / Date Collected:	CAS Number	Soil Standards or PQLs: S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	Soil Standards or PQLs: DC Non-Res Subsurf Soil (Exceedances Shaded)	PSSTP-01B 5-6 3/11/03	PSSTP-01R 5-6 4/10/19	PSSTP-02B 5-6 3/11/03	PSSTP-04R 7-8 4/11/19	PSSTP-08B 6-7 3/11/03	PSSTP-09B 6-7 3/12/03	PSSTP-22R 4-6 4/24/19	PSSTP-23B 7-8 3/13/03	PSSTP-25B 7-8 3/13/03	S-105 2-4 4/12/19	S-106 2-4 4/12/19
Metals (cont'd)														
Mercury	7439-97-6	10	190,000	1.1	0.14	0.41	0.79	0.19	0.49	0.82 J	5.6	0.12	0.25	0.34
Nickel	7440-02-0	650	190,000	15	13.7	8.8	164	< 6.7	18	21.7	14	27	21.7	29.1
Potassium	7440-09-7	- -	- -	NA	1,700	NA	44.4 J	NA	NA	1,080 J	NA	NA	1,800	< 1,100
Selenium	7782-49-2	26	190,000	< 2.1	< 2.4	< 2.3	< 12	< 2.4	< 2.2	0.94 J	< 2	< 2.4	< 4.5	< 2.3
Silver	7440-22-4	84	190,000	< 2.9	< 0.59	< 3.2	< 3.1	< 3.3	< 3.1	< 0.66	< 2.8	< 3.3	< 1.1	< 0.57
Sodium	7440-23-5	- -	- -	NA	217 J	NA	< 1,200	NA	NA	281 J	NA	NA	< 1,100	< 1,100
Thallium	7440-28-0	14	190,000	< 1.4	< 1.2	< 1.6	< 6.2	< 1.6	< 1.5	< 1.3	< 1.3	< 1.6	< 2.2	1.7
Vanadium	7440-62-2	680	190,000	NA	20.0	NA	17.9	NA	NA	25.8	NA	NA	30.8	137
Zinc	7440-66-6	12,000	190,000	550	179	110	178	13	660	335 J	130	230	271	21.6

Table 9
Unsaturated Soil Analytical Results – Detected VOCs, SVOCs, and Inorganics (mg/kg)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID: / Sample Depth (ft): / Date Collected:	CAS Number	Soil Standards or PQLs: S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	Soil Standards or PQLs: DC Non-Res Subsurf Soil (Exceedances Shaded)	S-107 2-4 4/23/19	S-108 2-4 4/15/19	S-109 2-4 4/15/19	S-110 2-4 4/12/19	S-111 2-4 4/23/19	S-114 2-4 4/15/19	S-127 2-4 4/17/19	S-128 2-4 4/18/19	S-129 2-4 4/18/19	S-130 2-4 4/17/19
Volatile Organic Compounds													
1,1,1-Trichloroethane	71-55-6	20	10,000	< 0.0033	< 0.0032 [< 0.0031]	< 0.0038	< 0.0031	< 0.0026	< 0.0024	< 0.24 [< 0.29]	< 0.0029	0.00082 J	< 0.0036
1,1-Dichloroethane	75-34-3	16	1,600	< 0.0016	< 0.0016 [< 0.0015]	< 0.0019	< 0.0015	< 0.0013	< 0.0012	< 0.12 [< 0.15]	< 0.0015	0.00052 J	< 0.0018
1,2,3-Trichlorobenzene	87-61-6	- -	- -	< 0.0082	< 0.0080 [< 0.0077]	< 0.0095	< 0.0077	< 0.0064	< 0.0059	< 0.61 [< 0.73]	< 0.0073 J	< 0.0063	< 0.0091
1,2,4-Trichlorobenzene	120-82-1	27	190	< 0.0082	< 0.0080 [< 0.0077]	< 0.0095	< 0.0077	< 0.0064	< 0.0059	< 0.61 [< 0.73]	< 0.0073	< 0.0063	< 0.0091
1,3-Dichlorobenzene	541-73-1	61	10,000	< 0.0016	< 0.0016 [< 0.0015]	< 0.0019	< 0.0015	< 0.0013	< 0.0012	< 0.12 [< 0.15]	< 0.0015	< 0.0013	< 0.0018
1,4-Dichlorobenzene	106-46-7	10	230	< 0.0016	< 0.0016 [< 0.0015]	< 0.0019	< 0.0015	< 0.0013	< 0.0012	< 0.12 [< 0.15]	< 0.0015	< 0.0013	< 0.0018
2-Butanone (MEK)	78-93-3	400	10,000	< 0.016	< 0.016 [< 0.015]	< 0.019	< 0.015	< 0.013	< 0.012	< 1.2 [< 1.5]	< 0.015	< 0.013	< 0.018
Acetone	67-64-1	8,800	10,000	< 0.016	0.127 J [0.0125 J]	0.0379	0.0265	< 0.013	0.0281	< 1.2 [< 1.5]	< 0.015	0.0552	< 0.018
Benzene	71-43-2	0.5	330	< 0.00082	0.0017 J [0.0020]	0.00086 J	< 0.00077	< 0.00064	< 0.00059	0.134 J [0.365 J]	0.0252	0.0012	0.0176
Carbon Disulfide	75-15-0	620	10,000	< 0.0033	0.0063 J [0.0052]	0.0049	0.0015 J	0.0013 J	< 0.0024	< 0.24 [< 0.29]	< 0.0029	0.0013 J	0.0017 J
Carbon Tetrachloride	56-23-5	0.5	430	< 0.0033	< 0.0032 [< 0.0031]	< 0.0038	0.0012 J	< 0.0026	< 0.0024	< 0.24 [< 0.29]	< 0.0029	< 0.0025	< 0.0036
Chloroform	67-66-3	8	110	< 0.0033	< 0.0032 [< 0.0031]	< 0.0038	< 0.0031	< 0.0026	< 0.0024	< 0.24 [< 0.29]	< 0.0029	< 0.0025	< 0.0036
cis-1,2-Dichloroethene	156-59-2	7	10,000	< 0.0016	< 0.0016 [< 0.0015]	< 0.0019	< 0.0015	< 0.0013	< 0.0012	< 0.12 [< 0.15]	< 0.0015	< 0.0013	< 0.0018
Cyclohexane	110-82-7	6,900	10,000	< 0.0033	< 0.0032 [< 0.0031]	< 0.0038	< 0.0031	< 0.0026	< 0.0024	< 0.24 [< 0.29]	< 0.0029	< 0.0025	< 0.0036
Dichloromethane	75-09-2	0.5	10,000	< 0.0082	< 0.0080 [< 0.0077]	< 0.0095	< 0.0077	< 0.0064	< 0.0059	< 0.61 [< 0.73]	< 0.0073	< 0.0063	< 0.0091
Ethylbenzene	100-41-4	70	1,000	< 0.0016	< 0.0016 [< 0.0015]	< 0.0019	< 0.0015	< 0.0013	< 0.0012	< 0.12 [< 0.15]	< 0.0015	< 0.0013	< 0.0018
m&p-Xylenes	ARC-mpXyl	- -	- -	< 0.0016	< 0.0016 [< 0.0015]	< 0.0019	< 0.0015	< 0.0013	< 0.0012	0.434 J [0.912 J]	< 0.0015	< 0.0013	< 0.0018
Methyl Acetate	79-20-9	9,700	10,000	< 0.0082	< 0.0080 [< 0.0077]	< 0.0095	< 0.0077	< 0.0064	< 0.0059	< 0.61 [< 0.73]	< 0.0073 J	< 0.0063	< 0.0091
Methylcyclohexane	108-87-2	- -	- -	< 0.0033	0.0013 J [0.0019 J]	0.0016 J	< 0.0031	< 0.0026	< 0.0024	< 0.24 [< 0.29]	< 0.0029	< 0.0025	< 0.0036
o,p-Xylene	136777-61-2	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
o-Xylene	95-47-6	- -	- -	< 0.0016	< 0.0016 [< 0.0015]	< 0.0019	< 0.0015	< 0.0013	< 0.0012	0.198 J [0.383 J]	< 0.0015	< 0.0013	< 0.0018
Styrene (Monomer)	100-42-5	24	10,000	< 0.0033	< 0.0032 [< 0.0031]	< 0.0038	< 0.0031	< 0.0026	< 0.0024	< 0.24 [< 0.29]	< 0.0029	< 0.0025	< 0.0036
Toluene	108-88-3	100	10,000	< 0.0016	< 0.0016 [< 0.0015]	< 0.0019	< 0.0015	< 0.0013	< 0.0012	0.143 J [0.36 J]	0.0010 J	< 0.0013	0.0015 J
Total Xylenes	1330-20-7	1,000	9,100	< 0.0016	< 0.0016 [< 0.0015]	< 0.0019	< 0.0015	< 0.0013	< 0.0012	0.632 J [1.3 J]	< 0.0015	< 0.0013	< 0.0018
trans-1,3-Dichloropropene	10061-02-6	- -	- -	< 0.0033	< 0.0032 [< 0.0031]	< 0.0038	< 0.0031	< 0.0026	< 0.0024	< 0.24 [< 0.29]	< 0.0029	< 0.0025	< 0.0036
Trichloroethene	79-01-6	0.5	180	< 0.0016	< 0.0016 [< 0.0015]	< 0.0019	< 0.0015	< 0.0013	< 0.0012	< 0.12 [< 0.15]	< 0.0015	< 0.0013	< 0.0018
Semi-Volatile Organic Compounds													
1,1-Biphenyl	92-52-4	1.5	40	0.143	0.0701 J [0.0711 J]	0.438	0.0423 J	0.101	< 0.076 B	***9.32 D [14.7 D]***	0.0685 J	0.0479 J	0.0980
1,2,4,5-Tetrachlorobenzene	95-94-3	13	190,000	< 0.18	< 0.19 [< 0.19]	< 0.19	< 0.19	< 0.19	< 0.19	< 0.37 J [< 0.39]	< 0.2	< 0.18	< 0.2
2,3,4,6-Tetrachlorophenol	58-90-2	4,500	190,000	< 0.18	< 0.19 [< 0.19]	< 0.19	< 0.19	< 0.19	< 0.19	< 0.37 J [< 0.39]	< 0.2	< 0.18	< 0.2
2,4-Dichlorophenol	120-83-2	2	190,000	< 0.18	< 0.19 [< 0.19]	< 0.19	< 0.19	< 0.19	< 0.19	< 0.37 J [< 0.39]	< 0.2	< 0.18	< 0.2
2,4-Dimethylphenol	105-67-9	190	10,000	< 0.18	< 0.19 [< 0.19]	0.0772 J	< 0.19	< 0.19	< 0.19	0.997 J [1.93 J]	< 0.2	< 0.18	< 0.2
2-Methylnaphthalene	91-57-6	100	270	0.359	0.236 [0.246]	1.2	0.249	0.447	0.0109 J	41.1 DJ [64.3 D]	0.237	0.159	0.592
2-Methylphenol	95-48-7	490	190,000	< 0.074	< 0.077 [< 0.074]	0.133	< 0.076	< 0.076	< 0.076	0.573 J [1.18 J]	< 0.079	< 0.074	0.188
3-Methylphenol, 4-Methylphenol	65794-96-9	- -	- -	< 0.074 J	0.102 [0.117]	0.538	< 0.076	0.0533 J	< 0.076	1.16 J [2.39 J]	< 0.079	< 0.074	0.368
4-Methylphenol	106-44-5	49	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	83-32-9	4,700	190,000	0.146	0.129 [0.106]	0.427	0.15	0.121	0.0527	4.14 J [7.15 J]	0.996	0.255	< 0.04
Acenaphthylene	208-96-8	6,600	190,000	1.61	1.73 [1.43]	10.9 D	0.203	3.14	0.0466	12.2 D [19.9 D]	0.511	0.809	0.12
Acetophenone	98-86-2	970	10,000	< 0.18 J	0.0228 J [< 0.19]	< 0.19	< 0.19	0.0318 J	< 0.19	0.0954 J [0.194 J]	< 0.2	0.0170 J	0.0835 J
Anthracene	120-12-7	350	190,000	3.96 D	1.4 [1.2]	13.4 D	0.317	2.21	0.205	54.8 DJ [90.8 D]	2.03	1.22	0.0285 J
Benz(a)anthracene	56-55-3	340	190,000	6.51 D	6.47 DJ [5.67 D]	40.5 D	0.834	4.48 D	0.549	45.3 DJ [75.2 D]	5.26 D	2.67	0.0269 J

Table 9
Unsaturated Soil Analytical Results – Detected VOCs, SVOCs, and Inorganics (mg/kg)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID: / Sample Depth (ft): / Date Collected:	CAS Number	Soil Standards or PQLs: S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	Soil Standards or PQLs: DC Non-Res Subsurf Soil (Exceedances Shaded)	S-107 2-4 4/23/19	S-108 2-4 4/15/19	S-109 2-4 4/15/19	S-110 2-4 4/12/19	S-111 2-4 4/23/19	S-114 2-4 4/15/19	S-127 2-4 4/17/19	S-128 2-4 4/18/19	S-129 2-4 4/18/19	S-130 2-4 4/17/19
Semi-Volatile Organic Compounds (cont'd)													
Benzaldehyde	100-52-7	- -	- -	< 0.18	< 0.19 [< 0.19]	< 0.19	< 0.19	< 0.19	< 0.19	< 0.37 J [< 0.39]	< 0.2	0.0220 J	< 0.2
Benzo(a)pyrene	50-32-8	46	190,000	5.54 D	6.75 DJ [6.02 D]	36.3 D	0.767	7.11 D	0.565	37.6 D ***[60.9 D]***	5.48 D	2.94	0.0300 J
Benzo(b)fluoranthene	205-99-2	170	190,000	6.86 D	9.74 DJ [8.59 D]	49 D	1.08	8.79 D	0.664	46.1 D [74.4 D]	7.31 D	4.37 D	0.0456
Benzo(g,h,i)perylene	191-24-2	180	190,000	3.6 D	2.49 [2.11]	22 D	0.504	5.67 D	0.351	18.7 D [31 D]	2.85	1.43	0.0380 J
Benzo(k)fluoranthene	207-08-9	610	190,000	3.07	3.39 DJ [1.91 J]	21.1 D	0.343	2.72 D	0.228	15.7 D [29.4 DJ]	1.6	1.78 D	< 0.04
bis(2-Ethylhexyl)phthalate	117-81-7	130	10,000	< 0.074	< 0.077 [< 0.074]	< 0.075	< 0.076	< 0.076	< 0.076	< 0.15 J [< 0.16]	0.0938	0.0805	< 0.079
Butyl benzyl phthalate	85-68-7	10,000	10,000	< 0.074	< 0.077 [< 0.074]	< 0.075	< 0.076	< 0.076	< 0.076	< 0.15 J [< 0.16]	< 0.079	0.0470 J	< 0.079
Caprolactam	105-60-2	- -	- -	< 0.074	< 0.077 [< 0.074]	< 0.075	< 0.076	< 0.076	< 0.076	< 0.15 J [< 0.16]	< 0.079	< 0.074	< 0.079
Carbazole	86-74-8	89	190,000	0.459	0.358 [0.271]	3.16	0.0756 J	0.354	< 0.076 B	27.5 D [43.3 D]	0.916	0.413	0.0214 J
Chrysene	218-01-9	230	190,000	5.8 D	7.77 DJ [6.71 D]	39.7 D	0.812	4.26 D	0.544	39.3 D [64.6 D]	5.53 D	2.97	0.0531
Dibenz(a,h)anthracene	53-70-3	270	190,000	1.45	1.23 [1.06]	5.35 D	0.133	2.02	0.0786	5.74 DJ [11 DJ]	1.09	0.533	< 0.04
Dibenzofuran	132-64-9	250	190,000	0.989	0.267 [0.242]	4.19 D	0.128	0.387	0.0258 J	46.6 D [73 D]	0.545	0.384	0.0760 J
Diethyl phthalate	84-66-2	7,800	10,000	< 0.074	< 0.077 [< 0.074]	< 0.075	< 0.076	< 0.076	< 0.076	< 0.15 J [< 0.16]	< 0.079	< 0.074	< 0.079
Dimethyl phthalate	131-11-3	- -	- -	< 0.074	< 0.077 [< 0.074]	< 0.075	< 0.076	< 0.076	< 0.076	< 0.15 J [< 0.16]	< 0.079	< 0.074	< 0.079
Di-n-butyl phthalate	84-74-2	4,000	10,000	< 0.074	< 0.077 [< 0.074]	< 0.075	< 0.076	< 0.076	< 0.076	< 0.15 J [< 0.16]	< 0.079	< 0.074	< 0.079
Di-n-octyl phthalate	117-84-0	10,000	10,000	< 0.074	< 0.077 [< 0.074]	< 0.075	< 0.076	< 0.076	< 0.076	< 0.15 J [< 0.16]	< 0.079	< 0.074	< 0.079
Fluoranthene	206-44-0	3,200	190,000	14.4 D	8.09 D [6.69 D]	73.2 D	1.79	6.89 D	1.19	130 D [211 D]	9.62 D	6.35 D	0.0299 J
Fluorene	86-73-7	3,800	190,000	2.28	0.243 [0.192]	6.44 D	0.206	0.448	0.0580	64.3 D [103 D]	1.05	0.689	0.0230 J
Indeno(1,2,3-cd)pyrene	193-39-5	18,000	190,000	2.99 D	2.73 [2.3]	23.4 D	0.516	4.87 D	0.341	19.6 D [32.2 D]	2.83	1.41	0.0326 J
Naphthalene	91-20-3	25	77	0.627	0.968 [1.23]	1.91	0.22	1.47	0.0197 J	***168 D [278 D]***	0.51	0.352	6.71 D
Pentachlorophenol	87-86-5	5	190,000	< 0.15	< 0.15 [< 0.15]	< 0.15	< 0.15	< 0.15	< 0.15	< 0.3 J [< 0.31]	< 0.16	< 0.15	< 0.16
Phenanthrene	85-01-8	10,000	190,000	11.3 D	3.41 [2.62]	46.5 D	1.37	3.22	0.827	216 D [350 D]	8.7 D	5.83 D	0.249
Phenol	108-95-2	200	18,000	< 0.074	0.0922 [0.122]	0.635	< 0.076	0.0490 J	< 0.076	0.338 J [0.72 J]	< 0.079	< 0.074	0.647
Pyrene	129-00-0	2,200	190,000	10.5 D	7.99 DJ [6.7 D]	69 D	1.5	6.44 D	1.08	82.8 D [137 D]	9.22 D	5.93 D	0.0347 J
Total PAHs and 2-Methylnaphthalene	-	- -	- -	81.0	64.8 [54.8]	460	11.0	64.3	6.81	1,000 [1,640]	64.8	39.7	8.01
Metals													
Aluminum	7429-90-5	- -	190,000	8,800	35,000 J [9,710 J]	8,650 J	6,060	5,750	12,200 J	9,820 J [11,600 J]	8,370	8,600	2,610 J
Antimony	7440-36-0	27	190,000	2.7	< 2.3 [< 2.3]	< 2.3	< 2.3	0.65 J	< 2.3	< 2.3 J [< 2.4 J]	< 2.4 J	< 2.3 J	0.67 J
Arsenic	7440-38-2	29	190,000	***57.7***	11.9 [6.5]	5.3	20.1	6.7	7.0	9.7 [7.9]	9.3	6.3	8.1
Barium	7440-39-3	8,200	190,000	85.0	65.7 [43.9]	33.8	207	66.5	76.0	121 [176]	211	157	120
Beryllium	7440-41-7	320	190,000	0.63	0.72 [0.51]	0.50	0.85	0.41	0.75	0.82 [0.90]	0.49	0.39	0.38
Cadmium	7440-43-9	38	190,000	0.46 J	< 1.2 [1.2]	< 0.57	< 0.57	0.50 J	0.18 J	0.35 J [0.33 J]	0.99	0.88	0.14 J
Calcium	7440-70-2	- -	- -	757	2,080 J [644 J]	792 J	2,890	6,330	6,050 J	14,800 [19,700]	58,100	35,700	2,040 J
Chromium	7440-47-3	190,000	190,000	15.4	51.6 J [14.6 J]	13.9 J	21.1	16.2	21.4 J	22.0 J [24.9]	25.9	24.3	18.5 J
Cobalt	7440-48-4	130	190,000	5.0 J	5.0 J [7.4]	3.6 J	7.3	5.2 J	5.0 J	4.9 J [5.3 J]	5.3 J	4.9 J	2.9 J
Copper	7440-50-8	43,000	190,000	52.7	13.5 [13.2]	8.9	332	49.0	18.1	37.6 [47.7]	52.7	66.7	96.7
Cyanide	57-12-5	200	190,000	12.3	10.8 J [12.7 J]	5.5 J	8.0	0.78	< 0.29	1.1 J [0.63 J]	0.38 J	0.64	8.4 J
Iron	7439-89-6	- -	190,000	18,500	38,100 J [16,600 J]	12,700 J	37,600	15,400	15,700 J	25,700 [21,800]	41,100	17,400	8,800
Lead	7439-92-1	450	190,000	***683***	13.9 J [32.1 J]	23.3 J	221	137	193 J	417 ***[454]***	***769 J***	279 J	181
Magnesium	7439-95-4	- -	- -	1,490	1,420 [1,950]	1,330	803	3,330	2,330	7,300 [9,260]	7,110 J	9,790 J	291 J
Manganese	7439-96-5	2,000	190,000	131	83.7 J [261 J]	91.5 J	301	143	160 J	624 J [1,080 J]	617 J	260 J	44.8 J

Table 9
Unsaturated Soil Analytical Results – Detected VOCs, SVOCs, and Inorganics (mg/kg)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID: / Sample Depth (ft): / Date Collected:	CAS Number	Soil Standards or PQLs: S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	Soil Standards or PQLs: DC Non-Res Subsurf Soil (Exceedances Shaded)	S-107 2-4 4/23/19	S-108 2-4 4/15/19	S-109 2-4 4/15/19	S-110 2-4 4/12/19	S-111 2-4 4/23/19	S-114 2-4 4/15/19	S-127 2-4 4/17/19	S-128 2-4 4/18/19	S-129 2-4 4/18/19	S-130 2-4 4/17/19
Metals (cont'd)													
Mercury	7439-97-6	10	190,000	0.36 J	0.023 J [0.31 J]	0.13 J	0.35	0.44 J	0.57 J	R [R]	0.93 J	0.56 J	0.57 J
Nickel	7440-02-0	650	190,000	13.4	13.4 [11.9]	8.1	15.6	16.6	10.6	14.4 [15.6]	17.9	18.9	11.0
Potassium	7440-09-7	- -	- -	660 J	1,190 J [1,070 J]	540 J	< 1,100	697 J	1,210	1,440 [1,600]	1,080 J	1,200	368 J
Selenium	7782-49-2	26	190,000	< 2.3	< 4.6 [< 2.3]	< 2.3	< 4.6	< 2.4	1.2 J	< 4.6 [< 2.4]	3.0 J	< 2.3	1.5 J
Silver	7440-22-4	84	190,000	< 0.57	< 1.2 [< 0.57]	< 0.57	< 1.1	< 0.59	< 0.57	< 1.2 [< 0.60]	< 1.8	0.52 J	< 0.65
Sodium	7440-23-5	- -	- -	< 1,100	126 J [139 J]	157 J	< 1,100	< 1,200	98.2 J	252 J [348 J]	265 J	212 J	< 1,300
Thallium	7440-28-0	14	190,000	< 1.1	< 2.3 [< 1.1]	< 1.1	< 2.3	< 1.2	< 1.1	< 2.3 [< 2.4]	< 3.6	< 1.1	< 1.3
Vanadium	7440-62-2	680	190,000	16.7	66.6 J [20.1 J]	16.6 J	27.3	27.1	25.0 J	24.2 [36.3]	23.4	24.7	12.4
Zinc	7440-66-6	12,000	190,000	144	44.0 [51.0]	31.2	93.3	126	80.7	208 J [180 J]	721	308	48.2 J

Table 9
Unsaturated Soil Analytical Results – Detected VOCs, SVOCs, and Inorganics (mg/kg)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID:	CAS Number	Soil Standards or PQLs		S-132	S-133	S-146	S-148	S-149	S-156		S-161	S-167	S-168	S-171	S-172
Sample Depth (ft):		S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	DC Non-Res Subsurf Soil (Exceedances Shaded)	2-4	2-4	14-16	8-10	8-10	3-5	7.5-9.5	5-7	7-9	6-8	5-7	5-7
Date Collected:				4/17/19	4/17/19	4/25/19	4/25/19	4/25/19	5/3/19	5/3/19	5/3/19	9/20/19	9/19/19	9/19/19	9/19/19
Volatile Organic Compounds															
1,1,1-Trichloroethane	71-55-6	20	10,000	< 0.0027	< 0.0027	< 0.0017	< 7.4	< 2	< 0.55	< 0.0025	< 21	< 0.0018	< 0.31	< 0.0020	< 0.22
1,1-Dichloroethane	75-34-3	16	1,600	< 0.0014	< 0.0013	< 0.00084	< 3.7	< 1 J	< 0.28	< 0.0012	< 10	< 0.00089	< 0.15	< 0.00099	< 0.11
1,2,3-Trichlorobenzene	87-61-6	- -	- -	< 0.0068	< 0.0067	< 0.0042	< 18	< 5.1	< 1.4	< 0.0062	< 51	< 0.0045	< 0.77	< 0.0050	< 0.56
1,2,4-Trichlorobenzene	120-82-1	27	190	< 0.0068	< 0.0067	< 0.0042	< 18	< 5.1	< 1.4	< 0.0062	< 51	< 0.0045	< 0.77	< 0.0050	0.606
1,3-Dichlorobenzene	541-73-1	61	10,000	< 0.0014	< 0.0013	< 0.00084	< 3.7	< 1	< 0.28	< 0.0012	< 10	< 0.00089	< 0.15	< 0.00099	0.12
1,4-Dichlorobenzene	106-46-7	10	230	< 0.0014	< 0.0013	< 0.00084	< 3.7	< 1	< 0.28	< 0.0012	< 10	< 0.00089	< 0.15	< 0.00099	0.407
2-Butanone (MEK)	78-93-3	400	10,000	< 0.014	0.0403	< 0.0084	< 37	< 10	< 2.8	0.0082 J	< 100	0.0060 J	< 1.5	< 0.0099	< 1.1
Acetone	67-64-1	8,800	10,000	< 0.014	0.447	0.0250	< 37	< 10	< 2.8	0.0587	< 100	0.0446	1.96	0.0242	< 1.1
Benzene	71-43-2	0.5	330	< 0.00068	< 0.00067	< 0.00042	***4.01***	***2.31***	0.368	0.0010	***103***	< 0.00045	***1.84***	< 0.00050	< 0.056
Carbon Disulfide	75-15-0	620	10,000	< 0.0027	0.0095	0.00083 J	6.43 J	5.32	< 0.55	< 0.0025	< 21	< 0.0018	0.185 J	< 0.0020	< 0.22
Carbon Tetrachloride	56-23-5	0.5	430	< 0.0027	< 0.0027	< 0.0017	< 7.4	< 2	< 0.55	< 0.0025	< 21	< 0.0018	< 0.31	< 0.0020	< 0.22
Chloroform	67-66-3	8	110	< 0.0027	< 0.0027	< 0.0017	< 7.4	< 2	< 0.55	< 0.0025	< 21	< 0.0018	< 0.31	< 0.0020	< 0.22
cis-1,2-Dichloroethene	156-59-2	7	10,000	< 0.0014	< 0.0013	< 0.00084	< 3.7	< 1	< 0.28	< 0.0012	< 10	< 0.00089	< 0.15	< 0.00099	< 0.11
Cyclohexane	110-82-7	6,900	10,000	< 0.0027	< 0.0027	< 0.0017	< 7.4	< 2	< 0.55	< 0.0025	< 21	< 0.0018	< 0.31	< 0.0020	< 0.22
Dichloromethane	75-09-2	0.5	10,000	< 0.0068	< 0.0067	< 0.0042	< 18	< 5.1	< 1.4	< 0.0062	< 51	0.0011 J	< 0.77	< 0.0050	< 0.56
Ethylbenzene	100-41-4	70	1,000	< 0.0014	< 0.0013	< 0.00084	3.52 J	1.51	< 0.28	< 0.0012	6.52 J	< 0.00089	0.216	< 0.00099	< 0.11
m&p-Xylenes	ARC-mpXyl	- -	- -	< 0.0014	< 0.0013	< 0.00084	9.49	2.88	0.568	< 0.0012	59.9	< 0.00089	0.315	< 0.00099	< 0.11
Methyl Acetate	79-20-9	9,700	10,000	< 0.0068	< 0.0067	< 0.0042	< 18	< 5.1	< 1.4	< 0.0062	< 51	< 0.0045	4.74	0.0022 J	< 0.56
Methylcyclohexane	108-87-2	- -	- -	< 0.0027	< 0.0027	< 0.0017	< 7.4	< 2	< 0.55	< 0.0025	< 21	< 0.0018	< 0.31	< 0.0020	< 0.22
o,p-Xylene	136777-61-2	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
o-Xylene	95-47-6	- -	- -	< 0.0014	< 0.0013	< 0.00084	2.98 J	1.38	< 0.28	< 0.0012	19.8	< 0.00089	< 0.15	< 0.00099	< 0.11
Styrene (Monomer)	100-42-5	24	10,000	< 0.0027	< 0.0027	< 0.0017	< 7.4	< 2	< 0.55	< 0.0025	11 J	< 0.0018	< 0.31	< 0.0020	< 0.22
Toluene	108-88-3	100	10,000	< 0.0014	< 0.0013	0.00035 J	2.31 J	1.8	0.424	< 0.0012	40.8	< 0.00089	0.465	< 0.00099	< 0.11
Total Xylenes	1330-20-7	1,000	9,100	< 0.0014	< 0.0013	< 0.00084	12.5	4.26	0.568	< 0.0012	79.7	< 0.00089	0.315	< 0.00099	< 0.11
trans-1,3-Dichloropropene	10061-02-6	- -	- -	< 0.0027	< 0.0027	< 0.0017	< 7.4	< 2	< 0.55	< 0.0025	< 21	< 0.0018	< 0.31	< 0.0020	< 0.22
Trichloroethene	79-01-6	0.5	180	< 0.0014	< 0.0013	< 0.00084	< 3.7	< 1	< 0.28	< 0.0012	< 10	< 0.00089	< 0.15	< 0.00099	< 0.11
Semi-Volatile Organic Compounds															
1,1-Biphenyl	92-52-4	1.5	40	0.195	< 0.079 B	NA	NA	NA	***72.1 D***	0.0322 J	***51.9 D***	0.0543 J	0.0602 J	0.0445 J	0.0328 J
1,2,4,5-Tetrachlorobenzene	95-94-3	13	190,000	< 0.19	< 0.2	NA	NA	NA	< 0.99	< 0.22	< 0.91	< 0.19	< 0.19	< 0.18	0.0185 J
2,3,4,6-Tetrachlorophenol	58-90-2	4,500	190,000	< 0.19	0.0291 J	NA	NA	NA	< 0.99	< 0.22	< 0.91	< 0.19	< 0.19	< 0.18	< 0.19
2,4-Dichlorophenol	120-83-2	2	190,000	< 0.19	< 0.2	< 0.19	< 1.6	< 0.43	< 0.99	< 0.22	< 0.91	< 0.19	< 0.19	< 0.18	0.0642 J
2,4-Dimethylphenol	105-67-9	190	10,000	< 0.19	< 0.2	< 0.19	17.8 J	0.814 J	5.92	< 0.22	4.43 J	< 0.19	< 0.19	< 0.18	< 0.19
2-Methylnaphthalene	91-57-6	100	270	1.28	0.0745	< 0.039	***495 D***	37.3 D	***312 D***	0.0935	***155 D***	0.199	0.163	0.173	0.0943
2-Methylphenol	95-48-7	490	190,000	0.0716 J	< 0.079	< 0.078	12	0.604	2.68	< 0.087	1.48	< 0.077	< 0.078	< 0.073	< 0.075
3-Methylphenol, 4-Methylphenol	65794-96-9	- -	- -	0.177	< 0.079	< 0.078	40.4 D	1.76	7.15	< 0.087	1.33	< 0.077	< 0.078	< 0.073	< 0.075
4-Methylphenol	106-44-5	49	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	83-32-9	4,700	190,000	0.925	0.0843	< 0.039	65.7 D	14.4 D	35.2 D	0.374	48.2 D	0.296	0.802	0.361	0.41
Acenaphthylene	208-96-8	6,600	190,000	14.2 D	0.351	< 0.039	575 D	68.5 D	125 D	0.155	286 D	0.787	0.609	0.137	0.147
Acetophenone	98-86-2	970	10,000	0.0385 J	< 0.2	NA	NA	NA	1.9	< 0.22	< 0.91	< 0.19	0.0168 J	< 0.18	0.0105 J
Anthracene	120-12-7	350	190,000	13.6 D	0.661	< 0.039	***969 D***	163 D	***373 D***	0.403	178 D	1.82	0.743	0.91	1.18
Benz(a)anthracene	56-55-3	340	190,000	36.1 D	1.56	< 0.039	***551 D***	164 D	302 D	0.957	168 D	7.67 D	2.5	1.73	4.27 D

Table 9
Unsaturated Soil Analytical Results – Detected VOCs, SVOCs, and Inorganics (mg/kg)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID:	CAS Number	Soil Standards or PQLs		S-132	S-133	S-146	S-148	S-149	S-156		S-161	S-167	S-168	S-171	S-172
Sample Depth (ft):		S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	DC Non-Res Subsurf Soil (Exceedances Shaded)	2-4	2-4	14-16	8-10	8-10	3-5	7.5-9.5	5-7	7-9	6-8	5-7	5-7
Date Collected:				4/17/19	4/17/19	4/25/19	4/25/19	4/25/19	5/3/19	5/3/19	5/3/19	9/20/19	9/19/19	9/19/19	9/19/19
Semi-Volatile Organic Compounds (cont'd)															
Benzaldehyde	100-52-7	- -	- -	< 0.19	< 0.2	NA	NA	NA	< 0.99	< 0.22	< 0.91	< 0.19	< 0.19	< 0.18	0.0235 J
Benzo(a)pyrene	50-32-8	46	190,000	33.5 D	1.57	< 0.039	***438 D***	***140 D***	***219 D***	0.837	***148 D***	6.78 D	2.39	1.36	4.55 D
Benzo(b)fluoranthene	205-99-2	170	190,000	45.2 D	2.17	< 0.039	***500 D***	***181 D***	***267 D***	0.94	***171 D***	7.97 D	3.13 D	1.69	5.33 D
Benzo(g,h,i)perylene	191-24-2	180	190,000	19.4 D	1.15	< 0.039	***245 D***	79.8 D	97.3 D	0.418	83.6 D	3.76 D	1.58	0.796	2.63
Benzo(k)fluoranthene	207-08-9	610	190,000	15.6 D	0.719	< 0.039	212 D	55.4 D	108 D	0.386	59.9 D	2.68	0.942	0.592	1.39
bis(2-Ethylhexyl)phthalate	117-81-7	130	10,000	< 0.076	0.396	< 0.078	< 0.63	< 0.17	< 0.4	< 0.087	< 0.36	< 0.077	0.105	0.0692 J	0.345
Butyl benzyl phthalate	85-68-7	10,000	10,000	< 0.076	0.0454 J	< 0.078	< 0.63	< 0.17	< 0.4	< 0.087	< 0.36	< 0.077	< 0.078	< 0.073	< 0.075
Caprolactam	105-60-2	- -	- -	< 0.076	< 0.079	NA	NA	NA	< 0.4	< 0.087	< 0.36	< 0.077	< 0.078	< 0.073	< 0.075
Carbazole	86-74-8	89	190,000	2.19 B	0.355	< 0.078	***491 D***	83.5 D	***167 D***	0.0509 J	***111 D***	0.783	0.175	0.373	0.49
Chrysene	218-01-9	230	190,000	31.2 D	1.58	< 0.039	***502 D***	152 D	***270 D***	0.86	133 D	7.43 D	2.56	1.63	3.96 D
Dibenz(a,h)anthracene	53-70-3	270	190,000	5.91 D	0.289	< 0.039	81.6 D	27.9 D	28.3 D	0.119	24.7 D	1.14	0.443	0.218	0.928
Dibenzofuran	132-64-9	250	190,000	3.19	0.278	< 0.078	***720 D***	101 D	***364 D***	0.0555 J	218 D	0.204	0.4	0.347	0.22
Diethyl phthalate	84-66-2	7,800	10,000	< 0.076	< 0.079	< 0.078	< 0.63	< 0.17	< 0.4	< 0.087	< 0.36	< 0.077	< 0.078	< 0.073	< 0.075
Dimethyl phthalate	131-11-3	- -	- -	< 0.076	< 0.079	< 0.078	< 0.63	< 0.17	< 0.4	< 0.087	< 0.36	< 0.077	< 0.078	< 0.073	< 0.075
Di-n-butyl phthalate	84-74-2	4,000	10,000	< 0.076	0.0982	< 0.078	< 0.63	< 0.17	< 0.4	< 0.087	< 0.36	< 0.077	< 0.078	< 0.073	< 0.075
Di-n-octyl phthalate	117-84-0	10,000	10,000	< 0.076	< 0.079	< 0.078	< 0.63	< 0.17	< 0.4	< 0.087	< 0.36	< 0.077	< 0.078	< 0.073	< 0.075
Fluoranthene	206-44-0	3,200	190,000	73.7 D	3.52	< 0.039	1,840 D	519 D	908 D	1.97	544 D	16.6 D	4.71 D	3.84 D	7.76 D
Fluorene	86-73-7	3,800	190,000	6.94 D	0.328	< 0.039	1,100 D	168 D	563 D	0.13	334 D	0.504	0.962	0.483	0.389
Indeno(1,2,3-cd)pyrene	193-39-5	18,000	190,000	19.7 D	1.13	< 0.039	237 D	68.8 D	110 D	0.489	87.9 DJ	3.82	1.6	0.865	2.55
Naphthalene	91-20-3	25	77	2.99	0.157	< 0.039	***2,640 D***	***228 D***	***1,830 D***	1.07	***854 D***	0.513	0.347	0.406	0.605
Pentachlorophenol	87-86-5	5	190,000	< 0.15	0.447	< 0.16	< 1.3	< 0.34	< 0.79	< 0.17	< 0.72	< 0.15	< 0.16	< 0.15	< 0.15
Phenanthrene	85-01-8	10,000	190,000	43.8 D	3.26	< 0.039	3,120 D	623 D	1,840 D	0.872	860 D	5.3 D	1.82	3.69 D	4.21 D
Phenol	108-95-2	200	18,000	0.196	< 0.079	< 0.078	37.3 D	0.795	2.72	< 0.087	0.455	< 0.077	< 0.078	< 0.073	< 0.075
Pyrene	129-00-0	2,200	190,000	53.3 D	2.85	< 0.039	1,200 D	381 D	611 D	1.39	348 D	14.6 D	4.01 D	3.55	7.08 D
Total PAHs and 2-Methylnaphthalene	-	- -	- -	417	21.5	< 0.039	14,800	3,070	8,000	11.5	4,480	81.9	29.3	22.4	47.5
Metals															
Aluminum	7429-90-5	- -	190,000	4,930 J	11,400 J	9,990	3,200	6,350	3,280 J	8,660 J	9,750 J	17,500	10,000	13,100	15,800
Antimony	7440-36-0	27	190,000	3.9 J	2.8 J	< 2.3 J	< 4.9 J	1.9 J	2.6 J	2.2 J	< 2.2 J	< 7.4	< 4.7	< 2.3	< 2.3
Arsenic	7440-38-2	29	190,000	21.1	11.2	2.2 J	13.6	13.8	10.2	15.9	5.8	10.1	***138***	6.0	14.7
Barium	7440-39-3	8,200	190,000	163	168	23.3	102	82.6	90.6	93.0	37.3	37.7	73.4	66.8	109
Beryllium	7440-41-7	320	190,000	0.35	0.93	0.34	0.35	0.91	0.34	1.4	0.56	6.2	0.75	0.68	0.65
Cadmium	7440-43-9	38	190,000	0.34 J	4.8	< 0.57	0.71	1.4	0.53 J	0.11 J	0.11 J	< 1.9	< 1.2	< 0.58	< 1.2
Calcium	7440-70-2	- -	- -	5,200 J	21,100 J	211 J	5,120 J	897 J	5,300	2,170	917	4,280	6,940	19,800	13,500
Chromium	7440-47-3	190,000	190,000	169 J	107 J	14.0	118	53.3	99.4	25.1	21.3	30.3	19.8	25.7	42.8
Cobalt	7440-48-4	130	190,000	4.7 J	7.2	5.7	4.7 J	5.3 J	7.3	8.3	7.0	21.3	6.8	6.0	7.6
Copper	7440-50-8	43,000	190,000	195	143	7.3	104	108	175	97.6	26.6	306	66.8	27.1	252
Cyanide	57-12-5	200	190,000	4.2 J	0.61 J	0.14 J	8.0 J	12.6 J	16.0 J	< 0.31 J	5.1 J	< 0.24	0.82	0.3	< 0.27
Iron	7439-89-6	- -	190,000	47,000	33,800	14,800	37,400	12,700	26,900	50,400	20,200	59,100	41,800	18,900	32,200
Lead	7439-92-1	450	190,000	246	297	7.7 J	86.0 J	154 J	204 J	150 J	38.0 J	105	91.1	127	210
Magnesium	7439-95-4	- -	- -	1,920	4,590	2,240	899	1,500	575 J	1,660	2,170	7,340	2,760	7,030	3,770
Manganese	7439-96-5	2,000	190,000	268 J	607 J	127 J	191 J	60.6 J	84.4	265	138	720	311	189	307

Location ID: / Sample Depth (ft): / Date Collected:	CAS Number	Soil Standards or PQLs		S-132	S-133	S-146	S-148	S-149	S-156		S-161	S-167	S-168	S-171	S-172
		S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	DC Non-Res Subsurf Soil (Exceedances Shaded)	2-4 4/17/19	2-4 4/17/19	14-16 4/25/19	8-10 4/25/19	8-10 4/25/19	3-5 5/3/19	7.5-9.5 5/3/19	5-7 5/3/19	7-9 9/20/19	6-8 9/19/19	5-7 9/19/19	5-7 9/19/19
Metals (cont'd)															
Mercury	7439-97-6	10	190,000	1.4 J	1.3 J	< 0.034 J	0.26 J	1.8 J	3.1	0.83	0.032 J	0.21	0.40	0.61	0.75
Nickel	7440-02-0	650	190,000	25.5	56.3	9.3	36.1	31.6	46.8	17.8	16.4	49.5	15.6	13.0	26.3
Potassium	7440-09-7	- -	- -	956 J	2,050	1,040 J	365 J	476 J	242 J	895 J	1,180	1,230	< 1,200	1,510	1,760
Selenium	7782-49-2	26	190,000	< 7.1	< 4.7	< 2.3	2.8 J	2.0 J	2.0 J	4.1 J	< 2.2	< 7.4	< 4.7	< 2.3	< 4.7
Silver	7440-22-4	84	190,000	< 1.8	< 1.2	< 0.57	< 1.2	0.63	0.51 J	0.60 J	0.32 J	< 1.9	< 1.2	< 0.58	< 1.2
Sodium	7440-23-5	- -	- -	201 J	167 J	< 1,100	< 1,200	< 1,300	< 1,200	126 J	95.1 J	< 1,200	< 1,200	< 1,200	< 1,200
Thallium	7440-28-0	14	190,000	< 3.5	< 2.4	< 1.1	< 2.4	< 1.3	< 2.4	< 2.7	< 1.1	< 3.7	< 2.4	< 1.2	< 2.3
Vanadium	7440-62-2	680	190,000	35.7	24.9	20.8	12.7	30.0	17.5	72.7	16.0	35.0	27.6	28.6	30.9
Zinc	7440-66-6	12,000	190,000	331 J	383 J	40.7	104	475	185 J	124 J	77.4 J	297	137	137	787

Location ID: / Sample Depth (ft): / Date Collected:	CAS Number	Soil Standards or PQLs		S-173 5-7 9/19/19	TP-30 2 3/14/05	TP-35 4 3/15/05	TP-44 4 3/16/05	TP-44R 3-5 4/22/19	TP-64 3 3/21/05
		S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	DC Non-Res Subsurf Soil (Exceedances Shaded)						
Volatile Organic Compounds									
1,1,1-Trichloroethane	71-55-6	20	10,000	< 0.0025	< 0.0003	< 0.00043	< 0.00064	< 0.4	< 0.00035
1,1-Dichloroethane	75-34-3	16	1,600	< 0.0012	< 0.00091	< 0.0013	< 0.00065	< 0.2	< 0.0011
1,2,3-Trichlorobenzene	87-61-6	- -	- -	< 0.0061	NA	NA	NA	< 1	NA
1,2,4-Trichlorobenzene	120-82-1	27	190	< 0.0061	NA	NA	NA	< 1	NA
1,3-Dichlorobenzene	541-73-1	61	10,000	< 0.0012	NA	NA	NA	< 0.2	NA
1,4-Dichlorobenzene	106-46-7	10	230	< 0.0012	NA	NA	NA	< 0.2	NA
2-Butanone (MEK)	78-93-3	400	10,000	0.0191	< 0.00094	< 0.0013	< 0.001	< 2	< 0.0011
Acetone	67-64-1	8,800	10,000	0.217	0.019	0.053	0.064	< 2	0.028
Benzene	71-43-2	0.5	330	< 0.00061	< 0.00061	***0.51***	0.0018	0.494	< 0.00072
Carbon Disulfide	75-15-0	620	10,000	0.0020 J	< 0.00078	< 0.0011	< 0.00071	< 0.4	< 0.00092
Carbon Tetrachloride	56-23-5	0.5	430	< 0.0025	< 0.001	< 0.0015	< 0.0013	< 0.4	< 0.0012
Chloroform	67-66-3	8	110	< 0.0025	< 0.00055	< 0.00078	< 0.00035	< 0.4	< 0.00064
cis-1,2-Dichloroethene	156-59-2	7	10,000	< 0.0012	< 0.00057	< 0.00082	< 0.0005	< 0.2	< 0.00068
Cyclohexane	110-82-7	6,900	10,000	< 0.0025	NA	NA	NA	< 0.4	NA
Dichloromethane	75-09-2	0.5	10,000	< 0.0061	0.011 B	0.013 B	0.025 B	< 1	0.026 B
Ethylbenzene	100-41-4	70	1,000	0.00079 J	< 0.0009	0.39	0.019	2.29	< 0.0011
m&p-Xylenes	ARC-mpXyl	- -	- -	0.0015	< 0.0013	0.13	0.13	2.95	< 0.0016
Methyl Acetate	79-20-9	9,700	10,000	< 0.0061	NA	NA	NA	< 1	NA
Methylcyclohexane	108-87-2	- -	- -	< 0.0025	NA	NA	NA	< 0.4	NA
o,p-Xylene	136777-61-2	- -	- -	NA	< 0.00056	0.11	0.046	NA	< 0.00066
o-Xylene	95-47-6	- -	- -	0.00095 J	NA	NA	NA	0.354	NA
Styrene (Monomer)	100-42-5	24	10,000	< 0.0025	< 0.00075	< 0.0011	< 0.00021	< 0.4	< 0.00088
Toluene	108-88-3	100	10,000	< 0.0012	< 0.00091	0.011	0.0099	1.04	< 0.0011
Total Xylenes	1330-20-7	1,000	9,100	0.0025	NA	NA	NA	3.3	NA
trans-1,3-Dichloropropene	10061-02-6	- -	- -	< 0.0025	NA	NA	NA	< 0.4	NA
Trichloroethene	79-01-6	0.5	180	< 0.0012	< 0.00074	< 0.0011	< 0.00066	< 0.2	< 0.00087
Semi-Volatile Organic Compounds									
1,1-Biphenyl	92-52-4	1.5	40	0.0588 J	NA	NA	NA	0.227	NA
1,2,4,5-Tetrachlorobenzene	95-94-3	13	190,000	< 0.18	NA	NA	NA	< 0.21	NA
2,3,4,6-Tetrachlorophenol	58-90-2	4,500	190,000	< 0.18	NA	NA	NA	< 0.21	NA
2,4-Dichlorophenol	120-83-2	2	190,000	< 0.18	NA	NA	NA	< 0.21	NA
2,4-Dimethylphenol	105-67-9	190	10,000	< 0.18	< 0.028	< 6.9	< 4.4	< 0.21	< 4.5
2-Methylnaphthalene	91-57-6	100	270	0.19	0.049 J	23	24	4.11	13
2-Methylphenol	95-48-7	490	190,000	< 0.074	< 0.12	< 4.2	< 2.7	< 0.083	< 8.6
3-Methylphenol, 4-Methylphenol	65794-96-9	- -	- -	< 0.074	NA	NA	NA	< 0.083	NA
4-Methylphenol	106-44-5	49	190,000	NA	< 0.15	< 4.4	< 2.8	NA	< 11
Acenaphthene	83-32-9	4,700	190,000	0.96	< 0.011	5.7	6.4	0.0707	4.4
Acenaphthylene	208-96-8	6,600	190,000	0.114	0.18	5.8	< 0.27	< 0.041	46
Acetophenone	98-86-2	970	10,000	< 0.18	NA	NA	NA	< 0.21	NA
Anthracene	120-12-7	350	190,000	2.51	0.28	17	4.5	0.0351 J	100
Benz(a)anthracene	56-55-3	340	190,000	4.91 D	1.7	24	2	0.0165 J	300

Location ID: / Sample Depth (ft): / Date Collected:	CAS Number	Soil Standards or PQLs		S-173	TP-30	TP-35	TP-44	TP-44R	TP-64
		S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	DC Non-Res Subsurf Soil (Exceedances Shaded)	5-7 9/19/19	2 3/14/05	4 3/15/05	4 3/16/05	3-5 4/22/19	3 3/21/05
Semi-Volatile Organic Compounds (cont'd)									
Benzaldehyde	100-52-7	- -	- -	< 0.18	NA	NA	NA	< 0.21	NA
Benzo(a)pyrene	50-32-8	46	190,000	4.32 D	1.4	21	2	< 0.041	***280***
Benzo(b)fluoranthene	205-99-2	170	190,000	5.16 D	2.3	32	1.8	0.0192 J	***470***
Benzo(g,h,i)perylene	191-24-2	180	190,000	2.68	0.77	6.3	1.1	< 0.041	100
Benzo(k)fluoranthene	207-08-9	610	190,000	1.72	0.76	10	< 0.15	< 0.041	130
bis(2-Ethylhexyl)phthalate	117-81-7	130	10,000	0.222	0.05	< 2.5	< 1.6	< 0.083	< 1
Butyl benzyl phthalate	85-68-7	10,000	10,000	1.12	< 0.012	< 0.32	< 0.2	< 0.083	< 1.6
Caprolactam	105-60-2	- -	- -	< 0.074	NA	NA	NA	< 0.083	NA
Carbazole	86-74-8	89	190,000	1.28	0.044	6.9	< 0.22	0.0632 J	31
Chrysene	218-01-9	230	190,000	4.41 D	1.6	24	2.8	0.0398 J	***280***
Dibenz(a,h)anthracene	53-70-3	270	190,000	0.671	0.31	2.8	< 0.16	< 0.041	40
Dibenzofuran	132-64-9	250	190,000	0.617	0.055 J	7.4	4	0.219	42
Diethyl phthalate	84-66-2	7,800	10,000	< 0.074	< 0.013	< 0.23	< 0.15	< 0.083	< 0.93
Dimethyl phthalate	131-11-3	- -	- -	< 0.074	< 0.01	< 0.42	< 0.27	< 0.083	< 2
Di-n-butyl phthalate	84-74-2	4,000	10,000	< 0.074	< 0.011	< 0.18	< 0.11	< 0.083	< 0.87
Di-n-octyl phthalate	117-84-0	10,000	10,000	< 0.074	< 0.011	< 0.29	< 0.19	< 0.083	< 0.92
Fluoranthene	206-44-0	3,200	190,000	13 D	3.6	56	3.4	0.0232 J	710
Fluorene	86-73-7	3,800	190,000	1.13	0.12	16	7.8	0.161	59
Indeno(1,2,3-cd)pyrene	193-39-5	18,000	190,000	2.5	0.75	9	0.94	0.0316 J	140
Naphthalene	91-20-3	25	77	0.453	0.24	***130***	11	1.42	***43***
Pentachlorophenol	87-86-5	5	190,000	< 0.15	NA	NA	NA	< 0.17	NA
Phenanthrene	85-01-8	10,000	190,000	10.2 D	0.9	44	12	0.284	340
Phenol	108-95-2	200	18,000	< 0.074	< 0.028	< 4	< 2.6	< 0.083	< 3.9
Pyrene	129-00-0	2,200	190,000	10.5 D	2.9	40	8.2	0.0702	460
Total PAHs and 2-Methylnaphthalene	-	- -	- -	65.4	17.9	467	87.9	6.28	3,520
Metals									
Aluminum	7429-90-5	- -	190,000	14,500	NA	NA	NA	2,730	NA
Antimony	7440-36-0	27	190,000	7.0	5.8	10	3.9	2.5	4
Arsenic	7440-38-2	29	190,000	7.6	8.2	***35***	29	17.0	16
Barium	7440-39-3	8,200	190,000	67.3	65	110	1,200	57.7	310
Beryllium	7440-41-7	320	190,000	0.65	< 0.72	< 0.87	< 0.83	0.38	3.4
Cadmium	7440-43-9	38	190,000	< 0.59	< 0.72	4	1.5	< 0.62	< 0.7
Calcium	7440-70-2	- -	- -	6,640	NA	NA	NA	852	NA
Chromium	7440-47-3	190,000	190,000	23.7	36	85	7.9	8.9	56
Cobalt	7440-48-4	130	190,000	6.9	NA	NA	NA	3.5 J	NA
Copper	7440-50-8	43,000	190,000	18.1	220	400	110	154	89
Cyanide	57-12-5	200	190,000	< 0.28	24	4.1	NA	2.7	45
Iron	7439-89-6	- -	190,000	22,200	NA	NA	NA	10,700	NA
Lead	7439-92-1	450	190,000	117	***860***	***620***	***9,600***	220	130
Magnesium	7439-95-4	- -	- -	2,910	NA	NA	NA	332 J	NA
Manganese	7439-96-5	2,000	190,000	262	NA	NA	NA	23.0	NA

Table 9
Unsaturated Soil Analytical Results – Detected VOCs, SVOCs, and Inorganics (mg/kg)

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National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID: Sample Depth (ft): Date Collected:	CAS Number	Soil Standards or PQLs		S-173 5-7 9/19/19	TP-30 2 3/14/05	TP-35 4 3/15/05	TP-44 4 3/16/05	TP-44R 3-5 4/22/19	TP-64 3 3/21/05
		S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	DC Non-Res Subsurf Soil (Exceedances Shaded)						
Metals (cont'd)									
Mercury	7439-97-6	10	190,000	1.4	0.37	1.2	< 0.12	0.23 J	0.54
Nickel	7440-02-0	650	190,000	12.8	8.4	110	18	8.2	24
Potassium	7440-09-7	- -	- -	1,530	NA	NA	NA	361 J	NA
Selenium	7782-49-2	26	190,000	< 2.4	3.3	< 2.6	3.2	1.2 J	3.6
Silver	7440-22-4	84	190,000	< 0.59	< 3	< 3.6	< 3.5	< 0.62	< 2.9
Sodium	7440-23-5	- -	- -	< 1,200	NA	NA	NA	< 1,200	NA
Thallium	7440-28-0	14	190,000	< 1.2	< 1.4	< 1.7	< 1.7	< 1.2	< 1.4
Vanadium	7440-62-2	680	190,000	30.1	NA	NA	NA	11.2	NA
Zinc	7440-66-6	12,000	190,000	79.5	83	420	2,700	19.5	240

Notes:

1. Samples prior to 2018 were collected by Paulus, Sokolowski, and Sartor Engineering, PC on the dates indicated. Samples in 2018 and 2019 were collected by Arcadis on the dates indicated.
2. Sample depth is reported in feet below ground surface.
3. 2003 and 2005 samples were analyzed by Hampton-Clarke, Veritech Laboratories of Fairfield, New Jersey (Veritech).
4. 2018 and 2019 samples were analyzed by SGS North America Incorporated Laboratories of Dayton, New Jersey (SGS).
5. Samples were submitted for laboratory analysis for one or more of the following constituent groups, as indicated above.
   - Target Compound List (TCL) volatile organic compounds (VOC) using United States Environmental Protection Agency (USEPA) SW-846 Method 8260.
   - TCL semi-volatile organic compounds (SVOC) using USEPA SW-846 Method 8270.
   - Metals using USEPA SW-846 Methods 6010 and 7471.
   - Cyanide using USEPA SW-846 Method 9010 (Veritech) or 9012B (SGS).
6. Only compounds detected in one or more samples are shown in this table.
7. < = constituent not detected at a concentration above the reported detection limit. These results are also reported in gray.
8. NA = Not Analyzed.
9. Concentrations reported in milligrams per kilogram (mg/kg) or parts per million (ppm).
10. Soil standards obtained from the Pennsylvania Department of Environmental Protection (PADEP) Medium Specific Concentrations (MSCs) established in Title 25 of Chapter 250, Administration of the Land Recycling Program (Act 2 cleanup standards) updated on November 20, 2021, and include:
    (a) The soil to groundwater MSCs for a non-residential used aquifer with total dissolved solids (TDS) less than or equal to 2,500 parts per million (ppm). The higher of the 100 X groundwater MSC or generic value is used.
    (b) The non-residential direct contact MSC for subsurface soil.
11. Shaded results indicates that the result exceed the PADEP non-residential direct contact MSC (for subsurface soil).
12. Italics and bolding indicates that the result exceeds the PADEP soil to groundwater MSC (for a non-residential used aquifer with TDS ≤ 2,500 ppm).
13. - - = No PADEP MSC.
14. - = No actual Chemical Abstracts Service (CAS) number is available.
15. Brackets indicate the reported concentration of a duplicate sample.
16. The MSCs reported for chromium is for trivalent chromium. The reported chromium results are for total chromium.
17. The MSCs reported for cyanide are for free cyanide. The reported cyanide results are for total cyanide.
18. Total polycyclic aromatic hydrocarbons (PAHs) are the sum of the 16 priority pollutant PAHs identified by the USEPA and 2-methylnaphthalene.
19. Qualifier Definitions:
    B = Analyte is an estimated value between the instrument detection limit and the Reporting Limit.
    D = Concentration is based on a diluted sample analysis.
    J = Analyte is an estimated value.
    R = Data rejected during validation.
20. Data from 2018 and 2019 have undergone a Tier II validation. Data prior to 2018 have not been validated.

Table 10
Unsaturated Soil Analytical Results – Detected Pesticides and PCBs (mg/kg)

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National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID: / Sample Depth (ft): / Date Collected:	CAS Number	Soil Standards or PQLs		MW-103	PCSB-30	PCTP-61	PCTP-64	PCTP-65	PCTP-66R-HC	PCTP-75	PCTP-76	PCTP-80
		S-GW Used Aquifer TDS≤ 2,500 Non-Res (No Exceedances)	DC Non-Res Subsurf Soil (No Exceedances)	6-7 5/16/18	2 7/26/05	7.5 9/8/05	7 9/8/05	7.5 9/8/05	2-4 4/4/19	11 9/9/05	6.5 9/12/05	8 9/12/05
Pesticides												
4,4-DDD	72-54-8	120	190,000	< 0.00082	< 0.0076	< 0.0054	< 0.006	< 0.0067	< 0.00063	< 0.019	< 0.027	0.029
4,4-DDE	72-55-9	170	190,000	< 0.00082	< 0.0076	< 0.0054	< 0.006	< 0.0067	< 0.00063	< 0.019	< 0.027	0.011
4,4-DDT	50-29-3	330	190,000	< 0.00082	< 0.0076	< 0.0054	< 0.006	< 0.0067	< 0.00063	0.029	< 0.027	< 0.0059
Aldrin	309-00-2	1.9	190,000	< 0.00082 J	< 0.0076	< 0.0054	< 0.006	< 0.0067	< 0.00063	< 0.019	< 0.027	< 0.0059
Beta-BHC	319-85-7	0.88	190,000	< 0.00082	< 0.0076	< 0.0054	< 0.006	< 0.0067	< 0.00063	< 0.019	< 0.027	< 0.0059
Chlordane	57-74-9	49	190,000	NA	< 0.015	< 0.011	< 0.012	< 0.013	NA	< 0.037	< 0.055	0.068
Dieldrin	60-57-1	0.47	190,000	< 0.00082	< 0.0076	< 0.0054	< 0.006	< 0.0067	< 0.00063	< 0.019	< 0.027	< 0.0059
Endosulfan I	959-98-8	260	190,000	< 0.00082	< 0.0076	< 0.0054	< 0.006	< 0.0067	< 0.00063	< 0.019	< 0.027	< 0.0059
Endosulfan sulfate	1031-07-8	70	190,000	< 0.00082	< 0.0076	< 0.0054	< 0.006	< 0.0067	< 0.00063	< 0.019	< 0.027	< 0.0059
Endrin	72-20-8	5.5	190,000	< 0.00082	< 0.0076	< 0.0054	< 0.006	< 0.0067	< 0.00063	< 0.019	< 0.027	< 0.0059
Endrin aldehyde	7421-93-4	- -	- -	< 0.00082	< 0.0076	< 0.0054	< 0.006	< 0.0067	< 0.00063	< 0.019	< 0.027	< 0.0059
Endrin ketone	53494-70-5	- -	- -	< 0.00082	< 0.0076	< 0.0054	< 0.006	< 0.0067	< 0.00063	< 0.019	< 0.027	< 0.0059
Heptachlor	76-44-8	0.68	190,000	< 0.00082 J	< 0.0076	< 0.0054	< 0.006	< 0.0067	< 0.00063	< 0.019	< 0.027	< 0.0059
Heptachlor epoxide	1024-57-3	1.1	190,000	< 0.00082	< 0.0076	< 0.0054	< 0.006	< 0.0067	< 0.00063	< 0.019	< 0.027	< 0.0059
trans-chlordane	5103-74-2	- -	- -	< 0.00082	NA	NA	NA	NA	< 0.00063	NA	NA	NA
Polychlorinated Biphenyls												
Aroclor 1242	53469-21-9	17	10,000	< 0.041	< 0.038	< 0.027	< 0.03	< 0.033	< 0.16	< 0.019	< 0.027	0.17
Aroclor 1254	11097-69-1	380	10,000	0.2	< 0.038	< 0.027	< 0.03	< 0.033	< 0.16	< 0.019	< 0.027	< 0.029
Aroclor 1260	11096-82-5	630	190,000	< 0.041	< 0.038	< 0.027	< 0.03	< 0.033	< 0.16	< 0.019	0.7	0.14
Total PCBs	-	- -	- -	0.2	< 0.038	< 0.027	< 0.03	< 0.033	< 0.16	< 0.019	0.7	0.31

Table 10
Unsaturated Soil Analytical Results – Detected Pesticides and PCBs (mg/kg)

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Location ID: Sample Depth (ft): Date Collected:	CAS Number	Soil Standards or PQLs		PSSTP-01B	PSSTP-01R	PSSTP-02B	PSSTP-04R	PSSTP-08B	PSSTP-09B	PSSTP-23B	PSSTP-25B
		S-GW Used Aquifer TDS≤ 2,500 Non-Res (No Exceedances)	DC Non-Res Subsurf Soil (No Exceedances)	5-6 3/11/03	5-6 4/10/19	5-6 3/11/03	7-8 4/11/19	6-7 3/11/03	6-7 3/12/03	7-8 3/13/03	7-8 3/13/03
Pesticides											
4,4-DDD	72-54-8	120	190,000	0.056	< 0.00078	< 0.0043	< 0.0025	< 0.022	0.14	< 0.004	< 0.0044
4,4-DDE	72-55-9	170	190,000	0.049	0.0466 J	< 0.0043	0.0127 JN	< 0.022	< 0.082	< 0.004	< 0.0044
4,4-DDT	50-29-3	330	190,000	< 0.02	0.0360 JN	< 0.0043	0.0068 JN	0.2	< 0.082	0.052	< 0.0044
Aldrin	309-00-2	1.9	190,000	< 0.0039	0.0159 JN	< 0.0043	< 0.0025	< 0.022	< 0.082	< 0.004	< 0.0044
Beta-BHC	319-85-7	0.88	190,000	0.012	< 0.00078	< 0.023	< 0.0025	< 0.022	< 0.082	< 0.0037	< 0.0044
Chlordane	57-74-9	49	190,000	< 0.0078	NA	< 0.0087	NA	1.2	0.41	< 0.0075	< 0.0089
Dieldrin	60-57-1	0.47	190,000	< 0.026	0.0198 JN	0.024	< 0.0025	< 0.022	< 0.082	< 0.004	< 0.0044
Endosulfan I	959-98-8	260	190,000	< 0.0039	0.0121 JN	< 0.0043	< 0.0025	0.049	< 0.082	< 0.004	< 0.0044
Endosulfan sulfate	1031-07-8	70	190,000	< 0.0039	< 0.00078	< 0.0043	< 0.0025	< 0.022	< 0.082	0.082	< 0.0044
Endrin	72-20-8	5.5	190,000	< 0.0039	0.0282	0.028	< 0.0025	< 0.022	< 0.082	0.073	< 0.0044
Endrin aldehyde	7421-93-4	- -	- -	< 0.0039	< 0.00078	0.1	< 0.0025 UJ	< 0.022	< 0.082	< 0.004	< 0.0044
Endrin ketone	53494-70-5	- -	- -	< 0.0039	0.0255 JN	< 0.0043	< 0.0025	< 0.022	< 0.082	< 0.004	< 0.0044
Heptachlor	76-44-8	0.68	190,000	< 0.0039	0.0158	< 0.0043	< 0.0025	< 0.022	< 0.082	< 0.004	< 0.0044
Heptachlor epoxide	1024-57-3	1.1	190,000	0.0074	0.0377	< 0.0043	< 0.0025 UJ	< 0.022	< 0.082	< 0.004	< 0.0044
trans-chlordane	5103-74-2	- -	- -	NA	0.0120	NA	< 0.0025	NA	NA	NA	NA
Polychlorinated Biphenyls											
Aroclor 1242	53469-21-9	17	10,000	< 0.39	< 0.039	0.24	< 0.12	1.2	< 0.41	< 0.019	< 0.023
Aroclor 1254	11097-69-1	380	10,000	< 0.39	1.51	< 0.022	< 0.12	< 0.022	< 0.41	< 0.019	< 0.023
Aroclor 1260	11096-82-5	630	190,000	13	< 0.039	0.9	< 0.12	< 0.022	8.9	< 0.019	< 0.023
Total PCBs	-	- -	- -	13	1.51	1.14	< 0.12	1.2	8.9	< 0.019	< 0.023

Notes:

1. Samples prior to 2018 were collected by Paulus, Sokolowski, and Sartor Engineering, PC on the dates indicated. Samples in 2018 and 2019 were collected by Arcadis on the dates indicated.
2. Sample depth is reported in feet below ground surface.
3. 2003 and 2005 samples were analyzed by Hampton-Clarke, Veritech Laboratories of Fairfield, New Jersey.
4. 2018 and 2019 samples were analyzed by SGS North America Incorporated Laboratories of Dayton, New Jersey.
5. Samples were submitted for laboratory analysis for one or more of the following constituent groups, as indicated above.
   - Pesticides using United States Environmental Protection Agency (USEPA) SW-846 Method 8081.
   - Polychlorinated biphenyls (PCBs) using USEPA SW-846 Method 8082.
6. Only compounds detected in one or more samples are shown in this table.
7. < = constituent not detected at a concentration above the reported detection limit. These results are also reported in gray.
8. NA = Not Analyzed.
9. Concentrations reported in milligrams per kilogram (mg/kg) or parts per million (ppm).
10. Soil standards obtained from the Pennsylvania Department of Environmental Protection (PADEP) Medium Specific Concentrations (MSCs) established in Title 25 of the Chapter 250, Administration of the Land Recycling Program (Act 2 cleanup standards) updated on November 20, 2021, and include:
    (a) The soil to groundwater MSCs for a non-residential used aquifer with total dissolved solids (TDS) less than or equal to 2,500 parts per million (ppm). The higher of the 100 X groundwater MSC or generic value is used.
    (b) The non-residential direct contact MSC for subsurface soil.
11. No results exceed the PADEP non-residential direct contact MSC (for subsurface soil) or the PADEP soil to groundwater MSC (for a non-residential used aquifer with TDS ≤ 2,500 ppm).
12. - - = No PADEP MSC.
13. - = No actual Chemical Abstracts Service (CAS) number is available.
14. Brackets indicate the reported concentration of a duplicate sample.
15. Qualifier Definitions:
    J = Analyte is an estimated value.
    N = There is presumptive evidence to make a tentative identification of this compound.
16. Data from 2018 and 2019 have undergone a Tier II validation. Data prior to 2018 have not been validated.

Table 11
Saturated Soil Analytical Results – Detected VOCs, SVOCs, and Inorganics (mg/kg)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID:	CAS Number	Soil Standards or PQLs		MW-102	MW-103	MW-111		PC-B13	PC-B14	PC-B8	PCSB-01		PCSB-01R		PCSB-02
Sample Depth (ft):		S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	DC Non-Res Subsurf Soil (Exceedances Shaded)	12-13	15-16	11-13	13-15	15-17	15-17	15.5-16	14.5-15	18.5-19	14-16	18-20	16
Date Collected:				5/16/18	5/16/18	9/23/19	9/23/19	2/10/05	2/11/05	2/9/05	2/18/05	2/18/05	4/5/19	4/5/19	3/4/05
Volatile Organic Compounds															
2-Butanone (MEK)	78-93-3	400	10,000	< 0.023	0.0239	< 62	< 2.1	< 0.0063	< 0.037	< 0.0067	< 0.027	< 0.00091	< 1.1	R	< 0.0014
Acetone	67-64-1	8,800	10,000	0.0383	0.0940 J	< 62	< 2.1	0.097	< 0.037	0.16	< 0.67	< 0.0042	< 1.1	0.0164 J	0.051
Benzene	71-43-2	0.5	330	0.0012	< 0.00060	***131***	***13.2***	< 0.0004	< 0.0015	< 0.00042	< 0.018	< 0.0003	< 0.056	R	< 0.00047
Carbon Disulfide	75-15-0	620	10,000	0.0334	< 0.0024	< 12	0.4 J	< 0.00074	< 0.0074	0.0092	< 0.026	< 0.00062	< 0.22	R	< 0.00098
Chlorobenzene	108-90-7	10	4,500	< 0.0047	< 0.0024	< 12	< 0.42	< 0.00097	< 0.0074	< 0.001	< 0.017	< 0.00024	< 0.22	R	< 0.00038
Chloroform	67-66-3	8	110	< 0.0047	< 0.0024	< 12	< 0.42	< 0.0021	< 0.0074	< 0.0022	< 0.043	< 0.00031	< 0.22	R	0.0038
cis-1,2-Dichloroethene	156-59-2	7	10,000	< 0.0023	< 0.0012	< 6.2	< 0.21	< 0.00065	< 0.0074	< 0.00069	< 0.042	< 0.00044	< 0.11	R	< 0.00068
Cyclohexane	110-82-7	6,900	10,000	< 0.0047	< 0.0024	< 12	< 0.42	NA	NA	NA	NA	NA	< 0.22	R	NA
Dichloromethane	75-09-2	0.5	10,000	< 0.012	0.0036 J	< 31	< 1.1	0.023 B	0.013 B	0.044 B	< 0.06	0.012 B	< 0.56	R	0.026 B
Ethylbenzene	100-41-4	70	1,000	< 0.0023	< 0.0012	21.3	0.19 J	0.0084	< 0.0015	< 0.0015	15	< 0.00082	< 0.11	R	< 0.0013
Isopropylbenzene	98-82-8	2,500	10,000	< 0.0047	< 0.0024	< 12	0.192 J	NA	NA	NA	NA	NA	< 0.22	R	NA
m&p-Xylenes	ARC-mpXyl	- -	- -	< 0.0023	< 0.0012	127	0.346	< 0.0016	< 0.0029	< 0.0017	24	< 0.00098	< 0.11	R	< 0.0015
Methyl Acetate	79-20-9	9,700	10,000	< 0.012	< 0.0060	< 31	< 1.1	NA	NA	NA	NA	NA	< 0.56	R	NA
Methylcyclohexane	108-87-2	- -	- -	< 0.0047	< 0.0024	< 12	< 0.42	NA	NA	NA	NA	NA	< 0.22	R	NA
Methyl-tert-butylether	1634-04-4	2	9,800	< 0.0023	< 0.0012	< 6.2	< 0.21	NA	NA	NA	NA	NA	< 0.11	R	NA
o,p-Xylene	136777-61-2	- -	- -	NA	NA	NA	NA	0.0056	< 0.0015	< 0.00054	3	< 0.00021	NA	NA	< 0.00033
o-Xylene	95-47-6	- -	- -	< 0.0023	< 0.0012	42.6	0.368	NA	NA	NA	NA	NA	< 0.11	R	NA
Styrene (Monomer)	100-42-5	24	10,000	< 0.0047	< 0.0024	***29.5***	< 0.42	< 0.00038	< 0.0074	< 0.0004	< 0.019	< 0.00019	< 0.22	R	< 0.00029
Toluene	108-88-3	100	10,000	0.0020 J	< 0.0012	99.2	1.5	< 0.00072	< 0.0015	< 0.00075	< 0.024	< 0.00022	< 0.11	R	< 0.00035
trans-1,2-Dichloroethene	156-60-5	10	10,000	< 0.0023	< 0.0012	< 6.2	< 0.21	< 0.0011	< 0.0074	< 0.0011	< 0.087	< 0.00063	< 0.11	R	< 0.00099
trans-1,3-Dichloropropene	10061-02-6	- -	- -	< 0.0047	< 0.0024	< 12	< 0.42	NA	NA	NA	NA	NA	< 0.22	R	NA
Total Xylenes	1330-20-7	1,000	9,100	< 0.0023	< 0.0012	170	0.714	NA	NA	NA	NA	NA	< 0.11	R	NA
Semi-Volatile Organic Compounds															
1,1-Biphenyl	92-52-4	1.5	40	0.0548 J	< 0.093	***158 D***	0.357	NA	NA	NA	NA	NA	< 0.076	< 0.073	NA
2,4-Dimethylphenol	105-67-9	190	10,000	R	< 0.23	64.6	< 0.26	< 1.3	< 0.23	< 0.28	< 0.028	< 0.12	< 0.19	< 0.18	< 0.035
2-Methylnaphthalene	91-57-6	100	270	0.244	< 0.047	***761 D***	1.27	14	0.39	0.18	1.9	< 0.059	< 0.038	< 0.037	0.37
2-Methylphenol	95-48-7	490	190,000	R	< 0.093	27.7	< 0.11	< 0.76	< 0.14	< 0.17	< 0.12	< 0.1	< 0.076	< 0.073	< 0.14
3-Methylphenol, 4-Methylphenol	65794-96-9	- -	- -	R	< 0.093	79.3	< 0.11	NA	NA	NA	NA	NA	< 0.076	< 0.073	NA
4-Methylphenol	106-44-5	49	190,000	NA	NA	NA	NA	< 0.8	< 0.15	0.082 J	< 0.15	< 0.1	NA	NA	0.064 J
Acenaphthene	83-32-9	4,700	190,000	0.106	< 0.047	274 D	2.63	14	1.2	0.19	< 0.011	< 0.012	< 0.038	< 0.037	1.5
Acenaphthylene	208-96-8	6,600	190,000	< 0.061	< 0.047	770 D	0.411	1.4	0.3	0.2	< 0.011	< 0.011	< 0.038	< 0.037	0.14
Acetophenone	98-86-2	970	10,000	< 0.3	< 0.23	0.374 J	< 0.26	NA	NA	NA	NA	NA	< 0.19	< 0.18	NA
Anthracene	120-12-7	350	190,000	0.0842	< 0.047	***421 D***	1.17	11	0.67	0.48	< 0.0099	< 0.0082	0.0414	< 0.037	0.73
Benz(a)anthracene	56-55-3	340	190,000	0.156	0.0248 J	***592 D***	2.09	13	1.5	1.5	< 0.013	< 0.01	0.0604	< 0.037	1
Benzaldehyde	100-52-7	- -	- -	< 0.3	< 0.23	< 4.5	< 0.26	NA	NA	NA	NA	NA	< 0.19	< 0.18	NA
Benzo(a)pyrene	50-32-8	46	190,000	0.0944	< 0.047	***469 D***	1.71	9.3	1.5	1.2	< 0.0087	< 0.0099	0.0498	< 0.037	0.81
Benzo(b)fluoranthene	205-99-2	170	190,000	0.0875	0.0278 J	***581 D***	1.91	12	1.9	1.8	< 0.016	< 0.0093	0.0711	< 0.037	0.92
Benzo(g,h,i)perylene	191-24-2	180	190,000	0.0610	< 0.047	***242 D***	0.975	3.6	0.88	0.88	< 0.012	< 0.0088	0.0306 J	< 0.037	0.5
Benzo(k)fluoranthene	207-08-9	610	190,000	0.0372 J	< 0.047	194 D	0.803	4	0.6	0.55	< 0.014	< 0.01	0.0263 J	< 0.037	0.26
bis(2-Ethylhexyl)phthalate	117-81-7	130	10,000	< 0.12	< 0.093	< 1.8	< 0.11	< 0.45	< 0.084	< 0.1	0.17	< 0.011	< 0.076	< 0.073	0.1 B
Butyl benzyl phthalate	85-68-7	10,000	10,000	< 0.12	< 0.093	< 1.8	< 0.11	< 0.058	< 0.011	< 0.013	< 0.012	< 0.0089	< 0.076	< 0.073	< 0.015

Table 11
Saturated Soil Analytical Results – Detected VOCs, SVOCs, and Inorganics (mg/kg)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID:	CAS Number	Soil Standards or PQLs		MW-102	MW-103	MW-111		PC-B13	PC-B14	PC-B8	PCSB-01		PCSB-01R		PCSB-02
Sample Depth (ft):		S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	DC Non-Res Subsurf Soil (Exceedances Shaded)	12-13	15-16	11-13	13-15	15-17	15-17	15.5-16	14.5-15	18.5-19	14-16	18-20	16
Date Collected:				5/16/18	5/16/18	9/23/19	9/23/19	2/10/05	2/11/05	2/9/05	2/18/05	2/18/05	4/5/19	4/5/19	3/4/05
Semi-Volatile Organic Compounds (cont'd)															
Carbazole	86-74-8	89	190,000	0.0450 J	< 0.093	***296 D***	0.82	2.2	0.15	0.099	< 0.0092	< 0.0057	0.0162 J	< 0.073	< 0.011
Chrysene	218-01-9	230	190,000	0.322	0.0212 J	***437 D***	1.58	11	1.5	1.3	< 0.0092	< 0.0087	0.0592	< 0.037	1.1
Dibenz(a,h)anthracene	53-70-3	270	190,000	< 0.061	< 0.047	65.4	0.333	1.6	0.36	0.3	< 0.015	< 0.013	< 0.038	< 0.037	0.16
Dibenzofuran	132-64-9	250	190,000	0.181	< 0.093	***663 D***	1.66	6.2	0.15	0.14	< 0.098	< 0.059	0.0241 J	< 0.073	0.16
Diethyl phthalate	84-66-2	7,800	10,000	< 0.12	< 0.093	< 1.8	< 0.11	< 0.042	0.16	< 0.0094	< 0.013	0.05	< 0.076	< 0.073	< 0.016
Di-n-butyl phthalate	84-74-2	4,000	10,000	< 0.12	< 0.093	< 1.8	< 0.11	< 0.033	0.065	< 0.0073	< 0.011	< 0.0071	< 0.076	< 0.073	< 0.014
Di-n-octyl phthalate	117-84-0	10,000	10,000	< 0.12	< 0.093	< 1.8	< 0.11	< 0.053	< 0.0099	< 0.012	< 0.011	< 0.0069	< 0.076	< 0.073	< 0.014
Fluoranthene	206-44-0	3,200	190,000	0.15	0.0296 J	1,600 D	4.22	30	2.8	3.1	< 0.013	< 0.0097	0.156	< 0.037	1.4
Fluorene	86-73-7	3,800	190,000	0.175	< 0.047	983 D	2.49	12	0.56	0.28	< 0.013	< 0.01	0.0216 J	< 0.037	1
Indeno(1,2,3-cd)pyrene	193-39-5	18,000	190,000	0.0488 J	< 0.047	261 D	1.04	3.6	0.82	0.87	< 0.012	< 0.0068	0.0310 J	< 0.037	0.37
Naphthalene	91-20-3	25	77	0.614	0.0167 J	***3,190 D***	4.5	2.8	0.7	0.48	3.4	< 0.0074	< 0.038	< 0.037	0.54
Pentachlorophenol	87-86-5	5	190,000	R	< 0.19	< 3.6	< 0.21	NA	NA	NA	NA	NA	< 0.15	< 0.15	NA
Phenanthrene	85-01-8	10,000	190,000	0.475	0.0174 J	2,380 D	7.07 D	38	2	1.2	< 0.014	< 0.007	0.21	< 0.037	2.9
Phenol	108-95-2	200	18,000	0.15 J	< 0.093	31.3	< 0.11	< 0.74	< 0.14	0.12 J	< 0.028	< 0.048	< 0.076	< 0.073	< 0.035
Pyrene	129-00-0	2,200	190,000	0.259	0.0398 J	1,080 D	3.72	29	3.2	3	< 0.011	< 0.0085	0.13	< 0.037	2.9
Total PAHs and 2-Methylnaphthalene	-	- -	- -	2.91	0.177	14,300	37.9	210	20.9	17.5	5.30	< 0.059	0.887	< 0.037	16.6
Metals															
Aluminum	7429-90-5	- -	190,000	1,440	21,700	4,410	17,500	NA	NA	NA	NA	NA	7,220	864	NA
Antimony	7440-36-0	27	190,000	< 3.7	< 2.7	< 2.2	< 3.0	< 3.2	< 2.9	< 3.6	< 2.4	< 2.4	< 2.5	< 2.3	< 3
Arsenic	7440-38-2	29	190,000	9.4	4.4	6.2	***34.7***	***33***	19	22	3	11	5.8	1.7 J	15
Barium	7440-39-3	8,200	190,000	< 37	159	32.8	170	180	140	260	20	44	22.5 J	4.8 J	200
Beryllium	7440-41-7	320	190,000	< 0.37	1.1	0.30	1.2	1	< 0.88	1.6	< 0.72	< 0.73	0.50	< 0.23	< 0.9
Cadmium	7440-43-9	38	190,000	< 0.92	< 0.68	< 0.55	1.5	1.6	< 0.88	< 1.1	< 0.72	< 0.73	< 0.61	< 0.59	< 0.9
Calcium	7440-70-2	- -	- -	164,000	2,510	893	3,580	NA	NA	NA	NA	NA	238 J	< 590	NA
Chromium	7440-47-3	190,000	190,000	6.6	43.9	12.5	162	130	90	150	20	20	15.5	3.7	44
Cobalt	7440-48-4	130	190,000	< 9.2	12.4	< 5.5	15.1	NA	NA	NA	NA	NA	5.2 J	0.56 J	NA
Copper	7440-50-8	43,000	190,000	6.0	9.3	25.0	88.8	100	73	98	7.7	7	7.6	< 2.9	37
Cyanide	57-12-5	200	190,000	1.0	< 0.24	< 0.29	0.87	NA	NA	NA	NA	NA	< 0.29	< 0.27	< 0.37
Iron	7439-89-6	- -	190,000	3,250	24,900	11,100	28,200	NA	NA	NA	NA	NA	17,200	1,650	NA
Lead	7439-92-1	450	190,000	22.6	46.5	55.4	185	220	160	***760***	11	9.8	10.5	2.1 J	99
Magnesium	7439-95-4	- -	- -	141,000	5,320	1,460	4,760	NA	NA	NA	NA	NA	1,120	77.5 J	NA
Manganese	7439-96-5	2,000	190,000	216	320	168	860	NA	NA	NA	NA	NA	217	8.7	NA
Mercury	7439-97-6	10	190,000	0.075	0.17	0.15	1.4	0.63	1.3	2.9	< 0.1	< 0.1	< 0.035	< 0.032	0.19
Nickel	7440-02-0	650	190,000	9.4	28.4	9.5	30.6	30	22	33	7.3	8.6	8.3	0.76 J	22
Potassium	7440-09-7	- -	- -	< 1,800	1,690	< 1,100	1,950	NA	NA	NA	NA	NA	832 J	113 J	NA
Selenium	7782-49-2	26	190,000	< 3.7	< 2.7	< 2.2	< 3.0	4.5	4.3	6.2	< 2.2	< 2.2	< 2.5	< 2.3	3.3
Silver	7440-22-4	84	190,000	< 4.6	< 0.68	< 0.55	1.2	< 4	< 3.7	< 4.5	< 3	< 3	< 0.61	< 0.59	< 3.7
Sodium	7440-23-5	- -	- -	< 1,800	< 1,400	< 1,100	< 1,500	NA	NA	NA	NA	NA	< 1,200	< 1,200	NA
Thallium	7440-28-0	14	190,000	< 1.8	< 1.4	< 1.1	< 1.5	< 1.9	< 1.8	< 2.1	< 1.4	< 1.5	< 1.2	< 1.2	< 1.8
Vanadium	7440-62-2	680	190,000	10.3	44.3	8.7	32.6	NA	NA	NA	NA	NA	19.1	3.8 J	NA
Zinc	7440-66-6	12,000	190,000	15.4	66.8	74.0	504	550	380	520	32	38	32.5	3.9 J	130

Table 11
Saturated Soil Analytical Results – Detected VOCs, SVOCs, and Inorganics (mg/kg)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID:		Soil Standards or PQLs		PCSB-03		PCSB-04			PCSB-06			PCSB-07		PCSB-08	
Sample Depth (ft):				14	25	4	12	25	13	18	23.5	14	21.5	10.5	19
Date Collected:	CAS Number	S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	DC Non-Res Subsurf Soil (Exceedances Shaded)	3/4/05	3/4/05	3/7/05	3/7/05	3/7/05	3/7/05	3/7/05	3/7/05	3/8/05	3/8/05	3/9/05	3/9/05
Volatile Organic Compounds															
2-Butanone (MEK)	78-93-3	400	10,000	< 0.0016	< 0.0016	< 0.00097	< 0.0011	< 0.0013	< 0.0014	< 0.0012	< 0.0013	< 0.0013	< 0.0029	< 0.0011	< 0.0018
Acetone	67-64-1	8,800	10,000	0.036	0.053	0.038	0.043	0.093	0.061	0.051	0.073	< 0.0092	0.19	0.022	0.041
Benzene	71-43-2	0.5	330	< 0.00052	< 0.00051	< 0.00064	0.0019	< 0.00088	< 0.00093	< 0.00078	< 0.00086	< 0.00088	< 0.0019	0.078	0.037
Carbon Disulfide	75-15-0	620	10,000	< 0.0011	< 0.0011	< 0.00081	< 0.00094	< 0.0011	< 0.0012	< 0.001	< 0.0011	0.022	0.061	< 0.00089	0.004
Chlorobenzene	108-90-7	10	4,500	< 0.00042	< 0.00041	< 0.00063	< 0.00073	< 0.00087	< 0.00091	< 0.00077	< 0.00085	< 0.00087	< 0.0019	< 0.00069	< 0.0011
Chloroform	67-66-3	8	110	0.0041	0.0041	0.0027	0.003	0.0036	0.0038	0.0034	0.0036	< 0.00078	< 0.0017	< 0.00062	< 0.001
cis-1,2-Dichloroethene	156-59-2	7	10,000	< 0.00076	< 0.00074	< 0.0006	< 0.00069	< 0.00082	< 0.00087	< 0.00073	< 0.00081	< 0.00082	< 0.0018	< 0.00065	< 0.0011
Cyclohexane	110-82-7	6,900	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichloromethane	75-09-2	0.5	10,000	0.021 B	0.022 B	0.0093 B	0.01 B	0.013 B	0.013 B	0.012 B	0.013 B	0.023 B	0.055 B	0.018 B	0.03 B
Ethylbenzene	100-41-4	70	1,000	< 0.0014	< 0.0014	< 0.00093	0.012	< 0.0013	0.0019	< 0.0011	< 0.0013	< 0.0013	< 0.0028	< 0.001	< 0.0017
Isopropylbenzene	98-82-8	2,500	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
m&p-Xylenes	ARC-mpXyl	- -	- -	< 0.0017	< 0.0017	< 0.0014	0.0058	< 0.0019	0.0038	< 0.0017	< 0.0019	< 0.0019	< 0.0041	0.0032	< 0.0025
Methyl Acetate	79-20-9	9,700	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylcyclohexane	108-87-2	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl-tert-butylether	1634-04-4	2	9,800	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
o,p-Xylene	136777-61-2	- -	- -	< 0.00037	< 0.00036	< 0.00058	0.01	< 0.00081	0.003	< 0.00072	< 0.00079	< 0.00081	< 0.0017	0.0023	< 0.0011
o-Xylene	95-47-6	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene (Monomer)	100-42-5	24	10,000	< 0.00033	< 0.00032	< 0.00078	< 0.0009	< 0.0011	< 0.0011	< 0.00095	< 0.0011	< 0.0011	< 0.0023	< 0.00085	< 0.0014
Toluene	108-88-3	100	10,000	< 0.00039	< 0.00038	< 0.00094	< 0.0011	< 0.0013	< 0.0014	< 0.0012	< 0.0013	< 0.0013	< 0.0028	0.0093	0.0043
trans-1,2-Dichloroethene	156-60-5	10	10,000	< 0.0011	< 0.0011	< 0.0004	< 0.00046	< 0.00055	< 0.00058	< 0.00049	< 0.00054	< 0.00055	< 0.0012	< 0.00044	< 0.00072
trans-1,3-Dichloropropene	10061-02-6	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Xylenes	1330-20-7	1,000	9,100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Semi-Volatile Organic Compounds															
1,1-Biphenyl	92-52-4	1.5	40	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	105-67-9	190	10,000	< 0.041	< 0.039	< 1.2	< 1.3	< 0.04	< 0.42	< 0.036	< 0.039	< 0.4	< 0.057	0.34 J	< 0.039
2-Methylnaphthalene	91-57-6	100	270	2.1	< 0.095	5.5	30	0.62	4.1	2.1	0.073 J	1.9	< 0.14	0.32	< 0.095
2-Methylphenol	95-48-7	490	190,000	< 0.17	< 0.16	< 4.8	< 5.6	< 0.17	< 1.7	< 0.15	< 0.16	< 1.7	< 0.23	0.52	0.072 J
3-Methylphenol, 4-Methylphenol	65794-96-9	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methylphenol	106-44-5	49	190,000	0.33	< 0.2	< 6	< 7	< 0.21	< 2.2	< 0.19	< 0.2	< 2.1	0.32	1	0.89
Acenaphthene	83-32-9	4,700	190,000	4.3	0.073	2	20	0.67	44	3.1	0.2	4.5	< 0.022	0.22	0.061
Acenaphthylene	208-96-8	6,600	190,000	0.38	< 0.016	11	7	0.12	< 0.17	0.15	< 0.016	< 0.16	< 0.023	0.26	< 0.016
Acetophenone	98-86-2	970	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	120-12-7	350	190,000	2.6	< 0.014	42	60	1.4	24	1.8	0.1	7.7	< 0.02	0.44	0.065
Benz(a)anthracene	56-55-3	340	190,000	3.3	< 0.017	110	75	1.5	15	1.5	0.11	7	0.093	0.66	0.13
Benzaldehyde	100-52-7	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	50-32-8	46	190,000	2.7	< 0.012	***82***	***53***	1.1	10	1.2	0.085	4.5	1	0.61	0.11
Benzo(b)fluoranthene	205-99-2	170	190,000	3.3	0.059	120	69	1.4	11	1.4	0.094	5.3	< 0.033	0.8	0.16
Benzo(g,h,i)perylene	191-24-2	180	190,000	1.5	< 0.017	53	30	0.6	5.3	0.63	< 0.017	2.5	0.094	0.32	0.081
Benzo(k)fluoranthene	207-08-9	610	190,000	0.72	< 0.02	33	22	0.56	4.3	0.27	< 0.02	2.1	< 0.029	0.3	0.077
bis(2-Ethylhexyl)phthalate	117-81-7	130	10,000	< 0.034	0.086 B	< 0.97	< 1.1	< 0.034	< 0.35	< 0.03	0.066	< 0.34	< 0.048	< 0.23	< 0.032
Butyl benzyl phthalate	85-68-7	10,000	10,000	< 0.018	< 0.017	< 0.5	< 0.58	< 0.017	< 0.18	< 0.015	< 0.017	< 0.17	< 0.024	< 0.03	< 0.017

Table 11
Saturated Soil Analytical Results – Detected VOCs, SVOCs, and Inorganics (mg/kg)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID:		Soil Standards or PQLs		PCSB-03		PCSB-04			PCSB-06			PCSB-07		PCSB-08	
Sample Depth (ft):				14	25	4	12	25	13	18	23.5	14	21.5	10.5	19
Date Collected:	CAS Number	S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	DC Non-Res Subsurf Soil (Exceedances Shaded)	3/4/05	3/4/05	3/7/05	3/7/05	3/7/05	3/7/05	3/7/05	3/7/05	3/8/05	3/8/05	3/9/05	3/9/05
Semi-Volatile Organic Compounds (cont'd)															
Carbazole	86-74-8	89	190,000	0.27	< 0.013	7.6	14	0.19	5.4	0.24	< 0.013	< 0.13	< 0.019	0.24	< 0.013
Chrysene	218-01-9	230	190,000	3.8	< 0.013	85	62	1.4	17	1.6	0.11	6.8	0.082	0.69	0.15
Dibenz(a,h)anthracene	53-70-3	270	190,000	0.6	< 0.021	19	13	0.24	2.4	0.24	< 0.021	1.1	< 0.031	< 0.024	< 0.021
Dibenzofuran	132-64-9	250	190,000	0.94	< 0.14	14	43	1.2	14	0.99	< 0.14	2	< 0.2	< 0.15	< 0.14
Diethyl phthalate	84-66-2	7,800	10,000	< 0.018	< 0.017	< 0.52	< 0.6	< 0.018	< 0.19	< 0.016	< 0.018	< 0.18	< 0.025	< 0.022	< 0.017
Di-n-butyl phthalate	84-74-2	4,000	10,000	< 0.017	0.058	< 0.47	< 0.55	< 0.016	< 0.17	< 0.015	0.064 B	< 0.16	< 0.023	< 0.017	< 0.016
Di-n-octyl phthalate	117-84-0	10,000	10,000	< 0.017	< 0.016	< 0.47	< 0.55	< 0.016	< 0.17	< 0.015	< 0.016	< 0.16	< 0.023	< 0.028	< 0.016
Fluoranthene	206-44-0	3,200	190,000	5.8	0.12	200	150	2.8	42	3.2	0.21	18	0.093	1.3	0.24
Fluorene	86-73-7	3,800	190,000	3.2	0.064	29	78	1.9	35	2.4	0.13	6.1	< 0.027	0.17	< 0.018
Indeno(1,2,3-cd)pyrene	193-39-5	18,000	190,000	1.2	< 0.017	50	29	0.55	4.6	0.52	< 0.017	2.2	< 0.025	0.46	0.074
Naphthalene	91-20-3	25	77	2.2	< 0.011	13	***81***	1.9	3.9	0.85	< 0.012	3.2	< 0.017	15	0.18
Pentachlorophenol	87-86-5	5	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	85-01-8	10,000	190,000	9.8	0.21	130	190	4.2	88	6.5	0.44	28	< 0.027	0.74	0.27
Phenol	108-95-2	200	18,000	< 0.041	< 0.039	< 1.2	< 1.3	< 0.04	< 0.42	< 0.036	< 0.039	< 0.4	< 0.057	1.9	< 0.039
Pyrene	129-00-0	2,200	190,000	8.6	0.14	180	140	3.1	49	4.3	0.25	20	0.13	0.95	0.28
Total PAHs and 2-Methylnaphthalene	-	- -	- -	56.1	0.666	1,160	1,110	24.1	360	31.8	1.80	121	1.49	23.2	1.88
Metals															
Aluminum	7429-90-5	- -	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	7440-36-0	27	190,000	< 3.5	< 3.3	< 2.5	3.2	< 3.4	5.1	< 3.1	< 3.4	4.3	< 4.9	19	< 3.3
Arsenic	7440-38-2	29	190,000	26	5	14	***39***	8.8	***49***	6	7.2	***76***	7.1	20	4.9
Barium	7440-39-3	8,200	190,000	130	150	110	160	130	200	150	200	260	210	1,500	220
Beryllium	7440-41-7	320	190,000	< 1.1	< 1	1.1	< 0.87	< 1	1.4	0.98	< 1	1.3	< 1.5	< 0.82	< 1
Cadmium	7440-43-9	38	190,000	< 1.1	< 1	0.85	2	< 1	2.5	< 0.92	< 1	2.6	< 1.5	< 0.82	< 1
Calcium	7440-70-2	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	7440-47-3	190,000	190,000	99	43	15	160	36	280	42	50	260	30	31	34
Cobalt	7440-48-4	130	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	7440-50-8	43,000	190,000	81	14	140	120	15	160	15	13	170	14	6,200	23
Cyanide	57-12-5	200	190,000	0.5	< 0.42	10	3.7	< 0.43	0.84	1.1	< 0.42	8	11	11	0.48
Iron	7439-89-6	- -	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	7439-92-1	450	190,000	180	11	210	220	16	280	25	29	400	22	***26,000***	83
Magnesium	7439-95-4	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	7439-96-5	2,000	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	7439-97-6	10	190,000	0.68	< 0.14	0.14	0.72	< 0.14	1.4	< 0.13	< 0.14	1.5	< 0.2	< 0.11	< 0.14
Nickel	7440-02-0	650	190,000	21	27	17	24	21	34	23	23	34	21	9	21
Potassium	7440-09-7	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	7782-49-2	26	190,000	3.3	3.2	3	3.7	3.7	4.6	3.6	3.7	5.8	5.3	5.3	3.6
Silver	7440-22-4	84	190,000	< 4.4	< 4.2	< 3.1	< 3.6	< 4.3	< 4.5	< 3.8	< 4.2	< 4.3	< 6.1	< 3.4	< 4.2
Sodium	7440-23-5	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	7440-28-0	14	190,000	< 2.1	< 2	< 1.5	< 1.7	< 2.1	< 2.2	< 1.8	< 2	< 2.1	< 2.9	< 1.6	< 2
Vanadium	7440-62-2	680	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	7440-66-6	12,000	190,000	420	72	190	590	75	740	83	86	940	73	1,300	110

Table 11
Saturated Soil Analytical Results – Detected VOCs, SVOCs, and Inorganics (mg/kg)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID: / Sample Depth (ft): / Date Collected:	CAS Number	Soil Standards or PQLs: S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	Soil Standards or PQLs: DC Non-Res Subsurf Soil (Exceedances Shaded)	PCSB-09 10 3/9/05	PCSB-09 15.5 3/9/05	PCSB-09 27.5 3/10/05	PCSB-10 16.5 3/22/05	PCSB-10 20 3/22/05	PCSB-11 17.5 3/10/05	PCSB-11 23.5 3/10/05	PCSB-12 9 3/16/05	PCSB-12 21.5 3/16/05	PCSB-13 17.5 3/15/05	PCSB-14 11 3/16/05	PCSB-14 25 3/17/05	PCSB-15 4-5 3/11/05
Volatile Organic Compounds																
2-Butanone (MEK)	78-93-3	400	10,000	< 0.0013	< 0.0017	< 0.0017	< 0.0015	0.085	< 0.0016	< 0.0015	< 0.0011	< 0.0013	< 0.0015	< 0.00093	< 0.0014	< 0.0014
Acetone	67-64-1	8,800	10,000	< 0.0092	0.077	0.088	0.15	0.38	0.063	0.098	0.025	0.089	0.1	0.032	0.12	0.046
Benzene	71-43-2	0.5	330	0.047	0.015	0.012	< 0.00098	< 0.0014	< 0.00051	< 0.00048	0.024	< 0.00041	< 0.00095	0.0076	< 0.00095	0.079
Carbon Disulfide	75-15-0	620	10,000	0.0019	0.069	0.031	< 0.0013	< 0.0017	< 0.0011	< 0.001	0.23	0.033	0.091	< 0.00063	< 0.0012	0.0061
Chlorobenzene	108-90-7	10	4,500	< 0.00087	< 0.0011	< 0.0011	< 0.00097	< 0.0013	< 0.00041	< 0.00039	< 0.00029	< 0.00033	< 0.00094	< 0.00024	< 0.00093	< 0.00037
Chloroform	67-66-3	8	110	< 0.00078	< 0.001	< 0.00096	< 0.00088	< 0.0012	0.0023	0.0024	< 0.00037	< 0.00043	< 0.00085	< 0.00031	< 0.00084	0.0022
cis-1,2-Dichloroethene	156-59-2	7	10,000	< 0.00082	< 0.0011	< 0.001	< 0.00092	< 0.0013	< 0.00074	< 0.0007	< 0.00052	< 0.0006	< 0.00089	< 0.00044	< 0.00089	< 0.00066
Cyclohexane	110-82-7	6,900	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichloromethane	75-09-2	0.5	10,000	0.03 B	0.035 B	0.027 B	0.012 B	0.017 B	0.021 B	0.02 B	0.026 B	0.028 B	0.015 B	0.023 B	0.024 B	0.017 B
Ethylbenzene	100-41-4	70	1,000	< 0.0013	0.25	< 0.0016	0.011	< 0.002	< 0.0014	< 0.0013	0.0096	< 0.0011	< 0.0014	0.0029	< 0.0014	0.058
Isopropylbenzene	98-82-8	2,500	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
m&p-Xylenes	ARC-mpXyl	- -	- -	< 0.0019	0.26	< 0.0023	0.006	< 0.0029	< 0.0017	< 0.0016	0.012	< 0.0014	< 0.0021	< 0.001	< 0.002	0.42
Methyl Acetate	79-20-9	9,700	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylcyclohexane	108-87-2	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl-tert-butylether	1634-04-4	2	9,800	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
o,p-Xylene	136777-61-2	- -	- -	< 0.00081	0.32	< 0.00099	0.014	< 0.0012	< 0.00036	< 0.00034	0.014	< 0.0003	< 0.00087	0.0035	< 0.00087	0.16
o-Xylene	95-47-6	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene (Monomer)	100-42-5	24	10,000	< 0.0011	< 0.0014	< 0.0013	< 0.0012	< 0.0016	< 0.00032	< 0.0003	< 0.00022	< 0.00026	< 0.0012	< 0.00019	< 0.0012	< 0.00028
Toluene	108-88-3	100	10,000	0.0021	0.055	< 0.0016	< 0.0015	< 0.002	< 0.00038	< 0.00036	0.0058	< 0.00031	< 0.0014	< 0.00023	< 0.0014	0.089
trans-1,2-Dichloroethene	156-60-5	10	10,000	< 0.00055	< 0.00071	< 0.00068	< 0.00062	< 0.00085	< 0.0011	< 0.001	< 0.00076	< 0.00088	< 0.0006	< 0.00064	< 0.00059	< 0.00096
trans-1,3-Dichloropropene	10061-02-6	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Xylenes	1330-20-7	1,000	9,100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Semi-Volatile Organic Compounds																
1,1-Biphenyl	92-52-4	1.5	40	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	105-67-9	190	10,000	0.31 J	< 28	< 0.041	< 1.3	< 0.083	< 0.8	< 0.26	0.17 J	< 0.27	< 0.26	< 0.98	< 0.036	< 49
2-Methylnaphthalene	91-57-6	100	270	0.23 J	***250***	0.35	41	1	1.1	< 0.095	1.9	< 0.098	0.06 J	2.4	< 0.089	***200***
2-Methylphenol	95-48-7	490	190,000	0.35 J	< 17	0.39	< 2.5	< 0.16	< 0.49	< 0.16	< 0.14	< 0.16	< 0.16	< 0.59	< 0.15	< 30
3-Methylphenol, 4-Methylphenol	65794-96-9	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methylphenol	106-44-5	49	190,000	1.2	< 18	2.8	< 3.1	< 0.19	< 0.52	< 0.17	0.21	0.28	< 0.17	< 0.63	< 0.19	< 32
Acenaphthene	83-32-9	4,700	190,000	0.41	180	0.32	43	0.86	4.3	< 0.011	4.4	< 0.012	< 0.011	6	< 0.014	31
Acenaphthylene	208-96-8	6,600	190,000	< 0.042	< 1.7	< 0.017	< 0.23	0.14	0.37	< 0.016	< 0.014	< 0.016	< 0.016	1.3	< 0.015	46
Acetophenone	98-86-2	970	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	120-12-7	350	190,000	0.52	110	0.25	24	0.58	1.9	< 0.011	0.86	< 0.012	< 0.011	2	< 0.013	140
Benz(a)anthracene	56-55-3	340	190,000	0.62	42	0.13	14	0.66	2.1	< 0.009	1.7	< 0.0093	< 0.009	0.66	< 0.016	130
Benzaldehyde	100-52-7	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	50-32-8	46	190,000	0.58	28	< 0.013	8.5	0.59	1.5	< 0.013	1.8	< 0.014	< 0.013	0.54	0.31	***100***
Benzo(b)fluoranthene	205-99-2	170	190,000	0.72	31	0.11	9.3	0.73	1.8	< 0.011	1.8	< 0.012	< 0.011	0.66	< 0.021	130
Benzo(g,h,i)perylene	191-24-2	180	190,000	0.29	10	0.069	2.3	0.21	0.73	< 0.01	0.8	< 0.011	< 0.01	0.36	< 0.016	48
Benzo(k)fluoranthene	207-08-9	610	190,000	0.19	8.6	< 0.021	3.4	0.24	0.59	< 0.0089	0.55	< 0.0092	< 0.0089	0.24	< 0.018	43
bis(2-Ethylhexyl)phthalate	117-81-7	130	10,000	< 0.25	< 10	< 0.035	< 0.31	0.084	< 0.29	0.11	0.078 J	0.079 J	0.067 J	< 0.35	0.063	< 18
Butyl benzyl phthalate	85-68-7	10,000	10,000	< 0.032	< 1.3	< 0.018	< 0.46	< 0.029	< 0.037	< 0.012	< 0.011	< 0.012	< 0.012	< 0.045	< 0.016	< 2.3

Table 11
Saturated Soil Analytical Results – Detected VOCs, SVOCs, and Inorganics (mg/kg)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID:	CAS Number	Soil Standards or PQLs		PCSB-09			PCSB-10		PCSB-11		PCSB-12		PCSB-13	PCSB-14		PCSB-15
Sample Depth (ft):		S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	DC Non-Res Subsurf Soil (Exceedances Shaded)	10	15.5	27.5	16.5	20	17.5	23.5	9	21.5	17.5	11	25	4-5
Date Collected:				3/9/05	3/9/05	3/10/05	3/22/05	3/22/05	3/10/05	3/10/05	3/16/05	3/16/05	3/15/05	3/16/05	3/17/05	3/11/05
Semi-Volatile Organic Compounds (cont'd)																
Carbazole	86-74-8	89	190,000	< 0.034	25	< 0.014	8.1	0.15	< 0.04	< 0.013	0.43	< 0.013	< 0.013	< 0.049	< 0.012	50
Chrysene	218-01-9	230	190,000	0.65	48	0.13	14	0.69	2.4	< 0.0095	1.8	< 0.0098	< 0.0095	0.91	< 0.012	110
Dibenz(a,h)anthracene	53-70-3	270	190,000	< 0.025	< 1	< 0.022	< 0.57	0.087	0.21	< 0.0094	0.3	< 0.0098	< 0.0094	< 0.036	< 0.02	15
Dibenzofuran	132-64-9	250	190,000	< 0.16	93	0.16	18	0.46	0.37	< 0.059	0.21	< 0.061	< 0.059	3.3	< 0.13	150
Diethyl phthalate	84-66-2	7,800	10,000	< 0.023	< 0.94	< 0.019	< 0.27	< 0.017	< 0.027	< 0.0087	< 0.0078	< 0.009	< 0.0087	< 0.033	< 0.016	< 1.7
Di-n-butyl phthalate	84-74-2	4,000	10,000	< 0.018	< 0.73	< 0.017	< 0.25	< 0.016	< 0.021	< 0.0067	0.12	0.064	0.055	< 0.025	< 0.015	< 1.3
Di-n-octyl phthalate	117-84-0	10,000	10,000	< 0.029	< 1.2	< 0.017	< 0.27	< 0.017	< 0.034	< 0.011	< 0.0099	< 0.011	< 0.011	< 0.042	< 0.015	< 2.1
Fluoranthene	206-44-0	3,200	190,000	1.2	180	0.39	40	1.9	5.1	0.062	3.5	< 0.0084	0.065	1.9	< 0.017	350
Fluorene	86-73-7	3,800	190,000	0.33	160	0.31	36	0.85	3	< 0.01	1.8	< 0.01	< 0.01	7.5	< 0.017	210
Indeno(1,2,3-cd)pyrene	193-39-5	18,000	190,000	0.32	9.5	< 0.018	2.8	0.23	0.72	< 0.0076	0.85	< 0.0079	< 0.0076	0.36	< 0.016	62
Naphthalene	91-20-3	25	77	1.9	***570***	0.74	***94***	2.2	0.88	< 0.017	7.8	< 0.017	0.15	4	< 0.011	***1,100***
Pentachlorophenol	87-86-5	5	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	85-01-8	10,000	190,000	1	420	0.97	88	2.5	8.3	0.12	4.1	< 0.014	0.12	14	< 0.018	520
Phenol	108-95-2	200	18,000	0.99	< 17	0.87	< 1.1	< 0.071	< 0.47	< 0.15	< 0.14	< 0.16	< 0.15	< 0.57	< 0.036	< 29
Pyrene	129-00-0	2,200	190,000	1.1	150	0.35	39	1.4	5.2	< 0.0095	4.2	< 0.0099	< 0.0095	2.4	< 0.015	230
Total PAHs and 2-Methylnaphthalene	-	- -	- -	10.1	2,200	4.12	459	14.9	40.2	0.182	38.2	< 0.098	0.395	45.2	0.31	3,470
Metals																
Aluminum	7429-90-5	- -	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	7440-36-0	27	190,000	< 2.9	5.7	< 3.6	< 3.4	< 4.3	7	< 3.3	< 2.9	< 3.4	< 3.3	2.7	< 3.1	6.7
Arsenic	7440-38-2	29	190,000	14	***77***	7.9	18	5.2	***54***	5.3	12	7.1	5.4	3.8	4.6	***33***
Barium	7440-39-3	8,200	190,000	120	250	180	190	170	300	150	66	120	170	110	110	120
Beryllium	7440-41-7	320	190,000	< 0.87	< 1.1	< 1.1	< 1	< 1.3	2.3	1.1	< 0.88	< 1	1.6	0.86	1	1.1
Cadmium	7440-43-9	38	190,000	< 0.87	3.6	< 1.1	< 1	< 1.3	3.4	< 0.98	< 0.88	< 1	< 0.98	< 0.74	< 0.94	2.8
Calcium	7440-70-2	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	7440-47-3	190,000	190,000	36	290	38	55	34	350	37	100	38	41	24	26	100
Cobalt	7440-48-4	130	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	7440-50-8	43,000	190,000	64	210	15	66	13	240	15	30	14	15	35	11	300
Cyanide	57-12-5	200	190,000	16	6.2	3.8	NA	NA	< 0.42	< 0.41	4	6	5.4	NA	NA	11
Iron	7439-89-6	- -	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	7439-92-1	450	190,000	190	400	15	190	12	380	16	66	14	21	57	9	***710***
Magnesium	7439-95-4	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	7439-96-5	2,000	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	7439-97-6	10	190,000	0.86	2.8	< 0.15	1.4	< 0.18	0.82	< 0.14	1.7	< 0.14	< 0.14	< 0.1	< 0.13	1.8
Nickel	7440-02-0	650	190,000	16	37	25	22	20	39	24	17	25	24	20	17	51
Potassium	7440-09-7	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	7782-49-2	26	190,000	4.2	6.2	4.2	3.7	4.6	5.5	3.9	2.9	3.7	3.8	3.2	3.3	5.4
Silver	7440-22-4	84	190,000	< 3.6	< 4.5	< 4.5	< 4.2	< 5.3	< 4.2	< 4.1	< 3.7	< 4.2	< 4.1	< 3.1	< 3.9	< 3.9
Sodium	7440-23-5	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	7440-28-0	14	190,000	< 1.7	< 2.1	< 2.1	< 2	< 2.6	< 2	< 2	< 1.8	< 2	< 2	< 1.5	< 1.9	< 1.9
Vanadium	7440-62-2	680	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	7440-66-6	12,000	190,000	300	1,100	78	290	59	1,100	83	320	73	120	110	56	730

Table 11
Saturated Soil Analytical Results – Detected VOCs, SVOCs, and Inorganics (mg/kg)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID: / Sample Depth (ft): / Date Collected:	CAS Number	Soil Standards or PQLs: S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	Soil Standards or PQLs: DC Non-Res Subsurf Soil (Exceedances Shaded)	PCSB-17 18 3/17/05	PCSB-18 13 3/14/05	PCSB-19 19 3/21/05	PCSB-19 26.5 3/21/05	PCSB-20 17 3/22/05	PCSB-20 22 3/22/05	PCSB-21 14-15 3/11/05	PCSB-21 38-40 3/11/05	PCSB-21 42654 3/11/05	PCSB-22 8.5 3/15/05	PCSB-22 23 3/15/05	PCSB-23 8.5 3/14/05	PCSB-23 21 3/14/05
Volatile Organic Compounds																
2-Butanone (MEK)	78-93-3	400	10,000	< 0.002	< 0.00096	< 0.0015	< 0.00089	< 0.0017	< 0.0011	< 0.0016	< 0.00094	< 0.0012	< 0.0016	< 0.0015	< 0.0016	< 0.0018
Acetone	67-64-1	8,800	10,000	0.18	0.037	0.11	0.046	0.14	0.046	0.085	0.019	0.034	0.052	0.08	0.16	0.21
Benzene	71-43-2	0.5	330	< 0.0013	0.0015	0.0024	< 0.00058	< 0.0011	< 0.00073	< 0.00053	< 0.00031	< 0.00039	0.15	0.043	0.19	< 0.0012
Carbon Disulfide	75-15-0	620	10,000	0.013	0.0037	0.061	0.0025	< 0.0014	< 0.00093	< 0.0011	< 0.00064	< 0.00083	< 0.0013	< 0.0013	0.42	0.0062
Chlorobenzene	108-90-7	10	4,500	< 0.0013	< 0.00062	< 0.00094	< 0.00057	< 0.0011	< 0.00072	< 0.00043	< 0.00025	< 0.00032	< 0.001	< 0.00097	< 0.001	< 0.0012
Chloroform	67-66-3	8	110	< 0.0012	< 0.00056	< 0.00085	< 0.00052	< 0.00098	< 0.00065	0.003	0.0013	0.0019	< 0.00091	< 0.00088	< 0.00091	< 0.0011
cis-1,2-Dichloroethene	156-59-2	7	10,000	< 0.0012	< 0.00059	< 0.00089	< 0.00054	< 0.001	< 0.00068	< 0.00077	< 0.00045	< 0.00058	< 0.00095	< 0.00092	< 0.00095	< 0.0011
Cyclohexane	110-82-7	6,900	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichloromethane	75-09-2	0.5	10,000	0.028 B	0.008 B	0.033 B	0.024 B	0.014 B	0.011 B	0.023 B	0.015 B	0.013 B	0.015 B	0.015 B	0.015 B	0.019 B
Ethylbenzene	100-41-4	70	1,000	< 0.0019	0.0068	0.0033	< 0.00085	< 0.0016	< 0.0011	< 0.0015	< 0.00084	< 0.0011	0.021	0.0033	< 0.0015	< 0.0018
Isopropylbenzene	98-82-8	2,500	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
m&p-Xylenes	ARC-mpXyl	- -	- -	< 0.0029	0.004	0.0032	< 0.0013	< 0.0024	< 0.0016	< 0.0017	< 0.001	< 0.0013	0.023	0.0027	0.0048	< 0.0026
Methyl Acetate	79-20-9	9,700	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylcyclohexane	108-87-2	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl-tert-butylether	1634-04-4	2	9,800	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
o,p-Xylene	136777-61-2	- -	- -	< 0.0012	0.0033	0.0047	< 0.00053	< 0.001	< 0.00067	< 0.00038	< 0.00022	< 0.00028	0.03	0.0027	0.0092	< 0.0011
o-Xylene	95-47-6	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene (Monomer)	100-42-5	24	10,000	< 0.0016	< 0.00077	< 0.0012	< 0.0007	< 0.0013	< 0.00089	< 0.00033	< 0.00019	< 0.00025	< 0.0012	< 0.0012	< 0.0012	< 0.0015
Toluene	108-88-3	100	10,000	< 0.002	< 0.00093	0.0029	< 0.00086	< 0.0016	< 0.0011	< 0.0004	< 0.00023	< 0.0003	0.029	< 0.0015	0.019	< 0.0018
trans-1,2-Dichloroethene	156-60-5	10	10,000	< 0.00083	< 0.00039	< 0.0006	< 0.00036	< 0.00069	< 0.00046	< 0.0011	< 0.00065	< 0.00084	< 0.00064	< 0.00062	< 0.00064	< 0.00075
trans-1,3-Dichloropropene	10061-02-6	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Xylenes	1330-20-7	1,000	9,100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Semi-Volatile Organic Compounds																
1,1-Biphenyl	92-52-4	1.5	40	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	105-67-9	190	10,000	< 0.042	< 0.029	< 0.063	< 0.044	< 0.071	< 0.04	< 0.86	< 0.17	< 0.25	< 2.5	< 0.27	2.3	< 0.044
2-Methylnaphthalene	91-57-6	100	270	0.083 J	2.9	2.1	< 0.039	1	< 0.081	0.91	< 0.063	0.74	9.4	0.093 J	2.2	< 0.11
2-Methylphenol	95-48-7	490	190,000	< 0.17	< 0.12	< 0.12	< 0.084	< 0.14	< 0.18	< 0.52	< 0.11	< 0.15	< 1.5	< 0.16	4.3	< 0.18
3-Methylphenol, 4-Methylphenol	65794-96-9	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methylphenol	106-44-5	49	190,000	0.41	0.069 J	< 0.15	< 0.1	0.47	< 0.18	< 0.55	< 0.11	0.32	< 1.6	< 0.17	5.9	0.59
Acenaphthene	83-32-9	4,700	190,000	0.11	2.6	6.5	< 0.014	1.6	< 0.0079	5	< 0.0075	0.5	21	0.32	3.3	< 0.017
Acenaphthylene	208-96-8	6,600	190,000	< 0.017	0.1	0.73	< 0.0076	0.38	< 0.0072	0.48	< 0.011	0.21	3.8	< 0.016	0.16	< 0.018
Acetophenone	98-86-2	970	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	120-12-7	350	190,000	0.2	1.2	2.7	< 0.0095	1.1	< 0.0094	2.8	< 0.0076	0.39	20	0.17	2	< 0.015
Benz(a)anthracene	56-55-3	340	190,000	0.19	1	4.5	0.073	2	< 0.0066	2.7	< 0.006	0.68	16	0.12	1.7	< 0.02
Benzaldehyde	100-52-7	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	50-32-8	46	190,000	0.14	0.86	3.9	0.069	1.9	0.15	2.1	< 0.0089	0.77	14	0.087	1.3	< 0.014
Benzo(b)fluoranthene	205-99-2	170	190,000	0.21	1.2	4.7	0.15	2.3	< 0.013	2.3	< 0.0075	0.83	17	0.095	1.7	< 0.025
Benzo(g,h,i)perylene	191-24-2	180	190,000	0.079	0.38	0.78	< 0.014	0.38	< 0.0068	0.8	< 0.0069	0.33	6.7	< 0.011	0.54	< 0.019
Benzo(k)fluoranthene	207-08-9	610	190,000	< 0.021	0.26	1.3	0.054	0.75	< 0.017	0.69	< 0.006	0.31	6.3	< 0.0092	0.54	< 0.022
bis(2-Ethylhexyl)phthalate	117-81-7	130	10,000	0.093	0.071	< 0.015	< 0.01	< 0.016	< 0.03	< 0.31	0.045 J	< 0.092	< 0.89	< 0.097	< 0.034	< 0.037
Butyl benzyl phthalate	85-68-7	10,000	10,000	< 0.018	< 0.012	< 0.022	< 0.016	< 0.025	< 0.013	< 0.04	< 0.0081	< 0.012	< 0.11	< 0.012	< 0.018	< 0.019

Location ID:		Soil Standards or PQLs		PCSB-17	PCSB-18	PCSB-19		PCSB-20		PCSB-21			PCSB-22		PCSB-23	
Sample Depth (ft):				18	13	19	26.5	17	22	14-15	38-40	42654	8.5	23	8.5	21
Date Collected:	CAS Number	S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	DC Non-Res Subsurf Soil (Exceedances Shaded)	3/17/05	3/14/05	3/21/05	3/21/05	3/22/05	3/22/05	3/11/05	3/11/05	3/11/05	3/15/05	3/15/05	3/14/05	3/14/05
Semi-Volatile Organic Compounds (cont'd)																
Carbazole	86-74-8	89	190,000	0.065	0.37	< 0.019	< 0.013	0.089	< 0.0091	< 0.043	< 0.0087	0.062	9	0.15	0.56	< 0.014
Chrysene	218-01-9	230	190,000	0.2	0.99	4.7	0.09	2.4	< 0.014	3	< 0.0063	0.89	16	0.11	1.9	< 0.014
Dibenz(a,h)anthracene	53-70-3	270	190,000	< 0.023	0.13	0.33	< 0.019	0.22	< 0.0087	0.27	< 0.0063	0.12	2	< 0.0098	0.27	< 0.024
Dibenzofuran	132-64-9	250	190,000	0.099 J	1.2	0.36	< 0.066	0.38	< 0.062	0.41	< 0.04	0.17	13	0.15	1.2	< 0.15
Diethyl phthalate	84-66-2	7,800	10,000	< 0.019	< 0.013	< 0.013	< 0.009	< 0.014	< 0.011	< 0.029	< 0.0058	< 0.0085	< 0.083	< 0.009	< 0.018	< 0.02
Di-n-butyl phthalate	84-74-2	4,000	10,000	< 0.017	< 0.012	< 0.012	< 0.0085	< 0.014	< 0.0096	< 0.022	< 0.0045	< 0.0066	< 0.064	< 0.0069	< 0.017	< 0.018
Di-n-octyl phthalate	117-84-0	10,000	10,000	< 0.017	< 0.012	< 0.013	< 0.0089	< 0.014	< 0.016	< 0.037	< 0.0074	< 0.011	< 0.11	< 0.011	< 0.017	< 0.018
Fluoranthene	206-44-0	3,200	190,000	0.39	2.4	7.3	0.12	3.6	< 0.0078	5.6	0.041	1.5	37	0.33	4.5	< 0.02
Fluorene	86-73-7	3,800	190,000	0.18	2.4	3.8	< 0.0081	1.3	< 0.011	3.3	< 0.0068	0.48	25	0.3	3.3	< 0.021
Indeno(1,2,3-cd)pyrene	193-39-5	18,000	190,000	0.075	0.34	0.95	< 0.027	0.52	< 0.0081	0.89	< 0.0051	0.33	7.9	< 0.0079	0.47	< 0.019
Naphthalene	91-20-3	25	77	0.29	2.9	3	< 0.0072	1.5	< 0.0046	1.3	< 0.011	1.4	13	0.4	3.8	< 0.013
Pentachlorophenol	87-86-5	5	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	85-01-8	10,000	190,000	0.67	4.3	8.9	0.042	3.5	< 0.011	9.9	0.055	0.95	48	0.58	6.9	< 0.021
Phenol	108-95-2	200	18,000	0.12	< 0.029	< 0.054	< 0.038	< 0.06	< 0.079	< 0.51	< 0.1	< 0.15	< 1.4	< 0.16	5.9	< 0.044
Pyrene	129-00-0	2,200	190,000	0.45	2.8	9.3	0.1	5	< 0.011	6.4	0.05	1.7	23	0.28	5.8	< 0.018
Total PAHs and 2-Methylnaphthalene	-	- -	- -	3.27	26.8	65.5	0.698	29.5	0.15	48.4	0.146	12.1	286	2.89	40.4	< 0.11
Metals																
Aluminum	7429-90-5	- -	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	7440-36-0	27	190,000	< 3.6	2.6	< 3.2	< 2.3	4.4	< 2.9	< 3.6	< 2.2	< 3.2	3.9	< 3.4	< 3.5	< 3.8
Arsenic	7440-38-2	29	190,000	13	16	17	< 2.3	***58***	5.2	11	< 2.2	12	18	6.2	***30***	4.1
Barium	7440-39-3	8,200	190,000	170	88	150	41	290	180	160	15	49	180	130	220	160
Beryllium	7440-41-7	320	190,000	1.4	< 0.74	1.4	0.79	1.6	1.1	1.3	< 0.66	< 0.97	2.3	1.4	1.2	< 1.1
Cadmium	7440-43-9	38	190,000	< 1.1	< 0.74	< 0.97	< 0.68	2.1	< 0.86	< 1.1	< 0.66	< 0.97	5.1	< 1	2.8	< 1.1
Calcium	7440-70-2	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	7440-47-3	190,000	190,000	67	70	81	11	220	48	60	15	30	60	34	240	39
Cobalt	7440-48-4	130	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	7440-50-8	43,000	190,000	79	51	62	8.5	160	11	35	< 5.5	34	110	11	140	11
Cyanide	57-12-5	200	190,000	NA	0.43	NA	NA	NA	NA	NA	NA	0.44	3.1	1	6.5	9.6
Iron	7439-89-6	- -	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	7439-92-1	450	190,000	110	140	130	< 5.7	280	14	53	< 5.5	63	210	11	280	14
Magnesium	7439-95-4	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	7439-96-5	2,000	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	7439-97-6	10	190,000	< 0.15	0.25	0.76	< 0.095	1.3	< 0.12	< 0.15	< 0.092	0.66	1.8	< 0.14	0.79	< 0.16
Nickel	7440-02-0	650	190,000	23	13	21	7.7	42	27	26	5.7	16	24	22	28	23
Potassium	7440-09-7	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	7782-49-2	26	190,000	4.6	2.7	3.7	< 2	4.3	< 2.6	4.5	< 2	2.9	4.8	3.8	5.3	4.4
Silver	7440-22-4	84	190,000	< 4.5	< 3.1	< 4	< 2.8	< 4.5	< 3.6	< 4.5	< 2.7	< 4	< 3.9	< 4.2	< 4.4	< 4.7
Sodium	7440-23-5	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	7440-28-0	14	190,000	< 2.2	< 1.5	< 1.9	< 1.4	< 2.2	< 1.7	< 2.2	< 1.3	< 1.9	< 1.9	< 2	< 2.1	< 2.3
Vanadium	7440-62-2	680	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	7440-66-6	12,000	190,000	300	200	310	28	840	78	170	21	230	440	67	840	68

Table 11
Saturated Soil Analytical Results – Detected VOCs, SVOCs, and Inorganics (mg/kg)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID: / Sample Depth (ft): / Date Collected:	CAS Number	Soil Standards or PQLs: S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	Soil Standards or PQLs: DC Non-Res Subsurf Soil (Exceedances Shaded)	PCSB-24 9 3/18/05	PCSB-24 15 3/18/05	PCSB-24 26.5 3/21/05	PCSB-25 8 3/18/05	PCSB-25 13 3/18/05	PCSB-26 6 7/26/05	PCSB-26 8 7/26/05	PCSB-27 10.5 7/26/05	PCSB-28 2 7/26/05	PCSB-28 15 7/26/05	PCSB-29 2 7/26/05	PCSB-29 11.5 7/26/05	PCSB-30 15 7/26/05
Volatile Organic Compounds																
2-Butanone (MEK)	78-93-3	400	10,000	< 0.0012	< 0.002	< 0.00094	< 0.00097	< 0.0012	< 0.0011	< 0.0012	< 0.0016	< 0.00084	< 0.0015	< 0.00084	< 0.0011	< 0.0015
Acetone	67-64-1	8,800	10,000	0.05	0.1	0.048	0.044	0.052	0.039	0.025	< 0.011	< 0.0057	0.073	< 0.0057	0.053	0.097
Benzene	71-43-2	0.5	330	0.25	0.0083	< 0.00061	0.011	< 0.00078	< 0.00074	< 0.00076	< 0.0011	< 0.00055	< 0.00096	< 0.00055	< 0.00075	< 0.00098
Carbon Disulfide	75-15-0	620	10,000	< 0.001	< 0.0016	< 0.00078	0.0029	< 0.001	0.0026	< 0.00097	< 0.0014	< 0.0007	< 0.0012	< 0.0007	< 0.00096	< 0.0013
Chlorobenzene	108-90-7	10	4,500	< 0.00079	< 0.0013	< 0.00061	< 0.00063	< 0.00077	< 0.00073	< 0.00075	< 0.001	< 0.00054	< 0.00095	< 0.00054	< 0.00074	< 0.00097
Chloroform	67-66-3	8	110	< 0.00071	< 0.0011	< 0.00055	< 0.00057	< 0.0007	< 0.00066	< 0.00067	< 0.00094	< 0.00049	< 0.00086	< 0.00049	< 0.00067	< 0.00087
cis-1,2-Dichloroethene	156-59-2	7	10,000	< 0.00075	< 0.0012	< 0.00057	< 0.0006	< 0.00073	< 0.00069	< 0.00071	< 0.00099	< 0.00051	< 0.0009	< 0.00051	< 0.0007	< 0.00092
Cyclohexane	110-82-7	6,900	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichloromethane	75-09-2	0.5	10,000	0.013 B	0.021 B	0.027 B	0.014 B	0.017 B	0.016 B	0.018 B	0.023 B	0.011 B	0.016 B	0.0067 B	0.015 B	0.02 B
Ethylbenzene	100-41-4	70	1,000	0.0036	0.0029	< 0.0009	< 0.00093	< 0.0011	< 0.0011	< 0.0011	< 0.0016	< 0.0008	< 0.0014	< 0.0008	< 0.0011	< 0.0014
Isopropylbenzene	98-82-8	2,500	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
m&p-Xylenes	ARC-mpXyl	- -	- -	0.0075	< 0.0028	< 0.0013	< 0.0014	< 0.0017	< 0.0016	< 0.0016	< 0.0023	< 0.0012	< 0.0021	< 0.0012	< 0.0016	< 0.0021
Methyl Acetate	79-20-9	9,700	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylcyclohexane	108-87-2	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl-tert-butylether	1634-04-4	2	9,800	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
o,p-Xylene	136777-61-2	- -	- -	0.0028	< 0.0012	< 0.00056	< 0.00058	< 0.00072	< 0.00068	< 0.0007	< 0.00097	< 0.0005	< 0.00088	< 0.0005	< 0.00069	< 0.0009
o-Xylene	95-47-6	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene (Monomer)	100-42-5	24	10,000	< 0.00097	< 0.0016	< 0.00075	< 0.00078	< 0.00095	< 0.0009	< 0.00092	< 0.0013	< 0.00067	< 0.0012	< 0.00067	< 0.00091	< 0.0012
Toluene	108-88-3	100	10,000	0.012	< 0.0019	< 0.00091	< 0.00094	< 0.0012	< 0.0011	< 0.0011	< 0.0016	< 0.00081	< 0.0014	< 0.00081	< 0.0011	< 0.0014
trans-1,2-Dichloroethene	156-60-5	10	10,000	< 0.0005	< 0.0008	< 0.00038	< 0.0004	< 0.00049	< 0.00046	< 0.00047	< 0.00067	< 0.00034	< 0.0006	< 0.00034	< 0.00047	< 0.00061
trans-1,3-Dichloropropene	10061-02-6	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Xylenes	1330-20-7	1,000	9,100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Semi-Volatile Organic Compounds																
1,1-Biphenyl	92-52-4	1.5	40	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	105-67-9	190	10,000	< 0.26	< 1.4	< 0.034	0.31	< 0.06	< 0.067	< 0.04	< 0.047	< 0.03	< 0.053	< 0.03	< 0.068	< 0.054
2-Methylnaphthalene	91-57-6	100	270	0.49	1.7	< 0.069	0.93	0.69	< 0.062	< 0.081	0.056 J	< 0.061	< 0.11	< 0.061	< 0.063	< 0.11
2-Methylphenol	95-48-7	490	190,000	< 0.49	< 0.84	< 0.15	< 0.093	< 0.11	< 0.23	< 0.18	< 0.21	< 0.13	< 0.23	< 0.13	< 0.23	< 0.24
3-Methylphenol, 4-Methylphenol	65794-96-9	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methylphenol	106-44-5	49	190,000	< 0.6	0.3 J	< 0.15	0.78	0.24	< 0.26	< 0.18	< 0.21	< 0.13	< 0.23	< 0.13	< 0.26	< 0.24
Acenaphthene	83-32-9	4,700	190,000	1.9	9.8	< 0.0066	0.63	1.4	< 0.02	< 0.0079	< 0.0092	< 0.0059	< 0.01	< 0.0059	< 0.02	< 0.011
Acenaphthylene	208-96-8	6,600	190,000	< 0.044	1	< 0.0061	0.52	0.32	< 0.011	< 0.0072	< 0.0084	< 0.0054	< 0.0095	< 0.0054	< 0.011	< 0.0097
Acetophenone	98-86-2	970	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	120-12-7	350	190,000	0.81	5	< 0.0079	0.84	0.86	< 0.013	< 0.0094	0.071	< 0.0071	< 0.012	< 0.0071	< 0.013	< 0.013
Benz(a)anthracene	56-55-3	340	190,000	0.91	6.8	< 0.0056	1.9	2	< 0.0084	< 0.0066	0.078	< 0.005	< 0.0088	0.078	< 0.0086	< 0.0089
Benzaldehyde	100-52-7	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	50-32-8	46	190,000	1.1	6.2	0.68	1.7	1.9	0.48	0.43	0.068	< 0.006	0.11	0.066	< 0.011	< 0.011
Benzo(b)fluoranthene	205-99-2	170	190,000	1.5	6.2	< 0.011	2.1	2.4	< 0.014	< 0.013	0.095	< 0.01	< 0.017	0.085	< 0.015	< 0.018
Benzo(g,h,i)perylene	191-24-2	180	190,000	0.73	2.4	< 0.0058	0.57	0.44	< 0.0092	< 0.0068	< 0.008	< 0.0051	< 0.009	0.038	< 0.0093	< 0.0092
Benzo(k)fluoranthene	207-08-9	610	190,000	0.39	1.7	< 0.014	0.7	0.81	< 0.016	< 0.017	< 0.019	< 0.013	< 0.022	0.039	< 0.016	< 0.022
bis(2-Ethylhexyl)phthalate	117-81-7	130	10,000	< 0.059	< 0.5	0.074	0.061	0.086	0.2	0.077	0.072	0.14	< 0.04	< 0.023	0.51	0.27
Butyl benzyl phthalate	85-68-7	10,000	10,000	< 0.09	< 0.064	< 0.011	< 0.017	< 0.021	< 0.019	< 0.013	< 0.015	< 0.0097	< 0.017	< 0.0097	< 0.02	< 0.017

Location ID:	CAS Number	Soil Standards or PQLs		PCSB-24			PCSB-25		PCSB-26		PCSB-27	PCSB-28		PCSB-29		PCSB-30
Sample Depth (ft):		S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	DC Non-Res Subsurf Soil (Exceedances Shaded)	9	15	26.5	8	13	6	8	10.5	2	15	2	11.5	15
Date Collected:				3/18/05	3/18/05	3/21/05	3/18/05	3/18/05	7/26/05	7/26/05	7/26/05	7/26/05	7/26/05	7/26/05	7/26/05	7/26/05
Semi-Volatile Organic Compounds (cont'd)																
Carbazole	86-74-8	89	190,000	0.98	0.34	< 0.0077	0.089	0.1	< 0.014	< 0.0091	< 0.011	< 0.0069	< 0.012	< 0.0069	< 0.015	< 0.012
Chrysene	218-01-9	230	190,000	1.1	7	< 0.011	1.9	2.1	< 0.01	< 0.014	0.091	< 0.01	< 0.018	0.076	< 0.01	< 0.018
Dibenz(a,h)anthracene	53-70-3	270	190,000	< 0.11	0.86	< 0.0074	0.27	0.19	< 0.017	< 0.0087	< 0.01	< 0.0066	< 0.012	< 0.0066	< 0.017	< 0.012
Dibenzofuran	132-64-9	250	190,000	1.2	0.65	< 0.052	0.5	0.28	< 0.061	< 0.062	< 0.072	< 0.046	< 0.081	< 0.046	< 0.062	< 0.083
Diethyl phthalate	84-66-2	7,800	10,000	< 0.052	< 0.046	< 0.0095	< 0.01	< 0.012	< 0.013	< 0.011	< 0.013	< 0.0084	< 0.015	< 0.0084	< 0.013	< 0.015
Di-n-butyl phthalate	84-74-2	4,000	10,000	< 0.049	< 0.036	< 0.0081	< 0.0093	0.22	< 0.011	0.054 B	< 0.011	< 0.0073	0.066	< 0.0073	< 0.011	< 0.013
Di-n-octyl phthalate	117-84-0	10,000	10,000	< 0.052	< 0.059	< 0.014	< 0.0098	< 0.012	< 0.011	< 0.016	< 0.019	< 0.012	< 0.021	< 0.012	< 0.012	< 0.022
Fluoranthene	206-44-0	3,200	190,000	1.7	12	< 0.0066	3.2	3.8	< 0.014	< 0.0078	0.18	< 0.0059	< 0.01	0.15	0.061	0.075
Fluorene	86-73-7	3,800	190,000	2.8	5.9	< 0.0096	0.91	1.1	< 0.012	< 0.011	0.076	< 0.0086	< 0.015	< 0.0086	< 0.012	< 0.015
Indeno(1,2,3-cd)pyrene	193-39-5	18,000	190,000	0.91	2.6	< 0.0068	0.71	0.54	< 0.0067	< 0.0081	< 0.0094	< 0.0061	< 0.011	< 0.0061	< 0.0068	< 0.011
Naphthalene	91-20-3	25	77	2.7	3.4	< 0.0039	7.1	1	< 0.011	< 0.0046	0.14	< 0.0035	< 0.0061	< 0.0035	< 0.012	< 0.0062
Pentachlorophenol	87-86-5	5	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	85-01-8	10,000	190,000	1.6	18	< 0.0089	1.9	3.5	< 0.011	< 0.011	0.079	< 0.008	< 0.014	0.04	< 0.011	< 0.014
Phenol	108-95-2	200	18,000	< 0.22	< 0.81	< 0.066	0.63	< 0.051	< 0.074	< 0.079	< 0.092	< 0.059	< 0.1	< 0.059	< 0.075	< 0.11
Pyrene	129-00-0	2,200	190,000	2.4	16	< 0.0092	2.6	3.8	< 0.011	< 0.011	0.19	< 0.0082	< 0.014	0.11	0.055	0.069
Total PAHs and 2-Methylnaphthalene	-	- -	- -	21.0	107	0.68	28.5	26.9	0.48	0.43	1.12	< 0.061	0.11	0.682	0.116	0.144
Metals																
Aluminum	7429-90-5	- -	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	7440-36-0	27	190,000	3.6	< 3.5	< 2.4	< 2.5	< 3.1	< 2.9	< 2.9	< 3.3	< 2.2	< 3.8	< 2.2	< 2.9	< 3.8
Arsenic	7440-38-2	29	190,000	6.7	26	< 2.4	12	***33***	5.2	< 2.9	6.8	5.2	4.9	< 2.2	4.9	6
Barium	7440-39-3	8,200	190,000	360	160	81	49	120	120	140	95	19	150	16	100	150
Beryllium	7440-41-7	320	190,000	1.5	1.5	0.78	0.89	1.1	1.1	0.98	1	< 0.65	< 1.1	< 0.65	< 0.88	1.2
Cadmium	7440-43-9	38	190,000	< 0.79	1.1	< 0.72	< 0.75	1	< 0.87	< 0.86	< 1	< 0.65	< 1.1	< 0.65	< 0.88	< 1.2
Calcium	7440-70-2	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	7440-47-3	190,000	190,000	23	120	13	23	77	42	37	64	7.7	43	15	34	45
Cobalt	7440-48-4	130	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	7440-50-8	43,000	190,000	110	83	7.6	27	65	18	10	29	< 5.4	15	7.9	14	17
Cyanide	57-12-5	200	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	7439-89-6	- -	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	7439-92-1	450	190,000	280	170	8.8	43	110	51	11	40	12	15	22	25	14
Magnesium	7439-95-4	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	7439-96-5	2,000	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	7439-97-6	10	190,000	< 0.11	0.93	< 0.1	0.78	0.64	< 0.12	< 0.12	0.4	< 0.09	< 0.16	< 0.09	< 0.12	< 0.16
Nickel	7440-02-0	650	190,000	14	25	11	10	20	26	28	33	5.8	28	7.9	19	31
Potassium	7440-09-7	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	7782-49-2	26	190,000	3	4.7	< 2.2	3.3	4.2	< 2.6	< 2.6	< 3	< 1.9	< 3.4	< 1.9	< 2.6	< 3.5
Silver	7440-22-4	84	190,000	< 3.3	< 4.4	< 3	< 3.1	< 3.8	< 3.6	< 3.6	< 4.2	< 2.7	< 4.7	< 2.7	< 3.7	< 4.8
Sodium	7440-23-5	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	7440-28-0	14	190,000	< 1.6	< 2.1	< 1.4	< 1.5	< 1.8	< 1.7	< 1.7	< 2	< 1.3	< 2.3	< 1.3	< 1.8	< 2.3
Vanadium	7440-62-2	680	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	7440-66-6	12,000	190,000	110	440	31	110	420	69	61	270	20	66	19	59	89

Location ID: / Sample Depth (ft): / Date Collected:	CAS Number	Soil Standards or PQLs		PCSB-31		PCSB-32		PCSB-33		PCSB-34		PCSB-35		PCSB-36	
		S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	DC Non-Res Subsurf Soil (Exceedances Shaded)	3.5 7/28/05	10.5 7/28/05	3.5 7/28/05	11.5 7/28/05	4 7/28/05	11.5 7/28/05	5 7/27/05	16.5 7/27/05	2.5 8/2/05	15.5 8/2/05	4 7/27/05	16 7/27/05
Volatile Organic Compounds															
2-Butanone (MEK)	78-93-3	400	10,000	< 0.0011	< 0.0012	< 0.00084	< 0.0016	< 0.00083	< 0.0012	< 0.0011	< 0.0012	< 0.001	< 0.00091	< 0.00094	< 0.0011
Acetone	67-64-1	8,800	10,000	< 0.0072	0.039	< 0.0057	0.084	< 0.0056	0.039	0.024	0.062	0.023	< 0.0062	< 0.0064	0.025
Benzene	71-43-2	0.5	330	< 0.00069	< 0.00078	< 0.00055	< 0.001	< 0.00054	< 0.00077	< 0.00075	< 0.00081	< 0.00066	< 0.00059	< 0.00061	< 0.00074
Carbon Disulfide	75-15-0	620	10,000	< 0.00088	< 0.001	< 0.0007	< 0.0013	< 0.00069	< 0.00098	< 0.00096	< 0.001	< 0.00084	< 0.00076	< 0.00078	< 0.00094
Chlorobenzene	108-90-7	10	4,500	< 0.00068	< 0.00077	< 0.00054	< 0.001	< 0.00053	< 0.00076	< 0.00074	< 0.0008	< 0.00065	< 0.00058	< 0.00061	< 0.00073
Chloroform	67-66-3	8	110	< 0.00061	< 0.0007	< 0.00049	< 0.00091	< 0.00048	< 0.00069	< 0.00067	< 0.00072	< 0.00059	< 0.00053	< 0.00055	< 0.00066
cis-1,2-Dichloroethene	156-59-2	7	10,000	< 0.00064	< 0.00073	< 0.00051	< 0.00095	< 0.00051	< 0.00072	< 0.0007	< 0.00076	< 0.00062	< 0.00055	< 0.00057	< 0.00069
Cyclohexane	110-82-7	6,900	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichloromethane	75-09-2	0.5	10,000	0.03 B	0.03 B	0.014 B	0.024 B	0.015 B	0.018 B	0.023 B	0.023 B	0.015 B	0.016 B	0.01 B	0.018 B
Ethylbenzene	100-41-4	70	1,000	< 0.001	< 0.0011	< 0.0008	< 0.0015	< 0.00079	< 0.0011	< 0.0011	< 0.0012	< 0.00097	< 0.00087	< 0.0009	< 0.0011
Isopropylbenzene	98-82-8	2,500	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
m&p-Xylenes	ARC-mpXyl	- -	- -	< 0.0015	< 0.0017	< 0.0012	< 0.0022	< 0.0012	< 0.0017	< 0.0016	< 0.0017	0.0013 J	< 0.0013	< 0.0013	< 0.0016
Methyl Acetate	79-20-9	9,700	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylcyclohexane	108-87-2	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl-tert-butylether	1634-04-4	2	9,800	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
o,p-Xylene	136777-61-2	- -	- -	< 0.00063	< 0.00072	< 0.0005	< 0.00094	< 0.0005	< 0.00071	< 0.00069	< 0.00074	< 0.00061	< 0.00054	< 0.00056	< 0.00068
o-Xylene	95-47-6	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene (Monomer)	100-42-5	24	10,000	< 0.00084	< 0.00095	< 0.00067	< 0.0012	< 0.00066	< 0.00094	< 0.00091	< 0.00098	< 0.00081	< 0.00072	< 0.00075	< 0.0009
Toluene	108-88-3	100	10,000	< 0.001	< 0.0012	< 0.00081	< 0.0015	< 0.0008	< 0.0011	< 0.0011	< 0.0012	< 0.00098	< 0.00088	< 0.00091	< 0.0011
trans-1,2-Dichloroethene	156-60-5	10	10,000	< 0.00043	< 0.00049	< 0.00034	< 0.00064	< 0.00034	< 0.00048	< 0.00047	< 0.00051	< 0.00041	< 0.00037	< 0.00038	< 0.00046
trans-1,3-Dichloropropene	10061-02-6	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Xylenes	1330-20-7	1,000	9,100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Semi-Volatile Organic Compounds															
1,1-Biphenyl	92-52-4	1.5	40	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	105-67-9	190	10,000	< 0.062	< 0.071	< 0.03	< 0.092	< 0.03	< 0.07	< 0.041	< 0.045	< 0.06	< 0.033	< 0.034	< 0.067
2-Methylnaphthalene	91-57-6	100	270	0.18	< 0.066	< 0.061	0.6	< 0.061	< 0.065	< 0.084	< 0.09	1.1	< 0.066	0.11	< 0.062
2-Methylphenol	95-48-7	490	190,000	< 0.21	< 0.24	< 0.13	< 0.32	< 0.13	< 0.24	< 0.18	< 0.2	< 0.21	< 0.14	< 0.15	< 0.23
3-Methylphenol, 4-Methylphenol	65794-96-9	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methylphenol	106-44-5	49	190,000	< 0.24	< 0.27	< 0.13	0.17 J	< 0.13	< 0.27	< 0.18	< 0.2	< 0.23	< 0.14	< 0.15	< 0.26
Acenaphthene	83-32-9	4,700	190,000	0.4	< 0.021	< 0.0059	0.35	< 0.0058	< 0.021	< 0.0081	< 0.0087	< 0.018	< 0.0064	< 0.0066	< 0.02
Acenaphthylene	208-96-8	6,600	190,000	< 0.01	< 0.012	< 0.0054	0.14	< 0.0054	0.089	< 0.0074	< 0.008	< 0.01	< 0.0059	0.087	< 0.011
Acetophenone	98-86-2	970	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	120-12-7	350	190,000	1.3	< 0.013	< 0.0071	0.56	< 0.007	0.14	< 0.0097	< 0.01	0.35	< 0.0077	0.11	< 0.013
Benz(a)anthracene	56-55-3	340	190,000	3.9	0.079	< 0.005	0.91	0.052	0.081	< 0.0068	0.13	0.21	< 0.0054	0.32	< 0.0084
Benzaldehyde	100-52-7	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	50-32-8	46	190,000	3.2	0.065	< 0.006	0.78	0.048	0.051	< 0.0081	0.11	0.081	0.36	0.33	0.18
Benzo(b)fluoranthene	205-99-2	170	190,000	4.2	< 0.015	< 0.01	1.1	0.07	0.077	< 0.014	< 0.015	0.24	< 0.011	0.54	< 0.014
Benzo(g,h,i)perylene	191-24-2	180	190,000	2.7	0.073	< 0.0051	0.7	< 0.0051	< 0.0096	< 0.007	0.071	0.11	< 0.0056	0.3	< 0.0092
Benzo(k)fluoranthene	207-08-9	610	190,000	1.2	< 0.017	< 0.013	0.32	< 0.012	< 0.016	< 0.017	< 0.019	0.044	< 0.014	0.16	< 0.016
bis(2-Ethylhexyl)phthalate	117-81-7	130	10,000	< 0.041	1.3	< 0.023	< 0.06	0.065	0.08	0.076	0.12	< 0.039	< 0.025	0.33	0.17
Butyl benzyl phthalate	85-68-7	10,000	10,000	< 0.018	< 0.021	< 0.0097	< 0.027	< 0.0096	< 0.02	< 0.013	< 0.014	< 0.017	< 0.01	< 0.011	< 0.019

Location ID: / Sample Depth (ft): / Date Collected:	CAS Number	Soil Standards or PQLs: S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	Soil Standards or PQLs: DC Non-Res Subsurf Soil (Exceedances Shaded)	PCSB-31 3.5 7/28/05	PCSB-31 10.5 7/28/05	PCSB-32 3.5 7/28/05	PCSB-32 11.5 7/28/05	PCSB-33 4 7/28/05	PCSB-33 11.5 7/28/05	PCSB-34 5 7/27/05	PCSB-34 16.5 7/27/05	PCSB-35 2.5 8/2/05	PCSB-35 15.5 8/2/05	PCSB-36 4 7/27/05	PCSB-36 16 7/27/05
Semi-Volatile Organic Compounds (cont'd)															
Carbazole	86-74-8	89	190,000	0.69	< 0.015	< 0.0069	0.11	< 0.0068	< 0.015	< 0.0094	< 0.01	< 0.013	< 0.0074	0.052	< 0.014
Chrysene	218-01-9	230	190,000	3.8	0.11	< 0.01	1.1	0.059	0.078	< 0.014	0.12	0.3	< 0.011	0.39	< 0.01
Dibenz(a,h)anthracene	53-70-3	270	190,000	0.82	< 0.018	< 0.0066	0.22	< 0.0065	< 0.018	< 0.009	< 0.0097	< 0.015	< 0.0071	0.081	< 0.017
Dibenzofuran	132-64-9	250	190,000	0.32	< 0.065	< 0.046	0.52	< 0.046	< 0.064	< 0.063	< 0.068	0.16	< 0.05	0.06	< 0.061
Diethyl phthalate	84-66-2	7,800	10,000	< 0.012	< 0.014	< 0.0084	< 0.018	< 0.0083	< 0.014	< 0.012	< 0.012	< 0.012	< 0.0091	< 0.0095	< 0.013
Di-n-butyl phthalate	84-74-2	4,000	10,000	0.047	0.069	< 0.0073	0.2	< 0.0072	< 0.011	0.08	0.074	0.18	< 0.0078	< 0.0081	0.082
Di-n-octyl phthalate	117-84-0	10,000	10,000	< 0.011	< 0.012	< 0.012	< 0.016	< 0.012	< 0.012	< 0.017	< 0.018	< 0.01	< 0.013	< 0.014	< 0.011
Fluoranthene	206-44-0	3,200	190,000	6.7	0.12	< 0.0059	1.7	0.085	0.11	0.052	0.25	0.25	< 0.0064	0.56	< 0.014
Fluorene	86-73-7	3,800	190,000	0.4	< 0.013	< 0.0086	0.6	< 0.0085	< 0.013	< 0.012	< 0.013	< 0.011	< 0.0093	0.049	< 0.012
Indeno(1,2,3-cd)pyrene	193-39-5	18,000	190,000	2.4	0.055	< 0.0061	0.57	< 0.006	0.056	< 0.0083	0.067	0.12	< 0.0066	0.25	< 0.0067
Naphthalene	91-20-3	25	77	0.47	0.089	< 0.0035	1.6	< 0.0034	0.055	0.078	< 0.0051	1.1	< 0.0038	0.12	< 0.011
Pentachlorophenol	87-86-5	5	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	85-01-8	10,000	190,000	4.8	0.061	< 0.008	1.1	0.062	0.11	< 0.011	0.058	0.53	< 0.0086	0.46	< 0.011
Phenol	108-95-2	200	18,000	< 0.069	< 0.078	< 0.059	< 0.1	< 0.059	< 0.077	< 0.081	< 0.087	< 0.066	< 0.064	< 0.066	< 0.074
Pyrene	129-00-0	2,200	190,000	5.4	0.12	< 0.0082	1.5	0.087	0.095	0.11	0.24	0.38	< 0.0089	0.51	< 0.011
Total PAHs and 2-Methylnaphthalene	-	- -	- -	41.9	0.772	< 0.061	13.9	0.463	0.942	0.24	1.05	4.82	0.36	4.38	0.18
Metals															
Aluminum	7429-90-5	- -	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	7440-36-0	27	190,000	3.5	< 3.1	< 2.2	< 4	< 2.1	< 3	< 2.9	< 3.2	< 2.6	< 2.3	5.6	< 2.9
Arsenic	7440-38-2	29	190,000	***50***	7	< 2.2	28	< 2.1	4.8	< 2.9	4.7	11	< 2.3	5.6	3.1
Barium	7440-39-3	8,200	190,000	410	77	< 11	240	< 11	72	45	110	120	63	120	74
Beryllium	7440-41-7	320	190,000	< 0.81	< 0.92	< 0.65	< 1.2	< 0.64	< 0.91	< 0.88	< 0.95	< 0.78	< 0.7	< 0.72	< 0.87
Cadmium	7440-43-9	38	190,000	< 0.81	< 0.92	< 0.65	< 1.2	< 0.64	< 0.91	< 0.88	< 0.95	< 0.78	< 0.7	1.4	< 0.87
Calcium	7440-70-2	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	7440-47-3	190,000	190,000	14	42	7.4	390	7.7	37	19	36	9.6	14	23	23
Cobalt	7440-48-4	130	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	7440-50-8	43,000	190,000	250	17	7.6	220	8.4	16	9.1	13	56	9.6	280	11
Cyanide	57-12-5	200	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	7439-89-6	- -	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	7439-92-1	450	190,000	***2,700***	23	8.1	290	11	17	7.4	29	190	40	***2,600***	53
Magnesium	7439-95-4	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	7439-96-5	2,000	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	7439-97-6	10	190,000	1.4	< 0.13	< 0.09	3	< 0.089	< 0.13	< 0.12	< 0.13	< 0.11	< 0.097	< 0.1	< 0.12
Nickel	7440-02-0	650	190,000	17	20	6	36	< 5.3	21	15	25	130	13	12	17
Potassium	7440-09-7	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	7782-49-2	26	190,000	7.6	< 2.8	< 1.9	5.5	< 1.9	2.8	< 2.6	< 2.9	2.7	< 2.1	< 2.2	< 2.6
Silver	7440-22-4	84	190,000	< 3.4	< 3.8	< 2.7	< 5	< 2.7	< 3.8	< 3.7	< 4	< 3.2	< 2.9	< 3	< 3.6
Sodium	7440-23-5	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	7440-28-0	14	190,000	< 1.6	< 1.8	< 1.3	< 2.4	< 1.3	< 1.8	< 1.8	< 1.9	< 1.6	< 1.4	< 1.4	< 1.7
Vanadium	7440-62-2	680	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	7440-66-6	12,000	190,000	610	89	28	640	20	67	36	67	290	28	1,700	84

Table 11
Saturated Soil Analytical Results – Detected VOCs, SVOCs, and Inorganics (mg/kg)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID:		Soil Standards or PQLs		PCSB-37		PCSB-38		PCSB-39		PCSB-40		PCSB-41		PCSB-41R
Sample Depth (ft):		S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	DC Non-Res Subsurf Soil (Exceedances Shaded)	4	10.5	3.5	9.5	4	11	4	10.5	3.5	9.5	9-11
Date Collected:	CAS Number			8/3/05	8/3/05	7/27/05	7/27/05	7/27/05	7/27/05	7/28/05	7/28/05	7/28/05	7/28/05	4/22/19
Volatile Organic Compounds														
2-Butanone (MEK)	78-93-3	400	10,000	< 0.001	< 0.0013	< 0.00089	0.029	< 0.00088	< 0.0012	< 0.001 [< 0.001]	< 0.0012	< 0.00096	< 0.0011	0.0113 J
Acetone	67-64-1	8,800	10,000	0.037	0.05	< 0.006	0.12	< 0.006	0.055	0.028 [0.027]	0.031	< 0.0066	0.037	0.184
Benzene	71-43-2	0.5	330	< 0.00065	< 0.00085	< 0.00058	< 0.00089	< 0.00057	< 0.00081	< 0.00068 [< 0.00068]	< 0.00081	< 0.00063	< 0.00075	0.0015
Carbon Disulfide	75-15-0	620	10,000	< 0.00083	< 0.0011	< 0.00074	< 0.0011	< 0.00073	< 0.001	< 0.00087 [< 0.00087]	< 0.001	0.0077	< 0.00096	< 0.0026
Chlorobenzene	108-90-7	10	4,500	< 0.00064	< 0.00084	< 0.00057	< 0.00088	< 0.00056	< 0.0008	< 0.00067 [< 0.00067]	< 0.0008	< 0.00062	< 0.00074	< 0.0026
Chloroform	67-66-3	8	110	< 0.00058	< 0.00076	< 0.00052	< 0.0008	< 0.00051	< 0.00072	< 0.0006 [< 0.0006]	< 0.00072	< 0.00056	< 0.00067	< 0.0026
cis-1,2-Dichloroethene	156-59-2	7	10,000	< 0.00061	< 0.00079	< 0.00054	< 0.00084	< 0.00054	< 0.00076	0.0018 [< 0.00064]	< 0.00076	< 0.00059	< 0.0007	< 0.0013
Cyclohexane	110-82-7	6,900	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0023 J
Dichloromethane	75-09-2	0.5	10,000	0.003 B	0.0043 B	0.014 B	0.015 B	0.013 B	0.017 B	0.011 B [0.015 B]	0.012 B	0.017 B	0.018 B	< 0.0065
Ethylbenzene	100-41-4	70	1,000	< 0.00096	< 0.0012	< 0.00085	< 0.0013	< 0.00084	< 0.0012	< 0.00099 [< 0.00099]	< 0.0012	< 0.00092	< 0.0011	0.0077
Isopropylbenzene	98-82-8	2,500	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0011 J
m&p-Xylenes	ARC-mpXyl	- -	- -	< 0.0014	< 0.0018	< 0.0013	< 0.0019	< 0.0012	< 0.0017	< 0.0015 [< 0.0015]	< 0.0017	< 0.0014	< 0.0016	0.0735
Methyl Acetate	79-20-9	9,700	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.0065
Methylcyclohexane	108-87-2	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0054
Methyl-tert-butylether	1634-04-4	2	9,800	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.0013
o,p-Xylene	136777-61-2	- -	- -	< 0.0006	< 0.00078	< 0.00053	< 0.00082	< 0.00053	< 0.00074	< 0.00062 [< 0.00062]	< 0.00074	< 0.00058	< 0.00069	NA
o-Xylene	95-47-6	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0316
Styrene (Monomer)	100-42-5	24	10,000	< 0.0008	< 0.001	< 0.0007	< 0.0011	< 0.0007	< 0.00098	< 0.00083 [< 0.00083]	< 0.00098	< 0.00077	< 0.00091	< 0.0026
Toluene	108-88-3	100	10,000	< 0.00097	< 0.0013	< 0.00086	< 0.0013	< 0.00085	< 0.0012	< 0.001 [< 0.001]	< 0.0012	< 0.00093	< 0.0011	0.0124
trans-1,2-Dichloroethene	156-60-5	10	10,000	< 0.00041	< 0.00053	< 0.00036	< 0.00056	< 0.00036	< 0.00051	< 0.00043 [< 0.00043]	< 0.00051	< 0.00039	< 0.00047	< 0.0013
trans-1,3-Dichloropropene	10061-02-6	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.0026
Total Xylenes	1330-20-7	1,000	9,100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.105
Semi-Volatile Organic Compounds														
1,1-Biphenyl	92-52-4	1.5	40	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.093
2,4-Dimethylphenol	105-67-9	190	10,000	< 0.059	< 0.077	< 0.032	< 0.081	< 0.032	< 0.045	< 0.061 [< 0.038]	< 0.045	< 0.035	< 0.041	< 0.23
2-Methylnaphthalene	91-57-6	100	270	< 0.055	< 0.072	< 0.065	0.072 J	< 0.064	< 0.09	0.29 [0.23]	< 0.09	< 0.07	< 0.084	< 0.046
2-Methylphenol	95-48-7	490	190,000	< 0.2	< 0.26	< 0.14	< 0.28	< 0.14	< 0.2	< 0.21 [< 0.17]	< 0.2	< 0.15	< 0.18	< 0.093
3-Methylphenol, 4-Methylphenol	65794-96-9	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.093
4-Methylphenol	106-44-5	49	190,000	< 0.23	< 0.29	< 0.14	< 0.31	< 0.14	< 0.2	< 0.24 [< 0.16]	< 0.2	< 0.15	< 0.18	NA
Acenaphthene	83-32-9	4,700	190,000	< 0.018	< 0.023	< 0.0062	< 0.024	< 0.0062	< 0.0087	0.29 [0.16]	< 0.0087	< 0.0068	< 0.0081	< 0.046
Acenaphthylene	208-96-8	6,600	190,000	< 0.0099	< 0.013	< 0.0057	< 0.014	< 0.0057	< 0.008	< 0.01 [< 0.0067]	< 0.008	< 0.0062	< 0.0074	< 0.046
Acetophenone	98-86-2	970	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.23
Anthracene	120-12-7	350	190,000	< 0.011	< 0.015	< 0.0075	0.089	< 0.0074	< 0.01	0.65 [0.36]	< 0.01	0.073	< 0.0097	< 0.046
Benz(a)anthracene	56-55-3	340	190,000	< 0.0075	< 0.0097	< 0.0053	0.21	< 0.0052	< 0.0074	5.9 [3.4]	< 0.0074	0.38	< 0.0068	< 0.046
Benzaldehyde	100-52-7	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.23
Benzo(a)pyrene	50-32-8	46	190,000	< 0.0098	0.093	< 0.0063	0.18	< 0.0062	0.33	6.6 [4.5]	< 0.0088	0.35	0.82	< 0.046
Benzo(b)fluoranthene	205-99-2	170	190,000	< 0.013	< 0.017	< 0.011	0.29	< 0.01	< 0.015	7.6 [5.6]	< 0.015	0.5	< 0.014	< 0.046
Benzo(g,h,i)perylene	191-24-2	180	190,000	< 0.0081	< 0.011	< 0.0054	0.18	< 0.0054	< 0.0076	6.1 [3.2]	< 0.0076	0.23	< 0.007	< 0.046
Benzo(k)fluoranthene	207-08-9	610	190,000	< 0.014	< 0.018	< 0.013	0.088	< 0.013	< 0.019	3 [2.2]	< 0.019	0.13	< 0.017	< 0.046
bis(2-Ethylhexyl)phthalate	117-81-7	130	10,000	< 0.039	< 0.05	0.49	0.1	0.31	< 0.034	0.17 [0.1]	< 0.034	0.081	0.05	< 0.093
Butyl benzyl phthalate	85-68-7	10,000	10,000	< 0.017	< 0.022	< 0.01	< 0.023	< 0.01	< 0.014	< 0.018 [< 0.012]	< 0.014	< 0.011	< 0.013	< 0.093

Table 11
Saturated Soil Analytical Results – Detected VOCs, SVOCs, and Inorganics (mg/kg)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID:		Soil Standards or PQLs		PCSB-37		PCSB-38		PCSB-39		PCSB-40		PCSB-41		PCSB-41R
Sample Depth (ft):		S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	DC Non-Res Subsurf Soil (Exceedances Shaded)	4	10.5	3.5	9.5	4	11	4	10.5	3.5	9.5	9-11
Date Collected:	CAS Number			8/3/05	8/3/05	7/27/05	7/27/05	7/27/05	7/27/05	7/28/05	7/28/05	7/28/05	7/28/05	4/22/19
Semi-Volatile Organic Compounds (cont'd)														
Carbazole	86-74-8	89	190,000	< 0.013	< 0.016	< 0.0073	< 0.017	< 0.0072	< 0.01	0.54 [0.34]	< 0.01	< 0.0079	< 0.0094	< 0.093
Chrysene	218-01-9	230	190,000	< 0.0088	< 0.011	< 0.011	0.28	< 0.011	< 0.015	5.7 [4]	< 0.015	0.36	< 0.014	< 0.046
Dibenz(a,h)anthracene	53-70-3	270	190,000	< 0.015	< 0.019	< 0.0069	< 0.02	< 0.0069	< 0.0097	2.3 [0.22]	< 0.0097	0.074	< 0.009	< 0.046
Dibenzofuran	132-64-9	250	190,000	< 0.054	< 0.071	< 0.049	0.065 J	< 0.048	< 0.068	0.17 [0.12]	< 0.068	< 0.053	< 0.063	< 0.093
Diethyl phthalate	84-66-2	7,800	10,000	< 0.012	< 0.015	< 0.0089	< 0.016	< 0.0088	< 0.012	< 0.012 [< 0.01]	< 0.012	< 0.0097	< 0.012	< 0.093
Di-n-butyl phthalate	84-74-2	4,000	10,000	0.088	0.14	0.044	0.092	< 0.0076	0.059	0.12 [< 0.009]	< 0.011	0.061	< 0.0099	< 0.093
Di-n-octyl phthalate	117-84-0	10,000	10,000	< 0.01	< 0.013	0.053	< 0.014	< 0.013	< 0.018	< 0.01 [< 0.015]	< 0.018	< 0.014	< 0.017	< 0.093
Fluoranthene	206-44-0	3,200	190,000	< 0.012	< 0.016	< 0.0062	0.4	< 0.0062	< 0.0087	6.5 [4.3]	0.071	0.66	< 0.0081	< 0.046
Fluorene	86-73-7	3,800	190,000	< 0.011	< 0.014	< 0.0091	0.095	< 0.009	< 0.013	0.17 [0.11]	< 0.013	< 0.0098	< 0.012	< 0.046
Indeno(1,2,3-cd)pyrene	193-39-5	18,000	190,000	< 0.0059	< 0.0077	< 0.0064	0.17	< 0.0064	< 0.009	5.1 [2.7]	< 0.009	0.2	< 0.0083	< 0.046
Naphthalene	91-20-3	25	77	< 0.01	< 0.013	< 0.0037	0.22	< 0.0036	< 0.0051	0.5 [0.34]	< 0.0051	< 0.004	< 0.0048	< 0.046
Pentachlorophenol	87-86-5	5	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.19
Phenanthrene	85-01-8	10,000	190,000	< 0.0098	< 0.013	< 0.0084	0.25	< 0.0083	< 0.012	2.5 [1.7]	0.057	0.3	< 0.011	< 0.046
Phenol	108-95-2	200	18,000	< 0.065	< 0.085	< 0.063	< 0.089	< 0.062	< 0.087	< 0.068 [< 0.073]	< 0.087	< 0.068	< 0.081	< 0.093
Pyrene	129-00-0	2,200	190,000	0.056	< 0.013	< 0.0087	0.39	< 0.0086	< 0.012	5.8 [4.1]	0.077	0.57	< 0.011	< 0.046
Total PAHs and 2-Methylnaphthalene	-	- -	- -	0.056	0.093	< 0.065	2.91	< 0.064	0.33	59.0 [37.1]	0.205	3.83	0.82	< 0.046
Metals														
Aluminum	7429-90-5	- -	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	16,700
Antimony	7440-36-0	27	190,000	< 2.6	< 3.3	< 2.3	< 3.5	< 2.2	< 3.2	< 2.7 [< 2.7]	< 3.2	< 2.5	< 2.9	< 2.8
Arsenic	7440-38-2	29	190,000	3.3	4	< 2.3	12	3.2	< 3.2	4.5 [7.3]	7.1	< 2.5	< 2.9	5.5
Barium	7440-39-3	8,200	190,000	37	180	13	170	29	150	34 [46]	89	59	130	117
Beryllium	7440-41-7	320	190,000	< 0.77	< 1	< 0.68	< 1.1	< 0.67	< 0.95	< 0.8 [< 0.8]	< 0.95	< 0.74	0.9	0.83
Cadmium	7440-43-9	38	190,000	< 0.77	< 1	< 0.68	< 1.1	< 0.67	< 0.95	< 0.8 [< 0.8]	< 0.95	< 0.74	< 0.88	0.097 J
Calcium	7440-70-2	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2,630
Chromium	7440-47-3	190,000	190,000	20	35	11	90	13	34	< 6.7 [9.9]	46	13	34	38.5
Cobalt	7440-48-4	130	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	9.8
Copper	7440-50-8	43,000	190,000	14	15	< 5.7	34	19	15	33 [73]	25	16	12	9.0
Cyanide	57-12-5	200	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.29
Iron	7439-89-6	- -	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	19,800
Lead	7439-92-1	450	190,000	17	16	< 5.7	100	170	10	73 [97]	30	60	27	19.4
Magnesium	7439-95-4	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4,730
Manganese	7439-96-5	2,000	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	341
Mercury	7439-97-6	10	190,000	1.6	< 0.14	< 0.095	0.44	< 0.094	< 0.13	< 0.11 [0.13]	< 0.13	0.11	< 0.12	< 0.043 J
Nickel	7440-02-0	650	190,000	21	23	7.2	25	7	26	8.1 [11]	22	12	26	24.2
Potassium	7440-09-7	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2,010
Selenium	7782-49-2	26	190,000	< 2.3	< 3	< 2	3.9	< 2	< 2.9	2.9 [3.2]	< 2.9	< 2.2	2.9	< 2.8
Silver	7440-22-4	84	190,000	< 3.2	< 4.2	< 2.8	< 4.4	< 2.8	< 4	< 3.3 [< 3.3]	< 4	< 3.1	< 3.7	< 0.69
Sodium	7440-23-5	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	256 J
Thallium	7440-28-0	14	190,000	< 1.5	< 2	< 1.4	< 2.1	< 1.3	< 1.9	< 1.6 [< 1.6]	< 1.9	< 1.5	< 1.8	< 1.4
Vanadium	7440-62-2	680	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	34.8
Zinc	7440-66-6	12,000	190,000	300	59	18	98	22	68	42 [56]	90	130	60	59.4

Table 11
Saturated Soil Analytical Results – Detected VOCs, SVOCs, and Inorganics (mg/kg)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID:	CAS Number	Soil Standards or PQLs		PCSB-42		PCSB-43		PCSB-44		PCSB-45		PCSB-46	PCSB-47	PCSB-48	PCSB-49	
Sample Depth (ft):		S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	DC Non-Res Subsurf Soil (Exceedances Shaded)	2.5	13	3.5	9	4.5	11.5	3	10.5	13	10.5	11	4	11
Date Collected:				8/1/05	8/1/05	8/1/05	8/1/05	8/3/05	8/3/05	8/3/05	8/3/05	7/27/05	8/3/05	8/3/05	8/3/05	8/3/05
Volatile Organic Compounds																
2-Butanone (MEK)	78-93-3	400	10,000	< 0.058	< 0.0015	< 0.00093	< 0.0011	< 0.075	< 0.0011	< 0.062	< 0.0013	< 0.0013	< 0.0012	< 0.0013	< 0.077	0.049
Acetone	67-64-1	8,800	10,000	< 0.41	0.057	0.024	0.023	< 0.53	0.059	< 0.44	0.067	0.059	0.074	0.09	< 0.55	0.27
Benzene	71-43-2	0.5	330	< 0.031	< 0.00096	< 0.00061	< 0.00071	< 0.04	< 0.00074	< 0.032	< 0.00084	< 0.00086	< 0.0008	< 0.00086	< 0.041	< 0.0011
Carbon Disulfide	75-15-0	620	10,000	< 0.049	< 0.0012	< 0.00077	< 0.0009	< 0.064	< 0.00094	< 0.052	< 0.0011	< 0.0011	< 0.001	< 0.0011	< 0.066	< 0.0014
Chlorobenzene	108-90-7	10	4,500	< 0.026	< 0.00095	< 0.0006	< 0.0007	< 0.033	< 0.00073	< 0.027	< 0.00082	< 0.00085	< 0.00079	< 0.00085	< 0.034	< 0.001
Chloroform	67-66-3	8	110	< 0.029	< 0.00086	< 0.00054	< 0.00063	< 0.038	< 0.00066	< 0.031	< 0.00074	< 0.00077	< 0.00071	< 0.00077	< 0.039	< 0.00094
cis-1,2-Dichloroethene	156-59-2	7	10,000	< 0.024	< 0.0009	< 0.00057	< 0.00066	< 0.03	< 0.00069	< 0.025	< 0.00078	< 0.00081	< 0.00074	< 0.00081	< 0.031	< 0.00099
Cyclohexane	110-82-7	6,900	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichloromethane	75-09-2	0.5	10,000	0.31 B	0.023 B	0.015 B	0.02 B	0.32 B	0.019 B	0.33 B	0.019 B	0.019 B	0.015 B	0.015 B	0.28 B	0.021 B
Ethylbenzene	100-41-4	70	1,000	< 0.06	< 0.0014	< 0.00089	< 0.001	< 0.077	< 0.0011	0.24	< 0.0012	< 0.0013	< 0.0012	< 0.0013	< 0.079	< 0.0016
Isopropylbenzene	98-82-8	2,500	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
m&p-Xylenes	ARC-mpXyl	- -	- -	0.17	< 0.0021	0.0013	< 0.0015	< 0.081	< 0.0016	0.17	< 0.0018	< 0.0019	< 0.0017	< 0.0019	< 0.083	< 0.0023
Methyl Acetate	79-20-9	9,700	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylcyclohexane	108-87-2	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl-tert-butylether	1634-04-4	2	9,800	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
o,p-Xylene	136777-61-2	- -	- -	< 0.039	< 0.00088	< 0.00056	< 0.00065	< 0.051	< 0.00068	< 0.042	< 0.00077	< 0.00079	< 0.00073	< 0.00079	< 0.052	< 0.00097
o-Xylene	95-47-6	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene (Monomer)	100-42-5	24	10,000	< 0.013	< 0.0012	< 0.00074	< 0.00086	< 0.017	< 0.0009	< 0.014	< 0.001	< 0.0011	< 0.00097	< 0.0011	< 0.017	< 0.0013
Toluene	108-88-3	100	10,000	< 0.02	< 0.0014	< 0.0009	< 0.001	< 0.025	< 0.0011	< 0.021	< 0.0012	< 0.0013	< 0.0012	< 0.0013	< 0.026	< 0.0016
trans-1,2-Dichloroethene	156-60-5	10	10,000	< 0.045	< 0.0006	< 0.00038	< 0.00044	< 0.057	< 0.00046	< 0.047	< 0.00052	< 0.00054	< 0.0005	< 0.00054	< 0.059	< 0.00067
trans-1,3-Dichloropropene	10061-02-6	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Xylenes	1330-20-7	1,000	9,100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Semi-Volatile Organic Compounds																
1,1-Biphenyl	92-52-4	1.5	40	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	105-67-9	190	10,000	< 0.49	< 0.053	< 0.16	< 0.054	< 0.063	< 0.041	< 0.32	< 0.075	< 0.048	< 0.044	< 0.048	< 1.3	< 0.059
2-Methylnaphthalene	91-57-6	100	270	4.1	< 0.11	9.8	< 0.047	5.4	< 0.083	9.1	< 0.07	< 0.097	< 0.089	< 0.097	18	< 0.12
2-Methylphenol	95-48-7	490	190,000	< 1.7	< 0.23	< 0.57	< 0.1	< 0.22	< 0.18	< 1.4	< 0.26	< 0.21	< 0.19	< 0.21	< 4.5	< 0.26
3-Methylphenol, 4-Methylphenol	65794-96-9	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methylphenol	106-44-5	49	190,000	< 1.9	< 0.23	< 0.63	< 0.13	0.23 J	< 0.18	< 1.4	< 0.29	< 0.21	< 0.19	< 0.21	< 5	< 0.26
Acenaphthene	83-32-9	4,700	190,000	3.2	< 0.01	3.1	< 0.017	1.1	< 0.008	3.8	< 0.023	< 0.0093	< 0.0086	< 0.0093	14	< 0.011
Acenaphthylene	208-96-8	6,600	190,000	< 0.082	< 0.0095	< 0.028	< 0.0092	< 0.011	< 0.0073	< 0.057	< 0.013	< 0.0085	< 0.0079	< 0.0085	< 0.22	< 0.01
Acetophenone	98-86-2	970	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	120-12-7	350	190,000	0.94	< 0.012	1.5	< 0.012	0.92	< 0.0096	1.4	0.058	< 0.011	< 0.01	< 0.011	6.4	< 0.014
Benz(a)anthracene	56-55-3	340	190,000	1.7	< 0.0088	2.9	< 0.019	0.64	< 0.0067	0.8	0.068	< 0.0079	< 0.0073	< 0.0079	1.6	< 0.0097
Benzaldehyde	100-52-7	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	50-32-8	46	190,000	2.8	0.13	2.8	0.37	0.67	0.4	0.61	< 0.013	< 0.0094	0.71	0.19	1.1	0.48
Benzo(b)fluoranthene	205-99-2	170	190,000	3.9	< 0.017	3.5	< 0.024	1	< 0.013	0.79	0.076	< 0.016	< 0.014	< 0.016	1.7	< 0.019
Benzo(g,h,i)perylene	191-24-2	180	190,000	2.3	< 0.009	2	< 0.017	0.57	< 0.0069	< 0.054	< 0.01	< 0.0081	< 0.0075	< 0.0081	< 0.18	< 0.01
Benzo(k)fluoranthene	207-08-9	610	190,000	1.4	< 0.022	1.2	< 0.021	0.37	< 0.017	< 0.13	< 0.018	< 0.02	< 0.018	< 0.02	< 0.31	< 0.024
bis(2-Ethylhexyl)phthalate	117-81-7	130	10,000	< 0.32	0.73	0.31	0.11	0.11	< 0.031	< 0.24	0.069	< 0.036	< 0.033	< 0.036	< 0.85	< 0.044
Butyl benzyl phthalate	85-68-7	10,000	10,000	< 0.14	< 0.017	< 0.048	< 0.019	< 0.018	< 0.013	< 0.1	< 0.022	< 0.015	< 0.014	< 0.015	< 0.38	< 0.019

Location ID:		Soil Standards or PQLs		PCSB-42		PCSB-43		PCSB-44		PCSB-45		PCSB-46	PCSB-47	PCSB-48	PCSB-49	
Sample Depth (ft):				2.5	13	3.5	9	4.5	11.5	3	10.5	13	10.5	11	4	11
Date Collected:	CAS Number	S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	DC Non-Res Subsurf Soil (Exceedances Shaded)	8/1/05	8/1/05	8/1/05	8/1/05	8/3/05	8/3/05	8/3/05	8/3/05	7/27/05	8/3/05	8/3/05	8/3/05	8/3/05
Semi-Volatile Organic Compounds (cont'd)																
Carbazole	86-74-8	89	190,000	< 0.11	< 0.012	< 0.035	< 0.016	< 0.014	< 0.0093	< 0.072	< 0.016	< 0.011	< 0.01	< 0.011	< 0.28	< 0.013
Chrysene	218-01-9	230	190,000	2.3	< 0.018	3	< 0.0086	0.93	< 0.014	0.78	0.075	< 0.016	< 0.015	< 0.016	1.7	< 0.02
Dibenz(a,h)anthracene	53-70-3	270	190,000	0.61	< 0.012	0.71	< 0.023	0.19	< 0.0088	< 0.069	< 0.019	< 0.01	< 0.0095	< 0.01	< 0.33	< 0.013
Dibenzofuran	132-64-9	250	190,000	1.5	< 0.081	2	< 0.081	0.9	< 0.062	2.7	< 0.069	< 0.073	< 0.067	< 0.073	8.3	< 0.09
Diethyl phthalate	84-66-2	7,800	10,000	< 0.097	< 0.015	< 0.033	< 0.011	< 0.013	< 0.011	< 0.088	< 0.015	< 0.013	< 0.012	< 0.013	< 0.26	< 0.016
Di-n-butyl phthalate	84-74-2	4,000	10,000	< 0.079	0.064	< 0.027	< 0.01	< 0.01	< 0.0098	< 0.076	0.077	< 0.011	0.062	< 0.011	< 0.21	< 0.014
Di-n-octyl phthalate	117-84-0	10,000	10,000	< 0.084	< 0.021	< 0.028	< 0.011	< 0.011	< 0.016	< 0.13	< 0.013	< 0.019	< 0.018	< 0.019	< 0.22	< 0.024
Fluoranthene	206-44-0	3,200	190,000	3.9	< 0.01	5	< 0.017	1.4	< 0.008	2.4	0.11	< 0.0093	< 0.0086	< 0.0093	4.2	< 0.011
Fluorene	86-73-7	3,800	190,000	3.7	< 0.015	3.9	< 0.0099	2.2	< 0.012	5.1	0.065	< 0.014	< 0.012	< 0.014	20	< 0.017
Indeno(1,2,3-cd)pyrene	193-39-5	18,000	190,000	2.1	< 0.011	1.8	< 0.033	0.48	< 0.0082	< 0.064	< 0.0075	< 0.0096	< 0.0088	< 0.0096	< 0.13	< 0.012
Naphthalene	91-20-3	25	77	2.6	< 0.0061	3.1	< 0.0088	3.3	< 0.0047	2.8	0.078	< 0.0055	< 0.0051	< 0.0055	13	< 0.0068
Pentachlorophenol	87-86-5	5	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	85-01-8	10,000	190,000	6.5	< 0.014	6.9	< 0.011	4.1	< 0.011	12	0.12	< 0.013	< 0.012	< 0.013	39	< 0.015
Phenol	108-95-2	200	18,000	< 0.54	< 0.1	< 0.18	< 0.046	0.056 J	< 0.08	< 0.62	< 0.083	< 0.093	< 0.086	< 0.093	< 1.4	< 0.11
Pyrene	129-00-0	2,200	190,000	3	< 0.014	4.7	< 0.0079	1.4	< 0.011	2.2	0.2	< 0.013	< 0.012	< 0.013	6	< 0.016
Total PAHs and 2-Methylnaphthalene	-	- -	- -	45.1	0.13	55.9	0.37	24.7	0.4	41.8	0.85	< 0.097	0.71	0.19	127	0.48
Metals																
Aluminum	7429-90-5	- -	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	7440-36-0	27	190,000	4	< 3.8	< 2.4	< 2.8	< 2.7	< 2.9	< 2.2	< 3.3	< 3.4	< 3.1	< 3.4	< 2.8	< 4.2
Arsenic	7440-38-2	29	190,000	24	5.2	***54***	3.6	***31***	3.3	***44***	5.8	5.1	< 3.1	< 3.4	22	5.6
Barium	7440-39-3	8,200	190,000	120	140	310	130	89	170	93	110	150	130	130	96	220
Beryllium	7440-41-7	320	190,000	< 0.64	< 1.1	< 0.71	< 0.83	< 0.82	1.1	< 0.67	< 0.98	< 1	< 0.94	< 1	< 0.85	< 1.2
Cadmium	7440-43-9	38	190,000	< 0.64	< 1.1	1.3	< 0.83	< 0.82	< 0.87	< 0.67	< 0.98	< 1	< 0.94	< 1	< 0.85	< 1.2
Calcium	7440-70-2	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	7440-47-3	190,000	190,000	7.9	35	21	34	22	42	16	63	42	31	40	26	46
Cobalt	7440-48-4	130	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	7440-50-8	43,000	190,000	64	14	88	9.4	32	16	36	30	15	15	13	200	21
Cyanide	57-12-5	200	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	7439-89-6	- -	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	7439-92-1	450	190,000	***2,500***	< 9.4	***2,600***	17	280	15	***490***	38	13	59	17	***540***	18
Magnesium	7439-95-4	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	7439-96-5	2,000	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	7439-97-6	10	190,000	0.63	< 0.16	0.99	< 0.12	0.41	< 0.12	0.22	0.25	< 0.14	< 0.13	< 0.14	5.6	< 0.17
Nickel	7440-02-0	650	190,000	32	30	56	26	23	30	16	28	28	21	25	55	27
Potassium	7440-09-7	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	7782-49-2	26	190,000	< 1.9	< 3.4	2.2	< 2.5	< 2.5	< 2.6	< 2	< 3	< 3.1	< 2.8	< 3.1	3.3	< 3.7
Silver	7440-22-4	84	190,000	< 2.7	< 4.7	< 3	< 3.5	< 3.4	< 3.6	< 2.8	< 4.1	< 4.2	< 3.9	< 4.2	< 3.5	< 5.2
Sodium	7440-23-5	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	7440-28-0	14	190,000	< 1.3	< 2.3	< 1.4	< 1.7	< 1.6	< 1.7	< 1.3	< 2	< 2	< 1.9	< 2	< 1.7	< 2.5
Vanadium	7440-62-2	680	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	7440-66-6	12,000	190,000	530	60	910	64	420	67	270	120	70	45	63	300	42

Location ID:		Soil Standards or PQLs		PCSB-49R		PCSB-50		PCSB-52		PCSB-53	PCSB-54		PCSB-55		PCSB-56	PCSB-57
Sample Depth (ft):				3-5	10-12	4	12.5	5.5	15.5	16.5	4.5	11.5	3.5	11	6.5	5.5
Date Collected:	CAS Number	S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	DC Non-Res Subsurf Soil (Exceedances Shaded)	4/19/19	4/19/19	8/3/05	8/3/05	8/2/05	8/2/05	8/1/05	8/3/05	8/3/05	8/3/05	8/3/05	8/15/05	8/15/05
Volatile Organic Compounds																
2-Butanone (MEK)	78-93-3	400	10,000	< 0.01	< 0.01	< 0.058	< 0.0011	< 0.00094	< 0.0014	< 0.0011	< 0.0011	< 0.0013	< 0.064	< 0.0011	< 0.0015	< 0.0016
Acetone	67-64-1	8,800	10,000	0.0179	0.0197	< 0.41	0.067	0.041	0.044	0.033	0.022	0.061	< 0.45	0.051	0.068	0.087
Benzene	71-43-2	0.5	330	< 0.00052	< 0.00051	< 0.03	< 0.00075	< 0.00061	< 0.00093	< 0.0007	< 0.0007	< 0.00088	< 0.034	< 0.00069	< 0.00096	< 0.001
Carbon Disulfide	75-15-0	620	10,000	< 0.0021	< 0.0021	< 0.049	< 0.00096	0.0016	< 0.0012	< 0.00089	< 0.00089	< 0.0011	< 0.054	< 0.00088	< 0.0012	< 0.0013
Chlorobenzene	108-90-7	10	4,500	< 0.0021	< 0.0021	< 0.025	< 0.00074	< 0.00061	< 0.00091	< 0.00069	< 0.00069	< 0.00087	< 0.028	< 0.00068	< 0.00095	< 0.001
Chloroform	67-66-3	8	110	< 0.0021	< 0.0021	< 0.029	< 0.00067	< 0.00055	< 0.00082	< 0.00062	< 0.00062	< 0.00078	< 0.032	< 0.00061	< 0.00086	< 0.00093
cis-1,2-Dichloroethene	156-59-2	7	10,000	< 0.0010	< 0.0010	< 0.023	< 0.0007	< 0.00057	< 0.00087	< 0.00065	< 0.00065	< 0.00082	< 0.026	< 0.00064	< 0.0009	< 0.00097
Cyclohexane	110-82-7	6,900	10,000	< 0.0021	< 0.0021	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichloromethane	75-09-2	0.5	10,000	< 0.0052	< 0.0051	0.25 B	0.02 B	0.015 B	0.021 B	0.02 B	0.0038 B	0.0043 B	0.41 B	0.021 B	0.057 B	0.052 B
Ethylbenzene	100-41-4	70	1,000	< 0.0010	< 0.0010	< 0.059	< 0.0011	< 0.0009	< 0.0014	< 0.001	< 0.001	< 0.0013	< 0.066	< 0.001	< 0.0014	< 0.0015
Isopropylbenzene	98-82-8	2,500	10,000	< 0.0021	< 0.0021	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
m&p-Xylenes	ARC-mpXyl	- -	- -	< 0.0010	< 0.0010	< 0.062	< 0.0016	< 0.0013	< 0.002	< 0.0015	< 0.0015	< 0.0019	< 0.069	< 0.0015	< 0.0021	< 0.0022
Methyl Acetate	79-20-9	9,700	10,000	< 0.0052	0.0021 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylcyclohexane	108-87-2	- -	- -	< 0.0021	< 0.0021	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl-tert-butylether	1634-04-4	2	9,800	< 0.0010	< 0.0010	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
o,p-Xylene	136777-61-2	- -	- -	NA	NA	< 0.039	< 0.00069	< 0.00056	< 0.00085	< 0.00064	< 0.00064	< 0.00081	< 0.043	< 0.00063	< 0.00088	< 0.00095
o-Xylene	95-47-6	- -	- -	< 0.0010	< 0.0010	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene (Monomer)	100-42-5	24	10,000	< 0.0021	< 0.0021	< 0.013	< 0.00091	< 0.00075	< 0.0011	< 0.00085	< 0.00085	< 0.0011	< 0.014	< 0.00084	< 0.0012	< 0.0013
Toluene	108-88-3	100	10,000	< 0.0010	< 0.0010	< 0.019	< 0.0011	< 0.00091	< 0.0014	< 0.001	< 0.001	< 0.0013	< 0.021	< 0.001	< 0.0014	< 0.0015
trans-1,2-Dichloroethene	156-60-5	10	10,000	< 0.0010	< 0.0010	< 0.044	< 0.00047	< 0.00038	< 0.00058	< 0.00044	< 0.00044	< 0.00055	< 0.049	< 0.00043	< 0.0006	< 0.00065
trans-1,3-Dichloropropene	10061-02-6	- -	- -	< 0.0021	< 0.0021	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Xylenes	1330-20-7	1,000	9,100	< 0.0010	< 0.0010	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Semi-Volatile Organic Compounds																
1,1-Biphenyl	92-52-4	1.5	40	< 0.073	0.0081 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	105-67-9	190	10,000	< 0.18	< 0.19	< 0.3	< 0.041	< 0.055	< 0.071	< 0.053	< 0.063	< 0.079	< 0.16	< 0.038	< 0.087	< 0.094
2-Methylnaphthalene	91-57-6	100	270	< 0.036	0.0333 J	14	< 0.084	0.18	< 0.062	< 0.047	< 0.059	< 0.074	2.5	< 0.077	0.97	0.67
2-Methylphenol	95-48-7	490	190,000	< 0.073	< 0.075	< 1.3	< 0.18	< 0.19	< 0.14	< 0.1	< 0.22	< 0.27	< 0.55	< 0.17	< 0.3	< 0.32
3-Methylphenol, 4-Methylphenol	65794-96-9	- -	- -	< 0.073	< 0.075	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methylphenol	106-44-5	49	190,000	NA	NA	< 1.3	< 0.18	< 0.21	< 0.16	< 0.12	< 0.24	< 0.3	< 0.62	< 0.17	0.35	0.39
Acenaphthene	83-32-9	4,700	190,000	< 0.036	0.0171 J	2.7	< 0.0081	0.19	< 0.022	< 0.016	< 0.019	< 0.024	2.8	< 0.0074	0.29	1.1
Acenaphthylene	208-96-8	6,600	190,000	0.0231 J	< 0.038	< 0.053	< 0.0074	0.06	< 0.012	< 0.0091	0.077	< 0.013	< 0.027	< 0.0068	0.21	0.26
Acetophenone	98-86-2	970	10,000	< 0.18	< 0.19	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	120-12-7	350	190,000	0.0430	< 0.038	1.1	< 0.0097	0.47	< 0.015	< 0.012	0.086	0.095	1.6	< 0.0089	0.49	0.88
Benz(a)anthracene	56-55-3	340	190,000	0.185	< 0.038	< 0.049	< 0.0068	1.3	< 0.025	< 0.019	0.083	0.23	2.7	0.084	1.4	1.7
Benzaldehyde	100-52-7	- -	- -	< 0.18	< 0.19	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	50-32-8	46	190,000	0.154	< 0.038	< 0.058	0.38	1.4	< 0.027	0.25	0.083	0.19	2.9	0.11	1.4	1.2
Benzo(b)fluoranthene	205-99-2	170	190,000	0.22	< 0.038	< 0.097	< 0.014	2.2	< 0.031	< 0.023	0.14	0.26	3.9	0.12	1.8	1.5
Benzo(g,h,i)perylene	191-24-2	180	190,000	0.0744	< 0.038	< 0.05	< 0.007	0.95	< 0.022	< 0.017	0.097	0.13	2.1	0.069	0.59	0.69
Benzo(k)fluoranthene	207-08-9	610	190,000	0.0826	< 0.038	< 0.12	< 0.017	0.57	< 0.028	< 0.021	< 0.015	0.068	1.5	< 0.016	0.42	0.33
bis(2-Ethylhexyl)phthalate	117-81-7	130	10,000	< 0.073	< 0.075	< 0.22	< 0.031	0.18	< 0.016	< 0.012	0.068	0.12	< 0.1	< 0.029	0.16	0.25
Butyl benzyl phthalate	85-68-7	10,000	10,000	< 0.073	< 0.075	< 0.095	< 0.013	< 0.016	< 0.025	< 0.019	< 0.018	< 0.023	< 0.047	< 0.012	< 0.025	< 0.027

Location ID:		Soil Standards or PQLs		PCSB-49R		PCSB-50		PCSB-52		PCSB-53	PCSB-54		PCSB-55		PCSB-56	PCSB-57
Sample Depth (ft):		S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	DC Non-Res Subsurf Soil (Exceedances Shaded)	3-5	10-12	4	12.5	5.5	15.5	16.5	4.5	11.5	3.5	11	6.5	5.5
Date Collected:	CAS Number			4/19/19	4/19/19	8/3/05	8/3/05	8/2/05	8/2/05	8/1/05	8/3/05	8/3/05	8/3/05	8/3/05	8/15/05	8/15/05
Semi-Volatile Organic Compounds (cont'd)																
Carbazole	86-74-8	89	190,000	0.0121 J	< 0.075	< 0.067	< 0.0094	0.14	< 0.021	< 0.016	< 0.014	< 0.017	< 0.034	< 0.0086	< 0.019	< 0.02
Chrysene	218-01-9	230	190,000	0.14	< 0.038	< 0.1	< 0.014	1.6	< 0.011	< 0.0085	0.086	0.23	2.9	0.088	1.4	1.6
Dibenz(a,h)anthracene	53-70-3	270	190,000	0.0255 J	< 0.038	< 0.064	< 0.009	0.37	< 0.031	< 0.023	< 0.016	< 0.02	0.69	< 0.0082	0.24	0.21
Dibenzofuran	132-64-9	250	190,000	< 0.073	0.0229 J	< 0.45	< 0.063	0.2	< 0.11	< 0.079	< 0.058	< 0.073	1.5	< 0.058	0.19	0.21
Diethyl phthalate	84-66-2	7,800	10,000	< 0.073	< 0.075	< 0.083	< 0.012	< 0.011	< 0.014	< 0.011	< 0.013	< 0.016	< 0.032	< 0.011	0.064	< 0.019
Di-n-butyl phthalate	84-74-2	4,000	10,000	< 0.073	< 0.075	< 0.071	< 0.0099	0.041 B	0.079 B	< 0.01	0.11 B	0.16 B	< 0.026	0.064 B	0.13 B	0.13 B
Di-n-octyl phthalate	117-84-0	10,000	10,000	< 0.073	< 0.075	< 0.12	< 0.017	< 0.0095	< 0.014	< 0.011	< 0.011	< 0.014	< 0.027	< 0.015	< 0.015	< 0.016
Fluoranthene	206-44-0	3,200	190,000	0.435	< 0.038	0.41	< 0.0081	2.5	< 0.022	< 0.017	0.074	0.41	4.6	0.15	1.9	1.7
Fluorene	86-73-7	3,800	190,000	< 0.036	0.0392	3	< 0.012	0.19	< 0.013	< 0.0097	< 0.012	< 0.015	3.3	< 0.011	0.46	0.89
Indeno(1,2,3-cd)pyrene	193-39-5	18,000	190,000	0.0847	< 0.038	< 0.059	< 0.0083	0.84	< 0.044	< 0.033	0.08	0.12	2	0.047	0.51	0.51
Naphthalene	91-20-3	25	77	< 0.036	0.0158 J	< 0.034	< 0.0048	0.29	< 0.012	< 0.0087	< 0.011	0.073	2.6	< 0.0044	1.5	1.2
Pentachlorophenol	87-86-5	5	190,000	< 0.15	< 0.15	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	85-01-8	10,000	190,000	0.183	0.0990	6.8	< 0.011	1.4	< 0.014	< 0.011	0.085	0.3	6.8	0.054	0.86	2.3
Phenol	108-95-2	200	18,000	< 0.073	< 0.075	< 0.58	< 0.081	< 0.061	< 0.06	< 0.045	< 0.07	< 0.088	< 0.18	< 0.074	< 0.096	< 0.1
Pyrene	129-00-0	2,200	190,000	0.343	0.0187 J	0.81	< 0.011	2	< 0.01	< 0.0078	0.079	0.47	4.5	0.15	4.1	4.5
Total PAHs and 2-Methylnaphthalene	-	- -	- -	1.99	0.223	28.8	0.38	16.5	< 0.062	0.25	0.97	2.58	47.4	0.872	18.5	21.2
Metals																
Aluminum	7429-90-5	- -	190,000	7,940	4,490	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	7440-36-0	27	190,000	< 2.1 J	< 2.3 J	< 2.1	< 2.9	< 2.4	< 3.6	< 2.7	< 2.7	20	< 2.3	< 2.7	< 3.8	< 4.1
Arsenic	7440-38-2	29	190,000	6.3	2.8	< 2.1	3.4	7.5	< 3.6	< 2.7	5.3	11	7	3.9	***36***	***42***
Barium	7440-39-3	8,200	190,000	29.5	37.7	18	160	160	110	110	150	110	95	150	250	300
Beryllium	7440-41-7	320	190,000	0.51	0.27	< 0.63	< 0.88	1.1	< 1.1	< 0.82	< 0.82	< 1	< 0.7	< 0.81	1.5	1.3
Cadmium	7440-43-9	38	190,000	< 0.54	< 0.56	< 0.63	< 0.88	1.8	< 1.1	< 0.82	< 0.82	< 1	< 0.7	< 0.81	4.4	1.7
Calcium	7440-70-2	- -	- -	408 J	257 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	7440-47-3	190,000	190,000	14.8	8.5	18	43	63	35	20	49	23	16	39	130	210
Cobalt	7440-48-4	130	190,000	5.8	4.2 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	7440-50-8	43,000	190,000	11.9	8.8	17	15	170	76	10	120	3,700	120	18	120	160
Cyanide	57-12-5	200	190,000	0.22 J	< 0.32 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	7439-89-6	- -	190,000	18,200	11,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	7439-92-1	450	190,000	19.0 J	72.4 J	25	18	130	18	15	140	***2,200***	160	250	220	270
Magnesium	7439-95-4	- -	- -	1,850 J	1,050 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	7439-96-5	2,000	190,000	173 J	88.3 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	7439-97-6	10	190,000	0.11 J	0.19 J	< 0.088	< 0.12	0.21	< 0.15	< 0.11	0.4	< 0.14	< 0.097	< 0.11	0.89	0.95
Nickel	7440-02-0	650	190,000	12.6	10.3	6.8	28	32	25	19	19	35	15	26	51	49
Potassium	7440-09-7	- -	- -	853 J	595 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	7782-49-2	26	190,000	< 2.1	< 2.3	< 1.9	< 2.6	2.6	< 3.3	< 2.5	< 2.5	< 3.1	< 2.1	< 2.4	6.9	7
Silver	7440-22-4	84	190,000	< 0.54	0.19 J	< 2.6	< 3.7	< 3	< 4.5	< 3.4	< 3.4	< 4.3	< 2.9	< 3.4	< 4.7	< 5.1
Sodium	7440-23-5	- -	- -	< 1,100	< 1,100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	7440-28-0	14	190,000	< 1.1	< 1.1	< 1.3	< 1.8	< 1.4	< 2.2	< 1.6	< 1.6	< 2.1	< 1.4	< 1.6	< 2.3	< 2.4
Vanadium	7440-62-2	680	190,000	19.4	10.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	7440-66-6	12,000	190,000	41.3	61.7	37	68	370	130	37	90	960	650	77	850	850

Table 11
Saturated Soil Analytical Results – Detected VOCs, SVOCs, and Inorganics (mg/kg)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID:	CAS Number	Soil Standards or PQLs		PCSB-58	PCSB-59		PCSB-60		PCTP-03	PCTP-04	PCTP-05	PCTP-06	PCTP-07		PCTP-07R	PCTP-08
Sample Depth (ft):		S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	DC Non-Res Subsurf Soil (Exceedances Shaded)	11	5.5	10.5	4	11	11.5	12	11.5	16	12	14	10-12	10.5
Date Collected:				8/15/05	8/15/05	8/15/05	8/15/05	8/15/05	2/15/05	2/15/05	2/15/05	2/16/05	2/17/05	2/17/05	9/20/19	2/15/05
Volatile Organic Compounds																
2-Butanone (MEK)	78-93-3	400	10,000	< 0.0012	< 0.00089	0.077	< 0.0009	< 0.0011	< 0.0025	< 0.0026	< 0.0031	< 0.0034	< 0.001	< 0.0017	< 1.8	< 0.0068
Acetone	67-64-1	8,800	10,000	0.1	0.036	0.35	0.036	0.054	0.017	< 0.0018	0.023	0.027	< 0.0048	0.074	< 1.8	0.056
Benzene	71-43-2	0.5	330	< 0.00076	< 0.00058	< 0.0013	< 0.00059	< 0.00074	< 0.00016	< 0.00017	< 0.00019	< 0.00021	< 0.00034	< 0.00055	< 0.091	< 0.00043
Carbon Disulfide	75-15-0	620	10,000	< 0.00097	< 0.00074	< 0.0016	< 0.00075	< 0.00094	< 0.0003	< 0.0003	< 0.00036	< 0.00039	< 0.00071	< 0.0011	< 0.37	< 0.00079
Chlorobenzene	108-90-7	10	4,500	< 0.00075	< 0.00057	< 0.0013	< 0.00058	< 0.00073	< 0.00039	< 0.0004	< 0.00047	< 0.00051	< 0.00027	< 0.00044	< 0.37	< 0.001
Chloroform	67-66-3	8	110	< 0.00068	< 0.00052	< 0.0011	< 0.00052	< 0.00066	0.0014	0.0013	0.0015	0.0014	< 0.00035	< 0.00057	< 0.37	0.0042
cis-1,2-Dichloroethene	156-59-2	7	10,000	< 0.00071	< 0.00054	< 0.0012	< 0.00055	< 0.00069	< 0.00026	< 0.00027	< 0.00032	< 0.00035	< 0.0005	< 0.0008	< 0.18	< 0.0007
Cyclohexane	110-82-7	6,900	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.37	NA
Dichloromethane	75-09-2	0.5	10,000	0.03 B	0.024 B	0.058 B	0.019 B	0.026 B	0.02 B	0.023 B	0.022 B	0.02 B	0.012 B	0.02 B	< 0.91	0.05 B
Ethylbenzene	100-41-4	70	1,000	< 0.0011	< 0.00085	< 0.0019	< 0.00086	< 0.0011	< 0.00058	< 0.0006	< 0.0007	< 0.00077	< 0.00094	< 0.0015	< 0.18	< 0.0016
Isopropylbenzene	98-82-8	2,500	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.37	NA
m&p-Xylenes	ARC-mpXyl	- -	- -	< 0.0016	< 0.0013	< 0.0028	< 0.0013	< 0.0016	< 0.00063	< 0.00065	< 0.00076	< 0.00084	< 0.0011	< 0.0018	< 0.18	< 0.0017
Methyl Acetate	79-20-9	9,700	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.91	NA
Methylcyclohexane	108-87-2	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.37	NA
Methyl-tert-butylether	1634-04-4	2	9,800	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.18	NA
o,p-Xylene	136777-61-2	- -	- -	< 0.0007	< 0.00053	< 0.0012	< 0.00054	< 0.00068	< 0.00021	< 0.00021	< 0.00025	< 0.00027	< 0.00024	< 0.00039	NA	< 0.00055
o-Xylene	95-47-6	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.18	NA
Styrene (Monomer)	100-42-5	24	10,000	< 0.00093	< 0.0007	< 0.0016	< 0.00071	< 0.0009	< 0.00015	< 0.00016	< 0.00018	< 0.0002	< 0.00021	< 0.00034	< 0.37	< 0.00041
Toluene	108-88-3	100	10,000	< 0.0011	< 0.00086	< 0.0019	< 0.00087	< 0.0011	< 0.00029	< 0.0003	< 0.00035	< 0.00038	< 0.00025	< 0.00041	< 0.18	< 0.00077
trans-1,2-Dichloroethene	156-60-5	10	10,000	< 0.00048	< 0.00036	< 0.0008	< 0.00037	< 0.00046	< 0.00043	< 0.00044	< 0.00051	< 0.00056	< 0.00072	< 0.0012	< 0.18	< 0.0011
trans-1,3-Dichloropropene	10061-02-6	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.37	NA
Total Xylenes	1330-20-7	1,000	9,100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.18	NA
Semi-Volatile Organic Compounds																
1,1-Biphenyl	92-52-4	1.5	40	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.45	NA
2,4-Dimethylphenol	105-67-9	190	10,000	< 0.042	< 0.052	< 0.12	< 0.053	< 0.067	< 0.17	< 0.11	< 0.2	< 0.67	< 0.032	< 0.12	< 1.1	< 0.45
2-Methylnaphthalene	91-57-6	100	270	< 0.085	0.37	< 0.11	0.58	0.059 J	< 0.061	< 0.053	< 0.074	0.22 J	0.83	2.7	< 0.22	< 0.16
2-Methylphenol	95-48-7	490	190,000	< 0.19	< 0.18	< 0.4	< 0.18	< 0.23	< 0.1	< 0.093	< 0.12	< 0.41	< 0.13	< 0.49	< 0.45	< 0.27
3-Methylphenol, 4-Methylphenol	65794-96-9	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.45	NA
4-Methylphenol	106-44-5	49	190,000	< 0.18	< 0.2	< 0.44	< 0.2	< 0.26	< 0.11	< 0.091	< 0.13	< 0.43	< 0.17	0.38 J	NA	0.67
Acenaphthene	83-32-9	4,700	190,000	< 0.0082	0.38	< 0.035	0.4	0.063	0.051	< 0.011	0.053	0.88	1.4	0.98	1.65	< 0.02
Acenaphthylene	208-96-8	6,600	190,000	< 0.0075	0.28	< 0.019	0.15	< 0.011	< 0.01	< 0.0095	0.13	0.29	0.61	1.2	< 0.22	< 0.028
Acetophenone	98-86-2	970	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 1.1	NA
Anthracene	120-12-7	350	190,000	< 0.0098	1.1	0.13	0.46	0.073	0.083	< 0.0073	0.22	1.9	0.99	2.3	0.615	0.096
Benz(a)anthracene	56-55-3	340	190,000	< 0.0069	2	0.25	1.3	0.13	0.33	< 0.009	0.76	5.8	2	5.7	0.467	0.47
Benzaldehyde	100-52-7	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 1.1	NA
Benzo(a)pyrene	50-32-8	46	190,000	< 0.0083	1.8	0.2	1.3	0.14	0.33	< 0.0089	0.61	5.1	1.9	8	0.305	0.17
Benzo(b)fluoranthene	205-99-2	170	190,000	< 0.014	2.7	0.31	2.1	0.18	0.38	< 0.0084	0.85	6	2.9	8.2	0.44	0.33
Benzo(g,h,i)perylene	191-24-2	180	190,000	< 0.0071	0.98	< 0.016	0.65	0.068	0.18	< 0.008	0.34	2	1.6	7.5	0.188 J	0.12
Benzo(k)fluoranthene	207-08-9	610	190,000	< 0.017	1.1	0.11	0.53	0.072	0.13	< 0.009	0.34	2.3	1.3	2	0.127 J	0.18
bis(2-Ethylhexyl)phthalate	117-81-7	130	10,000	< 0.032	1.3	0.18	0.54	0.11	0.088	< 0.0096	0.068 J	< 0.24	0.084	< 0.099	< 0.45	< 0.16
Butyl benzyl phthalate	85-68-7	10,000	10,000	< 0.013	< 0.015	< 0.033	< 0.015	< 0.019	< 0.0078	< 0.008	< 0.0094	< 0.031	< 0.014	< 0.051	< 0.45	< 0.021

Table 11
Saturated Soil Analytical Results – Detected VOCs, SVOCs, and Inorganics (mg/kg)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID: / Sample Depth (ft): / Date Collected:	CAS Number	Soil Standards or PQLs: S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	Soil Standards or PQLs: DC Non-Res Subsurf Soil (Exceedances Shaded)	PCSB-58 11 8/15/05	PCSB-59 5.5 8/15/05	PCSB-59 10.5 8/15/05	PCSB-60 4 8/15/05	PCSB-60 11 8/15/05	PCTP-03 11.5 2/15/05	PCTP-04 12 2/15/05	PCTP-05 11.5 2/15/05	PCTP-06 16 2/16/05	PCTP-07 12 2/17/05	PCTP-07 14 2/17/05	PCTP-07R 10-12 9/20/19	PCTP-08 10.5 2/15/05
Semi-Volatile Organic Compounds (cont'd)																
Carbazole	86-74-8	89	190,000	< 0.0096	0.51	< 0.025	0.12	< 0.014	0.038	< 0.0052	0.092	0.49	< 0.011	0.45	< 0.45	< 0.023
Chrysene	218-01-9	230	190,000	< 0.014	2.1	0.23	1.3	0.17	0.3	< 0.0079	0.65	5.6	2.4	6.8	0.445	0.45
Dibenz(a,h)anthracene	53-70-3	270	190,000	< 0.0091	0.43	< 0.029	0.27	< 0.017	0.071	< 0.011	0.12	0.91	0.67	1.8	< 0.22	< 0.016
Dibenzofuran	132-64-9	250	190,000	< 0.064	0.56	< 0.11	0.28	< 0.061	< 0.038	< 0.053	0.053	0.32	< 0.11	0.51	0.444 J	< 0.1
Diethyl phthalate	84-66-2	7,800	10,000	< 0.012	< 0.01	< 0.023	0.13	0.05	< 0.0056	< 0.0097	< 0.0068	< 0.022	< 0.014	< 0.053	< 0.45	< 0.015
Di-n-butyl phthalate	84-74-2	4,000	10,000	< 0.01	0.047 B	0.1 B	0.059 B	< 0.011	< 0.0044	< 0.0064	< 0.0053	< 0.017	< 0.013	< 0.048	< 0.45	0.16
Di-n-octyl phthalate	117-84-0	10,000	10,000	< 0.017	< 0.0089	< 0.02	< 0.009	< 0.011	< 0.0072	< 0.0062	< 0.0086	< 0.028	< 0.013	< 0.048	< 0.45	< 0.019
Fluoranthene	206-44-0	3,200	190,000	0.11	3.7	0.49	2.5	0.28	0.58	< 0.0087	1.5	11	3.7	6.4	1.2	0.39
Fluorene	86-73-7	3,800	190,000	< 0.012	0.9	< 0.021	0.49	0.081	< 0.0066	< 0.0095	0.089	0.74	1.5	1.3	< 0.22	< 0.018
Indeno(1,2,3-cd)pyrene	193-39-5	18,000	190,000	< 0.0084	0.92	< 0.011	0.59	0.06	0.18	< 0.0061	0.34	2.1	1.4	6.1	0.317	0.19
Naphthalene	91-20-3	25	77	< 0.0048	0.39	< 0.02	0.33	0.14	< 0.011	< 0.0066	0.06	0.3	1.2	6.5	0.204 J	0.14
Pentachlorophenol	87-86-5	5	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.89 J	NA
Phenanthrene	85-01-8	10,000	190,000	0.12	4.3	0.44	1.4	0.19	0.32	< 0.0063	0.8	8.1	1.7	4.4	0.542	0.32
Phenol	108-95-2	200	18,000	< 0.082	< 0.058	< 0.13	< 0.058	< 0.074	< 0.099	< 0.044	< 0.12	< 0.39	< 0.032	< 0.12	< 0.45	< 0.26
Pyrene	129-00-0	2,200	190,000	0.088	5.8	0.75	2.7	0.52	0.51	< 0.0077	1.2	12	3.4	11	1.5	0.5
Total PAHs and 2-Methylnaphthalene	-	- -	- -	0.318	29.3	2.91	17.1	2.23	3.45	< 0.053	8.06	65.2	29.5	82.9	8.00	3.36
Metals																
Aluminum	7429-90-5	- -	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,740	NA
Antimony	7440-36-0	27	190,000	< 3	3.6	< 5	< 2.3	3.4	< 2.1	< 2.2	< 2.6	< 2.8	< 2.8	6.6	< 2.8	< 5.7
Arsenic	7440-38-2	29	190,000	3.5	***44***	7.8	16	***35***	< 2.1	< 2.2	9.9	14	6.2	***63***	12.2	11
Barium	7440-39-3	8,200	190,000	150	290	180	100	130	35	< 11	75	200	58	330	53.7	110
Beryllium	7440-41-7	320	190,000	< 0.9	< 0.68	< 1.5	< 0.69	< 0.87	< 0.64	< 0.66	< 0.77	1.5	< 0.83	2.3	0.46	< 1.7
Cadmium	7440-43-9	38	190,000	< 0.9	1.6	< 1.5	< 0.69	< 0.87	< 0.64	< 0.66	< 0.77	1.4	< 0.83	2.4	< 0.70	< 1.7
Calcium	7440-70-2	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,770	NA
Chromium	7440-47-3	190,000	190,000	44	36	44	21	96	< 5.3	< 5.5	15	15	11	330	4.7	< 14
Cobalt	7440-48-4	130	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 7.0	NA
Copper	7440-50-8	43,000	190,000	16	150	29	58	200	8.3	< 5.5	21	82	59	200	20.4	42
Cyanide	57-12-5	200	190,000	NA	NA	NA	NA	NA	< 0.27	< 0.27	0.43	< 0.29	NA	NA	< 0.36	< 0.71
Iron	7439-89-6	- -	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	23,900	NA
Lead	7439-92-1	450	190,000	37	***2,000***	67	410	370	12	< 5.5	79	***470***	160	410	19.7	55
Magnesium	7439-95-4	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 700	NA
Manganese	7439-96-5	2,000	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	387	NA
Mercury	7439-97-6	10	190,000	< 0.12	1	< 0.21	0.13	0.25	< 0.089	< 0.092	0.46	0.37	0.22	1.2	2.5	< 0.24
Nickel	7440-02-0	650	190,000	27	28	31	22	23	< 5.3	< 5.5	14	27	8.9	47	8.4	< 14
Potassium	7440-09-7	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 1,400	NA
Selenium	7782-49-2	26	190,000	3.5	3.1	4.8	2.2	4.4	< 1.9	< 2	2.8	2.8	3.7	6.3	< 2.8	< 5.1
Silver	7440-22-4	84	190,000	< 3.7	< 2.8	< 6.2	< 2.9	< 3.6	< 2.7	< 2.7	< 3.2	< 3.5	< 3.5	< 4.2	< 0.70	< 7.1
Sodium	7440-23-5	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 1,400	NA
Thallium	7440-28-0	14	190,000	< 1.8	< 1.4	< 3	< 1.4	< 1.7	< 1.3	< 1.3	< 1.5	< 1.7	< 1.7	< 2	< 1.4	< 3.4
Vanadium	7440-62-2	680	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	8.9	NA
Zinc	7440-66-6	12,000	190,000	82	2,600	110	610	440	37	15	64	340	170	1,000	82.2	91

Table 11
Saturated Soil Analytical Results – Detected VOCs, SVOCs, and Inorganics (mg/kg)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID: / Sample Depth (ft): / Date Collected:	CAS Number	Soil Standards or PQLs: S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	Soil Standards or PQLs: DC Non-Res Subsurf Soil (Exceedances Shaded)	PCTP-08R 10-12 4/9/19	PCTP-09 7 2/9/05	PCTP-10 8 2/9/05	PCTP-10R 7-9 4/9/19	PCTP-11 4 2/9/05	PCTP-12R 9-11 4/12/19	PCTP-13 8 2/10/05	PCTP-15 3.5 3/3/05	PCTP-17 8 2/10/05
Volatile Organic Compounds												
2-Butanone (MEK)	78-93-3	400	10,000	< 0.015	< 0.0031	< 0.0035	< 0.015	< 0.0028	< 0.012	< 0.0062	< 0.00094	< 23
Acetone	67-64-1	8,800	10,000	0.0987	0.12	0.071	0.0647	0.073	0.0726	0.045	< 0.0043	< 5.2
Benzene	71-43-2	0.5	330	< 0.00073	0.049	< 0.00022	< 0.00076	< 0.00018	0.0039	0.0027	< 0.00031	***4.7***
Carbon Disulfide	75-15-0	620	10,000	0.0014 J	< 0.00036	< 0.00041	< 0.0031	< 0.00032	< 0.0024	< 0.00072	< 0.00064	< 0.99
Chlorobenzene	108-90-7	10	4,500	< 0.0029	< 0.00047	< 0.00054	< 0.0031	< 0.00042	< 0.0024	< 0.00095	< 0.00025	< 1
Chloroform	67-66-3	8	110	< 0.0029	< 0.001	< 0.0012	< 0.0031	< 0.00093	< 0.0024	< 0.0021	0.0021	< 2.2
cis-1,2-Dichloroethene	156-59-2	7	10,000	< 0.0015	< 0.00032	< 0.00036	< 0.0015	< 0.00029	< 0.0012	< 0.00064	< 0.00045	< 1.4
Cyclohexane	110-82-7	6,900	10,000	< 0.0029	NA	NA	< 0.0031	NA	< 0.0024	NA	NA	NA
Dichloromethane	75-09-2	0.5	10,000	< 0.0073	0.023 B	0.026 B	< 0.0076	0.022 B	< 0.0060	0.019 B	0.029 B	< 2
Ethylbenzene	100-41-4	70	1,000	< 0.0015	0.002	< 0.0008	< 0.0015	< 0.00063	< 0.0012	< 0.0014	< 0.00084	2.1
Isopropylbenzene	98-82-8	2,500	10,000	< 0.0029	NA	NA	< 0.0031	NA	< 0.0024	NA	NA	NA
m&p-Xylenes	ARC-mpXyl	- -	- -	< 0.0015	0.0018	< 0.00088	< 0.0015	< 0.00069	< 0.0012	< 0.0015	< 0.001	52
Methyl Acetate	79-20-9	9,700	10,000	< 0.0073	NA	NA	< 0.0076	NA	< 0.0060	NA	NA	NA
Methylcyclohexane	108-87-2	- -	- -	< 0.0029	NA	NA	< 0.0031	NA	< 0.0024	NA	NA	NA
Methyl-tert-butylether	1634-04-4	2	9,800	< 0.0015	NA	NA	< 0.0015	NA	< 0.0012	NA	NA	NA
o,p-Xylene	136777-61-2	- -	- -	NA	< 0.00025	< 0.00029	NA	< 0.00023	NA	< 0.0005	< 0.00022	14
o-Xylene	95-47-6	- -	- -	< 0.0015	NA	NA	< 0.0015	NA	< 0.0012	NA	NA	NA
Styrene (Monomer)	100-42-5	24	10,000	< 0.0029	< 0.00019	< 0.00021	< 0.0031	< 0.00017	< 0.0024	< 0.00037	< 0.00019	4.5
Toluene	108-88-3	100	10,000	< 0.0015	0.0038	< 0.0004	< 0.0015	< 0.00031	< 0.0012	< 0.0007	< 0.00023	21
trans-1,2-Dichloroethene	156-60-5	10	10,000	< 0.0015	< 0.00052	< 0.00059	< 0.0015	< 0.00047	< 0.0012	< 0.001	< 0.00065	< 1.7
trans-1,3-Dichloropropene	10061-02-6	- -	- -	< 0.0029	NA	NA	< 0.0031	NA	< 0.0024	NA	NA	NA
Total Xylenes	1330-20-7	1,000	9,100	< 0.0015	NA	NA	< 0.0015	NA	< 0.0012	NA	NA	NA
Semi-Volatile Organic Compounds												
1,1-Biphenyl	92-52-4	1.5	40	< 0.087	NA	NA	0.0160 J	NA	0.0145 J	NA	NA	NA
2,4-Dimethylphenol	105-67-9	190	10,000	< 0.22	< 0.21	< 1.2	< 0.2	< 0.18	< 0.21	0.47	< 0.029	< 1,000
2-Methylnaphthalene	91-57-6	100	270	0.0195 J	0.39	2.8	0.0480	0.042 J	0.0581	0.097	0.068 J	***6,100***
2-Methylphenol	95-48-7	490	190,000	< 0.087	< 0.12	< 0.71	< 0.081	< 0.11	0.0556 J	1	0.047 J	< 630
3-Methylphenol, 4-Methylphenol	65794-96-9	- -	- -	< 0.087	NA	NA	< 0.081	NA	0.0977	NA	NA	NA
4-Methylphenol	106-44-5	49	190,000	NA	< 0.13	< 0.75	NA	< 0.12	NA	2.2	0.12 J	< 670
Acenaphthene	83-32-9	4,700	190,000	0.0248 J	0.8	6.2	0.234	< 0.0079	0.179	1.1	0.28	1,100
Acenaphthylene	208-96-8	6,600	190,000	< 0.044	0.27	0.71	0.0320 J	0.1	0.0648	0.23	0.075	3,600
Acetophenone	98-86-2	970	10,000	< 0.22	NA	NA	< 0.2	NA	< 0.21	NA	NA	NA
Anthracene	120-12-7	350	190,000	< 0.044	0.9	12	0.507	0.097	0.125	0.18	0.59	***6,900***
Benz(a)anthracene	56-55-3	340	190,000	0.0654	2.1	16	0.915	0.38	0.375	0.75	1.2	***5,500***
Benzaldehyde	100-52-7	- -	- -	< 0.22	NA	NA	0.0230 J	NA	< 0.21	NA	NA	NA
Benzo(a)pyrene	50-32-8	46	190,000	0.0633	1.6	13	0.836	0.37	0.338	0.86	1.1	***3,800***
Benzo(b)fluoranthene	205-99-2	170	190,000	0.0731	2.8	17	0.934	0.43	0.426	1.1	1.8	***4,600***
Benzo(g,h,i)perylene	191-24-2	180	190,000	0.0395 J	0.96	5.9	0.324	0.26	0.187	0.47	0.74	***1,500***
Benzo(k)fluoranthene	207-08-9	610	190,000	0.0313 J	0.79	5.7	0.396	0.16	0.154	0.4	0.46	***1,700***
bis(2-Ethylhexyl)phthalate	117-81-7	130	10,000	< 0.087	< 0.074	< 0.42	< 0.081	< 0.066	< 0.085	< 0.092	0.37 B	< 380
Butyl benzyl phthalate	85-68-7	10,000	10,000	< 0.087	< 0.0095	< 0.054	< 0.081	< 0.0085	< 0.085	< 0.012	< 0.012	< 49

Location ID: / Sample Depth (ft): / Date Collected:	CAS Number	Soil Standards or PQLs: S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	Soil Standards or PQLs: DC Non-Res Subsurf Soil (Exceedances Shaded)	PCTP-08R 10-12 4/9/19	PCTP-09 7 2/9/05	PCTP-10 8 2/9/05	PCTP-10R 7-9 4/9/19	PCTP-11 4 2/9/05	PCTP-12R 9-11 4/12/19	PCTP-13 8 2/10/05	PCTP-15 3.5 3/3/05	PCTP-17 8 2/10/05
Semi-Volatile Organic Compounds (cont'd)												
Carbazole	86-74-8	89	190,000	0.0103 J	0.38	3.8	0.155	< 0.0092	0.0272 J	0.097	0.33	***3,100***
Chrysene	218-01-9	230	190,000	0.0839	2.6	15	1.06	0.49	0.335	0.76	1.3	***5,500***
Dibenz(a,h)anthracene	53-70-3	270	190,000	< 0.044	0.41	2.1	0.122	0.092	0.0480	0.14	0.21	***610***
Dibenzofuran	132-64-9	250	190,000	< 0.087	0.1	4	0.0947	< 0.042	0.0439 J	< 0.058	0.14	***5,300***
Diethyl phthalate	84-66-2	7,800	10,000	< 0.087	< 0.0069	< 0.039	< 0.081	< 0.0062	< 0.085	< 0.0085	< 0.013	< 35
Di-n-butyl phthalate	84-74-2	4,000	10,000	< 0.087	< 0.0053	< 0.03	< 0.081	< 0.0048	< 0.085	0.063	0.097	< 27
Di-n-octyl phthalate	117-84-0	10,000	10,000	< 0.087	< 0.0087	< 0.049	< 0.081	< 0.0078	< 0.085	< 0.011	< 0.012	< 44
Fluoranthene	206-44-0	3,200	190,000	0.0853	5.3	39	1.69	0.67	0.814	1.4	2.9	***15,000***
Fluorene	86-73-7	3,800	190,000	< 0.044	0.55	8.1	0.187	< 0.0072	0.0886	0.11	0.33	***8,200***
Indeno(1,2,3-cd)pyrene	193-39-5	18,000	190,000	0.0312 J	0.99	5.5	0.325	0.23	0.228	0.46	0.67	1,600
Naphthalene	91-20-3	25	77	0.0280 J	4.5	3.5	0.0782	0.11	1.2	0.92	0.44	***31,000***
Pentachlorophenol	87-86-5	5	190,000	< 0.17	NA	NA	< 0.16	NA	< 0.17	NA	NA	NA
Phenanthrene	85-01-8	10,000	190,000	0.0934	2.4	41	1.97	0.33	0.369	0.42	2.1	***24,000***
Phenol	108-95-2	200	18,000	< 0.087	< 0.12	< 0.68	< 0.081	< 0.11	0.0630 J	2.6	0.11	< 610
Pyrene	129-00-0	2,200	190,000	0.132	4.9	33	1.81	0.91	0.684	1.2	3.2	***11,000***
Total PAHs and 2-Methylnaphthalene	-	- -	- -	0.771	32.3	227	11.5	4.67	5.67	10.6	17.5	132,000
Metals												
Aluminum	7429-90-5	- -	190,000	7,790 J	NA	NA	6,490 J	NA	5,520	NA	NA	NA
Antimony	7440-36-0	27	190,000	0.89 J	***92***	3.7	1.6 J	< 2.3	< 2.5	< 3.2	27	5
Arsenic	7440-38-2	29	190,000	7.7	***51***	16	9.0	8.5	9.0	***44***	16	15
Barium	7440-39-3	8,200	190,000	114	930	470	489	130	45.5	60	90	51
Beryllium	7440-41-7	320	190,000	0.65	< 0.78	1.3	0.46	1.2	0.34	< 0.97	< 0.75	1.4
Cadmium	7440-43-9	38	190,000	0.74	6.4	3.3	5.9	< 0.7	< 0.63	< 0.97	< 0.75	6.2
Calcium	7440-70-2	- -	- -	8,290	NA	NA	9,700	NA	2,180	NA	NA	NA
Chromium	7440-47-3	190,000	190,000	14.9	37	98	21.0	15	36.8	< 8.1	120	69
Cobalt	7440-48-4	130	190,000	5.5 J	NA	NA	5.8 J	NA	< 6.3	NA	NA	NA
Copper	7440-50-8	43,000	190,000	78.3	560	210	82.5	52	16.3	55	270	400
Cyanide	57-12-5	200	190,000	0.22 J	NA	NA	< 0.28	NA	< 0.30	0.82	20	***670***
Iron	7439-89-6	- -	190,000	20,700 J	NA	NA	20,300 J	NA	14,800	NA	NA	NA
Lead	7439-92-1	450	190,000	193	***6,500***	***700***	***2,530***	370	42.3	160	100	***480***
Magnesium	7439-95-4	- -	- -	2,950	NA	NA	6,720	NA	1,830	NA	NA	NA
Manganese	7439-96-5	2,000	190,000	118 J	NA	NA	181 J	NA	237	NA	NA	NA
Mercury	7439-97-6	10	190,000	0.23	4.2	0.67	0.18	< 0.097	0.11	0.38	0.65	5
Nickel	7440-02-0	650	190,000	14.3	49	23	12.9	17	11.3	20	33	26
Potassium	7440-09-7	- -	- -	886 J	NA	NA	715 J	NA	< 1,300	NA	NA	NA
Selenium	7782-49-2	26	190,000	0.95 J	4.6	4.6	0.89 J	3.6	< 2.5	4.4	3.3	8.4
Silver	7440-22-4	84	190,000	0.34 J	< 3.2	< 3.7	0.44 J	< 2.9	< 0.63	< 4	< 3.1	< 4.7
Sodium	7440-23-5	- -	- -	108 J	NA	NA	< 1,200	NA	< 1,300	NA	NA	NA
Thallium	7440-28-0	14	190,000	< 1.3	4.3	< 1.8	< 1.2	< 1.4	< 1.3	< 1.9	< 1.5	3.5
Vanadium	7440-62-2	680	190,000	21.2	NA	NA	15.4	NA	10.9	NA	NA	NA
Zinc	7440-66-6	12,000	190,000	312	4,900	1,700	487	160	120	260	130	1,500

Table 11
Saturated Soil Analytical Results – Detected VOCs, SVOCs, and Inorganics (mg/kg)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID:		Soil Standards or PQLs		PCTP-17R				PCTP-19		PCTP-20	PCTP-21	PCTP-214	PCTP-22	PCTP-23	
Sample Depth (ft):		S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	DC Non-Res Subsurf Soil (Exceedances Shaded)	7-9	9-11	18-20	24-25	6	11	20	4	7.5	4.5	7	10
Date Collected:	CAS Number			4/15/19	4/15/19	4/15/19	4/15/19	2/18/05	2/18/05	3/2/05	2/11/05	3/3/05	3/2/05	3/2/05	3/2/05
Volatile Organic Compounds															
2-Butanone (MEK)	78-93-3	400	10,000	0.0033 J	0.0157 J	< 2.7	0.117	< 0.0015	< 0.0016	< 0.0012	< 0.037	< 0.0013	< 0.0014	< 0.0043	< 0.0011
Acetone	67-64-1	8,800	10,000	0.0407	0.119	< 2.7	0.495	< 0.0068	< 0.0072	< 0.0056	< 0.037	< 0.0061	< 0.0062	< 0.02	< 0.0051
Benzene	71-43-2	0.5	330	< 0.00043	0.0019	< 0.14	< 0.0015	< 0.00049	0.0048	< 0.0004	0.016	< 0.00044	< 0.00044	0.0095	0.021
Carbon Disulfide	75-15-0	620	10,000	< 0.0017	0.0048	7.25	0.0050 J	< 0.001	0.056	< 0.00084	< 0.0074	< 0.00091	< 0.00093	< 0.0029	0.0085
Chlorobenzene	108-90-7	10	4,500	< 0.0017	< 0.0038	< 0.55	< 0.0059	< 0.00039	< 0.00042	< 0.00032	< 0.0074	< 0.00035	< 0.00036	< 0.0011	< 0.00029
Chloroform	67-66-3	8	110	< 0.0017	< 0.0038	< 0.55	< 0.0059	< 0.00051	< 0.00054	0.0029	< 0.0074	0.0034	0.0031	0.0097	0.0024
cis-1,2-Dichloroethene	156-59-2	7	10,000	< 0.00085	< 0.0019	< 0.27	< 0.0030	< 0.00071	< 0.00075	< 0.00059	< 0.0074	< 0.00064	< 0.00065	< 0.0021	< 0.00053
Cyclohexane	110-82-7	6,900	10,000	< 0.0017	< 0.0038	< 0.55	< 0.0059	NA	NA	NA	NA	NA	NA	NA	NA
Dichloromethane	75-09-2	0.5	10,000	< 0.0043	< 0.0095	< 1.4	< 0.015	0.016 B	0.016 B	0.0094 B	0.014 B	0.023 B	0.063 B	0.24 B	0.009 B
Ethylbenzene	100-41-4	70	1,000	< 0.00085	< 0.0019	< 0.27	< 0.0030	< 0.0013	< 0.0014	< 0.0011	< 0.0015	< 0.0012	< 0.0012	0.18	< 0.001
Isopropylbenzene	98-82-8	2,500	10,000	< 0.0017	< 0.0038	0.353 J	< 0.0059	NA	NA	NA	NA	NA	NA	NA	NA
m&p-Xylenes	ARC-mpXyl	- -	- -	< 0.00085	< 0.0019	0.248 J	< 0.0030	< 0.0016	< 0.0017	< 0.0013	< 0.0029	< 0.0014	< 0.0015	0.25	< 0.0012
Methyl Acetate	79-20-9	9,700	10,000	< 0.0043	< 0.0095	2.9	< 0.015	NA	NA	NA	NA	NA	NA	NA	NA
Methylcyclohexane	108-87-2	- -	- -	< 0.0017	0.0013 J	1.21	0.0053 J	NA	NA	NA	NA	NA	NA	NA	NA
Methyl-tert-butylether	1634-04-4	2	9,800	< 0.00085	< 0.0019	< 0.27	< 0.0030	NA	NA	NA	NA	NA	NA	NA	NA
o,p-Xylene	136777-61-2	- -	- -	NA	NA	NA	NA	< 0.00035	< 0.00037	< 0.00029	< 0.0015	< 0.00031	< 0.00032	0.37	< 0.00026
o-Xylene	95-47-6	- -	- -	< 0.00085	< 0.0019	0.173 J	< 0.0030	NA	NA	NA	NA	NA	NA	NA	NA
Styrene (Monomer)	100-42-5	24	10,000	< 0.0017	< 0.0038	< 0.55	< 0.0059	< 0.00031	< 0.00032	< 0.00025	< 0.0074	< 0.00027	< 0.00028	< 0.00088	< 0.00023
Toluene	108-88-3	100	10,000	< 0.00085	< 0.0019	1.07	< 0.0030	< 0.00037	< 0.00038	< 0.0003	< 0.0015	< 0.00033	< 0.00033	0.019	0.0032
trans-1,2-Dichloroethene	156-60-5	10	10,000	< 0.00085	< 0.0019	< 0.27	< 0.0030	< 0.001	< 0.0011	< 0.00085	< 0.0074	< 0.00093	< 0.00094	< 0.003	< 0.00077
trans-1,3-Dichloropropene	10061-02-6	- -	- -	< 0.0017	< 0.0038	< 0.55	< 0.0059	NA	NA	NA	NA	NA	NA	NA	NA
Total Xylenes	1330-20-7	1,000	9,100	< 0.00085	< 0.0019	0.421	< 0.0030	NA	NA	NA	NA	NA	NA	NA	NA
Semi-Volatile Organic Compounds															
1,1-Biphenyl	92-52-4	1.5	40	0.0054 J	0.0617 J	0.0793 J	0.0170 J	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	105-67-9	190	10,000	< 0.18	0.145 J	< 0.3	< 0.32	< 0.031	0.33	< 0.11	0.075 J	< 1.2	< 1.7	< 1.1	< 0.035
2-Methylnaphthalene	91-57-6	100	270	0.0145 J	0.205	0.467	0.0742	0.11	0.19	1.6	0.52	< 2.9	4.5	54	0.23
2-Methylphenol	95-48-7	490	190,000	< 0.072	0.215	< 0.12	< 0.13	< 0.13	1.2	< 0.47	0.12 J	< 4.8	< 7	< 4.4	0.16
3-Methylphenol, 4-Methylphenol	65794-96-9	- -	- -	< 0.072	0.664	0.319	< 0.13	NA	NA	NA	NA	NA	NA	NA	NA
4-Methylphenol	106-44-5	49	190,000	NA	NA	NA	NA	< 0.16	2.8	< 0.59	0.12 J	< 6	< 8.8	< 5.6	0.42
Acenaphthene	83-32-9	4,700	190,000	< 0.036	0.239	1.76	0.105	< 0.012	0.14	6.8	0.21	< 0.45	3.3	37	1.2
Acenaphthylene	208-96-8	6,600	190,000	< 0.036	0.102	0.237	< 0.063	0.15	0.097	< 0.047	0.14	7	19	89	0.33
Acetophenone	98-86-2	970	10,000	< 0.18	< 0.28	< 0.3	< 0.32	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	120-12-7	350	190,000	< 0.036	0.721	0.919	0.0559 J	0.22	0.39	2.7	0.35	13	34	52	0.8
Benz(a)anthracene	56-55-3	340	190,000	0.0264 J	0.409	0.884	0.0314 J	1.4	0.76	4.3	0.63	45	58	44	1.6
Benzaldehyde	100-52-7	- -	- -	< 0.18	0.0556 J	< 0.3	< 0.32	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	50-32-8	46	190,000	0.0280 J	0.449	0.799	< 0.063	1.1	0.8	3.2	0.74	39	***54***	30	1.4
Benzo(b)fluoranthene	205-99-2	170	190,000	0.0341 J	0.505	0.809	< 0.063	1.6	1	3.2	0.77	58	71	37	1.7
Benzo(g,h,i)perylene	191-24-2	180	190,000	0.0203 J	0.289	0.354	< 0.063	0.71	0.5	2	0.35	28	38	14	0.7
Benzo(k)fluoranthene	207-08-9	610	190,000	< 0.036	0.206	0.259	< 0.063	0.63	0.24	1.5	0.29	15	22	15	0.42
bis(2-Ethylhexyl)phthalate	117-81-7	130	10,000	< 0.072	< 0.11	< 0.12	< 0.13	< 0.026	< 0.034	< 0.096	< 0.084	< 0.97	64	2.5	< 0.029
Butyl benzyl phthalate	85-68-7	10,000	10,000	< 0.072	< 0.11	< 0.12	< 0.13	< 0.013	< 0.017	< 0.049	< 0.011	< 0.5	< 0.73	< 0.46	< 0.015

Location ID:		Soil Standards or PQLs		PCTP-17R				PCTP-19		PCTP-20	PCTP-21	PCTP-214	PCTP-22	PCTP-23	
Sample Depth (ft):		S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	DC Non-Res Subsurf Soil (Exceedances Shaded)	7-9	9-11	18-20	24-25	6	11	20	4	7.5	4.5	7	10
Date Collected:	CAS Number			4/15/19	4/15/19	4/15/19	4/15/19	2/18/05	2/18/05	3/2/05	2/11/05	3/3/05	3/2/05	3/2/05	3/2/05
Semi-Volatile Organic Compounds (cont'd)															
Carbazole	86-74-8	89	190,000	0.0079 J	0.113	0.0420 J	0.0218 J	0.05	0.072	< 0.037	0.075	2.4	16	23	0.23
Chrysene	218-01-9	230	190,000	0.0276 J	0.527	1.25	0.0314 J	1.4	0.95	4.5	0.67	46	54	34	1.6
Dibenz(a,h)anthracene	53-70-3	270	190,000	< 0.036	0.0677	0.0976	< 0.063	0.29	0.19	0.73	0.15	12	17	6.4	0.45
Dibenzofuran	132-64-9	250	190,000	< 0.072	0.158	0.197	0.0417 J	0.086 J	0.077 J	< 0.4	0.15	2.5 J	17	68	0.34
Diethyl phthalate	84-66-2	7,800	10,000	< 0.072	< 0.11	< 0.12	< 0.13	0.048 B	0.078 B	< 0.051	< 0.0078	< 0.52	< 0.76	< 0.48	< 0.016
Di-n-butyl phthalate	84-74-2	4,000	10,000	< 0.072	< 0.11	< 0.12	< 0.13	< 0.012	< 0.016	< 0.047	< 0.006	< 0.47	35 B	< 0.43	< 0.014
Di-n-octyl phthalate	117-84-0	10,000	10,000	< 0.072	< 0.11	< 0.12	< 0.13	< 0.012	< 0.016	< 0.047	< 0.0099	< 0.47	13	< 0.43	< 0.014
Fluoranthene	206-44-0	3,200	190,000	0.0362	0.767	2.19	0.0671	2.1	1.2	7.3	1	63	120	110	2.2
Fluorene	86-73-7	3,800	190,000	< 0.036	0.19	< 0.06	0.0762	0.067	0.19	4.5	0.27	4	29	88	0.95
Indeno(1,2,3-cd)pyrene	193-39-5	18,000	190,000	< 0.036	0.247	0.269	< 0.063	0.63	0.43	1.7	0.34	26	46	15	0.59
Naphthalene	91-20-3	25	77	0.0380	0.652	0.991	0.149	0.6	0.66	2.3	1.6	3.2	21	17	1.1
Pentachlorophenol	87-86-5	5	190,000	< 0.14	< 0.23	< 0.24	< 0.25	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	85-01-8	10,000	190,000	0.0630	1.01	4.23	0.232	0.79	0.72	13	0.7	37	110	170	2.4
Phenol	108-95-2	200	18,000	< 0.072	0.54	< 0.12	< 0.13	< 0.031	3.6	< 0.11	< 0.14	< 1.2	< 1.7	< 1.1	< 0.035
Pyrene	129-00-0	2,200	190,000	0.0302 J	0.807	2.39	0.0680	2.2	1.5	10	1.1	77	91	86	2.8
Total PAHs and 2-Methylnaphthalene	-	- -	- -	0.318	7.39	17.9	0.890	14.0	9.96	69.3	9.83	473	792	898	20.5
Metals															
Aluminum	7429-90-5	- -	190,000	17,400 J	12,100 J	14,400 J	11,800 J	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	7440-36-0	27	190,000	< 4.5	< 3.6	< 3.7	< 3.7	14	< 3.4	< 3.3	< 2.9	3.4	< 3.6	3.5	< 3
Arsenic	7440-38-2	29	190,000	2.9 J	7.5	14.6	7.6	***140***	23	***42***	8.4	7.1	***100***	12	20
Barium	7440-39-3	8,200	190,000	120	62.4	312	41.7	420	160	260	69	720	26	36	100
Beryllium	7440-41-7	320	190,000	0.80	0.71	0.61	0.68	1.9	1.7	< 0.98	< 0.88	< 0.75	< 1.1	< 0.69	< 0.9
Cadmium	7440-43-9	38	190,000	< 0.56	0.18 J	0.87 J	< 0.92	2	1.6	1.8	< 0.88	< 0.75	< 1.1	< 0.69	< 0.9
Calcium	7440-70-2	- -	- -	1,950 J	1,250 J	2,910 J	1,060 J	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	7440-47-3	190,000	190,000	27.3 J	22.2 J	32.5 J	18.9 J	94	140	180	31	29	11	8.2	80
Cobalt	7440-48-4	130	190,000	11.7	9.2	7.2 J	12.3	NA	NA	NA	NA	NA	NA	NA	NA
Copper	7440-50-8	43,000	190,000	16.6	27.9	288	16.6	1,800	120	140	36	97	83	40	62
Cyanide	57-12-5	200	190,000	0.58 J	9.5 J	3.0 J	1.5 J	1.5	< 0.43	1.8	NA	13	64	2.1	1.1
Iron	7439-89-6	- -	190,000	23,600 J	23,000 J	27,800 J	22,600 J	NA	NA	NA	NA	NA	NA	NA	NA
Lead	7439-92-1	450	190,000	9.1 J	40.9 J	***697 J***	18.3 J	***790***	220	250	59	200	73	220	130
Magnesium	7439-95-4	- -	- -	10,600	3,190	2,530	3,180	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	7439-96-5	2,000	190,000	427 J	374 J	204 J	493 J	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	7439-97-6	10	190,000	0.038 J	3.0 J	1.3 J	0.057 J	< 0.11	2.1	0.99	0.14	2.5	0.42	0.2	0.28
Nickel	7440-02-0	650	190,000	25.4	17.2	22.7	18.5	93	30	32	17	16	36	7.3	24
Potassium	7440-09-7	- -	- -	9,760	1,320 J	1,170 J	1,410 J	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	7782-49-2	26	190,000	< 4.5	< 3.6	< 3.7	< 3.7	3.7	5.2	4.5	< 2.6	3.8	5.8	< 2.1	2.9
Silver	7440-22-4	84	190,000	0.61 J	< 0.89	0.66 J	< 0.92	< 3.3	< 4.3	< 4.1	< 3.7	< 3.1	< 4.5	< 2.9	< 3.7
Sodium	7440-23-5	- -	- -	272 J	409 J	589 J	< 1,800	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	7440-28-0	14	190,000	< 2.2	< 1.8	< 1.8	< 1.8	2.3	< 2.1	< 2	< 1.8	< 1.5	< 2.2	< 1.4	< 1.8
Vanadium	7440-62-2	680	190,000	33.2 J	26.2 J	70.6 J	24.4 J	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	7440-66-6	12,000	190,000	73.8	111	448	57.6	690	620	730	260	150	67	50	290

Table 11
Saturated Soil Analytical Results – Detected VOCs, SVOCs, and Inorganics (mg/kg)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID:		Soil Standards or PQLs		PCTP-236	PCTP-24	PCTP-25	PCTP-26	PCTP-27	PCTP-28	PCTP-28R		PCTP-29	PCTP-30	PCTP-31	PCTP-32	PCTP-32R
Sample Depth (ft):		S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	DC Non-Res Subsurf Soil (Exceedances Shaded)	7	19.5	5	12	11	7	6-8	11-12	13	7	11	7	6-8
Date Collected:	CAS Number			2/18/05	2/11/05	2/18/05	2/18/05	2/16/05	2/17/05	4/11/19	4/11/19	2/18/05	2/22/05	2/11/05	3/2/05	4/9/19
Volatile Organic Compounds																
2-Butanone (MEK)	78-93-3	400	10,000	< 0.0016	< 0.037	< 0.00094	< 0.0017	< 0.0039	< 0.0011	0.0045 J	< 0.024	< 0.0013	< 0.0034	< 0.031	< 0.034	0.0172
Acetone	67-64-1	8,800	10,000	< 0.0071	< 0.037	0.023	0.042	0.049	< 0.0052	0.0381	0.0435	< 0.0059	0.031	< 0.031	< 0.84	0.204
Benzene	71-43-2	0.5	330	< 0.00051	0.0076	< 0.00031	< 0.00054	< 0.00025	< 0.00037	< 0.00058	< 0.0012	< 0.00042	0.0017	0.0013	***1.8***	0.0052
Carbon Disulfide	75-15-0	620	10,000	< 0.0011	< 0.0074	< 0.00064	0.017	< 0.00046	< 0.00078	0.0068	0.0035 J	< 0.00088	< 0.00039	< 0.0063	< 0.033	0.0018 J
Chlorobenzene	108-90-7	10	4,500	< 0.00041	< 0.0074	< 0.00025	< 0.00044	< 0.0006	< 0.0003	< 0.0023	< 0.0049	< 0.00034	< 0.00051	< 0.0063	< 0.022	< 0.0024
Chloroform	67-66-3	8	110	< 0.00053	< 0.0074	< 0.00032	< 0.00056	< 0.0013	< 0.00039	< 0.0023	< 0.0049	< 0.00044	0.002	< 0.0063	< 0.054	< 0.0024
cis-1,2-Dichloroethene	156-59-2	7	10,000	< 0.00074	< 0.0074	< 0.00045	< 0.00079	< 0.00041	< 0.00054	< 0.0012	< 0.0024	< 0.00061	< 0.00035	< 0.0063	< 0.053	< 0.0012
Cyclohexane	110-82-7	6,900	10,000	NA	NA	NA	NA	NA	NA	< 0.0023	< 0.0049	NA	NA	NA	NA	< 0.0024
Dichloromethane	75-09-2	0.5	10,000	0.021 B	0.012 B	0.013 B	0.018 B	0.018 B	0.016 B	< 0.0058	< 0.012	0.014 B	0.021 B	0.011 B	0.31	< 0.0060
Ethylbenzene	100-41-4	70	1,000	< 0.0014	0.011	< 0.00084	< 0.0015	< 0.0009	< 0.001	< 0.0012	< 0.0024	< 0.0012	< 0.00077	< 0.0013	23	< 0.0012
Isopropylbenzene	98-82-8	2,500	10,000	NA	NA	NA	NA	NA	NA	< 0.0023	< 0.0049	NA	NA	NA	NA	< 0.0024
m&p-Xylenes	ARC-mpXyl	- -	- -	< 0.0017	0.026	< 0.001	< 0.0018	< 0.00098	0.0025	< 0.0012	< 0.0024	< 0.0014	0.0016	< 0.0025	0.64	0.0011 J
Methyl Acetate	79-20-9	9,700	10,000	NA	NA	NA	NA	NA	NA	< 0.0058	< 0.012	NA	NA	NA	NA	< 0.0060
Methylcyclohexane	108-87-2	- -	- -	NA	NA	NA	NA	NA	NA	< 0.0023	< 0.0049	NA	NA	NA	NA	< 0.0024
Methyl-tert-butylether	1634-04-4	2	9,800	NA	NA	NA	NA	NA	NA	< 0.0012	< 0.0024	NA	NA	NA	NA	< 0.0012
o,p-Xylene	136777-61-2	- -	- -	< 0.00036	0.019	< 0.00022	< 0.00038	< 0.00032	< 0.00026	NA	NA	< 0.0003	< 0.00027	< 0.0013	1.2	NA
o-Xylene	95-47-6	- -	- -	NA	NA	NA	NA	NA	NA	< 0.0012	< 0.0024	NA	NA	NA	NA	< 0.0012
Styrene (Monomer)	100-42-5	24	10,000	< 0.00032	< 0.0074	< 0.00019	< 0.00034	< 0.00024	< 0.00023	< 0.0023	< 0.0049	< 0.00026	< 0.0002	< 0.0063	< 0.023	< 0.0024
Toluene	108-88-3	100	10,000	< 0.00038	0.003	< 0.00023	0.003	< 0.00044	< 0.00028	< 0.0012	< 0.0024	< 0.00031	< 0.00038	< 0.0013	0.6	0.0019
trans-1,2-Dichloroethene	156-60-5	10	10,000	< 0.0011	< 0.0074	< 0.00065	< 0.0011	< 0.00066	0.0025	NA	< 0.0024	< 0.00089	< 0.00056	< 0.0063	< 0.11	< 0.0012
trans-1,3-Dichloropropene	10061-02-6	- -	- -	NA	NA	NA	NA	NA	0.0025	NA	< 0.0049	NA	NA	NA	NA	< 0.0024
Total Xylenes	1330-20-7	1,000	9,100	NA	NA	NA	NA	NA	< 0.00093	< 0.0023	< 0.0024	NA	NA	NA	NA	0.0011 J
Semi-Volatile Organic Compounds																
1,1-Biphenyl	92-52-4	1.5	40	NA	NA	NA	NA	NA	NA	0.0518 J	0.152	NA	NA	NA	NA	0.0718 J
2,4-Dimethylphenol	105-67-9	190	10,000	< 0.12	< 14	< 0.087	< 0.12	< 0.19	< 0.035	< 0.18	< 0.22	< 0.033	< 2.2	< 0.2	< 11	< 0.43
2-Methylnaphthalene	91-57-6	100	270	< 0.058	41	0.13 J	2.7	0.75	0.24	0.122	0.318	0.076 J	1.3	0.44	***250***	0.492
2-Methylphenol	95-48-7	490	190,000	< 0.1	< 8.5	< 0.36	< 0.5	< 0.12	< 0.15	< 0.072	< 0.088	< 0.14	< 1.4	< 0.12	< 44	0.218
3-Methylphenol, 4-Methylphenol	65794-96-9	- -	- -	NA	NA	NA	NA	NA	NA	< 0.072	< 0.088	NA	NA	NA	NA	0.28
4-Methylphenol	106-44-5	49	190,000	< 0.099	< 8.9	< 0.45	0.41 J	< 0.12	0.057 J	NA	NA	0.047 J	< 1.4	< 0.13	< 55	NA
Acenaphthene	83-32-9	4,700	190,000	< 0.012	53	< 0.033	7.6	1.4	0.82	0.7	0.373	0.085	0.55	0.63	45	0.127
Acenaphthylene	208-96-8	6,600	190,000	< 0.01	23	1.1	0.88	0.65	< 0.014	1.12	< 0.044	0.4	0.99	0.31	< 4.3	0.0745 J
Acetophenone	98-86-2	970	10,000	NA	NA	NA	NA	NA	NA	< 0.18	< 0.22	NA	NA	NA	NA	0.0414 J
Anthracene	120-12-7	350	190,000	< 0.0081	57	1.4	4.6	0.82	1.4	3.55	< 0.044	1.7	2.1	1.5	< 3.7	0.132
Benz(a)anthracene	56-55-3	340	190,000	0.075	67	12	6.3	2.7	2.9	8.11 D	0.0362 J	4.3	2.3	2.4	< 4.7	0.213
Benzaldehyde	100-52-7	- -	- -	NA	NA	NA	NA	NA	NA	< 0.18	< 0.22	NA	NA	NA	NA	< 0.43
Benzo(a)pyrene	50-32-8	46	190,000	0.055	***51***	10	5.2	2.1	2.5	6.42 D	< 0.044	3.4	2	2	< 3.3	0.239
Benzo(b)fluoranthene	205-99-2	170	190,000	0.14	66	17	5.6	4.1	3.3	8.61 D	0.0250 J	4.7	2.7	2.8	< 6.1	0.238
Benzo(g,h,i)perylene	191-24-2	180	190,000	0.045	23	7.4	2.8	1.2	1.6	3.48 DJ	< 0.044	2.3	1.1	0.96	< 4.6	0.184
Benzo(k)fluoranthene	207-08-9	610	190,000	0.046	17	3.7	1.7	1.1	0.75	3.31	< 0.044	1.6	0.81	0.8	< 5.3	0.103
bis(2-Ethylhexyl)phthalate	117-81-7	130	10,000	< 0.011	< 5	< 0.073	< 0.1	0.18	< 0.03	0.116	< 0.088	0.11	< 0.8	0.16	< 8.9	< 0.17
Butyl benzyl phthalate	85-68-7	10,000	10,000	< 0.0088	< 0.65	< 0.037	< 0.052	< 0.009	< 0.015	< 0.072	< 0.088	< 0.014	< 0.1	< 0.0092	< 4.5	< 0.17

Table 11
Saturated Soil Analytical Results – Detected VOCs, SVOCs, and Inorganics (mg/kg)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID:		Soil Standards or PQLs		PCTP-236	PCTP-24	PCTP-25	PCTP-26	PCTP-27	PCTP-28	PCTP-28R		PCTP-29	PCTP-30	PCTP-31	PCTP-32	PCTP-32R
Sample Depth (ft):		S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	DC Non-Res Subsurf Soil (Exceedances Shaded)	7	19.5	5	12	11	7	6-8	11-12	13	7	11	7	6-8
Date Collected:	CAS Number			2/18/05	2/11/05	2/18/05	2/18/05	2/16/05	2/17/05	4/11/19	4/11/19	2/18/05	2/22/05	2/11/05	3/2/05	4/9/19
Semi-Volatile Organic Compounds (cont'd)																
Carbazole	86-74-8	89	190,000	< 0.0057	23	0.41	< 0.039	0.84	0.52	1.19	< 0.088	0.17	< 0.11	0.54	< 3.5	0.0396 J
Chrysene	218-01-9	230	190,000	0.15	53	11	7.4	2.7	2.9	7.19 D	0.0515	3.9	2.3	2.1	< 3.5	0.246
Dibenz(a,h)anthracene	53-70-3	270	190,000	< 0.013	9.3	2.6	1.1	0.56	0.54	1.68 J	< 0.044	0.86	< 0.081	0.4	< 5.7	< 0.085
Dibenzofuran	132-64-9	250	190,000	0.051 J	46	0.19 J	0.71	1.4	0.42	0.774	< 0.088	0.27	1.6	0.58	25 J	0.0963 J
Diethyl phthalate	84-66-2	7,800	10,000	0.05	< 0.47	< 0.039	< 0.054	< 0.0065	< 0.016	< 0.072	< 0.088	< 0.015	< 0.075	< 0.0066	< 4.7	< 0.17
Di-n-butyl phthalate	84-74-2	4,000	10,000	< 0.007	< 0.36	< 0.035	< 0.049	< 0.005	< 0.014	< 0.072	< 0.088	< 0.013	< 0.058	< 0.0051	20 B	< 0.17
Di-n-octyl phthalate	117-84-0	10,000	10,000	< 0.0068	< 0.59	< 0.035	< 0.049	< 0.0082	< 0.014	< 0.072	< 0.088	< 0.013	< 0.095	< 0.0084	< 4.3	< 0.17
Fluoranthene	206-44-0	3,200	190,000	0.1	160	14	10	4.8	4.3	22.9 D	0.0607 J	8.2	5.7	5.7	< 4.9	0.341
Fluorene	86-73-7	3,800	190,000	< 0.01	73	0.28	5.9	1.5	0.83	1.94	< 0.044	0.7	2.3	1.1	37	0.132
Indeno(1,2,3-cd)pyrene	193-39-5	18,000	190,000	0.046	24	6.6	2.4	1.2	1.5	3.38 DJ	< 0.044	2.1	1.3	0.98	< 4.6	0.161
Naphthalene	91-20-3	25	77	0.048	***190***	0.32	3.3	2.5	0.57	0.259	0.415	0.25	12	1.3	***1,300***	4.88
Pentachlorophenol	87-86-5	5	190,000	NA	NA	NA	NA	NA	NA	< 0.14	< 0.18	NA	NA	NA	NA	< 0.34
Phenanthrene	85-01-8	10,000	190,000	0.053	210	4.7	18	3.3	4.1	9.39 D	< 0.044	3.8	7.4	4.5	43	0.344
Phenol	108-95-2	200	18,000	< 0.048	< 8.2	< 0.087	< 0.12	< 0.11	0.23	< 0.072	< 0.088	0.093	< 1.3	< 0.12	< 11	< 0.17
Pyrene	129-00-0	2,200	190,000	0.16	120	15	17	3.9	5.9	14.4 D	0.125	8.1	7.2	4.1	< 4.3	0.401
Total PAHs and 2-Methylnaphthalene	-	- -	- -	0.918	1,240	107	102	35.3	34.2	96.6	1.40	46.5	52.1	32.0	1,680	8.31
Metals																
Aluminum	7429-90-5	- -	190,000	NA	NA	NA	NA	NA	NA	12,900	3,590	NA	NA	NA	NA	4,290 J
Antimony	7440-36-0	27	190,000	< 2.4	< 2.9	2.9	5.5	3.2	7.6	< 2.3	1.3 J	4.6	< 2.8	2.9	11	< 2.6 J
Arsenic	7440-38-2	29	190,000	5.1	21	9.4	***54***	***34***	20	5.7	***31.6***	22	7.3	13	18	3.9
Barium	7440-39-3	8,200	190,000	180	170	140	340	41	4,700	190	61.0	340	71	140	140	30.3
Beryllium	7440-41-7	320	190,000	0.89	< 0.88	1.7	2.1	< 0.73	1	1.2	0.37	< 0.85	0.86	1.3	1	0.22 J
Cadmium	7440-43-9	38	190,000	< 0.72	0.9	0.9	2.8	< 0.73	7.6	0.84	0.49 J	1.1	< 0.85	< 0.75	< 0.91	0.13 J
Calcium	7440-70-2	- -	- -	NA	NA	NA	NA	NA	NA	61,000	3,440	NA	NA	NA	NA	65,200
Chromium	7440-47-3	190,000	190,000	8.1	85	11	230	14	97	38.4	6.5	19	33	42	26	14.6
Cobalt	7440-48-4	130	190,000	NA	NA	NA	NA	NA	NA	6.9	7.2	NA	NA	NA	NA	4.2 J
Copper	7440-50-8	43,000	190,000	40	83	70	200	66	150	66.1	46.9	150	210	260	230	13.8
Cyanide	57-12-5	200	190,000	1.7	NA	2.2	< 0.43	NA	NA	2.4	0.3	NA	0.4	NA	< 0.38	0.45
Iron	7439-89-6	- -	190,000	NA	NA	NA	NA	NA	NA	14,800	35,800	NA	NA	NA	NA	9,540 J
Lead	7439-92-1	450	190,000	6.3	210	430	400	54	***62,000***	233	92.0	420	190	98	***940***	21.3
Magnesium	7439-95-4	- -	- -	NA	NA	NA	NA	NA	NA	10,400	650 J	NA	NA	NA	NA	37,200
Manganese	7439-96-5	2,000	190,000	NA	NA	NA	NA	NA	NA	804	157	NA	NA	NA	NA	196 J
Mercury	7439-97-6	10	190,000	< 0.1	0.84	0.13	2	< 0.1	0.62	< 0.037	0.074	1.5	0.16	0.16	0.85	0.21
Nickel	7440-02-0	650	190,000	18	22	18	41	14	18	14.0	24.6	15	22	28	26	8.6
Potassium	7440-09-7	- -	- -	NA	NA	NA	NA	NA	NA	1,330	356 J	NA	NA	NA	NA	679 J
Selenium	7782-49-2	26	190,000	4.2	3.7	2.9	6.8	2.9	3.8	0.79 J	< 5.3	4.4	5.5	2.5	4.3	< 2.6
Silver	7440-22-4	84	190,000	< 3	< 3.7	< 3.1	< 4.3	< 3	< 3.8	< 0.56	< 1.3	< 3.5	< 3.5	< 3.1	< 3.8	< 0.65
Sodium	7440-23-5	- -	- -	NA	NA	NA	NA	NA	NA	265 J	140 J	NA	NA	NA	NA	< 1,300
Thallium	7440-28-0	14	190,000	< 1.4	< 1.8	< 1.5	< 2.1	< 1.5	< 1.8	< 1.1	< 2.6	< 1.7	< 1.7	< 1.5	< 1.8	< 1.3
Vanadium	7440-62-2	680	190,000	NA	NA	NA	NA	NA	NA	22.2	13.1	NA	NA	NA	NA	10.6
Zinc	7440-66-6	12,000	190,000	< 12	390	330	1,000	39	4,100	239	154	520	150	160	550	66.5

Table 11
Saturated Soil Analytical Results – Detected VOCs, SVOCs, and Inorganics (mg/kg)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID:		Soil Standards or PQLs		PCTP-33	PCTP-34		PCTP-35	PCTP-38		PCTP-39	PCTP-40		PCTP-41	PCTP-42	PCTP-43
Sample Depth (ft):				12	10	14	6	10	12	8	9	10	6.5	13.5	7
Date Collected:	CAS Number	S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	DC Non-Res Subsurf Soil (Exceedances Shaded)	3/2/05	2/28/05	2/28/05	2/16/05	2/22/05	2/22/05	2/24/05	2/14/05	2/14/05	2/24/05	2/23/05	2/23/05
Volatile Organic Compounds															
2-Butanone (MEK)	78-93-3	400	10,000	< 0.0014	< 0.00099	< 0.0013	< 0.0039	< 0.0048	< 0.0051	< 0.001	< 0.0032	< 0.002	< 0.0011	< 2.1	< 0.0011
Acetone	67-64-1	8,800	10,000	< 0.0063	< 0.0045	0.026	< 0.0026	0.057	0.037	0.03	0.035	< 0.01	< 0.0048	< 2.5	0.051
Benzene	71-43-2	0.5	330	0.0026	0.0015	0.011	< 0.00025	0.0022	< 0.00033	0.0024	0.16	0.066	< 0.00034	***4.2***	0.051
Carbon Disulfide	75-15-0	620	10,000	< 0.00095	0.0082	0.006	< 0.00045	< 0.00056	< 0.00059	< 0.00068	0.66	0.25	< 0.00072	< 0.32	0.34
Chlorobenzene	108-90-7	10	4,500	< 0.00037	< 0.00026	< 0.00033	< 0.00059	< 0.00073	< 0.00078	< 0.00026	< 0.0013	< 0.00082	< 0.00028	< 0.13	< 0.00028
Chloroform	67-66-3	8	110	0.0036	< 0.00034	< 0.00042	< 0.0013	0.0029	< 0.0017	< 0.00034	< 0.0018	< 0.0012	< 0.00036	< 0.24	< 0.00036
cis-1,2-Dichloroethene	156-59-2	7	10,000	< 0.00066	< 0.00047	< 0.00059	< 0.0004	< 0.00049	< 0.00053	< 0.00048	< 0.0018	< 0.0012	< 0.0005	< 0.31	< 0.0005
Cyclohexane	110-82-7	6,900	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichloromethane	75-09-2	0.5	10,000	0.011 B	0.023 B	0.028 B	0.016 B	0.03 B	0.012 B	0.015 B	0.023 B	0.016 B	0.015 B	***0.91 B***	0.0093 B
Ethylbenzene	100-41-4	70	1,000	0.031	< 0.00089	0.07	< 0.00089	< 0.0011	< 0.0012	< 0.0009	0.0016	< 0.00071	< 0.00095	***180***	0.0058
Isopropylbenzene	98-82-8	2,500	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
m&p-Xylenes	ARC-mpXyl	- -	- -	0.013	< 0.0011	0.027	< 0.00097	< 0.0012	< 0.0013	< 0.0011	0.0046	0.0019	< 0.0011	260	0.0081
Methyl Acetate	79-20-9	9,700	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylcyclohexane	108-87-2	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl-tert-butylether	1634-04-4	2	9,800	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
o,p-Xylene	136777-61-2	- -	- -	0.013	< 0.00023	0.066	< 0.00032	< 0.00039	< 0.00042	< 0.00023	0.0066	0.0027	< 0.00025	79	0.0062
o-Xylene	95-47-6	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene (Monomer)	100-42-5	24	10,000	< 0.00028	< 0.0002	< 0.00025	< 0.00023	< 0.00029	< 0.00031	< 0.0002	< 0.00086	< 0.00056	< 0.00021	< 0.18	< 0.00021
Toluene	108-88-3	100	10,000	0.0043	< 0.00024	0.0072	< 0.00044	< 0.00054	< 0.00058	< 0.00024	0.018	0.0061	< 0.00026	2.6	0.0026
trans-1,2-Dichloroethene	156-60-5	10	10,000	< 0.00096	< 0.00068	< 0.00086	< 0.00065	< 0.0008	< 0.00086	< 0.00069	< 0.0016	< 0.001	< 0.00073	< 0.31	< 0.00073
trans-1,3-Dichloropropene	10061-02-6	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Xylenes	1330-20-7	1,000	9,100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Semi-Volatile Organic Compounds															
1,1-Biphenyl	92-52-4	1.5	40	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	105-67-9	190	10,000	< 0.86	< 0.031	< 0.97	< 0.2	< 0.21	< 0.25	< 1.3	0.86	0.98	< 0.033	< 80	0.19 J
2-Methylnaphthalene	91-57-6	100	270	***110***	< 0.075	97	0.86	0.22	0.27	0.88	1.1	1.4	0.075 J	***290***	0.12
2-Methylphenol	95-48-7	490	190,000	< 3.6	< 0.13	< 4	< 0.12	< 0.13	< 0.15	< 0.77	< 0.16	2	< 0.14	< 49	0.35
3-Methylphenol, 4-Methylphenol	65794-96-9	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methylphenol	106-44-5	49	190,000	< 4.5	< 0.16	< 5	< 0.13	< 0.13	0.15 J	< 0.81	2.1	1.9	< 0.17	< 51	0.61
Acenaphthene	83-32-9	4,700	190,000	110	0.23	88	0.089	0.45	0.22	0.94	2	2	< 0.013	330	0.11
Acenaphthylene	208-96-8	6,600	190,000	< 0.35	< 0.012	< 0.39	0.83	0.11	0.17	3.4	0.097	< 0.014	< 0.013	52	0.09
Acetophenone	98-86-2	970	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	120-12-7	350	190,000	66	0.061	45	0.86	0.5	0.26	6.7	0.66	1.3	0.07	310	0.13
Benz(a)anthracene	56-55-3	340	190,000	26	0.075	24	2.7	0.42	0.77	15	0.99	1.2	0.26	290	0.42
Benzaldehyde	100-52-7	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	50-32-8	46	190,000	16	0.063	14	2.5	0.35	0.96	13	0.93	0.85	0.25	***200***	0.44
Benzo(b)fluoranthene	205-99-2	170	190,000	18	0.079	16	4.3	0.51	1.1	19	1.1	1.1	0.37	***260***	0.56
Benzo(g,h,i)perylene	191-24-2	180	190,000	6.7	0.045	7.7	1.6	0.23	0.51	6.6	0.41	0.39	0.15	84	0.22
Benzo(k)fluoranthene	207-08-9	610	190,000	7.1	< 0.015	5.7	1.1	0.14	0.37	6.6	0.32	0.28	0.11	92	0.21
bis(2-Ethylhexyl)phthalate	117-81-7	130	10,000	< 0.72	< 0.026	< 0.81	0.36	< 0.075	< 0.091	< 0.46	< 0.032	< 0.028	0.076	< 29	< 0.08
Butyl benzyl phthalate	85-68-7	10,000	10,000	< 0.37	< 0.013	< 0.42	< 0.0091	< 0.0097	< 0.012	< 0.059	< 0.016	< 0.014	< 0.014	< 3.7	< 0.01

Table 11
Saturated Soil Analytical Results – Detected VOCs, SVOCs, and Inorganics (mg/kg)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID: / Sample Depth (ft): / Date Collected:	CAS Number	Soil Standards or PQLs: S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	Soil Standards or PQLs: DC Non-Res Subsurf Soil (Exceedances Shaded)	PCTP-33 12 3/2/05	PCTP-34 10 2/28/05	PCTP-34 14 2/28/05	PCTP-35 6 2/16/05	PCTP-38 10 2/22/05	PCTP-38 12 2/22/05	PCTP-39 8 2/24/05	PCTP-40 9 2/14/05	PCTP-40 10 2/14/05	PCTP-41 6.5 2/24/05	PCTP-42 13.5 2/23/05	PCTP-43 7 2/23/05
Semi-Volatile Organic Compounds (cont'd)															
Carbazole	86-74-8	89	190,000	13	0.29	10	0.24	< 0.01	< 0.013	1.8	0.2	0.32	< 0.011	85	0.055
Chrysene	218-01-9	230	190,000	26	0.064	25	2.7	0.49	0.9	15	1.2	1.3	0.26	***260***	0.46
Dibenz(a,h)anthracene	53-70-3	270	190,000	2.6	< 0.017	2.4	0.64	< 0.0076	0.26	2.5	0.17	0.18	0.047	26	0.053
Dibenzofuran	132-64-9	250	190,000	49	0.049 J	41	0.48	0.42	0.11	2.5	0.4	0.57	< 0.11	240	0.048 J
Diethyl phthalate	84-66-2	7,800	10,000	< 0.39	< 0.014	< 0.43	< 0.0065	0.077	0.11	< 0.042	< 0.017	< 0.015	< 0.015	< 2.7	< 0.0075
Di-n-butyl phthalate	84-74-2	4,000	10,000	< 0.35	< 0.012	< 0.39	0.052	< 0.0054	0.073 B	< 0.033	< 0.016	< 0.014	< 0.013	< 2.1	< 0.0058
Di-n-octyl phthalate	117-84-0	10,000	10,000	< 0.35	< 0.012	< 0.39	< 0.0083	< 0.0088	< 0.011	< 0.054	< 0.016	< 0.014	< 0.013	< 3.4	< 0.0095
Fluoranthene	206-44-0	3,200	190,000	98	0.17	69	6.3	0.97	1.3	31	2.6	3.3	0.43	670	0.57
Fluorene	86-73-7	3,800	190,000	89	0.11	74	0.44	0.25	0.2	4.5	1.2	1.6	< 0.016	400	< 0.0087
Indeno(1,2,3-cd)pyrene	193-39-5	18,000	190,000	5.9	< 0.013	6.1	1.6	0.22	0.45	7.6	0.39	0.37	0.14	90	0.23
Naphthalene	91-20-3	25	77	***68***	0.12	***140***	0.77	2.3	0.98	5.2	3.7	2.6	0.089	***2,700***	0.55
Pentachlorophenol	87-86-5	5	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	85-01-8	10,000	190,000	230	0.058	180	3	0.41	0.61	12	3.1	5.2	0.32	1,000	0.4
Phenol	108-95-2	200	18,000	< 0.86	< 0.031	< 0.97	< 0.11	0.089 J	< 0.15	< 0.74	1.8	2	< 0.033	< 47	0.54
Pyrene	129-00-0	2,200	190,000	82	0.26	90	4.8	0.98	1.5	26	2.7	3.3	0.47	490	0.64
Total PAHs and 2-Methylnaphthalene	-	- -	- -	961	1.34	884	35.1	8.55	10.8	176	22.7	26.4	3.04	7,540	5.20
Metals															
Aluminum	7429-90-5	- -	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	7440-36-0	27	190,000	5.5	< 2.6	< 3.3	3.1	2.7	< 3.2	7.8	< 3.3	< 2.9	***34***	< 2.5	< 2.8
Arsenic	7440-38-2	29	190,000	***71***	< 2.6	***59***	26	15	18	11	18	< 2.9	13	6.9	3
Barium	7440-39-3	8,200	190,000	290	24	220	67	75	110	110	200	46	130	33	64
Beryllium	7440-41-7	320	190,000	1.3	< 0.79	1.5	< 0.74	< 0.79	< 0.95	< 0.8	1	< 0.86	< 0.85	< 0.76	< 0.85
Cadmium	7440-43-9	38	190,000	2.8	< 0.79	2.3	< 0.74	< 0.79	< 0.95	< 0.8	1.3	< 0.86	< 0.85	< 0.76	< 0.85
Calcium	7440-70-2	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	7440-47-3	190,000	190,000	380	16	200	14	30	84	35	150	18	14	16	39
Cobalt	7440-48-4	130	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	7440-50-8	43,000	190,000	210	21	170	68	120	60	150	130	19	130	16	36
Cyanide	57-12-5	200	190,000	< 0.46	0.44	1.7	NA	< 0.33	< 0.4	4.1	1.5	3.1	0.63	0.5	< 0.35
Iron	7439-89-6	- -	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	7439-92-1	450	190,000	***470***	12	310	160	86	110	240	260	43	***1,400***	30	80
Magnesium	7439-95-4	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	7439-96-5	2,000	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	7439-97-6	10	190,000	2.1	< 0.11	1.3	0.2	0.51	0.76	1	2.7	< 0.12	< 0.12	< 0.11	0.27
Nickel	7440-02-0	650	190,000	41	7.4	34	12	20	20	21	25	8.9	18	11	8.8
Potassium	7440-09-7	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	7782-49-2	26	190,000	4.9	4	4	3.2	3.9	3.4	2.6	3.5	< 2.6	3.4	< 2.3	< 2.5
Silver	7440-22-4	84	190,000	< 4.6	< 3.3	< 4.2	< 3.1	< 3.3	< 4	< 3.3	< 4.1	< 3.6	< 3.5	< 3.2	< 3.5
Sodium	7440-23-5	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	7440-28-0	14	190,000	< 2.2	< 1.6	< 2	< 1.5	< 1.6	< 1.9	< 1.6	< 2	< 1.7	< 1.7	< 1.5	< 1.7
Vanadium	7440-62-2	680	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	7440-66-6	12,000	190,000	1,100	28	860	220	220	270	170	610	90	210	140	58

Location ID: / Sample Depth (ft): / Date Collected:	CAS Number	Soil Standards or PQLs: S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	Soil Standards or PQLs: DC Non-Res Subsurf Soil (Exceedances Shaded)	PCTP-44 4 2/14/05	PCTP-44 9 2/14/05	PCTP-45 10 2/14/05	PCTP-46 9 2/22/05	PCTP-46 10.5 2/22/05	PCTP-49 9 2/23/05	PCTP-49R 8-10 4/16/19	PCTP-49R 10-11 4/16/19	PCTP-50 11 2/23/05	PCTP-51 11 2/22/05	PCTP-51R 10-12 4/18/19	PCTP-52 7 2/22/05	PCTP-53 10 2/22/05
Volatile Organic Compounds																
2-Butanone (MEK)	78-93-3	400	10,000	< 0.0016	< 0.003	< 0.0018	< 0.007	< 1.1	< 0.0015	< 0.011	< 1.7	< 0.00099	< 0.0032	0.0097 J	< 0.0028	< 0.0096
Acetone	67-64-1	8,800	10,000	< 0.0083	0.033	< 0.0093	0.19	< 1.3	0.045	0.0280	< 1.7	< 0.0045	0.035	0.0488	0.039	0.063
Benzene	71-43-2	0.5	330	< 0.00064	< 0.0012	< 0.00073	0.054	***5.1***	0.023	0.0034	***0.563***	0.018	< 0.00021	0.00047 J	< 0.00018	0.034
Carbon Disulfide	75-15-0	620	10,000	< 0.0013	0.15	< 0.0015	< 0.00082	< 0.17	0.0043	0.0080	6.61	< 0.00067	< 0.00038	< 0.0024	< 0.00033	0.012
Chlorobenzene	108-90-7	10	4,500	< 0.00065	< 0.0012	< 0.00073	< 0.0011	< 0.066	< 0.0004	< 0.0022	< 0.35	< 0.00026	< 0.00049	< 0.0024	< 0.00043	< 0.0015
Chloroform	67-66-3	8	110	< 0.00093	< 0.0017	< 0.0011	0.0036	< 0.13	< 0.00052	< 0.0022	< 0.35	< 0.00034	0.0017	< 0.0024	0.0015	0.005
cis-1,2-Dichloroethene	156-59-2	7	10,000	< 0.00092	< 0.0017	< 0.001	< 0.00072	< 0.16	< 0.00073	< 0.0011	< 0.17	< 0.00047	< 0.00033	< 0.0012	< 0.00029	< 0.00098
Cyclohexane	110-82-7	6,900	10,000	NA	NA	NA	NA	NA	NA	< 0.0022	< 0.35	NA	NA	< 0.0024	NA	NA
Dichloromethane	75-09-2	0.5	10,000	0.014 B	0.025 B	0.015 B	0.052 B	***1.2 B***	0.018 B	< 0.0054	< 0.87	0.0096 B	0.023 B	< 0.0060	0.019 B	0.06 B
Ethylbenzene	100-41-4	70	1,000	< 0.00057	< 0.0011	< 0.00064	0.032	18	0.06	< 0.0011	1.85	0.0077	< 0.00074	< 0.0012	< 0.00065	< 0.0022
Isopropylbenzene	98-82-8	2,500	10,000	NA	NA	NA	NA	NA	NA	0.0013 J	3.03	NA	NA	< 0.0024	NA	NA
m&p-Xylenes	ARC-mpXyl	- -	- -	< 0.00092	< 0.0017	< 0.001	0.0081	25	0.01	< 0.0011	0.847	0.0021	< 0.00081	< 0.0012	< 0.00071	< 0.0024
Methyl Acetate	79-20-9	9,700	10,000	NA	NA	NA	NA	NA	NA	< 0.0054	< 0.87	NA	NA	0.0027 J	NA	NA
Methylcyclohexane	108-87-2	- -	- -	NA	NA	NA	NA	NA	NA	< 0.0022	0.778	NA	NA	< 0.0024	NA	NA
Methyl-tert-butylether	1634-04-4	2	9,800	NA	NA	NA	NA	NA	NA	< 0.0011	< 0.17	NA	NA	< 0.0012	NA	NA
o,p-Xylene	136777-61-2	- -	- -	< 0.00065	< 0.0012	< 0.00074	0.014	9.2	0.019	NA	NA	0.0016	< 0.00026	NA	< 0.00023	< 0.00078
o-Xylene	95-47-6	- -	- -	NA	NA	NA	NA	NA	NA	< 0.0011	0.756	NA	NA	< 0.0012	NA	NA
Styrene (Monomer)	100-42-5	24	10,000	< 0.00044	< 0.00083	< 0.0005	< 0.00042	< 0.094	< 0.00031	< 0.0022	< 0.35	< 0.0002	< 0.00019	< 0.0024	< 0.00017	< 0.00058
Toluene	108-88-3	100	10,000	< 0.00061	< 0.0011	< 0.00069	0.0043	8	0.0063	< 0.0011	0.406	< 0.00024	< 0.00036	0.00077 J	< 0.00032	< 0.0011
trans-1,2-Dichloroethene	156-60-5	10	10,000	< 0.00083	< 0.0016	< 0.00094	< 0.0012	< 0.16	< 0.0011	< 0.0011	< 0.17	< 0.00068	< 0.00054	< 0.0012	< 0.00048	< 0.0016
trans-1,3-Dichloropropene	10061-02-6	- -	- -	NA	NA	NA	NA	NA	NA	< 0.0022	< 0.35	NA	NA	< 0.0024	NA	NA
Total Xylenes	1330-20-7	1,000	9,100	NA	NA	NA	NA	NA	NA	< 0.0011	1.6	NA	NA	< 0.0012	NA	NA
Semi-Volatile Organic Compounds																
1,1-Biphenyl	92-52-4	1.5	40	NA	NA	NA	NA	NA	NA	0.0178 J	0.878	NA	NA	0.0114 J	NA	NA
2,4-Dimethylphenol	105-67-9	190	10,000	< 0.026	0.67	< 0.03	< 5.8	< 920	< 1.9	< 0.2	< 0.25	< 0.031	< 0.21	< 0.22	< 0.94	0.21 J
2-Methylnaphthalene	91-57-6	100	270	< 0.065	0.31	< 0.073	4.6	***7,200***	27	0.0322 J	0.957	0.13	0.38	0.0234 J	1.3	2.3
2-Methylphenol	95-48-7	490	190,000	0.043 J	2.5	< 0.12	< 3.5	< 560	< 7.9	0.0478 J	0.0727 J	< 0.13	< 0.13	< 0.087	< 0.57	0.23 J
3-Methylphenol, 4-Methylphenol	65794-96-9	- -	- -	NA	NA	NA	NA	NA	NA	0.105	0.25	NA	NA	< 0.087	NA	NA
4-Methylphenol	106-44-5	49	190,000	0.099 J	1	< 0.15	< 3.7	< 590	< 9.9	NA	NA	< 0.16	0.053 J	NA	< 0.6	0.41
Acenaphthene	83-32-9	4,700	190,000	< 0.01	0.22	< 0.011	23	1,100	130	0.47	3.88	3.1	0.29	0.155	1.7	8.1
Acenaphthylene	208-96-8	6,600	190,000	< 0.011	0.076	< 0.012	6.1	4,200	< 0.78	0.0871	0.219	< 0.012	0.11	0.285	2.6	0.73
Acetophenone	98-86-2	970	10,000	NA	NA	NA	NA	NA	NA	< 0.2	< 0.25	NA	NA	< 0.22	NA	NA
Anthracene	120-12-7	350	190,000	< 0.0093	0.28	< 0.011	19	***3,800***	98	0.32	1.79	0.41	0.28	0.344	5.1	< 0.018
Benz(a)anthracene	56-55-3	340	190,000	< 0.012	0.81	0.063	61	***3,400***	38	0.398	0.951	0.29	0.49	0.936	8	0.092
Benzaldehyde	100-52-7	- -	- -	NA	NA	NA	NA	NA	NA	< 0.2	< 0.25	NA	NA	< 0.22	NA	NA
Benzo(a)pyrene	50-32-8	46	190,000	< 0.0082	0.82	0.055	37	***2,500***	21	0.468	0.917	0.23	0.54	0.976	7	< 0.021
Benzo(b)fluoranthene	205-99-2	170	190,000	< 0.015	1	0.077	59	***3,000***	26	0.426	0.944	0.31	0.65	1.12	10	0.11
Benzo(g,h,i)perylene	191-24-2	180	190,000	< 0.011	0.41	< 0.013	16	***970***	10	0.264	0.49	0.14	0.36	0.603	3.8	< 0.016
Benzo(k)fluoranthene	207-08-9	610	190,000	< 0.013	0.26	< 0.015	16	***1,000***	7.6	0.176	0.327	0.083	0.24	0.452	3.6	< 0.014
bis(2-Ethylhexyl)phthalate	117-81-7	130	10,000	< 0.022	< 0.031	< 0.025	< 2.1	< 330	< 1.6	< 0.079	< 0.1	0.083 B	0.05 J	< 0.087	0.47	< 0.15
Butyl benzyl phthalate	85-68-7	10,000	10,000	< 0.011	< 0.016	< 0.013	< 0.27	< 43	< 0.82	< 0.079	0.0586 J	< 0.013	< 0.0099	< 0.087	< 0.044	< 0.019

Location ID:		Soil Standards or PQLs		PCTP-44		PCTP-45	PCTP-46		PCTP-49	PCTP-49R		PCTP-50	PCTP-51	PCTP-51R	PCTP-52	PCTP-53
Sample Depth (ft):				4	9	10	9	10.5	9	8-10	10-11	11	11	10-12	7	10
Date Collected:	CAS Number	S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	DC Non-Res Subsurf Soil (Exceedances Shaded)	2/14/05	2/14/05	2/14/05	2/22/05	2/22/05	2/23/05	4/16/19	4/16/19	2/23/05	2/22/05	4/18/19	2/22/05	2/22/05
Semi-Volatile Organic Compounds (cont'd)																
Carbazole	86-74-8	89	190,000	< 0.0086	0.085	< 0.0098	< 0.29	***1,800***	23	0.0479 J	0.739	1.2	0.078	0.0720 J	3.3	1.5
Chrysene	218-01-9	230	190,000	< 0.0087	0.88	0.048	40	***2,500***	35	0.387	1.06	0.28	0.54	0.865	7.6	< 0.015
Dibenz(a,h)anthracene	53-70-3	270	190,000	< 0.014	0.16	< 0.016	7.8	< 33	3.4	0.0592	0.105	0.044	0.14	0.136	1.3	< 0.015
Dibenzofuran	132-64-9	250	190,000	< 0.093	0.096 J	< 0.1	8.6	***3,600***	68	0.0773 J	1.91	1.2	0.22	0.0854 J	4.3	0.5
Diethyl phthalate	84-66-2	7,800	10,000	< 0.012	< 0.017	< 0.013	< 0.19	< 31	< 0.85	< 0.079	< 0.1	0.072 B	0.072	< 0.087	< 0.031	< 0.014
Di-n-butyl phthalate	84-74-2	4,000	10,000	< 0.011	0.055	< 0.012	< 0.15	< 24	< 0.78	< 0.079	< 0.1	0.1 B	0.064 B	< 0.087	< 0.024	< 0.011
Di-n-octyl phthalate	117-84-0	10,000	10,000	< 0.011	< 0.015	< 0.012	< 0.25	< 39	< 0.78	< 0.079	< 0.1	< 0.012	< 0.0091	< 0.087	< 0.04	< 0.018
Fluoranthene	206-44-0	3,200	190,000	< 0.012	1.2	0.1	160	***8,300***	120	0.576	2.82	0.6	0.84	1.8	22	0.2
Fluorene	86-73-7	3,800	190,000	< 0.013	0.21	< 0.014	22	***5,500***	110	0.327	2.91	2.3	0.23	0.224	7	0.99
Indeno(1,2,3-cd)pyrene	193-39-5	18,000	190,000	< 0.012	0.39	< 0.013	20	1,000	7.9	0.259	0.482	0.11	0.33	0.642	4.2	< 0.012
Naphthalene	91-20-3	25	77	0.079	1	0.14	< 0.37	***31,000***	***91***	0.159	2.02	0.51	1	0.0821	6.6	16
Pentachlorophenol	87-86-5	5	190,000	NA	NA	NA	NA	NA	NA	< 0.16	< 0.2	NA	NA	< 0.17	NA	NA
Phenanthrene	85-01-8	10,000	190,000	< 0.013	0.86	< 0.014	3.2	***14,000***	300	0.845	9.2 D	2.8	0.76	0.761	22	0.14
Phenol	108-95-2	200	18,000	0.068	0.92	< 0.03	< 3.4	< 540	< 1.9	0.145	0.293	< 0.031	0.061 J	< 0.087	< 0.55	0.41
Pyrene	129-00-0	2,200	190,000	< 0.011	1.6	0.11	110	***6,500***	120	0.719	2.58	0.81	0.84	1.49	15	0.17
Total PAHs and 2-Methylnaphthalene	-	- -	- -	0.079	10.5	0.593	605	96,000	1,140	5.97	31.7	12.1	8.02	10.9	129	28.8
Metals																
Aluminum	7429-90-5	- -	190,000	NA	NA	NA	NA	NA	NA	5,030 J	10,000 J	NA	NA	12,000	NA	NA
Antimony	7440-36-0	27	190,000	< 2.3	< 3.2	< 2.6	< 2.9	< 2.6	< 3.3	< 2.4 J	< 3.2 J	< 2.6	< 2.7	< 2.7 J	7.6	< 5.3
Arsenic	7440-38-2	29	190,000	3.7	***33***	< 2.6	< 2.9	< 2.6	***38***	5.6	24.6	7.5	4.6	12.2	14	22
Barium	7440-39-3	8,200	190,000	150	170	190	< 15	15	190	37.7	118	41	50	93.4	140	50
Beryllium	7440-41-7	320	190,000	1.3	< 0.97	1.4	< 0.88	< 0.79	< 0.98	0.39	0.72	< 0.79	< 0.81	2.2	< 0.71	< 1.6
Cadmium	7440-43-9	38	190,000	< 0.68	1.1	< 0.77	< 0.88	< 0.79	1.4	0.18 J	1.2	< 0.79	2.2	0.60 J	1.7	< 1.6
Calcium	7440-70-2	- -	- -	NA	NA	NA	NA	NA	NA	1,030 J	3,320 J	NA	NA	3,300	NA	NA
Chromium	7440-47-3	190,000	190,000	38	130	41	8.4	< 6.6	150	15.2 J	71.6 J	20	30	64.6	31	18
Cobalt	7440-48-4	130	190,000	NA	NA	NA	NA	NA	NA	5.4 J	11.2	NA	NA	11.0	NA	NA
Copper	7440-50-8	43,000	190,000	65	120	24	58	29	120	14.4	62.3	14	130	73.6	120	36
Cyanide	57-12-5	200	190,000	18	4.5	1.8	0.82	2	6.6	< 0.27 J	0.52 J	< 0.33	6.3	1.1 J	NA	NA
Iron	7439-89-6	- -	190,000	NA	NA	NA	NA	NA	NA	12,000	21,300	NA	NA	13,800	NA	NA
Lead	7439-92-1	450	190,000	16	230	7.1	11	< 6.6	240	32.4	139	29	52	107 J	410	< 13
Magnesium	7439-95-4	- -	- -	NA	NA	NA	NA	NA	NA	1,640	3,000	NA	NA	3,320 J	NA	NA
Manganese	7439-96-5	2,000	190,000	NA	NA	NA	NA	NA	NA	258 J	563 J	NA	NA	140 J	NA	NA
Mercury	7439-97-6	10	190,000	< 0.095	1.7	< 0.11	< 0.12	< 0.11	1.7	0.12 J	1.2 J	0.14	0.17	0.49 J	0.46	< 0.22
Nickel	7440-02-0	650	190,000	37	28	33	8.4	< 6.6	26	10.2	20.0	8.1	21	26.1	23	17
Potassium	7440-09-7	- -	- -	NA	NA	NA	NA	NA	NA	724 J	1,330 J	NA	NA	1,570	NA	NA
Selenium	7782-49-2	26	190,000	2.3	4.3	3.1	< 2.6	< 2.4	4.2	< 2.4	1.2 J	< 2.4	2.9	< 2.7	2.9	5.7
Silver	7440-22-4	84	190,000	< 2.8	< 4	< 3.2	< 3.7	< 3.3	< 4.1	< 0.60	0.47 J	< 3.3	< 3.4	< 0.68	< 3	< 6.6
Sodium	7440-23-5	- -	- -	NA	NA	NA	NA	NA	NA	< 1,200	442 J	NA	NA	139 J	NA	NA
Thallium	7440-28-0	14	190,000	< 1.4	< 1.9	< 1.5	< 1.8	< 1.6	< 2	< 1.2	< 1.6	< 1.6	< 1.6	< 1.4	< 1.4	< 3.2
Vanadium	7440-62-2	680	190,000	NA	NA	NA	NA	NA	NA	7.8	19.3	NA	NA	22.1	NA	NA
Zinc	7440-66-6	12,000	190,000	120	560	110	51	39	620	82.5 J	365 J	120	480	278	240	39

Table 11
Saturated Soil Analytical Results – Detected VOCs, SVOCs, and Inorganics (mg/kg)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID: / Sample Depth (ft): / Date Collected:	CAS Number	Soil Standards or PQLs: S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	Soil Standards or PQLs: DC Non-Res Subsurf Soil (Exceedances Shaded)	PCTP-54 8 2/28/05	PCTP-55 7 2/28/05	PCTP-56 8 2/28/05	PCTP-57 12 2/25/05	PCTP-59 5 2/25/05	PCTP-59 7 2/25/05	PCTP-60 2 2/25/05	PCTP-62 10.5 9/8/05	PCTP-63 10.5 9/8/05	PCTP-66 7.5 9/8/05	PCTP-66R 8-10 4/24/19	PCTP-67 8 9/12/05
Volatile Organic Compounds															
2-Butanone (MEK)	78-93-3	400	10,000	< 0.0019	< 0.0011	< 0.0012	< 0.0011	< 0.00094	< 0.00096	< 0.00096	< 0.0013	< 0.001	< 0.0011	0.0368 J	< 0.0011
Acetone	67-64-1	8,800	10,000	< 0.0087	< 0.0052	< 0.0054	0.03	< 0.0043	< 0.0044	< 0.0044	0.12	< 0.0048	0.056	0.238 J	0.028
Benzene	71-43-2	0.5	330	< 0.00062	< 0.00037	< 0.00038	< 0.00036	< 0.00031	< 0.00031	< 0.00031	< 0.00085	< 0.00034	< 0.00075	0.0093 J	0.024
Carbon Disulfide	75-15-0	620	10,000	< 0.0013	< 0.00078	< 0.0008	< 0.00075	< 0.00064	< 0.00066	< 0.00066	< 0.0011	< 0.00071	< 0.00096	0.0021 J	< 0.00096
Chlorobenzene	108-90-7	10	4,500	< 0.0005	< 0.0003	< 0.00031	< 0.00029	< 0.00025	< 0.00025	< 0.00025	< 0.00084	< 0.00027	< 0.00074	< 0.0043	< 0.00074
Chloroform	67-66-3	8	110	< 0.00065	0.0028	< 0.0004	< 0.00037	< 0.00032	< 0.00033	< 0.00033	< 0.00076	< 0.00035	< 0.00067	< 0.0043	< 0.00067
cis-1,2-Dichloroethene	156-59-2	7	10,000	< 0.00091	< 0.00054	< 0.00056	< 0.00052	< 0.00045	< 0.00046	< 0.00046	< 0.00079	< 0.0005	< 0.0007	< 0.0021	< 0.0007
Cyclohexane	110-82-7	6,900	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0122 J	NA
Dichloromethane	75-09-2	0.5	10,000	0.032 B	0.065 B	0.026 B	0.014 B	0.011 B	0.011 B	0.0072 B	0.011 B	0.015 B	0.013 B	< 0.011	0.023 B
Ethylbenzene	100-41-4	70	1,000	< 0.0017	< 0.001	< 0.0011	< 0.00099	< 0.00084	< 0.00086	< 0.00086	< 0.0012	< 0.00094	< 0.0011	0.272 J	< 0.0011
Isopropylbenzene	98-82-8	2,500	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	6.37 D	NA
m&p-Xylenes	ARC-mpXyl	- -	- -	< 0.002	< 0.0012	< 0.0013	< 0.0012	< 0.001	< 0.001	< 0.001	< 0.0018	< 0.0011	< 0.0016	0.0490 J	< 0.0016
Methyl Acetate	79-20-9	9,700	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.011	NA
Methylcyclohexane	108-87-2	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0773 J	NA
Methyl-tert-butylether	1634-04-4	2	9,800	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.0021	NA
o,p-Xylene	136777-61-2	- -	- -	< 0.00044	< 0.00026	< 0.00027	< 0.00026	< 0.00022	< 0.00022	< 0.00022	< 0.00078	< 0.00024	< 0.00069	NA	< 0.00069
o-Xylene	95-47-6	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.16 J	NA
Styrene (Monomer)	100-42-5	24	10,000	< 0.00039	< 0.00023	< 0.00024	< 0.00022	< 0.00019	< 0.0002	< 0.0002	< 0.001	< 0.00021	< 0.00091	< 0.0043	< 0.00091
Toluene	108-88-3	100	10,000	< 0.00046	< 0.00028	0.0023	< 0.00027	< 0.00023	< 0.00023	< 0.00023	< 0.0013	< 0.00025	< 0.0011	0.0250 J	< 0.0011
trans-1,2-Dichloroethene	156-60-5	10	10,000	< 0.0013	< 0.00079	< 0.00081	< 0.00076	< 0.00065	< 0.00067	< 0.00067	< 0.00053	< 0.00072	< 0.00047	< 0.0021	< 0.00047
trans-1,3-Dichloropropene	10061-02-6	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.0043	NA
Total Xylenes	1330-20-7	1,000	9,100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.209 J	NA
Semi-Volatile Organic Compounds															
1,1-Biphenyl	92-52-4	1.5	40	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	***61.1 D***	NA
2,4-Dimethylphenol	105-67-9	190	10,000	< 0.22	< 0.035	< 0.15	< 0.23	< 0.029	< 0.2	< 0.03	< 0.077	< 0.064	< 0.068	< 0.55	< 0.041
2-Methylnaphthalene	91-57-6	100	270	2.8	7.2	3.3	0.2	0.59	2.1	0.29	0.53	0.28	0.38	***420 D***	0.19
2-Methylphenol	95-48-7	490	190,000	< 0.92	< 0.15	< 0.61	< 0.14	< 0.12	< 0.12	< 0.12	< 0.26	< 0.22	< 0.23	< 0.22	< 0.18
3-Methylphenol, 4-Methylphenol	65794-96-9	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.907	NA
4-Methylphenol	106-44-5	49	190,000	0.73 J	< 0.18	< 0.77	0.11 J	< 0.15	< 0.13	< 0.15	0.23 J	< 0.25	0.079 J	NA	0.25
Acenaphthene	83-32-9	4,700	190,000	7.7	1.4	1.2	0.25	0.3	0.094	0.069	0.27	1.8	0.13	314 D	0.12
Acenaphthylene	208-96-8	6,600	190,000	0.78	< 0.014	0.36	< 0.014	< 0.012	0.13	< 0.012	0.32	0.1	0.18	6.52	0.15
Acetophenone	98-86-2	970	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.55	NA
Anthracene	120-12-7	350	190,000	4.8	0.56	1.1	0.45	0.28	0.16	0.12	0.44	1	0.27	203 D	0.23
Benz(a)anthracene	56-55-3	340	190,000	6.7	0.12	1.3	1	1.1	0.44	0.46	0.74	1.1	0.75	54.1 D	0.81
Benzaldehyde	100-52-7	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.55	NA
Benzo(a)pyrene	50-32-8	46	190,000	4.6	0.074	1.2	0.75	0.98	0.5	0.22	1.1	1	0.75	35.5 D	0.89
Benzo(b)fluoranthene	205-99-2	170	190,000	5.3	0.097	1.5	1.1	1.4	0.82	0.82	1.3	1.1	0.78	39.3 D	1.1
Benzo(g,h,i)perylene	191-24-2	180	190,000	2.5	0.061	1.4	0.38	0.67	0.37	0.2	1.2	0.61	0.45	14.1 D	0.5
Benzo(k)fluoranthene	207-08-9	610	190,000	1.7	< 0.018	0.67	0.46	0.37	0.26	0.26	0.45	0.29	0.25	15 D	0.32
bis(2-Ethylhexyl)phthalate	117-81-7	130	10,000	< 0.19	0.099	0.36	< 0.084	0.098	0.28	0.49	0.88	0.062	0.084	< 0.22	< 0.031
Butyl benzyl phthalate	85-68-7	10,000	10,000	< 0.096	< 0.015	< 0.064	< 0.011	< 0.012	< 0.0094	0.25	< 0.022	< 0.019	< 0.02	< 0.22	< 0.013

Location ID: / Sample Depth (ft): / Date Collected:	CAS Number	Soil Standards or PQLs: S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	Soil Standards or PQLs: DC Non-Res Subsurf Soil (Exceedances Shaded)	PCTP-54 8 2/28/05	PCTP-55 7 2/28/05	PCTP-56 8 2/28/05	PCTP-57 12 2/25/05	PCTP-59 5 2/25/05	PCTP-59 7 2/25/05	PCTP-60 2 2/25/05	PCTP-62 10.5 9/8/05	PCTP-63 10.5 9/8/05	PCTP-66 7.5 9/8/05	PCTP-66R 8-10 4/24/19	PCTP-67 8 9/12/05
Semi-Volatile Organic Compounds (cont'd)															
Carbazole	86-74-8	89	190,000	< 0.073	< 0.012	< 0.049	0.18	0.085	< 0.01	< 0.0098	0.16	0.14	0.089	31.6 D	0.051
Chrysene	218-01-9	230	190,000	8.2	0.12	2	1	0.97	0.63	0.81	0.9	1	0.71	58 D	0.91
Dibenz(a,h)anthracene	53-70-3	270	190,000	0.99	< 0.019	0.73	0.17	0.24	0.12	0.099	0.37	0.22	0.13	3.59	0.15
Dibenzofuran	132-64-9	250	190,000	1.4	0.73	< 0.52	0.16	0.2	0.4	0.24	0.17	1.3	0.14	180 D	0.08
Diethyl phthalate	84-66-2	7,800	10,000	< 0.1	< 0.016	< 0.067	0.06	< 0.013	< 0.0068	< 0.013	< 0.015	< 0.013	< 0.013	< 0.22	< 0.012
Di-n-butyl phthalate	84-74-2	4,000	10,000	< 0.091	< 0.014	< 0.061	0.14	< 0.012	< 0.0053	< 0.012	0.18	0.06	< 0.011	< 0.22	< 0.0099
Di-n-octyl phthalate	117-84-0	10,000	10,000	< 0.091	< 0.014	< 0.061	< 0.0099	< 0.012	< 0.0086	< 0.012	0.22	< 0.011	< 0.012	< 0.22	< 0.017
Fluoranthene	206-44-0	3,200	190,000	12	0.37	1.9	1.9	1.4	0.65	0.75	1	3.9	0.61	250 D	0.85
Fluorene	86-73-7	3,800	190,000	6.2	2.3	2.5	0.28	0.32	< 0.0079	< 0.014	0.32	2.6	0.27	281 D	0.16
Indeno(1,2,3-cd)pyrene	193-39-5	18,000	190,000	2.1	< 0.015	0.75	0.46	0.59	0.43	0.2	0.86	0.52	0.36	14.4 D	0.42
Naphthalene	91-20-3	25	77	3.8	0.43	1.6	0.26	0.4	5.4	0.42	1.2	1.2	1.1	***95.3 D***	0.91
Pentachlorophenol	87-86-5	5	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.44	NA
Phenanthrene	85-01-8	10,000	190,000	20	3.1	3.8	1.4	1.2	0.94	0.75	0.98	1	0.79	720 D	0.58
Phenol	108-95-2	200	18,000	< 0.22	< 0.035	< 0.15	< 0.14	< 0.029	< 0.12	< 0.03	< 0.085	< 0.071	< 0.075	0.15 J	< 0.081
Pyrene	129-00-0	2,200	190,000	20	0.72	3.1	1.6	1.6	0.68	0.59	1.6	4.6	1.7	205 D	1.4
Total PAHs and 2-Methylnaphthalene	-	- -	- -	110	16.6	28.4	11.7	12.4	13.7	6.06	13.6	22.3	9.61	2,730	9.69
Metals															
Aluminum	7429-90-5	- -	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	17,500 J	NA
Antimony	7440-36-0	27	190,000	< 3.8	< 3	< 2.6	3.5	< 2.5	< 2.6	< 2.6	< 3.3	< 2.8	< 2.9	0.75 J	< 2.9
Arsenic	7440-38-2	29	190,000	***32***	4.5	10	18	14	22	2.9	25	9.8	19	***59.0***	13
Barium	7440-39-3	8,200	190,000	270	49	150	130	740	160	< 13	190	48	130	246 J	76
Beryllium	7440-41-7	320	190,000	1.8	< 0.91	< 0.77	< 0.88	< 0.75	< 0.77	< 0.77	1.5	< 0.83	< 0.88	1.4	< 0.88
Cadmium	7440-43-9	38	190,000	1.4	< 0.91	< 0.77	0.95	2.3	< 0.77	< 0.77	2.2	< 0.83	< 0.88	2.7	< 0.88
Calcium	7440-70-2	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	31,700 J	NA
Chromium	7440-47-3	190,000	190,000	110	20	17	66	12	8.4	< 6.4	150	32	130	172	45
Cobalt	7440-48-4	130	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	21.5	NA
Copper	7440-50-8	43,000	190,000	100	25	58	460	160	33	7.9	240	50	80	157	48
Cyanide	57-12-5	200	190,000	1.5	< 0.38	NA	< 0.37	< 0.31	< 0.32	< 0.32	NA	NA	NA	1.9 J	NA
Iron	7439-89-6	- -	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	30,100	NA
Lead	7439-92-1	450	190,000	190	62	160	***500***	***7,300***	***960***	9.9	250	53	160	323	100
Magnesium	7439-95-4	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4,230 J	NA
Manganese	7439-96-5	2,000	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	747	NA
Mercury	7439-97-6	10	190,000	0.8	0.14	0.13	0.78	3.5	0.28	< 0.11	0.53	0.24	0.96	1.3 J	0.47
Nickel	7440-02-0	650	190,000	39	12	13	21	58	18	< 6.4	31	15	23	38.7	21
Potassium	7440-09-7	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,900	NA
Selenium	7782-49-2	26	190,000	4.1	< 2.7	2.7	2.8	< 2.2	< 2.3	< 2.3	4.7	< 2.5	4.5	2.3 J	3.2
Silver	7440-22-4	84	190,000	< 4.8	< 3.8	< 3.2	< 3.7	< 3.1	< 3.2	< 3.2	< 4.2	< 3.5	< 3.7	0.98	< 3.7
Sodium	7440-23-5	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	556 J	NA
Thallium	7440-28-0	14	190,000	< 2.3	< 1.8	< 1.5	< 1.8	< 1.5	< 1.5	< 1.5	< 2	< 1.7	< 1.8	< 1.8	< 1.8
Vanadium	7440-62-2	680	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	35.9	NA
Zinc	7440-66-6	12,000	190,000	550	120	460	660	1,300	450	< 13	710	160	380	810 J	280

Table 11
Saturated Soil Analytical Results – Detected VOCs, SVOCs, and Inorganics (mg/kg)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID: / Sample Depth (ft): / Date Collected:	CAS Number	Soil Standards or PQLs: S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	Soil Standards or PQLs: DC Non-Res Subsurf Soil (Exceedances Shaded)	PCTP-68 6 9/9/05	PCTP-69 17.5 9/9/05	PCTP-70 18 9/9/05	PCTP-71 17.5 9/9/05	PCTP-72 12 9/9/05	PCTP-73 9.5 9/9/05	PCTP-74 12.5 9/9/05	PCTP-75R 14-16 4/11/19	PCTP-77 10.5 9/12/05	PCTP-78 9.5 9/12/05	PCTP-79 10 9/12/05	PSSTP-03B 8-9 3/11/03
Volatile Organic Compounds															
2-Butanone (MEK)	78-93-3	400	10,000	< 0.0012	< 0.00091	< 0.00084	< 0.00084	< 0.00096	< 0.00095	< 0.0011	< 0.018	< 0.0011	< 0.0011	< 0.00099	NA
Acetone	67-64-1	8,800	10,000	0.05	< 0.0062	< 0.0057	< 0.0057	< 0.0044	< 0.0043	< 0.0078	0.0313	< 0.0052	< 0.0073	0.051	< 0.024
Benzene	71-43-2	0.5	330	< 0.00078	< 0.00059	< 0.00055	< 0.00055	< 0.00031	< 0.00031	< 0.00075	< 0.00088	< 0.00037	< 0.0007	0.018	0.0012 B
Carbon Disulfide	75-15-0	620	10,000	< 0.001	< 0.00076	< 0.0007	< 0.0007	< 0.00066	< 0.00065	< 0.00096	< 0.0035	< 0.00078	< 0.00089	< 0.00067	< 0.006
Chlorobenzene	108-90-7	10	4,500	< 0.00077	< 0.00058	< 0.00054	< 0.00054	< 0.00025	< 0.00025	< 0.00074	< 0.0035	< 0.0003	< 0.00069	< 0.00026	< 0.006
Chloroform	67-66-3	8	110	< 0.0007	< 0.00053	< 0.00049	< 0.00049	< 0.00033	< 0.00032	< 0.00067	< 0.0035	< 0.00039	< 0.00062	< 0.00034	NA
cis-1,2-Dichloroethene	156-59-2	7	10,000	< 0.00073	< 0.00055	< 0.00051	< 0.00051	< 0.00046	< 0.00045	< 0.0007	< 0.0018	< 0.00054	< 0.00065	< 0.00047	NA
Cyclohexane	110-82-7	6,900	10,000	NA	NA	NA	NA	NA	NA	NA	< 0.0035	NA	NA	NA	NA
Dichloromethane	75-09-2	0.5	10,000	0.013 B	0.0088 B	0.0074 B	0.012 B	0.011 B	0.012 B	0.0058 B	< 0.0088	0.011 B	0.021 B	0.011 B	0.0079 B
Ethylbenzene	100-41-4	70	1,000	< 0.0011	< 0.00087	< 0.0008	< 0.0008	< 0.00086	< 0.00085	< 0.0011	< 0.0018	< 0.001	< 0.001	< 0.00089	< 0.00125
Isopropylbenzene	98-82-8	2,500	10,000	NA	NA	NA	NA	NA	NA	NA	< 0.0035	NA	NA	NA	NA
m&p-Xylenes	ARC-mpXyl	- -	- -	< 0.0017	< 0.0013	< 0.0012	< 0.0012	< 0.001	< 0.001	< 0.0016	< 0.0018	< 0.0012	< 0.0015	< 0.0011	NA
Methyl Acetate	79-20-9	9,700	10,000	NA	NA	NA	NA	NA	NA	NA	< 0.0088	NA	NA	NA	NA
Methylcyclohexane	108-87-2	- -	- -	NA	NA	NA	NA	NA	NA	NA	< 0.0035	NA	NA	NA	NA
Methyl-tert-butylether	1634-04-4	2	9,800	NA	NA	NA	NA	NA	NA	NA	< 0.0018	NA	NA	NA	NA
o,p-Xylene	136777-61-2	- -	- -	< 0.00072	< 0.00054	< 0.0005	< 0.0005	< 0.00022	< 0.00022	< 0.00069	NA	< 0.00026	< 0.00064	< 0.00023	NA
o-Xylene	95-47-6	- -	- -	NA	NA	NA	NA	NA	NA	NA	< 0.0018	NA	NA	NA	NA
Styrene (Monomer)	100-42-5	24	10,000	< 0.00095	< 0.00072	< 0.00067	< 0.00067	< 0.0002	< 0.00019	< 0.00091	< 0.0035	< 0.00023	< 0.00085	< 0.0002	NA
Toluene	108-88-3	100	10,000	< 0.0012	< 0.00088	< 0.00081	< 0.00081	< 0.00023	< 0.00023	< 0.0011	< 0.0018	< 0.00028	< 0.001	< 0.00024	< 0.0012
trans-1,2-Dichloroethene	156-60-5	10	10,000	< 0.00049	< 0.00037	< 0.00034	< 0.00034	< 0.00067	< 0.00066	< 0.00047	< 0.0018	< 0.00079	< 0.00044	< 0.00068	NA
trans-1,3-Dichloropropene	10061-02-6	- -	- -	NA	NA	NA	NA	NA	NA	NA	< 0.0035	NA	NA	NA	NA
Total Xylenes	1330-20-7	1,000	9,100	NA	NA	NA	NA	NA	NA	NA	< 0.0018	NA	NA	NA	0
Semi-Volatile Organic Compounds															
1,1-Biphenyl	92-52-4	1.5	40	NA	NA	NA	NA	NA	NA	NA	0.0103 J	NA	NA	NA	NA
2,4-Dimethylphenol	105-67-9	190	10,000	< 0.071	< 0.033	< 0.03	< 0.03	< 0.059	< 0.058	< 0.041	< 0.2	< 0.043	< 0.63	< 0.037	< 2
2-Methylnaphthalene	91-57-6	100	270	0.18	< 0.066	< 0.061	< 0.061	0.16	0.085	0.06 J	0.0226 J	0.33	0.77	0.39	0.2 J
2-Methylphenol	95-48-7	490	190,000	< 0.24	< 0.14	< 0.13	< 0.13	< 0.2	< 0.2	< 0.18	< 0.081	< 0.19	< 2.2	< 0.16	NA
3-Methylphenol, 4-Methylphenol	65794-96-9	- -	- -	NA	NA	NA	NA	NA	NA	NA	< 0.081	NA	NA	NA	< 2
4-Methylphenol	106-44-5	49	190,000	0.26 J	< 0.14	< 0.13	< 0.13	< 0.23	< 0.22	< 0.18	NA	< 0.19	< 2.4	< 0.16	NA
Acenaphthene	83-32-9	4,700	190,000	1	< 0.0064	< 0.0059	< 0.0059	0.47	0.1	< 0.0081	< 0.04	0.2	0.86	< 0.0072	1.5 J
Acenaphthylene	208-96-8	6,600	190,000	0.32	< 0.0059	< 0.0054	< 0.0054	0.062	0.061	< 0.0074	< 0.04	0.089	< 0.11	0.14	< 2
Acetophenone	98-86-2	970	10,000	NA	NA	NA	NA	NA	NA	NA	< 0.2	NA	NA	NA	NA
Anthracene	120-12-7	350	190,000	1.2	< 0.0077	< 0.0071	< 0.0071	0.67	0.25	< 0.0097	0.0395 J	0.25	2.8	0.14	4
Benz(a)anthracene	56-55-3	340	190,000	3.7	< 0.0054	< 0.005	0.043	1.4	1.1	0.15	0.0717	0.58	6.4	0.47	5.4
Benzaldehyde	100-52-7	- -	- -	NA	NA	NA	NA	NA	NA	NA	< 0.2	NA	NA	NA	NA
Benzo(a)pyrene	50-32-8	46	190,000	3	< 0.0064	< 0.006	0.037	1.4	0.92	0.15	0.0599	0.55	5.8	0.45	3.1
Benzo(b)fluoranthene	205-99-2	170	190,000	3.7	< 0.011	< 0.01	0.049	1.7	1.4	0.23	0.0774	0.82	7.1	0.94	4.5
Benzo(g,h,i)perylene	191-24-2	180	190,000	2.1	< 0.0056	< 0.0051	< 0.0051	0.95	0.61	0.12	0.0417	0.38	4.4	0.41	1.1 J
Benzo(k)fluoranthene	207-08-9	610	190,000	1.6	< 0.014	< 0.013	< 0.013	0.72	0.38	0.076	0.0254 J	0.23	2.5	0.28	0.93 J
bis(2-Ethylhexyl)phthalate	117-81-7	130	10,000	< 0.046	< 0.025	< 0.023	0.037	0.18	0.18	< 0.031	< 0.081	< 0.032	< 0.41	< 0.028	< 2
Butyl benzyl phthalate	85-68-7	10,000	10,000	< 0.021	< 0.01	< 0.0097	< 0.0097	< 0.017	< 0.017	< 0.013	< 0.081	< 0.014	< 0.18	< 0.012	< 2

Table 11
Saturated Soil Analytical Results – Detected VOCs, SVOCs, and Inorganics (mg/kg)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID: / Sample Depth (ft): / Date Collected:	CAS Number	Soil Standards or PQLs: S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	Soil Standards or PQLs: DC Non-Res Subsurf Soil (Exceedances Shaded)	PCTP-68 6 9/9/05	PCTP-69 17.5 9/9/05	PCTP-70 18 9/9/05	PCTP-71 17.5 9/9/05	PCTP-72 12 9/9/05	PCTP-73 9.5 9/9/05	PCTP-74 12.5 9/9/05	PCTP-75R 14-16 4/11/19	PCTP-77 10.5 9/12/05	PCTP-78 9.5 9/12/05	PCTP-79 10 9/12/05	PSSTP-03B 8-9 3/11/03
Semi-Volatile Organic Compounds (cont'd)															
Carbazole	86-74-8	89	190,000	0.36	< 0.0074	< 0.0069	< 0.0069	0.32	0.088	< 0.0094	0.0166 J	0.13	1.1	0.099	0.47 J
Chrysene	218-01-9	230	190,000	3.5	< 0.011	< 0.01	0.04	1.5	1	0.21	0.104	0.69	6.7	0.62	4.1
Dibenz(a,h)anthracene	53-70-3	270	190,000	0.74	< 0.0071	< 0.0066	< 0.0066	0.32	0.27	0.051	< 0.04	0.14	1.3	0.14	0.62 J
Dibenzofuran	132-64-9	250	190,000	0.45	< 0.05	< 0.046	< 0.046	0.29	0.07	< 0.063	< 0.081	0.17	0.59	0.17	0.98 J
Diethyl phthalate	84-66-2	7,800	10,000	< 0.014	< 0.0091	< 0.0084	< 0.0084	< 0.012	< 0.012	< 0.012	< 0.081	< 0.012	< 0.13	< 0.01	NA
Di-n-butyl phthalate	84-74-2	4,000	10,000	0.071	< 0.0078	< 0.0073	0.044	0.089	< 0.0094	< 0.0099	< 0.081	< 0.01	< 0.1	< 0.0089	< 2
Di-n-octyl phthalate	117-84-0	10,000	10,000	< 0.012	< 0.013	< 0.012	< 0.012	< 0.01	< 0.01	< 0.017	< 0.081	< 0.017	< 0.11	< 0.015	< 2
Fluoranthene	206-44-0	3,200	190,000	6.1	< 0.0064	< 0.0059	0.095	2.4	1.5	0.24	0.108	1.3	11	0.76	10
Fluorene	86-73-7	3,800	190,000	0.99	< 0.0093	< 0.0086	< 0.0086	0.45	0.092	< 0.012	< 0.04	0.15	1.2	0.082	1.5 J
Indeno(1,2,3-cd)pyrene	193-39-5	18,000	190,000	1.8	< 0.0066	< 0.0061	< 0.0061	0.82	0.57	0.1	0.0528	0.32	3.6	0.36	1.2 J
Naphthalene	91-20-3	25	77	1.2	< 0.0038	< 0.0035	< 0.0035	0.18	0.12	0.13	0.0297 J	0.45	< 0.11	1.5	0.41 J
Pentachlorophenol	87-86-5	5	190,000	NA	NA	NA	NA	NA	NA	NA	< 0.16	NA	NA	NA	< 2
Phenanthrene	85-01-8	10,000	190,000	4.2	< 0.0086	< 0.008	0.036	2.5	1	0.15	0.167	1.1	12	0.6	11
Phenol	108-95-2	200	18,000	< 0.078	< 0.064	< 0.059	< 0.059	< 0.065	< 0.064	< 0.081	< 0.081	< 0.083	< 0.7	< 0.072	< 1.5
Pyrene	129-00-0	2,200	190,000	6.8	< 0.0089	< 0.0082	0.064	3.3	2.1	0.23	0.118	1.3	11	0.75	12
Total PAHs and 2-Methylnaphthalene	-	- -	- -	42.1	< 0.066	< 0.061	0.364	19.0	11.6	1.90	0.918	8.88	77.4	8.03	61.6
Metals															
Aluminum	7429-90-5	- -	190,000	NA	NA	NA	NA	NA	NA	NA	4,450	NA	NA	NA	NA
Antimony	7440-36-0	27	190,000	6.1	< 2.3	< 2.2	< 2.2	3.7	10	< 2.9	< 2.4	< 3	6.5	6.6	< 2.4
Arsenic	7440-38-2	29	190,000	***37***	6.3	5	2.8	***66***	20	14	11.5	***81***	27	***99***	4.4
Barium	7440-39-3	8,200	190,000	700	20	25	21	94	83	84	119	71	440	140	120
Beryllium	7440-41-7	320	190,000	< 0.92	< 0.7	0.99	< 0.65	0.84	0.86	1.4	0.46	< 0.91	< 0.82	1.3	0.87
Cadmium	7440-43-9	38	190,000	4.1	< 0.7	< 0.65	< 0.65	< 0.77	< 0.76	< 0.88	0.085 J	< 0.91	1.7	< 0.79	< 0.71
Calcium	7440-70-2	- -	- -	NA	NA	NA	NA	NA	NA	NA	2,560	NA	NA	NA	NA
Chromium	7440-47-3	190,000	190,000	260	12	17	12	24	15	11	10.0	16	24	31	17
Cobalt	7440-48-4	130	190,000	NA	NA	NA	NA	NA	NA	NA	9.9	NA	NA	NA	NA
Copper	7440-50-8	43,000	190,000	220	10	15	11	67	95	110	27.7	77	250	89	16
Cyanide	57-12-5	200	190,000	NA	NA	NA	NA	NA	NA	NA	0.32	NA	NA	NA	< 0.3
Iron	7439-89-6	- -	190,000	NA	NA	NA	NA	NA	NA	NA	32,400	NA	NA	NA	NA
Lead	7439-92-1	450	190,000	***2,500***	6.8	< 5.4	22	***1,400***	450	170	28.2	88	***2,700***	150	46
Magnesium	7439-95-4	- -	- -	NA	NA	NA	NA	NA	NA	NA	363 J	NA	NA	NA	NA
Manganese	7439-96-5	2,000	190,000	NA	NA	NA	NA	NA	NA	NA	151	NA	NA	NA	NA
Mercury	7439-97-6	10	190,000	***31***	< 0.097	< 0.09	< 0.09	0.61	0.21	0.53	0.020 J	0.33	1.5	0.39	0.17
Nickel	7440-02-0	650	190,000	69	8.5	12	9.2	21	15	26	23.2	16	41	20	18
Potassium	7440-09-7	- -	- -	NA	NA	NA	NA	NA	NA	NA	466 J	NA	NA	NA	NA
Selenium	7782-49-2	26	190,000	19	< 2.1	< 1.9	< 1.9	3.1	3	10	< 4.9	4.5	6	3.6	< 2.1
Silver	7440-22-4	84	190,000	< 3.8	< 2.9	< 2.7	< 2.7	< 3.2	< 3.2	< 3.7	0.44 J	< 3.8	< 3.4	< 3.3	< 3
Sodium	7440-23-5	- -	- -	NA	NA	NA	NA	NA	NA	NA	193 J	NA	NA	NA	NA
Thallium	7440-28-0	14	190,000	< 1.8	< 1.4	< 1.3	< 1.3	< 1.5	< 1.5	< 1.8	< 2.4	< 1.8	< 1.6	< 1.6	< 1.4
Vanadium	7440-62-2	680	190,000	NA	NA	NA	NA	NA	NA	NA	14.8	NA	NA	NA	NA
Zinc	7440-66-6	12,000	190,000	3,400	22	32	21	390	180	110	51.3	93	960	180	60

Table 11
Saturated Soil Analytical Results – Detected VOCs, SVOCs, and Inorganics (mg/kg)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID:	CAS Number	Soil Standards or PQLs		PSSTP-04B	PSSTP-04R		PSSTP-05B	PSSTP-06B	PSSTP-07B	PSSTP-07R		PSSTP-10B	PSSTP-10R	PSSTP-11B
Sample Depth (ft):		S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	DC Non-Res Subsurf Soil (Exceedances Shaded)	8-9	8-9	16-17	5-6	5-6	8-9	8-9	20-22	8-9	8-9	8-9
Date Collected:				3/11/03	4/11/19	4/11/19	3/11/03	3/11/03	3/11/03	4/18/19	4/18/19	3/12/03	4/16/19	3/12/03
Volatile Organic Compounds														
2-Butanone (MEK)	78-93-3	400	10,000	NA	< 160	0.0059 J	NA	NA	NA	< 0.0097	0.0398	NA	< 0.0091	NA
Acetone	67-64-1	8,800	10,000	< 6	< 160	0.0510	< 0.024	< 0.026	< 0.026	< 0.0097	0.139	< 0.033	0.0226	< 0.025
Benzene	71-43-2	0.5	330	< 0.3 JB	< 8.1	< 0.00067	< 0.12	< 0.0013	< 0.013	0.0061	0.0033	< 0.0017	< 0.00046	< 0.0012
Carbon Disulfide	75-15-0	620	10,000	< 1.5	< 32	0.0025 J	< 0.006	< 0.0064	< 0.0064	< 0.0019	0.0929	< 0.0083	< 0.0018	< 0.0062
Chlorobenzene	108-90-7	10	4,500	< 1.5	< 32	< 0.0027	< 5	< 0.0064	< 0.0064	< 0.0019	< 0.0025	< 0.0083	< 0.0018	< 0.0062
Chloroform	67-66-3	8	110	NA	< 32	< 0.0027	NA	NA	NA	< 0.0019	< 0.0025	NA	< 0.0018	NA
cis-1,2-Dichloroethene	156-59-2	7	10,000	NA	< 16	< 0.0013	NA	NA	NA	< 0.00097	< 0.0013	NA	< 0.00091	NA
Cyclohexane	110-82-7	6,900	10,000	NA	< 32	< 0.0027	NA	NA	NA	< 0.0019	< 0.0025	NA	< 0.0018	NA
Dichloromethane	75-09-2	0.5	10,000	< 0.3 JB	< 81	< 0.0067	0.0093 B	0.0086 B	0.011 B	< 0.0048	< 0.0064	0.0043 JB	< 0.0046	0.0054 JB
Ethylbenzene	100-41-4	70	1,000	< 0.33	< 16	< 0.0013	< 0.0012	< 0.0013	< 0.0013	< 0.00097	< 0.0013	< 0.0017	< 0.00091	< 0.0012
Isopropylbenzene	98-82-8	2,500	10,000	NA	< 32	< 0.0027	NA	NA	NA	< 0.0019	< 0.0025	NA	< 0.0018	NA
m&p-Xylenes	ARC-mpXyl	- -	- -	NA	14.3 J	< 0.0013	NA	NA	NA	< 0.00097	< 0.0013	NA	< 0.00091	NA
Methyl Acetate	79-20-9	9,700	10,000	NA	< 81	< 0.0067	NA	NA	NA	< 0.0048	0.0054 J	NA	< 0.0046	NA
Methylcyclohexane	108-87-2	- -	- -	NA	< 32	< 0.0027	NA	NA	NA	< 0.0019	0.0017 J	NA	< 0.0018	NA
Methyl-tert-butylether	1634-04-4	2	9,800	NA	< 16	< 0.0013	NA	NA	NA	< 0.00097	< 0.0013	NA	< 0.00091	NA
o,p-Xylene	136777-61-2	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
o-Xylene	95-47-6	- -	- -	NA	< 16	< 0.0013	NA	NA	NA	< 0.00097	< 0.0013	NA	< 0.00091	NA
Styrene (Monomer)	100-42-5	24	10,000	NA	< 32	< 0.0027	NA	NA	NA	< 0.0019	< 0.0025	NA	< 0.0018	NA
Toluene	108-88-3	100	10,000	< 0.3	< 16	< 0.0013	< 0.0012	< 0.0013	< 0.0013	< 0.00097	0.0023	< 0.0017	< 0.00091	< 0.0012
trans-1,2-Dichloroethene	156-60-5	10	10,000	NA	< 16	< 0.0013	NA	NA	NA	< 0.00097	< 0.0013	NA	< 0.00091	NA
trans-1,3-Dichloropropene	10061-02-6	- -	- -	NA	< 32	< 0.0027	NA	NA	NA	< 0.0019	< 0.0025	NA	< 0.0018	NA
Total Xylenes	1330-20-7	1,000	9,100	0.45 J	14.3 J	< 0.0013	0	0	0	< 0.00097	< 0.0013	0	< 0.00091	0
Semi-Volatile Organic Compounds														
1,1-Biphenyl	92-52-4	1.5	40	NA	***40.1 D***	0.0140 J	NA	NA	NA	< 0.074	0.0085 J	NA	< 0.077	NA
2,4-Dimethylphenol	105-67-9	190	10,000	< 20	2.95	< 0.2	< 0.4	< 0.43	< 0.43	< 0.19	< 0.23	< 0.56	< 0.19	< 0.41
2-Methylnaphthalene	91-57-6	100	270	31	***194 D***	0.0557	< 0.4	< 0.43	0.062 J	< 0.037	0.0163 J	0.96	< 0.038	< 0.41
2-Methylphenol	95-48-7	490	190,000	NA	3.42	< 0.081	NA	NA	NA	< 0.074	< 0.091	NA	< 0.077	NA
3-Methylphenol, 4-Methylphenol	65794-96-9	- -	- -	< 20	2.11	< 0.081	< 0.4	0.086	< 0.43	< 0.074	< 0.091	0.15 J	< 0.077	< 0.41
4-Methylphenol	106-44-5	49	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	83-32-9	4,700	190,000	8.8 J	23.2 D	0.0679	< 0.4	< 0.43	0.1 J	< 0.037	0.101	5.7	0.0147 J	< 0.41
Acenaphthylene	208-96-8	6,600	190,000	37	95.8 D	0.0359 J	< 0.4	< 0.43	< 0.43	< 0.037	0.0275 J	0.35 J	0.124	< 0.41
Acetophenone	98-86-2	970	10,000	NA	0.677 J	< 0.2	NA	NA	NA	< 0.19	< 0.23	NA	0.0232 J	NA
Anthracene	120-12-7	350	190,000	83	181 D	0.184	0.11 J	< 0.43	0.19 J	< 0.037	0.0787	1.6	0.0351 J	< 0.41
Benz(a)anthracene	56-55-3	340	190,000	87	168 D	0.489	0.26 J	0.071 J	0.38 J	0.0413	0.126	1.5	0.125	< 0.41
Benzaldehyde	100-52-7	- -	- -	NA	< 1.1	< 0.2	NA	NA	NA	< 0.19	< 0.23	NA	< 0.19	NA
Benzo(a)pyrene	50-32-8	46	190,000	***62***	***126 D***	0.4	0.2 J	0.06 J	0.28 J	0.0453	0.145	1.8	0.163	< 0.41
Benzo(b)fluoranthene	205-99-2	170	190,000	84	165 D	0.45	0.22 J	0.068 J	0.32 J	0.0504	0.155	2.6	0.217	< 0.41
Benzo(g,h,i)perylene	191-24-2	180	190,000	31	74.9 DJ	0.25 J	0.1 J	0.046 J	0.24 J	0.0286 J	0.0809	0.56 J	0.135	< 0.41
Benzo(k)fluoranthene	207-08-9	610	190,000	27	60.3 D	0.163	0.11 J	< 0.43	0.14 J	0.0196 J	0.0612	0.8	0.0721	< 0.41
bis(2-Ethylhexyl)phthalate	117-81-7	130	10,000	< 20	< 0.42	< 0.081	< 0.4	< 0.43	< 0.43	< 0.074	< 0.091	< 0.56	< 0.077	< 0.41
Butyl benzyl phthalate	85-68-7	10,000	10,000	< 20	< 0.42	< 0.081	< 0.4	< 0.43	< 0.43	< 0.074	< 0.091	< 0.56	< 0.077	< 0.41

Location ID: / Sample Depth (ft): / Date Collected:	CAS Number	Soil Standards or PQLs: S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	Soil Standards or PQLs: DC Non-Res Subsurf Soil (Exceedances Shaded)	PSSTP-04B 8-9 3/11/03	PSSTP-04R 8-9 4/11/19	PSSTP-04R 16-17 4/11/19	PSSTP-05B 5-6 3/11/03	PSSTP-06B 5-6 3/11/03	PSSTP-07B 8-9 3/11/03	PSSTP-07R 8-9 4/18/19	PSSTP-07R 20-22 4/18/19	PSSTP-10B 8-9 3/12/03	PSSTP-10R 8-9 4/16/19	PSSTP-11B 8-9 3/12/03
Semi-Volatile Organic Compounds (cont'd)														
Carbazole	86-74-8	89	190,000	39	82.5 D	0.0770 J	0.045 J	< 0.43	0.083 J	< 0.074	0.0201 J	0.091 J	0.0093 J	< 0.41
Chrysene	218-01-9	230	190,000	69	137 D	0.462	0.19 J	0.063 J	0.32 J	0.0444	0.133	2	0.145	< 0.41
Dibenz(a,h)anthracene	53-70-3	270	190,000	11 J	19.2 DJ	0.0685 J	< 0.4	< 0.43	0.062 J	< 0.037	< 0.045	0.24 J	0.0332 J	< 0.41
Dibenzofuran	132-64-9	250	190,000	63	196 D	0.0671 J	< 0.4	< 0.43	0.071 J	< 0.074	0.0215 J	2.1	< 0.077	< 0.41
Diethyl phthalate	84-66-2	7,800	10,000	NA	< 0.42	< 0.081	NA	NA	NA	< 0.074	< 0.091	NA	< 0.077	NA
Di-n-butyl phthalate	84-74-2	4,000	10,000	< 20	< 0.42	< 0.081	0.08 JB	0.13 JB	0.051 JB	< 0.074	< 0.091	0.059 J	< 0.077	< 0.41
Di-n-octyl phthalate	117-84-0	10,000	10,000	< 20	< 0.42	< 0.081	< 0.4	< 0.43	< 0.43	< 0.074	< 0.091	< 0.56	< 0.077	< 0.41
Fluoranthene	206-44-0	3,200	190,000	210	587 D	0.695	0.36 J	0.13 J	0.88	0.0384	0.207	2.8	0.16	< 0.41
Fluorene	86-73-7	3,800	190,000	93	329 D	0.112	0.043 J	< 0.43	0.12 J	< 0.037	0.0768	4.6	< 0.038	< 0.41
Indeno(1,2,3-cd)pyrene	193-39-5	18,000	190,000	25	67.3 DJ	0.219 J	0.088 J	< 0.43	0.16 J	0.0286 J	0.0847	0.55 J	0.134	< 0.41
Naphthalene	91-20-3	25	77	***160***	***869 D***	0.0792	< 0.4	0.07 J	0.17 J	< 0.037	0.0481	1.8	0.0368 J	< 0.41
Pentachlorophenol	87-86-5	5	190,000	< 20	< 0.85	< 0.16	< 0.4	< 0.43	< 0.43	< 0.15	< 0.18	< 0.56	< 0.15	< 0.41
Phenanthrene	85-01-8	10,000	190,000	270	824 D	0.655	0.37 J	0.13 J	0.88	0.0163 J	0.283	7	0.0890	< 0.41
Phenol	108-95-2	200	18,000	4.5	< 0.42	< 0.081	< 0.4	< 0.43	< 0.43	< 0.074	< 0.091	< 0.56	< 0.077	< 0.41
Pyrene	129-00-0	2,200	190,000	190	369 D	0.781	0.5 J	0.15 J	1.2	0.0587	0.231	3.5	0.174	0.044 J
Total PAHs and 2-Methylnaphthalene	-	- -	- -	1,480	4,290	5.17	2.55	0.788	5.50	0.372	1.86	38.4	1.66	0.044
Metals														
Aluminum	7429-90-5	- -	190,000	NA	3,230	12,600	NA	NA	NA	8,170	3,780	NA	7,300 J	NA
Antimony	7440-36-0	27	190,000	5.1	1.4 J	3.5	< 2.4	< 2.6	< 2.6	< 2.4 J	< 2.6 J	5.1	< 2.4 J	< 2.5
Arsenic	7440-38-2	29	190,000	12	19.7	***29.7***	4.5	3.9	4	6.6	4.8	***45***	12.1	< 2.5
Barium	7440-39-3	8,200	190,000	63	134	70.8	32	46	61	43.5	40.3	210	51.5	14
Beryllium	7440-41-7	320	190,000	< 0.71	0.45	9.5	< 0.72	< 0.77	< 0.77	0.36	0.21 J	1.2	0.46	< 0.74
Cadmium	7440-43-9	38	190,000	1.1	0.54 J	< 3.2	< 0.72	< 0.77	< 0.77	< 0.60	0.16 J	1.9	0.27 J	1.7
Calcium	7440-70-2	- -	- -	NA	4,040	2,310	NA	NA	NA	661	1,150	NA	478 J	NA
Chromium	7440-47-3	190,000	190,000	40	157	283	13	18	23	11.2	17.4	230	16.4 J	9.1
Cobalt	7440-48-4	130	190,000	NA	5.3 J	65.2	NA	NA	NA	5.5 J	4.8 J	NA	5.4 J	NA
Copper	7440-50-8	43,000	190,000	170	129	219	12	28	21	33.1	13.1	140	61.7	7.2
Cyanide	57-12-5	200	190,000	11	14.7	0.59	1.1	0.68	0.64	< 0.26 J	1.4 J	0.68	0.28 J	< 0.31
Iron	7439-89-6	- -	190,000	NA	28,700	124,000	NA	NA	NA	14,500	8,320	NA	26,300	NA
Lead	7439-92-1	450	190,000	190	127	***457***	33	51	110	92.2 J	44.2 J	300	192	26
Magnesium	7439-95-4	- -	- -	NA	645 J	741	NA	NA	NA	1,680 J	1,210 J	NA	1,460	NA
Manganese	7439-96-5	2,000	190,000	NA	152	1,120	NA	NA	NA	104 J	193 J	NA	192 J	NA
Mercury	7439-97-6	10	190,000	1	1.9	0.052	< 0.1	< 0.11	0.32	0.046 J	0.50 J	1.3	0.17 J	< 0.1
Nickel	7440-02-0	650	190,000	43	33.0	***2,480***	9.9	10	12	12.2	8.2	26	12.6	< 6.2
Potassium	7440-09-7	- -	- -	NA	456 J	390 J	NA	NA	NA	758 J	583 J	NA	729 J	NA
Selenium	7782-49-2	26	190,000	< 2.1	1.9 J	< 13	< 2.2	< 2.3	< 2.3	< 2.4	< 2.6	< 3	< 4.9	< 2.2
Silver	7440-22-4	84	190,000	< 3	< 1.4	< 3.2	< 3	< 3.2	< 3.2	0.34 J	< 0.66	< 4.2	< 1.2	< 3.1
Sodium	7440-23-5	- -	- -	NA	111 J	150 J	NA	NA	NA	< 1,200	105 J	NA	< 1,200	NA
Thallium	7440-28-0	14	190,000	< 1.4	< 2.7	< 6.4	< 1.4	< 1.5	< 1.5	< 1.2	< 1.3	< 2	< 2.4	< 1.5
Vanadium	7440-62-2	680	190,000	NA	22.4	40.4	NA	NA	NA	14.0	6.8	NA	16.9	NA
Zinc	7440-66-6	12,000	190,000	330	108	228	37	73	150	51.9	69.1	720	110 J	60

Location ID: / Sample Depth (ft): / Date Collected:	CAS Number	Soil Standards or PQLs: S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	Soil Standards or PQLs: DC Non-Res Subsurf Soil (Exceedances Shaded)	PSSTP-12B 7-8 3/12/03	PSSTP-13B 7-8 3/12/03	PSSTP-14B 7-8 3/12/03	PSSTP-15B 8-9 3/12/03	PSSTP-16B 5-6 3/12/03	PSSTP-17B 8-9 3/12/03	PSSTP-18B 6-7 3/12/03	PSSTP-19B 7-8 3/12/03	PSSTP-20B 8-9 3/13/03	PSSTP-21B 8-9 3/13/03	PSSTP-22B 6-7 3/13/03
Volatile Organic Compounds														
2-Butanone (MEK)	78-93-3	400	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	67-64-1	8,800	10,000	< 0.028	< 0.028	< 0.029	< 0.023	< 0.027	< 0.024	< 0.025	< 0.026	< 0.023	0.086	< 0.033
Benzene	71-43-2	0.5	330	< 0.0014	0.0028	< 0.0014	0.038	0.0042	0.0044	< 0.0013	0.0024	< 0.0012	< 0.0018	0.004
Carbon Disulfide	75-15-0	620	10,000	< 0.007	0.032	< 0.0071	< 0.57	< 0.0068	< 0.006	< 0.0063	< 0.0065	< 0.0058	< 0.0091	0.0028 J
Chlorobenzene	108-90-7	10	4,500	< 0.007	< 5	< 0.0071	< 0.0057	< 0.0068	< 5	< 0.0063	< 0.0065	< 0.0058	< 5	< 0.0082
Chloroform	67-66-3	8	110	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	156-59-2	7	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyclohexane	110-82-7	6,900	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichloromethane	75-09-2	0.5	10,000	0.0053 JB	0.0043 JB	0.0024 JB	0.0014 JB	0.0031 JB	0.0023 JB	0.0023 JB	0.0018 JB	0.0009 B	0.014 B	0.013 B
Ethylbenzene	100-41-4	70	1,000	< 0.0014	0.0019	< 0.0014	< 0.0011	0.013	0.0031	< 0.0013	< 0.0013	< 0.0012	< 0.0018	< 0.0016
Isopropylbenzene	98-82-8	2,500	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
m&p-Xylenes	ARC-mpXyl	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl Acetate	79-20-9	9,700	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylcyclohexane	108-87-2	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl-tert-butylether	1634-04-4	2	9,800	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
o,p-Xylene	136777-61-2	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
o-Xylene	95-47-6	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene (Monomer)	100-42-5	24	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	108-88-3	100	10,000	< 0.0014	< 0.0014	< 0.0014	< 0.0011	0.0015	0.0015	< 0.0013	< 0.0013	< 0.0012	< 0.0018	0.0023
trans-1,2-Dichloroethene	156-60-5	10	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,3-Dichloropropene	10061-02-6	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Xylenes	1330-20-7	1,000	9,100	0	0	0	0.0081	0.0042 J	0.0089	0	0	0	0	0.0057 J
Semi-Volatile Organic Compounds														
1,1-Biphenyl	92-52-4	1.5	40	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	105-67-9	190	10,000	< 0.47	< 0.47	< 0.48	< 1.1	0.062 J	< 0.4	< 0.42	< 1.3	< 0.39	< 0.61	< 11
2-Methylnaphthalene	91-57-6	100	270	< 0.47	0.12 J	0.2 J	0.36 J	0.15 J	0.77	0.17 J	0.33 J	< 0.39	0.88	3.1 J
2-Methylphenol	95-48-7	490	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Methylphenol, 4-Methylphenol	65794-96-9	- -	- -	< 0.47	0.12 J	0.1 J	< 1.1	0.35 J	< 0.4	< 0.42	< 1.3	< 0.39	< 0.61	< 11
4-Methylphenol	106-44-5	49	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	83-32-9	4,700	190,000	0.11 J	0.6	0.22 J	1.5	0.77	0.7	0.37 J	1.2 J	< 0.39	0.15 J	1.4 J
Acenaphthylene	208-96-8	6,600	190,000	< 0.47	0.085 J	0.16 J	0.88 J	0.83	0.38 J	0.24 J	0.43 J	< 0.39	0.24 J	3.7 J
Acetophenone	98-86-2	970	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	120-12-7	350	190,000	0.11 J	0.46 J	0.15 J	3.1	0.23 J	1.2	1.2	1.8	< 0.39	0.38 J	14
Benz(a)anthracene	56-55-3	340	190,000	0.14 J	0.58	0.62	4.3	0.15 J	2.1	1.9	5.5	< 0.39	0.68	39
Benzaldehyde	100-52-7	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	50-32-8	46	190,000	0.11 J	0.45 J	0.86	3.1	0.13 J	1.5	1.4	4.2	< 0.39	0.73	25
Benzo(b)fluoranthene	205-99-2	170	190,000	0.14 J	0.56	1.1	4.8	0.17 J	2.6	2.2	7.4	< 0.39	1.1	41
Benzo(g,h,i)perylene	191-24-2	180	190,000	< 0.47	0.13 J	0.31 J	1.1 J	0.049 J	0.42	0.37 J	1.7	< 0.39	0.31 J	11
Benzo(k)fluoranthene	207-08-9	610	190,000	0.058 J	0.25 J	0.35 J	1.7	0.071 J	1	0.68	2.3	< 0.39	0.42 J	15
bis(2-Ethylhexyl)phthalate	117-81-7	130	10,000	< 0.47	< 0.47	< 0.48	< 1.1	< 0.46	< 0.4	< 0.42	< 1.3	< 0.39	< 0.61	< 11
Butyl benzyl phthalate	85-68-7	10,000	10,000	< 0.47	< 0.47	< 0.48	< 1.1	< 0.46	< 0.4	< 0.42	< 1.3	< 0.39	< 0.61	< 11

Table 11
Saturated Soil Analytical Results – Detected VOCs, SVOCs, and Inorganics (mg/kg)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID: / Sample Depth (ft): / Date Collected:	CAS Number	Soil Standards or PQLs: S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	Soil Standards or PQLs: DC Non-Res Subsurf Soil (Exceedances Shaded)	PSSTP-12B 7-8 3/12/03	PSSTP-13B 7-8 3/12/03	PSSTP-14B 7-8 3/12/03	PSSTP-15B 8-9 3/12/03	PSSTP-16B 5-6 3/12/03	PSSTP-17B 8-9 3/12/03	PSSTP-18B 6-7 3/12/03	PSSTP-19B 7-8 3/12/03	PSSTP-20B 8-9 3/13/03	PSSTP-21B 8-9 3/13/03	PSSTP-22B 6-7 3/13/03
Semi-Volatile Organic Compounds (cont'd)														
Carbazole	86-74-8	89	190,000	0.054 J	0.27 J	< 0.48	< 1.1	1.1	0.58	0.42 J	0.85 J	< 0.39	0.11 J	3.6 J
Chrysene	218-01-9	230	190,000	0.17 J	0.67	0.73	6	0.17 J	2.2	2	6.3	< 0.39	0.81	39
Dibenz(a,h)anthracene	53-70-3	270	190,000	< 0.47	0.061 J	0.14 J	0.48 J	< 0.46	0.19 J	0.17 J	0.66 J	< 0.39	0.12 J	4.8 J
Dibenzofuran	132-64-9	250	190,000	< 0.47	0.095 J	< 0.48	1.3	0.87	0.6	0.39 J	0.86 J	< 0.39	0.2 J	5.5 J
Diethyl phthalate	84-66-2	7,800	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-butyl phthalate	84-74-2	4,000	10,000	0.068 J	0.062 J	0.065 J	< 1.1	< 0.46	0.063 J	< 0.42	< 1.3	0.041 J	0.13 J	< 11
Di-n-octyl phthalate	117-84-0	10,000	10,000	< 0.47	< 0.47	< 0.48	< 1.1	< 0.46	< 0.4	< 0.42	< 1.3	< 0.39	< 0.61	< 11
Fluoranthene	206-44-0	3,200	190,000	0.28 J	1.1	0.92	7.3	0.38 J	3.9	4.1	12	< 0.39	1.1	83
Fluorene	86-73-7	3,800	190,000	0.074 J	0.35 J	0.13 J	2.7	1.2	1.3	0.77	1.4	< 0.39	0.27 J	7.7 J
Indeno(1,2,3-cd)pyrene	193-39-5	18,000	190,000	< 0.47	0.14 J	0.33 J	1.3	0.047 J	0.48	0.44	1.9	< 0.39	0.3 J	13
Naphthalene	91-20-3	25	77	0.4 J	2	0.65	2.4	1.4	2.2	0.65	1 J	< 0.39	6.8	8.3 J
Pentachlorophenol	87-86-5	5	190,000	< 0.47	< 0.47	< 0.48	< 1.1	< 0.46	< 0.4	< 0.42	< 1.3	< 0.39	< 0.61	< 11
Phenanthrene	85-01-8	10,000	190,000	0.14 J	0.51	0.41 J	4.4	0.1 J	4	4	6.4	< 0.39	1	51
Phenol	108-95-2	200	18,000	< 0.47	0.21 J	0.095 J	1.5	0.33 J	< 0.4	< 0.42	< 1.3	< 0.39	< 0.61	2.4
Pyrene	129-00-0	2,200	190,000	0.31 J	1.3	0.97	0.33 J	0.32 J	3.9	3.5	10	< 0.39	1.1	65
Total PAHs and 2-Methylnaphthalene	-	- -	- -	2.04	9.37	8.25	45.8	6.17	28.8	24.2	64.5	< 0.39	16.4	425
Metals														
Aluminum	7429-90-5	- -	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	7440-36-0	27	190,000	< 2.8	< 2.8	< 2.9	3.1	< 2.7	< 2.4	< 2.5	8.6	< 2.3	3.9	7
Arsenic	7440-38-2	29	190,000	< 2.8	6.3	10	9.5	< 2.7	4.5	6.8	11	< 2.3	22	14
Barium	7440-39-3	8,200	190,000	47	38	77	100	33	110	86	130	20	180	240
Beryllium	7440-41-7	320	190,000	< 0.85	< 0.85	< 0.86	< 0.68	< 0.82	< 0.72	< 0.76	1.1	< 0.7	1.3	< 0.98
Cadmium	7440-43-9	38	190,000	< 0.85	< 0.85	< 0.86	< 0.68	< 0.82	< 0.72	< 0.76	1.9	< 0.7	2.8	1.4
Calcium	7440-70-2	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	7440-47-3	190,000	190,000	14	34	33	24	7.3	23	27	29	8.6	140	40
Cobalt	7440-48-4	130	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	7440-50-8	43,000	190,000	13	19	68	86	17	69	23	160	5.8	140	1,300
Cyanide	57-12-5	200	190,000	120	5.8	3	1.8	2.5	0.73	< 0.32	6.6	< 0.29	5.1	99
Iron	7439-89-6	- -	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	7439-92-1	450	190,000	32	41	130	***470***	26	120	150	300	6	240	***570***
Magnesium	7439-95-4	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	7439-96-5	2,000	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	7439-97-6	10	190,000	< 0.12	0.28	0.17	0.63	< 0.11	0.44	0.6	0.7	< 0.097	1.9	3.2
Nickel	7440-02-0	650	190,000	11	26	15	19	9.1	15	13	28	6.2	36	44
Potassium	7440-09-7	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	7782-49-2	26	190,000	< 2.5	< 2.5	< 2.6	< 2	< 2.5	< 2.2	< 2.3	< 2.3	< 2.1	< 3.3	< 3.2
Silver	7440-22-4	84	190,000	< 3.5	< 3.5	< 3.6	< 2.8	< 3.4	< 3	< 3.2	< 3.2	< 2.9	< 4.5	< 4.1
Sodium	7440-23-5	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	7440-28-0	14	190,000	< 1.7	< 1.7	< 1.7	< 1.4	< 1.6	< 1.4	< 1.5	< 1.6	< 1.4	< 2.2	< 2
Vanadium	7440-62-2	680	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	7440-66-6	12,000	190,000	< 0.35	190	180	250	40	140	110	550	25	1,200	730

Table 11
Saturated Soil Analytical Results – Detected VOCs, SVOCs, and Inorganics (mg/kg)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID:		Soil Standards or PQLs		PSSTP-24B	PSSTP-26B	PSSTP-27B	PSSTP-28B	PSSTP-29B	PSSTP-30B	S-101		S-102		S-103	
Sample Depth (ft):		S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	DC Non-Res Subsurf Soil (Exceedances Shaded)	7-8	7-8	5-6	5-6	5-6	5-6	10-12	14.5-16.5	10-12	13.5-15.5	10-12	13-15
Date Collected:	CAS Number			3/13/03	3/13/03	3/13/03	3/13/03	3/13/03	3/13/03	4/10/19	4/10/19	4/10/19	4/10/19	4/11/19	4/11/19
Volatile Organic Compounds															
2-Butanone (MEK)	78-93-3	400	10,000	NA	NA	NA	NA	NA	NA	< 0.019	< 0.014	0.0111 J	0.0042 J	< 0.019	< 0.019
Acetone	67-64-1	8,800	10,000	< 0.035	< 0.027	< 0.027	< 0.13	< 2.8	< 0.13	0.0451	0.0529	0.0740	0.0521	0.0270	0.0255
Benzene	71-43-2	0.5	330	< 0.0018	0.018	< 0.0014	< 0.0066	< 0.14	< 0.0065	< 0.00094	< 0.00072	< 0.00062	< 0.00054	< 0.00095	< 0.00095
Carbon Disulfide	75-15-0	620	10,000	< 0.0088	< 0.0068 J	< 0.0068	< 0.033	< 0.7	< 0.032	< 0.0038	0.0019 J	< 0.0025	< 0.0022	< 0.0038	0.0021 J
Chlorobenzene	108-90-7	10	4,500	< 0.0088	0.28	< 0.0068	< 0.033	< 5	< 0.032	< 0.0038	< 0.0029	< 0.0025	< 0.0022	< 0.0038	< 0.0038
Chloroform	67-66-3	8	110	NA	NA	NA	NA	NA	NA	< 0.0038	< 0.0029	< 0.0025	< 0.0022	< 0.0038	< 0.0038
cis-1,2-Dichloroethene	156-59-2	7	10,000	NA	NA	NA	NA	NA	NA	< 0.0019	< 0.0014	< 0.0012	< 0.0011	< 0.0019	< 0.0019
Cyclohexane	110-82-7	6,900	10,000	NA	NA	NA	NA	NA	NA	< 0.0038	< 0.0029	< 0.0025	< 0.0022	< 0.0038	< 0.0038
Dichloromethane	75-09-2	0.5	10,000	0.0092 B	0.009 B	0.0059 JB	0.037 B	0.39 J	0.046 B	< 0.0094	< 0.0072	< 0.0062	< 0.0054	< 0.0095	< 0.0095
Ethylbenzene	100-41-4	70	1,000	< 0.0018	0.0015	< 0.0014	< 0.0066	< 0.14	< 0.0065	< 0.0019	< 0.0014	< 0.0012	< 0.0011	< 0.0019	< 0.0019
Isopropylbenzene	98-82-8	2,500	10,000	NA	NA	NA	NA	NA	NA	< 0.0038	< 0.0029	< 0.0025	< 0.0022	< 0.0038	< 0.0038
m&p-Xylenes	ARC-mpXyl	- -	- -	NA	NA	NA	NA	NA	NA	< 0.0019	< 0.0014	< 0.0012	< 0.0011	< 0.0019	< 0.0019
Methyl Acetate	79-20-9	9,700	10,000	NA	NA	NA	NA	NA	NA	< 0.0094	< 0.0072	< 0.0062	< 0.0054	< 0.0095	< 0.0095
Methylcyclohexane	108-87-2	- -	- -	NA	NA	NA	NA	NA	NA	< 0.0038	< 0.0029	< 0.0025	< 0.0022	< 0.0038	< 0.0038
Methyl-tert-butylether	1634-04-4	2	9,800	NA	NA	NA	NA	NA	NA	< 0.0019	< 0.0014	< 0.0012	< 0.0011	< 0.0019	< 0.0019
o,p-Xylene	136777-61-2	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
o-Xylene	95-47-6	- -	- -	NA	NA	NA	NA	NA	NA	< 0.0019	< 0.0014	< 0.0012	< 0.0011	< 0.0019	< 0.0019
Styrene (Monomer)	100-42-5	24	10,000	NA	NA	NA	NA	NA	NA	< 0.0038	< 0.0029	< 0.0025	< 0.0022	< 0.0038	< 0.0038
Toluene	108-88-3	100	10,000	< 0.0018	0.0026	< 0.0014	< 0.0066	< 0.14	< 0.0065	< 0.0019	< 0.0014	< 0.0012	< 0.0011	< 0.0019	< 0.0019
trans-1,2-Dichloroethene	156-60-5	10	10,000	NA	NA	NA	NA	NA	NA	< 0.0019	< 0.0014	< 0.0012	< 0.0011	< 0.0019	< 0.0019
trans-1,3-Dichloropropene	10061-02-6	- -	- -	NA	NA	NA	NA	NA	NA	< 0.0038	< 0.0029	< 0.0025	< 0.0022	< 0.0038	< 0.0038
Total Xylenes	1330-20-7	1,000	9,100	0	0.0036	0	0	0	0	< 0.0019	< 0.0014	< 0.0012	< 0.0011	< 0.0019	< 0.0019
Semi-Volatile Organic Compounds															
1,1-Biphenyl	92-52-4	1.5	40	NA	NA	NA	NA	NA	NA	0.0842	0.0142 J	0.0191 J	0.122	0.0138 J	< 0.092
2,4-Dimethylphenol	105-67-9	190	10,000	< 0.58	< 1.4	< 0.46	< 0.44	< 3.7	< 0.43	< 0.21	< 0.2	< 0.43	< 0.21	< 0.21	< 0.23
2-Methylnaphthalene	91-57-6	100	270	1.5	0.46 J	0.91	1.5	51	1	0.378	0.0595	0.0636 J	0.305	0.0527	< 0.046
2-Methylphenol	95-48-7	490	190,000	NA	NA	NA	NA	NA	NA	< 0.082	< 0.079	< 0.17	< 0.082	< 0.083	< 0.092
3-Methylphenol, 4-Methylphenol	65794-96-9	- -	- -	0.36 J	< 1.4	< 0.46	< 0.44	< 3.7	< 0.43	< 0.082	< 0.079	< 0.17	< 0.082	< 0.083	< 0.092
4-Methylphenol	106-44-5	49	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	83-32-9	4,700	190,000	2.4	7.1	0.34 J	0.98	7.2	2	0.0909	0.0331 J	0.54	0.977	0.0258 J	< 0.046
Acenaphthylene	208-96-8	6,600	190,000	0.22 J	0.63 J	< 0.46	< 0.44	< 3.7	< 0.43	0.0289 J	0.0236 J	0.589	0.262	0.0465	< 0.046
Acetophenone	98-86-2	970	10,000	NA	NA	NA	NA	NA	NA	< 0.21	< 0.2	< 0.43	< 0.21	< 0.21	< 0.23
Anthracene	120-12-7	350	190,000	1.1	2.6	0.26 J	0.74	3.3 J	0.85	0.106	0.0613	2.3	2.38	0.0656	< 0.046
Benz(a)anthracene	56-55-3	340	190,000	1.5	3.9	0.37 J	0.67	< 3.7	0.083 J	0.151	0.13	4.53	3.44	0.258	0.0687
Benzaldehyde	100-52-7	- -	- -	NA	NA	NA	NA	NA	NA	< 0.21	< 0.2	< 0.43	0.0437 J	< 0.21	< 0.23
Benzo(a)pyrene	50-32-8	46	190,000	1.1	1.6	0.24 J	0.5	< 3.7	0.045 J	0.139	0.118	3.75	2.74	0.24	0.0679
Benzo(b)fluoranthene	205-99-2	170	190,000	1.7	2.7	0.37 J	0.55	< 3.7	0.065 J	0.172	0.129	4.22	3.29	0.339	0.0917
Benzo(g,h,i)perylene	191-24-2	180	190,000	0.32 J	0.28 J	0.17 J	0.19 J	< 3.7	< 0.43	0.0936	0.0686	1.69	1.58	0.183	0.0709 J
Benzo(k)fluoranthene	207-08-9	610	190,000	0.47 J	1.1 J	0.097 J	0.23 J	< 3.7	< 0.43	0.0638	0.0489	1.41	1.12	0.0906	0.0288 J
bis(2-Ethylhexyl)phthalate	117-81-7	130	10,000	< 0.58	< 1.4	0.12 J	0.11 JB	< 3.7	< 0.43	0.0847	0.0404 J	< 0.17	< 0.082	0.114	< 0.092
Butyl benzyl phthalate	85-68-7	10,000	10,000	< 0.58	< 1.4	< 0.46	< 0.44	< 3.7	< 0.43	< 0.082	< 0.079	< 0.17	< 0.082	< 0.083	< 0.092

Location ID:	CAS Number	Soil Standards or PQLs		PSSTP-24B	PSSTP-26B	PSSTP-27B	PSSTP-28B	PSSTP-29B	PSSTP-30B	S-101		S-102		S-103	
Sample Depth (ft):		S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	DC Non-Res Subsurf Soil (Exceedances Shaded)	7-8	7-8	5-6	5-6	5-6	5-6	10-12	14.5-16.5	10-12	13.5-15.5	10-12	13-15
Date Collected:				3/13/03	3/13/03	3/13/03	3/13/03	3/13/03	3/13/03	4/10/19	4/10/19	4/10/19	4/10/19	4/11/19	4/11/19
Semi-Volatile Organic Compounds (cont'd)															
Carbazole	86-74-8	89	190,000	0.091 J	1.1 J	< 0.46	< 0.44	< 3.7	< 0.43	0.0366 J	0.0218 J	0.288	0.555	0.0235 J	0.0106 J
Chrysene	218-01-9	230	190,000	1.9	3.2	0.46	0.55	< 3.7	0.1 J	0.203	0.15	4.49	3.57	0.31	0.0746
Dibenz(a,h)anthracene	53-70-3	270	190,000	0.16 J	0.18 J	0.087 J	0.11 J	< 3.7	< 0.43	0.0291 J	0.0220 J	0.512	0.523	0.0624 J	0.0202 J
Dibenzofuran	132-64-9	250	190,000	0.69	2.6	0.13 J	0.79	4	1	0.0727 J	0.0261 J	0.115 J	0.802	< 0.083	< 0.092
Diethyl phthalate	84-66-2	7,800	10,000	NA	NA	NA	NA	NA	NA	< 0.082	< 0.079	< 0.17	< 0.082	< 0.083	< 0.092
Di-n-butyl phthalate	84-74-2	4,000	10,000	0.13 J	< 1.4	0.066 J	< 0.44	< 3.7	< 0.43	< 0.082	< 0.079	< 0.17	< 0.082	< 0.083	< 0.092
Di-n-octyl phthalate	117-84-0	10,000	10,000	< 0.58	< 1.4	< 0.46	< 0.44	< 3.7	< 0.43	< 0.082	< 0.079	< 0.17	< 0.082	< 0.083	< 0.092
Fluoranthene	206-44-0	3,200	190,000	3.8	10	0.48	0.87	1.1 J	0.5	0.276	0.187	10.7 D	5.75 D	0.434	0.1 J
Fluorene	86-73-7	3,800	190,000	1.3	5.5	0.44 J	1.6	12	3.3	0.107	0.0392	0.824	1.39	0.0422	< 0.046
Indeno(1,2,3-cd)pyrene	193-39-5	18,000	190,000	0.33 J	0.31 J	0.14 J	0.14 J	< 3.7	< 0.43	0.0969	0.0801	1.89	1.68	0.152 J	0.0508 J
Naphthalene	91-20-3	25	77	3.2	5.7	0.31 J	< 0.44	< 3.7	0.36 J	2.11	0.255	0.0285 J	0.243	0.353	0.0267 J
Pentachlorophenol	87-86-5	5	190,000	< 0.58	< 1.4	< 0.46	< 0.44	< 3.7	< 0.43	< 0.16	< 0.16	< 0.34	< 0.16	< 0.17	< 0.18
Phenanthrene	85-01-8	10,000	190,000	3.6	3.8	0.42 J	3.1	18	2.1	0.43	0.225	8.18	7.62 D	0.281	0.0897
Phenol	108-95-2	200	18,000	2.6	< 1.4	< 0.46	2.4	< 1.4	< 0.43	< 0.082	< 0.079	< 0.17	< 0.082	< 0.083	< 0.092
Pyrene	129-00-0	2,200	190,000	4.5	9.3	0.68	1.5	1.2 J	0.4 J	0.283	0.292	9.92 D	6.43 D	0.458	0.118
Total PAHs and 2-Methylnaphthalene	-	- -	- -	29.1	58.4	5.77	13.2	93.8	10.8	4.76	1.92	55.6	43.3	3.39	0.808
Metals															
Aluminum	7429-90-5	- -	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	7440-36-0	27	190,000	< 3.5	< 2.7	6.8	< 2.6	< 2.2	< 2.6	NA	NA	NA	NA	NA	NA
Arsenic	7440-38-2	29	190,000	18	< 2.7	11	3.8	< 2.2	< 2.6	NA	NA	NA	NA	NA	NA
Barium	7440-39-3	8,200	190,000	160	45	140	62	18	28	NA	NA	NA	NA	NA	NA
Beryllium	7440-41-7	320	190,000	< 1.1	< 0.81	< 0.82	< 0.79	< 0.67	< 0.78	NA	NA	NA	NA	NA	NA
Cadmium	7440-43-9	38	190,000	< 1.1	< 0.81	< 0.82	< 0.79	< 0.67	< 0.78	NA	NA	NA	NA	NA	NA
Calcium	7440-70-2	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	7440-47-3	190,000	190,000	77	< 6.8	24	12	11	12	NA	NA	NA	NA	NA	NA
Cobalt	7440-48-4	130	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	7440-50-8	43,000	190,000	57	11	1,200	10	24	8.7	NA	NA	NA	NA	NA	NA
Cyanide	57-12-5	200	190,000	1.5	< 0.34	0.79	< 0.33	< 0.28	< 0.32	NA	NA	NA	NA	NA	NA
Iron	7439-89-6	- -	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	7439-92-1	450	190,000	120	47	180	260	< 5.6	18	NA	NA	NA	NA	NA	NA
Magnesium	7439-95-4	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	7439-96-5	2,000	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	7439-97-6	10	190,000	0.97	< 0.11	< 0.11	< 0.11	< 0.094	< 0.11	NA	NA	NA	NA	NA	NA
Nickel	7440-02-0	650	190,000	23	< 6.8	22	13	13	6.7	NA	NA	NA	NA	NA	NA
Potassium	7440-09-7	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	7782-49-2	26	190,000	< 3.2	< 2.4	< 2.5	< 2.4	< 2	< 2.3	NA	NA	NA	NA	NA	NA
Silver	7440-22-4	84	190,000	< 4.4	< 3.4	< 3.4	< 3.3	< 2.8	< 3.2	NA	NA	NA	NA	NA	NA
Sodium	7440-23-5	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	7440-28-0	14	190,000	< 2.1	< 1.6	< 1.6	< 1.6	< 1.3	< 1.6	NA	NA	NA	NA	NA	NA
Vanadium	7440-62-2	680	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	7440-66-6	12,000	190,000	220	29	690	120	370	34	NA	NA	NA	NA	NA	NA

Location ID: / Sample Depth (ft): / Date Collected:	CAS Number	Soil Standards or PQLs		S-104		S-105	S-106	S-107	S-108		S-109	S-110	S-111
		S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	DC Non-Res Subsurf Soil (Exceedances Shaded)	10-12 4/10/19	15.5-17.5 4/10/19	8-10 4/12/19	8-10 4/12/19	4-5.5 4/23/19	8-10 4/15/19	15-17 4/15/19	8-10 4/15/19	8-10 4/12/19	4.5-6.5 4/23/19
Volatile Organic Compounds													
2-Butanone (MEK)	78-93-3	400	10,000	< 0.011	< 0.01	< 0.012	< 0.018	< 0.01	< 0.0070	< 2.7	< 0.016	< 0.014	< 0.011
Acetone	67-64-1	8,800	10,000	0.0615	0.0286	0.0256	0.0686	< 0.01	0.0324	< 2.7	0.138	0.0882	0.0643
Benzene	71-43-2	0.5	330	< 0.00056	< 0.00051	< 0.00059	< 0.00089	< 0.00052	0.0034	0.196	0.0035	< 0.00070	< 0.00055
Carbon Disulfide	75-15-0	620	10,000	< 0.0022	< 0.0020	< 0.0024	< 0.0036	< 0.0021	0.0014	51	0.0041	< 0.0028	< 0.0022
Chlorobenzene	108-90-7	10	4,500	< 0.0022	< 0.0020	< 0.0024	< 0.0036	< 0.0021	< 0.0014	< 0.54	< 0.0032	< 0.0028	< 0.0022
Chloroform	67-66-3	8	110	< 0.0022	< 0.0020	< 0.0024	< 0.0036	< 0.0021	< 0.0014	< 0.54	< 0.0032	< 0.0028	< 0.0022
cis-1,2-Dichloroethene	156-59-2	7	10,000	< 0.0011	< 0.0010	< 0.0012	< 0.0018	< 0.0010	< 0.00070	< 0.27	< 0.0016	< 0.0014	< 0.0011
Cyclohexane	110-82-7	6,900	10,000	< 0.0022	< 0.0020	< 0.0024	< 0.0036	< 0.0021	< 0.0014	< 0.54	< 0.0032	< 0.0028	< 0.0022
Dichloromethane	75-09-2	0.5	10,000	< 0.0056	< 0.0051	< 0.0059	< 0.0089	< 0.0052	< 0.0035	< 1.3	< 0.0081	< 0.0070	< 0.0055
Ethylbenzene	100-41-4	70	1,000	< 0.0011	< 0.0010	< 0.0012	< 0.0018	< 0.0010	< 0.00070	3.1	< 0.0016	< 0.0014	< 0.0011
Isopropylbenzene	98-82-8	2,500	10,000	< 0.0022	< 0.0020	< 0.0024	< 0.0036	< 0.0021	< 0.0014	2.41	< 0.0032	< 0.0028	< 0.0022
m&p-Xylenes	ARC-mpXyl	- -	- -	< 0.0011	< 0.0010	< 0.0012	< 0.0018	< 0.0010	< 0.00070	2.99	< 0.0016	< 0.0014	< 0.0011
Methyl Acetate	79-20-9	9,700	10,000	< 0.0056	< 0.0051	< 0.0059	< 0.0089	< 0.0052	< 0.0035	3.14	< 0.0081	< 0.0070	< 0.0055
Methylcyclohexane	108-87-2	- -	- -	< 0.0022	< 0.0020	< 0.0024	< 0.0036	< 0.0021	< 0.0014	0.466 J	< 0.0032	< 0.0028	< 0.0022
Methyl-tert-butylether	1634-04-4	2	9,800	< 0.0011	< 0.0010	< 0.0012	< 0.0018	< 0.0010	< 0.00070	< 0.27	< 0.0016	< 0.0014	< 0.0011
o,p-Xylene	136777-61-2	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
o-Xylene	95-47-6	- -	- -	< 0.0011	< 0.0010	< 0.0012	< 0.0018	< 0.0010	< 0.00070	3.88	< 0.0016	< 0.0014	< 0.0011
Styrene (Monomer)	100-42-5	24	10,000	< 0.0022	< 0.0020	< 0.0024	< 0.0036	< 0.0021	< 0.0014	< 0.54	< 0.0032	< 0.0028	< 0.0022
Toluene	108-88-3	100	10,000	< 0.0011	< 0.0010	0.00045 J	< 0.0018	< 0.0010	0.00032 J	1.25	< 0.0016	< 0.0014	0.00060 J
trans-1,2-Dichloroethene	156-60-5	10	10,000	< 0.0011	< 0.0010	< 0.0012	< 0.0018	< 0.0010	< 0.00070	< 0.27	< 0.0016	< 0.0014	< 0.0011
trans-1,3-Dichloropropene	10061-02-6	- -	- -	< 0.0022	< 0.0020	< 0.0024	< 0.0036	< 0.0021	< 0.0014	< 0.54	< 0.0032	< 0.0028	< 0.0022
Total Xylenes	1330-20-7	1,000	9,100	< 0.0011	< 0.0010	< 0.0012	< 0.0018	< 0.0010	< 0.00070	6.87	< 0.0016	< 0.0014	< 0.0011
Semi-Volatile Organic Compounds													
1,1-Biphenyl	92-52-4	1.5	40	0.0425 J	0.0104 J	0.0071 J	0.0304 J	0.0357 J	0.0939	***19.1 D***	0.0759 J	0.0183 J	< 0.074
2,4-Dimethylphenol	105-67-9	190	10,000	< 0.21	< 0.19	< 0.21	< 0.26	< 0.19	0.121 J	< 0.29	0.0713 J	< 0.24	< 0.18
2-Methylnaphthalene	91-57-6	100	270	0.195	0.0244 J	0.0182 J	0.134	0.155	0.295	***140 D***	0.194	0.0608	< 0.037
2-Methylphenol	95-48-7	490	190,000	0.0305 J	< 0.076	< 0.083	< 0.1	0.0361 J	0.194	0.0373 J	0.122	< 0.094	< 0.074
3-Methylphenol, 4-Methylphenol	65794-96-9	- -	- -	0.138	< 0.076	< 0.083	0.166	0.0756 J	0.945	0.339	0.378	0.0646 J	< 0.074 J
4-Methylphenol	106-44-5	49	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	83-32-9	4,700	190,000	0.133	< 0.038	< 0.041	0.0582	0.179	1.04	93.5 D	0.324	0.0386 J	< 0.037
Acenaphthylene	208-96-8	6,600	190,000	0.0463	< 0.038	< 0.041	0.13	0.39	0.185	1.93	0.488	0.0539	0.104
Acetophenone	98-86-2	970	10,000	< 0.21	< 0.19	< 0.21	< 0.26	< 0.19	< 0.2	< 0.29	0.0111 J	< 0.24	< 0.18 J
Anthracene	120-12-7	350	190,000	0.312	< 0.038	< 0.041	0.182	1.98	0.573	49.6 D	0.636	0.179	0.0330 J
Benz(a)anthracene	56-55-3	340	190,000	0.553	0.0268 J	0.0429	0.361	4.32 D	0.168	18.4 D	1.6	0.427	0.0427
Benzaldehyde	100-52-7	- -	- -	< 0.21	< 0.19	< 0.21	< 0.26	< 0.19	< 0.2	< 0.29	< 0.19	< 0.24	< 0.18
Benzo(a)pyrene	50-32-8	46	190,000	0.518	0.0221 J	0.0445	0.404	4.51 D	0.151	10.8 D	1.72	0.423	0.312
Benzo(b)fluoranthene	205-99-2	170	190,000	0.603	0.0271 J	0.0493	0.418	4.84 D	0.192	10.8 D	2.27	0.456	0.353
Benzo(g,h,i)perylene	191-24-2	180	190,000	0.311	0.0208 J	0.0277 J	0.213	2.55	0.105	1.53	1.26	0.214	0.233
Benzo(k)fluoranthene	207-08-9	610	190,000	0.246	< 0.038	0.0213 J	0.134	1.73	0.0632	1.7	0.772	0.165	0.131
bis(2-Ethylhexyl)phthalate	117-81-7	130	10,000	0.0475 J	0.0365 J	< 0.083	< 0.1	< 0.078	< 0.079	< 0.11	< 0.077	< 0.094	< 0.074
Butyl benzyl phthalate	85-68-7	10,000	10,000	< 0.084	< 0.076	< 0.083	< 0.1	< 0.078	< 0.079	< 0.11	< 0.077	< 0.094	< 0.074

Location ID: / Sample Depth (ft): / Date Collected:	CAS Number	Soil Standards or PQLs		S-104		S-105	S-106	S-107	S-108		S-109	S-110	S-111
		S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	DC Non-Res Subsurf Soil (Exceedances Shaded)	10-12 4/10/19	15.5-17.5 4/10/19	8-10 4/12/19	8-10 4/12/19	4-5.5 4/23/19	8-10 4/15/19	15-17 4/15/19	8-10 4/15/19	8-10 4/12/19	4.5-6.5 4/23/19
Semi-Volatile Organic Compounds (cont'd)													
Carbazole	86-74-8	89	190,000	0.139	0.0067 J	0.0067 J	0.0523 J	0.436	0.671	12.1 D	0.163	0.0185 J	< 0.074
Chrysene	218-01-9	230	190,000	0.57	0.0341 J	0.0477	0.361	4.27 D	0.199	19.4 D	1.83	0.356	0.0765
Dibenz(a,h)anthracene	53-70-3	270	190,000	0.0848	< 0.038	< 0.041	0.0569	0.826	0.0255 J	0.552	0.415 J	0.0540	0.0589
Dibenzofuran	132-64-9	250	190,000	0.125	< 0.076	< 0.083	0.0728 J	0.2	0.357	53 D	0.371	0.0305 J	< 0.074
Diethyl phthalate	84-66-2	7,800	10,000	< 0.084	< 0.076	< 0.083	< 0.1	< 0.078	< 0.079	< 0.11	< 0.077	< 0.094	< 0.074
Di-n-butyl phthalate	84-74-2	4,000	10,000	< 0.084	< 0.076	< 0.083	< 0.1	< 0.078	< 0.079	< 0.11	< 0.077	< 0.094	< 0.074
Di-n-octyl phthalate	117-84-0	10,000	10,000	< 0.084	< 0.076	< 0.083	< 0.1	< 0.078	< 0.079	< 0.11	< 0.077	< 0.094	< 0.074
Fluoranthene	206-44-0	3,200	190,000	1.07	0.0248 J	0.0913	0.584	6.12 D	0.414	77.2 D	3.04	0.756	0.0168 J
Fluorene	86-73-7	3,800	190,000	0.174	< 0.038	< 0.041	0.132	0.387	0.589	81.2 D	0.314	0.0696	< 0.037
Indeno(1,2,3-cd)pyrene	193-39-5	18,000	190,000	0.335	0.0348 J	0.0645	0.267	2.35	0.0840	1.42	1.11 J	0.265	0.207
Naphthalene	91-20-3	25	77	1.19	0.0336 J	0.0658	0.633	0.43	3.82	***325 D***	1.06	0.268	0.0133 J
Pentachlorophenol	87-86-5	5	190,000	< 0.17	< 0.15	< 0.17	< 0.21	< 0.16	< 0.16	< 0.23	< 0.15	< 0.19	< 0.15
Phenanthrene	85-01-8	10,000	190,000	1.2	0.0493	0.0999	0.518	3.3	0.576	223 D	1.82	0.459	< 0.037
Phenol	108-95-2	200	18,000	0.0808 J	< 0.076	< 0.083	< 0.1	< 0.078	1.37	0.132	0.299	< 0.094	< 0.074
Pyrene	129-00-0	2,200	190,000	1.07	0.0363 J	0.105	0.751	5 D	0.447	61.1 D	2.32	0.713	0.0454
Total PAHs and 2-Methylnaphthalene	-	- -	- -	8.61	0.334	0.678	5.34	43.3	8.93	1,120	21.2	4.96	1.63
Metals													
Aluminum	7429-90-5	- -	190,000	NA	NA	4,820	10,500	8,430 J	23,000 J	11,600 J	11,400 J	7,180	8,310
Antimony	7440-36-0	27	190,000	NA	NA	< 2.5	< 3.1	0.53 J	< 2.5	< 3.4	< 2.5	< 2.7	< 2.3
Arsenic	7440-38-2	29	190,000	NA	NA	5.5	21.5	20.2	9.0	6.1	11.0	12.9	4.5
Barium	7440-39-3	8,200	190,000	NA	NA	35.4	104	51.5 J	75.9	46.6	126	67.6	23.9
Beryllium	7440-41-7	320	190,000	NA	NA	0.28	0.77	0.53	0.75	0.53	1.8	0.61	1.0
Cadmium	7440-43-9	38	190,000	NA	NA	< 0.64	0.83	0.24 J	0.099 J	0.15 J	1.1	< 0.68	0.34 J
Calcium	7440-70-2	- -	- -	NA	NA	1,070	3,320	1,100 J	1,300 J	714 J	24,300 J	2,430	358 J
Chromium	7440-47-3	190,000	190,000	NA	NA	16.5	77.5	19.0	32.9 J	19.6 J	44.5 J	36.5	31.0
Cobalt	7440-48-4	130	190,000	NA	NA	6.6	11.4	7.4	7.6	4.9 J	8.9	9.6	6.8
Copper	7440-50-8	43,000	190,000	NA	NA	17.4	49.0	40.0	14.1	12.6	75.6	40.7	41.5
Cyanide	57-12-5	200	190,000	NA	NA	0.58	< 0.37	7.5 J	3.3 J	9.6 J	17.5 J	< 0.31	2.8
Iron	7439-89-6	- -	190,000	NA	NA	12,100	20,300	24,500	27,900 J	17,900 J	19,900 J	18,400	19,600
Lead	7439-92-1	450	190,000	NA	NA	49.1	127	115	38.1 J	45.4 J	147 J	75.2	44.8
Magnesium	7439-95-4	- -	- -	NA	NA	1,700	3,320	1,910 J	2,290	2,060	5,920	2,620	1,410
Manganese	7439-96-5	2,000	190,000	NA	NA	212	718	217	201 J	156 J	359 J	428	89.5
Mercury	7439-97-6	10	190,000	NA	NA	0.12	0.47	0.55 J	2.6 J	1.7 J	0.19 J	0.25	0.16 J
Nickel	7440-02-0	650	190,000	NA	NA	12.8	21.0	15.8	15.1	11.7	19.4	16.3	15.1
Potassium	7440-09-7	- -	- -	NA	NA	< 1,300	< 1,600	957 J	1,440	961 J	1,150 J	< 1,400	872 J
Selenium	7782-49-2	26	190,000	NA	NA	< 2.5	< 3.1	< 2.5	< 4.9	< 3.4	2.0 J	< 2.7	< 2.3
Silver	7440-22-4	84	190,000	NA	NA	< 0.64	< 0.79	< 0.63	< 1.2	< 0.85	< 0.62	< 0.68	< 0.58
Sodium	7440-23-5	- -	- -	NA	NA	< 1,300	< 1,600	< 1,300	< 1,200	< 1,700	722 J	< 1,400	< 1,200
Thallium	7440-28-0	14	190,000	NA	NA	< 1.3	< 1.6	< 1.3	< 2.5	< 1.7	< 1.2	< 1.4	< 1.2
Vanadium	7440-62-2	680	190,000	NA	NA	7.9	23.6	20.6	46.1 J	24.8 J	25.8 J	14.4	18.7
Zinc	7440-66-6	12,000	190,000	NA	NA	422	310	94.4 J	63.4	55.1	335	254	144

Table 11
Saturated Soil Analytical Results – Detected VOCs, SVOCs, and Inorganics (mg/kg)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID: / Sample Depth (ft): / Date Collected:	CAS Number	Soil Standards or PQLs: S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	Soil Standards or PQLs: DC Non-Res Subsurf Soil (Exceedances Shaded)	S-112 2-4 4/12/19	S-112 8-10 4/12/19	S-113B 10-12 4/24/19	S-113B 13-15 4/24/19	S-113B 15-17 4/24/19	S-114 8-10 4/15/19	S-114 14-15 4/15/19	S-114 23-25 4/15/19	S-115 4-6 4/16/19	S-116 4-6 4/16/19
Volatile Organic Compounds													
2-Butanone (MEK)	78-93-3	400	10,000	< 0.02	< 0.012	0.0182	0.0131 J	< 0.013	0.0137 J	< 24	0.0626	< 0.017 [< 0.016]	< 0.015 J
Acetone	67-64-1	8,800	10,000	0.0400	0.0079 J	0.104	0.0740	0.0188	0.0703	< 24	0.213	0.0143 J [0.0388]	0.0531 J
Benzene	71-43-2	0.5	330	< 0.00099	< 0.00061	0.0175	< 0.00088	< 0.00065	< 0.00071	***20.8***	0.00084 J	0.0079 J [0.0112]	< 0.00077 J
Carbon Disulfide	75-15-0	620	10,000	< 0.0040	< 0.0024	< 0.0036	< 0.0035	< 0.0026	< 0.0029	5.26	0.0056	0.0018 J [0.0016 J]	< 0.0031 J
Chlorobenzene	108-90-7	10	4,500	< 0.0040	< 0.0024	< 0.0036	< 0.0035	< 0.0026	< 0.0029	< 4.7	< 0.0034	< 0.0034 [< 0.0033]	< 0.0031 J
Chloroform	67-66-3	8	110	< 0.0040	< 0.0024	< 0.0036	< 0.0035	< 0.0026	< 0.0029	< 4.7	< 0.0034	< 0.0034 [< 0.0033]	< 0.0031 J
cis-1,2-Dichloroethene	156-59-2	7	10,000	< 0.0020	< 0.0012	< 0.0018	< 0.0018	< 0.0013	< 0.0014	< 2.4	< 0.0017	< 0.0017 [< 0.0016]	< 0.0015 J
Cyclohexane	110-82-7	6,900	10,000	< 0.0040	< 0.0024	0.0018 J	0.0039	0.0022 J	< 0.0029	< 4.7	< 0.0034	0.00084 J [< 0.0033]	< 0.0031 J
Dichloromethane	75-09-2	0.5	10,000	< 0.0099	< 0.0061	< 0.0090	< 0.0088	< 0.0065	< 0.0071	< 12	< 0.0086	< 0.0085 [< 0.0082]	< 0.0077 J
Ethylbenzene	100-41-4	70	1,000	< 0.0020	< 0.0012	0.0437	< 0.0018	< 0.0013	< 0.0014	1.95 J	< 0.0017	< 0.0017 [< 0.0016]	< 0.0015 J
Isopropylbenzene	98-82-8	2,500	10,000	< 0.0040	< 0.0024	0.139	0.0225	0.0097	< 0.0029	< 4.7	0.0025 J	< 0.0034 [< 0.0033]	< 0.0031 J
m&p-Xylenes	ARC-mpXyl	- -	- -	< 0.0020	< 0.0012	0.0096	< 0.0018	0.0264	< 0.0014	37	< 0.0017	< 0.0017 [< 0.0016]	< 0.0015 J
Methyl Acetate	79-20-9	9,700	10,000	< 0.0099	< 0.0061	< 0.0090	< 0.0088 J	< 0.0065 J	< 0.0071	< 12	< 0.0086	< 0.0085 [< 0.0082]	< 0.0077 J
Methylcyclohexane	108-87-2	- -	- -	< 0.0040	< 0.0024	0.0131	0.0479	0.0107	< 0.0029	< 4.7	0.0023 J	0.0015 J [0.0016 J]	< 0.0031
Methyl-tert-butylether	1634-04-4	2	9,800	< 0.0020	< 0.0012	0.00092 J	< 0.0018	< 0.0013	< 0.0014	< 2.4	< 0.0017	< 0.0017 [< 0.0016]	< 0.0015 J
o,p-Xylene	136777-61-2	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
o-Xylene	95-47-6	- -	- -	< 0.0020	< 0.0012	0.0340	0.0033	0.0013	< 0.0014	12.4	0.0013 J	< 0.0017 [< 0.0016]	< 0.0015 J
Styrene (Monomer)	100-42-5	24	10,000	< 0.0040	< 0.0024	< 0.0036	< 0.0035	< 0.0026	< 0.0029	5.57	< 0.0034	< 0.0034 [< 0.0033]	< 0.0031 J
Toluene	108-88-3	100	10,000	< 0.0020	< 0.0012	0.0027	0.0011 J	< 0.0013	< 0.0014	26.6	0.0015 J	< 0.0017 [< 0.0016]	< 0.0015 J
trans-1,2-Dichloroethene	156-60-5	10	10,000	< 0.0020	< 0.0012	< 0.0018	< 0.0018	< 0.0013	< 0.0014	< 2.4	< 0.0017	< 0.0017 [< 0.0016]	< 0.0015 J
trans-1,3-Dichloropropene	10061-02-6	- -	- -	< 0.0040	< 0.0024	< 0.0036	< 0.0035	< 0.0026	< 0.0029	< 4.7	< 0.0034	< 0.0034 [< 0.0033]	< 0.0031 J
Total Xylenes	1330-20-7	1,000	9,100	< 0.0020	< 0.0012	0.0436	0.0033	0.0277	< 0.0014	49.4	0.0013 J	< 0.0017 [< 0.0016]	< 0.0015 J
Semi-Volatile Organic Compounds													
1,1-Biphenyl	92-52-4	1.5	40	< 0.09	0.0069 J	***17.2 D***	0.637	< 0.088	0.525	***132 D***	< 0.11	0.0612 J [0.0714 J]	0.113
2,4-Dimethylphenol	105-67-9	190	10,000	< 0.23	< 0.22	0.165 J	< 0.25	< 0.22	< 0.24	10.7	< 0.27	< 0.2 [< 0.19]	< 0.2
2-Methylnaphthalene	91-57-6	100	270	0.0237 J	0.0188 J	***153 D***	4.82	< 0.044	0.327	***499 D***	0.0234 J	0.279 [0.303]	0.274
2-Methylphenol	95-48-7	490	190,000	< 0.09	< 0.086	< 0.11	< 0.1	< 0.088	< 0.097	0.818 J	< 0.11	0.0405 J [0.0435 J]	< 0.082
3-Methylphenol, 4-Methylphenol	65794-96-9	- -	- -	< 0.09	< 0.086	1	1.55	< 0.088	0.152	1.75	0.909	0.112 [0.124]	< 0.082
4-Methylphenol	106-44-5	49	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	83-32-9	4,700	190,000	< 0.045	0.0197 J	139 D	8.24 D	< 0.044	17.2 D	253 D	< 0.054	0.179 [0.231]	0.869
Acenaphthylene	208-96-8	6,600	190,000	< 0.045	< 0.043	4.63	0.962	< 0.044	10.5 D	425 D	< 0.054	0.309 [0.329]	0.895
Acetophenone	98-86-2	970	10,000	< 0.23	< 0.22	< 0.27	< 0.25	< 0.22	< 0.24	< 2.2	< 0.27	< 0.2 [< 0.19]	< 0.2
Anthracene	120-12-7	350	190,000	< 0.045	< 0.043	89.6 D	4.01	< 0.044	23.2 D	***580 D***	< 0.054	0.597 [0.838]	1.84
Benz(a)anthracene	56-55-3	340	190,000	0.0648	0.0565	29.5 D	3.05	0.0249 J	25.9 D	***428 D***	0.0159 J	2.12 [3.38]	3.82
Benzaldehyde	100-52-7	- -	- -	< 0.23	< 0.22	< 0.27	< 0.25	< 0.22	< 0.24	< 2.2	0.103 J	< 0.2 [< 0.19]	< 0.2
Benzo(a)pyrene	50-32-8	46	190,000	0.0550	0.0661	19.2 D	2.75	0.0200 J	23.7 D	***396 D***	< 0.054	2.56 J [4.86 DJ]	5.11 D
Benzo(b)fluoranthene	205-99-2	170	190,000	0.0720	0.0667	21.6 D	3.12	0.0254 J	24.9 D	***430 D***	< 0.054	3.16 J [6.13 DJ]	6.64 D
Benzo(g,h,i)perylene	191-24-2	180	190,000	0.0337 J	0.0356 J	7.97 D	1.45	< 0.044	13.6 D	***188 D***	< 0.054	1.76 J [3.06 J]	2.81
Benzo(k)fluoranthene	207-08-9	610	190,000	0.0280 J	0.0253 J	4.29	0.873	< 0.044	9.92 D	172 D	< 0.054	1.04 [1.68 D]	1.9 D
bis(2-Ethylhexyl)phthalate	117-81-7	130	10,000	< 0.09	< 0.086	< 0.11	< 0.1	< 0.088	< 0.097	< 0.87	< 0.11	< 0.078 [< 0.078]	< 0.082
Butyl benzyl phthalate	85-68-7	10,000	10,000	< 0.09	< 0.086	< 0.11	< 0.1	< 0.088	< 0.097	< 0.87	< 0.11	< 0.078 [< 0.078]	< 0.082

Location ID:		Soil Standards or PQLs		S-112		S-113B			S-114			S-115	S-116
Sample Depth (ft):	CAS Number	S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	DC Non-Res Subsurf Soil (Exceedances Shaded)	2-4	8-10	10-12	13-15	15-17	8-10	14-15	23-25	4-6	4-6
Date Collected:				4/12/19	4/12/19	4/24/19	4/24/19	4/24/19	4/15/19	4/15/19	4/15/19	4/16/19	4/16/19
Semi-Volatile Organic Compounds (cont'd)													
Carbazole	86-74-8	89	190,000	0.0074 J	< 0.086	14.8 D	0.185	< 0.088	6.91 D	***277 D***	< 0.11	0.281 J [0.484 J]	0.704
Chrysene	218-01-9	230	190,000	0.0613	0.0601	32.3 D	3.77	0.0207 J	22.5 D	***435 D***	< 0.054	2.26 [3.7]	3.96
Dibenz(a,h)anthracene	53-70-3	270	190,000	< 0.045	< 0.043	2.44	0.406	< 0.044	2.28	61.3 D	< 0.054	0.504 J [0.844 J]	0.951
Dibenzofuran	132-64-9	250	190,000	< 0.09	< 0.086	69.9 D	1.08	< 0.088	13.6 D	***546 D***	< 0.11	0.208 [0.209]	0.905
Diethyl phthalate	84-66-2	7,800	10,000	< 0.09	< 0.086	< 0.11	< 0.1	< 0.088	< 0.097	< 0.87	< 0.11	< 0.078 [< 0.078]	< 0.082
Di-n-butyl phthalate	84-74-2	4,000	10,000	< 0.09	< 0.086	< 0.11	< 0.1	< 0.088	< 0.097	< 0.87	< 0.11	< 0.078 [< 0.078]	< 0.082
Di-n-octyl phthalate	117-84-0	10,000	10,000	< 0.09	< 0.086	< 0.11	< 0.1	< 0.088	< 0.097	< 0.87	< 0.11	< 0.078 [< 0.078]	< 0.082
Fluoranthene	206-44-0	3,200	190,000	0.128	0.0607	126 D	8.57 D	0.0517	72.7 D	1,210 D	0.0272 J	3.19 [5.29 D]	8.36 D
Fluorene	86-73-7	3,800	190,000	< 0.045	< 0.043	118 D	4.53	< 0.044	24.7 D	821 D	0.0325 J	0.268 [0.293]	1.84
Indeno(1,2,3-cd)pyrene	193-39-5	18,000	190,000	0.0743	0.0717	7.98 D	1.35	< 0.044	14.8 D	180 D	< 0.054	1.88 J [3.26 J]	3.05
Naphthalene	91-20-3	25	77	0.0578	0.0717	24.6 D	8.96 D	0.0937	1.18	***3,010 D***	0.136	1.88 [1.94]	1.15
Pentachlorophenol	87-86-5	5	190,000	< 0.18	< 0.17	< 0.21	< 0.2	< 0.18	< 0.19	< 1.7	< 0.22	< 0.16 [< 0.16]	< 0.16
Phenanthrene	85-01-8	10,000	190,000	0.113	0.0456	322 D	17 D	0.0391 J	39.7 D	2,340 D	0.0658	2.17 [2.95]	6.59 D
Phenol	108-95-2	200	18,000	< 0.09	< 0.086	0.119	< 0.1	< 0.088	< 0.097	0.771 J	0.223	0.2 [0.194]	< 0.082
Pyrene	129-00-0	2,200	190,000	0.104	0.0867	108 D	9.48 D	0.0365 J	56.4 D	859 D	0.0228 J	2.89 J [4.93 DJ]	6.78 D
Total PAHs and 2-Methylnaphthalene	-	- -	- -	0.816	0.685	1,210	83.3	0.312	384	12,300	0.324	27.0 [44.0]	56.8
Metals													
Aluminum	7429-90-5	- -	190,000	5,950	4,790	16,800 J	13,400 J	19,300 J	11,700 J	10,800 J	14,700 J	2,250 J [1,750 J]	1,310 J
Antimony	7440-36-0	27	190,000	< 2.8	< 2.5	0.76 J	1.3 J	< 2.8 J	< 3.0	< 2.7	< 3.6	1.1 J [1.3 J]	0.68 J
Arsenic	7440-38-2	29	190,000	11.6	5.2	***57.8***	20.2	4.0	6.9	7.0	8.3	21.6 [16.8]	12.1
Barium	7440-39-3	8,200	190,000	90.3	27.3	219 J	189 J	139 J	42.0	24.7 J	45.6	72.1 [49.4]	55.0
Beryllium	7440-41-7	320	190,000	0.61	0.28	1.3	1.0	0.96	0.59	0.55	0.69	0.61 [0.45]	0.52
Cadmium	7440-43-9	38	190,000	< 0.70	< 0.63	2.1	1.3	< 0.71	< 0.76	< 0.69	< 0.89	0.50 J [0.39 J]	0.70
Calcium	7440-70-2	- -	- -	1,630	1,040	4,530 J	3,290 J	2,160 J	645 J	178 J	3,380 J	1,770 J [3,880 J]	1,110 J
Chromium	7440-47-3	190,000	190,000	20.7	16.2	194	67.3	43.0	19.5 J	16.8 J	27.5 J	90.2 J [25.4 J]	13.8 J
Cobalt	7440-48-4	130	190,000	< 7.0	< 6.3	19.8	16.9	11.6	8.2	9.1	9.7	4.4 J [3.7 J]	3.0 J
Copper	7440-50-8	43,000	190,000	67.7	15.5	145	73.9	6.4	13.8	13.2	16.9	135 [98.5]	110
Cyanide	57-12-5	200	190,000	1.5	< 0.29	1.7 J	1.5 J	1.0 J	0.59 J	12.1 J	4.6 J	18.3 J [21.2 J]	2.5
Iron	7439-89-6	- -	190,000	11,900	12,000	28,700	22,900	26,000	20,000 J	21,100 J	26,700 J	32,200 [25,900]	19,000
Lead	7439-92-1	450	190,000	117	27.4	306	169	13.2	14.8 J	9.2 J	14.3 J	162 [108]	69.0
Magnesium	7439-95-4	- -	- -	736	1,770	4,030 J	3,690 J	5,170 J	2,430	2,150	3,360	464 J [1,820]	202 J
Manganese	7439-96-5	2,000	190,000	110	238	687	595	402	335 J	150 J	259 J	211 J [280 J]	253 J
Mercury	7439-97-6	10	190,000	0.30	0.061	1.3 J	0.61 J	< 0.045 J	0.81 J	1.7 J	0.029 J	0.22 J [0.14 J]	0.26
Nickel	7440-02-0	650	190,000	11.8	11.0	35.8	30.7	25.6	14.7	14.7	19.7	24.0 [19.2]	15.9
Potassium	7440-09-7	- -	- -	< 1,400	< 1,300	1,840	1,540	1,730	1,090 J	954 J	1,460 J	290 J [255 J]	201 J
Selenium	7782-49-2	26	190,000	< 2.8	< 2.5	1.6 J	< 2.9	< 2.8	< 3.0	< 2.7	< 3.6	< 5.1 [< 5.0]	2.1 J
Silver	7440-22-4	84	190,000	< 0.70	< 0.63	1.1	0.80	< 0.71	< 0.76	< 0.69	< 0.89	< 1.3 [< 1.3]	< 0.65
Sodium	7440-23-5	- -	- -	< 1,400	< 1,300	516 J	387 J	328 J	< 1,500	162 J	201 J	< 1,300 [< 1,300]	< 1,300
Thallium	7440-28-0	14	190,000	< 1.4	< 1.3	< 1.7	< 1.5	< 1.4	< 1.5	< 1.4	< 1.8	< 2.6 [< 2.5]	< 1.3
Vanadium	7440-62-2	680	190,000	13.5	7.9	33.1	26.6	38.8	24.6 J	21.9 J	30.8 J	11.1 [10.4]	9.2
Zinc	7440-66-6	12,000	190,000	83.4	140	691 J	390 J	64.0 J	45.1	38.4	55.6	183 J [115 J]	216 J

Table 11
Saturated Soil Analytical Results – Detected VOCs, SVOCs, and Inorganics (mg/kg)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID:		Soil Standards or PQLs		S-117	S-118	S-122	S-123		S-124		S-125			S-126	
Sample Depth (ft):		S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	DC Non-Res Subsurf Soil (Exceedances Shaded)	4-6	4-6	10-12	7-9	13-15	7-9	10-12	7-9	11-13	13-15	7-9	13-15
Date Collected:	CAS Number			4/16/19	4/16/19	4/9/19	4/18/19	4/18/19	4/18/19	4/18/19	4/18/19	4/18/19	4/18/19	4/17/19	4/17/19
Volatile Organic Compounds															
2-Butanone (MEK)	78-93-3	400	10,000	< 0.014	< 0.016	< 2.3	< 0.011	0.0174 J	< 3.9	0.0153 J	< 31	< 22	0.0084 J	< 0.0088	0.0093 J
Acetone	67-64-1	8,800	10,000	0.0274 J	0.0366	< 2.3	< 0.011	0.127	< 3.9	0.124	< 31	< 22	0.106	0.0293	0.0698
Benzene	71-43-2	0.5	330	< 0.00069	0.0024	< 0.11	0.00085	0.0466	***38.8***	0.0337	***157***	***69***	0.0916	0.0035	< 0.00063
Carbon Disulfide	75-15-0	620	10,000	< 0.0027	0.0042	< 0.45	< 0.0023	< 0.0035	1.68	< 0.0036	< 6.3	< 4.3	< 0.0034	0.0012 J	< 0.0025
Chlorobenzene	108-90-7	10	4,500	< 0.0027 J	< 0.0033	< 0.45	< 0.0023	< 0.0035	*1.12*	< 0.0036	***47.5***	***19***	0.0021 J	< 0.0018	< 0.0025
Chloroform	67-66-3	8	110	< 0.0027	< 0.0033	< 0.45	< 0.0023	< 0.0035	< 0.78	< 0.0036	< 6.3	< 4.3	< 0.0034	< 0.0018	< 0.0025
cis-1,2-Dichloroethene	156-59-2	7	10,000	< 0.0014	< 0.0016	< 0.23	< 0.0011	< 0.0018	< 0.39	< 0.0018	< 3.1	< 2.2	< 0.0017	< 0.00088	< 0.0013
Cyclohexane	110-82-7	6,900	10,000	0.00062 J	0.0011 J	< 0.45	< 0.0023	< 0.0035	< 0.78	< 0.0036	< 6.3	< 4.3	< 0.0034	< 0.0018	< 0.0025
Dichloromethane	75-09-2	0.5	10,000	< 0.0069	< 0.0082	***0.829 J***	< 0.0056	< 0.0089	< 1.9	< 0.0089	< 16	< 11	< 0.0086	< 0.0044	< 0.0063
Ethylbenzene	100-41-4	70	1,000	< 0.0014 J	< 0.0016	1.02	< 0.0011	< 0.0018	3.42	< 0.0018	51	18.2	0.0037	< 0.00088	< 0.0013
Isopropylbenzene	98-82-8	2,500	10,000	< 0.0027 J	< 0.0033	1.78	< 0.0023	< 0.0035	< 0.78	< 0.0036	< 6.3	< 4.3	< 0.0034	< 0.0018	0.0043
m&p-Xylenes	ARC-mpXyl	- -	- -	< 0.0014 J	< 0.0016	0.475	< 0.0011	< 0.0018	1.56	< 0.0018	89.7	29.7	0.0050	< 0.00088	< 0.0013
Methyl Acetate	79-20-9	9,700	10,000	< 0.0069	< 0.0082	< 1.1	< 0.0056	< 0.0089	< 1.9	< 0.0089	< 16	< 11	< 0.0086	< 0.0044	< 0.0063
Methylcyclohexane	108-87-2	- -	- -	0.0014 J	0.0021 J	0.339 J	< 0.0023	0.0019 J	< 0.78	< 0.0036	< 6.3	< 4.3	< 0.0034	< 0.0018	< 0.0025
Methyl-tert-butylether	1634-04-4	2	9,800	< 0.0014	< 0.0016	< 0.23	< 0.0011	< 0.0018	< 0.39	< 0.0018	< 3.1	< 2.2	< 0.0017	< 0.00088	< 0.0013
o,p-Xylene	136777-61-2	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
o-Xylene	95-47-6	- -	- -	< 0.0014 J	< 0.0016	0.315	< 0.0011	< 0.0018	0.634	< 0.0018	23.1	8.23	0.0021	< 0.00088	< 0.0013
Styrene (Monomer)	100-42-5	24	10,000	< 0.0027	< 0.0033	< 0.45	< 0.0023	< 0.0035	< 0.78	< 0.0036	< 6.3	< 4.3	< 0.0034	< 0.0018	< 0.0025
Toluene	108-88-3	100	10,000	< 0.0014 J	0.00090 J	0.212 J	< 0.0011	0.00092 J	1.67	0.00069 J	22.7	14.6	0.0032	< 0.00088	< 0.0013
trans-1,2-Dichloroethene	156-60-5	10	10,000	< 0.0014	< 0.0016	< 0.23	< 0.0011	< 0.0018	< 0.39	< 0.0018	< 3.1	< 2.2	< 0.0017	< 0.00088	< 0.0013
trans-1,3-Dichloropropene	10061-02-6	- -	- -	< 0.0027	< 0.0033	< 0.45	< 0.0023	< 0.0035	< 0.78	< 0.0036	< 6.3	< 4.3	< 0.0034	< 0.0018	< 0.0025
Total Xylenes	1330-20-7	1,000	9,100	< 0.0014 J	< 0.0016	0.79	< 0.0011	< 0.0018	2.2	< 0.0018	113	37.9	0.0071	< 0.00088	< 0.0013
Semi-Volatile Organic Compounds															
1,1-Biphenyl	92-52-4	1.5	40	0.0672 J	***1.57***	***1.91***	0.0096 J	< 0.11	0.0351 J	< 0.11	1.33	***15.3 D***	0.0173 J	< 0.078 B	< 0.11 B
2,4-Dimethylphenol	105-67-9	190	10,000	< 0.2	0.0773 J	< 1.3	< 0.21	< 0.27	< 0.24	< 0.28	< 0.2	1.06	< 0.29	0.0913 J	< 0.27
2-Methylnaphthalene	91-57-6	100	270	0.305	2.44	37.6 D	0.0310 J	< 0.054	0.0601	0.0225 J	1.48	57.7 D	0.0628	0.0114 J	0.853
2-Methylphenol	95-48-7	490	190,000	< 0.081	0.0494 J	< 0.53	< 0.086	< 0.11	< 0.097	< 0.11	< 0.079	0.0852 J	< 0.12	0.0630 J	< 0.11
3-Methylphenol, 4-Methylphenol	65794-96-9	- -	- -	< 0.081	0.181	0.975	< 0.086	< 0.11	< 0.097	< 0.11	< 0.079	0.0662 J	< 0.12	0.129	0.0746 J
4-Methylphenol	106-44-5	49	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	83-32-9	4,700	190,000	0.37	3.23	55.3 D	0.0628	< 0.054	0.0731	0.261	9.61 D	82.5 D	0.206	< 0.039	6.79 D
Acenaphthylene	208-96-8	6,600	190,000	0.161	20.5 D	2.04	0.0956	< 0.054	0.0672	0.0446 J	1.41	22.9 D	0.0403 J	< 0.039	0.256
Acetophenone	98-86-2	970	10,000	< 0.2	< 0.19	< 1.3	< 0.21	< 0.27	< 0.24	< 0.28	< 0.2	< 0.39	< 0.29	0.0120 J	< 0.27
Anthracene	120-12-7	350	190,000	0.761	28.1 D	30.4 D	0.151	< 0.054	< 0.049	0.0746	7.7 D	54.4 D	0.137	0.0351 J	3.09
Benz(a)anthracene	56-55-3	340	190,000	6.07 D	48.6 D	11.2	0.496	0.0302 J	0.0249 J	0.126	6.07 D	48 D	0.154	0.0985	1.25
Benzaldehyde	100-52-7	- -	- -	< 0.2	< 0.19	< 1.3	< 0.21	< 0.27	< 0.24	< 0.28	< 0.2	< 0.39	< 0.29	< 0.2	< 0.27
Benzo(a)pyrene	50-32-8	46	190,000	8.33 D	37.2 D	7.07	0.581	0.0426 J	0.0274 J	0.164	5.49 D	43.4 D	0.158	0.0937	0.992
Benzo(b)fluoranthene	205-99-2	170	190,000	9.84 D	55.7 D	7.33	0.753	0.0505 J	0.0448 J	0.17	6.31 D	52.2 D	0.184	0.116	0.972
Benzo(g,h,i)perylene	191-24-2	180	190,000	5.52 D	23.4 D	3.42	0.415	0.0380 J	0.0417 J	0.0914	2.47	20.8 D	0.0849	0.0624	0.462
Benzo(k)fluoranthene	207-08-9	610	190,000	3.74 D	18.3 D	2.73	0.251	< 0.054	< 0.049	0.0585	2.77 D	6.04	0.0614	0.0405	0.376
bis(2-Ethylhexyl)phthalate	117-81-7	130	10,000	< 0.081	< 0.076	< 0.53	< 0.086	< 0.11	< 0.097	< 0.11	< 0.079	< 0.15	< 0.12	< 0.078	< 0.11
Butyl benzyl phthalate	85-68-7	10,000	10,000	< 0.081	< 0.076	< 0.53	< 0.086	< 0.11	< 0.097	< 0.11	< 0.079	< 0.15	< 0.12	< 0.078	< 0.11

Location ID: / Sample Depth (ft): / Date Collected:	CAS Number	Soil Standards or PQLs: S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	Soil Standards or PQLs: DC Non-Res Subsurf Soil (Exceedances Shaded)	S-117 4-6 4/16/19	S-118 4-6 4/16/19	S-122 10-12 4/9/19	S-123 7-9 4/18/19	S-123 13-15 4/18/19	S-124 7-9 4/18/19	S-124 10-12 4/18/19	S-125 7-9 4/18/19	S-125 11-13 4/18/19	S-125 13-15 4/18/19	S-126 7-9 4/17/19	S-126 13-15 4/17/19
Semi-Volatile Organic Compounds (cont'd)															
Carbazole	86-74-8	89	190,000	0.644	9.67 D	7.79	0.0573 J	< 0.11	< 0.097	< 0.11	9.03 D	27 D	0.0321 J	< 0.078 B	0.687
Chrysene	218-01-9	230	190,000	6.59 D	42.4 D	12.6	0.502	0.0342 J	0.0298 J	0.145	5.09 D	41.4 D	0.148	0.11	1.42
Dibenz(a,h)anthracene	53-70-3	270	190,000	1.58	7.5 D	0.884	0.115	< 0.054	< 0.049	< 0.056	0.866	1.57	< 0.059	< 0.039	0.122
Dibenzofuran	132-64-9	250	190,000	0.196	14.4 D	28 D	0.0384 J	< 0.11	< 0.097	< 0.11	7.74 D	63.3 D	0.0777 J	< 0.078	2.19
Diethyl phthalate	84-66-2	7,800	10,000	< 0.081	< 0.076	< 0.53	< 0.086	< 0.11	< 0.097	< 0.11	< 0.079	< 0.15	< 0.12	< 0.078	< 0.11
Di-n-butyl phthalate	84-74-2	4,000	10,000	< 0.081	< 0.076	< 0.53	< 0.086	< 0.11	< 0.097	< 0.11	< 0.079	< 0.15	< 0.12	< 0.078	< 0.11
Di-n-octyl phthalate	117-84-0	10,000	10,000	< 0.081	< 0.076	< 0.53	< 0.086	< 0.11	< 0.097	< 0.11	< 0.079	< 0.15	< 0.12	< 0.078	< 0.11
Fluoranthene	206-44-0	3,200	190,000	8.51 D	120 D	42.4 D	0.889	0.0560	0.0465 J	0.322	17.1 D	128 D	0.378	0.182	5.01
Fluorene	86-73-7	3,800	190,000	0.249	29.1 D	43.2 D	0.0594	< 0.054	< 0.049	0.151	11.9 D	94.4 D	0.164	0.0201 J	4.39
Indeno(1,2,3-cd)pyrene	193-39-5	18,000	190,000	6.06 D	26.3 D	3.26	0.437	0.0365 J	0.0409 J	0.0983	2.31	18.7 D	0.0902	0.0773	0.414
Naphthalene	91-20-3	25	77	0.765	6.59 D	***26.4***	0.141	< 0.054	0.176	0.0503 J	19.2 D	***302 D***	0.213	0.251	0.831
Pentachlorophenol	87-86-5	5	190,000	< 0.16	< 0.15	< 1.1	< 0.17	< 0.22	< 0.19	< 0.22	< 0.16	< 0.31	< 0.24	< 0.16	< 0.22
Phenanthrene	85-01-8	10,000	190,000	2.79	107 D	129 D	0.517	0.0243 J	< 0.049	0.152	29.8 D	254 D	0.613	0.105	16.5 D
Phenol	108-95-2	200	18,000	0.0848	0.214	< 0.53	< 0.086	< 0.11	< 0.097	< 0.11	< 0.079	0.126 J	< 0.12	0.0373 J	< 0.11
Pyrene	129-00-0	2,200	190,000	7.55 D	83.4 D	39.3 D	0.755	0.0613	0.0564	0.302	12.5 D	87.8 D	0.303	0.176	4.39
Total PAHs and 2-Methylnaphthalene	-	- -	- -	69.2	660	454	6.25	0.374	0.689	2.23	142	1,320	3.00	1.38	48.1
Metals															
Aluminum	7429-90-5	- -	190,000	1,310 J	4,680 J	18,200 J	17,300	22,700	14,700	17,000	2,190	6,940	19,900	8,020 J	18,700 J
Antimony	7440-36-0	27	190,000	1.2 J	0.56 J	1.5 J	0.68 J	< 3.4 J	< 3.0 J	< 3.5 J	< 2.4 J	< 2.5 J	1.6 J	< 2.3 J	< 3.4 J
Arsenic	7440-38-2	29	190,000	12.6	5.7	***49.4***	11.9	***46.9***	11.9	***69.9***	3.6	4.7	***56.3***	6.9	***60.2***
Barium	7440-39-3	8,200	190,000	81.5	38.8	187	109	212	103	193	33.3	57.6	267	85.0	216
Beryllium	7440-41-7	320	190,000	0.41	0.40	1.2	0.74	1.6	0.93	1.1	0.35	0.57	1.3	0.56	1.5
Cadmium	7440-43-9	38	190,000	0.49 J	0.23 J	2.2	0.28 J	2.5	1.6	3.1	0.18 J	0.17 J	2.5	0.28 J	1.7
Calcium	7440-70-2	- -	- -	1,420 J	2,590 J	4,120	2,140	4,290	2,430	4,750	31,600	13,600	5,330	1,120 J	3,480 J
Chromium	7440-47-3	190,000	190,000	18.1 J	24.4 J	200	28.4	187	25.9	296	7.1	19.8	271	14.7 J	273 J
Cobalt	7440-48-4	130	190,000	3.0 J	3.7 J	17.5	7.7	22.5	15.7	17.4	8.5	6.2 J	19.1	5.7	15.9
Copper	7440-50-8	43,000	190,000	312	37.1	127	92.0	158	119	136	42.2	28.8	162	31.9	156
Cyanide	57-12-5	200	190,000	13.2 J	18.3 J	< 0.39	2.9 J	1.1 J	2.3 J	0.18 J	8.3 J	1.3 J	1.1	< 0.28 J	0.33 J
Iron	7439-89-6	- -	190,000	22,900	10,500	31,600 J	26,300	39,600	20,800	28,200	5,710	12,900	32,200	19,200	31,000
Lead	7439-92-1	450	190,000	134	65.2	251	***459 J***	288 J	225 J	280 J	10.9 J	30.3 J	408 J	***749***	303
Magnesium	7439-95-4	- -	- -	561 J	1,510	4,630	2,520 J	5,210 J	2,700 J	4,510 J	870 J	1,540 J	4,760 J	1,250	4,080
Manganese	7439-96-5	2,000	190,000	193 J	83.6 J	751 J	186 J	1,090 J	189 J	868 J	66.3 J	205 J	947 J	137 J	736 J
Mercury	7439-97-6	10	190,000	0.19 J	0.49 J	1.1	0.68 J	1.6 J	0.49 J	2.4 J	0.018 J	0.065 J	2.0 J	0.31 J	1.4 J
Nickel	7440-02-0	650	190,000	17.1	12.3	31.2	22.6	41.7	39.5	31.8	67.6	30.5	37.8	11.9	33.0
Potassium	7440-09-7	- -	- -	226 J	565 J	2,130	1,900	2,370	2,290	1,810	183 J	661 J	2,090	842 J	1,900
Selenium	7782-49-2	26	190,000	1.7 J	< 2.2	1.5 J	< 2.7	3.5 J	1.5 J	< 3.5	< 2.4	< 2.5	1.4 J	< 2.3	1.8 J
Silver	7440-22-4	84	190,000	< 0.62	< 0.56	1.1	< 0.67	2.2	< 0.75	0.96	< 0.59	< 0.64	1.4	< 0.57	1.1
Sodium	7440-23-5	- -	- -	142 J	< 1,100	202 J	109 J	264 J	135 J	237 J	< 1,200	102 J	276 J	< 1,100	215 J
Thallium	7440-28-0	14	190,000	< 1.2	< 1.1	< 1.7	0.82 J	< 3.4	0.88 J	< 1.8	< 1.2	< 1.3	< 1.8	< 1.1	< 1.7
Vanadium	7440-62-2	680	190,000	9.4	13.6	36.9	38.5	42.2	39.0	35.0	3.9 J	16.6	40.1	15.8	35.4
Zinc	7440-66-6	12,000	190,000	169 J	86.5 J	684	569	793	527	929	512	268	850	118 J	632 J

Table 11
Saturated Soil Analytical Results – Detected VOCs, SVOCs, and Inorganics (mg/kg)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID: / Sample Depth (ft): / Date Collected:	CAS Number	Soil Standards or PQLs: S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	Soil Standards or PQLs: DC Non-Res Subsurf Soil (Exceedances Shaded)	S-127 6-8 4/17/19	S-127 13-15 4/17/19	S-128 10-12 4/18/19	S-128 13-15 4/18/19	S-129 8-10 4/18/19	S-129 10-12 4/18/19	S-130 7-8 4/17/19	S-130 10-12 4/17/19	S-130 13-15 4/17/19	S-131 2-4 4/17/19	S-131 7-9 4/17/19	S-132 8-10 4/17/19
Volatile Organic Compounds															
2-Butanone (MEK)	78-93-3	400	10,000	< 9	0.0112 J	< 6.3	0.0196	< 130	0.0111 J	0.0162	< 2.1	0.0084 J	< 0.0098	0.0085 J	< 2.4
Acetone	67-64-1	8,800	10,000	< 9	0.0693	< 6.3	0.125	< 130	0.105	0.133	< 2.1	0.0492	0.0324	0.0577	< 2.4
Benzene	71-43-2	0.5	330	***8.52***	< 0.00073	***1.29***	0.0019	***44.3***	0.0824	0.0661	0.285	< 0.00083	< 0.00049	0.0018	0.363
Carbon Disulfide	75-15-0	620	10,000	< 1.8	< 0.0029	< 1.3	< 0.0038	< 26	0.0020 J	0.0030	2.08	< 0.0033	< 0.0020	0.0038 J	0.607
Chlorobenzene	108-90-7	10	4,500	< 1.8	< 0.0029	< 1.3	< 0.0038	< 26	< 0.0033	< 0.0024	< 0.43	< 0.0033	< 0.0020	< 0.0039	< 0.47
Chloroform	67-66-3	8	110	< 1.8	< 0.0029	< 1.3	< 0.0038	< 26	< 0.0033	< 0.0024	< 0.43	< 0.0033	< 0.0020	< 0.0039	< 0.47
cis-1,2-Dichloroethene	156-59-2	7	10,000	< 0.9	< 0.0015	< 0.63	< 0.0019	< 13	< 0.0017	< 0.0012	< 0.21	< 0.0017	< 0.00098	< 0.0019	< 0.24
Cyclohexane	110-82-7	6,900	10,000	< 1.8	< 0.0029	< 1.3	< 0.0038	< 26	< 0.0033	< 0.0024	< 0.43	< 0.0033	< 0.0020	< 0.0039	< 0.47
Dichloromethane	75-09-2	0.5	10,000	< 4.5	< 0.0073	< 3.1	< 0.0095	< 66	< 0.0083	< 0.0060	< 1.1	< 0.0083	< 0.0049	< 0.0097	< 1.2
Ethylbenzene	100-41-4	70	1,000	7.46	< 0.0015	< 0.63	< 0.0019	11.6 J	0.0010 J	0.00071 J	0.235	< 0.0017	< 0.00098	0.0021	0.249
Isopropylbenzene	98-82-8	2,500	10,000	< 1.8	0.0012 J	< 1.3	0.0020 J	< 26	0.0024 J	< 0.0024	0.541	0.0014 J	< 0.0020	0.0044	< 0.47
m&p-Xylenes	ARC-mpXyl	- -	- -	19.7	< 0.0015	0.915	< 0.0019	80.9	0.0045	< 0.0012	0.162 J	< 0.0017	< 0.00098	< 0.0019	0.311
Methyl Acetate	79-20-9	9,700	10,000	< 4.5	< 0.0073	< 3.1	< 0.0095	< 66	< 0.0083	0.0024 J	< 1.1	< 0.0083	< 0.0049	< 0.0097	1.03 J
Methylcyclohexane	108-87-2	- -	- -	< 1.8	0.0034	< 1.3	0.0035 J	< 26	< 0.0033	< 0.0024	0.209 J	0.0014 J	< 0.0020	0.0024 J	< 0.47
Methyl-tert-butylether	1634-04-4	2	9,800	< 0.9	< 0.0015	< 0.63	< 0.0019	< 13	< 0.0017	< 0.0012	< 0.21	< 0.0017	< 0.00098	< 0.0019	< 0.24
o,p-Xylene	136777-61-2	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
o-Xylene	95-47-6	- -	- -	8.26	< 0.0015	< 0.63	0.0013 J	29.7	0.0026	< 0.0012	< 0.21	< 0.0017	< 0.00098	< 0.0019	< 0.24
Styrene (Monomer)	100-42-5	24	10,000	< 1.8	< 0.0029	< 1.3	< 0.0038	< 26	< 0.0033	< 0.0024	< 0.43	< 0.0033	< 0.0020	< 0.0039	< 0.47
Toluene	108-88-3	100	10,000	7.56	0.00060 J	0.626 J	< 0.0019	17.6	0.0026	0.0015	0.381	< 0.0017	< 0.00098	0.00083 J	1.63
trans-1,2-Dichloroethene	156-60-5	10	10,000	< 0.9	< 0.0015	< 0.63	< 0.0019	< 13	< 0.0017	< 0.0012	< 0.21	< 0.0017	< 0.00098	< 0.0019	< 0.24
trans-1,3-Dichloropropene	10061-02-6	- -	- -	< 1.8	< 0.0029	< 1.3	< 0.0038	< 26	< 0.0033	< 0.0024	< 0.43	< 0.0033	< 0.0020	< 0.0039	< 0.47
Total Xylenes	1330-20-7	1,000	9,100	27.9	< 0.0015	0.915	0.0013 J	111	0.0071	< 0.0012	0.162 J	< 0.0017	< 0.00098	0.0017 J	0.311
Semi-Volatile Organic Compounds															
1,1-Biphenyl	92-52-4	1.5	40	***7.08***	0.0773 J	***29.3 D***	0.0369 J	***127 D***	0.0542 J	0.0413 J	0.16	0.0452 J	< 0.075	0.218	< 0.12 B
2,4-Dimethylphenol	105-67-9	190	10,000	3.17	< 0.26	0.659	< 0.3	4.18	< 0.29	0.783	< 0.28	< 0.26	< 0.19	< 0.28	< 0.29
2-Methylnaphthalene	91-57-6	100	270	46.8 D	0.405	***123 D***	0.142	***533 D***	0.234	0.227	3.72	0.279	< 0.038	0.752	0.181
2-Methylphenol	95-48-7	490	190,000	0.362	< 0.11	0.136 J	< 0.12	< 0.78	< 0.12	1.54	0.166	< 0.1	< 0.075	< 0.11	< 0.12
3-Methylphenol, 4-Methylphenol	65794-96-9	- -	- -	2.16	0.142	0.389	0.154	0.39 J	0.0604 J	1.48	0.231	0.128	< 0.075	0.101 J	0.345
4-Methylphenol	106-44-5	49	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	83-32-9	4,700	190,000	42.6 D	1.5	60.5 D	1.99	469 D	0.885	0.0908	6.8 D	1.1	< 0.038	7.65 D	0.265
Acenaphthylene	208-96-8	6,600	190,000	16.4 D	0.228	33.6 D	0.119	121 D	0.0859	0.0292 J	0.325	0.136	< 0.038	0.223	0.0621
Acetophenone	98-86-2	970	10,000	< 0.37	< 0.26	< 0.43	< 0.3	< 1.9	< 0.29	0.0424 J	< 0.28	< 0.26	< 0.19	0.0334 J	0.0182 J
Anthracene	120-12-7	350	190,000	29.9 D	1.04	140 D	0.996	325 D	0.392	0.0854	1.88	0.44	< 0.038	4.93	0.0988
Benz(a)anthracene	56-55-3	340	190,000	30.5 D	0.94	141 D	0.584	***357 D***	0.314	0.0770	1.15	0.436	0.0114 J	1.59	0.137
Benzaldehyde	100-52-7	- -	- -	< 0.37	< 0.26	< 0.43	< 0.3	< 1.9	< 0.29	< 0.22	< 0.28	< 0.26	< 0.19	< 0.28	< 0.29
Benzo(a)pyrene	50-32-8	46	190,000	27.1 D	1.07	***110 D***	0.533	***299 D***	0.303	0.0635	1.06	0.445	< 0.038	0.989	0.184
Benzo(b)fluoranthene	205-99-2	170	190,000	31.9 D	1.08	150 D	0.585	***345 D***	0.336	0.0840	0.993	0.48	< 0.038	1.23	0.177
Benzo(g,h,i)perylene	191-24-2	180	190,000	14.3 D	0.587	55.5 D	0.273	135 D	0.168	0.0440	0.513	0.253	< 0.038	0.426	0.121
Benzo(k)fluoranthene	207-08-9	610	190,000	11.3 D	0.384	50 D	0.166	147 D	0.147	0.0265 J	0.318	0.146	< 0.038	0.411	0.0717
bis(2-Ethylhexyl)phthalate	117-81-7	130	10,000	< 0.15	< 0.11	< 0.17	< 0.12	< 0.78	< 0.12	< 0.088	< 0.11	< 0.1	< 0.075	< 0.11	< 0.12
Butyl benzyl phthalate	85-68-7	10,000	10,000	< 0.15	< 0.11	< 0.17	< 0.12	< 0.78	< 0.12	< 0.088	< 0.11	< 0.1	< 0.075	< 0.11	< 0.12

Location ID:		Soil Standards or PQLs		S-127		S-128		S-129		S-130			S-131		S-132
Sample Depth (ft):	CAS Number	S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	DC Non-Res Subsurf Soil (Exceedances Shaded)	6-8	13-15	10-12	13-15	8-10	10-12	7-8	10-12	13-15	2-4	7-9	8-10
Date Collected:				4/17/19	4/17/19	4/18/19	4/18/19	4/18/19	4/18/19	4/17/19	4/17/19	4/17/19	4/17/19	4/17/19	4/17/19
Semi-Volatile Organic Compounds (cont'd)															
Carbazole	86-74-8	89	190,000	15.6 D	0.0599 J	70.9 D	0.0659 J	***152 D***	0.191	0.0400 J	0.783	0.0247 J	< 0.075	1.61	< 0.12 B
Chrysene	218-01-9	230	190,000	25.1 D	1.1	135 D	0.776	***296 D***	0.382	0.0931	1.22	0.535	< 0.038	2.02	0.175
Dibenz(a,h)anthracene	53-70-3	270	190,000	3.37	0.145	2.36	0.0776	9.11	0.0535 J	< 0.044	0.16	0.0611	< 0.038	0.12	0.0270 J
Dibenzofuran	132-64-9	250	190,000	38.3 D	0.382	172 D	0.502	***472 D***	0.256	0.0514 J	1.54	0.0823 J	< 0.075	2.78	0.0450 J
Diethyl phthalate	84-66-2	7,800	10,000	< 0.15	< 0.11	< 0.17	< 0.12	< 0.78	< 0.12	< 0.088	< 0.11	< 0.1	< 0.075	< 0.11	< 0.12
Di-n-butyl phthalate	84-74-2	4,000	10,000	< 0.15	< 0.11	< 0.17	< 0.12	< 0.78	< 0.12	< 0.088	< 0.11	< 0.1	< 0.075	< 0.11	< 0.12
Di-n-octyl phthalate	117-84-0	10,000	10,000	< 0.15	< 0.11	< 0.17	< 0.12	< 0.78	< 0.12	< 0.088	< 0.11	< 0.1	< 0.075	< 0.11	< 0.12
Fluoranthene	206-44-0	3,200	190,000	87.1 D	2.09	396 D	1.83	864 D	0.75	0.153	2.9	0.982	0.0171 J	6.59 D	0.282
Fluorene	86-73-7	3,800	190,000	51.3 D	1.12	197 D	1.31	693 D	0.604	0.0826	3.29	0.55	< 0.038	5.69 D	0.103
Indeno(1,2,3-cd)pyrene	193-39-5	18,000	190,000	13.9 D	0.518	51.7 D	0.209	120 D	0.139	0.0441	0.502	0.239	< 0.038	0.4	0.12
Naphthalene	91-20-3	25	77	***282 D***	1.03	***557 D***	0.451	***2,440 D***	0.984	11.7 D	2.11	0.587	< 0.038	1.12	0.762
Pentachlorophenol	87-86-5	5	190,000	< 0.3	< 0.21	< 0.35	< 0.24	< 1.6	0.197 J	< 0.18	< 0.22	< 0.21	< 0.15	< 0.22	< 0.23
Phenanthrene	85-01-8	10,000	190,000	154 D	4.69	718 D	5.12	1,700 D	1.07	0.27	9.57 D	1.9	0.0160 J	17 D	0.34
Phenol	108-95-2	200	18,000	0.276	< 0.11	0.204	< 0.12	< 0.78	< 0.12	1.73	0.196	< 0.1	< 0.075	< 0.11	< 0.12
Pyrene	129-00-0	2,200	190,000	55.8 D	2.3	286 D	1.91	586 D	0.752	0.141	3.08	1.13	0.0131 J	5.27	0.347
Total PAHs and 2-Methylnaphthalene	-	- -	- -	923	20.2	3,210	17.1	9,440	7.6	13.2	39.6	9.70	0.0576	56.4	3.45
Metals															
Aluminum	7429-90-5	- -	190,000	9,850 J	16,400 J	14,500	24,500	5,970	14,200	4,490 J	16,300 J	19,400 J	21,400 J	16,600 J	19,900 J
Antimony	7440-36-0	27	190,000	< 2.3 J	0.71 J	< 2.7 J	< 3.6 J	< 2.4 J	< 3.6 J	< 2.6 J	< 3.4 J	1.1 J	< 2.5 J	< 3.4 J	3.6 J
Arsenic	7440-38-2	29	190,000	8.2	***41.6***	12.9	***80.7***	7.4	24.9	16.5	***35.8***	***64.3***	4.9	***33.4***	***34.5***
Barium	7440-39-3	8,200	190,000	29.5	165	148	257	58.4	154	45.8	165	260	51.6	150	241
Beryllium	7440-41-7	320	190,000	0.45	0.97	1.3	1.7	0.32	0.82	0.60	1.2	1.6	0.66	1.0	1.3
Cadmium	7440-43-9	38	190,000	0.10 J	1.8	0.49 J	3.1	0.50 J	1.2	0.90	1.6	2.8	< 0.61	1.2	1.4
Calcium	7440-70-2	- -	- -	516 J	2,900 J	30,900	6,290	1,380	4,120	1,050 J	3,880 J	5,250 J	672 J	3,310 J	3,910 J
Chromium	7440-47-3	190,000	190,000	15.4 J	122 J	33.3	247	11.5	109	18.4 J	151 J	427 J	31.5 J	129 J	149 J
Cobalt	7440-48-4	130	190,000	4.7 J	13.9	7.5	22.6	5.9	12.8	8.7	15.5	17.8	7.5	17.6	17.4
Copper	7440-50-8	43,000	190,000	12.2	97.5	52.3	182	45.2	78.4	46.8	103	204	12.0	85.8	93.6
Cyanide	57-12-5	200	190,000	< 0.25 J	0.50 J	2.1 J	1.7 J	7.7 J	1.0 J	1.8 J	0.81 J	0.92 J	0.44 J	2.1 J	0.50 J
Iron	7439-89-6	- -	190,000	19,400	24,000	13,200	39,800	17,000	24,400	14,800	29,600	32,300	21,200	29,800	32,000
Lead	7439-92-1	450	190,000	24.1	186	84.2 J	374 J	196 J	196 J	169	212	***497***	20.2	153	178
Magnesium	7439-95-4	- -	- -	1,700	3,750	15,000 J	5,290 J	1,170 J	4,380 J	911	4,050	4,550	2,110	4,100	4,840
Manganese	7439-96-5	2,000	190,000	172 J	562 J	1,380 J	886 J	469 J	843 J	158 J	718 J	743 J	209 J	867 J	1,180 J
Mercury	7439-97-6	10	190,000	0.052 J	0.87 J	0.29 J	2.0 J	0.086 J	0.88 J	0.15 J	1.6 J	2.3 J	R	1.2 J	1.3 J
Nickel	7440-02-0	650	190,000	11.6	26.7	21.5	43.3	11.7	26.3	26.2	33.5	38.4	14.2	29.7	34.5
Potassium	7440-09-7	- -	- -	954 J	1,670	2,320	2,470	601 J	1,780 J	467 J	1,890	2,180	1,060 J	1,710	2,080
Selenium	7782-49-2	26	190,000	< 2.3	1.4 J	1.4 J	4.3 J	< 2.4	< 3.6	2.3 J	1.5 J	3.6	< 2.5	< 3.4	< 3.7
Silver	7440-22-4	84	190,000	< 0.57	< 0.79	< 0.69	2.5	< 0.59	0.34 J	< 0.65	0.77 J	2.5	< 0.61	< 0.85	< 0.93
Sodium	7440-23-5	- -	- -	< 1,100	175 J	1,400	337 J	< 1,200	179 J	< 1,300	270 J	421 J	< 1,200	222 J	171 J
Thallium	7440-28-0	14	190,000	< 1.1	< 1.6	< 2.7	< 3.6	< 1.2	< 1.8	< 1.3	< 1.7	< 1.7	< 1.2	< 1.7	< 1.9
Vanadium	7440-62-2	680	190,000	19.3	31.4	32.0	44.3	10.6	27.8	13.8	35.8	38.7	45.3	32.4	41.1
Zinc	7440-66-6	12,000	190,000	159 J	507 J	144	960	249	380	85.8 J	485 J	1,040 J	55.9 J	453 J	514 J

Table 11
Saturated Soil Analytical Results – Detected VOCs, SVOCs, and Inorganics (mg/kg)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID:	CAS Number	Soil Standards or PQLs		S-133		S-135		S-136		S-142		S-144		S-146
Sample Depth (ft):		S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	DC Non-Res Subsurf Soil (Exceedances Shaded)	7-9	13-15	4-6	8-10	4-6	7-9	6-6.5	7-8	15-17	22-24	17-19
Date Collected:				4/17/19	4/17/19	4/22/19	4/22/19	4/22/19	4/22/19	4/25/19	4/25/19	4/24/19	4/24/19	4/25/19
Volatile Organic Compounds														
2-Butanone (MEK)	78-93-3	400	10,000	0.0304	0.0104 J	< 1.7	0.0096 J	0.0229	< 0.011	NA	0.0355	< 0.01	< 0.015	< 0.01
Acetone	67-64-1	8,800	10,000	0.173	0.0648	< 1.7	0.105	0.176	0.0664	NA	0.129	0.0294 J	0.0554	0.0053 J
Benzene	71-43-2	0.5	330	0.0088	< 0.00074	< 0.083	< 0.00064	0.0022	< 0.00057	NA	< 0.0011	< 0.00052	< 0.00073	< 0.00052
Carbon Disulfide	75-15-0	620	10,000	0.0063	< 0.0030	< 0.33	< 0.0026	< 0.0029	< 0.0023	NA	< 0.0046	0.0119 J	< 0.0029	< 0.0021
Chlorobenzene	108-90-7	10	4,500	< 0.0035	< 0.0030	< 0.33	< 0.0026	< 0.0029	< 0.0023	NA	< 0.0046	< 0.0021	< 0.0029	< 0.0021
Chloroform	67-66-3	8	110	< 0.0035	< 0.0030	< 0.33	< 0.0026	< 0.0029	< 0.0023	NA	< 0.0046	< 0.0021	< 0.0029	< 0.0021
cis-1,2-Dichloroethene	156-59-2	7	10,000	< 0.0017	< 0.0015	< 0.17	< 0.0013	< 0.0015	< 0.0011	NA	< 0.0023	< 0.0010	< 0.0015	< 0.0010
Cyclohexane	110-82-7	6,900	10,000	< 0.0035	< 0.0030	< 0.33	< 0.0026	< 0.0029	< 0.0023	NA	< 0.0046	< 0.0021	< 0.0029	< 0.0021
Dichloromethane	75-09-2	0.5	10,000	< 0.0087	< 0.0074	< 0.83	< 0.0064	< 0.0073	< 0.0057	NA	0.0068 J	< 0.0052	< 0.0073	0.0057
Ethylbenzene	100-41-4	70	1,000	< 0.0017	< 0.0015	0.119 J	< 0.0013	< 0.0015	< 0.0011	NA	< 0.0023	< 0.0010	< 0.0015	< 0.0010
Isopropylbenzene	98-82-8	2,500	10,000	< 0.0035	0.0010 J	< 0.33	< 0.0026	< 0.0029	< 0.0023	NA	< 0.0046	< 0.0021	< 0.0029	< 0.0021
m&p-Xylenes	ARC-mpXyl	- -	- -	< 0.0017	< 0.0015	0.212	< 0.0013	< 0.0015	< 0.0011	NA	< 0.0023	< 0.0010	< 0.0015	< 0.0010
Methyl Acetate	79-20-9	9,700	10,000	0.0039 J	< 0.0074	< 0.83	< 0.0064	< 0.0073	< 0.0057	NA	< 0.011	< 0.0052	< 0.0073	< 0.0052
Methylcyclohexane	108-87-2	- -	- -	< 0.0035	0.0019 J	< 0.33	< 0.0026	< 0.0029	< 0.0023	NA	< 0.0046	< 0.0021	< 0.0029	< 0.0021
Methyl-tert-butylether	1634-04-4	2	9,800	< 0.0017	< 0.0015	< 0.17	< 0.0013	< 0.0015	< 0.0011	NA	< 0.0023	< 0.0010	< 0.0015	< 0.0010
o,p-Xylene	136777-61-2	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
o-Xylene	95-47-6	- -	- -	< 0.0017	< 0.0015	< 0.17	< 0.0013	< 0.0015	< 0.0011	NA	< 0.0023	< 0.0010	< 0.0015	< 0.0010
Styrene (Monomer)	100-42-5	24	10,000	< 0.0035	< 0.0030	< 0.33	< 0.0026	< 0.0029	< 0.0023	NA	< 0.0046	< 0.0021	< 0.0029	< 0.0021
Toluene	108-88-3	100	10,000	0.0010 J	< 0.0015	2.07	0.00080 J	0.0013 J	0.00068 J	NA	< 0.0023	< 0.0010	< 0.0015	< 0.0010
trans-1,2-Dichloroethene	156-60-5	10	10,000	< 0.0017	< 0.0015	< 0.17	< 0.0013	< 0.0015	< 0.0011	NA	< 0.0023	< 0.0010	< 0.0015	< 0.0010
trans-1,3-Dichloropropene	10061-02-6	- -	- -	< 0.0035	< 0.0030	< 0.33	< 0.0026	< 0.0029	< 0.0023	NA	< 0.0046	< 0.0021	< 0.0029	< 0.0021
Total Xylenes	1330-20-7	1,000	9,100	< 0.0017	< 0.0015	0.212	< 0.0013	< 0.0015	< 0.0011	NA	< 0.0023	< 0.0010	< 0.0015	< 0.0010
Semi-Volatile Organic Compounds														
1,1-Biphenyl	92-52-4	1.5	40	< 0.071 B	< 0.1 B	< 0.093	0.0091 J	0.0242 J	< 0.08	NA	NA	< 0.083	< 0.073	NA
2,4-Dimethylphenol	105-67-9	190	10,000	< 0.18	< 0.26	< 0.23	< 0.24	< 0.23	< 0.2	NA	< 0.31	< 0.21	< 0.18	< 0.19
2-Methylnaphthalene	91-57-6	100	270	0.0771	0.253	0.108	< 0.047	0.0765	< 0.04	NA	0.0925	< 0.041	< 0.036	< 0.039
2-Methylphenol	95-48-7	490	190,000	< 0.071	< 0.1	< 0.093	< 0.095	< 0.091	< 0.08	NA	< 0.12	< 0.083	< 0.073	< 0.078
3-Methylphenol, 4-Methylphenol	65794-96-9	- -	- -	< 0.071	0.121	0.0827 J	< 0.095	< 0.091 J	< 0.08 J	NA	0.349	< 0.083	< 0.073	< 0.078
4-Methylphenol	106-44-5	49	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	83-32-9	4,700	190,000	0.758	0.461	0.216	< 0.047	0.0375 J	< 0.04	NA	0.0453 J	< 0.041	< 0.036	< 0.039
Acenaphthylene	208-96-8	6,600	190,000	0.0551	0.234	< 0.046	< 0.047	0.0473	< 0.04	NA	0.0634	< 0.041	< 0.036	< 0.039
Acetophenone	98-86-2	970	10,000	< 0.18	0.0118 J	< 0.23	< 0.24	< 0.23 J	< 0.2 J	NA	NA	< 0.21	< 0.18	NA
Anthracene	120-12-7	350	190,000	0.139	0.39	0.114	< 0.047	0.0616	< 0.04	NA	0.0702	< 0.041	< 0.036	< 0.039
Benz(a)anthracene	56-55-3	340	190,000	0.0873	0.807	0.126	0.0422 J	0.0799	< 0.04	NA	0.17	0.0229 J	< 0.036	< 0.039
Benzaldehyde	100-52-7	- -	- -	< 0.18	< 0.26	< 0.23	< 0.24	0.0149 J	< 0.2	NA	NA	< 0.21	< 0.18	NA
Benzo(a)pyrene	50-32-8	46	190,000	0.0724	1.06	0.143	0.0408 J	0.0990	< 0.04	NA	0.2	0.0230 J	< 0.036	< 0.039
Benzo(b)fluoranthene	205-99-2	170	190,000	0.0955	1.05	0.152	0.0492	0.102	< 0.04	NA	0.207	0.0297 J	< 0.036	< 0.039
Benzo(g,h,i)perylene	191-24-2	180	190,000	0.0367	0.616	0.0966	0.0291 J	0.0731	< 0.04	NA	0.122	< 0.041	< 0.036	< 0.039
Benzo(k)fluoranthene	207-08-9	610	190,000	0.0360	0.376	0.0623	< 0.047	0.0441 J	< 0.04	NA	0.0798	< 0.041	< 0.036	< 0.039
bis(2-Ethylhexyl)phthalate	117-81-7	130	10,000	< 0.071	< 0.1	< 0.093	< 0.095	< 0.091	< 0.08	NA	< 0.12	< 0.083	< 0.073	< 0.078
Butyl benzyl phthalate	85-68-7	10,000	10,000	< 0.071	< 0.1	< 0.093	< 0.095	< 0.091	< 0.08	NA	< 0.12	< 0.083	< 0.073	< 0.078

Location ID: / Sample Depth (ft): / Date Collected:	CAS Number	Soil Standards or PQLs: S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	Soil Standards or PQLs: DC Non-Res Subsurf Soil (Exceedances Shaded)	S-133 7-9 4/17/19	S-133 13-15 4/17/19	S-135 4-6 4/22/19	S-135 8-10 4/22/19	S-136 4-6 4/22/19	S-136 7-9 4/22/19	S-142 6-6.5 4/25/19	S-142 7-8 4/25/19	S-144 15-17 4/24/19	S-144 22-24 4/24/19	S-146 17-19 4/25/19
Semi-Volatile Organic Compounds (cont'd)														
Carbazole	86-74-8	89	190,000	< 0.071	0.0571 J	< 0.093	0.0071 J	< 0.091	< 0.08	NA	0.0184 J	< 0.083	< 0.073	< 0.078
Chrysene	218-01-9	230	190,000	0.0997	0.931	0.15	0.0391 J	0.0841	< 0.04	NA	0.181	0.0172 J	< 0.036	< 0.039
Dibenz(a,h)anthracene	53-70-3	270	190,000	< 0.035	0.163	0.0287 J	< 0.047	< 0.046	< 0.04	NA	0.0281 J	< 0.041	< 0.036	< 0.039
Dibenzofuran	132-64-9	250	190,000	0.103	0.0943 J	0.131	< 0.095	< 0.091	< 0.08	NA	0.0292 J	< 0.083	< 0.073	< 0.078
Diethyl phthalate	84-66-2	7,800	10,000	< 0.071	< 0.1	< 0.093	< 0.095	< 0.091	< 0.08	NA	< 0.12	< 0.083	< 0.073	< 0.078
Di-n-butyl phthalate	84-74-2	4,000	10,000	< 0.071	< 0.1	< 0.093	< 0.095	< 0.091	< 0.08	NA	< 0.12	< 0.083	< 0.073	< 0.078
Di-n-octyl phthalate	117-84-0	10,000	10,000	< 0.071	< 0.1	< 0.093	< 0.095	< 0.091	< 0.08	NA	< 0.12	< 0.083	< 0.073	< 0.078
Fluoranthene	206-44-0	3,200	190,000	0.289	1.27	0.305	0.0481	0.111	< 0.04	NA	0.284	0.0294 J	< 0.036	< 0.039
Fluorene	86-73-7	3,800	190,000	0.465	0.293	0.302	< 0.047	0.0331 J	< 0.04	NA	0.0544 J	< 0.041	< 0.036	< 0.039
Indeno(1,2,3-cd)pyrene	193-39-5	18,000	190,000	0.0516	0.58	0.105	0.0464 J	0.0537	< 0.04	NA	0.0956	< 0.041	< 0.036	< 0.039
Naphthalene	91-20-3	25	77	1.26	0.752	0.104	0.0258 J	0.395	< 0.04	NA	0.406	< 0.041	< 0.036	< 0.039
Pentachlorophenol	87-86-5	5	190,000	< 0.14	< 0.21	< 0.19	< 0.19	< 0.18	< 0.16	NA	< 0.25	< 0.17	< 0.15	< 0.16
Phenanthrene	85-01-8	10,000	190,000	0.173	0.916	0.142	0.0343 J	0.0722	< 0.04	NA	0.21	0.0174 J	< 0.036	< 0.039
Phenol	108-95-2	200	18,000	0.0232 J	< 0.1	< 0.093	< 0.095	< 0.091	< 0.08	NA	< 0.12	< 0.083	< 0.073	< 0.078
Pyrene	129-00-0	2,200	190,000	0.296	1.4	0.274	0.0574	0.156	< 0.04	NA	0.336	0.0267 J	< 0.036	< 0.039
Total PAHs and 2-Methylnaphthalene	-	- -	- -	3.99	11.6	2.43	0.412	1.53	< 0.04	NA	2.65	0.166	< 0.036	< 0.039
Metals														
Aluminum	7429-90-5	- -	190,000	6,230 J	17,200 J	12,300	7,510	10,400	4,850	NA	20,500	7,290 J	7,490 J	1,080
Antimony	7440-36-0	27	190,000	1.3 J	4.2 J	< 2.8	< 2.8	< 2.8	< 2.5	NA	1.6 J	< 2.5 J	< 2.4 J	< 2.3 J
Arsenic	7440-38-2	29	190,000	3.8	***38.4***	***52.2***	4.6	20.8	5.7	NA	***48.7***	2.6	1.9 J	1.6 J
Barium	7440-39-3	8,200	190,000	43.5	195	136	46.6	123	29.3	NA	203	23.6 J	29.0 J	4.1 J
Beryllium	7440-41-7	320	190,000	0.37	1.1	0.95	0.36	0.70	0.22 J	NA	1.5	0.28	0.31	0.16 J
Cadmium	7440-43-9	38	190,000	0.073 J	1.6	1.6	0.14 J	2.1	0.10 J	NA	2.6	< 0.62	< 0.60	< 0.57
Calcium	7440-70-2	- -	- -	1,400 J	2,630 J	2,810	1,940	1,820	1,040	NA	4,500 J	245 J	218 J	58.7 J
Chromium	7440-47-3	190,000	190,000	17.6 J	207 J	125	23.7	79.0	12.4	NA	176	9.7	13.6	5.1
Cobalt	7440-48-4	130	190,000	4.5 J	14.7	13.2	6.8 J	8.0	6.2 J	NA	21.5	7.3	3.1 J	0.87 J
Copper	7440-50-8	43,000	190,000	28.6	127	104	10.1	74.3	6.8	NA	148	7.2	3.2	1.1 J
Cyanide	57-12-5	200	190,000	0.28 J	0.36 J	0.67	< 0.37	2.7	0.72	1.3 J	1.6 J	< 0.28	< 0.24	< 0.24 J
Iron	7439-89-6	- -	190,000	14,600	26,500	23,100	13,500	17,600	10,400	NA	33,300	12,300	5,270	2,510
Lead	7439-92-1	450	190,000	23.1	270	189	25.6	137	9.0	NA	279 J	10.3	5.4	1.0 J
Magnesium	7439-95-4	- -	- -	2,220	3,320	3,340	3,200	2,690	1,820	NA	5,090	1,820 J	1,090 J	72.2 J
Manganese	7439-96-5	2,000	190,000	254 J	785 J	557	401	144	304	NA	967 J	100	32.6	11.6 J
Mercury	7439-97-6	10	190,000	0.070 J	1.6 J	0.99 J	0.051 J	0.80 J	0.037 J	NA	1.9 J	< 0.034 J	< 0.034 J	< 0.035 J
Nickel	7440-02-0	650	190,000	11.4	28.3	24.2	15.3	21.4	10.1	NA	38.4	13.0	7.3	1.3 J
Potassium	7440-09-7	- -	- -	988 J	1,580 J	1,530	1,150 J	1,230 J	774 J	NA	2,280	896 J	1,100 J	120 J
Selenium	7782-49-2	26	190,000	< 2.1	< 3.2	1.3 J	< 2.8	1.1 J	< 2.5	NA	1.6 J	< 2.5	< 2.4	< 2.3
Silver	7440-22-4	84	190,000	< 0.52	0.68 J	0.79	< 0.70	0.43 J	< 0.63	NA	2.1	< 0.62	< 0.60	< 0.57
Sodium	7440-23-5	- -	- -	135 J	142 J	121 J	116 J	121 J	< 1,300	NA	189 J	< 1,200	< 1,200	< 1,100
Thallium	7440-28-0	14	190,000	< 1.0	< 1.6	< 1.4	< 1.4	< 1.4	< 1.3	NA	< 1.9	< 1.2	< 1.2	< 1.1
Vanadium	7440-62-2	680	190,000	15.6	32.4	24.7	15.9	22.0	8.1	NA	41.3	9.6	8.8	3.9 J
Zinc	7440-66-6	12,000	190,000	56.1 J	679 J	531	61.9	332	86.6	NA	751	43.0 J	26.6 J	5.3 J

Table 11
Saturated Soil Analytical Results – Detected VOCs, SVOCs, and Inorganics (mg/kg)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID:		Soil Standards or PQLs		S-147		S-148	S-149	S-151	S-153		S-154	
Sample Depth (ft):		S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	DC Non-Res Subsurf Soil (Exceedances Shaded)	12-14	18-20	16-18	18.5-20.5	3-5	7-9	13.5-15	9-11	12-14
Date Collected:	CAS Number			4/25/19	4/25/19	4/25/19	4/25/19	4/25/19	4/26/19	4/26/19	4/26/19	4/26/19
Volatile Organic Compounds												
2-Butanone (MEK)	78-93-3	400	10,000	< 0.019	0.0561	0.0209	0.0317	< 0.013 [< 0.01]	0.0139 J	0.0141 J [0.0162 J]	< 1.6	0.0257 [0.0116 J]
Acetone	67-64-1	8,800	10,000	0.0924	0.24	0.0890	0.134	0.0139 [0.0278]	0.141	0.0755 [0.0725 J]	< 1.6	0.208 [0.0716]
Benzene	71-43-2	0.5	330	< 0.00095	< 0.00082	< 0.00075	< 0.00072	< 0.00064 [< 0.00051]	0.0087	< 0.00079 [< 0.00088]	***11.4***	0.0025 [0.0042]
Carbon Disulfide	75-15-0	620	10,000	0.0053	< 0.0033	< 0.0030	< 0.0029	< 0.0026 [< 0.0020]	0.0105	< 0.0032 [< 0.0035]	0.206 J	< 0.0043 [< 0.0046]
Chlorobenzene	108-90-7	10	4,500	< 0.0038	< 0.0033	< 0.0030	< 0.0029	< 0.0026 [< 0.0020]	< 0.0044	< 0.0032 [< 0.0035]	0.163 J	< 0.0043 [< 0.0046]
Chloroform	67-66-3	8	110	< 0.0038	< 0.0033	< 0.0030	< 0.0029	< 0.0026 [< 0.0020]	< 0.0044	< 0.0032 [< 0.0035]	< 0.32	< 0.0043 [< 0.0046]
cis-1,2-Dichloroethene	156-59-2	7	10,000	< 0.0019	< 0.0016	< 0.0015	< 0.0014	< 0.0013 [< 0.0010]	< 0.0022	< 0.0016 [< 0.0018]	< 0.16	< 0.0022 [< 0.0023]
Cyclohexane	110-82-7	6,900	10,000	< 0.0038	< 0.0033	< 0.0030	< 0.0029	< 0.0026 [< 0.0020]	< 0.0044	< 0.0032 [< 0.0035]	< 0.32	< 0.0043 [< 0.0046]
Dichloromethane	75-09-2	0.5	10,000	< 0.0095	< 0.0082	< 0.0075	< 0.0072	< 0.0064 [< 0.0051]	< 0.011	< 0.0079 [< 0.0088]	< 0.81	< 0.011 [< 0.011]
Ethylbenzene	100-41-4	70	1,000	< 0.0019	< 0.0016	< 0.0015	< 0.0014	< 0.0013 [< 0.0010]	0.0018 J	< 0.0016 [< 0.0018]	0.0949 J	0.0012 J [< 0.0023]
Isopropylbenzene	98-82-8	2,500	10,000	< 0.0038	< 0.0033	< 0.0030	< 0.0029	< 0.0026 [< 0.0020]	< 0.0044	< 0.0032 [0.0016 J]	< 0.32	0.0018 J [< 0.0046]
m&p-Xylenes	ARC-mpXyl	- -	- -	< 0.0019	< 0.0016	< 0.0015	< 0.0014	< 0.0013 [< 0.0010]	0.0023	< 0.0016 [< 0.0018]	< 0.16	< 0.0022 [< 0.0023]
Methyl Acetate	79-20-9	9,700	10,000	< 0.0095	< 0.0082	< 0.0075	< 0.0072	< 0.0064 [< 0.0051]	< 0.011 J	< 0.0079 [< 0.0088]	0.431 J	< 0.011 [< 0.011]
Methylcyclohexane	108-87-2	- -	- -	< 0.0038	< 0.0033	< 0.0030	< 0.0029	< 0.0026 [< 0.0020]	< 0.0044	< 0.0032 [0.0015 J]	< 0.32	< 0.0043 [< 0.0046]
Methyl-tert-butylether	1634-04-4	2	9,800	< 0.0019	< 0.0016	< 0.0015	< 0.0014	< 0.0013 [< 0.0010]	< 0.0022	< 0.0016 [< 0.0018]	< 0.16	< 0.0022 [< 0.0023]
o,p-Xylene	136777-61-2	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA
o-Xylene	95-47-6	- -	- -	< 0.0019	< 0.0016	< 0.0015	< 0.0014	< 0.0013 [< 0.0010]	0.0028	< 0.0016 [< 0.0018]	< 0.16	0.0014 J [< 0.0023]
Styrene (Monomer)	100-42-5	24	10,000	< 0.0038	< 0.0033	< 0.0030	< 0.0029	< 0.0026 [< 0.0020]	< 0.0044	< 0.0032 [< 0.0035]	< 0.32	< 0.0043 [< 0.0046]
Toluene	108-88-3	100	10,000	< 0.0019	< 0.0016	< 0.0015	< 0.0014	< 0.0013 [< 0.0010]	0.0022	0.00063 J [0.0033 J]	0.594	0.0013 J [0.00087 J]
trans-1,2-Dichloroethene	156-60-5	10	10,000	< 0.0019	< 0.0016	< 0.0015	< 0.0014	< 0.0013 [< 0.0010]	< 0.0022	< 0.0016 [< 0.0018]	< 0.16	< 0.0022 [< 0.0023]
trans-1,3-Dichloropropene	10061-02-6	- -	- -	< 0.0038	< 0.0033	< 0.0030	< 0.0029	< 0.0026 [< 0.0020]	< 0.0044	< 0.0032 [< 0.0035]	< 0.32	< 0.0043 [< 0.0046]
Total Xylenes	1330-20-7	1,000	9,100	< 0.0019	< 0.0016	< 0.0015	< 0.0014	< 0.0013 [< 0.0010]	0.0051	< 0.0016 [< 0.0018]	< 0.16	0.0014 J [< 0.0023]
Semi-Volatile Organic Compounds												
1,1-Biphenyl	92-52-4	1.5	40	NA	NA	NA	NA	NA	0.282	0.0935 J [0.0924 J]	0.222	0.115 [0.143]
2,4-Dimethylphenol	105-67-9	190	10,000	< 0.23	< 0.25	< 0.27 J	< 0.26	< 0.21 [< 0.2]	< 0.27	< 0.26 [< 0.24]	< 0.2	< 0.29 [< 0.3]
2-Methylnaphthalene	91-57-6	100	270	1.4	0.0199 J	< 0.054	< 0.052	< 0.043 [< 0.04]	0.638	0.406 [0.473]	0.319	0.572 [0.638]
2-Methylphenol	95-48-7	490	190,000	< 0.091	< 0.1	< 0.11	< 0.1	< 0.085 [< 0.08]	0.0936 J	< 0.1 [< 0.094]	< 0.08	< 0.11 [< 0.12]
3-Methylphenol, 4-Methylphenol	65794-96-9	- -	- -	< 0.091	< 0.1	< 0.11	< 0.1	< 0.085 [< 0.08]	0.141	0.297 [0.181]	0.0360 J	0.425 [0.681]
4-Methylphenol	106-44-5	49	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	83-32-9	4,700	190,000	0.127	< 0.051	< 0.054	< 0.052	0.0188 J [< 0.04]	2.85	0.641 [0.945]	9.54 D	1.89 [1.62]
Acenaphthylene	208-96-8	6,600	190,000	< 0.045	< 0.051	< 0.054	< 0.052	< 0.043 [< 0.04]	0.703	0.194 [0.251]	0.504	0.308 [0.331]
Acetophenone	98-86-2	970	10,000	NA	NA	NA	NA	NA	0.0376 J	0.0114 J [< 0.24]	< 0.2	0.0210 J [0.0168 J]
Anthracene	120-12-7	350	190,000	0.284	0.0457 J	< 0.054	< 0.052	0.0526 [< 0.04]	< 0.055	0.296 J [0.672 J]	1.61	1.08 [0.867]
Benz(a)anthracene	56-55-3	340	190,000	0.115	0.0427 J	0.0178 J	< 0.052	0.138 [0.0189 J]	0.138	0.49 J [0.994 J]	0.318	0.762 [0.741]
Benzaldehyde	100-52-7	- -	- -	NA	NA	NA	NA	NA	< 0.27	< 0.26 [< 0.24]	< 0.2	< 0.29 [< 0.3]
Benzo(a)pyrene	50-32-8	46	190,000	0.0677	0.0275 J	< 0.054	< 0.052	0.134 [< 0.04]	0.107	0.657 [1.06]	0.249	0.916 [0.799]
Benzo(b)fluoranthene	205-99-2	170	190,000	0.0997	0.0332 J	< 0.054	< 0.052	0.154 J [0.0186 J]	0.134	0.638 [1.02]	0.33	0.896 [0.807]
Benzo(g,h,i)perylene	191-24-2	180	190,000	0.0450	< 0.051	< 0.054	< 0.052	0.0827 [< 0.04]	0.0743	0.438 [0.599]	0.16	0.551 [0.468]
Benzo(k)fluoranthene	207-08-9	610	190,000	0.0336 J	< 0.051	< 0.054	< 0.052	0.0541 [< 0.04]	0.0555	0.259 [0.417]	0.105	0.326 [0.257]
bis(2-Ethylhexyl)phthalate	117-81-7	130	10,000	< 0.091	< 0.1	< 0.11	< 0.1	< 0.085 [< 0.08]	< 0.11	< 0.1 [< 0.094]	< 0.08	< 0.11 [< 0.12]
Butyl benzyl phthalate	85-68-7	10,000	10,000	< 0.091	< 0.1	< 0.11	< 0.1	< 0.085 [< 0.08]	< 0.11	< 0.1 [< 0.094]	< 0.08	< 0.11 [< 0.12]

Location ID:		Soil Standards or PQLs		S-147		S-148	S-149	S-151	S-153		S-154	
Sample Depth (ft):		S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	DC Non-Res Subsurf Soil (Exceedances Shaded)	12-14	18-20	16-18	18.5-20.5	3-5	7-9	13.5-15	9-11	12-14
Date Collected:	CAS Number			4/25/19	4/25/19	4/25/19	4/25/19	4/25/19	4/26/19	4/26/19	4/26/19	4/26/19
Semi-Volatile Organic Compounds (cont'd)												
Carbazole	86-74-8	89	190,000	0.644	0.0155 J	< 0.11	< 0.1	0.0245 J [< 0.08]	1.2	0.0781 J [0.0711 J]	2.54	0.204 [0.115 J]
Chrysene	218-01-9	230	190,000	0.11	0.0366 J	< 0.054	< 0.052	0.126 [0.0149 J]	0.151	0.564 J [1.07 J]	0.362	0.892 [0.868]
Dibenz(a,h)anthracene	53-70-3	270	190,000	< 0.045	< 0.051	< 0.054	< 0.052	< 0.043 [< 0.04]	< 0.055	0.112 [0.16]	0.0438	0.146 [0.119]
Dibenzofuran	132-64-9	250	190,000	0.224	0.0310 J	< 0.11	< 0.1	< 0.085 [< 0.08]	0.821	0.143 [0.147]	3.62	0.584 [0.505]
Diethyl phthalate	84-66-2	7,800	10,000	< 0.091	< 0.1	< 0.11	< 0.1	< 0.085 [< 0.08]	< 0.11	< 0.1 [< 0.094]	< 0.08	< 0.11 [< 0.12]
Di-n-butyl phthalate	84-74-2	4,000	10,000	< 0.091	< 0.1	< 0.11	< 0.1	< 0.085 [< 0.08]	< 0.11	< 0.1 [< 0.094]	< 0.08	< 0.11 [< 0.12]
Di-n-octyl phthalate	117-84-0	10,000	10,000	< 0.091	< 0.1	< 0.11	< 0.1	< 0.085 [< 0.08]	< 0.11	< 0.1 [< 0.094]	< 0.08	< 0.11 [< 0.12]
Fluoranthene	206-44-0	3,200	190,000	0.497	0.0951	0.0380 J	0.0236 J	0.282 J [0.0277 J]	0.434	0.751 J [1.77 J]	1.91	1.88 [1.81]
Fluorene	86-73-7	3,800	190,000	0.356	0.0420 J	< 0.054	< 0.052	0.0211 J [< 0.04]	2.97	0.32 J [0.598 J]	8.69 D	1.4 [1.04]
Indeno(1,2,3-cd)pyrene	193-39-5	18,000	190,000	0.0315 J	< 0.051	< 0.054	< 0.052	0.0687 [< 0.04]	0.0733	0.413 [0.6]	0.158	0.499 [0.432]
Naphthalene	91-20-3	25	77	1.78	0.103	0.0754	0.0297 J	0.0122 J [< 0.04]	8.28 D	1.22 [1.29]	3.23	1.61 [1.85]
Pentachlorophenol	87-86-5	5	190,000	< 0.18	< 0.2	< 0.22	< 0.21	< 0.17 [< 0.16]	< 0.22	< 0.21 [< 0.19]	< 0.16	< 0.23 [< 0.24]
Phenanthrene	85-01-8	10,000	190,000	0.4	0.138	0.0427 J	0.0218 J	0.202 J [0.0228 J]	0.326	0.925 J [2.3 J]	2.9	4.56 [3.3]
Phenol	108-95-2	200	18,000	< 0.091	< 0.1	< 0.11	< 0.1	< 0.085 [< 0.08]	0.257	< 0.1 [< 0.094]	< 0.08	< 0.11 [< 0.12]
Pyrene	129-00-0	2,200	190,000	0.538	0.0734	0.0298 J	0.0202 J	0.248 J [0.0286 J]	0.495	0.851 J [2.07 J]	1.38	2.08 [2.14]
Total PAHs and 2-Methylnaphthalene	-	- -	- -	5.88	0.657	0.204	0.0953	1.59 [0.132]	17.4	9.18 [16.3]	31.8	20.4 [18.1]
Metals												
Aluminum	7429-90-5	- -	190,000	3,240	23,600	21,100	19,200	16,100 [18,500]	27,800 J	8,140 J [13,800 J]	4,510 J	22,800 J [18,500 J]
Antimony	7440-36-0	27	190,000	0.88 J	0.61 J	< 3.3 J	< 3.2 J	< 2.7 J [< 4.7 J]	< 3.5 J	< 3.1 J [< 2.9 J]	< 2.7 J	1.2 J [< 3.7 J]
Arsenic	7440-38-2	29	190,000	8.1	5.3	5.4	4.3	2.9 [2.4 J]	8.2 J	13.0 J [27.6 J]	5.2 J	***140 J [33.9 J]***
Barium	7440-39-3	8,200	190,000	88.0	177	152	142	151 [153]	236 J	89.1 [148]	58.2 J	276 J [159 J]
Beryllium	7440-41-7	320	190,000	2.3	1.0	1.1	0.87	0.84 [0.91]	4.4	0.53 [1.0]	0.43	1.7 [1.3]
Cadmium	7440-43-9	38	190,000	1.4	0.16 J	0.15 J	0.14 J	< 0.67 [0.12 J]	< 0.87	0.48 J [1.6]	0.19 J	3.9 [1.4]
Calcium	7440-70-2	- -	- -	939 J	3,420 J	3,160 J	3,050 J	7,430 J [1,700 J]	15,400	2,280 [2,630]	3,160	5,000 [3,900]
Chromium	7440-47-3	190,000	190,000	8.0	45.3	46.9	39.3	33.2 [33.7]	75.4 J	64.0 J [135 J]	28.2 J	449 J [156 J]
Cobalt	7440-48-4	130	190,000	42.2	10.6	11.2	10.6	12.2 [13.2]	39.5	8.3 [13.0]	5.4 J	26.8 [17.9]
Copper	7440-50-8	43,000	190,000	80.5	11.6	14.7	9.2	46.5 [54.2]	28.1 J	40.7 J [87.1 J]	36.1 J	220 J [98.6 J]
Cyanide	57-12-5	200	190,000	1.5 J	0.24 J	0.55 J	0.26 J	< 0.30 J [0.20 J]	2.2 J	4.9 [5.2]	5.5 J	3.2 J [1.5 J]
Iron	7439-89-6	- -	190,000	7,690	23,500	27,600	18,800	26,300 [30,400]	41,600 J	15,800 J [22,000 J]	17,000 J	42,200 J [32,900 J]
Lead	7439-92-1	450	190,000	45.1 J	17.2 J	42.7 J	12.3 J	103 J [36.8 J]	21.2 J	107 J [189 J]	55.8 J	***561 J*** [187 J]
Magnesium	7439-95-4	- -	- -	179 J	5,660	5,520	5,120	8,400 [9,700]	7,630	2,590 [3,500]	1,350	5,040 [5,090]
Manganese	7439-96-5	2,000	190,000	28.2 J	356 J	447 J	310 J	382 J [469 J]	523	354 [462]	407	1,210 [1,020]
Mercury	7439-97-6	10	190,000	0.078 J	0.047 J	0.040 J	0.048 J	0.31 J [0.054 J]	0.23 J	1.1 J [0.50 J]	0.29 J	2.1 [2.4]
Nickel	7440-02-0	650	190,000	77.2	28.4	29.9	26.0	25.1 [32.4]	205	15.9 [25.7]	19.6	47.2 [33.7]
Potassium	7440-09-7	- -	- -	228 J	2,130	2,370	1,780	7,750 [10,300]	1,780	1,040 J [1,530]	501 J	2,260 [2,120]
Selenium	7782-49-2	26	190,000	5.5	< 3.0	< 3.3	< 3.2	< 2.7 [< 4.7]	< 6.9	< 3.1 [1.2 J]	< 2.7	2.3 J [1.2 J]
Silver	7440-22-4	84	190,000	< 0.68	< 0.74	< 0.84	0.52 J	< 0.67 [< 1.2]	< 1.7	< 0.78 [0.44 J]	< 0.67	2.4 [< 0.93]
Sodium	7440-23-5	- -	- -	< 1,400	315 J	257 J	332 J	173 J [190 J]	< 1,700	135 J [199 J]	123 J	335 J [267 J]
Thallium	7440-28-0	14	190,000	< 1.4	< 1.5	< 1.7	< 1.6	< 2.7 [< 2.3]	< 3.5	< 1.6 [< 1.5]	< 1.3	< 3.5 [< 1.9]
Vanadium	7440-62-2	680	190,000	7.3	41.7	41.3	39.7	36.7 [42.9]	22.0	15.1 [28.4]	14.6	44.1 [38.0]
Zinc	7440-66-6	12,000	190,000	188	68.9	82.2	63.5	106 [124]	323 J	215 J [491 J]	100 J	1,690 J [540 J]

Location ID: / Sample Depth (ft): / Date Collected:	CAS Number	Soil Standards or PQLs: S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	Soil Standards or PQLs: DC Non-Res Subsurf Soil (Exceedances Shaded)	S-155 10-12 4/26/19	S-155 13-15 4/26/19	S-156 14-16 5/3/19	S-157 7-9 5/3/19	S-157 23-25 5/3/19	S-158 11-13 4/26/19	S-158 18-20 4/26/19	S-159 11-13 4/26/19	S-159 18-20 4/26/19	S-160 10-12 5/3/19	S-160 13-15 5/3/19
Volatile Organic Compounds														
2-Butanone (MEK)	78-93-3	400	10,000	< 17	0.0577	0.0287 [0.0387]	0.0103 J	< 0.011	< 7.3	0.0519	< 2	0.0223	< 140	0.0162 J
Acetone	67-64-1	8,800	10,000	< 17	0.376	0.114 J [0.229]	0.0627	0.0187	< 7.3	0.224	< 2	0.107	< 140	0.0683
Benzene	71-43-2	0.5	330	***247***	0.0029	< 0.00079 [< 0.00099]	0.00099	< 0.00053	< 0.36	< 0.00082	***1.13***	< 0.00065	***46.6***	< 0.00093
Carbon Disulfide	75-15-0	620	10,000	< 3.5	< 0.0038	< 0.0032 [< 0.0040]	0.0017 J	< 0.0021	11.2	< 0.0033	0.539	< 0.0026	< 28	< 0.0037
Chlorobenzene	108-90-7	10	4,500	***40.7***	< 0.0038	< 0.0032 [< 0.0040]	< 0.0026	< 0.0021	< 1.5	< 0.0033 J	< 0.41	< 0.0026	< 28	< 0.0037
Chloroform	67-66-3	8	110	< 3.5	< 0.0038	< 0.0032 [< 0.0040]	< 0.0026	< 0.0021	< 1.5	< 0.0033	< 0.41	< 0.0026	< 28	< 0.0037
cis-1,2-Dichloroethene	156-59-2	7	10,000	< 1.7	< 0.0019	< 0.0016 [< 0.0020]	< 0.0013	< 0.0011	< 0.73	< 0.0016	< 0.2	< 0.0013	< 14	< 0.0019
Cyclohexane	110-82-7	6,900	10,000	< 3.5	< 0.0038	< 0.0032 [< 0.0040]	< 0.0026	< 0.0021	< 1.5	< 0.0033	< 0.41	< 0.0026	< 28	< 0.0037
Dichloromethane	75-09-2	0.5	10,000	< 8.7	< 0.0096	0.0018 J [< 0.0099]	< 0.0065	< 0.0053	< 3.6	< 0.0082	< 1	< 0.0065	< 70	< 0.0093
Ethylbenzene	100-41-4	70	1,000	***76***	< 0.0019	< 0.0016 [< 0.0020]	< 0.0013	< 0.0011	0.537 J	< 0.0016	0.184 J	< 0.0013	19.1	< 0.0019
Isopropylbenzene	98-82-8	2,500	10,000	2.13 J	0.0026 J	< 0.0032 [< 0.0040]	0.0021 J	< 0.0021	< 1.5	< 0.0033	< 0.41	< 0.0026	< 28	< 0.0037
m&p-Xylenes	ARC-mpXyl	- -	- -	137	0.0028	< 0.0016 [< 0.0020]	< 0.0013	< 0.0011	< 0.73	< 0.0016	1.02	< 0.0013	81.3	< 0.0019
Methyl Acetate	79-20-9	9,700	10,000	< 8.7	< 0.0096	< 0.0079 [0.0062 J]	< 0.0065	< 0.0053	1.05 J	< 0.0082 J	< 1	< 0.0065	< 70	< 0.0093
Methylcyclohexane	108-87-2	- -	- -	< 3.5	0.0046	< 0.0032 [< 0.0040]	< 0.0026	< 0.0021	< 1.5	< 0.0033	< 0.41	< 0.0026	< 28	< 0.0037
Methyl-tert-butylether	1634-04-4	2	9,800	< 1.7	< 0.0019	< 0.0016 [< 0.0020]	< 0.0013	< 0.0011	< 0.73	< 0.0016	< 0.2	< 0.0013	< 14	< 0.0019
o,p-Xylene	136777-61-2	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
o-Xylene	95-47-6	- -	- -	38.4	0.0035	< 0.0016 [< 0.0020]	0.0016	< 0.0011	< 0.73	< 0.0016	0.282	< 0.0013	27.2	< 0.0019
Styrene (Monomer)	100-42-5	24	10,000	< 3.5	< 0.0038	< 0.0032 [< 0.0040]	< 0.0026	< 0.0021	< 1.5	< 0.0033 J	< 0.41	< 0.0026	15.5 J	< 0.0037
Toluene	108-88-3	100	10,000	84.4	0.0014 J	< 0.0016 [< 0.0020]	< 0.0013	< 0.0011	< 0.73	< 0.0016	1.52	< 0.0013	47.8	< 0.0019
trans-1,2-Dichloroethene	156-60-5	10	10,000	< 1.7	< 0.0019	< 0.0016 [< 0.0020]	< 0.0013	< 0.0011	< 0.73	< 0.0016	< 0.2	< 0.0013	< 14	< 0.0019
trans-1,3-Dichloropropene	10061-02-6	- -	- -	< 3.5	< 0.0038	< 0.0032 [< 0.0040]	< 0.0026	< 0.0021	< 1.5	< 0.0033	< 0.41	< 0.0026	< 28	< 0.0037
Total Xylenes	1330-20-7	1,000	9,100	175	0.0063	< 0.0016 [< 0.0020]	0.0016	< 0.0011	< 0.73	< 0.0016	1.3	< 0.0013	109	< 0.0019
Semi-Volatile Organic Compounds														
1,1-Biphenyl	92-52-4	1.5	40	***23.2***	0.109 J	0.0077 J [< 0.098]	0.0098 J	< 0.073	***16.4 D***	0.0103 J	0.959 D	< 0.094	***300 D***	0.0150 J
2,4-Dimethylphenol	105-67-9	190	10,000	< 1.3	< 0.3	< 0.23 [< 0.25]	< 0.2	< 0.18	< 0.42	< 0.28	< 0.2	< 0.23	152 D	< 0.29
2-Methylnaphthalene	91-57-6	100	270	29.9 D	0.51	0.0144 J [0.0155 J]	0.0257 J	< 0.036	46.1 D	0.0300 J	2.55	< 0.047	***1,490 D***	0.0550 J
2-Methylphenol	95-48-7	490	190,000	< 0.52	< 0.12	< 0.093 [< 0.098]	< 0.08	< 0.073	< 0.17	< 0.11	< 0.078	< 0.094	73.6	< 0.12
3-Methylphenol, 4-Methylphenol	65794-96-9	- -	- -	0.382 J	0.315	< 0.093 [< 0.098]	< 0.08	< 0.073	< 0.17	< 0.11	< 0.078	< 0.094	221 D	< 0.12
4-Methylphenol	106-44-5	49	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	83-32-9	4,700	190,000	190 D	0.809	< 0.047 [< 0.049]	0.112	< 0.036	9.55 D	0.0231 J	0.36 D	< 0.047	344 D	0.0539 J
Acenaphthylene	208-96-8	6,600	190,000	24.5	0.252	< 0.047 [< 0.049]	< 0.04	< 0.036	44.4 D	< 0.056	< 0.039	< 0.047	1,800 D	0.0634
Acetophenone	98-86-2	970	10,000	< 1.3	0.0225 J	< 0.23 [< 0.25]	< 0.2	< 0.18	0.927	< 0.28	0.0664 J	< 0.23	< 4.2	< 0.29
Anthracene	120-12-7	350	190,000	178 D	0.359	< 0.047 [< 0.049]	0.0692	< 0.036	11.7 D	< 0.056	< 0.039	< 0.047	***1,950 D***	0.0844
Benz(a)anthracene	56-55-3	340	190,000	117 D	0.284	0.0263 J [0.0153 J]	0.0541	< 0.036	10.7 D	0.0351 J	0.17	< 0.047	***1,100 D***	0.145
Benzaldehyde	100-52-7	- -	- -	< 1.3	< 0.3	0.0208 J [< 0.25]	0.0229 J	< 0.18	< 0.42	< 0.28	< 0.2	< 0.23	< 4.2	< 0.29
Benzo(a)pyrene	50-32-8	46	190,000	***101 D***	0.549	0.0225 J [< 0.049]	0.0511	< 0.036	8.04	0.0322 J	0.124	< 0.047	***762 D***	0.174
Benzo(b)fluoranthene	205-99-2	170	190,000	106 D	0.46	0.0296 J [< 0.049]	0.0678	< 0.036	11.2 D	0.0332 J	0.163	< 0.047	***1,050 D***	0.181
Benzo(g,h,i)perylene	191-24-2	180	190,000	48.9 D	0.434	< 0.047 [< 0.049]	0.0374 J	< 0.036	5.25	< 0.056	0.0863	< 0.047	***429 D***	0.103
Benzo(k)fluoranthene	207-08-9	610	190,000	19.3	0.17	< 0.047 [< 0.049]	0.0252 J	< 0.036	3.59 D	< 0.056	0.0602	< 0.047	396 D	0.0724
bis(2-Ethylhexyl)phthalate	117-81-7	130	10,000	< 0.52	< 0.12	< 0.093 [< 0.098]	< 0.08	< 0.073	< 0.17	< 0.11	< 0.078	< 0.094	< 1.7	< 0.12
Butyl benzyl phthalate	85-68-7	10,000	10,000	< 0.52	< 0.12	< 0.093 [< 0.098]	< 0.08	< 0.073	< 0.17	< 0.11	< 0.078	< 0.094	< 1.7	< 0.12

Location ID: / Sample Depth (ft): / Date Collected:	CAS Number	Soil Standards or PQLs: S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	Soil Standards or PQLs: DC Non-Res Subsurf Soil (Exceedances Shaded)	S-155 10-12 4/26/19	S-155 13-15 4/26/19	S-156 14-16 5/3/19	S-157 7-9 5/3/19	S-157 23-25 5/3/19	S-158 11-13 4/26/19	S-158 18-20 4/26/19	S-159 11-13 4/26/19	S-159 18-20 4/26/19	S-160 10-12 5/3/19	S-160 13-15 5/3/19
Semi-Volatile Organic Compounds (cont'd)														
Carbazole	86-74-8	89	190,000	63 D	0.0814 J	0.0083 J [< 0.098]	< 0.08	< 0.073	2.83	0.0085 J	< 0.078	< 0.094	***828 D***	0.0265 J
Chrysene	218-01-9	230	190,000	100 D	0.374	0.0252 J [< 0.049]	0.0658	< 0.036	9.02 D	0.0455 J	0.213	< 0.047	***784 D***	0.152
Dibenz(a,h)anthracene	53-70-3	270	190,000	18.1	0.0982	< 0.047 [< 0.049]	< 0.04	< 0.036	1.14	< 0.056	0.0258 J	< 0.047	39	0.0315 J
Dibenzofuran	132-64-9	250	190,000	113 D	0.248	< 0.093 [< 0.098]	0.0239 J	< 0.073	51.5 D	< 0.11	0.56 D	< 0.094	***1,420 D***	0.0256 J
Diethyl phthalate	84-66-2	7,800	10,000	< 0.52	< 0.12	< 0.093 [< 0.098]	< 0.08	< 0.073	< 0.17	< 0.11	< 0.078	< 0.094	< 1.7	< 0.12
Di-n-butyl phthalate	84-74-2	4,000	10,000	< 0.52	< 0.12	< 0.093 [< 0.098]	< 0.08	< 0.073	< 0.17	< 0.11	< 0.078	< 0.094	< 1.7	< 0.12
Di-n-octyl phthalate	117-84-0	10,000	10,000	< 0.52	< 0.12	< 0.093 [< 0.098]	< 0.08	< 0.073	< 0.17	< 0.11	< 0.078	< 0.094	< 1.7	< 0.12
Fluoranthene	206-44-0	3,200	190,000	337 D	0.537	0.0597 [0.0286 J]	0.138	< 0.036	36.4 D	0.0577	0.278	< 0.047	***3,400 D***	0.281
Fluorene	86-73-7	3,800	190,000	186 D	0.478	0.0219 J [< 0.049]	0.0302 J	< 0.036	51.1 D	0.0315 J	0.615 D	< 0.047	2,130 D	0.0600
Indeno(1,2,3-cd)pyrene	193-39-5	18,000	190,000	43 D	0.383	< 0.047 [< 0.049]	0.0527	< 0.036	5.74	< 0.056	0.0764	< 0.047	481 D	0.102
Naphthalene	91-20-3	25	77	***139 D***	1.57	0.0778 [0.115]	0.0419	< 0.036	***423 D***	0.156	***29.3 D***	< 0.047	***6,610 D***	0.199
Pentachlorophenol	87-86-5	5	190,000	< 1	< 0.24	< 0.19 [< 0.2]	< 0.16	< 0.15	< 0.34	< 0.22	< 0.16	< 0.19	< 3.3	< 0.23
Phenanthrene	85-01-8	10,000	190,000	519 D	1.19	0.0652 [0.0432 J]	0.0946	< 0.036	67.8 D	0.0625	0.613	< 0.047	4,840 D	0.209
Phenol	108-95-2	200	18,000	< 0.52	< 0.12	< 0.093 [< 0.098]	< 0.08	< 0.073	< 0.17	< 0.11	< 0.078	< 0.094	75.9	< 0.12
Pyrene	129-00-0	2,200	190,000	232 D	0.632	0.0434 J [0.0220 J]	0.111	< 0.036	24.5 D	0.0654	0.816	< 0.047	1,920 D	0.282
Total PAHs and 2-Methylnaphthalene	-	- -	- -	2,390	9.09	0.386 [0.240]	0.977	< 0.036	769	0.572	35.5	< 0.047	29,500	2.25
Metals														
Aluminum	7429-90-5	- -	190,000	11,600 J	22,300 J	21,800 J [24,700 J]	10,900 J	8,590 J	3,230 J	12,500 J	8,420 J	22,400 J	6,170 J	21,900 J
Antimony	7440-36-0	27	190,000	< 3.1 J	1.4 J	< 2.9 J [< 3.0 J]	2.1 J	< 2.2 J	< 2.5 J	< 3.3 J	0.54 J	< 2.8 J	< 2.7 J	1.2 J
Arsenic	7440-38-2	29	190,000	***34.5 J***	***78.4 J***	7.4 [4.5]	12.6	3.8	18.2 J	4.1 J	12.0 J	4.3 J	12.7	***32.8***
Barium	7440-39-3	8,200	190,000	128 J	266 J	183 [162]	52.3	32.3	104 J	116 J	27.0 J	172 J	48.4	145
Beryllium	7440-41-7	320	190,000	0.82	1.6	1.1 [1.2]	0.62	0.51	0.29	0.69	1.8	1.1	0.40	1.3
Cadmium	7440-43-9	38	190,000	1.8	3.0	0.28 J [0.13 J]	0.79 J	< 0.54	0.28 J	< 0.82	0.95	0.11 J	1.1	1.4
Calcium	7440-70-2	- -	- -	4,070	4,570	2,800 [2,730]	2,790	248 J	10,900	3,380	2,600	2,770	2,290	4,280
Chromium	7440-47-3	190,000	190,000	143 J	264 J	42.7 [47.5]	20.0	25.7	72.7 J	27.1 J	20.4 J	44.6 J	32.9	128
Cobalt	7440-48-4	130	190,000	11.5	29.1	10.9 [12.1]	9.9	7.6	3.9 J	5.6 J	8.7	9.5	4.4 J	17.3
Copper	7440-50-8	43,000	190,000	82.8 J	194 J	22.1 [10.1]	243	9.4	127 J	11.9 J	293 J	7.4 J	31.5	81.2
Cyanide	57-12-5	200	190,000	7.2 J	1.5 J	< 0.30 J [< 0.33 J]	0.70 J	< 0.27 J	29.4 J	0.34 J	0.70 J	0.21 J	6.6 J	1.8 J
Iron	7439-89-6	- -	190,000	38,700 J	50,800 J	25,700 [25,400]	54,800	13,400	21,600 J	14,400 J	36,800 J	22,700 J	12,000	35,200
Lead	7439-92-1	450	190,000	175 J	380 J	80.3 J [14.8 J]	43.8 J	6.0 J	101 J	21.4 J	79.8 J	15.5 J	108 J	151 J
Magnesium	7439-95-4	- -	- -	3,590	5,010	5,160 [5,840]	792	2,070	1,420	3,120	448 J	5,160	1,520	6,010
Manganese	7439-96-5	2,000	190,000	698	1,170	402 [325]	379	111	262	333	402	309	238	1,230
Mercury	7439-97-6	10	190,000	1.8 J	2.4 J	0.11 [< 0.043]	0.065	< 0.032	2.8 J	0.060 J	0.061 J	0.087 J	0.39	0.86
Nickel	7440-02-0	650	190,000	24.5	47.1	26.3 [29.6]	22.3	15.7	17.2	16.0	18.6	25.4	10.0	35.9
Potassium	7440-09-7	- -	- -	1,440 J	2,290	1,870 [2,170]	826 J	897 J	649 J	1,280 J	559 J	1,840	823 J	2,660
Selenium	7782-49-2	26	190,000	< 6.3	< 7.6	< 2.9 [< 3.0]	< 7.9	< 2.2	< 2.5	< 3.3	4.3 J	< 2.8	3.1	< 3.7
Silver	7440-22-4	84	190,000	0.91 J	2.2	0.52 J [0.49 J]	< 2.0	0.37 J	< 0.64	< 0.82	< 1.3	< 0.69	0.55 J	1.2
Sodium	7440-23-5	- -	- -	153 J	356 J	228 J [248 J]	< 1,300	< 1,100	155 J	240 J	< 1,300	255 J	109 J	346 J
Thallium	7440-28-0	14	190,000	< 3.1	< 3.8	< 1.4 [< 1.5]	< 3.9	< 1.1	< 1.3	< 1.6	< 2.5	< 1.4	2.0	< 1.8
Vanadium	7440-62-2	680	190,000	23.6	42.6	41.9 [48.1]	25.9	19.0	12.4	25.9	13.2	43.2	12.0	46.4
Zinc	7440-66-6	12,000	190,000	529 J	1,010 J	132 J [72.1 J]	451 J	35.9 J	128 J	56.1 J	117 J	61.2 J	164 J	458 J

Table 11
Saturated Soil Analytical Results – Detected VOCs, SVOCs, and Inorganics (mg/kg)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID:	CAS Number	Soil Standards or PQLs		S-161	S-162		S-163	S-164	TP-11	TP-13	TP-14	TP-15	TP-15R		TP-16
Sample Depth (ft):		S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	DC Non-Res Subsurf Soil (Exceedances Shaded)	10-12	5-7	15-17	2-4	4-6	14	14	18	5.5	5-7	10.5-12.5	6
Date Collected:				5/3/19	5/3/19	5/3/19	9/19/19	9/19/19	3/7/05	3/8/05	3/8/05	3/8/05	4/16/19	4/16/19	3/9/05
Volatile Organic Compounds															
2-Butanone (MEK)	78-93-3	400	10,000	< 0.012	< 0.011	0.0173 J	< 0.0086	< 1.1	< 0.002	< 0.0014	< 0.0011	< 3.9	< 2.1	< 0.012	< 0.0016
Acetone	67-64-1	8,800	10,000	0.0570	0.0167	0.0713	0.0193	< 1.1	0.064	< 0.0097	0.033	< 4.6	< 2.1	0.0191	0.06
Benzene	71-43-2	0.5	330	0.0102	0.0062	0.0174	< 0.00043	< 0.055	0.02	0.011	0.0036	***43***	***4.18***	< 0.00061	0.027
Carbon Disulfide	75-15-0	620	10,000	0.0023 J	0.0013 J	< 0.0037	0.00089 J	< 0.22	0.0046	< 0.0012	< 0.00096	< 0.6	< 0.42	< 0.0025	0.005
Chlorobenzene	108-90-7	10	4,500	< 0.0024	< 0.0022	< 0.0037	< 0.0017	< 0.22	< 0.0013	< 0.00092	< 0.00074	< 0.23	< 0.42	< 0.0025	< 0.0011
Chloroform	67-66-3	8	110	< 0.0024	< 0.0022	< 0.0037	< 0.0017	< 0.22	0.0056	0.0033	0.0025	< 0.45	< 0.42	< 0.0025	< 0.00095
cis-1,2-Dichloroethene	156-59-2	7	10,000	< 0.0012	< 0.0011	< 0.0019	< 0.00086	< 0.11	< 0.0012	< 0.00087	< 0.0007	< 0.58	< 0.21	< 0.0012	< 0.001
Cyclohexane	110-82-7	6,900	10,000	< 0.0024	< 0.0022	< 0.0037	< 0.0017	< 0.22	NA	NA	NA	NA	0.305 J	< 0.0025	NA
Dichloromethane	75-09-2	0.5	10,000	< 0.0059	< 0.0055	< 0.0093	< 0.0043	< 0.55	0.018 B	0.014 B	0.015 B	***1.8 B***	< 1.1	< 0.0061	0.035 B
Ethylbenzene	100-41-4	70	1,000	< 0.0012	0.00083 J	< 0.0019	< 0.00086	0.0748 J	0.12	< 0.0014	0.078	20	< 0.21	< 0.0012	0.11
Isopropylbenzene	98-82-8	2,500	10,000	< 0.0024	< 0.0022	< 0.0037	< 0.0017	< 0.22	NA	NA	NA	NA	< 0.42	< 0.0025	NA
m&p-Xylenes	ARC-mpXyl	- -	- -	< 0.0012	0.0023	< 0.0019	< 0.00086	0.102 J	0.0061	< 0.002	0.0055	84	0.509	< 0.0012	0.031
Methyl Acetate	79-20-9	9,700	10,000	< 0.0059	< 0.0055	< 0.0093	< 0.0043	0.211 J	NA	NA	NA	NA	< 1.1	< 0.0061	NA
Methylcyclohexane	108-87-2	- -	- -	< 0.0024	< 0.0022	< 0.0037	< 0.0017	< 0.22	NA	NA	NA	NA	0.895	< 0.0025	NA
Methyl-tert-butylether	1634-04-4	2	9,800	< 0.0012	< 0.0011	< 0.0019	< 0.00086	< 0.11	NA	NA	NA	NA	< 0.21	< 0.0012	NA
o,p-Xylene	136777-61-2	- -	- -	NA	NA	NA	NA	NA	0.012	< 0.00086	0.04	26	NA	NA	0.052
o-Xylene	95-47-6	- -	- -	< 0.0012	0.0023	< 0.0019	< 0.00086	< 0.11	NA	NA	NA	NA	0.312	< 0.0012	NA
Styrene (Monomer)	100-42-5	24	10,000	< 0.0024	< 0.0022	< 0.0037	< 0.0017	< 0.22	< 0.0016	< 0.0011	< 0.00091	13	< 0.42	< 0.0025	< 0.0013
Toluene	108-88-3	100	10,000	0.00068 J	0.0017	0.0017 J	< 0.00086	0.0746 J	< 0.0019	< 0.0014	0.002	36	0.505	< 0.0012	0.015
trans-1,2-Dichloroethene	156-60-5	10	10,000	< 0.0012	< 0.0011	< 0.0019	< 0.00086	< 0.11	< 0.00081	< 0.00059	< 0.00047	< 0.58	< 0.21	< 0.0012	< 0.00067
trans-1,3-Dichloropropene	10061-02-6	- -	- -	< 0.0024	< 0.0022	< 0.0037	< 0.0017	< 0.22	NA	NA	NA	NA	< 0.42	< 0.0025	NA
Total Xylenes	1330-20-7	1,000	9,100	< 0.0012	0.0046	< 0.0019	< 0.00086	0.102 J	NA	NA	NA	NA	0.821	< 0.0012	NA
Semi-Volatile Organic Compounds															
1,1-Biphenyl	92-52-4	1.5	40	0.0474 J	***4.09 D***	0.0842 J	0.0315 J	0.0057 J	NA	NA	NA	NA	***13.3 D***	0.0180 J	NA
2,4-Dimethylphenol	105-67-9	190	10,000	< 0.21	< 0.19	< 0.3	< 0.18	< 0.19	< 0.084	< 0.082	< 21	< 550	0.495	< 0.42	< 14
2-Methylnaphthalene	91-57-6	100	270	0.265	65.2 D	0.311	0.164	0.0186 J	2.1	0.58	81	***1,800***	33.2 D	0.0421 J	3.3 J
2-Methylphenol	95-48-7	490	190,000	< 0.084	< 0.077	< 0.12	< 0.072	< 0.076	< 0.35	< 0.34	< 13	< 340	0.233	< 0.17	< 8.7
3-Methylphenol, 4-Methylphenol	65794-96-9	- -	- -	< 0.084	< 0.077	0.0571 J	< 0.072	< 0.076	NA	NA	NA	NA	0.635	< 0.17	NA
4-Methylphenol	106-44-5	49	190,000	NA	NA	NA	NA	NA	< 0.44	< 0.43	< 13	< 350	NA	NA	< 9.2
Acenaphthene	83-32-9	4,700	190,000	1.65	1.44	0.957	0.477	< 0.038	2.6	1.2	100	890	59 D	0.148	180
Acenaphthylene	208-96-8	6,600	190,000	0.117	< 0.039	0.233	0.329	0.0687	< 0.034	< 0.033	< 1.3	1,300	23.7 D	0.0469 J	12
Acetophenone	98-86-2	970	10,000	< 0.21	< 0.19	< 0.3	0.0800 J	< 0.19	NA	NA	NA	NA	< 0.39	< 0.42	NA
Anthracene	120-12-7	350	190,000	2.97	3.19	0.919	0.818	0.175	2.3	0.54	51	***1,100***	53 D	0.202	110
Benz(a)anthracene	56-55-3	340	190,000	0.981	0.716	0.5	1.96	0.274	3.5	0.43	26	***1,700***	67.4 D	0.446	89
Benzaldehyde	100-52-7	- -	- -	< 0.21	< 0.19	< 0.3	< 0.18	< 0.19	NA	NA	NA	NA	< 0.39	< 0.42	NA
Benzo(a)pyrene	50-32-8	46	190,000	0.645	0.446	0.458	1.79	0.242	2.4	0.36	18	***1,400***	***61.5 D***	0.482	***100***
Benzo(b)fluoranthene	205-99-2	170	190,000	0.801	0.601	0.509	1.73	0.318	3	0.5	20	***1,500***	73.6 D	0.574	100
Benzo(g,h,i)perylene	191-24-2	180	190,000	0.271	0.177	0.253	1	0.179	1.8	0.27	6	***690***	36.4 D	0.27	47
Benzo(k)fluoranthene	207-08-9	610	190,000	0.273	0.246	0.215	0.437	0.122	1.1	0.13	6.6	***700***	23.5 D	0.201	30
bis(2-Ethylhexyl)phthalate	117-81-7	130	10,000	< 0.084	0.0513 J	< 0.12	< 0.072	< 0.076	< 0.071	0.37 B	< 7.5	< 200	< 0.16	< 0.17	< 5.2
Butyl benzyl phthalate	85-68-7	10,000	10,000	< 0.084	< 0.077	< 0.12	< 0.072	< 0.076	< 0.036	< 0.035	< 0.97	< 26	< 0.16	< 0.17	< 0.67

Table 11
Saturated Soil Analytical Results – Detected VOCs, SVOCs, and Inorganics (mg/kg)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID: / Sample Depth (ft): / Date Collected:	CAS Number	Soil Standards or PQLs: S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	Soil Standards or PQLs: DC Non-Res Subsurf Soil (Exceedances Shaded)	S-161 10-12 5/3/19	S-162 5-7 5/3/19	S-162 15-17 5/3/19	S-163 2-4 9/19/19	S-164 4-6 9/19/19	TP-11 14 3/7/05	TP-13 14 3/8/05	TP-14 18 3/8/05	TP-15 5.5 3/8/05	TP-15R 5-7 4/16/19	TP-15R 10.5-12.5 4/16/19	TP-16 6 3/9/05
Semi-Volatile Organic Compounds (cont'd)															
Carbazole	86-74-8	89	190,000	0.761	< 0.077	0.463	0.189	0.0437 J	< 0.028	< 0.027	14	***630***	28.1 D	0.105 J	27
Chrysene	218-01-9	230	190,000	1.22	0.56	0.494	2.09	0.294	4.1	0.56	26	***1,400***	57.3 D	0.429	110
Dibenz(a,h)anthracene	53-70-3	270	190,000	0.0904	0.0502	0.0666	0.283	0.0391	0.74	< 0.044	< 0.76	130	11.4 D	0.0811 J	11
Dibenzofuran	132-64-9	250	190,000	0.536	1.85	0.423	0.0834	0.0432 J	< 0.3	< 0.29	36	***1,700***	56 D	0.0695 J	51
Diethyl phthalate	84-66-2	7,800	10,000	< 0.084	< 0.077	< 0.12	< 0.072	< 0.076	< 0.038	< 0.037	< 0.7	< 18	< 0.16	< 0.17	< 0.48
Di-n-butyl phthalate	84-74-2	4,000	10,000	< 0.084	< 0.077	< 0.12	< 0.072	< 0.076	< 0.034	< 0.033	< 0.54	< 14	< 0.16	< 0.17	< 0.37
Di-n-octyl phthalate	117-84-0	10,000	10,000	< 0.084	< 0.077	< 0.12	< 0.072	< 0.076	< 0.034	< 0.033	< 0.89	< 23	< 0.16	< 0.17	< 0.61
Fluoranthene	206-44-0	3,200	190,000	2.88	3.25 D	1.38	3.05	0.644	4	1.2	100	***5,000***	198 D	0.732	230
Fluorene	86-73-7	3,800	190,000	1.56	2.3	0.914	0.431	0.0681	1.8	1	80	2,400	105 D	0.122	120
Indeno(1,2,3-cd)pyrene	193-39-5	18,000	190,000	0.288	0.21	0.258	0.894	0.204	1.3	0.18	6.4	740	40.5 D	0.298	49
Naphthalene	91-20-3	25	77	0.587	13.5 D	1.26	0.164	0.0382	6.6	10	11	***12,000***	***255 D***	0.316	20
Pentachlorophenol	87-86-5	5	190,000	< 0.17	< 0.15	< 0.24	< 0.14	< 0.15	NA	NA	NA	NA	< 0.32	< 0.34	NA
Phenanthrene	85-01-8	10,000	190,000	5.48 D	11.4 D	2.45	3.47	0.45	4.1	1.2	220	7,200	275 D	0.688	370
Phenol	108-95-2	200	18,000	< 0.084	< 0.077	< 0.12	< 0.072	< 0.076	< 0.085	< 0.082	< 12	< 320	0.682	< 0.17	< 8.4
Pyrene	129-00-0	2,200	190,000	2.43	2.32	1.01	4.51 D	0.558	8.2	1.4	82	***3,500***	136 D	0.778	220
Total PAHs and 2-Methylnaphthalene	-	- -	- -	22.5	106	12.2	23.6	3.69	49.6	19.6	834	43,500	1,510	5.86	1,800
Metals															
Aluminum	7429-90-5	- -	190,000	6,860 J	12,400 J	19,900 J	6,900	12,400	NA	NA	NA	NA	1,680 J	5,060 J	NA
Antimony	7440-36-0	27	190,000	< 2.6 J	2.1 J	1.8 J	< 2.3	< 2.4	5.8	< 2.4	3.7	< 2.3	1.6 J	< 2.7 J	4.1
Arsenic	7440-38-2	29	190,000	11.8	7.2	***41.7***	7.5	< 2.4	***32***	3.2	***53***	4	17.0	7.0	***37***
Barium	7440-39-3	8,200	190,000	63.0	106	208	74.5	125	380	15	210	32	62.0	34.3	220
Beryllium	7440-41-7	320	190,000	0.42	0.63	1.3	0.74	1.3	< 1.1	0.83	0.96	< 0.7	0.73	0.41	< 0.91
Cadmium	7440-43-9	38	190,000	0.40 J	0.64	2.3	< 0.58	< 0.61	1.5	< 0.71	2.6	< 0.7	0.83	0.12 J	1.5
Calcium	7440-70-2	- -	- -	1,680	52,000	20,300	3,580	2,510	NA	NA	NA	NA	5,490 J	506 J	NA
Chromium	7440-47-3	190,000	190,000	40.7	26.2	191	12.7	23.7	20	< 5.9	170	11	16.4 J	14.2 J	160
Cobalt	7440-48-4	130	190,000	7.5	6.9	17.5	8.1	13.3	NA	NA	NA	NA	3.5 J	5.8 J	NA
Copper	7440-50-8	43,000	190,000	31.3	57.5	135	94.7	36.1	140	11	150	17	598	21.1	120
Cyanide	57-12-5	200	190,000	0.23 J	1.0 J	< 0.42 J	2.5	0.33	9.2	0.71	1.2	4	7.0 J	< 0.29 J	12
Iron	7439-89-6	- -	190,000	15,600	17,800	33,000	21,000	21,100	NA	NA	NA	NA	20,000	12,500	NA
Lead	7439-92-1	450	190,000	69.3 J	296 J	277 J	219	13.7	***1,100***	17	270	58	257	50.9	330
Magnesium	7439-95-4	- -	- -	2,360	17,300	5,190	2,020	7,440	NA	NA	NA	NA	2,510	1,660	NA
Manganese	7439-96-5	2,000	190,000	379	330	1,010	244	878	NA	NA	NA	NA	213 J	184 J	NA
Mercury	7439-97-6	10	190,000	0.37	0.36	1.9	1.6	0.22	0.61	< 0.098	1.1	< 0.097	2.1 J	0.096 J	1.6
Nickel	7440-02-0	650	190,000	14.0	17.0	34.8	16.5	24.1	12	< 5.9	29	8.8	25.5	11.4	27
Potassium	7440-09-7	- -	- -	931 J	2,250	2,200	< 1,200	8,000	NA	NA	NA	NA	260 J	626 J	NA
Selenium	7782-49-2	26	190,000	< 2.6	< 2.5	1.4 J	< 2.3	< 2.4	5.1	2.5	4.8	3.2	2.6	< 2.7	4.7
Silver	7440-22-4	84	190,000	< 0.65	0.49 J	1.8	< 0.58	< 1.2	< 4.5	< 2.9	< 3.7	< 2.9	< 0.64	< 0.68	< 3.8
Sodium	7440-23-5	- -	- -	< 1,300	247 J	450 J	< 1,200	< 1,200	NA	NA	NA	NA	144 J	< 1,400	NA
Thallium	7440-28-0	14	190,000	< 1.3	< 1.3	< 1.9	< 1.2	< 2.4	< 2.2	< 1.4	< 1.8	< 1.4	< 1.3	< 1.4	< 1.8
Vanadium	7440-62-2	680	190,000	13.6	28.8	38.1	18.6	47.5	NA	NA	NA	NA	10.9	7.1	NA
Zinc	7440-66-6	12,000	190,000	156 J	491 J	690 J	174	103	690	67	770	76	1,210 J	104 J	630

Table 11
Saturated Soil Analytical Results – Detected VOCs, SVOCs, and Inorganics (mg/kg)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID: / Sample Depth (ft): / Date Collected:	CAS Number	Soil Standards or PQLs: S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	Soil Standards or PQLs: DC Non-Res Subsurf Soil (Exceedances Shaded)	TP-21 8 3/10/05	TP-23 7 3/10/05	TP-25 5 3/11/05	TP-30 12 3/14/05	TP-32 6.5 3/14/05	TP-33 9 3/14/05	TP-34 4 3/14/05	TP-36 7 3/15/05	TP-37 8 3/15/05	TP-37 9 3/15/05	TP-39 9 3/16/05
Volatile Organic Compounds														
2-Butanone (MEK)	78-93-3	400	10,000	< 0.0011 [< 0.0011]	< 0.0011	< 0.00082	< 0.0019	< 0.0011	< 8.8	< 0.0019	< 0.0013	< 0.0018	< 0.0019	< 0.001
Acetone	67-64-1	8,800	10,000	0.023 [0.036]	0.049	0.041	0.13	0.031	< 10	0.075	0.033	0.048	0.045	0.027
Benzene	71-43-2	0.5	330	0.0016 [< 0.00075]	< 0.00035	< 0.00027	< 0.0012	0.0059	< 1.1	0.1	0.023	0.011	0.0061	0.17
Carbon Disulfide	75-15-0	620	10,000	< 0.00073 [< 0.00096]	< 0.00073	< 0.00056	< 0.0016	< 0.00088	< 1.4	0.0042	< 0.0011	0.0046	0.0029	< 0.0007
Chlorobenzene	108-90-7	10	4,500	< 0.00028 [< 0.00074]	< 0.00028	< 0.00021	< 0.0012	< 0.00068	< 0.53	< 0.0012	0.0029	< 0.0011	< 0.0012	< 0.00027
Chloroform	67-66-3	8	110	0.0019 [< 0.00067]	0.0018	< 0.00028	< 0.0011	< 0.00061	< 1	< 0.0011	< 0.00076	< 0.001	< 0.0011	< 0.00035
cis-1,2-Dichloroethene	156-59-2	7	10,000	< 0.00051 [< 0.0007]	< 0.00051	< 0.00039	< 0.0012	< 0.00064	< 1.3	< 0.0011	< 0.0008	< 0.0011	< 0.0012	< 0.00049
Cyclohexane	110-82-7	6,900	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichloromethane	75-09-2	0.5	10,000	0.018 B [0.036 B]	0.014 B	0.015 B	0.02 B	0.0098 B	***3.2 B***	0.013 B	0.015 B	0.018 B	0.021 B	0.025 B
Ethylbenzene	100-41-4	70	1,000	0.002 [< 0.0011]	< 0.00097	< 0.00073	< 0.0018	0.0017	2.7	0.018	0.0022	0.0023	< 0.0018	0.0082
Isopropylbenzene	98-82-8	2,500	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
m&p-Xylenes	ARC-mpXyl	- -	- -	0.006 [< 0.0016]	< 0.0012	< 0.00088	< 0.0027	0.0022	4.7	0.012	0.0032	0.0063	< 0.0027	0.0095
Methyl Acetate	79-20-9	9,700	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylcyclohexane	108-87-2	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl-tert-butylether	1634-04-4	2	9,800	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
o,p-Xylene	136777-61-2	- -	- -	0.0015 [< 0.00069]	0.0073	< 0.00019	< 0.0011	0.0014	3	0.016	< 0.00078	0.0038	< 0.0011	0.019
o-Xylene	95-47-6	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene (Monomer)	100-42-5	24	10,000	< 0.00022 [< 0.00091]	< 0.00022	< 0.00017	< 0.0015	< 0.00084	< 0.75	< 0.0015	< 0.001	< 0.0014	< 0.0015	< 0.00021
Toluene	108-88-3	100	10,000	< 0.00026 [< 0.0011]	< 0.00026	< 0.0002	< 0.0018	< 0.001	< 0.81	0.0068	0.0036	< 0.0017	< 0.0018	0.0047
trans-1,2-Dichloroethene	156-60-5	10	10,000	< 0.00074 [< 0.00047]	< 0.00074	< 0.00056	< 0.00078	< 0.00043	< 1.3	< 0.00076	< 0.00053	0.0234	< 0.00078	< 0.00071
trans-1,3-Dichloropropene	10061-02-6	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	0.076	NA	NA
Total Xylenes	1330-20-7	1,000	9,100	NA	NA	NA	NA	NA	NA	NA	NA	< 0.0016	NA	NA
Semi-Volatile Organic Compounds														
1,1-Biphenyl	92-52-4	1.5	40	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	105-67-9	190	10,000	< 1.1 [< 1.2]	< 1.9	< 0.86	< 0.043	< 2.1	< 100	< 0.18	< 1.1	< 2.6	< 2.5	< 2.2
2-Methylnaphthalene	91-57-6	100	270	1.6 [1.5]	6	25	0.86	< 0.78	45	2.7	1.7	23	10	2.5
2-Methylphenol	95-48-7	490	190,000	< 0.69 [< 0.71]	< 1.2	< 0.52	< 0.18	< 1.3	< 63	1.6	< 0.66	< 1.6	< 1.5	< 1.3
3-Methylphenol, 4-Methylphenol	65794-96-9	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methylphenol	106-44-5	49	190,000	< 0.72 [< 0.75]	< 1.2	< 0.55	0.28	< 1.4	< 67	3.2	< 0.69	0.66 J	1.3 J	< 1.4
Acenaphthene	83-32-9	4,700	190,000	1.5 [0.89]	7.3	3.9	2.2	2.9	< 4.5	1.4	4.4	22	17	18
Acenaphthylene	208-96-8	6,600	190,000	0.27 [0.25]	< 0.12	< 0.052	0.22	4	< 6.4	0.46	2.4	5	1.4	6.8
Acetophenone	98-86-2	970	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	120-12-7	350	190,000	< 0.05 [1.3]	3	1.4	0.89	2.3	< 4.6	0.62	4.9	19	14	20
Benz(a)anthracene	56-55-3	340	190,000	0.6 [0.47]	1.8	0.2	1.4	8	< 3.6	< 0.081	6.9	19	16	25
Benzaldehyde	100-52-7	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	50-32-8	46	190,000	0.57 [0.39]	2	< 0.044	1.2	7.2	< 5.4	< 0.057	5.1	15	12	27
Benzo(b)fluoranthene	205-99-2	170	190,000	0.95 [0.69]	2.6	< 0.037	1.3	8.8	< 4.5	< 0.1	7	19	15	33
Benzo(g,h,i)perylene	191-24-2	180	190,000	0.38 [< 0.046]	1.4	< 0.034	0.56	2.8	< 4.1	< 0.079	2.5	7.7	5.9	14
Benzo(k)fluoranthene	207-08-9	610	190,000	0.3 [< 0.04]	1	< 0.03	0.57	3.2	< 3.6	< 0.092	2.2	6.4	6	13
bis(2-Ethylhexyl)phthalate	117-81-7	130	10,000	< 0.41 [< 0.42]	< 0.69	< 0.31	< 0.036	< 0.77	< 38	< 0.15	0.34 J	< 0.93	< 0.92	< 0.78
Butyl benzyl phthalate	85-68-7	10,000	10,000	< 0.052 [< 0.054]	< 0.089	< 0.04	< 0.018	< 0.099	< 4.8	< 0.078	< 0.05	< 0.12	< 0.12	< 0.1

Table 11
Saturated Soil Analytical Results – Detected VOCs, SVOCs, and Inorganics (mg/kg)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID: / Sample Depth (ft): / Date Collected:	CAS Number	Soil Standards or PQLs: S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	Soil Standards or PQLs: DC Non-Res Subsurf Soil (Exceedances Shaded)	TP-21 8 3/10/05	TP-23 7 3/10/05	TP-25 5 3/11/05	TP-30 12 3/14/05	TP-32 6.5 3/14/05	TP-33 9 3/14/05	TP-34 4 3/14/05	TP-36 7 3/15/05	TP-37 8 3/15/05	TP-37 9 3/15/05	TP-39 9 3/16/05
Semi-Volatile Organic Compounds (cont'd)														
Carbazole	86-74-8	89	190,000	< 0.057 [< 0.058]	< 0.095	< 0.043	< 0.014	< 0.11	< 5.2	< 0.059	1.8	10	5.8	6.4
Chrysene	218-01-9	230	190,000	0.87 [0.59]	2.3	0.23	1.6	9.7	< 3.8	< 0.06	6.6	19	16	25
Dibenz(a,h)anthracene	53-70-3	270	190,000	< 0.041 [< 0.042]	< 0.069	< 0.031	0.29	0.95	< 3.8	< 0.098	0.86	2	1.5	4.8
Dibenzofuran	132-64-9	250	190,000	1.3 [1.1]	< 0.43	2	0.37	< 0.49	< 24	0.6 J	4.7	16	11	12
Diethyl phthalate	84-66-2	7,800	10,000	< 0.038 [< 0.039]	< 0.064	< 0.029	< 0.019	< 0.071	< 3.5	< 0.081	< 0.036	< 0.087	< 0.085	< 0.072
Di-n-butyl phthalate	84-74-2	4,000	10,000	< 0.029 [< 0.03]	< 0.049	< 0.022	< 0.018	< 0.055	< 2.7	< 0.074	< 0.028	< 0.067	< 0.066	< 0.056
Di-n-octyl phthalate	117-84-0	10,000	10,000	< 0.048 [< 0.049]	< 0.081	< 0.037	< 0.018	< 0.091	< 4.4	< 0.074	< 0.046	< 0.11	< 0.11	< 0.092
Fluoranthene	206-44-0	3,200	190,000	< 0.035 [1.4]	4.1	0.52	2.8	13	< 3.3	0.6	16	53	43	54
Fluorene	86-73-7	3,800	190,000	1.2 [0.95]	8.3	4.1	1.5	2.9	< 4.1	1	7	29	21	23
Indeno(1,2,3-cd)pyrene	193-39-5	18,000	190,000	0.33 [0.26]	1.6	< 0.025	0.46	3.2	< 3.1	< 0.079	3.2	9	7.1	16
Naphthalene	91-20-3	25	77	15 [14]	2.2	< 0.055	2	1.4	***3,600***	***47***	16	***42***	16	***39***
Pentachlorophenol	87-86-5	5	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	85-01-8	10,000	190,000	1.3 [1.1]	9.9	7.3	3.9	1.8	33	1.3	7.5	72	56	57
Phenol	108-95-2	200	18,000	< 0.66 [< 0.68]	< 1.1	< 0.5	< 0.043	< 1.3	< 61	3.6	< 0.63	0.88 J	1.8	< 1.3
Pyrene	129-00-0	2,200	190,000	< 0.042 [1.5]	4.3	0.95	4.3	17	< 3.8	0.6	9.7	40	30	32
Total PAHs and 2-Methylnaphthalene	-	- -	- -	24.9 [25.3]	57.8	43.6	26.1	89.2	3,680	55.7	104	402	288	410
Metals														
Aluminum	7429-90-5	- -	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	7440-36-0	27	190,000	4 [5.7]	4.5	< 2.2	< 3.7	18	< 2.6	20	2.8	7.3	6.8	< 2.7
Arsenic	7440-38-2	29	190,000	10 [13]	***62***	< 2.2	***35***	***40***	< 2.6	< 12	12	11	9.9	10
Barium	7440-39-3	8,200	190,000	240 [240]	670	30	210	440	43	65	67	180	110	170
Beryllium	7440-41-7	320	190,000	1.2 [1.8]	0.77	< 0.65	1.6	< 0.81	< 0.79	1.9	1.6	1.9	1.4	1
Cadmium	7440-43-9	38	190,000	< 0.86 [< 0.88]	1.2	< 0.65	1.7	4.4	< 0.79	6.3	0.91	1.6	0.97	< 0.82
Calcium	7440-70-2	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	7440-47-3	190,000	190,000	39 [49]	13	7	140	33	9.8	620	20	27	35	12
Cobalt	7440-48-4	130	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	7440-50-8	43,000	190,000	71 [93]	140	5.5	100	210	15	260	100	600	340	54
Cyanide	57-12-5	200	190,000	0.37 [< 0.37]	< 0.3	NA	2.3	16	3.9	< 0.39	3.2	< 0.41	< 0.4	2
Iron	7439-89-6	- -	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	7439-92-1	450	190,000	73 [100]	***2,000***	57	190	***3,200***	64	< 31	210	***460***	430	150
Magnesium	7439-95-4	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	7439-96-5	2,000	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	7439-97-6	10	190,000	< 0.12 [< 0.12]	1.6	< 0.091	0.84	0.77	0.24	< 0.13	0.24	0.39	0.53	0.21
Nickel	7440-02-0	650	190,000	26 [34]	23	< 5.4	34	30	9.5	290	30	19	22	11
Potassium	7440-09-7	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	7782-49-2	26	190,000	4.2 [4.7]	3.4	< 2	5.6	< 2.4	2.5	< 2.8	3.4	4.1	4.8	3.4
Silver	7440-22-4	84	190,000	< 3.6 [< 3.7]	< 3	< 2.7	< 4.6	< 3.4	< 3.3	< 16	< 3.4	< 4.1	< 4	< 3.4
Sodium	7440-23-5	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	7440-28-0	14	190,000	< 1.7 [< 1.8]	< 1.4	< 1.3	< 2.2	< 1.6	< 1.6	< 7.5	< 1.6	< 2	< 1.9	< 1.6
Vanadium	7440-62-2	680	190,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	7440-66-6	12,000	190,000	94 [160]	740	52	550	1,200	74	350	280	230	240	170

Table 11
Saturated Soil Analytical Results – Detected VOCs, SVOCs, and Inorganics (mg/kg)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID:	CAS Number	Soil Standards or PQLs		TP-44R		TP-58	TP-59	TP-60	TP-63	TP-63R		TP-64	TP-68A	TP-70
Sample Depth (ft):		S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	DC Non-Res Subsurf Soil (Exceedances Shaded)	5-7	7-9	11	12	18	8	7-9	11-13	7	9	12
Date Collected:				4/22/19	4/22/19	3/18/05	3/18/05	3/18/05	3/21/05	4/18/19	4/18/19	3/21/05	3/21/05	3/22/05
Volatile Organic Compounds														
2-Butanone (MEK)	78-93-3	400	10,000	< 1.3	< 0.012	< 0.0027	< 0.0015	< 0.0012	< 6.6	< 0.016	0.0113 J	< 0.0011	< 0.0018	< 0.0018 [< 0.0024]
Acetone	67-64-1	8,800	10,000	< 1.3	0.0449	0.11	0.063	0.036	< 7.9	< 0.016	0.0954	0.034	0.12	0.13 [0.14]
Benzene	71-43-2	0.5	330	< 0.065	0.0012	< 0.0018	< 0.00098	0.032	***230***	0.0327	0.0462	0.0024	< 0.0012	0.0063 [0.0088]
Carbon Disulfide	75-15-0	620	10,000	< 0.26	< 0.0024	< 0.0023	< 0.0012	0.002	< 1	< 0.0032	< 0.0040	< 0.00088	0.02	0.0027 [0.0038]
Chlorobenzene	108-90-7	10	4,500	< 0.26	< 0.0024	< 0.0018	< 0.00097	< 0.00074	***53***	< 0.0032	< 0.0040	< 0.00068	< 0.0011	< 0.0012 [< 0.0016]
Chloroform	67-66-3	8	110	< 0.26	< 0.0024	< 0.0016	< 0.00087	< 0.00067	< 0.76	< 0.0032	< 0.0040	< 0.00061	< 0.001	< 0.0011 [< 0.0014]
cis-1,2-Dichloroethene	156-59-2	7	10,000	< 0.13	< 0.0012	< 0.0017	< 0.00091	< 0.00071	< 0.99	< 0.0016	< 0.0020	< 0.00064	< 0.0011	< 0.0011 [< 0.0015]
Cyclohexane	110-82-7	6,900	10,000	< 0.26	< 0.0024	NA	NA	NA	NA	< 0.0032	< 0.0040	NA	NA	NA
Dichloromethane	75-09-2	0.5	10,000	< 0.65	< 0.0061	0.039 B	0.018 B	0.015 B	< 1.7	< 0.0079	< 0.0099	0.028 B	0.033 B	0.019 B [0.021 B]
Ethylbenzene	100-41-4	70	1,000	< 0.13	< 0.0012	< 0.0026	< 0.0014	< 0.0011	***140***	< 0.0016	< 0.0020	< 0.001	< 0.0017	0.078 [0.19]
Isopropylbenzene	98-82-8	2,500	10,000	< 0.26	< 0.0024	NA	NA	NA	NA	< 0.0032	< 0.0040	NA	NA	NA
m&p-Xylenes	ARC-mpXyl	- -	- -	< 0.13	< 0.0012	< 0.0039	< 0.0021	< 0.0016	430	0.01	< 0.0020	< 0.0015	0.0031	0.031 [0.078]
Methyl Acetate	79-20-9	9,700	10,000	< 0.65	< 0.0061	NA	NA	NA	NA	< 0.0079	< 0.0099	NA	NA	NA
Methylcyclohexane	108-87-2	- -	- -	< 0.26	< 0.0024	NA	NA	NA	NA	< 0.0032	< 0.0040	NA	NA	NA
Methyl-tert-butylether	1634-04-4	2	9,800	< 0.13	< 0.0012	NA	NA	NA	NA	< 0.0016	< 0.0020	NA	NA	NA
o,p-Xylene	136777-61-2	- -	- -	NA	NA	< 0.0016	< 0.0009	< 0.00069	140	NA	NA	< 0.00063	0.0043	0.051 [0.11]
o-Xylene	95-47-6	- -	- -	< 0.13	< 0.0012	NA	NA	NA	NA	0.0055	< 0.0020	NA	NA	NA
Styrene (Monomer)	100-42-5	24	10,000	< 0.26	< 0.0024	< 0.0022	< 0.0012	< 0.00092	***47***	< 0.0032	< 0.0040	< 0.00084	< 0.0014	< 0.0015 [< 0.0019]
Toluene	108-88-3	100	10,000	0.0684 J	0.0023	< 0.0026	< 0.0014	< 0.0011	***140***	0.0090	0.0020	< 0.001	0.0058	0.023 [0.039]
trans-1,2-Dichloroethene	156-60-5	10	10,000	< 0.13	< 0.0012	< 0.0011	< 0.00061	< 0.00047	< 0.99	< 0.0016	< 0.0020	< 0.00043	< 0.00072	< 0.00075 [< 0.00099]
trans-1,3-Dichloropropene	10061-02-6	- -	- -	< 0.26	< 0.0024	NA	NA	NA	NA	< 0.0032	< 0.0040	NA	NA	NA
Total Xylenes	1330-20-7	1,000	9,100	< 0.13	< 0.0012	NA	NA	NA	NA	0.0155	< 0.0020	NA	NA	NA
Semi-Volatile Organic Compounds														
1,1-Biphenyl	92-52-4	1.5	40	< 0.087	0.0067 J	NA	NA	NA	NA	0.0793 J	< 0.12	NA	NA	NA
2,4-Dimethylphenol	105-67-9	190	10,000	< 0.22	< 0.21	< 0.23	< 0.037	< 0.31	< 150	< 0.42	< 0.3	< 0.053	< 0.072	< 1.5 [< 5.1]
2-Methylnaphthalene	91-57-6	100	270	< 0.044	0.0147 J	0.25	0.13	2.4	***5,800***	0.15	< 0.06	0.1	2.7	***130 [340]***
2-Methylphenol	95-48-7	490	190,000	< 0.087	< 0.084	< 0.44	< 0.15	< 1.3	< 290	< 0.17	< 0.12	< 0.1	< 0.14	< 2.8 [< 9.7]
3-Methylphenol, 4-Methylphenol	65794-96-9	- -	- -	< 0.087	< 0.084	NA	NA	NA	NA	< 0.17	< 0.12	NA	NA	NA
4-Methylphenol	106-44-5	49	190,000	NA	NA	< 0.53	< 0.19	< 1.6	< 360	NA	NA	0.11 J	0.83	< 3.4 [< 12]
Acenaphthene	83-32-9	4,700	190,000	0.671	0.0293 J	1.6	0.88	4.5	1,200	0.871	< 0.06	0.54	5.4	110 [250]
Acenaphthylene	208-96-8	6,600	190,000	< 0.044	< 0.042	0.36	< 0.015	1	4,900	8.91 D	< 0.06	0.068	0.69	< 0.25 [< 0.87]
Acetophenone	98-86-2	970	10,000	< 0.22	< 0.21	NA	NA	NA	NA	0.0406 J	< 0.3	NA	NA	NA
Anthracene	120-12-7	350	190,000	0.226	< 0.042	2.1	0.27	14	***4,200***	5.9	< 0.06	0.36	3.2	58 [150]
Benz(a)anthracene	56-55-3	340	190,000	0.0327 J	< 0.042	5.3	0.56	16	***4,400***	30.6 D	0.0255 J	0.28	4.8	25 [63]
Benzaldehyde	100-52-7	- -	- -	< 0.22	< 0.21	NA	NA	NA	NA	< 0.42	< 0.3	NA	NA	NA
Benzo(a)pyrene	50-32-8	46	190,000	< 0.044	< 0.042	4.1	0.41	12	***3,400***	31.2 D	0.0302 J	0.25	3.9	17 [32]
Benzo(b)fluoranthene	205-99-2	170	190,000	0.0218 J	< 0.042	5	0.54	14	***4,700***	38.5 D	0.0324 J	0.36	5.3	21 [42]
Benzo(g,h,i)perylene	191-24-2	180	190,000	< 0.044	< 0.042	1.2	0.32	7.6	***890***	19.2 D	< 0.06	0.075	0.79	4.6 [9]
Benzo(k)fluoranthene	207-08-9	610	190,000	< 0.044	< 0.042	1.6	0.098	5.7	***1,400***	14.4 D	< 0.06	0.12	1.6	5.3 [12]
bis(2-Ethylhexyl)phthalate	117-81-7	130	10,000	< 0.087	< 0.084	0.51	< 0.031	< 0.26	< 35	< 0.17	< 0.12	0.068	< 0.017	< 0.34 [< 1.2]
Butyl benzyl phthalate	85-68-7	10,000	10,000	< 0.087	< 0.084	< 0.08	< 0.016	< 0.13	< 54	< 0.17	< 0.12	< 0.018	< 0.025	< 0.52 [< 1.8]

Location ID: / Sample Depth (ft): / Date Collected:	CAS Number	Soil Standards or PQLs: S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	Soil Standards or PQLs: DC Non-Res Subsurf Soil (Exceedances Shaded)	TP-44R 5-7 4/22/19	TP-44R 7-9 4/22/19	TP-58 11 3/18/05	TP-59 12 3/18/05	TP-60 18 3/18/05	TP-63 8 3/21/05	TP-63R 7-9 4/18/19	TP-63R 11-13 4/18/19	TP-64 7 3/21/05	TP-68A 9 3/21/05	TP-70 12 3/22/05
Semi-Volatile Organic Compounds (cont'd)														
Carbazole	86-74-8	89	190,000	< 0.087	< 0.084	0.64	< 0.012	4	***2,100***	0.465	< 0.12	0.15	< 0.022	21 [53]
Chrysene	218-01-9	230	190,000	0.0296 J	< 0.042	5.2	0.62	13	***3,400***	20.9 D	0.0277 J	0.3	5.2	29 [60]
Dibenz(a,h)anthracene	53-70-3	270	190,000	< 0.044	< 0.042	0.5	0.11	2.4	***410***	5.45	< 0.06	< 0.023	0.37	2.1 [< 2.2]
Dibenzofuran	132-64-9	250	190,000	0.6	< 0.084	0.45	0.15	5.3	***4,500***	0.48	< 0.12	0.31	0.61	55 [150]
Diethyl phthalate	84-66-2	7,800	10,000	< 0.087	< 0.084	< 0.047	< 0.017	< 0.14	< 31	< 0.17	< 0.12	< 0.011	< 0.015	< 0.3 [< 1]
Di-n-butyl phthalate	84-74-2	4,000	10,000	< 0.087	< 0.084	< 0.044	< 0.015	< 0.13	< 29	< 0.17	< 0.12	0.058	< 0.014	< 0.28 [< 0.98]
Di-n-octyl phthalate	117-84-0	10,000	10,000	< 0.087	< 0.084	< 0.046	< 0.015	< 0.13	< 31	< 0.17	< 0.12	< 0.011	< 0.015	< 0.3 [< 1]
Fluoranthene	206-44-0	3,200	190,000	0.134	< 0.042	11	0.78	32	***11,000***	48.4 D	0.0403 J	0.95	8.6	98 [260]
Fluorene	86-73-7	3,800	190,000	1.21	< 0.042	< 0.042	0.24	8.9	***7,000***	1.22	< 0.06	0.62	4.3	98 [230]
Indeno(1,2,3-cd)pyrene	193-39-5	18,000	190,000	0.0347 J	< 0.042	1.4	0.24	6.5	1,200	20.8 D	< 0.06	0.09	0.95	5.5 [9.3]
Naphthalene	91-20-3	25	77	< 0.044	< 0.042	0.46	0.52	21	***19,000***	0.581	< 0.06	0.58	3.1	***61 [200]***
Pentachlorophenol	87-86-5	5	190,000	< 0.17	< 0.17	NA	NA	NA	NA	< 0.34	< 0.24	NA	NA	NA
Phenanthrene	85-01-8	10,000	190,000	0.236	< 0.042	7	0.84	41	***15,000***	6.06	< 0.06	0.92	11	210 [540]
Phenol	108-95-2	200	18,000	< 0.087	< 0.084	< 0.2	< 0.038	< 0.31	< 130	< 0.17	< 0.12	< 0.045	< 0.061	< 1.3 [< 4.3]
Pyrene	129-00-0	2,200	190,000	0.154	< 0.042	11	1.4	31	***7,100***	39.3 D	0.0449 J	0.66	9.5	81 [180]
Total PAHs and 2-Methylnaphthalene	-	- -	- -	2.75	0.044	58.1	7.96	233	95,000	292	0.201	6.27	71.4	956 [2,380]
Metals														
Aluminum	7429-90-5	- -	190,000	4,720	5,920	NA	NA	NA	NA	3,540	20,500	NA	NA	NA
Antimony	7440-36-0	27	190,000	0.92 J	< 2.6	5.4	4.4	3.8	< 3.3	0.66 J	< 3.7 J	< 2.7	6	6.2 [6.6]
Arsenic	7440-38-2	29	190,000	7.0	5.9	13	18	8	< 3.3	9.4	***37.2***	8.1	***58***	***46 [77]***
Barium	7440-39-3	8,200	190,000	407	35.2	1,600	290	350	20	47.0	177	59	310	64 [260]
Beryllium	7440-41-7	320	190,000	0.20 J	0.35	1.9	< 0.97	< 0.8	< 0.98	0.45	1.3	< 0.81	1.9	< 1.1 [1.8]
Cadmium	7440-43-9	38	190,000	< 0.66	0.46 J	11	1.4	< 0.8	< 0.98	0.34 J	1.6	< 0.81	3.2	4.9 [3.5]
Calcium	7440-70-2	- -	- -	640 J	484 J	NA	NA	NA	NA	2,750	4,260	NA	NA	NA
Chromium	7440-47-3	190,000	190,000	14.3	13.5	30	14	8.7	< 8.2	10.9	157	32	240	62 [210]
Cobalt	7440-48-4	130	190,000	3.4 J	4.7 J	NA	NA	NA	NA	3.0 J	18.1	NA	NA	NA
Copper	7440-50-8	43,000	190,000	17.8	8.4	190	54	40	< 8.2	86.9	99.8	35	210	640 [450]
Cyanide	57-12-5	200	190,000	< 0.33	< 0.33	NA	NA	NA	1.2	2.8 J	0.82 J	***789***	5.9	4.1 [3.8]
Iron	7439-89-6	- -	190,000	9,770	11,300	NA	NA	NA	NA	14,400	34,400	NA	NA	NA
Lead	7439-92-1	450	190,000	***2,840***	18.8	***5,100***	***2,200***	330	< 8.2	142 J	194 J	81	370	***640*** [450]
Magnesium	7439-95-4	- -	- -	1,810	1,580	NA	NA	NA	NA	579 J	5,450 J	NA	NA	NA
Manganese	7439-96-5	2,000	190,000	95.2	83.7	NA	NA	NA	NA	42.1 J	1,250 J	NA	NA	NA
Mercury	7439-97-6	10	190,000	0.67 J	0.026 J	0.96	0.2	0.22	< 0.14	0.29 J	1.6 J	0.31	2.1	0.26 [0.97]
Nickel	7440-02-0	650	190,000	8.1	9.0	22	9.1	7.3	< 8.2	9.9	35.1	11	39	21 [44]
Potassium	7440-09-7	- -	- -	1,220 J	985 J	NA	NA	NA	NA	485 J	2,280	NA	NA	NA
Selenium	7782-49-2	26	190,000	< 2.7	< 2.6	3.7	3.6	2.6	< 3	1.3 J	< 3.7	2.6	5.7	6.7 [7.1]
Silver	7440-22-4	84	190,000	< 0.66	< 0.64	< 4.9	< 4	< 3.3	< 4.1	< 0.62	< 0.93	< 3.4	< 4.6	< 4.7 [< 5.4]
Sodium	7440-23-5	- -	- -	< 1,300	< 1,300	NA	NA	NA	NA	< 1,200	264 J	NA	NA	NA
Thallium	7440-28-0	14	190,000	< 1.3	< 1.3	< 2.4	< 1.9	< 1.6	< 2	< 1.2	< 1.9	< 1.6	< 2.2	< 2.3 [< 2.6]
Vanadium	7440-62-2	680	190,000	8.4	12.3	NA	NA	NA	NA	13.8	41.1	NA	NA	NA
Zinc	7440-66-6	12,000	190,000	79.1	167	2,800	810	230	200	113	534	170	1,200	1,700 [1,500]

Location ID: Sample Depth (ft): Date Collected:	CAS Number	Soil Standards or PQLs		TP-71 10 3/22/05	TP-75 7 3/23/05	TP-78 7 3/23/05	TP-278 9 3/23/05
		S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	DC Non-Res Subsurf Soil (Exceedances Shaded)				
Volatile Organic Compounds							
2-Butanone (MEK)	78-93-3	400	10,000	< 0.0018	< 0.0011	< 0.0012	< 0.001
Acetone	67-64-1	8,800	10,000	0.11	0.023	0.071	0.039
Benzene	71-43-2	0.5	330	0.0064	< 0.00072	< 0.0008	< 0.00065
Carbon Disulfide	75-15-0	620	10,000	< 0.0015	< 0.00092	< 0.001	< 0.00083
Chlorobenzene	108-90-7	10	4,500	< 0.0011	< 0.00071	< 0.00079	< 0.00064
Chloroform	67-66-3	8	110	< 0.001	< 0.00064	< 0.00071	< 0.00058
cis-1,2-Dichloroethene	156-59-2	7	10,000	< 0.0011	< 0.00067	< 0.00074	< 0.00061
Cyclohexane	110-82-7	6,900	10,000	NA	NA	NA	NA
Dichloromethane	75-09-2	0.5	10,000	0.015 B	0.024 B	0.013 B	0.01 B
Ethylbenzene	100-41-4	70	1,000	0.078	< 0.0011	< 0.0012	< 0.00096
Isopropylbenzene	98-82-8	2,500	10,000	NA	NA	NA	NA
m&p-Xylenes	ARC-mpXyl	- -	- -	0.0097	< 0.0016	< 0.0017	< 0.0014
Methyl Acetate	79-20-9	9,700	10,000	NA	NA	NA	NA
Methylcyclohexane	108-87-2	- -	- -	NA	NA	NA	NA
Methyl-tert-butylether	1634-04-4	2	9,800	NA	NA	NA	NA
o,p-Xylene	136777-61-2	- -	- -	0.058	< 0.00066	< 0.00073	< 0.0006
o-Xylene	95-47-6	- -	- -	NA	NA	NA	NA
Styrene (Monomer)	100-42-5	24	10,000	< 0.0014	< 0.00087	< 0.00097	< 0.0008
Toluene	108-88-3	100	10,000	< 0.0017	< 0.0011	< 0.0012	< 0.00097
trans-1,2-Dichloroethene	156-60-5	10	10,000	< 0.00073	< 0.00045	< 0.0005	< 0.00041
trans-1,3-Dichloropropene	10061-02-6	- -	- -	NA	NA	NA	NA
Total Xylenes	1330-20-7	1,000	9,100	NA	NA	NA	NA
Semi-Volatile Organic Compounds							
1,1-Biphenyl	92-52-4	1.5	40	NA	NA	NA	NA
2,4-Dimethylphenol	105-67-9	190	10,000	< 4.3	< 0.055	< 0.053	< 0.25
2-Methylnaphthalene	91-57-6	100	270	100	< 0.048	0.16	< 0.22
2-Methylphenol	95-48-7	490	190,000	< 8.1	< 0.1	< 0.1	< 0.48
3-Methylphenol, 4-Methylphenol	65794-96-9	- -	- -	NA	NA	NA	NA
4-Methylphenol	106-44-5	49	190,000	< 9.9	< 0.13	< 0.12	< 0.58
Acenaphthene	83-32-9	4,700	190,000	140	< 0.017	0.56	0.38
Acenaphthylene	208-96-8	6,600	190,000	< 0.73	< 0.0094	0.12	< 0.043
Acetophenone	98-86-2	970	10,000	NA	NA	NA	NA
Anthracene	120-12-7	350	190,000	90	< 0.012	1.3	0.88
Benz(a)anthracene	56-55-3	340	190,000	41	0.11	3.2	2.8
Benzaldehyde	100-52-7	- -	- -	NA	NA	NA	NA
Benzo(a)pyrene	50-32-8	46	190,000	24	0.11	2.8	2.5
Benzo(b)fluoranthene	205-99-2	170	190,000	29	0.12	3.5	3.1
Benzo(g,h,i)perylene	191-24-2	180	190,000	7.1	0.074	1.3	0.97
Benzo(k)fluoranthene	207-08-9	610	190,000	9.3	0.067	1.1	1.1
bis(2-Ethylhexyl)phthalate	117-81-7	130	10,000	< 0.98	< 0.013	< 0.012	< 0.058
Butyl benzyl phthalate	85-68-7	10,000	10,000	< 1.5	< 0.019	< 0.019	< 0.088

Location ID: Sample Depth (ft): Date Collected:	CAS Number	Soil Standards or PQLs		TP-71 10 3/22/05	TP-75 7 3/23/05	TP-78 7 3/23/05	TP-278 9 3/23/05
		S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	DC Non-Res Subsurf Soil (Exceedances Shaded)				
Semi-Volatile Organic Compounds (cont'd)							
Carbazole	86-74-8	89	190,000	19	< 0.017	0.55	0.31
Chrysene	218-01-9	230	190,000	41	0.11	3	2.9
Dibenz(a,h)anthracene	53-70-3	270	190,000	< 1.8	< 0.024	0.44	0.37
Dibenzofuran	132-64-9	250	190,000	64	< 0.082	0.28	< 0.37
Diethyl phthalate	84-66-2	7,800	10,000	< 0.87	< 0.011	< 0.011	< 0.051
Di-n-butyl phthalate	84-74-2	4,000	10,000	< 0.82	0.14	< 0.01	< 0.048
Di-n-octyl phthalate	117-84-0	10,000	10,000	< 0.86	< 0.011	< 0.011	< 0.05
Fluoranthene	206-44-0	3,200	190,000	150	0.2	6.5	5.7
Fluorene	86-73-7	3,800	190,000	120	< 0.01	0.58	0.36
Indeno(1,2,3-cd)pyrene	193-39-5	18,000	190,000	6.6	0.074	1.2	1.2
Naphthalene	91-20-3	25	77	11	< 0.0089	0.18	< 0.041
Pentachlorophenol	87-86-5	5	190,000	NA	NA	NA	NA
Phenanthrene	85-01-8	10,000	190,000	310	0.11	4.7	3.9
Phenol	108-95-2	200	18,000	< 3.6	< 0.047	< 0.045	< 0.21
Pyrene	129-00-0	2,200	190,000	120	0.16	4.7	4.9
Total PAHs and 2-Methylnaphthalene	-	- -	- -	1,200	1.14	35.3	31.1
Metals							
Aluminum	7429-90-5	- -	190,000	NA	NA	NA	NA
Antimony	7440-36-0	27	190,000	6.7	< 2.8	11	4.3
Arsenic	7440-38-2	29	190,000	***83***	5.9	19	27
Barium	7440-39-3	8,200	190,000	270	140	210	150
Beryllium	7440-41-7	320	190,000	1.8	1.1	< 0.82	< 0.77
Cadmium	7440-43-9	38	190,000	3.6	< 0.85	1	< 0.77
Calcium	7440-70-2	- -	- -	NA	NA	NA	NA
Chromium	7440-47-3	190,000	190,000	350	31	29	11
Cobalt	7440-48-4	130	190,000	NA	NA	NA	NA
Copper	7440-50-8	43,000	190,000	230	22	280	120
Cyanide	57-12-5	200	190,000	NA	NA	NA	NA
Iron	7439-89-6	- -	190,000	NA	NA	NA	NA
Lead	7439-92-1	450	190,000	440	110	***1,600***	***2,500***
Magnesium	7439-95-4	- -	- -	NA	NA	NA	NA
Manganese	7439-96-5	2,000	190,000	NA	NA	NA	NA
Mercury	7439-97-6	10	190,000	2.6	< 0.12	0.98	1.8
Nickel	7440-02-0	650	190,000	42	20	21	16
Potassium	7440-09-7	- -	- -	NA	NA	NA	NA
Selenium	7782-49-2	26	190,000	4.5	2.8	3.2	2.5
Silver	7440-22-4	84	190,000	< 4.5	< 3.5	< 3.4	< 3.2
Sodium	7440-23-5	- -	- -	NA	NA	NA	NA
Thallium	7440-28-0	14	190,000	< 2.2	< 1.7	< 1.6	< 1.5
Vanadium	7440-62-2	680	190,000	NA	NA	NA	NA
Zinc	7440-66-6	12,000	190,000	1,200	120	750	420

Table 11
Saturated Soil Analytical Results – Detected VOCs, SVOCs, and Inorganics (mg/kg)

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Philadelphia, Pennsylvania

Notes:

1. Samples prior to 2018 were collected by Paulus, Sokolowski, and Sartor Engineering, PC on the dates indicated. Samples in 2018 and 2019 were collected by Arcadis on the dates indicated.
2. Sample depth is reported in feet below ground surface.
3. 2003 and 2005 samples were analyzed by Hampton-Clarke, Veritech Laboratories of Fairfield, New Jersey (Veritech).
4. 2018 and 2019 samples were analyzed by SGS North America Incorporated Laboratories of Dayton, New Jersey (SGS).
5. Samples were submitted for laboratory analysis for one or more of the following constituent groups, as indicated above.
   - Target Compound List (TCL) volatile organic compounds (VOC) using United States Environmental Protection Agency (USEPA) SW-846 Method 8260.
   - TCL semi-volatile organic compounds (SVOC) using USEPA SW-846 Method 8270.
   - Metals using USEPA SW-846 Methods 6010 and 7471.
   - Cyanide using USEPA SW-846 Method 9010 (Veritech) or 9012B (SGS).
6. Only compounds detected in one or more samples are shown in this table.
7. < = constituent not detected at a concentration above the reported detection limit. These results are also reported in gray.
8. NA = Not Analyzed.
9. Concentrations reported in milligrams per kilogram (mg/kg) or parts per million (ppm).
10. Soil standards obtained from the Pennsylvania Department of Environmental Protection (PADEP) Medium Specific Concentrations (MSCs) established in Title 25 of the Pennsylvania Code Chapter 250, Administration of the Land Recycling Program (Act 2 cleanup standards) updated on November 20, 2021 and include:
    (a) The soil to groundwater MSCs for a non-residential used aquifer with total dissolved solids (TDS) less than or equal to 2,500 parts per million (ppm). The higher of the 100 X groundwater MSC or generic value is used.
    (b) The non-residential direct contact MSC for subsurface soil.
11. Shaded results indicates that the results exceed the PADEP non-residential direct contact MSC (for subsurface soil).
12. Italics and bolding indicates that the result exceeds the PADEP soil to groundwater MSC (for a non-residential used aquifer with TDS ≤ 2,500 ppm).
13. - - = No PADEP MSC.
14. - = No actual Chemical Abstracts Service (CAS) number is available.
15. Brackets indicate the reported concentration of a duplicate sample.
16. The MSCs reported for chromium is for trivalent chromium. The reported chromium results are for total chromium.
17. The MSCs reported for cyanide are for free cyanide. The reported cyanide results are for total cyanide.
18. Total polycyclic aromatic hydrocarbons (PAHs) are the sum of the 16 priority pollutant PAHs identified by the USEPA and 2-methylnaphthalene.
19. Qualifier Definitions:
    B = Analyte is an estimated value between the instrument detection limit and the Reporting Limit.
    D = Concentration is based on a diluted sample analysis.
    J = Analyte is an estimated value.
    R = Data rejected during validation.
20. Data from 2018 and 2019 have undergone a Tier II validation. Data prior to 2018 have not been validated.

Table 12
Saturated Soil Analytical Results – Detected Pesticides and PCBs (mg/kg)

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Philadelphia, Pennsylvania

Location ID: / Sample Depth (ft): / Date Collected:	CAS Number	Soil Standards or PQLs		MW-102	MW-103	PCSB-26		PCSB-27	PCSB-28		PCSB-29		PCSB-30	PCSB-34	
		S-GW Used Aquifer TDS≤ 2,500 Non-Res (No Exceedances)	DC Non-Res Subsurf Soil (No Exceedances)	12-13 5/16/18	15-16 5/16/18	6 7/26/05	8 7/26/05	10.5 7/26/05	2 7/26/05	15 7/26/05	2 7/26/05	11.5 7/26/05	15 7/26/05	5 7/27/05	16.5 7/27/05
Pesticides															
4,4-DDD	72-54-8	120	190,000	< 0.0012	< 0.00087	< 0.0072	< 0.0071	< 0.0083	< 0.0054	< 0.0094	< 0.0054	< 0.0074	< 0.0096	< 0.0074	< 0.0079
4,4-DDE	72-55-9	170	190,000	< 0.0012	< 0.00087	< 0.0072	< 0.0071	< 0.0083	< 0.0054	< 0.0094	< 0.0054	< 0.0074	< 0.0096	< 0.0074	< 0.0079
4,4-DDT	50-29-3	330	190,000	< 0.0012	< 0.00087	< 0.0072	< 0.0071	< 0.0083	< 0.0054	< 0.0094	< 0.0054	< 0.0074	< 0.0096	< 0.0074	< 0.0079
Beta-BHC	319-85-7	0.88	190,000	< 0.0012	< 0.00087	< 0.0072	< 0.0071	< 0.0083	< 0.0054	< 0.0094	< 0.0054	< 0.0074	< 0.0096	< 0.0074	< 0.0079
Chlordane	57-74-9	49	190,000	NA	NA	< 0.014	< 0.014	< 0.017	< 0.011	< 0.019	< 0.011	< 0.015	< 0.019	< 0.015	< 0.016
Dieldrin	60-57-1	0.47	190,000	< 0.0012	< 0.00087	< 0.0072	< 0.0071	< 0.0083	< 0.0054	< 0.0094	< 0.0054	< 0.0074	< 0.0096	< 0.0074	< 0.0079
Endosulfan I	959-98-8	260	190,000	< 0.0012	< 0.00087	< 0.0072	< 0.0071	< 0.0083	< 0.0054	< 0.0094	< 0.0054	< 0.0074	< 0.0096	< 0.0074	< 0.0079
Endrin aldehyde	7421-93-4	- -	- -	< 0.0012	< 0.00087	< 0.0072	< 0.0071	< 0.0083	< 0.0054	< 0.0094	< 0.0054	< 0.0074	< 0.0096	< 0.0074	< 0.0079
Polychlorinated Biphenyls															
Aroclor 1016	12674-11-2	190	10,000	< 0.058	< 0.043	< 0.036	< 0.036	< 0.042	< 0.027	< 0.047	< 0.027	< 0.037	< 0.048	< 0.037	< 0.04
Aroclor 1242	53469-21-9	17	10,000	< 0.058	< 0.043	< 0.036	< 0.036	< 0.042	< 0.027	< 0.047	< 0.027	< 0.037	< 0.048	< 0.037	< 0.04
Aroclor 1254	11097-69-1	380	10,000	< 0.058	< 0.043	< 0.036	< 0.036	< 0.042	< 0.027	< 0.047	< 0.027	< 0.037	< 0.048	< 0.037	< 0.04
Aroclor 1260	11096-82-5	630	190,000	< 0.058	< 0.043	< 0.036	< 0.036	< 0.042	< 0.027	< 0.047	< 0.027	< 0.037	< 0.048	< 0.037	< 0.04
Total PCBs	-	- -	- -	< 0.058	< 0.043	< 0.036	< 0.036	< 0.042	< 0.027	< 0.047	< 0.027	< 0.037	< 0.048	< 0.037	< 0.04

Table 12
Saturated Soil Analytical Results – Detected Pesticides and PCBs (mg/kg)

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National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID: Sample Depth (ft): Date Collected:	CAS Number	Soil Standards or PQLs		PCSB-36		PCSB-38		PCTP-62	PCTP-63	PCTP-66	PCTP-66R	PCTP-67	PCTP-68	PCTP-69	PCTP-70	PCTP-71	PCTP-72
		S-GW Used Aquifer TDS≤ 2,500 Non-Res (No Exceedances)	DC Non-Res Subsurf Soil (No Exceedances)	4 7/27/05	16 7/27/05	3.5 7/27/05	9.5 7/27/05	10.5 9/8/05	10.5 9/8/05	7.5 9/8/05	8-10 4/24/19	8 9/12/05	6 9/9/05	17.5 9/9/05	18 9/9/05	17.5 9/9/05	12 9/9/05
Pesticides																	
4,4-DDD	72-54-8	120	190,000	< 0.006	< 0.0072	< 0.0057	< 0.0088	< 0.0083	< 0.0069	< 0.0074	< 0.0010	< 0.0074	< 0.0051	< 0.0058	< 0.0054	< 0.0054	< 0.0064
4,4-DDE	72-55-9	170	190,000	< 0.006	< 0.0072	< 0.0057	< 0.0088	< 0.0083	< 0.0069	< 0.0074	< 0.0010	< 0.0074	< 0.0051	< 0.0058	< 0.0054	< 0.0054	< 0.0064
4,4-DDT	50-29-3	330	190,000	< 0.006	< 0.0072	< 0.0057	< 0.0088	< 0.0083	< 0.0069	< 0.0074	< 0.0010	< 0.0074	< 0.0051	< 0.0058	< 0.0054	< 0.0054	< 0.0064
Beta-BHC	319-85-7	0.88	190,000	< 0.006	< 0.0072	< 0.0057	< 0.0088	< 0.0083	< 0.0069	< 0.0074	< 0.0010	< 0.0074	< 0.0051	< 0.0058	< 0.0054	< 0.0054	< 0.0064
Chlordane	57-74-9	49	190,000	< 0.012	< 0.014	< 0.011	< 0.018	< 0.017	< 0.014	< 0.015	NA	< 0.015	< 0.01	< 0.012	< 0.011	< 0.011	< 0.013
Dieldrin	60-57-1	0.47	190,000	< 0.006	< 0.0072	< 0.0057	< 0.0088	< 0.0083	< 0.0069	< 0.0074	< 0.0010	< 0.0074	< 0.0051	< 0.0058	< 0.0054	< 0.0054	< 0.0064
Endosulfan I	959-98-8	260	190,000	< 0.006	< 0.0072	< 0.0057	< 0.0088	< 0.0083	< 0.0069	< 0.0074	< 0.0010	< 0.0074	< 0.0051	< 0.0058	< 0.0054	< 0.0054	< 0.0064
Endrin aldehyde	7421-93-4	- -	- -	< 0.006	< 0.0072	< 0.0057	< 0.0088	< 0.0083	< 0.0069	< 0.0074	< 0.0010	< 0.0074	< 0.0051	< 0.0058	< 0.0054	< 0.0054	< 0.0064
Polychlorinated Biphenyls																	
Aroclor 1016	12674-11-2	190	10,000	< 0.03	< 0.036	< 0.028	< 0.044	< 0.042	< 0.035	< 0.037	< 0.052	< 0.037	< 0.026	< 0.029	< 0.027	< 0.027	< 0.032
Aroclor 1242	53469-21-9	17	10,000	< 0.03	< 0.036	< 0.028	< 0.044	< 0.042	< 0.035	< 0.037	< 0.052	< 0.037	0.93	< 0.029	< 0.027	< 0.027	< 0.032
Aroclor 1254	11097-69-1	380	10,000	< 0.03	< 0.036	< 0.028	< 0.044	< 0.042	< 0.035	< 0.037	< 0.052	< 0.037	0.92	< 0.029	< 0.027	< 0.027	< 0.032
Aroclor 1260	11096-82-5	630	190,000	< 0.03	< 0.036	< 0.028	< 0.044	< 0.042	< 0.035	< 0.037	< 0.052	< 0.037	< 0.026	< 0.029	< 0.027	< 0.027	< 0.032
Total PCBs	-	- -	- -	< 0.03	< 0.036	< 0.028	< 0.044	< 0.042	< 0.035	< 0.037	< 0.052	< 0.037	1.85	< 0.029	< 0.027	< 0.027	< 0.032

Table 12
Saturated Soil Analytical Results – Detected Pesticides and PCBs (mg/kg)

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National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID: / Sample Depth (ft): / Date Collected:	CAS Number	Soil Standards or PQLs		PCTP-73	PCTP-74	PCTP-77	PCTP-78	PCTP-79	PSSTP-03B	PSSTP-04B	PSSTP-04R		PSSTP-05B	PSSTP-06B	PSSTP-07B
		S-GW Used Aquifer TDS≤ 2,500 Non-Res (No Exceedances)	DC Non-Res Subsurf Soil (No Exceedances)	9.5 9/9/05	12.5 9/9/05	10.5 9/12/05	9.5 9/12/05	10 9/12/05	8-9 3/11/03	8-9 3/11/03	8-9 4/11/19	16-17 4/11/19	5-6 3/11/03	5-6 3/11/03	8-9 3/11/03
Pesticides															
4,4-DDD	72-54-8	120	190,000	< 0.0063	< 0.0049	< 0.0076	< 0.034	< 0.0066	< 0.004	< 0.2	< 0.00086	< 0.00074	< 0.004	< 0.0043	< 0.0043
4,4-DDE	72-55-9	170	190,000	< 0.0063	< 0.0049	< 0.0076	< 0.034	< 0.0066	0.0048	< 0.2	< 0.00086	< 0.00074	< 0.004	< 0.0043	< 0.0043
4,4-DDT	50-29-3	330	190,000	< 0.0063	< 0.0049	< 0.0076	< 0.034	< 0.0066	< 0.004	0.56	0.00097	< 0.00074	< 0.004	< 0.0043	< 0.0043
Beta-BHC	319-85-7	0.88	190,000	< 0.0063	< 0.0049	< 0.0076	< 0.034	< 0.0066	0.0063	< 0.4	< 0.00086	< 0.00074	< 0.004	< 0.043	< 0.0043
Chlordane	57-74-9	49	190,000	< 0.013	< 0.0098	< 0.015	< 0.068	< 0.013	< 0.0079	< 0.2	NA	NA	< 0.008	< 0.0085	< 0.0085
Dieldrin	60-57-1	0.47	190,000	< 0.0063	< 0.0049	< 0.0076	< 0.034	< 0.0066	< 0.004	< 0.2	< 0.00086	< 0.00074	< 0.004	< 0.0043	< 0.0043
Endosulfan I	959-98-8	260	190,000	< 0.0063	< 0.0049	< 0.0076	< 0.034	< 0.0066	< 0.004	< 0.2	0.0037 JN	< 0.00074	< 0.004	< 0.0043	< 0.0043
Endrin aldehyde	7421-93-4	- -	- -	< 0.0063	< 0.0049	< 0.0076	< 0.034	< 0.0066	< 0.004	< 0.2	< 0.00086 J	< 0.00074	< 0.004	< 0.0043	< 0.0043
Polychlorinated Biphenyls															
Aroclor 1016	12674-11-2	190	10,000	< 0.032	< 0.025	< 0.038	< 0.034	< 0.033	< 0.02	< 0.02	< 0.043	< 0.038	< 0.02	< 0.021	< 0.021
Aroclor 1242	53469-21-9	17	10,000	< 0.032	< 0.025	< 0.038	< 0.034	< 0.033	0.049	< 0.02	< 0.043	< 0.038	< 0.02	< 0.021	< 0.021
Aroclor 1254	11097-69-1	380	10,000	0.85	< 0.025	< 0.038	< 0.034	< 0.033	0.057	< 0.02	< 0.043	< 0.038	< 0.02	< 0.021	< 0.021
Aroclor 1260	11096-82-5	630	190,000	< 0.032	< 0.025	< 0.038	< 0.034	< 0.033	< 0.02	0.47	< 0.043	< 0.038	< 0.02	< 0.021	< 0.021
Total PCBs	-	- -	- -	0.85	< 0.025	< 0.038	< 0.034	< 0.033	0.106	0.47	< 0.043	< 0.038	< 0.02	< 0.021	< 0.021

Table 12
Saturated Soil Analytical Results – Detected Pesticides and PCBs (mg/kg)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID: Sample Depth (ft): Date Collected:	CAS Number	Soil Standards or PQLs		PSSTP-07R	PSSTP-10B	PSSTP-10R	PSSTP-11B	PSSTP-12B	PSSTP-13B	PSSTP-14B	PSSTP-15B	PSSTP-16B	PSSTP-17B	PSSTP-18B
		S-GW Used Aquifer TDS≤ 2,500 Non-Res (No Exceedances)	DC Non-Res Subsurf Soil (No Exceedances)	8-9 4/18/19	8-9 3/12/03	8-9 4/16/19	8-9 3/12/03	7-8 3/12/03	7-8 3/12/03	7-8 3/12/03	8-9 3/12/03	5-6 3/12/03	8-9 3/12/03	6-7 3/12/03
Pesticides														
4,4-DDD	72-54-8	120	190,000	< 0.00074	< 0.0056	< 0.00079	< 0.0041	< 0.0047	< 0.0047	< 0.0048	< 0.0038	< 0.0046	0.015	< 0.0042
4,4-DDE	72-55-9	170	190,000	< 0.00074	< 0.0056	0.0011 JN	< 0.0041	< 0.0047	< 0.0047	< 0.0048	< 0.0038	< 0.0046	< 0.04	< 0.0042
4,4-DDT	50-29-3	330	190,000	< 0.00074	< 0.0056	< 0.00079	< 0.0041	< 0.0047	< 0.0047	< 0.0048	< 0.0038	< 0.0046	0.0097	< 0.0042
Beta-BHC	319-85-7	0.88	190,000	< 0.00074	< 0.0056	< 0.00079	< 0.0041	< 0.0047	< 0.0047	< 0.0048	< 0.0038	< 0.0046	< 0.04	0.043
Chlordane	57-74-9	49	190,000	NA	< 0.011	NA	< 0.0082	< 0.0094	< 0.0094	< 0.0095	0.032	< 0.0091	0.057	0.031
Dieldrin	60-57-1	0.47	190,000	< 0.00074	< 0.0056	< 0.00079	< 0.0041	< 0.0047	< 0.0047	< 0.0048	< 0.0038	< 0.0046	0.0064	0.0096
Endosulfan I	959-98-8	260	190,000	< 0.00074	< 0.0056	< 0.00079	< 0.0041	< 0.0047	< 0.0047	< 0.0048	< 0.0038	< 0.0046	< 0.04	< 0.0042
Endrin aldehyde	7421-93-4	- -	- -	< 0.00074	0.015	< 0.00079	< 0.0041	< 0.0047	< 0.0047	< 0.0048	< 0.0038	< 0.0046	< 0.04	< 0.0042
Polychlorinated Biphenyls														
Aroclor 1016	12674-11-2	190	10,000	< 0.037	< 0.028	< 0.04	< 0.021	< 0.023	< 0.023	< 0.024	< 0.019	< 0.023	< 0.02	< 0.021
Aroclor 1242	53469-21-9	17	10,000	< 0.037	< 0.028	< 0.04	< 0.021	< 0.023	< 0.023	< 0.024	< 0.02	< 0.023	< 0.02	< 0.021
Aroclor 1254	11097-69-1	380	10,000	< 0.037	< 0.028	< 0.04	< 0.021	< 0.023	< 0.023	< 0.024	< 0.02	< 0.023	0.073	< 0.021
Aroclor 1260	11096-82-5	630	190,000	< 0.037	< 0.028	< 0.04	< 0.021	< 0.023	< 0.023	< 0.024	< 0.02	< 0.023	< 0.02	< 0.021
Total PCBs	-	- -	- -	< 0.037	< 0.028	< 0.04	< 0.021	< 0.023	< 0.023	< 0.024	< 0.019	< 0.023	0.073	< 0.021

Table 12
Saturated Soil Analytical Results – Detected Pesticides and PCBs (mg/kg)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID: Sample Depth (ft): Date Collected:	CAS Number	Soil Standards or PQLs		PSSTP-19B	PSSTP-20B	PSSTP-21B	PSSTP-22B	PSSTP-24B	PSSTP-26B	PSSTP-27B	PSSTP-28B	PSSTP-29B	PSSTP-30B
		S-GW Used Aquifer TDS≤ 2,500 Non-Res (No Exceedances)	DC Non-Res Subsurf Soil (No Exceedances)	7-8 3/12/03	8-9 3/13/03	8-9 3/13/03	6-7 3/13/03	7-8 3/13/03	7-8 3/13/03	5-6 3/13/03	5-6 3/13/03	5-6 3/13/03	5-6 3/13/03
Pesticides													
4,4-DDD	72-54-8	120	190,000	0.073	< 0.0039	< 0.0061	< 0.0055	< 0.0058	< 0.0045	< 0.046	< 0.044	< 0.0037	< 0.0043
4,4-DDE	72-55-9	170	190,000	0.059	< 0.0039	< 0.0061	< 0.0055	< 0.0058	< 0.0045	< 0.046	< 0.044	< 0.0037	< 0.0043
4,4-DDT	50-29-3	330	190,000	0.043	< 0.0039	< 0.0061	< 0.0055	< 0.0058	0.015	< 0.046	0.0068	< 0.0037	< 0.0043
Beta-BHC	319-85-7	0.88	190,000	0.016	< 0.0039	< 0.0061	< 0.0055	< 0.0058	< 0.0045	< 0.046	< 0.044	< 0.0037	< 0.0043
Chlordane	57-74-9	49	190,000	< 0.0087	< 0.0078	< 0.012	< 0.011	< 0.012	< 0.009	< 0.0091	< 0.0088	< 0.0075	< 0.0087
Dieldrin	60-57-1	0.47	190,000	0.032	< 0.0039	< 0.0061	< 0.0055	< 0.0058	< 0.0045	< 0.046	< 0.044	< 0.0037	< 0.0043
Endosulfan I	959-98-8	260	190,000	< 0.0043	< 0.0039	< 0.0061	< 0.0055	< 0.0058	< 0.0045	< 0.046	< 0.044	< 0.0037	< 0.0043
Endrin aldehyde	7421-93-4	- -	- -	< 0.0043	< 0.0039	< 0.0061	< 0.0055	< 0.0058	< 0.0045	< 0.046	< 0.044	< 0.0037	< 0.0043
Polychlorinated Biphenyls													
Aroclor 1016	12674-11-2	190	10,000	0.31	< 0.019	< 0.03	< 0.027	< 0.029	< 0.023	< 0.023	< 0.022	< 0.019	< 0.022
Aroclor 1242	53469-21-9	17	10,000	< 0.022	< 0.019	< 0.03	< 0.027	< 0.029	< 0.023	< 0.023	< 0.022	< 0.019	< 0.022
Aroclor 1254	11097-69-1	380	10,000	< 0.022	< 0.019	< 0.03	< 0.027	< 0.029	< 0.023	< 0.023	< 0.022	< 0.019	< 0.022
Aroclor 1260	11096-82-5	630	190,000	0.77	< 0.019	< 0.03	< 0.027	< 0.029	< 0.023	< 0.023	< 0.022	< 0.019	< 0.022
Total PCBs	-	- -	- -	1.08	< 0.019	< 0.03	< 0.027	< 0.029	< 0.023	< 0.023	< 0.022	< 0.019	< 0.022

Notes:

1. Samples prior to 2018 were collected by Paulus, Sokolowski, and Sartor Engineering, PC on the dates indicated. Samples in 2018 and 2019 were collected by Arcadis on the dates indicated.
2. Sample depth is reported in feet below ground surface.
3. 2003 and 2005 samples were analyzed by Hampton-Clarke, Veritech Laboratories of Fairfield, New Jersey.
4. 2018 and 2019 samples were analyzed by SGS North America Incorporated Laboratories of Dayton, New Jersey.
5. Samples were submitted for laboratory analysis for one or more of the following constituent groups, as indicated above.
   - Pesticides using United States Environmental Protection Agency (USEPA) SW-846 Method 8081.
   - Polychlorinated biphenyls (PCBs) using USEPA SW-846 Method 8082.
6. Only compounds detected in one or more samples are shown in this table.
7. < = constituent not detected at a concentration above the reported detection limit. These results are also reported in gray.
8. NA = Not Analyzed.
9. Concentrations reported in milligrams per kilogram (mg/kg) or parts per million (ppm).
10. Soil standards obtained from the Pennsylvania Department of Environmental Protection (PADEP) Chapter 250, Administration of the Land Recycling Program (Act 2 cleanup standards) updated on November 20, 2021, and include:
    (a) The soil to groundwater MSCs for a non-residential used aquifer with total dissolved solids (TDS) less than or equal to 2,500 parts per million (ppm). The higher of the 100 X groundwater MSC or generic value is used.
    (b) The non-residential direct contact MSC for subsurface soil.
11. No results exceed the PADEP non-residential direct contact MSC (for subsurface soil) or the PADEP soil to groundwater MSC (for a non-residential used aquifer with TDS ≤ 2,500 ppm).
12. - - = No PADEP MSC.
13. - = No actual Chemical Abstracts Service (CAS) number is available.
14. Qualifier Definitions:
    J = Analyte is an estimated value.
    N = There is presumptive evidence to make a tentative identification of this compound.
15. Data from 2018 and 2019 have undergone a Tier II validation. Data prior to 2018 have not been validated.

Table 13
Soil Analytical Statistics for Detected Compounds

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Analyte	CAS Number	Soil Standards or PQLs			Surface Soil Samples					
		S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	DC Non-Res Surf Soil (Exceedances Shaded-orange)	DC Non-Res Subsurf Soil (Exceedances Shaded)	Detection Frequency	S-GW Exceedance Frequency	DC Exceedance Frequency	Minimum Detect	Maximum Detect	Max Detect Location and Depth
Volatile Organic Compounds										
1,1,1-Trichloroethane	71-55-6	20	10,000	10,000	0/73	0/73	0/73	ND	ND	ND
1,1-Dichloroethane	75-34-3	16	1,400	1,600	0/73	0/73	0/73	ND	ND	ND
1,2,3-Trichlorobenzene	87-61-6	- -	- -	- -	0/18	0/18	0/18	ND	ND	ND
1,2,4-Trichlorobenzene	120-82-1	27	3,100	190	0/18	0/18	0/18	ND	ND	ND
1,3-Dichlorobenzene	541-73-1	61	10,000	10,000	0/18	0/18	0/18	ND	ND	ND
1,4-Dichlorobenzene	106-46-7	10	200	230	0/18	0/18	0/18	ND	ND	ND
2-Butanone (MEK)	78-93-3	400	10,000	10,000	0/73	0/73	0/73	ND	ND	ND
Acetone	67-64-1	8,800	10,000	10,000	16/103	0/103	0/103	0.0087	0.394	PSSTP-10R (1-2)
Benzene	71-43-2	0.5	280	330	9/103	4/103	0/103	0.001	***29***	PCTP-66 (0.5)
Carbon Disulfide	75-15-0	620	10,000	10,000	3/103	0/103	0/103	0.0012	0.0061	PSSTP-05A (1-2)
Carbon Tetrachloride	56-23-5	0.5	370	430	0/73	0/73	0/73	ND	ND	ND
Chlorobenzene	108-90-7	10	4,000	4,500	0/103	0/103	0/103	ND	ND	ND
Chloroform	67-66-3	8	97	110	0/73	0/73	0/73	ND	ND	ND
cis-1,2-Dichloroethene	156-59-2	7	6,400	10,000	0/73	0/73	0/73	ND	ND	ND
Cyclohexane	110-82-7	6,900	10,000	10,000	2/18	0/18	0/18	0.158	4.89	PCSB-41R (0.5-2)
Dichloromethane	75-09-2	0.5	10,000	10,000	79/103	0/103	0/103	0.002	0.28	PSSTP-22A (1-2)
Ethylbenzene	100-41-4	70	880	1,000	3/102	0/102	0/102	0.0083	12.3	PCSB-41R (0.5-2)
Isopropylbenzene	98-82-8	2,500	10,000	10,000	1/18	0/18	0/18	0.943	0.943	PCSB-41R (0.5-2)
m&p-Xylenes	ARC-mpXyl	- -	- -	- -	6/73	0/73	0/73	0.0029	51.9	PCSB-41R (0.5-2)
Methyl Acetate	79-20-9	9,700	10,000	10,000	2/18	0/18	0/18	0.0039	0.0061	PSSTP-10R (1-2)
Methylcyclohexane	108-87-2	- -	- -	- -	2/18	0/18	0/18	0.409	8.78	PCSB-41R (0.5-2)
Methyl-tert-butylether	1634-04-4	2	8,600	9,800	0/18	0/18	0/18	ND	ND	ND
o,p-Xylene	136777-61-2	- -	- -	- -	2/55	0/55	0/55	0.1	2.2	PCTP-66 (0.5)
o-Xylene	95-47-6	- -	- -	- -	3/18	0/18	0/18	0.00085	19.1	PCSB-41R (0.5-2)
Styrene (Monomer)	100-42-5	24	10,000	10,000	1/73	0/73	0/73	2.4	2.4	PCTP-66 (0.5)
Toluene	108-88-3	100	10,000	10,000	10/103	0/103	0/103	0.0013	53.4	PCSB-41R (0.5-2)
Total Xylenes	1330-20-7	1,000	7,900	9,100	33/47	0/47	0/47	0.29	71	PCSB-41R (0.5-2)
trans-1,2-Dichloroethene	156-60-5	10	4,800	5,500	0/73	0/73	0/73	ND	ND	ND
trans-1,3-Dichloropropene	10061-02-6	- -	- -	- -	0/18	0/18	0/18	ND	ND	ND
Trichloroethene	79-01-6	0.5	160	180	0/73	0/73	0/73	ND	ND	ND
Semi-Volatile Organic Compounds										
1,1-Biphenyl	92-52-4	1.5	34	40	16/18	4/18	0/18	0.0088	***6.43***	PCSB-41R (0.5-2)
1,2,4,5-Tetrachlorobenzene	95-94-3	16	960	190,000	0/18	0/18	0/18	ND	ND	ND
2,3,4,6-Tetrachlorophenol	58-90-2	5,500	96,000	190,000	0/18	0/18	0/18	ND	ND	ND
2,4-Dichlorophenol	120-83-2	2	9,600	190,000	0/19	0/19	0/19	ND	ND	ND
2,4-Dimethylphenol	105-67-9	190	10,000	10,000	2/104	0/104	0/104	0.158	0.181	PSSTP-22R (0.5-2)
2-Methylnaphthalene	91-57-6	100	240	270	81/104	2/104	1/104	0.0173	***1,300***	PCTP-66 (0.5)
2-Methylphenol	95-48-7	490	160,000	190,000	3/74	0/74	0/74	0.0797	0.195	S-113 (0-1)
3-Methylphenol, 4-Methylphenol	65794-96-9	- -	- -	- -	5/49	0/49	0/49	0.037	0.61	S-113 (0-1)
4-Methylphenol	106-44-5	49	16,000	190,000	1/55	1/55	0/55	***180***	***180***	PCTP-66 (0.5)
4-Nitroaniline	100-01-6	14	4,600	190,000	1/49	0/49	0/49	0.17	0.17	PSSTP-09A (1-2)
Acenaphthene	83-32-9	4,700	190,000	190,000	73/104	0/104	0/104	0.0155	180	PCTP-66 (0.5)
Acenaphthylene	208-96-8	6,600	190,000	190,000	81/104	0/104	0/104	0.035	2,000	PCTP-66 (0.5)
Acetophenone	98-86-2	970	10,000	10,000	3/18	0/18	0/18	0.0245	0.128	S-113 (0-1)
Anthracene	120-12-7	350	190,000	190,000	91/104	1/104	0/104	0.044	***1,800***	PCTP-66 (0.5)
Benz(a)anthracene	56-55-3	340	130	190,000	102/104	1/104	3/104	0.0283	***1,800***	PCTP-66 (0.5)
Benzaldehyde	100-52-7	- -	- -	- -	7/18	0/18	0/18	0.0111	0.212	S-119 (0-1)
Benzo(a)pyrene	50-32-8	46	91	190,000	102/104	9/104	3/104	0.0339	***1,300***	PCTP-66 (0.5)
Benzo(b)fluoranthene	205-99-2	170	76	190,000	104/104	3/104	8/104	0.0478	***1,600***	PCTP-66 (0.5)
Benzo(g,h,i)perylene	191-24-2	180	190,000	190,000	99/104	1/104	0/104	0.0281	***850***	PCTP-66 (0.5)
Benzo(k)fluoranthene	207-08-9	610	76	190,000	97/104	1/104	2/104	0.046	***690***	PCTP-66 (0.5)
bis(2-Ethylhexyl)phthalate	117-81-7	130	6,500	10,000	56/104	0/104	0/104	0.0385	1.7	PSSTP-09A (1-2)
Butyl benzyl phthalate	85-68-7	10,000	10,000	10,000	13/104	0/104	0/104	0.045	0.7	PCTP-64 (0.5)
Caprolactam	105-60-2	- -	- -	- -	0/18	0/18	0/18	ND	ND	ND
Carbazole	86-74-8	89	4,600	190,000	85/104	2/104	0/104	0.0116	***970***	PCTP-66 (0.5)
Chrysene	218-01-9	230	760	190,000	103/104	1/104	1/104	0.0272	***1,500***	PCTP-66 (0.5)
Dibenz(a,h)anthracene	53-70-3	270	22	190,000	91/104	0/104	3/104	0.0326	270	PCTP-66 (0.5)
Dibenzofuran	132-64-9	250	3,200	190,000	87/104	1/104	0/104	0.0199	***1,600***	PCTP-66 (0.5)
Diethyl phthalate	84-66-2	7,800	10,000	10,000	3/74	0/74	0/74	0.041	0.064	PCSB-60 (0.5)
Dimethyl phthalate	131-11-3	- -	- -	- -	0/74	0/74	0/74	ND	ND	ND
Di-n-butyl phthalate	84-74-2	4,000	10,000	10,000	30/104	0/104	0/104	0.0187	0.42	PSSTP-07A (1-2)
Di-n-octyl phthalate	117-84-0	10,000	10,000	10,000	2/104	0/104	0/104	0.047	0.076	PSSTP-15A (1-2)
Fluoranthene	206-44-0	3,200	130,000	190,000	104/104	1/104	0/104	0.0452	***3,800***	PCTP-66 (0.5)

Analyte	CAS Number	Soil Standards or PQLs			Surface Soil Samples					
		S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	DC Non-Res Surf Soil (Exceedances Shaded-orange)	DC Non-Res Subsurf Soil (Exceedances Shaded)	Detection Frequency	S-GW Exceedance Frequency	DC Exceedance Frequency	Minimum Detect	Maximum Detect	Max Detect Location and Depth
Semi-Volatile Organic Compounds (cont'd)										
Fluorene	86-73-7	3,800	130,000	190,000	81/104	0/104	0/104	0.0204	2,600	PCTP-66 (0.5)
Indeno(1,2,3-cd)pyrene	193-39-5	18,000	76	190,000	99/104	0/104	3/104	0.0286	750	PCTP-66 (0.5)
Naphthalene	91-20-3	25	66	77	86/104	4/104	3/104	0.02565	***6,000***	PCTP-66 (0.5)
Pentachlorophenol	87-86-5	5	230	190,000	0/49	0/49	0/49	ND	ND	ND
Phenanthrene	85-01-8	10,000	190,000	190,000	101/104	0/104	0/104	0.0215	7,700	PCTP-66 (0.5)
Phenol	108-95-2	200	16,000	18,000	14/104	1/104	0/104	0.0737	***210***	PCTP-66 (0.5)
Pyrene	129-00-0	2,200	96,000	190,000	103/104	1/104	0/104	0.0413	***4,400***	PCTP-66 (0.5)
Total PAHs and 2-Methylnaphthalene	-	- -	- -	- -	104/104	0/104	0/104	0.105	38,500	PCTP-66 (0.5)
Metals										
Aluminum	7429-90-5	- -	190,000	190,000	19/19	0/19	0/19	1,140	13,500	PSSTP-04R (1-2)
Antimony	7440-36-0	27	1,300	190,000	47/104	0/104	0/104	0.56	20.6	PCSB-41R (0.5-2)
Arsenic	7440-38-2	29	61	190,000	98/104	23/104	13/104	2.4	***170***	PSSTP-30A (1-2)
Barium	7440-39-3	8,200	190,000	190,000	100/104	0/104	0/104	7.1	780	PCSB-36 (0.5)
Beryllium	7440-41-7	320	6,400	190,000	38/104	0/104	0/104	0.24	8.1	PSSTP-23A (1-2)
Cadmium	7440-43-9	38	1,600	190,000	42/104	0/104	0/104	0.1	4.1	PCTP-67 (0.5)
Calcium	7440-70-2	- -	- -	- -	19/19	0/19	0/19	430	41,400	S-163 (0.5-2)
Chromium	7440-47-3	190,000	190,000	190,000	93/104	0/104	0/104	1.6	162	PCSB-26R (0.5-2)
Cobalt	7440-48-4	130	960	190,000	16/19	0/19	0/19	0.6	56.7	PCSB-26R (0.5-2)
Copper	7440-50-8	43,000	100,000	190,000	103/104	0/104	0/104	6.7	1,400	PCTP-73 (0.5)
Cyanide	57-12-5	200	1,900	190,000	36/49	0/49	0/49	0.14	125	S-113 (0-1)
Iron	7439-89-6	- -	190,000	190,000	19/19	0/19	0/19	3,720	93,300	PCSB-26R (0.5-2)
Lead	7439-92-1	450	1,000	190,000	102/104	30/104	12/104	6.9	***14,000***	PCSB-36 (0.5)
Magnesium	7439-95-4	- -	- -	- -	19/19	0/19	0/19	297	15,400	S-163 (0.5-2)
Manganese	7439-96-5	2,000	190,000	190,000	19/19	0/19	0/19	11.1	1,710	S-163 (0.5-2)
Mercury	7439-97-6	10	510	190,000	84/104	1/104	0/104	0.03	***17***	PCSB-26 (0.5)
Nickel	7440-02-0	650	64,000	190,000	95/104	0/104	0/104	1.6	243	PCSB-26R (0.5-2)
Potassium	7440-09-7	- -	- -	- -	16/19	0/19	0/19	462	2,550	PSSTP-22R (0.5-2)
Selenium	7782-49-2	26	16,000	190,000	37/104	0/104	0/104	0.74	6.4	PCSB-58 (0.5)
Silver	7440-22-4	84	16,000	190,000	4/104	0/104	0/104	0.22	2.4	PCSB-26R (0.5-2)
Sodium	7440-23-5	- -	- -	- -	10/19	0/19	0/19	119.5	665	PCSB-30R (0.5-2)
Thallium	7440-28-0	14	32	190,000	0/104	0/104	0/104	ND	ND	ND
Vanadium	7440-62-2	680	220	190,000	19/19	0/19	0/19	4.1	41.3	S-163 (0.5-2)
Zinc	7440-66-6	12,000	190,000	190,000	102/104	0/104	0/104	7.9	6,300	PCSB-36 (0.5)
Pesticides										
4,4-DDD	72-54-8	120	380	190,000	15/93	0/93	0/93	0.00205	0.086	PSSTP-30A (1-2)
4,4-DDE	72-55-9	170	270	190,000	23/93	0/93	0/93	0.002	0.15	PCSB-41 (0.5)
4,4-DDT	50-29-3	330	270	190,000	42/93	0/93	0/93	0.0052	0.48	PSSTP-12A (1-2)
Aldrin	309-00-2	1.9	5.4	190,000	2/93	0/93	0/93	0.0074	0.0152	PSSTP-04R (1-2)
Beta-BHC	319-85-7	0.88	51	190,000	1/93	0/93	0/93	0.012	0.012	PSSTP-05A (1-2)
Chlordane	57-74-9	49	260	190,000	17/82	0/82	0/82	0.016	4.5	PCTP-78 (0.5)
Dieldrin	60-57-1	0.47	5.7	190,000	11/93	0/93	0/93	0.0043	0.18	PSSTP-17A (1-2)
Endosulfan I	959-98-8	260	19,000	190,000	1/93	0/93	0/93	0.012	0.012	PSSTP-04A (1-2)
Endosulfan II	33213-65-9	260	19,000	190,000	3/93	0/93	0/93	0.016	0.04	PSSTP-05A (1-2)
Endosulfan sulfate	1031-07-8	70	19,000	190,000	6/93	0/93	0/93	0.0083	0.088	PSSTP-22A (1-2)
Endrin	72-20-8	5.5	960	190,000	2/93	0/93	0/93	0.0057	0.015	PSSTP-30A (1-2)
Endrin aldehyde	7421-93-4	- -	- -	- -	7/93	0/93	0/93	0.0071	0.32	PSSTP-26A (1-2)
Endrin ketone	53494-70-5	- -	- -	- -	1/93	0/93	0/93	0.0091	0.0091	PCTP-73R (0-0.2)
Heptachlor	76-44-8	0.68	20	190,000	0/93	0/93	0/93	ND	ND	ND
Heptachlor epoxide	1024-57-3	1.1	10	190,000	5/93	0/93	0/93	0.001095	0.012	PSSTP-04A (1-2)
Methoxychlor	72-43-5	630	16,000	16,000	1/93	0/93	0/93	0.014	0.014	PSSTP-28A (1-2)
Toxaphene	8001-35-2	1.2	83	83	1/93	0/93	0/93	0.02	0.02	PSSTP-05A (1-2)
trans-chlordane	5103-74-2	- -	- -	- -	2/11	0/11	0/11	0.00059	0.00135	PSSTP-07R (0.5-2)
Polychlorinated Biphenyls										
Aroclor 1016	12674-11-2	190	46	10,000	0/101	0/101	0/101	ND	ND	ND
Aroclor 1242	53469-21-9	17	46	10,000	2/101	0/101	0/101	0.12	0.12	PSSTP-03A (1-2), PSSTP-04A (1-2)
Aroclor 1248	12672-29-6	67	46	46	6/101	0/101	0/101	0.053	1.7	PCSB-56 (0.5)
Aroclor 1254	11097-69-1	380	64	10,000	22/101	0/101	0/101	0.0256	7.9	PCTP-73 (0.5)
Aroclor 1260	11096-82-5	630	46	190,000	44/101	0/101	0/101	0.046	1	PCSB-37 (0.5)
Aroclor 1262	37324-23-5	- -	- -	- -	1/17	0/17	0/17	0.2925	0.2925	PCTP-66R (0-0.5)
Total PCBs	-	- -	- -	- -	68/101	0/101	0/101	0.0256	7.9	PCTP-73 (0.5)

Analyte	CAS Number	Soil Standards or PQLs			Unsaturated Soil Samples					
		S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	DC Non-Res Surf Soil (Exceedances Shaded-orange)	DC Non-Res Subsurf Soil (Exceedances Shaded)	Detection Frequency	S-GW Exceedance Frequency	DC Exceedance Frequency	Minimum Detect	Maximum Detect	Max Detect Location and Depth
Volatile Organic Compounds										
1,1,1-Trichloroethane	71-55-6	20	10,000	10,000	1/68	0/68	0/68	0.00082	0.00082	S-129 (2-4)
1,1-Dichloroethane	75-34-3	16	1,400	1,600	1/68	0/68	0/68	0.00052	0.00052	S-129 (2-4)
1,2,3-Trichlorobenzene	87-61-6	- -	- -	- -	1/36	0/36	0/36	0.0019	0.0019	PSSTP-01R (5-6)
1,2,4-Trichlorobenzene	120-82-1	27	3,100	190	1/36	0/36	0/36	0.606	0.606	S-172 (5-7)
1,3-Dichlorobenzene	541-73-1	61	10,000	10,000	1/35	0/35	0/35	0.12	0.12	S-172 (5-7)
1,4-Dichlorobenzene	106-46-7	10	200	230	2/36	0/36	0/36	0.002	0.407	S-172 (5-7)
2-Butanone (MEK)	78-93-3	400	10,000	10,000	5/69	0/69	0/69	0.006	0.0403	S-133 (2-4)
Acetone	67-64-1	8,800	10,000	10,000	37/76	0/76	0/76	0.011	1.96	S-168 (6-8)
Benzene	71-43-2	0.5	280	330	26/74	11/74	0/74	0.00086	***103***	S-161 (5-7)
Carbon Disulfide	75-15-0	620	10,000	10,000	19/75	0/75	0/75	0.00083	8.42	MW-108 (5-7)
Carbon Tetrachloride	56-23-5	0.5	370	430	1/68	0/68	0/68	0.0012	0.0012	S-110 (2-4)
Chlorobenzene	108-90-7	10	4,000	4,500	0/74	0/74	0/74	ND	ND	ND
Chloroform	67-66-3	8	97	110	3/68	0/68	0/68	0.0018	0.0056	PCTP-14 (2.5)
cis-1,2-Dichloroethene	156-59-2	7	6,400	10,000	1/68	0/68	0/68	0.0016	0.0016	PCTP-80 (8)
Cyclohexane	110-82-7	6,900	10,000	10,000	1/36	0/36	0/36	0.0054	0.0054	MW-108 (10-12)
Dichloromethane	75-09-2	0.5	10,000	10,000	39/74	0/74	0/74	0.0011	0.29	PCSB-48 (4)
Ethylbenzene	100-41-4	70	880	1,000	13/74	0/74	0/74	0.00079	6.52	S-161 (5-7)
Isopropylbenzene	98-82-8	2,500	10,000	10,000	0/36	0/36	0/36	ND	ND	ND
m&p-Xylenes	ARC-mpXyl	- -	- -	- -	19/68	0/68	0/68	0.0015	93.5	S-106 (2-4)
Methyl Acetate	79-20-9	9,700	10,000	10,000	2/36	0/36	0/36	0.0022	4.74	S-168 (6-8)
Methylcyclohexane	108-87-2	- -	- -	- -	3/36	0/36	0/36	0.0016	0.0148	MW-108 (5-7)
Methyl-tert-butylether	1634-04-4	2	8,600	9,800	0/36	0/36	0/36	ND	ND	ND
o,p-Xylene	136777-61-2	- -	- -	- -	6/32	0/32	0/32	0.0016	23	PCTP-12 (3)
o-Xylene	95-47-6	- -	- -	- -	12/36	0/36	0/36	0.00095	35.3	S-106 (2-4)
Styrene (Monomer)	100-42-5	24	10,000	10,000	3/68	0/68	0/68	4.8	20.4	S-106 (2-4)
Toluene	108-88-3	100	10,000	10,000	24/76	0/76	0/76	0.00035	75	PCTP-12 (3)
Total Xylenes	1330-20-7	1,000	7,900	9,100	20/44	0/44	0/44	0.0025	129	S-106 (2-4)
trans-1,2-Dichloroethene	156-60-5	10	4,800	5,500	0/68	0/68	0/68	ND	ND	ND
trans-1,3-Dichloropropene	10061-02-6	- -	- -	- -	2/36	0/36	0/36	5.558	248.8	PCTP-12 (3)
Trichloroethene	79-01-6	0.5	160	180	2/66	0/66	0/66	5.668	253.6	PCTP-12 (3)
Semi-Volatile Organic Compounds										
1,1-Biphenyl	92-52-4	1.5	34	40	33/36	8/36	5/36	0.0138	***331***	S-106 (2-4)
1,2,4,5-Tetrachlorobenzene	95-94-3	16	960	190,000	1/36	0/36	0/36	0.0185	0.0185	S-172 (5-7)
2,3,4,6-Tetrachlorophenol	58-90-2	5,500	96,000	190,000	1/35	0/35	0/35	0.0291	0.0291	S-133 (2-4)
2,4-Dichlorophenol	120-83-2	2	9,600	190,000	1/38	0/38	0/38	0.0642	0.0642	S-172 (5-7)
2,4-Dimethylphenol	105-67-9	190	10,000	10,000	11/76	0/76	0/77	0.0772	185	S-106 (2-4)
2-Methylnaphthalene	91-57-6	100	240	270	68/77	9/77	7/77	0.0109	***5,500***	PCTP-12 (3)
2-Methylphenol	95-48-7	490	160,000	190,000	13/70	0/70	0/70	0.0716	189	S-106 (2-4)
3-Methylphenol, 4-Methylphenol	65794-96-9	- -	- -	- -	17/44	0/44	0/44	0.0533	476	S-106 (2-4)
4-Methylphenol	106-44-5	49	16,000	190,000	2/32	0/32	0/32	0.057 J	0.17	PCTP-65 (7.5)
4-Nitroaniline	100-01-6	14	4,600	190,000	0/45	0/45	0/45	ND	ND	ND
Acenaphthene	83-32-9	4,700	190,000	190,000	59/77	0/77	0/77	0.043	1,300	PCTP-12 (3)
Acenaphthylene	208-96-8	6,600	190,000	190,000	59/77	0/77	0/77	0.0363	1,600	PCTP-12 (3)
Acetophenone	98-86-2	970	10,000	10,000	14/36	0/36	0/36	0.0105	13.3	PSSTP-04R (7-8)
Anthracene	120-12-7	350	190,000	190,000	69/77	7/77	0/77	0.0285	***3,000***	PCTP-12 (3)
Benz(a)anthracene	56-55-3	340	130	190,000	68/77	6/77	0/77	0.0165	***2,800***	PCTP-12 (3)
Benzaldehyde	100-52-7	- -	- -	- -	5/36	0/36	0/36	0.022	0.0406	PCTP-01R (5-7)
Benzo(a)pyrene	50-32-8	46	91	190,000	67/77	10/77	0/77	0.03	***1,800***	PCTP-12 (3)
Benzo(b)fluoranthene	205-99-2	170	76	190,000	70/77	10/77	0/77	0.0192	***2,000***	PCTP-12 (3)
Benzo(g,h,i)perylene	191-24-2	180	190,000	190,000	66/77	5/77	0/77	0.038	***620***	PCTP-12 (3)
Benzo(k)fluoranthene	207-08-9	610	76	190,000	65/77	1/77	0/77	0.046	***730***	PCTP-12 (3)
bis(2-Ethylhexyl)phthalate	117-81-7	130	6,500	10,000	23/77	0/77	0/77	0.049	8.5	PSSTP-02B (5-6)
Butyl benzyl phthalate	85-68-7	10,000	10,000	10,000	5/77	0/77	0/77	0.0454	1.6	PCSB-58 (2)
Caprolactam	105-60-2	- -	- -	- -	1/36	0/36	0/36	0.125	0.125	PCTP-01R (5-7)
Carbazole	86-74-8	89	4,600	190,000	62/77	8/77	0/77	0.0214	***1,500***	PCTP-12 (3)
Chrysene	218-01-9	230	760	190,000	69/77	8/77	0/77	0.0398	***1,800***	PCTP-12 (3)
Dibenz(a,h)anthracene	53-70-3	270	22	190,000	62/77	0/77	0/77	0.052	210	PCTP-12 (3)
Dibenzofuran	132-64-9	250	3,200	190,000	65/77	7/77	0/77	0.0258	***3,700***	PCTP-12 (3)
Diethyl phthalate	84-66-2	7,800	10,000	10,000	5/71	0/71	0/71	0.041	0.066	PCTP-37 (3)
Dimethyl phthalate	131-11-3	- -	- -	- -	1/71	0/71	0/71	0.0206	0.0206	PCTP-01R (5-7)
Di-n-butyl phthalate	84-74-2	4,000	10,000	10,000	10/77	0/77	0/77	0.045	0.68	PCTP-14 (2.5)
Di-n-octyl phthalate	117-84-0	10,000	10,000	10,000	3/77	0/77	0/77	0.048	1.5	PSSTP-02B (5-6)
Fluoranthene	206-44-0	3,200	130,000	190,000	71/77	2/77	0/77	0.0232	***7,500***	PCTP-12 (3)

Analyte	CAS Number	Soil Standards or PQLs			Unsaturated Soil Samples					
		S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	DC Non-Res Surf Soil (Exceedances Shaded-orange)	DC Non-Res Subsurf Soil (Exceedances Shaded)	Detection Frequency	S-GW Exceedance Frequency	DC Exceedance Frequency	Minimum Detect	Maximum Detect	Max Detect Location and Depth
Semi-Volatile Organic Compounds (cont'd)										
Fluorene	86-73-7	3,800	130,000	190,000	67/77	1/77	0/77	0.023	***5,200***	PCTP-12 (3)
Indeno(1,2,3-cd)pyrene	193-39-5	18,000	76	190,000	68/77	0/77	0/77	0.0316	620	PCTP-12 (3)
Naphthalene	91-20-3	25	66	77	69/77	15/77	14/77	0.0197	***29,000***	PCTP-12 (3)
Pentachlorophenol	87-86-5	5	230	190,000	1/44	0/44	0/44	0.447	0.447	S-133 (2-4)
Phenanthrene	85-01-8	10,000	190,000	190,000	71/77	1/77	0/77	0.053	***14,000***	PCTP-12 (3)
Phenol	108-95-2	200	16,000	18,000	21/77	1/77	0/77	0.049	***296***	S-106 (2-4)
Pyrene	129-00-0	2,200	96,000	190,000	71/77	1/77	0/77	0.0347	***5,900***	PCTP-12 (3)
Total PAHs and 2-Methylnaphthalene	-	- -	- -	- -	73/77	0/77	0/77	0.085	83,600	PCTP-12 (3)
Metals										
Aluminum	7429-90-5	- -	190,000	190,000	39/39	0/39	0/39	1,090	22,355	S-108 (2-4)
Antimony	7440-36-0	27	1,300	190,000	32/77	1/77	0/77	0.65	***33***	PCTP-12 (3)
Arsenic	7440-38-2	29	61	190,000	75/77	8/77	0/77	2.2	***170***	S-105 (2-4)
Barium	7440-39-3	8,200	190,000	190,000	77/77	0/77	0/77	13	1,200	TP-44 (4)
Beryllium	7440-41-7	320	6,400	190,000	42/77	0/77	0/77	0.31	6.2	S-167 (7-9)
Cadmium	7440-43-9	38	1,600	190,000	32/77	0/77	0/77	0.11	15	PCSB-30 (2)
Calcium	7440-70-2	- -	- -	- -	38/39	0/39	0/39	176	86,800	PSSTP-01R (5-6)
Chromium	7440-47-3	190,000	190,000	190,000	74/77	0/77	0/77	4.1	791	PSSTP-04R (7-8)
Cobalt	7440-48-4	130	960	190,000	36/39	0/39	0/39	2.9	21.3	S-167 (7-9)
Copper	7440-50-8	43,000	100,000	190,000	76/77	0/77	0/77	4.9	3,200	PCTP-12 (3)
Cyanide	57-12-5	200	1,900	190,000	46/54	1/54	0/54	0.13	340	PCTP-12 (3)
Iron	7439-89-6	- -	190,000	190,000	39/39	0/39	0/39	2,860	71,400	PSSTP-04R (7-8)
Lead	7439-92-1	450	1,000	190,000	75/77	14/77	0/77	6.3	***9,600***	TP-44 (4)
Magnesium	7439-95-4	- -	- -	- -	37/39	0/39	0/39	218	12,500	PCTP-47R (4-7)
Manganese	7439-96-5	2,000	190,000	190,000	39/39	0/39	0/39	16.4	852	S-127 (2-4)
Mercury	7439-97-6	10	510	190,000	65/76	0/76	0/76	0.032	5.6	PSSTP-23B (7-8)
Nickel	7440-02-0	650	64,000	190,000	75/77	0/77	0/77	5.7	164	PSSTP-04R (7-8)
Potassium	7440-09-7	- -	- -	- -	34/39	0/39	0/39	44.4	2,770	MW-108 (10-12)
Selenium	7782-49-2	26	16,000	190,000	32/77	1/77	0/77	0.94	***29***	PCSB-30 (2)
Silver	7440-22-4	84	16,000	190,000	9/77	0/77	0/77	0.25	6	PCSB-30 (2)
Sodium	7440-23-5	- -	- -	- -	14/39	0/39	0/39	95.1	300	S-127 (2-4)
Thallium	7440-28-0	14	32	190,000	1/77	0/77	0/77	1.7	1.7	S-106 (2-4)
Vanadium	7440-62-2	680	220	190,000	39/39	0/39	0/39	6.8	137	S-106 (2-4)
Zinc	7440-66-6	12,000	190,000	190,000	73/77	0/77	0/77	13	4,100	PCSB-30 (2)
Pesticides										
4,4-DDD	72-54-8	120	380	190,000	3/17	0/17	0/17	0.029	0.14	PSSTP-9B (6-7)
4,4-DDE	72-55-9	170	270	190,000	4/17	0/17	0/17	0.011	0.049	PSSTP-1B (5-6)
4,4-DDT	50-29-3	330	270	190,000	5/17	0/17	0/17	0.0068	0.2	PSSTP-8B (6-7)
Aldrin	309-00-2	1.9	5.4	190,000	1/17	0/17	0/17	0.0159	0.0159	PSSTP-1R (5-6)
Beta-BHC	319-85-7	0.88	51	190,000	1/17	0/17	0/17	0.012	0.012	PSSTP-1B (5-6)
Chlordane	57-74-9	49	260	190,000	3/13	0/13	0/13	0.068	1.2	PSSTP-8B (6-7)
Dieldrin	60-57-1	0.47	5.7	190,000	2/17	0/17	0/17	0.0198	0.024	PSSTP-2B (5-6)
Endosulfan I	959-98-8	260	19,000	190,000	2/17	0/17	0/17	0.0121	0.049	PSSTP-8B (6-7)
Endosulfan II	33213-65-9	260	19,000	190,000	0/17	0/17	0/17	ND	ND	ND
Endosulfan sulfate	1031-07-8	70	19,000	190,000	1/17	0/17	0/17	0.082	0.082	PSSTP-23B (7-8)
Endrin	72-20-8	5.5	960	190,000	3/17	0/17	0/17	0.028	0.073	PSSTP-23B (7-8)
Endrin aldehyde	7421-93-4	- -	- -	- -	1/17	0/17	0/17	0.1	0.1	PSSTP-2B (5-6)
Endrin ketone	53494-70-5	- -	- -	- -	1/17	0/17	0/17	0.0255	0.0255	PSSTP-1R (5-6)
Heptachlor	76-44-8	0.68	20	190,000	1/17	0/17	0/17	0.0158	0.0158	PSSTP-1R (5-6)
Heptachlor epoxide	1024-57-3	1.1	10	190,000	2/17	0/17	0/17	0.0074	0.0377	PSSTP-1R (5-6)
Methoxychlor	72-43-5	630	16,000	16,000	0/17	0/17	0/17	ND	ND	ND
Toxaphene	8001-35-2	1.2	83	83	0/17	0/17	0/17	ND	ND	ND
trans-chlordane	5103-74-2	- -	- -	- -	1/4	0/4	0/4	0.012	0.012	PSSTP-1R (5-6)
Polychlorinated Biphenyls										
Aroclor 1016	12674-11-2	190	46	10,000	0/17	0/17	0/17	ND	ND	ND
Aroclor 1242	53469-21-9	17	46	10,000	3/17	0/17	0/17	0.17	1.2	PSSTP-8B (6-7)
Aroclor 1248	12672-29-6	67	46	46	0/17	0/17	0/17	ND	ND	ND
Aroclor 1254	11097-69-1	380	64	10,000	2/17	0/17	0/17	0.2	1.51	PSSTP-1R (5-6)
Aroclor 1260	11096-82-5	630	46	190,000	5/17	0/17	0/17	0.14	13	PSSTP-1B (5-6)
Aroclor 1262	37324-23-5	- -	- -	- -	0/4	0/4	0/4	ND	ND	ND
Total PCBs	-	- -	- -	- -	8/17	0/17	0/17	0.2	13	PSSTP-1B (5-6)

Analyte	CAS Number	Soil Standards or PQLs			Saturated Soil Samples					
		S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	DC Non-Res Surf Soil (Exceedances Shaded-orange)	DC Non-Res Subsurf Soil (Exceedances Shaded)	Detection Frequency	S-GW Exceedance Frequency	DC Exceedance Frequency	Minimum Detect	Maximum Detect	Max Detect Location and Depth
Volatile Organic Compounds										
1,1,1-Trichloroethane	71-55-6	20	10,000	10,000	0/329	0/329	0/329	ND	ND	ND
1,1-Dichloroethane	75-34-3	16	1,400	1,600	0/329	0/329	0/329	ND	ND	ND
1,2,3-Trichlorobenzene	87-61-6	- -	- -	- -	0/119	0/119	0/119	ND	ND	ND
1,2,4-Trichlorobenzene	120-82-1	27	3,100	190	0/119	0/119	0/119	ND	ND	ND
1,3-Dichlorobenzene	541-73-1	61	10,000	10,000	0/119	0/119	0/119	ND	ND	ND
1,4-Dichlorobenzene	106-46-7	10	200	230	0/119	0/119	0/119	ND	ND	ND
2-Butanone (MEK)	78-93-3	400	10,000	10,000	50/329	0/329	0/329	0.0033	0.117	PCTP-17R (9-11)
Acetone	67-64-1	8,800	10,000	10,000	231/354	0/354	0/354	0.0053	0.495	PCTP-17R (9-11)
Benzene	71-43-2	0.5	280	330	123/353	21/353	0/353	0.00047	***247***	S-155 (10-12)
Carbon Disulfide	75-15-0	620	10,000	10,000	83/353	0/353	0/353	0.00089	51	S-108 (15-17)
Carbon Tetrachloride	56-23-5	0.5	370	430	0/329	0/329	0/329	ND	ND	ND
Chlorobenzene	108-90-7	10	4,000	4,500	9/353	4/353	0/353	0.0021	***53***	TP-63 (8)
Chloroform	67-66-3	8	97	110	39/329	0/329	0/329	0.0013	0.0097	PCTP-23 (10)
cis-1,2-Dichloroethene	156-59-2	7	6,400	10,000	1/329	0/329	0/329	0.0018	0.0018	PCSB-40 (4)
Cyclohexane	110-82-7	6,900	10,000	10,000	9/120	0/120	0/120	0.00062	0.305	TP-15R (5-7)
Dichloromethane	75-09-2	0.5	10,000	10,000	234/353	5/353	0/353	0.0009	***3.2***	TP-33 (9)
Ethylbenzene	100-41-4	70	880	1,000	78/353	3/353	0/353	0.00071	***180***	PCTP-42 (13.5)
Isopropylbenzene	98-82-8	2,500	10,000	10,000	25/120	0/120	0/120	0.001	6.37	PCTP-66R (8-10)
m&p-Xylenes	ARC-mpXyl	- -	- -	- -	83/329	0/329	0/329	0.0011	430	TP-63 (8)
Methyl Acetate	79-20-9	9,700	10,000	10,000	12/120	0/120	0/120	0.0021	3.14	S-108 (15-17)
Methylcyclohexane	108-87-2	- -	- -	- -	26/120	0/120	0/120	0.0013	1.21	PCTP-17R (9-11)
Methyl-tert-butylether	1634-04-4	2	8,600	9,800	1/120	0/120	0/120	0.00092	0.00092	S-113B (10-12)
o,p-Xylene	136777-61-2	- -	- -	- -	45/209	0/209	0/209	0.0014	140	TP-63 (8)
o-Xylene	95-47-6	- -	- -	- -	31/120	0/120	0/120	0.0013	42.6	MW-111 (11-13)
Styrene (Monomer)	100-42-5	24	10,000	10,000	6/329	2/329	0/329	4.5	***47***	TP-63 (8)
Toluene	108-88-3	100	10,000	10,000	97/353	1/353	0/353	0.00032	***140***	TP-63 (8)
Total Xylenes	1330-20-7	1,000	7,900	9,100	63/146	0/146	0/146	0.0013	175	S-155 (10-12)
trans-1,2-Dichloroethene	156-60-5	10	4,800	5,500	2/328	0/328	0/328	0.0025	0.0234	TP-37 (8)
trans-1,3-Dichloropropene	10061-02-6	- -	- -	- -	2/121	0/121	0/121	0.0025	0.076	TP-37 (8)
Trichloroethene	79-01-6	0.5	160	180	0/327	0/327	0/327	ND	ND	ND
Semi-Volatile Organic Compounds										
1,1-Biphenyl	92-52-4	1.5	34	40	84/114	16/114	6/114	0.0054	***300***	S-160 (10-12)
1,2,4,5-Tetrachlorobenzene	95-94-3	16	960	190,000	0/114	0/114	0/114	ND	ND	ND
2,3,4,6-Tetrachlorophenol	58-90-2	5,500	96,000	190,000	0/113	0/113	0/113	ND	ND	ND
2,4-Dichlorophenol	120-83-2	2	9,600	190,000	0/120	0/120	0/120	ND	ND	ND
2,4-Dimethylphenol	105-67-9	190	10,000	10,000	30/353	0/353	0/353	0.062	152	S-160 (10-12)
2-Methylnaphthalene	91-57-6	100	240	270	258/354	19/354	11/354	0.0114	***7,200***	PCTP-46 (10.5)
2-Methylphenol	95-48-7	490	160,000	190,000	40/329	0/329	0/329	0.0305	73.6	S-160 (10-12)
3-Methylphenol, 4-Methylphenol	65794-96-9	- -	- -	- -	56/144	0/144	0/144	0.036	221	S-160 (10-12)
4-Methylphenol	106-44-5	49	16,000	190,000	53/209	0/209	0/209	0.047	5.9	PCSB-23 (8.5)
4-Nitroaniline	100-01-6	14	4,600	190,000	0/145	0/145	0/145	ND	ND	ND
Acenaphthene	83-32-9	4,700	190,000	190,000	247/354	0/354	0/354	0.0147	1,200	TP-63 (8)
Acenaphthylene	208-96-8	6,600	190,000	190,000	188/354	0/354	0/354	0.0231	4,900	TP-63 (8)
Acetophenone	98-86-2	970	10,000	10,000	18/114	0/114	0/114	0.0111	0.927	S-158 (11-13)
Anthracene	120-12-7	350	190,000	190,000	260/354	7/354	0/354	0.033	***6,900***	PCTP-17 (8)
Benz(a)anthracene	56-55-3	340	130	190,000	294/354	8/354	0/354	0.0114	***5,500***	PCTP-17 (8)
Benzaldehyde	100-52-7	- -	- -	- -	7/114	0/114	0/114	0.0149	0.103	S-114 (23-25)
Benzo(a)pyrene	50-32-8	46	91	190,000	302/354	20/354	0/354	0.02	***3,800***	PCTP-17 (8)
Benzo(b)fluoranthene	205-99-2	170	76	190,000	287/354	9/354	0/354	0.0218	***4,700***	TP-63 (8)
Benzo(g,h,i)perylene	191-24-2	180	190,000	190,000	265/354	7/354	0/354	0.0203	***1,500***	PCTP-17 (8)
Benzo(k)fluoranthene	207-08-9	610	76	190,000	253/354	4/354	0/354	0.0196	***1,700***	PCTP-17 (8)
bis(2-Ethylhexyl)phthalate	117-81-7	130	6,500	10,000	87/354	0/354	0/354	0.0365	64	PCTP-22 (4.5)
Butyl benzyl phthalate	85-68-7	10,000	10,000	10,000	2/354	0/354	0/354	0.0586	0.25	PCTP-60 (2)
Caprolactam	105-60-2	- -	- -	- -	0/114	0/114	0/114	ND	ND	ND
Carbazole	86-74-8	89	4,600	190,000	200/354	8/354	0/354	0.0067	***3,100***	PCTP-17 (8)
Chrysene	218-01-9	230	760	190,000	290/354	9/354	0/354	0.0172	***5,500***	PCTP-17 (8)
Dibenz(a,h)anthracene	53-70-3	270	22	190,000	203/354	2/354	0/354	0.0202	***610***	PCTP-17 (8)
Dibenzofuran	132-64-9	250	3,200	190,000	228/354	8/354	0/354	0.0215	***5,300***	PCTP-17 (8)
Diethyl phthalate	84-66-2	7,800	10,000	10,000	13/330	0/330	0/330	0.048	0.16	PC-B14 (15-17)
Dimethyl phthalate	131-11-3	- -	- -	- -	0/330	0/330	0/330	ND	ND	ND
Di-n-butyl phthalate	84-74-2	4,000	10,000	10,000	66/354	0/354	0/354	0.041	35	PCTP-22 (4.5)
Di-n-octyl phthalate	117-84-0	10,000	10,000	10,000	3/354	0/354	0/354	0.053	13	PCTP-22 (4.5)
Fluoranthene	206-44-0	3,200	130,000	190,000	307/354	5/354	0/354	0.0168	***15,000***	PCTP-17 (8)

Analyte	CAS Number	Soil Standards or PQLs			Saturated Soil Samples					
		S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	DC Non-Res Surf Soil (Exceedances Shaded-orange)	DC Non-Res Subsurf Soil (Exceedances Shaded)	Detection Frequency	S-GW Exceedance Frequency	DC Exceedance Frequency	Minimum Detect	Maximum Detect	Max Detect Location and Depth
Semi-Volatile Organic Compounds (cont'd)										
Fluorene	86-73-7	3,800	130,000	190,000	248/354	3/354	0/354	0.0201	***8,200***	PCTP-17 (8)
Indeno(1,2,3-cd)pyrene	193-39-5	18,000	76	190,000	260/354	0/354	0/354	0.0286	1,600	PCTP-17 (8)
Naphthalene	91-20-3	25	66	77	276/354	35/354	29/354	0.0122	***31,000***	PCTP-17 (8), PCTP-46 (10.5)
Pentachlorophenol	87-86-5	5	230	190,000	1/144	0/144	0/144	0.197	0.197	S-129 (10-12)
Phenanthrene	85-01-8	10,000	190,000	190,000	301/354	3/354	0/354	0.016	***24,000***	PCTP-17 (8)
Phenol	108-95-2	200	16,000	18,000	59/354	0/354	0/354	0.0232	75.9	S-160 (10-12)
Pyrene	129-00-0	2,200	96,000	190,000	308/354	4/354	0/354	0.0131	***11,000***	PCTP-17 (8)
Total PAHs and 2-Methylnaphthalene	-	- -	- -	- -	334/354	0/354	0/354	0.044	132,000	PCTP-17 (8)
Metals										
Aluminum	7429-90-5	- -	190,000	190,000	113/113	0/113	0/113	864	27,800	S-153 (7-9)
Antimony	7440-36-0	27	1,300	190,000	104/346	2/346	0/346	0.53	***92***	PCTP-09 (7)
Arsenic	7440-38-2	29	61	190,000	309/346	70/346	0/346	1.6	***140***	PCTP-19 (6)
Barium	7440-39-3	8,200	190,000	190,000	340/346	0/346	0/346	4.1	4,700	PCTP-28 (7)
Beryllium	7440-41-7	320	6,400	190,000	191/346	0/346	0/346	0.16	9.5	PSSTP-04R (16-17)
Cadmium	7440-43-9	38	1,600	190,000	149/346	0/346	0/346	0.073	11	TP-58 (11)
Calcium	7440-70-2	- -	- -	- -	112/113	0/113	0/113	58.7	164,000	MW-102 (12-13)
Chromium	7440-47-3	190,000	190,000	190,000	337/346	0/346	0/346	3.7	620	TP-34 (4)
Cobalt	7440-48-4	130	960	190,000	107/113	0/113	0/113	0.56	65.2	PSSTP-04R (16-17)
Copper	7440-50-8	43,000	100,000	190,000	340/346	0/346	0/346	1.1	6,200	PCSB-08 (10.5)
Cyanide	57-12-5	200	1,900	190,000	168/230	2/230	0/230	0.18	789	TP-64 (7)
Iron	7439-89-6	- -	190,000	190,000	113/113	0/113	0/113	1650	124,000	PSSTP-04R (16-17)
Lead	7439-92-1	450	1,000	190,000	335/346	45/346	0/346	1	***62,000***	PCTP-28 (7)
Magnesium	7439-95-4	- -	- -	- -	112/113	0/113	0/113	72.2	141,000	MW-102 (12-13)
Manganese	7439-96-5	2,000	190,000	190,000	113/113	0/113	0/113	8.7	1,380	S-128 (10-12)
Mercury	7439-97-6	10	510	190,000	234/345	1/345	0/345	0.018	***31***	PCTP-68 (6)
Nickel	7440-02-0	650	64,000	190,000	335/346	1/346	0/346	0.76	***2,480***	PSSTP-04R (16-17)
Potassium	7440-09-7	- -	- -	- -	103/113	0/113	0/113	113	9,760	PCTP-17R (24-15)
Selenium	7782-49-2	26	16,000	190,000	170/346	0/346	0/346	0.79	19	PCTP-68 (6)
Silver	7440-22-4	84	16,000	190,000	36/346	0/346	0/346	0.19	2.5	S-128 (13-15), S-130 (13-15)
Sodium	7440-23-5	- -	- -	- -	62/113	0/113	0/113	102	1,400	S-128 (10-12)
Thallium	7440-28-0	14	32	190,000	6/346	0/346	0/346	0.82	4.3	PCTP-09 (7)
Vanadium	7440-62-2	680	220	190,000	113/113	0/113	0/113	3.8	70.6	PCTP-17R (18-20)
Zinc	7440-66-6	12,000	190,000	190,000	343/346	0/346	0/346	3.9	4,900	PCTP-09 (7)
Pesticides										
4,4-DDD	72-54-8	120	380	190,000	2/59	0/59	0/59	0.015	0.073	PSSTP-19B (7-8)
4,4-DDE	72-55-9	170	270	190,000	3/59	0/59	0/59	0.0011	0.059	PSSTP-19B (7-8)
4,4-DDT	50-29-3	330	270	190,000	6/59	0/59	0/59	0.00097	0.56	PSSTP-04B (8-9)
Aldrin	309-00-2	1.9	5.4	190,000	0/59	0/59	0/59	ND	ND	ND
Beta-BHC	319-85-7	0.88	51	190,000	3/59	0/59	0/59	0.0063	0.043	PSSTP-18B (6-7)
Chlordane	57-74-9	49	260	190,000	3/52	0/52	0/52	0.031	0.057	PSSTP-17B (8-9)
Dieldrin	60-57-1	0.47	5.7	190,000	3/59	0/59	0/59	0.0064	0.032	PSSTP-19B (7-8)
Endosulfan I	959-98-8	260	19,000	190,000	1/59	0/59	0/59	0.0037	0.0037	PSSTP-04R (8-9)
Endosulfan II	33213-65-9	260	19,000	190,000	0/59	0/59	0/59	ND	ND	ND
Endosulfan sulfate	1031-07-8	70	19,000	190,000	0/59	0/59	0/59	ND	ND	ND
Endrin	72-20-8	5.5	960	190,000	0/59	0/59	0/59	ND	ND	ND
Endrin aldehyde	7421-93-4	- -	- -	- -	1/59	0/59	0/59	0.015	0.015	PSSTP-10B (8-9)
Endrin ketone	53494-70-5	- -	- -	- -	0/59	0/59	0/59	ND	ND	ND
Heptachlor	76-44-8	0.68	20	190,000	0/59	0/59	0/59	ND	ND	ND
Heptachlor epoxide	1024-57-3	1.1	10	190,000	0/59	0/59	0/59	ND	ND	ND
Methoxychlor	72-43-5	630	16,000	16,000	0/59	0/59	0/59	ND	ND	ND
Toxaphene	8001-35-2	1.2	83	83	0/59	0/59	0/59	ND	ND	ND
trans-chlordane	5103-74-2	- -	- -	- -	0/7	0/7	0/7	ND	ND	ND
Polychlorinated Biphenyls										
Aroclor 1016	12674-11-2	190	46	10,000	1/59	0/59	0/59	0.31	0.31	PSSTP-19B (7-8)
Aroclor 1242	53469-21-9	17	46	10,000	2/59	0/59	0/59	0.049	0.93	PCTP-68 (6)
Aroclor 1248	12672-29-6	67	46	46	0/59	0/59	0/59	ND	ND	ND
Aroclor 1254	11097-69-1	380	64	10,000	4/59	0/59	0/59	0.057	0.92	PCTP-68 (6)
Aroclor 1260	11096-82-5	630	46	190,000	2/59	0/59	0/59	0.47	0.77	PSSTP-19B (7-8)
Aroclor 1262	37324-23-5	- -	- -	- -	0/7	0/7	0/7	ND	ND	ND
Total PCBs	-	- -	- -	- -	6/59	0/59	0/59	0.073	1.85	PCTP-68 (6)

Analyte	CAS Number	Soil Standards or PQLs			All Soil Samples					
		S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	DC Non-Res Surf Soil (Exceedances Shaded-orange)	DC Non-Res Subsurf Soil (Exceedances Shaded)	Detection Frequency	S-GW Exceedance Frequency	DC Exceedance Frequency	Minimum Detect	Maximum Detect	Max Detect Location and Depth
Volatile Organic Compounds										
1,1,1-Trichloroethane	71-55-6	20	10,000	10,000	1/470	0/470	0/470	0.00082	0.00082	S-129 (2-4)
1,1-Dichloroethane	75-34-3	16	1,400	1,600	1/470	0/470	0/470	0.00052	0.00052	S-129 (2-4)
1,2,3-Trichlorobenzene	87-61-6	- -	- -	- -	1/173	0/173	0/173	0.0019	0.0019	PSSTP-01R (5-6)
1,2,4-Trichlorobenzene	120-82-1	27	3,100	190	1/173	0/173	0/173	0.606	0.606	S-172 (5-7)
1,3-Dichlorobenzene	541-73-1	61	10,000	10,000	1/172	0/172	0/172	0.12	0.12	S-172 (5-7)
1,4-Dichlorobenzene	106-46-7	10	200	230	2/173	0/173	0/173	0.002	0.407	S-172 (5-7)
2-Butanone (MEK)	78-93-3	400	10,000	10,000	55/471	0/471	0/471	0.0033	0.117	PCTP-17R (9-11)
Acetone	67-64-1	8,800	10,000	10,000	284/533	0/533	0/533	0.0053	1.96	S-168 (6-8)
Benzene	71-43-2	0.5	280	330	159/530	36/530	0/530	0.00047	***247***	S-155 (10-12)
Carbon Disulfide	75-15-0	620	10,000	10,000	105/531	0/531	0/531	0.00083	51	S-108 (15-17)
Carbon Tetrachloride	56-23-5	0.5	370	430	1/470	0/470	0/470	0.0012	0.0012	S-110 (2-4)
Chlorobenzene	108-90-7	10	4,000	4,500	9/530	4/530	0/530	0.0021	***53***	TP-63 (8)
Chloroform	67-66-3	8	97	110	42/470	0/470	0/470	0.0013	0.0097	PCTP-23 (10)
cis-1,2-Dichloroethene	156-59-2	7	6,400	10,000	2/470	0/470	0/470	0.0016	0.0018	PCSB-40 (4)
Cyclohexane	110-82-7	6,900	10,000	10,000	12/174	0/174	0/174	0.00062	4.89	PCSB-41R (0.5-2)
Dichloromethane	75-09-2	0.5	10,000	10,000	352/530	5/530	0/530	0.0009	***3.2***	TP-33 (9)
Ethylbenzene	100-41-4	70	880	1,000	94/529	3/529	0/529	0.00071	***180***	PCTP-42 (13.5)
Isopropylbenzene	98-82-8	2,500	10,000	10,000	26/174	0/174	0/174	0.001	6.37	PCTP-66R (8-10)
m&p-Xylenes	ARC-mpXyl	- -	- -	- -	108/470	0/470	0/470	0.0011	430	TP-63 (8)
Methyl Acetate	79-20-9	9,700	10,000	10,000	16/174	0/174	0/174	0.0021	4.74	S-168 (6-8)
Methylcyclohexane	108-87-2	- -	- -	- -	31/174	0/174	0/174	0.0013	8.78	PCSB-41R (0.5-2)
Methyl-tert-butylether	1634-04-4	2	8,600	9,800	1/174	0/174	0/174	0.00092	0.00092	S-113B (10-12)
o,p-Xylene	136777-61-2	- -	- -	- -	53/296	0/296	0/296	0.0014	140	TP-63 (8)
o-Xylene	95-47-6	- -	- -	- -	46/174	0/174	0/174	0.00085	42.6	MW-111 (11-13)
Styrene (Monomer)	100-42-5	24	10,000	10,000	10/470	2/470	0/470	2.4	***47***	TP-63 (8)
Toluene	108-88-3	100	10,000	10,000	131/532	1/532	0/532	0.00032	***140***	TP-63 (8)
Total Xylenes	1330-20-7	1,000	7,900	9,100	116/237	0/237	0/237	0.0013	175	S-155 (10-12)
trans-1,2-Dichloroethene	156-60-5	10	4,800	5,500	2/469	0/469	0/469	0.0025	0.0234	TP-37 (8)
trans-1,3-Dichloropropene	10061-02-6	- -	- -	- -	4/175	0/175	0/175	0.0025	248.8	PCTP-12 (3)
Trichloroethene	79-01-6	0.5	160	180	2/466	0/466	0/466	5.668	253.6	PCTP-12 (3)
Semi-Volatile Organic Compounds										
1,1-Biphenyl	92-52-4	1.5	34	40	133/168	28/168	11/168	0.0054	***331***	S-106 (2-4)
1,2,4,5-Tetrachlorobenzene	95-94-3	16	960	190,000	1/168	0/168	0/168	0.0185	0.0185	S-172 (5-7)
2,3,4,6-Tetrachlorophenol	58-90-2	5,500	96,000	190,000	1/166	0/166	0/166	0.0291	0.0291	S-133 (2-4)
2,4-Dichlorophenol	120-83-2	2	9,600	190,000	1/177	0/177	0/177	0.0642	0.0642	S-172 (5-7)
2,4-Dimethylphenol	105-67-9	190	10,000	10,000	43/533	0/533	0/533	0.062	185	S-106 (2-4)
2-Methylnaphthalene	91-57-6	100	240	270	407/535	30/535	19/535	0.0109	***7,200***	PCTP-46 (10.5)
2-Methylphenol	95-48-7	490	160,000	190,000	56/473	0/473	0/473	0.0305	189	S-106 (2-4)
3-Methylphenol, 4-Methylphenol	65794-96-9	- -	- -	- -	78/237	0/237	0/237	0.036	476	S-106 (2-4)
4-Methylphenol	106-44-5	49	16,000	190,000	56/296	1/296	0/296	0.047	***180***	PCTP-66 (0.5)
4-Nitroaniline	100-01-6	14	4,600	190,000	1/239	0/239	0/239	0.17	0.17	PSSTP-09A (1-2)
Acenaphthene	83-32-9	4,700	190,000	190,000	379/535	0/535	0/535	0.0147	1,200	TP-63 (8)
Acenaphthylene	208-96-8	6,600	190,000	190,000	328/535	0/535	0/535	0.0231	4,900	TP-63 (8)
Acetophenone	98-86-2	970	10,000	10,000	35/168	0/168	0/168	0.0105	13.3	PSSTP-04R (7-8)
Anthracene	120-12-7	350	190,000	190,000	420/535	15/535	0/535	0.0285	***6,900***	PCTP-17 (8)
Benz(a)anthracene	56-55-3	340	130	190,000	464/535	15/535	3/535	0.0114	***5,500***	PCTP-17 (8)
Benzaldehyde	100-52-7	- -	- -	- -	19/168	0/168	0/168	0.0111	0.212	S-119 (0-1)
Benzo(a)pyrene	50-32-8	46	91	190,000	471/535	39/535	3/535	0.02	***3,800***	PCTP-17 (8)
Benzo(b)fluoranthene	205-99-2	170	76	190,000	461/535	22/535	8/535	0.0192	***4,700***	TP-63 (8)
Benzo(g,h,i)perylene	191-24-2	180	190,000	190,000	430/535	13/535	0/535	0.0203	***1,500***	PCTP-17 (8)
Benzo(k)fluoranthene	207-08-9	610	76	190,000	415/535	6/535	2/535	0.0196	***1,700***	PCTP-17 (8)
bis(2-Ethylhexyl)phthalate	117-81-7	130	6,500	10,000	166/535	0/535	0/535	0.0365	64	PCTP-22 (4.5)
Butyl benzyl phthalate	85-68-7	10,000	10,000	10,000	20/535	0/535	0/535	0.045	1.6	PCSB-58 (2)
Caprolactam	105-60-2	- -	- -	- -	1/168	0/168	0/168	0.125	0.125	PCTP-01R (5-7)
Carbazole	86-74-8	89	4,600	190,000	347/535	18/535	0/535	0.0067	***3,100***	PCTP-17 (8)
Chrysene	218-01-9	230	760	190,000	462/535	18/535	1/535	0.0172	***5,500***	PCTP-17 (8)
Dibenz(a,h)anthracene	53-70-3	270	22	190,000	356/535	2/535	3/535	0.0202	***610***	PCTP-17 (8)
Dibenzofuran	132-64-9	250	3,200	190,000	380/535	16/535	0/535	0.0199	***5,300***	PCTP-17 (8)
Diethyl phthalate	84-66-2	7,800	10,000	10,000	21/475	0/475	0/475	0.041	0.16	PC-B14 (15-17)
Dimethyl phthalate	131-11-3	- -	- -	- -	1/475	0/475	0/475	0.0206	0.0206	PCTP-01R (5-7)
Di-n-butyl phthalate	84-74-2	4,000	10,000	10,000	106/535	0/535	0/535	0.0187	35	PCTP-22 (4.5)
Di-n-octyl phthalate	117-84-0	10,000	10,000	10,000	8/535	0/535	0/535	0.047	13	PCTP-22 (4.5)
Fluoranthene	206-44-0	3,200	130,000	190,000	482/535	8/535	0/535	0.0168	***15,000***	PCTP-17 (8)

Analyte	CAS Number	Soil Standards or PQLs			All Soil Samples					
		S-GW Used Aquifer TDS≤ 2,500 Non-Res (Exceedances Bolded & Italicized)	DC Non-Res Surf Soil (Exceedances Shaded-orange)	DC Non-Res Subsurf Soil (Exceedances Shaded)	Detection Frequency	S-GW Exceedance Frequency	DC Exceedance Frequency	Minimum Detect	Maximum Detect	Max Detect Location and Depth
Semi-Volatile Organic Compounds (cont'd)										
Fluorene	86-73-7	3,800	130,000	190,000	396/535	4/535	0/535	0.0201	***8,200***	PCTP-17 (8)
Indeno(1,2,3-cd)pyrene	193-39-5	18,000	76	190,000	427/535	0/535	3/535	0.0286	1,600	PCTP-17 (8)
Naphthalene	91-20-3	25	66	77	431/535	54/535	46/535	0.0122	***31,000***	PCTP-17 (8), PCTP-46 (10.5)
Pentachlorophenol	87-86-5	5	230	190,000	2/237	0/237	0/237	0.197	0.447	S-133 (2-4)
Phenanthrene	85-01-8	10,000	190,000	190,000	473/535	4/535	0/535	0.016	***24,000***	PCTP-17 (8)
Phenol	108-95-2	200	16,000	18,000	94/535	2/535	0/535	0.0232	***296***	S-106 (2-4)
Pyrene	129-00-0	2,200	96,000	190,000	482/535	6/535	0/535	0.0131	***11,000***	PCTP-17 (8)
Total PAHs and 2-Methylnaphthalene	-	- -	- -	- -	511/535	0/535	0/535	0.044	132,000	PCTP-17 (8)
Metals										
Aluminum	7429-90-5	- -	190,000	190,000	171/171	0/171	0/171	864	27,800	S-153 (7-9)
Antimony	7440-36-0	27	1,300	190,000	183/527	3/527	0/527	0.53	***92***	PCTP-09 (7)
Arsenic	7440-38-2	29	61	190,000	482/527	101/527	13/527	1.6	***170***	PSSTP-30A (1-2)
Barium	7440-39-3	8,200	190,000	190,000	517/527	0/527	0/527	4.1	4,700	PCTP-28 (7)
Beryllium	7440-41-7	320	6,400	190,000	271/527	0/527	0/527	0.16	9.5	PSSTP-04R (16-17)
Cadmium	7440-43-9	38	1,600	190,000	223/527	0/527	0/527	0.073	15	PCSB-30 (2)
Calcium	7440-70-2	- -	- -	- -	169/171	0/171	0/171	58.7	164,000	MW-102 (12-13)
Chromium	7440-47-3	190,000	190,000	190,000	504/527	0/527	0/527	1.6	791	PSSTP-04R (7-8)
Cobalt	7440-48-4	130	960	190,000	159/171	0/171	0/171	0.56	65.2	PSSTP-04R (16-17)
Copper	7440-50-8	43,000	100,000	190,000	519/527	0/527	0/527	1.1	6,200	PCSB-08 (10.5)
Cyanide	57-12-5	200	1,900	190,000	250/333	3/333	0/333	0.13	789	TP-64 (7)
Iron	7439-89-6	- -	190,000	190,000	171/171	0/171	0/171	1,650	124,000	PSSTP-04R (16-17)
Lead	7439-92-1	450	1,000	190,000	512/527	89/527	12/527	1	***62,000***	PCTP-28 (7)
Magnesium	7439-95-4	- -	- -	- -	168/171	0/171	0/171	72.2	141,000	MW-102 (12-13)
Manganese	7439-96-5	2,000	190,000	190,000	171/171	0/171	0/171	8.7	1,710	S-163 (0.5-2)
Mercury	7439-97-6	10	510	190,000	383/525	2/525	0/525	0.018	***31***	PCTP-68 (6)
Nickel	7440-02-0	650	64,000	190,000	505/527	1/527	0/527	0.76	***2,480***	PSSTP-04R (16-17)
Potassium	7440-09-7	- -	- -	- -	153/171	0/171	0/171	44.4	9,760	PCTP-17R (24-15)
Selenium	7782-49-2	26	16,000	190,000	239/527	1/527	0/527	0.74	***29***	PCSB-30 (2)
Silver	7440-22-4	84	16,000	190,000	49/527	0/527	0/527	0.19	6	PCSB-30 (2)
Sodium	7440-23-5	- -	- -	- -	86/171	0/171	0/171	95.1	1,400	S-128 (10-12)
Thallium	7440-28-0	14	32	190,000	7/527	0/527	0/527	0.82	4.3	PCTP-09 (7)
Vanadium	7440-62-2	680	220	190,000	171/171	0/171	0/171	3.8	137	S-106 (2-4)
Zinc	7440-66-6	12,000	190,000	190,000	518/527	0/527	0/527	3.9	6,300	PCSB-36 (0.5)
Pesticides										
4,4-DDD	72-54-8	120	380	190,000	20/169	0/169	0/169	0.00205	0.14	PSSTP-9B (6-7)
4,4-DDE	72-55-9	170	270	190,000	30/169	0/169	0/169	0.0011	0.15	PCSB-41 (0.5)
4,4-DDT	50-29-3	330	270	190,000	53/169	0/169	0/169	0.00097	0.56	PSSTP-04B (8-9)
Aldrin	309-00-2	1.9	5.4	190,000	3/169	0/169	0/169	0.0074	0.0159	PSSTP-1R (5-6)
Beta-BHC	319-85-7	0.88	51	190,000	5/169	0/169	0/169	0.0063	0.043	PSSTP-18B (6-7)
Chlordane	57-74-9	49	260	190,000	23/147	0/147	0/147	0.016	4.5	PCTP-78 (0.5)
Dieldrin	60-57-1	0.47	5.7	190,000	17/169	0/169	0/169	0.0043	0.18	PSSTP-17A (1-2)
Endosulfan I	959-98-8	260	19,000	190,000	4/169	0/169	0/169	0.0037	0.049	PSSTP-8B (6-7)
Endosulfan II	33213-65-9	260	19,000	190,000	3/169	0/169	0/169	0.016	0.04	PSSTP-05A (1-2)
Endosulfan sulfate	1031-07-8	70	19,000	190,000	7/169	0/169	0/169	0.0083	0.088	PSSTP-22A (1-2)
Endrin	72-20-8	5.5	960	190,000	5/169	0/169	0/169	0.0057	0.073	PSSTP-23B (7-8)
Endrin aldehyde	7421-93-4	- -	- -	- -	9/169	0/169	0/169	0.0071	0.32	PSSTP-26A (1-2)
Endrin ketone	53494-70-5	- -	- -	- -	2/169	0/169	0/169	0.0091	0.0255	PSSTP-1R (5-6)
Heptachlor	76-44-8	0.68	20	190,000	1/169	0/169	0/169	0.0158	0.0158	PSSTP-1R (5-6)
Heptachlor epoxide	1024-57-3	1.1	10	190,000	7/169	0/169	0/169	0.001095	0.0377	PSSTP-1R (5-6)
Methoxychlor	72-43-5	630	16,000	16,000	1/169	0/169	0/169	0.014	0.014	PSSTP-28A (1-2)
Toxaphene	8001-35-2	1.2	83	83	1/169	0/169	0/169	0.02	0.02	PSSTP-05A (1-2)
trans-chlordane	5103-74-2	- -	- -	- -	3/22	0/22	0/22	0.00059	0.012	PSSTP-1R (5-6)
Polychlorinated Biphenyls										
Aroclor 1016	12674-11-2	190	46	10,000	1/177	0/177	0/177	0.31	0.31	PSSTP-19B (7-8)
Aroclor 1242	53469-21-9	17	46	10,000	7/177	0/177	0/177	0.049	1.2	PSSTP-8B (6-7)
Aroclor 1248	12672-29-6	67	46	46	6/177	0/177	0/177	0.053	1.7	PCSB-56 (0.5)
Aroclor 1254	11097-69-1	380	64	10,000	28/177	0/177	0/177	0.0256	7.9	PCTP-73 (0.5)
Aroclor 1260	11096-82-5	630	46	190,000	51/177	0/177	0/177	0.046	13	PSSTP-1B (5-6)
Aroclor 1262	37324-23-5	- -	- -	- -	1/28	0/28	0/28	0.2925	0.2925	PCTP-66R (0-0.5)
Total PCBs	-	- -	- -	- -	82/177	0/177	0/177	0.0256	13	PSSTP-1B (5-6)

Notes:

1. Samples were submitted for laboratory analysis for one or more of the following constituent groups, as indicated above.
   - Target Compound List (TCL) volatile organic compounds (VOC) using United States Environmental Protection Agency (USEPA) SW-846 Method 8260.
   - TCL semi-volatile organic compounds (SVOC) using USEPA SW-846 Method 8270.
   - Metals using USEPA SW-846 Methods 6010 and 7471.
   - Cyanide using USEPA SW-846 Method 9010 or 9012B.
   - Pesticides using USEPA SW-846 Method 8081.
   - Polychlorinated biphenyls (PCBs) using USEPA SW-846 Method 8082.
2. Only compounds detected in one or more samples are shown in this table.
3. Analytes detected in sample are shown in black font and analytes that are not detected are shown in gray font.
4. For purposes of this statistical analysis, field duplicate results are averaged with their parent sample and the average is counted as one sample. If the resulting average is a minimum or maximum concentration, it is reported as such. If either the parent or duplicate result is non-detect while the other is detected, only the detected concentration is used. If either the parent or the duplicate exceed an MCS, it is reported as such.
5. Concentrations reported in milligrams per kilogram (mg/kg) or parts per million (ppm).
6. Soil standards obtained from the Pennsylvania Department of Environmental Protection (PADEP) Medium Chapter 250, Administration of the Land Recycling Program (Act 2 cleanup standards) updated on November 20, 2021, and include:
   (a) The soil to groundwater MSCs for a non-residential used aquifer with total dissolved solids (TDS) less than or equal to 2,500 parts per million (ppm). The higher of the 100 X groundwater MSC or generic value is used.
   (b) The non-residential direct contact MSC for surface and subsurface soil.
7. Gray shading indicates that the result exceed the PADEP non-residential direct contact MSC (for subsurface soil).
8. Orange shading indicates that the result exceeds the PADEP non-residential direct contact MSC (for surface soil).
9. Italics and bolding indicates that the result exceeds the PADEP soil to groundwater MSC (for a non-residential used aquifer with TDS ≤ 2,500 ppm).
10. - - = No PADEP MSC.
11. - = No actual Chemical Abstracts Service (CAS) number is available.
12. ND = Not detected.
13. The MSCs reported for chromium is for trivalent chromium. The reported chromium results are for total chromium.
14. The MSCs reported for cyanide are for free cyanide. The reported cyanide results are for total cyanide.
15. Rejected data was not counted for total number of samples collected.
16. Total polycyclic aromatic hydrocarbons (PAHs) are the sum of the 16 priority pollutant PAHs identified by the USEPA and 2-methylnaphthalene.
17. Data qualifiers are not presented in this table.
18. Data from 2018 and 2019 have undergone a Tier II validation. Data prior to 2018 have not been validated.

Table 14
Hydropunch Groundwater Analytical Results (ug/L)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location: / Date Collected:	CAS Number	Groundwater Standards: Used Aquifer TDS≤2,500 Res (Exceedances Bolded & Italicized)	Groundwater Standards: Used Aquifer TDS≤2,500 Non-Res (Exceedances Shaded)	PCHP-01 3/24/05	PCHP-02 3/25/05	PCHP-03 3/24/05	PCHP-04 3/25/05	PCHP-05 3/25/05	PCHP-06 3/25/05	PCHP-07 3/25/05
Volatile Organic Compounds										
Benzene	71-43-2	5	5	< 0.24	< 0.24	***290***	< 0.24	< 0.24 [< 0.24]	< 0.24	< 0.24
Carbon Disulfide	75-15-0	1,500	6,200	64	< 0.51	49	57	25 [30]	24	27
Ethylbenzene	100-41-4	700	700	< 0.67	< 0.67	2.6	< 0.67	< 0.67 [< 0.67]	< 0.67	< 0.67
m&p-Xylenes	ARC-mpXyl	- -	- -	< 0.81	< 0.81	5.1	< 0.81	< 0.81 [< 0.81]	< 0.81	< 0.81
o,p-Xylene	136777-61-2	- -	- -	< 0.17	< 0.17	5.5	< 0.17	< 0.17 [< 0.17]	< 0.17	< 0.17
Toluene	108-88-3	1,000	1,000	< 0.18	< 0.18	6.3	< 0.18	< 0.18 [< 0.18]	< 0.18	< 0.18
Semi-Volatile Organic Compounds										
2,4-Dimethylphenol	105-67-9	690	1,900	2.3	< 0.91	2.9	< 0.93	< 0.96 [< 0.91]	< 0.91	< 0.92
2-Methylnaphthalene	91-57-6	6.3	26	< 1.9	< 1.8	***11***	< 1.9	< 1.9 [< 1.8]	< 1.8	< 1.9
Acenaphthene	83-32-9	2,100	3,800	1.2	< 0.18	16	< 0.18	3.9 [3.9]	< 0.18	< 0.18
Acenaphthylene	208-96-8	2,100	5,800	< 0.17	< 0.16	7.8	< 0.17	< 0.17 [< 0.16]	< 0.16	< 0.16
Anthracene	120-12-7	66	66	< 0.22	< 0.21	8.4	< 0.22	< 0.22 [< 0.21]	< 0.21	< 0.21
Benz(a)anthracene	56-55-3	0.3	3.9	< 0.15	< 0.15	***6***	< 0.15	< 0.16 [< 0.15]	< 0.15	< 0.15
Benzo(a)pyrene	50-32-8	0.2	0.2	< 0.18	< 0.18	***4.6***	< 0.18	< 0.19 [< 0.18]	< 0.18	< 0.18
Benzo(b)fluoranthene	205-99-2	0.18	1.2	< 0.31	< 0.3	***6.3***	< 0.31	< 0.32 [< 0.3]	< 0.3	< 0.3
Benzo(g,h,i)perylene	191-24-2	0.26	0.26	< 0.16	< 0.15	***2.8***	< 0.16	< 0.16 [< 0.15]	< 0.15	< 0.16
Benzo(k)fluoranthene	207-08-9	0.18	0.55	< 0.39	< 0.38	***1.8***	< 0.38	< 0.4 [< 0.38]	< 0.38	< 0.38
bis(2-Ethylhexyl)phthalate	117-81-7	6	6	< 0.71	< 0.68	2.1	< 0.7	< 0.72 [< 0.68]	< 0.68	< 0.69
Carbazole	86-74-8	33	140	< 0.21	< 0.21	30	< 0.21	< 0.22 [< 0.21]	< 0.21	< 0.21
Chrysene	218-01-9	1.8	1.9	< 0.32	< 0.31	***5.1***	< 0.31	< 0.32 [< 0.31]	< 0.31	< 0.31
Dibenzofuran	132-64-9	35	97	< 1.4	< 1.4	8.1	< 1.4	< 1.5 [< 1.4]	< 1.4	< 1.4
Fluoranthene	206-44-0	260	260	< 0.18	1.3	23	< 0.18	< 0.19 [< 0.18]	< 0.18	1.2
Fluorene	86-73-7	1,400	1,900	< 0.27	< 0.26	16	< 0.26	< 0.27 [< 0.26]	< 0.26	< 0.26
Indeno(1,2,3-cd)pyrene	193-39-5	0.18	2.3	< 0.19	< 0.18	***2.5***	< 0.19	< 0.19 [< 0.18]	< 0.18	< 0.18
Naphthalene	91-20-3	100	100	< 0.11	< 0.1	3.8	< 0.11	< 0.11 [< 0.1]	< 0.1	1.7
Phenanthrene	85-01-8	1,100	1,100	< 0.25	< 0.24	18	< 0.24	< 0.25 [1.2]	< 0.24	< 0.24
Phenol	108-95-2	2,000	2,000	< 1.8	< 1.8	10	< 1.8	< 1.9 [< 1.8]	< 1.8	< 1.8
Pyrene	129-00-0	130	130	< 0.25	1.1	16	< 0.25	< 0.26 [< 0.25]	< 0.25	1.8
Metals (Totals)										
Antimony	7440-36-0	6	6	< 15	***110***	***34***	< 15	< 15 [< 15]	***500***	***77***
Arsenic	7440-38-2	10	10	***63***	***400***	***77***	***40***	< 7.5 [< 7.5]	***190***	***160***
Barium	7440-39-3	2,000	2,000	400	1,900	1,000	220	69 [78]	***36,000***	***7,800***
Beryllium	7440-41-7	4	4	< 4	***17***	***5.8***	< 4	< 4 [< 4]	***7.3***	***8.4***
Cadmium	7440-43-9	5	5	< 3.5	***15***	***14***	< 3.5	< 3.5 [< 3.5]	***28***	***43***
Chromium	7440-47-3	100	100	***350***	***490***	***290***	***180***	< 50 [< 50]	***1,100***	***520***
Copper	7440-50-8	1,000	1,000	270	***2,500***	***4,200***	93	< 50 [< 50]	***18,000***	***2,500***
Cyanide, amenable	ARC-CYAM	200	200	0.059	0.46	6.8	< 0.01	0.16 [0.13]	22	0.031
Lead	7439-92-1	5	5	***380***	***5,200***	***10,000***	***74***	< 4 [< 4]	***15,000***	***70,000***
Mercury	7439-97-6	2	2	1.7	***35***	***120***	< 0.7	< 0.7 [< 0.7]	***24***	***4.6***
Nickel	7440-02-0	100	100	***120***	***380***	***170***	72	< 50 [< 50]	***310***	***240***
Selenium	7782-49-2	50	50	< 40	***61***	43	< 40	< 40 [< 40]	< 40	< 40
Zinc	7440-66-6	2,000	2,000	1,100	***3,200***	***5,000***	310	< 50 [< 50]	***15,000***	***16,000***

Notes:
1. Samples were collected by Paulus, Sokolowski, and Sartor Engineering, PC on the dates indicated.
2. Samples were analyzed by Hampton-Clarke, Veritech Laboratories of Fairfield, New Jersey for the following:
   - Target Compound List (TCL) volatile organic compounds (VOC) using United States Environmental Protection Agency (USEPA) SW-846 Method 8260.
   - TCL semi-volatile organic compounds (SVOC) using USEPA SW-846 Method 8270.
   - Metals using USEPA SW-846 Methods 200.7 and 245.1.
3. Only compounds detected in one or more samples are shown in this table.
4. < = constituent not detected at a concentration above the reported detection limit. These results are also reported in gray.
5. Concentrations reported in micrograms per liter (ug/L) or parts per billion (ppb).
6. Shading indicates an exceedance of Pennsylvania Department of Environmental Protection's (PADEP's) non-residential Medium Specific Concentrations (MSCs) for Used Aquifers containing Total Dissolved Solids (TDS) ≤ 2,500 milligrams per liter (mg/L).
7. Italics and bolding indicates an exceedance of PADEP's Residential MSCs for Used Aquifers containing TDS ≤ 2,500 mg/L.
8. - - = No PADEP Groundwater Standard.
9. The groundwater standards reported for cyanide are for free cyanide. The reported cyanide results are for amenable cyanide.
10. Data have not been validated.

Table 15
Groundwater Analytical Results – Detected VOCs, SVOCs, Pesticides, and PCBs (ug/L)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location: / Date Collected:	CAS Number	Groundwater Standards: Used Aquifer TDS≤2,500 Res (Exceedances Bolded & Italicized)	Groundwater Standards: Used Aquifer TDS≤2,500 Non-Res (Exceedances Shaded)	MW-102 5/31/18	MW-103 5/31/18	MW-104 5/30/18	MW-107 5/30/18	MW-108 10/4/19	MW-109 10/4/19
Volatile Organic Compounds									
1,2-Dichlorobenzene	95-50-1	600	600	< 1.0 [< 1.0]	< 1.0	< 1.0	< 1.0	< 1.0 [< 1.0]	< 1.0
Acetone	67-64-1	31,000	88,000	< 10 [< 10]	< 10	< 10	< 10	< 10 [< 10]	< 10
Benzene	71-43-2	5	5	< 0.50 [< 0.50]	< 0.50	< 0.50	< 0.50	< 0.50 [< 0.50]	< 0.50
Chlorobenzene	108-90-7	100	100	< 1.0 [< 1.0]	< 1.0	< 1.0	< 1.0	< 1.0 [< 1.0]	< 1.0
Chloroform	67-66-3	80	80	< 1.0 [< 1.0]	< 1.0	< 1.0	< 1.0	< 1.0 [< 1.0]	< 1.0
cis-1,2-Dichloroethene	156-59-2	70	70	< 1.0 [< 1.0]	< 1.0	< 1.0	< 1.0	< 1.0 [< 1.0]	< 1.0
Dichloromethane	75-09-2	5	5	< 2.0 [< 2.0]	< 2.0	< 2.0	< 2.0	< 2.0 [< 2.0]	< 2.0
Ethylbenzene	100-41-4	700	700	< 1.0 [< 1.0]	< 1.0	< 1.0	< 1.0	< 1.0 [< 1.0]	< 1.0
Isopropylbenzene	98-82-8	840	3,500	< 1.0 [< 1.0]	< 1.0	< 1.0	< 1.0	< 1.0 [< 1.0]	< 1.0
m&p-Xylenes	ARC-mpXyl	- -	- -	< 1.0 [< 1.0]	< 1.0	< 1.0	< 1.0	< 1.0 [< 1.0]	< 1.0
Methyl-tert-butyl ether	1634-04-4	20	20	< 1.0 [< 1.0]	< 1.0	< 1.0	***20.7***	< 1.0 [< 1.0]	< 1.0
o,p-Xylene	136777-61-2	- -	- -	NA	NA	NA	NA	NA	NA
o-Xylene	95-47-6	- -	- -	< 1.0 [< 1.0]	< 1.0	< 1.0	< 1.0	< 1.0 [< 1.0]	< 1.0
Styrene (Monomer)	100-42-5	100	100	< 1.0 [< 1.0]	< 1.0	< 1.0	< 1.0	< 1.0 [< 1.0]	< 1.0
Tetrachloroethene	127-18-4	5	5	< 1.0 [< 1.0]	< 1.0	< 1.0	< 1.0	< 1.0 [< 1.0]	< 1.0
Toluene	108-88-3	1,000	1,000	< 1.0 [< 1.0]	< 1.0	< 1.0	< 1.0	< 1.0 [< 1.0]	< 1.0
Total Xylenes	1330-20-7	10,000	10,000	< 1.0 [< 1.0]	< 1.0	< 1.0	< 1.0	< 1.0 [< 1.0]	< 1.0
Trichloroethene	79-01-6	5	5	< 1.0 [< 1.0]	< 1.0	< 1.0	< 1.0	< 1.0 [< 1.0]	< 1.0
Semi-Volatile Organic Compounds									
1,1-Biphenyl	92-52-4	0.84	3.5	< 1.2 [< 1.3]	< 1.2	< 0.95	< 1.1	< 1.0 [< 1.0]	0.39 J
2,4-Dimethylphenol	105-67-9	690	1,900	< 5.9 [< 6.3]	< 5.9	< 4.8	< 5.3	< 5.0 [< 5.0]	< 4.8
2,4-Dinitrotoluene	121-14-2	2.1	8.8	< 1.2 [< 1.3]	< 1.2	< 0.95	< 1.1	< 1.0 [< 1.0]	< 0.96
2-Methylnaphthalene	91-57-6	6.3	26	< 1.2 [< 1.3]	< 1.2	< 0.95	< 1.1	0.77 J [0.67 J]	1.5
2-Methylphenol	95-48-7	1,700	4,900	< 2.4 [< 2.5]	< 2.4	< 1.9	< 2.1	< 2.0 [< 2.0]	< 1.9
3-Methylphenol, 4-Methylphenol	65794-96-9	- -	- -	< 2.4 [< 2.5]	< 2.4	< 1.9	< 2.1	< 2.0 [< 2.0]	< 1.9
4-Methylphenol	106-44-5	170	490	NA	NA	NA	NA	NA	NA
Acenaphthene	83-32-9	2,100	3,800	< 1.2 [< 1.3]	< 1.2	0.92 J	< 1.1	< 1.0 [< 1.0]	1.2
Acenaphthylene	208-96-8	2,100	5,800	< 1.2 [< 1.3]	< 1.2	< 0.95	0.46 J	< 1.0 [< 1.0]	1.2
Acetophenone	98-86-2	3,500	9,700	< 2.4 [< 2.5]	< 2.4	< 1.9	< 2.1	< 2.0 [< 2.0]	0.25 J
Anthracene	120-12-7	66	66	< 1.2 [< 1.3]	< 1.2	< 0.95	< 1.1	0.37 J [0.43 J]	1.1
Benz(a)anthracene	56-55-3	0.3	3.9	< 1.2 [< 1.3]	< 1.2	< 0.95	***1.3***	< 1.0 [< 1.0]	< 0.96
Benzo(a)pyrene	50-32-8	0.2	0.2	< 1.2 [< 1.3]	< 1.2	< 0.95	***1.2***	< 1.0 [< 1.0]	< 0.96
Benzo(b)fluoranthene	205-99-2	0.18	1.2	< 1.2 [< 1.3]	< 1.2	< 0.95	***1.7***	< 1.0 [< 1.0]	< 0.96
Benzo(g,h,i)perylene	191-24-2	0.26	0.26	< 1.2 [< 1.3]	< 1.2	< 0.95	***0.95 J***	< 1.0 [< 1.0]	< 0.96
Benzo(k)fluoranthene	207-08-9	0.18	0.55	< 1.2 [< 1.3]	< 1.2	< 0.95	***0.53 J***	< 1.0 [< 1.0]	< 0.96
bis(2-Ethylhexyl)phthalate	117-81-7	6	6	< 2.4 ***[11.3]***	< 2.4	< 1.9	< 2.1	< 2.0 [< 2.0]	< 1.9
Butyl benzyl phthalate	85-68-7	340	1,400	< 2.4 [< 2.5]	< 2.4	< 1.9	< 2.1	< 2.0 [< 2.0]	< 1.9
Carbazole	86-74-8	33	140	< 1.2 [< 1.3]	< 1.2	< 0.95	< 1.1	0.85 J [0.91 J]	2.2
Chrysene	218-01-9	1.8	1.9	< 1.2 [< 1.3]	< 1.2	< 0.95	1.1	< 1.0 [< 1.0]	< 0.96
Dibenz(a,h)anthracene	53-70-3	0.052	0.6	< 1.2 [< 1.3]	< 1.2	< 0.95	< 1.1	< 1.0 [< 1.0]	< 0.96
Dibenzofuran	132-64-9	35	97	< 5.9 [< 6.3]	< 5.9	< 4.8	< 5.3	0.48 J [0.40 J]	2.0 J
Diethyl phthalate	84-66-2	28,000	78,000	< 2.4 [< 2.5]	< 2.4	< 1.9	< 2.1	< 2.0 [< 2.0]	< 1.9
Di-n-butyl phthalate	84-74-2	3,500	9,700	< 2.4 [< 2.5]	< 2.4	< 1.9	< 2.1	< 2.0 [< 2.0]	< 1.9
Fluoranthene	206-44-0	260	260	< 1.2 [< 1.3]	< 1.2	0.57 J	2.6	0.36 J [0.26 J]	1.2
Fluorene	86-73-7	1,400	1,900	< 1.2 [< 1.3]	< 1.2	0.48 J	< 1.1	0.99 J [0.90 J]	4.2
Indeno(1,2,3-cd)pyrene	193-39-5	0.18	2.3	< 1.2 [< 1.3]	< 1.2	< 0.95	***0.74 J***	< 1.0 [< 1.0]	< 0.96
Naphthalene	91-20-3	100	100	< 1.2 [< 1.3]	< 1.2	< 0.95	< 1.1	7.2 [5.8]	8.8
Phenanthrene	85-01-8	1,100	1,100	< 1.2 [< 1.3]	< 1.2	< 0.95	0.98 J	1.3 [1.1]	7.7
Phenol	108-95-2	2,000	2,000	< 2.4 [< 2.5]	< 2.4	< 1.9	< 2.1	< 2.0 [< 2.0]	< 1.9
Pyrene	129-00-0	130	130	< 1.2 [< 1.3]	< 1.2	0.57 J	2.0	0.22 J [< 1.0]	0.71 J
Pesticides									
4,4-DDT	50-29-3	1.9	5.5	< 0.0067 [< 0.0067]	< 0.0067	< 0.0067	< 0.0067	NA	NA
Dieldrin	60-57-1	0.041	0.17	< 0.0067 [< 0.0067]	< 0.0067	< 0.0067	< 0.0067	NA	NA
trans-chlordane	5103-74-2	- -	- -	< 0.0067 [< 0.0067]	< 0.0067	< 0.0067	< 0.0067	NA	NA
Polychlorinated Biphenyls									
Total PCBs	-	- -	- -	< 0.33 [< 0.33]	< 0.33	< 0.33	< 0.33	NA	NA

Location: / Date Collected:	CAS Number	Groundwater Standards: Used Aquifer TDS≤2,500 Res (Exceedances Bolded & Italicized)	Groundwater Standards: Used Aquifer TDS≤2,500 Non-Res (Exceedances Shaded)	MW-110 10/4/19	MW-111 10/4/19	MW-112 10/4/19	MW-113 10/4/19	MW-5 3/19/18	MW-6 3/22/18
Volatile Organic Compounds									
1,2-Dichlorobenzene	95-50-1	600	600	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Acetone	67-64-1	31,000	88,000	< 10	8.6 J	< 10	< 10	< 10 UJ	< 10
Benzene	71-43-2	5	5	< 0.50	***686 D***	< 0.50	< 0.50	< 0.50	< 0.50
Chlorobenzene	108-90-7	100	100	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroform	67-66-3	80	80	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
cis-1,2-Dichloroethene	156-59-2	70	70	< 1.0	< 1.0	< 1.0	< 1.0	28.3	< 1.0
Dichloromethane	75-09-2	5	5	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene	100-41-4	700	700	< 1.0	24.3	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	98-82-8	840	3,500	< 1.0	1.2	< 1.0	< 1.0	< 1.0	< 1.0
m&p-Xylenes	ARC-mpXyl	- -	- -	< 1.0	72.9	< 1.0	< 1.0	< 1.0	< 1.0
Methyl-tert-butyl ether	1634-04-4	20	20	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o,p-Xylene	136777-61-2	- -	- -	NA	NA	NA	NA	NA	NA
o-Xylene	95-47-6	- -	- -	< 1.0	36.5	< 1.0	< 1.0	< 1.0	< 1.0
Styrene (Monomer)	100-42-5	100	100	< 1.0	9.4	< 1.0	< 1.0	< 1.0	< 1.0 UJ
Tetrachloroethene	127-18-4	5	5	< 1.0	< 1.0	< 1.0	< 1.0	1.1	< 1.0
Toluene	108-88-3	1,000	1,000	< 1.0	90.4 J	< 1.0	< 1.0	< 1.0	< 1.0
Total Xylenes	1330-20-7	10,000	10,000	< 1.0	109	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene	79-01-6	5	5	< 1.0	< 1.0	< 1.0	< 1.0	***6.1***	< 1.0
Semi-Volatile Organic Compounds									
1,1-Biphenyl	92-52-4	0.84	3.5	0.35 J	***20.7***	< 1.0	< 1.0	< 1.0	< 0.98
2,4-Dimethylphenol	105-67-9	690	1,900	< 4.8	241 D	< 5.0	< 5.0	< 5.0	< 4.9
2,4-Dinitrotoluene	121-14-2	2.1	8.8	< 0.95	< 1.0	< 1.0	< 1.0	< 1.0	< 0.98
2-Methylnaphthalene	91-57-6	6.3	26	1.2	***97.8 J***	< 1.0	< 1.0	< 1.0	< 0.98
2-Methylphenol	95-48-7	1,700	4,900	< 1.9	177 DJ	< 2.0	< 2.0	< 2.0	< 2.0
3-Methylphenol, 4-Methylphenol	65794-96-9	- -	- -	< 1.9	212 D	< 2.0	< 2.0	< 2.0	< 2.0
4-Methylphenol	106-44-5	170	490	NA	NA	NA	NA	NA	NA
Acenaphthene	83-32-9	2,100	3,800	0.19 J	87.7	1.4	< 1.0	0.78 J	1.6
Acenaphthylene	208-96-8	2,100	5,800	0.72 J	80.2	< 1.0	< 1.0	< 1.0	< 0.98
Acetophenone	98-86-2	3,500	9,700	< 1.9	2.1	0.27 J	< 2.0	< 2.0	< 2.0
Anthracene	120-12-7	66	66	0.26 J	16.1	0.22 J	0.33 J	< 1.0	< 0.98
Benz(a)anthracene	56-55-3	0.3	3.9	< 0.95	***3.6***	< 1.0	< 1.0	< 1.0	< 0.98
Benzo(a)pyrene	50-32-8	0.2	0.2	< 0.95	***2.6***	< 1.0	< 1.0	< 1.0	< 0.98
Benzo(b)fluoranthene	205-99-2	0.18	1.2	< 0.95	***2.9***	< 1.0	< 1.0	< 1.0	< 0.98
Benzo(g,h,i)perylene	191-24-2	0.26	0.26	< 0.95	***1.4***	< 1.0	< 1.0	< 1.0	< 0.98
Benzo(k)fluoranthene	207-08-9	0.18	0.55	< 0.95	***1.3***	< 1.0	< 1.0	< 1.0	< 0.98
bis(2-Ethylhexyl)phthalate	117-81-7	6	6	< 1.9	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Butyl benzyl phthalate	85-68-7	340	1,400	< 1.9	< 2.0	1.7 J	< 2.0	< 2.0	< 2.0
Carbazole	86-74-8	33	140	1.6	***189 DJ***	< 1.0	< 1.0	< 1.0	< 0.98
Chrysene	218-01-9	1.8	1.9	< 0.95	***3.2 J***	< 1.0	< 1.0	< 1.0	< 0.98
Dibenz(a,h)anthracene	53-70-3	0.052	0.6	< 0.95	***0.42 J***	< 1.0	< 1.0	< 1.0	< 0.98
Dibenzofuran	132-64-9	35	97	0.85 J	***64.2***	< 5.0	< 5.0	< 5.0	< 4.9
Diethyl phthalate	84-66-2	28,000	78,000	< 1.9	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Di-n-butyl phthalate	84-74-2	3,500	9,700	< 1.9	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Fluoranthene	206-44-0	260	260	0.25 J	22.9 J	< 1.0	< 1.0	< 1.0	< 0.98
Fluorene	86-73-7	1,400	1,900	0.96	75.2	0.28 J	< 1.0	< 1.0	< 0.98
Indeno(1,2,3-cd)pyrene	193-39-5	0.18	2.3	< 0.95	***1.4***	< 1.0	< 1.0	< 1.0	< 0.98
Naphthalene	91-20-3	100	100	15.5	***973 D***	< 1.0	< 1.0 UB	< 1.0	< 0.98
Phenanthrene	85-01-8	1,100	1,100	< 0.95	136 DJ	< 1.0	0.20 J	< 1.0	< 0.98
Phenol	108-95-2	2,000	2,000	< 1.9	80.2	< 2.0	< 2.0	< 2.0	< 2.0
Pyrene	129-00-0	130	130	< 0.95	15.5 J	< 1.0	< 1.0	< 1.0	< 0.98
Pesticides									
4,4-DDT	50-29-3	1.9	5.5	NA	NA	NA	NA	< 0.0067	< 0.0067
Dieldrin	60-57-1	0.041	0.17	NA	NA	NA	NA	< 0.0067	< 0.0067
trans-chlordane	5103-74-2	- -	- -	NA	NA	NA	NA	< 0.0067	< 0.0067
Polychlorinated Biphenyls									
Total PCBs	-	- -	- -	NA	NA	NA	NA	< 0.33	< 0.33

Location: Date Collected:	CAS Number	Groundwater Standards		PCMW-01			PCMW-02 / MW-106*		
		Used Aquifer TDS≤2,500 Res (Exceedances Bolded & Italicized)	Used Aquifer TDS≤2,500 Non-Res (Exceedances Shaded)	11/1/05	1/30/06	3/19/18	11/1/05	1/30/06	5/29/18
Volatile Organic Compounds									
1,2-Dichlorobenzene	95-50-1	600	600	NA	NA	< 1.0	NA	NA	< 1.0
Acetone	67-64-1	31,000	88,000	< 5.6	< 5.6	< 10 UJ	< 5.6 [< 5.6]	< 5.6	< 10
Benzene	71-43-2	5	5	< 0.14	< 0.14	< 0.50	< 0.14 [< 0.14]	< 0.14	< 0.50
Chlorobenzene	108-90-7	100	100	< 0.37	< 0.17	< 1.0	< 0.37 [< 0.37]	< 0.17	< 1.0
Chloroform	67-66-3	80	80	< 0.36	< 0.4	< 1.0	< 0.36 [< 0.36]	< 0.4	< 1.0
cis-1,2-Dichloroethene	156-59-2	70	70	< 0.3	< 0.34	< 1.0	< 0.3 [< 0.3]	< 0.34	< 1.0
Dichloromethane	75-09-2	5	5	< 0.49	< 1.2	< 2.0	< 0.49 [< 0.49]	2.7	< 2.0
Ethylbenzene	100-41-4	700	700	< 0.34	< 0.31	< 1.0	< 0.34 [< 0.34]	< 0.31	< 1.0
Isopropylbenzene	98-82-8	840	3,500	NA	NA	< 1.0	NA	NA	< 1.0
m&p-Xylenes	ARC-mpXyl	- -	- -	< 0.54	< 0.49	< 1.0	< 0.54 [< 0.54]	< 0.49	< 1.0
Methyl-tert-butyl ether	1634-04-4	20	20	NA	NA	< 1.0	NA	NA	< 1.0
o,p-Xylene	136777-61-2	- -	- -	< 0.14	< 0.21	NA	< 0.14 [< 0.14]	< 0.21	NA
o-Xylene	95-47-6	- -	- -	NA	NA	< 1.0	NA	NA	< 1.0
Styrene (Monomer)	100-42-5	100	100	< 0.22	< 0.21	< 1.0	< 0.22 [< 0.22]	< 0.21	< 1.0
Tetrachloroethene	127-18-4	5	5	< 0.28	< 0.46	< 1.0	< 0.28 [< 0.28]	< 0.46	< 1.0
Toluene	108-88-3	1,000	1,000	< 0.22	< 0.21	< 1.0	< 0.22 [< 0.22]	< 0.21	< 1.0
Total Xylenes	1330-20-7	10,000	10,000	NA	NA	< 1.0	NA	NA	< 1.0
Trichloroethene	79-01-6	5	5	< 0.37	< 0.76	< 1.0	< 0.37 [< 0.37]	< 0.76	< 1.0
Semi-Volatile Organic Compounds									
1,1-Biphenyl	92-52-4	0.84	3.5	NA	NA	< 1.1	NA	NA	< 1.0
2,4-Dimethylphenol	105-67-9	690	1,900	< 0.85	< 0.85	< 5.3	< 0.85 [< 0.85]	< 0.85	< 5.0
2,4-Dinitrotoluene	121-14-2	2.1	8.8	NA	NA	< 1.1	NA	NA	< 1.0
2-Methylnaphthalene	91-57-6	6.3	26	< 1.7	< 1.7	< 1.1	< 1.7 [< 1.7]	< 1.7	< 1.0
2-Methylphenol	95-48-7	1,700	4,900	< 3.7	< 3.7	< 2.1	< 3.7 [< 3.7]	< 3.7	< 2.0
3-Methylphenol, 4-Methylphenol	65794-96-9	- -	- -	NA	NA	< 2.1	NA	NA	< 2.0
4-Methylphenol	106-44-5	170	490	< 3.7	< 3.7	NA	< 3.7 [< 3.7]	< 3.7	NA
Acenaphthene	83-32-9	2,100	3,800	< 0.16	1	< 1.1	< 0.16 [< 0.16]	< 0.16	< 1.0
Acenaphthylene	208-96-8	2,100	5,800	< 0.15	< 0.15	< 1.1	< 0.15 [< 0.15]	< 0.15	< 1.0
Acetophenone	98-86-2	3,500	9,700	NA	NA	< 2.1	NA	NA	< 2.0
Anthracene	120-12-7	66	66	< 0.2	< 0.2	< 1.1	< 0.2 [< 0.2]	< 0.2	< 1.0
Benz(a)anthracene	56-55-3	0.3	3.9	< 0.14	< 0.14	< 1.1	< 0.14 [< 0.14]	< 0.14	< 1.0
Benzo(a)pyrene	50-32-8	0.2	0.2	< 0.17	< 0.17	< 1.1	< 0.17 [< 0.17]	< 0.17	< 1.0
Benzo(b)fluoranthene	205-99-2	0.18	1.2	< 0.28	< 0.28	< 1.1	< 0.28 [< 0.28]	< 0.28	< 1.0
Benzo(g,h,i)perylene	191-24-2	0.26	0.26	< 0.14	< 0.14	< 1.1	< 0.14 [< 0.14]	< 0.14	< 1.0
Benzo(k)fluoranthene	207-08-9	0.18	0.55	< 0.35	< 0.35	< 1.1	< 0.35 [< 0.35]	< 0.35	< 1.0
bis(2-Ethylhexyl)phthalate	117-81-7	6	6	< 0.63	< 0.63	< 2.1	< 0.63 [< 0.63]	< 0.63	< 2.0
Butyl benzyl phthalate	85-68-7	340	1,400	< 0.27	< 0.27	< 2.1	< 0.27 [< 0.27]	< 0.27	< 2.0
Carbazole	86-74-8	33	140	< 0.19	< 0.19	< 1.1	< 0.19 [< 0.19]	< 0.19	< 1.0
Chrysene	218-01-9	1.8	1.9	< 0.28	< 0.28	< 1.1	< 0.28 [< 0.28]	< 0.28	< 1.0
Dibenz(a,h)anthracene	53-70-3	0.052	0.6	< 0.18	< 0.18	< 1.1	< 0.18 [< 0.18]	< 0.18	< 1.0
Dibenzofuran	132-64-9	35	97	< 1.3	< 1.3	< 5.3	< 1.3 [< 1.3]	< 1.3	< 5.0
Diethyl phthalate	84-66-2	28,000	78,000	< 0.24	< 0.24	< 2.1	< 0.24 [< 0.24]	< 0.24	< 2.0
Di-n-butyl phthalate	84-74-2	3,500	9,700	< 0.2	< 0.2	< 2.1	< 0.2 [< 0.2]	< 0.2	< 2.0
Fluoranthene	206-44-0	260	260	< 0.16	< 0.16	< 1.1	< 0.16 [< 0.16]	< 0.16	< 1.0
Fluorene	86-73-7	1,400	1,900	< 0.24	< 0.24	< 1.1	< 0.24 [< 0.24]	< 0.24	< 1.0
Indeno(1,2,3-cd)pyrene	193-39-5	0.18	2.3	< 0.17	< 0.17	< 1.1	< 0.17 [< 0.17]	< 0.17	< 1.0
Naphthalene	91-20-3	100	100	< 0.097	< 0.097	< 1.1	< 0.097 [< 0.097]	< 0.097	< 1.0
Phenanthrene	85-01-8	1,100	1,100	< 0.22	1.7	< 1.1	< 0.22 [< 0.22]	< 0.22	< 1.0
Phenol	108-95-2	2,000	2,000	< 1.7	< 1.7	< 2.1	< 1.7 [< 1.7]	< 1.7	< 2.0
Pyrene	129-00-0	130	130	< 0.23	< 0.23	< 1.1	< 0.23 [< 0.23]	< 0.23	< 1.0
Pesticides									
4,4-DDT	50-29-3	1.9	5.5	< 0.05	< 0.05	< 0.0073	< 0.05 [< 0.05]	< 0.05	< 0.0067
Dieldrin	60-57-1	0.041	0.17	< 0.05	< 0.05	< 0.0073	< 0.05 [< 0.05]	< 0.05	< 0.0067
trans-chlordane	5103-74-2	- -	- -	NA	NA	< 0.0073	NA	NA	< 0.0067
Polychlorinated Biphenyls									
Total PCBs	-	- -	- -	< 0.25	< 0.25	< 0.36	< 0.25 [< 0.25]	< 0.25	< 0.33

Location: / Date Collected:	CAS Number	Groundwater Standards: Used Aquifer TDS≤2,500 Res (Exceedances Bolded & Italicized)	Groundwater Standards: Used Aquifer TDS≤2,500 Non-Res (Exceedances Shaded)	PCMW-03 11/2/05	PCMW-03 1/30/06	PCMW-04 11/2/05	PCMW-04 1/30/06	PCMW-04 3/19/18
Volatile Organic Compounds								
1,2-Dichlorobenzene	95-50-1	600	600	NA	NA	NA	NA	< 1.0
Acetone	67-64-1	31,000	88,000	< 5.6	< 5.6	< 5.6	< 5.6	< 10 UJ
Benzene	71-43-2	5	5	< 0.14	< 0.14	< 0.14	< 0.14	< 0.50
Chlorobenzene	108-90-7	100	100	< 0.37	< 0.17	< 0.37	< 0.17	< 1.0
Chloroform	67-66-3	80	80	< 0.36	< 0.4	< 0.36	< 0.4	< 1.0
cis-1,2-Dichloroethene	156-59-2	70	70	1.7	1.1	< 0.3	< 0.34	< 1.0
Dichloromethane	75-09-2	5	5	< 0.49	2.3	< 0.49	1.8	< 2.0
Ethylbenzene	100-41-4	700	700	< 0.34	< 0.31	< 0.34	< 0.31	< 1.0
Isopropylbenzene	98-82-8	840	3,500	NA	NA	NA	NA	< 1.0
m&p-Xylenes	ARC-mpXyl	- -	- -	< 0.54	< 0.49	< 0.54	< 0.49	< 1.0
Methyl-tert-butyl ether	1634-04-4	20	20	NA	NA	NA	NA	4.8
o,p-Xylene	136777-61-2	- -	- -	< 0.14	< 0.21	< 0.14	< 0.21	NA
o-Xylene	95-47-6	- -	- -	NA	NA	NA	NA	< 1.0
Styrene (Monomer)	100-42-5	100	100	< 0.22	< 0.21	< 0.22	< 0.21	< 1.0
Tetrachloroethene	127-18-4	5	5	< 0.28	< 0.46	< 0.28	< 0.46	< 1.0
Toluene	108-88-3	1,000	1,000	< 0.22	< 0.21	< 0.22	< 0.21	< 1.0
Total Xylenes	1330-20-7	10,000	10,000	NA	NA	NA	NA	< 1.0
Trichloroethene	79-01-6	5	5	< 0.37	< 0.76	< 0.37	< 0.76	< 1.0
Semi-Volatile Organic Compounds								
1,1-Biphenyl	92-52-4	0.84	3.5	NA	NA	NA	NA	< 1.1
2,4-Dimethylphenol	105-67-9	690	1,900	< 0.85	< 0.85	< 0.85	< 0.85	< 5.3
2,4-Dinitrotoluene	121-14-2	2.1	8.8	NA	NA	NA	NA	< 1.1
2-Methylnaphthalene	91-57-6	6.3	26	< 1.7	< 1.7	< 1.7	< 1.7	< 1.1
2-Methylphenol	95-48-7	1,700	4,900	< 3.7	< 3.7	< 3.7	< 3.7	< 2.1
3-Methylphenol, 4-Methylphenol	65794-96-9	- -	- -	NA	NA	NA	NA	< 2.1
4-Methylphenol	106-44-5	170	490	< 3.7	< 3.7	< 3.7	< 3.7	NA
Acenaphthene	83-32-9	2,100	3,800	< 0.16	< 0.16	< 0.16	< 0.16	< 1.1
Acenaphthylene	208-96-8	2,100	5,800	< 0.15	< 0.15	< 0.15	< 0.15	< 1.1
Acetophenone	98-86-2	3,500	9,700	NA	NA	NA	NA	< 2.1
Anthracene	120-12-7	66	66	< 0.2	< 0.2	< 0.2	< 0.2	< 1.1
Benz(a)anthracene	56-55-3	0.3	3.9	< 0.14	< 0.14	< 0.14	< 0.14	< 1.1
Benzo(a)pyrene	50-32-8	0.2	0.2	< 0.17	< 0.17	< 0.17	< 0.17	< 1.1
Benzo(b)fluoranthene	205-99-2	0.18	1.2	< 0.28	< 0.28	< 0.28	< 0.28	< 1.1
Benzo(g,h,i)perylene	191-24-2	0.26	0.26	< 0.14	< 0.14	< 0.14	< 0.14	< 1.1
Benzo(k)fluoranthene	207-08-9	0.18	0.55	< 0.35	< 0.35	< 0.35	< 0.35	< 1.1
bis(2-Ethylhexyl)phthalate	117-81-7	6	6	< 0.63	< 0.63	< 0.63	< 0.63	< 2.1
Butyl benzyl phthalate	85-68-7	340	1,400	< 0.27	< 0.27	< 0.27	< 0.27	< 2.1
Carbazole	86-74-8	33	140	< 0.19	< 0.19	< 0.19	< 0.19	< 1.1
Chrysene	218-01-9	1.8	1.9	< 0.28	< 0.28	< 0.28	< 0.28	< 1.1
Dibenz(a,h)anthracene	53-70-3	0.052	0.6	< 0.18	< 0.18	< 0.18	< 0.18	< 1.1
Dibenzofuran	132-64-9	35	97	< 1.3	< 1.3	< 1.3	< 1.3	< 5.3
Diethyl phthalate	84-66-2	28,000	78,000	< 0.24	< 0.24	< 0.24	< 0.24	< 2.1
Di-n-butyl phthalate	84-74-2	3,500	9,700	< 0.2	< 0.2	< 0.2	< 0.2	< 2.1
Fluoranthene	206-44-0	260	260	< 0.16	< 0.16	< 0.16	< 0.16	< 1.1
Fluorene	86-73-7	1,400	1,900	< 0.24	< 0.24	< 0.24	< 0.24	< 1.1
Indeno(1,2,3-cd)pyrene	193-39-5	0.18	2.3	< 0.17	< 0.17	< 0.17	< 0.17	< 1.1
Naphthalene	91-20-3	100	100	< 0.097	< 0.097	< 0.097	< 0.097	< 1.1
Phenanthrene	85-01-8	1,100	1,100	< 0.22	< 0.22	< 0.22	< 0.22	< 1.1
Phenol	108-95-2	2,000	2,000	< 1.7	< 1.7	< 1.7	< 1.7	< 2.1
Pyrene	129-00-0	130	130	< 0.23	< 0.23	< 0.23	< 0.23	< 1.1
Pesticides								
4,4-DDT	50-29-3	1.9	5.5	< 0.05	< 0.05	< 0.05	0.084	< 0.0067
Dieldrin	60-57-1	0.041	0.17	< 0.05	< 0.05	< 0.05	< 0.05	< 0.0067
trans-chlordane	5103-74-2	- -	- -	NA	NA	NA	NA	0.0045 J
Polychlorinated Biphenyls								
Total PCBs	-	- -	- -	< 0.25	< 0.25	< 0.25	< 0.25	< 0.33

Location: / Date Collected:	CAS Number	Groundwater Standards		PCMW-05			PCMW-06		
		Used Aquifer TDS≤2,500 Res (Exceedances Bolded & Italicized)	Used Aquifer TDS≤2,500 Non-Res (Exceedances Shaded)	11/2/05	1/31/06	3/23/18	11/3/05	1/31/06	3/23/18
Volatile Organic Compounds									
1,2-Dichlorobenzene	95-50-1	600	600	NA	NA	< 1.0 [< 1.0]	NA	NA	< 1.0
Acetone	67-64-1	31,000	88,000	< 5.6	< 5.6	< 10 [< 10]	< 5.6	< 5.6	< 10
Benzene	71-43-2	5	5	< 0.14	< 0.14	< 0.50 [< 0.50]	< 0.14	< 0.14	< 0.50
Chlorobenzene	108-90-7	100	100	< 0.37	< 0.17	< 1.0 [< 1.0]	< 0.37	< 0.17	< 1.0
Chloroform	67-66-3	80	80	< 0.36	< 0.4	< 1.0 [< 1.0]	< 0.36	< 0.4	< 1.0
cis-1,2-Dichloroethene	156-59-2	70	70	< 0.3	< 0.34	< 1.0 [< 1.0]	< 0.3	< 0.34	< 1.0
Dichloromethane	75-09-2	5	5	< 0.49	1.6	< 2.0 [< 2.0]	< 0.49	1.3	< 2.0
Ethylbenzene	100-41-4	700	700	< 0.34	< 0.31	< 1.0 [< 1.0]	< 0.34	< 0.31	< 1.0
Isopropylbenzene	98-82-8	840	3,500	NA	NA	< 1.0 [< 1.0]	NA	NA	< 1.0
m&p-Xylenes	ARC-mpXyl	- -	- -	< 0.54	< 0.49	< 1.0 [< 1.0]	< 0.54	< 0.49	< 1.0
Methyl-tert-butyl ether	1634-04-4	20	20	NA	NA	< 1.0 [< 1.0]	NA	NA	< 1.0
o,p-Xylene	136777-61-2	- -	- -	< 0.14	< 0.21	NA	< 0.14	< 0.21	NA
o-Xylene	95-47-6	- -	- -	NA	NA	< 1.0 [< 1.0]	NA	NA	< 1.0
Styrene (Monomer)	100-42-5	100	100	< 0.22	< 0.21	< 1.0 [< 1.0]	< 0.22	< 0.21	< 1.0
Tetrachloroethene	127-18-4	5	5	< 0.28	< 0.46	< 1.0 [< 1.0]	< 0.28	< 0.46	< 1.0
Toluene	108-88-3	1,000	1,000	< 0.22	< 0.21	< 1.0 [< 1.0]	< 0.22	< 0.21	< 1.0
Total Xylenes	1330-20-7	10,000	10,000	NA	NA	< 1.0 [< 1.0]	NA	NA	< 1.0
Trichloroethene	79-01-6	5	5	< 0.37	< 0.76	< 1.0 [< 1.0]	< 0.37	< 0.76	< 1.0
Semi-Volatile Organic Compounds									
1,1-Biphenyl	92-52-4	0.84	3.5	NA	NA	< 1.0 [< 1.1]	NA	NA	< 1.0
2,4-Dimethylphenol	105-67-9	690	1,900	< 0.85	< 0.85	< 5.2 [< 5.4]	< 0.85	< 0.85	< 5.0
2,4-Dinitrotoluene	121-14-2	2.1	8.8	NA	NA	< 1.0 [< 1.1]	NA	NA	< 1.0
2-Methylnaphthalene	91-57-6	6.3	26	***34***	***8.1***	< 1.0 [< 1.1]	< 1.7	< 1.7	< 1.0
2-Methylphenol	95-48-7	1,700	4,900	< 3.7	< 3.7	< 2.1 [< 2.2]	4.8	< 3.7	< 2.0
3-Methylphenol, 4-Methylphenol	65794-96-9	- -	- -	NA	NA	4.3 [4.6]	NA	NA	< 2.0
4-Methylphenol	106-44-5	170	490	< 3.7	< 3.7	NA	3.3 J	< 3.7	NA
Acenaphthene	83-32-9	2,100	3,800	3.8	1.3	< 1.0 [< 1.1]	< 0.16	< 0.16	< 1.0
Acenaphthylene	208-96-8	2,100	5,800	< 0.15	< 0.15	< 1.0 [< 1.1]	< 0.15	< 0.15	< 1.0
Acetophenone	98-86-2	3,500	9,700	NA	NA	< 2.1 [< 2.2]	NA	NA	< 2.0
Anthracene	120-12-7	66	66	< 0.2	< 0.2	< 1.0 [< 1.1]	< 0.2	< 0.2	< 1.0
Benz(a)anthracene	56-55-3	0.3	3.9	< 0.14	< 0.14	< 1.0 [< 1.1]	< 0.14	< 0.14	< 1.0
Benzo(a)pyrene	50-32-8	0.2	0.2	< 0.17	< 0.17	< 1.0 [< 1.1]	< 0.17	< 0.17	< 1.0
Benzo(b)fluoranthene	205-99-2	0.18	1.2	< 0.28	< 0.28	< 1.0 [< 1.1]	< 0.28	< 0.28	< 1.0
Benzo(g,h,i)perylene	191-24-2	0.26	0.26	< 0.14	< 0.14	< 1.0 [< 1.1]	< 0.14	< 0.14	< 1.0
Benzo(k)fluoranthene	207-08-9	0.18	0.55	< 0.35	< 0.35	< 1.0 [< 1.1]	< 0.35	< 0.35	< 1.0
bis(2-Ethylhexyl)phthalate	117-81-7	6	6	< 0.63	< 0.63	< 2.1 [< 2.2]	< 0.63	< 0.63	< 2.0
Butyl benzyl phthalate	85-68-7	340	1,400	< 0.27	< 0.27	< 2.1 [< 2.2]	< 0.27	< 0.27	< 2.0
Carbazole	86-74-8	33	140	< 0.19	< 0.19	< 1.0 [< 1.1]	< 0.19	< 0.19	< 1.0
Chrysene	218-01-9	1.8	1.9	< 0.28	< 0.28	< 1.0 [< 1.1]	< 0.28	< 0.28	< 1.0
Dibenz(a,h)anthracene	53-70-3	0.052	0.6	< 0.18	< 0.18	< 1.0 [< 1.1]	< 0.18	< 0.18	< 1.0
Dibenzofuran	132-64-9	35	97	2.4	< 1.3	< 5.2 [< 5.4]	< 1.3	< 1.3	< 5.0
Diethyl phthalate	84-66-2	28,000	78,000	< 0.24	< 0.24	< 2.1 [< 2.2]	< 0.24	< 0.24	< 2.0
Di-n-butyl phthalate	84-74-2	3,500	9,700	< 0.2	< 0.2	< 2.1 [< 2.2]	< 0.2	< 0.2	< 2.0
Fluoranthene	206-44-0	260	260	< 0.16	< 0.16	< 1.0 [< 1.1]	< 0.16	< 0.16	< 1.0
Fluorene	86-73-7	1,400	1,900	2.9	1.5	< 1.0 [< 1.1]	< 0.24	< 0.24	< 1.0
Indeno(1,2,3-cd)pyrene	193-39-5	0.18	2.3	< 0.17	< 0.17	< 1.0 [< 1.1]	< 0.17	< 0.17	< 1.0
Naphthalene	91-20-3	100	100	< 0.097	< 0.097	< 1.0 [< 1.1]	4	< 0.097	< 1.0
Phenanthrene	85-01-8	1,100	1,100	< 0.22	< 0.22	< 1.0 [< 1.1]	< 0.22	< 0.22	< 1.0
Phenol	108-95-2	2,000	2,000	< 1.7	< 1.7	< 2.1 [< 2.2]	2	< 1.7	< 2.0
Pyrene	129-00-0	130	130	< 0.23	< 0.23	< 1.0 [< 1.1]	< 0.23	< 0.23	< 1.0
Pesticides									
4,4-DDT	50-29-3	1.9	5.5	< 0.05	0.089	< 0.0067 [< 0.0067]	0.14	0.066	< 0.0067
Dieldrin	60-57-1	0.041	0.17	< 0.05	< 0.05	< 0.0067 [< 0.0067]	< 0.05	< 0.05	< 0.0067
trans-chlordane	5103-74-2	- -	- -	NA	NA	< 0.0067 [< 0.0067]	NA	NA	< 0.0067
Polychlorinated Biphenyls									
Total PCBs	-	- -	- -	< 0.25	< 0.25	< 0.33 [< 0.33]	< 0.25	< 0.25	< 0.33

Location: / Date Collected:	CAS Number	Groundwater Standards: Used Aquifer TDS≤2,500 Res (Exceedances Bolded & Italicized)	Groundwater Standards: Used Aquifer TDS≤2,500 Non-Res (Exceedances Shaded)	PCMW-07		PCMW-08S		PCMW-08D		
				11/3/05	1/31/06	11/3/05	3/22/18	11/4/05	1/31/06	3/22/18
Volatile Organic Compounds										
1,2-Dichlorobenzene	95-50-1	600	600	NA	NA	NA	< 1.0	NA	NA	< 1.0
Acetone	67-64-1	31,000	88,000	< 5.6	< 5.6	< 5.6	< 10 UJ	< 5.6	< 5.6	< 10 UJ
Benzene	71-43-2	5	5	< 0.14	< 0.14	< 0.14	< 0.50	< 0.14	< 0.14	< 0.50
Chlorobenzene	108-90-7	100	100	< 0.37	< 0.37	< 0.37	< 1.0	< 0.37	< 0.37	< 1.0
Chloroform	67-66-3	80	80	< 0.36	< 0.36	< 0.36	< 1.0	< 0.36	< 0.36	< 1.0
cis-1,2-Dichloroethene	156-59-2	70	70	< 0.3	< 0.3	< 0.3	< 1.0	< 0.3	< 0.3	< 1.0
Dichloromethane	75-09-2	5	5	< 0.49	< 0.49	< 0.49	< 2.0	< 0.49	< 0.49	< 2.0
Ethylbenzene	100-41-4	700	700	< 0.34	< 0.34	< 0.34	< 1.0	< 0.34	< 0.34	< 1.0
Isopropylbenzene	98-82-8	840	3,500	NA	NA	NA	< 1.0	NA	NA	< 1.0
m&p-Xylenes	ARC-mpXyl	- -	- -	< 0.54	< 0.54	< 0.54	< 1.0	< 0.54	< 0.54	< 1.0
Methyl-tert-butyl ether	1634-04-4	20	20	NA	NA	NA	< 1.0	NA	NA	< 1.0
o,p-Xylene	136777-61-2	- -	- -	< 0.14	< 0.14	< 0.14	NA	< 0.14	< 0.14	NA
o-Xylene	95-47-6	- -	- -	NA	NA	NA	< 1.0	NA	NA	< 1.0
Styrene (Monomer)	100-42-5	100	100	< 0.22	< 0.22	< 0.22	< 1.0	< 0.22	< 0.22	< 1.0
Tetrachloroethene	127-18-4	5	5	< 0.28	< 0.28	< 0.28	< 1.0	< 0.28	< 0.28	< 1.0
Toluene	108-88-3	1,000	1,000	< 0.22	< 0.22	< 0.22	< 1.0	< 0.22	< 0.22	< 1.0
Total Xylenes	1330-20-7	10,000	10,000	NA	NA	NA	< 1.0	NA	NA	< 1.0
Trichloroethene	79-01-6	5	5	< 0.37	< 0.37	< 0.37	< 1.0	< 0.37	< 0.37	< 1.0
Semi-Volatile Organic Compounds										
1,1-Biphenyl	92-52-4	0.84	3.5	NA	NA	NA	< 1.0	NA	NA	< 1.0
2,4-Dimethylphenol	105-67-9	690	1,900	< 0.85	< 0.85	< 0.85	< 5.0	< 0.85	< 0.85	< 5.1
2,4-Dinitrotoluene	121-14-2	2.1	8.8	NA	NA	NA	< 1.0	NA	NA	< 1.0
2-Methylnaphthalene	91-57-6	6.3	26	< 1.7	< 1.7	< 1.7	< 1.0	< 1.7	< 1.7	< 1.0
2-Methylphenol	95-48-7	1,700	4,900	< 3.7	< 3.7	< 3.7	< 2.0	< 3.7	< 3.7	< 2.0
3-Methylphenol, 4-Methylphenol	65794-96-9	- -	- -	NA	NA	NA	< 2.0	NA	NA	< 2.0
4-Methylphenol	106-44-5	170	490	< 3.7	< 3.7	< 3.7	NA	< 3.7	< 3.7	NA
Acenaphthene	83-32-9	2,100	3,800	< 0.16	< 0.16	< 0.16	< 1.0	1.8	1.6	3.9
Acenaphthylene	208-96-8	2,100	5,800	< 0.15	< 0.15	< 0.15	< 1.0	< 0.15	< 0.15	< 1.0
Acetophenone	98-86-2	3,500	9,700	NA	NA	NA	< 2.0	NA	NA	< 2.0
Anthracene	120-12-7	66	66	< 0.2	< 0.2	< 0.2	< 1.0	< 0.2	< 0.2	< 1.0
Benz(a)anthracene	56-55-3	0.3	3.9	< 0.14	< 0.14	< 0.14	< 1.0	< 0.14	< 0.14	< 1.0
Benzo(a)pyrene	50-32-8	0.2	0.2	< 0.17	< 0.17	< 0.17	< 1.0	< 0.17	< 0.17	< 1.0
Benzo(b)fluoranthene	205-99-2	0.18	1.2	< 0.28	< 0.28	< 0.28	< 1.0	< 0.28	< 0.28	< 1.0
Benzo(g,h,i)perylene	191-24-2	0.26	0.26	< 0.14	< 0.14	< 0.14	< 1.0	< 0.14	< 0.14	< 1.0
Benzo(k)fluoranthene	207-08-9	0.18	0.55	< 0.35	< 0.35	< 0.35	< 1.0	< 0.35	< 0.35	< 1.0
bis(2-Ethylhexyl)phthalate	117-81-7	6	6	< 0.63	< 0.63	< 0.63	< 2.0	< 0.63	< 0.63	< 2.0
Butyl benzyl phthalate	85-68-7	340	1,400	< 0.27	< 0.27	< 0.27	< 2.0	< 0.27	< 0.27	< 2.0
Carbazole	86-74-8	33	140	< 0.19	< 0.19	< 0.19	< 1.0	< 0.19	< 0.19	< 1.0
Chrysene	218-01-9	1.8	1.9	< 0.28	< 0.28	< 0.28	< 1.0	< 0.28	< 0.28	< 1.0
Dibenz(a,h)anthracene	53-70-3	0.052	0.6	< 0.18	< 0.18	< 0.18	< 1.0	< 0.18	< 0.18	< 1.0
Dibenzofuran	132-64-9	35	97	< 1.3	< 1.3	< 1.3	< 5.0	< 1.3	< 1.3	< 5.1
Diethyl phthalate	84-66-2	28,000	78,000	< 0.24	< 0.24	< 0.24	< 2.0	< 0.24	< 0.24	1.0 J
Di-n-butyl phthalate	84-74-2	3,500	9,700	< 0.2	< 0.2	< 0.2	< 2.0	< 0.2	< 0.2	< 2.0
Fluoranthene	206-44-0	260	260	< 0.16	< 0.16	< 0.16	< 1.0	< 0.16	< 0.16	< 1.0
Fluorene	86-73-7	1,400	1,900	< 0.24	< 0.24	< 0.24	< 1.0	< 0.24	< 0.24	< 1.0
Indeno(1,2,3-cd)pyrene	193-39-5	0.18	2.3	< 0.17	< 0.17	< 0.17	< 1.0	< 0.17	< 0.17	< 1.0
Naphthalene	91-20-3	100	100	< 0.097	< 0.097	< 0.097	< 1.0	< 0.097	< 0.097	< 1.0
Phenanthrene	85-01-8	1,100	1,100	< 0.22	< 0.22	< 0.22	< 1.0	< 0.22	< 0.22	< 1.0
Phenol	108-95-2	2,000	2,000	< 1.7	< 1.7	< 1.7	< 2.0	< 1.7	< 1.7	< 2.0
Pyrene	129-00-0	130	130	< 0.23	< 0.23	< 0.23	< 1.0	< 0.23	< 0.23	< 1.0
Pesticides										
4,4-DDT	50-29-3	1.9	5.5	< 0.05	< 0.05	< 0.05	< 0.0067	< 0.05	< 0.05	< 0.0069
Dieldrin	60-57-1	0.041	0.17	< 0.05	< 0.05	< 0.05	< 0.0067	< 0.05	< 0.05	< 0.0069
trans-chlordane	5103-74-2	- -	- -	NA	NA	NA	< 0.0067	NA	NA	< 0.0069
Polychlorinated Biphenyls										
Total PCBs	-	- -	- -	< 0.25	< 0.25	< 0.25	< 0.33	< 0.25	< 0.25	< 0.34

Location: / Date Collected:	CAS Number	Groundwater Standards: Used Aquifer TDS≤2,500 Res (Exceedances Bolded & Italicized)	Groundwater Standards: Used Aquifer TDS≤2,500 Non-Res (Exceedances Shaded)	PCMW-09S 11/4/05	PCMW-09S 1/31/06	PCMW-09S 3/19/18	PCMW-09D 11/7/05	PCMW-09D 1/31/06
Volatile Organic Compounds								
1,2-Dichlorobenzene	95-50-1	600	600	NA	NA	< 1.0	NA	NA
Acetone	67-64-1	31,000	88,000	< 5.6	< 5.6	< 10 UJ	< 4	< 5.6
Benzene	71-43-2	5	5	< 0.14	< 0.14	< 0.50	< 0.43	< 0.14
Chlorobenzene	108-90-7	100	100	< 0.37	< 0.37	< 1.0	< 0.2	< 0.37
Chloroform	67-66-3	80	80	< 0.36	< 0.36	< 1.0	< 0.38	< 0.36
cis-1,2-Dichloroethene	156-59-2	70	70	< 0.3	< 0.3	< 1.0	< 0.5	< 0.3
Dichloromethane	75-09-2	5	5	< 0.49	< 0.49	< 2.0	< 0.87	< 0.49
Ethylbenzene	100-41-4	700	700	< 0.34	< 0.34	< 1.0	< 0.49	< 0.34
Isopropylbenzene	98-82-8	840	3,500	NA	NA	< 1.0	NA	NA
m&p-Xylenes	ARC-mpXyl	- -	- -	< 0.54	< 0.54	< 1.0	< 0.86	< 0.54
Methyl-tert-butyl ether	1634-04-4	20	20	NA	NA	< 1.0	NA	NA
o,p-Xylene	136777-61-2	- -	- -	< 0.14	< 0.14	NA	< 0.55	< 0.14
o-Xylene	95-47-6	- -	- -	NA	NA	< 1.0	NA	NA
Styrene (Monomer)	100-42-5	100	100	< 0.22	< 0.22	< 1.0	< 0.29	< 0.22
Tetrachloroethene	127-18-4	5	5	< 0.28	< 0.28	< 1.0	< 0.31	< 0.28
Toluene	108-88-3	1,000	1,000	< 0.22	< 0.22	< 1.0	< 0.31	< 0.22
Total Xylenes	1330-20-7	10,000	10,000	NA	NA	< 1.0	NA	NA
Trichloroethene	79-01-6	5	5	< 0.37	< 0.37	< 1.0	< 0.36	< 0.37
Semi-Volatile Organic Compounds								
1,1-Biphenyl	92-52-4	0.84	3.5	NA	NA	< 1.1	NA	NA
2,4-Dimethylphenol	105-67-9	690	1,900	< 0.85	< 0.85	< 5.3	< 0.85	< 0.85
2,4-Dinitrotoluene	121-14-2	2.1	8.8	NA	NA	< 1.1	NA	NA
2-Methylnaphthalene	91-57-6	6.3	26	< 1.7	< 1.7	< 1.1	3.9	< 1.7
2-Methylphenol	95-48-7	1,700	4,900	< 3.7	< 3.7	< 2.1	< 3.7	< 3.7
3-Methylphenol, 4-Methylphenol	65794-96-9	- -	- -	NA	NA	< 2.1	NA	NA
4-Methylphenol	106-44-5	170	490	< 3.7	< 3.7	NA	< 3.7	< 3.7
Acenaphthene	83-32-9	2,100	3,800	< 0.16	< 0.16	< 1.1	5.2	3.6
Acenaphthylene	208-96-8	2,100	5,800	< 0.15	< 0.15	< 1.1	< 0.15	< 0.15
Acetophenone	98-86-2	3,500	9,700	NA	NA	< 2.1	NA	NA
Anthracene	120-12-7	66	66	< 0.2	< 0.2	< 1.1	< 0.2	< 0.2
Benz(a)anthracene	56-55-3	0.3	3.9	< 0.14	< 0.14	< 1.1	< 0.14	***2***
Benzo(a)pyrene	50-32-8	0.2	0.2	< 0.17	< 0.17	< 1.1	< 0.17	***1.7***
Benzo(b)fluoranthene	205-99-2	0.18	1.2	< 0.28	< 0.28	< 1.1	< 0.28	***2.5***
Benzo(g,h,i)perylene	191-24-2	0.26	0.26	< 0.14	< 0.14	< 1.1	< 0.14	< 0.14
Benzo(k)fluoranthene	207-08-9	0.18	0.55	< 0.35	< 0.35	< 1.1	< 0.35	< 0.35
bis(2-Ethylhexyl)phthalate	117-81-7	6	6	< 0.63	1.3	< 2.1	< 0.63	2.7
Butyl benzyl phthalate	85-68-7	340	1,400	< 0.27	< 0.27	< 2.1	< 0.27	< 0.27
Carbazole	86-74-8	33	140	< 0.19	< 0.19	< 1.1	< 0.19	< 0.19
Chrysene	218-01-9	1.8	1.9	< 0.28	< 0.28	< 1.1	< 0.28	***2***
Dibenz(a,h)anthracene	53-70-3	0.052	0.6	< 0.18	< 0.18	< 1.1	< 0.18	< 0.18
Dibenzofuran	132-64-9	35	97	< 1.3	< 1.3	< 5.3	< 1.3	< 1.3
Diethyl phthalate	84-66-2	28,000	78,000	< 0.24	< 0.24	< 2.1	< 0.24	< 0.24
Di-n-butyl phthalate	84-74-2	3,500	9,700	< 0.2	< 0.2	< 2.1	< 0.2	< 0.2
Fluoranthene	206-44-0	260	260	< 0.16	< 0.16	< 1.1	< 0.16	4.5
Fluorene	86-73-7	1,400	1,900	< 0.24	< 0.24	< 1.1	1.4	1.3
Indeno(1,2,3-cd)pyrene	193-39-5	0.18	2.3	< 0.17	< 0.17	< 1.1	< 0.17	< 0.17
Naphthalene	91-20-3	100	100	< 0.097	1.2	< 1.1	17	1.2
Phenanthrene	85-01-8	1,100	1,100	< 0.22	< 0.22	< 1.1	2	2.9
Phenol	108-95-2	2,000	2,000	< 1.7	< 1.7	< 2.1	< 1.7	< 1.7
Pyrene	129-00-0	130	130	< 0.23	< 0.23	< 1.1	< 0.23	3.5
Pesticides								
4,4-DDT	50-29-3	1.9	5.5	< 0.05	< 0.05	< 0.0071	< 0.05	< 0.05
Dieldrin	60-57-1	0.041	0.17	< 0.05	< 0.05	< 0.0071	< 0.05	< 0.05
trans-chlordane	5103-74-2	- -	- -	NA	NA	< 0.0071	NA	NA
Polychlorinated Biphenyls								
Total PCBs	-	- -	- -	< 0.25	< 0.25	< 0.36	< 0.25	< 0.25

Location: / Date Collected:	CAS Number	Groundwater Standards: Used Aquifer TDS≤2,500 Res (Exceedances Bolded & Italicized)	Groundwater Standards: Used Aquifer TDS≤2,500 Non-Res (Exceedances Shaded)	PCMW-10S 11/7/05	PCMW-10S 2/1/06	PCMW-10S 3/22/18	PCMW-10D 11/7/05	PCMW-10D 2/1/06	PCMW-10D 3/22/18
Volatile Organic Compounds									
1,2-Dichlorobenzene	95-50-1	600	600	NA	NA	< 1.0	NA	NA	< 1.0
Acetone	67-64-1	31,000	88,000	< 4	< 5.6	< 10	< 4	< 5.6	< 10 UJ
Benzene	71-43-2	5	5	< 0.43	***11***	< 0.50	< 0.43	< 0.14	< 0.50
Chlorobenzene	108-90-7	100	100	< 0.2	< 0.37	< 1.0	< 0.2	< 0.37	0.28 J
Chloroform	67-66-3	80	80	< 0.38	< 0.36	< 1.0	< 0.38	< 0.36	< 1.0
cis-1,2-Dichloroethene	156-59-2	70	70	< 0.5	< 0.3	< 1.0	< 0.5	< 0.3	< 1.0
Dichloromethane	75-09-2	5	5	< 0.87	< 0.49	< 2.0	< 0.87	1	< 2.0
Ethylbenzene	100-41-4	700	700	< 0.49	< 0.34	< 1.0	< 0.49	< 0.34	< 1.0
Isopropylbenzene	98-82-8	840	3,500	NA	NA	< 1.0	NA	NA	< 1.0
m&p-Xylenes	ARC-mpXyl	- -	- -	< 0.86	< 0.54	< 1.0	< 0.86	< 0.54	< 1.0
Methyl-tert-butyl ether	1634-04-4	20	20	NA	NA	< 1.0	NA	NA	0.80 J
o,p-Xylene	136777-61-2	- -	- -	< 0.55	< 0.14	NA	< 0.55	< 0.14	NA
o-Xylene	95-47-6	- -	- -	NA	NA	< 1.0	NA	NA	< 1.0
Styrene (Monomer)	100-42-5	100	100	< 0.29	< 0.22	< 1.0	< 0.29	< 0.22	< 1.0
Tetrachloroethene	127-18-4	5	5	< 0.31	< 0.28	< 1.0	< 0.31	< 0.28	< 1.0
Toluene	108-88-3	1,000	1,000	< 0.31	< 0.22	< 1.0	< 0.31	< 0.22	< 1.0
Total Xylenes	1330-20-7	10,000	10,000	NA	NA	< 1.0	NA	NA	< 1.0
Trichloroethene	79-01-6	5	5	< 0.36	< 0.37	< 1.0	< 0.36	< 0.37	< 1.0
Semi-Volatile Organic Compounds									
1,1-Biphenyl	92-52-4	0.84	3.5	NA	NA	< 1.1	NA	NA	< 1.0
2,4-Dimethylphenol	105-67-9	690	1,900	< 0.85	7	< 5.6	< 0.85	< 0.85	< 5.0
2,4-Dinitrotoluene	121-14-2	2.1	8.8	NA	NA	< 1.1	NA	NA	< 1.0
2-Methylnaphthalene	91-57-6	6.3	26	< 1.7	< 1.7	< 1.1	< 1.7	< 1.7	< 1.0
2-Methylphenol	95-48-7	1,700	4,900	< 3.7	< 3.7	< 2.2	< 3.7	< 3.7	< 2.0
3-Methylphenol, 4-Methylphenol	65794-96-9	- -	- -	NA	NA	< 2.2	NA	NA	< 2.0
4-Methylphenol	106-44-5	170	490	< 3.7	< 3.7	NA	< 3.7	< 3.7	NA
Acenaphthene	83-32-9	2,100	3,800	9.9	9.7	< 1.1	1.1	< 0.16	< 1.0
Acenaphthylene	208-96-8	2,100	5,800	9.5	9.1	< 1.1	< 0.15	< 0.15	< 1.0
Acetophenone	98-86-2	3,500	9,700	NA	NA	< 2.2	NA	NA	< 2.0
Anthracene	120-12-7	66	66	< 0.2	< 0.2	< 1.1	< 0.2	< 0.2	< 1.0
Benz(a)anthracene	56-55-3	0.3	3.9	< 0.14	< 0.14	< 1.1	< 0.14	< 0.14	< 1.0
Benzo(a)pyrene	50-32-8	0.2	0.2	< 0.17	< 0.17	< 1.1	< 0.17	< 0.17	< 1.0
Benzo(b)fluoranthene	205-99-2	0.18	1.2	< 0.28	< 0.28	< 1.1	< 0.28	< 0.28	< 1.0
Benzo(g,h,i)perylene	191-24-2	0.26	0.26	< 0.14	< 0.14	< 1.1	< 0.14	< 0.14	< 1.0
Benzo(k)fluoranthene	207-08-9	0.18	0.55	< 0.35	< 0.35	< 1.1	< 0.35	< 0.35	< 1.0
bis(2-Ethylhexyl)phthalate	117-81-7	6	6	< 0.63	< 0.63	< 2.2	< 0.63	< 0.63	< 2.0
Butyl benzyl phthalate	85-68-7	340	1,400	< 0.27	< 0.27	< 2.2	< 0.27	< 0.27	< 2.0
Carbazole	86-74-8	33	140	7.2	17	< 1.1	< 0.19	< 0.19	< 1.0
Chrysene	218-01-9	1.8	1.9	< 0.28	< 0.28	< 1.1	< 0.28	< 0.28	< 1.0
Dibenz(a,h)anthracene	53-70-3	0.052	0.6	< 0.18	< 0.18	< 1.1	< 0.18	< 0.18	< 1.0
Dibenzofuran	132-64-9	35	97	8.4	9.6	< 5.6	< 1.3	< 1.3	< 5.0
Diethyl phthalate	84-66-2	28,000	78,000	< 0.24	< 0.24	< 2.2	< 0.24	< 0.24	< 2.0
Di-n-butyl phthalate	84-74-2	3,500	9,700	< 0.2	< 0.2	< 2.2	< 0.2	< 0.2	< 2.0
Fluoranthene	206-44-0	260	260	< 0.16	< 0.16	< 1.1	< 0.16	< 0.16	< 1.0
Fluorene	86-73-7	1,400	1,900	9.9	11	< 1.1	< 0.24	< 0.24	< 1.0
Indeno(1,2,3-cd)pyrene	193-39-5	0.18	2.3	< 0.17	< 0.17	< 1.1	< 0.17	< 0.17	< 1.0
Naphthalene	91-20-3	100	100	< 0.097	< 0.097	< 1.1	< 0.097	< 0.097	< 1.0
Phenanthrene	85-01-8	1,100	1,100	1.4	< 0.22	< 1.1	< 0.22	< 0.22	< 1.0
Phenol	108-95-2	2,000	2,000	< 1.7	< 1.7	< 2.2	< 1.7	< 1.7	< 2.0
Pyrene	129-00-0	130	130	< 0.23	< 0.23	< 1.1	< 0.23	< 0.23	< 1.0
Pesticides									
4,4-DDT	50-29-3	1.9	5.5	< 0.05	< 0.05	< 0.0067	< 0.05	< 0.05	< 0.0067
Dieldrin	60-57-1	0.041	0.17	< 0.05	< 0.05	< 0.0067	< 0.05	< 0.05	< 0.0067
trans-chlordane	5103-74-2	- -	- -	NA	NA	< 0.0067	NA	NA	< 0.0067
Polychlorinated Biphenyls									
Total PCBs	-	- -	- -	< 0.25	< 0.25	< 0.33	< 0.25	< 0.25	< 0.33

Location: / Date Collected:	CAS Number	Groundwater Standards		PCMW-11S			PCMW-11D		PCMW-211
		Used Aquifer TDS≤2,500 Res (Exceedances Bolded & Italicized)	Used Aquifer TDS≤2,500 Non-Res (Exceedances Shaded)	11/7/05	2/2/06	3/23/18	11/8/05	2/2/06	2/2/06
Volatile Organic Compounds									
1,2-Dichlorobenzene	95-50-1	600	600	NA	NA	< 1.0	NA	NA	NA
Acetone	67-64-1	31,000	88,000	< 4	< 5.6	< 10	< 4	< 5.6	< 5.6
Benzene	71-43-2	5	5	< 0.43	< 0.14	0.23 J	< 0.43	< 0.14	< 0.14
Chlorobenzene	108-90-7	100	100	< 0.2	< 0.37	< 1.0	< 0.2	< 0.37	< 0.37
Chloroform	67-66-3	80	80	< 0.38	< 0.36	< 1.0	< 0.38	< 0.36	< 0.36
cis-1,2-Dichloroethene	156-59-2	70	70	< 0.5	< 0.3	< 1.0	< 0.5	< 0.3	< 0.3
Dichloromethane	75-09-2	5	5	< 0.87	< 0.49	< 2.0	< 0.87	< 0.49	< 0.49
Ethylbenzene	100-41-4	700	700	< 0.49	< 0.34	< 1.0	< 0.49	< 0.34	< 0.34
Isopropylbenzene	98-82-8	840	3,500	NA	NA	< 1.0	NA	NA	NA
m&p-Xylenes	ARC-mpXyl	- -	- -	< 0.86	< 0.54	< 1.0	< 0.86	< 0.54	< 0.54
Methyl-tert-butyl ether	1634-04-4	20	20	NA	NA	< 1.0	NA	NA	NA
o,p-Xylene	136777-61-2	- -	- -	< 0.55	< 0.14	NA	< 0.55	< 0.14	< 0.14
o-Xylene	95-47-6	- -	- -	NA	NA	< 1.0	NA	NA	NA
Styrene (Monomer)	100-42-5	100	100	< 0.29	< 0.22	< 1.0	< 0.29	< 0.22	< 0.22
Tetrachloroethene	127-18-4	5	5	< 0.31	< 0.28	< 1.0	***37***	4	< 0.28
Toluene	108-88-3	1,000	1,000	< 0.31	< 0.22	< 1.0	< 0.31	< 0.22	< 0.22
Total Xylenes	1330-20-7	10,000	10,000	NA	NA	< 1.0	NA	NA	NA
Trichloroethene	79-01-6	5	5	< 0.36	< 0.37	< 1.0	< 0.36	< 0.37	< 0.37
Semi-Volatile Organic Compounds									
1,1-Biphenyl	92-52-4	0.84	3.5	NA	NA	< 1.1	NA	NA	NA
2,4-Dimethylphenol	105-67-9	690	1,900	< 0.85	< 0.89	< 5.6	< 0.85	< 0.85	< 0.89
2,4-Dinitrotoluene	121-14-2	2.1	8.8	NA	NA	< 1.1	NA	NA	NA
2-Methylnaphthalene	91-57-6	6.3	26	< 1.7	< 1.8	< 1.1	< 1.7	< 1.7	< 1.8
2-Methylphenol	95-48-7	1,700	4,900	< 3.7	< 3.9	< 2.2	< 3.7	< 3.7	< 3.9
3-Methylphenol, 4-Methylphenol	65794-96-9	- -	- -	NA	NA	< 2.2	NA	NA	NA
4-Methylphenol	106-44-5	170	490	< 3.7	< 3.9	NA	< 3.7	< 3.7	< 3.9
Acenaphthene	83-32-9	2,100	3,800	2.8	1.1	< 1.1	< 0.16	28	1.2
Acenaphthylene	208-96-8	2,100	5,800	< 0.15	< 0.16	< 1.1	< 0.15	< 0.15	< 0.16
Acetophenone	98-86-2	3,500	9,700	NA	NA	< 2.2	NA	NA	NA
Anthracene	120-12-7	66	66	< 0.2	< 0.21	< 1.1	< 0.2	< 0.2	< 0.21
Benz(a)anthracene	56-55-3	0.3	3.9	< 0.14	< 0.15	< 1.1	< 0.14	< 0.14	< 0.15
Benzo(a)pyrene	50-32-8	0.2	0.2	< 0.17	< 0.17	< 1.1	< 0.17	< 0.17	< 0.17
Benzo(b)fluoranthene	205-99-2	0.18	1.2	< 0.28	< 0.29	< 1.1	< 0.28	< 0.28	< 0.29
Benzo(g,h,i)perylene	191-24-2	0.26	0.26	< 0.14	< 0.15	< 1.1	< 0.14	< 0.14	< 0.15
Benzo(k)fluoranthene	207-08-9	0.18	0.55	< 0.35	< 0.37	< 1.1	< 0.35	< 0.35	< 0.37
bis(2-Ethylhexyl)phthalate	117-81-7	6	6	< 0.63	< 0.67	< 2.2	< 0.63	< 0.63	< 0.67
Butyl benzyl phthalate	85-68-7	340	1,400	< 0.27	< 0.29	< 2.2	< 0.27	< 0.27	< 0.29
Carbazole	86-74-8	33	140	< 0.19	< 0.2	< 1.1	< 0.19	< 0.19	< 0.2
Chrysene	218-01-9	1.8	1.9	< 0.28	< 0.3	< 1.1	< 0.28	< 0.28	< 0.3
Dibenz(a,h)anthracene	53-70-3	0.052	0.6	< 0.18	< 0.19	< 1.1	< 0.18	< 0.18	< 0.19
Dibenzofuran	132-64-9	35	97	< 1.3	< 1.4	< 5.6	1.8	< 1.3	< 1.4
Diethyl phthalate	84-66-2	28,000	78,000	< 0.24	< 0.25	< 2.2	< 0.24	< 0.24	< 0.25
Di-n-butyl phthalate	84-74-2	3,500	9,700	< 0.2	< 0.21	< 2.2	< 0.2	< 0.2	< 0.21
Fluoranthene	206-44-0	260	260	< 0.16	< 0.17	< 1.1	< 0.16	< 0.16	< 0.17
Fluorene	86-73-7	1,400	1,900	< 0.24	< 0.25	< 1.1	< 0.24	< 0.24	1.2
Indeno(1,2,3-cd)pyrene	193-39-5	0.18	2.3	< 0.17	< 0.18	< 1.1	< 0.17	< 0.17	< 0.18
Naphthalene	91-20-3	100	100	< 0.097	< 0.1	< 1.1	< 0.097	< 0.097	< 0.1
Phenanthrene	85-01-8	1,100	1,100	< 0.22	1.1	< 1.1	< 0.22	< 0.22	1.3
Phenol	108-95-2	2,000	2,000	1.4 J	1.5 J	< 2.2	30	25	< 1.7
Pyrene	129-00-0	130	130	< 0.23	< 0.24	< 1.1	< 0.23	< 0.23	< 0.24
Pesticides									
4,4-DDT	50-29-3	1.9	5.5	< 0.05	< 0.05	< 0.0067	0.17	< 0.05	< 0.05
Dieldrin	60-57-1	0.041	0.17	< 0.05	< 0.05	< 0.0067	< 0.05	< 0.05	< 0.05
trans-chlordane	5103-74-2	- -	- -	NA	NA	< 0.0067	NA	NA	NA
Polychlorinated Biphenyls									
Total PCBs	-	- -	- -	< 0.25	< 0.25	< 0.33	< 0.25	< 0.25	< 0.25

Location: / Date Collected:	CAS Number	Groundwater Standards		PCMW-12S		PCMW-12D		PCMW-212	PCMW-13S	
		Used Aquifer TDS≤2,500 Res (Exceedances Bolded & Italicized)	Used Aquifer TDS≤2,500 Non-Res (Exceedances Shaded)	11/8/05	2/1/06	11/8/05	2/1/06	2/1/06	11/9/05	2/2/06
Volatile Organic Compounds										
1,2-Dichlorobenzene	95-50-1	600	600	NA	NA	NA	NA	NA	NA	NA
Acetone	67-64-1	31,000	88,000	< 4	< 5.6	< 4	< 5.6	< 5.6	< 4	< 5.6
Benzene	71-43-2	5	5	< 0.43	< 0.14	< 0.43	< 0.14	< 0.14	< 0.43	< 0.14
Chlorobenzene	108-90-7	100	100	< 0.2	< 0.17	< 0.2	< 0.17	< 0.17	< 0.2	< 0.17
Chloroform	67-66-3	80	80	< 0.38	< 0.4	< 0.38	< 0.4	< 0.4	< 0.38	< 0.4
cis-1,2-Dichloroethene	156-59-2	70	70	< 0.5	< 0.34	< 0.5	< 0.34	< 0.34	< 0.5	< 0.34
Dichloromethane	75-09-2	5	5	< 0.87	< 1.2	< 0.87	< 1.2	< 1.2	< 0.87	< 1.2
Ethylbenzene	100-41-4	700	700	< 0.49	< 0.31	< 0.49	< 0.31	< 0.31	< 0.49	< 0.31
Isopropylbenzene	98-82-8	840	3,500	NA	NA	NA	NA	NA	NA	NA
m&p-Xylenes	ARC-mpXyl	- -	- -	< 0.86	< 0.49	< 0.86	< 0.49	< 0.49	< 0.86	< 0.49
Methyl-tert-butyl ether	1634-04-4	20	20	NA	NA	NA	NA	NA	NA	NA
o,p-Xylene	136777-61-2	- -	- -	< 0.55	< 0.21	< 0.55	< 0.21	< 0.21	< 0.55	< 0.21
o-Xylene	95-47-6	- -	- -	NA	NA	NA	NA	NA	NA	NA
Styrene (Monomer)	100-42-5	100	100	< 0.29	< 0.21	< 0.29	< 0.21	< 0.21	< 0.29	< 0.21
Tetrachloroethene	127-18-4	5	5	< 0.31	< 0.46	< 0.31	< 0.46	< 0.46	< 0.31	< 0.46
Toluene	108-88-3	1,000	1,000	< 0.31	< 0.21	< 0.31	< 0.21	< 0.21	< 0.31	< 0.21
Total Xylenes	1330-20-7	10,000	10,000	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	79-01-6	5	5	< 0.36	< 0.76	< 0.36	< 0.76	< 0.76	< 0.36	< 0.76
Semi-Volatile Organic Compounds										
1,1-Biphenyl	92-52-4	0.84	3.5	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	105-67-9	690	1,900	< 0.85	< 0.85	< 0.85	< 0.85	< 0.85	< 0.85	< 0.85
2,4-Dinitrotoluene	121-14-2	2.1	8.8	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	91-57-6	6.3	26	< 1.7	< 1.7	< 1.7	< 1.7	< 1.7	< 1.7	< 1.7
2-Methylphenol	95-48-7	1,700	4,900	< 3.7	< 3.7	< 3.7	< 3.7	< 3.7	< 3.7	< 3.7
3-Methylphenol, 4-Methylphenol	65794-96-9	- -	- -	NA	NA	NA	NA	NA	NA	NA
4-Methylphenol	106-44-5	170	490	< 3.7	< 3.7	< 3.7	< 3.7	< 3.7	< 3.7	< 3.7
Acenaphthene	83-32-9	2,100	3,800	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16
Acenaphthylene	208-96-8	2,100	5,800	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15
Acetophenone	98-86-2	3,500	9,700	NA	NA	NA	NA	NA	NA	NA
Anthracene	120-12-7	66	66	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Benz(a)anthracene	56-55-3	0.3	3.9	< 0.14	< 0.14	< 0.14	< 0.14	< 0.14	< 0.14	< 0.14
Benzo(a)pyrene	50-32-8	0.2	0.2	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17
Benzo(b)fluoranthene	205-99-2	0.18	1.2	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28
Benzo(g,h,i)perylene	191-24-2	0.26	0.26	< 0.14	< 0.14	< 0.14	< 0.14	< 0.14	< 0.14	< 0.14
Benzo(k)fluoranthene	207-08-9	0.18	0.55	< 0.35	< 0.35	< 0.35	< 0.35	< 0.35	< 0.35	< 0.35
bis(2-Ethylhexyl)phthalate	117-81-7	6	6	< 0.63	< 0.63	< 0.63	< 0.63	< 0.63	< 0.63	< 0.63
Butyl benzyl phthalate	85-68-7	340	1,400	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27
Carbazole	86-74-8	33	140	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19
Chrysene	218-01-9	1.8	1.9	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28
Dibenz(a,h)anthracene	53-70-3	0.052	0.6	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18
Dibenzofuran	132-64-9	35	97	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3
Diethyl phthalate	84-66-2	28,000	78,000	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24
Di-n-butyl phthalate	84-74-2	3,500	9,700	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Fluoranthene	206-44-0	260	260	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16
Fluorene	86-73-7	1,400	1,900	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24
Indeno(1,2,3-cd)pyrene	193-39-5	0.18	2.3	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17
Naphthalene	91-20-3	100	100	< 0.097	< 0.097	< 0.097	< 0.097	< 0.097	< 0.097	< 0.097
Phenanthrene	85-01-8	1,100	1,100	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22
Phenol	108-95-2	2,000	2,000	< 1.7	< 1.7	< 1.7	< 1.7	< 1.7	< 1.7	< 1.7
Pyrene	129-00-0	130	130	< 0.23	< 0.23	< 0.23	< 0.23	< 0.23	< 0.23	< 0.23
Pesticides										
4,4-DDT	50-29-3	1.9	5.5	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Dieldrin	60-57-1	0.041	0.17	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
trans-chlordane	5103-74-2	- -	- -	NA	NA	NA	NA	NA	NA	NA
Polychlorinated Biphenyls										
Total PCBs	-	- -	- -	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25

Location: / Date Collected:	CAS Number	Groundwater Standards: Used Aquifer TDS≤2,500 Res (Exceedances Bolded & Italicized)	Groundwater Standards: Used Aquifer TDS≤2,500 Non-Res (Exceedances Shaded)	PCMW-13D 11/9/05	PCMW-13D 2/2/06	PCMW-14S / MW-101* 11/9/05	PCMW-14S / MW-101* 2/3/06	PCMW-14S / MW-101* 5/30/18	PCMW-14D 11/9/05	PCMW-14D 2/3/06
Volatile Organic Compounds										
1,2-Dichlorobenzene	95-50-1	600	600	NA	NA	NA	NA	< 1.0	NA	NA
Acetone	67-64-1	31,000	88,000	< 4	< 5.6	< 40	< 56	< 10	< 4 [< 4]	< 5.6
Benzene	71-43-2	5	5	< 0.43	< 0.14	***580***	***1,200***	3.8	< 0.43 [< 0.43]	< 0.14
Chlorobenzene	108-90-7	100	100	< 0.2	< 0.17	< 2	< 1.7	< 1.0	< 0.2 [< 0.2]	< 0.17
Chloroform	67-66-3	80	80	< 0.38	< 0.4	< 3.8	< 4	< 1.0	< 0.38 [< 0.38]	< 0.4
cis-1,2-Dichloroethene	156-59-2	70	70	< 0.5	< 0.34	< 5	< 3.4	< 1.0	< 0.5 [< 0.5]	< 0.34
Dichloromethane	75-09-2	5	5	< 0.87	< 1.2	< 8.7	< 12	< 2.0	< 0.87 [< 0.87]	< 1.2
Ethylbenzene	100-41-4	700	700	< 0.49	< 0.31	< 4.9	< 3.1	0.23 J	< 0.49 [< 0.49]	< 0.31
Isopropylbenzene	98-82-8	840	3,500	NA	NA	NA	NA	< 1.0	NA	NA
m&p-Xylenes	ARC-mpXyl	- -	- -	< 0.86	< 0.49	< 8.6	< 4.9	0.59 J	< 0.86 [< 0.86]	< 0.49
Methyl-tert-butyl ether	1634-04-4	20	20	NA	NA	NA	NA	< 1.0	NA	NA
o,p-Xylene	136777-61-2	- -	- -	< 0.55	< 0.21	< 5.5	< 2.1	NA	< 0.55 [< 0.55]	< 0.21
o-Xylene	95-47-6	- -	- -	NA	NA	NA	NA	1.7	NA	NA
Styrene (Monomer)	100-42-5	100	100	< 0.29	< 0.21	< 2.9	< 2.1	< 1.0	< 0.29 [< 0.29]	< 0.21
Tetrachloroethene	127-18-4	5	5	< 0.31	< 0.46	< 3.1	< 4.6	< 1.0	< 0.31 [< 0.31]	< 0.46
Toluene	108-88-3	1,000	1,000	< 0.31	< 0.21	< 3.1	< 2.1	< 1.0	< 0.31 [< 0.31]	< 0.21
Total Xylenes	1330-20-7	10,000	10,000	NA	NA	NA	NA	2.3	NA	NA
Trichloroethene	79-01-6	5	5	< 0.36	< 0.76	< 3.6	< 7.6	< 1.0	< 0.36 [< 0.36]	< 0.76
Semi-Volatile Organic Compounds										
1,1-Biphenyl	92-52-4	0.84	3.5	NA	NA	NA	NA	< 1.0	NA	NA
2,4-Dimethylphenol	105-67-9	690	1,900	< 0.85	< 0.85	< 0.85	< 0.85	< 5.0	< 0.85 [< 0.85]	< 0.85
2,4-Dinitrotoluene	121-14-2	2.1	8.8	NA	NA	NA	NA	< 1.0	NA	NA
2-Methylnaphthalene	91-57-6	6.3	26	< 1.7	< 1.7	1.1 J	1.2 J	< 1.0	< 1.7 [< 1.7]	< 1.7
2-Methylphenol	95-48-7	1,700	4,900	< 3.7	< 3.7	15	8.1	< 2.0	< 3.7 [< 3.7]	< 3.7
3-Methylphenol, 4-Methylphenol	65794-96-9	- -	- -	NA	NA	NA	NA	< 2.0	NA	NA
4-Methylphenol	106-44-5	170	490	< 3.7	< 3.7	< 3.7	< 3.7	NA	< 3.7 [< 3.7]	< 3.7
Acenaphthene	83-32-9	2,100	3,800	< 0.16	< 0.16	1.7	2	0.76 J	< 0.16 [< 0.16]	< 0.16
Acenaphthylene	208-96-8	2,100	5,800	< 0.15	< 0.15	< 0.15	< 0.15	< 1.0	< 0.15 [< 0.15]	< 0.15
Acetophenone	98-86-2	3,500	9,700	NA	NA	NA	NA	< 2.0	NA	NA
Anthracene	120-12-7	66	66	< 0.2	< 0.2	< 0.2	< 0.2	< 1.0	< 0.2 [< 0.2]	< 0.2
Benz(a)anthracene	56-55-3	0.3	3.9	< 0.14	< 0.14	< 0.14	< 0.14	< 1.0	< 0.14 [< 0.14]	< 0.14
Benzo(a)pyrene	50-32-8	0.2	0.2	< 0.17	< 0.17	< 0.17	< 0.17	< 1.0	< 0.17 [< 0.17]	< 0.17
Benzo(b)fluoranthene	205-99-2	0.18	1.2	< 0.28	< 0.28	< 0.28	< 0.28	< 1.0	< 0.28 [< 0.28]	< 0.28
Benzo(g,h,i)perylene	191-24-2	0.26	0.26	< 0.14	< 0.14	< 0.14	< 0.14	< 1.0	< 0.14 [< 0.14]	< 0.14
Benzo(k)fluoranthene	207-08-9	0.18	0.55	< 0.35	< 0.35	< 0.35	< 0.35	< 1.0	< 0.35 [< 0.35]	< 0.35
bis(2-Ethylhexyl)phthalate	117-81-7	6	6	< 0.63	< 0.63	< 0.63	< 0.63	< 2.0	< 0.63 [< 0.63]	< 0.63
Butyl benzyl phthalate	85-68-7	340	1,400	< 0.27	< 0.27	< 0.27	< 0.27	< 2.0	< 0.27 [< 0.27]	< 0.27
Carbazole	86-74-8	33	140	< 0.19	< 0.19	1.6	1.4	0.70 J	< 0.19 [< 0.19]	< 0.19
Chrysene	218-01-9	1.8	1.9	< 0.28	< 0.28	< 0.28	< 0.28	< 1.0	< 0.28 [< 0.28]	< 0.28
Dibenz(a,h)anthracene	53-70-3	0.052	0.6	< 0.18	< 0.18	< 0.18	< 0.18	< 1.0	< 0.18 [< 0.18]	< 0.18
Dibenzofuran	132-64-9	35	97	< 1.3	< 1.3	< 1.3	< 1.3	0.44 J	< 1.3 [< 1.3]	< 1.3
Diethyl phthalate	84-66-2	28,000	78,000	< 0.24	< 0.24	< 0.24	< 0.24	< 2.0	< 0.24 [< 0.24]	< 0.24
Di-n-butyl phthalate	84-74-2	3,500	9,700	< 0.2	< 0.2	< 0.2	< 0.2	< 2.0	< 0.2 [< 0.2]	< 0.2
Fluoranthene	206-44-0	260	260	< 0.16	< 0.16	< 0.16	1.5	0.44 J	< 0.16 [< 0.16]	< 0.16
Fluorene	86-73-7	1,400	1,900	< 0.24	< 0.24	1.5	2	0.85 J	< 0.24 [< 0.24]	< 0.24
Indeno(1,2,3-cd)pyrene	193-39-5	0.18	2.3	< 0.17	< 0.17	< 0.17	< 0.17	< 1.0	< 0.17 [< 0.17]	< 0.17
Naphthalene	91-20-3	100	100	< 0.097	< 0.097	5	4.9	1.9	< 0.097 [< 0.097]	< 0.097
Phenanthrene	85-01-8	1,100	1,100	< 0.22	< 0.22	3.9	4.9	1.1	< 0.22 [< 0.22]	< 0.22
Phenol	108-95-2	2,000	2,000	< 1.7	< 1.7	1.2 J	2.5	< 2.0	< 1.7 [< 1.7]	< 1.7
Pyrene	129-00-0	130	130	< 0.23	< 0.23	< 0.23	1.1	< 1.0	< 0.23 [< 0.23]	< 0.23
Pesticides										
4,4-DDT	50-29-3	1.9	5.5	< 0.05	< 0.05	< 0.05	< 0.05	< 0.0067	< 0.05 [< 0.05]	< 0.05
Dieldrin	60-57-1	0.041	0.17	< 0.05	< 0.05	< 0.05	< 0.05	< 0.0067	< 0.05 [< 0.05]	< 0.05
trans-chlordane	5103-74-2	- -	- -	NA	NA	NA	NA	< 0.0067	NA	NA
Polychlorinated Biphenyls										
Total PCBs	-	- -	- -	< 0.25	< 0.25	< 0.25	< 0.25	< 0.33	< 0.25 [< 0.25]	< 0.25

Location: / Date Collected:	CAS Number	Groundwater Standards		PCMW-15S			PCMW-15D		
		Used Aquifer TDS≤2,500 Res (Exceedances Bolded & Italicized)	Used Aquifer TDS≤2,500 Non-Res (Exceedances Shaded)	11/10/05	2/3/06	3/20/18	11/10/05	2/3/06	3/20/18
Volatile Organic Compounds									
1,2-Dichlorobenzene	95-50-1	600	600	NA	NA	< 1.0	NA	NA	< 1.0
Acetone	67-64-1	31,000	88,000	< 4	< 5.6	< 10 UJ	< 4	< 5.6	< 10 UJ
Benzene	71-43-2	5	5	***67***	***54***	0.20 J	< 0.43	< 0.14	< 0.50
Chlorobenzene	108-90-7	100	100	< 0.2	< 0.17	< 1.0	< 0.2	< 0.17	< 1.0
Chloroform	67-66-3	80	80	< 0.38	< 0.18	< 1.0	< 0.38	< 0.4	< 1.0
cis-1,2-Dichloroethene	156-59-2	70	70	< 0.5	< 0.19	< 1.0	< 0.5	< 0.34	< 1.0
Dichloromethane	75-09-2	5	5	< 0.87	< 0.20	< 2.0	< 0.87	< 1.2	< 2.0
Ethylbenzene	100-41-4	700	700	< 0.49	< 0.21	< 1.0	< 0.49	< 0.31	< 1.0
Isopropylbenzene	98-82-8	840	3,500	NA	< 0.22	< 1.0	NA	NA	< 1.0
m&p-Xylenes	ARC-mpXyl	- -	- -	< 0.86	< 0.23	< 1.0	< 0.86	< 0.49	< 1.0
Methyl-tert-butyl ether	1634-04-4	20	20	NA	< 0.24	< 1.0	NA	NA	< 1.0
o,p-Xylene	136777-61-2	- -	- -	< 0.55	< 0.25	NA	< 0.55	< 0.21	NA
o-Xylene	95-47-6	- -	- -	NA	< 0.26	< 1.0	NA	NA	< 1.0
Styrene (Monomer)	100-42-5	100	100	< 0.29	< 0.27	< 1.0	< 0.29	< 0.21	< 1.0
Tetrachloroethene	127-18-4	5	5	< 0.31	< 0.28	< 1.0	< 0.31	< 0.46	< 1.0
Toluene	108-88-3	1,000	1,000	1.3	< 0.29	< 1.0	< 0.31	< 0.21	< 1.0
Total Xylenes	1330-20-7	10,000	10,000	NA	< 0.30	< 1.0	NA	NA	< 1.0
Trichloroethene	79-01-6	5	5	< 0.36	< 0.31	< 1.0	< 0.36	< 0.76	< 1.0
Semi-Volatile Organic Compounds									
1,1-Biphenyl	92-52-4	0.84	3.5	NA	NA	< 1.0	NA	NA	< 1.0
2,4-Dimethylphenol	105-67-9	690	1,900	1.9	3.1	< 5.0	< 0.87	< 0.85	< 5.0
2,4-Dinitrotoluene	121-14-2	2.1	8.8	NA	NA	< 1.0	NA	NA	< 1.0
2-Methylnaphthalene	91-57-6	6.3	26	< 1.7	< 1.7	< 1.0	***13***	< 1.7	< 1.0
2-Methylphenol	95-48-7	1,700	4,900	< 3.7	< 3.7	< 2.0	2 J	< 3.7	< 2.0
3-Methylphenol, 4-Methylphenol	65794-96-9	- -	- -	NA	NA	< 2.0	NA	NA	< 2.0
4-Methylphenol	106-44-5	170	490	< 3.7	< 3.7	NA	1 J	< 3.7	NA
Acenaphthene	83-32-9	2,100	3,800	4.8	6.4	< 1.0	11	7.6	< 1.0
Acenaphthylene	208-96-8	2,100	5,800	< 0.15	< 0.15	< 1.0	< 0.16	< 0.15	< 1.0
Acetophenone	98-86-2	3,500	9,700	NA	NA	< 2.0	NA	NA	< 2.0
Anthracene	120-12-7	66	66	< 0.2	< 0.2	< 1.0	1.1	< 0.2	< 1.0
Benz(a)anthracene	56-55-3	0.3	3.9	< 0.14	< 0.14	< 1.0	< 0.14	< 0.14	< 1.0
Benzo(a)pyrene	50-32-8	0.2	0.2	< 0.17	< 0.17	< 1.0	< 0.17	< 0.17	< 1.0
Benzo(b)fluoranthene	205-99-2	0.18	1.2	< 0.28	< 0.28	< 1.0	< 0.28	< 0.28	< 1.0
Benzo(g,h,i)perylene	191-24-2	0.26	0.26	< 0.14	< 0.14	< 1.0	< 0.15	< 0.14	< 1.0
Benzo(k)fluoranthene	207-08-9	0.18	0.55	< 0.35	< 0.35	< 1.0	< 0.36	< 0.35	< 1.0
bis(2-Ethylhexyl)phthalate	117-81-7	6	6	< 0.63	< 0.63	< 2.0	< 0.65	< 0.63	< 2.0
Butyl benzyl phthalate	85-68-7	340	1,400	< 0.27	< 0.27	< 2.0	< 0.28	< 0.27	< 2.0
Carbazole	86-74-8	33	140	1.6	2.1	< 1.0	2.1	1.6	< 1.0
Chrysene	218-01-9	1.8	1.9	< 0.28	< 0.28	< 1.0	< 0.29	< 0.28	< 1.0
Dibenz(a,h)anthracene	53-70-3	0.052	0.6	< 0.18	< 0.18	< 1.0	< 0.19	< 0.18	< 1.0
Dibenzofuran	132-64-9	35	97	< 1.3	1.6	< 5.0	3.1	2.5	< 5.0
Diethyl phthalate	84-66-2	28,000	78,000	< 0.24	< 0.24	< 2.0	< 0.24	< 0.24	< 2.0
Di-n-butyl phthalate	84-74-2	3,500	9,700	21	< 0.2	< 2.0	< 0.21	< 0.2	< 2.0
Fluoranthene	206-44-0	260	260	1.8	1.3	< 1.0	< 0.17	< 0.16	< 1.0
Fluorene	86-73-7	1,400	1,900	< 0.24	1.2	< 1.0	5.3	4.3	< 1.0
Indeno(1,2,3-cd)pyrene	193-39-5	0.18	2.3	< 0.17	< 0.17	< 1.0	< 0.17	< 0.17	< 1.0
Naphthalene	91-20-3	100	100	5.8	15	< 1.0	62	9.9	< 1.0
Phenanthrene	85-01-8	1,100	1,100	< 0.22	1.6	< 1.0	7.1	5.7	< 1.0
Phenol	108-95-2	2,000	2,000	< 1.7	< 1.7	< 2.0	< 1.7	< 1.7	< 2.0
Pyrene	129-00-0	130	130	1.2	1	< 1.0	< 0.23	< 0.23	< 1.0
Pesticides									
4,4-DDT	50-29-3	1.9	5.5	< 0.05	< 0.05	< 0.0068	< 0.05	< 0.05	< 0.0069
Dieldrin	60-57-1	0.041	0.17	< 0.05	< 0.05	< 0.0068	< 0.05	< 0.05	< 0.0069
trans-chlordane	5103-74-2	- -	- -	NA	NA	< 0.0068	NA	NA	< 0.0069
Polychlorinated Biphenyls									
Total PCBs	-	- -	- -	< 0.25	< 0.25	< 0.34	< 0.25	< 0.25	< 0.34

Location: / Date Collected:	CAS Number	Groundwater Standards: Used Aquifer TDS≤2,500 Res (Exceedances Bolded & Italicized)	Groundwater Standards: Used Aquifer TDS≤2,500 Non-Res (Exceedances Shaded)	PCMW-16S / MW-105* 11/10/05	PCMW-16S / MW-105* 2/1/06	PCMW-16S / MW-105* 5/30/18	PCMW-16D 11/10/05	PCMW-16D 2/1/06	PCMW-16D 3/19/18
Volatile Organic Compounds									
1,2-Dichlorobenzene	95-50-1	600	600	NA	NA	< 1.0	NA	NA	< 1.0
Acetone	67-64-1	31,000	88,000	< 4	< 5.6	< 10	< 4	< 5.6	< 10 UJ
Benzene	71-43-2	5	5	1.2	< 0.14	< 0.50	< 0.43	< 0.14	< 0.50
Chlorobenzene	108-90-7	100	100	< 0.2	< 0.37	< 1.0	1.1	3.7	1.4
Chloroform	67-66-3	80	80	< 0.38	< 0.36	< 1.0	< 0.38	< 0.36	< 1.0
cis-1,2-Dichloroethene	156-59-2	70	70	< 0.5	< 0.3	< 1.0	< 0.5	< 0.3	< 1.0
Dichloromethane	75-09-2	5	5	< 0.87	1.1	< 2.0	< 0.87	< 0.49	< 2.0
Ethylbenzene	100-41-4	700	700	< 0.49	< 0.34	< 1.0	< 0.49	< 0.34	< 1.0
Isopropylbenzene	98-82-8	840	3,500	NA	NA	< 1.0	NA	NA	< 1.0
m&p-Xylenes	ARC-mpXyl	- -	- -	< 0.86	< 0.54	< 1.0	< 0.86	< 0.54	< 1.0
Methyl-tert-butyl ether	1634-04-4	20	20	NA	NA	< 1.0	NA	NA	< 1.0
o,p-Xylene	136777-61-2	- -	- -	< 0.55	< 0.14	NA	< 0.55	< 0.14	NA
o-Xylene	95-47-6	- -	- -	NA	NA	< 1.0	NA	NA	< 1.0
Styrene (Monomer)	100-42-5	100	100	< 0.29	< 0.22	< 1.0	< 0.29	< 0.22	< 1.0
Tetrachloroethene	127-18-4	5	5	< 0.31	< 0.28	< 1.0	< 0.31	< 0.28	< 1.0
Toluene	108-88-3	1,000	1,000	< 0.31	< 0.22	< 1.0	< 0.31	< 0.22	< 1.0
Total Xylenes	1330-20-7	10,000	10,000	NA	NA	< 1.0	NA	NA	< 1.0
Trichloroethene	79-01-6	5	5	< 0.36	< 0.37	< 1.0	< 0.36	< 0.37	< 1.0
Semi-Volatile Organic Compounds									
1,1-Biphenyl	92-52-4	0.84	3.5	NA	NA	< 0.95	NA	NA	< 1.0
2,4-Dimethylphenol	105-67-9	690	1,900	< 0.85	< 0.85	< 4.8	< 0.89	< 0.85	< 5.0
2,4-Dinitrotoluene	121-14-2	2.1	8.8	NA	NA	< 0.95	NA	NA	***13.3 J***
2-Methylnaphthalene	91-57-6	6.3	26	< 1.7	< 1.7	< 0.95	< 1.8	< 1.7	< 1.0
2-Methylphenol	95-48-7	1,700	4,900	< 3.7	< 3.7	< 1.9	< 3.9	< 3.7	< 2.0
3-Methylphenol, 4-Methylphenol	65794-96-9	- -	- -	NA	NA	< 1.9	NA	NA	< 2.0
4-Methylphenol	106-44-5	170	490	< 3.7	< 3.7	NA	< 3.9	< 3.7	NA
Acenaphthene	83-32-9	2,100	3,800	4.2	< 0.16	1.3	< 0.17	< 0.16	< 1.0
Acenaphthylene	208-96-8	2,100	5,800	< 0.15	< 0.15	< 0.95	< 0.16	< 0.15	< 1.0
Acetophenone	98-86-2	3,500	9,700	NA	NA	< 1.9	NA	NA	< 2.0
Anthracene	120-12-7	66	66	< 0.2	< 0.2	< 0.95	< 0.21	< 0.2	< 1.0
Benz(a)anthracene	56-55-3	0.3	3.9	< 0.14	***3.3***	< 0.95	< 0.15	< 0.14	< 1.0
Benzo(a)pyrene	50-32-8	0.2	0.2	< 0.17	***3.2***	< 0.95	< 0.17	< 0.17	< 1.0
Benzo(b)fluoranthene	205-99-2	0.18	1.2	< 0.28	***4.1***	< 0.95	< 0.29	< 0.28	< 1.0
Benzo(g,h,i)perylene	191-24-2	0.26	0.26	< 0.14	***1.7***	< 0.95	< 0.15	< 0.14	< 1.0
Benzo(k)fluoranthene	207-08-9	0.18	0.55	< 0.35	***1.4***	< 0.95	< 0.37	< 0.35	< 1.0
bis(2-Ethylhexyl)phthalate	117-81-7	6	6	< 0.63	< 0.63	< 1.9	< 0.67	< 0.63	< 2.0
Butyl benzyl phthalate	85-68-7	340	1,400	< 0.27	< 0.27	< 1.9	< 0.29	< 0.27	< 2.0
Carbazole	86-74-8	33	140	< 0.19	< 0.19	< 0.95	< 0.2	< 0.19	< 1.0
Chrysene	218-01-9	1.8	1.9	< 0.28	***3.1***	< 0.95	< 0.3	< 0.28	< 1.0
Dibenz(a,h)anthracene	53-70-3	0.052	0.6	< 0.18	< 0.18	< 0.95	< 0.19	< 0.18	< 1.0
Dibenzofuran	132-64-9	35	97	< 1.3	< 1.3	< 4.8	< 1.4	< 1.3	< 5.0
Diethyl phthalate	84-66-2	28,000	78,000	< 0.24	< 0.24	< 1.9	< 0.25	< 0.24	< 2.0
Di-n-butyl phthalate	84-74-2	3,500	9,700	< 0.2	< 0.2	< 1.9	< 0.21	< 0.2	< 2.0
Fluoranthene	206-44-0	260	260	< 0.16	1.8	0.45 J	< 0.17	< 0.16	< 1.0
Fluorene	86-73-7	1,400	1,900	< 0.24	< 0.24	< 0.95	< 0.25	< 0.24	< 1.0
Indeno(1,2,3-cd)pyrene	193-39-5	0.18	2.3	< 0.17	***1.5***	< 0.95	< 0.18	< 0.17	< 1.0
Naphthalene	91-20-3	100	100	< 0.097	< 0.097	< 0.95	< 0.1	< 0.097	< 1.0
Phenanthrene	85-01-8	1,100	1,100	< 0.22	< 0.22	< 0.95	< 0.23	< 0.22	< 1.0
Phenol	108-95-2	2,000	2,000	< 1.7	< 1.7	< 1.9	< 1.7	< 1.7	< 2.0
Pyrene	129-00-0	130	130	< 0.23	1.5	0.47 J	< 0.24	< 0.23	< 1.0
Pesticides									
4,4-DDT	50-29-3	1.9	5.5	< 0.05	< 0.05	< 0.0067	< 0.05	< 0.05	< 0.0067
Dieldrin	60-57-1	0.041	0.17	< 0.05	< 0.05	< 0.0067	< 0.05	< 0.05	0.038
trans-chlordane	5103-74-2	- -	- -	NA	NA	< 0.0067	NA	NA	< 0.0067
Polychlorinated Biphenyls									
Total PCBs	-	- -	- -	< 0.25	< 0.25	< 0.33	< 0.25	< 0.25	< 0.33

Location: / Date Collected:	CAS Number	Groundwater Standards		PCMW-17S			PCMW-17D		
		Used Aquifer TDS≤2,500 Res (Exceedances Bolded & Italicized)	Used Aquifer TDS≤2,500 Non-Res (Exceedances Shaded)	11/11/05	2/3/06	3/22/18	11/11/05	2/3/06	3/22/18
Volatile Organic Compounds									
1,2-Dichlorobenzene	95-50-1	600	600	NA	NA	< 1.0	NA	NA	< 1.0
Acetone	67-64-1	31,000	88,000	< 5.6	< 5.6	< 10 UJ	< 5.6	< 5.6	< 10 UJ
Benzene	71-43-2	5	5	***9.7***	***11***	1.1	< 0.14	< 0.14	< 0.50
Chlorobenzene	108-90-7	100	100	< 0.37	< 0.17	< 1.0	< 0.37	< 0.17	< 1.0
Chloroform	67-66-3	80	80	< 0.36	< 0.4	< 1.0	< 0.36	< 0.4	< 1.0
cis-1,2-Dichloroethene	156-59-2	70	70	< 0.3	< 0.34	< 1.0	< 0.3	< 0.34	< 1.0
Dichloromethane	75-09-2	5	5	< 0.49	< 1.2	< 2.0	< 0.49	< 1.2	< 2.0
Ethylbenzene	100-41-4	700	700	2.5	22	< 1.0	< 0.34	< 0.31	< 1.0
Isopropylbenzene	98-82-8	840	3,500	NA	NA	< 1.0	NA	NA	< 1.0
m&p-Xylenes	ARC-mpXyl	- -	- -	< 0.54	1.4	< 1.0	< 0.54	< 0.49	< 1.0
Methyl-tert-butyl ether	1634-04-4	20	20	NA	NA	< 1.0	NA	NA	< 1.0
o,p-Xylene	136777-61-2	- -	- -	1.2	3.3	NA	< 0.14	< 0.21	NA
o-Xylene	95-47-6	- -	- -	NA	NA	< 1.0	NA	NA	< 1.0
Styrene (Monomer)	100-42-5	100	100	< 0.22	< 0.21	< 1.0	< 0.22	< 0.21	< 1.0
Tetrachloroethene	127-18-4	5	5	< 0.28	< 0.46	< 1.0	< 0.28	< 0.46	< 1.0
Toluene	108-88-3	1,000	1,000	< 0.22	< 0.21	< 1.0	< 0.22	< 0.21	< 1.0
Total Xylenes	1330-20-7	10,000	10,000	NA	NA	< 1.0	NA	NA	< 1.0
Trichloroethene	79-01-6	5	5	< 0.37	< 0.76	< 1.0	< 0.37	< 0.76	< 1.0
Semi-Volatile Organic Compounds									
1,1-Biphenyl	92-52-4	0.84	3.5	NA	NA	< 1.0	NA	NA	< 1.1
2,4-Dimethylphenol	105-67-9	690	1,900	< 0.85	< 0.85	< 5.1	< 0.85	< 0.85	< 5.6
2,4-Dinitrotoluene	121-14-2	2.1	8.8	NA	NA	< 1.0	NA	NA	< 1.1
2-Methylnaphthalene	91-57-6	6.3	26	***20***	***48***	< 1.0	< 1.7	< 1.7	< 1.1
2-Methylphenol	95-48-7	1,700	4,900	< 3.7	< 3.7	< 2.0	< 3.7	< 3.7	< 2.2
3-Methylphenol, 4-Methylphenol	65794-96-9	- -	- -	NA	NA	< 2.0	NA	NA	< 2.2
4-Methylphenol	106-44-5	170	490	< 3.7	< 3.7	NA	< 3.7	< 3.7	NA
Acenaphthene	83-32-9	2,100	3,800	41	70	1.2	1.6	1.1	< 1.1
Acenaphthylene	208-96-8	2,100	5,800	1.2	4.9	< 1.0	< 0.15	< 0.15	< 1.1
Acetophenone	98-86-2	3,500	9,700	NA	NA	< 2.0	NA	NA	< 2.2
Anthracene	120-12-7	66	66	2.4	4.1	< 1.0	< 0.2	< 0.2	< 1.1
Benz(a)anthracene	56-55-3	0.3	3.9	< 0.14	< 0.14	< 1.0	< 0.14	< 0.14	< 1.1
Benzo(a)pyrene	50-32-8	0.2	0.2	< 0.17	< 0.17	< 1.0	< 0.17	< 0.17	< 1.1
Benzo(b)fluoranthene	205-99-2	0.18	1.2	< 0.28	< 0.28	< 1.0	< 0.28	< 0.28	< 1.1
Benzo(g,h,i)perylene	191-24-2	0.26	0.26	< 0.14	< 0.14	< 1.0	< 0.14	< 0.14	< 1.1
Benzo(k)fluoranthene	207-08-9	0.18	0.55	< 0.35	< 0.35	< 1.0	< 0.35	< 0.35	< 1.1
bis(2-Ethylhexyl)phthalate	117-81-7	6	6	3.8	< 0.63	< 2.0	< 0.63	< 0.63	< 2.2
Butyl benzyl phthalate	85-68-7	340	1,400	< 0.27	< 0.27	< 2.0	< 0.27	< 0.27	< 2.2
Carbazole	86-74-8	33	140	17	***51***	< 1.0	< 0.19	< 0.19	< 1.1
Chrysene	218-01-9	1.8	1.9	< 0.28	< 0.28	< 1.0	< 0.28	< 0.28	< 1.1
Dibenz(a,h)anthracene	53-70-3	0.052	0.6	< 0.18	< 0.18	< 1.0	< 0.18	< 0.18	< 1.1
Dibenzofuran	132-64-9	35	97	8.3	28	< 5.1	< 1.3	< 1.3	< 5.6
Diethyl phthalate	84-66-2	28,000	78,000	< 0.24	< 0.24	< 2.0	< 0.24	< 0.24	< 2.2
Di-n-butyl phthalate	84-74-2	3,500	9,700	< 0.2	< 0.2	< 2.0	< 0.2	< 0.2	< 2.2
Fluoranthene	206-44-0	260	260	2.8	3.2	< 1.0	< 0.16	< 0.16	< 1.1
Fluorene	86-73-7	1,400	1,900	17	39	0.76 J	1.1	< 0.24	< 1.1
Indeno(1,2,3-cd)pyrene	193-39-5	0.18	2.3	< 0.17	< 0.17	< 1.0	< 0.17	< 0.17	< 1.1
Naphthalene	91-20-3	100	100	7.6	41	< 1.0	6.3	< 0.097	< 1.1
Phenanthrene	85-01-8	1,100	1,100	13	25	< 1.0	< 0.22	1.1	< 1.1
Phenol	108-95-2	2,000	2,000	< 1.7	< 1.7	< 2.0	< 1.7	< 1.7	< 2.2
Pyrene	129-00-0	130	130	2.1	1.9	< 1.0	< 0.23	< 0.23	< 1.1
Pesticides									
4,4-DDT	50-29-3	1.9	5.5	< 0.05	< 0.05	< 0.0069	< 0.05	< 0.05	< 0.0069
Dieldrin	60-57-1	0.041	0.17	< 0.05	< 0.05	< 0.0069	< 0.05	< 0.05	***0.046***
trans-chlordane	5103-74-2	- -	- -	NA	NA	< 0.0069	NA	NA	< 0.0069
Polychlorinated Biphenyls									
Total PCBs	-	- -	- -	< 0.25	< 0.25	< 0.34	< 0.25	< 0.25	< 0.34

Location: / Date Collected:	CAS Number	Groundwater Standards		PCMW-18S			PCMW-18D		
		Used Aquifer TDS≤2,500 Res (Exceedances Bolded & Italicized)	Used Aquifer TDS≤2,500 Non-Res (Exceedances Shaded)	11/11/05	2/2/06	3/23/18	11/11/05	2/2/06	3/23/18
Volatile Organic Compounds									
1,2-Dichlorobenzene	95-50-1	600	600	NA	NA	0.71 J	NA	NA	< 1.0
Acetone	67-64-1	31,000	88,000	< 5.6	< 5.6	< 10	< 5.6	< 5.6	< 10
Benzene	71-43-2	5	5	< 0.14	< 0.14	< 0.50	< 0.14	< 0.14	< 0.50
Chlorobenzene	108-90-7	100	100	< 0.37	< 0.17	< 1.0	< 0.37	< 0.37	< 1.0
Chloroform	67-66-3	80	80	2.6	< 0.4	< 1.0	2	1.8	12.3
cis-1,2-Dichloroethene	156-59-2	70	70	< 0.3	< 0.34	< 1.0	< 0.3	< 0.3	< 1.0
Dichloromethane	75-09-2	5	5	< 0.49	< 1.2	< 2.0	< 0.49	< 0.49	< 2.0
Ethylbenzene	100-41-4	700	700	< 0.34	< 0.31	< 1.0	< 0.34	< 0.34	< 1.0
Isopropylbenzene	98-82-8	840	3,500	NA	NA	< 1.0	NA	NA	< 1.0
m&p-Xylenes	ARC-mpXyl	- -	- -	< 0.54	< 0.49	< 1.0	< 0.54	< 0.54	< 1.0
Methyl-tert-butyl ether	1634-04-4	20	20	NA	NA	< 1.0	NA	NA	< 1.0
o,p-Xylene	136777-61-2	- -	- -	< 0.14	< 0.21	NA	< 0.14	< 0.14	NA
o-Xylene	95-47-6	- -	- -	NA	NA	< 1.0	NA	NA	< 1.0
Styrene (Monomer)	100-42-5	100	100	< 0.22	< 0.21	< 1.0	< 0.22	< 0.22	< 1.0
Tetrachloroethene	127-18-4	5	5	< 0.28	< 0.46	< 1.0	2.5	< 0.28	1.5
Toluene	108-88-3	1,000	1,000	< 0.22	< 0.21	< 1.0	< 0.22	< 0.22	< 1.0
Total Xylenes	1330-20-7	10,000	10,000	NA	NA	< 1.0	NA	NA	< 1.0
Trichloroethene	79-01-6	5	5	< 0.37	< 0.76	< 1.0	< 0.37	< 0.37	< 1.0
Semi-Volatile Organic Compounds									
1,1-Biphenyl	92-52-4	0.84	3.5	NA	NA	< 1.1	NA	NA	< 1.1
2,4-Dimethylphenol	105-67-9	690	1,900	< 0.85	< 0.86	< 5.6	< 0.85	< 0.87	< 5.6
2,4-Dinitrotoluene	121-14-2	2.1	8.8	NA	NA	< 1.1	NA	NA	< 1.1
2-Methylnaphthalene	91-57-6	6.3	26	< 1.7	< 1.7	< 1.1	< 1.7	< 1.8	< 1.1
2-Methylphenol	95-48-7	1,700	4,900	< 3.7	< 3.8	< 2.2	< 3.7	< 3.8	< 2.2
3-Methylphenol, 4-Methylphenol	65794-96-9	- -	- -	NA	NA	< 2.2	NA	NA	< 2.2
4-Methylphenol	106-44-5	170	490	< 3.7	< 3.8	NA	< 3.7	< 3.8	NA
Acenaphthene	83-32-9	2,100	3,800	< 0.16	< 0.17	< 1.1	< 0.16	< 0.17	< 1.1
Acenaphthylene	208-96-8	2,100	5,800	< 0.15	< 0.15	< 1.1	< 0.15	< 0.16	< 1.1
Acetophenone	98-86-2	3,500	9,700	NA	NA	< 2.2	NA	NA	< 2.2
Anthracene	120-12-7	66	66	< 0.2	< 0.2	< 1.1	< 0.2	< 0.2	< 1.1
Benz(a)anthracene	56-55-3	0.3	3.9	< 0.14	< 0.14	< 1.1	< 0.14	< 0.14	< 1.1
Benzo(a)pyrene	50-32-8	0.2	0.2	< 0.17	< 0.17	< 1.1	< 0.17	< 0.17	< 1.1
Benzo(b)fluoranthene	205-99-2	0.18	1.2	< 0.28	< 0.28	< 1.1	< 0.28	< 0.29	< 1.1
Benzo(g,h,i)perylene	191-24-2	0.26	0.26	< 0.14	< 0.15	< 1.1	< 0.14	< 0.15	< 1.1
Benzo(k)fluoranthene	207-08-9	0.18	0.55	< 0.35	< 0.36	< 1.1	< 0.35	< 0.36	< 1.1
bis(2-Ethylhexyl)phthalate	117-81-7	6	6	< 0.63	< 0.65	3.7	< 0.63	< 0.65	< 2.2
Butyl benzyl phthalate	85-68-7	340	1,400	< 0.27	< 0.28	< 2.2	< 0.27	< 0.28	< 2.2
Carbazole	86-74-8	33	140	< 0.19	< 0.2	< 1.1	< 0.19	< 0.2	< 1.1
Chrysene	218-01-9	1.8	1.9	< 0.28	< 0.29	< 1.1	< 0.28	< 0.29	< 1.1
Dibenz(a,h)anthracene	53-70-3	0.052	0.6	< 0.18	< 0.19	< 1.1	< 0.18	< 0.19	< 1.1
Dibenzofuran	132-64-9	35	97	< 1.3	< 1.3	< 5.6	< 1.3	< 1.3	< 5.6
Diethyl phthalate	84-66-2	28,000	78,000	< 0.24	< 0.24	< 2.2	< 0.24	< 0.24	< 2.2
Di-n-butyl phthalate	84-74-2	3,500	9,700	< 0.2	< 0.21	< 2.2	< 0.2	< 0.21	< 2.2
Fluoranthene	206-44-0	260	260	< 0.16	< 0.17	< 1.1	< 0.16	< 0.17	< 1.1
Fluorene	86-73-7	1,400	1,900	< 0.24	< 0.24	< 1.1	< 0.24	< 0.25	< 1.1
Indeno(1,2,3-cd)pyrene	193-39-5	0.18	2.3	< 0.17	< 0.17	< 1.1	< 0.17	< 0.17	< 1.1
Naphthalene	91-20-3	100	100	< 0.097	< 0.099	< 1.1	< 0.097	< 0.1	< 1.1
Phenanthrene	85-01-8	1,100	1,100	< 0.22	< 0.23	< 1.1	< 0.22	< 0.23	< 1.1
Phenol	108-95-2	2,000	2,000	< 1.7	< 1.7	< 2.2	< 1.7	< 1.7	< 2.2
Pyrene	129-00-0	130	130	< 0.23	< 0.23	< 1.1	< 0.23	< 0.24	< 1.1
Pesticides									
4,4-DDT	50-29-3	1.9	5.5	< 0.05	< 0.05	< 0.0069	< 0.05	< 0.05	< 0.0068
Dieldrin	60-57-1	0.041	0.17	< 0.05	< 0.05	< 0.0069	< 0.05	< 0.05	< 0.0068
trans-chlordane	5103-74-2	- -	- -	NA	NA	< 0.0069	NA	NA	< 0.0068
Polychlorinated Biphenyls									
Total PCBs	-	- -	- -	< 0.25	< 0.25	< 0.34	< 0.25	< 0.25	< 0.34

Location: / Date Collected:	CAS Number	Groundwater Standards: Used Aquifer TDS≤2,500 Res (Exceedances Bolded & Italicized)	Groundwater Standards: Used Aquifer TDS≤2,500 Non-Res (Exceedances Shaded)	PCMW-19S 11/14/05	PCMW-19S 2/2/06	PCMW-19S 3/22/18	PCMW-19D 11/14/05	PCMW-19D 2/2/06	PCMW-19D 3/22/18
Volatile Organic Compounds									
1,2-Dichlorobenzene	95-50-1	600	600	NA	NA	< 1.0	NA	NA	< 1.0 [< 1.0]
Acetone	67-64-1	31,000	88,000	< 4	< 5.6	< 10	< 4	< 5.6	< 10 [< 10]
Benzene	71-43-2	5	5	< 0.43	< 0.14	< 0.50	< 0.43	< 0.14	< 0.50 [< 0.50]
Chlorobenzene	108-90-7	100	100	< 0.2	< 0.37	< 1.0	< 0.2	< 0.37	< 1.0 [< 1.0]
Chloroform	67-66-3	80	80	< 0.38	< 0.36	< 1.0	< 0.38	< 0.36	< 1.0 [< 1.0]
cis-1,2-Dichloroethene	156-59-2	70	70	< 0.5	< 0.3	< 1.0	< 0.5	< 0.3	< 1.0 [< 1.0]
Dichloromethane	75-09-2	5	5	< 0.87	< 0.49	< 2.0	< 0.87	< 0.49	< 2.0 [< 2.0]
Ethylbenzene	100-41-4	700	700	< 0.49	< 0.34	< 1.0	< 0.49	< 0.34	< 1.0 [< 1.0]
Isopropylbenzene	98-82-8	840	3,500	NA	NA	< 1.0	NA	NA	< 1.0 [< 1.0]
m&p-Xylenes	ARC-mpXyl	- -	- -	< 0.86	< 0.54	< 1.0	< 0.86	< 0.54	< 1.0 [< 1.0]
Methyl-tert-butyl ether	1634-04-4	20	20	NA	NA	< 1.0	NA	NA	< 1.0 [< 1.0]
o,p-Xylene	136777-61-2	- -	- -	< 0.55	< 0.14	NA	< 0.55	< 0.14	NA
o-Xylene	95-47-6	- -	- -	NA	NA	< 1.0	NA	NA	< 1.0 [< 1.0]
Styrene (Monomer)	100-42-5	100	100	< 0.29	< 0.22	< 1.0	< 0.29	< 0.22	< 1.0 [< 1.0]
Tetrachloroethene	127-18-4	5	5	< 0.31	< 0.28	< 1.0	< 0.31	< 0.28	< 1.0 [< 1.0]
Toluene	108-88-3	1,000	1,000	< 0.31	< 0.22	< 1.0	< 0.31	< 0.22	< 1.0 [< 1.0]
Total Xylenes	1330-20-7	10,000	10,000	NA	NA	< 1.0	NA	NA	< 1.0 [< 1.0]
Trichloroethene	79-01-6	5	5	< 0.36	< 0.37	< 1.0	< 0.36	< 0.37	< 1.0 [< 1.0]
Semi-Volatile Organic Compounds									
1,1-Biphenyl	92-52-4	0.84	3.5	NA	NA	< 0.95	NA	NA	< 0.98 [< 0.95]
2,4-Dimethylphenol	105-67-9	690	1,900	< 0.85	< 0.85	< 4.8	< 0.85	< 0.94	< 4.9 [< 4.8]
2,4-Dinitrotoluene	121-14-2	2.1	8.8	NA	NA	< 0.95	NA	NA	< 0.98 [< 0.95]
2-Methylnaphthalene	91-57-6	6.3	26	< 1.7	< 1.7	< 0.95	< 1.7	< 1.9	< 0.98 [< 0.95]
2-Methylphenol	95-48-7	1,700	4,900	< 3.7	< 3.7	< 1.9	< 3.7	< 4.1	< 2.0 [< 1.9]
3-Methylphenol, 4-Methylphenol	65794-96-9	- -	- -	NA	NA	< 1.9	NA	NA	< 2.0 [< 1.9]
4-Methylphenol	106-44-5	170	490	< 3.7	< 3.7	NA	< 3.7	< 4.1	NA
Acenaphthene	83-32-9	2,100	3,800	< 0.16	< 0.16	< 0.95	< 0.16	< 0.18	< 0.98 [< 0.95]
Acenaphthylene	208-96-8	2,100	5,800	< 0.15	< 0.15	< 0.95	< 0.15	< 0.17	< 0.98 [< 0.95]
Acetophenone	98-86-2	3,500	9,700	NA	NA	< 1.9	NA	NA	< 2.0 [< 1.9]
Anthracene	120-12-7	66	66	< 0.2	< 0.2	< 0.95	< 0.2	< 0.22	< 0.98 [< 0.95]
Benz(a)anthracene	56-55-3	0.3	3.9	< 0.14	< 0.14	< 0.95	< 0.14	< 0.15	< 0.98 [< 0.95]
Benzo(a)pyrene	50-32-8	0.2	0.2	< 0.17	< 0.17	< 0.95	< 0.17	< 0.18	< 0.98 [< 0.95]
Benzo(b)fluoranthene	205-99-2	0.18	1.2	< 0.28	< 0.28	< 0.95	< 0.28	< 0.31	< 0.98 [< 0.95]
Benzo(g,h,i)perylene	191-24-2	0.26	0.26	< 0.14	< 0.14	< 0.95	< 0.14	< 0.16	< 0.98 [< 0.95]
Benzo(k)fluoranthene	207-08-9	0.18	0.55	< 0.35	< 0.35	< 0.95	< 0.35	< 0.39	< 0.98 [< 0.95]
bis(2-Ethylhexyl)phthalate	117-81-7	6	6	1.4	< 0.63	< 1.9	< 0.63	< 0.71	< 2.0 [< 1.9]
Butyl benzyl phthalate	85-68-7	340	1,400	< 0.27	< 0.27	< 1.9	< 0.27	< 0.3	< 2.0 [< 1.9]
Carbazole	86-74-8	33	140	< 0.19	< 0.19	< 0.95	< 0.19	< 0.21	< 0.98 [< 0.95]
Chrysene	218-01-9	1.8	1.9	< 0.28	< 0.28	< 0.95	< 0.28	< 0.32	< 0.98 [< 0.95]
Dibenz(a,h)anthracene	53-70-3	0.052	0.6	< 0.18	< 0.18	< 0.95	< 0.18	< 0.2	< 0.98 [< 0.95]
Dibenzofuran	132-64-9	35	97	< 1.3	< 1.3	< 4.8	< 1.3	< 1.4	< 4.9 [< 4.8]
Diethyl phthalate	84-66-2	28,000	78,000	< 0.24	< 0.24	< 1.9	< 0.24	< 0.26	< 2.0 [< 1.9]
Di-n-butyl phthalate	84-74-2	3,500	9,700	< 0.2	< 0.2	< 1.9	< 0.2	< 0.22	< 2.0 [< 1.9]
Fluoranthene	206-44-0	260	260	< 0.16	< 0.16	< 0.95	< 0.16	< 0.18	< 0.98 [< 0.95]
Fluorene	86-73-7	1,400	1,900	< 0.24	< 0.24	< 0.95	< 0.24	< 0.27	< 0.98 [< 0.95]
Indeno(1,2,3-cd)pyrene	193-39-5	0.18	2.3	< 0.17	< 0.17	< 0.95	< 0.17	< 0.19	< 0.98 [< 0.95]
Naphthalene	91-20-3	100	100	< 0.097	< 0.097	< 0.95	< 0.097	< 0.11	< 0.98 [< 0.95]
Phenanthrene	85-01-8	1,100	1,100	< 0.22	< 0.22	< 0.95	< 0.22	< 0.25	< 0.98 [< 0.95]
Phenol	108-95-2	2,000	2,000	< 1.7	< 1.7	< 1.9	< 1.7	< 1.8	< 2.0 [< 1.9]
Pyrene	129-00-0	130	130	< 0.23	< 0.23	< 0.95	< 0.23	< 0.25	< 0.98 [< 0.95]
Pesticides									
4,4-DDT	50-29-3	1.9	5.5	< 0.05	< 0.05	< 0.0067	< 0.051	< 0.05	< 0.0069 [< 0.0069]
Dieldrin	60-57-1	0.041	0.17	< 0.05	< 0.05	< 0.0067	< 0.051	< 0.05	< 0.0069 [< 0.0069]
trans-chlordane	5103-74-2	- -	- -	NA	NA	< 0.0067	NA	NA	< 0.0069 [< 0.0069]
Polychlorinated Biphenyls									
Total PCBs	-	- -	- -	< 0.25	< 0.25	< 0.33	< 0.26	< 0.25	< 0.34 [< 0.33]

Location: / Date Collected:	CAS Number	Groundwater Standards		PCMW-20S			PCMW-20D		
		Used Aquifer TDS≤2,500 Res (Exceedances Bolded & Italicized)	Used Aquifer TDS≤2,500 Non-Res (Exceedances Shaded)	11/14/05	2/1/06	3/22/18	11/14/05	2/1/06	3/22/18
Volatile Organic Compounds									
1,2-Dichlorobenzene	95-50-1	600	600	NA	NA	< 1.0	NA	NA	< 1.0
Acetone	67-64-1	31,000	88,000	< 4	< 5.6	< 10	< 4	< 5.6	< 10
Benzene	71-43-2	5	5	< 0.43	< 0.14	< 0.50	< 0.43	< 0.14	< 0.50
Chlorobenzene	108-90-7	100	100	< 0.2	< 0.17	< 1.0	< 0.2	< 0.17	< 1.0
Chloroform	67-66-3	80	80	< 0.38	< 0.4	< 1.0	< 0.38	< 0.4	< 1.0
cis-1,2-Dichloroethene	156-59-2	70	70	< 0.5	< 0.34	< 1.0	< 0.5	< 0.34	< 1.0
Dichloromethane	75-09-2	5	5	< 0.87	< 1.2	< 2.0	< 0.87	< 1.2	< 2.0
Ethylbenzene	100-41-4	700	700	< 0.49	< 0.31	< 1.0	< 0.49	< 0.31	< 1.0
Isopropylbenzene	98-82-8	840	3,500	NA	NA	< 1.0	NA	NA	< 1.0
m&p-Xylenes	ARC-mpXyl	- -	- -	< 0.86	< 0.49	< 1.0	< 0.86	< 0.49	< 1.0
Methyl-tert-butyl ether	1634-04-4	20	20	NA	NA	< 1.0	NA	NA	< 1.0
o,p-Xylene	136777-61-2	- -	- -	< 0.55	< 0.21	NA	< 0.55	< 0.21	NA
o-Xylene	95-47-6	- -	- -	NA	NA	< 1.0	NA	NA	< 1.0
Styrene (Monomer)	100-42-5	100	100	< 0.29	< 0.21	< 1.0	< 0.29	< 0.21	< 1.0
Tetrachloroethene	127-18-4	5	5	< 0.31	< 0.46	< 1.0	< 0.31	< 0.46	< 1.0
Toluene	108-88-3	1,000	1,000	< 0.31	< 0.21	< 1.0	< 0.31	< 0.21	< 1.0
Total Xylenes	1330-20-7	10,000	10,000	NA	NA	< 1.0	NA	NA	< 1.0
Trichloroethene	79-01-6	5	5	< 0.36	< 0.76	< 1.0	< 0.36	< 0.76	< 1.0
Semi-Volatile Organic Compounds									
1,1-Biphenyl	92-52-4	0.84	3.5	NA	NA	< 1.0	NA	NA	< 0.98
2,4-Dimethylphenol	105-67-9	690	1,900	< 0.85	< 0.85	< 5.0	< 0.85	< 0.85	< 4.9
2,4-Dinitrotoluene	121-14-2	2.1	8.8	NA	NA	< 1.0	NA	NA	< 0.98
2-Methylnaphthalene	91-57-6	6.3	26	2	< 1.7	< 1.0	< 1.7	< 1.7	< 0.98
2-Methylphenol	95-48-7	1,700	4,900	< 3.7	< 3.7	< 2.0	< 3.7	< 3.7	< 2.0
3-Methylphenol, 4-Methylphenol	65794-96-9	- -	- -	NA	NA	< 2.0	NA	NA	< 2.0
4-Methylphenol	106-44-5	170	490	< 3.7	< 3.7	NA	< 3.7	< 3.7	NA
Acenaphthene	83-32-9	2,100	3,800	3.9	< 0.16	< 1.0	< 0.16	< 0.16	< 0.98
Acenaphthylene	208-96-8	2,100	5,800	< 0.15	< 0.15	< 1.0	< 0.15	< 0.15	< 0.98
Acetophenone	98-86-2	3,500	9,700	NA	NA	< 2.0	NA	NA	< 2.0
Anthracene	120-12-7	66	66	1.4	< 0.2	< 1.0	< 0.2	< 0.2	< 0.98
Benz(a)anthracene	56-55-3	0.3	3.9	< 0.14	< 0.14	< 1.0	< 0.14	< 0.14	< 0.98
Benzo(a)pyrene	50-32-8	0.2	0.2	< 0.17	< 0.17	< 1.0	< 0.17	< 0.17	< 0.98
Benzo(b)fluoranthene	205-99-2	0.18	1.2	< 0.28	< 0.28	< 1.0	< 0.28	< 0.28	< 0.98
Benzo(g,h,i)perylene	191-24-2	0.26	0.26	< 0.14	< 0.14	< 1.0	< 0.14	< 0.14	< 0.98
Benzo(k)fluoranthene	207-08-9	0.18	0.55	< 0.35	< 0.35	< 1.0	< 0.35	< 0.35	< 0.98
bis(2-Ethylhexyl)phthalate	117-81-7	6	6	< 0.63	< 0.63	< 2.0	< 0.63	< 0.63	< 2.0
Butyl benzyl phthalate	85-68-7	340	1,400	< 0.27	< 0.27	< 2.0	< 0.27	< 0.27	< 2.0
Carbazole	86-74-8	33	140	< 0.19	< 0.19	< 1.0	< 0.19	< 0.19	< 0.98
Chrysene	218-01-9	1.8	1.9	< 0.28	< 0.28	< 1.0	< 0.28	< 0.28	< 0.98
Dibenz(a,h)anthracene	53-70-3	0.052	0.6	< 0.18	< 0.18	< 1.0	< 0.18	< 0.18	< 0.98
Dibenzofuran	132-64-9	35	97	1.2 J	< 1.3	< 5.0	< 1.3	< 1.3	< 4.9
Diethyl phthalate	84-66-2	28,000	78,000	< 0.24	< 0.24	< 2.0	< 0.24	< 0.24	< 2.0
Di-n-butyl phthalate	84-74-2	3,500	9,700	< 0.2	< 0.2	< 2.0	< 0.2	< 0.2	< 2.0
Fluoranthene	206-44-0	260	260	2.4	< 0.16	< 1.0	< 0.16	< 0.16	< 0.98
Fluorene	86-73-7	1,400	1,900	2.4	< 0.24	< 1.0	< 0.24	< 0.24	< 0.98
Indeno(1,2,3-cd)pyrene	193-39-5	0.18	2.3	< 0.17	< 0.17	< 1.0	< 0.17	< 0.17	< 0.98
Naphthalene	91-20-3	100	100	< 0.097	< 0.097	< 1.0	< 0.097	< 0.097	< 0.98
Phenanthrene	85-01-8	1,100	1,100	5.1	< 0.22	< 1.0	< 0.22	< 0.22	< 0.98
Phenol	108-95-2	2,000	2,000	< 1.7	< 1.7	< 2.0	< 1.7	< 1.7	< 2.0
Pyrene	129-00-0	130	130	2	< 0.23	< 1.0	< 0.23	< 0.23	< 0.98
Pesticides									
4,4-DDT	50-29-3	1.9	5.5	< 0.057	< 0.05	< 0.0067	< 0.054	< 0.05	< 0.0067
Dieldrin	60-57-1	0.041	0.17	< 0.057	< 0.05	< 0.0067	< 0.054	< 0.05	< 0.0067
trans-chlordane	5103-74-2	- -	- -	NA	NA	< 0.0067	NA	NA	< 0.0067
Polychlorinated Biphenyls									
Total PCBs	-	- -	- -	< 0.29	< 0.25	< 0.33	< 0.27	< 0.25	< 0.33

Notes:

1. Samples prior to 2018 were collected by Paulus, Sokolowski, and Sartor Engineering, PC on the dates indicated. Samples in 2018 and 2019 were collected by Arcadis on the dates indicated.
2. 2005 and 2006 samples were analyzed by Hampton-Clarke, Veritech Laboratories of Fairfield, New Jersey.
3. 2018 and 2019 samples were analyzed by SGS North America Incorporated Laboratories of Dayton, New Jersey.
4. Samples were submitted for laboratory analysis for one or more of the following constituent groups, as indicated above.
   - Target Compound List (TCL) volatile organic compounds (VOC) using United States Environmental Protection Agency (USEPA) SW-846 Method 8260D.
   - TCL semi-volatile organic compounds (SVOC) using USEPA SW-846 Method 8270.
   - Pesticides using USEPA SW-846 Method 8081.
   - Polychlorinated biphenyls (PCBs) using USEPA SW-846 Method 8082.
5. Only compounds detected in one or more samples are shown in this table.
6. < = constituent not detected at a concentration above the reported detection limit. These results are also reported in gray.
7. NA = Not Analyzed.
8. Concentrations reported in micrograms per liter (ug/L) or parts per billion (ppb).
9. Shading indicates an exceedance of Pennsylvania Department of Environmental Protection's (PADEP's) non-residential Medium Specific Concentrations (MSCs) for Used Aquifers containing Total Dissolved Solids (TDS) ≤ 2,500 milligrams per liter (mg/L).
10. Italics and bolding indicates an exceedance of PADEP's Residential MSCs for Used Aquifers containing TDS ≤ 2,500 mg/L.
11. - - = No PADEP MSC.
12. - = No actual Chemical Abstracts Service (CAS) number is available.
13. * indicates that the groundwater monitoring well was installed to replace the missing historical well also listed in the monitoring well ID.
14. Brackets indicate the reported concentration of a duplicate sample.
15. Qualifier Definitions:
    B = The compound has been found in the sample as well as its associated blank.
    D = Concentration is based on a diluted sample analysis.
    J = Analyte is an estimated value.
16. Data from 2018 and 2019 have undergone a Tier II validation. Data prior to 2018 have not been validated.

Table 16
Groundwater Analytical Results – TDS and Detected Total Inorganics (ug/L)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location: / Date Collected:	CAS Number	Groundwater Standards: Used Aquifer TDS≤2,500 Res (Exceedances Bolded & Italicized)	Groundwater Standards: Used Aquifer TDS≤2,500 Non-Res (Exceedances Shaded)	MW-102 5/31/18	MW-103 5/31/18	MW-104 5/30/18	MW-107 5/30/18	MW-107 3/28/19	MW-108 10/4/19	MW-109 10/4/19	MW-110 10/4/19	MW-111 10/4/19	MW-112 10/4/19	MW-113 10/4/19	MW-5 3/19/18
General Chemistry															
Total Dissolved Solids	ARC-TDS	- -	- -	NA	NA	NA	NA	560,000	908,000 [916,000]	NA	NA	710,000	NA	NA	NA
Metals (Totals)															
Aluminum	7429-90-5	- -	- -	661 [275]	< 200	1,080	1,570	NA	< 200 [< 200]	< 200	< 200	6,890	< 200	< 200	< 200
Antimony	7440-36-0	6	6	< 6.0 [< 6.0]	< 6.0	< 6.0	< 6.0	NA	< 6.0 [< 6.0]	< 6.0	< 6.0	< 6.0	< 6.0	< 6.0	< 6.0
Arsenic	7440-38-2	10	10	6.7 [6.6]	< 3.0	4.1	9.4	NA	< 3.0 [< 3.0]	< 3.0	5.0	***26.8***	5.2	< 3.0	3.7
Barium	7440-39-3	2,000	2,000	352 [350]	< 200	< 200	242	NA	< 200 [< 200]	< 200	< 200	250	< 200	< 200	< 200
Beryllium	7440-41-7	4	4	< 1.0 [< 1.0]	< 1.0	< 1.0	< 1.0	NA	< 1.0 [< 1.0]	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cadmium	7440-43-9	5	5	< 3.0 [< 3.0]	< 3.0	< 3.0	< 3.0	NA	< 3.0 [< 3.0]	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
Calcium	7440-70-2	- -	- -	103,000 [103,000]	151,000	60,200	104,000	NA	186,000 [178,000]	149,000	178,000	72,500	123,000	105,000	29,800
Chromium	7440-47-3	100	100	< 10 [< 10]	< 10	< 10	< 10	NA	< 10 [< 10]	< 10	< 10	46.8	< 10	< 10	< 10
Copper	7440-50-8	1,000	1,000	< 10 [< 10]	< 10	< 10	16.8	NA	< 10 [< 10]	< 10	< 10	38.5	< 10	< 10	< 10
Cyanide	57-12-5	200	200	< 10 UJ [< 10 UJ]	< 10	***670***	< 10	NA	31 J [34 J]	11 J	14 J	140 J	180 J	***380 J***	< 10 UJ
Iron	7439-89-6	- -	- -	3,560 [2,900]	3,100	2,900	17,100	NA	12,500 [12,200]	28,000	18,900	19,200	3,630	25,600	14,100
Lead	7439-92-1	5	5	4.8 [< 3.0]	***15.9***	***7.7***	***206***	NA	***81.7 [82.7]***	< 3.0	< 3.0	***87.9***	< 3.0	< 3.0	4.2
Magnesium	7439-95-4	- -	- -	74,200 [74,900]	114,000	10,800	44,200	NA	80,900 [79,100]	83,300	82,100	38,600	73,300	29,900	15,500
Manganese	7439-96-5	300	300	***383 [370]***	***542***	***639***	***1,120***	NA	***719 [699]***	***1,660***	***1,430***	***958***	***5,840***	***1,060***	***326***
Mercury	7439-97-6	2	2	< 0.20 [< 0.20]	< 0.20	< 0.20	< 0.20	NA	< 0.20 [< 0.20]	< 0.20	< 0.20	0.42	< 0.20	< 0.20	< 0.20
Nickel	7440-02-0	100	100	< 10 [< 10]	< 10	< 10	< 10	NA	< 10 [< 10]	< 10	< 10	11.5	< 10	< 10	< 10
Potassium	7440-09-7	- -	- -	14,900 [15,000]	21,500	< 10,000	16,400	NA	17,000 [16,600]	17,700	16,500	20,900	< 10,000	< 10,000	< 10,000
Selenium	7782-49-2	50	50	< 10 [< 10]	< 10	< 10	< 10	NA	< 10 [< 10]	< 10	< 10	< 10	< 10	< 10	< 10
Sodium	7440-23-5	- -	- -	47,600 [47,800]	62,100	< 10,000	12,000	NA	20,500 [20,000]	37,900	32,800	110,000	33,600	13,200	< 10,000
Zinc	7440-66-6	2,000	2,000	< 20 [< 20]	< 20	34.1	135	NA	< 20 [< 20]	< 20	< 20	173	< 20	< 20	< 20

Table 16
Groundwater Analytical Results – TDS and Detected Total Inorganics (ug/L)

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National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location: / Date Collected:	CAS Number	Groundwater Standards: Used Aquifer TDS≤2,500 Res (Exceedances Bolded & Italicized)	Groundwater Standards: Used Aquifer TDS≤2,500 Non-Res (Exceedances Shaded)	MW-6	PCMW-01			PCMW-02 / MW-106*			PCMW-03	
				3/22/18	11/1/05	1/30/06	3/19/18	11/1/05	1/30/06	5/29/18	11/2/05	1/30/06
General Chemistry												
Total Dissolved Solids	ARC-TDS	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals (Totals)												
Aluminum	7429-90-5	- -	- -	< 200	NA	NA	< 200	NA	NA	781	NA	NA
Antimony	7440-36-0	6	6	< 6.0	< 6	< 6	< 6.0	< 6 [< 6]	< 6	< 6.0	< 6	< 6
Arsenic	7440-38-2	10	10	< 3.0	< 7.5	< 7.5	< 3.0	< 7.5 [< 7.5]	< 7.5	< 3.0	< 7.5	< 7.5
Barium	7440-39-3	2,000	2,000	< 200	86	80	< 200	110 [120]	99	< 200	87	72
Beryllium	7440-41-7	4	4	< 1.0	< 4	< 4	< 1.0	< 4 [< 4]	< 4	< 1.0	< 4	< 4
Cadmium	7440-43-9	5	5	< 3.0	< 3.5	< 3.5	< 3.0	< 3.5 [< 3.5]	< 3.5	< 3.0	< 3.5	< 3.5
Calcium	7440-70-2	- -	- -	71,100	NA	NA	72,200	NA	NA	59,100	NA	NA
Chromium	7440-47-3	100	100	< 10	< 50	< 50	< 10	< 50 [< 50]	< 50	< 10	< 50	< 50
Copper	7440-50-8	1,000	1,000	< 10	< 50	< 50	< 10	< 50 [< 50]	< 50	< 10	< 50	< 50
Cyanide	57-12-5	200	200	10 J	NA	NA	< 10 UJ	NA	NA	< 10	NA	NA
Iron	7439-89-6	- -	- -	12,300	NA	NA	7,790	NA	NA	20,500	NA	NA
Lead	7439-92-1	5	5	3.0	***6.7***	< 4	< 3.0	***13 [12]***	***12***	***94.4***	< 4	< 4
Magnesium	7439-95-4	- -	- -	20,200	NA	NA	19,300	NA	NA	27,300	NA	NA
Manganese	7439-96-5	300	300	***948***	NA	NA	***863***	NA	NA	***1,030***	NA	NA
Mercury	7439-97-6	2	2	< 0.20	< 0.7	< 0.7	< 0.20	< 0.7 [< 7.0]	< 0.7	< 0.20	< 0.7	< 0.7
Nickel	7440-02-0	100	100	< 10	< 50	< 50	< 10	< 50 [< 50]	< 50	< 10	< 50	< 50
Potassium	7440-09-7	- -	- -	< 10,000	NA	NA	< 10,000	NA	NA	< 10,000	NA	NA
Selenium	7782-49-2	50	50	< 10	< 40	< 40	< 10	< 40 [< 40]	< 40	< 10	< 40	< 40
Sodium	7440-23-5	- -	- -	< 10,000	NA	NA	14,100	NA	NA	14,200	NA	NA
Zinc	7440-66-6	2,000	2,000	< 20	190	< 50	34.6	57 [58]	< 50	41.6	< 50	84

Table 16
Groundwater Analytical Results – TDS and Detected Total Inorganics (ug/L)

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National Grid Former Philadelphia Coke Plant
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Location: / Date Collected:	CAS Number	Groundwater Standards: Used Aquifer TDS≤2,500 Res (Exceedances Bolded & Italicized)	Groundwater Standards: Used Aquifer TDS≤2,500 Non-Res (Exceedances Shaded)	PCMW-04				PCMW-05					PCMW-06			
				11/2/05	1/30/06	3/19/18	5/30/18	11/2/05	1/31/06	3/23/18	5/30/18	3/28/19	11/3/05	1/31/06	3/23/18	5/30/18
General Chemistry																
Total Dissolved Solids	ARC-TDS	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	600,000 [750,000]	NA	NA	NA	NA
Metals (Totals)																
Aluminum	7429-90-5	- -	- -	NA	NA	209	< 200	NA	NA	< 200 [< 200]	< 200	NA	NA	NA	< 200	< 200
Antimony	7440-36-0	6	6	< 6	< 6	< 6.0	< 6.0	< 6	< 6	< 6.0 [< 6.0]	< 6.0	NA	< 6	< 6	< 6.0	< 6.0
Arsenic	7440-38-2	10	10	8.1	< 7.5	6.3	3.7	< 7.5	< 7.5	3.4 [3.7]	4.2	NA	***13***	< 7.5	3.2	< 3.0
Barium	7440-39-3	2,000	2,000	130	150	< 200	< 200	410	250	240 [238]	318	NA	240	270	< 200	227
Beryllium	7440-41-7	4	4	< 4	< 4	< 1.0	< 1.0	< 4	< 4	< 1.0 [< 1.0]	< 1.0	NA	< 4	< 4	< 1.0	< 1.0
Cadmium	7440-43-9	5	5	< 3.5	< 3.5	< 3.0	< 3.0	< 3.5	< 3.5	< 3.0 [< 3.0]	< 3.0	NA	< 3.5	< 3.5	< 3.0	< 3.0
Calcium	7440-70-2	- -	- -	NA	NA	119,000	97,200	NA	NA	104,000 [104,000]	159,000	NA	NA	NA	72,100	82,900
Chromium	7440-47-3	100	100	< 50	< 50	< 10	< 10	< 50	< 50	< 10 [< 10]	< 10	NA	< 50	< 50	< 10	< 10
Copper	7440-50-8	1,000	1,000	< 50	< 50	23.5	14.9	< 50	< 50	27.4 [28.6]	28.4	NA	< 50	< 50	16.9	< 10
Cyanide	57-12-5	200	200	NA	NA	< 10 UJ	NA	NA	NA	< 10 [< 10 UJ]	NA	NA	NA	NA	< 10 UJ	NA
Iron	7439-89-6	- -	- -	NA	NA	7,130	8,270	NA	NA	3,130 [3,090]	2,990	NA	NA	NA	1,030	912
Lead	7439-92-1	5	5	4.2	< 4	***17.8***	***9.0***	***13***	***75***	***112 [110]***	***80.1***	NA	***66***	***32***	***42.3***	***24.1***
Magnesium	7439-95-4	- -	- -	NA	NA	37,400	33,900	NA	NA	11,300 [11,200]	14,600	NA	NA	NA	8,070	8,650
Manganese	7439-96-5	300	300	NA	NA	***654***	***593***	NA	NA	157 [160]	***360***	NA	NA	NA	48.9	45.4
Mercury	7439-97-6	2	2	< 0.7	< 0.7	< 0.20	< 0.20	< 0.7	< 0.7	< 0.40 [< 0.20]	< 0.20	NA	< 0.7	< 0.7	< 0.20	< 0.20
Nickel	7440-02-0	100	100	< 50	< 50	< 10	< 10	< 50	***250***	***450 [465]***	***524***	NA	< 50	< 50	< 10	< 10
Potassium	7440-09-7	- -	- -	NA	NA	< 10,000	13,700	NA	NA	< 10,000 [< 10,000]	< 10,000	NA	NA	NA	< 10,000	< 10,000
Selenium	7782-49-2	50	50	< 40	< 40	< 10	< 10	< 40	< 40	< 10 [< 10]	< 10	NA	< 40	< 40	< 10	< 10
Sodium	7440-23-5	- -	- -	NA	NA	< 10,000	< 10,000	NA	NA	< 10,000 [< 10,000]	< 10,000	NA	NA	NA	< 10,000	< 10,000
Zinc	7440-66-6	2,000	2,000	< 50	< 50	58.0	< 20	250	***2,400***	***2,680 [2,700]***	***2,070***	NA	460	170	158	117

Table 16
Groundwater Analytical Results – TDS and Detected Total Inorganics (ug/L)

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National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location: / Date Collected:	CAS Number	Groundwater Standards: Used Aquifer TDS≤2,500 Res (Exceedances Bolded & Italicized)	Groundwater Standards: Used Aquifer TDS≤2,500 Non-Res (Exceedances Shaded)	PCMW-07		PCMW-08S			PCMW-08D			PCMW-09S			
				11/3/05	1/31/06	11/3/05	3/22/18	5/31/18	11/4/05	1/31/06	3/22/18	11/4/05	1/31/06	3/19/18	5/31/18
General Chemistry															
Total Dissolved Solids	ARC-TDS	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals (Totals)															
Aluminum	7429-90-5	- -	- -	NA	NA	NA	< 200	< 200	NA	NA	< 1,000	NA	NA	275	< 200
Antimony	7440-36-0	6	6	***6.4***	< 6	< 6	***9.9***	6.0	< 6	< 6	< 30	< 6	< 6	< 6.0	< 6.0
Arsenic	7440-38-2	10	10	< 7.5	< 7.5	***160***	3.4	***34.6***	8.7	< 7.5	< 15	8.4	< 7.5	***19.2***	7.4
Barium	7440-39-3	2,000	2,000	64	66	< 50	< 200	< 200	340	390	< 1,000	66	63	< 200	< 200
Beryllium	7440-41-7	4	4	< 4	< 4	< 4	< 1.0	< 1.0	< 4	< 4	< 5.0	< 4	< 4	< 1.0	< 1.0
Cadmium	7440-43-9	5	5	< 3.5	< 3.5	4.5	< 3.0	< 3.0	< 3.5	< 3.5	< 15	< 3.5	< 3.5	< 3.0	< 3.0
Calcium	7440-70-2	- -	- -	NA	NA	NA	170,000	155,000	NA	NA	63,500	NA	NA	186,000	169,000
Chromium	7440-47-3	100	100	< 50	< 50	< 50	< 10	< 10	< 50	< 50	< 50	< 50	< 50	< 10	< 10
Copper	7440-50-8	1,000	1,000	< 50	< 50	< 50	< 10	< 10	< 50	< 50	< 50	< 50	< 50	24.5	< 10
Cyanide	57-12-5	200	200	NA	NA	NA	18 J	NA	NA	NA	60 J	NA	NA	< 10 UJ	NA
Iron	7439-89-6	- -	- -	NA	NA	NA	163	9,500	NA	NA	165,000	NA	NA	6,760	6,170
Lead	7439-92-1	5	5	***6.2***	< 4	***89***	***5.3***	***12.6***	< 4	< 4	< 15	< 4	***14***	***21.2***	***5.3***
Magnesium	7439-95-4	- -	- -	NA	NA	NA	149,000	126,000	NA	NA	26,800	NA	NA	101,000	100,000
Manganese	7439-96-5	300	300	NA	NA	NA	41.7	***676***	NA	NA	***6,640***	NA	NA	***515***	***488***
Mercury	7439-97-6	2	2	< 0.7	< 0.7	< 0.7	< 0.20	< 0.20	< 0.7	< 0.7	< 0.60	< 0.7	< 0.7	< 0.20	< 0.20
Nickel	7440-02-0	100	100	< 50	< 50	< 50	< 10	< 10	< 50	< 50	< 50	< 50	< 50	20.0	11.3
Potassium	7440-09-7	- -	- -	NA	NA	NA	17,400	17,900	NA	NA	< 50,000	NA	NA	13,600	11,800
Selenium	7782-49-2	50	50	< 40	< 40	< 40	11.9	< 10	< 40	< 40	< 50	< 40	< 40	11.3	< 10
Sodium	7440-23-5	- -	- -	NA	NA	NA	13,900	16,400	NA	NA	79,000	NA	NA	21,900	18,300
Zinc	7440-66-6	2,000	2,000	< 50	< 50	54	48.2	57.1	< 50	< 50	< 100	< 50	< 50	85.2	24.6

Table 16
Groundwater Analytical Results – TDS and Detected Total Inorganics (ug/L)

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National Grid Former Philadelphia Coke Plant
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Location: / Date Collected:	CAS Number	Groundwater Standards: Used Aquifer TDS≤2,500 Res (Exceedances Bolded & Italicized)	Groundwater Standards: Used Aquifer TDS≤2,500 Non-Res (Exceedances Shaded)	PCMW-09D		PCMW-10S			PCMW-10D			PCMW-11S		
				11/7/05	1/31/06	11/7/05	2/1/06	3/22/18	11/7/05	2/1/06	3/22/18	11/7/05	2/2/06	3/23/18
General Chemistry														
Total Dissolved Solids	ARC-TDS	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals (Totals)														
Aluminum	7429-90-5	- -	- -	NA	NA	NA	NA	< 200	NA	NA	1,740	NA	NA	226
Antimony	7440-36-0	6	6	< 6	< 6	< 6	< 6	< 6.0	< 6	< 6	< 30	< 6	< 6	< 6.0
Arsenic	7440-38-2	10	10	< 7.5	***32***	***20***	***16***	< 9.0	< 7.5	< 7.5	< 15	9	< 7.5	6.3
Barium	7440-39-3	2,000	2,000	300	1,100	< 50	< 50	< 200	660	560	< 1,000	92	68	< 200
Beryllium	7440-41-7	4	4	< 4	***5.1***	< 4	< 4	< 1.0	< 4	< 4	< 5.0	< 4	< 4	< 1.0
Cadmium	7440-43-9	5	5	< 3.5	< 3.5	< 3.5	< 3.5	< 3.0	< 3.5	< 3.5	< 15	< 3.5	< 3.5	< 3.0
Calcium	7440-70-2	- -	- -	NA	NA	NA	NA	299,000	NA	NA	92,400	NA	NA	203,000
Chromium	7440-47-3	100	100	< 50	< 50	< 50	< 50	< 10	< 50	< 50	< 50	< 50	< 50	< 10
Copper	7440-50-8	1,000	1,000	< 50	79	< 50	< 50	15.2	< 50	< 50	< 50	< 50	< 50	23.4
Cyanide	57-12-5	200	200	NA	NA	NA	NA	< 10 UJ	NA	NA	***350 J***	NA	NA	< 10 UJ
Iron	7439-89-6	- -	- -	NA	NA	NA	NA	462	NA	NA	64,600	NA	NA	40,500
Lead	7439-92-1	5	5	< 4	***170***	< 4	< 4	< 9.0	< 4	< 4	< 15	< 4	< 4	< 3.0
Magnesium	7439-95-4	- -	- -	NA	NA	NA	NA	165,000	NA	NA	38,000	NA	NA	96,300
Manganese	7439-96-5	300	300	NA	NA	NA	NA	125	NA	NA	***7,650***	NA	NA	***1,300***
Mercury	7439-97-6	2	2	< 0.7	< 0.7	< 0.7	< 0.7	< 0.20	< 0.7	< 0.7	< 0.60	< 0.7	< 0.7	< 0.20
Nickel	7440-02-0	100	100	< 50	< 50	< 50	< 50	< 10	< 50	< 50	< 50	< 50	< 50	68.3
Potassium	7440-09-7	- -	- -	NA	NA	NA	NA	20,700	NA	NA	< 50,000	NA	NA	13,800
Selenium	7782-49-2	50	50	< 40	< 40	< 40	< 40	< 10	< 40	< 40	< 50	< 40	< 40	< 10
Sodium	7440-23-5	- -	- -	NA	NA	NA	NA	14,700	NA	NA	103,000	NA	NA	19,000
Zinc	7440-66-6	2,000	2,000	< 50	300	< 50	560	88.6	< 50	< 50	< 100	< 50	< 50	233

Table 16
Groundwater Analytical Results – TDS and Detected Total Inorganics (ug/L)

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National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location: / Date Collected:	CAS Number	Groundwater Standards: Used Aquifer TDS≤2,500 Res (Exceedances Bolded & Italicized)	Groundwater Standards: Used Aquifer TDS≤2,500 Non-Res (Exceedances Shaded)	PCMW-211	PCMW-11D		PCMW-12S		PCMW-12D		PCMW-212	PCMW-13S		PCMW-13D	
				2/2/06	11/8/05	2/2/06	11/8/05	2/1/06	11/8/05	2/1/06	2/1/06	11/9/05	2/2/06	11/9/05	2/2/06
General Chemistry															
Total Dissolved Solids	ARC-TDS	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals (Totals)															
Aluminum	7429-90-5	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	7440-36-0	6	6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	***6.4***	< 6	< 6	< 6
Arsenic	7440-38-2	10	10	8	< 7.5	< 7.5	< 7.5	< 7.5	< 7.5	< 7.5	< 7.5	< 7.5	< 7.5	< 7.5	< 7.5
Barium	7440-39-3	2,000	2,000	67	180	220	53	< 50	90	110	< 50	62	63	< 50	< 50
Beryllium	7440-41-7	4	4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4
Cadmium	7440-43-9	5	5	< 3.5	< 3.5	< 3.5	< 3.5	< 3.5	< 3.5	< 3.5	< 3.5	< 3.5	< 3.5	< 3.5	< 3.5
Calcium	7440-70-2	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	7440-47-3	100	100	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Copper	7440-50-8	1,000	1,000	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Cyanide	57-12-5	200	200	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	7439-89-6	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	7439-92-1	5	5	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4
Magnesium	7439-95-4	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	7439-96-5	300	300	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	7439-97-6	2	2	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7
Nickel	7440-02-0	100	100	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Potassium	7440-09-7	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	7782-49-2	50	50	< 40	< 40	< 40	< 40	< 40	< 40	< 40	< 40	< 40	< 40	< 40	< 40
Sodium	7440-23-5	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	7440-66-6	2,000	2,000	< 50	< 50	< 50	< 50	190	< 50	110	170	< 50	98	< 50	81

Table 16
Groundwater Analytical Results – TDS and Detected Total Inorganics (ug/L)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location: / Date Collected:	CAS Number	Groundwater Standards: Used Aquifer TDS≤2,500 Res (Exceedances Bolded & Italicized)	Groundwater Standards: Used Aquifer TDS≤2,500 Non-Res (Exceedances Shaded)	PCMW-14S / MW-101* 11/9/05	PCMW-14S / MW-101* 2/3/06	PCMW-14S / MW-101* 5/30/18	PCMW-14D 11/9/05	PCMW-14D 2/3/06	PCMW-15S 11/10/05	PCMW-15S 2/3/06	PCMW-15S 3/20/18	PCMW-15D 11/10/05	PCMW-15D 2/3/06	PCMW-15D 3/20/18
General Chemistry														
Total Dissolved Solids	ARC-TDS	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals (Totals)														
Aluminum	7429-90-5	- -	- -	NA	NA	508	NA	NA	NA	NA	267	NA	NA	< 200
Antimony	7440-36-0	6	6	< 6	< 6	< 6.0	< 6 [< 6]	< 6	< 6	< 6	< 6.0	< 6	< 6	< 6.0
Arsenic	7440-38-2	10	10	< 7.5	< 7.5	< 3.0	7.9 [9.4]	< 7.5	***12***	8	< 15	***13***	***12***	***27.3***
Barium	7440-39-3	2,000	2,000	100	86	543	75 [73]	110	110	78	< 200	110	92	< 200
Beryllium	7440-41-7	4	4	< 4	< 4	< 1.0	< 4 [< 4]	< 4	< 4	< 4	< 1.0	< 4	< 4	< 1.0
Cadmium	7440-43-9	5	5	< 3.5	< 3.5	< 3.0	< 3.5 [< 3.5]	< 3.5	< 3.5	< 3.5	< 3.0	< 3.5	< 3.5	< 3.0
Calcium	7440-70-2	- -	- -	NA	NA	112,000	NA	NA	NA	NA	210,000	NA	NA	124,000
Chromium	7440-47-3	100	100	< 50	< 50	< 10	< 50 [< 50]	< 50	< 50	< 50	< 10	< 50	< 50	< 10
Copper	7440-50-8	1,000	1,000	< 50	< 50	12.2	< 50 [< 50]	< 50	< 50	< 50	< 10	< 50	< 50	< 10
Cyanide	57-12-5	200	200	NA	NA	200	NA	NA	NA	NA	***210 J***	NA	NA	20 J
Iron	7439-89-6	- -	- -	NA	NA	2,600	NA	NA	NA	NA	10,300	NA	NA	26,800
Lead	7439-92-1	5	5	***5.2***	***13***	***60.7***	< 4 [< 4]	< 4	***39***	4.2	< 15	< 4	< 4	< 3.0
Magnesium	7439-95-4	- -	- -	NA	NA	63,000	NA	NA	NA	NA	135,000	NA	NA	49,600
Manganese	7439-96-5	300	300	NA	NA	156	NA	NA	NA	NA	***5,290***	NA	NA	***5,070***
Mercury	7439-97-6	2	2	< 0.7	< 0.7	< 0.20	< 0.7 [< 0.7]	< 0.7	< 0.7	< 0.7	0.29	< 0.7	< 0.7	< 0.20
Nickel	7440-02-0	100	100	< 50	< 50	< 10	< 50 [< 50]	< 50	< 50	< 50	< 10	< 50	< 50	< 10
Potassium	7440-09-7	- -	- -	NA	NA	< 10,000	NA	NA	NA	NA	< 10,000	NA	NA	13,300
Selenium	7782-49-2	50	50	< 40	< 40	< 10	< 40 [< 40]	< 40	< 40	< 40	< 10	< 40	< 40	< 10
Sodium	7440-23-5	- -	- -	NA	NA	37,000	NA	NA	NA	NA	90,300	NA	NA	54,800
Zinc	7440-66-6	2,000	2,000	< 50	< 50	54.5	< 50 [< 50]	< 50	53	< 50	25.9	< 50	< 50	< 20

Table 16
Groundwater Analytical Results – TDS and Detected Total Inorganics (ug/L)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location: / Date Collected:	CAS Number	Groundwater Standards: Used Aquifer TDS≤2,500 Res (Exceedances Bolded & Italicized)	Groundwater Standards: Used Aquifer TDS≤2,500 Non-Res (Exceedances Shaded)	PCMW-16S / MW-105*			PCMW-16D				PCMW-17S			PCMW-17D		
				11/10/05	2/1/06	5/30/18	11/10/05	2/1/06	3/19/18	3/28/19	11/11/05	2/3/06	3/22/18	11/11/05	2/3/06	3/22/18
General Chemistry																
Total Dissolved Solids	ARC-TDS	- -	- -	NA	NA	NA	NA	NA	NA	440,000	NA	NA	NA	NA	NA	NA
Metals (Totals)																
Aluminum	7429-90-5	- -	- -	NA	NA	< 200	NA	NA	343	NA	NA	NA	1,020	NA	NA	1,170
Antimony	7440-36-0	6	6	6	< 6	< 6.0	< 6	< 6	< 6.0	NA	< 6	< 6	< 6.0	< 6	< 6	< 6.0
Arsenic	7440-38-2	10	10	< 7.5	< 7.5	< 3.0	***45***	***51***	***93.5***	NA	***12***	< 7.5	< 15	***17***	8.6	< 3.0
Barium	7440-39-3	2,000	2,000	54	< 50	< 200	53	< 50	< 200	NA	98	70	< 200	64	50	< 200
Beryllium	7440-41-7	4	4	< 4	< 4	< 1.0	< 4	< 4	< 1.0	NA	< 4	< 4	< 1.0	< 4	< 4	< 1.0
Cadmium	7440-43-9	5	5	< 3.5	< 3.5	< 3.0	< 3.5	< 3.5	< 3.0	NA	< 3.5	< 3.5	3.3	< 3.5	< 3.5	< 3.0
Calcium	7440-70-2	- -	- -	NA	NA	242,000	NA	NA	51,800	NA	NA	NA	188,000	NA	NA	58,900
Chromium	7440-47-3	100	100	< 50	< 50	< 10	< 50	< 50	< 10	NA	50	< 50	< 10	< 50	< 50	< 10
Copper	7440-50-8	1,000	1,000	< 50	52	< 10	< 50	< 50	< 10	NA	< 50	< 50	30.6	< 50	< 50	< 10
Cyanide	57-12-5	200	200	NA	NA	110	NA	NA	< 10 UJ	NA	NA	NA	< 10 UJ	NA	NA	< 10 UJ
Iron	7439-89-6	- -	- -	NA	NA	42,600	NA	NA	61,600	NA	NA	NA	22,100	NA	NA	5,830
Lead	7439-92-1	5	5	***5.5***	***17***	< 15	< 4	< 4	< 3.0	NA	***54***	< 4	< 15	< 4	< 4	< 3.0
Magnesium	7439-95-4	- -	- -	NA	NA	42,500	NA	NA	28,900	NA	NA	NA	34,500	NA	NA	32,000
Manganese	7439-96-5	300	300	NA	NA	***2,330***	NA	NA	***3,610***	NA	NA	NA	***2,120***	NA	NA	***4,750***
Mercury	7439-97-6	2	2	< 0.7	< 0.7	< 0.20	< 0.7	< 0.7	< 0.20	NA	< 0.7	< 0.7	< 0.20	< 0.7	< 0.7	< 0.20
Nickel	7440-02-0	100	100	< 50	< 50	< 10	< 50	< 50	< 10	NA	< 50	< 50	93.4	< 50	< 50	< 10
Potassium	7440-09-7	- -	- -	NA	NA	< 10,000	NA	NA	< 10,000	NA	NA	NA	< 10,000	NA	NA	< 10,000
Selenium	7782-49-2	50	50	< 40	< 40	< 10	< 40	< 40	< 10	NA	< 40	< 40	< 10	< 40	< 40	< 10
Sodium	7440-23-5	- -	- -	NA	NA	14,600	NA	NA	61,300	NA	NA	NA	11,100	NA	NA	50,100
Zinc	7440-66-6	2,000	2,000	< 50	150	< 20	< 50	< 50	< 20	NA	120	< 50	1,130	< 50	< 50	< 20

Table 16
Groundwater Analytical Results – TDS and Detected Total Inorganics (ug/L)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location: / Date Collected:	CAS Number	Groundwater Standards: Used Aquifer TDS≤2,500 Res (Exceedances Bolded & Italicized)	Groundwater Standards: Used Aquifer TDS≤2,500 Non-Res (Exceedances Shaded)	PCMW-18S 11/11/05	PCMW-18S 2/2/06	PCMW-18S 3/23/18	PCMW-18D 11/11/05	PCMW-18D 2/2/06	PCMW-18D 3/23/18	PCMW-19S 11/14/05	PCMW-19S 2/2/06	PCMW-19S 3/22/18	PCMW-19S 5/29/18
General Chemistry													
Total Dissolved Solids	ARC-TDS	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals (Totals)													
Aluminum	7429-90-5	- -	- -	NA	NA	< 200	NA	NA	9,320	NA	NA	393	< 200
Antimony	7440-36-0	6	6	< 6	< 6	< 6.0	< 6	< 6	< 30	< 6	< 6	< 6.0	< 6.0
Arsenic	7440-38-2	10	10	< 7.5	< 7.5	4.9	< 7.5	< 7.5	< 15	***45***	***32***	***33.2***	***38.1***
Barium	7440-39-3	2,000	2,000	< 50	< 50	< 200	< 50	< 50	< 1,000	160	120	< 200	< 200
Beryllium	7440-41-7	4	4	< 4	< 4	< 1.0	< 4	< 4	< 5.0	< 4	< 4	< 1.0	< 1.0
Cadmium	7440-43-9	5	5	< 3.5	< 3.5	< 3.0	< 3.5	< 3.5	< 15	< 3.5	< 3.5	< 3.0	< 3.0
Calcium	7440-70-2	- -	- -	NA	NA	217,000	NA	NA	48,300	NA	NA	87,800	81,300
Chromium	7440-47-3	100	100	< 50	< 50	< 10	< 50	< 50	< 50	< 50	< 50	< 10	< 10
Copper	7440-50-8	1,000	1,000	< 50	< 50	< 10	< 50	< 50	< 50	< 50	< 50	< 10	< 10
Cyanide	57-12-5	200	200	NA	NA	< 10 UJ	NA	NA	12 J	NA	NA	< 10 UJ	NA
Iron	7439-89-6	- -	- -	NA	NA	2,960	NA	NA	245,000	NA	NA	12,700	12,000
Lead	7439-92-1	5	5	< 4	< 4	< 3.0	< 4	< 4	< 15	***5.9***	< 4	***11.5***	***7.3***
Magnesium	7439-95-4	- -	- -	NA	NA	77,600	NA	NA	< 25,000	NA	NA	15,800	15,000
Manganese	7439-96-5	300	300	NA	NA	***4,430***	NA	NA	***611***	NA	NA	***1,300***	***1,210***
Mercury	7439-97-6	2	2	< 0.7	< 0.7	< 0.20	< 0.7	< 0.7	< 0.60	< 0.7	< 0.7	< 0.20	< 0.20
Nickel	7440-02-0	100	100	< 50	< 50	< 10	< 50	< 50	< 50	< 50	< 50	< 10	< 10
Potassium	7440-09-7	- -	- -	NA	NA	95,000	NA	NA	< 50,000	NA	NA	< 10,000	< 10,000
Selenium	7782-49-2	50	50	< 40	< 40	< 10	< 40	< 40	< 50	< 40	< 40	< 10	< 10
Sodium	7440-23-5	- -	- -	NA	NA	49,100	NA	NA	58,500	NA	NA	< 10,000	< 10,000
Zinc	7440-66-6	2,000	2,000	< 50	< 50	< 20	< 50	< 50	< 100	< 50	< 50	23.2	< 20

Table 16
Groundwater Analytical Results – TDS and Detected Total Inorganics (ug/L)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location: / Date Collected:	CAS Number	Groundwater Standards: Used Aquifer TDS≤2,500 Res (Exceedances Bolded & Italicized)	Groundwater Standards: Used Aquifer TDS≤2,500 Non-Res (Exceedances Shaded)	PCMW-19D 11/14/05	PCMW-19D 2/2/06	PCMW-19D 3/22/18	PCMW-20S 11/14/05	PCMW-20S 2/1/06	PCMW-20S 3/22/18	PCMW-20D 11/14/05	PCMW-20D 2/1/06	PCMW-20D 3/22/18
General Chemistry												
Total Dissolved Solids	ARC-TDS	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals (Totals)												
Aluminum	7429-90-5	- -	- -	NA	NA	1,440 [1,130]	NA	NA	< 200	NA	NA	996
Antimony	7440-36-0	6	6	< 6	< 6	< 6.0 [< 6.0]	< 6	< 6	< 6.0	< 6	< 6	< 6.0
Arsenic	7440-38-2	10	10	***12***	***16***	***13.4 [12.8]***	***16***	< 7.5	< 3.0	***25***	***18***	***17.4***
Barium	7440-39-3	2,000	2,000	62	58	< 200 [< 200]	170	71	< 200	< 50	< 50	< 200
Beryllium	7440-41-7	4	4	< 4	< 4	< 1.0 [< 1.0]	< 4	< 4	< 1.0	< 4	< 4	< 1.0
Cadmium	7440-43-9	5	5	< 3.5	< 3.5	< 3.0 [< 3.0]	< 3.5	< 3.5	< 3.0	< 3.5	< 3.5	< 3.0
Calcium	7440-70-2	- -	- -	NA	NA	83,900 [81,800]	NA	NA	31,300	NA	NA	28,300
Chromium	7440-47-3	100	100	< 50	< 50	< 10 [< 10]	68	< 50	< 10	< 50	< 50	< 10
Copper	7440-50-8	1,000	1,000	< 50	< 50	< 10 [< 10]	88	< 50	< 10	< 50	< 50	< 10
Cyanide	57-12-5	200	200	NA	NA	< 10 UJ [< 10 UJ]	NA	NA	< 10 UJ	NA	NA	120 J
Iron	7439-89-6	- -	- -	NA	NA	21,300 [20,100]	NA	NA	7,420	NA	NA	8,400
Lead	7439-92-1	5	5	< 4	< 4	3.5 [< 3.0]	***180***	< 4	4.0	< 4	< 4	< 3.0
Magnesium	7439-95-4	- -	- -	NA	NA	35,900 [34,900]	NA	NA	< 5,000	NA	NA	13,900
Manganese	7439-96-5	300	300	NA	NA	***5,690 [5,530]***	NA	NA	***613***	NA	NA	***641***
Mercury	7439-97-6	2	2	< 0.7	< 0.7	< 0.20 [< 0.20]	0.83	< 0.7	< 0.20	< 0.7	< 0.7	< 0.40
Nickel	7440-02-0	100	100	< 50	< 50	11.9 [11.7]	< 50	< 50	< 10	< 50	< 50	< 10
Potassium	7440-09-7	- -	- -	NA	NA	< 10,000 [< 10,000]	NA	NA	< 10,000	NA	NA	< 10,000
Selenium	7782-49-2	50	50	< 40	< 40	< 10 [< 10]	< 40	< 40	< 10	< 40	< 40	< 10
Sodium	7440-23-5	- -	- -	NA	NA	34,600 [33,400]	NA	NA	< 10,000	NA	NA	241,000
Zinc	7440-66-6	2,000	2,000	< 50	< 50	< 20 [< 20]	250	240	42.4	< 50	100	< 20

Notes:

1. Samples prior to 2018 were collected by Paulus, Sokolowski, and Sartor Engineering, PC on the dates indicated. Samples in 2018 and 2019 were collected by Arcadis on the dates indicated.
2. 2005 and 2006 samples were analyzed by Hampton-Clarke, Veritech Laboratories of Fairfield, New Jersey (Veritech).
3. 2018 and 2019 samples were analyzed by SGS North America Incorporated Laboratories of Dayton, New Jersey (SGS).
4. Samples were submitted for laboratory analysis for one or more of the following constituent groups, as indicated above.
   - Total dissolved solids using American Society for Testing and Materials Method SM2540 C-11.
   - Metals using United States Environmental Protection Agency (USEPA) SW-846 Methods 200.7 (Veritech), 245.1 (Veritech), 6010 (SGS), and 7470 (SGS).
   - Total cyanide using USEPA Method 335.1 (Veritech) or 335.4 (SGS).
5. Only compounds detected in one or more samples are shown in this table.
6. < = constituent not detected at a concentration above the reported detection limit. These results are also reported in gray.
7. NA = Not Analyzed.
8. Concentrations reported in micrograms per liter (ug/L) or parts per billion (ppb).
9. Shading indicates an exceedance of Pennsylvania Department of Environmental Protection's (PADEP's) non-residential Medium Specific Concentrations (MSCs) for Used Aquifers containing Total Dissolved Solids (TDS) ≤ 2,500 milligrams per liter (mg/L).
10. Italics and bolding indicates an exceedance of PADEP's Residential MSCs for Used Aquifers containing TDS ≤ 2,500 mg/L.
11. - - = No PADEP MSC.
12. * indicates that the groundwater monitoring well was installed to replace the missing historical well also listed in the monitoring well ID.
13. The groundwater standards reported for cyanide are for free cyanide. The reported groundwater results are for total cyanide.
14. Brackets indicate the reported concentration of a duplicate sample.
15. Qualifier Definition:
    J = Analyte is an estimated value.
16. Data from 2018 and 2019 have undergone a Tier II validation. Data prior to 2018 have not been validated.

Table 17
Groundwater Analytical Results – Detected Dissolved Inorganics & Free Cyanide (mg/L)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location: / Date Collected:	CAS Number	Groundwater Standards: Used Aquifer TDS≤2,500 Res (Exceedances Bolded & Italicized)	Groundwater Standards: Used Aquifer TDS≤2,500 Non-Res (Exceedances Shaded)	MW-107 3/28/19	MW-108 10/4/19	MW-109 10/4/19	MW-110 10/4/19	MW-111 10/4/19	MW-112 10/4/19	MW-113 10/4/19	PCMW-01 11/1/05	PCMW-01 1/30/06	PCMW-02 11/1/05	PCMW-02 1/30/06	PCMW-03 11/2/05	PCMW-03 1/30/06	PCMW-04 11/2/05	PCMW-04 1/30/06
Antimony	7440-36-0	6	6	< 6.0	< 6.0 [< 6.0]	< 6.0	< 6.0	< 6.0	< 6.0	< 6.0	< 6	< 6	< 6 [< 6]	< 6	< 6	< 6	< 6	< 6
Arsenic	7440-38-2	10	10	< 3.0	< 3.0 [< 3.0]	< 3.0	< 3.0	8.7	4.3	< 3.0	< 7.5	< 7.5	< 7.5 [< 7.5]	< 7.5	< 7.5	< 7.5	< 7.5	< 7.5
Barium	7440-39-3	2,000	2,000	159 J	< 200 [< 200]	< 200	< 200	< 200	< 200	< 200	75	< 50	< 50 [< 50]	< 50	66	62	92	99
Calcium	7440-70-2	- -	- -	106,000	191,000 [189,000]	144,000	179,000	69,100	122,000	104,000	NA	NA	NA	NA	NA	NA	NA	NA
Cobalt	7440-48-4	10	29	< 50	< 50 [< 50]	< 50	< 50	< 50	< 50	< 50	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide, free	ARC-Cnfree	200	200	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	7439-89-6	- -	- -	621	224 [197]	1,860	2,680	208	240	7,660	NA	NA	NA	NA	NA	NA	NA	NA
Lead	7439-92-1	5	5	< 3.0	< 3.0 [< 3.0]	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 4	< 4	< 4 [< 4]	< 4	< 4	< 4	< 4	< 4
Magnesium	7439-95-4	- -	- -	43,200	83,000 [82,100]	83,700	83,700	37,300	72,800	29,700	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	7439-96-5	300	300	***1,190***	***710 [701]***	***1,520***	***1,390***	***730***	***5,570***	***1,010***	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	7440-02-0	100	100	< 10	< 10 [< 10]	< 10	< 10	< 10	< 10	< 10	< 50	< 50	< 50 [< 50]	< 50	< 50	< 50	< 50	< 50
Potassium	7440-09-7	- -	- -	8,700 J	18,500 [18,100]	17,900	16,900	20,400	< 10,000	< 10,000	NA	NA	NA	NA	NA	NA	NA	NA
Sodium	7440-23-5	- -	- -	14,300	22,000 [21,700]	38,100	33,300	110,000	33,300	13,100	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	7440-62-2	2.4	6.8	2.0 J	< 50 [< 50]	< 50	< 50	< 50	< 50	< 50	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	7440-66-6	2,000	2,000	< 20	< 20 [< 20]	< 20	< 20	< 20	< 20	< 20	170	< 50	< 50 [< 50]	< 50	< 50	65	< 50	< 50

Table 17
Groundwater Analytical Results – Detected Dissolved Inorganics & Free Cyanide (mg/L)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location: / Date Collected:	CAS Number	Groundwater Standards: Used Aquifer TDS≤2,500 Res (Exceedances Bolded & Italicized)	Groundwater Standards: Used Aquifer TDS≤2,500 Non-Res (Exceedances Shaded)	PCMW-05			PCMW-06		PCMW-07		PCMW-08S	PCMW-08D		PCMW-09S	
				11/2/05	1/31/06	3/28/19	11/3/05	1/31/06	11/3/05	1/31/06	11/3/05	11/4/05	1/31/06	11/4/05	1/31/06
Antimony	7440-36-0	6	6	< 6	< 6	< 6.0 [< 6.0]	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6
Arsenic	7440-38-2	10	10	< 7.5	< 7.5	< 3.0 [< 3.0]	< 7.5	< 7.5	< 7.5	< 7.5	***21***	< 7.5	< 7.5	< 7.5	< 7.5
Barium	7440-39-3	2,000	2,000	210	160	365 [360]	140	190	< 50	< 50	< 50	200	210	58	< 50
Calcium	7440-70-2	- -	- -	NA	NA	76,700 [76,200]	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cobalt	7440-48-4	10	29	NA	NA	< 50 [< 50]	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide, free	ARC-Cnfree	200	200	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	7439-89-6	- -	- -	NA	NA	99.6 J [99.0 J]	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	7439-92-1	5	5	< 4	< 4	2.9 J [1.9 J]	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4
Magnesium	7439-95-4	- -	- -	NA	NA	9,710 [9,830]	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	7439-96-5	300	300	NA	NA	182 [186]	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	7440-02-0	100	100	< 50	***210***	85.5 [80.9]	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Potassium	7440-09-7	- -	- -	NA	NA	2,880 J [2,890 J]	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sodium	7440-23-5	- -	- -	NA	NA	3,790 J [3,800 J]	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	7440-62-2	2.4	6.8	NA	NA	< 50 [< 50]	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	7440-66-6	2,000	2,000	57	1,800	27.2 [28.2]	450	120	< 50	< 50	< 50	< 50	< 50	< 50	< 50

Table 17
Groundwater Analytical Results – Detected Dissolved Inorganics & Free Cyanide (mg/L)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location:		Groundwater Standards		PCMW-09D		PCMW-10S		PCMW-10D			PCMW-11S		PCMW-11D		PCMW-211	PCMW-12S	
Date Collected:	CAS Number	Used Aquifer TDS≤2,500 Res (Exceedances Bolded & Italicized)	Used Aquifer TDS≤2,500 Non-Res (Exceedances Shaded)	11/7/05	1/31/06	11/7/05	2/1/06	11/7/05	2/1/06	7/27/18	11/7/05	2/2/06	11/8/05	2/2/06	2/2/06	11/8/05	2/1/06
Antimony	7440-36-0	6	6	< 6	< 6	< 6	< 6	< 6	< 6	NA	***7.8***	< 6	< 6	< 6	< 6	< 6	< 6
Arsenic	7440-38-2	10	10	< 7.5	< 7.5	< 7.5	< 7.5	< 7.5	< 7.5	NA	< 7.5	< 7.5	< 7.5	< 7.5	< 7.5	< 7.5	< 7.5
Barium	7440-39-3	2,000	2,000	170	83	< 50	< 50	360	210	NA	51	< 50	110	130	< 50	50	< 50
Calcium	7440-70-2	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cobalt	7440-48-4	10	29	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide, free	ARC-Cnfree	200	200	NA	NA	NA	NA	NA	NA	4.1 J	NA	NA	NA	NA	NA	NA	NA
Iron	7439-89-6	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	7439-92-1	5	5	< 4	< 4	< 4	< 4	< 4	< 4	NA	< 4	< 4	< 4	< 4	< 4	< 4	< 4
Magnesium	7439-95-4	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	7439-96-5	300	300	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	7440-02-0	100	100	< 50	< 50	< 50	< 50	< 50	< 50	NA	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Potassium	7440-09-7	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sodium	7440-23-5	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	7440-62-2	2.4	6.8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	7440-66-6	2,000	2,000	< 50	< 50	< 50	410	< 50	66	NA	< 50	< 50	< 50	< 50	< 50	< 50	110

Table 17
Groundwater Analytical Results – Detected Dissolved Inorganics & Free Cyanide (mg/L)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location:		Groundwater Standards		PCMW-12D		PCMW-212	PCMW-13S		PCMW-13D		PCMW-14S		PCMW-14D		PCMW-15S			PCMW-15D	
Date Collected:	CAS Number	Used Aquifer TDS≤2,500 Res (Exceedances Bolded & Italicized)	Used Aquifer TDS≤2,500 Non-Res (Exceedances Shaded)	11/8/05	2/1/06	2/1/06	11/9/05	2/2/06	11/9/05	2/2/06	11/9/05	2/3/06	11/9/05	2/3/06	11/10/05	2/3/06	7/27/18	11/10/05	2/3/06
Antimony	7440-36-0	6	6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6 [< 6]	< 6	< 6	< 6	NA	< 6	< 6
Arsenic	7440-38-2	10	10	< 7.5	< 7.5	< 7.5	< 7.5	< 7.5	< 7.5	< 7.5	< 7.5	< 7.5	7.9 [< 7.5]	< 7.5	< 7.5	< 7.5	NA	< 7.5	< 7.5
Barium	7440-39-3	2,000	2,000	< 50	62	< 50	50	61	< 50	< 50	93	87	65 [62]	56	54	< 50	NA	65	52
Calcium	7440-70-2	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cobalt	7440-48-4	10	29	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide, free	ARC-Cnfree	200	200	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	6.2 J [9.0 J]	NA	NA
Iron	7439-89-6	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	7439-92-1	5	5	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4 [< 4]	< 4	< 4	< 4	NA	< 4	< 4
Magnesium	7439-95-4	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	7439-96-5	300	300	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	7440-02-0	100	100	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50 [< 50]	< 50	< 50	< 50	NA	< 50	< 50
Potassium	7440-09-7	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sodium	7440-23-5	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	7440-62-2	2.4	6.8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	7440-66-6	2,000	2,000	< 50	170	94	< 50	100	< 50	81	< 50	< 50	< 50 [< 50]	< 50	< 50	< 50	NA	< 50	< 50

Table 17
Groundwater Analytical Results – Detected Dissolved Inorganics & Free Cyanide (mg/L)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location: / Date Collected:	CAS Number	Groundwater Standards: Used Aquifer TDS≤2,500 Res (Exceedances Bolded & Italicized)	Groundwater Standards: Used Aquifer TDS≤2,500 Non-Res (Exceedances Shaded)	PCMW-16S		PCMW-16D				PCMW-17S		PCMW-17D		PCMW-18S		PCMW-18D	
				11/10/05	2/1/06	11/10/05	2/1/06	5/30/18	3/28/19	11/11/05	2/3/06	11/11/05	2/3/06	11/11/05	2/2/06	11/11/05	2/2/06
Antimony	7440-36-0	6	6	< 6	< 6	< 6	< 6	NA	< 6.0	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6
Arsenic	7440-38-2	10	10	< 7.5	< 7.5	< 7.5	< 7.5	NA	5.8	< 7.5	< 7.5	< 7.5	< 7.5	< 7.5	< 7.5	< 7.5	< 7.5
Barium	7440-39-3	2,000	2,000	< 50	< 50	< 50	< 50	NA	34.6 J	< 50	52	55	< 50	< 50	< 50	< 50	< 50
Calcium	7440-70-2	- -	- -	NA	NA	NA	NA	NA	46,700	NA	NA	NA	NA	NA	NA	NA	NA
Cobalt	7440-48-4	10	29	NA	NA	NA	NA	NA	2.8 J	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide, free	ARC-Cnfree	200	200	NA	NA	NA	NA	9.1 J [18.0 J]	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	7439-89-6	- -	- -	NA	NA	NA	NA	NA	27,100	NA	NA	NA	NA	NA	NA	NA	NA
Lead	7439-92-1	5	5	< 4	< 4	< 4	< 4	NA	< 3.0	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4
Magnesium	7439-95-4	- -	- -	NA	NA	NA	NA	NA	24,900	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	7439-96-5	300	300	NA	NA	NA	NA	NA	***3,130***	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	7440-02-0	100	100	< 50	< 50	< 50	< 50	NA	< 10	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Potassium	7440-09-7	- -	- -	NA	NA	NA	NA	NA	2,730 J	NA	NA	NA	NA	NA	NA	NA	NA
Sodium	7440-23-5	- -	- -	NA	NA	NA	NA	NA	56,100	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	7440-62-2	2.4	6.8	NA	NA	NA	NA	NA	***4.5 J***	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	7440-66-6	2,000	2,000	< 50	120	< 50	< 50	NA	< 20	< 50	< 50	< 50	< 50	< 50	< 50	70	< 50

Table 17
Groundwater Analytical Results – Detected Dissolved Inorganics & Free Cyanide (mg/L)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location: / Date Collected:	CAS Number	Groundwater Standards		PCMW-19S		PCMW-19D		PCMW-20S		PCMW-20D	
		Used Aquifer TDS≤2,500 Res (Exceedances Bolded & Italicized)	Used Aquifer TDS≤2,500 Non-Res (Exceedances Shaded)	11/14/05	2/2/06	11/14/05	2/2/06	11/14/05	2/1/06	11/14/05	2/1/06
Antimony	7440-36-0	6	6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6
Arsenic	7440-38-2	10	10	***11***	< 7.5	< 7.5	< 7.5	< 7.5	< 7.5	***11***	7.7
Barium	7440-39-3	2,000	2,000	110	110	< 50	< 50	81	74	< 50	< 50
Calcium	7440-70-2	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA
Cobalt	7440-48-4	10	29	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide, free	ARC-Cnfree	200	200	NA	NA	NA	NA	NA	NA	NA	NA
Iron	7439-89-6	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA
Lead	7439-92-1	5	5	< 4	< 4	< 4	< 4	< 4	< 4	< 4	< 4
Magnesium	7439-95-4	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	7439-96-5	300	300	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	7440-02-0	100	100	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Potassium	7440-09-7	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA
Sodium	7440-23-5	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	7440-62-2	2.4	6.8	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	7440-66-6	2,000	2,000	< 50	< 50	< 50	< 50	61	240	< 50	100

Table 17
Groundwater Analytical Results – Detected Dissolved Inorganics & Free Cyanide (mg/L)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Notes:
1. Samples prior to 2018 were collected by Paulus, Sokolowski, and Sartor Engineering, PC on the dates indicated. Samples in 2018 and 2019 were collected by Arcadis on the dates indicated.
2. 2005 and 2006 samples were analyzed by Hampton-Clarke, Veritech Laboratories of Fairfield, New Jersey (Veritech).
3. 2018 and 2019 samples were analyzed by SGS North America Incorporated Laboratories of Dayton, New Jersey (SGS), except free cyanide samples which were analyzed by TestAmerica of Amherst, New York.
4. Samples were submitted for laboratory analysis for one or more of the following constituent groups, as indicated above.
   - Dissolved metals using United States Environmental Protection Agency (USEPA) SW-846 Methods 200.7 (Veritech), 245.1 (Veritech), 6010 (SGS), and 7470 (SGS).
   - Free cyanide using USEPA Method 9016.
5. Only compounds detected in one or more samples are shown in this table.
6. < = constituent not detected at a concentration above the reported detection limit. These results are also reported in gray.
7. NA = Not Analyzed.
8. Concentrations reported in micrograms per liter (ug/L) or parts per billion (ppb).
9. Shading indicates an exceedance of Pennsylvania Department of Environmental Protection's (PADEP's) non-residential Medium Specific Concentrations (MSCs) for Used Aquifers containing Total Dissolved Solids (TDS) ≤ 2,500 milligrams per liter (mg/L).
10. Italics and bolding indicates an exceedance of PADEP's Residential MSCs for Used Aquifers containing TDS ≤ 2,500 mg/L.
11. - - = No PADEP MSC.
12. Brackets indicate the reported concentration of a duplicate sample.
13. Qualifier Definition:
    J = Analyte is an estimated value.
14. Data from 2018 and 2019 have undergone a Tier II validation. Data prior to 2018 have not been validated.

Table 18
Groundwater Analytical Statistics for Detected Compounds

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Analyte	CAS Number	Groundwater Standards		Detection Frequency	Res Exceedance Frequency	Non-Res Exceedance Frequency	Minimum Detection	Maximum Detection	Max Detection Location and Date
		Used Aquifer TDS≤2,500 Res (Exceedances Bolded & Italicized)	Used Aquifer TDS≤2,500 Non-Res (Exceedances Shaded)						
Volatile Organic Compounds									
1,2-Dichlorobenzene	95-50-1	600	600	1/36	0/36	0/36	0.71	0.71	PCMW-18S (3/23/18)
Acetone	67-64-1	31,000	88,000	1/103	0/103	0/103	8.6	8.6	MW-111 (10/4/19)
Benzene	71-43-2	5	5	13/103	8/103	8/103	0.23	***1,200***	PCMW-14S (2/3/06)
Chlorobenzene	108-90-7	100	100	4/103	0/103	0/103	0.28	3.7	PCMW-16D (2/1/06)
Chloroform	67-66-3	80	80	4/103	0/103	0/103	1.8	12.3	PCMW-18D (3/23/18)
cis-1,2-Dichloroethene	156-59-2	70	70	3/103	0/103	0/103	1.1	28.3	MW-5 (3/19/18)
Dichloromethane	75-09-2	5	5	7/103	0/103	0/103	1	2.7	PCMW-02 (1/30/06)
Ethylbenzene	100-41-4	700	700	4/103	0/103	0/103	0.23	24.3	MW-111 (10/4/19)
Isopropylbenzene	98-82-8	840	3,500	1/36	0/36	0/36	1.2	1.2	MW-111 (10/4/19)
m&p-Xylenes	ARC-mpXyl	- -	- -	3/103	0/103	0/103	0.59	72.9	MW-111 (10/4/19)
Methyl-tert-butylether	1634-04-4	20	20	3/36	1/36	1/36	0.8	***20.7***	MW-107 (5/30/18)
o,p-Xylene	136777-61-2	- -	- -	2/67	0/67	0/67	1.2	3.3	PCMW-17S (2/3/06)
o-Xylene	95-47-6	- -	- -	2/36	0/36	0/36	1.7	36.5	MW-111 (10/4/19)
Styrene (Monomer)	100-42-5	100	100	1/103	0/103	0/103	9.4	9.4	MW-111 (10/4/19)
Tetrachloroethene	127-18-4	5	5	5/103	1/103	1/103	1.1	***37***	PCMW-11D (11/8/05)
Toluene	108-88-3	1,000	1,000	2/103	0/103	0/103	1.3	90.4	MW-111 (10/4/19)
Total Xylenes	1330-20-7	10,000	10,000	2/36	0/36	0/36	2.3	109	MW-111 (10/4/19)
Trichloroethene	79-01-6	5	5	1/103	1/103	1/103	***6.1***	***6.1***	MW-5 (3/19/18)
Semi-Volatile Organic Compounds									
1,1-Biphenyl	92-52-4	0.84	3.5	3/36	1/36	1/36	0.35	***20.7***	MW-111 (10/4/19)
2,4-Dimethylphenol	105-67-9	690	1,900	4/103	0/103	0/103	1.9	241	MW-111 (10/4/19)
2,4-Dinitrotoluene	121-14-2	2.1	8.8	1/36	1/36	1/36	***13.3***	***13.3***	PCMW-16D (3/19/18)
2-Methylnaphthalene	91-57-6	6.3	26	13/103	6/103	3/103	0.72	**97.8**	MW-111 (10/4/19)
2-Methylphenol	95-48-7	1,700	4,900	5/103	0/103	0/103	2	177	MW-111 (10/4/19)
3-Methylphenol, 4-Methylphenol	65794-96-9	- -	- -	2/36	0/36	0/36	4.45	212	MW-111 (10/4/19)
4-Methylphenol	106-44-5	170	490	2/67	0/67	0/67	1	3.3	PCMW-06 (11/3/05)
Acenaphthene	83-32-9	2,100	3,800	37/103	0/103	0/103	0.19	87.7	MW-111 (10/4/19)
Acenaphthylene	208-96-8	2,100	5,800	8/103	0/103	0/103	0.46	80.2	MW-111 (10/4/19)
Acetophenone	98-86-2	3,500	9,700	3/36	0/36	0/36	0.25	2.1	MW-111 (10/4/19)
Anthracene	120-12-7	66	66	10/103	0/103	0/103	0.22	16.1	MW-111 (10/4/19)
Benz(a)anthracene	56-55-3	0.3	3.9	4/103	4/103	0/103	***1.3***	***3.6***	MW-111 (10/4/19)
Benzo(a)pyrene	50-32-8	0.2	0.2	4/103	4/103	4/103	***1.2***	***3.2***	PCMW-16S (2/1/06)
Benzo(b)fluoranthene	205-99-2	0.18	1.2	4/103	4/103	4/103	***1.7***	***4.1***	PCMW-16S (2/1/06)

Table 18
Groundwater Analytical Statistics for Detected Compounds

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Analyte	CAS Number	Groundwater Standards		Detection Frequency	Res Exceedance Frequency	Non-Res Exceedance Frequency	Minimum Detection	Maximum Detection	Max Detection Location and Date
		Used Aquifer TDS≤2,500 Res (Exceedances Bolded & Italicized)	Used Aquifer TDS≤2,500 Non-Res (Exceedances Shaded)						
Semi-Volatile Organic Compounds (cont'd)									
Benzo(g,h,i)perylene	191-24-2	0.26	0.26	3/103	3/103	3/103	***0.95***	***1.7***	PCMW-16S (2/1/06)
Benzo(k)fluoranthene	207-08-9	0.18	0.55	3/103	3/103	2/103	***0.53***	***1.4***	PCMW-16S (2/1/06)
bis(2-Ethylhexyl)phthalate	117-81-7	6	6	6/103	1/103	1/103	1.3	***11.3***	MW-102 (5/31/18)
Butyl benzyl phthalate	85-68-7	340	1,400	1/103	0/103	0/103	1.7	1.7	MW-112 (10/4/19)
Carbazole	86-74-8	33	140	15/103	2/103	1/103	0.7	***189***	MW-111 (10/4/19)
Chrysene	218-01-9	1.8	1.9	4/103	3/103	3/103	1.1	***3.2***	MW-111 (10/4/19)
Dibenz(a,h)anthracene	53-70-3	0.052	0.6	1/103	1/103	0/103	***0.42***	***0.42***	MW-111 (10/4/19)
Dibenzofuran	132-64-9	35	97	15/103	1/103	0/103	0.44	***64.2***	MW-111 (10/4/19)
Diethyl phthalate	84-66-2	28,000	78,000	1/103	0/103	0/103	1	1	PCMW-08D (3/22/18)
Di-n-butyl phthalate	84-74-2	3,500	9,700	1/103	0/103	0/103	21	21	PCMW-15S (11/10/05)
Fluoranthene	206-44-0	260	260	16/103	0/103	0/103	0.25	22.9	MW-111 (10/4/19)
Fluorene	86-73-7	1,400	1,900	24/103	0/103	0/103	0.28	75.2	MW-111 (10/4/19)
Indeno(1,2,3-cd)pyrene	193-39-5	0.18	2.3	3/103	3/103	0/103	***0.74***	***1.5***	PCMW-16S (2/1/06)
Naphthalene	91-20-3	100	100	18/103	1/103	1/103	1.2	***973***	MW-111 (10/4/19)
Phenanthrene	85-01-8	1,100	1,100	21/103	0/103	0/103	0.2	136	MW-111 (10/4/19)
Phenol	108-95-2	2,000	2,000	8/103	0/103	0/103	1.2	80.2	MW-111 (10/4/19)
Pyrene	129-00-0	130	130	14/103	0/103	0/103	0.22	15.5	MW-111 (10/4/19)
Pesticides									
4,4-DDT	50-29-3	1.9	5.5	5/97	0/97	0/97	0.066	0.17	PCMW-11D (11/8/05)
Dieldrin	60-57-1	0.041	0.17	2/97	1/97	0/97	0.038	***0.046***	PCMW-17D (3/22/18)
trans-chlordane	5103-74-2	- -	- -	1/30	0/30	0/30	0.0045	0.0045	PCMW-04 (3/19/18)
Polychlorinated Biphenyls									
Aroclor 1268	11100-14-4	- -	- -	0/30	0/28	0/28	ND	ND	ND
Metals (Totals)									
Aluminum	7429-90-5	- -	- -	18/42	0/42	0/42	209	9,320	PCMW-18D (3/23/18)
Antimony	7440-36-0	6	6	5/109	3/109	3/109	6	***9.9***	PCMW-08S (3/22/18)
Arsenic	7440-38-2	10	10	52/109	28/109	28/109	3.2	***160***	PCMW-08S (11/3/05)
Barium	7440-39-3	2,000	2,000	59/109	0/109	0/109	50	1,100	PCMW-09D (1/31/06)
Beryllium	7440-41-7	4	4	1/109	1/109	1/109	***5.1***	***5.1***	PCMW-09D (1/31/06)
Cadmium	7440-43-9	5	5	2/109	0/109	0/109	3.3	4.5	PCMW-08S (11/3/05)
Calcium	7440-70-2	- -	- -	42/42	0/42	0/42	28,300	299,000	PCMW-10S (3/22/18)
Chromium	7440-47-3	100	100	3/109	0/109	0/109	46.8	68	PCMW-20S (11/14/05)
Copper	7440-50-8	1,000	1,000	15/109	0/109	0/109	12.2	88	PCMW-20S (11/14/05)

Table 18
Groundwater Analytical Statistics for Detected Compounds

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National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Analyte	CAS Number	Groundwater Standards		Detection Frequency	Res Exceedance Frequency	Non-Res Exceedance Frequency	Minimum Detection	Maximum Detection	Max Detection Location and Date
		Used Aquifer TDS≤2,500 Res (Exceedances Bolded & Italicized)	Used Aquifer TDS≤2,500 Non-Res (Exceedances Shaded)						
Metals (Totals) (cont'd)									
Cyanide	57-12-5	200	200	17/36	4/36	4/36	10	***670***	MW-104 (5/30/18)
Iron	7439-89-6	- -	- -	42/42	0/42	0/42	163	245,000	PCMW-18D (3/23/18)
Lead	7439-92-1	5	5	45/109	38/109	38/109	3	***206***	MW-107 (5/30/18)
Magnesium	7439-95-4	- -	- -	40/42	0/42	0/42	8,070	165,000	PCMW-10S (3/22/18)
Manganese	7439-96-5	300	300	42/42	36/42	36/42	41.7	***7,650***	PCMW-10D (3/22/18)
Mercury	7439-97-6	2	2	3/109	0/109	0/109	0.29	0.83	PCMW-20S (11/14/05)
Nickel	7440-02-0	100	100	9/109	3/109	3/109	11.3	***524***	PCMW-05 (5/30/18)
Potassium	7440-09-7	- -	- -	16/42	0/42	0/42	11,800	95,000	PCMW-18S (3/23/18)
Selenium	7782-49-2	50	50	2/109	0/109	0/109	11.3	11.9	PCMW-08S (3/22/18)
Sodium	7440-23-5	- -	- -	30/42	0/42	0/42	11,100	241,000	PCMW-20D (3/22/18)
Zinc	7440-66-6	2,000	2,000	42/109	3/109	3/109	23.2	***2,690***	PCMW-05 (3/23/18)
Metals (Dissolved)									
Antimony	7440-36-0	6	6	1/76	1/76	1/76	***7.8***	***7.8***	PCMW-11S (11/7/05)
Arsenic	7440-38-2	10	10	8/76	3/76	3/76	4.3	***21***	PCMW-08S (11/3/05)
Barium	7440-39-3	2,000	2,000	39/76	0/76	0/76	34.6	365	PCMW-05 (3/28/19)
Calcium	7440-70-2	- -	- -	9/9	0/9	0/9	46,700	191,000	MW-108 (10/4/19)
Cobalt	7440-48-4	10	29	1/9	0/9	0/9	2.8	2.8	PCMW-16D (3/28/19)
Cyanide, Free	ARC-Cnfree	200	200	3/3	0/3	0/3	4.1	13.55	PCMW-16D (3/28/19)
Iron	7439-89-6	- -	- -	9/9	0/9	0/9	99.6	27,100	PCMW-16D (3/28/19)
Lead	7439-92-1	5	5	1/76	0/76	0/76	2.9	2.9	PCMW-05 (3/28/19)
Magnesium	7439-95-4	- -	- -	9/9	0/9	0/9	9,710	83,700	MW-109 (10/4/19), MW-110 (10/4/19)
Manganese	7439-96-5	300	300	9/9	8/9	8/9	184	***5,570***	MW-112 (10/4/19)
Nickel	7440-02-0	100	100	2/76	1/76	1/76	83.2	***210***	PCMW-05 (1/31/06)
Potassium	7440-09-7	- -	- -	7/9	0/9	0/9	2,730	20,400	MW-111 (10/4/19)
Sodium	7440-23-5	- -	- -	9/9	0/9	0/9	3,795	110,000	MW-111 (10/4/19)
Vanadium	7440-62-2	2.4	6.8	2/9	1/9	0/9	2	***4.5***	PCMW-16D (3/28/19)
Zinc	7440-66-6	2,000	2,000	19/76	0/76	0/76	27.2	1,800	PCMW-05 (1/31/06)
General Chemistry									
Total Dissolved Solids	ARC-TDS	- -	- -	5/5	0/5	0/5	440,000	916,000	MW-108 (10/4/19)

Table 18
Groundwater Analytical Statistics for Detected Compounds

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National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Notes:

1. Samples were submitted for laboratory analysis for one or more of the following constituent groups, as indicated above.
   - Target Compound List (TCL) volatile organic compounds (VOC) using United States Environmental Protection Agency (USEPA) SW-846 Method 8260.
   - TCL semi-volatile organic compounds (SVOC) using USEPA SW-846 Method 8270.
   - Pesticides using USEPA SW-846 Method 8081.
   - Polychlorinated biphenyls (PCBs) using USEPA SW-846 Method 8082.
   - Metals using USEPA SW-846 Methods 200.7, 245.1, 6010, and 7470. Dissolved metals were analyzed using the same methodology but were filtered prior to analysis.
   - Total cyanide using USEPA Method 335.1 or 335.4.
   - Free cyanide using USEPA SW-846 Method 9016.
   - Total dissolved solids using American Society for Testing and Materials Method SM2540 C-11.
2. Only compounds detected in one or more samples are shown in this table.
3. For purposes of this statistical analysis, field duplicate results are averaged with their parent sample and the average is counted as one sample. If the resulting average is a minimum or maximum concentration, it is reported as such. If either the parent or duplicate result is non-detect while the other is detected, only the detected concentration is used.
4. Concentrations reported in micrograms per liter (ug/L) or parts per billion (ppb).
5. Shading indicates an exceedance of Pennsylvania Department of Environmental Protection's (PADEP's) non-residential Medium Specific Concentrations (MSCs) for Used Aquifers containing Total Dissolved Solids (TDS) ≤ 2,500 milligrams per liter (mg/L).
6. Italics and bolding indicates an exceedance of PADEP's Residential MSCs for Used Aquifers containing TDS ≤ 2,500 mg/L.
7. - - = No PADEP MSC.
8. ND = Not detected.
9. The groundwater standards reported for cyanide are for free cyanide.
10. Hydropunch results have not been included in this table.
11. Data qualifiers are not presented in this table.
12. Data from 2018 and 2019 have undergone a Tier II validation. Data prior to 2018 have not been validated.

Table 19
Historical Soil Vapor Sampling Results for Detected Constituents

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Philadelphia, Pennsylvania

Location ID:		Soil Vapor Screening Values		Ambient	PCSV-01	PCSV-02	PCSV-03	PCSV-04	PCSV-05	PCSV-06	PCSV-07
Sample Depth(ft):	CAS Number	Residential SV_{SS} (Exceedances Bolded & Italicized)	Nonresidential SV_{SS} (No Exceedances)								
Date Collected:				12/1/2006	5 1/6/2006	4.5 1/6/2006	2 1/9/2006	1.5 1/9/2006	2 1/9/2006	4.5 1/6/2006	2 1/9/2006
Detected SG1 Target List Analytical Parameters (ug/m3)											
1,1,1-Trichloroethane	71-55-6	200,000	2,800,000	19	< 4.5	< 4.5	< 4.6	< 4.5	< 4.6	< 4.6	< 4.4
1,2,4-Trimethylbenzene	95-63-6	2,400	34,000	< 4	< 4	< 4	< 4.1	< 4	< 4.1	< 4.1	< 4
1,3,5-Trimethylbenzene	108-67-8	2,400	34,000	< 4	< 4	< 4	< 4.1	< 4	< 4.1	< 4.1	< 4
1,4-Dioxane	123-91-1	190	3,100	< 12	< 12	< 12	< 12	< 12	< 12	< 12	< 12
2-Butanone (MEK)	78-93-3	200,000	2,800,000	< 2.4	< 2.4	< 2.4	< 2.5	3.1	< 2.5	< 2.5	< 2.4
4-Methyl-2-Pentanone	108-10-1	120,000	1,700,000	< 3.3	< 3.4	< 3.4	< 3.4	< 3.4	< 3.4	< 3.4	< 3.3
Acetone	67-64-1	1,200,000	17,000,000	13	< 7.8	< 7.8	8.8	15	< 8	< 8	24
Benzene	71-43-2	120	2,000	< 2.6	< 2.6	< 2.6	3.9	10	4.1	< 2.7	< 2.6
Carbon Disulfide	75-15-0	28,000	390,000	< 2.5	< 2.6	< 2.6	54	690	< 2.6	< 2.6	< 2.5
Chloroform	67-66-3	41	680	< 3.9	< 4	< 4	< 4.1	< 4	< 4.1	< 4.1	< 3.9
cis-1,2-Dichloroethene	156-59-2	- -	- -	< 3.2	< 3.2	< 3.2	< 3.3	< 3.2	< 3.3	< 3.3	< 3.2
Dichloromethane	75-09-2	24,000	340,000	< 2.8	< 2.8	< 2.8	< 2.9	< 2.8	< 2.9	< 2.9	< 2.8
Ethylbenzene	100-41-4	370	6,300	< 3.5	< 3.6	< 3.6	< 3.6	< 3.6	< 3.6	< 3.6	< 3.5
Hexane	110-54-3	28,000	390,000	< 2.8	< 2.9	< 2.9	3.2	< 2.9	< 3	< 3	< 2.8
Methyl-tert-butylether	1634-04-4	3,600	61,000	< 2.9	< 3J	< 3J	< 3	< 3	< 3	< 3J	22
N-Propylbenzene	103-65-1	40,000	560,000	< 4	< 4	< 4	< 4.1	< 4	< 4.1	< 4.1	< 4
Tetrachloroethene	127-18-4	1,600	22,000	< 5.5	240	< 5.6	< 5.7	< 5.6	< 5.7	< 5.7	< 5.5
Toluene	108-88-3	200,000	2,800,000	7.5	< 3.1	< 3.1	4.3	3.2	< 3.2	< 3.2	8.6
Trichloroethene	79-01-6	80	1,100	< 4.3	< 4.4	< 4.4	< 4.5	< 4.4	< 4.5	< 4.5	< 4.3
Detected SG2 Target List Analytical Parameters (ppbv)											
4-Bromofluorobenzene	460-00-4	- -	- -	25	23	24	25	25	25	22	25
4-Ethyltoluene	622-96-8	- -	- -	< 4	< 4	< 4	< 4.1	< 4	< 4.1	< 4.1	10
Carbon Dioxide	124-38-9	- -	- -	0.041	5.2	2.1	1.4	0.81	1.1	4.9	1.1
CFC-11	75-69-4	28,000	390,000	4.7	400	< 4.6	< 4.7	< 4.6	< 4.7	17	6.9
CFC-12	75-71-8	4,000	56,000	< 4	18	< 4	< 4.2	< 4	< 4.2	< 4.2	< 4
Cyclohexane	110-82-7	240,000	3,400,000	< 2.8	< 2.8	< 2.8	10	< 2.8	< 2.9	< 2.9	< 2.8
Ethanol	64-17-5	- -	- -	11	< 6.2	< 6.2	< 6.3	< 6.2	< 6.3	< 6.3	< 6.1
Isopropyl alcohol	67-63-0	- -	- -	< 7.9	< 8.1	< 8.1	< 8.2	< 8.1	< 8.2	< 8.2	< 7.9
m&p-Xylenes	ARC-mpXyl	- -	- -	< 3.5	< 3.6	< 3.6	< 3.6	< 3.6	< 3.6	< 3.6	10
Methane	74-82-8	- -	- -	0.0002	< 0.00016	< 0.00016	< 0.00017	0.0002	< 0.00017	< 0.00017	0.0058
Methyl N-Butyl Ketone	591-78-6	1,200	17,000	< 13	< 13	< 13	< 14	< 13	< 14	< 14	< 13
N-Heptane	142-82-5	- -	- -	< 3.3	< 3.4	< 3.4	3.8	< 3.4	< 3.4	< 3.4	< 3.3
Nitrogen	7727-37-9	- -	- -	79	83	79	83	83	78	88	80
o,p-Xylene	136777-61-2	- -	- -	< 3.5	< 3.6	< 3.6	< 3.6	< 3.6	< 3.6	< 3.6	4.4
Oxygen	7782-44-7	- -	- -	21	12	19	16	16	21	7	19
Tetrahydrofuran	109-99-9	480	8,100	<2.4	<2.4	<2.4	<2.5	<2.4	<2.5	<2.5	3.1

Table 19
Historical Soil Vapor Sampling Results for Detected Constituents

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National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID:		Soil Vapor Screening Values		PCSV-08	PCSV-09	PCSV-10	PCSV-11	PCSV-12	PCSV-13	PCSV-14	PCSV-15
Sample Depth(ft): Date Collected:	CAS Number	Residential SV_{SS} (Exceedances Bolded & Italicized)	Nonresidential SV_{SS} (No Exceedances)	3 1/6/2006	3.5 1/6/2006	3 1/6/2006	3 1/9/2006	3 1/9/2006	3 1/10/2006	3 1/10/2006	3 1/11/2006
Detected SG1 Target List Analytical Parameters (ug/m3)											
1,1,1-Trichloroethane	71-55-6	200,000	2,800,000	< 4.7	< 4.4 [< 4.5]	< 4.5	< 4.6	< 4.6	< 4.3	< 30	< 4.2
1,2,4-Trimethylbenzene	95-63-6	2,400	34,000	< 4.2	7.6 [5.6]	< 4	52	< 4.1	11	< 28	< 3.8
1,3,5-Trimethylbenzene	108-67-8	2,400	34,000	< 4.2	5.8 [4.8]	< 4	15	4.4	8.3	< 28	< 3.8
1,4-Dioxane	123-91-1	190	3,100	< 12	< 12 [< 12]	< 12	***440***	< 12	< 11	< 81	< 11
2-Butanone (MEK)	78-93-3	200,000	2,800,000	2.9	15 [14]	3.1	360	3.4	< 2.3	< 16	< 2.3
4-Methyl-2-Pentanone	108-10-1	120,000	1,700,000	< 3.5	< 3.3 [< 3.4]	< 3.4	410	< 3.4	< 3.2	< 23	< 3.2
Acetone	67-64-1	1,200,000	17,000,000	18	140 [130]	21	210	18	7.7	< 53	< 7.4
Benzene	71-43-2	120	2,000	5.4	< 2.6 [< 2.6]	< 2.6	8.9	8.3	< 2.5	< 18	< 2.5
Carbon Disulfide	75-15-0	28,000	390,000	18	< 2.5 [< 2.6]	< 2.6	12	32	< 2.5	19	< 2.4
Chloroform	67-66-3	41	680	< 4.2	< 3.9 [< 4]	< 4	8.1	< 4.1	< 3.8	< 27	< 3.8
cis-1,2-Dichloroethene	156-59-2	- -	- -	< 3.4	< 3.2 [< 3.2]	< 3.2	3.3	< 3.3	< 3.1	< 22	< 3.1
Dichloromethane	75-09-2	24,000	340,000	< 3	< 2.8 [< 2.8]	< 2.8	< 2.9	< 2.9	< 2.7	< 19	< 2.7
Ethylbenzene	100-41-4	370	6,300	< 3.7	< 3.5 [< 3.6]	< 3.6	21	< 3.6	< 3.4	< 24	< 3.4
Hexane	110-54-3	28,000	390,000	< 3	< 2.8 [< 2.9]	< 2.9	< 3	< 3	< 2.8	< 20	< 2.7
Methyl-tert-butylether	1634-04-4	3,600	61,000	< 3.1J	21 J [19 J]	< 3J	< 3	5	17	< 20	< 2.8
N-Propylbenzene	103-65-1	40,000	560,000	< 4.2	< 4 [< 4]	< 4	5.3	< 4.1	< 3.9	< 28	< 3.8
Tetrachloroethene	127-18-4	1,600	22,000	< 5.8	< 5.5 [< 5.6]	5.8	46	< 5.7	< 5.4	< 38	6.7
Toluene	108-88-3	200,000	2,800,000	< 3.2	< 3 [< 3.1]	< 3.1	67	4.6	5.5	< 21	7.8
Trichloroethene	79-01-6	80	1,100	< 4.6	< 4.3 [< 4.4]	< 4.4	< 4.5	< 4.5	< 4.2	< 30	4.6
Detected SG2 Target List Analytical Parameters (ppbv)											
4-Bromofluorobenzene	460-00-4	- -	- -	23	25 [23]	23	25	25	25	25	25
4-Ethyltoluene	622-96-8	- -	- -	< 4.2	7.3 [5.8]	< 4	24	< 4.1	12	< 28	< 3.8
Carbon Dioxide	124-38-9	- -	- -	2.9	0.25 [0.24]	0.58	2.6	1.6	0.16	0.15	3.7
CFC-11	75-69-4	28,000	390,000	< 4.8	< 4.5 [< 4.6]	11	< 4.7	< 4.7	< 4.4	8,000	22
CFC-12	75-71-8	4,000	56,000	< 4.2	< 4 [< 4]	4.1	< 4.2	< 4.2	< 3.9	< 28	< 3.8
Cyclohexane	110-82-7	240,000	3,400,000	< 2.9	< 2.8 [< 2.8]	< 2.8	8.2	8.6	< 2.7	< 19	< 2.7
Ethanol	64-17-5	- -	- -	< 6.4	7.3 [6.5]	< 6.2	9.3	< 6.3	< 6	< 42	< 5.8
Isopropyl alcohol	67-63-0	- -	- -	< 8.4	< 7.9 [< 8.1]	< 8.1	28	< 8.2	< 7.8	< 55	< 7.6
m&p-Xylenes	ARC-mpXyl	- -	- -	< 3.7	< 3.5 [< 3.6]	< 3.6	120	5.5	8.4	< 24	< 3.4
Methane	74-82-8	- -	- -	0.00023	0.00022 [0.00021]	0.0002	< 0.00017	0.00054	< 0.00016	0.00089	< 0.00016
Methyl N-Butyl Ketone	591-78-6	1,200	17,000	< 14	< 13 [< 13]	< 13	29	< 14	< 13	< 92	< 13
N-Heptane	142-82-5	- -	- -	< 3.5	< 3.3 [< 3.4]	< 3.4	< 3.4	< 3.4	< 3.2	< 23	< 3.2
Nitrogen	7727-37-9	- -	- -	84	78 [78]	78	80	85	79	91	82
o,p-Xylene	136777-61-2	- -	- -	< 3.7	< 3.5 [< 3.6]	< 3.6	58	< 3.6	3.9	< 24	< 3.4
Oxygen	7782-44-7	- -	- -	13	22 [22]	21	17	13	21	8.6	14
Tetrahydrofuran	109-99-9	480	8,100	<2.5	2.8 [2.5]	<2.4	29	<2.5	<2.3	<16	<2.3

Table 19
Historical Soil Vapor Sampling Results for Detected Constituents

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National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID:		Soil Vapor Screening Values		PCSV-16	PCSV-17	PCSV-18	PCSV-20	PCSV-21	PCSV-22
Sample Depth(ft):	CAS Number	Residential SV_{SS} (Exceedances Bolded & Italicized)	Nonresidential SV_{SS} (No Exceedances)	1	2	1	1	1	1
Date Collected:				1/12/2006	1/11/2006	1/12/2006	1/12/2006	1/12/2006	1/12/2006
Detected SG1 Target List Analytical Parameters (ug/m3)									
1,1,1-Trichloroethane	71-55-6	200,000	2,800,000	< 4.9	< 4.3	< 4.5	< 4.7	< 4.5	< 4.7 [< 4.3]
1,2,4-Trimethylbenzene	95-63-6	2,400	34,000	21	< 3.9	< 4	< 4.2	< 4	< 4.2 [< 3.9]
1,3,5-Trimethylbenzene	108-67-8	2,400	34,000	19	< 3.9	< 4	< 4.2	< 4	< 4.2 [< 3.9]
1,4-Dioxane	123-91-1	190	3,100	< 13	< 11	< 12	< 12	< 12	< 12 [< 11]
2-Butanone (MEK)	78-93-3	200,000	2,800,000	< 2.6	11	< 2.4	< 2.5	< 2.4	< 2.5 [< 2.3]
4-Methyl-2-Pentanone	108-10-1	120,000	1,700,000	< 3.7	< 3.2	< 3.4	< 3.5	< 3.4	< 3.5 [< 3.2]
Acetone	67-64-1	1,200,000	17,000,000	< 8.5	53	11	< 8.1	< 7.8	< 8.1 [< 7.5]
Benzene	71-43-2	120	2,000	< 2.8	< 2.5	< 2.6	< 2.7	< 2.6	< 2.7 [< 2.5]
Carbon Disulfide	75-15-0	28,000	390,000	< 2.8	4	21	< 2.7	< 2.6	4 [3.4]
Chloroform	67-66-3	41	680	< 4.4	< 3.8	< 4	< 4.2	< 4	< 4.2 [< 3.8]
cis-1,2-Dichloroethene	156-59-2	- -	- -	< 3.5	< 3.1	< 3.2	< 3.4	< 3.2	< 3.4 [< 3.1]
Dichloromethane	75-09-2	24,000	340,000	< 3.1	< 2.7	< 2.8	< 3	< 2.8	7.9 [5.7]
Ethylbenzene	100-41-4	370	6,300	4.5	< 3.4	< 3.6	< 3.7	< 3.6	< 3.7 [< 3.4]
Hexane	110-54-3	28,000	390,000	< 3.2	< 2.8	< 2.9	< 3	< 2.9	< 3 [< 2.8]
Methyl-tert-butylether	1634-04-4	3,600	61,000	16	5.5	5.6	< 3.1	5.6	6.5 [6.1]
N-Propylbenzene	103-65-1	40,000	560,000	< 4.4	< 3.9	< 4	< 4.2	< 4	< 4.2 [< 3.9]
Tetrachloroethene	127-18-4	1,600	22,000	< 6.1	< 5.4	< 5.6	< 5.8	< 5.6	< 5.8 [< 5.4]
Toluene	108-88-3	200,000	2,800,000	13	< 3	< 3.1	< 3.2	< 3.1	< 3.2 [< 3]
Trichloroethene	79-01-6	80	1,100	< 4.8	< 4.2	< 4.4	< 4.6	< 4.4	< 4.6 [< 4.2]
Detected SG2 Target List Analytical Parameters (ppbv)									
4-Bromofluorobenzene	460-00-4	- -	- -	25	25	24	25	26	25 [26]
4-Ethyltoluene	622-96-8	- -	- -	28	< 3.9	< 4	< 4.2	< 4	< 4.2 [< 3.9]
Carbon Dioxide	124-38-9	- -	- -	0.4	0.052	0.25	1	0.1	0.79 [0.79]
CFC-11	75-69-4	28,000	390,000	< 5	< 4.4	< 4.6	< 4.8	< 4.6	65 [70]
CFC-12	75-71-8	4,000	56,000	< 4.4	< 3.9	< 4	< 4.2	< 4	4.4 [4.6]
Cyclohexane	110-82-7	240,000	3,400,000	< 3.1	< 2.7	< 2.8	< 2.9	< 2.8	< 2.9 [< 2.7]
Ethanol	64-17-5	- -	- -	< 6.7	< 6	< 6.2	< 6.4	< 6.2	< 6.4 [< 6]
Isopropyl alcohol	67-63-0	- -	- -	< 8.8	< 7.8	< 8.1	< 8.4	< 8.1	< 8.4 [< 7.8]
m&p-Xylenes	ARC-mpXyl	- -	- -	20	< 3.4	< 3.6	< 3.7	< 3.6	< 3.7 [< 3.4]
Methane	74-82-8	- -	- -	< 0.00018	< 0.00016	0.00019	< 0.00017	0.00017	0.014 [0.015]
Methyl N-Butyl Ketone	591-78-6	1,200	17,000	< 15	< 13	< 13	< 14	< 13	< 14 [< 13]
N-Heptane	142-82-5	- -	- -	< 3.7	< 3.2	< 3.4	< 3.5	< 3.4	< 3.5 [< 3.2]
Nitrogen	7727-37-9	- -	- -	80	80	79	80	86	79 [80]
o,p-Xylene	136777-61-2	- -	- -	10	< 3.4	< 3.6	< 3.7	< 3.6	< 3.7 [< 3.4]
Oxygen	7782-44-7	- -	- -	20	20	21	19	14	20 [19]
Tetrahydrofuran	109-99-9	480	8,100	<2.6	<2.3	<2.4	<2.5	<2.4	<2.5 [<2.3]

Table 19
Historical Soil Vapor Sampling Results for Detected Constituents

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Notes:

1. Samples were collected by Paulus, Sokolowski, and Sartor Engineering, PC on the dates indicated.
2. Soil samples were analyzed by Air Toxics LTD, located in Folsom, California for the following:
   - Volatile organic compounds and naphthalene using the Modified EPA Compendium Method TO-15 and GC/MS in the full scan mode.
   - Methane and fixed gases using modified ASTM Method D-1946 and GC/FID or GC/TCD.
3. Only compounds detected in one or more samples are shown in this table.
4. < = constituent not detected at a concentration above the reported detection limit. These results are also reported in gray.
5. Concentrations reported in micrograms per cubic meter (ug/m^3) or part per billion by volume (ppbv).
6. Soil vapor screening values for residential and non-residential, sub-slab, soil gas (SV_{SS}) obtained from the Pennsylvania Department of Environmental Protection (PADEP) Land Recycling Program Technical Guidance Manual for Vapor Intrusion into Buildings from Groundwater and Soil under Act 2, published on November 19, 2016 and effective January 18, 2017.
7. No result exceed the non-residential SV_{SS} screening value.
8. Italics and bolding indicates that the result exceeds the residential SVSS screening value.
9. Brackets indicate the reported concentration of a duplicate sample.
10. - - = No soil vapor screening value.
11. Data have not been validated.

Table 20
Detected Unsaturated Soil Analytical Results Compared to VI Standards (mg/kg)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID:		Res VI Standard (Exceedances Bolded & Italicized)	Non-Res VI Standard (Exceedances Shaded)	MW-103	MW-108		PCSB-17	PCSB-26	PCSB-26R	PCSB-27		PCSB-28	PCSB-29	PCSB-30		PCSB-30R
Sample Depth (ft):				6-7	5-7	10-12	4	0.5	0.5-2	0.5	1.5	0.5	0.5	0.5	2	0.5-2
Date Collected:	CAS Number			5/16/18	9/24/19	9/24/19	3/17/05	7/26/05	4/19/19	7/26/05	7/26/05	7/26/05	7/26/05	7/26/05	7/26/05	4/19/19
Volatile Organic Compounds																
Acetone	67-64-1	350	4,700	0.0380 J	< 85	0.0163 J	0.048	0.034	0.0087 J	< 0.013	< 0.006	< 0.013	< 0.0059	< 0.006	< 0.008	0.0252
Benzene	71-43-2	0.13	0.13	< 0.00051	***9.98***	< 0.0012	***0.17***	< 0.00083	< 0.00058	< 0.0013	< 0.00058	< 0.0012	< 0.00057	< 0.00057	< 0.00077	< 0.00092
2-Butanone (MEK)	78-93-3	76	1,100	< 0.01	< 85	< 0.024	< 0.0013	< 0.0013	< 0.012	< 0.002	< 0.00089	< 0.0019	< 0.00087	< 0.00088	< 0.0012	< 0.018
Carbon Disulfide	75-15-0	130	530	< 0.0020	8.42 J	< 0.0047	0.0019	< 0.0011	< 0.0023	< 0.0016	< 0.00074	< 0.0015	< 0.00072	< 0.00073	< 0.00098	< 0.0037 UJ
Carbon Tetrachloride	56-23-5	0.26	0.26	< 0.0020	< 17	< 0.0047	< 0.0014	< 0.0014	< 0.0023	< 0.0021	< 0.00096	< 0.002	< 0.00094	< 0.00095	< 0.0013	< 0.0037
Chlorobenzene	108-90-7	6.1	6.1	< 0.0020	< 17	< 0.0047 UJ	< 0.00081	< 0.00082	< 0.0023	< 0.0013	< 0.00057	< 0.0012	< 0.00056	< 0.00056	< 0.00076	< 0.0037
Chloroform	67-66-3	2	2	< 0.0020	< 17	< 0.0047	< 0.00073	< 0.00074	< 0.0023	< 0.0011	< 0.00052	< 0.0011	< 0.0005	< 0.00051	< 0.00069	< 0.0037
Cyclohexane	110-82-7	1,700	6,900	< 0.0020	< 17	0.0054	NA	NA	< 0.0023	NA	NA	NA	NA	NA	NA	< 0.0037
1,4-Dichlorobenzene	106-46-7	10	10	< 0.0010	< 8.5	R	NA	NA	< 0.0012	NA	NA	NA	NA	NA	NA	< 0.0018 UJ
1,1-Dichloroethane	75-34-3	0.75	3.9	< 0.0010	< 8.5	< 0.0024	< 0.0012	< 0.0012	< 0.0012	< 0.0019	< 0.00086	< 0.0018	< 0.00084	< 0.00085	< 0.0011	< 0.0018
Dichloromethane	75-09-2	0.076	1.5	0.0035 J	< 43	< 0.012	0.014 B	0.018 B	< 0.0058	0.021 B	0.013 B	0.017 B	0.013 B	0.0058 B	0.017 B	< 0.0092
Ethylbenzene	100-41-4	46	46	< 0.0010	< 8.5	< 0.0024 UJ	0.0092	< 0.0012	< 0.0012	< 0.0019	< 0.00085	< 0.0018	< 0.00083	< 0.00084	< 0.0011	< 0.0018
Isopropylbenzene	98-82-8	600	2,500	< 0.0020	< 17	< 0.0047	NA	NA	< 0.0023	NA	NA	NA	NA	NA	NA	< 0.0037
Methyl-tert-butylether	1634-04-4	0.28	1.4	< 0.0010	< 8.5	< 0.0024	NA	NA	< 0.0012	NA	NA	NA	NA	NA	NA	< 0.0018
Styrene (Monomer)	100-42-5	24	79	< 0.0020	< 17	< 0.0047 UJ	< 0.001	< 0.001	< 0.0023	< 0.0016	< 0.0007	< 0.0015	< 0.00069	< 0.0007	< 0.00094	< 0.0037
Toluene	108-88-3	44	44	< 0.0010	12.5	< 0.0024 UJ	0.16	< 0.0012	< 0.0012	< 0.0019	< 0.00086	< 0.0018	< 0.00084	< 0.00085	< 0.0011	< 0.0018
1,2,4-Trichlorobenzene	120-82-1	27	27	< 0.0051	< 43	< 0.012	NA	NA	< 0.0058	NA	NA	NA	NA	NA	NA	< 0.0092
1,1,1-Trichloroethane	71-55-6	7.2	7.4	< 0.0020	< 17	< 0.0047	< 0.0004	< 0.0004	< 0.0023	< 0.00063	< 0.00028	< 0.00059	< 0.00028	< 0.00028	< 0.00038	< 0.0037
Total Xylenes	1330-20-7	990	990	< 0.0010	51.3	0.0040 J	NA	NA	< 0.0012	NA	NA	NA	NA	NA	NA	< 0.0018
Semi-Volatile Organic Compounds																
1,1-Biphenyl	92-52-4	0.37	1.5	0.0223 J	**310 D**	0.0439 J	NA	NA	< 0.077	NA	NA	NA	NA	NA	NA	< 0.089
2-Methylnaphthalene	91-57-6	25	100	0.0604	***1,610 D***	0.27	***250***	0.12	< 0.038	0.73	< 0.065	0.78	0.072	0.36	< 0.086	< 0.045
Naphthalene	91-20-3	25	25	0.189	***8,500 D***	1.06	***1,200***	0.16	< 0.038	1.2	< 0.0037	0.69	0.054	0.42	< 0.0049	< 0.045
Phenol	108-95-2	380	7,900	< 0.081	24.8	< 0.09	< 16	< 0.058	< 0.077	< 0.3	< 0.063	< 0.06	< 0.061	< 0.057	< 0.083	< 0.089

Table 20
Detected Unsaturated Soil Analytical Results Compared to VI Standards (mg/kg)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID:		Res VI Standard (Exceedances Bolded & Italicized)	PCSB-31	PCSB-32		PCSB-33	PCSB-34	PCSB-35	PCSB-36	PCSB-37	PCSB-38	PCSB-39	PCSB-40	PCSB-41	PCSB-41R
Sample Depth (ft):			0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5-2
Date Collected:	CAS Number		7/28/05	7/28/05	8/1/05	7/28/05	7/27/05	8/2/05	7/27/05	8/3/05	7/27/05	7/27/05	7/28/05	7/28/05	4/22/19
Volatile Organic Compounds															
Acetone	67-64-1	350	< 0.0074	NA	< 0.0072	< 0.0066	< 0.0064	0.018	< 0.0062	< 0.0059	< 0.0065	< 0.0069	< 0.0071	< 0.0058	< 1.4
Benzene	71-43-2	0.13	< 0.00071	NA	< 0.00069	< 0.00064	< 0.00061	< 0.00053	< 0.00059	< 0.00057	< 0.00062	< 0.00066	< 0.00068	< 0.00055	***6.32***
2-Butanone (MEK)	78-93-3	76	< 0.0011	NA	< 0.0011	< 0.00097	< 0.00094	< 0.00081	< 0.00091	< 0.00087	< 0.00095	< 0.001	< 0.001	< 0.00085	< 1.4
Carbon Disulfide	75-15-0	130	< 0.0009	NA	< 0.00088	< 0.00081	< 0.00078	< 0.00068	< 0.00076	< 0.00072	< 0.00079	< 0.00084	< 0.00087	< 0.00071	< 0.28
Carbon Tetrachloride	56-23-5	0.26	< 0.0012	NA	< 0.0011	< 0.0011	< 0.001	< 0.00088	< 0.00099	< 0.00094	< 0.001	< 0.0011	< 0.0011	< 0.00092	< 0.28
Chlorobenzene	108-90-7	6.1	< 0.0007	NA	< 0.00068	< 0.00063	< 0.00061	< 0.00052	< 0.00058	< 0.00056	< 0.00061	< 0.00065	< 0.00067	< 0.00055	< 0.28
Chloroform	67-66-3	2	< 0.00063	NA	< 0.00061	< 0.00057	< 0.00055	< 0.00047	< 0.00053	< 0.0005	< 0.00055	< 0.00059	< 0.0006	< 0.00049	< 0.28
Cyclohexane	110-82-7	1,700	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4.89
1,4-Dichlorobenzene	106-46-7	10	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.14
1,1-Dichloroethane	75-34-3	0.75	< 0.0011	NA	< 0.001	< 0.00095	< 0.00091	< 0.00079	< 0.00088	< 0.00084	< 0.00092	< 0.00098	< 0.001	< 0.00082	< 0.14
Dichloromethane	75-09-2	0.076	0.038 B	NA	0.021 B	0.028 B	0.0093 B	0.011 B	0.0067 B	0.0023 B	0.009 B	0.018 B	0.036 B	0.011 B	< 0.7
Ethylbenzene	100-41-4	46	< 0.001	NA	< 0.001	< 0.00093	< 0.0009	< 0.00078	< 0.00087	< 0.00083	< 0.00091	< 0.00097	< 0.00099	< 0.00081	12.3
Isopropylbenzene	98-82-8	600	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.943
Methyl-tert-butylether	1634-04-4	0.28	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.14
Styrene (Monomer)	100-42-5	24	< 0.00086	NA	< 0.00084	< 0.00078	< 0.00075	< 0.00065	< 0.00072	< 0.00069	< 0.00076	< 0.00081	< 0.00083	< 0.00067	< 0.28
Toluene	108-88-3	44	< 0.001	NA	< 0.001	< 0.00094	< 0.00091	< 0.00079	< 0.00088	< 0.00084	< 0.00092	< 0.00098	< 0.001	< 0.00082	***53.4 D***
1,2,4-Trichlorobenzene	120-82-1	27	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.7
1,1,1-Trichloroethane	71-55-6	7.2	< 0.00035	NA	< 0.00034	< 0.00031	< 0.0003	< 0.00026	< 0.00029	< 0.00028	< 0.0003	< 0.00032	< 0.00033	< 0.00027	< 0.28
Total Xylenes	1330-20-7	990	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	71
Semi-Volatile Organic Compounds															
1,1-Biphenyl	92-52-4	0.37	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	***6.43 D***
2-Methylnaphthalene	91-57-6	25	< 0.079	< 0.076	NA	0.14	0.74	0.11 J	1.3	3.8	0.13	0.56	< 0.076	0.47	22.8 D
Naphthalene	91-20-3	25	< 0.0045	< 0.0043	NA	0.067	1	< 0.024	1.8	2.1	0.13	0.27	< 0.0043	0.59	14.1 D
Phenol	108-95-2	380	< 0.077	< 0.073	NA	< 0.069	< 0.31	< 0.16	< 0.3	< 0.17	< 0.067	< 0.072	< 0.073	< 0.28	< 0.081

Table 20
Detected Unsaturated Soil Analytical Results Compared to VI Standards (mg/kg)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID:		Res VI Standard (Exceedances Bolded & Italicized)	PCSB-42	PCSB-43	PCSB-44	PCSB-45	PCSB-46		PCSB-47		PCSB-48		PCSB-49	PCSB-50
Sample Depth (ft):			0.5	0.5	0.5	0.5	0.5	4	0.5	4	0.5	4	0.5	0.5
Date Collected:	CAS Number		8/1/05	8/1/05	8/3/05	8/3/05	7/27/05	7/27/05	8/3/05	8/3/05	8/3/05	8/3/05	8/3/05	8/3/05
Volatile Organic Compounds														
Acetone	67-64-1	350	< 0.0055 [< 0.0056]	< 0.0056	0.028	0.036 [0.022]	< 0.006	< 0.006	0.036	0.18	0.3	< 0.44	0.019	< 0.41
Benzene	71-43-2	0.13	< 0.00053 [< 0.00054]	< 0.00054	< 0.00053	< 0.00054 [< 0.00054]	< 0.00058	< 0.00057	< 0.00055	< 0.0028	< 0.0027	< 0.033	< 0.00053	< 0.031
2-Butanone (MEK)	78-93-3	76	< 0.0008 [< 0.00082]	< 0.00083	< 0.00081	< 0.00082 [< 0.00083]	< 0.00089	< 0.00088	< 0.00085	< 0.0043	< 0.0041	< 0.062	< 0.00081	< 0.058
Carbon Disulfide	75-15-0	130	< 0.00067 [< 0.00068]	< 0.00069	< 0.00068	< 0.00068 [< 0.00069]	< 0.00074	< 0.00073	< 0.00071	< 0.0036	< 0.0034	< 0.053	< 0.00068	< 0.049
Carbon Tetrachloride	56-23-5	0.26	< 0.00087 [< 0.00089]	< 0.0009	< 0.00088	< 0.00089 [< 0.0009]	< 0.00096	< 0.00095	< 0.00092	< 0.0047	< 0.0045	< 0.034	< 0.00088	< 0.032
Chlorobenzene	108-90-7	6.1	< 0.00052 [< 0.00053]	< 0.00053	< 0.00052	< 0.00053 [< 0.00053]	< 0.00057	< 0.00056	< 0.00055	< 0.0028	< 0.0026	< 0.027	< 0.00052	< 0.026
Chloroform	67-66-3	2	< 0.00047 [< 0.00048]	< 0.00048	< 0.00047	< 0.00048 [< 0.00048]	< 0.00052	< 0.00051	< 0.00049	< 0.0025	< 0.0024	< 0.031	< 0.00047	< 0.029
Cyclohexane	110-82-7	1,700	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	106-46-7	10	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	75-34-3	0.75	< 0.00078 [< 0.0008]	< 0.00081	< 0.00079	< 0.0008 [< 0.00081]	< 0.00086	< 0.00085	< 0.00082	< 0.0042	< 0.004	< 0.044	< 0.00079	< 0.041
Dichloromethane	75-09-2	0.076	0.014 B [0.014 B]	0.014 B	0.01 B	0.012 B [0.009 B]	0.015 B	0.014 B	0.008 B	0.06 B	0.07 B	***0.29 B***	0.01 B	***0.22 B***
Ethylbenzene	100-41-4	46	< 0.00077 [< 0.00079]	< 0.00079	< 0.00078	< 0.00079 [< 0.00079]	< 0.00085	< 0.00084	< 0.00081	< 0.0041	< 0.0039	< 0.064	< 0.00078	< 0.06
Isopropylbenzene	98-82-8	600	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl-tert-butylether	1634-04-4	0.28	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene (Monomer)	100-42-5	24	< 0.00064 [< 0.00065]	< 0.00066	< 0.00065	< 0.00065 [< 0.00066]	< 0.0007	< 0.0007	< 0.00067	< 0.0034	< 0.0033	< 0.014	< 0.00065	< 0.013
Toluene	108-88-3	44	< 0.00078 [< 0.00079]	< 0.0008	< 0.00079	< 0.00079 [< 0.0008]	< 0.00086	< 0.00085	< 0.00082	< 0.0042	< 0.004	< 0.021	< 0.00079	< 0.02
1,2,4-Trichlorobenzene	120-82-1	27	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	71-55-6	7.2	< 0.00026 [< 0.00026]	< 0.00026	< 0.00026	< 0.00026 [< 0.00026]	< 0.00028	< 0.00028	< 0.00027	< 0.0014	< 0.0013	< 0.027	< 0.00026	< 0.025
Total Xylenes	1330-20-7	990	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Semi-Volatile Organic Compounds														
1,1-Biphenyl	92-52-4	0.37	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	91-57-6	25	0.11 [< 0.036]	1.4	0.093	0.68 [0.52]	1.3	< 0.064	0.18	14	< 0.06	3.7	< 0.059	1.4
Naphthalene	91-20-3	25	0.08 [< 0.0067]	0.59	0.1	0.25 [0.25]	0.86	< 0.0036	0.17	< 0.018	< 0.0034	< 0.074	< 0.0034	0.98
Phenol	108-95-2	380	< 0.034 [< 0.035]	< 0.16	< 0.057	< 0.053 [< 0.054]	< 0.058	< 0.062	< 0.06	< 0.31	< 0.058	< 1.3	< 0.057	< 0.054

Table 20
Detected Unsaturated Soil Analytical Results Compared to VI Standards (mg/kg)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID:		Res VI Standard (Exceedances Bolded & Italicized)	PCSB-51		PCSB-52	PCSB-53		PCSB-54	PCSB-55	PCSB-56		PCSB-57		PCSB-58		PCSB-59
Sample Depth (ft):			0.5	3	0.5	0.5	3.5	0.5	0.5	0.5	2	0.5	2.5	0.5	5	0.5
Date Collected:	CAS Number		8/3/05	8/3/05	8/2/05	8/1/05	8/1/05	8/3/05	8/3/05	8/15/05	8/15/05	8/15/05	8/15/05	8/15/05	8/15/05	8/15/05
Volatile Organic Compounds																
Acetone	67-64-1	350	< 0.0056	0.05	< 0.0057	< 0.0057	0.023	< 0.0062	0.024	< 0.006	< 0.0069	< 0.006	< 0.0061	< 0.0058	< 0.0069	< 0.0058
Benzene	71-43-2	0.13	< 0.00054	< 0.00072	< 0.00055	< 0.00055	< 0.00057	< 0.0006	< 0.00055	< 0.00057	< 0.00066	< 0.00058	< 0.00059	< 0.00056	< 0.00066	< 0.00056
2-Butanone (MEK)	78-93-3	76	< 0.00082	< 0.0011	< 0.00084	< 0.00084	< 0.00088	< 0.00092	< 0.00085	< 0.00088	< 0.001	< 0.00089	< 0.0009	< 0.00086	< 0.001	< 0.00086
Carbon Disulfide	75-15-0	130	< 0.00068	< 0.00092	< 0.0007	< 0.0007	< 0.00073	< 0.00076	< 0.00071	< 0.00073	< 0.00084	< 0.00074	< 0.00075	< 0.00071	< 0.00084	< 0.00071
Carbon Tetrachloride	56-23-5	0.26	< 0.00089	< 0.0012	< 0.00091	< 0.00091	< 0.00095	< 0.001	< 0.00092	< 0.00095	< 0.0011	< 0.00096	< 0.00098	< 0.00093	< 0.0011	< 0.00093
Chlorobenzene	108-90-7	6.1	< 0.00053	< 0.00071	< 0.00054	< 0.00054	< 0.00056	< 0.00059	< 0.00055	< 0.00056	< 0.00065	< 0.00057	< 0.00058	< 0.00055	< 0.00065	< 0.00055
Chloroform	67-66-3	2	< 0.00048	< 0.00064	< 0.00049	< 0.00049	< 0.00051	< 0.00053	< 0.00049	< 0.00051	< 0.00059	< 0.00052	< 0.00052	< 0.0005	< 0.00059	< 0.0005
Cyclohexane	110-82-7	1,700	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	106-46-7	10	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	75-34-3	0.75	< 0.0008	< 0.0011	< 0.00081	< 0.00081	< 0.00085	< 0.00089	< 0.00082	< 0.00085	< 0.00098	< 0.00086	< 0.00087	< 0.00083	< 0.00098	< 0.00083
Dichloromethane	75-09-2	0.076	0.0026 B	0.0038 B	0.013 B	0.017 B	0.016 B	0.0024 B	0.014 B	0.041 B	0.048 B	0.034 B	0.035 B	0.018 B	0.03 B	0.019 B
Ethylbenzene	100-41-4	46	< 0.00079	< 0.0011	< 0.0008	< 0.0008	< 0.00084	< 0.00088	< 0.00081	< 0.00084	< 0.00097	< 0.00085	< 0.00086	< 0.00082	< 0.00097	< 0.00082
Isopropylbenzene	98-82-8	600	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl-tert-butylether	1634-04-4	0.28	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene (Monomer)	100-42-5	24	< 0.00065	< 0.00087	< 0.00067	< 0.00067	< 0.0007	< 0.00073	< 0.00067	< 0.0007	< 0.00081	< 0.0007	< 0.00071	< 0.00068	< 0.00081	< 0.00068
Toluene	108-88-3	44	< 0.00079	< 0.0011	< 0.00081	< 0.00081	< 0.00085	< 0.00089	< 0.00082	< 0.00085	< 0.00098	< 0.00086	< 0.00087	< 0.00083	< 0.00098	< 0.00083
1,2,4-Trichlorobenzene	120-82-1	27	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	71-55-6	7.2	< 0.00026	< 0.00035	< 0.00027	< 0.00027	< 0.00028	< 0.00029	< 0.00027	< 0.00028	< 0.00032	< 0.00028	< 0.00029	< 0.00027	< 0.00032	< 0.00027
Total Xylenes	1330-20-7	990	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Semi-Volatile Organic Compounds																
1,1-Biphenyl	92-52-4	0.37	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	91-57-6	25	0.33	0.24	0.35	1.5	1.8	1.3	0.46	0.11	0.12	0.38	0.25	0.68	0.58	0.43
Naphthalene	91-20-3	25	0.36	0.18	0.22	0.8	2.2	1.3	0.54	0.13	0.35	0.88	0.55	0.8	0.49	0.24
Phenol	108-95-2	380	< 0.16	< 0.072	< 0.16	< 0.16	< 0.17	< 0.18	< 0.055	< 0.057	< 0.066	< 0.17	< 0.18	< 0.056	< 0.066	< 0.056

Table 20
Detected Unsaturated Soil Analytical Results Compared to VI Standards (mg/kg)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID:		Res VI Standard (Exceedances Bolded & Italicized)	PCSB-60	PCTP-01	PCTP-01R	PCTP-02	PCTP-02R	PCTP-12	PCTP-12R	PCTP-14	PCTP-16	PCTP-17R	PCTP-18	PCTP-36	PCTP-37
Sample Depth (ft):			0.5	6	5-7	5	4-6	3	2-4	2.5	2	5-6	6	6	3
Date Collected:	CAS Number		8/15/05	2/8/05	4/5/19	2/8/05	4/5/19	2/9/05	4/12/19	3/3/05	2/10/05	4/15/19	2/16/05	2/18/05	2/17/05
Volatile Organic Compounds															
Acetone	67-64-1	350	0.02 [0.019]	0.044	0.142 J	0.068	0.0110 J	< 4.9	0.0672	< 0.01	< 0.003	< 7.9	< 0.0028	< 0.0072	0.023
Benzene	71-43-2	0.13	< 0.00055 [< 0.00055]	< 0.00019	R	< 0.00018	R	***59***	0.0073	< 0.00074	< 0.00028	***1.23***	< 0.00026	< 0.00051	< 0.00033
2-Butanone (MEK)	78-93-3	76	< 0.00085 [< 0.00085]	< 0.0029	0.0179 J	< 0.0028	R	< 22	< 0.011	< 0.0023	< 0.0044	< 7.9	< 0.0041	< 0.0016	< 0.001
Carbon Disulfide	75-15-0	130	< 0.00071 [< 0.00071]	< 0.00034	0.0053 J	< 0.00033	R	< 0.92	< 0.0023	< 0.0015	< 0.00051	< 1.6	< 0.00048	0.0057	< 0.00069
Carbon Tetrachloride	56-23-5	0.26	< 0.00092 [< 0.00092]	< 0.00049	R	< 0.00048	R	< 0.91	< 0.0023	< 0.0027	< 0.00074	< 1.6	< 0.00069	< 0.0019	< 0.0012
Chlorobenzene	108-90-7	6.1	< 0.00055 [< 0.00055]	< 0.00044	R	< 0.00043	R	< 0.97	< 0.0023	< 0.00059	< 0.00067	< 1.6	< 0.00063	< 0.00041	< 0.00027
Chloroform	67-66-3	2	< 0.00049 [< 0.00049]	< 0.00098	R	< 0.00095	R	< 2.1	< 0.0023	0.0056	< 0.0015	< 1.6	0.0018	< 0.00053	< 0.00034
Cyclohexane	110-82-7	1,700	NA	NA	R	NA	R	NA	< 0.0023	NA	NA	< 1.6	NA	NA	NA
1,4-Dichlorobenzene	106-46-7	10	NA	NA	0.0020 J	NA	R	NA	< 0.0011	NA	NA	< 0.79	NA	NA	NA
1,1-Dichloroethane	75-34-3	0.75	< 0.00082 [< 0.00082]	< 0.00047	R	< 0.00046	R	< 1.6	< 0.0011	< 0.0014	< 0.00071	< 0.79	< 0.00067	< 0.00098	< 0.00063
Dichloromethane	75-09-2	0.076	0.018 B [0.017 B]	0.016 B	R	0.016 B	R	< 1.8	< 0.0056	0.05 B	0.013 B	< 3.9	0.021 B	0.021 B	0.012 B
Ethylbenzene	100-41-4	46	< 0.00081 [< 0.00081]	< 0.00066	R	< 0.00065	R	5.8	< 0.0011	< 0.002	< 0.001	< 0.79	< 0.00094	< 0.0014	< 0.00091
Isopropylbenzene	98-82-8	600	NA	NA	R	NA	R	NA	< 0.0023	NA	NA	< 1.6	NA	NA	NA
Methyl-tert-butylether	1634-04-4	0.28	NA	NA	R	NA	R	NA	< 0.0011	NA	NA	< 0.79	NA	NA	NA
Styrene (Monomer)	100-42-5	24	< 0.00067 [< 0.00067]	< 0.00018	R	< 0.00017	R	4.8	< 0.0023	< 0.00046	< 0.00026	< 1.6	< 0.00025	< 0.00032	< 0.00021
Toluene	108-88-3	44	< 0.00082 [< 0.00082]	< 0.00033	0.00072 J	< 0.00032	R	***75***	0.0016	< 0.00055	< 0.0005	1.65	< 0.00047	< 0.00038	< 0.00025
1,2,4-Trichlorobenzene	120-82-1	27	NA	NA	R	NA	R	NA	< 0.0056	NA	NA	< 3.9	NA	NA	NA
1,1,1-Trichloroethane	71-55-6	7.2	< 0.00027 [< 0.00027]	< 0.00055	R	< 0.00053	R	< 1.1	< 0.0023	< 0.0014	< 0.00082	< 1.6	< 0.00078	< 0.00096	< 0.00062
Total Xylenes	1330-20-7	990	NA	NA	R	NA	R	NA	< 0.0011	NA	NA	5.62	NA	NA	NA
Semi-Volatile Organic Compounds															
1,1-Biphenyl	92-52-4	0.37	NA	NA	0.0526 J	NA	< 0.073	NA	***0.599***	NA	NA	***8.64 D***	NA	NA	NA
2-Methylnaphthalene	91-57-6	25	0.55 [0.49]	< 2.1	0.142	0.62	< 0.036	***5,500***	2.41	0.41 J	0.33 J	***56.2 D***	0.14	< 0.07	0.15
Naphthalene	91-20-3	25	0.3 [0.27]	6.6	0.266	0.74	< 0.036	***29,000***	9.89	1.4	0.43	***146 D***	0.25	< 0.0084	0.2
Phenol	108-95-2	380	< 0.055 [< 0.055]	< 3.4	< 0.078	< 0.11	< 0.073	< 520	0.257 J	< 0.28	< 0.55	2.79	< 0.12	< 0.028	< 0.031

Table 20
Detected Unsaturated Soil Analytical Results Compared to VI Standards (mg/kg)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID:		Res VI Standard (Exceedances Bolded & Italicized)	PCTP-47	PCTP-47R	PCTP-58	PCTP-61		PCTP-62	PCTP-63	PCTP-64		PCTP-65		PCTP-66
Sample Depth (ft):			6	5-7	2	0.5	7.5	0.5	0.5	0.5	7	0.5	7.5	0.5
Date Collected:	CAS Number		2/17/05	4/9/19	2/24/05	9/8/05	9/8/05	9/8/05	9/8/05	9/8/05	9/8/05	9/8/05	9/8/05	9/8/05
Volatile Organic Compounds														
Acetone	67-64-1	350	< 0.0096	0.0259	< 0.0042	< 0.0038 [< 0.006]	< 0.0057	< 0.0038	< 0.0036	< 0.0059	0.042	< 0.0059	0.043	< 0.79
Benzene	71-43-2	0.13	< 0.00069	< 0.00058	< 0.0003	< 0.00027 [< 0.00057]	< 0.00055	< 0.00027	< 0.00026	< 0.00057	< 0.00061	< 0.00057	< 0.00068	***29***
2-Butanone (MEK)	78-93-3	76	< 0.0021	< 0.012	< 0.00093	< 0.00084 [< 0.00088]	< 0.00084	< 0.00083	< 0.00079	< 0.00087	< 0.00093	< 0.00087	< 0.001	< 0.11
Carbon Disulfide	75-15-0	130	< 0.0014	0.0012 J	< 0.00063	< 0.00057 [< 0.00073]	< 0.0007	< 0.00057	< 0.00054	< 0.00072	< 0.00077	< 0.00072	< 0.00087	< 0.095
Carbon Tetrachloride	56-23-5	0.26	< 0.0025	< 0.0023	< 0.0011	< 0.001 [< 0.00095]	< 0.00091	< 0.001	< 0.00096	< 0.00094	< 0.001	< 0.00094	< 0.0011	< 0.06
Chlorobenzene	108-90-7	6.1	< 0.00055	< 0.0023	< 0.00024	< 0.00022 [< 0.00056]	< 0.00054	< 0.00022	< 0.00021	< 0.00056	< 0.0006	< 0.00056	< 0.00067	< 0.049
Chloroform	67-66-3	2	< 0.00071	< 0.0023	< 0.00031	< 0.00029 [< 0.00051]	< 0.00049	< 0.00028	< 0.00027	< 0.0005	< 0.00054	< 0.0005	< 0.0006	< 0.056
Cyclohexane	110-82-7	1,700	NA	< 0.0023	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	106-46-7	10	NA	< 0.0012	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	75-34-3	0.75	< 0.0013	< 0.0012	< 0.00058	< 0.00053 [< 0.00085]	< 0.00081	< 0.00052	< 0.00049	< 0.00084	< 0.0009	< 0.00084	< 0.001	< 0.079
Dichloromethane	75-09-2	0.076	0.028 B	< 0.0058	0.0095 B	0.011 B [0.019 B]	0.01 B	0.0095 B	0.0078 B	0.0087 B	0.014 B	0.011 B	0.0086 B	< 0.22
Ethylbenzene	100-41-4	46	< 0.0019	< 0.0012	< 0.00083	< 0.00076 [< 0.00084]	< 0.0008	< 0.00075	< 0.00071	< 0.00083	< 0.00089	< 0.00083	< 0.00099	< 0.12
Isopropylbenzene	98-82-8	600	NA	< 0.0023	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl-tert-butylether	1634-04-4	0.28	NA	< 0.0012	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene (Monomer)	100-42-5	24	< 0.00043	< 0.0023	< 0.00019	< 0.00017 [< 0.0007]	< 0.00067	< 0.00017	< 0.00016	< 0.00069	< 0.00074	< 0.00069	< 0.00083	2.4
Toluene	108-88-3	44	< 0.00051	< 0.0012	< 0.00023	< 0.00021 [< 0.00085]	< 0.00081	< 0.0002	< 0.00019	< 0.00084	< 0.0009	< 0.00084	< 0.001	22
1,2,4-Trichlorobenzene	120-82-1	27	NA	< 0.0058	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	71-55-6	7.2	< 0.0013	< 0.0023	< 0.00057	< 0.00052 [< 0.00028]	< 0.00027	< 0.00051	< 0.00048	< 0.00028	< 0.0003	< 0.00028	< 0.00033	< 0.048
Total Xylenes	1330-20-7	990	NA	< 0.0012	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Semi-Volatile Organic Compounds														
1,1-Biphenyl	92-52-4	0.37	NA	0.0138 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	91-57-6	25	0.047 J	0.0417	0.65	0.13 [0.09]	< 0.061	5.8	< 0.45	< 0.48	0.11	< 0.14	1.4	***1,300***
Naphthalene	91-20-3	25	0.48	0.0707	0.77	0.12 [0.1]	< 0.0035	12	< 0.083	0.43	0.98	0.28	3.3	***6,000***
Phenol	108-95-2	380	< 0.029	< 0.076	< 0.11	< 0.057 [< 0.057]	< 0.059	< 1.7	< 0.53	< 0.56	0.12	< 0.17	< 0.068	210

Table 20
Detected Unsaturated Soil Analytical Results Compared to VI Standards (mg/kg)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID: / Sample Depth (ft): / Date Collected:	CAS Number	Res VI Standard (Exceedances Bolded & Italicized)	PCTP-66R 0-0.5 4/24/19	PCTP-66R 0.5-2 4/24/19	PCTP-66R-HC 0-2 4/4/19	PCTP-66R-HC 2-4 4/4/19	PCTP-67 0.5 9/12/05	PCTP-68 0.5 9/9/05	PCTP-69 0.5 9/9/05	PCTP-70 0.5 9/9/05	PCTP-71 0.5 9/9/05	PCTP-72 0.5 9/9/05	PCTP-73 0.5 9/9/05
Volatile Organic Compounds													
Acetone	67-64-1	350	< 0.02 [0.0199]	< 0.012	R	R	< 0.0059 [< 0.0058]	< 0.028	< 0.0056	< 0.0059	< 0.0055	< 0.0039	< 0.0038
Benzene	71-43-2	0.13	< 0.0010 [< 0.00095]	< 0.00062	R	R	< 0.00057 [< 0.00056]	0.006	< 0.00054	< 0.00057	< 0.00053	< 0.00028	< 0.00027
2-Butanone (MEK)	78-93-3	76	< 0.02 [< 0.019]	< 0.012	R	R	< 0.00087 [< 0.00086]	< 0.0041	< 0.00082	< 0.00087	< 0.0008	< 0.00085	< 0.00083
Carbon Disulfide	75-15-0	130	< 0.0041 [< 0.0038]	< 0.0025	R	R	< 0.00072 [< 0.00071]	< 0.0034	< 0.00068	< 0.00072	< 0.00067	< 0.00058	< 0.00057
Carbon Tetrachloride	56-23-5	0.26	< 0.0041 [< 0.0038]	< 0.0025	R	R	< 0.00094 [< 0.00093]	< 0.0045	< 0.00089	< 0.00094	< 0.00087	< 0.001	< 0.001
Chlorobenzene	108-90-7	6.1	< 0.0041 [< 0.0038]	< 0.0025	R	R	< 0.00056 [< 0.00055]	< 0.0026	< 0.00053	< 0.00056	< 0.00052	< 0.00022	< 0.00022
Chloroform	67-66-3	2	< 0.0041 [< 0.0038]	< 0.0025	R	R	< 0.0005 [< 0.0005]	< 0.0024	< 0.00048	< 0.0005	< 0.00047	< 0.00029	< 0.00028
Cyclohexane	110-82-7	1,700	< 0.0041 [< 0.0038]	< 0.0025	R	R	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	106-46-7	10	< 0.0020 [< 0.0019]	< 0.0012	R	R	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	75-34-3	0.75	< 0.0020 [< 0.0019]	< 0.0012	R	R	< 0.00084 [< 0.00083]	< 0.004	< 0.0008	< 0.00084	< 0.00078	< 0.00053	< 0.00052
Dichloromethane	75-09-2	0.076	< 0.01 [< 0.0095]	< 0.0062	R	R	0.0048 B [0.0065 B]	0.03 B	0.0075 B	0.013 B	0.0058 B	0.0091 B	0.01 B
Ethylbenzene	100-41-4	46	< 0.0020 [< 0.0019]	< 0.0012	R	R	< 0.00083 [< 0.00082]	0.0083	< 0.00079	< 0.00083	< 0.00077	< 0.00077	< 0.00075
Isopropylbenzene	98-82-8	600	< 0.0041 [< 0.0038]	< 0.0025	R	R	NA	NA	NA	NA	NA	NA	NA
Methyl-tert-butylether	1634-04-4	0.28	< 0.0020 [< 0.0019]	< 0.0012	R	R	NA	NA	NA	NA	NA	NA	NA
Styrene (Monomer)	100-42-5	24	< 0.0041 [< 0.0038]	< 0.0025	R	R	< 0.00069 [< 0.00068]	< 0.0033	< 0.00065	< 0.00069	< 0.00064	< 0.00017	< 0.00017
Toluene	108-88-3	44	< 0.0020 [< 0.0019]	< 0.0012	R	0.0687 J	< 0.00084 [< 0.00083]	0.022	< 0.00079	< 0.00084	< 0.00078	< 0.00021	< 0.0002
1,2,4-Trichlorobenzene	120-82-1	27	< 0.01 [< 0.0095]	< 0.0062	R	R	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	71-55-6	7.2	< 0.0041 [< 0.0038]	< 0.0025	R	R	< 0.00028 [< 0.00027]	< 0.0013	< 0.00026	< 0.00028	< 0.00026	< 0.00052	< 0.00051
Total Xylenes	1330-20-7	990	< 0.0020 [< 0.0019]	< 0.0012	R	R	NA	NA	NA	NA	NA	NA	NA
Semi-Volatile Organic Compounds													
1,1-Biphenyl	92-52-4	0.37	0.226 J ***[4.33 J]***	0.0185 J	0.211	***0.677***	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	91-57-6	25	0.486 J [10.5 J]	0.106	0.502	1.96	0.13 J [0.16]	***230***	0.16	< 0.048	0.057	0.075	0.06
Naphthalene	91-20-3	25	0.782 J [11.2]	0.0294 J	0.643	1.76	0.21 [0.15]	***1,900***	0.56	0.043	0.18	0.14	0.14
Phenol	108-95-2	380	0.0364 J [0.111 J]	< 0.07	< 0.079	< 0.069	< 0.17 [< 0.12]	< 23	< 0.058	< 0.056	< 0.052	< 0.058	< 0.056

Table 20
Detected Unsaturated Soil Analytical Results Compared to VI Standards (mg/kg)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID:		Res VI Standard (Exceedances Bolded & Italicized)	PCTP-73R	PCTP-74	PCTP-75		PCTP-75R	PCTP-76		PCTP-77	PCTP-78	PCTP-79	PCTP-80	PSSTP-01A	PSSTP-01B	PSSTP-01R
Sample Depth (ft):			0-0.5	0.5	0.5	11	10-12	0.5	6.5	0.5	0.5	0.5	8	1-2	5-6	5-6
Date Collected:	CAS Number		4/10/19	9/9/05	9/9/05	9/9/05	4/11/19	9/12/05	9/12/05	9/12/05	9/12/05	9/12/05	9/12/05	3/11/03	3/11/03	4/10/19
Volatile Organic Compounds																
Acetone	67-64-1	350	< 0.012	< 0.0058	< 0.0055	0.11	0.0523	< 0.0057	< 0.0038	< 0.0037	< 0.0036	< 0.0036	0.041	< 0.022	< 0.024	0.0668
Benzene	71-43-2	0.13	< 0.00061	< 0.00055	< 0.00053	***2.8***	< 0.0011	< 0.00055	< 0.00027	< 0.00026	< 0.00026	< 0.00026	< 0.00029	0.0059	0.0073 B	< 0.00083
2-Butanone (MEK)	78-93-3	76	< 0.012	< 0.00085	< 0.0008	< 0.0044	< 0.021	< 0.00084	< 0.00082	< 0.00081	< 0.0008	< 0.0008	< 0.00088	NA	NA	< 0.017
Carbon Disulfide	75-15-0	130	< 0.0025	< 0.00071	< 0.00067	< 0.0037	< 0.0042	< 0.0007	< 0.00056	< 0.00055	< 0.00054	< 0.00054	< 0.0006	< 0.056	< 0.0059	0.0048
Carbon Tetrachloride	56-23-5	0.26	< 0.0025	< 0.00092	< 0.00087	< 0.0048	< 0.0042	< 0.00091	< 0.001	< 0.00098	< 0.00097	< 0.00097	< 0.0011	NA	NA	< 0.0033
Chlorobenzene	108-90-7	6.1	< 0.0025	< 0.00055	< 0.00052	< 0.0028	< 0.0042	< 0.00054	< 0.00022	< 0.00021	< 0.00021	< 0.00021	< 0.00023	< 0.056	< 5	< 0.0033
Chloroform	67-66-3	2	< 0.0025	< 0.00049	< 0.00047	< 0.0025	< 0.0042	< 0.00049	< 0.00028	< 0.00027	< 0.00027	< 0.00027	< 0.0003	NA	NA	< 0.0033
Cyclohexane	110-82-7	1,700	< 0.0025	NA	NA	NA	< 0.0042	NA	NA	NA	NA	NA	NA	NA	NA	< 0.0033
1,4-Dichlorobenzene	106-46-7	10	< 0.0012	NA	NA	NA	< 0.0021	NA	NA	NA	NA	NA	NA	NA	NA	< 0.0017
1,1-Dichloroethane	75-34-3	0.75	< 0.0012	< 0.00082	< 0.00078	< 0.0043	< 0.0021	< 0.00081	< 0.00051	< 0.0005	< 0.0005	< 0.0005	< 0.00055	NA	NA	< 0.0017
Dichloromethane	75-09-2	0.076	< 0.0061	0.0048 B	0.0034 B	0.03 B	< 0.011	0.013 B	0.01 B	0.01 B	0.011 B	0.009 B	0.015 B	0.0072 B	0.0073 B	< 0.0083
Ethylbenzene	100-41-4	46	< 0.0012	< 0.00081	< 0.00077	2.4	< 0.0021	< 0.0008	< 0.00074	< 0.00073	< 0.00072	< 0.00072	< 0.00079	< 11	< 0.0012	< 0.0017
Isopropylbenzene	98-82-8	600	< 0.0025	NA	NA	NA	< 0.0042	NA	NA	NA	NA	NA	NA	NA	NA	< 0.0033
Methyl-tert-butylether	1634-04-4	0.28	< 0.0012	NA	NA	NA	< 0.0021	NA	NA	NA	NA	NA	NA	NA	NA	< 0.0017
Styrene (Monomer)	100-42-5	24	< 0.0025	< 0.00067	< 0.00064	< 0.0035	< 0.0042	< 0.00067	< 0.00017	< 0.00016	< 0.00016	< 0.00016	< 0.00018	NA	NA	< 0.0033
Toluene	108-88-3	44	< 0.0012	< 0.00082	< 0.00078	0.028	< 0.0021	< 0.00081	< 0.0002	< 0.0002	< 0.00019	< 0.00019	< 0.00022	0.0015	< 0.0012	< 0.0017
1,2,4-Trichlorobenzene	120-82-1	27	< 0.0061	NA	NA	NA	< 0.011	NA	NA	NA	NA	NA	NA	NA	NA	< 0.0083
1,1,1-Trichloroethane	71-55-6	7.2	< 0.0025	< 0.00027	< 0.00026	< 0.0014	< 0.0042	< 0.00027	< 0.0005	< 0.00049	< 0.00049	< 0.00049	< 0.00054	NA	NA	< 0.0033
Total Xylenes	1330-20-7	990	< 0.0012	NA	NA	NA	< 0.0021	NA	NA	NA	NA	NA	NA	0	0	< 0.0017
Semi-Volatile Organic Compounds																
1,1-Biphenyl	92-52-4	0.37	0.0131 J	NA	NA	NA	0.0255 J	NA	NA	NA	NA	NA	NA	NA	NA	0.262
2-Methylnaphthalene	91-57-6	25	0.0404 J	< 0.062	0.12	***340***	0.0866	0.097	1.4	0.91	0.044 J	< 0.14	0.25	0.22 J	0.34 J	0.861
Naphthalene	91-20-3	25	0.0552	0.071	0.27	***2,700***	0.184	0.084	1.4	1.6	0.064	< 0.025	0.6	0.36 J	0.37 J	0.577
Phenol	108-95-2	380	< 0.085	< 0.06	< 0.057	< 43	< 0.091	< 0.059	< 1.1	< 0.59	< 0.059	< 0.16	< 0.18	1.5	< 1.5	0.183 J

Table 20
Detected Unsaturated Soil Analytical Results Compared to VI Standards (mg/kg)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID:		Res VI Standard (Exceedances Bolded & Italicized)	PSSTP-02A	PSSTP-02B	PSSTP-03A	PSSTP-04A	PSSTP-04R		PSSTP-05A	PSSTP-06A	PSSTP-07A	PSSTP-07R	PSSTP-08A	PSSTP-08B
Sample Depth (ft):			1-2	5-6	1-2	1-2	1-2	7-8	1-2	1-2	1-2	0.5-2	1-2	6-7
Date Collected:	CAS Number		3/11/03	3/11/03	3/11/03	3/11/03	4/11/19	4/11/19	3/11/03	3/11/03	3/11/03	4/18/19	3/11/03	3/11/03
Volatile Organic Compounds														
Acetone	67-64-1	350	< 0.023	0.08	< 0.024	< 0.023	0.0232	< 190	< 0.024	< 0.025	< 0.025	< 0.01 [0.0095 J]	< 0.025	< 0.027
Benzene	71-43-2	0.13	0.0082 B	< 0.0013	< 0.0012	< 0.0011 UB	< 0.00052	***16.9***	< 0.12	< 0.0013	< 0.0012	0.00089 J [0.0034 J]	< 0.0012	0.0028
2-Butanone (MEK)	78-93-3	76	NA	NA	NA	NA	< 0.01	< 190	NA	NA	NA	< 0.01 [< 0.011]	NA	NA
Carbon Disulfide	75-15-0	130	< 0.0057	< 0.0065	< 0.006	< 0.0057	< 0.0021	< 38	0.0061	< 0.0063	< 0.0062	< 0.0021 [< 0.0023]	< 0.0062	< 0.0067
Carbon Tetrachloride	56-23-5	0.26	NA	NA	NA	NA	< 0.0021	< 38	NA	NA	NA	< 0.0021 [< 0.0023]	NA	NA
Chlorobenzene	108-90-7	6.1	< 0.0057	< 0.0065	< 0.006	< 0.0057	< 0.0021	< 38	< 0.0059	< 0.0063	< 0.0062	< 0.0021 [< 0.0023]	< 0.0062	< 0.67
Chloroform	67-66-3	2	NA	NA	NA	NA	< 0.0021	< 38	NA	NA	NA	< 0.0021 [< 0.0023]	NA	NA
Cyclohexane	110-82-7	1,700	NA	NA	NA	NA	< 0.0021	< 38	NA	NA	NA	< 0.0021 [< 0.0023]	NA	NA
1,4-Dichlorobenzene	106-46-7	10	NA	NA	NA	NA	< 0.0010	< 19	NA	NA	NA	< 0.0010 [< 0.0011]	NA	NA
1,1-Dichloroethane	75-34-3	0.75	NA	NA	NA	NA	< 0.0010	< 19	NA	NA	NA	< 0.0010 [< 0.0011]	NA	NA
Dichloromethane	75-09-2	0.076	0.0082 B	0.0085 B	0.0097 B	0.0076 B	< 0.0052	< 94	0.067 B	0.0046 JB	0.0099 B	< 0.0052 [< 0.0057]	0.0057 JB	0.0053 JB
Ethylbenzene	100-41-4	46	< 0.0011	< 0.0013	< 0.0012	< 0.0011	< 0.0010	< 19	< 0.0012	< 0.0013	< 0.0012	< 0.0010 [< 0.0011]	< 0.012	< 0.0013
Isopropylbenzene	98-82-8	600	NA	NA	NA	NA	< 0.0021	< 38	NA	NA	NA	< 0.0021 [< 0.0023]	NA	NA
Methyl-tert-butylether	1634-04-4	0.28	NA	NA	NA	NA	< 0.0010	< 19	NA	NA	NA	< 0.0010 [< 0.0011]	NA	NA
Styrene (Monomer)	100-42-5	24	NA	NA	NA	NA	< 0.0021	< 38	NA	NA	NA	< 0.0021 [< 0.0023]	NA	NA
Toluene	108-88-3	44	< 0.0011	< 13	< 0.0012	< 0.0011	< 0.0010	34.5	0.0013	< 0.0013	< 0.0012	< 0.0010 [< 0.0011]	< 0.0012	0.0015
1,2,4-Trichlorobenzene	120-82-1	27	NA	NA	NA	NA	< 0.0052	< 94	NA	NA	NA	< 0.0052 [< 0.0057]	NA	NA
1,1,1-Trichloroethane	71-55-6	7.2	NA	NA	NA	NA	< 0.0021	< 38	NA	NA	NA	< 0.0021 [< 0.0023]	NA	NA
Total Xylenes	1330-20-7	990	0	0.0089 J	0	0	< 0.0010	100	0.0067 B	0	0	< 0.0010 [< 0.0011]	0	0
Semi-Volatile Organic Compounds														
1,1-Biphenyl	92-52-4	0.37	NA	NA	NA	NA	0.0462 J	***301 D***	NA	NA	NA	0.0107 J [0.0085 J]	NA	NA
2-Methylnaphthalene	91-57-6	25	< 1.9	1.3	0.35 J	3.7 J	0.0951	***1,780 D***	1.4	0.054 J	< 4.2	0.0195 J [0.0151 J]	0.86 J	0.19 J
Naphthalene	91-20-3	25	< 1.9	3	0.5 J	9 J	0.16	***9,350 D***	2.5 J	0.23 J	0.48 J	0.0321 J [0.0192 J]	4.7	0.26 J
Phenol	108-95-2	380	< 1.4	2.6	< 1.5	1.7	< 0.075	69 D	< 1.5	< 0.42	< 1.6	< 0.083 [< 0.075]	< 1.5	< 1.3

Table 20
Detected Unsaturated Soil Analytical Results Compared to VI Standards (mg/kg)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID:		Res VI Standard (Exceedances Bolded & Italicized)	PSSTP-09A	PSSTP-09B	PSSTP-10A	PSSTP-10R	PSSTP-11A	PSSTP-12A	PSSTP-13A	PSSTP-14A	PSSTP-15A	PSSTP-16A	PSSTP-17A	PSSTP-18A	PSSTP-19A
Sample Depth (ft):			1-2	6-7	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2
Date Collected:	CAS Number		3/12/03	3/12/03	3/12/03	4/16/19	3/12/03	3/12/03	3/12/03	3/12/03	3/12/03	3/12/03	3/12/03	3/12/03	3/12/03
Volatile Organic Compounds															
Acetone	67-64-1	350	< 0.026	< 0.025	< 0.023	0.394	< 0.023	< 0.024	< 0.022	< 0.029	< 0.024	< 0.024	< 0.024	< 0.024	< 0.024
Benzene	71-43-2	0.13	< 0.0013	< 0.0012	< 0.0011	< 0.00063	< 0.0011	< 0.0012	< 0.0011	< 0.0014	< 0.0012	< 0.0012	< 0.012	< 0.0012	< 0.0012
2-Butanone (MEK)	78-93-3	76	NA	NA	NA	< 0.013	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon Disulfide	75-15-0	130	< 0.0065	< 0.0062	< 0.0057	< 0.0025	< 0.0057	< 0.006	0.0012 J	< 0.0071	< 0.0061	< 0.0061	< 0.006	< 0.0059	< 0.006
Carbon Tetrachloride	56-23-5	0.26	NA	NA	NA	< 0.0025	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene	108-90-7	6.1	< 0.0065	< 5	< 0.0057	< 0.0025	< 0.0057	< 0.006	< 0.0056	< 0.0071	< 0.0061	< 0.0061	< 0.006	< 0.0059	< 0.006
Chloroform	67-66-3	2	NA	NA	NA	< 0.0025	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyclohexane	110-82-7	1,700	NA	NA	NA	< 0.0025	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	106-46-7	10	NA	NA	NA	< 0.0013	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	75-34-3	0.75	NA	NA	NA	< 0.0013	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichloromethane	75-09-2	0.076	0.0041 JB	0.0023 JB	0.0036 JB	< 0.0063	0.0046 JB	< 0.006	0.0035 JB	< 0.0071	0.002 JB	0.0021 JB	0.0021 JB	< 0.0059	< 0.006
Ethylbenzene	100-41-4	46	< 0.0013	< 0.0012	< 0.0011	< 0.0013	< 0.0011	< 0.0012	<	< 0.0014	< 0.0012	< 0.0012	< 0.0012	< 0.0012	< 0.0012
Isopropylbenzene	98-82-8	600	NA	NA	NA	< 0.0025	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl-tert-butylether	1634-04-4	0.28	NA	NA	NA	< 0.0013	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene (Monomer)	100-42-5	24	NA	NA	NA	< 0.0025	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	108-88-3	44	< 0.0013	< 0.0012	< 0.0011	< 0.0013	< 0.0011	< 0.0012	< 0.0011	< 0.0014	< 0.0012	< 0.0012	< 0.0012	< 0.0012	< 0.0012
1,2,4-Trichlorobenzene	120-82-1	27	NA	NA	NA	< 0.0063	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	71-55-6	7.2	NA	NA	NA	< 0.0025	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Xylenes	1330-20-7	990	0	0	0	< 0.0013	0	0	0	0	0	0	0	JB	0
Semi-Volatile Organic Compounds															
1,1-Biphenyl	92-52-4	0.37	NA	NA	NA	0.0132 J	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	91-57-6	25	< 0.43	0.21 J	< 0.38	0.0273 J	0.06 J	1.9 J	< 0.37	< 0.48	0.35 J	0.051 J	0.14 J	0.076 J	< 0.4
Naphthalene	91-20-3	25	< 0.43	0.37 J	< 0.38	0.0813	0.11 J	3.5 J	< 0.37	0.11 J	1.9	0.08 J	0.77	0.17 J	< 0.4
Phenol	108-95-2	380	< 0.43	1.6	< 0.38	< 0.074	1.7	< 1.5	< 0.37	< 0.48	< 0.41	< 0.41	< 0.4	< 0.39	< 0.4

Table 20
Detected Unsaturated Soil Analytical Results Compared to VI Standards (mg/kg)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID:		Res VI Standard (Exceedances Bolded & Italicized)	PSSTP-20A	PSSTP-21A	PSSTP-22A	PSSTP-22R		PSSTP-23A	PSSTP-23B	PSSTP-24A	PSSTP-25A	PSSTP-25B	PSSTP-26A	PSSTP-27A	PSSTP-28A
Sample Depth (ft):			1-2	1-2	1-2	0.5-2	4-6	1-2	7-8	1-2	1-2	7-8	1-2	1-2	1-2
Date Collected:	CAS Number		3/13/03	3/13/03	3/13/03	4/24/19	4/24/19	3/13/03	3/13/03	3/13/03	3/13/03	3/13/03	3/13/03	3/13/03	3/13/03
Volatile Organic Compounds															
Acetone	67-64-1	350	< 0.023	< 0.025	< 2.9	< 0.013	< 1.5	< 0.024	< 0.022	< 0.024	< 0.024	< 0.027	< 0.024	< 0.023	< 0.11
Benzene	71-43-2	0.13	< 0.0012	< 0.0013	***0.68***	0.0010	***0.482***	< 0.0012	< 0.0011	< 0.0012	< 0.0012	< 0.0013	< 0.012	< 0.0012	< 0.0057
2-Butanone (MEK)	78-93-3	76	NA	NA	NA	< 0.013	< 1.5	NA	NA	NA	NA	NA	NA	NA	NA
Carbon Disulfide	75-15-0	130	< 0.0058	< 0.0063	< 0.73	0.0012 J	< 0.3	< 0.006	< 0.0056	< 0.006	< 0.0061	< 0.0067	< 0.0061	< 0.0058	< 0.029
Carbon Tetrachloride	56-23-5	0.26	NA	NA	NA	< 0.0026	< 0.3	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene	108-90-7	6.1	< 0.0058	< 0.0063	< 0.73	< 0.0026	< 0.3	< 0.006	< 0.0056	< 0.006	< 0.0061	< 5	< 0.0061	< 0.0058	< 0.029
Chloroform	67-66-3	2	NA	NA	NA	< 0.0026	< 0.3	NA	NA	NA	NA	NA	NA	NA	NA
Cyclohexane	110-82-7	1,700	NA	NA	NA	< 0.0026	< 0.3	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	106-46-7	10	NA	NA	NA	< 0.0013	< 0.15	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	75-34-3	0.75	NA	NA	NA	< 0.0013	< 0.15	NA	NA	NA	NA	NA	NA	NA	NA
Dichloromethane	75-09-2	0.076	0.0072 B	0.0052 JB	***0.28 J***	< 0.0064	< 0.76	0.0095 B	0.0049 JB	0.0053 JB	0.0056 JB	0.0077 B	0.0091 B	0.0035 JB	0.035 B
Ethylbenzene	100-41-4	46	< 0.0012	< 0.0013	< 0.15	< 0.0013	0.17	< 0.0012	< 0.0011	< 0.0012	< 0.0012	< 0.0013	< 0.0012	< 0.0012	0.0095
Isopropylbenzene	98-82-8	600	NA	NA	NA	< 0.0026	< 0.3	NA	NA	NA	NA	NA	NA	NA	NA
Methyl-tert-butylether	1634-04-4	0.28	NA	NA	NA	< 0.0013	< 0.15	NA	NA	NA	NA	NA	NA	NA	NA
Styrene (Monomer)	100-42-5	24	NA	NA	NA	< 0.0026	< 0.3	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	108-88-3	44	< 0.0012	< 0.0013	0.9	0.0016	1.09	< 0.0012	< 0.0011	< 0.0012	< 0.0012	< 0.0013	< 0.0012	< 0.0012	0.012
1,2,4-Trichlorobenzene	120-82-1	27	NA	NA	NA	< 0.0064	< 0.76	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	71-55-6	7.2	NA	NA	NA	< 0.0026	< 0.3	NA	NA	NA	NA	NA	NA	NA	NA
Total Xylenes	1330-20-7	990	0	0	1.22	0.0038	4.31	0	0	0	0	0	0	0	0.048
Semi-Volatile Organic Compounds															
1,1-Biphenyl	92-52-4	0.37	NA	NA	NA	***1.99***	**6.85 D**	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	91-57-6	25	0.092 J	0.82	11 J	10.9 D	***31.9 D***	< 0.4	0.4 J	0.24 J	< 8.1	0.26 J	0.35 J	2 J	17
Naphthalene	91-20-3	25	0.16 J	1.7	21	18.5 D	***103 D***	< 0.4	1.4 J	0.66 J	1.8 J	0.32 J	0.77 J	< 19	7.9
Phenol	108-95-2	380	< 0.39	1.6	1.7	0.212	0.115	1.6	< 1.4	< 1.2	2	1.7	< 1.2	< 1.5	2.5

Table 20
Detected Unsaturated Soil Analytical Results Compared to VI Standards (mg/kg)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID:		Res VI Standard (Exceedances Bolded & Italicized)	PSSTP-29A	PSSTP-30A	S-105	S-106	S-107	S-108	S-109	S-110	S-111	S-113	S-113B	S-114	S-119
Sample Depth (ft):			1-2	1-2	2-4	2-4	2-4	2-4	2-4	2-4	2-4	0-1	1-3	2-4	0-1
Date Collected:	CAS Number		3/13/03	3/13/03	4/12/19	4/12/19	4/23/19	4/15/19	4/15/19	4/12/19	4/23/19	4/23/19	4/24/19	4/15/19	4/12/19
Volatile Organic Compounds															
Acetone	67-64-1	350	< 0.022	< 0.026	0.0214	< 27	< 0.016	0.127 J [0.0125 J]	0.0379	0.0265	< 0.013	< 0.016	< 2.5	0.0281	0.0428
Benzene	71-43-2	0.13	< 0.0011	< 0.0013	< 0.00062	***48.9***	< 0.00082	0.0017 J [0.0020]	0.00086 J	< 0.00077	< 0.00064	< 0.00082	***0.935***	< 0.00059	< 0.00097
2-Butanone (MEK)	78-93-3	76	NA	NA	< 0.012	< 27	< 0.016	< 0.016 [< 0.015]	< 0.019	< 0.015	< 0.013	< 0.016	< 2.5	< 0.012	< 0.019
Carbon Disulfide	75-15-0	130	< 0.0056	< 0.0066	< 0.0025	3.72 J	< 0.0033	0.0063 J [0.0052]	0.0049	0.0015 J	0.0013 J	< 0.0033	< 0.5	< 0.0024	< 0.0039
Carbon Tetrachloride	56-23-5	0.26	NA	NA	< 0.0025	< 5.4	< 0.0033	< 0.0032 [< 0.0031]	< 0.0038	0.0012 J	< 0.0026	< 0.0033	< 0.5	< 0.0024	< 0.0039
Chlorobenzene	108-90-7	6.1	< 0.0056	< 0.0066	< 0.0025	< 5.4	< 0.0033	< 0.0032 [< 0.0031]	< 0.0038	< 0.0031	< 0.0026	< 0.0033	< 0.5	< 0.0024	< 0.0039
Chloroform	67-66-3	2	NA	NA	< 0.0025	< 5.4	< 0.0033	< 0.0032 [< 0.0031]	< 0.0038	< 0.0031	< 0.0026	< 0.0033	< 0.5	< 0.0024	< 0.0039
Cyclohexane	110-82-7	1,700	NA	NA	< 0.0025	< 5.4	< 0.0033	< 0.0032 [< 0.0031]	< 0.0038	< 0.0031	< 0.0026	< 0.0033	< 0.5	< 0.0024	< 0.0039
1,4-Dichlorobenzene	106-46-7	10	NA	NA	< 0.0012	< 2.7	< 0.0016	< 0.0016 [< 0.0015]	< 0.0019	< 0.0015	< 0.0013	< 0.0016	< 0.25	< 0.0012	< 0.0019
1,1-Dichloroethane	75-34-3	0.75	NA	NA	< 0.0012	< 2.7	< 0.0016	< 0.0016 [< 0.0015]	< 0.0019	< 0.0015	< 0.0013	< 0.0016	< 0.25	< 0.0012	< 0.0019
Dichloromethane	75-09-2	0.076	0.0043 JB	< 0.0046 UJB	< 0.0062	< 14	< 0.0082	< 0.0080 [< 0.0077]	< 0.0095	< 0.0077	< 0.0064	< 0.0082	< 1.3	< 0.0059	< 0.0097
Ethylbenzene	100-41-4	46	< 0.0011	< 0.0013	< 0.0012	3.85	< 0.0016	< 0.0016 [< 0.0015]	< 0.0019	< 0.0015	< 0.0013	< 0.0016	< 0.25	< 0.0012	< 0.0019
Isopropylbenzene	98-82-8	600	NA	NA	< 0.0025	< 5.4	< 0.0033	< 0.0032 [< 0.0031]	< 0.0038	< 0.0031	< 0.0026	< 0.0033	< 0.5	< 0.0024	< 0.0039
Methyl-tert-butylether	1634-04-4	0.28	NA	NA	< 0.0012	< 2.7	< 0.0016	< 0.0016 [< 0.0015]	< 0.0019	< 0.0015	< 0.0013	< 0.0016	< 0.25	< 0.0012	< 0.0019
Styrene (Monomer)	100-42-5	24	NA	NA	< 0.0025	20.4	< 0.0033	< 0.0032 [< 0.0031]	< 0.0038	< 0.0031	< 0.0026	< 0.0033	< 0.5	< 0.0024	< 0.0039
Toluene	108-88-3	44	< 0.0011	< 0.0013	< 0.0012	***67***	< 0.0016	< 0.0016 [< 0.0015]	< 0.0019	< 0.0015	< 0.0013	< 0.0016	0.546	< 0.0012	< 0.0019
1,2,4-Trichlorobenzene	120-82-1	27	NA	NA	< 0.0062	< 14	< 0.0082	< 0.0080 [< 0.0077]	< 0.0095	< 0.0077	< 0.0064	< 0.0082	< 1.3	< 0.0059	< 0.0097
1,1,1-Trichloroethane	71-55-6	7.2	NA	NA	< 0.0025	< 5.4	< 0.0033	< 0.0032 [< 0.0031]	< 0.0038	< 0.0031	< 0.0026	< 0.0033	< 0.5	< 0.0024	< 0.0039
Total Xylenes	1330-20-7	990	0	0	< 0.0012	129	< 0.0016	< 0.0016 [< 0.0015]	< 0.0019	< 0.0015	< 0.0013	< 0.0016	0.29	< 0.0012	< 0.0019
Semi-Volatile Organic Compounds															
1,1-Biphenyl	92-52-4	0.37	NA	NA	0.0737 J	***331***	0.143	0.0701 J [0.0711 J]	***0.438***	0.0423 J	0.101	***1.2***	0.177 J	< 0.076 UB	0.0202 J
2-Methylnaphthalene	91-57-6	25	0.5 J	4.8	0.269	***1,760***	0.359	0.236 [0.246]	1.2	0.249	0.447	2.99	0.522 J	0.0109 J	0.0629
Naphthalene	91-20-3	25	0.63 J	2.4	0.411	***7,730***	0.627	0.968 [1.23]	1.91	0.22	1.47	7.76	1.08 J	0.0197 J	0.127
Phenol	108-95-2	380	< 1.1	< 1.3	< 0.075	296	< 0.074	0.0922 [0.122]	0.635	< 0.076	0.0490 J	0.646	< 0.16	< 0.076	< 0.086

Table 20
Detected Unsaturated Soil Analytical Results Compared to VI Standards (mg/kg)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID:		Res VI Standard (Exceedances Bolded & Italicized)	S-120	S-121	S-122	S-127	S-128	S-129	S-130	S-132	S-133	S-146	S-148	S-149	S-151
Sample Depth (ft):			0-1	0-1	0-1	2-4	2-4	2-4	2-4	2-4	2-4	14-16	8-10	8-10	0.5-2
Date Collected:	CAS Number		4/24/19	4/12/19	4/12/19	4/17/19	4/18/19	4/18/19	4/17/19	4/17/19	4/17/19	4/25/19	4/25/19	4/25/19	4/25/19
Volatile Organic Compounds															
Acetone	67-64-1	350	< 0.028	< 0.023	< 0.011	< 1.2 [< 1.5]	< 0.015	0.0552	< 0.018	< 0.014	0.447	0.0250	< 37	< 10	< 2.8
Benzene	71-43-2	0.13	< 0.0014	< 0.0012	< 0.00055	***0.134 J [0.365 J]***	0.0252	0.0012	0.0176	< 0.00068	< 0.00067	< 0.00042	***4.01***	***2.31***	< 0.14
2-Butanone (MEK)	78-93-3	76	< 0.028	< 0.023	< 0.011	< 1.2 [< 1.5]	< 0.015	< 0.013	< 0.018	< 0.014	0.0403	< 0.0084	< 37	< 10	< 2.8
Carbon Disulfide	75-15-0	130	< 0.0055	< 0.0047	< 0.0022	< 0.24 [< 0.29]	< 0.0029	0.0013 J	0.0017 J	< 0.0027	0.0095	0.00083 J	6.43 J	5.32	< 0.57
Carbon Tetrachloride	56-23-5	0.26	< 0.0055	< 0.0047	< 0.0022	< 0.24 [< 0.29]	< 0.0029	< 0.0025	< 0.0036	< 0.0027	< 0.0027	< 0.0017	< 7.4	< 2	< 0.57
Chlorobenzene	108-90-7	6.1	< 0.0055	< 0.0047	< 0.0022	< 0.24 [< 0.29]	< 0.0029	< 0.0025	< 0.0036	< 0.0027	< 0.0027	< 0.0017	< 7.4	< 2	< 0.57
Chloroform	67-66-3	2	< 0.0055	< 0.0047	< 0.0022	< 0.24 [< 0.29]	< 0.0029	< 0.0025	< 0.0036	< 0.0027	< 0.0027	< 0.0017	< 7.4	< 2	< 0.57
Cyclohexane	110-82-7	1,700	< 0.0055	< 0.0047	< 0.0022	< 0.24 [< 0.29]	< 0.0029	< 0.0025	< 0.0036	< 0.0027	< 0.0027	< 0.0017	< 7.4	< 2	< 0.57
1,4-Dichlorobenzene	106-46-7	10	< 0.0028 UJ	< 0.0023	< 0.0011	< 0.12 [< 0.15]	< 0.0015	< 0.0013	< 0.0018	< 0.0014	< 0.0013	< 0.00084	< 3.7	< 1	< 0.28
1,1-Dichloroethane	75-34-3	0.75	< 0.0028	< 0.0023	< 0.0011	< 0.12 [< 0.15]	< 0.0015	0.00052 J	< 0.0018	< 0.0014	< 0.0013	< 0.00084	< 3.7	< 1 UJ	< 0.28
Dichloromethane	75-09-2	0.076	< 0.014	< 0.012	< 0.0055	< 0.61 [< 0.73]	< 0.0073	< 0.0063	< 0.0091	< 0.0068	< 0.0067	< 0.0042	< 18	< 5.1	< 1.4
Ethylbenzene	100-41-4	46	< 0.0028	< 0.0023	< 0.0011	< 0.12 [< 0.15]	< 0.0015	< 0.0013	< 0.0018	< 0.0014	< 0.0013	< 0.00084	3.52 J	1.51	< 0.28
Isopropylbenzene	98-82-8	600	< 0.0055	< 0.0047	< 0.0022	< 0.24 [< 0.29]	< 0.0029	< 0.0025	< 0.0036	< 0.0027	< 0.0027	< 0.0017	< 7.4	< 2	< 0.57
Methyl-tert-butylether	1634-04-4	0.28	< 0.0028	< 0.0023	< 0.0011	< 0.12 [< 0.15]	< 0.0015	< 0.0013	< 0.0018	< 0.0014	< 0.0013	< 0.00084	< 3.7	< 1	< 0.28
Styrene (Monomer)	100-42-5	24	< 0.0055	< 0.0047	< 0.0022	< 0.24 [< 0.29]	< 0.0029	< 0.0025	< 0.0036	< 0.0027	< 0.0027	< 0.0017	< 7.4	< 2	< 0.57
Toluene	108-88-3	44	< 0.0028	< 0.0023	< 0.0011	0.143 J [0.36 J]	0.0010 J	< 0.0013	0.0015 J	< 0.0014	< 0.0013	0.00035 J	2.31 J	1.8	< 0.28
1,2,4-Trichlorobenzene	120-82-1	27	< 0.014	< 0.012	< 0.0055	< 0.61 [< 0.73]	< 0.0073	< 0.0063	< 0.0091	< 0.0068	< 0.0067	< 0.0042	< 18	< 5.1	< 1.4
1,1,1-Trichloroethane	71-55-6	7.2	< 0.0055	< 0.0047	< 0.0022	< 0.24 [< 0.29]	< 0.0029	0.00082 J	< 0.0036	< 0.0027	< 0.0027	< 0.0017	< 7.4	< 2	< 0.57
Total Xylenes	1330-20-7	990	< 0.0028	< 0.0023	< 0.0011	0.632 J [1.3 J]	< 0.0015	< 0.0013	< 0.0018	< 0.0014	< 0.0013	< 0.00084	12.5	4.26	< 0.28
Semi-Volatile Organic Compounds															
1,1-Biphenyl	92-52-4	0.37	0.0109 J	0.0090 J	0.0088 J	***9.32 D [14.7 D]***	0.0685 J	0.0479 J	0.0980	0.195	< 0.079 UB	NA	NA	NA	NA
2-Methylnaphthalene	91-57-6	25	0.0360 J	0.0209 J	0.0226 J	**41.1 DJ [64.3 D]**	0.237	0.159	0.592	1.28	0.0745	< 0.039	***495 D***	***37.3 D***	22.1 D
Naphthalene	91-20-3	25	0.114	0.0591	0.0505	***168 D [278 D]***	0.51	0.352	6.71 D	2.99	0.157	< 0.039	***2,640 D***	***228 D***	***100 D***
Phenol	108-95-2	380	< 0.074	< 0.089	< 0.079	0.338 J [0.72 J]	< 0.079	< 0.074	0.647	0.196	< 0.079	< 0.078	37.3 D	0.795	0.0928 J

Table 20
Detected Unsaturated Soil Analytical Results Compared to VI Standards (mg/kg)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID:		Res VI Standard (Exceedances Bolded & Italicized)	S-156		S-161	S-163	S-167	S-168	S-171	S-172	S-173	TP-30	TP-35	TP-44	TP-44R	TP-64
Sample Depth (ft):			3-5	7.5-9.5	5-7	0.5-2	7-9	6-8	5-7	5-7	5-7	2	4	4	3-5	3
Date Collected:	CAS Number		5/3/19	5/3/19	5/3/19	9/19/19	9/20/19	9/19/19	9/19/19	9/19/19	9/19/19	3/14/05	3/15/05	3/16/05	4/22/19	3/21/05
Volatile Organic Compounds																
Acetone	67-64-1	350	< 2.8	0.0587	< 100	< 1.7	0.0446	1.96	0.0242	< 1.1	0.217	0.019	0.053	0.064	< 2	0.028
Benzene	71-43-2	0.13	***0.368***	0.0010	***103***	< 0.087	< 0.00045	***1.84***	< 0.00050	< 0.056	< 0.00061	< 0.00061	***0.51***	0.0018	***0.494***	< 0.00072
2-Butanone (MEK)	78-93-3	76	< 2.8	0.0082 J	< 100	< 1.7	0.0060 J	< 1.5	< 0.0099	< 1.1	0.0191	< 0.00094	< 0.0013	< 0.001	< 2	< 0.0011
Carbon Disulfide	75-15-0	130	< 0.55	< 0.0025	< 21	< 0.35	< 0.0018	0.185 J	< 0.0020	< 0.22	0.0020 J	< 0.00078	< 0.0011	< 0.00071	< 0.4	< 0.00092
Carbon Tetrachloride	56-23-5	0.26	< 0.55	< 0.0025	< 21	< 0.35	< 0.0018	< 0.31	< 0.0020	< 0.22	< 0.0025	< 0.001	< 0.0015	< 0.0013	< 0.4	< 0.0012
Chlorobenzene	108-90-7	6.1	< 0.55	< 0.0025	< 21	< 0.35	< 0.0018	< 0.31	< 0.0020	< 0.22	< 0.0025	< 0.00061	< 0.00087	< 0.00027	< 0.4	< 0.00071
Chloroform	67-66-3	2	< 0.55	< 0.0025	< 21	< 0.35	< 0.0018	< 0.31	< 0.0020	< 0.22	< 0.0025	< 0.00055	< 0.00078	< 0.00035	< 0.4	< 0.00064
Cyclohexane	110-82-7	1,700	< 0.55	< 0.0025	< 21	0.158 J	< 0.0018	< 0.31	< 0.0020	< 0.22	< 0.0025	NA	NA	NA	< 0.4	NA
1,4-Dichlorobenzene	106-46-7	10	< 0.28	< 0.0012	< 10	< 0.17	< 0.00089	< 0.15	< 0.00099	0.407	< 0.0012	NA	NA	NA	< 0.2	NA
1,1-Dichloroethane	75-34-3	0.75	< 0.28	< 0.0012	< 10	< 0.17	< 0.00089	< 0.15	< 0.00099	< 0.11	< 0.0012	< 0.00091	< 0.0013	< 0.00065	< 0.2	< 0.0011
Dichloromethane	75-09-2	0.076	< 1.4	< 0.0062	< 51	< 0.87	0.0011 J	< 0.77	< 0.0050	< 0.56	< 0.0061	0.011 B	0.013 B	0.025 B	< 1	0.026 B
Ethylbenzene	100-41-4	46	< 0.28	< 0.0012	6.52 J	< 0.17	< 0.00089	0.216	< 0.00099	< 0.11	0.00079 J	< 0.0009	0.39	0.019	2.29	< 0.0011
Isopropylbenzene	98-82-8	600	< 0.55	< 0.0025	< 21	< 0.35	< 0.0018	< 0.31	< 0.0020	< 0.22	< 0.0025	NA	NA	NA	< 0.4	NA
Methyl-tert-butylether	1634-04-4	0.28	< 0.28	< 0.0012	< 10	< 0.17	< 0.00089	< 0.15	< 0.00099	< 0.11	< 0.0012	NA	NA	NA	< 0.2	NA
Styrene (Monomer)	100-42-5	24	< 0.55	< 0.0025	11 J	< 0.35	< 0.0018	< 0.31	< 0.0020	< 0.22	< 0.0025	< 0.00075	< 0.0011	< 0.00021	< 0.4	< 0.00088
Toluene	108-88-3	44	0.424	< 0.0012	40.8	0.311	< 0.00089	0.465	< 0.00099	< 0.11	< 0.0012	< 0.00091	0.011	0.0099	1.04	< 0.0011
1,2,4-Trichlorobenzene	120-82-1	27	< 1.4	< 0.0062	< 51	< 0.87	< 0.0045	< 0.77	< 0.0050	0.606	< 0.0061	NA	NA	NA	< 1	NA
1,1,1-Trichloroethane	71-55-6	7.2	< 0.55	< 0.0025	< 21	< 0.35	< 0.0018	< 0.31	< 0.0020	< 0.22	< 0.0025	< 0.0003	< 0.00043	< 0.00064	< 0.4	< 0.00035
Total Xylenes	1330-20-7	990	0.568	< 0.0012	79.7	0.447	< 0.00089	0.315	< 0.00099	< 0.11	0.0025	NA	NA	NA	3.3	NA
Semi-Volatile Organic Compounds																
1,1-Biphenyl	92-52-4	0.37	***72.1 D***	0.0322 J	***51.9 D***	***3.19***	0.0543 J	0.0602 J	0.0445 J	0.0328 J	0.0588 J	NA	NA	NA	0.227	NA
2-Methylnaphthalene	91-57-6	25	***312 D***	0.0935	***155 D***	15.3	0.199	0.163	0.173	0.0943	0.19	0.049 J	23	24	4.11	13
Naphthalene	91-20-3	25	***1,830 D***	1.07	***854 D***	***37.2 D***	0.513	0.347	0.406	0.605	0.453	0.24	***130***	11	1.42	***43***
Phenol	108-95-2	380	2.72	< 0.087	0.455	0.404	< 0.077	< 0.078	< 0.073	< 0.075	< 0.074	< 0.028	< 4	< 2.6	< 0.083	< 3.9

Notes:

1. Samples prior to 2019 were collected by Paulus, Sokolowski, and Sartor Engineering, PC on the dates indicated. Samples in 2019 were collected by Arcadis on the dates indicated.
2. Sample depth is reported in feet below ground surface.
3. 2003 and 2005 samples were analyzed by Hampton-Clarke, Veritech Laboratories of Fairfield, New Jersey.
4. 2019 samples were analyzed by SGS North America Incorporated Laboratories of Dayton, New Jersey.
5. Samples were submitted for laboratory analysis for one or more of the following constituent groups, as indicated above.
   - Target Compound List (TCL) volatile organic compounds (VOC) using United States Environmental Protection Agency (USEPA) SW-846 Method 8260.
   - TCL semi-volatile organic compounds (SVOC) using USEPA SW-846 Method 8270.
6. Only compounds with a vapor instrusion standard are presented in this table.
7. Only compounds detected in one or more samples are presented in this table.
8. Only surface soil samples or unsaturated soil samples are presented in this table.
9. < = constituent not detected at a concentration above the reported detection limit. These results are also reported in gray.
10. NA = Not Analyzed.
11. Concentrations reported in milligrams per kilogram (mg/kg) or parts per million (ppm).
12. Soil standards obtained from the Pennsylvania Department of Environmental Protection (PADEP) Technical Guidance Manual for Vapor Instrusion (VI) into Buildings from Groundwater and Soil Under Act 2 dated November 19, 2016.
13. Shading indicates that the result exceeds the PADEP statewide health standard vapor intrusion screening value for non-residential soil.
14. Italics and bolding indicates that the result exceeds the PADEP statewide health standard vapor intrusion screening value for residential soil.
15. Brackets indicate the reported concentration of a duplicate sample.
16. Qualifier Definitions:
    B = Analyte is an estimated value between the instrument detection limit and the Reporting Limit.
    D = Concentration is based on a diluted sample analysis.
    J = Analyte is an estimated value.
    R = Data rejected during validation.
17. Data from 2018 and 2019 have undergone a Tier II validation. Data prior to 2018 have not been validated.

Table 21
Detected Groundwater Analytical Results Compared to VI Standards (ug/L)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location:	CAS	Used Aquifer TDS≤2,500 Res (Exceedances Shaded if GW <5 ft bgs)	Res VI Standard (Exceedances Bolded & Italicized if GW >5 ft bgs)	Non-Res VI Standard (Exceedances Shaded if GW >5 ft bgs)	MW-102	MW-103	MW-104	MW-107	MW-108	MW-109	MW-110	MW-111	MW-112	MW-113	MW-5	MW-6
Highest Groundwater Surface (ft bgs):					8.51	8.23	4.26	3.02	10.96	7.21	4.95	10.23	5.31	10.05	4.56	2.69
Date Collected:	Number				5/31/18	5/31/18	5/30/18	5/30/18	10/4/19	10/4/19	10/4/19	10/4/19	10/4/19	10/4/19	3/19/18	3/22/18
Volatile Organic Compounds																
Acetone	67-64-1	31,000	37,000,000	470,000,000	< 10 [< 10]	< 10	< 10	< 10	< 10 [< 10]	< 10	< 10	8.6 J	< 10	< 10	< 10 UJ	< 10
Benzene	71-43-2	5	23	350	< 0.50 [< 0.50]	< 0.50	< 0.50	< 0.50	< 0.50 [< 0.50]	< 0.50	< 0.50	***686 D***	< 0.50	< 0.50	< 0.50	< 0.50
Chlorobenzene	108-90-7	100	760	9,600	< 1.0 [< 1.0]	< 1.0	< 1.0	< 1.0	< 1.0 [< 1.0]	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroform	67-66-3	80	80	180	< 1.0 [< 1.0]	< 1.0	< 1.0	< 1.0	< 1.0 [< 1.0]	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	95-50-1	600	5,400	69,000	< 1.0 [< 1.0]	< 1.0	< 1.0	< 1.0	< 1.0 [< 1.0]	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dichloromethane	75-09-2	5	7,600	95,000	< 2.0 [< 2.0]	< 2.0	< 2.0	< 2.0	< 2.0 [< 2.0]	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Ethylbenzene	100-41-4	700	700	860	< 1.0 [< 1.0]	< 1.0	< 1.0	< 1.0	< 1.0 [< 1.0]	< 1.0	< 1.0	24.3	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	98-82-8	840	1,900	24,000	< 1.0 [< 1.0]	< 1.0	< 1.0	< 1.0	< 1.0 [< 1.0]	< 1.0	< 1.0	1.2	< 1.0	< 1.0	< 1.0	< 1.0
Methyl-tert-butylether	1634-04-4	20	6,300	96,000	< 1.0 [< 1.0]	< 1.0	< 1.0	***20.7***	< 1.0 [< 1.0]	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene (Monomer)	100-42-5	100	18,000	220,000	< 1.0 [< 1.0]	< 1.0	< 1.0	< 1.0	< 1.0 [< 1.0]	< 1.0	< 1.0	9.4	< 1.0	< 1.0	< 1.0	< 1.0 UJ
Tetrachloroethene	127-18-4	5	110	1,300	< 1.0 [< 1.0]	< 1.0	< 1.0	< 1.0	< 1.0 [< 1.0]	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	1.1	< 1.0
Toluene	108-88-3	1,000	34,000	430,000	< 1.0 [< 1.0]	< 1.0	< 1.0	< 1.0	< 1.0 [< 1.0]	< 1.0	< 1.0	90.4 J	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene	79-01-6	5	9	110	< 1.0 [< 1.0]	< 1.0	< 1.0	< 1.0	< 1.0 [< 1.0]	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	***6.1***	< 1.0
Total Xylenes	1330-20-7	10,000	10,000	12,000	< 1.0 [< 1.0]	< 1.0	< 1.0	< 1.0	< 1.0 [< 1.0]	< 1.0	< 1.0	109	< 1.0	< 1.0	< 1.0	< 1.0
Semi-Volatile Organic Compounds																
1,1-Biphenyl	92-52-4	0.84	91	970	< 1.2 [< 1.3]	< 1.2	< 0.95	< 1.1	< 1.0 [< 1.0]	0.39 J	0.35 J	20.7	< 1.0	< 1.0	< 1.0	< 0.98
2-Methylnaphthalene	91-57-6	6.3	380	4,800	< 1.2 [< 1.3]	< 1.2	< 0.95	< 1.1	0.77 J [0.67 J]	1.5	1.2	97.8 J	< 1.0	< 1.0	< 1.0	< 0.98
Naphthalene	91-20-3	100	100	1,300	< 1.2 [< 1.3]	< 1.2	< 0.95	< 1.1	7.2 [5.8]	8.8	15.5	***973 D***	< 1.0	< 1.0 UB	< 1.0	< 0.98
Phenol	108-95-2	2,000	34,000,000	84,000,000	< 2.4 [< 2.5]	< 2.4	< 1.9	< 2.1	< 2.0 [< 2.0]	< 1.9	< 1.9	80.2	< 2.0	< 2.0	< 2.0	< 2.0

Table 21
Detected Groundwater Analytical Results Compared to VI Standards (ug/L)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location:	CAS	Used Aquifer TDS≤2,500 Res (Exceedances Shaded if GW <5 ft bgs)	Res VI Standard (Exceedances Bolded & Italicized if GW >5 ft bgs)	Non-Res VI Standard (Exceedances Shaded if GW >5 ft bgs)	PCMW-01			PCMW-02 / MW-106*			PCMW-03		PCMW-04		
Highest Groundwater Surface (ft bgs):					3.21			2.33		1.97	2.13		3.08		
Date Collected:	Number				11/1/05	1/30/06	3/19/18	11/1/05	1/30/06	5/29/18	11/2/05	1/30/06	11/2/05	1/30/06	3/19/18
Volatile Organic Compounds															
Acetone	67-64-1	31,000	37,000,000	470,000,000	< 5.6	< 5.6	< 10 UJ	< 5.6 [< 5.6]	< 5.6	< 10	< 5.6	< 5.6	< 5.6	< 5.6	< 10 UJ
Benzene	71-43-2	5	23	350	< 0.14	< 0.14	< 0.50	< 0.14 [< 0.14]	< 0.14	< 0.50	< 0.14	< 0.14	< 0.14	< 0.14	< 0.50
Chlorobenzene	108-90-7	100	760	9,600	< 0.37	< 0.17	< 1.0	< 0.37 [< 0.37]	< 0.17	< 1.0	< 0.37	< 0.17	< 0.37	< 0.17	< 1.0
Chloroform	67-66-3	80	80	180	< 0.36	< 0.4	< 1.0	< 0.36 [< 0.36]	< 0.4	< 1.0	< 0.36	< 0.4	< 0.36	< 0.4	< 1.0
1,2-Dichlorobenzene	95-50-1	600	5,400	69,000	NA	NA	< 1.0	NA	NA	< 1.0	NA	NA	NA	NA	< 1.0
Dichloromethane	75-09-2	5	7,600	95,000	< 0.49	< 1.2	< 2.0	< 0.49 [< 0.49]	2.7	< 2.0	< 0.49	2.3	< 0.49	1.8	< 2.0
Ethylbenzene	100-41-4	700	700	860	< 0.34	< 0.31	< 1.0	< 0.34 [< 0.34]	< 0.31	< 1.0	< 0.34	< 0.31	< 0.34	< 0.31	< 1.0
Isopropylbenzene	98-82-8	840	1,900	24,000	NA	NA	< 1.0	NA	NA	< 1.0	NA	NA	NA	NA	< 1.0
Methyl-tert-butylether	1634-04-4	20	6,300	96,000	NA	NA	< 1.0	NA	NA	< 1.0	NA	NA	NA	NA	4.8
Styrene (Monomer)	100-42-5	100	18,000	220,000	< 0.22	< 0.21	< 1.0	< 0.22 [< 0.22]	< 0.21	< 1.0	< 0.22	< 0.21	< 0.22	< 0.21	< 1.0
Tetrachloroethene	127-18-4	5	110	1,300	< 0.28	< 0.46	< 1.0	< 0.28 [< 0.28]	< 0.46	< 1.0	< 0.28	< 0.46	< 0.28	< 0.46	< 1.0
Toluene	108-88-3	1,000	34,000	430,000	< 0.22	< 0.21	< 1.0	< 0.22 [< 0.22]	< 0.21	< 1.0	< 0.22	< 0.21	< 0.22	< 0.21	< 1.0
Trichloroethene	79-01-6	5	9	110	< 0.37	< 0.76	< 1.0	< 0.37 [< 0.37]	< 0.76	< 1.0	< 0.37	< 0.76	< 0.37	< 0.76	< 1.0
Total Xylenes	1330-20-7	10,000	10,000	12,000	NA	NA	< 1.0	NA	NA	< 1.0	NA	NA	NA	NA	< 1.0
Semi-Volatile Organic Compounds															
1,1-Biphenyl	92-52-4	0.84	91	970	NA	NA	< 1.1	NA	NA	< 1.0	NA	NA	NA	NA	< 1.1
2-Methylnaphthalene	91-57-6	6.3	380	4,800	< 1.7	< 1.7	< 1.1	< 1.7 [< 1.7]	< 1.7	< 1.0	< 1.7	< 1.7	< 1.7	< 1.7	< 1.1
Naphthalene	91-20-3	100	100	1,300	< 0.097	< 0.097	< 1.1	< 0.097 [< 0.097]	< 0.097	< 1.0	< 0.097	< 0.097	< 0.097	< 0.097	< 1.1
Phenol	108-95-2	2,000	34,000,000	84,000,000	< 1.7	< 1.7	< 2.1	< 1.7 [< 1.7]	< 1.7	< 2.0	< 1.7	< 1.7	< 1.7	< 1.7	< 2.1

Table 21
Detected Groundwater Analytical Results Compared to VI Standards (ug/L)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location:	CAS	Used Aquifer TDS≤2,500 Res (Exceedances Shaded if GW <5 ft bgs)	Res VI Standard (Exceedances Bolded & Italicized if GW >5 ft bgs)	Non-Res VI Standard (Exceedances Shaded if GW >5 ft bgs)	PCMW-05			PCMW-06			PCMW-07		PCMW-08S		PCMW-08D		
Highest Groundwater Surface (ft bgs):					1.78			2.45			3.24		7.11		15.01		
Date Collected:	Number				11/2/05	1/31/06	3/23/18	11/3/05	1/31/06	3/23/18	11/3/05	1/31/06	11/3/05	3/22/18	11/4/05	1/31/06	3/22/18
Volatile Organic Compounds																	
Acetone	67-64-1	31,000	37,000,000	470,000,000	< 5.6	< 5.6	< 10 [< 10]	< 5.6	< 5.6	< 10	< 5.6	< 5.6	< 5.6	< 10 UJ	< 5.6	< 5.6	< 10 UJ
Benzene	71-43-2	5	23	350	< 0.14	< 0.14	< 0.50 [< 0.50]	< 0.14	< 0.14	< 0.50	< 0.14	< 0.14	< 0.14	< 0.50	< 0.14	< 0.14	< 0.50
Chlorobenzene	108-90-7	100	760	9,600	< 0.37	< 0.17	< 1.0 [< 1.0]	< 0.37	< 0.17	< 1.0	< 0.37	< 0.37	< 0.37	< 1.0	< 0.37	< 0.37	< 1.0
Chloroform	67-66-3	80	80	180	< 0.36	< 0.4	< 1.0 [< 1.0]	< 0.36	< 0.4	< 1.0	< 0.36	< 0.36	< 0.36	< 1.0	< 0.36	< 0.36	< 1.0
1,2-Dichlorobenzene	95-50-1	600	5,400	69,000	NA	NA	< 1.0 [< 1.0]	NA	NA	< 1.0	NA	NA	NA	< 1.0	NA	NA	< 1.0
Dichloromethane	75-09-2	5	7,600	95,000	< 0.49	1.6	< 2.0 [< 2.0]	< 0.49	1.3	< 2.0	< 0.49	< 0.49	< 0.49	< 2.0	< 0.49	< 0.49	< 2.0
Ethylbenzene	100-41-4	700	700	860	< 0.34	< 0.31	< 1.0 [< 1.0]	< 0.34	< 0.31	< 1.0	< 0.34	< 0.34	< 0.34	< 1.0	< 0.34	< 0.34	< 1.0
Isopropylbenzene	98-82-8	840	1,900	24,000	NA	NA	< 1.0 [< 1.0]	NA	NA	< 1.0	NA	NA	NA	< 1.0	NA	NA	< 1.0
Methyl-tert-butylether	1634-04-4	20	6,300	96,000	NA	NA	< 1.0 [< 1.0]	NA	NA	< 1.0	NA	NA	NA	< 1.0	NA	NA	< 1.0
Styrene (Monomer)	100-42-5	100	18,000	220,000	< 0.22	< 0.21	< 1.0 [< 1.0]	< 0.22	< 0.21	< 1.0	< 0.22	< 0.22	< 0.22	< 1.0	< 0.22	< 0.22	< 1.0
Tetrachloroethene	127-18-4	5	110	1,300	< 0.28	< 0.46	< 1.0 [< 1.0]	< 0.28	< 0.46	< 1.0	< 0.28	< 0.28	< 0.28	< 1.0	< 0.28	< 0.28	< 1.0
Toluene	108-88-3	1,000	34,000	430,000	< 0.22	< 0.21	< 1.0 [< 1.0]	< 0.22	< 0.21	< 1.0	< 0.22	< 0.22	< 0.22	< 1.0	< 0.22	< 0.22	< 1.0
Trichloroethene	79-01-6	5	9	110	< 0.37	< 0.76	< 1.0 [< 1.0]	< 0.37	< 0.76	< 1.0	< 0.37	< 0.37	< 0.37	< 1.0	< 0.37	< 0.37	< 1.0
Total Xylenes	1330-20-7	10,000	10,000	12,000	NA	NA	< 1.0 [< 1.0]	NA	NA	< 1.0	NA	NA	NA	< 1.0	NA	NA	< 1.0
Semi-Volatile Organic Compounds																	
1,1-Biphenyl	92-52-4	0.84	91	970	NA	NA	< 1.0 [< 1.1]	NA	NA	< 1.0	NA	NA	NA	< 1.0	NA	NA	< 1.0
2-Methylnaphthalene	91-57-6	6.3	380	4,800	34	8.1	< 1.0 [< 1.1]	< 1.7	< 1.7	< 1.0	< 1.7	< 1.7	< 1.7	< 1.0	< 1.7	< 1.7	< 1.0
Naphthalene	91-20-3	100	100	1,300	< 0.097	< 0.097	< 1.0 [< 1.1]	4	< 0.097	< 1.0	< 0.097	< 0.097	< 0.097	< 1.0	< 0.097	< 0.097	< 1.0
Phenol	108-95-2	2,000	34,000,000	84,000,000	< 1.7	< 1.7	< 2.1 [< 2.2]	2	< 1.7	< 2.0	< 1.7	< 1.7	< 1.7	< 2.0	< 1.7	< 1.7	< 2.0

Table 21
Detected Groundwater Analytical Results Compared to VI Standards (ug/L)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location:	CAS	Used Aquifer TDS≤2,500 Res (Exceedances Shaded if GW <5 ft bgs)	Res VI Standard (Exceedances Bolded & Italicized if GW >5 ft bgs)	Non-Res VI Standard (Exceedances Shaded if GW >5 ft bgs)	PCMW-09S			PCMW-09D		PCMW-10S			PCMW-10D			PCMW-11S		
Highest Groundwater Surface (ft bgs):					7.01			15.06		6.59			11.83			7.38		
Date Collected:	Number				11/4/05	1/31/06	3/19/18	11/7/05	1/31/06	11/7/05	2/1/06	3/22/18	11/7/05	2/1/06	3/22/18	11/7/05	2/2/06	3/23/18
Volatile Organic Compounds																		
Acetone	67-64-1	31,000	37,000,000	470,000,000	< 5.6	< 5.6	< 10 UJ	< 4	< 5.6	< 4	< 5.6	< 10	< 4	< 5.6	< 10 UJ	< 4	< 5.6	< 10
Benzene	71-43-2	5	23	350	< 0.14	< 0.14	< 0.50	< 0.43	< 0.14	< 0.43	11	< 0.50	< 0.43	< 0.14	< 0.50	< 0.43	< 0.14	0.23 J
Chlorobenzene	108-90-7	100	760	9,600	< 0.37	< 0.37	< 1.0	< 0.2	< 0.37	< 0.2	< 0.37	< 1.0	< 0.2	< 0.37	0.28 J	< 0.2	< 0.37	< 1.0
Chloroform	67-66-3	80	80	180	< 0.36	< 0.36	< 1.0	< 0.38	< 0.36	< 0.38	< 0.36	< 1.0	< 0.38	< 0.36	< 1.0	< 0.38	< 0.36	< 1.0
1,2-Dichlorobenzene	95-50-1	600	5,400	69,000	NA	NA	< 1.0	NA	NA	NA	NA	< 1.0	NA	NA	< 1.0	NA	NA	< 1.0
Dichloromethane	75-09-2	5	7,600	95,000	< 0.49	< 0.49	< 2.0	< 0.87	< 0.49	< 0.87	< 0.49	< 2.0	< 0.87	1	< 2.0	< 0.87	< 0.49	< 2.0
Ethylbenzene	100-41-4	700	700	860	< 0.34	< 0.34	< 1.0	< 0.49	< 0.34	< 0.49	< 0.34	< 1.0	< 0.49	< 0.34	< 1.0	< 0.49	< 0.34	< 1.0
Isopropylbenzene	98-82-8	840	1,900	24,000	NA	NA	< 1.0	NA	NA	NA	NA	< 1.0	NA	NA	< 1.0	NA	NA	< 1.0
Methyl-tert-butylether	1634-04-4	20	6,300	96,000	NA	NA	< 1.0	NA	NA	NA	NA	< 1.0	NA	NA	0.80 J	NA	NA	< 1.0
Styrene (Monomer)	100-42-5	100	18,000	220,000	< 0.22	< 0.22	< 1.0	< 0.29	< 0.22	< 0.29	< 0.22	< 1.0	< 0.29	< 0.22	< 1.0	< 0.29	< 0.22	< 1.0
Tetrachloroethene	127-18-4	5	110	1,300	< 0.28	< 0.28	< 1.0	< 0.31	< 0.28	< 0.31	< 0.28	< 1.0	< 0.31	< 0.28	< 1.0	< 0.31	< 0.28	< 1.0
Toluene	108-88-3	1,000	34,000	430,000	< 0.22	< 0.22	< 1.0	< 0.31	< 0.22	< 0.31	< 0.22	< 1.0	< 0.31	< 0.22	< 1.0	< 0.31	< 0.22	< 1.0
Trichloroethene	79-01-6	5	9	110	< 0.37	< 0.37	< 1.0	< 0.36	< 0.37	< 0.36	< 0.37	< 1.0	< 0.36	< 0.37	< 1.0	< 0.36	< 0.37	< 1.0
Total Xylenes	1330-20-7	10,000	10,000	12,000	NA	NA	< 1.0	NA	NA	NA	NA	< 1.0	NA	NA	< 1.0	NA	NA	< 1.0
Semi-Volatile Organic Compounds																		
1,1-Biphenyl	92-52-4	0.84	91	970	NA	NA	< 1.1	NA	NA	NA	NA	< 1.1	NA	NA	< 1.0	NA	NA	< 1.1
2-Methylnaphthalene	91-57-6	6.3	380	4,800	< 1.7	< 1.7	< 1.1	3.9	< 1.7	< 1.7	< 1.7	< 1.1	< 1.7	< 1.7	< 1.0	< 1.7	< 1.8	< 1.1
Naphthalene	91-20-3	100	100	1,300	< 0.097	1.2	< 1.1	17	1.2	< 0.097	< 0.097	< 1.1	< 0.097	< 0.097	< 1.0	< 0.097	< 0.1	< 1.1
Phenol	108-95-2	2,000	34,000,000	84,000,000	< 1.7	< 1.7	< 2.1	< 1.7	< 1.7	< 1.7	< 1.7	< 2.2	< 1.7	< 1.7	< 2.0	1.4 J	1.5 J	< 2.2

Table 21
Detected Groundwater Analytical Results Compared to VI Standards (ug/L)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location: Highest Groundwater Surface (ft bgs): Date Collected:	CAS Number	Used Aquifer TDS≤2,500 Res (Exceedances Shaded if GW <5 ft bgs)	Res VI Standard (Exceedances Bolded & Italicized if GW >5 ft bgs)	Non-Res VI Standard (Exceedances Shaded if GW >5 ft bgs)	PCMW-11D 15.08		PCMW-211 NA	PCMW-12S 0.78		PCMW-12D 10.35		PCMW-212 NA	PCMW-13S 6.34		PCMW-13D 10.23	
					11/8/05	2/2/06	2/2/06	11/8/05	2/1/06	11/8/05	2/1/06	2/1/06	11/9/05	2/2/06	11/9/05	2/2/06
Volatile Organic Compounds																
Acetone	67-64-1	31,000	37,000,000	470,000,000	< 4	< 5.6	< 5.6	< 4	< 5.6	< 4	< 5.6	< 5.6	< 4	< 5.6	< 4	< 5.6
Benzene	71-43-2	5	23	350	< 0.43	< 0.14	< 0.14	< 0.43	< 0.14	< 0.43	< 0.14	< 0.14	< 0.43	< 0.14	< 0.43	< 0.14
Chlorobenzene	108-90-7	100	760	9,600	< 0.2	< 0.37	< 0.37	< 0.2	< 0.17	< 0.2	< 0.17	< 0.17	< 0.2	< 0.17	< 0.2	< 0.17
Chloroform	67-66-3	80	80	180	< 0.38	< 0.36	< 0.36	< 0.38	< 0.4	< 0.38	< 0.4	< 0.4	< 0.38	< 0.4	< 0.38	< 0.4
1,2-Dichlorobenzene	95-50-1	600	5,400	69,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichloromethane	75-09-2	5	7,600	95,000	< 0.87	< 0.49	< 0.49	< 0.87	< 1.2	< 0.87	< 1.2	< 1.2	< 0.87	< 1.2	< 0.87	< 1.2
Ethylbenzene	100-41-4	700	700	860	< 0.49	< 0.34	< 0.34	< 0.49	< 0.31	< 0.49	< 0.31	< 0.31	< 0.49	< 0.31	< 0.49	< 0.31
Isopropylbenzene	98-82-8	840	1,900	24,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl-tert-butylether	1634-04-4	20	6,300	96,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene (Monomer)	100-42-5	100	18,000	220,000	< 0.29	< 0.22	< 0.22	< 0.29	< 0.21	< 0.29	< 0.21	< 0.21	< 0.29	< 0.21	< 0.29	< 0.21
Tetrachloroethene	127-18-4	5	110	1,300	37	4	< 0.28	< 0.31	< 0.46	< 0.31	< 0.46	< 0.46	< 0.31	< 0.46	< 0.31	< 0.46
Toluene	108-88-3	1,000	34,000	430,000	< 0.31	< 0.22	< 0.22	< 0.31	< 0.21	< 0.31	< 0.21	< 0.21	< 0.31	< 0.21	< 0.31	< 0.21
Trichloroethene	79-01-6	5	9	110	< 0.36	< 0.37	< 0.37	< 0.36	< 0.76	< 0.36	< 0.76	< 0.76	< 0.36	< 0.76	< 0.36	< 0.76
Total Xylenes	1330-20-7	10,000	10,000	12,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Semi-Volatile Organic Compounds																
1,1-Biphenyl	92-52-4	0.84	91	970	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	91-57-6	6.3	380	4,800	< 1.7	< 1.7	< 1.8	< 1.7	< 1.7	< 1.7	< 1.7	< 1.7	< 1.7	< 1.7	< 1.7	< 1.7
Naphthalene	91-20-3	100	100	1,300	< 0.097	< 0.097	< 0.1	< 0.097	< 0.097	< 0.097	< 0.097	< 0.097	< 0.097	< 0.097	< 0.097	< 0.097
Phenol	108-95-2	2,000	34,000,000	84,000,000	30	25	< 1.7	< 1.7	< 1.7	< 1.7	< 1.7	< 1.7	< 1.7	< 1.7	< 1.7	< 1.7

Table 21
Detected Groundwater Analytical Results Compared to VI Standards (ug/L)

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location:	CAS	Used Aquifer TDS≤2,500 Res (Exceedances Shaded if GW <5 ft bgs)	Res VI Standard (Exceedances Bolded & Italicized if GW >5 ft bgs)	Non-Res VI Standard (Exceedances Shaded if GW >5 ft bgs)	PCMW-14S / MW-101*			PCMW-14D		PCMW-15S			PCMW-15D			PCMW-16S / MW-105*		
Highest Groundwater Surface (ft bgs):					4.40		4.82	10.85		5.73			13.31			4.93		6.55
Date Collected:	Number				11/9/05	2/3/06	5/30/18	11/9/05	2/3/06	11/10/05	2/3/06	3/20/18	11/10/05	2/3/06	3/20/18	11/10/05	2/1/06	5/30/18
Volatile Organic Compounds																		
Acetone	67-64-1	31,000	37,000,000	470,000,000	< 40	< 56	< 10	< 4 [< 4]	< 5.6	< 4	< 5.6	< 10 UJ	< 4	< 5.6	< 10 UJ	< 4	< 5.6	< 10
Benzene	71-43-2	5	23	350	***580***	***1,200***	3.8	< 0.43 [< 0.43]	< 0.14	***67***	***54***	0.20 J	< 0.43	< 0.14	< 0.50	1.2	< 0.14	< 0.50
Chlorobenzene	108-90-7	100	760	9,600	< 2	< 1.7	< 1.0	< 0.2 [< 0.2]	< 0.17	< 0.2	< 0.17	< 1.0	< 0.2	< 0.17	< 1.0	< 0.2	< 0.37	< 1.0
Chloroform	67-66-3	80	80	180	< 3.8	< 4	< 1.0	< 0.38 [< 0.38]	< 0.4	< 0.38	< 0.4	< 1.0	< 0.38	< 0.4	< 1.0	< 0.38	< 0.36	< 1.0
1,2-Dichlorobenzene	95-50-1	600	5,400	69,000	NA	NA	< 1.0	NA	NA	NA	NA	< 1.0	NA	NA	< 1.0	NA	NA	< 1.0
Dichloromethane	75-09-2	5	7,600	95,000	< 8.7	< 12	< 2.0	< 0.87 [< 0.87]	< 1.2	< 0.87	< 1.2	< 2.0	< 0.87	< 1.2	< 2.0	< 0.87	1.1	< 2.0
Ethylbenzene	100-41-4	700	700	860	< 4.9	< 3.1	0.23 J	< 0.49 [< 0.49]	< 0.31	< 0.49	< 0.31	< 1.0	< 0.49	< 0.31	< 1.0	< 0.49	< 0.34	< 1.0
Isopropylbenzene	98-82-8	840	1,900	24,000	NA	NA	< 1.0	NA	NA	NA	NA	< 1.0	NA	NA	< 1.0	NA	NA	< 1.0
Methyl-tert-butylether	1634-04-4	20	6,300	96,000	NA	NA	< 1.0	NA	NA	NA	NA	< 1.0	NA	NA	< 1.0	NA	NA	< 1.0
Styrene (Monomer)	100-42-5	100	18,000	220,000	< 2.9	< 2.1	< 1.0	< 0.29 [< 0.29]	< 0.21	< 0.29	< 0.21	< 1.0	< 0.29	< 0.21	< 1.0	< 0.29	< 0.22	< 1.0
Tetrachloroethene	127-18-4	5	110	1,300	< 3.1	< 4.6	< 1.0	< 0.31 [< 0.31]	< 0.46	< 0.31	< 0.46	< 1.0	< 0.31	< 0.46	< 1.0	< 0.31	< 0.28	< 1.0
Toluene	108-88-3	1,000	34,000	430,000	< 3.1	< 2.1	< 1.0	< 0.31 [< 0.31]	< 0.21	1.3	< 0.21	< 1.0	< 0.31	< 0.21	< 1.0	< 0.31	< 0.22	< 1.0
Trichloroethene	79-01-6	5	9	110	< 3.6	< 7.6	< 1.0	< 0.36 [< 0.36]	< 0.76	< 0.36	< 0.76	< 1.0	< 0.36	< 0.76	< 1.0	< 0.36	< 0.37	< 1.0
Total Xylenes	1330-20-7	10,000	10,000	12,000	NA	NA	2.3	NA	NA	NA	NA	< 1.0	NA	NA	< 1.0	NA	NA	< 1.0
Semi-Volatile Organic Compounds																		
1,1-Biphenyl	92-52-4	0.84	91	970	NA	NA	< 1.0	NA	NA	NA	NA	< 1.0	NA	NA	< 1.0	NA	NA	< 0.95
2-Methylnaphthalene	91-57-6	6.3	380	4,800	1.1 J	1.2 J	< 1.0	< 1.7 [< 1.7]	< 1.7	< 1.7	< 1.7	< 1.0	13	< 1.7	< 1.0	< 1.7	< 1.7	< 0.95
Naphthalene	91-20-3	100	100	1,300	5	4.9	1.9	< 0.097 [< 0.097]	< 0.097	5.8	15	< 1.0	62	9.9	< 1.0	< 0.097	< 0.097	< 0.95
Phenol	108-95-2	2,000	34,000,000	84,000,000	1.2 J	2.5	< 2.0	< 1.7 [< 1.7]	< 1.7	< 1.7	< 1.7	< 2.0	< 1.7	< 1.7	< 2.0	< 1.7	< 1.7	< 1.9

Table 21
Detected Groundwater Analytical Results Compared to VI Standards (ug/L)

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National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location:	CAS	Used Aquifer TDS≤2,500 Res (Exceedances Shaded if GW <5 ft bgs)	Res VI Standard (Exceedances Bolded & Italicized if GW >5 ft bgs)	Non-Res VI Standard (Exceedances Shaded if GW >5 ft bgs)	PCMW-16D			PCMW-17S			PCMW-17D			PCMW-18S			PCMW-18D		
Highest Groundwater Surface (ft bgs):					9.58			1.51			9.64			14.98			15.17		
Date Collected:	Number				11/10/05	2/1/06	3/19/18	11/11/05	2/3/06	3/22/18	11/11/05	2/3/06	3/22/18	11/11/05	2/2/06	3/23/18	11/11/05	2/2/06	3/23/18
Volatile Organic Compounds																			
Acetone	67-64-1	31,000	37,000,000	470,000,000	< 4	< 5.6	< 10 UJ	< 5.6	< 5.6	< 10 UJ	< 5.6	< 5.6	< 10 UJ	< 5.6	< 5.6	< 10	< 5.6	< 5.6	< 10
Benzene	71-43-2	5	23	350	< 0.43	< 0.14	< 0.50	***9.7***	***11***	1.1	< 0.14	< 0.14	< 0.50	< 0.14	< 0.14	< 0.50	< 0.14	< 0.14	< 0.50
Chlorobenzene	108-90-7	100	760	9,600	1.1	3.7	1.4	< 0.37	< 0.17	< 1.0	< 0.37	< 0.17	< 1.0	< 0.37	< 0.17	< 1.0	< 0.37	< 0.37	< 1.0
Chloroform	67-66-3	80	80	180	< 0.38	< 0.36	< 1.0	< 0.36	< 0.4	< 1.0	< 0.36	< 0.4	< 1.0	2.6	< 0.4	< 1.0	2	1.8	12.3
1,2-Dichlorobenzene	95-50-1	600	5,400	69,000	NA	NA	< 1.0	NA	NA	< 1.0	NA	NA	< 1.0	NA	NA	0.71 J	NA	NA	< 1.0
Dichloromethane	75-09-2	5	7,600	95,000	< 0.87	< 0.49	< 2.0	< 0.49	< 1.2	< 2.0	< 0.49	< 1.2	< 2.0	< 0.49	< 1.2	< 2.0	< 0.49	< 0.49	< 2.0
Ethylbenzene	100-41-4	700	700	860	< 0.49	< 0.34	< 1.0	2.5	22	< 1.0	< 0.34	< 0.31	< 1.0	< 0.34	< 0.31	< 1.0	< 0.34	< 0.34	< 1.0
Isopropylbenzene	98-82-8	840	1,900	24,000	NA	NA	< 1.0	NA	NA	< 1.0	NA	NA	< 1.0	NA	NA	< 1.0	NA	NA	< 1.0
Methyl-tert-butylether	1634-04-4	20	6,300	96,000	NA	NA	< 1.0	NA	NA	< 1.0	NA	NA	< 1.0	NA	NA	< 1.0	NA	NA	< 1.0
Styrene (Monomer)	100-42-5	100	18,000	220,000	< 0.29	< 0.22	< 1.0	< 0.22	< 0.21	< 1.0	< 0.22	< 0.21	< 1.0	< 0.22	< 0.21	< 1.0	< 0.22	< 0.22	< 1.0
Tetrachloroethene	127-18-4	5	110	1,300	< 0.31	< 0.28	< 1.0	< 0.28	< 0.46	< 1.0	< 0.28	< 0.46	< 1.0	< 0.28	< 0.46	< 1.0	2.5	< 0.28	1.5
Toluene	108-88-3	1,000	34,000	430,000	< 0.31	< 0.22	< 1.0	< 0.22	< 0.21	< 1.0	< 0.22	< 0.21	< 1.0	< 0.22	< 0.21	< 1.0	< 0.22	< 0.22	< 1.0
Trichloroethene	79-01-6	5	9	110	< 0.36	< 0.37	< 1.0	< 0.37	< 0.76	< 1.0	< 0.37	< 0.76	< 1.0	< 0.37	< 0.76	< 1.0	< 0.37	< 0.37	< 1.0
Total Xylenes	1330-20-7	10,000	10,000	12,000	NA	NA	< 1.0	NA	NA	< 1.0	NA	NA	< 1.0	NA	NA	< 1.0	NA	NA	< 1.0
Semi-Volatile Organic Compounds																			
1,1-Biphenyl	92-52-4	0.84	91	970	NA	NA	< 1.0	NA	NA	< 1.0	NA	NA	< 1.1	NA	NA	< 1.1	NA	NA	< 1.1
2-Methylnaphthalene	91-57-6	6.3	380	4,800	< 1.8	< 1.7	< 1.0	***20***	***48***	< 1.0	< 1.7	< 1.7	< 1.1	< 1.7	< 1.7	< 1.1	< 1.7	< 1.8	< 1.1
Naphthalene	91-20-3	100	100	1,300	< 0.1	< 0.097	< 1.0	7.6	41	< 1.0	6.3	< 0.097	< 1.1	< 0.097	< 0.099	< 1.1	< 0.097	< 0.1	< 1.1
Phenol	108-95-2	2,000	34,000,000	84,000,000	< 1.7	< 1.7	< 2.0	< 1.7	< 1.7	< 2.0	< 1.7	< 1.7	< 2.2	< 1.7	< 1.7	< 2.2	< 1.7	< 1.7	< 2.2

Table 21
Detected Groundwater Analytical Results Compared to VI Standards (ug/L)

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National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location: Highest Groundwater Surface (ft bgs): Date Collected:	CAS Number	Used Aquifer TDS≤2,500 Res (Exceedances Shaded if GW <5 ft bgs)	Res VI Standard (Exceedances Bolded & Italicized if GW >5 ft bgs)	Non-Res VI Standard (Exceedances Shaded if GW >5 ft bgs)	PCMW-19S 3.72			PCMW-19D 9.34			PCMW-20S 5.30			PCMW-20D 10.88		
					11/14/05	2/2/06	3/22/18	11/14/05	2/2/06	3/22/18	11/14/05	2/1/06	3/22/18	11/14/05	2/1/06	3/22/18
Volatile Organic Compounds																
Acetone	67-64-1	31,000	37,000,000	470,000,000	< 4	< 5.6	< 10	< 4	< 5.6	< 10 [< 10]	< 4	< 5.6	< 10	< 4	< 5.6	< 10
Benzene	71-43-2	5	23	350	< 0.43	< 0.14	< 0.50	< 0.43	< 0.14	< 0.50 [< 0.50]	< 0.43	< 0.14	< 0.50	< 0.43	< 0.14	< 0.50
Chlorobenzene	108-90-7	100	760	9,600	< 0.2	< 0.37	< 1.0	< 0.2	< 0.37	< 1.0 [< 1.0]	< 0.2	< 0.17	< 1.0	< 0.2	< 0.17	< 1.0
Chloroform	67-66-3	80	80	180	< 0.38	< 0.36	< 1.0	< 0.38	< 0.36	< 1.0 [< 1.0]	< 0.38	< 0.4	< 1.0	< 0.38	< 0.4	< 1.0
1,2-Dichlorobenzene	95-50-1	600	5,400	69,000	NA	NA	< 1.0	NA	NA	< 1.0 [< 1.0]	NA	NA	< 1.0	NA	NA	< 1.0
Dichloromethane	75-09-2	5	7,600	95,000	< 0.87	< 0.49	< 2.0	< 0.87	< 0.49	< 2.0 [< 2.0]	< 0.87	< 1.2	< 2.0	< 0.87	< 1.2	< 2.0
Ethylbenzene	100-41-4	700	700	860	< 0.49	< 0.34	< 1.0	< 0.49	< 0.34	< 1.0 [< 1.0]	< 0.49	< 0.31	< 1.0	< 0.49	< 0.31	< 1.0
Isopropylbenzene	98-82-8	840	1,900	24,000	NA	NA	< 1.0	NA	NA	< 1.0 [< 1.0]	NA	NA	< 1.0	NA	NA	< 1.0
Methyl-tert-butylether	1634-04-4	20	6,300	96,000	NA	NA	< 1.0	NA	NA	< 1.0 [< 1.0]	NA	NA	< 1.0	NA	NA	< 1.0
Styrene (Monomer)	100-42-5	100	18,000	220,000	< 0.29	< 0.22	< 1.0	< 0.29	< 0.22	< 1.0 [< 1.0]	< 0.29	< 0.21	< 1.0	< 0.29	< 0.21	< 1.0
Tetrachloroethene	127-18-4	5	110	1,300	< 0.31	< 0.28	< 1.0	< 0.31	< 0.28	< 1.0 [< 1.0]	< 0.31	< 0.46	< 1.0	< 0.31	< 0.46	< 1.0
Toluene	108-88-3	1,000	34,000	430,000	< 0.31	< 0.22	< 1.0	< 0.31	< 0.22	< 1.0 [< 1.0]	< 0.31	< 0.21	< 1.0	< 0.31	< 0.21	< 1.0
Trichloroethene	79-01-6	5	9	110	< 0.36	< 0.37	< 1.0	< 0.36	< 0.37	< 1.0 [< 1.0]	< 0.36	< 0.76	< 1.0	< 0.36	< 0.76	< 1.0
Total Xylenes	1330-20-7	10,000	10,000	12,000	NA	NA	< 1.0	NA	NA	< 1.0 [< 1.0]	NA	NA	< 1.0	NA	NA	< 1.0
Semi-Volatile Organic Compounds																
1,1-Biphenyl	92-52-4	0.84	91	970	NA	NA	< 0.95	NA	NA	< 0.98 [< 0.95]	NA	NA	< 1.0	NA	NA	< 0.98
2-Methylnaphthalene	91-57-6	6.3	380	4,800	< 1.7	< 1.7	< 0.95	< 1.7	< 1.9	< 0.98 [< 0.95]	2	< 1.7	< 1.0	< 1.7	< 1.7	< 0.98
Naphthalene	91-20-3	100	100	1,300	< 0.097	< 0.097	< 0.95	< 0.097	< 0.11	< 0.98 [< 0.95]	< 0.097	< 0.097	< 1.0	< 0.097	< 0.097	< 0.98
Phenol	108-95-2	2,000	34,000,000	84,000,000	< 1.7	< 1.7	< 1.9	< 1.7	< 1.8	< 2.0 [< 1.9]	< 1.7	< 1.7	< 2.0	< 1.7	< 1.7	< 2.0

Notes:

1. Samples prior to 2018 were collected by Paulus, Sokolowski, and Sartor Engineering, PC on the dates indicated. Samples in 2018 and 2019 were collected by Arcadis on the dates indicated.
2. 2005 and 2006 samples were analyzed by Hampton-Clarke, Veritech Laboratories of Fairfield, New Jersey.
3. 2018 and 2019 samples were analyzed by SGS North America Incorporated Laboratories of Dayton, New Jersey.
4. Samples were submitted for laboratory analysis for one or more of the following constituent groups, as indicated above.
   - Target Compound List (TCL) volatile organic compounds (VOC) using United States Environmental Protection Agency (USEPA) SW-846 Method 8260.
   - TCL semi-volatile organic compounds (SVOC) using USEPA SW-846 Method 8270.
5. Only compounds with a vapor instrusion standard are shown in this table.
6. Only compounds detected in one or more samples are shown in this table.
7. < = constituent not detected at a concentration above the reported detection limit. These results are also reported in gray.
8. NA = Not Analyzed.
9. Concentrations reported in micrograms per liter (ug/L) or parts per billion (ppb).
10. Highest groundwater surface is the highest groundwater surface observed during the 2018 and 2019 monitoring well gauging events, except for values in black which are for wells that couldn't be located or were destroyed prior to the 2018 monitoring well gauging events. In these cases, the highest groundwater surface observed from 2005 and 2006 is reported.
11. Highest groundwater surface observed is reported in feet below ground surface (bgs).
12. Groundwater vapor intrusion standards obtained from the Pennsylvania Department of Environmental Protection (PADEP) Technical Guidance Manual for Vapor Instrusion (VI) into Buildings from Groundwater and Soil Under Act 2 dated November 19, 2016. Groundwater vapor intrusion standards are only applicable if groundwater is greater than 5 feet bgs.
13. Shading indicates an exceedance of either: (1) PADEP's non-residential groundwater vapor intrusion standard when groundwater surface is more than 5 feet bgs; or (2) PADEP's residential Medium Specific Concentrations (MSCs) for Used Aquifers containing Total Dissolved Solids (TDS) ≤ 2,500 milligrams per liter (mg/L) when groundwater surface is equal to or less than 5 feet bgs.
14. Italics and bolding indicates an exceedance of PADEP's residential groundwater vapor intrusion standard when groundwater surface is more than 5 feet bgs.
15. * indicates that the groundwater monitoring well was installed to replace the missing historical well also listed in the monitoring well ID.
16. Brackets indicate the reported concentration of a duplicate sample.
17. Qualifier Definitions:
    B = The compound has been found in the sample as well as its associated blank.
    D = Concentration is based on a diluted sample analysis.
    J = Analyte is an estimated value.
18. Data from 2018 and 2019 have undergone a Tier II validation. Data prior to 2018 have not been validated.

Table 22
Exposure Pathway Elimination

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Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	Pathway Eliminated?	Rationale for Exposure Pathway Elimination by Cleanup Plan
Current	Soil	Surface Soil	Site	Outdoor Worker	Adult	Ingestion	Y	Surface soil outside of impervious areas is heavily vegetated. The limited areas of exposed surface soil may be contacted during activities such as lawn maintenance, but such maintance is limited to a few times per year and the grass height is kept at 6-inches or higher.
						Dermal Contact	Y	
						Inhalation	Y	
		Surface Soil	Site	Trespasser	Adolescent	Ingestion	Y	Surface soil outside of impervious areas is heavily vegetated. Site access is restricted by perimeter chainlink fencing and locked gates.
						Dermal Contact	Y	
						Inhalation	Y	
		Surface & Subsurface Soil	Excavation/Trench	Utility Worker	Adult	Ingestion	Y	Subsurface utilities at the Site were disconnected when the above-ground facilities and structures were demolished. There are no active utilities at the Site, other than one manhole providing access to the Upper Delaware Collecting Sewer that extends across the Site along the alignment of Bath Street. Work on the Upper Delaware Collecting Sewer would be performed by the Philadelphia Water Department, and potentially limited to access via the manhole, minimizing worker contact with soil. No soil excavation for installation, maintenance, or repair of underground utilities is anticipated under current conditions. Such work (if needed) and any remedial work would be conducted under a Health and Safety Plan (HASP) with engineering controls in-place to limit exposure. Work on the railroad that extends through the eastern portion of the Site (e.g., railroad tie replacement, ballast stone placement) would be performed by the railroad owner working from the railroad right-of-way, minimizing worker contact with soil beyond the railroad tracks.
						Dermal Contact	Y	
						Inhalation	Y	
	Groundwater	Shallow Groundwater	Excavation/Trench	Utility Worker	Adult	Ingestion	Y	Subsurface utilities at the Site were disconnected when the above-ground facilities and structures were demolished. There are no active utilities at the Site, other than one manhole providing access to the Upper Delaware Collecting Sewer that conveys regional stormwater deep beneath the Site along the alignment of Bath Street. The sewer does not collect any storm water from the Site. Based on measurements from the one existing manhole onsite, this sewer is very deep with an invert elevation at least 29 feet bgs. Future maintenance or repair of this sewer, if needed, could involve non-intrusive means (no excavation but potential access through an existing onsite manhole). No installation, maintenance, or repair of underground utilities is anticipated under current conditions. If such work were needed and required excavation to the depth of the perched water or groundwater table, the work would be conducted under a HASP with engineering controls in-place to limit exposure.
						Dermal Contact	Y	
						Inhalation	Y	
		Outdoor Air	Site	Outdoor Worker	Adult	Inhalation	Y	The volatile organic compound (VOC) concentrations identified in vadose zone soil and groundwater at the Site are less than those that would cause a vapor intrusion concern for outdoor air due to dispersion and mixing across a massive air volume.
Future	Soil	Surface Soil	Site	Outdoor Worker	Adult	Ingestion	Y	Under a redevelopment scenario, future Site workers may be exposed to surface soil. The installation of a cap consisting of development components, including concrete floor slabs/foundations for new buildings; asphalt pavement and/or concrete for driveways, parking areas, and sidewalks; and 2-feet of clean soil (e.g., in landscape areas) will restrict worker exposure to constituents of concern (COCs) in soils.
						Dermal Contact	Y	
						Inhalation	Y	
		Surface Soil	Workplace	Indoor Worker	Adult	Ingestion	Y	Under a redevelopment scenario, wind may generate dust from exposed soil at the Site and the airborne outside soils may be incidentally ingested or inhaled as volatiles and particulates outdoors (and to a lesser extent indoors as dust). However, the installation of a cap will eliminate exposure to COCs in soils.
						Dermal Contact	Y	
						Inhalation	Y	
		Surface Soil	Hypothetical Residence	Resident	Adult/Child	Ingestion	Y	Under a hypothetical residential redevelopment scenario, residents will not be exposed to soil because a cap consisting of development components, including concrete floor slabs/foundations for new buildings; asphalt pavement and/or concrete for driveways, parking areas, and sidewalks; and 2-feet of clean soil (e.g., in landscape areas) will restrict exposure to COCs in soils. Additionally, a deed restriction will limit the property to commercial or industrial use.
						Dermal Contact	Y	
						Inhalation	Y	
		Surface & Subsurface Soil	Excavation/Trench	Utility Worker	Adult	Ingestion	Y	Soil may be contacted during utility excavations for installation, maintenance, or repair of underground utilities. The installation of a cap, use of other engineering controls, and compliance with HASPs and Post-Remedial Care Plan restrict worker exposure to COCs in soils.
						Dermal Contact	Y	
						Inhalation	Y	
	Groundwater	Shallow Groundwater	Excavation/Trench	Utility Worker	Adult	Ingestion	Y	Construction/utility workers may encounter shallow groundwater during utility excavations for installation, maintenance, or repair of underground utilities. Volatile constituents in groundwater may volatilize into the utility trench. Potential exposures will be addressed by using personal protective equipment (PPE) in accordance with the HASP.
						Dermal Contact	Y	
						Inhalation	Y	
		Tapwater	Workplace	Indoor Worker	Adult/Child	Ingestion	Y	In the future, an environmental covenant will restrict groundwater use; therefore, no potable water wells may be installed at the Site once the covenant is in-place.
						Dermal Contact	Y	
						Inhalation	Y	
			Residence	Resident	Adult	Ingestion	Y	
						Dermal Contact	Y	
						Inhalation	Y	
		Indoor Air	Workplace	Indoor Worker	Adult	Inhalation	TBD	The VOC concentrations identified in vadose zone soil and groundwater at the Site could cause a vapor intrusion (VI) concern if mitigation systems were not installed. However, redevelopment plans will be required to include (1) a VI mitigation system(s) within areas of potential VI concern identified by initial VI screening ; or (2) building-specific VI risk assessment(s) that demonstrates that a mitigation system is not needed.
			Hypothetical Residence	Resident	Adult/Child	Inhalation	Y	

Notes:
1. Only potentially complete pathways from the conceptual site model are included in this table.

Abbreviations
COCs - constituents of concern
HASP - Health and Safety Plan
personal protective equipment - PPE
TBD - to be determined
VOC - volatile organic compound

Table 23
Observed Vegetative Species

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National Grid Former Philadelphia Coke Plant
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Common Name	Scientific Name
Mugwort	Artemisia vulgaris
Japanese Honey Suckle	Lonicera japonica
Common Reed	Phragmite australis
Stickywilly	Galium apartine
Staghorn Sumac	Rhus typhina
Canada Goldenrod	Solidago canadensis
Asiatic Bittersweet	Celastrus orbiculatus
Japanese Knotweed	Reynoutria japonica
White Mullberry	Morus alba
Black Locust	Robinia psuedoacacia
Poison Ivy	Toxicodendron radicans
Fowl Bluegrass	Poa palustris
Common Plantain	Plantago major
Yellow Foxtail	Setaria pumila
Purple Loosetrife	Lythrum salicaria
Big Bluestem	Andropogon gerardii
American Sycamore	Platanus occidentalis
Pin Oak	Quercus palustris
Black Cherry	Prunus serotina
Birds Foot Trefoil	Lotus norniculatus
Queen Anne's Lace	Daucus carota
Princess Tree	Paulowna tomentosa
Eastern Cottonwood	Populus deltoides
White Birch	Betula papyrifera
Garlic Mustard	Alliaria petiolata
Chinese catalpa	Catalpa ovata
Vetch	Vicia sp.
Bradford Pear	Pyrus calleryana
White Spruce	Picea glauca
American Elm	Ulmus americana

Notes:
1. Listing of species detailed during site observations conducted on May 1, 2019 and November 12, 2019.

Table 24
Observed Wildlife Species

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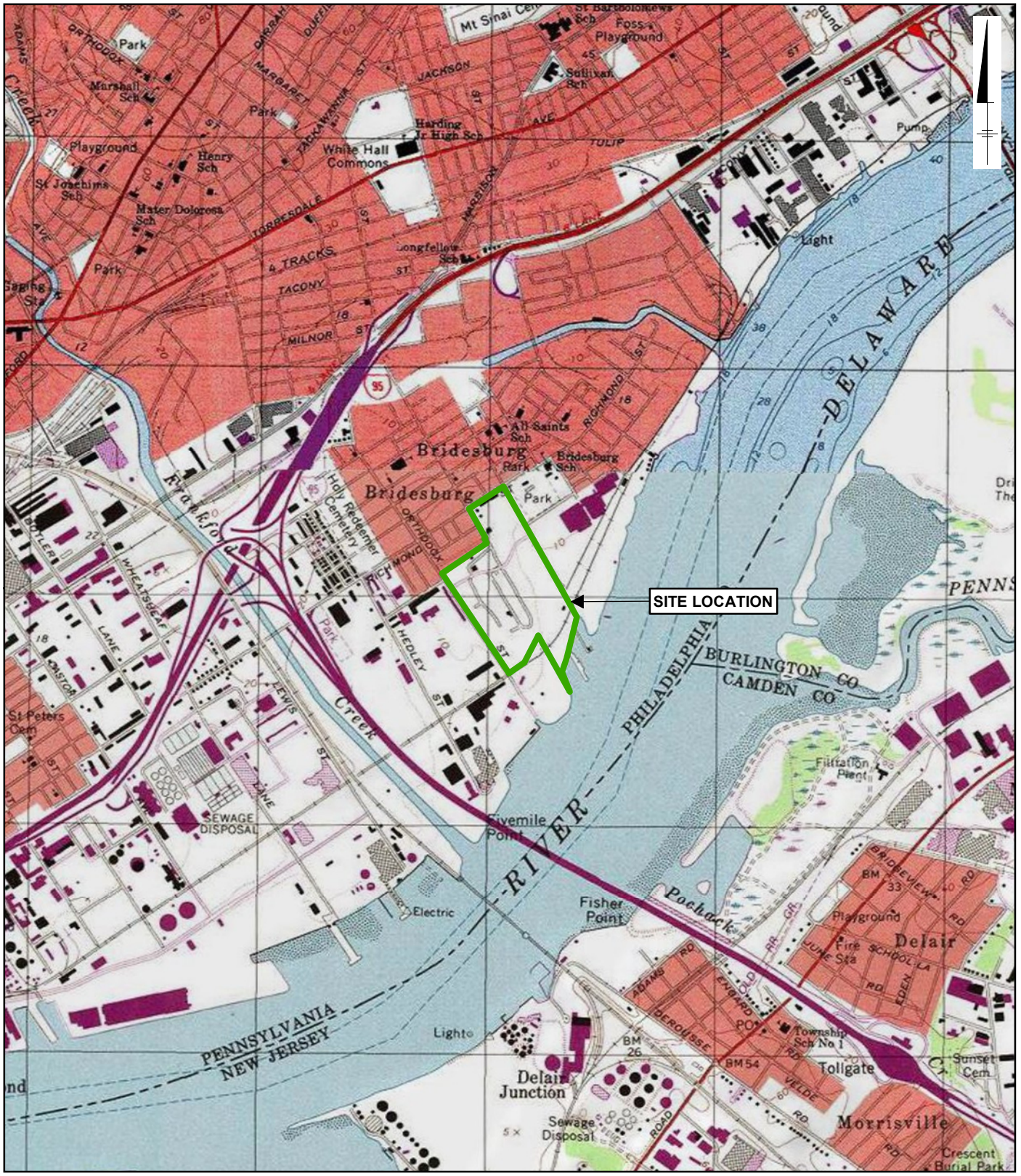
Common Name	Scientific Name
American Crow	Corvus brachyrhynchos
American Robin	Turdus migratorius
Grey Squirrel	Sciurus carolinensis
Groundhog	Marmota monax
Raccoon	Procyon lotor
Red Fox	Vulpes vulpes
Ring-billed Gull	Larus delawarensis
White-tailed Deer	Odocoileus virginianus

Notes:
1. Listing of species detailed during site observations conducted on November 12, 2019.

FIGURES



NOTE:

1. USGS TOPOGRAPHIC MAP PROVIDED BY ESRI.

0 2,000 4,000 Feet

GRAPHIC SCALE

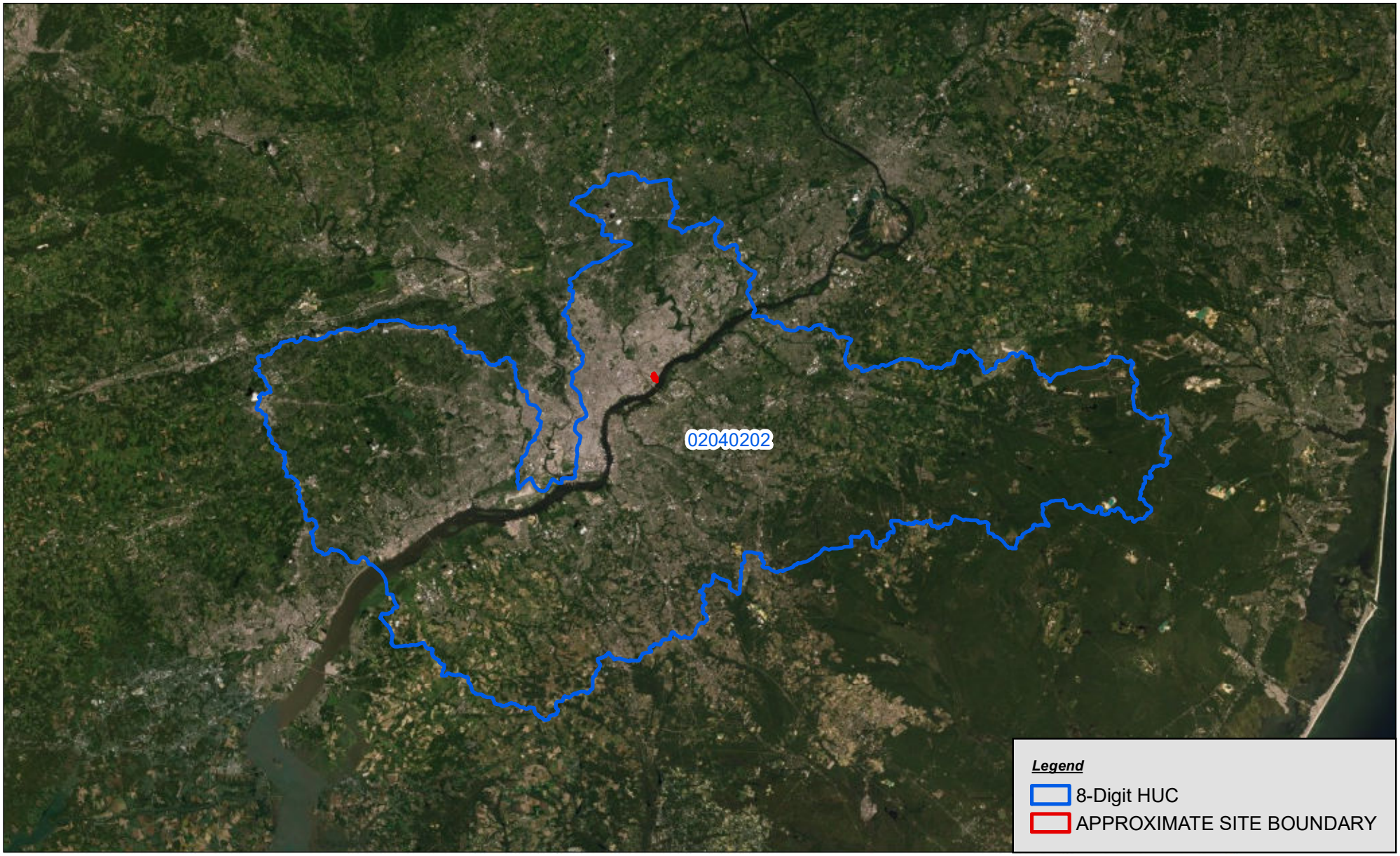
NATIONAL GRID
FORMER PHILADELPHIA COKE PLANT
PHILADELPHIA, PENNSYLVANIA
RI REPORT

SITE LOCATION MAP

ARCADIS

FIGURE 1

City: Syr Div/Group: IM/DV Created By: K. Sinsabaugh Last Saved By: AKENS
National Grid Philly Coke (B0036790.0000.00001)
T:_ENV\NationalGrid\PhiladelphiaCoke\2021\RICP report\Fig1_SiteLocationMap.mxd 6/24/2021 4:09:00 PM



0 50,000 100,000 Feet

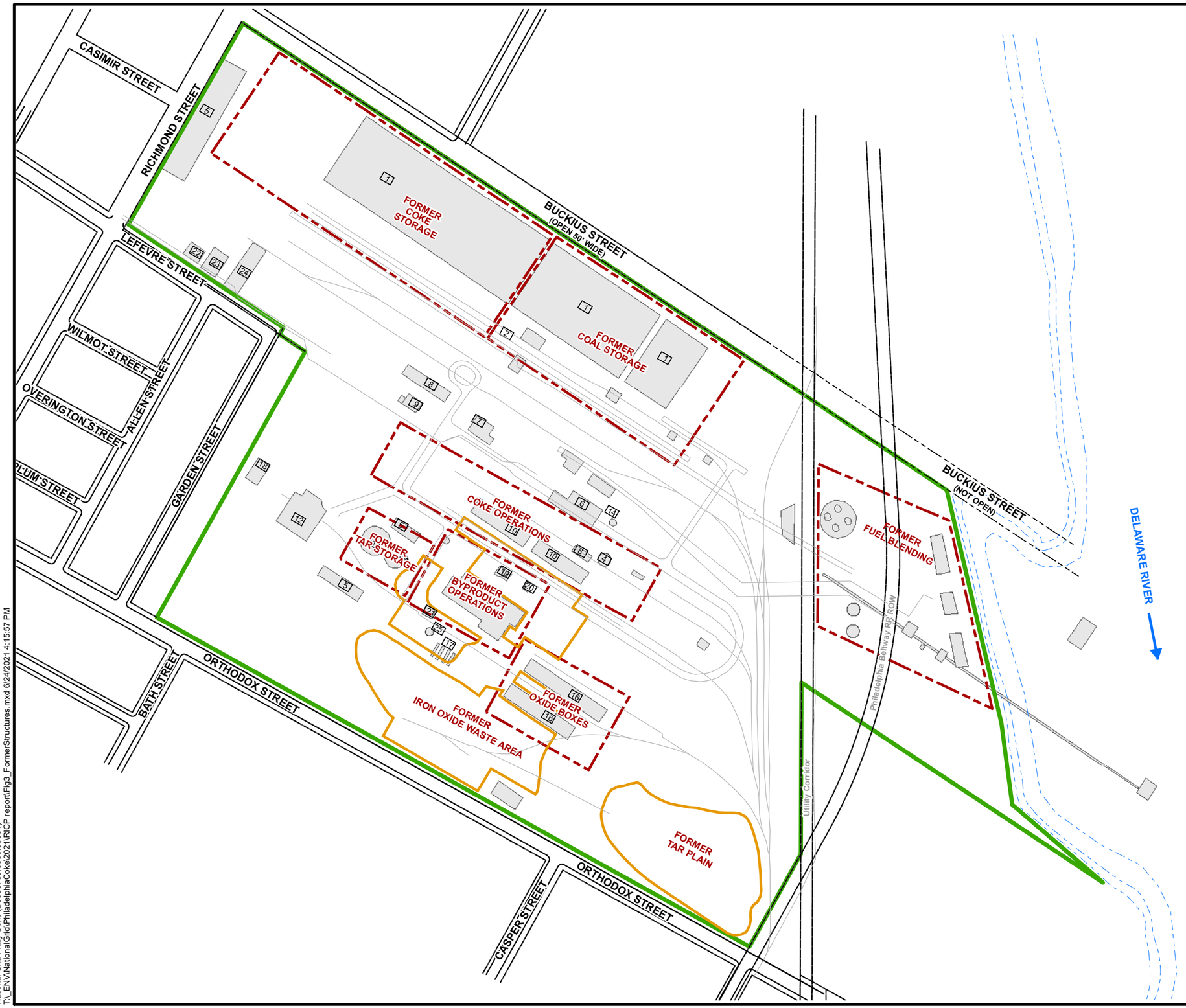
NOTE:
1. 2016 AERIAL IMAGE ACCESSED VIA ARC GIS ONLINE
2. HUC IS DEFINED AS HYDROLOGIC UNIT CODE

N

NATIONAL GRID
FORMER PHILADELPHIA COKE PLANT
PHILADELPHIA, PENNSYLVANIA
RI REPORT

FIGURE 2. LOWER DELAWARE RIVER WATERSHED

ARCADIS



LEGEND:

- FORMER SITE OPERATION AREA
- RCRA EXCAVATION
- FORMER STRUCTURE/OPERATION
- SITE BOUNDARY
- SHORELINE

FORMER STRUCTURES:

1 - COKE AND COAL STORAGE (NO STRUCTURES)
2 - CONVEYOR
3 - FUEL BLENDING AREA
4 - STACKS
5 - CONCRETE FOUNDATION
6 - BOILER HOUSE / PRODUCER BUILDING
7 - SHEET METAL BUILDING
8 - DUST COLLECTOR
9 - ELECTRIC SUBSTATION
10 - COKE OVENS
11 - QUENCHING STATION
12 - MACHINE SHOP
13 - TAR STORAGE TANK / HOLDER FOUNDATION
14 - TAR STORAGE TANK / HOLDER FOUNDATION
15 - BY-PRODUCTS BUILDING
16 - OXIDE BOXES
17 - TANKS
18 - FIELD OFFICES
19 - TAR DECANTERS
20 - DECANTER SLUDGE LAGOON
21 - WASTE LIQUOR PIT
22 - LAB
24 - CHANGE HOUSE
25 - ABSORBER TANK

NOTE:

1. BASE MAP OBTAINED FROM FIGURE PREPARED BY PAULUS SOKOLOSKI AND SARTOR ENGINEERING, PC, TITLED “GENERAL SITE PLAN”, DRAWING 2A, DATED APRIL 9, 2007 AT A SCALE OF 1”=250’.

0 250 500 Feet

GRAPHIC SCALE

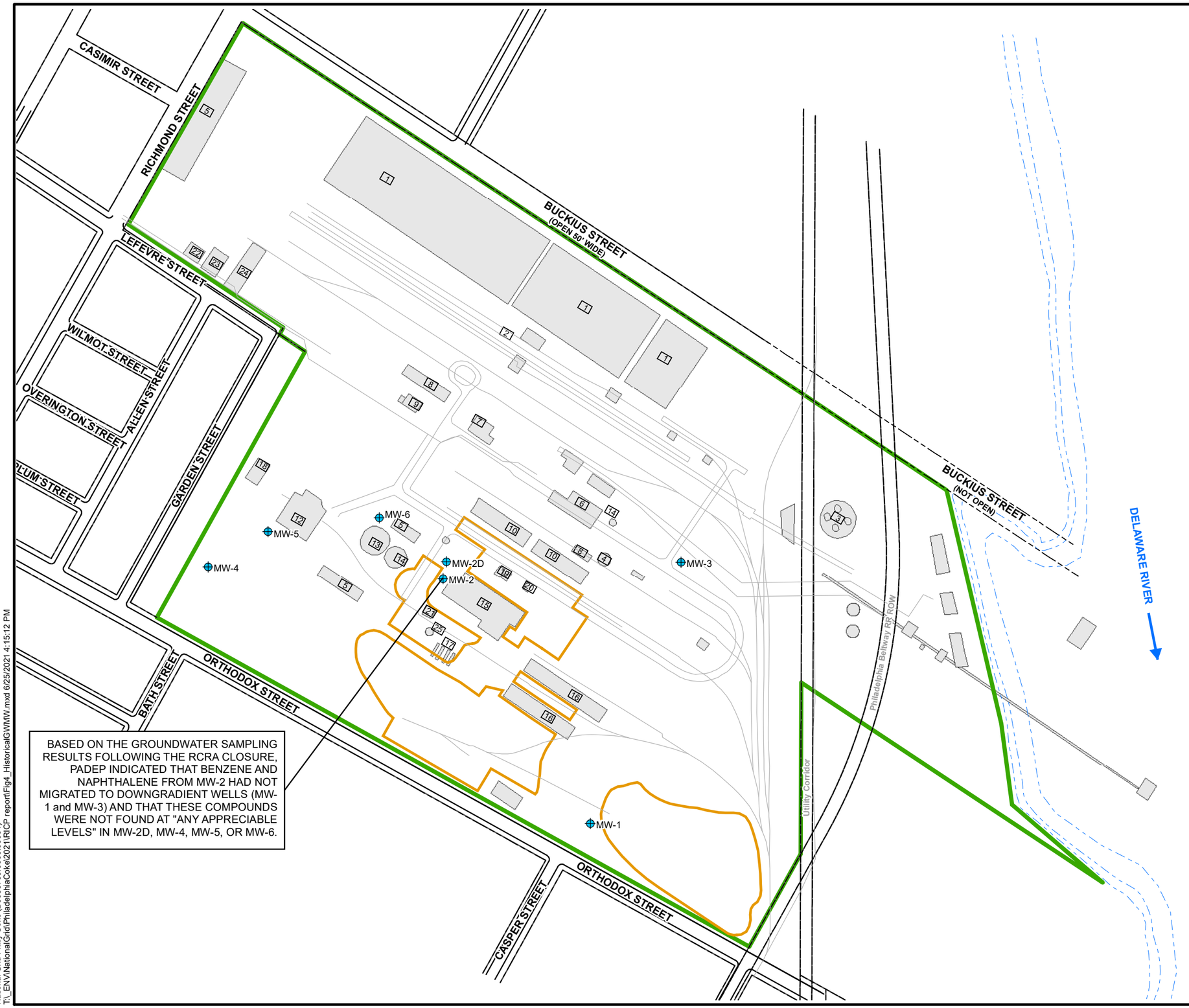
NATIONAL GRID
FORMER PHILADELPHIA COKE PLANT
PHILADELPHIA, PENNSYLVANIA
RI REPORT

FORMER STRUCTURES

ARCADIS

FIGURE 3

City: Syr Div/Group: IM/DV Created By:K. Sinsabaugh Last Saved By: AKENS
National Grid Philly Coke (B0036790.0000.00001)
T:_ENV\NationalGrid\PhiladelphiaCoke\2021\RICP report\Fig3_FormerStructures.mxd 6/24/2021 4:15:57 PM



BASED ON THE GROUNDWATER SAMPLING RESULTS FOLLOWING THE RCRA CLOSURE, PADEP INDICATED THAT BENZENE AND NAPHTHALENE FROM MW-2 HAD NOT MIGRATED TO DOWNGRADIENT WELLS (MW-1 and MW-3) AND THAT THESE COMPOUNDS WERE NOT FOUND AT "ANY APPRECIABLE LEVELS" IN MW-2D, MW-4, MW-5, OR MW-6.

LEGEND:

- (MW-5) RCRA CLOSURE GROUNDWATER MONITORING WELL (1992 AND EARLIER)
- RCRA EXCAVATION
- FORMER STRUCTURE/OPERATION
- SITE BOUNDARY
- SHORELINE

FORMER STRUCTURES:

1 - COKE AND COAL STORAGE (NO STRUCTURES)
2 - CONVEYOR
3 - FUEL BLENDING AREA
4 - STACKS
5 - CONCRETE FOUNDATION
6 - BOILER HOUSE / PRODUCER BUILDING
7 - SHEET METAL BUILDING
8 - DUST COLLECTOR
9 - ELECTRIC SUBSTATION
10 - COKE OVENS
11 - QUENCHING STATION
12 - MACHINE SHOP
13 - TAR STORAGE TANK / HOLDER FOUNDATION
14 - TAR STORAGE TANK / HOLDER FOUNDATION
15 - BY-PRODUCTS BUILDING
16 - OXIDE BOXES
17 - TANKS
18 - FIELD OFFICES
19 - TAR DECANTERS
20 - DECANTER SLUDGE LAGOON
21 - WASTE LIQUOR PIT
22 - LAB
24 - CHANGE HOUSE
25 - ABSORBER TANK

NOTES:

1. BASE MAP OBTAINED FROM FIGURE PREPARED BY PAULUS SOKOLOSKI AND SARTOR ENGINEERING, PC, TITLED "GENERAL SITE PLAN", DRAWING 2A, DATED APRIL 9, 2007 AT A SCALE OF 1"=250'.
2. IN A JULY 26, 1999 LETTER, PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION (PADEP) CONCLUDED THAT VOLATILE ORGANIC COMPOUND AND SEMI-VOLATILE ORGANIC COMPOUND CONCENTRATIONS IN GROUNDWATER SIGNIFICANTLY DECREASED FROM 1985 TO 1998 AND HAVE BEEN LOCALIZED SINCE 1994. THE CONCLUSION WAS BASED ON 14 YEARS OF GROUNDWATER SAMPLING FROM APRIL 1985 TO NOVEMBER 1998 AT MONITORING WELLS MW-1 THROUGH MW-6. DURING THIS TIME PERIOD, GROUNDWATER SAMPLES WERE GENERALLY COLLECTED ON A QUARTERLY BASIS (FOUR TIMES A YEAR).

0 250 500 Feet

GRAPHIC SCALE

NATIONAL GRID
FORMER PHILADELPHIA COKE PLANT
PHILADELPHIA, PENNSYLVANIA
RI REPORT

HISTORICAL GROUNDWATER MONITORING WELLS

ARCADIS

FIGURE 4

City: Syr Div/Group: IM/DV Created By:K. Sinsabaugh Last Saved By: AKENS
National Grid Philly Coke (B0036790.0000.00001)
T:_ENV\NationalGrid\PhiladelphiaCoke\2021\RICP report\Fig4_HistoricalGWMW.mxd 6/25/2021 4:15:12 PM

CASIMIR STREET
RICHMOND STREET
LEFEVRE STREET
WILMOT STREET
OVERINGTON STREET
ALLEN STREET
GARDEN STREET
PLUM STREET
BUCKIUS STREET (OPEN 50' WIDE)
BUCKIUS STREET (NOT OPEN)
DELAWARE RIVER
Philadelphia Beltway ROW
Utility Corridor
BATH STREET
ORTHODOX STREET
CASPER STREET

LEGEND:

- ARCADIS SOIL BORING LOCATION (2019)
- ARCADIS TEST PIT LOCATION (2019)
- PSS ENVIRONMENTAL SOIL BORINGS (2005)
- PSS ENVIRONMENTAL HYDROPUNCHES (2005)
- PSS ENVIRONMENTAL TEST PITS (2005)
- PSS ENVIRONMENTAL TEST PITS (2003)
- EEI GEOTECHNICAL TEST PITS (2005)
- ARCADIS GROUNDWATER MONITORING WELL LOCATION (2018-2019)
- PSS ENVIRONMENTAL GROUNDWATER MONITORING WELLS (2005)
- MISSING/DESTROYED PSS ENVIRONMENTAL GROUNDWATER MONITORING WELLS
- RCRA CLOSURE GROUNDWATER MONITORING WELL (1992 AND EARLIER)
- EEI GEOTECHNICAL SOIL BORINGS (2005)
- PSS SOIL VAPOR SAMPLING LOCATIONS (2006)
- FORMER RCRA EXCAVATION
- FORMER STRUCTURE/OPERATION
- SITE BOUNDARY
- SHORELINE

NOTE:

1. BASE MAP OBTAINED FROM FIGURE PREPARED BY PAULUS SOKOLOSKI AND SARTOR ENGINEERING, PC, TITLED "GENERAL SITE PLAN", DRAWING 2A, DATED APRIL 9, 2007 AT A SCALE OF 1"=250'.

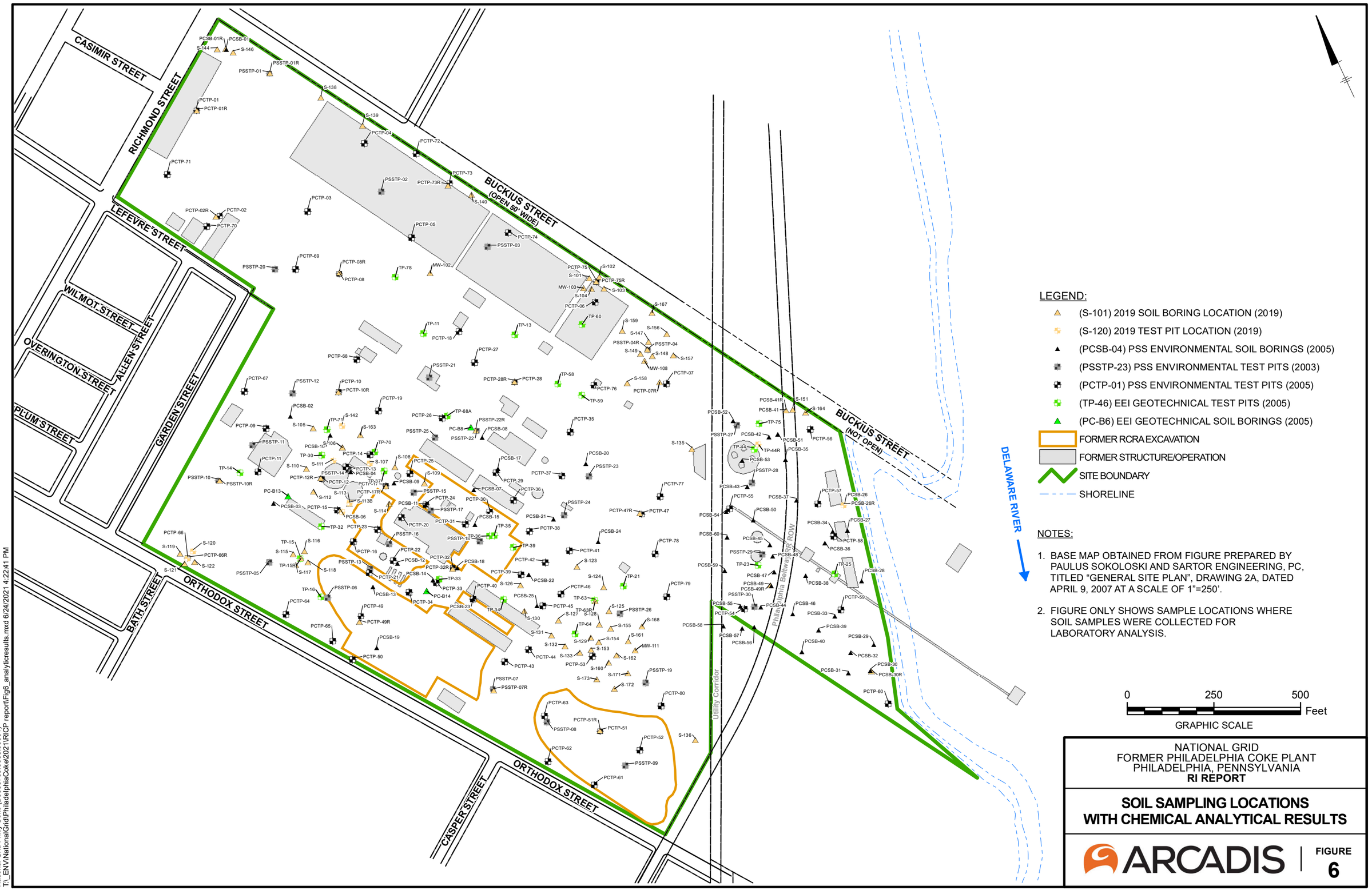
0 250 500 Feet
GRAPHIC SCALE

NATIONAL GRID
FORMER PHILADELPHIA COKE PLANT
PHILADELPHIA, PENNSYLVANIA
RI REPORT

SAMPLING LOCATIONS

ARCADIS | FIGURE 5

City: Syr Div/Group: IM/DV Created By: K. Sinsabaugh Last Saved By: AKENS
National Grid Philly Coke (B0036790.0000.00001)
T:_ENV\NationalGrid\PhiladelphiaCoke\2021\RICP report\Fig5_samplelocs.mxd 6/24/2021 3:22:42 PM



LEGEND:

- (S-101) 2019 SOIL BORING LOCATION (2019)
- (S-120) 2019 TEST PIT LOCATION (2019)
- (PCSB-04) PSS ENVIRONMENTAL SOIL BORINGS (2005)
- (PSSTP-23) PSS ENVIRONMENTAL TEST PITS (2003)
- (PCTP-01) PSS ENVIRONMENTAL TEST PITS (2005)
- (TP-46) EEI GEOTECHNICAL TEST PITS (2005)
- (PC-B6) EEI GEOTECHNICAL SOIL BORINGS (2005)
- FORMER RCRA EXCAVATION
- FORMER STRUCTURE/OPERATION
- SITE BOUNDARY
- SHORELINE

NOTES:

1. BASE MAP OBTAINED FROM FIGURE PREPARED BY PAULUS SOKOLOSKI AND SARTOR ENGINEERING, PC, TITLED “GENERAL SITE PLAN”, DRAWING 2A, DATED APRIL 9, 2007 AT A SCALE OF 1”=250’.
2. FIGURE ONLY SHOWS SAMPLE LOCATIONS WHERE SOIL SAMPLES WERE COLLECTED FOR LABORATORY ANALYSIS.

0 250 500 Feet

GRAPHIC SCALE

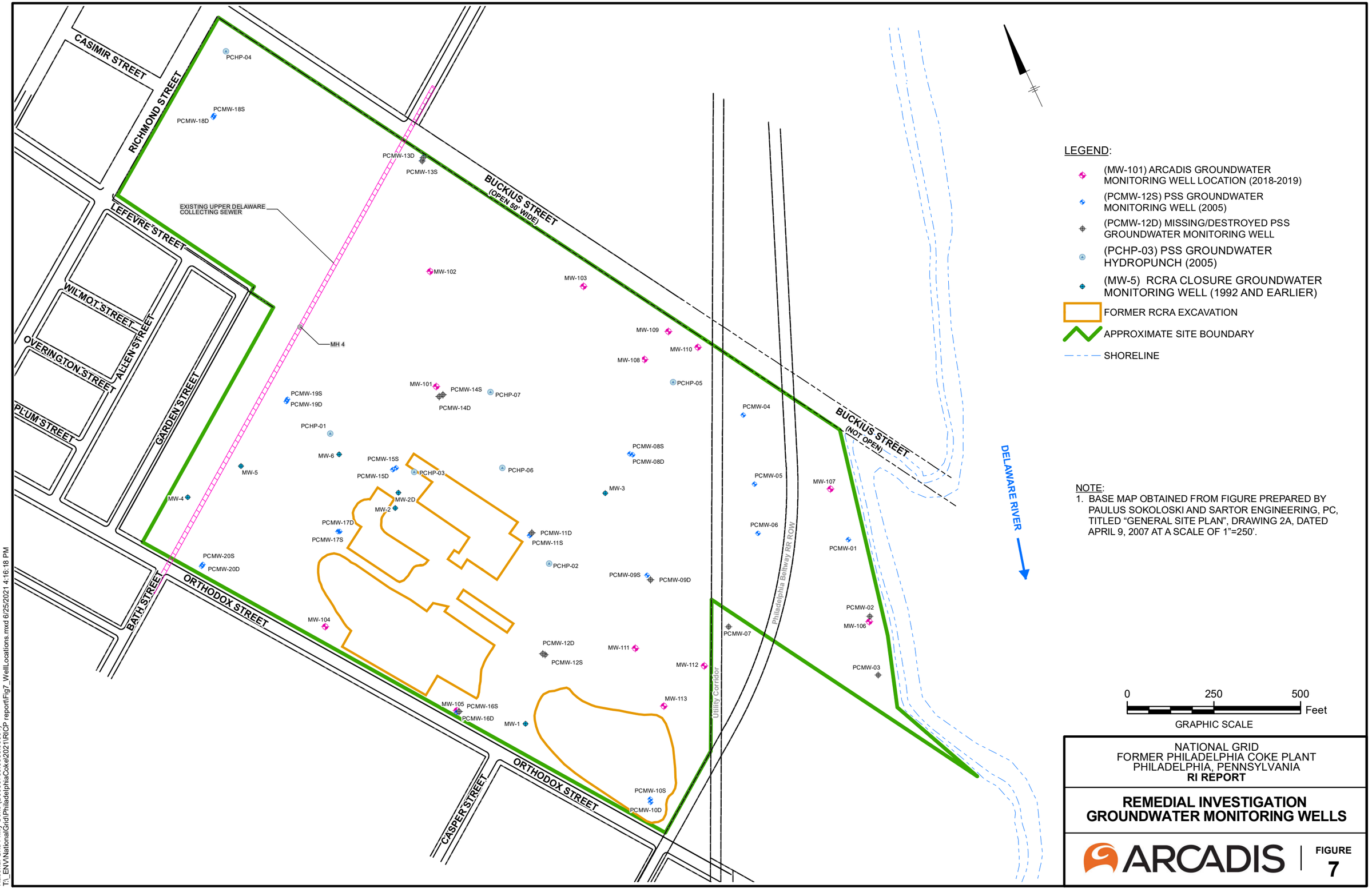
NATIONAL GRID
FORMER PHILADELPHIA COKE PLANT
PHILADELPHIA, PENNSYLVANIA
RI REPORT

SOIL SAMPLING LOCATIONS WITH CHEMICAL ANALYTICAL RESULTS

ARCADIS

FIGURE 6

City: Syr Div/Group: IM/DV Created By: K. Sinsabaugh Last Saved By: AKENS
National Grid Philly Coke (B0036790.0000.00001)
T:_ENV\NationalGrid\PhiladelphiaCoke\2021\RICP report\Fig6_analyticresults.mxd 6/24/2021 4:22:41 PM



LEGEND:

- (MW-101) ARCADIS GROUNDWATER MONITORING WELL LOCATION (2018-2019)
- (PCMW-12S) PSS GROUNDWATER MONITORING WELL (2005)
- (PCMW-12D) MISSING/DESTROYED PSS GROUNDWATER MONITORING WELL
- (PCHP-03) PSS GROUNDWATER HYDROPUNCH (2005)
- (MW-5) RCRA CLOSURE GROUNDWATER MONITORING WELL (1992 AND EARLIER)
- FORMER RCRA EXCAVATION
- APPROXIMATE SITE BOUNDARY
- SHORELINE

NOTE:

1. BASE MAP OBTAINED FROM FIGURE PREPARED BY PAULUS SOKOLOSKI AND SARTOR ENGINEERING, PC, TITLED “GENERAL SITE PLAN”, DRAWING 2A, DATED APRIL 9, 2007 AT A SCALE OF 1”=250’.

0 250 500 Feet

GRAPHIC SCALE

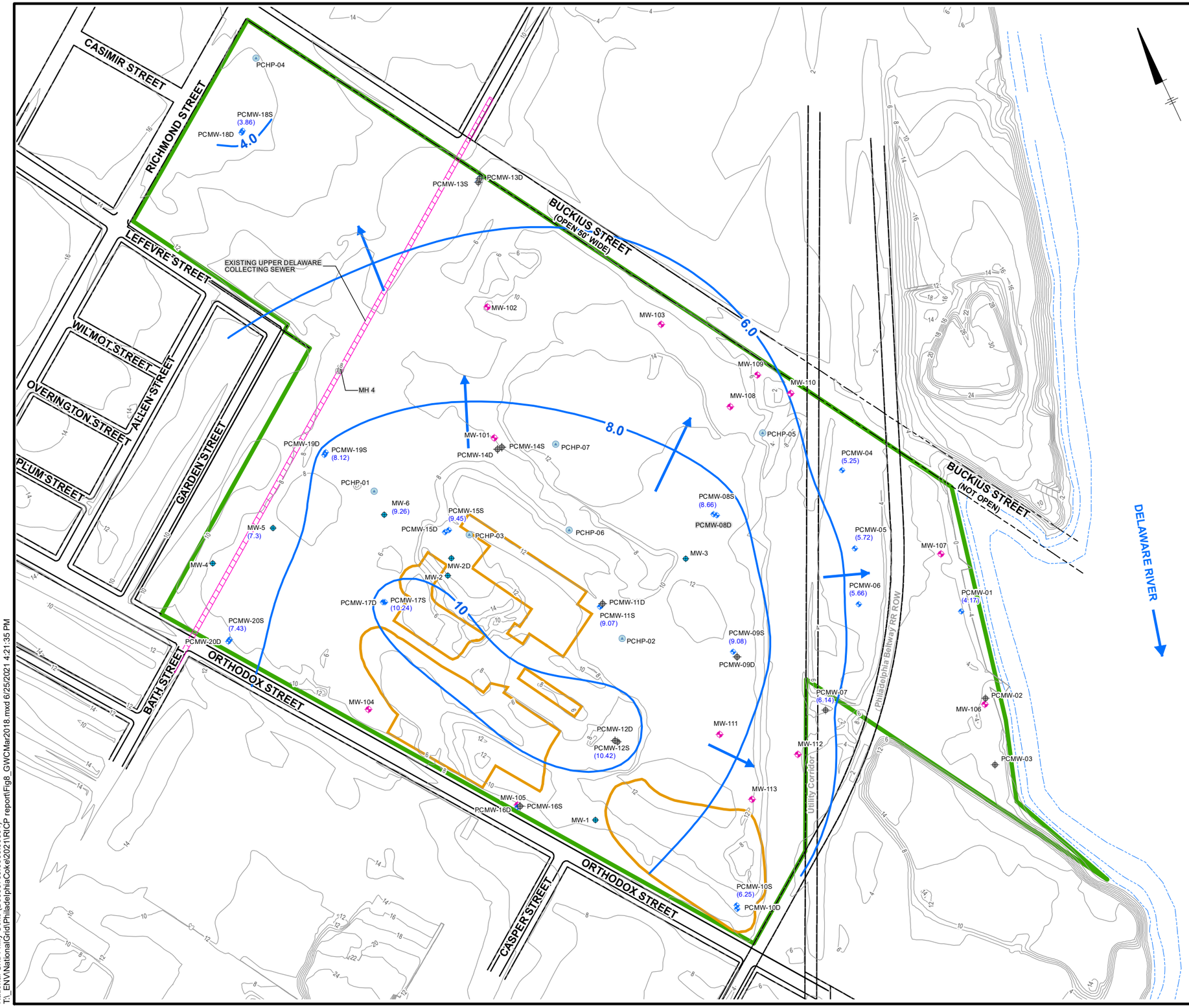
NATIONAL GRID
FORMER PHILADELPHIA COKE PLANT
PHILADELPHIA, PENNSYLVANIA
RI REPORT

REMEDIAL INVESTIGATION GROUNDWATER MONITORING WELLS

ARCADIS

FIGURE 7

City: Syr Div/Group: IM/DV Created By: K. Sinsabaugh Last Saved By: AKENS
National Grid Philly Coke (B0036790.0000.00001)
T:_ENV\NationalGrid\PhiladelphiaCoke\2021\RICP report\Fig7_WellLocations.mxd 6/25/2021 4:16:18 PM



LEGEND:

- INFERRED GROUNDWATER ELEVATION CONTOUR (FEET ABOVE MEAN SEA LEVEL, NAVD 88)
- APPROXIMATE GROUNDWATER FLOW DIRECTION
- (9.07) GROUNDWATER ELEVATION - SHALLOW ZONE (FEET ABOVE MEAN SEA LEVEL, NAVD 88)
- (MW-101) GROUNDWATER MONITORING WELL LOCATION (2018-2019)
- (PCMW-12S) PSS GROUNDWATER MONITORING WELL (2005)
- (PCMW-12D) MISSING/DESTROYED PSS GROUNDWATER MONITORING WELL
- (PCHP-03) PSS GROUNDWATER HYDROPUNCH (2005)
- (MW-5) RCRA CLOSURE GROUNDWATER MONITORING WELL (1992 AND EARLIER)
- GROUND SURFACE ELEVATION CONTOURS FROM DATA CLEARINGHOUSE PHILADELPHIA CONTOURS 2-FT. (PHILADELPHIA VERTICAL DATUM, 2004 - CITY OF PHILADELPHIA)
- FORMER RCRA EXCAVATION
- APPROXIMATE SITE BOUNDARY
- SHORELINE

NOTES:

1. BASE MAP OBTAINED FROM FIGURE PREPARED BY PAULUS SOKOLOSKI AND SARTOR ENGINEERING, PC, TITLED “GENERAL SITE PLAN”, DRAWING 2A, DATED APRIL 9, 2007 AT A SCALE OF 1”=250’.
2. WATER LEVEL ELEVATIONS ARE FROM MARCH 19, 2018 APPROXIMATELY AN HOUR BEFORE LOW TIDE THROUGH THE DURATION OF LOW TIDE.
3. PCMW-07 AND PCMW-12S ARE OBSTRUCTED BY OVERGROWN ROOTS IMMEDIATELY BELOW THE WATER TABLE. HOWEVER, WATER ELEVATIONS WERE STILL OBTAINED FROM BOTH WELLS.
4. MONITORING WELLS MW-101 THROUGH MW-113 WERE NOT YET INSTALLED DURING THE MARCH 2018 WATER LEVEL GAUGING EVENT.

0 250 500 Feet

GRAPHIC SCALE

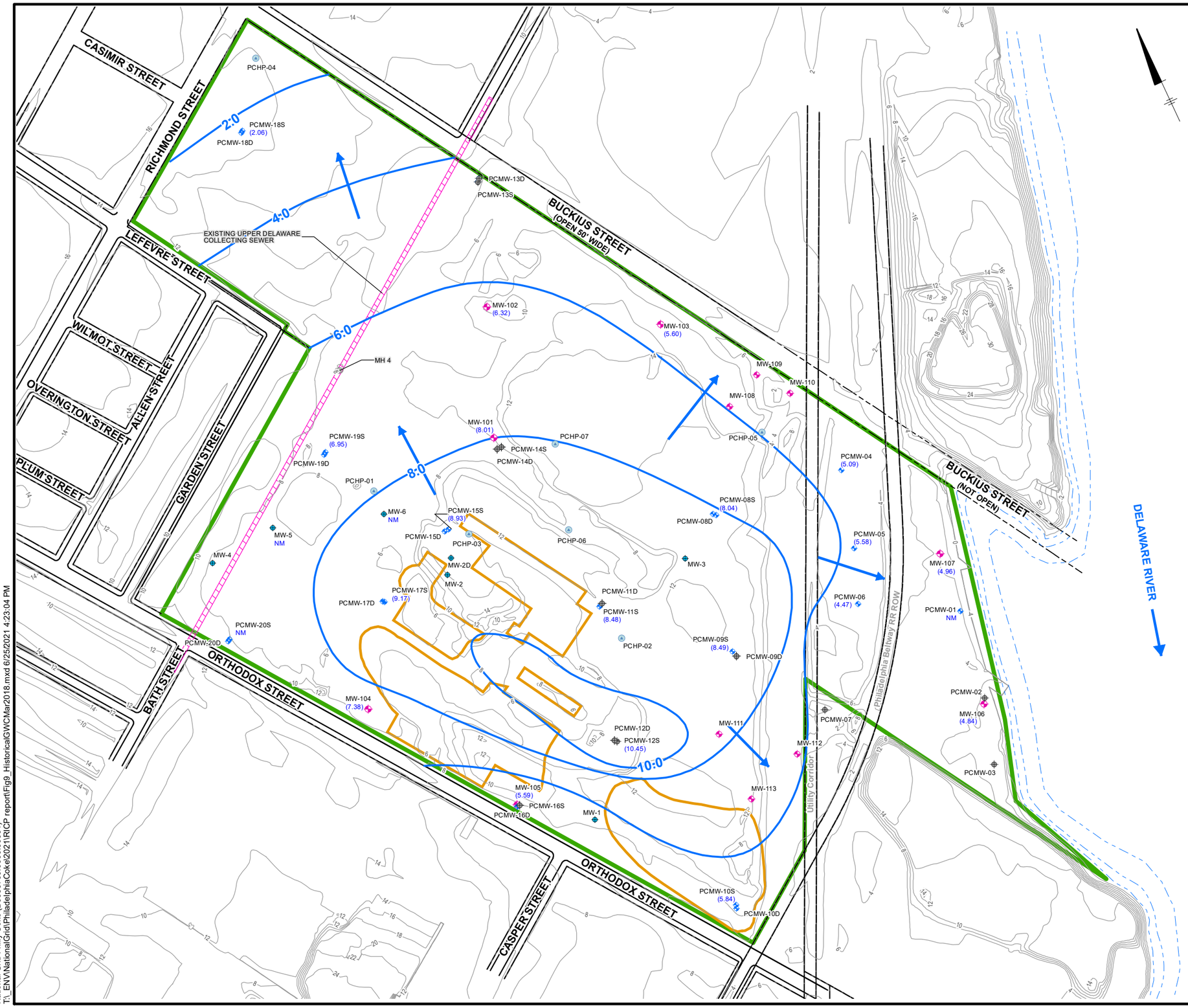
NATIONAL GRID
FORMER PHILADELPHIA COKE PLANT
PHILADELPHIA, PENNSYLVANIA
RI REPORT

GROUNDWATER POTENTIOMETRIC SURFACE MAP - SHALLOW ZONE MARCH 19, 2018

ARCADIS

FIGURE 8

City: Syr Div/Group: IM/DV Created By: K. Sinsabaugh Last Saved By: AKENS
National Grid Philly Coke (B0036790.0000.00001)
T:_ENV\NationalGrid\PhiladelphiaCoke\2021\RICP report\Fig8_GWCMar2018.mxd 6/25/2021 4:21:35 PM



LEGEND:

- INFERRED GROUNDWATER ELEVATION CONTOUR (FEET ABOVE MEAN SEA LEVEL, NAVD 88)
- APPROXIMATE GROUNDWATER FLOW DIRECTION
- (9.07) GROUNDWATER ELEVATION - SHALLOW ZONE (FEET ABOVE MEAN SEA LEVEL, NAVD 88)
- (MW-101) ARCADIS GROUNDWATER MONITORING WELL LOCATION (2018-2019)
- (PCMW-12S) PSS GROUNDWATER MONITORING WELL (2005)
- (PCMW-12D) MISSING/DESTROYED PSS GROUNDWATER MONITORING WELL
- (PCHP-03) PSS GROUNDWATER HYDROPUNCH (2005)
- (MW-5) RCRA CLOSURE GROUNDWATER MONITORING WELL (1992 AND EARLIER)
- GROUND SURFACE ELEVATION CONTOURS FROM DATA CLEARINGHOUSE PHILADELPHIA CONTOURS 2-FT. (PHILADELPHIA VERTICAL DATUM, 2004 - CITY OF PHILADELPHIA)
- FORMER RCRA EXCAVATION
- APPROXIMATE SITE BOUNDARY
- SHORELINE

NOTES:

1. BASE MAP OBTAINED FROM FIGURE PREPARED BY PAULUS SOKOLOSKI AND SARTOR ENGINEERING, PC, TITLED "GENERAL SITE PLAN", DRAWING 2A, DATED APRIL 9, 2007 AT A SCALE OF 1"=250'.
2. WATER LEVEL ELEVATIONS ARE FROM MAY 29, 2018 APPROXIMATELY AT LOW TIDE TO AN HOUR AFTER LOW TIDE.
3. NM = NOT MEASURED
4. PCMW-12S IS OBSTRUCTED BY OVERGROWN ROOTS IMMEDIATELY BELOW THE WATER TABLE. HOWEVER, WATER ELEVATION WAS STILL OBTAINED FROM THE WELL.
5. MONITORING WELLS MW-108 THROUGH MW-113 WERE NOT YET INSTALLED DURING THE 2018 WATER LEVEL GAUGING EVENTS.

0 250 500 Feet

GRAPHIC SCALE

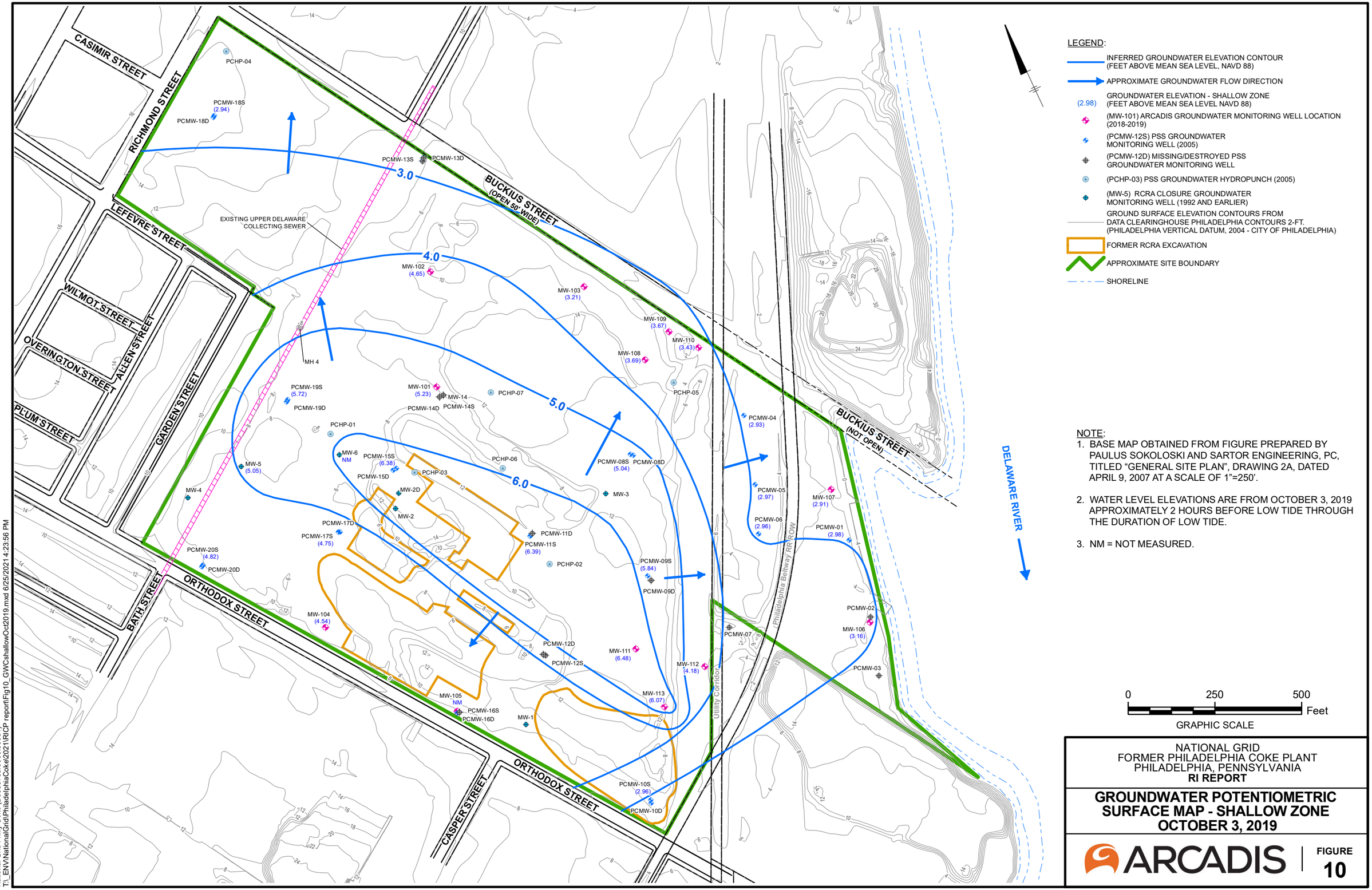
NATIONAL GRID
FORMER PHILADELPHIA COKE PLANT
PHILADELPHIA, PENNSYLVANIA
RI REPORT

GROUNDWATER POTENTIOMETRIC SURFACE MAP - SHALLOW ZONE MAY 29, 2018

ARCADIS

FIGURE 9

City: Syr Div/Group: IM/DV Created By: K. Sinsabaugh Last Saved By: AKENS
National Grid Philly Coke (B0036790.0000.00001)
T:_ENV\NationalGrid\PhiladelphiaCoke\2021\RICP report\Fig9_HistoricalGWCMar2018.mxd 6/25/2021 4:23:04 PM



LEGEND:

- INFERRED GROUNDWATER ELEVATION CONTOUR (FEET ABOVE MEAN SEA LEVEL, NAVD 88)
- APPROXIMATE GROUNDWATER FLOW DIRECTION
- (2.98) GROUNDWATER ELEVATION - SHALLOW ZONE (FEET ABOVE MEAN SEA LEVEL NAVD 88)
- (MW-101) ARCADIS GROUNDWATER MONITORING WELL LOCATION (2018-2019)
- (PCMW-12S) PSS GROUNDWATER MONITORING WELL (2005)
- (PCMW-12D) MISSING/DESTROYED PSS GROUNDWATER MONITORING WELL
- (PCHP-03) PSS GROUNDWATER HYDROPUNCH (2005)
- (MW-5) RCRA CLOSURE GROUNDWATER MONITORING WELL (1992 AND EARLIER)
- GROUND SURFACE ELEVATION CONTOURS FROM DATA CLEARINGHOUSE PHILADELPHIA CONTOURS 2-FT. (PHILADELPHIA VERTICAL DATUM, 2004 - CITY OF PHILADELPHIA)
- FORMER RCRA EXCAVATION
- APPROXIMATE SITE BOUNDARY
- SHORELINE

NOTE:

1. BASE MAP OBTAINED FROM FIGURE PREPARED BY PAULUS SOKOLOSKI AND SARTOR ENGINEERING, PC, TITLED “GENERAL SITE PLAN”, DRAWING 2A, DATED APRIL 9, 2007 AT A SCALE OF 1”=250’.
2. WATER LEVEL ELEVATIONS ARE FROM OCTOBER 3, 2019 APPROXIMATELY 2 HOURS BEFORE LOW TIDE THROUGH THE DURATION OF LOW TIDE.
3. NM = NOT MEASURED.

0 250 500 Feet

GRAPHIC SCALE

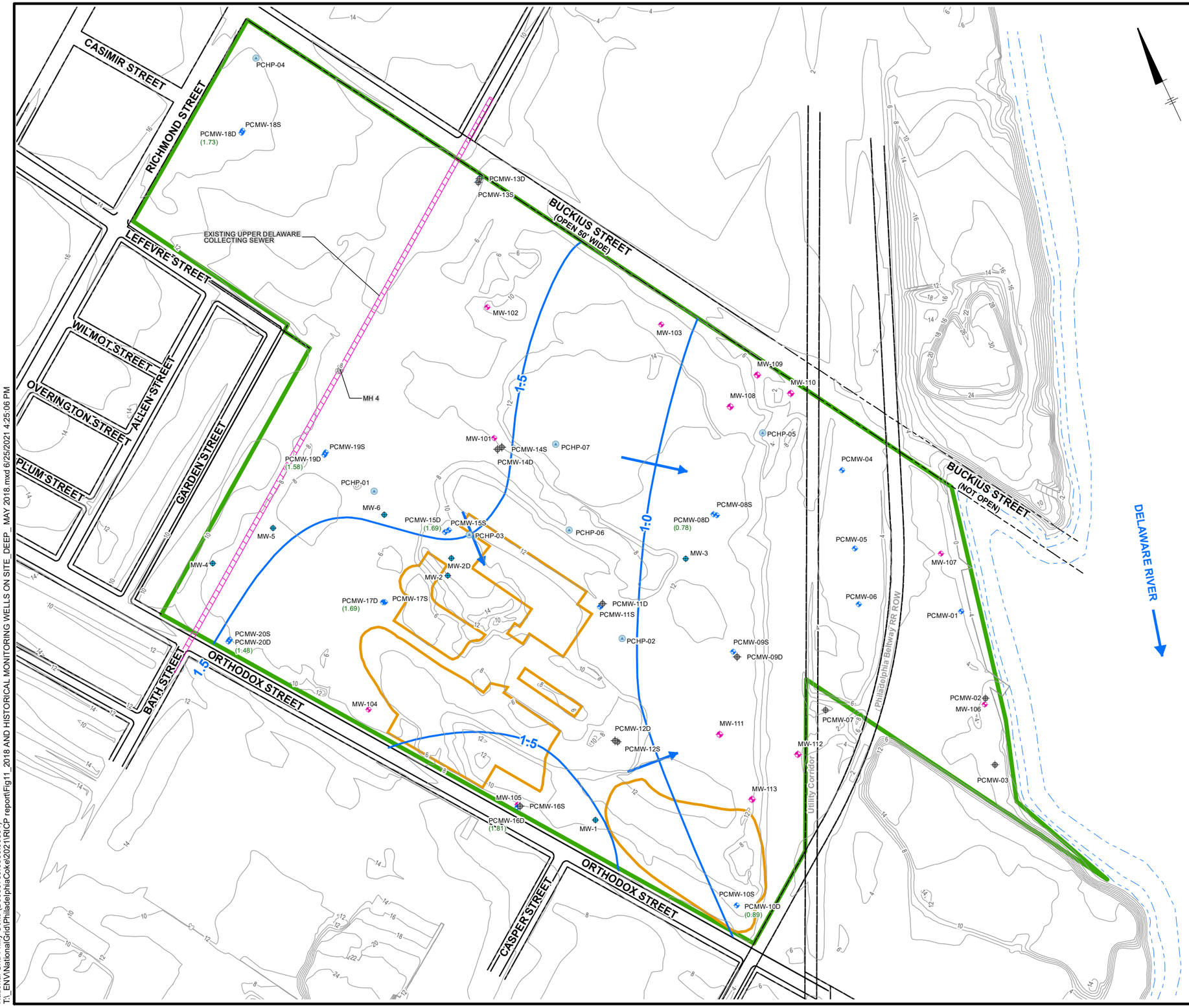
NATIONAL GRID
FORMER PHILADELPHIA COKE PLANT
PHILADELPHIA, PENNSYLVANIA
RI REPORT

GROUNDWATER POTENTIOMETRIC SURFACE MAP - SHALLOW ZONE OCTOBER 3, 2019

ARCADIS

FIGURE 10

City: Syr Div/Group: IMDV Created By: K. Sinsabaugh Last Saved By: AKENS
National Grid Philly Coke (B0036790.0000.00001)
T:_ENV\NationalGrid\PhiladelphiaCoke\2021\RICP report\Fig10_GWCshallowOct2019.mxd 6/25/2021 4:23:56 PM



LEGEND:

- INFERRED GROUNDWATER ELEVATION CONTOUR (FEET ABOVE MEAN SEA LEVEL, NAVD 88)
- APPROXIMATE GROUNDWATER FLOW DIRECTION
- (9.07) GROUNDWATER ELEVATION - DEEP ZONE (FEET ABOVE MEAN SEA LEVEL, NAVD 88)
- (MW-101) ARCADIS GROUNDWATER MONITORING WELL LOCATION (2018-2019)
- (PCMW-12S) PSS GROUNDWATER MONITORING WELL (2005)
- (PCMW-12D) MISSING/DESTROYED PSS GROUNDWATER MONITORING WELL
- (PCHP-03) PSS GROUNDWATER HYDROPUNCH (2005)
- (MW-5) RCRA CLOSURE GROUNDWATER MONITORING WELL (1992 AND EARLIER)
- GROUND SURFACE ELEVATION CONTOURS FROM DATA CLEARINGHOUSE PHILADELPHIA CONTOURS 2-FT. (PHILADELPHIA VERTICAL DATUM, 2004 - CITY OF PHILADELPHIA)
- FORMER RCRA EXCAVATION
- APPROXIMATE SITE BOUNDARY
- SHORELINE

NOTES:

1. BASE MAP OBTAINED FROM FIGURE PREPARED BY PAULUS SOKOLOSKI AND SARTOR ENGINEERING, PC, TITLED "GENERAL SITE PLAN", DRAWING 2A, DATED APRIL 9, 2007 AT A SCALE OF 1"=250'.
2. WATER LEVEL ELEVATIONS ARE FROM MAY 29, 2018 APPROXIMATELY AT LOW TIDE TO AN HOUR AFTER LOW TIDE.

0 250 500 Feet

GRAPHIC SCALE

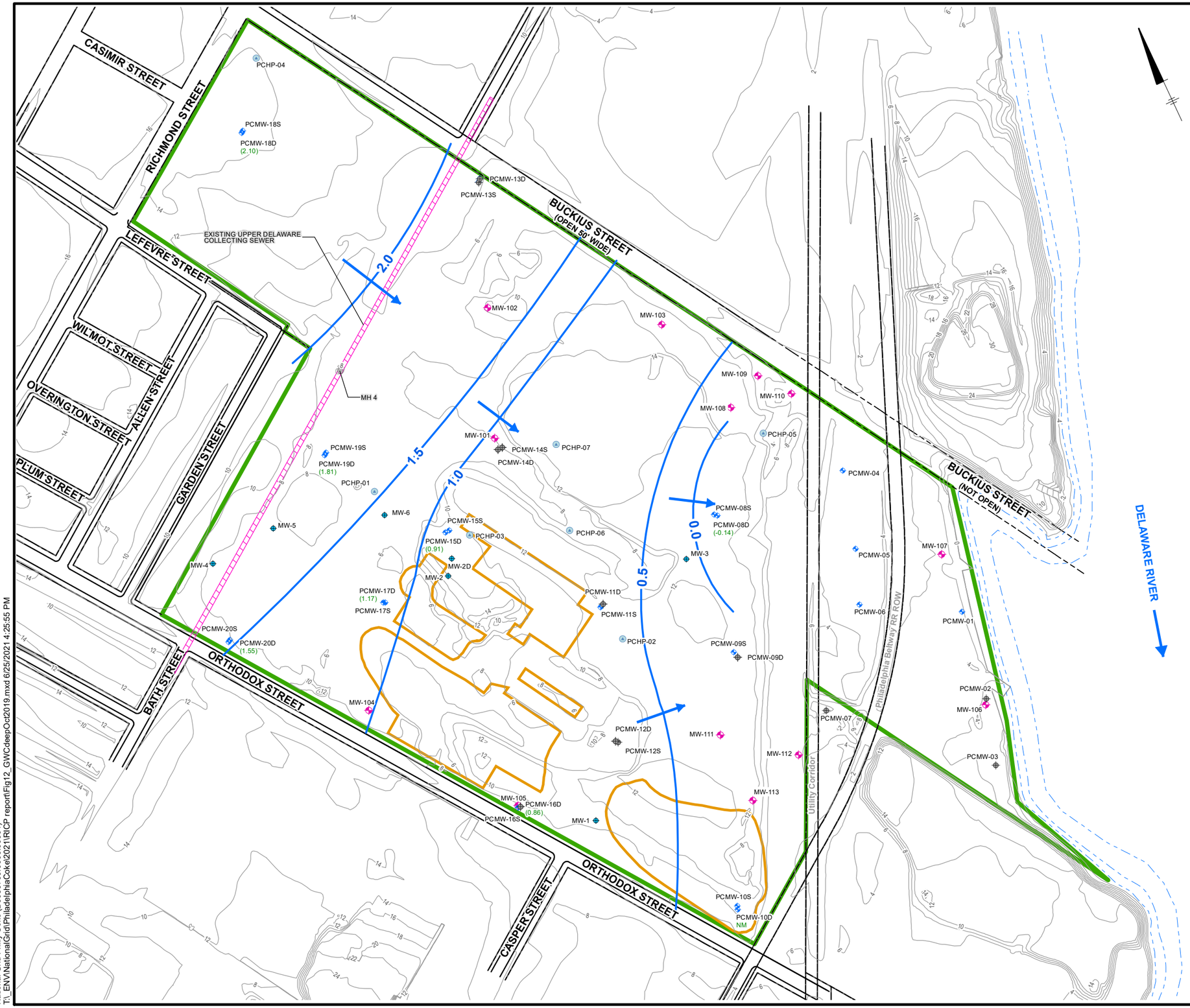
NATIONAL GRID
FORMER PHILADELPHIA COKE PLANT
PHILADELPHIA, PENNSYLVANIA
RI REPORT

GROUNDWATER POTENTIOMETRIC SURFACE MAP - DEEP ZONE MAY 29, 2018

ARCADIS

FIGURE 11

City: Syr Div/Group: IM/DV Created By: K. Sinsabaugh Last Saved By: AKENS
National Grid Philly Coke (B0036790.0000.00001)
T:_ENV\NationalGrid\PhiladelphiaCoke\2021\RICP report\Fig11_2018 AND HISTORICAL MONITORING WELLS ON SITE_DEEP_ MAY 2018.mxd 6/25/2021 4:25:06 PM



LEGEND:

- INFERRED GROUNDWATER ELEVATION CONTOUR (FEET ABOVE MEAN SEA LEVEL, NAVD 88)
- APPROXIMATE GROUNDWATER FLOW
- (0.91) GROUNDWATER ELEVATION - DEEP ZONE (FEET ABOVE MEAN SEA LEVEL NAVD 88)
- (MW-101) ARCADIS GROUNDWATER MONITORING WELL LOCATION (2018-2019)
- (PCMW-12S) PSS GROUNDWATER MONITORING WELL (2005)
- (PCMW-12D) MISSING/DESTROYED PSS GROUNDWATER MONITORING WELL
- (PCHP-03) PSS GROUNDWATER HYDROPUNCH
- (MW-5) RCRA CLOSURE GROUNDWATER MONITORING WELL (1992 AND EARLIER)
- GROUND SURFACE ELEVATION CONTOURS FROM DATA Clearinghouse Philadelphia Contours 2ft. (Philadelphia Vertical Datum, 2004 - City of Philadelphia)
- FORMER RCRA EXCAVATION
- APPROXIMATE SITE BOUNDARY
- SHORELINE

NOTES:

1. BASE MAP OBTAINED FROM FIGURE PREPARED BY PAULUS SOKOLOSKI AND SARTOR ENGINEERING, PC, TITLED “GENERAL SITE PLAN”, DRAWING 2A, DATED APRIL 9, 2007 AT A SCALE OF 1”=250’.
2. WATER LEVEL ELEVATIONS ARE FROM OCTOBER 3, 2019 APPROXIMATELY 2 HOURS BEFORE LOW TIDE THROUGH THE DURATION OF LOW TIDE.
3. NM = NOT MEASURED.

0 250 500 Feet

GRAPHIC SCALE

NATIONAL GRID
FORMER PHILADELPHIA COKE PLANT
PHILADELPHIA, PENNSYLVANIA
RI REPORT

GROUNDWATER POTENTIOMETRIC SURFACE MAP - DEEP ZONE OCTOBER 3, 2019

ARCADIS

FIGURE 12

City: Syr Div/Group: IMDV Created By: K. Sinsabaugh Last Saved By: AKENS
National Grid Philly Coke (B0036790.0000.00001)
T:_ENV\NationalGrid\PhiladelphiaCoke\2021\RICP report\Fig12_GWCdeepOct2019.mxd 6/25/2021 4:25:55 PM

LEGEND:

PUMPING WELL SEARCH RESULTS

- OTHER WITHDRAWAL WELL LOCATION
- MONITORING WELL LOCATION
- DOMESTIC WITHDRAWAL WELL LOCATION
- UNKNOWN WITHDRAWAL WELL LOCATION
- UNUSED/ABANDONED/DESTROYED WELL LOCATION
- SITE BOUNDARY
- 1/2-MILE RADIUS OF SITE

GEOLOGIC UNIT

- QT - FILL DEPOSITS, HOLOCENE MARSH/ALLUVIAL DEPOSITS, AND TRENTON GRAVEL (PLEISTOCENE) FORMATION
- XW - WISSAHICKON FORMATION

NOTES:

1. GEOLOGIC DATA - THE U.S. DEPARTMENT OF AGRICULTURE (USDA), 2005, (ACCESSED VIA WEB ON MARCH 28, 2012).
2. WELL DATA - PA TOPOGRAPHIC & GEOLOGIC SURVEY DATABASE (ACCESSED VIA WEB ON OCTOBER 13, 2020).
3. PER THE PHILADELPHIA WATER DEPARTMENT RECORDS, RESIDENTS AROUND THE SITE CONSUME CITY WATER. ACCORDING TO THE PENNSYLVANIA GROUNDWATER INFORMATION SYSTEM WEBSITE, THE ONE DOMESTIC WELL LOCATED NEAR THE SITE IS ALSO LISTED FOR MONITORING. THE ONE DOMESTIC WELL IS LOCATED ON A PROPERTY WHERE THERE IS A HISTORICAL DIESEL RELEASE. THEREFORE, IT IS LIKELY THAT THIS WELL WAS USED FOR AND/OR CONTINUES TO BE USED FOR MONITORING PURPOSES ONLY. MORE INFORMATION IS AVAILABLE IN SUBSECTION 3.2.2.1 OF THE REMEDIAL INVESTIGATION REPORT.
4. WELLS OUTSIDE THE 1/2-MILE RADIUS OF THE SITE ARE NOT SHOWN.

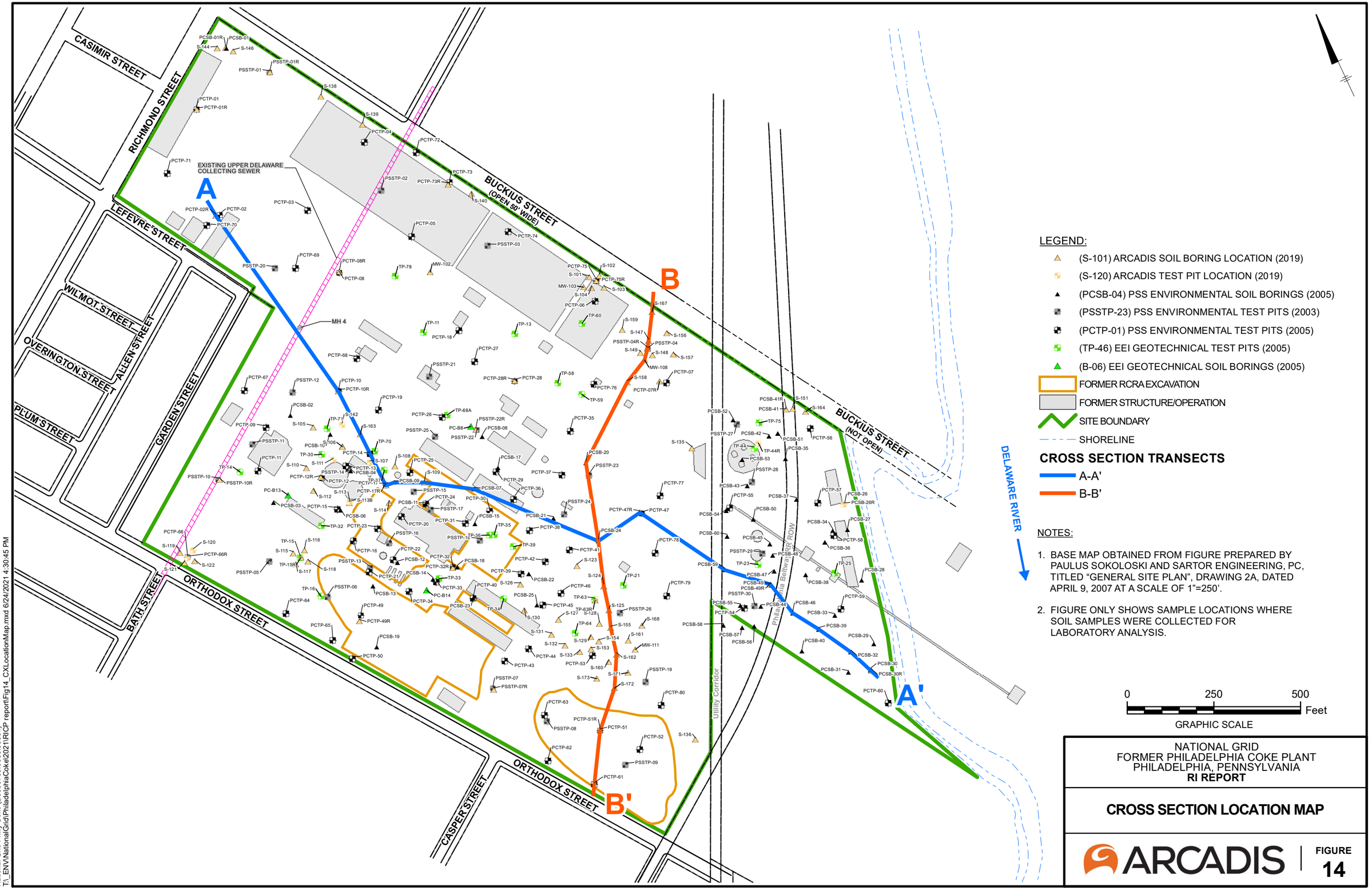
0 900 1,800 Feet

NATIONAL GRID
FORMER PHILADELPHIA COKE PLANT
PHILADELPHIA, PENNSYLVANIA
RI REPORT

SITE GEOLOGY MAP WITH LOCAL WELLS WITHIN HALF MILE RADIUS

ARCADIS | FIGURE 13

City: Syr Div/Group: IM/DV Created By: K. Sinsabaugh Last Saved By: AKENS
National Grid Philly Coke (B0036790.0000.00001)
T:_ENV\NationalGrid\PhiladelphiaCoke\2021\RICP report\Fig13_HalfMileRadius_DSCP_GeologicMapand_WaterSupply_B-size.mxd 6/24/2021 4:29:46 PM



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National Grid Philly Coke (B0036790.0000.00001)
T:_ENV\NationalGrid\PhiladelphiaCoke\2021\RICP report\Fig14_CXLocationMap.mxd 6/24/2021 4:30:45 PM

NATIONAL GRID
FORMER PHILADELPHIA COKE PLANT
PHILADELPHIA, PENNSYLVANIA
RI REPORT

CROSS SECTION LOCATION MAP

ARCADIS

FIGURE
14

A
NORTH

A'
SOUTH

PCTP-02R
PCTP-10R
S-163
PCTP-14
PCTP-17R
PCSB-09
S-109
PCSB-07
PCSB-24
PCTP-47R
PCSB-59
PCSB-49R
PCSB-46
PCSB-39
PCSB-32
PCSB-30R

FILL
K = 1.47x10^{-4} TO 2.93x10^{-3}cm/sec

FILL

FILL

SOFT ORGANIC SILT AND CLAY

SOFT ORGANIC SILT AND CLAY
K = 8.76x10^{-8} TO 1.38x10^{-7}cm/sec

SAND AND GRAVEL
K = 2.73x10^{-3}TO 1.79x10^{-1}cm/sec

20
15
10
5
0
-5
-10
-15
-20
-25
-30
-35

DRAFT
CONFIDENTIAL

LEGEND

S-163	ARCADIS SOIL BORING LOCATION (2019)
PCSB-09	PSS ENVIRONMENTAL SOIL BORING (2005)
PCTP-14	PSS ENVIRONMENTAL TEST PIT (2005)
K	HYDRAULIC CONDUCTIVITY
cm/sec	CENTIMETER PER SECOND
	WELL/BORING LOCATION
	APPROXIMATE GROUNDWATER ELEVATION BASED ON ELEVATION OF GROUNDWATER ENCOUNTERED IN THE BORING OR TEST PIT
	FILL
	CLAY
	SAND AND GRAVEL
	ASSUMED GEOLOGIC CONTACTS BASED ON AVAILABLE BORINGS

10
0
100
200
CROSS-SECTION SCALE IN FEET
VERTICAL EXAGGERATION: 20x

NATIONAL GRID
FORMER PHILADELPHIA COKE PLANT
PHILADELPHIA, PENNSYLVANIA
RI REPORT

GEOLOGIC CROSS-SECTION A - A'

ARCADIS

FIGURE
15

DIV/GROUP: ENV DB: C. McKeough PIC:(Opt) PM:(Reqd) TM: E. Green LYR:(Opt)ON=*;OFF=*REF*
C:\Users\akens\OneDrive - ARCADIS\BIM 360 Docs\National Grid\Project Files\Philadelphia Coke\2020\30004026\01-DWG\Xsec-WellPts.dwg LAYOUT: 15 SAVED: 6/24/2021 2:10 PM ACADVER: 23.0S (LMS TECH) PAGESETUP: PDF-LB PLOTSTYLETABLE: BLACKGRAY.CTB PLOTTED: 6/24/2021 4:06 PM
BY: AKENS, DAVID
XREFS: PROJECTNAME: ---

B
NORTHEAST

B'
SOUTHWEST

S-167
S-147
PSSTP-04R
MW-108
S-158
PCSB-20
PCSB-24
S-124
S-125
S-155
S-162
S-172
PCTP-51R
PCTP-61

FILL
K = 1.47x10^{-4} TO 2.93x10^{-3}cm/sec

FILL

FILL

SOFT ORGANIC SILT AND CLAY

SOFT ORGANIC SILT AND CLAY
K = 8.76x10^{-8} TO 1.38x10^{-7}cm/sec

SAND AND GRAVEL
K = 2.73x10^{-3} TO 1.79x10^{-1}cm/sec

25
20
15
10
5
0
-5
-10
-15
-20
-25
-30
-35

LEGEND

S-163	ARCADIS SOIL BORING LOCATION (2019)
MW-108	ARCADIS GROUNDWATER MONITORING WELL LOCATION (2019)
PCSB-09	PSS ENVIRONMENTAL SOIL BORING (2005)
PCTP-14	PSS ENVIRONMENTAL TEST PIT (2005)
K	HYDRAULIC CONDUCTIVITY
cm/sec	CENTIMETER PER SECOND
	WELL/BORING LOCATION
	SCREENED INTERVAL

APPROXIMATE GROUNDWATER ELEVATION BASED ON ELEVATION OF GROUNDWATER ENCOUNTERED IN THE BORING OR TEST PIT

FILL

CLAY

SAND AND GRAVEL

ASSUMED GEOLOGIC CONTACTS BASED ON AVAILABLE BORINGS

10
0
50
100
CROSS-SECTION SCALE IN FEET
VERTICAL EXAGGERATION: 10x

DRAFT
CONFIDENTIAL

NATIONAL GRID
FORMER PHILADELPHIA COKE PLANT
PHILADELPHIA, PENNSYLVANIA
RI REPORT

GEOLOGIC CROSS-SECTION B - B'

ARCADIS

FIGURE
16

DIV/GROUP: ENV DB: C. McKeough PIC:(Opt) PM:(Regt) TM: E. Green LYR:(Opt)ON=*;OFF=*REF*
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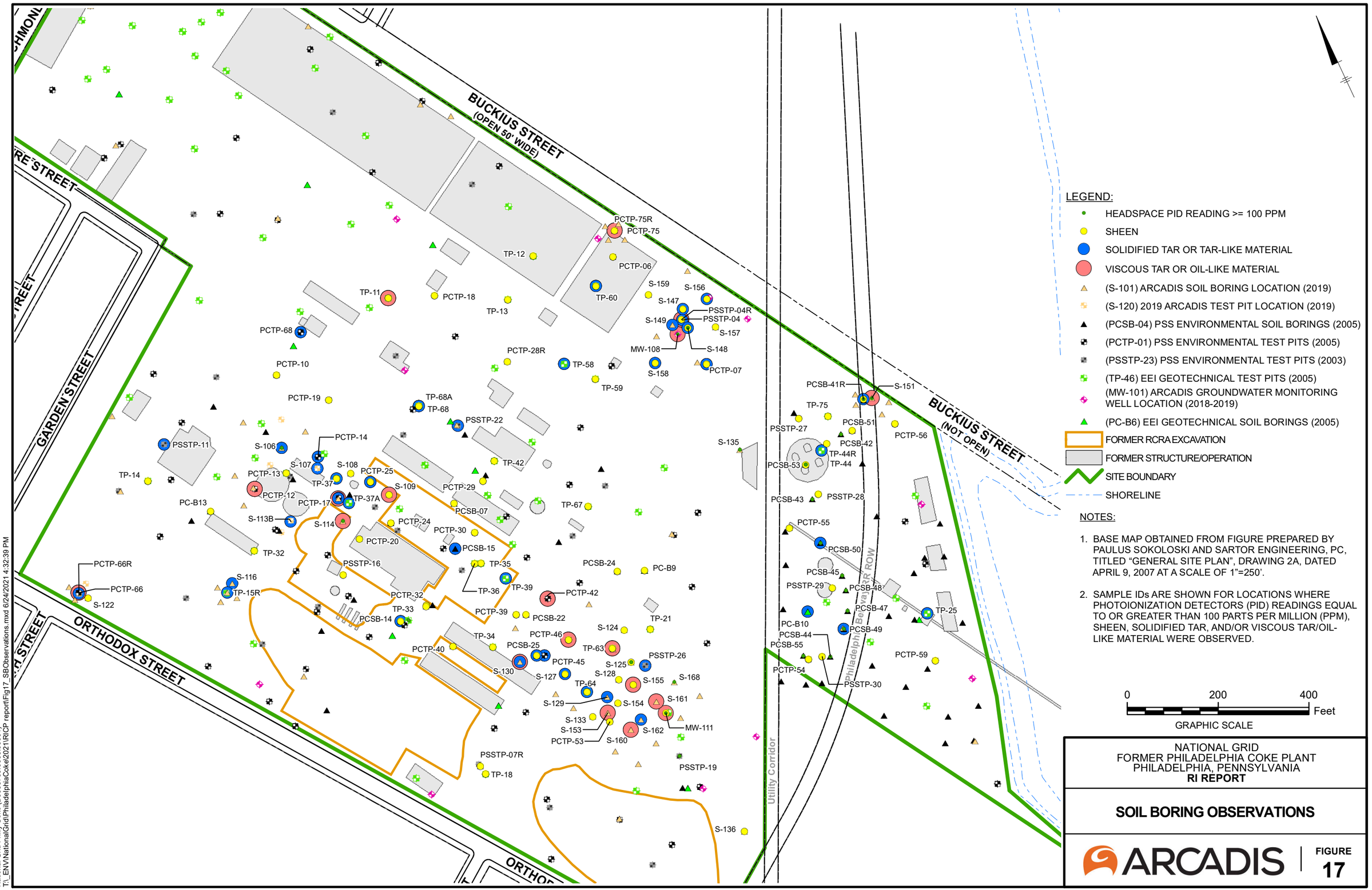
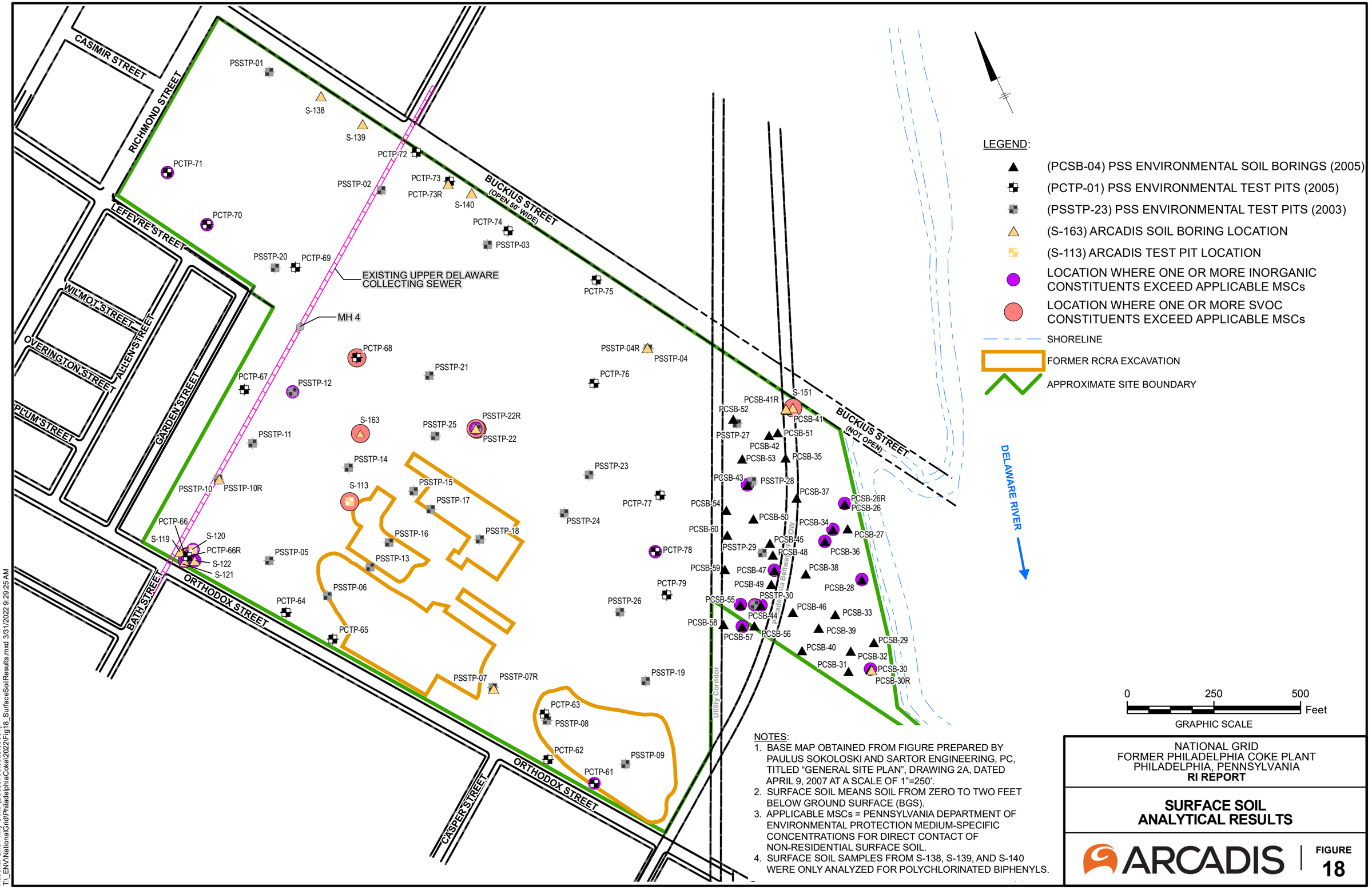
BY: AKENS, DAVID
XREFS:
PROJECTNAME: ---



City: Syr Div/Group: IM/DV Created By: K. Sinsabaugh Last Saved By: AKENS
National Grid Philly Coke (B0036790.0000.00001)
T:_ENV\NationalGrid\PhiladelphiaCoke\2021\RICP report\Fig17_SBObservations.mxd 6/24/2021 4:32:39 PM



NOTES:

1. BASE MAP OBTAINED FROM FIGURE PREPARED BY PAULUS SOKOLOSKI AND SARTOR ENGINEERING, PC, TITLED “GENERAL SITE PLAN”, DRAWING 2A, DATED APRIL 9, 2007 AT A SCALE OF 1”=250’.
2. SURFACE SOIL MEANS SOIL FROM ZERO TO TWO FEET BELOW GROUND SURFACE (BGS).
3. APPLICABLE MSCs = PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION MEDIUM-SPECIFIC CONCENTRATIONS FOR DIRECT CONTACT OF NON-RESIDENTIAL SURFACE SOIL.
4. SURFACE SOIL SAMPLES FROM S-138, S-139, AND S-140 WERE ONLY ANALYZED FOR POLYCHLORINATED BIPHENYLS.

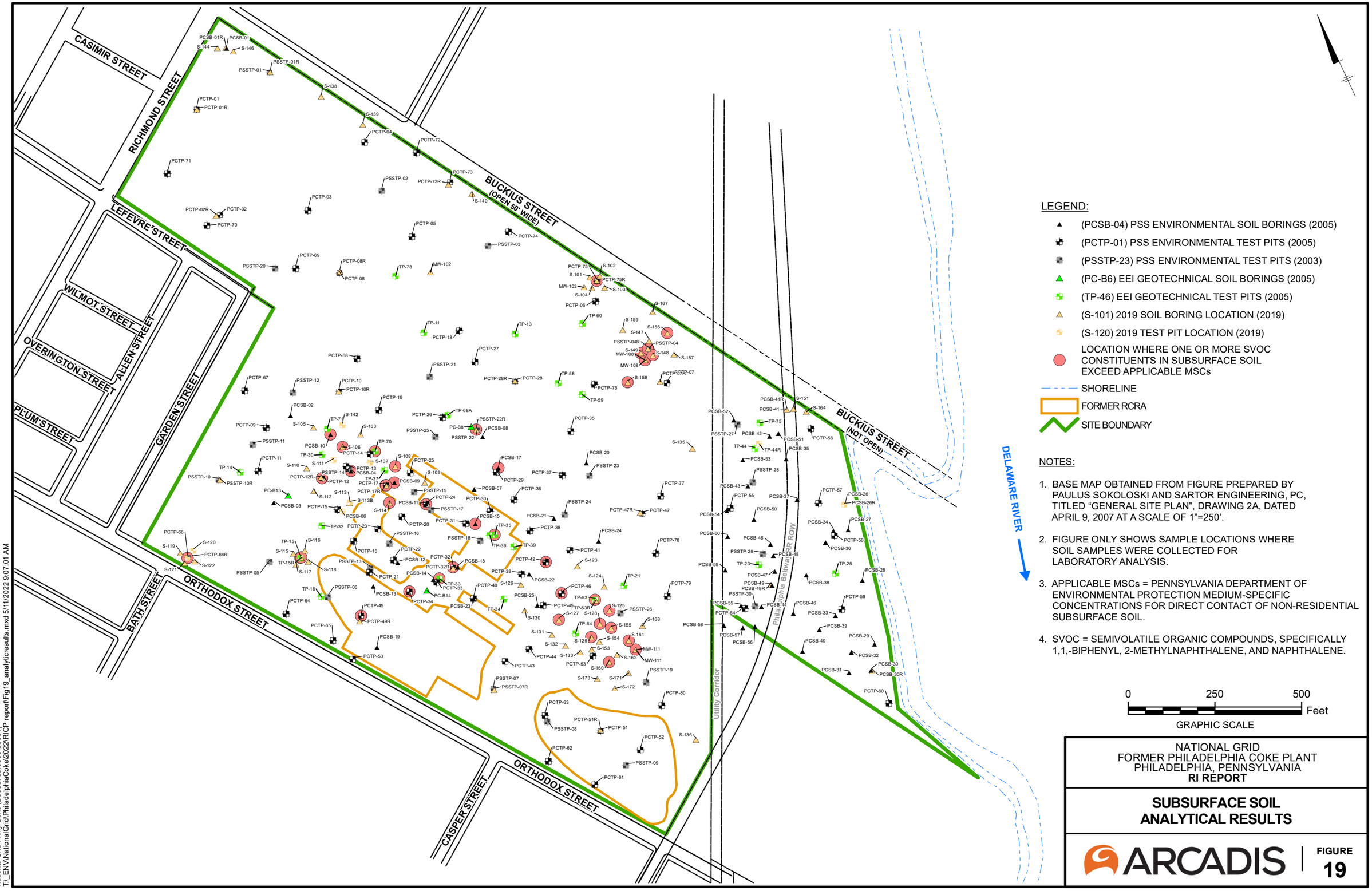
NATIONAL GRID
FORMER PHILADELPHIA COKE PLANT
PHILADELPHIA, PENNSYLVANIA
RI REPORT

SURFACE SOIL ANALYTICAL RESULTS

ARCADIS

FIGURE
18

City: Syr Div/Group: IM/DV Created By: K. Sinsabaugh Last Saved By: AKENS
National Grid Philly Coke (B0036790.0000.00001)
T:_ENV\NationalGrid\PhiladelphiaCoke\2022\Fig18_SurfaceSoilResults.mxd 3/31/2022 9:29:25 AM



LEGEND:

- (PCSB-04) PSS ENVIRONMENTAL SOIL BORINGS (2005)
- (PCTP-01) PSS ENVIRONMENTAL TEST PITS (2005)
- (PSSTP-23) PSS ENVIRONMENTAL TEST PITS (2003)
- (PC-B6) EEI GEOTECHNICAL SOIL BORINGS (2005)
- (TP-46) EEI GEOTECHNICAL TEST PITS (2005)
- (S-101) 2019 SOIL BORING LOCATION (2019)
- (S-120) 2019 TEST PIT LOCATION (2019)
- LOCATION WHERE ONE OR MORE SVOC CONSTITUENTS IN SUBSURFACE SOIL EXCEED APPLICABLE MSCs
- SHORELINE
- FORMER RCRA
- SITE BOUNDARY

NOTES:

1. BASE MAP OBTAINED FROM FIGURE PREPARED BY PAULUS SOKOLOSKI AND SARTOR ENGINEERING, PC, TITLED "GENERAL SITE PLAN", DRAWING 2A, DATED APRIL 9, 2007 AT A SCALE OF 1"=250'.
2. FIGURE ONLY SHOWS SAMPLE LOCATIONS WHERE SOIL SAMPLES WERE COLLECTED FOR LABORATORY ANALYSIS.
3. APPLICABLE MSCs = PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION MEDIUM-SPECIFIC CONCENTRATIONS FOR DIRECT CONTACT OF NON-RESIDENTIAL SUBSURFACE SOIL.
4. SVOC = SEMIVOLATILE ORGANIC COMPOUNDS, SPECIFICALLY 1,1,-BIPHENYL, 2-METHYLNAPHTHALENE, AND NAPHTHALENE.

0 250 500 Feet

GRAPHIC SCALE

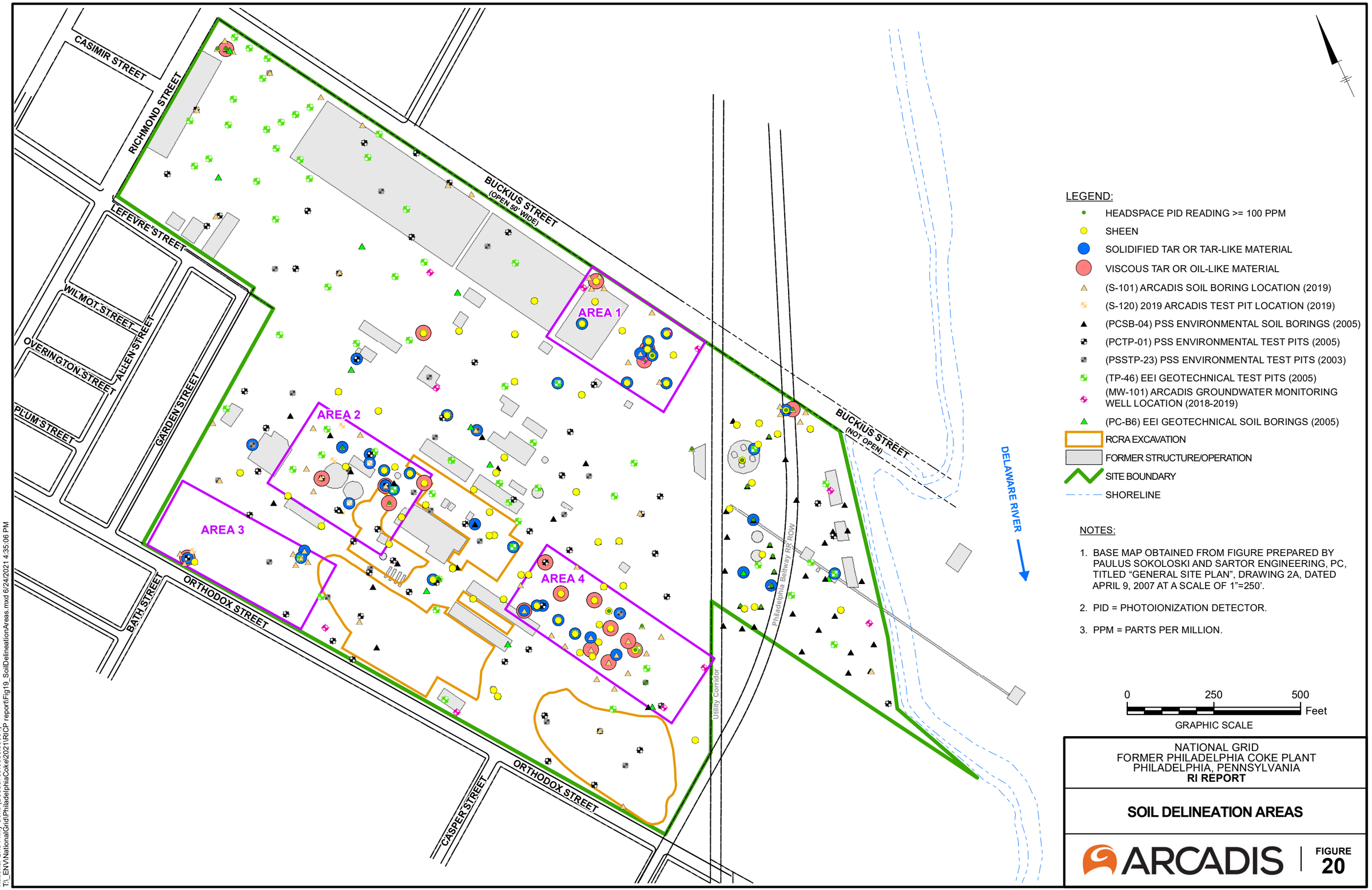
NATIONAL GRID
FORMER PHILADELPHIA COKE PLANT
PHILADELPHIA, PENNSYLVANIA
RI REPORT

SUBSURFACE SOIL ANALYTICAL RESULTS

ARCADIS

FIGURE 19

City: Syr Div/Group: IM/DV Created By: K. Sinsabaugh Last Saved By: AKENS
National Grid Philly Coke (B0036790.0000.00001)
T:_ENV\NationalGrid\PhiladelphiaCoke\2022\RICP report\Fig19_analyticresults.mxd 5/11/2022 9:07:01 AM



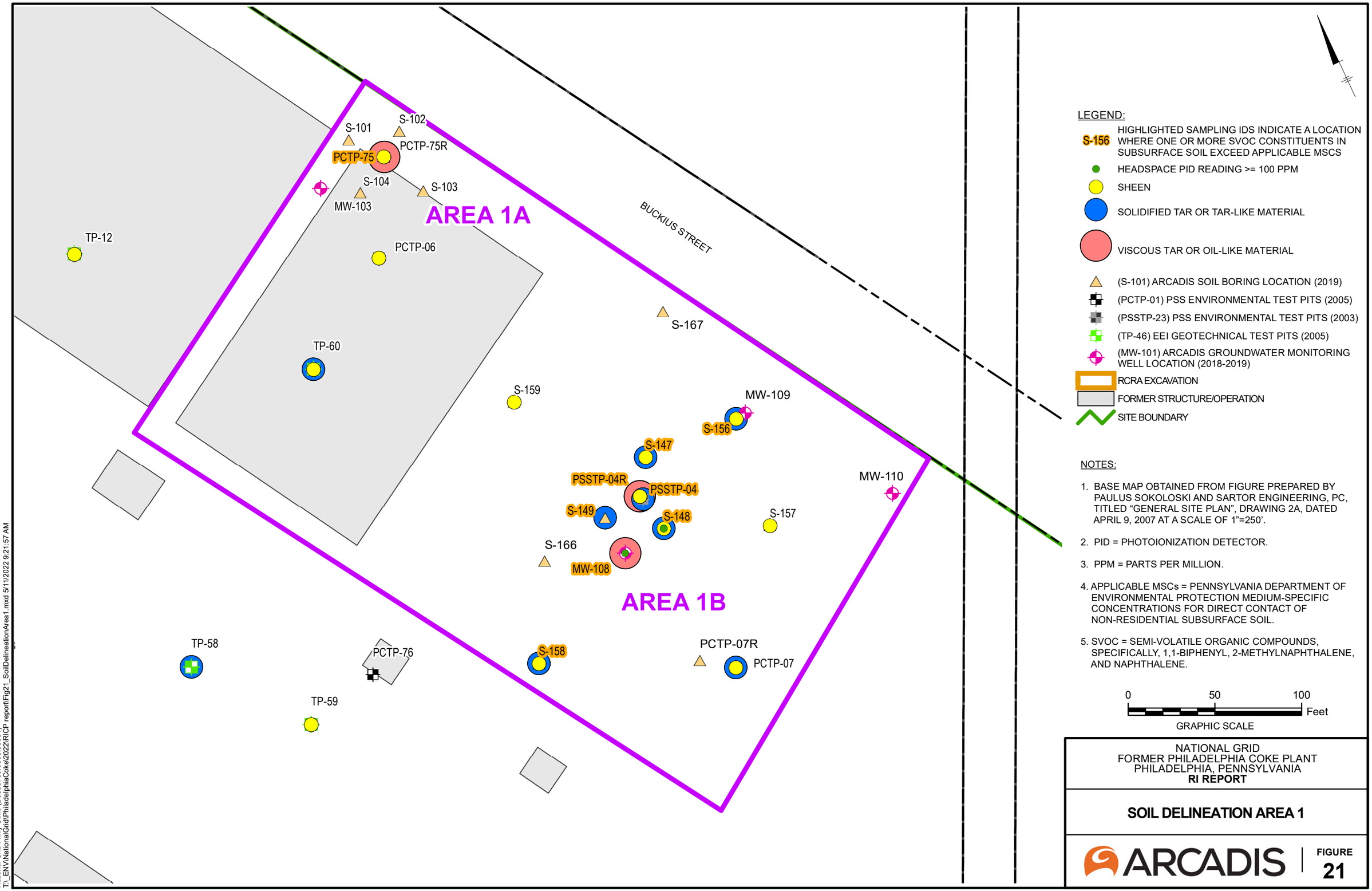
City: Syr Div/Group: IM/DV Created By: K. Sinsabaugh Last Saved By: AKENS
National Grid Philly Coke (B0036790.0000.00001)
T:_ENV\NationalGrid\PhiladelphiaCoke\2021\RICP report\Fig19_SoilDelineationAreas.mxd 6/24/2021 4:35:06 PM

NATIONAL GRID
FORMER PHILADELPHIA COKE PLANT
PHILADELPHIA, PENNSYLVANIA
RI REPORT

SOIL DELINEATION AREAS

ARCADIS

FIGURE 20



NOTES:

1. BASE MAP OBTAINED FROM FIGURE PREPARED BY PAULUS SOKOLOSKI AND SARTOR ENGINEERING, PC, TITLED “GENERAL SITE PLAN”, DRAWING 2A, DATED APRIL 9, 2007 AT A SCALE OF 1”=250’.
2. PID = PHOTOIONIZATION DETECTOR.
3. PPM = PARTS PER MILLION.
4. APPLICABLE MSCs = PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION MEDIUM-SPECIFIC CONCENTRATIONS FOR DIRECT CONTACT OF NON-RESIDENTIAL SUBSURFACE SOIL.
5. SVOC = SEMI-VOLATILE ORGANIC COMPOUNDS, SPECIFICALLY, 1,1-BIPHENYL, 2-METHYLNAPHTHALENE, AND NAPHTHALENE.

0 50 100 Feet

GRAPHIC SCALE

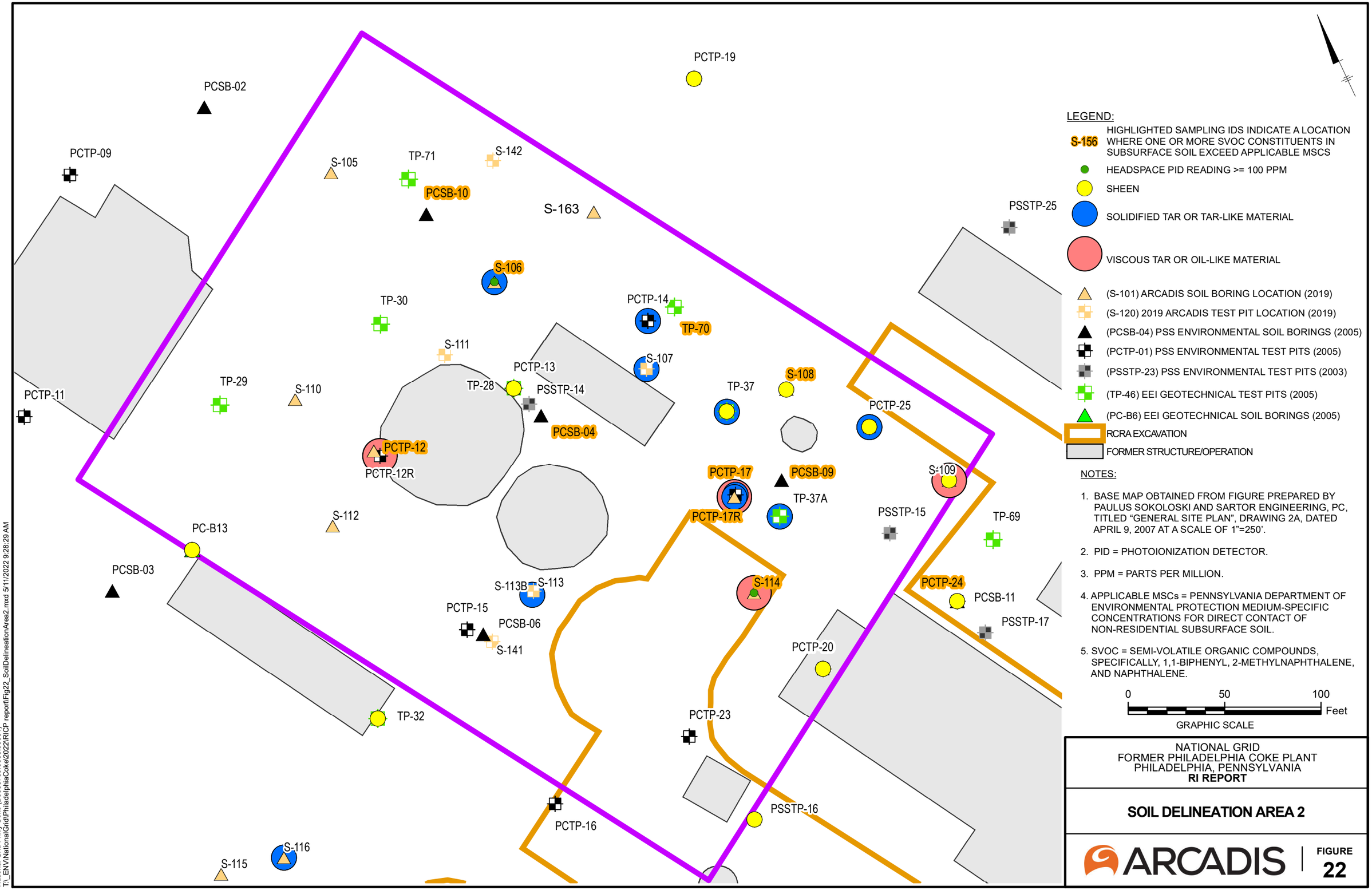
NATIONAL GRID
FORMER PHILADELPHIA COKE PLANT
PHILADELPHIA, PENNSYLVANIA
RI REPORT

SOIL DELINEATION AREA 1

ARCADIS

FIGURE 21

City: Syr Div/Group: IM/DV Created By: K. Sinsabaugh Last Saved By: AKENS
National Grid Philly Coke (B0036790.0000.00001)
T:_ENV\NationalGrid\PhiladelphiaCoke\2022\RICP report\Fig21_SoilDelineationArea1.mxd 5/11/2022 9:21:57 AM



LEGEND:

- S-156 — HIGHLIGHTED SAMPLING IDS INDICATE A LOCATION WHERE ONE OR MORE SVOC CONSTITUENTS IN SUBSURFACE SOIL EXCEED APPLICABLE MSCS
- HEADSPACE PID READING >= 100 PPM
- SHEEN
- SOLIDIFIED TAR OR TAR-LIKE MATERIAL
- VISCOUS TAR OR OIL-LIKE MATERIAL
- (S-101) ARCADIS SOIL BORING LOCATION (2019)
- (S-120) 2019 ARCADIS TEST PIT LOCATION (2019)
- (PCSB-04) PSS ENVIRONMENTAL SOIL BORINGS (2005)
- (PCTP-01) PSS ENVIRONMENTAL TEST PITS (2005)
- (PSSTP-23) PSS ENVIRONMENTAL TEST PITS (2003)
- (TP-46) EEI GEOTECHNICAL TEST PITS (2005)
- (PC-B6) EEI GEOTECHNICAL SOIL BORINGS (2005)
- RCRA EXCAVATION
- FORMER STRUCTURE/OPERATION

NOTES:

1. BASE MAP OBTAINED FROM FIGURE PREPARED BY PAULUS SOKOLOSKI AND SARTOR ENGINEERING, PC, TITLED “GENERAL SITE PLAN”, DRAWING 2A, DATED APRIL 9, 2007 AT A SCALE OF 1”=250’.
2. PID = PHOTOIONIZATION DETECTOR.
3. PPM = PARTS PER MILLION.
4. APPLICABLE MSCs = PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION MEDIUM-SPECIFIC CONCENTRATIONS FOR DIRECT CONTACT OF NON-RESIDENTIAL SUBSURFACE SOIL.
5. SVOC = SEMI-VOLATILE ORGANIC COMPOUNDS, SPECIFICALLY, 1,1-BIPHENYL, 2-METHYLNAPHTHALENE, AND NAPHTHALENE.

0 50 100 Feet

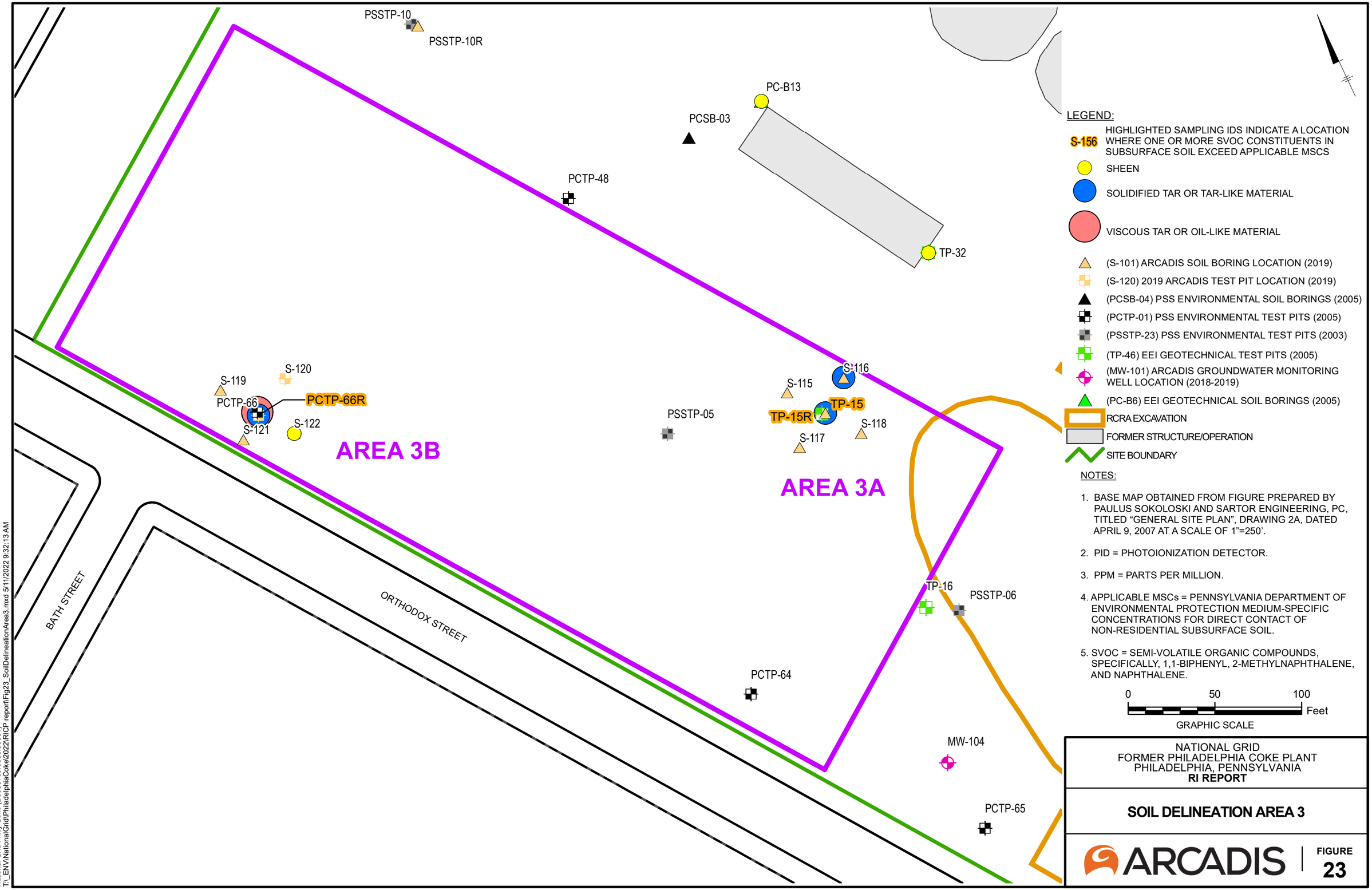
GRAPHIC SCALE

NATIONAL GRID
FORMER PHILADELPHIA COKE PLANT
PHILADELPHIA, PENNSYLVANIA
RI REPORT

SOIL DELINEATION AREA 2

ARCADIS | FIGURE 22

City: Syr Div/Group: IM/DV Created By: K. Sinsabaugh Last Saved By: AKENS
National Grid Philly Coke (B0036790.0000.00001)
T:_ENV\NationalGrid\PhiladelphiaCoke\2022\RICP report\Fig22_SoilDelineationArea2.mxd 5/11/2022 9:28:29 AM

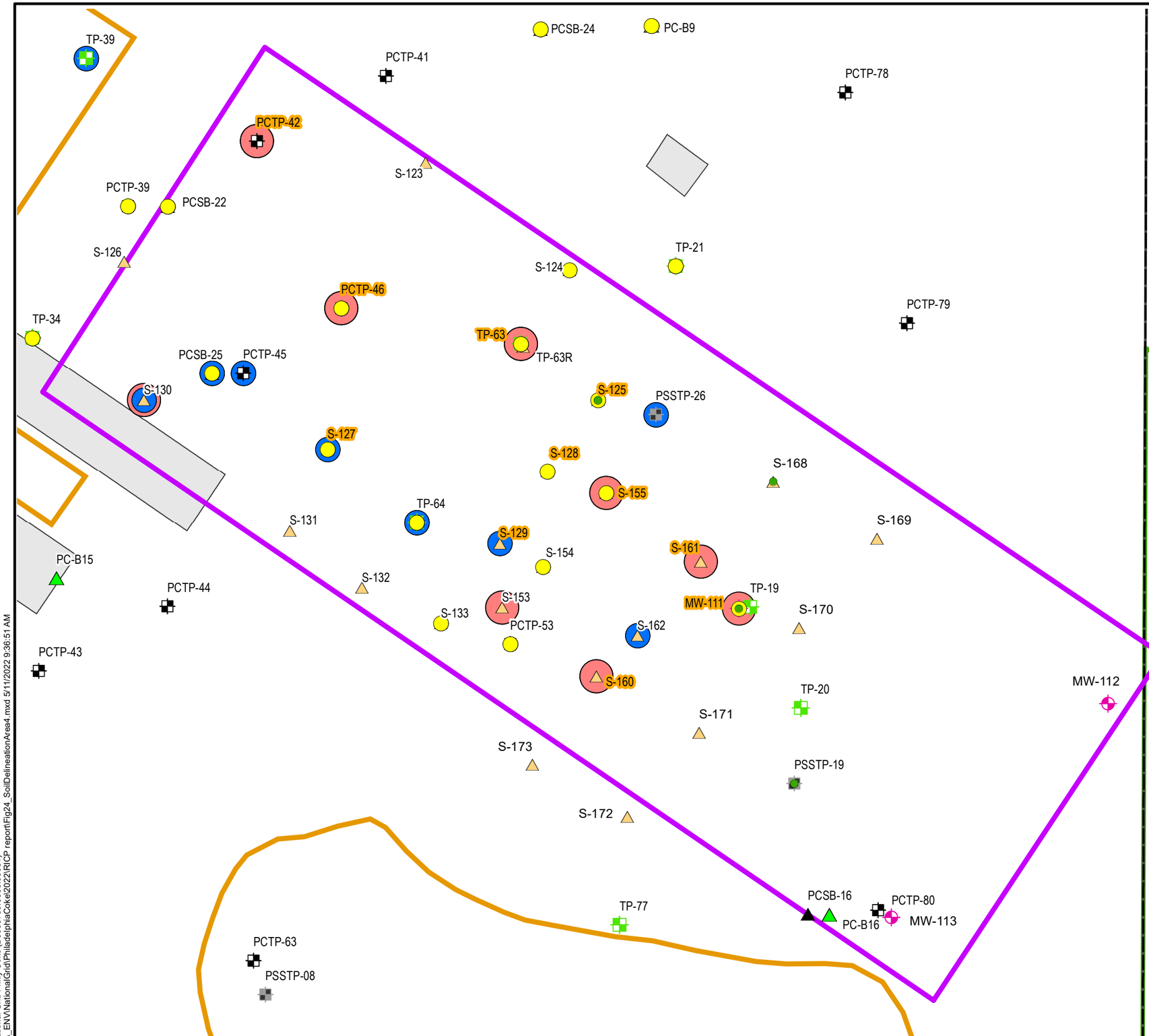


NATIONAL GRID
FORMER PHILADELPHIA COKE PLANT
PHILADELPHIA, PENNSYLVANIA
RI REPORT

SOIL DELINEATION AREA 3

ARCADIS | FIGURE 23

City: Syr Div/Group: IM/DV Created By: K. Sinsabaugh Last Saved By: AKENS
National Grid Philly Coke (B0036790.0000.00001)
T:_ENV\NationalGrid\PhiladelphiaCoke\2022\RICP report\Fig23_SoilDelineationArea3.mxd 5/11/2022 9:32:13 AM



LEGEND:

S-156 HIGHLIGHTED SAMPLING IDS INDICATE A LOCATION WHERE ONE OR MORE SVOC CONSTITUENTS IN SUBSURFACE SOIL EXCEED APPLICABLE MSCS

HEADSPACE PID READING >= 100 PPM

SHEEN

SOLIDIFIED TAR OR TAR-LIKE MATERIAL

VISCOUS TAR OR OIL-LIKE MATERIAL

(S-101) ARCADIS SOIL BORING LOCATION (2019)

(PCSB-04) PSS ENVIRONMENTAL SOIL BORINGS (2005)

(PCTP-01) PSS ENVIRONMENTAL TEST PITS (2005)

(PSSTP-23) PSS ENVIRONMENTAL TEST PITS (2003)

(TP-46) EEI GEOTECHNICAL TEST PITS (2005)

(PC-B6) EEI GEOTECHNICAL SOIL BORINGS (2005)

RCRA EXCAVATION

FORMER STRUCTURE/OPERATION

SITE BOUNDARY

NOTES:

1. BASE MAP OBTAINED FROM FIGURE PREPARED BY PAULUS SOKOLOSKI AND SARTOR ENGINEERING, PC, TITLED “GENERAL SITE PLAN”, DRAWING 2A, DATED APRIL 9, 2007 AT A SCALE OF 1”=250’.
2. PID = PHOTOIONIZATION DETECTOR.
3. PPM = PARTS PER MILLION.
4. APPLICABLE MSCs = PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION MEDIUM-SPECIFIC CONCENTRATIONS FOR DIRECT CONTACT OF NON-RESIDENTIAL SUBSURFACE SOIL.
5. SVOC = SEMI-VOLATILE ORGANIC COMPOUNDS, SPECIFICALLY, 1,1-BIPHENYL, 2-METHYLNAPHTHALENE, AND NAPHTHALENE.

0 50 100 Feet

GRAPHIC SCALE

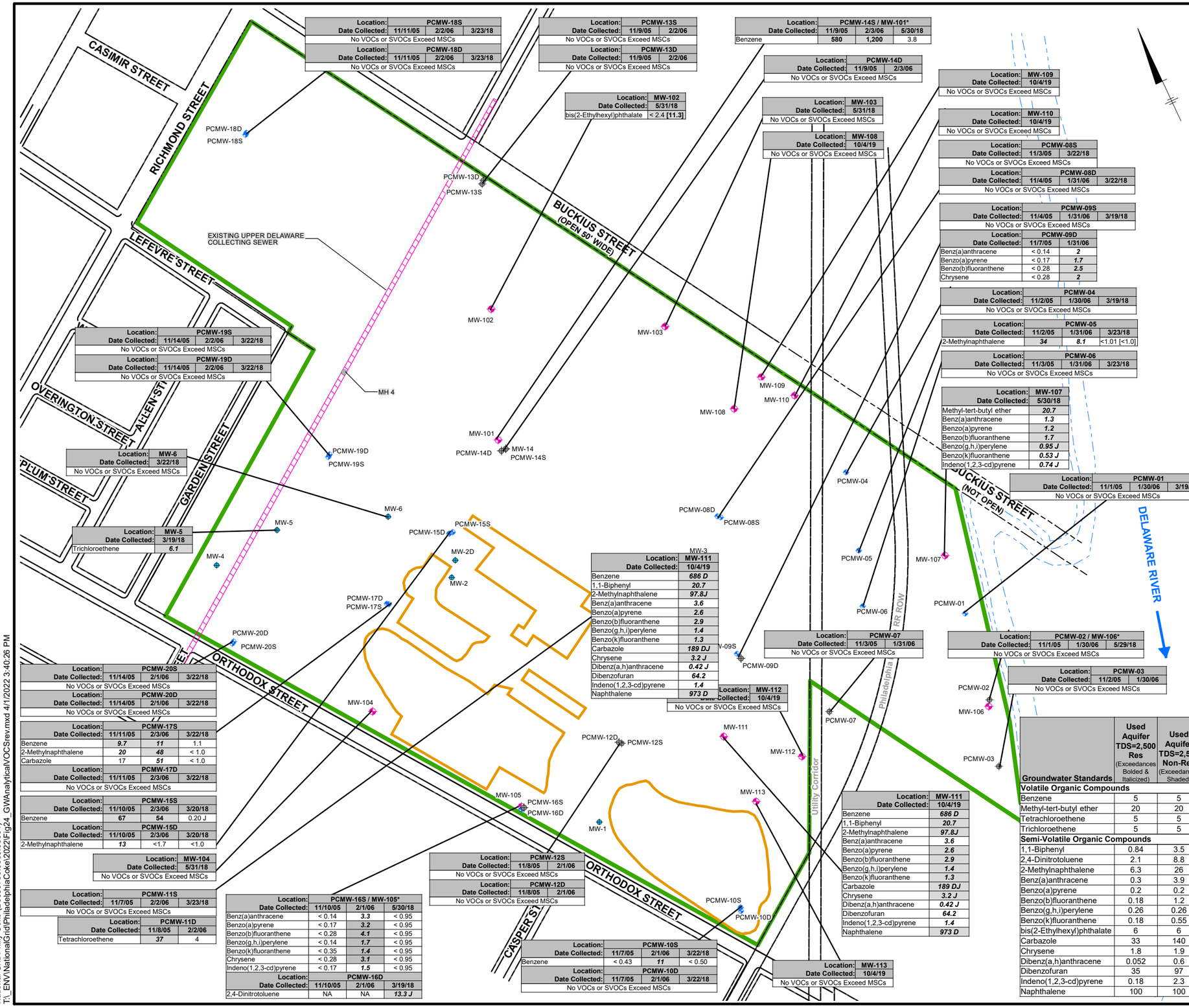
NATIONAL GRID
FORMER PHILADELPHIA COKE PLANT
PHILADELPHIA, PENNSYLVANIA
RI REPORT

SOIL DELINEATION AREA 4

ARCADIS

FIGURE
24

City: Syr Div/Group: IM/DV Created By: K. Sinsabaugh Last Saved By: AKENS
National Grid Philly Coke (B0036790.0000.00001)
T:_ENV\NationalGrid\PhiladelphiaCoke\2022\RICP report\Fig24_SoilDelineationArea4.mxd 5/11/2022 9:36:51 AM



Location:	PCMW-18S		
Date Collected:	11/11/05	2/2/06	3/23/18
No VOCs or SVOCs Exceed MSCs			

Location:	PCMW-18D		
Date Collected:	11/11/05	2/2/06	3/23/18
No VOCs or SVOCs Exceed MSCs			

Location:	PCMW-13S		
Date Collected:	11/9/05	2/2/06	
No VOCs or SVOCs Exceed MSCs			

Location:	PCMW-13D		
Date Collected:	11/9/05	2/2/06	
No VOCs or SVOCs Exceed MSCs			

Location:	MW-102	
Date Collected:	5/31/18	
bis(2-Ethylhexyl)phthalate	< 2.4	**[11.3]**

Location:	PCMW-14S / MW-101*		
Date Collected:	11/9/05	2/3/06	5/30/18
Benzene	**580**	**1,200**	3.8

Location:	PCMW-14D	
Date Collected:	11/9/05	2/3/06
No VOCs or SVOCs Exceed MSCs		

Location:	MW-103	
Date Collected:	5/31/18	
No VOCs or SVOCs Exceed MSCs		

Location:	MW-108	
Date Collected:	10/4/19	
No VOCs or SVOCs Exceed MSCs		

Location:	MW-109	
Date Collected:	10/4/19	
No VOCs or SVOCs Exceed MSCs		

Location:	MW-110	
Date Collected:	10/4/19	
No VOCs or SVOCs Exceed MSCs		

Location:	PCMW-08S		
Date Collected:	11/3/05	3/22/18	
No VOCs or SVOCs Exceed MSCs			

Location:	PCMW-08D			
Date Collected:	11/4/05	1/31/06	3/22/18	
No VOCs or SVOCs Exceed MSCs				

Location:	PCMW-09S			
Date Collected:	11/4/05	1/31/06	3/19/18	
No VOCs or SVOCs Exceed MSCs				

Location:	PCMW-09D		
Date Collected:	11/7/05	1/31/06	
Benz(a)anthracene	< 0.14	*2*	
Benzo(a)pyrene	< 0.17	***1.7***	
Benzo(b)fluoranthene	< 0.28	***2.5***	
Chrysene	< 0.28	*2*	

Location:	PCMW-04		
Date Collected:	11/2/05	1/30/06	3/19/18
No VOCs or SVOCs Exceed MSCs			

Location:	PCMW-05			
Date Collected:	11/2/05	1/31/06	3/23/18	
2-Methylnaphthalene	***34***	***8.1***	<1.01	<1.0]

Location:	PCMW-06		
Date Collected:	11/3/05	1/31/06	3/23/18
No VOCs or SVOCs Exceed MSCs			

Location:	MW-107
Date Collected:	5/30/18
Methyl-tert-butyl ether	***20.7***
Benz(a)anthracene	***1.3***
Benzo(a)pyrene	***1.2***
Benzo(b)fluoranthene	***1.7***
Benzo(g,h,i)perylene	***0.95 J***
Benzo(k)fluoranthene	***0.53 J***
Indeno(1,2,3-cd)pyrene	***0.74 J***

Location:	PCMW-01		
Date Collected:	11/1/05	1/30/06	3/19/18
No VOCs or SVOCs Exceed MSCs			

Location:	PCMW-19S		
Date Collected:	11/14/05	2/2/06	3/22/18
No VOCs or SVOCs Exceed MSCs			

Location:	PCMW-19D		
Date Collected:	11/14/05	2/2/06	3/22/18
No VOCs or SVOCs Exceed MSCs			

Location:	MW-6
Date Collected:	3/22/18
No VOCs or SVOCs Exceed MSCs	

Location:	MW-5
Date Collected:	3/19/18
Trichloroethene	***6.1***

Location:	MW-111
Date Collected:	10/4/19
Benzene	***686 D***
1,1-Biphenyl	***20.7***
2-Methylnaphthalene	***97.8J***
Benz(a)anthracene	***3.6***
Benzo(a)pyrene	***2.6***
Benzo(b)fluoranthene	***2.9***
Benzo(g,h,i)perylene	***1.4***
Benzo(k)fluoranthene	***1.3***
Carbazole	***189 DJ***
Chrysene	***3.2 J***
Dibenz(a,h)anthracene	***0.42 J***
Dibenzofuran	***64.2***
Indeno(1,2,3-cd)pyrene	***1.4***
Naphthalene	***973 D***

Location:	MW-112
Date Collected:	10/4/19
No VOCs or SVOCs Exceed MSCs	

Location:	PCMW-07	
Date Collected:	11/3/05	1/31/06
No VOCs or SVOCs Exceed MSCs		

Location:	PCMW-02 / MW-106*		
Date Collected:	11/1/05	1/30/06	5/29/18
No VOCs or SVOCs Exceed MSCs			

Location:	PCMW-03	
Date Collected:	11/2/05	1/30/06
No VOCs or SVOCs Exceed MSCs		

Location:	PCMW-20S		
Date Collected:	11/14/05	2/1/06	3/22/18
No VOCs or SVOCs Exceed MSCs			

Location:	PCMW-20D		
Date Collected:	11/14/05	2/1/06	3/22/18
No VOCs or SVOCs Exceed MSCs			

Location:	PCMW-17S		
Date Collected:	11/11/05	2/3/06	3/22/18
Benzene	***9.7***	***11***	1.1
2-Methylnaphthalene	***20***	***48***	< 1.0
Carbazole	17	***51***	< 1.0

Location:	PCMW-17D		
Date Collected:	11/11/05	2/3/06	3/22/18
No VOCs or SVOCs Exceed MSCs			

Location:	PCMW-15S		
Date Collected:	11/10/05	2/3/06	3/20/18
Benzene	67	54	0.20 J

Location:	PCMW-15D		
Date Collected:	11/10/05	2/3/06	3/20/18
2-Methylnaphthalene	***13***	<1.7	<1.0

Location:	MW-104
Date Collected:	5/31/18
No VOCs or SVOCs Exceed MSCs	

Location:	PCMW-11S
Date Collected:	11/7/05	2/2/06	3/23/18
No VOCs or SVOCs Exceed MSCs	

Location:	PCMW-11D	
Date Collected:	11/8/05	2/2/06
Tetrachloroethene	***37***	4

Location:	PCMW-16S / MW-105*		
Date Collected:	11/10/05	2/1/06	5/30/18
Benz(a)anthracene	< 0.14	***3.3***	< 0.95
Benzo(a)pyrene	< 0.17	***3.2***	< 0.95
Benzo(b)fluoranthene	< 0.28	***4.1***	< 0.95
Benzo(g,h,i)perylene	< 0.14	***1.7***	< 0.95
Benzo(k)fluoranthene	< 0.35	***1.4***	< 0.95
Chrysene	< 0.28	***3.1***	< 0.95
Indeno(1,2,3-cd)pyrene	< 0.17	***1.5***	< 0.95

Location:	PCMW-16D		
Date Collected:	11/10/05	2/1/06	3/19/18
2,4-Dinitrotoluene	NA	NA	***13.3 J***

Location:	PCMW-12S	
Date Collected:	11/8/05	2/1/06
No VOCs or SVOCs Exceed MSCs		

Location:	PCMW-12D	
Date Collected:	11/8/05	2/1/06
No VOCs or SVOCs Exceed MSCs		

Location:	PCMW-10S		
Date Collected:	11/7/05	2/1/06	3/22/18
Benzene	< 0.43	***11***	< 0.50

Location:	PCMW-10D		
Date Collected:	11/7/05	2/1/06	3/22/18
No VOCs or SVOCs Exceed MSCs			

Location:	MW-113
Date Collected:	10/4/19
No VOCs or SVOCs Exceed MSCs	

LEGEND:

- (MW-101) ARCADIS GROUNDWATER MONITORING WELL LOCATION (2018-2019)
- (PCMW-12S) PSS GROUNDWATER MONITORING WELL (2005)
- (PCMW-12D) MISSING/DESTROYED PSS GROUNDWATER MONITORING WELL
- (MW-5) RCRA CLOSURE GROUNDWATER MONITORING WELL (1992 AND EARLIER)
- FORMER RCRA EXCAVATION
- APPROXIMATE SITE BOUNDARY
- SHORELINE

NOTES:

1. BASE MAP OBTAINED FROM FIGURE PREPARED BY PAULUS SOKOLOSKI AND SARTOR ENGINEERING, PC, TITLED "GENERAL SITE PLAN", DRAWING 2A, DATED APRIL 9, 2007 AT A SCALE OF 1"=250'.

2. SAMPLES PRIOR TO 2018 WERE COLLECTED BY PAULUS, SOKOLOWSKI, AND SARTOR ENGINEERING, PC. SAMPLES IN 2018 AND 2019 WERE COLLECTED BY ARCADIS.

3. ONLY COMPOUNDS EXCEEDING MEDIUM SPECIFIC CONCENTRATIONS (MSCS) ARE SHOWN IN THIS FIGURE.

4. < = CONSTITUENT NOT DETECTED AT A CONCENTRATION ABOVE THE REPORTED DETECTION LIMIT.

5. CONCENTRATIONS REPORTED IN MICROGRAMS PER LITER (µg/L) OR PARTS PER BILLION (ppb).

6. SHADING INDICATES AN EXCEEDANCE OF PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION'S (PADEP'S) NONRESIDENTIAL MSCS FOR USED AQUIFERS CONTAINING TOTAL DISSOLVED SOLIDS (TDS) ≤ 2,500 MILLIGRAMS PER LITER (mg/L).

7. ITALICS AND BOLDING INDICATES AN EXCEEDANCE OF PADEP'S RESIDENTIAL MSCS FOR USED AQUIFERS CONTAINING TDS ≤ 2,500 mg/L.

8. BRACKETS INDICATE THE REPORTED CONCENTRATION OF A DUPLICATE SAMPLE.

9. D = CONCENTRATION IS BASED ON DILUTED SAMPLE ANALYSIS.

10. J = ANALYTE IS AN ESTIMATED VALUE.

11. * = INDICATES THAT THE GROUNDWATER MONITORING WELL WAS INSTALLED TO REPLACE THE MISSING HISTORICAL WELL ALSO LISTED IN THE WELL ID.

Groundwater Standards	Used Aquifer TDS=2,500 Res (Exceedances Bolded & Italicized)	Used Aquifer TDS=2,500 Non-Res (Exceedances Shaded)
Volatile Organic Compounds		
Benzene	5	5
Methyl-tert-butyl ether	20	20
Tetrachloroethene	5	5
Trichloroethene	5	5
Semi-Volatile Organic Compounds		
1,1-Biphenyl	0.84	3.5
2,4-Dinitrotoluene	2.1	8.8
2-Methylnaphthalene	6.3	26
Benz(a)anthracene	0.3	3.9
Benzo(a)pyrene	0.2	0.2
Benzo(b)fluoranthene	0.18	1.2
Benzo(g,h,i)perylene	0.26	0.26
Benzo(k)fluoranthene	0.18	0.55
bis(2-Ethylhexyl)phthalate	6	6
Carbazole	33	140
Chrysene	1.8	1.9
Dibenz(a,h)anthracene	0.052	0.6
Dibenzofuran	35	97
Indeno(1,2,3-cd)pyrene	0.18	2.3
Naphthalene	100	100

0 250 500 Feet

GRAPHIC SCALE

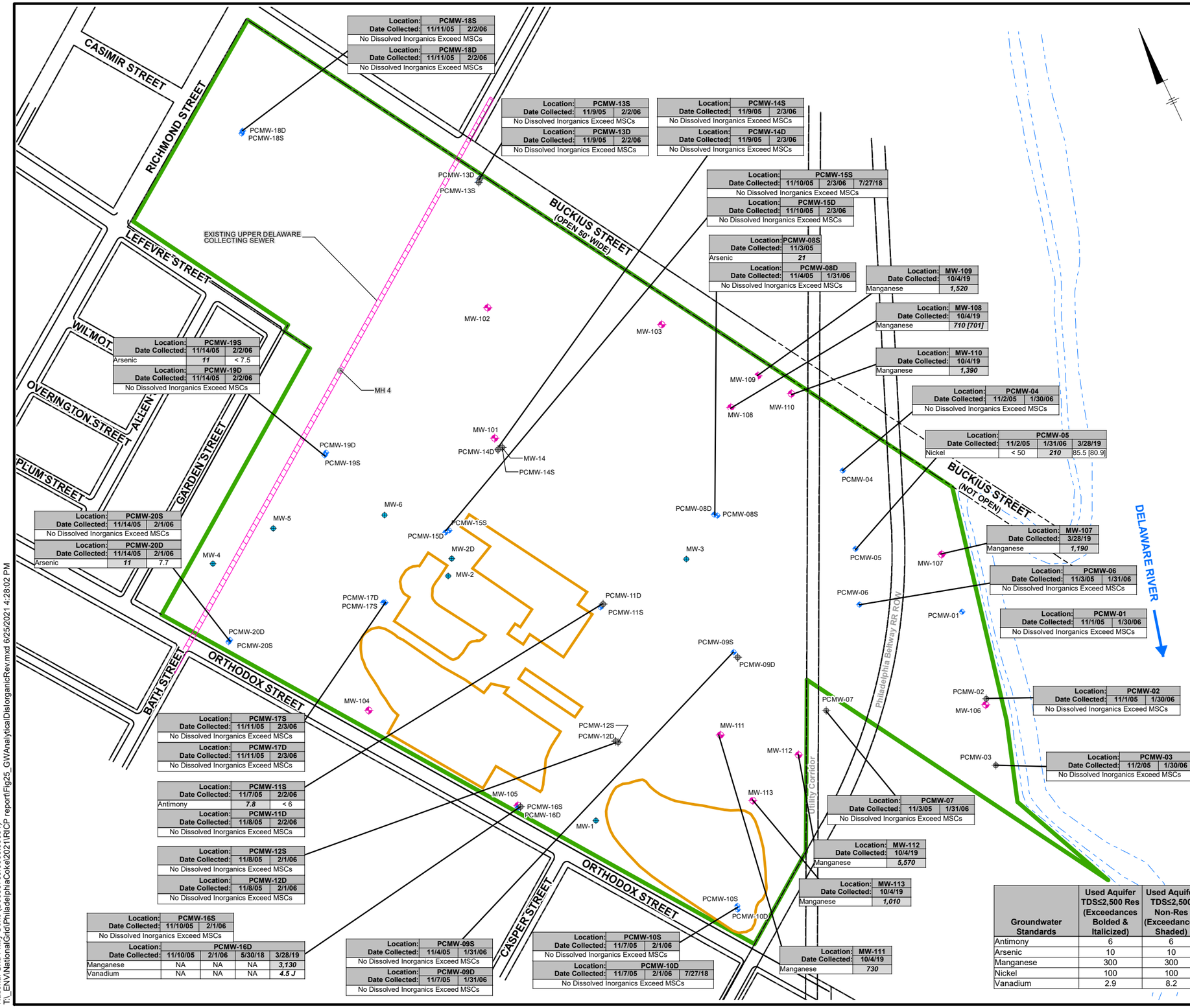
NATIONAL GRID
FORMER PHILADELPHIA COKE PLANT
PHILADELPHIA, PENNSYLVANIA
RI REPORT

GROUNDWATER ANALYTICAL RESULTS VOCs AND SVOCs EXCEEDING MSCs

ARCADIS

FIGURE 25

City: Syr Div/Group: IM/DV Created By: K. Sinsabaugh Last Saved By: AKENS
National Grid Philly Coke (B0036790.0000.00001)
T:_ENV\NationalGrid\PhiladelphiaCoke\2022\Fig24_GWAnalyticalVOCSrev.mxd 4/1/2022 3:40:26 PM



Location:	PCMW-18S	
Date Collected:	11/11/05	2/2/06
No Dissolved Inorganics Exceed MSCs		
Location:	**PCMW-18D**	
Date Collected:	**11/11/05**	**2/2/06**
No Dissolved Inorganics Exceed MSCs		

Location:	PCMW-13S	
Date Collected:	11/9/05	2/2/06
No Dissolved Inorganics Exceed MSCs		
Location:	**PCMW-13D**	
Date Collected:	**11/9/05**	**2/2/06**
No Dissolved Inorganics Exceed MSCs		

Location:	PCMW-14S	
Date Collected:	11/9/05	2/3/06
No Dissolved Inorganics Exceed MSCs		
Location:	**PCMW-14D**	
Date Collected:	**11/9/05**	**2/3/06**
No Dissolved Inorganics Exceed MSCs		

Location:	PCMW-15S		
Date Collected:	11/10/05	2/3/06	7/27/18
No Dissolved Inorganics Exceed MSCs			
Location:	**PCMW-15D**		
Date Collected:	**11/10/05**	**2/3/06**	
No Dissolved Inorganics Exceed MSCs			

Location:	PCMW-08S	
Date Collected:	11/3/05	
Arsenic	*21*	
Location:	**PCMW-08D**	
Date Collected:	**11/4/05**	**1/31/06**
No Dissolved Inorganics Exceed MSCs		

Location:	MW-109
Date Collected:	10/4/19
Manganese	*1,520*

Location:	MW-108
Date Collected:	10/4/19
Manganese	*710 [701]*

Location:	MW-110
Date Collected:	10/4/19
Manganese	*1,390*

Location:	PCMW-04	
Date Collected:	11/2/05	1/30/06
No Dissolved Inorganics Exceed MSCs		

Location:	PCMW-05		
Date Collected:	11/2/05	1/31/06	3/28/19
Nickel	< 50	*210*	85.5 [80.9]

Location:	MW-107
Date Collected:	3/28/19
Manganese	*1,190*

Location:	PCMW-06	
Date Collected:	11/3/05	1/31/06
No Dissolved Inorganics Exceed MSCs		

Location:	PCMW-01	
Date Collected:	11/1/05	1/30/06
No Dissolved Inorganics Exceed MSCs		

Location:	PCMW-02	
Date Collected:	11/1/05	1/30/06
No Dissolved Inorganics Exceed MSCs		

Location:	PCMW-03	
Date Collected:	11/2/05	1/30/06
No Dissolved Inorganics Exceed MSCs		

Location:	PCMW-19S		
Date Collected:	11/14/05	2/2/06	
Arsenic	*11*	< 7.5	
Location:	**PCMW-19D**		
Date Collected:	**11/14/05**	**2/2/06**	
No Dissolved Inorganics Exceed MSCs			

Location:	PCMW-20S	
Date Collected:	11/14/05	2/1/06
No Dissolved Inorganics Exceed MSCs		
Location:	**PCMW-20D**	
Date Collected:	**11/14/05**	**2/1/06**
Arsenic	*11*	7.7

Location:	PCMW-17S	
Date Collected:	11/11/05	2/3/06
No Dissolved Inorganics Exceed MSCs		
Location:	**PCMW-17D**	
Date Collected:	**11/11/05**	**2/3/06**
No Dissolved Inorganics Exceed MSCs		

Location:	PCMW-11S	
Date Collected:	11/7/05	2/2/06
Antimony	*7.8*	< 6
Location:	**PCMW-11D**	
Date Collected:	**11/8/05**	**2/2/06**
No Dissolved Inorganics Exceed MSCs		

Location:	PCMW-12S	
Date Collected:	11/8/05	2/1/06
No Dissolved Inorganics Exceed MSCs		
Location:	**PCMW-12D**	
Date Collected:	**11/8/05**	**2/1/06**
No Dissolved Inorganics Exceed MSCs		

Location:	PCMW-16S	
Date Collected:	11/10/05	2/1/06
No Dissolved Inorganics Exceed MSCs		
Location:	**PCMW-16D**			
Date Collected:	**11/10/05**	**2/1/06**	**5/30/18**	**3/28/19**
Manganese	NA	NA	NA	*3,130*
Vanadium	NA	NA	NA	*4.5 J*

Location:	PCMW-09S	
Date Collected:	11/4/05	1/31/06
No Dissolved Inorganics Exceed MSCs		
Location:	**PCMW-09D**	
Date Collected:	**11/7/05**	**1/31/06**
No Dissolved Inorganics Exceed MSCs		

Location:	PCMW-10S		
Date Collected:	11/7/05	2/1/06	
No Dissolved Inorganics Exceed MSCs			
Location:	**PCMW-10D**		
Date Collected:	**11/7/05**	**2/1/06**	**7/27/18**
No Dissolved Inorganics Exceed MSCs			

Location:	MW-111
Date Collected:	10/4/19
Manganese	*730*

Location:	MW-112
Date Collected:	10/4/19
Manganese	*5,570*

Location:	MW-113
Date Collected:	10/4/19
Manganese	*1,010*

Location:	PCMW-07	
Date Collected:	11/3/05	1/31/06
No Dissolved Inorganics Exceed MSCs		

Groundwater Standards	Used Aquifer TDS≤2,500 Res (Exceedances Bolded & Italicized)	Used Aquifer TDS≤2,500 Non-Res (Exceedances Shaded)
Antimony	6	6
Arsenic	10	10
Manganese	300	300
Nickel	100	100
Vanadium	2.9	8.2

LEGEND:

- (MW-101) ARCADIS GROUNDWATER MONITORING WELL LOCATION (2018-2019)
- (PCMW-12S) PSS GROUNDWATER MONITORING WELL (2005)
- (PCMW-12D) MISSING/DESTROYED PSS GROUNDWATER MONITORING WELL
- (MW-5) RCRA CLOSURE GROUNDWATER MONITORING WELL (1992 AND EARLIER)
- FORMER RCRA EXCAVATION
- APPROXIMATE SITE BOUNDARY
- SHORELINE

NOTES:

1. BASE MAP OBTAINED FROM FIGURE PREPARED BY PAULUS SOKOLOSKI AND SARTOR ENGINEERING, PC, TITLED "GENERAL SITE PLAN", DRAWING 2A, DATED APRIL 9, 2007 AT A SCALE OF 1"=250'.

2. SAMPLES PRIOR TO 2018 WERE COLLECTED BY PAULUS, SOKOLOWSKI, AND SARTOR ENGINEERING, PC. SAMPLES IN 2018 AND 2019 WERE COLLECTED BY ARCADIS.

3. ONLY COMPOUNDS EXCEEDING MEDIUM SPECIFIC CONCENTRATIONS (MSCS) ARE SHOWN IN THIS FIGURE.

4. < = CONSTITUENT NOT DETECTED AT A CONCENTRATION ABOVE THE REPORTED DETECTION LIMIT.

5. CONCENTRATIONS REPORTED IN MICROGRAMS PER LITER (µg/L) OR PARTS PER BILLION (ppb).

6. SHADING INDICATES AN EXCEEDANCE OF PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION'S (PADEP'S) NONRESIDENTIAL MSCS FOR USED AQUIFERS CONTAINING TOTAL DISSOLVED SOLIDS (TDS) ≤ 2,500 MILLIGRAMS PER LITER (mg/L).

7. ITALICS AND BOLDING INDICATES AN EXCEEDANCE OF PADEP'S RESIDENTIAL MSCS FOR USED AQUIFERS CONTAINING TDS ≤ 2,500 mg/L.

8. * = INDICATES THAT THE GROUNDWATER MONITORING WELL WAS INSTALLED TO REPLACE THE MISSING HISTORICAL WELL ALSO LISTED IN THE WELL ID.

9. J = ANALYTE IS AN ESTIMATED VALUE.

0 250 500 Feet

GRAPHIC SCALE

NATIONAL GRID
FORMER PHILADELPHIA COKE PLANT
PHILADELPHIA, PENNSYLVANIA
RI REPORT

GROUNDWATER ANALYTICAL RESULTS DISSOLVED INORGANICS EXCEEDING MSCs

ARCADIS

FIGURE 26

City: Syr Div/Group: IM/DV Created By: K. Sinsabaugh Last Saved By: AKENS
National Grid Philly Coke (B0036790.0000.00001)
T:_ENV\NationalGrid\PhiladelphiaCoke\2021\RICP report\Fig25_GWAnalyticalDisInorganicRev.mxd 6/25/2021 4:28:02 PM

NO SOIL GAS SAMPLING RESULTS EXCEEDED THE NON-RESIDENTIAL, SUB-SLAB, SCREENING VALUE FROM THE PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION (PADEP) LAND RECYCLING PROGRAM TECHNICAL GUIDANCE MANUAL FOR VAPOR INTRUSION INTO BUILDINGS, EFFECTIVE JANUARY 18, 2016.

CASIMIR STREET
RICHMOND STREET
LEFEVRE STREET
WILMOT STREET
OVERINGTON STREET
ALLEN STREET
GARDEN STREET
PLUM STREET
BATH STREET
ORTHODOX STREET
CASPER STREET
BUCKIUS STREET (OPEN 50' WIDE)
BUCKIUS STREET (NOT OPEN)
EXISTING UPPER DELAWARE COLLECTING SEWER
MH 4
Utility Corridor
Philadelphia Beltway RR ROW
DELAWARE RIVER

PCSV-01
PCSV-02
PCSV-03
PCSV-04
PCSV-05
PCSV-06
PCSV-07
PCSV-08
PCSV-09
PCSV-10
PCSV-11
PCSV-12
PCSV-13
PCSV-14
PCSV-15
PCSV-16
PCSV-17
PCSV-18
PCSV-19
PCSV-20
PCSV-21
PCSV-22

LEGEND:

- (PCSV-20) PSS SOIL VAPOR SAMPLING LOCATIONS (2006)
- (MW-101) ARCADIS GROUNDWATER MONITORING WELL LOCATION (2018-2019)
- (PCMW-12S) PSS GROUNDWATER MONITORING WELL (2005)
- (PCMW-12D) MISSING/DESTROYED PSS GROUNDWATER MONITORING WELL
- (MW-5) RCRA CLOSURE GROUNDWATER MONITORING WELL (1992 AND EARLIER)
- FORMER RCRA EXCAVATION
- APPROXIMATE SITE BOUNDARY
- SHORELINE

NOTES:

1. BASE MAP OBTAINED FROM FIGURE PREPARED BY PAULUS SOKOLOSKI AND SARTOR ENGINEERING, PC, TITLED "GENERAL SITE PLAN", DRAWING 2A, DATED APRIL 9, 2007 AT A SCALE OF 1"=250'.

2. SAMPLES WERE COLLECTED BY PAULUS, SOKOLOWSKI, AND SARTOR ENGINEERING, PC ON THE DATES INDICATED.

0 250 500 Feet
GRAPHIC SCALE

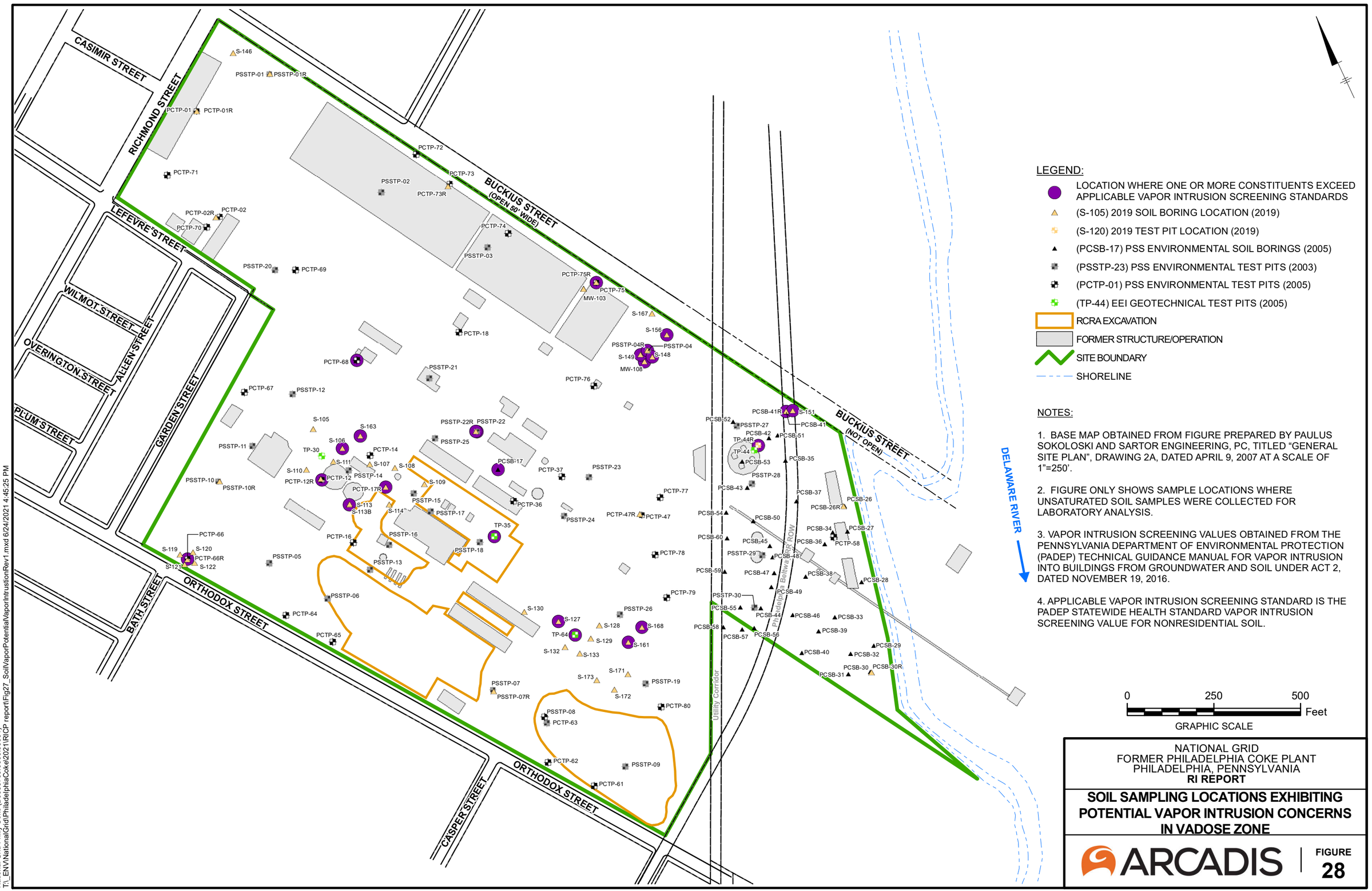
NATIONAL GRID
FORMER PHILADELPHIA COKE PLANT
PHILADELPHIA, PENNSYLVANIA
RI REPORT

SOIL GAS SAMPLING LOCATIONS

ARCADIS

FIGURE 27

City: Syr Div/Group: IM/DV Created By: K. Sinsabaugh Last Saved By: AKENS
National Grid Philly Coke (B0036790.0000.00001)
T:_ENV\NationalGrid\PhiladelphiaCoke\2021\RICP report\Fig26_SoilVaporResultsNonresIndoorAir.mxd 6/25/2021 4:28:43 PM



LEGEND:

- LOCATION WHERE ONE OR MORE CONSTITUENTS EXCEED APPLICABLE VAPOR INTRUSION SCREENING STANDARDS
- (S-105) 2019 SOIL BORING LOCATION (2019)
- (S-120) 2019 TEST PIT LOCATION (2019)
- (PCSB-17) PSS ENVIRONMENTAL SOIL BORINGS (2005)
- (PSSTP-23) PSS ENVIRONMENTAL TEST PITS (2003)
- (PCTP-01) PSS ENVIRONMENTAL TEST PITS (2005)
- (TP-44) EEI GEOTECHNICAL TEST PITS (2005)
- RCRA EXCAVATION
- FORMER STRUCTURE/OPERATION
- SITE BOUNDARY
- SHORELINE

NOTES:

1. BASE MAP OBTAINED FROM FIGURE PREPARED BY PAULUS SOKOLOSKI AND SARTOR ENGINEERING, PC, TITLED "GENERAL SITE PLAN", DRAWING 2A, DATED APRIL 9, 2007 AT A SCALE OF 1"=250'.

2. FIGURE ONLY SHOWS SAMPLE LOCATIONS WHERE UNSATURATED SOIL SAMPLES WERE COLLECTED FOR LABORATORY ANALYSIS.

3. VAPOR INTRUSION SCREENING VALUES OBTAINED FROM THE PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION (PADEP) TECHNICAL GUIDANCE MANUAL FOR VAPOR INTRUSION INTO BUILDINGS FROM GROUNDWATER AND SOIL UNDER ACT 2, DATED NOVEMBER 19, 2016.

4. APPLICABLE VAPOR INTRUSION SCREENING STANDARD IS THE PADEP STATEWIDE HEALTH STANDARD VAPOR INTRUSION SCREENING VALUE FOR NONRESIDENTIAL SOIL.

0 250 500 Feet

GRAPHIC SCALE

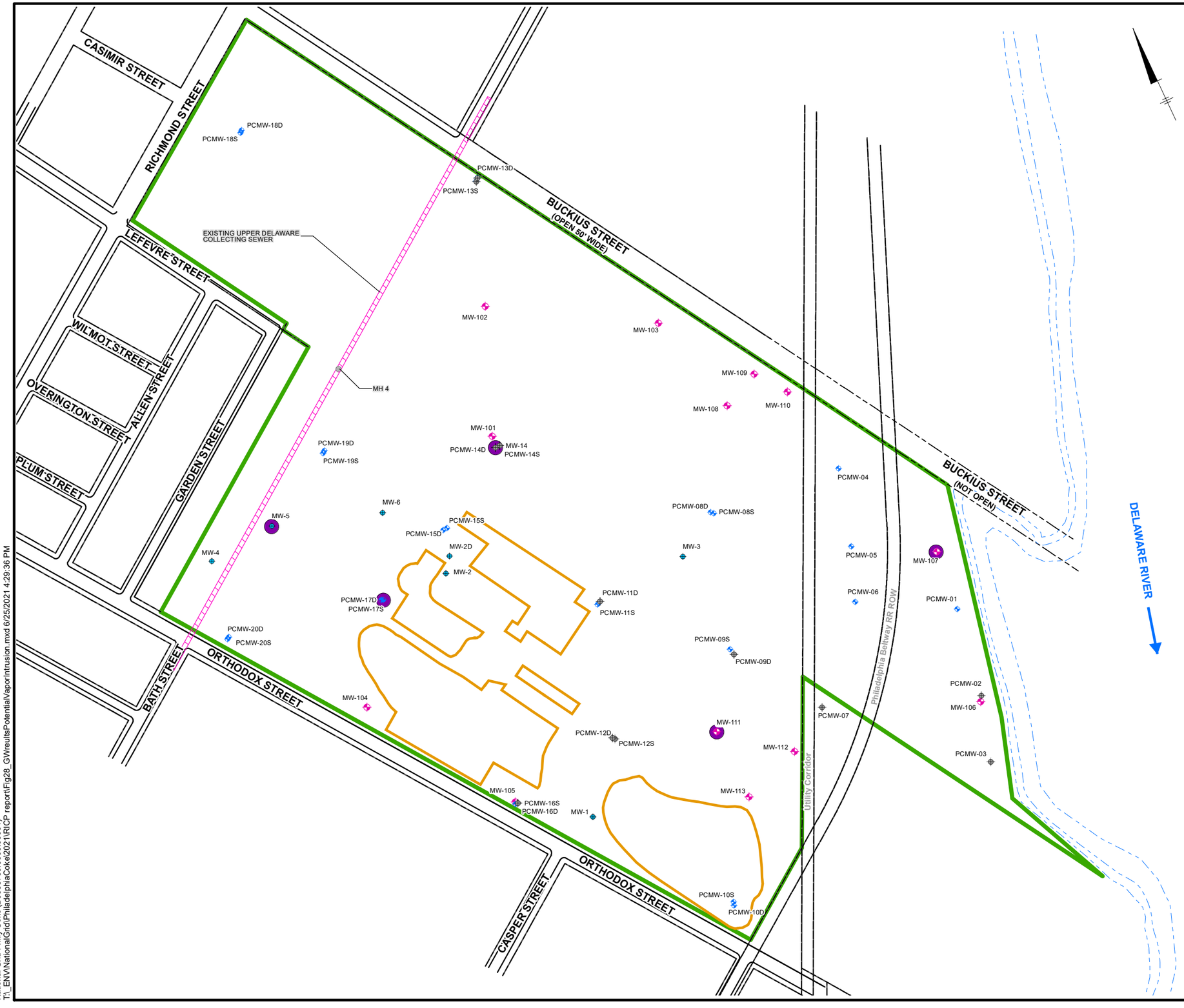
NATIONAL GRID
FORMER PHILADELPHIA COKE PLANT
PHILADELPHIA, PENNSYLVANIA
RI REPORT

SOIL SAMPLING LOCATIONS EXHIBITING POTENTIAL VAPOR INTRUSION CONCERNS IN VADOSE ZONE

ARCADIS

FIGURE 28

City: Syr Div/Group: IM/DV Created By: K. Sinsabaugh Last Saved By: AKENS
National Grid Philly Coke (B0036790.0000.00001)
T:_ENV\NationalGrid\PhiladelphiaCoke\2021\RICP report\Fig27_SoilVaporPotentialVaporIntrusionRev1.mxd 6/24/2021 4:45:25 PM



LEGEND:

- LOCATION WHERE ONE OR MORE CONSTITUENTS EXCEED APPLICABLE VAPOR INTRUSION SCREENING STANDARD
- (MW-101) ARCADIS GROUNDWATER MONITORING WELL LOCATION (2018-2019)
- (PCMW-12S) PSS GROUNDWATER MONITORING WELL (2005)
- (PCMW-12D) MISSING/DESTROYED PSS GROUNDWATER MONITORING WELL
- (MW-5) RCRA CLOSURE GROUNDWATER MONITORING WELL (1992 AND EARLIER)
- FORMER RCRA EXCAVATION
- APPROXIMATE SITE BOUNDARY
- SHORELINE

NOTES:

1. BASE MAP OBTAINED FROM FIGURE PREPARED BY PAULUS SOKOLOSKI AND SARTOR ENGINEERING, PC, TITLED "GENERAL SITE PLAN", DRAWING 2A, DATED APRIL 9, 2007 AT A SCALE OF 1"=250'.

2. VAPOR INTRUSION SCREENING VALUES OBTAINED FROM THE PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION (PADEP) TECHNICAL GUIDANCE MANUAL FOR VAPOR INTRUSION INTO BUILDINGS FROM GROUNDWATER AND SOIL UNDER ACT 2, DATED NOVEMBER 19, 2016.

3. APPLICABLE VAPOR INTRUSION SCREENING STANDARD IS THE PADEP STATEWIDE HEALTH STANDARD VAPOR INTRUSION SCREENING VALUE FOR NONRESIDENTIAL GROUNDWATER.

0 250 500 Feet

GRAPHIC SCALE

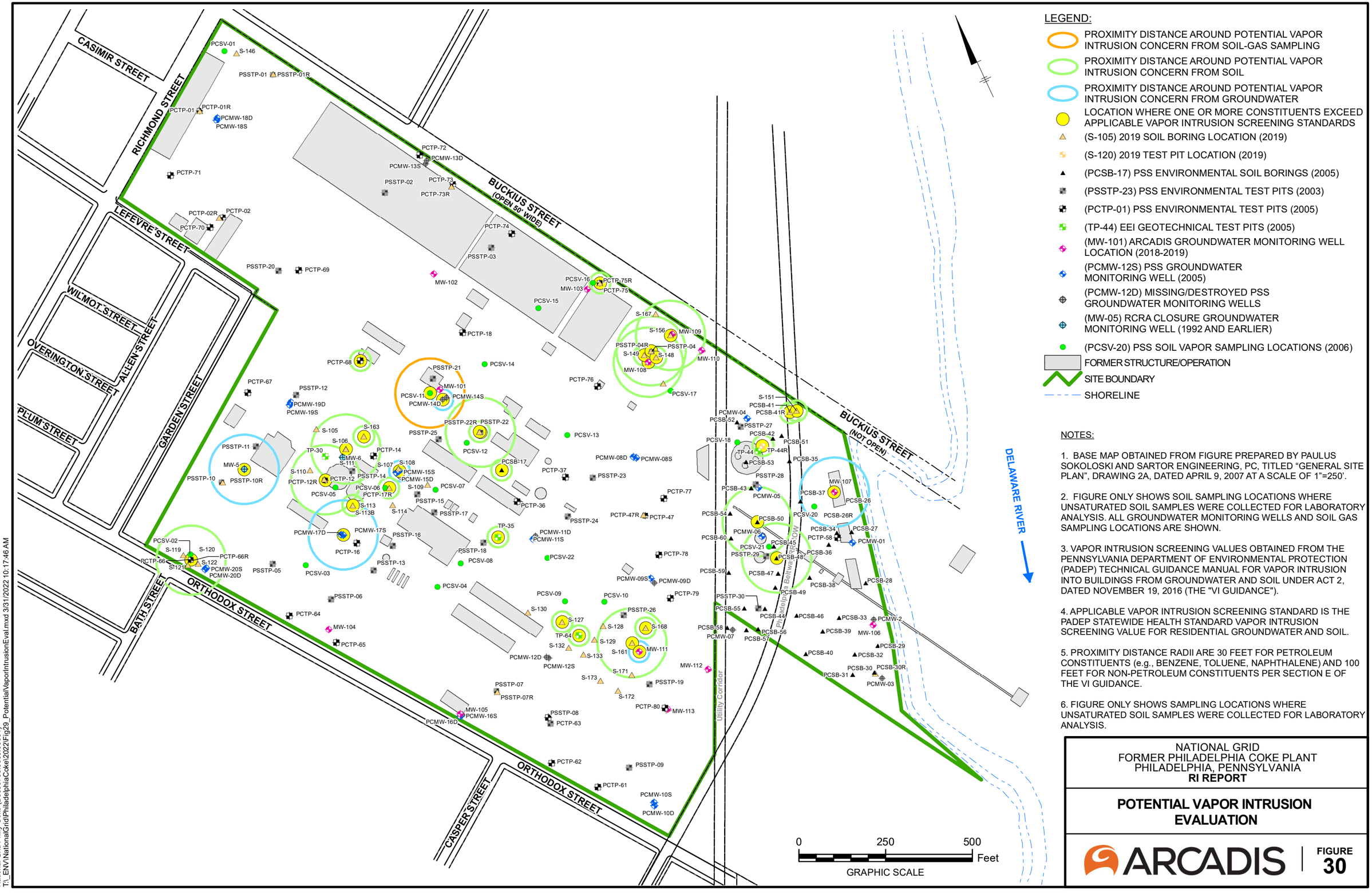
NATIONAL GRID
FORMER PHILADELPHIA COKE PLANT
PHILADELPHIA, PENNSYLVANIA
RI REPORT

GROUNDWATER MONITORING WELLS EXHIBITING POTENTIAL VAPOR INTRUSION CONCERNS

ARCADIS

FIGURE 29

City: Syr Div/Group: IM/DV Created By: K. Sinsabaugh Last Saved By: AKENS
National Grid Philly Coke (B0036790.0000.00001)
T:_ENV\NationalGrid\PhiladelphiaCoke\2021\RICP report\Fig28_GWreultsPotentialVaporIntrusion.mxd 6/25/2021 4:29:36 PM



LEGEND:

- PROXIMITY DISTANCE AROUND POTENTIAL VAPOR INTRUSION CONCERN FROM SOIL-GAS SAMPLING
- PROXIMITY DISTANCE AROUND POTENTIAL VAPOR INTRUSION CONCERN FROM SOIL
- PROXIMITY DISTANCE AROUND POTENTIAL VAPOR INTRUSION CONCERN FROM GROUNDWATER
- LOCATION WHERE ONE OR MORE CONSTITUENTS EXCEED APPLICABLE VAPOR INTRUSION SCREENING STANDARDS
- (S-105) 2019 SOIL BORING LOCATION (2019)
- (S-120) 2019 TEST PIT LOCATION (2019)
- (PCSB-17) PSS ENVIRONMENTAL SOIL BORINGS (2005)
- (PSSTP-23) PSS ENVIRONMENTAL TEST PITS (2003)
- (PCTP-01) PSS ENVIRONMENTAL TEST PITS (2005)
- (TP-44) EEI GEOTECHNICAL TEST PITS (2005)
- (MW-101) ARCADIS GROUNDWATER MONITORING WELL LOCATION (2018-2019)
- (PCMW-12S) PSS GROUNDWATER MONITORING WELL (2005)
- (PCMW-12D) MISSING/DESTROYED PSS GROUNDWATER MONITORING WELLS
- (MW-05) RCRA CLOSURE GROUNDWATER MONITORING WELL (1992 AND EARLIER)
- (PCSV-20) PSS SOIL VAPOR SAMPLING LOCATIONS (2006)
- FORMER STRUCTURE/OPERATION
- SITE BOUNDARY
- SHORELINE

NOTES:

1. BASE MAP OBTAINED FROM FIGURE PREPARED BY PAULUS SOKOLOSKI AND SARTOR ENGINEERING, PC, TITLED “GENERAL SITE PLAN”, DRAWING 2A, DATED APRIL 9, 2007 AT A SCALE OF 1”=250’.

2. FIGURE ONLY SHOWS SOIL SAMPLING LOCATIONS WHERE UNSATURATED SOIL SAMPLES WERE COLLECTED FOR LABORATORY ANALYSIS. ALL GROUNDWATER MONITORING WELLS AND SOIL GAS SAMPLING LOCATIONS ARE SHOWN.

3. VAPOR INTRUSION SCREENING VALUES OBTAINED FROM THE PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION (PADEP) TECHNICAL GUIDANCE MANUAL FOR VAPOR INTRUSION INTO BUILDINGS FROM GROUNDWATER AND SOIL UNDER ACT 2, DATED NOVEMBER 19, 2016 (THE "VI GUIDANCE").

4. APPLICABLE VAPOR INTRUSION SCREENING STANDARD IS THE PADEP STATEWIDE HEALTH STANDARD VAPOR INTRUSION SCREENING VALUE FOR RESIDENTIAL GROUNDWATER AND SOIL.

5. PROXIMITY DISTANCE RADII ARE 30 FEET FOR PETROLEUM CONSTITUENTS (e.g., BENZENE, TOLUENE, NAPHTHALENE) AND 100 FEET FOR NON-PETROLEUM CONSTITUENTS PER SECTION E OF THE VI GUIDANCE.

6. FIGURE ONLY SHOWS SAMPLING LOCATIONS WHERE UNSATURATED SOIL SAMPLES WERE COLLECTED FOR LABORATORY ANALYSIS.

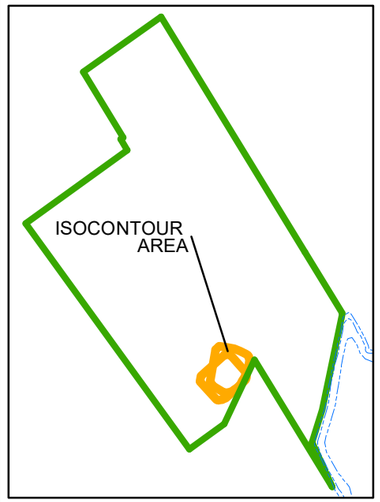
NATIONAL GRID
FORMER PHILADELPHIA COKE PLANT
PHILADELPHIA, PENNSYLVANIA
RI REPORT

POTENTIAL VAPOR INTRUSION EVALUATION

ARCADIS

FIGURE 30

City: Syr Div/Group: IM/DV Created By: K. Sinsabaugh Last Saved By: AKENS
National Grid Philly Coke (B0036790.0000.00001)
T:_ENV\NationalGrid\PhiladelphiaCoke\2022\Fig29_PotentialVaporIntrusionEval.mxd 3/31/2022 10:17:46 AM



LOCATION MAP

MW-111

MW-112

MW-113

PCMW-07

8.0

12

10

8

6

4

6

4

4

LEGEND:

BENZENE CONCENTRATIONS (µg/L)

- 0.25 - 1
- 1.0-5.0
- 5.0-20
- 20-50
- 50-100
- 100-300
- >300

INFERRED GROUNDWATER ELEVATION CONTOUR (FEET ABOVE MEAN SEA LEVEL, NAVD 88)

GROUNDWATER FLOW DIRECTION FROM MW-111

ARCADIS GROUNDWATER MONITORING WELL LOCATION (2019)

MISSING/DESTROYED PSS GROUNDWATER MONITORING WELL

GROUND SURFACE ELEVATION CONTOURS FROM DATA CLEARINGHOUSE PHILADELPHIA CONTOURS 2-FT. (PHILADELPHIA VERTICAL DATUM, 2004 - CITY OF PHILADELPHIA)

APPROXIMATE SITE BOUNDARY

NOTES:

1. BASE MAP OBTAINED FROM FIGURE PREPARED BY PAULUS SOKOLOSKI AND SARTOR ENGINEERING, PC, TITLED “GENERAL SITE PLAN”, DRAWING 2A, DATED APRIL 9, 2007 AT A SCALE OF 1”=250’.

2. WATER LEVEL ELEVATIONS ARE FROM MARCH 19, 2018 APPROXIMATELY AN HOUR BEFORE LOW TIDE THROUGH THE DURATION OF LOW TIDE.

3. PCMW-07 OBSTRUCTED BY OVERGROWN ROOTS IMMEDIATELY BELOW THE WATER TABLE. HOWEVER, WATER ELEVATIONS WERE STILL OBTAINED FROM BOTH WELLS.

4. MONITORING WELLS MW-101 THROUGH MW-113 WERE NOT YET INSTALLED DURING THE MARCH 2018 WATER LEVEL GAUGING EVENT.

0 30 60 Feet

GRAPHIC SCALE

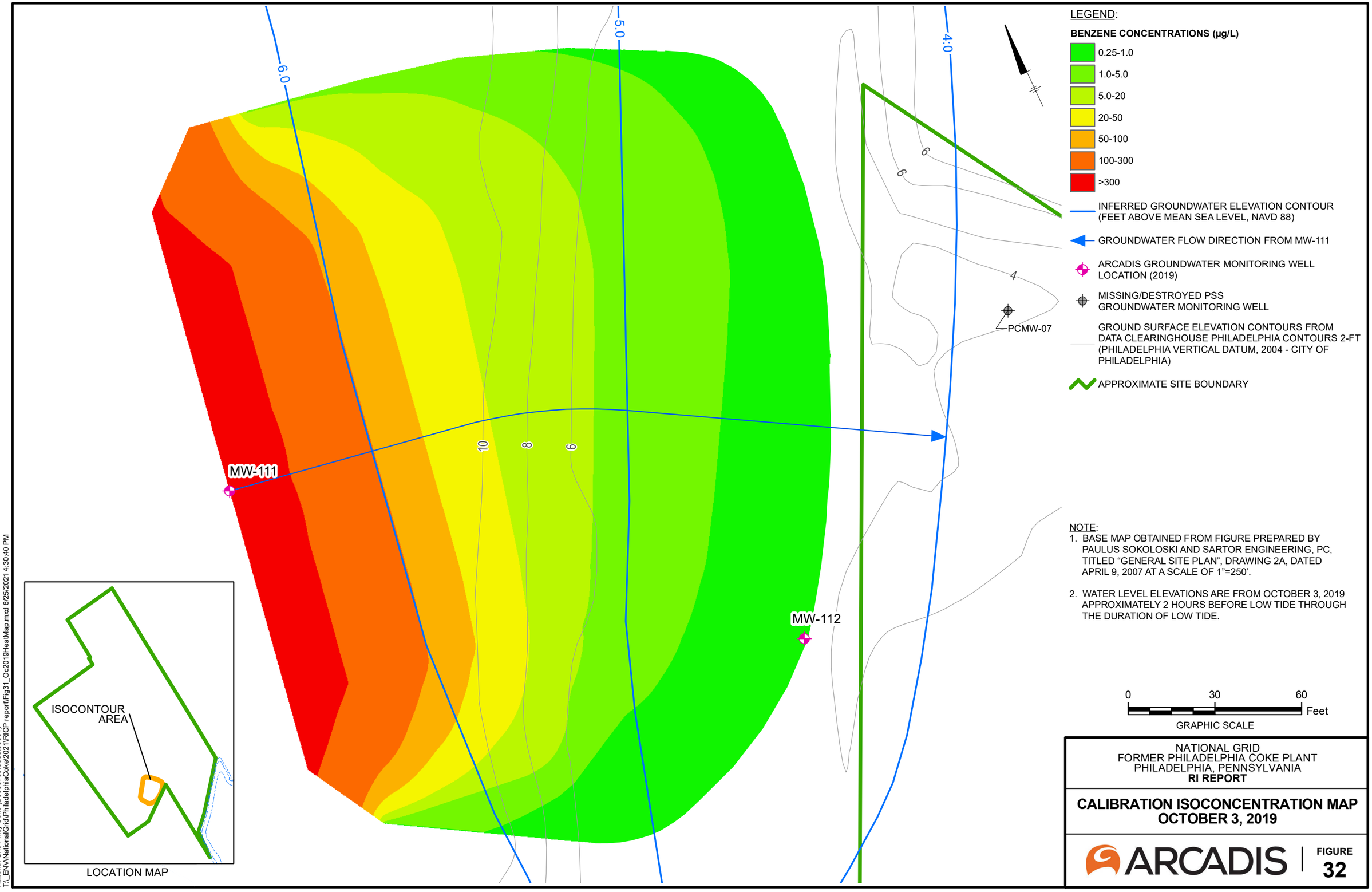
NATIONAL GRID
FORMER PHILADELPHIA COKE PLANT
PHILADELPHIA, PENNSYLVANIA
RI REPORT

CALIBRATION ISOCONCENTRATION MAP MARCH 19, 2018

ARCADIS

FIGURE
31

City: Syr Div/Group: IM/DV Created By: K. Sinsabaugh Last Saved By: AKENS
National Grid Philly Coke (B0036790.0000.00001)
T:_ENV\NationalGrid\PhiladelphiaCoke\2021\RICP report\Fig30_Mar2018HeatMap.mxd 6/25/2021 4:37:24 PM



NOTE:
1. BASE MAP OBTAINED FROM FIGURE PREPARED BY PAULUS SOKOLOSKI AND SARTOR ENGINEERING, PC, TITLED "GENERAL SITE PLAN", DRAWING 2A, DATED APRIL 9, 2007 AT A SCALE OF 1"=250'.
2. WATER LEVEL ELEVATIONS ARE FROM OCTOBER 3, 2019 APPROXIMATELY 2 HOURS BEFORE LOW TIDE THROUGH THE DURATION OF LOW TIDE.

0 30 60 Feet
GRAPHIC SCALE

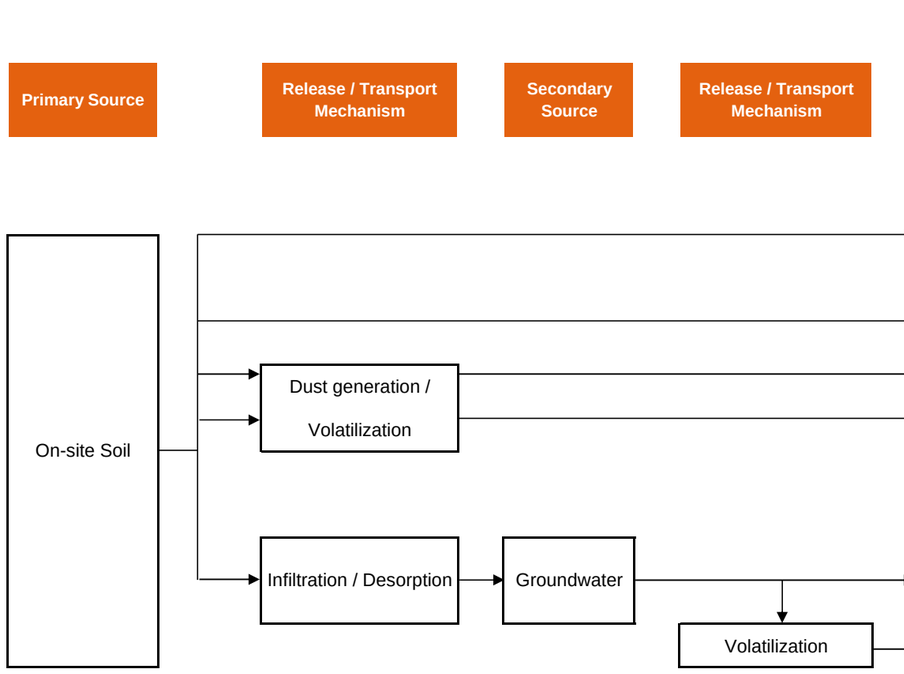
NATIONAL GRID
FORMER PHILADELPHIA COKE PLANT
PHILADELPHIA, PENNSYLVANIA
RI REPORT

CALIBRATION ISOCONCENTRATION MAP OCTOBER 3, 2019

ARCADIS

FIGURE 32

City: Syr Div/Group: IM/DV Created By: K. Sinsabaugh Last Saved By: AKENS
National Grid Philly Coke (B0036790.0000.00001)
T:_ENV\NationalGrid\PhiladelphiaCoke\2021\RICP report\Fig31_Oc2019HeatMap.mxd 6/25/2021 4:30:40 PM



Primary Source	Release / Transport Mechanism	Secondary Source	Release / Transport Mechanism	Exposure Medium	Exposure Route	Current Exposure Scenario: Utility Worker	Current Exposure Scenario: Outdoor Worker	Current Exposure Scenario: Trespasser	Future Exposure Scenario: Resident	Future Exposure Scenario: Utility Worker	Future Exposure Scenario: Indoor Worker	Future Exposure Scenario: Outdoor Worker	Future Exposure Scenario: Recreational User
On-site Soil				Surface Soil	Ingestion	○ [a]	○ [a]	○ [b]	○ [c]	○ [d]	○ [d]	○ [d]	○ [d]
					Dermal Contact	○ [a]	○ [a]	○ [b]	○ [c]	○ [d]	--	○ [d]	○ [d]
				Subsurface Soil	Ingestion	○ [a]	--	--	--	○ [d]	--	--	--
					Dermal Contact	○ [a]	--	--	--	○ [d]	--	--	--
	Dust generation / Volatilization			Outdoor Air	Inhalation	○ [a]	○ [a]	○ [b]	○ [c]	○ [d]	--	○ [d]	○ [d]
				Indoor Air	Inhalation	--	--	--	○ [c,d]	--	◐ [f]	--	--
	Infiltration / Desorption	Groundwater		Groundwater	Ingestion	○ [a]	--	--	○ [c,e]	○	○ [e]	--	--
					Dermal Contact	○ [a]	--	--	○ [c,e]	○	○ [e]	--	--
					Inhalation	○ [a]	--	--	○ [c,e]	○	○ [e]	--	--
			Volatilization	Indoor Air	Inhalation	--	--	--	○ [c,d]	○ [d]	◐ [f]	--	--

Legend:

- ● = Complete Exposure Pathway.
- ◐ = Potentially Complete Exposure Pathway.
- ○ = Incomplete Exposure Pathway.
- -- = Not applicable.

NOTES:

Exposure pathway completeness is evaluated based on current and anticipated future use and

[a] Exposure route is currently incomplete due to vegetative cover and/or existing health and safety plan (HASP) requiring use of personal protective equipment (PPE) for ground intrusive / excavation work.

[b] Exposure route is currently incomplete for trespassers due to Site security fencing.

[c] Exposure route will be incomplete after a soil cover system and deed restriction are in place, limiting the property to commercial/industrial use (no fence will be required).

[d] Exposure route is incomplete due to the exising vegetative cover (or soil cover system to be installed during redevelopment) and/or exisiting HASP requiring use of PPE for ground-instrusive / excavation work. No passive recreational use will be allowed at the Site until after the soil cover system is installed, mitigating potential exposure.

[e] Exposure route will be incomplete due to a groundwater use ordinance to be established for the Site.

[f] Vapor intrusion (VI) exposure pathway will be fully assessed by a VI evaluation once the redevelopment plans are complete. Altenatively, a VI mitigation system can be installed in lieu of a VI evaluation that eliminates potential exposure pathways.

NATIONAL GRID
FORMER PHILADELPHIA COKE PLANT
PHILADELPHIA, PENNSYLVANIA
RI REPORT

HUMAN HEALTH CONCEPTUAL SITE MODEL

ARCADIS

FIGURE
33

0 500 1,000 Feet

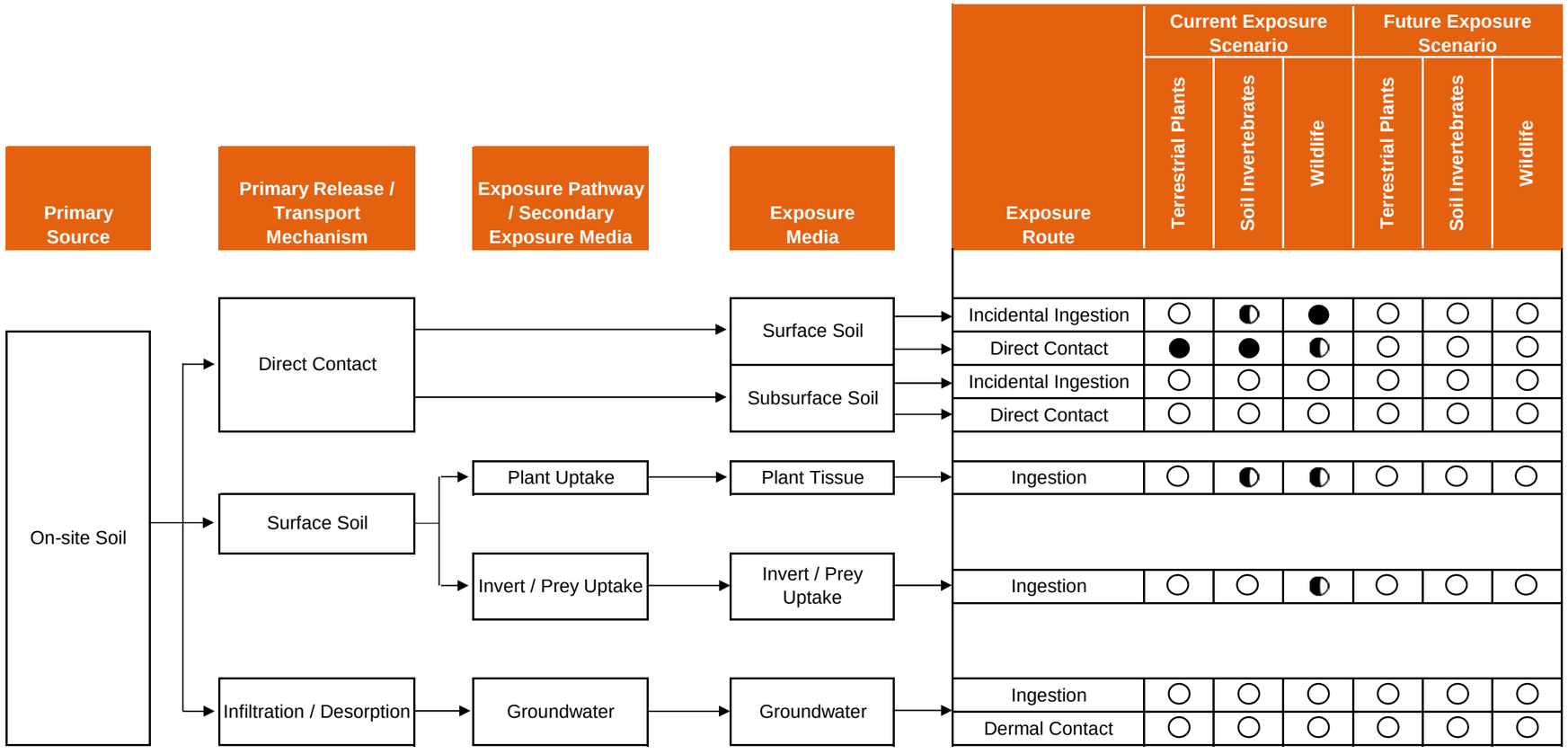
NOTE:
1. 2016 AERIAL IMAGE ACCESSED VIA ARC GIS ONLINE
2. HABITAT ASSESSED BY ARCADIS NOVEMBER, 2019

N

NATIONAL GRID
FORMER PHILADELPHIA COKE PLANT
PHILADELPHIA, PENNSYLVANIA
RI REPORT

FIGURE 34. ECOLOGICAL COVER TYPE

ARCADIS



Legend:

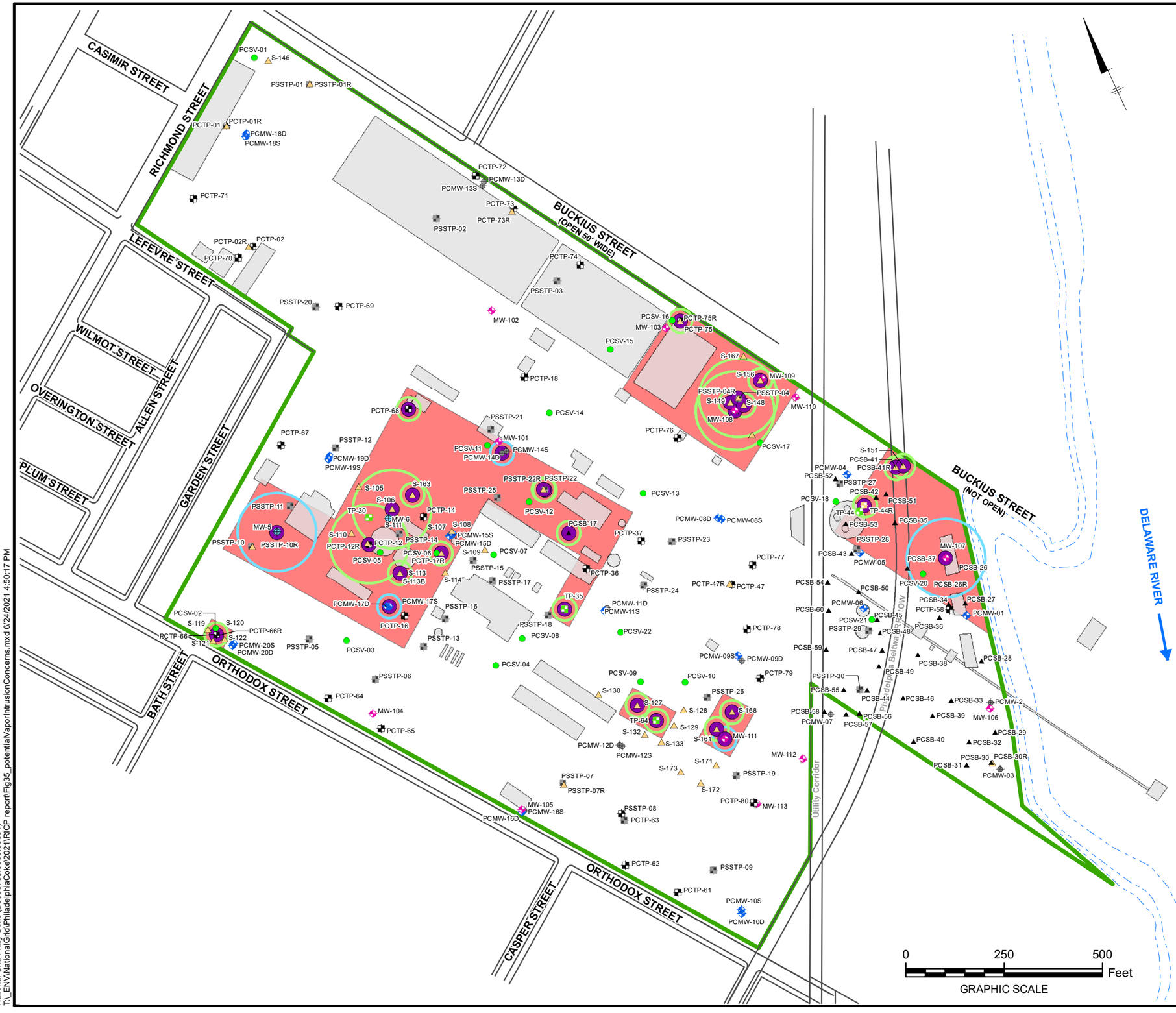
- ● = Complete Exposure Pathway. Evaluated quantitatively through applicable ecological screening benchmarks.
- ◐ = Potentially Complete Exposure Pathway. Pathway expected to be insignificant. Pathway may be evaluated qualitatively.
- ○ = Incomplete Exposure Pathway. Not evaluated.

NATIONAL GRID
FORMER PHILADELPHIA COKE PLANT
PHILADELPHIA, PENNSYLVANIA
RI REPORT

ECOLOGICAL CONCEPTUAL SITE MODEL

ARCADIS

FIGURE
35



LEGEND:

- APPROXIMATE AREAS WHERE POTENTIAL BUILDINGS WILL NEED VAPOR INTRUSION MITIGATION MEASURES OR ADDITIONAL VAPOR INTRUSION EVALUATION IS NEEDED
- PROXIMITY DISTANCE AROUND POTENTIAL VAPOR INTRUSION CONCERN FROM SOIL
- PROXIMITY DISTANCE AROUND POTENTIAL VAPOR INTRUSION CONCERN FROM GROUNDWATER
- LOCATION WHERE ONE OR MORE CONSTITUENTS EXCEED APPLICABLE VAPOR INTRUSION SCREENING STANDARDS
- (S-105) 2019 SOIL BORING LOCATION (2019)
- (S-120) 2019 TEST PIT LOCATION (2019)
- (PCSB-17) PSS ENVIRONMENTAL SOIL BORINGS (2005)
- (PSSTP-23) PSS ENVIRONMENTAL TEST PITS (2003)
- (PCTP-01) PSS ENVIRONMENTAL TEST PITS (2005)
- (TP-44) EEI GEOTECHNICAL TEST PITS (2005)
- (MW-101) ARCADIS GROUNDWATER MONITORING WELL LOCATION (2018-2019)
- (PCMW-12S) PSS GROUNDWATER MONITORING WELL (2005)
- (PCMW-12D) MISSING/DESTROYED PSS GROUNDWATER MONITORING WELL
- (MW-05) RCRA CLOSURE GROUNDWATER MONITORING WELL (1992 AND EARLIER)
- (PCSV-20) PSS SOIL VAPOR SAMPLING LOCATIONS (2006)
- FORMER STRUCTURE/OPERATION
- SITE BOUNDARY
- SHORELINE

NOTES:

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4. APPLICABLE VAPOR INTRUSION SCREENING STANDARD IS THE PADEP STATEWIDE HEALTH STANDARD VAPOR INTRUSION SCREENING VALUE FOR NONRESIDENTIAL GROUNDWATER AND SOIL.

5. PROXIMITY DISTANCE RADII ARE 30 FEET FOR PETROLEUM CONSTITUENTS (e.g., BENZENE, TOLUENE, NAPHTHALENE) AND 100 FEET FOR NON-PETROLEUM CONSTITUENTS PER SECTION E OF THE VI GUIDANCE.

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NATIONAL GRID
FORMER PHILADELPHIA COKE PLANT
PHILADELPHIA, PENNSYLVANIA
RI REPORT

SITE LOCATIONS WITH POTENTIAL VAPOR INTRUSION CONCERNS

ARCADIS

FIGURE 36

City: Syr Div/Group: IM/DV Created By: K. Sinsabaugh Last Saved By: AKENS
National Grid Philly Coke (B0036790.0000.00001)
T:_ENV\NationalGrid\PhiladelphiaCoke\2021\RICP report\Fig35_potentialVaporIntrusionConcerns.mxd 6/24/2021 4:50:17 PM

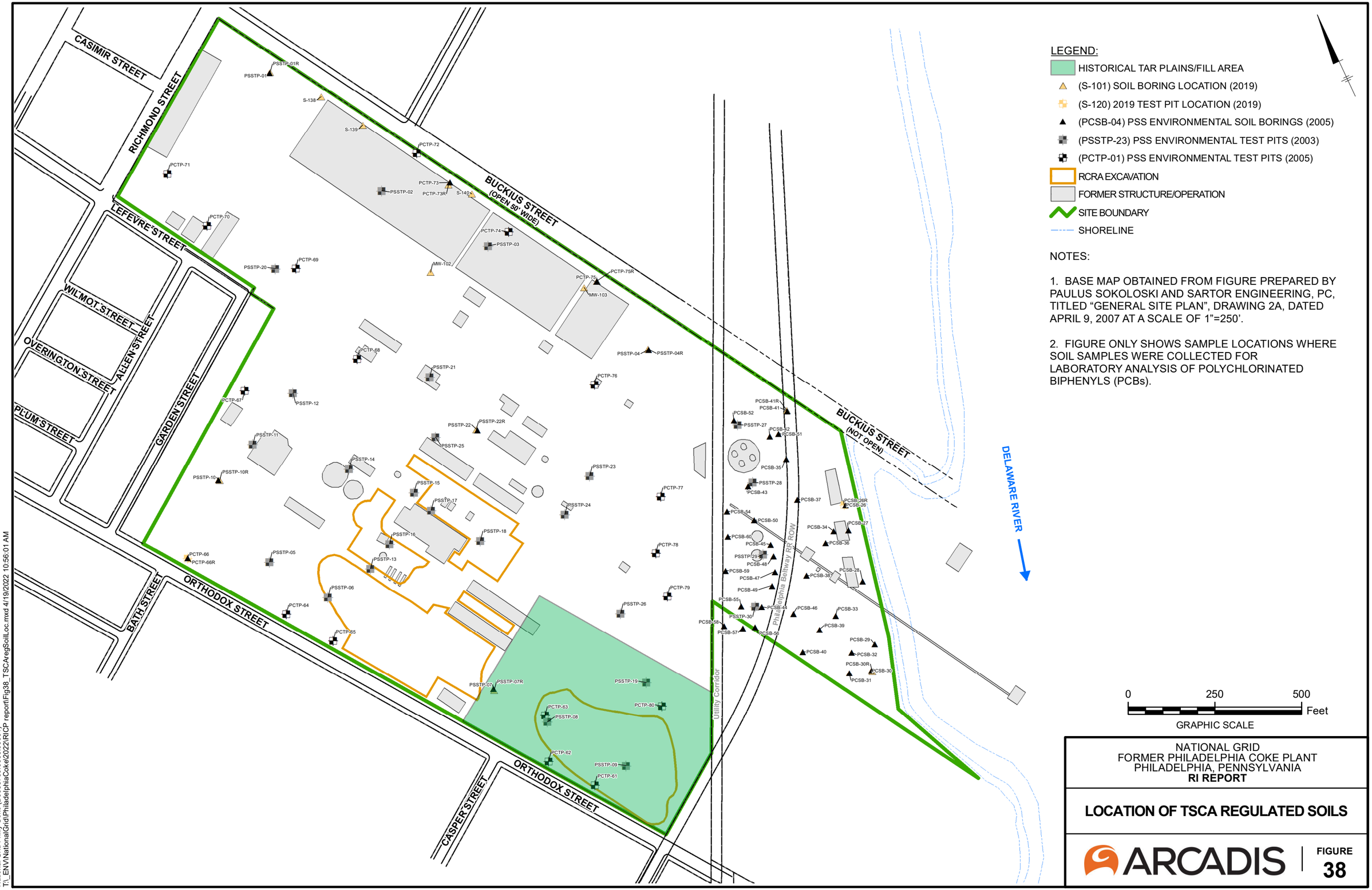
NATIONAL GRID
FORMER PHILADELPHIA COKE PLANT
PHILADELPHIA, PENNSYLVANIA
RI REPORT

SOIL CAP LIMITS

ARCADIS

FIGURE 37

City: Syr Div/Group: IM/DV Created By: K. Sinsabaugh Last Saved By: AKENS
National Grid Philly Coke (B0036790.0000.00001)
T:_ENV\NationalGrid\PhiladelphiaCoke\2022\RICP report\Fig37_soilcaplimits.mxd 5/12/2022 3:47:47 PM



NATIONAL GRID
FORMER PHILADELPHIA COKE PLANT
PHILADELPHIA, PENNSYLVANIA
RI REPORT

LOCATION OF TSCA REGULATED SOILS

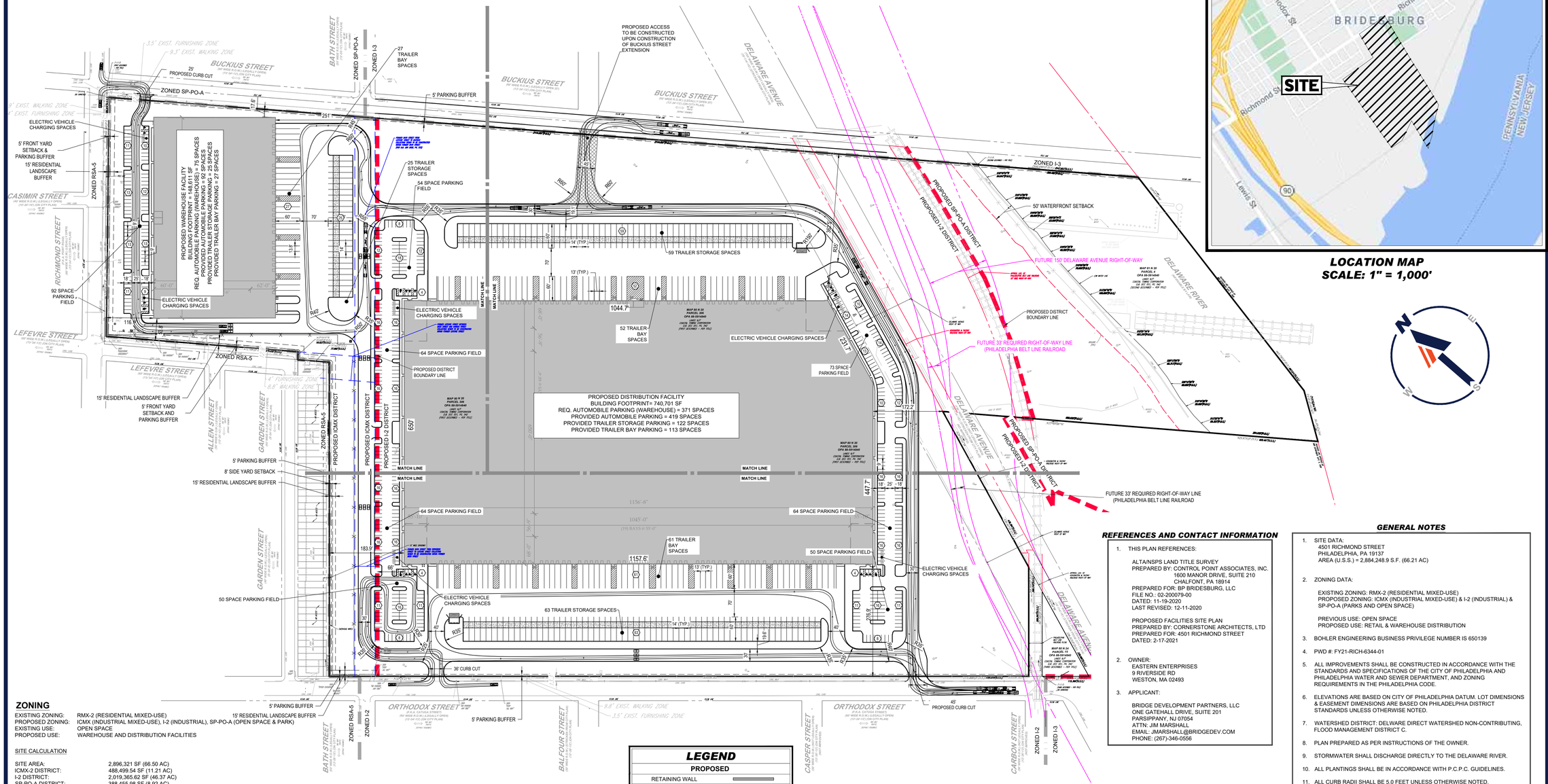
ARCADIS

FIGURE
38

City: Syr Div/Group: IM/DV Created By: K. Sinsabaugh Last Saved By: AKENS
National Grid Philly Coke (B0036790.0000.00001)
T:_ENV\NationalGrid\PhiladelphiaCoke\2022\RICP report\Fig38_TSCAregSoilLoc.mxd 4/19/2022 10:56:01 AM

EXHIBIT 1

Site Redevelopment Plan



LOCATION MAP
SCALE: 1" = 1,000'

ZONING

EXISTING ZONING: RMX-2 (RESIDENTIAL MIXED-USE)
PROPOSED ZONING: ICMX (INDUSTRIAL MIXED-USE), I-2 (INDUSTRIAL), SP-PO-A (OPEN SPACE & PARK)
EXISTING USE: OPEN SPACE
PROPOSED USE: WAREHOUSE AND DISTRIBUTION FACILITIES

SITE CALCULATION

SITE AREA:	2,896,321 SF (66.50 AC)
ICMX-2 DISTRICT:	488,499.54 SF (11.21 AC)
I-2 DISTRICT:	2,019,365.62 SF (46.37 AC)
SP-PO-A DISTRICT:	388,455.98 SF (8.92 AC)

ZONING DISTRICT REQUIREMENTS

	REQUIRED (ICMX)	EXISTING	PROPOSED	REQUIRED (I-2)	EXISTING	PROPOSED
MAX. OCCUPIED AREA	100%	N/A	30.42%	100%	N/A	36.68%
MIN. YARD SETBACKS						
FRONT	0*	N/A	17.6'	0*	N/A	276.9'
SIDE YARD (EA)	8*	N/A	N/A	8*	N/A	66'
REAR	8*	N/A	251'	8*	N/A	172.2'
WATERFRONT SETBACK	50'	N/A	N/A	50'	N/A	50'
LANDSCAPE BUFFER	15'	>15'	15'	15'	>15'	15'
MAX. BUILDING HEIGHT	60'	N/A	60'	60'	N/A	60'
MAX. FLOOR AREA RATIO	500%	N/A	30.42%	500%	N/A	36.68%

* WHERE A LOT ABUTS A RESIDENTIAL DISTRICT, FRONT YARDS, SIDE YARDS, AND REAR YARDS SHALL BE PROVIDED ON THE LOT ON THE SIDES ABUTTING THE RESIDENTIAL DISTRICT. THE MINIMUM REQUIREMENTS FOR THOSE YARDS SHALL BE EITHER THOSE FOR THE INDUSTRIAL DISTRICT OR THOSE FOR THE RESIDENTIAL DISTRICT ON THE ABUTTING SIDE, WHICHEVER IS LARGER

PARKING REQUIREMENTS

	REQUIRED (ICMX)	PROVIDED	REQUIRED (I-2)	PROVIDED
PARKING SPACES (WAREHOUSE & DISTRIBUTION)	1 / 2000 SF (75 SPACES)	92 SPACES	1 /2000 SF (371 SPACES)	419 SPACES
ADA PARKING SPACES	4 SPACES	4 SPACES	8 SPACES	16 SPACES
PARKING SETBACK	5' ALONG STREET FRONTAGE	5'	5' ALONG STREET FRONTAGE	5'

LEGEND — PROPOSED

RETAINING WALL
CONCRETE CURB
FLUSH CURB
FENCE
GUIDE RAIL
TREELINE
ACCESSIBLE SYMBOL
CROSSWALK
SIDEWALK
SIGN
BOLLARD
PARKING COUNT
AREA LIGHT
DRAINAGE INLET
MANHOLE
ENDWALL
RIPRAP
CLEANOUT
ROOFDRAIN
FIRE HYDRANT
UTILITY POLE
LANDSCAPE AREA

LEGEND — EXISTING

RETAINING WALL
CONCRETE CURB
FLUSH CURB
FENCE
GUIDE RAIL
TREELINE
PROPERTY LINE
R.O.W. LINE
ADJACENT PROPERTY LINE
TITLE LINE
EASEMENT LINE
SETBACK LINE
50' WATERFRONT SETBACK
EX. RAILROAD RIGHT-OF-WAY
EX. EASEMENT
EX. DELAWARE AVENUE RIGHT-OF-WAY (STRICKEN FROM CITY PLAN)
FUTURE RIGHT-OF-WAY

LEGEND — EXISTING

CONCRETE MONUMENT/ IRON PIN
SIGN
AREA LIGHT
TREE
DRAINAGE INLET
STORM/SANITARY MANHOLE
WATER/GAS VALVES
ROOF DRAIN/CLEANOUT
FIRE HYDRANT
UTILITY POLE W/ LIGHT
UTILITY POLE

REFERENCES AND CONTACT INFORMATION

1. THIS PLAN REFERENCES:

   ALTA/NSPS LAND TITLE SURVEY
   PREPARED BY: CONTROL POINT ASSOCIATES, INC.
   1600 MANOR DRIVE, SUITE 210
   CHALFONT, PA 18914
   PREPARED FOR: BP BRIDESBURG, LLC
   FILE NO.: 02-200079-00
   DATED: 11-19-2020
   LAST REVISED: 12-11-2020

   PROPOSED FACILITIES SITE PLAN
   PREPARED BY: CORNERSTONE ARCHITECTS, LTD
   PREPARED FOR: 4501 RICHMOND STREET
   DATED: 2-17-2021

2. OWNER:
   EASTERN ENTERPRISES
   9 RIVERSIDE RD
   WESTON, MA 02493

3. APPLICANT:

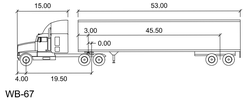
   BRIDGE DEVELOPMENT PARTNERS, LLC
   ONE GATEHALL DRIVE, SUITE 201
   PARSIPPANY, NJ 07054
   ATTN: JIM MARSHALL
   EMAIL: JMARSHALL@BRIDGEDEV.COM
   PHONE: (267)-346-0556

GENERAL NOTES

1. SITE DATA:
   4501 RICHMOND STREET
   PHILADELPHIA, PA 19137
   AREA (U.S.S.) = 2,884,248.9 S.F. (66.21 AC)
2. ZONING DATA:
   EXISTING ZONING: RMX-2 (RESIDENTIAL MIXED-USE)
   PROPOSED ZONING: ICMX (INDUSTRIAL MIXED-USE) & I-2 (INDUSTRIAL) & SP-PO-A (PARKS AND OPEN SPACE)
   PREVIOUS USE: OPEN SPACE
   PROPOSED USE: RETAIL & WAREHOUSE DISTRIBUTION
3. BOHLER ENGINEERING BUSINESS PRIVILEGE NUMBER IS 650139
4. PWD #: FY21-RICH-6344-01
5. ALL IMPROVEMENTS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS OF THE CITY OF PHILADELPHIA AND PHILADELPHIA WATER AND SEWER DEPARTMENT, AND ZONING REQUIREMENTS IN THE PHILADELPHIA CODE.
6. ELEVATIONS ARE BASED ON CITY OF PHILADELPHIA DATUM. LOT DIMENSIONS & EASEMENT DIMENSIONS ARE BASED ON PHILADELPHIA DISTRICT STANDARDS UNLESS OTHERWISE NOTED.
7. WATERSHED DISTRICT: DELWARE DIRECT WATERSHED NON-CONTRIBUTING, FLOOD MANAGEMENT DISTRICT C.
8. PLAN PREPARED AS PER INSTRUCTIONS OF THE OWNER.
9. STORMWATER SHALL DISCHARGE DIRECTLY TO THE DELAWARE RIVER.
10. ALL PLANTINGS SHALL BE IN ACCORDANCE WITH P.C.P.C. GUIDELINES.
11. ALL CURB RADII SHALL BE 5.0 FEET UNLESS OTHERWISE NOTED.
12. ELEVATIONS OF PROPOSED CONCRETE CURB TO BE DETERMINED BY THE CITY SURVEY DISTRICT. FACE OF CURB TO MATCH EXISTING CURB/EDGE OF PAVEMENT.
13. DEVELOPMENT TO BE SERVICED BY PUBLIC WATER AND SEWER IN ACCORDANCE WITH CITY OF PHILADELPHIA REQUIREMENTS.
14. BY GRAPHIC PLOTTING ONLY, THIS PROPERTY IS LOCATED IN FLOOD HAZARD ZONE X (AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN) & FLOOD HAZARD ZONE AE (WITH BFE OR DEPTH).
15. TRASH PICK-UP WILL BE VIA A PRIVATE HAULER.

P

	feet
Width	: 7.00
Track	: 6.00
Lock to Lock Time	: 6.0
Steering Angle	: 31.6



WB-67

	feet		
Tractor Width	: 8.00	Lock to Lock Time	: 6.0
Trailer Width	: 8.50	Steering Angle	: 28.4
Tractor Track	: 8.00	Articulating Angle	: 75.0
Trailer Track	: 8.50		

120 60 30 0 120
1"= 120'

BOHLER
SITE CIVIL AND CONSULTING ENGINEERING
LAND SURVEYING
PROGRAM MANAGEMENT
LANDSCAPE ARCHITECTURE
ELECTRICAL DESIGN
PERMITTING SERVICES
TRANSPORTATION SERVICES

THE INFORMATION, DESIGN AND CONTENT OF THIS PLAN IS PROPRIETARY AND SHALL NOT BE COPIED OR USED FOR ANY PURPOSE, WITHOUT PRIOR WRITTEN AUTHORIZATION FROM BOHLER. ONLY APPROVED AND SEALED PLANS SHALL BE UTILIZED FOR CONSTRUCTION PURPOSES.

REVISIONS

REV	DATE	COMMENT	DRAWN BY / CHECKED BY

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YOU MUST CALL 811 BEFORE ANY EXCAVATION WHETHER IT'S ON PRIVATE OR PUBLIC LAND.
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www.pa1call.org
20202801994

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PROJECT NO.:	PP203056
DRAWN BY:	GB
CHECKED BY:	KM
DATE:	2/1/2021
CAD I.D.:	PP203056-SPP-2

PROJECT:

ZONING PLAN

FOR

BRIDGE ACQUISITIONS, LLC

PROPOSED DEVELOPMENT

4501 RICHMOND STREET
PHILADELPHIA, PA 19137

BOHLER
1515 MARKET STREET, SUITE 920
PHILADELPHIA, PA 19102
Phone: (267) 402-3400
Fax: (267) 402-3401
www.BohlerEngineering.com

C. BROWN
PROFESSIONAL ENGINEER
PENNSYLVANIA LICENSE No. PE075317
DELAWARE LICENSE No. 18093
NEW JERSEY LICENSE No. 24GE05081400

SHEET TITLE:

OVERALL ZONING PLAN

SHEET NUMBER:

1A

ORG. DATE - 2/1/2021

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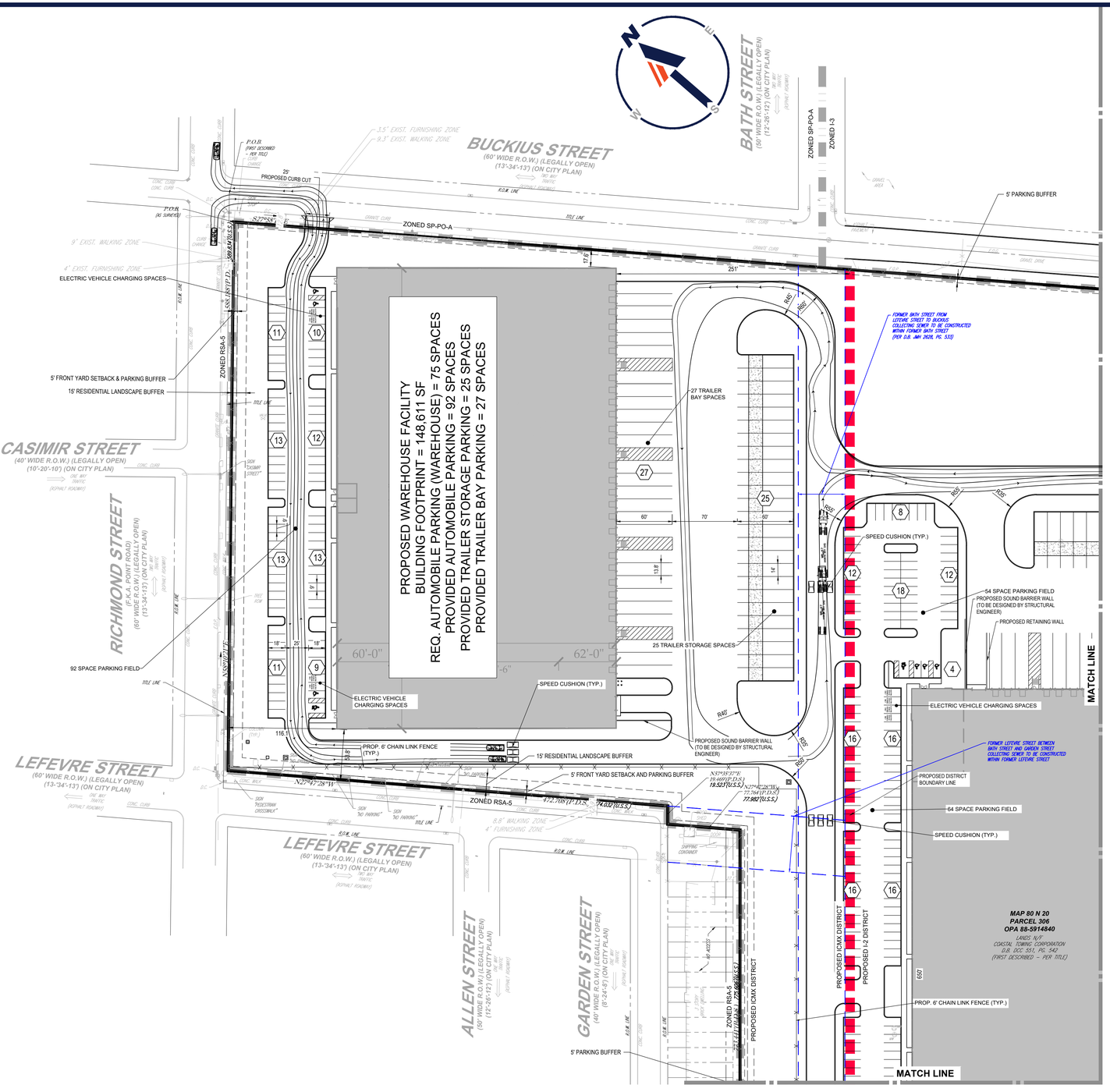

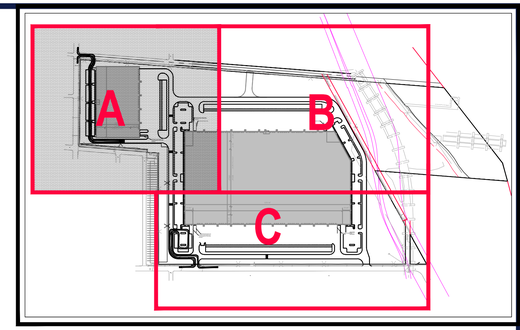

KEY MAP
SCALE: 1" = 500'

LEGEND

PROPOSED

RETAINING WALL	
CONCRETE CURB	
FLUSH CURB	
FENCE	
GUIDE RAIL	
TREELINE	
ACCESSIBLE SYMBOL	
CROSSWALK	
SIDEWALK	
SIGN	
BOLLARD	
PARKING COUNT	10
AREA LIGHT	
DRAINAGE INLET	
MANHOLE	
ENDWALL	
RIPRAP	
CLEANOUT	
ROOFDRAIN	
FIRE HYDRANT	
UTILITY POLE	
LANDSCAPE AREA	

LEGEND

EXISTING

RETAINING WALL	
CONCRETE CURB	
FLUSH CURB	
FENCE	
GUIDE RAIL	
TREELINE	
PROPERTY LINE	
R.O.W. LINE	
ADJACENT PROPERTY LINE	
TITLE LINE	
EASEMENT LINE	
SETBACK LINE	
50' WATERFRONT SETBACK	
EX. RAILROAD RIGHT-OF-WAY	
EX. EASEMENT	
EX. DELAWARE AVENUE RIGHT-OF-WAY (STRICKEN FROM CITY PLAN)	
FUTURE RIGHT-OF-WAY	

LEGEND

EXISTING

CONCRETE MONUMENT/ IRON PIN	
SIGN	
AREA LIGHT	
TREE	
DRAINAGE INLET	
STORM/SANITARY MANHOLE	
WATER/GAS VALVES	
ROOF DRAIN/CLEANOUT	
FIRE HYDRANT	
UTILITY POLE W/ LIGHT	
UTILITY POLE	

60 30 15 0 60
1"= 60'

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PROJECT:

ZONING PLAN

FOR
BRIDGE ACQUISITIONS, LLC

PROPOSED DEVELOPMENT

4501 RICHMOND STREET
PHILADELPHIA, PA 19137

BOHLER
1515 MARKET STREET, SUITE 920
PHILADELPHIA, PA 19102
Phone: (267) 402-3400
Fax: (267) 402-3401
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PROFESSIONAL ENGINEER
PENNSYLVANIA LICENSE No. PE075317
DELAWARE LICENSE No. 18093
NEW JERSEY LICENSE No. 24GE050841400

SHEET TITLE:

ZONING PLAN

SHEET NUMBER:

1B

ORG. DATE - 2/1/2021

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GB
R:\PP203056\DRAWINGS\PLAN SETS\PERMITTING DOCS\REV-2 ZONING CHECKLIST #1\PP203056-SPP-2-----LAYOUT: 2 | B ZONING

LEGEND
PROPOSED

RETAINING WALL	
CONCRETE CURB	
FLUSH CURB	
FENCE	
GUIDE RAIL	
TREELINE	
ACCESSIBLE SYMBOL	
CROSSWALK	
SIDEWALK	
SIGN	
BOLLARD	
PARKING COUNT	(10)
AREA LIGHT	
DRAINAGE INLET	
MANHOLE	
ENDWALL	
RIPRAP	
CLEANOUT	
ROOFDRAIN	
FIRE HYDRANT	
UTILITY POLE	
LANDSCAPE AREA	

LEGEND
EXISTING

RETAINING WALL	
CONCRETE CURB	
FLUSH CURB	
FENCE	
GUIDE RAIL	
TREELINE	
PROPERTY LINE	
R.O.W. LINE	
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TITLE LINE	
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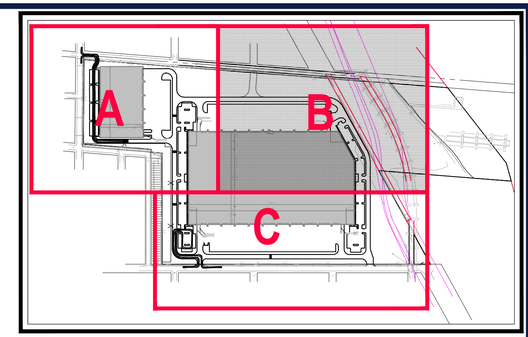
SETBACK LINE	
50' WATERFRONT SETBACK	
EX. RAILROAD RIGHT-OF-WAY	
EX. EASEMENT	
EX. DELAWARE AVENUE RIGHT-OF-WAY (STROKEN FROM CITY PLAN)	
FUTURE RIGHT-OF-WAY	

LEGEND
EXISTING

CONCRETE MONUMENT/ IRON PIN	
SIGN	
AREA LIGHT	
TREE	
DRAINAGE INLET	
STORM/SANITARY MANHOLE	
WATER/GAS VALVES	
ROOF DRAIN/CLEANOUT	
FIRE HYDRANT	
UTILITY POLE W/ LIGHT	
UTILITY POLE	



KEY MAP
SCALE: 1" = 500'

DELAWARE AVENUE
(150' WIDE R.O.W.) (NOT LEGALLY OPEN)
(18°17'4"E 18') (STROKEN FROM CITY PLAN)

BUCKIUS STREET
(60' WIDE R.O.W.) (LEGALLY OPEN 25')
(13°34'-13') (ON CITY PLAN)

UCTED STREET

EXTENSION

FORMER 94TH STREET FROM LITZENIE STREET TO BUCKIUS COLLECTING SEWER TO BE CONSTRUCTED WITHIN FORMER 94TH STREET (PER D.B. JMH 2628, PG. 533)

FORMER LITZENIE STREET BETWEEN 94TH STREET AND GARDEN STREET COLLECTING SEWER TO BE CONSTRUCTED WITHIN FORMER LITZENIE STREET

PROPOSED DISTRICT BOUNDARY LINE

PROPOSED ICMX DISTRICT

PROPOSED I-2 DISTRICT

ZONED RSA-5
PROPOSED ICMX DISTRICT
ZONED I-3
PROPOSED I-2 DISTRICT

PROPOSED DISTRIBUTION FACILITY
BUILDING FOOTPRINT= 740,701 SF
REQ. AUTOMOBILE PARKING (WAREHOUSE) = 371 SPACES
PROVIDED AUTOMOBILE PARKING = 419 SPACES
PROVIDED TRAILER STORAGE PARKING = 122 SPACES
PROVIDED TRAILER BAY PARKING = 113 SPACES

64 SPACE PARKING FIELD
PROPOSED SOUND BARRIER WALL (TO BE DESIGNED BY STRUCTURAL ENGINEER)
PROPOSED RETAINING WALL
SPEED CUSHION (TYP.)
ELECTRIC VEHICLE CHARGING SPACES
PROP. 6' CHAIN LINK FENCE (TYP.)
PROP. TRASH ENCLOSURE
59 TRAILER STORAGE SPACES
52 TRAILER BAY SPACES
73 SPACE PARKING FIELD
7 TRAILER AY SPACES
RAGE SPACES
PROPOSED SOUND BARRIER WALL (TO BE DESIGNED BY STRUCTURAL ENGINEER)

MATCH LINE

MAP 80 N 20
PARCEL 306
OPA 88-5914840
LANDS: N/F
COASTAL TOWING CORPORATION
D.B. DCC 551, PG. 542
(FIRST DESCRIBED – PER TITLE)

P.O.B. (SECOND DESCRIBED – PER TITLE)

2144.007'(P.D.S.)

N57°35'37"E 19.469'(T.D.S.) 19.523'(U.S.S.)
N27°42'22"W 77.764'(T.D.S.) 77.982'(U.S.S.)

S15°15'47"W 84.047'(P.D.S.)
S15°13'59"W 57.000'(P.D.S.)
S19°07'26"W 59.000'(P.D.S.)
S20°23'44"E 23.000'(P.D.S.)
S22°29'12"W 37.000'(P.D.S.)
S19°57'35"W 48.500'(P.D.S.)

2540.490'(P.D.S.) 2542.603'(U.S.S.)
396.482'(P.D.S.)
660.938'(P.D.S.)
N27°49'08"W

FUTURE 150' DELAWARE AVENUE RIGHT-OF-WAY
APPROX. LOC. OF PHILADELPHIA BELT LINE RAILROAD 33' WIDE RIGHT-OF-WAY
DELAWARE AVENUE RIGHT OF WAY
KENSINGTON & TACONY RAILROAD RIGHT-OF-WAY
FUTURE 32' REQUIRED RIGHT-OF-WAY LINE (PHILADELPHIA BELT LINE RAILROAD)
50' WATERFRONT SETBACK
PROPOSED SP-POA DISTRICT
PROPOSED I-2 DISTRICT
PROPOSED DISTRICT BOUNDARY LINE

DELAWARE AVENUE
(150' WIDE R.O.W.) (NOT LEGALLY OPEN)
(18°17'4"E 18') (STRIPPED FROM CITY PLAN)
(NO IMPROVED)

60 30 15 0 60
1"= 60'

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SHEET NUMBER:

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GB

LEGEND

PROPOSED

RETAINING WALL	
CONCRETE CURB	
FLUSH CURB	
FENCE	
GUIDE RAIL	
TREELINE	
ACCESSIBLE SYMBOL	
CROSSWALK	
SIDEWALK	
SIGN	
BOLLARD	
PARKING COUNT	10
AREA LIGHT	
DRAINAGE INLET	
MANHOLE	
ENDWALL	
RIPRAP	
CLEANOUT	
ROOFDRAIN	
FIRE HYDRANT	
UTILITY POLE	
LANDSCAPE AREA	

LEGEND

EXISTING

RETAINING WALL	
CONCRETE CURB	
FLUSH CURB	
FENCE	
GUIDE RAIL	
TREELINE	
PROPERTY LINE	
R.O.W. LINE	
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EX. RAILROAD RIGHT-OF-WAY	
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LEGEND

EXISTING

CONCRETE MONUMENT/ IRON PIN	
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AREA LIGHT	
TREE	
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WATER/GAS VALVES	
ROOF DRAIN/CLEANOUT	
FIRE HYDRANT	
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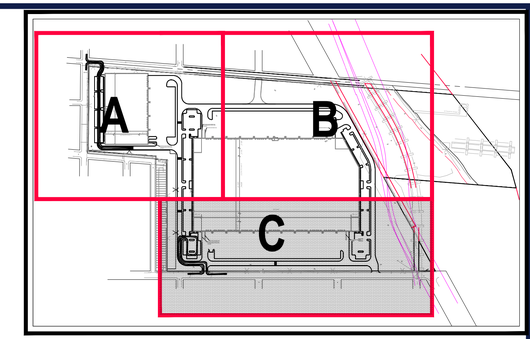
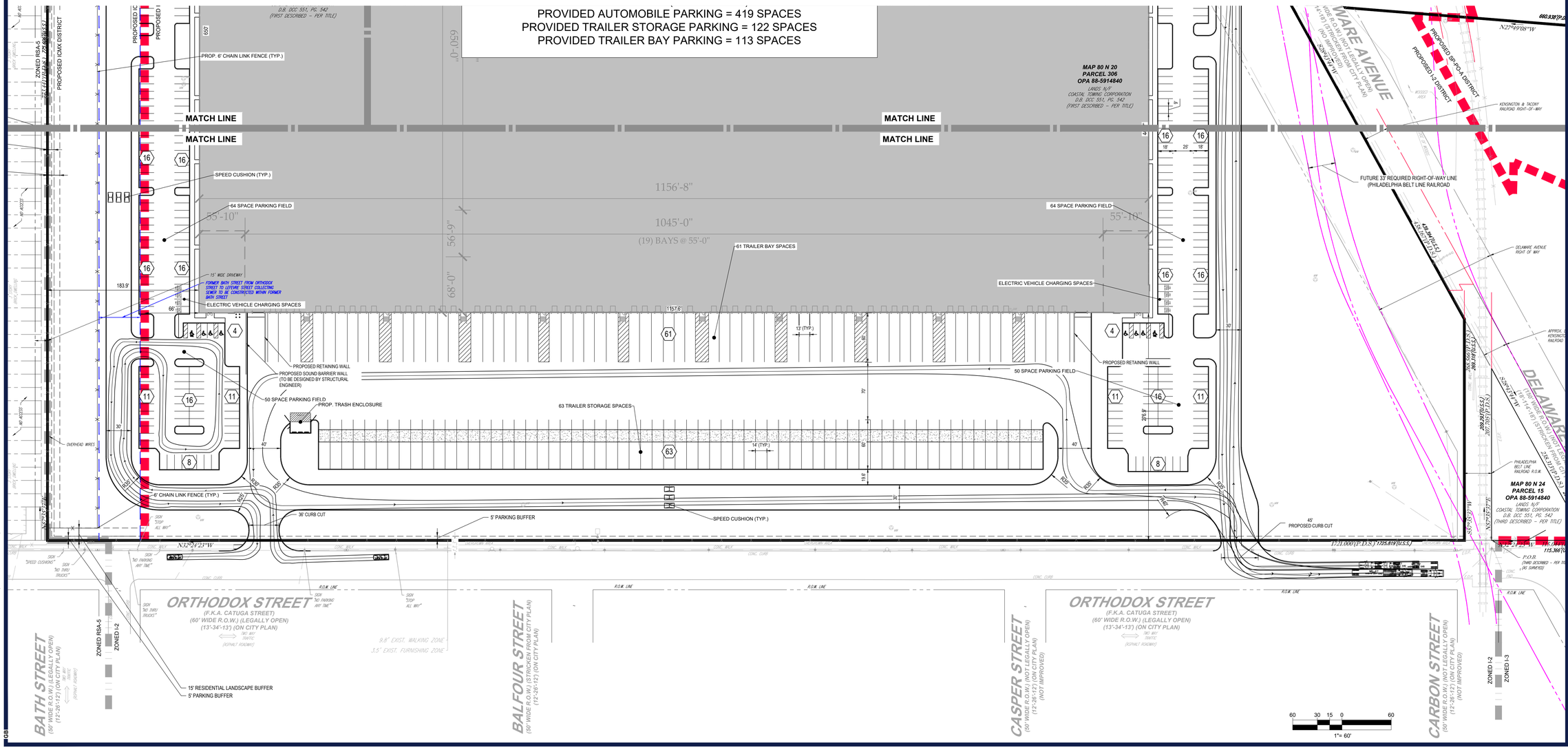
UTILITY POLE	



KEY MAP
SCALE: 1" = 500'

PROVIDED AUTOMOBILE PARKING = 419 SPACES
PROVIDED TRAILER STORAGE PARKING = 122 SPACES
PROVIDED TRAILER BAY PARKING = 113 SPACES



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SHEET NUMBER:

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ORG. DATE - 2/1/2021

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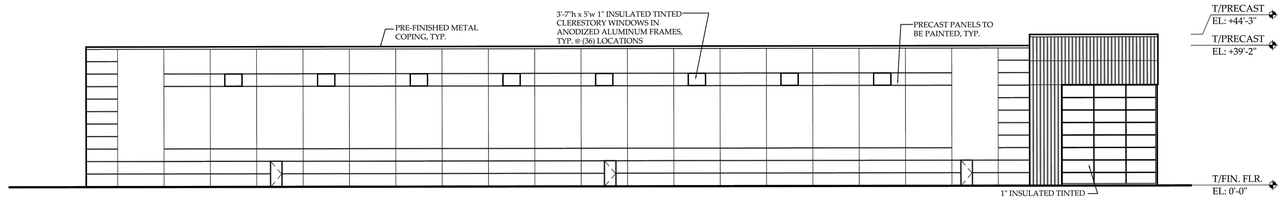
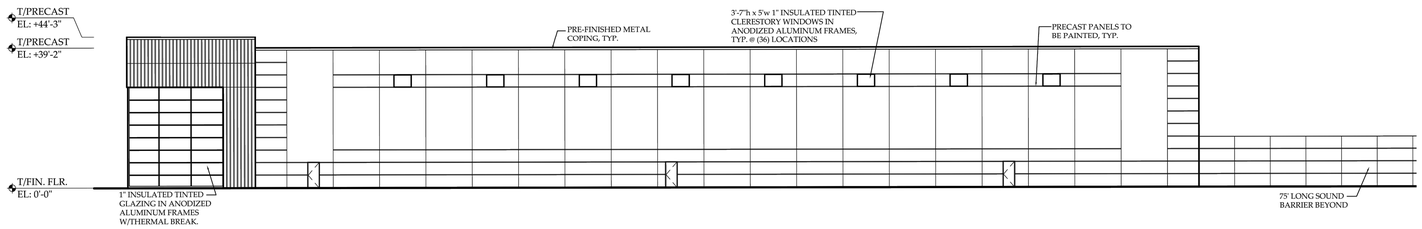
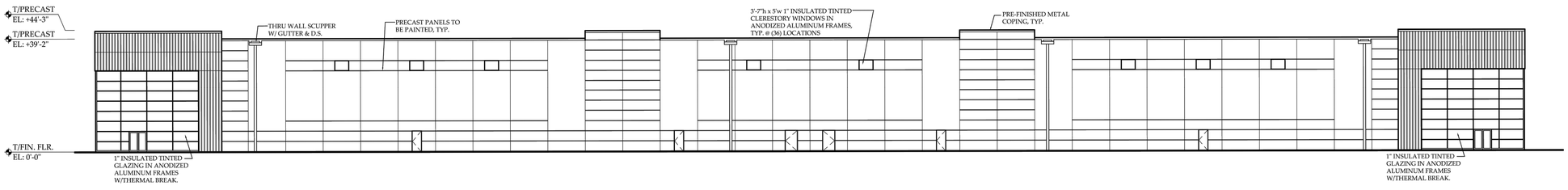


EAST ELEVATION:

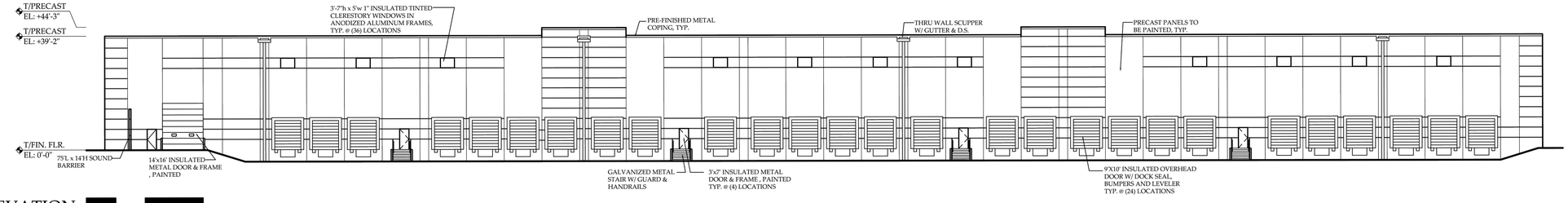


WEST ELEVATION

LOCATION MAP
SCALE: 1" = 1,000'



NORTH ELEVATION:



SOUTH ELEVATION:

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SHEET TITLE:

ELEVATION PLANS

SHEET NUMBER:

2A

ORG. DATE - 2/1/2021

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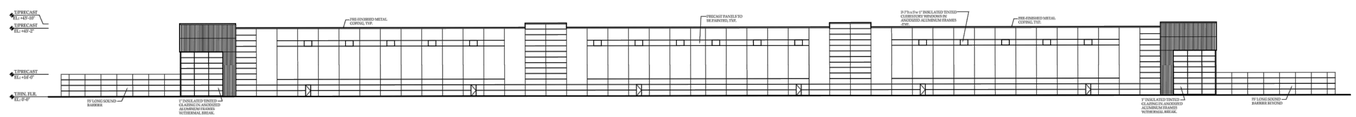
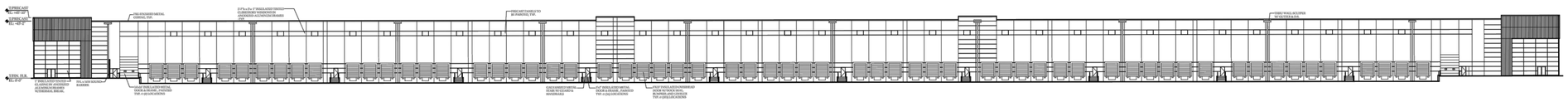
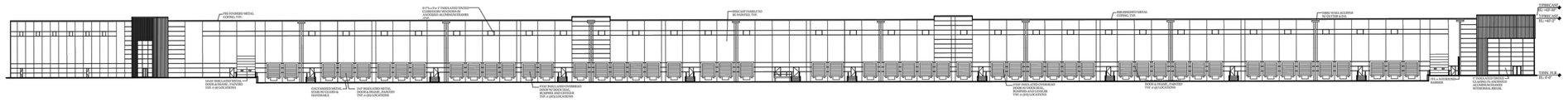
GB



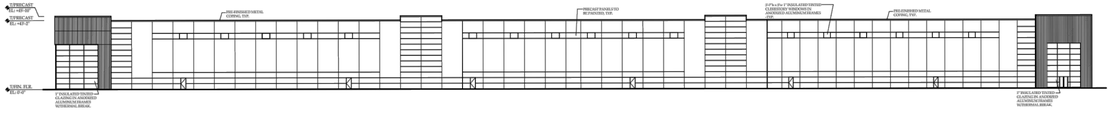
NORTH ELEVATION:
0 15 30 60 FEET



WEST ELEVATION:
0 15 30 60 FEET



EAST ELEVATION:
0 15 30 60 FEET



SOUTH ELEVATION:
0 10 20 40 FEET

LOCATION MAP
SCALE: 1" = 1,000'

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R:\2\PP203056\DRAWINGS\PLAN SETS\PERMITTING DOCS\REV 2 (ZONING CHECKLIST #1)\PP203056-SPP-2----LAYOUT, 22-B-ELEVATIONS
GB
R:\SPP-2\203056\DRAWINGS\PLAN SETS\PERMITTING DOCS\REV 2 (ZONING CHECKLIST #1)\PP203056-SPP-2----LAYOUT, 22-B-ELEVATIONS
GB

EXHIBIT 2

Phase 1 Habitat Survey for the 4501 Richmond Street Project

HA File #PA21.09
PNDI #720080
SIR #53900

Northern Red-bellied Cooter (*Pseudemys rubriventris*) Phase I Habitat Survey for the 4501 Richmond Street Project, Philadelphia County, Pennsylvania

Submitted July 13, 2021

to

Bohler Engineering
1515 Market Street, Suite 920
Philadelphia, PA 19102

by

Michael E. Torocco, Quillyn Bickley and Robert T. Zappalorti

Herpetological Associates, Inc.
Plant and Wildlife Consultants
1745 Westwood Road
Wyomissing, PA 19610

TABLE OF CONTENTS

Introduction. 1
Materials and Methods. 1
Project and Site Information. 4
Results. 5
Recommendations. 7
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INTRODUCTION

Herpetological Associates, Inc. (HA) was contracted by Bohler Engineering on behalf of BP Bridesburg, LLC to conduct a Northern Red-bellied Cooter (*Pseudemys rubriventris*, Threatened) Phase I Aquatic and Nesting Habitat Survey for the proposed 4501 Richmond Street Project. The request for this survey was in response to a search of the Pennsylvania Natural Diversity Inventory (PNDI) database, which revealed a "Potential Impact" to a species under the jurisdiction of the Pennsylvania Fish and Boat Commission (PFBC). In response to the PNDI, a Species Impact Review (SIR) letter dated January 6, 2021 was issued by PFBC, which requested a habitat assessment for the Northern Red-bellied Cooter (formerly known as Eastern Redbelly Turtle) in the project area (PNDI #720080 [**Appendix A**]; SIR #53900 [**Appendix B**]).

MATERIALS AND METHODS

LOCATION OF THE STUDY SITE

The 66.5-acre project area is located in the city of Philadelphia, Philadelphia County, Pennsylvania. Site coordinates are 39.995449°, -75.068569°. The project area is found on the Camden U.S. Geological Survey (USGS) 7.5 minute quadrangle (**Figure 1**).

SURVEYORS

The Phase I survey was performed by Michael Torocco (Recognized Qualified Northern Red-bellied Cooter Surveyor (RQNRCS)) and Quillyn Bickley (Herpetologist).

HABITAT EVALUATION METHODS

HA reviewed publicly available data as part of a preliminary desktop review of potential, natural resources for the site, as well as wetland delineation maps that are developed specifically for the project. Data included information relating to soils; topography; waterways; floodplains; wetlands; and rare, threatened, and endangered species. Field evaluations of identified aquatic resources, including streams and ponds were conducted by an RQNRCS.

The Northern Red-bellied Cooter is a large, aquatic species that inhabits large ponds, lakes, and slow-flowing, deep-water streams (Carr, 1952). They are usually found in deep water with numerous basking sites and muddy or sandy substrate. Ample aquatic vegetation is important, as Northern Red-bellied Cooters are primarily herbivorous (Hulse et al., 2001; Swarth, 2003). The suitability of the site for this species is determined by evaluating the existing habitat components. Vegetative communities, hydrological conditions, topography, soil characteristics, and the surrounding upland habitat were investigated.

Figure 1. USGS topographic map showing the approximate location of the project site.

Habitat potential for Northern Red-bellied Cooter was determined by evaluating the size and depth of open water habitats, quantity of aquatic vegetation and stream or pond substrate type. The presence and orientation of basking sites are also noted. Potential aquatic habitat is defined in this report as either "temporary/transitional", which is marginal-quality habitatwhich may be used for short durations (generally less that one season) by migrating individuals; or "core habitat", which is permanent habitat that is can be used for multiple seasons by a local population.

Surveys for upland nesting habitat are conducted by first identifying potential aquatic turtle habitat. If a location is determined to provide suitable aquatic habitat, the upland areas surrounding the open water habitat are examined for potential nesting habitat. Locations which are determined to lack aquatic habitat or only provide transitional aquatic habitat are considered low potential for the presence of reproductive Northern Red-bellied Cooters, and therefore the surrounding upland areas are not considered potential terrestrial nesting habitat regardless of the upland characteristics. Areas within 500 feet of suitable aquatic habitat with ample sun exposure and well-drained soils are considered potential nesting habitat. Conversely, upland that surrounds suitable aquatic habitat and has heavy canopy cover, poorly drained soils, or contains impervious surfaces (e.g., concrete, asphalt) were not considered potential nesting habitat.

Due to the wide range of aquatic habitat and terrestrial nesting habitat used, an experienced RQNRCS evaluates the existing components of each habitat feature for Northern Red-bellied Cooter. Habitat data are recorded on custom field forms (*Phase I Northern Red-bellied Cooter Field Form*) that incorporate key habitat characteristics of the Northern Red-bellied Cooter. Separate field forms are prepared for aquatic and nesting habitat. Aquatic habitat data may be recorded at sample points, with sample point locations selected via an initial desktop review to provide suitable coverage of an aquatic feature. Sample points are generally selected at separate aquatic features (e.g., separate ponds/lakes, streams) within the project area, although multiple sample points may be selected to adequately cover a single, large aquatic feature. Photographs are taken to document important habitats or to document site conditions.

PROJECT AND SITE INFORMATION

Project/Property Name: 4501 Richmond Street Project

Project Area and Project Description: BP Bridesburg, LLC proposes to redevelop the existing 66.5-acre site, currently an undeveloped site, located at 4501 Richmond Street, Philadelphia, PA 19137. The existing site consists of mostly pervious land. The proposed development includes two (2) buildings with 740,701 square-feet (SF) and 148,611 SF of warehouse space. The site will also contain related site amenities and improvements inclusive of parking, access roadways, lighting, landscaping, utilities, and stormwater management facilities (**Appendix C**).

Regulated Wetlands and Watercourses: An investigation of the property was performed for wetlands and regulated watercourses by Valley Environmental Services, Inc. on October 15, 2020 and May 17, 2021. A plan showing the locations of wetlands and watercourses is provided in **Appendix D**.

Wetland/Stream Impacts: The on-site wetlands will be filled as part of site grading and remediation. An extension of the project area to the Delaware River is a proposed stormwater outfall. The project will be required to obtain Joint 105 permitting for the wetland disturbances and the outfall.

Current Land Use and Setting: The project area is located in a highly developed and historically altered urban setting within the City of Philadelphia. The site is currently fallow and naturally vegetated. A hazardous materials remediation site, the Philadelphia Coke Company Inc. (PCC) property, is located in the southern portion of the project area. Structures at the PCC site are dismantled and the site has been partially remediated, and is currently overgrown with trees and tall grasses. The project approaches the Delaware River, which is lined with bulkheads or old construction debris (concrete, brick, rock fill) in most locations.

Watershed: The project area is located within the Pompeston Creek-Delaware River HUC 12 watershed and the Tacony Creek-Frankford Creek HUC 8 watershed.

Area Investigated: The study area for the habitat assessment included the entire project area, but emphasis was placed on the Delaware River and upland areas within 300 feet of the river.

RESULTS

A Phase I survey for Northern Red-bellied Cooter was conducted on May 25, 2021. The primary emphasis of this study was to document the presence/absence of potential aquatic habitat and nesting habitat which could be impacted by the proposed project. Habitat photographs and a photo location map are presented in **Appendix E** and the *Phase I Northern Red-bellied Cooter Field Forms* are provided in **Appendix F**.

HABITAT DESCRIPTION

Project Area and Offsite Riverfront

The areas within and adjacent to the project area are highly disturbed, and are currently or formerly developed for commercial or industrial uses. Most sections of the upland riverfront were historically interspersed with wetlands and marshes, and were filled to accommodate this development. The former land use within the central project area was associated with the Philadelphia Coke Company, which was certified as closed in 1994 and is now in a state of natural succession; it is currently vegetated with early successional grasses, shrubs and trees, many of which are non-native and coverage is particularly dense. However, even areas which are currently naturally vegetated have impervious surfaces below a shallow soil layer. Fragments of macadam still remain in the northwest project area and old, gravel access roads weave through this successional area. A large transmission line right-of-way extends southwest to northeast, bisecting the eastern portion of the project area.

The upland along the Delaware River has been protected against flooding by the construction of bulkheads and fill, which produces an abrupt and steep transition to the water. A section of an abandoned railroad parallels the Delaware River outside and adjacent to the eastern project area. perimeter. To the south of the project area is a large bus company; and to the north is a large recycling center and a small, private marina.

Open canopy areas are limited to the abandoned railroad and the gravel access roads. Substrate in these areas is firm and compact and can be characterized as rock, gravel, with low organic content. With the exception of the gravel road and railroad tracks, vegetation is dense, including within the transmission line right-of-way. The large successional plot that occupies the majority of the project area contains thick herbaceous cover with scattered patches of trees and shrubs. Dominant species include mugwort (*Artemisia vulgaris*), unidentified grasses, crown vetch (*Coronilla varia*), bush honeysuckle (*Lonicera* sp.), staghorn sumac (*Rhus typhina*), and cottonwood (*Populus deltoides*).

Delaware River

The Delaware River in the vicinity of the project area is within the city limits of Philadelphia, and expectedly, is highly disturbed. The remnants of old piers and bulkheads are evident, as is the presence of fill material along the river bank from historic land alteration. The river at this location exhibits an inlet area with the presence of two linear bulkheads that extend approximately 500 feet

from the bank toward the river center. The inlet serves as a "cove" which is protected from the full force of the river flow. The river itself is approximately 2,650 feet wide, with observed water depths along the shoreline averaging 3-6 feet deep. Tidal fluctuations are on the order of 6 feet, which will expose portions of the river bottom of the assessed shoreline areas at low tide. Similarly, basking structure is limited to a few logs in protected area, since the high water flows periodically bring in and subsequently remove and logs or other structure in high-flow areas. Water quality is turbid. Substrate along the banks is composed of rock and gravel, with concrete and other various industrial debris scattered along its length - part of the fill that was historically placed to fill in marshes and low areas.

Submerged aquatic vegetation along the shoreline was not observed, but emergent vegetation grows sparsely among the rocks; the northernmost inlet supports spadderdock (*Nuphar advena*). The river bank is thickly vegetated with Japanese knotweed (*Reynoutria japonica*), common reed (*Phragmites australis*), staghorn sumac, indigo bush (*Amorpha fruticosa*), black walnut (*Juglans nigra*), and mulberry (*Morus* sp.).

HABITAT EVALUATION

Aquatic Habitat: The Delaware River along the project boundary provides potential core aquatic habitat for Northern Red-bellied Cooter. This assessment is based on the depth of the water (in excess of 3 feet), and protected/slow flow rate due to the presence of a cove. Limiting factors include limited basking structure and lack of aquatic vegetation. This section of river could support Northern Red-bellied Cooters, although it is assumed that they would move into and out of the area by way of the river throughout the season rather than being permanent residents.

One turtle, presumed to be a snapping turtle (*Chelydra serpentina*) but without positive identification, was observed swimming in the cove during the evaluation. Additionally, two beaver (*Castor canadensis*) were observed swimming.

Nesting Habitat: Several upland areas were identified as potential nesting habitat for Northern Red-bellied Cooter (**Appendix E1**). Locations with 1) lack of tree canopy, 2) substrate which is not excessively rock or overly compacted, and 3) proximity to the Delaware River (generally within 500 feet) were used as criteria for determining nesting potential. It should be noted that these areas are to the east and outside of the project area, and are not proposed to be disturbed by this project.

Within the project area the habitat consist of wooded areas and densely vegetated fields, which are unlikely to be used by nesting turtles. A network of trails could allow access to nesting turtles, but based on the distance from the river are not expected to be used.

RECOMMENDATIONS

Although nesting by turtles in the project area is not expected, a protective measure that can be utilized to eliminate the chance is the installation of a turtle exclusion fence. This is simply a silt or super silt fence barrier, which should extend along the entire eastern side of the project limit of disturbance (LOD). The fence should be buried six inches and provide a continuous barrier along the eastern LOD, and should remain in place for the duration of construction.

SUMMARY AND CONCLUSIONS

HA was contracted by Bohler Engineering on behalf of BP Bridesburg, LLC to conduct a Northern Red-bellied Cooter (*Pseudemys rubriventris*) Phase I Aquatic and Nesting Habitat Survey for the proposed 4501 Richmond Street Project. The project area is located in Phiadelphia City, Philadelphia County, Pennsylvania.

The Phase I habitat evaluation was conducted on May 25, 2021. The study area included the project area plus upland areas to the east and the Delaware River. The evaluation revealed potential core aquatic habitat within the Delaware River, but the presence of Northern Red-bellied Cooter at this location has not been confirmed. Potential nesting habitat was also observed in upland areas, particularly within 500 feet of the Delaware River; these location fall outside of the project area. Northern Red-bellied Cooters are not expected to nest or occur within the project area, but the installation of a turtle exclusion fence along the eastern LOD is recommended to further reduce the risk of this species within active construction areas.

THE ECOLOGY OF THE NORTHERN RED-BELLIED COOTER

Identifying Characteristics

The Northern Red-bellied Cooter (*Pseudemys rubriventris*; **Figures 2-3**) is a large basking turtle averaging 10-12 inches (254-305 mm) in carapace length when mature (Conant and Collins, 1991). Coloration and pattern are highly variable, but in general, the carapace is mahogany to black, with light chestnut to reddish vertical bars on the laminae (Iverson and Graham, 1990). The name *rubriventris* is from the Latin words *rubidus* or reddish, and *venter* for belly, referring to the reddish plastron (Graham, 1991).

Figure 2. Hatchling Northern Red-bellied Cooter.

Considerable sexual dimorphism exists in body size and scute proportions (Graham, 1991). Female red-bellied cooters are larger and have a longer plastron, higher shell and wider bridges, and plastral scutes are relatively longer at the midline, except the femoral scute, which is slightly longer in males. Red-bellied cooters, especially males, tend to become melanistic with age. Background color of the male plastron is pale pink overlaid with dark vermicular mottling; in females, it is coral red with grey figures narrowly bordering the plates (Graham, 1971b). The front of the upper jaw has a terminal notch flanked on each side by a distinct maxillary cusp. The presence of maxillary cusps distinguishes the redbelly group, which also includes the Florida Red-bellied Cooter *(P. nelsoni*) and the Alabama Red-bellied Cooter *(P. alabamensis*).

Status

Pennsylvania Status - Threatened
Federal Status - None

Range

The Northern Red-bellied Cooter has a relatively continuous coastal plain distribution across seven mid-Atlantic states from eastern North Carolina to central New Jersey, and a disjunct population in southeastern Massachusetts (Ernst and Barbour,1994). Waters (1962) suggests that the Massachusetts population may be a relic from a once continuous, prehistoric distribution across the eastern coastal United States. *P. rubriventris* could have expanded its range when the

Figure 3. An adult Northern Red-bellied Cooter.

continental shelf was emergent during the post-Wisconsin glacial period, which became isolated as the shelf submerged with the retreat of the glaciers. South of New England, the northernmost red-bellied cooter population known occurs in Middlesex County, New Jersey. Red-bellied cooters are also known historically from New York (Carr, 1952), and an introduced population apparently became established in Charleston, Staten Island, New York, R. Zappalorti, in Litt. 1992).

Habitat and Life History

Although most of their time is spent in fresh water ponds, Pennsylvania red-bellied cooters may also be found on land. In late spring and early summer, females select nesting sites in sandy soil, usually within 100 yards (90 m) of the pond. Females occasionally travel greater distances from the ponds in search of suitable nesting sites. In each nest, 8-35 eggs are deposited Hulse et al;., 2001). Incubation takes 73-80 days at 25°C (Graham, 1971a, 1971b). Hatchlings average about 1.25 inches (32 mm) in length (range 25.8-40.8 mm). Under certain conditions, hatchlings do not emerge from nests to enter ponds and instead overwinter in the nest chamber. Sexual maturity in red-bellied cooters is probably reached at 15 years by females and sooner by males.

Red-bellied cooters are usually active from late March to November. During the winter, they rest on the bottom of ponds under the ice, in a state of relative inactivity known as brumation. Current data gathered suggests that aquatic vegetation is the primary diet for all ages classes.

Factors Contributing to the Threatened Status in Pennsylvania

The Pennsylvania Fish and Boat Commission, with the advice of a team of herpetologists, generally considered the following factors that may adversely affect the red-bellied cooter and its habitat: adverse modification of water quality, such as siltation from land clearing adjacent to ponds; pollution and eutrophication of ponds; pollution of groundwater or reduction in the levels of ponds from groundwater pumping; any draining or filling of wetlands adjacent to occupied ponds; and shoreline modification such as filling, dredging for beaches, dikes, real estate development or similar types of activity (Graham, 1984; U.S. Fish and Wildlife Service, 1994). Other factors include:

1. Predation of eggs by raccoons and striped skunks, whose population tend to increase with residential development and habitat fragmentation;
2. Predation on hatchlings and young turtles from introduced and natural predators, such as largemouth bass, herons, bullfrogs, etc.;
3. Loss of nesting and basking sites to development, recreation, and forest canopy closure;
4. Manipulation of aquatic vegetation, including herbicide use, which may impact quality and quantity of food resources;
5. Collection and harassment by humans;
6. Incidental mortality from highway traffic and shooting;
7. Isolation of populations resulting in inbreeding and genetic drift, which can reduce genetic variability and potentially decrease survivorship.

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U.S. Fish and Wildlife Service. 1994. Plymouth Redbelly Turtle (Pseudemys rubriventris) Recovery Plan, Second Revision. Hadley, Massachusetts. 48 pp.

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APPENDIX A:

PNDI

1. PROJECT INFORMATION

Project Name: **4501 Richmond Street Philadelphia**
Date of Review: **10/15/2020 04:12:50 PM**
Project Category: **Development, Other**
Project Area: **64.69 acres**
County(s): **Philadelphia**
Township/Municipality(s): **PHILADELPHIA**
ZIP Code: **19137**
Quadrangle Name(s): **CAMDEN**
Watersheds HUC 8: **Lower Delaware**
Watersheds HUC 12: **Pompeston Creek-Delaware River; Tacony Creek-Frankford Creek**
Decimal Degrees: **39.995449, -75.068569**
Degrees Minutes Seconds: **39° 59' 43.6172" N, 75° 4' 6.8479" W**

2. SEARCH RESULTS

Agency	Results	Response
PA Game Commission	No Known Impact	No Further Review Required
PA Department of Conservation and Natural Resources	No Known Impact	No Further Review Required
PA Fish and Boat Commission	**Potential Impact**	**FURTHER REVIEW IS REQUIRED, See Agency Response**
U.S. Fish and Wildlife Service	No Known Impact	No Further Review Required

As summarized above, Pennsylvania Natural Diversity Inventory (PNDI) records indicate there may be potential impacts to threatened and endangered and/or special concern species and resources within the project area. If the response above indicates "No Further Review Required" no additional communication with the respective agency is required. If the response is "Further Review Required" or "See Agency Response," refer to the appropriate agency comments below. Please see the DEP Information Section of this receipt if a PA Department of Environmental Protection Permit is required.

4501 Richmond Street Philadelphia

Project Boundary

Buffered Project Boundary

Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China

4501 Richmond Street Philadelphia

Project Boundary

Buffered Project Boundary

Service Layer Credits: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

3. AGENCY COMMENTS

Regardless of whether a DEP permit is necessary for this proposed project, any potential impacts to threatened and endangered species and/or special concern species and resources must be resolved with the appropriate jurisdictional agency. In some cases, a permit or authorization from the jurisdictional agency may be needed if adverse impacts to these species and habitats cannot be avoided.

These agency determinations and responses are **valid for two years** (from the date of the review), and are based on the project information that was provided, including the exact project location; the project type, description, and features; and any responses to questions that were generated during this search. If any of the following change: 1) project location, 2) project size or configuration, 3) project type, or 4) responses to the questions that were asked during the online review, the results of this review are not valid, and the review must be searched again via the PNDI Environmental Review Tool and resubmitted to the jurisdictional agencies. The PNDI tool is a primary screening tool, and a desktop review may reveal more or fewer impacts than what is listed on this PNDI receipt. The jursidictional agencies **strongly advise against** conducting surveys for the species listed on the receipt prior to consultation with the agencies.

PA Game Commission

RESPONSE:

No Impact is anticipated to threatened and endangered species and/or special concern species and resources.

PA Department of Conservation and Natural Resources

RESPONSE:

No Impact is anticipated to threatened and endangered species and/or special concern species and resources.

PA Fish and Boat Commission

RESPONSE:

Further review of this project is necessary to resolve the potential impact(s). Please send project information to this agency for review (see WHAT TO SEND).

PFBC Species: (Note: The Pennsylvania Conservation Explorer tool is a primary screening tool, and a desktop review may reveal more or fewer species than what is listed below.)

Scientific Name	Common Name	Current Status
Sensitive Species**		Endangered
Sensitive Species**		Endangered
Sensitive Species**		Threatened

U.S. Fish and Wildlife Service

RESPONSE:

No impacts to **federally** listed or proposed species are anticipated. Therefore, no further consultation/coordination under the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq. is required. Because no take of federally listed species is anticipated, none is authorized. This response does not reflect potential Fish and Wildlife Service concerns under the Fish and Wildlife Coordination Act or other authorities.

* Special Concern Species or Resource - Plant or animal species classified as rare, tentatively undetermined or candidate as well as other taxa of conservation concern, significant natural communities, special concern populations (plants or animals) and unique geologic features.
** Sensitive Species - Species identified by the jurisdictional agency as collectible, having economic value, or being susceptible to decline as a result of visitation.

WHAT TO SEND TO JURISDICTIONAL AGENCIES

If project information was requested by one or more of the agencies above, upload* or email* the following information to the agency(s). Instructions for uploading project materials can be found here. This option provides the applicant with the convenience of sending project materials to a single location accessible to all three state agencies. Alternatively, applicants may email or mail their project materials (see AGENCY CONTACT INFORMATION).

Check-list of Minimum Materials to be submitted:
____Project narrative with a description of the overall project, the work to be performed, current physical characteristics of the site and acreage to be impacted.
____A map with the project boundary and/or a basic site plan(particularly showing the relationship of the project to the physical features such as wetlands, streams, ponds, rock outcrops, etc.)
In addition to the materials listed above, USFWS REQUIRES the following
____**SIGNED** copy of a Final Project Environmental Review Receipt

The inclusion of the following information may expedite the review process.
____Color photos keyed to the basic site plan (i.e. showing on the site plan where and in what direction each photo was taken and the date of the photos)
____Information about the presence and location of wetlands in the project area, and how this was determined (e.g., by a qualified wetlands biologist), if wetlands are present in the project area, provide project plans showing the location of all project features, as well as wetlands and streams.

4. DEP INFORMATION

The Pa Department of Environmental Protection (DEP) requires that a signed copy of this receipt, along with any required documentation from jurisdictional agencies concerning resolution of potential impacts, be submitted with applications for permits requiring PNDI review. Two review options are available to permit applicants for handling PNDI coordination in conjunction with DEP's permit review process involving either T&E Species or species of special concern. Under sequential review, the permit applicant performs a PNDI screening and completes all coordination with the appropriate jurisdictional agencies prior to submitting the permit application. The applicant will include with its application, both a PNDI receipt and/or a clearance letter from the jurisdictional agency if the PNDI Receipt shows a Potential Impact to a species or the applicant chooses to obtain letters directly from the jurisdictional agencies. Under concurrent review, DEP, where feasible, will allow technical review of the permit to occur concurrently with the T&E species consultation with the jurisdictional agency. The applicant must still supply a copy of the PNDI Receipt with its permit application. The PNDI Receipt should also be submitted to the appropriate agency according to directions on the PNDI Receipt. The applicant and the jurisdictional agency will work together to resolve the potential impact(s). See the DEP PNDI policy at https://conservationexplorer.dcnr.pa.gov/content/resources.

5. ADDITIONAL INFORMATION

The PNDI environmental review website is a preliminary screening tool. There are often delays in updating species status classifications. Because the proposed status represents the best available information regarding the conservation status of the species, state jurisdictional agency staff give the proposed statuses at least the same consideration as the current legal status. If surveys or further information reveal that a threatened and endangered and/or special concern species and resources exist in your project area, contact the appropriate jurisdictional agency/agencies immediately to identify and resolve any impacts.

For a list of species known to occur in the county where your project is located, please see the species lists by county found on the PA Natural Heritage Program (PNHP) home page (www.naturalheritage.state.pa.us). Also note that the PNDI Environmental Review Tool only contains information about species occurrences that have actually been reported to the PNHP.

6. AGENCY CONTACT INFORMATION

PA Department of Conservation and Natural Resources
Bureau of Forestry, Ecological Services Section
400 Market Street, PO Box 8552
Harrisburg, PA 17105-8552
Email: RA-HeritageReview@pa.gov

U.S. Fish and Wildlife Service
Pennsylvania Field Office
Endangered Species Section
110 Radnor Rd; Suite 101
State College, PA 16801
Email: IR1_ESPenn@fws.gov
NO Faxes Please

PA Fish and Boat Commission
Division of Environmental Services
595 E. Rolling Ridge Dr., Bellefonte, PA 16823
Email: RA-FBPACENOTIFY@pa.gov

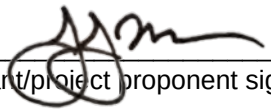
PA Game Commission
Bureau of Wildlife Habitat Management
Division of Environmental Planning and Habitat Protection
2001 Elmerton Avenue, Harrisburg, PA 17110-9797
Email: RA-PGC_PNDI@pa.gov
NO Faxes Please

7. PROJECT CONTACT INFORMATION

Name: Jason J. Mease
Company/Business Name: Valley Environmental Services, Inc.
Address: 3282 Hope Drive
City, State, Zip: Emmaus, PA 18049
Phone: (610) 762-0990 Fax: ( ) N/A
Email: jason@valenv.com

8. CERTIFICATION

I certify that ALL of the project information contained in this receipt (including project location, project size/configuration, project type, answers to questions) is true, accurate and complete. In addition, if the project type, location, size or configuration changes, or if the answers to any questions that were asked during this online review change, I agree to re-do the online environmental review.



applicant/project proponent signature

10/15/20
date

APPENDIX B:

SIR Letter

Pennsylvania Fish & Boat Commission

established 1866

Division of Environmental Services
Natural Diversity Section
595 E Rolling Ridge Dr.
Bellefonte, PA 16823
814-359-5237

January 6, 2021

IN REPLY REFER TO
SIR# 53900

Valley Environmental Services, Inc.
Jason Mease
3282 Hope Drive
Emmaus, Pennsylvania 18049

RE: Species Impact Review (SIR) – Rare, Candidate, Threatened and Endangered Species
PNDI Search No. 720080_1
4501 Richmond Street Philadelphia
PHILADELPHIA County: Philadelphia City

Dear Jason Mease:

This responds to your inquiry about a Pennsylvania Natural Diversity Inventory (PNDI) Internet Database search "potential conflict" or a threatened and endangered species impact review. These projects are screened for potential conflicts with rare, candidate, threatened or endangered species under Pennsylvania Fish & Boat Commission jurisdiction (fish, reptiles, amphibians, aquatic invertebrates only) using the Pennsylvania Natural Diversity Inventory (PNDI) database and our own files. These species of special concern are listed under the Endangered Species Act of 1973, the Wild Resource Conservation Act, and the Pennsylvania Fish & Boat Code (Chapter 75), or the Wildlife Code.

Northern Red-bellied Cooter (*Pseudemys rubriventris*, Threatened)

The Northern Red-bellied Cooter is one of Pennsylvania's largest native aquatic turtles. This turtle species is known to inhabit relatively large, deep streams, rivers, ponds, lakes, and marshes with permanent water and ample basking sites. Red-bellied Cooters are restricted to the southcentral and southeastern regions of the Commonwealth. The existence of this turtle species is threatened by habitat destruction, poor water quality and competition with aggressive non-native turtle species that share its range and habitat (e.g. Red-eared Slider).

Based on the review of this information and the proximity of the project to known element occurrences of the species of concern listed above, potential habitat could be present within the proposed disturbance area. Therefore, additional evaluations are necessary to confirm whether or not the project site contains habitat and to determine the potential for adverse impacts to this species. We request completion of a **habitat assessment** to characterize and determine if potential habitat exists within the vicinity of the proposed project area.

A qualified biologist, who possesses the necessary Scientific Collector's Permit issued by the Pennsylvania Fish and Boat Commission, must conduct this habitat assessment. A list of biologists recognized as qualified by the Pennsylvania Fish and Boat Commission to perform this assessment is enclosed.

This response represents the most up-to-date summary of the PNDI data and our files and is valid for two (2) years from the date of this letter. An absence of recorded species information does not necessarily imply species absence. Our data files and the PNDI system are continuously being updated with species occurrence information. Should project plans change or additional information on listed or proposed species become available, this determination may be reconsidered, and consultation shall be re-initiated.

If you have any questions regarding this review, please contact Kathy Gipe at 814-359-5186 and refer to the SIR # 53900. Thank you for your cooperation and attention to this important matter of species conservation and habitat protection.

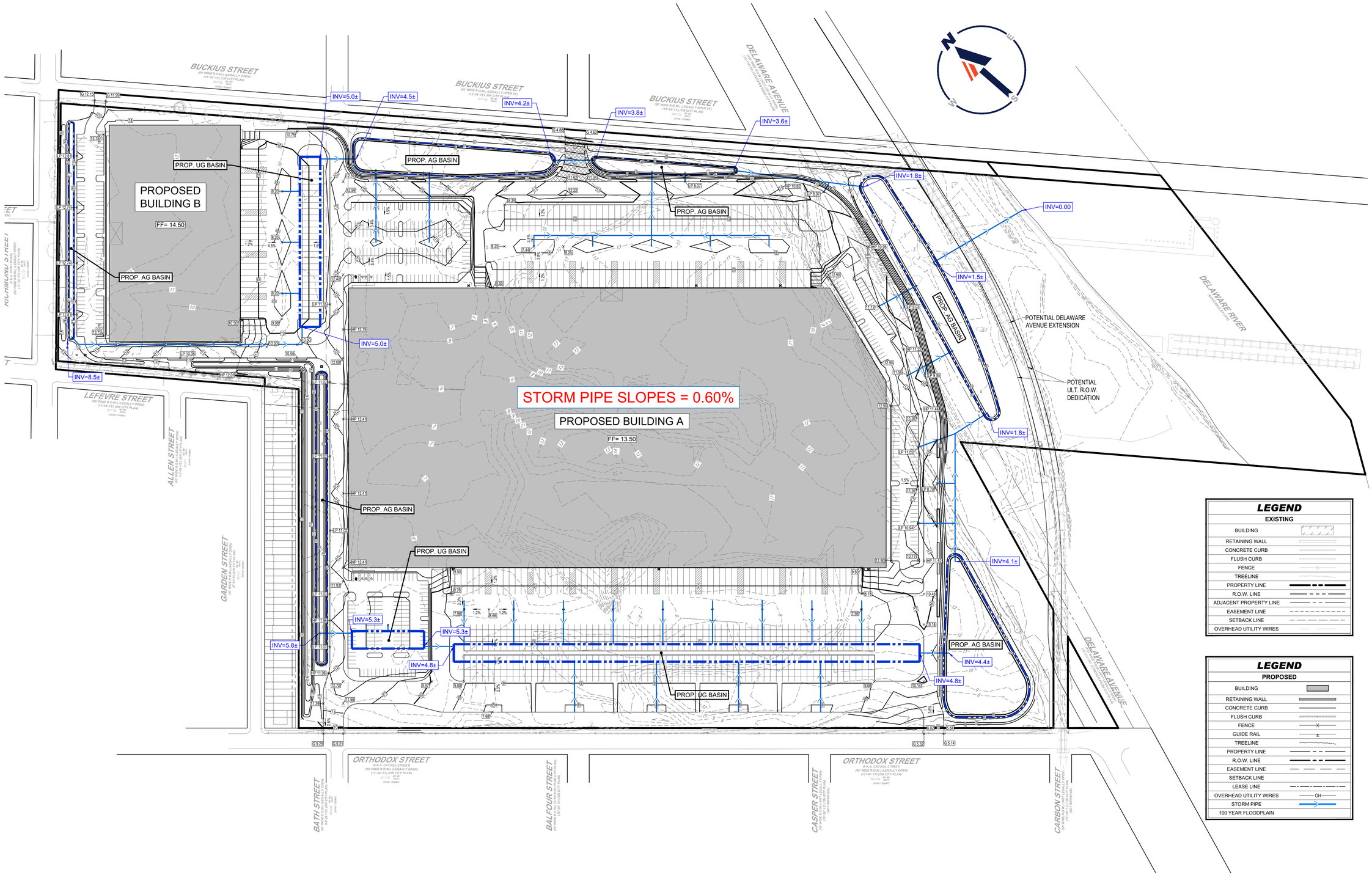
Sincerely,

Christopher A. Urban, Chief
Natural Diversity Section

CAU/KDG/dn

APPENDIX C:

Concept Plan



LEGEND	
EXISTING	
BUILDING	
RETAINING WALL	
CONCRETE CURB	
FLUSH CURB	
FENCE	
TREELINE	
PROPERTY LINE	
R.O.W. LINE	
ADJACENT PROPERTY LINE	
EASEMENT LINE	
SETBACK LINE	
OVERHEAD UTILITY WIRES	

LEGEND	
PROPOSED	
BUILDING	
RETAINING WALL	
CONCRETE CURB	
FLUSH CURB	
FENCE	
GUIDE RAIL	
TREELINE	
PROPERTY LINE	
R.O.W. LINE	
EASEMENT LINE	
SETBACK LINE	
LEASE LINE	
OVERHEAD UTILITY WIRES	OH
STORM PIPE	
100 YEAR FLOODPLAIN	

100 50 25 0 100
1"= 100'

R:\20\PP203056\DRAWINGS\CONCEPTS\CONCEPT A\REV-5\PP203056-CPA-5-----LAYOUT- CONCEPT GRADING
GB
R:\20\PP203056\DRAWINGS\CONCEPTS\CONCEPT A\REV-5\PP203056-CPA-5-----LAYOUT- CONCEPT GRADING
GB

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LAND SURVEYING
PROGRAM MANAGEMENT
LANDSCAPE ARCHITECTURE
LAND PLANNING & DESIGN
PERMITTING SERVICES
TRANSPORTATION SERVICES

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REVISIONS

REV	DATE	COMMENT	DRAWN BY / CHECKED BY
1	10/22/2020	PER CLIENT COMMENTS	GB / KM
2	11/5/2020	PER CLIENT COMMENTS	GB / KM
3	11/25/2020	PER SURVEY	GB / KM
4	12/01/2020	PER CLIENT COMMENTS	JW / KM
5	12/16/2020	PER CLIENT COMMENTS	GB / KM

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20202801994

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PROJECT No.:	PP203056
DRAWN BY:	GB
CHECKED BY:	KM
DATE:	10/15/2020
CAD I.D.:	PP203056-CPA-5

PROJECT:

CONCEPT PLAN

FOR
BRIDGE ACQUISITIONS, LLC

PROPOSED DEVELOPMENT

4501 RICHMOND STREET
PHILADELPHIA, PA 19137

BOHLER
1515 MARKET STREET, SUITE 920
PHILADELPHIA, PA 19102
Phone: (267) 402-3400
Fax: (267) 402-3401
www.BohlerEngineering.com

C. BROWN
PROFESSIONAL ENGINEER
PENNSYLVANIA LICENSE No. PE075317
DELAWARE LICENSE No. 18093
NEW JERSEY LICENSE No. 24GE05691400

SHEET TITLE:

CONCEPTUAL GRADING PLAN

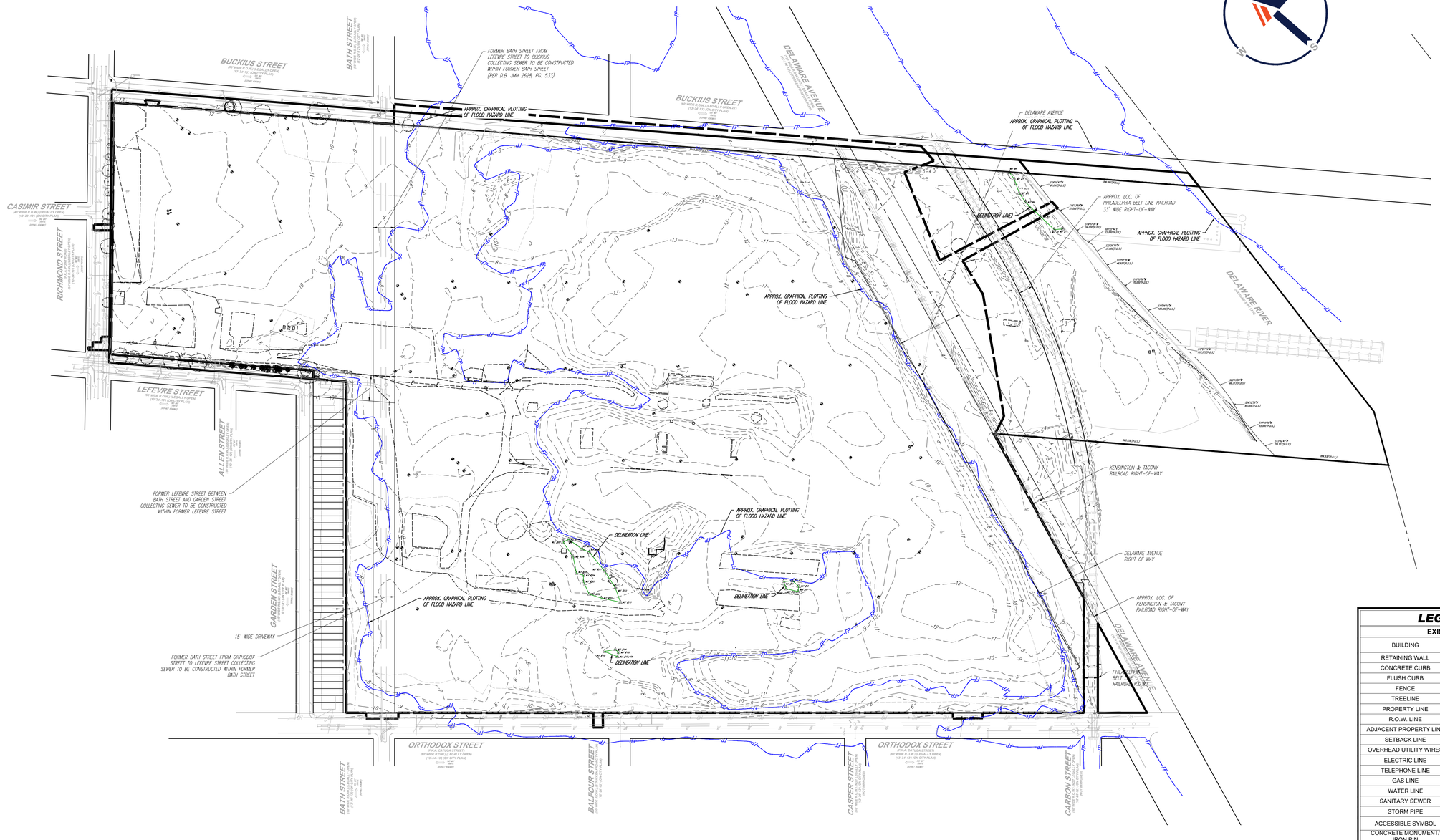
SHEET NUMBER:

C-401

REVISION 5 - 12/16/2020

APPENDIX D:

Existing Conditions Plan



LEGEND

TO BE REMOVED

RETAINING WALL (TBR)	
CONCRETE CURB (TBR)	
FLUSH CURB (TBR)	
FENCE (TBR)	
DRAINAGE INLET (TBR)	

LEGEND

EXISTING

BUILDING	
RETAINING WALL	
CONCRETE CURB	
FLUSH CURB	
FENCE	X
TREELINE	
PROPERTY LINE	
R.O.W. LINE	
ADJACENT PROPERTY LINE	
SETBACK LINE	
OVERHEAD UTILITY WIRES	OH
ELECTRIC LINE	E
TELEPHONE LINE	T
GAS LINE	G
WATER LINE	W
SANITARY SEWER	S
STORM PIPE	
ACCESSIBLE SYMBOL	
CONCRETE MONUMENT/ IRON PIN	
SIGN	
TREE	
DRAINAGE INLET	
STORM/SANITARY MANHOLE	
WATER/GAS VALVES	
ROOF DRAIN/CLEANOUT	
UTILITY POLE W/ LIGHT	
UTILITY POLE	

120 60 30 0 120

1"= 120'

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www.pa1call.org
20202801994

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PROJECT No.:	PP203056
DRAWN BY:	GB
CHECKED BY:	KM
DATE:	6/23/2021
CAD I.D.:	PP203056-PHPD-0B

PROJECT:

PERMITTING DOCUMENTS

FOR
BP BRIDESBURG, LLC

PROPOSED DEVELOPMENT

4501 RICHMOND STREET
PHILADELPHIA, PA 19137

BOHLER
1515 MARKET STREET, SUITE 920
PHILADELPHIA, PA 19102
Phone: (267) 402-3400
Fax: (267) 402-3401
www.BohlerEngineering.com

COMMONWEALTH OF PENNSYLVANIA
C. BROWN
PROFESSIONAL
CHRISTOPHER L. BROWN
DENTISTRY
PROFESSIONAL ENGINEER
PENNSYLVANIA LICENSE NO. PE070017
DELAWARE LICENSE NO. 19697
NEW JERSEY LICENSE NO. 24GE04991400

SHEET TITLE:
OVERALL EXISTING CONDITIONS & DEMOLITION PLAN

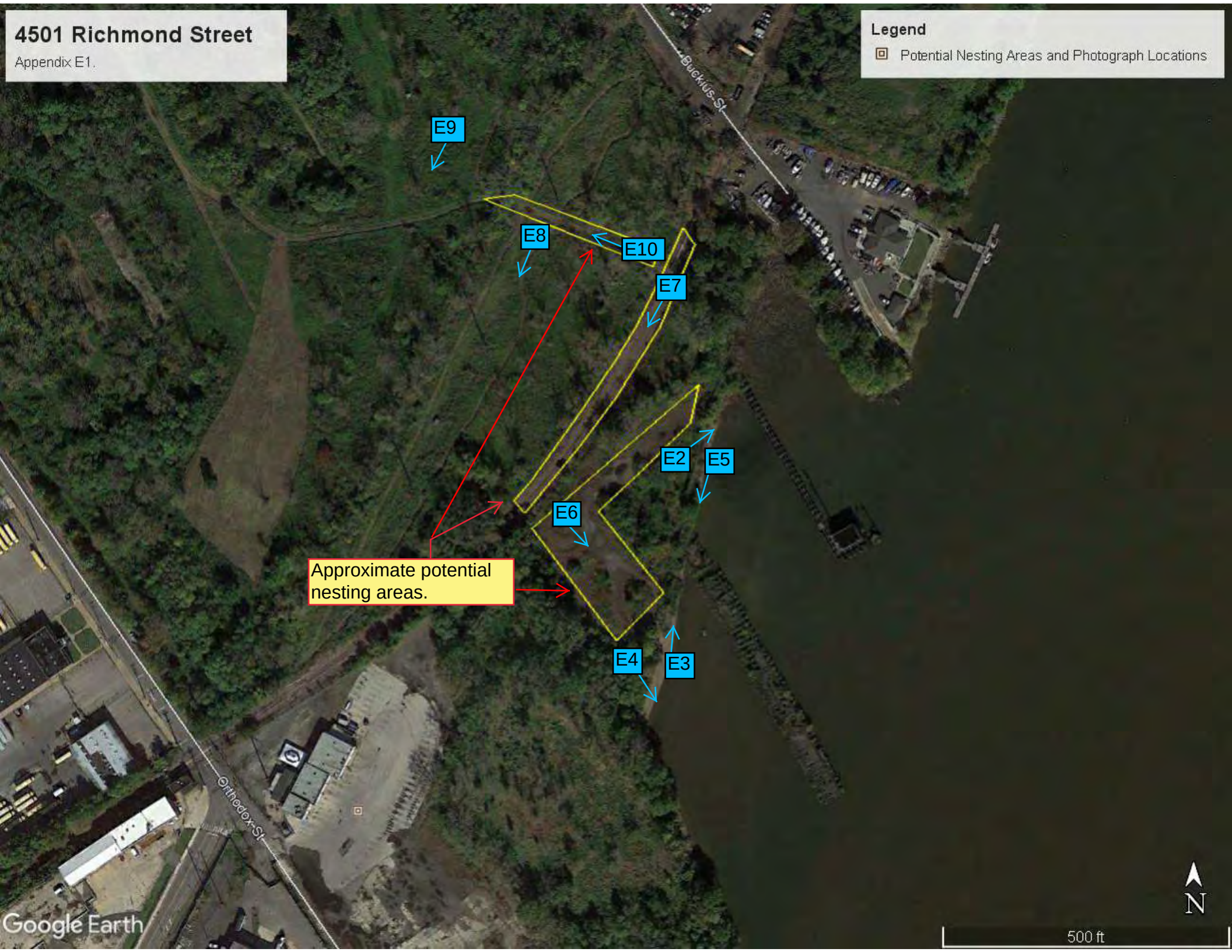
SHEET NUMBER:
C-301

ORG. DATE - 6/23/2021

JW
R:\2021\PP203056\CAD\DRAWINGS\PLAN SETS\PHILLY PERMIT DOCS\PP203056-PHPD-0B-----LAYOUT C-301 OVRL EXIST-DEMO

APPENDIX E:

Potential Nesting Areas & Photograph Location Map
and
Site Photographs


4501 Richmond Street
Appendix E1.
Legend
Potential Nesting Areas and Photograph Locations
Buckius St
Orthodox St
E9
E8
E10
E7
E2
E5
E6
E4
E3
Approximate potential nesting areas.
N
500 ft
Google Earth

Appendix E2. Northeasterly view of one of several coves created from an inlet bisected with bulkheads (May 2021).

Appendix E3. Northerly view of another cove in the inlet (May 2021).

Appendix E4. Southerly view of the southern cove (May 2021).

Appendix E5. Representative photograph of the eroded and manipulated river bank (May 2021).

Appendix E6. Southeasterly view of open canopy area adjacent to river that are outside of the project property (May 2021).

Appendix E7. This abandoned railway is adjacent to the Delaware River but outside of the eastern project property line (May 2021).

Appendix E8. This power line bisects the eastern portion of the project area, but is densely vegetated (May 2021).

Appendix E9. A successional field occupies the majority of the project area and supports dense vegetation (May 2021).

Appendix E10. Gravel access roads weave through the successional field that occupies the majority of the project area (May 2021).

APPENDIX F:

Phase I Red-bellied Cooter Field Forms

Phase I Northern Red-bellied Cooter Field Form - Aquatic Habitat

Project Name: 4501 Richmond Project No. PA20.09 Date: 5/25/2021
Township: Phila. City County: Phila. State: PA
GPS Datum: WGS84 Qualified Surveyor: M. Torocco Assistants: Q. Bickley

	Name/ID: Del. River	Notes:
Latitude (N)	39.99344	
Longitude (W)	75.06575	
Adjacent Potential Habitat?	yes	Delaware River
Setting	☐ Rural ☐ Suburban ☒ Urban	
Recreational Disturbance	☒ Low ☐ Moderate ☐ High	
Development/ Other Disturbance	☐ Low ☐ Moderate ☒ High	Highly disturbed riverfront and old industrial site
Alteration Time	☒ >20 y ears ☐ 2-19 years ☐ Present-2 years	

Aquatic Feature (*Only one aquatic feature evaluated per data form - use additional forms for separate features*)

Type: Select One Feature for Evaluation	Waterway:	☐ N/A ☐ Canal ☐ Unnamed Tributary ☒ Major River/Large Stream ☐ Other:_____	Delaware Rivers
	Open Water POW:	☒ N/A ☐ Pond ☐ Lake ☐ Oxbow ☐ Artificial Basin ☐ Other:_____	
	Wetland:	☒ N/A ☐ PEM ☐ PSS ☐ PFO	

Aquatic Feature Description

Size/Dimensions:	2500'-3000' wide	~1,300' of riverbank
Water Depth:	tidal, 2+ ft	estimated 3-6' deep
Water Quality/Turbidity:	turbid	
Substrate:	Rock, silt, concrete	
Aquatic Vegetation:	None	
Banks:	Eroded 3'	variable based on tide
Basking Structure:	limited- few logs	
Canopy Closure:	low	
Flow Rate (Waterway):	slow	bulk heads
Distance to Open Water (if wetland):	N/A	

Dominant Vegetation (Vicinity of Aquatic Feature)

Disturbance to Vegetation?	
Herbaceous Vegetation:	Jap. knotweed, mugwort, phragmites
Woody Vegetation:	indigo bush, staghorn sumac
Trees:	black willow, mulberry, cottonwood

Evaluation

Aquatic Habitat Quality	☒ **Core/Permanent** - ☐ Suitable ☒ Marginal ☐ **Temporary/Transitional** ☐ **No Habitat/Not Suitable**
Justification	Delaware River known occupancy for NBC's, bulkheads provide "cove" area, No SAV's observed

Notes: assessment area is at bulkhead cove along Del river front within abandoned, fallow industrial site. River is tidal, currently mid-tide. Eroded river front/bank formed by eroded old fill. Water depth gradually increases away from bank. No aquatic veg observed.

Semi-protected cove may provide aquatic habitat but turtles may have high immigration/emmigration rates.

Certification

As a Pennsylvania-Qualified Northern Red-Bellied Cooter Surveyor, I certify to the best of my knowledge that all of the information provided herein is accurate and complete.

Print Name Michael Torocco **Signature** [signature]

Phase I Northern Red-bellied Cooter Field Form - Nesting Habitat

Project Name: 4501 Richmond Project No. PA20.09 Date: 5/25/2021
Township: Phila, City County: Philadelphia State: PA
GPS Datum: WAS84 Qualified Surveyor: Mike Torocco Assistants: Q. Bickley

	Name/ID: Adj. Upland	Notes:
Latitude (N)	39.993786	
Longitude (W)	75.066704	
Adjacent Potential Habitat?	Yes - aquatic	Delaware River
Setting	☐ Rural ☐ Suburban ☒ Urban	
Recreational Disturbance	☒ Low ☐ Moderate ☐ High	
Development/ Other Disturbance	☐ Low ☐ Moderate ☒ High	
Alteration Time	☒ >20 y ears ☐ 2-19 years ☐ Present-2 years	

Nesting Habitat

	Name/ID: Adj. Upland	Notes: Primarily offsite area to east
Type (*check all that apply*)	☐ N/A or None ☐ Stream Bank ☒ ROW ☒ Gravel Road/Lot ☐ Paved Road Edge ☐ Lawn ☒ Old Field ☐ Ag Field ☒ Other: RR tracks	large successional field/forest bisected w/ gravel access road, transmission line & RR
Size	see description	
Distance to Aquatic Habitat	adj. → 500 ft	
Canopy Closure	☐ None ☐ Low ☒ Moderate	
Substrate (*check all that apply*)	☒ Rock ☒ Gravel ☐ Sand ☐ Clay ☐ Silt ☐ High organic ☒ Low organic ☐ Mulch ☐ Other:	
Relative Elevation	☐ Low ☒ Moderate ☐ High	
Soil Drainage	☐ Poor ☒ Moderate ☐ Well-drained	
Disturbance to Habitat	Yes	periodic ROW maintenance, occassional use of gravel roads to access groundwater meters

Dominant Vegetation

Disturbance to Vegetation?	Periodic ROW maintenance
Herbaceous Vegetation:	Grasses, Mugwort, vetch
Woody Vegetation:	Bush honeysuckle
Trees:	Cottonwood

Evaluation

Nesting Habitat Quality	☐ Suitable ☒ Marginal ☐ No Habitat	Justification: Poor access, extent of historical disturbances

Notes: Project area contains large successional plot that supports dense vegetation. Large areas of exposed Macadam present as well as shallow, compact soil over impervious surfaces. Few areas of open-canopy may provide Marginal potential nesting habitat which include abandoned rail road, gravel access road and open-canopy area near river. Substrate is gravel w/ low organic composition. Steep, eroded bank may present access challenge to these areas.

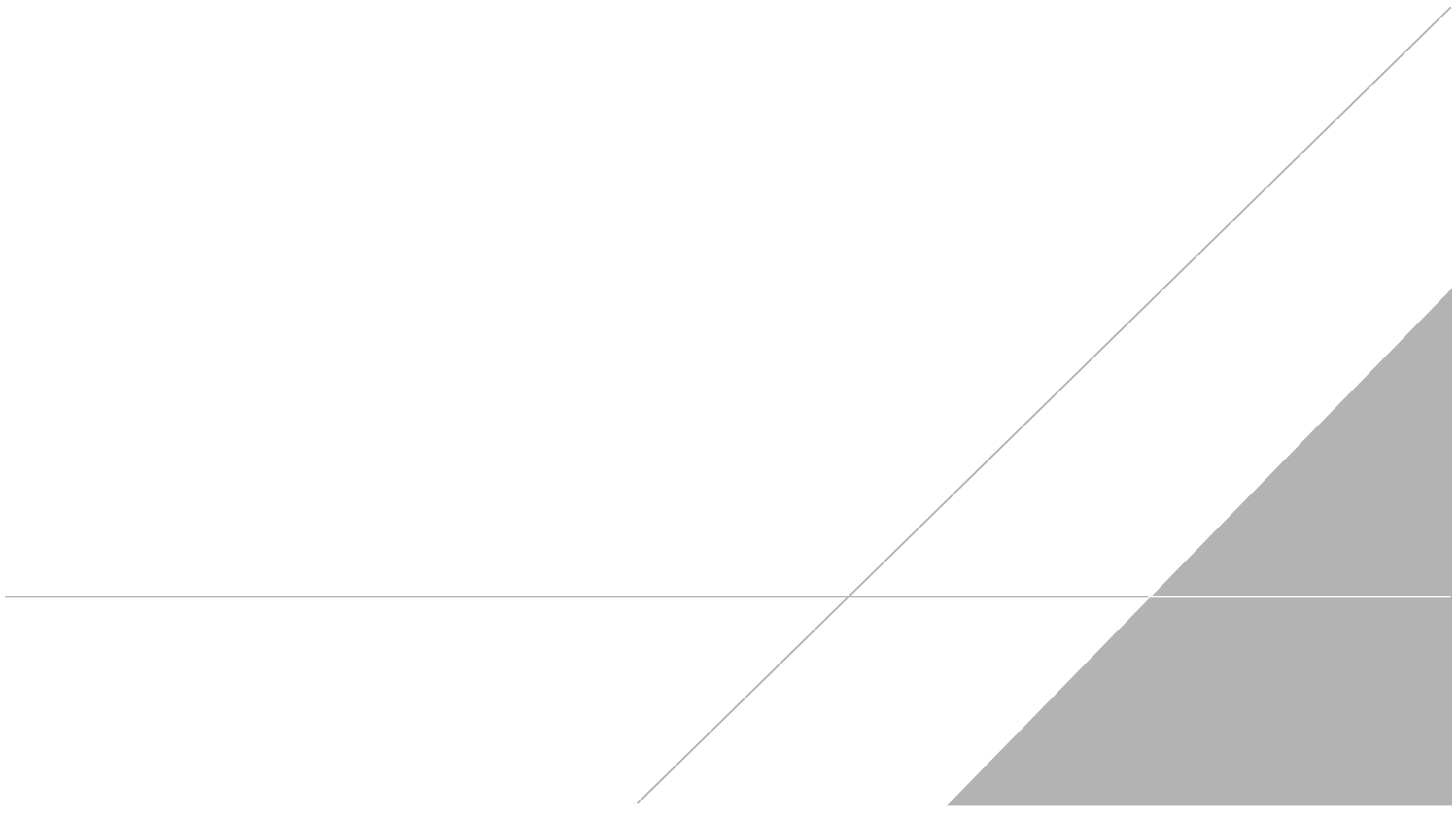
Certification

As a Pennsylvania-Qualified Northern Red-Bellied Cooter Surveyor, I certify to the best of my knowledge that all of the information provided herein is accurate and complete.

Print Name Michael Torocco **Signature** [signature]

EXHIBIT 3

Post-Remediation Care Plan



MEMORANDUM

Date: Date When Completed

To: Jim Marshall - BP Bridesburg, LLC

From: Peter Downham – Roux Associates, Inc.
Haley Rodack – Roux Associates, Inc.
Shannon Boyle – Roux Associates, Inc.

Subject: Proposed Post Remediation Care Plan
4501 Richmond Avenue, Philadelphia, Pennsylvania

Attainment of the Act 2 Site Specific Standard relies on both engineering and institutional controls. The objective of this Post Remediation Care Plan (PRCP) is to ensure the continued attainment with the Site-Specific Standard in the future and to address select comments from the Pennsylvania Department of Environmental Protection (PADEP) on January 14, 2022 based on their review of the Remedial Investigation Report and Cleanup Plan prepared by Arcadis US, Inc. (Arcadis). The PRCP may be modified in the future to comply with future changes in applicable legal requirements, subject to approval by PADEP.

In accordance with the Act 2 regulations, following PADEP approval of a Final Report, an Environmental Covenant (EC) will be executed between the property owner and the PADEP and recorded with the deed for the property. The EC will include activity and use limitations (AULs) and compliance reporting requirements. Those items are described below, along with vapor mitigation and soil management plans.

Environmental Covenant

The EC will be prepared in a similar format to the PADEP "Model Environmental Covenant" shown in **Attachment A**. The EC will be submitted to the PADEP for approval within 30 days following approval of the Final Report. Following PADEP approval of the EC, it will be recorded with the property deed and proof of filing with the deed office will be provided to the PADEP. The AULs and compliance monitoring and reporting requirements to be included in the EC are described below.

Activity and Use Limitations

The EC will contain the following language pertaining to AULs:

"The Property is subject to the following activity and use limitations, which the then current owner of the Property, and its tenants, agents, employees and other persons under its control, shall abide by:

- The groundwater beneath the Site shall not be used for any purpose;
- Subsurface structures such as basements shall not be constructed on Site;
- New enclosed structures shall be constructed with vapor mitigation measures as indicated in the Post Remediation Care Plan presented in the Act 2 Final Report; and
- The cover system shall be maintained as described in the Post Remediation Care Plan presented in the Act 2 Final Report."

Compliance Reporting

The EC will contain the following language relating to compliance reporting:

"Starting in the first month following recordation of this Environmental Covenant and biennially after that for two subsequent events, or after written request by the Department following the Department's approval of this Environmental Covenant, the then current owner of the Property shall submit, to the Department, written documentation presenting the results of compliance monitoring described in the Act 2 Final Report and stating whether or not the activity and use limitations in this Environmental Covenant are being abided by.

In addition, within 1 month after any of the following events, the then current owner of the Property shall submit, to the Department, written documentation of:

- Noncompliance with the activity and use limitations in this Environmental Covenant;
- Transfer of the Property;
- Changes in use of the Property; or
- Filing of applications for building permits for the Property and any proposals for any site work, if the building or proposed site work will affect the contamination on the Property subject to this Environmental Covenant."

Passive Indoor Vapor Mitigation

New enclosed structures shall be designed and constructed in general accordance with Section II-B of the approved Act 2 Cleanup Plan that relates to passive vapor mitigation **(Attachment B)**.

Any future building slabs shall be considered part of the vapor mitigation system in that they keep the vapor from entering the buildings directly. Absent another mitigating vapor intrusion system, the owner should ensure that there are no punctures or openings in the slabs, and that any openings such as pipes, electrical wires or other building elements are sealed with rubber gaskets, spray foam, or in some other way to prevent air from beneath the slabs from entering the living space. For inhabited buildings, a vapor barrier should be installed (at a minimum). Vapor intrusion mitigation measures are not needed for uninhabited structures (e.g., storage shed).

Cover System Monitoring and Maintenance

The cover system functions by restricting human access to impacted materials located beneath the cover. Currently, the cover system will be comprised primarily of a minimum of two feet of clean soil and to a lesser extent by concrete aggregate and paving. It is anticipated that in the future, much of the Site will contain various structures and roadways.

A visual inspection of the two-foot clean soil cap will be performed annually to look for perceived settlement against rigid elements (buildings, retaining walls, storm structures, etc.). If settlement is perceived, a further inspection which may include intrusive testing (i.e. measuring of total thickness by limited spot excavation) or surveying by a professional surveyor will be performed. Additional soil will be added if needed to re-establish the two-foot minimum thickness.

The owner will inspect the cover system quarterly and after significant rainfall events during the first year. Once vegetation is established, the inspection frequency will be reduced to annually, or as required by a ny subsequent permit. The table below identifies the general items to be inspected.

Inspection Item	Likely Corrective Measures
Vegetative Cover	Revegetate as needed
Soil Cover Erosion	Replace with clean soil to ensure the minimum two feet cover thickness and reseed
Pavement	Repair or replace any pavement that exposes underlying Site soil; also performing crack repairs as needed
Storm Water Management Structures	Remove obstructions to allow free drainage and repair any erosion damage
Building Slabs Over Vapor Mitigation Systems	Seal cracks and replace sealant that has separated or deteriorated around cracks and pipe penetrations

Repairs to the cover system will be made promptly and the corrective action will be documented for inclusion in the Compliance Report. Only certified clean fill as defined by the PADEP Management of Fill Policy will be used to repair the soil cover system. A copy of the PADEP Management of Fill Policy is provided as **Attachment C**. The Clean Fill Certification form can be submitted online[1].

Upon completion of development activities, sediment basins are proposed to be installed to control overland stormwater flow. The basins will be lined with a 30-millimeter geomembrane liner. These facilities will be inspected on a quarterly basis and after rainfall event exceeding 3 inches within a 24-hour period of time for indications of a compromise of remedial measure integrity (e.g., excessive settlement, erosion, etc.). The inspections will be documented on an inspection log and maintained by property owner's representative. Required repairs will be made by qualified personnel and recorded on the Intrusive Work Notification and Documentation form. Completed forms will be maintained in on-site files. A narrative description and/or plan mark-up depicting the cross sections and details of the remedial measures must be documented in the inspection logs for any necessary repairs.

Soil Management Plan

Future excavation into and below the cover must be carefully planned and documented to ensure that:

1. The integrity of the remedial measures is maintained;
2. Construction workers are protected; and
3. Site soil is properly managed and disposed of.

The purpose of this Soil Management Plan, included as **Attachment D**, is to provide general guidelines to be considered when planning for and conducting excavation activities at the Site. In accordance with the proposed EC Compliance Reporting requirements described above, PADEP must be notified within 1 month following the application for building permits or any proposals for activities that "will affect the contamination at the property". Currently, all material beneath the cover system is considered to be potentially "contaminated". Therefore, PADEP must be notified of planned excavation activities beneath the cover and that notification must describe the plans relating to a specific activity for ensuring worker safety and managing the excavated material. Notification must be 15 days prior to initiating any activity that will disturb the soil cover and underlying potentially contaminated materials.

It is expected that excavation will occur using a variety of methods for a variety of reasons, including:

1. Construction of caissons through the unsaturated and saturated zone using large diameter augers;
2. Construction of building footers and foundations using heavy construction equipment; and
3. Installation of subsurface utilities.

[1] http://www.depgreenport.state.pa.us/CleanFill

Prospective contractors performing work that may disturb the soil cover and underlying Site Materials need to consider the following:

1) Work below the cover system may encounter hazardous substances. A site-specific health and safety plan should be developed to address work activity hazards and protection of the workers, including air monitoring and other media monitoring as appropriate.
2) Measures must be employed to ensure that materials from below the cover system do not impact the clean cover material in the vicinity of the work area;
3) Excavated material from below the cover may be used as backfill provided that 2 feet of clean soil cover and/or hard surface are re-established when the work is completed. Excavated material not suitable for reuse as subsurface fill must be properly characterized and disposed off-Site in accordance with 25 Pa Code § 250.3(a). Tar-like material may be encountered in certain locations during excavation. If immobile tar or tar-like material is encountered during construction, requiring removal from its present location, the material will be characterized and may remain on-Site if found to be non-hazardous. If potentially mobile tar or tar-like material (as determined by a paint filter test) is encountered during construction, it will be segregated and transferred to a material staging area constructed with a low-permeability liner system (e.g., HDPE) extending over the prepared ground surface and formed sidewalls to contain the tar/soil mixture. The stockpiled material will be characterized to determine disposal requirements and subsequently disposed of off-Site in accordance with 25 Pa. Code § 250.3(a);
4) Excess material that can't be placed under the cover requires waste characterization and off-Site disposal. No material removed from beneath the marker mat may remain uncovered.
5) Fill materials brought on Site must meet the definition of "clean fill" as presented in the PADEP Management of Fill Policy (**Attachment C)**.
6) Groundwater at the Site contains a variety of polycyclic aromatic hydrocarbons (PAHs), arsenic and lead in concentrations exceeding the PADEP Medium Specific Concentrations (MSCs). Excavation below the water table must include plans for managing and off-Site disposal of liquids.
7) A general NPDES storm water permit exists for the site. Close coordination with the property owner is necessary during design and execution of excavation to determine what type of modifications to the existing permit, if any, are necessary.

The following presents the generally anticipated sequence of events during excavation below the cover system.

Excavation

The PADEP must be notified prior to excavation into the soil below the cover system as required by the EC. The notification will include specific plans for ensuring worker safety; managing excavated materials; and restoring the clean cover system. Excavation below the cover system is expected to generally proceed in the following manner:

1) Obtain necessary permits, establish erosion and sediment controls, and implement health and safety measures as required.
2) Remove and stockpile the top 2 feet of clean cover.
3) Excavate into the potentially impacted material and stage on Site, separate from the clean cover. Depending on the size of the excavation, the excavated material could be placed on polyethylene sheeting, or the clean cover could be over excavated such that the excavated material is placed directly on other "sub cover" soils. Further containment measures are necessary for excavation below the water table.
4) Backfill the excavation with the stockpiled soil from below the cover. Stockpiled clean cover such that the 2-foot thickness of clean cover is restored or the material is beneath a hard surface (e.g., roadway, floor slab, etc.).
5) Obtain disposal facility approval (where applicable a RCRA-approved facility) and dispose of excess impacted soil off-Site at a properly permitted disposal facility. The disposal facility will provide specific instructions for sampling and analysis of the material for characterization.

The Site owner must maintain documentation relating to the location of the excavation and the disposition of the excess material, including waste disposal manifests. A summary of the excavation activities will be included in the annual Compliance Report as required by the EC.

Dust Control

Site development will be performed in accordance with a dust control permit issued as per § IX of the Philadelphia Air management Services Regulations set forth by the Philadelphia Department of Public Health's Air Pollution Control Board and other applicable permits and regulations. The dust control permit is required for earthwork (e.g., clearing, grubbing, or earth disturbances) involving more than 5,000 square feet of land.

During construction, Site controls, such as silt fencing, silt socks, stabilized construction entrances, wetting, tire washes, and street sweeping, will be conducted to minimize fugitive dust generation and soil movement off-Site.

Human Health Risk Assessment – Utility Worker

Pursuant to 25 Pa. § 250.602, Roux completed a limited Site-specific Human Health Risk Assessment (HHRA) to address select PADEP's comments from the January 14, 2022 letter based on their review of the Remedial Investigation Report and Cleanup Plan prepared by Arcadis. The HHRA has been developed to evaluate whether soil poses an unacceptable risk to human health given the proposed future work at the Site, specifically for utility workers at the Site as part of future redevelopment activities. The various pathways are addressed by pathway elimination, a combination of Statewide health and Site-specific numeric standards, and the calculation of residual risk based on current Site data. As detailed below, this evaluation includes the identification of regulated substances carried forward into the risk assessment as constituents of potential concern (COPCs), an exposure assessment discussing the relevant receptors and pathways, and details on inputs and derivation of specific risk calculations for COPCs in Site soil. This evaluation has been prepared as outlined in the January 2019 Technical Guidance Manual (TGM) and in accordance with 25 Pa. Code § 250.602(c), § 250.603 and 250.604.

Contaminants of Potential Concern (COPCs)

Pursuant to the aforementioned procedures, Roux attained analytical data from Arcadis for soil samples collected from surface soil and unsaturated soil. The analytical data was compared to the United States Environmental Protection Agency's (USEPA's) Industrial Regional Screening Levels (RSLs) to identify COPCs. The dataset included exceedances of several metals, polychlorinated biphenyls, volatile organic compounds, and semi-volatile organic compounds, as listed in **Table 1**.

The HHRA completed by Arcadis analyzes risk in a small portion of the Site (i.e., near the railroad). The COPCs identified by Roux represent Site-wide COPCs; therefore, Roux analyzed additional COPCs absent from Arcadis' HHRA analysis. From the analytical data provided by Arcadis, Roux utilized the ProUCL software Version 5.1 (2015a,b) to calculate the upper confidence limits (UCL) for the COPC list, as shown on **Table 2A,** by using the recommended output concentration.

Potentially Exposed Population and Exposure Pathways

For purposes of this limited HHRA, future exposure pathways to both surface (0 – 2 ft below ground surface [bgs]) and subsurface, unsaturated soils (2 – 16 ft bgs) were considered complete. This Post Remediation Care Plan includes the limited HHRA for only the future utility work at the Site since a majority of the Site is being raised; therefore, construction workers would not be cutting into the impacted soils. If it is anticipated that the construction worker will be cutting into impacted soils, the construction workers with either 1) have the proper 40-hour OSHA HAZWOPER training or 2) a human health risk assessment will be performed to evaluate risk for the construction worker exposure pathway. Exposure pathways

associated with direct contact with soil include incidental ingestion, dermal contact, and the inhalation of vapors and/or particulates during intrusive subsurface activities within a trench specifically for utility line installation. It is assumed during utility work groundwater will not be encountered and therefore groundwater exposure was not evaluated.

Toxicity Assessment

The toxicity assessment discusses the two general categories of toxic effects (noncarcinogenic and carcinogenic) and constituent-specific toxicity values used to calculate potential risks for these two types of toxic effects. Toxicity values used in the calculations and their sources are presented in **Table 2B**. Toxicity values for potential noncarcinogenic and carcinogenic effects were obtained by accessing the toxicity information contained in the current USEPA RSL tables (USEPA 2019b). Variables utilized as part of this HHRA are outlined on **Table 2C**.

Exposure Assumptions

The equations used to evaluate utility workers exposures to unsaturated soil are presented in **Table 2D** and are used to calculate an acceptable soil concentration that upon exposure will not pose an unacceptable risk to the potentially exposed population. The Excess Lifetime Cancer Risks (ELCRs) and Hazard Index (HI) for non-cancer effects were developed for all unsaturated soil COCs and are derived based on the most likely exposed population (utility worker) and exposure routes (ingestion, dermal absorption, and inhalation).

The exposure assumptions used in the calculations are presented in **Table 2E** and are summarized below. Utility workers are assumed to access the Site and have the potential to be exposed to surface soils through incidental ingestion, dermal contact, or inhalation. The body weight for an average worker is 80 kilograms, which is the weighted average of the mean recommended values for body weight by age group from the PADEP. The selected soil ingestion rate is 330 mg/day, which is the central tendency soil ingestion rate (USEPA 2002, Exhibit 1-2); and the fraction ingested from the Site is assumed to be 100 percent, which is conservative. Utility workers are assumed to work 5 days per week over a two-week period as part of utility work (FDOT, 2001) for one year. The assumed exposed skin surface area (SSA) is 3,527 centimeters squared (cm^2), which is the default for construction workers (USEPA 2002). The construction worker 0.3 milligram per square centimeter per day soil-to-skin adherence rate (SAR) from USEPA (2002, 2004) is used. The exposure time used in inhalation exposure equations is 8 hours per day based on typical work day.

Additional factors are required for the evaluation of the inhalation route. General approaches for the derivation of these factors are included in the *Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites* (USEPA 2002). Volatilization factors derived following USEPA 2002, are shown in **Table 2F**. Particulate Emission Factor calculations for wind-blown fugitive dust are included in **Table 2F**.

Noncarcinogenic Effects

For a given regulated substance, the dose or concentration that elicits no adverse effect when evaluating the most sensitive response in the most sensitive species is referred to as the “no observed adverse effect level.” This level is used to establish noncancer toxicity values, called reference doses (RfDs) for evaluating oral exposures and reference concentrations (RfCs) for evaluating inhalation exposures. The RfD and RfC values represent daily exposure levels that are not expected to cause adverse noncarcinogenic health effects. **Table 2B** presents the available RfDs and RfCs for COCs. Chronic non-carcinogenic values are used in the derivation of HIs.

Carcinogenic Effects

Cancer slope factors (CSFs) are derived from the conservative assumption that any dose level has a possibility of causing cancer. The cumulative dose, regardless of the particular exposure period, determines the risk. To evaluate inhalation exposures, inhalation unit risks (IURs) that relate cancer potency to a constituent concentration in air are used. **Table 2B** presents the CSF and IUR for each constituent considered to be a carcinogen.

Dermal Toxicity Values

The USEPA has not yet developed toxicity values specific to dermal exposure. For this reason, the oral toxicity values (RfD_o and CSF_o) and the fraction absorbed dermally from soil, also known as the dermal absorption efficiency (ABS_d) were used to derive adjusted toxicity values (RfD_d and CSF_d) (adjusted to dermal dose) for use in assessing dermal exposure (USEPA 1989, 2004): **Table 2F** includes the dermal ECLR/HI calculations which incorporate the ABS_d into the equations, also presented in **Table 2B.**

Lead Modeling

There currently are no toxicity data for lead that allow a standard quantification of potential risks and hazards associated with lead exposure. Therefore, the USEPA (2003b, 2009, 2017) Adult Lead Methodology (ALM) was used to quantify potential risks and hazards associated with lead exposure at the Site. Specifically, the ALM was used to evaluate a utility worker scenario. Parameter values used in the ALM were based on USEPA's latest recommended default values. **Attachment E** presents the ALM model used to quantify risk following the latest updates to the ALM (USEPA 2017). The mean lead concentration of 905 mg/kg presents a 5.3% probability of a Target lead blood level of 5 µg/dL and a 0.3% probability of a target lead level of 10 µg/dL. Input values used by Roux are conservative and assume a full year of utility work. A more realistic scenario would assume an exposure of ten days over a two-week period. In addition, a majority of the elevated lead concentrations do not correspond with the depths in which the utility workers would be operating. Therefore, the probability of unacceptable lead blood level concentrations is likely much less likely.

Risk Evaluation

The evaluation of risk or the calculation of ELCR/HI requires the assumption of acceptable "target" risk levels for carcinogenic and non-carcinogenic effects. ELCRs were calculated for each COC and the total ELCR was compared to a target cancer risk of 1×10^{-5} as presented in **Table 2F**. A non-cancer hazard quotient (HQ) of 1 indicates that the exposure level is equal to the reference exposure level that is not expected to produce non-carcinogenic (systemic) effects, even for sensitive individuals or subpopulations. HQs were calculated for each COC and the total HI was compared to a target HI of 1, as presented in **Table 2F**. For carcinogens which also have available non-carcinogenic toxicity values, both the ELCR/HI were calculated based on potential carcinogenic (at a target risk level of 1×10^{-5}) and non-carcinogenic effects (at a target non-cancer HQ of 1).

Risk Characterization Results

The exposure variables and assumptions are presented in **Table 2E**. The equations used to calculate the ECLR/HI are presented in **Table 2D**. The dermal absorption parameters and volatilization factors are presented in **Table 2B** and **Table 2F**, respectively. Toxicity values are presented in **Table 2B**.

Due to conservative estimates, lead should not pose a concern to utility workers during subsurface work. In addition, total ECLR and total HI are below the target cancer risk of 1×10^{-5} and target non-cancer HQ of 1, respectively.

The Site-wide unsaturated soil EPCs are currently at acceptable or "safe" concentrations. There is no anticipated unacceptable risk to the only potentially complete exposure pathway of direct contact with soil

by utility workers. In the future, the pathway to soil COCs will be eliminated to other potential receptors through engineering and institutional controls as discussed in the Cleanup Plan.

TABLES

1. Summary of Arcadis Soil Analytical Data
2A. Summary of UCL Concentrations
2B. Summary of Compound-Dependent Input Values
2C. Summary of Input Variables
2D. Summary of Equations
2E. Summary of Constant Input Values
2F. Summary of Calculations

Table 1. Summary of Arcadis Soil Analytical Data. BP Bridesburg, LLC; 4501 Richmond Ave, Philadelphia, PA.

Sample ID	USEPA	MW-103	MW-108	MW-108	PCSB-17	PCSB-26	PCSB-26R	PCSB-27	PCSB-27	PCSB-28
ft bgs	Industrial Soil	6-7	10-12	5-7	4	0.5	0.5-2	0.5	1.5	0.5
Sample Date	Regional Screening Level	5/16/2018	9/24/2019	9/24/2019	3/17/2005	7/26/2005	4/19/2019	7/26/2005	7/26/2005	7/26/2005
METALS - 6010D (mg/kg)										
Antimony	470	ND	ND	**2.6**	ND	**8**	ND	**2.6**	ND	**9.6**
Arsenic	3	**5.4**	**18.4**	**16**	**8.3**	**64**	**15.2**	**27**	ND	**99**
Chromium	—	**22.9**	**185**	**107**	**27**	**34**	**162**	**8.7**	**21**	**15**
Cyanide	150	**0.25**	**0.4**	**12.8**	—	—	**1.1 J**	—	—	—
Lead	800	**229**	**150**	**145**	**150**	**3000**	**768 J**	**440**	**13**	**3200**
Mercury	46	**0.3**	**0.5**	**3.5**	**2**	**17**	**0.44 J**	ND	ND	**1.8**
Selenium	5800	ND	ND	ND	**3.3**	**4**	**5.7 J**	**4.2**	ND	**4.3**
POLYCHLORINATED BIPHENYLS (mg/kg)										
Aroclor 1260	0.99	**< 0.041**	NA	NA	NA	**< 0.028**	**< 0.038**	**< 0.029**	**< 0.028**	**< 0.03**
SEMI-VOLATILE ORGANIC COMPOUNDS - 8270D (mg/kg)										
1,1-Biphenyl	200	**0.0223 J**	**0.0439 J**	**310 D**	—	—	ND	—	—	—
2-Methylnaphthalene	3000	**0.0604**	**0.27**	**1610 D**	**250**	**0.12**	ND	**0.73**	ND	**0.78**
4-Methylphenol	16000	—	—	—	ND	ND	—	ND	ND	ND
Anthracene	230000	**0.708**	**0.0766**	**1010 D**	**540**	**0.61**	ND	**1.6**	ND	**0.47**
Benz(a)anthracene	21	**1.34**	**0.118**	**1050 D**	**410**	**3.8**	**0.134**	**9.2**	**0.046**	**2.4**
Benzo(a)pyrene	2.1	**1.21**	**0.108**	**681 D**	**290**	**3.1**	**0.154**	**8.8**	**0.042**	**2.1**
Benzo(b)fluoranthene	21	**1.45**	**0.14**	**903 D**	**390**	**4.8**	**0.211**	**11**	**0.13**	**4**
Benzo(g,h,i)perylene	—	**0.776**	**0.0798**	**321 D**	**96**	**2.3**	**0.102**	**7.3**	ND	**2**
Benzo(k)fluoranthene	210	**0.482**	**0.0536**	**320 D**	**130**	**1.8**	**0.0702**	**4.1**	**0.046**	**0.94**
Carbazole	—	**0.236**	**0.0436 J**	**594 D**	**200**	**0.18**	**0.0116 J**	**0.46**	ND	**0.19**
Chrysene	2100	**1.38**	**0.148**	**927 D**	**400**	**3.9**	**0.142**	**9.6**	**0.085**	**3**
Dibenz(a,h)anthracene	2.1	**0.191**	ND	**119 D**	**45**	**0.8**	**0.0326 J**	**2.5**	ND	**0.85**
Dibenzofuran	1200	**0.179**	**0.103**	**1270 D**	**340**	**0.16**	ND	**0.44**	ND	**0.35**
Fluoranthene	30000	**2.93**	**0.241**	**2470 D**	**1100**	**3.7**	**0.243**	**17**	**0.049**	**3.9**
Fluorene	30000	**0.342**	**0.127**	**1940 D**	**500**	**0.17**	ND	**0.41**	ND	**0.12**
Indeno[1,2,3-cd]pyrene	21	**0.84**	**377 D**	**0.07**	**140.00**	**2.10**	**0.11**	**6.20**	**< 0.0064**	**1.80**
Naphthalene	8.6	**0.189**	**1.06**	**8500 D**	**1200**	**0.16**	ND	**1.2**	ND	**0.69**
Phenanthrene	—	**2.33**	**0.363**	**5220 D**	**1600**	**1.8**	**0.121**	**5.6**	ND	**1.7**
Phenol	250000	ND	ND	**24.8**	ND	ND	ND	ND	ND	ND
Pyrene	23000	**2.72**	**0.254**	**1760 D**	**780**	**3.2**	**0.21**	**14**	**0.067**	**3.2**
VOLATILE ORGANIC COMPOUNDS - 8260C (mg/kg)										
Benzene	5.1	ND	ND	**9.98**	**0.17**	ND	ND	ND	ND	ND

Notes:
ft bgs = Feet below ground surface.
mg/kg = Milligrams per kilogram.
USEPA = United States Environmental Protection Agency.
Boxed concentrations exceed the EPA Industrial Soil Regional Screening Levels.
— = Sample not analyzed.
B = Analyte also detected in the laboratory blank.
D = Result reported from dilution analysis.
ND = Not detected.
U = Not detected above laboratory detection limit.
J = Result below the reporting limit (estimated value).
Bold = Detected concentration.

Table 1. Summary of Arcadis Soil Analytical Data. BP Bridesburg, LLC; 4501 Richmond Ave, Philadelphia, PA.

Sample ID	USEPA	PCSB-29	PCSB-30	PCSB-30	PCSB-30R	PCSB-31	PCSB-32	PCSB-32	PCSB-33	PCSB-34
ft bgs	Industrial Soil	0.5	0.5	2	0.5-2	0.5	0.5	0.5	0.5	0.5
Sample Date	Regional Screening Level	7/26/2005	7/26/2005	7/26/2005	4/19/2019	7/28/2005	7/28/2005	8/1/2005	7/28/2005	7/27/2005
METALS - 6010D (mg/kg)										
Antimony	470	ND	ND	**11**	ND	ND	ND	—	ND	**3.4**
Arsenic	3	**2.4**	**4.3**	**140**	**5.2**	**3**	ND	—	ND	**7**
Chromium	—	**< 5.6**	**11**	**28**	**1.6**	**< 6.9**	**< 6.7**	NA	**< 6.2**	**50**
Cyanide	150	—	—	—	ND	—	—	—	—	—
Lead	800	**29**	**21**	**2100**	**15.4**	**7.6**	**7**	—	ND	**1200**
Mercury	46	ND	ND	**0.53**	**0.037 J**	ND	ND	—	ND	ND
Selenium	5800	ND	**2.1**	**29**	ND	ND	ND	—	ND	**2.9**
POLYCHLORINATED BIPHENYLS (mg/kg)										
Aroclor 1260	0.99	**< 0.028**	**< 0.028**	**< 0.038**	**< 0.042**	**< 0.035**	**< 0.033**	NA	**< 0.031**	**0.084**
SEMI-VOLATILE ORGANIC COMPOUNDS - 8270D (mg/kg)										
1,1-Biphenyl	200	—	—	—	ND	—	—	—	—	—
2-Methylnaphthalene	3000	**0.072**	**0.36**	ND	ND	ND	ND	—	**0.14**	**0.74**
4-Methylphenol	16000	ND	ND	ND	—	ND	ND	—	ND	ND
Anthracene	230000	ND	**0.22**	ND	ND	ND	ND	—	ND	**4.2**
Benz(a)anthracene	21	**0.067**	**0.68**	ND	**0.0283 J**	ND	**0.052**	—	**0.23**	**16**
Benzo(a)pyrene	2.1	**0.055**	**0.41**	ND	**0.0339 J**	ND	**0.051**	—	**0.24**	**14**
Benzo(b)fluoranthene	21	**0.12**	**0.97**	ND	**0.0478**	**0.07**	**0.087**	—	**0.45**	**19**
Benzo(g,h,i)perylene	—	**0.045**	**0.39**	ND	**0.0281 J**	ND	ND	—	**0.23**	**13**
Benzo(k)fluoranthene	210	ND	**0.24**	ND	ND	ND	ND	—	**0.12**	**7.4**
Carbazole	—	ND	ND	ND	ND	ND	ND	—	ND	**0.75**
Chrysene	2100	**0.099**	**0.99**	ND	**0.0272 J**	**0.053**	**0.065**	—	**0.36**	**16**
Dibenz(a,h)anthracene	2.1	ND	**0.16**	ND	ND	ND	ND	—	**0.062**	**4.3**
Dibenzofuran	1200	ND	**0.22**	ND	ND	ND	ND	—	**0.056**	**0.83**
Fluoranthene	30000	**0.12**	**1.1**	ND	**0.0452**	**0.058**	**0.084**	—	**0.41**	**30**
Fluorene	30000	ND	ND	ND	ND	ND	ND	—	ND	**1.3**
Indeno[1,2,3-cd]pyrene	21	**< 0.0063**	**0.39**	**< 0.0086**	**0.0286 J**	**< 0.0078**	**< 0.0075**	NA	**0.19**	**11.00**
Naphthalene	8.6	**0.054**	**0.42**	ND	ND	ND	ND	—	**0.067**	**1**
Phenanthrene	—	**0.11**	**0.93**	ND	**0.0215 J**	ND	**0.048**	—	**0.29**	**15**
Phenol	250000	ND	ND	ND	ND	ND	ND	—	ND	ND
Pyrene	23000	**0.11**	**0.78**	ND	**0.0413 J**	**0.055**	**0.079**	—	**0.39**	**26**
VOLATILE ORGANIC COMPOUNDS - 8260C (mg/kg)										
Benzene	5.1	ND	ND	ND	ND	ND	—	ND	ND	ND

Notes:
ft bgs = Feet below ground surface.
mg/kg = Milligrams per kilogram.
USEPA = United States Environmental Protection Agency.
Boxed concentrations exceed the EPA Industrial Soil Regional Screening Levels.
— = Sample not analyzed.
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Table 1. Summary of Arcadis Soil Analytical Data. BP Bridesburg, LLC; 4501 Richmond Ave, Philadelphia, PA.

Sample ID	USEPA	PCSB-35	PCSB-36	PCSB-37	PCSB-38	PCSB-39	PCSB-40	PCSB-41	PCSB-41R	PCSB-42
ft bgs	Industrial Soil	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5-2	0.5
Sample Date	Regional Screening Level	8/2/2005	7/27/2005	8/3/2005	7/27/2005	7/27/2005	7/28/2005	7/28/2005	4/22/2019	8/1/2005
METALS - 6010D (mg/kg)										
Antimony	470	ND	**17**	**8.7**	ND	ND	ND	**14**	**20.6**	ND
Arsenic	3	**13**	**20**	**20**	**41**	ND	**3.2**	**13**	**19.5**	**5.2**
Chromium	—	**24**	**16**	**110**	**9.5**	**< 6.5**	**< 6.7**	**59**	**26.0**	**16**
Cyanide	150	—	—	—	—	—	—	—	**0.53**	—
Lead	800	**130**	**14000**	**420**	**230**	**11**	ND	**930**	**986**	**160**
Mercury	46	**0.27**	**1.2**	**0.47**	**0.13**	ND	ND	**1.6**	**0.34 J**	**0.15**
Selenium	5800	ND	**3.6**	**2.4**	**2.7**	ND	ND	**3.3**	ND	ND
POLYCHLORINATED BIPHENYLS (mg/kg)										
Aroclor 1260	0.99	**0.066**	**0.18**	**1**	**0.11**	**< 0.032**	**0.053**	**0.33**	**< 0.039**	**0.051 [< 0.026]**
SEMI-VOLATILE ORGANIC COMPOUNDS - 8270D (mg/kg)										
1,1-Biphenyl	200	—	—	—	—	—	—	—	**6.43 D**	—
2-Methylnaphthalene	3000	**0.11 J**	**1.3**	**3.8**	**0.13**	**0.56**	ND	**0.47**	**22.8 D**	**0.11**
4-Methylphenol	16000	ND	ND	ND	ND	ND	ND	ND	—	ND
Anthracene	230000	ND	**3.5**	**0.58**	**0.079**	ND	ND	**1.3**	**28.1 D**	**0.4**
Benz(a)anthracene	21	**0.58**	**11**	**1.2**	**0.37**	**0.23**	ND	**7.6**	**19.4 D**	**1.2**
Benzo(a)pyrene	2.1	**0.61**	**9.4**	**1.4**	**0.39**	**0.24**	ND	**7.5**	**14.4 D**	**1.3**
Benzo(b)fluoranthene	21	**0.88**	**13**	**1.7**	**0.71**	**0.42**	**0.056**	**10**	**17.8 D**	**1.8**
Benzo(g,h,i)perylene	—	**0.53**	**8.1**	**1.8**	**0.32**	**0.2**	ND	**7.1**	**8.46 D**	**1.1**
Benzo(k)fluoranthene	210	**0.25**	**3.5**	**0.67**	**0.21**	**0.13**	ND	**2.5**	**6.97 D**	**0.5**
Carbazole	—	ND	**0.91**	ND	**0.049**	ND	ND	ND	**9.89 D**	**0.081**
Chrysene	2100	**0.7**	**11**	**1.8**	**0.59**	**0.36**	ND	**7.1**	**17.7 D**	**1.3**
Dibenz(a,h)anthracene	2.1	**0.17**	**2.9**	**0.55**	**0.11**	**0.076**	ND	**2.3**	**2.69**	**0.3**
Dibenzofuran	1200	ND	**0.99**	**0.84**	**0.064**	**0.18**	ND	**0.22 J**	**32.5 D**	**0.13**
Fluoranthene	30000	**1.2**	**20**	**2**	**0.67**	**0.31**	**0.049**	**15**	**97.9 D**	**2.7**
Fluorene	30000	ND	**1.4**	**1.4**	ND	ND	ND	**0.23**	**48.5 D**	**0.18**
Indeno[1,2,3-cd]pyrene	21	**0.45**	**7.00**	**1.20**	**0.28**	**0.18**	**< 0.0075**	**6.20**	**9.14 D**	**0.87 [0.15]**
Naphthalene	8.6	ND	**1.8**	**2.1**	**0.13**	**0.27**	ND	**0.59**	**14.1 D**	**0.08**
Phenanthrene	—	**0.54**	**12**	**2.9**	**0.54**	**0.56**	ND	**4.4**	**158 D**	**1.9**
Phenol	250000	ND	ND	ND	ND	ND	ND	ND	ND	ND
Pyrene	23000	**0.76**	**17**	**2**	**0.67**	**0.31**	ND	**11**	**61.6 D**	**2.6**
VOLATILE ORGANIC COMPOUNDS - 8260C (mg/kg)										
Benzene	5.1	ND	ND	ND	ND	ND	ND	ND	**6.32**	ND

Notes:
ft bgs = Feet below ground surface.
mg/kg = Milligrams per kilogram.
USEPA = United States Environmental Protection Agency.
Boxed concentrations exceed the EPA Industrial Soil Regional Screening Levels.
— = Sample not analyzed.
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J = Result below the reporting limit (estimated value).
Bold = Detected concentration.

Table 1. Summary of Arcadis Soil Analytical Data. BP Bridesburg, LLC; 4501 Richmond Ave, Philadelphia, PA.

Sample ID	USEPA	PCSB-43	PCSB-44	PCSB-45	PCSB-46	PCSB-46	PCSB-47	PCSB-47	PCSB-48	PCSB-48
ft bgs	Industrial Soil	0.5	0.5	0.5	0.5	4	0.5	4	0.5	4
Sample Date	Regional Screening Level	8/1/2005	8/3/2005	8/3/2005	7/27/2005	7/27/2005	8/3/2005	8/3/2005	8/3/2005	8/3/2005
METALS - 6010D (mg/kg)										
Antimony	470	ND	**2.5**	ND	ND	ND	**2.6**	ND	ND	ND
Arsenic	3	**57**	**23**	**33**	**7.3**	ND	**100**	ND	**4.2**	**3.7**
Chromium	—	**25**	**21**	**21**	**< 5.7**	**7.2**	**26**	**12**	**16**	**14**
Cyanide	150	—	—	—	—	—	—	—	—	—
Lead	800	**1900**	**5400**	**670**	**6.9**	ND	**260**	**35**	**110**	**1100**
Mercury	46	**0.64**	**3.3**	**0.37**	ND	ND	**0.25**	**0.25**	**0.12**	**0.22**
Selenium	5800	**2.1**	**2.3**	ND	**2.3**	ND	**2**	ND	ND	ND
POLYCHLORINATED BIPHENYLS (mg/kg)										
Aroclor 1260	0.99	**0.16**	**0.12**	**0.13 [0.13]**	**0.046**	NA	**< 0.027**	NA	**< 0.026**	NA
SEMI-VOLATILE ORGANIC COMPOUNDS - 8270D (mg/kg)										
1,1-Biphenyl	200	—	—	—	—	—	—	—	—	—
2-Methylnaphthalene	3000	**1.4**	**0.093**	**0.68**	**1.3**	ND	**0.18**	**14**	ND	**3.7**
4-Methylphenol	16000	ND	ND	ND	ND	ND	ND	ND	ND	ND
Anthracene	230000	**0.48**	**0.37**	**0.28**	**0.13**	ND	**0.13**	**0.75**	ND	**2.2**
Benz(a)anthracene	21	**2.2**	**1.6**	**0.9**	**0.48**	ND	**0.54**	ND	**0.052**	ND
Benzo(a)pyrene	2.1	**2.2**	**1.6**	**0.89**	**0.3**	ND	**0.53**	ND	**0.059**	ND
Benzo(b)fluoranthene	21	**2.8**	**2.1**	**1.2**	**0.67**	ND	**0.79**	ND	**0.069**	**0.81**
Benzo(g,h,i)perylene	—	**2.1**	**1.1**	**0.74**	**0.33**	ND	**0.43**	ND	**0.055**	ND
Benzo(k)fluoranthene	210	**0.86**	**0.83**	**0.43**	**0.21**	ND	**0.27**	ND	ND	ND
Carbazole	—	ND	**0.12**	**0.098**	**0.085**	ND	**0.068**	**0.22**	ND	ND
Chrysene	2100	**1.9**	**1.6**	**0.95**	**0.76**	ND	**0.6**	ND	**0.065**	ND
Dibenz(a,h)anthracene	2.1	**0.56**	**0.39**	**0.29**	**0.15**	ND	**0.13**	ND	ND	ND
Dibenzofuran	1200	**0.28**	**0.075**	**0.098**	**0.55**	ND	**0.074**	ND	ND	**0.91 J**
Fluoranthene	30000	**3.3**	**2.3**	**1.7**	**0.74**	ND	**1**	**0.41**	**0.098**	**1.4**
Fluorene	30000	**0.16**	**0.062**	**0.096**	ND	ND	**0.053**	**2.3**	ND	**8.4**
Indeno[1,2,3-cd]pyrene	21	**1.60**	**0.98**	**0.67 [1]**	**0.29**	**< 0.0064**	**0.36**	**< 0.031**	**0.04**	**< 0.13**
Naphthalene	8.6	**0.59**	**0.1**	**0.25**	**0.86**	ND	**0.17**	ND	ND	ND
Phenanthrene	—	**1.8**	**1.4**	**1.1**	**1.4**	ND	**0.63**	**5.9**	**0.067**	**17**
Phenol	250000	ND	ND	ND	ND	ND	ND	ND	ND	ND
Pyrene	23000	**2.5**	**2.1**	**1.3**	**0.54**	ND	**0.95**	**0.73**	**0.13**	**2**
VOLATILE ORGANIC COMPOUNDS - 8260C (mg/kg)										
Benzene	5.1	ND	ND	ND	ND	ND	ND	ND	ND	ND

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ND = Not detected.
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Bold = Detected concentration.

Table 1. Summary of Arcadis Soil Analytical Data. BP Bridesburg, LLC; 4501 Richmond Ave, Philadelphia, PA.

Sample ID	USEPA	PCSB-49	PCSB-50	PCSB-51	PCSB-51	PCSB-52	PCSB-53	PCSB-53	PCSB-54	PCSB-55
ft bgs	Industrial Soil	0.5	0.5	0.5	3	0.5	0.5	3.5	0.5	0.5
Sample Date	Regional Screening Level	8/3/2005	8/3/2005	8/3/2005	8/3/2005	8/2/2005	8/1/2005	8/1/2005	8/3/2005	8/3/2005
METALS - 6010D (mg/kg)										
Antimony	470	ND	ND	**3.8**	ND	ND	ND	ND	**3**	**3.9**
Arsenic	3	**7.2**	**27**	**8.2**	**3.2**	**18**	**22**	**37**	**27**	**75**
Chromium	—	**18**	**15**	**43**	**7.5**	**39**	**25**	**< 5.6**	**22**	**18**
Cyanide	150	—	—	—	—	—	—	—	—	—
Lead	800	**50**	**490**	**180**	**160**	**470**	**650**	**42**	**240**	**6200**
Mercury	46	**0.19**	**0.44**	**0.24**	**0.2**	**0.69**	**0.28**	ND	ND	ND
Selenium	5800	ND	ND	ND	ND	ND	ND	ND	ND	**2.1**
POLYCHLORINATED BIPHENYLS (mg/kg)										
Aroclor 1260	0.99	**0.053**	**0.14**	**0.12**	NA	**0.12**	NA	NA	**< 0.029**	**0.069**
SEMI-VOLATILE ORGANIC COMPOUNDS - 8270D (mg/kg)										
1,1-Biphenyl	200	—	—	—	—	—	—	—	—	—
2-Methylnaphthalene	3000	ND	**1.4**	**0.33**	**0.24**	**0.35**	**1.5**	**1.8**	**1.3**	**0.46**
4-Methylphenol	16000	ND	ND	ND	ND	ND	ND	ND	ND	ND
Anthracene	230000	**0.044**	**1.5**	**0.59**	**0.32**	**1.7**	**0.39**	**1.2**	**1.5**	**1.5**
Benz(a)anthracene	21	**0.14**	**2.1**	**2.2**	**0.34**	**7.5**	**1.3**	**0.53**	**4.9**	**3.8**
Benzo(a)pyrene	2.1	**0.15**	**2.1**	**2**	**0.31**	**6.7**	**1.4**	**0.57**	**3.6**	**3.2**
Benzo(b)fluoranthene	21	**0.2**	**2.8**	**2.9**	**0.39**	**9.5**	**1.6**	**0.45**	**5.8**	**4.2**
Benzo(g,h,i)perylene	—	**0.19**	**1.6**	**2**	**0.21**	**4.1**	**1.4**	**0.44**	**2.7**	**2.1**
Benzo(k)fluoranthene	210	**0.066**	**1.1**	**1**	**0.17**	**2**	**0.73**	**0.14**	**1.6**	**1.6**
Carbazole	—	**0.035**	ND	**0.13**	ND	**0.4**	**0.14**	ND	**0.52**	**0.75**
Chrysene	2100	**0.16**	**2.1**	**2.2**	**0.45**	**7.3**	**1.6**	**0.93**	**4.5**	**3.9**
Dibenz(a,h)anthracene	2.1	ND	**0.55**	**0.63**	**0.055**	**1.9**	**0.33**	ND	**1.1**	**0.76**
Dibenzofuran	1200	ND	**0.92**	**0.25**	ND	**0.27**	**0.27**	ND	**0.81**	**0.48**
Fluoranthene	30000	**0.26**	**4.5**	**4.1**	**0.5**	**13**	**2.4**	**0.69**	**9.4**	**6.4**
Fluorene	30000	ND	**1.9**	ND	ND	**0.48**	**0.2**	**2.7**	**0.78**	**0.43**
Indeno[1,2,3-cd]pyrene	21	**0.11**	**1.50**	**1.60**	**0.18**	**3.90**	**1.00**	**0.21**	**2.50**	**2.00**
Naphthalene	8.6	ND	**0.98**	**0.36**	**0.18**	**0.22**	**0.8**	**2.2**	**1.3**	**0.54**
Phenanthrene	—	**0.17**	**4.5**	**2.1**	**0.53**	**5.6**	**1.6**	**3**	**7.3**	**5.2**
Phenol	250000	ND	ND	ND	ND	ND	ND	ND	ND	ND
Pyrene	23000	**0.26**	**3.3**	**3.3**	**0.7**	**11**	**2**	**1.8**	**7.6**	**5.5**
VOLATILE ORGANIC COMPOUNDS - 8260C (mg/kg)										
Benzene	5.1	ND	ND	ND	ND	ND	ND	ND	ND	ND

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Table 1. Summary of Arcadis Soil Analytical Data. BP Bridesburg, LLC; 4501 Richmond Ave, Philadelphia, PA.

Sample ID	USEPA	PCSB-56	PCSB-56	PCSB-57	PCSB-57	PCSB-58	PCSB-58	PCSB-59	PCSB-60	PCTP-01
ft bgs	Industrial Soil	0.5	2	0.5	2.5	0.5	5	0.5	0.5	6
Sample Date	Regional Screening Level	8/15/2005	8/15/2005	8/15/2005	8/15/2005	8/15/2005	8/15/2005	8/15/2005	8/15/2005	2/8/2005
METALS - 6010D (mg/kg)										
Antimony	470	**3.5**	**4.8**	**4**	**3.2**	**5.2**	**3.5**	**3.3**	**2.7**	ND
Arsenic	3	**13**	**14**	**19**	**11**	**28**	**20**	**39**	**35**	**4.8**
Chromium	—	**55**	**28**	**29**	**31**	**53**	**28**	**31**	**24 [23]**	**8.6**
Cyanide	150	—	—	—	—	—	—	—	—	—
Lead	800	**130**	**360**	**1600**	**310**	**180**	**160**	**960**	**710**	**200**
Mercury	46	**0.36**	**0.28**	**1.3**	**0.38**	**0.24**	**0.15**	**0.66**	**0.46**	**0.25**
Selenium	5800	**4**	**3.6**	**4.8**	**3.7**	**6.4**	**3.4**	**3.1**	**2.8**	**3.1**
POLYCHLORINATED BIPHENYLS (mg/kg)										
Aroclor 1260	0.99	**< 0.028**	NA	**< 0.028**	NA	**< 0.027**	NA	**< 0.027**	**< 0.027 [< 0.027]**	NA
SEMI-VOLATILE ORGANIC COMPOUNDS - 8270D (mg/kg)										
1,1-Biphenyl	200	—	—	—	—	—	—	—	—	—
2-Methylnaphthalene	3000	**0.11**	**0.12**	**0.38**	**0.25**	**0.68**	**0.58**	**0.43**	**0.55**	ND
4-Methylphenol	16000	ND	ND	ND	ND	ND	ND	ND	ND	ND
Anthracene	230000	**0.11**	**0.42**	**1.6**	**2.2**	**0.33**	**0.46**	**0.39**	**0.4**	**16**
Benz(a)anthracene	21	**0.43**	**3.4**	**7.7**	**4.7**	**1.1**	**1.2**	**1.3**	**1.6**	**58**
Benzo(a)pyrene	2.1	**0.43**	**3.3**	**7.2**	**4.1**	**0.92**	**0.94**	**1.3**	**1.6**	**43**
Benzo(b)fluoranthene	21	**0.75**	**5.1**	**12**	**6**	**1.8**	**1.5**	**1.8**	**2.3**	**68**
Benzo(g,h,i)perylene	—	**0.37**	**2**	**3.6**	**1.4**	**0.59**	**0.56**	**0.94**	**1.1**	**23**
Benzo(k)fluoranthene	210	**0.27**	**1.7**	**2.8**	**1.6**	**0.47**	**0.43**	**0.66**	**0.71**	**24**
Carbazole	—	**0.037**	**0.15**	**0.78**	**0.99**	**0.12**	**0.11**	**0.17**	**0.19**	**5.2**
Chrysene	2100	**0.57**	**3.1**	**6.8**	**4.4**	**1.3**	**1.3**	**1.3**	**1.6**	**49**
Dibenz(a,h)anthracene	2.1	**0.099**	**0.78**	**1.4**	**0.49**	**0.3**	**0.28**	**0.4**	**0.44**	**8.8**
Dibenzofuran	1200	**0.053**	**0.11**	**0.36**	**0.45**	**0.3**	**0.21**	**0.17**	**0.2**	**5**
Fluoranthene	30000	**0.5**	**3.3**	**11**	**9.5**	**1.5**	**2**	**1.4**	**1.9**	**110**
Fluorene	30000	**0.038**	**0.099**	**0.51**	**0.87**	**0.16**	**0.22**	**0.23**	**0.25**	**7.3**
Indeno[1,2,3-cd]pyrene	21	**0.33**	**1.90**	**3.20**	**1.30**	**0.56**	**0.52**	**0.85**	**0.98 [0.87]**	**25.00**
Naphthalene	8.6	**0.13**	**0.35**	**0.88**	**0.55**	**0.8**	**0.49**	**0.24**	**0.3**	**6.6**
Phenanthrene	—	**0.43**	**1.4**	**5.4**	**7.1**	**1.7**	**1.9**	**1.7**	**1.6**	**54**
Phenol	250000	ND	ND	ND	ND	ND	ND	ND	ND	ND
Pyrene	23000	**0.86**	**5.6**	**13**	**9.1**	**2.2**	**2.4**	**2.9**	**4**	**96**
VOLATILE ORGANIC COMPOUNDS - 8260C (mg/kg)										
Benzene	5.1	ND	ND	ND	ND	ND	ND	ND	ND	ND

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Table 1. Summary of Arcadis Soil Analytical Data. BP Bridesburg, LLC; 4501 Richmond Ave, Philadelphia, PA.

Sample ID	USEPA	PCTP-01R	PCTP-02	PCTP-02R	PCTP-12	PCTP-12R	PCTP-14	PCTP-16	PCTP-17R	PCTP-18
ft bgs	Industrial Soil	5-7	5	4-6	3	2-4	2.5	2	5-6	6
Sample Date	Regional Screening Level	4/5/2019	2/8/2005	4/5/2019	2/9/2005	4/12/2019	3/3/2005	2/10/2005	4/15/2019	2/16/2005
METALS - 6010D (mg/kg)										
Antimony	470	**1.3 J**	ND	ND	**33**	ND	ND	**5.7**	ND	ND
Arsenic	3	**4.7**	**4.9**	**2.7**	**33**	**7.8**	**4.2**	**20**	**5.8**	**17**
Chromium	—	**15.1**	**11**	**9.7**	**71**	**21.6**	**12**	**24**	**17.3 J**	**7.8**
Cyanide	150	ND	—	ND	**340**	**0.77**	**8.5**	—	**8.3 J**	—
Lead	800	**111**	**290**	**6.3**	**2100**	**274**	**110**	**240**	**6.6 J**	**160**
Mercury	46	ND	**0.93**	**0.16**	**0.41**	**0.39**	**2.3**	**0.29**	**0.46 J**	**0.43**
Selenium	5800	ND	ND	ND	**5.9**	ND	**3.3**	**4.3**	ND	**2.9**
POLYCHLORINATED BIPHENYLS (mg/kg)										
Aroclor 1260	0.99	NA	NA	NA	NA	NA	NA	NA	NA	NA
SEMI-VOLATILE ORGANIC COMPOUNDS - 8270D (mg/kg)										
1,1-Biphenyl	200	**0.0526 J**	—	ND	—	**0.599**	—	—	**8.64 D**	—
2-Methylnaphthalene	3000	**0.142**	**0.62**	ND	**5500**	**2.41**	**0.41 J**	**0.33 J**	**56.2 D**	**0.14**
4-Methylphenol	16000	—	ND	—	ND	—	ND	ND	—	ND
Anthracene	230000	**1.73**	**1.8**	ND	**3000**	**21.8**	**4**	**1.5**	**67.8 D**	**0.78**
Benz(a)anthracene	21	**4.39 D**	**3.1**	ND	**2800**	**52.8**	**23**	**4.7**	**57.2 D**	**2.6**
Benzo(a)pyrene	2.1	**4.61 D**	**2.4**	ND	**1800**	**40**	**19**	**4.3**	**41.1 D**	**2.7**
Benzo(b)fluoranthene	21	**5.59 D**	**3.3**	ND	**2000**	**56.5**	**27**	**6.6**	**49 D**	**3.5**
Benzo(g,h,i)perylene	—	**2.66**	**1.2**	ND	**620**	**21.7**	**16**	**2.4**	**20.5 D**	**1.6**
Benzo(k)fluoranthene	210	**2.14 D**	**1.3**	ND	**730**	**12.8**	**11**	**1.5**	**18.9 D**	**1.1**
Carbazole	—	**0.962**	**1**	ND	**1500**	**2.35**	**0.71**	**0.62**	**28.8 D**	**0.22**
Chrysene	2100	**4.27 D**	**2.7**	ND	**1800**	**46**	**22**	**4.2**	**48 D**	**2.6**
Dibenz(a,h)anthracene	2.1	**0.78**	**0.42**	ND	**210**	**6.72**	**6.3**	**0.94**	**6.99 D**	**0.54**
Dibenzofuran	1200	**0.489**	**0.95**	ND	**3700**	**3.91**	**0.76 J**	**0.24**	**49.9 D**	**0.21**
Fluoranthene	30000	**8.81 D**	**7.5**	ND	**7500**	**141**	**29**	**10**	**138 D**	**4.6**
Fluorene	30000	**1.02**	**1.7**	ND	**5200**	**9.78**	**1.4**	**0.29**	**77.2 D**	**0.23**
Indeno[1,2,3-cd]pyrene	21	**2.97**	**1.30**	**< 0.036**	**620.00**	**19.50**	**14.00**	**2.60**	**22 D**	**1.70**
Naphthalene	8.6	**0.266**	**0.74**	ND	**29000**	**9.89**	**1.4**	**0.43**	**146 D**	**0.25**
Phenanthrene	—	**6.49 D**	**7.2**	ND	**14000**	**54.6**	**9**	**5.1**	**219 D**	**2.3**
Phenol	250000	ND	ND	ND	ND	**0.257 J**	ND	ND	**2.79**	ND
Pyrene	23000	**7.25 D**	**5.4**	ND	**5900**	**94.7**	**30**	**7.8**	**95.6 D**	**4.1**
VOLATILE ORGANIC COMPOUNDS - 8260C (mg/kg)										
Benzene	5.1	—	ND	—	**59**	**0.0073**	ND	ND	**1.23**	ND

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Sample ID	USEPA	PCTP-28	PCTP-36	PCTP-37	PCTP-47	PCTP-47R	PCTP-58	PCTP-61	PCTP-61	PCTP-62
ft bgs	Industrial Soil	7	6	3	6	5-7	2	0.5	7.5	0.5
Sample Date	Regional Screening Level	2/17/2005	2/18/2005	2/17/2005	2/17/2005	4/9/2019	2/24/2005	9/8/2005	9/8/2005	9/8/2005
METALS - 6010D (mg/kg)										
Antimony	470	**7.6**	ND	ND	ND	**2.2 J**	**5.8**	ND	ND	**2.3**
Arsenic	3	**20**	**4.9**	**28**	**4.8**	**7.5**	**79**	**12**	**3.2**	**13**
Chromium	—	**97**	**6.3**	**10**	**< 6.2**	**20.6**	**< 6.2**	**25 [21]**	**15**	**16**
Cyanide	150	—	**0.54**	—	—	**0.2 J**	**0.37**	—	—	—
Lead	800	**62000**	ND	**320**	**17**	**359**	**1000**	**680**	**34**	**400**
Mercury	46	**0.62**	ND	**0.19**	ND	**0.53**	ND	**0.99**	ND	**0.55**
Selenium	5800	**3.8**	**3.1**	**2.9**	**2.6**	ND	**2.8**	**2.7**	ND	ND
POLYCHLORINATED BIPHENYLS (mg/kg)										
Aroclor 1260	0.99	NA	NA	NA	NA	NA	NA	**1.3 [0.54]**	**< 0.027**	**0.43**
SEMI-VOLATILE ORGANIC COMPOUNDS - 8270D (mg/kg)										
1,1-Biphenyl	200	—	—	—	—	**0.0138 J**	—	—	—	—
2-Methylnaphthalene	3000	**0.24**	ND	**0.15**	**0.047 J**	**0.0417**	**0.65**	**0.13**	ND	**5.8**
4-Methylphenol	16000	**0.057 J**	ND	ND	ND	—	ND	ND	ND	ND
Anthracene	230000	**1.4**	ND	**0.11**	**0.083**	**0.364**	**0.71**	**0.38**	ND	**32**
Benz(a)anthracene	21	**2.9**	ND	**0.47**	**0.7**	**1.64**	**3.4**	**0.93**	ND	**53**
Benzo(a)pyrene	2.1	**2.5**	ND	**0.46**	**0.7**	**1.43**	**3.1**	**0.89**	ND	**34**
Benzo(b)fluoranthene	21	**3.3**	**0.085**	**0.69**	**1.3**	**1.67**	**7.4**	**1.2**	ND	**41**
Benzo(g,h,i)perylene	—	**1.6**	ND	**0.35**	**0.49**	**0.908**	**1.9**	**0.66**	ND	**19**
Benzo(k)fluoranthene	210	**0.75**	ND	**0.16**	**0.31**	**0.721**	**2.3**	**0.47**	ND	**18**
Carbazole	—	**0.52**	ND	ND	ND	**0.159**	**0.44**	**0.14**	ND	**12**
Chrysene	2100	**2.9**	**0.064**	**0.62**	**0.83**	**1.72**	**5.1**	**0.97**	ND	**41**
Dibenz(a,h)anthracene	2.1	**0.54**	ND	**0.12**	**0.18**	**0.247**	**0.78**	**0.21**	ND	**7.5**
Dibenzofuran	1200	**0.42**	ND	ND	ND	**0.0651 J**	**0.53**	**0.22**	ND	**14**
Fluoranthene	30000	**4.3**	ND	**0.64**	**1**	**2.6**	**7.7**	**1.8**	**0.044**	**97**
Fluorene	30000	**0.83**	ND	**0.052**	ND	**0.11**	**0.19**	**0.12**	ND	**31**
Indeno[1,2,3-cd]pyrene	21	**1.50**	**< 0.012**	**0.28**	**0.44**	**0.91**	**2.40**	**0.57 [0.63]**	**< 0.0061**	**18.00**
Naphthalene	8.6	**0.57**	ND	**0.2**	**0.48**	**0.0707**	**0.77**	**0.12**	ND	**12**
Phenanthrene	—	**4.1**	ND	**0.34**	**0.38**	**1.36**	**3.3**	**1.5**	ND	**140**
Phenol	250000	**0.23**	ND	ND	ND	ND	ND	ND	ND	ND
Pyrene	23000	**5.9**	ND	**0.95**	**0.97**	**2.54**	**5.7**	**1.8**	**0.041**	**110**
VOLATILE ORGANIC COMPOUNDS - 8260C (mg/kg)										
Benzene	5.1	ND	ND	ND	ND	ND	ND	ND	ND	ND

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Table 1. Summary of Arcadis Soil Analytical Data. BP Bridesburg, LLC; 4501 Richmond Ave, Philadelphia, PA.

Sample ID	USEPA	PCTP-63	PCTP-64	PCTP-64	PCTP-65	PCTP-65	PCTP-66	PCTP-66R	PCTP-66R	PCTP-66R-HC
ft bgs	Industrial Soil	0.5	0.5	7	0.5	7.5	0.5	0.5-2	0-0.5	0-2
Sample Date	Regional Screening Level	9/8/2005	9/8/2005	9/8/2005	9/8/2005	9/8/2005	9/8/2005	4/24/2019	4/24/2019	4/4/2019
METALS - 6010D (mg/kg)										
Antimony	470	**5.4**	**2.5**	ND	ND	ND	ND	ND	**2.8 J**	**2.6**
Arsenic	3	**9.5**	**17**	**3**	**6.7**	**13**	**2.8**	**6.7**	**66.6**	**35.7**
Chromium	—	**24**	**25**	**33**	**9.7**	**39**	**< 5.1**	**23.2 [23.9]**	**19.2**	**19.8**
Cyanide	150	—	—	—	—	—	—	**1.2 J**	**0.54 J**	**0.14 J**
Lead	800	**810**	**230**	**48**	**150**	**120**	**30**	**26.8**	**392**	**323**
Mercury	46	**1.2**	**0.27**	**0.32**	**0.38**	**0.38**	ND	**0.03 J**	**0.2 J**	**0.23**
Selenium	5800	**2**	**4**	**2.3**	ND	ND	ND	ND	**0.88 J**	ND
POLYCHLORINATED BIPHENYLS (mg/kg)										
Aroclor 1260	0.99	**0.12**	**0.36**	**< 0.03**	**< 0.028**	**< 0.033**	**< 0.017**	**< 0.037 [< 0.039]**	**< 0.035**	**0.369**
SEMI-VOLATILE ORGANIC COMPOUNDS - 8270D (mg/kg)										
1,1-Biphenyl	200	—	—	—	—	—	—	**0.0185 J**	**0.226 J**	**0.211**
2-Methylnaphthalene	3000	ND	ND	**0.11**	ND	**1.4**	**1300**	**0.106**	**0.486 J**	**0.502**
4-Methylphenol	16000	ND	ND	**0.071 J**	ND	**0.17 J**	**180 J**	—	—	—
Anthracene	230000	**8.7**	**2.6**	**0.24**	**1.2**	**0.59**	**1800**	**0.143**	**4.16 J**	**5.81 J**
Benz(a)anthracene	21	**18**	**10**	**0.39**	**8.4**	**1.2**	**1800**	**0.393**	**8.88 J**	**8.24 D**
Benzo(a)pyrene	2.1	**14**	**10**	**0.34**	**9.8**	**1.3**	**1300**	**0.515**	**9.2 J**	**8.36 D**
Benzo(b)fluoranthene	21	**20**	**15**	**0.4**	**12**	**1.3**	**1600**	**0.681**	**11.7 J**	**10.4 D**
Benzo(g,h,i)perylene	—	**9.8**	**8.3**	**0.19**	**8.5**	**0.81**	**850**	**0.421**	**5.99 J**	**5.36 J**
Benzo(k)fluoranthene	210	**5.1**	**5.3**	**0.15**	**2.9**	**0.47**	**690**	**0.251**	**2.66 J**	**4.16 D**
Carbazole	—	**3.2**	**0.87**	**0.29**	**0.19**	**0.16**	**970**	**0.03 J**	**1.44 J**	**1.59**
Chrysene	2100	**16**	**10**	**0.38**	**7.8**	**1.3**	**1500**	**0.373**	**8.37 J**	**8.31 D**
Dibenz(a,h)anthracene	2.1	**4**	**2.7**	**0.052**	**2.5**	**0.26**	**270**	**0.105**	**1.45 J**	**1.66**
Dibenzofuran	1200	**2.1**	**0.46 J**	**0.11**	**0.11 J**	**0.24**	**1600**	**0.0495 J**	**1.56 J**	**1.39**
Fluoranthene	30000	**31**	**18**	**0.55**	**9.9**	**1.8**	**3800**	**0.624**	**19.8 J**	**17.3 D**
Fluorene	30000	**4.4**	**0.97**	**0.32**	**0.24**	**0.69**	**2600**	**0.0866**	**3.11**	**2.79 J**
Indeno[1,2,3-cd]pyrene	21	**9.10**	**7.00**	**0.17**	**6.80**	**0.64**	**750.00**	**6.39 DJ [42.9 DJ]**	**0.44**	**5.97 DJ**
Naphthalene	8.6	ND	**0.43**	**0.98**	**0.28**	**3.3**	**6000**	**0.0294 J**	**0.782 J**	**0.643**
Phenanthrene	—	**33**	**10**	**0.38**	**4.8**	**1.4**	**7700**	**0.348**	**18.3 J**	**15 D**
Phenol	250000	ND	ND	**0.12**	ND	ND	**210**	ND	**0.0364 J**	ND
Pyrene	23000	**42**	**22**	**1.1**	**13**	**2.9**	**4400**	**0.523**	**15.7 J**	**14.6 D**
VOLATILE ORGANIC COMPOUNDS - 8260C (mg/kg)										
Benzene	5.1	ND	ND	ND	ND	ND	**29**	ND	ND	—

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Sample ID	USEPA	PCTP-66R-HC	PCTP-67	PCTP-68	PCTP-69	PCTP-70	PCTP-71	PCTP-72	PCTP-73	PCTP-73R
ft bgs	Industrial Soil	2-4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0-0.5
Sample Date	Regional Screening Level	4/4/2019	9/12/2005	9/9/2005	9/9/2005	9/9/2005	9/9/2005	9/9/2005	9/9/2005	4/10/2019
METALS - 6010D (mg/kg)										
Antimony	470	ND	**9.9**	ND	ND	ND	ND	ND	ND	**1.4 J**
Arsenic	3	**4.2**	**27**	**5.8**	**44**	**120**	**100**	**7.9**	**4.2**	**5.3**
Chromium	—	**12.8**	**40 [48]**	**12**	**17**	**15**	**14**	**25**	**14**	**19.8**
Cyanide	150	**0.13 J**	—	—	—	—	—	—	—	**0.45**
Lead	800	**25.8**	**470**	**58**	**290**	**71**	**370**	**280**	**130**	**248**
Mercury	46	**0.046**	ND	ND	**0.29**	**0.27**	**0.14**	**0.93**	**0.5**	**0.48**
Selenium	5800	ND	**7**	**3**	**2.6**	ND	ND	ND	ND	ND
POLYCHLORINATED BIPHENYLS (mg/kg)										
Aroclor 1260	0.99	**< 0.16**	**0.25 [0.2]**	**< 0.018**	**< 0.026**	**< 0.028**	**< 0.026**	**0.3**	**< 0.56**	**< 0.038**
SEMI-VOLATILE ORGANIC COMPOUNDS - 8270D (mg/kg)										
1,1-Biphenyl	200	**0.677**	—	—	—	—	—	—	—	**0.0131 J**
2-Methylnaphthalene	3000	**1.96**	**0.13 J**	**230**	**0.16**	ND	**0.057**	**0.075**	**0.06**	**0.0404 J**
4-Methylphenol	16000	—	ND	ND	ND	ND	ND	ND	ND	—
Anthracene	230000	**8.17 D**	**0.26**	**250**	**0.99**	**0.17**	**0.52**	**0.73**	**0.31**	**0.226**
Benz(a)anthracene	21	**13 D**	**1.5**	**220**	**2.3**	**1**	**1.5**	**2.3**	**1.1**	**0.742**
Benzo(a)pyrene	2.1	**12.5 D**	**1.5**	**190**	**1.9**	**0.99**	**1.3**	**2.1**	**1.1**	**0.742**
Benzo(b)fluoranthene	21	**15.3 D**	**1.8**	**250**	**3.6**	**1.5**	**1.5**	**2.7**	**1.5**	**0.981**
Benzo(g,h,i)perylene	—	**8.24 D**	**1.3**	**91**	**1**	**0.72**	**0.97**	**1.5**	**0.87**	**0.507**
Benzo(k)fluoranthene	210	**6.32 D**	**0.8**	**79**	**1.2**	**0.54**	**0.62**	**1.1**	**0.62**	**0.341**
Carbazole	—	**2.41**	**0.12**	**140**	**0.19**	**0.11**	**0.28**	**0.29**	**0.11**	**0.0768 J**
Chrysene	2100	**11.3 D**	**1.4**	**210**	**2.6**	**1.1**	**1.4**	**2.4**	**1.1**	**0.741**
Dibenz(a,h)anthracene	2.1	**2.24**	**0.37**	**31**	**0.39**	**0.28**	**0.38**	**0.59**	**0.33**	**0.137**
Dibenzofuran	1200	**5.28 D**	**0.13 J**	**230**	**0.18**	**0.038 J**	**0.13**	**0.16**	**0.089**	**0.0403 J**
Fluoranthene	30000	**28.9 D**	**2**	**700**	**3.8**	**1.5**	**2.1**	**3.4**	**1.7**	**1.34**
Fluorene	30000	**9.19 D**	ND	**320**	**0.14**	**0.079**	**0.25**	**0.28**	**0.094**	**0.0577**
Indeno[1,2,3-cd]pyrene	21	**8.58 D**	**1 [0.66]**	**88.00**	**1.10**	**0.64**	**0.81**	**1.30**	**0.73**	**0.53**
Naphthalene	8.6	**1.76**	**0.21**	**1900**	**0.56**	**0.043**	**0.18**	**0.14**	**0.14**	**0.0552**
Phenanthrene	—	**29.7 D**	**1.4**	**1000**	**1.4**	**0.77**	**2.2**	**3**	**1.2**	**0.732**
Phenol	250000	ND	ND	ND	ND	ND	ND	ND	ND	ND
Pyrene	23000	**22.5 D**	**2.5**	**490**	**4.2**	**1.8**	**3.1**	**5.7**	**2.2**	**1.26**
VOLATILE ORGANIC COMPOUNDS - 8260C (mg/kg)										
Benzene	5.1	—	ND	**0.006**	ND	ND	ND	ND	ND	ND

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Sample ID	USEPA	PCTP-74	PCTP-75	PCTP-75	PCTP-75R	PCTP-76	PCTP-76	PCTP-77	PCTP-78	PCTP-79
ft bgs	Industrial Soil	0.5	0.5	11	10-12	0.5	6.5	0.5	0.5	0.5
Sample Date	Regional Screening Level	9/9/2005	9/9/2005	9/9/2005	4/11/2019	9/12/2005	9/12/2005	9/12/2005	9/12/2005	9/12/2005
METALS - 6010D (mg/kg)										
Antimony	470	ND	ND	ND	ND	ND	**5.7**	ND	ND	**3.2**
Arsenic	3	**4.4**	**2.8**	**3.8**	**7.7**	**4.8**	**7**	**5.6**	**9**	**5.5**
Chromium	—	**19**	**9.6**	**7.4**	**4.1**	**23**	**42**	**25**	**23**	**23**
Cyanide	150	—	—	—	**0.41**	—	—	—	—	—
Lead	800	**250**	**73**	**6.6**	**31.9**	**150**	**740**	**220**	**1100**	**430**
Mercury	46	**0.8**	**0.13**	ND	**0.043**	ND	**0.63**	**0.47**	**0.36**	**0.2**
Selenium	5800	**2.6**	**2.3**	**2.9**	**1.5 J**	**2.6**	**2.6**	**2.2**	ND	**2.6**
POLYCHLORINATED BIPHENYLS (mg/kg)										
Aroclor 1260	0.99	**< 0.027**	**0.055**	**< 0.019**	NA	**0.37**	**0.7**	**0.39**	**< 0.027**	**0.27**
SEMI-VOLATILE ORGANIC COMPOUNDS - 8270D (mg/kg)										
1,1-Biphenyl	200	—	—	—	**0.0255 J**	—	—	—	—	—
2-Methylnaphthalene	3000	ND	**0.12**	**340**	**0.0866**	**0.097**	**1.4**	**0.91**	**0.044 J**	ND
4-Methylphenol	16000	ND	ND	ND	—	ND	ND	ND	ND	ND
Anthracene	230000	**1.2**	**0.16**	ND	**0.254**	**0.55**	**20**	**4.3**	**0.51**	**0.69**
Benz(a)anthracene	21	**2.9**	**0.66**	ND	**0.437**	**1.1**	**46**	**7.8**	**1.7**	**2.5**
Benzo(a)pyrene	2.1	**2.4**	**0.61**	ND	**0.417**	**0.77**	**37**	**6.7**	**1.7**	**2.6**
Benzo(b)fluoranthene	21	**3.4**	**1.2**	ND	**0.482**	**0.94**	**44**	**8.9**	**2.2**	**3.3**
Benzo(g,h,i)perylene	—	**1.3**	**0.41**	ND	**0.277**	**0.38**	**22**	**3.6**	**1**	**2.1**
Benzo(k)fluoranthene	210	**1**	**0.36**	ND	**0.185**	**0.27**	**12**	**3.2**	**0.73**	**1**
Carbazole	—	**0.18**	**0.06**	ND	**0.12**	**0.17**	**3.9**	**1.3**	**0.23**	**0.36**
Chrysene	2100	**2.7**	**0.76**	ND	**0.524**	**1.1**	**44**	**7.5**	**1.7**	**2.7**
Dibenz(a,h)anthracene	2.1	**0.42**	**0.14**	ND	**0.0825**	**0.14**	**8.5**	**1.2**	**0.31**	**0.57**
Dibenzofuran	1200	**0.12**	**0.088**	ND	**0.0831 J**	**0.13**	**6.1**	**1.7**	**0.1**	**0.18**
Fluoranthene	30000	**6.7**	**1.1**	ND	**0.764**	**1.8**	**86**	**17**	**3.1**	**4.8**
Fluorene	30000	**0.31**	**0.07**	ND	**0.115**	**0.2**	**7.2**	**2.3**	**0.2**	**0.26**
Indeno[1,2,3-cd]pyrene	21	**1.20**	**0.38**	**< 3.9**	**0.26**	**0.34**	**20.00**	**3.30**	**0.92**	**1.70**
Naphthalene	8.6	**0.071**	**0.27**	**2700**	**0.184**	**0.084**	**1.4**	**1.6**	**0.064**	ND
Phenanthrene	—	**3.5**	**0.54**	**35**	**1.11**	**2.5**	**98**	**16**	**2.2**	**3.7**
Phenol	250000	ND	ND	ND	ND	ND	ND	ND	ND	ND
Pyrene	23000	**5.4**	**1.2**	ND	**0.739**	**2.3**	**100**	**13**	**3.5**	**5.5**
VOLATILE ORGANIC COMPOUNDS - 8260C (mg/kg)										
Benzene	5.1	ND	ND	**2.8**	ND	ND	ND	ND	ND	ND

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Sample ID	USEPA	PCTP-80	PSSTP-01A	PSSTP-01B	PSSTP-01R	PSSTP-02A	PSSTP-02B	PSSTP-03A	PSSTP-04A	PSSTP-04R
ft bgs	Industrial Soil	8	1-2	5-6	5-6	1-2	5-6	1-2	1-2	1-2
Sample Date	Regional Screening Level	9/12/2005	3/11/2003	3/11/2003	4/10/2019	3/11/2003	3/11/2003	3/11/2003	3/11/2003	4/11/2019
METALS - 6010D (mg/kg)										
Antimony	470	**3.3**	ND	**3.2**	**3.6**	**3.2**	ND	ND	ND	ND
Arsenic	3	**3.5**	**5.3**	**5.2**	**4.1**	**6.2**	**5.6**	**3.6**	**5.2**	**5.8**
Chromium	—	**27**	**23**	**22**	**28.4**	**26**	**9.8**	**21**	**28**	**23.8**
Cyanide	150	—	ND	**0.49**	**0.58**	ND	**1.2**	**0.9**	**0.72**	**0.23 J**
Lead	800	**520**	**230**	**260**	**300**	**970**	**140**	**250**	**170**	**523**
Mercury	46	**1.6**	**0.58**	**1.1**	**0.14**	**1.2**	**0.41**	**0.71**	**0.41**	**0.71**
Selenium	5800	ND	ND	ND	ND	ND	ND	ND	ND	ND
POLYCHLORINATED BIPHENYLS (mg/kg)										
Aroclor 1260	0.99	**0.14**	**< 0.019**	**13**	**< 0.039**	**0.43**	**0.9**	**0.094**	**< 0.02**	**< 0.037**
SEMI-VOLATILE ORGANIC COMPOUNDS - 8270D (mg/kg)										
1,1-Biphenyl	200	—	—	—	**0.262**	—	—	—	—	**0.0462 J**
2-Methylnaphthalene	3000	**0.25**	**0.22 J**	**0.34 J**	**0.861**	ND	**1.3**	**0.35 J**	**3.7 J**	**0.0951**
4-Methylphenol	16000	ND	—	—	—	—	—	—	—	—
Anthracene	230000	**1.6**	**1.2**	**27**	**6.15**	**0.7 J**	**2.1**	**3.3**	**23**	**0.871**
Benz(a)anthracene	21	**3.1**	**2.8**	**5.3**	**10.4 D**	**5.9**	**2.5**	**7.6**	**45**	**2.79**
Benzo(a)pyrene	2.1	**2.9**	**2.3**	**3.8**	**7.67**	**4.6**	**1.9**	**5.9**	**35**	**2.37**
Benzo(b)fluoranthene	21	**3.6**	**3.8**	**5.6**	**11.2 D**	**7.4**	**2.8**	**7.3**	**42**	**2.85**
Benzo(g,h,i)perylene	—	**2**	**0.52**	**1.1 J**	**5**	**1.4 J**	**0.9**	**3.3**	**12 J**	**1.35 J**
Benzo(k)fluoranthene	210	**1.3**	**1.2**	**1.9 J**	**4.29 D**	**2.6**	**1**	**2.9**	**18 J**	**1.01**
Carbazole	—	**0.82**	**0.47**	**0.74 J**	**2.55**	**0.45 J**	**1.8**	**1.2**	**10 J**	**0.344**
Chrysene	2100	**2.9**	**2.8**	**5.4**	**9.78 D**	**5.6**	**2.3**	**5.6**	**37**	**2.59**
Dibenz(a,h)anthracene	2.1	**0.64**	**0.23 J**	**0.42 J**	**1.28**	**0.56 J**	**0.29 J**	**1 J**	**6 J**	**0.421**
Dibenzofuran	1200	**0.61**	**0.38**	**0.77 J**	**1.82**	ND	**1.4**	**0.75 J**	**7.6 J**	**0.316**
Fluoranthene	30000	**6.6**	**4.7**	**11**	**25.2 D**	**9.6**	**6.4**	**16**	**86**	**5.45 D**
Fluorene	30000	**1**	**0.69**	**1.7 J**	**2.92**	ND	**2.2**	**1.3 J**	**13 J**	**0.472**
Indeno[1,2,3-cd]pyrene	21	**1.90**	**0.61**	**1.2 J**	**4.97**	**1.7 J**	**0.74**	**3.40**	**16 J**	**1.27 J**
Naphthalene	8.6	**0.6**	**0.36 J**	**0.37 J**	**0.577**	ND	**3**	**0.5 J**	**9 J**	**0.16**
Phenanthrene	—	**5.9**	**3.8**	**11**	**29 D**	**2.3**	**7.7**	**12**	**85**	**4.19 D**
Phenol	250000	ND	**1.5**	ND	**0.183 J**	ND	**2.6**	ND	**1.7**	ND
Pyrene	23000	**5.8**	**5.2**	**10**	**19.5 D**	**8.2**	**5.7**	**14**	**99**	**4.33 D**
VOLATILE ORGANIC COMPOUNDS - 8260C (mg/kg)										
Benzene	5.1	ND	**0.0059**	**0.0073 B**	ND	**0.0082 B**	ND	ND	0 UB	ND

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Table 1. Summary of Arcadis Soil Analytical Data. BP Bridesburg, LLC; 4501 Richmond Ave, Philadelphia, PA.

Sample ID	USEPA	PSSTP-04R	PSSTP-05A	PSSTP-06A	PSSTP-07A	PSSTP-07R	PSSTP-08A	PSSTP-08B	PSSTP-09A	PSSTP-09B
ft bgs	Industrial Soil	7-8	1-2	1-2	1-2	0.5-2	1-2	6-7	1-2	6-7
Sample Date	Regional Screening Level	4/11/2019	3/11/2003	3/11/2003	3/11/2003	4/18/2019	3/11/2003	3/11/2003	3/12/2003	3/12/2003
METALS - 6010D (mg/kg)										
Antimony	470	**20.6**	**4.3**	ND	ND	ND	**6.6**	ND	**2.7**	**2.7**
Arsenic	3	**10.2 J**	**15**	**4**	**4.4**	**6.6**	**12**	**6.7**	**6.7**	**4.7**
Chromium	—	**791**	**15**	**< 6.3**	**11**	**18.0 [20.0]**	**32**	**6.7**	**68**	**23**
Cyanide	150	**2.7**	**13**	**4.1**	**0.35**	**0.33 J**	**2**	**5.5**	**0.85**	ND
Lead	800	**78.6**	**150**	**41**	**340**	**158 J**	**930**	**27**	**85**	**230**
Mercury	46	**0.79**	**0.4**	**0.15**	**0.37**	**0.19 J**	**2.1**	**0.19**	**0.24**	**0.49**
Selenium	5800	ND	ND	ND	ND	ND	ND	ND	ND	ND
POLYCHLORINATED BIPHENYLS (mg/kg)										
Aroclor 1260	0.99	**< 0.12**	**0.83**	**0.11**	**0.18**	**< 0.04 [< 0.036]**	**0.12**	**< 0.022**	**0.05**	**8.9**
SEMI-VOLATILE ORGANIC COMPOUNDS - 8270D (mg/kg)										
1,1-Biphenyl	200	**301 D**	—	—	—	**0.0107 J**	—	—	—	—
2-Methylnaphthalene	3000	**1780 D**	**1.4**	**0.054 J**	ND	**0.0195 J**	**0.86 J**	**0.19 J**	ND	**0.21 J**
4-Methylphenol	16000	—	—	—	—	—	—	—	—	—
Anthracene	230000	**883 D**	**9.9**	**0.33 J**	**3.6 J**	**0.321**	**7.4**	**1.4**	**0.16 J**	**2.4**
Benz(a)anthracene	21	**819 D**	**21**	**1.8**	**6.4**	**0.939**	**15**	**3.2**	**0.41 J**	**5.4**
Benzo(a)pyrene	2.1	**566 D**	**18**	**1.5**	**5**	**0.979**	**10**	**2.1**	**0.37 J**	**4.2**
Benzo(b)fluoranthene	21	**723 D**	**23**	**2.7**	**7 7**	**1.21**	**15**	**3.4**	**0.6**	**6**
Benzo(g,h,i)perylene	—	**267 DJ**	**7.8 J**	**0.08 J**	**1.8 J**	**0.626**	**3.9 J**	**0.97 J**	**0.1 J**	**1.4 J**
Benzo(k)fluoranthene	210	**261 D**	**11**	**0.95**	**2.1 J**	**0.481**	**3.8 J**	**1.2 J**	**0.26 J**	**2.4**
Carbazole	—	**573 D**	**3.1 J**	**0.087 J**	**1.8 J**	**0.139**	**2.4 J**	**0.51 J**	**0.061 J**	**1.1 J**
Chrysene	2100	**701 D**	**20**	**1.5**	**6.6**	**0.847**	**10**	**2.7**	**0.37 J**	**5.3**
Dibenz(a,h)anthracene	2.1	**106 DJ**	**2.6 J**	**0.36 J**	**0.66 J**	**0.132**	**1.7 J**	**0.32 J**	ND	**0.59 J**
Dibenzofuran	1200	**1220 D**	**3.4 J**	**0.057 J**	**0.8 J**	**0.0676 J**	**6.1**	**0.35 J**	ND	**0.62 J**
Fluoranthene	30000	**2710 D**	**49**	**2.8**	**15**	**1.71**	**27**	**5.7**	**0.76**	**11**
Fluorene	30000	**2020 D**	**5.5 J**	**0.069 J**	**1.4 J**	**0.136**	**8.8**	**0.51 J**	**0.048 J**	**1.2 J**
Indeno[1,2,3-cd]pyrene	21	**274 DJ**	**7.5 J**	**1.00**	**1.7 J**	**0.66 [0.633]**	**3.7 J**	**0.95 J**	**0.093 J**	**1.6 J**
Naphthalene	8.6	**9350 D**	**2.5 J**	**0.23 J**	**0.48 J**	**0.0321 J**	**4.7**	**0.26 J**	ND	**0.37 J**
Phenanthrene	—	**4730 D**	**38**	**1.2**	**12**	**1.2**	**14**	**4.9**	**0.61**	**8.8**
Phenol	250000	**69 D**	ND	ND	ND	ND	ND	ND	ND	**1.6**
Pyrene	23000	**1490 D**	**41**	**3.2**	**13**	**1.59**	**23**	**6.1**	**0.99**	**8.7**
VOLATILE ORGANIC COMPOUNDS - 8260C (mg/kg)										
Benzene	5.1	**16.9**	ND	ND	ND	**0.00089 J**	ND	**0.0028**	ND	ND

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Table 1. Summary of Arcadis Soil Analytical Data. BP Bridesburg, LLC; 4501 Richmond Ave, Philadelphia, PA.

Sample ID	USEPA	PSSTP-10A	PSSTP-10R	PSSTP-11A	PSSTP-12A	PSSTP-13A	PSSTP-14A	PSSTP-15A	PSSTP-16A	PSSTP-17A
ft bgs	Industrial Soil	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2
Sample Date	Regional Screening Level	3/12/2003	4/16/2019	3/12/2003	3/12/2003	3/12/2003	3/12/2003	3/12/2003	3/12/2003	3/12/2003
METALS - 6010D (mg/kg)										
Antimony	470	ND	**0.56 J**	ND	**5.4**	ND	ND	ND	ND	**2.7**
Arsenic	3	**10**	**7.9**	ND	**100**	**3.6**	ND	**6.1**	**6**	**7.4**
Chromium	—	**12**	**19.5 J**	**< 5.7**	**20**	**9.2**	**< 7.1**	**24**	**23**	**24**
Cyanide	150	ND	ND	**0.53**	**2.8**	ND	ND	ND	**0.68**	ND
Lead	800	**100**	**153**	**52**	**310**	**13**	**58**	**380**	**280**	**270**
Mercury	46	**0.18**	**0.24 J**	**0.13**	**0.6**	ND	**0.17**	**0.7**	**0.63**	**0.53**
Selenium	5800	ND	ND	ND	ND	ND	ND	ND	ND	ND
POLYCHLORINATED BIPHENYLS (mg/kg)										
Aroclor 1260	0.99	**< 0.019**	**< 0.037**	**< 0.019**	**0.32**	**< 0.019**	**< 0.024**	**< 0.02**	**0.63**	**< 0.02**
SEMI-VOLATILE ORGANIC COMPOUNDS - 8270D (mg/kg)										
1,1-Biphenyl	200	—	**0.0132 J**	—	—	—	—	—	—	—
2-Methylnaphthalene	3000	ND	**0.0273 J**	**0.06 J**	**1.9 J**	ND	ND	**0.35 J**	**0.051 J**	**0.14 J**
4-Methylphenol	16000	—	—	—	—	—	—	—	—	—
Anthracene	230000	ND	**0.608**	**0.83**	**12**	**0.27 J**	**0.079 J**	**1.2**	**0.53**	**0.54 J**
Benz(a)anthracene	21	**0.17 J**	**1.76**	**3.7**	**50**	**1.4**	**1.5**	**2.8**	**1.5**	**1.3**
Benzo(a)pyrene	2.1	**0.14 J**	**1.31**	**2.3**	**41**	**1.2**	**1.9**	**2.4**	**1.3**	**1**
Benzo(b)fluoranthene	21	**0.22 J**	**1.97**	**3.5**	**67**	**1.5**	**4.3**	**4**	**2.1**	**1.7**
Benzo(g,h,i)perylene	—	**0.1 J**	**0.909**	**1**	**13**	**0.73**	**1.3**	**0.75**	**0.39 J**	**0.36 J**
Benzo(k)fluoranthene	210	**0.089 J**	**0.781**	**1.6**	**20**	**0.54**	**1.3**	**1.6**	**0.62**	**0.58**
Carbazole	—	ND	**0.218**	**0.17 J**	**3.6 J**	**0.12 J**	ND	**0.7**	**0.25 J**	**0.23 J**
Chrysene	2100	**0.21 J**	**1.72**	**3.4**	**56**	**1.6**	**2**	**2.9**	**1.6**	**1.3**
Dibenz(a,h)anthracene	2.1	ND	**0.354**	**0.46**	**5.1 J**	**0.21 J**	**0.5**	**0.3 J**	**0.15 J**	**0.14 J**
Dibenzofuran	1200	ND	**0.115**	**0.25 J**	**2.9 J**	**0.1 J**	ND	**0.48**	**0.12 J**	**0.19 J**
Fluoranthene	30000	**0.31 J**	**3.21**	**5.6**	**100**	**3.3**	**1.2**	**4.8**	**3**	**2.4**
Fluorene	30000	ND	**0.203**	**0.31 J**	**8.1**	**0.19 J**	ND	**0.59**	**0.22 J**	**0.23 J**
Indeno[1,2,3-cd]pyrene	21	**0.095 J**	**1.03**	**1.10**	**13.00**	**0.66**	**1.40**	**0.83**	**0.44**	**0.41**
Naphthalene	8.6	ND	**0.0813**	**0.11 J**	**3.5 J**	ND	**0.11 J**	**1.9**	**0.08 J**	**0.77**
Phenanthrene	—	**0.15 J**	**2.25**	**2.6**	**86**	**1.2**	**0.31 J**	**4**	**2.2**	**1.9**
Phenol	250000	ND	ND	**1.7**	ND	ND	ND	ND	ND	ND
Pyrene	23000	**0.26 J**	**2.56**	**4.7**	**120**	**3.1**	**0.99**	**4.6**	**2.7**	**2.2**
VOLATILE ORGANIC COMPOUNDS - 8260C (mg/kg)										
Benzene	5.1	ND	ND	ND	ND	ND	ND	ND	ND	ND

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Sample ID	USEPA	PSSTP-18A	PSSTP-19A	PSSTP-20A	PSSTP-21A	PSSTP-22A	PSSTP-22R	PSSTP-22R	PSSTP-23A	PSSTP-23B
ft bgs	Industrial Soil	1-2	1-2	1-2	1-2	1-2	0.5-2	4-6	1-2	7-8
Sample Date	Regional Screening Level	3/12/2003	3/12/2003	3/13/2003	3/13/2003	3/13/2003	4/24/2019	4/24/2019	3/13/2003	3/13/2003
METALS - 6010D (mg/kg)										
Antimony	470	ND	ND	ND	2.7	2.7	2.2 J	1.1 J	ND	ND
Arsenic	3	6.3	6.8	47	5.5	16	13.5	12.2	10	5.1
Chromium	—	24	19	9.8	12	22	28.4	18.8	25	13
Cyanide	150	0.29	ND	2.3	2.2	5.5	8.1 J	8.3 J	ND	15
Lead	800	180	200	240	130	190	1130	477	21	170
Mercury	46	0.54	0.6	0.41	0.37	8.1	0.17 J	0.82 J	0.17	5.6
Selenium	5800	ND	ND	ND	ND	ND	ND	0.94 J	ND	ND
POLYCHLORINATED BIPHENYLS (mg/kg)										
Aroclor 1260	0.99	0.12	0.23	< 0.019	0.25	< 0.019	< 0.037	NA	< 0.02	< 0.019
SEMI-VOLATILE ORGANIC COMPOUNDS - 8270D (mg/kg)										
1,1-Biphenyl	200	—	—	—	—	—	1.99	6.85 D	—	—
2-Methylnaphthalene	3000	0.076 J	ND	0.092 J	0.82	11 J	10.9 D	31.9 D	ND	0.4 J
4-Methylphenol	16000	—	—	—	—	—	—	—	—	—
Anthracene	230000	0.8	0.35 J	0.46	1.1	39	31.1 D	38.9 D	ND	2.3 J
Benz(a)anthracene	21	1.9	0.31 J	1.7	4.3	81	58 D	39.8 D	0.19 J	9.2
Benzo(a)pyrene	2.1	1.5	0.5	1.5	3.7	53	48.6 D	34.9 D	0.16 J	6.9
Benzo(b)fluoranthene	21	2.6	0.099 J	2.4	7.1	82	71.4 D	49.2 D	0.24 J	13
Benzo(g,h,i)perylene	—	0.42	0.14 J	0.55	1.3	27	31 D	18.6 D	0.099 J	4.1
Benzo(k)fluoranthene	210	0.77	ND	0.83	2.9	35	6.68	15.7 D	0.074 J	4.3
Carbazole	—	0.37 J	0.043 J	0.24 J	0.5	11 J	9.74 D	18.8 D	ND	0.81
Chrysene	2100	1.8	0.38 J	1.8	4.8	75	52.3 D	36.5 D	0.18 J	11
Dibenz(a,h)anthracene	2.1	0.17 J	ND	0.23 J	0.53	11 J	6.44	5.68 D	ND	1.6 J
Dibenzofuran	1200	0.17 J	ND	0.11 J	0.54	22	18.1 D	32.5 D	ND	0.61 J
Fluoranthene	30000	3.6	0.66	3	6.2	160	139 D	107 D	0.33 J	18
Fluorene	30000	0.32 J	ND	0.18 J	0.43	30	18.9 D	54.2 D	ND	0.85 J
Indeno[1,2,3-cd]pyrene	21	0.48	0.12 J	0.61	1.50	29.00	35.3 D	20.7 D	0.09 J	4.40
Naphthalene	8.6	0.17 J	ND	0.16 J	1.7	21	18.5 D	103 D	ND	1.4 J
Phenanthrene	—	2.6	0.39 J	1.8	4.1	140	122 D	152 D	0.047 J	8.6
Phenol	250000	ND	ND	ND	1.6	1.7	0.212	0.115	1.6	ND
Pyrene	23000	3.3	0.58	2.7	6.3	130	107 D	80.2 D	0.27 J	14
VOLATILE ORGANIC COMPOUNDS - 8260C (mg/kg)										
Benzene	5.1	ND	ND	ND	ND	0.68	0.001	0.482	ND	ND

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Sample ID	USEPA	PSSTP-24A	PSSTP-25A	PSSTP-25B	PSSTP-26A	PSSTP-27A	PSSTP-28A	PSSTP-29A	PSSTP-30A	S-105
ft bgs	Industrial Soil	1-2	1-2	7-8	1-2	1-2	1-2	1-2	1-2	2-4
Sample Date	Regional Screening Level	3/13/2003	3/13/2003	3/13/2003	3/13/2003	3/13/2003	3/13/2003	3/13/2003	3/13/2003	4/12/2019
METALS - 6010D (mg/kg)										
Antimony	470	**3.7**	**2.8**	ND	ND	**2.8**	**3.3**	**2.3**	**16**	ND
Arsenic	3	**13**	**12**	**4.3**	**5.2**	**11**	**54**	**20**	**170**	**170**
Chromium	—	**10**	**31**	**11**	**15**	**26**	**11**	**27**	**31**	**21.6**
Cyanide	150	**1.3**	**2.6**	**0.75**	**0.46**	ND	**0.91**	ND	**0.64**	**3.2**
Lead	800	**69**	**91**	**140**	**1000**	**150**	**960**	**560**	**1600**	**504**
Mercury	46	ND	**0.19**	**0.12**	**0.9**	**0.22**	**0.35**	**0.44**	**1.2**	**0.25**
Selenium	5800	**2.7**	ND	ND	ND	ND	ND	ND	ND	ND
POLYCHLORINATED BIPHENYLS (mg/kg)										
Aroclor 1260	0.99	**< 0.02**	**0.081**	**< 0.023**	**0.092**	**0.2**	**< 0.019**	**0.077**	**< 0.023**	NA
SEMI-VOLATILE ORGANIC COMPOUNDS - 8270D (mg/kg)										
1,1-Biphenyl	200	—	—	—	—	—	—	—	—	**0.0737 J**
2-Methylnaphthalene	3000	**0.24 J**	ND	**0.26 J**	**0.35 J**	**2 J**	**17**	**0.5 J**	**4.8**	**0.269**
4-Methylphenol	16000	—	—	—	—	—	—	—	—	—
Anthracene	230000	**4.7**	**3.4 J**	**0.86 J**	**2.5**	**31**	**7 J**	**2.8**	**0.44 J**	**2.36**
Benz(a)anthracene	21	**11**	**18**	**4.1**	**6**	**51**	**7 J**	**4.7**	**1.1 J**	**7.11**
Benzo(a)pyrene	2.1	**6.6**	**14**	**3.5**	**5.4**	**42**	**3.4 J**	**3.4**	**1.1 J**	**7.46**
Benzo(b)fluoranthene	21	**11**	**29**	**5.7**	**8.3**	**67**	**3.4 J**	**5.2**	**2.6**	**8.45**
Benzo(g,h,i)perylene	—	**2.5**	ND	ND	**1.7**	**11 J**	**1.4 J**	**0.95 J**	**0.59 J**	**4.62**
Benzo(k)fluoranthene	210	**4.4**	**8 J**	**2.2**	**2.7**	**21**	**0.97 J**	**1.2**	**0.68 J**	**2.4**
Carbazole	—	**1.3**	**1.5 J**	**0.29 J**	**1.2**	**4.5 J**	ND	**1.1 J**	**0.3 J**	**0.409**
Chrysene	2100	**12**	**23**	**4.7**	**5.7**	**47**	**6.7 J**	**4.1**	**2.2**	**7.11**
Dibenz(a,h)anthracene	2.1	**1.1 J**	**3.4 J**	**0.81 J**	**0.6 J**	**3.2 J**	ND	**0.35 J**	**0.17 J**	**1.11**
Dibenzofuran	1200	**0.42 J**	**0.97 J**	**0.25 J**	**0.65 J**	**5.8 J**	**3.4 J**	**1 J**	**0.59 J**	**0.196**
Fluoranthene	30000	**16**	**34**	**5.3**	**11**	**120**	**4 J**	**9.1**	**1.8**	**14**
Fluorene	30000	**0.71 J**	ND	**0.15 J**	**1.2 J**	**12 J**	**11**	**1.5**	**0.55 J**	**0.462**
Indeno[1,2,3-cd]pyrene	21	**2.70**	**8.50**	**1.90**	**1.70**	**11 J**	**0.87 J**	**1 J**	**0.56 J**	**3.63**
Naphthalene	8.6	**0.66 J**	**1.8 J**	**0.32 J**	**0.77 J**	ND	**7.9**	**0.63 J**	**2.4**	**0.411**
Phenanthrene	—	**6.7**	**16**	**3**	**8.6**	**110**	**13**	**11**	**2.5**	**8.22**
Phenol	250000	ND	**2**	**1.7**	ND	ND	**2.5**	ND	ND	ND
Pyrene	23000	**13**	**25**	**4.4**	**12**	**130**	**26**	**8.9**	**2.2**	**16.2**
VOLATILE ORGANIC COMPOUNDS - 8260C (mg/kg)										
Benzene	5.1	ND	ND	ND	ND	ND	ND	ND	ND	ND

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Table 1. Summary of Arcadis Soil Analytical Data. BP Bridesburg, LLC; 4501 Richmond Ave, Philadelphia, PA.

Sample ID	USEPA	S-106	S-107	S-108	S-109	S-110	S-111	S-113	S-113B	S-114
ft bgs	Industrial Soil	2-4	2-4	2-4	2-4	2-4	2-4	0-1	1-3	2-4
Sample Date	Regional Screening Level	4/12/2019	4/23/2019	4/15/2019	4/15/2019	4/12/2019	4/23/2019	4/23/2019	4/24/2019	4/15/2019
METALS - 6010D (mg/kg)										
Antimony	470	ND	**2.7**	ND	ND	ND	**0.65 J**	**4.9 J**	**2.5 J**	ND
Arsenic	3	**5.8**	**57.7**	**11.9**	**5.3**	**20.1**	**6.7**	**10.7**	**10.9**	**7**
Chromium	—	**7.5**	**15.4**	**51.6 J**	**13.9 J**	**21.1**	**16.2**	**27.1**	**38.6**	**21.4 J**
Cyanide	150	**3.9**	**12.3**	**10.8 J**	**5.5 J**	**8**	**0.78**	**125 J**	**9.8 J**	ND
Lead	800	**27.1**	**683**	**13.9 J**	**23.3 J**	**221**	**137**	**460**	**445**	**193 J**
Mercury	46	**0.34**	**0.36 J**	**0.023 J**	**0.13 J**	**0.35**	**0.44 J**	**0.5 J**	**0.3 J**	**0.57 J**
Selenium	5800	ND	ND	ND	ND	ND	ND	**2.1 J**	**1.8 J**	**1.2 J**
POLYCHLORINATED BIPHENYLS (mg/kg)										
Aroclor 1260	0.99	NA	NA	NA	NA	NA	NA	NA	NA	NA
SEMI-VOLATILE ORGANIC COMPOUNDS - 8270D (mg/kg)										
1,1-Biphenyl	200	**331**	**0.143**	**0.0701 J**	**0.438**	**0.0423 J**	**0.101**	**1.2**	**0.177 J**	0 UB
2-Methylnaphthalene	3000	**1760**	**0.359**	**0.236**	**1.2**	**0.249**	**0.447**	**2.99**	**0.522 J**	**0.0109 J**
4-Methylphenol	16000	—	—	—	—	—	—	—	—	—
Anthracene	230000	**1350**	**3.96 D**	**1.4**	**13.4 D**	**0.317**	**2.21**	**52.7 D**	**24 D**	**0.205**
Benz(a)anthracene	21	**1180**	**6.51 D**	**6.47 DJ**	**40.5 D**	**0.834**	**4.48 D**	**101 D**	**65.9 D**	**0.549**
Benzo(a)pyrene	2.1	**956**	**5.54 D**	**6.75 DJ**	**36.3 D**	**0.767**	**7.11 D**	**82.9 D**	**55.2 D**	**0.565**
Benzo(b)fluoranthene	21	**1070**	**6.86 D**	**9.74 DJ**	**49 D**	**1.08**	**8.79 D**	**107 D**	**76.6 D**	**0.664**
Benzo(g,h,i)perylene	—	**538**	**3.6 D**	**2.49**	**22 D**	**0.504**	**5.67 D**	**53.1 D**	**31.1 D**	**0.351**
Benzo(k)fluoranthene	210	**374**	**3.07**	**3.39 DJ**	**21.1 D**	**0.343**	**2.72 D**	**43 D**	**23.1 D**	**0.228**
Carbazole	—	**677**	**0.459**	**0.358**	**3.16**	**0.0756 J**	**0.354**	**9.79 D**	**1.82 J**	0 UB
Chrysene	2100	**956**	**5.8 D**	**7.77 DJ**	**39.7 D**	**0.812**	**4.26 D**	**90.9 D**	**57 D**	**0.544**
Dibenz(a,h)anthracene	2.1	**149**	**1.45**	**1.23**	**5.35 D**	**0.133**	**2.02**	**17.1 D**	**9.6 D**	**0.0786**
Dibenzofuran	1200	**1280**	**0.989**	**0.267**	**4.19 D**	**0.128**	**0.387**	**10.2 D**	**2.81 J**	**0.0258 J**
Fluoranthene	30000	**3290**	**14.4 D**	**8.09 D**	**73.2 D**	**1.79**	**6.89 D**	**266 D**	**179 D**	**1.19**
Fluorene	30000	**2120**	**2.28**	**0.243**	**6.44 D**	**0.206**	**0.448**	**22.3 D**	**11 D**	**0.058**
Indeno[1,2,3-cd]pyrene	21	**515.00**	**2.99 D**	**2.73**	**23.4 D**	**0.52**	**4.87 D**	**49.6 D**	**36.4 D**	**0.34**
Naphthalene	8.6	**7730**	**0.627**	**0.968**	**1.91**	**0.22**	**1.47**	**7.76**	**1.08 J**	**0.0197 J**
Phenanthrene	—	**5410**	**11.3 D**	**3.41**	**46.5 D**	**1.37**	**3.22**	**183 D**	**63.4 D**	**0.827**
Phenol	250000	**296**	ND	**0.0922**	**0.635**	ND	**0.049 J**	**0.646**	ND	ND
Pyrene	23000	**2190**	**10.5 D**	**7.99 DJ**	**69 D**	**1.5**	**6.44 D**	**187 D**	**133 D**	**1.08**
VOLATILE ORGANIC COMPOUNDS - 8260C (mg/kg)										
Benzene	5.1	**48.9**	ND	**0.0017 J**	**0.00086 J**	ND	ND	ND	**0.935**	ND

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Table 1. Summary of Arcadis Soil Analytical Data. BP Bridesburg, LLC; 4501 Richmond Ave, Philadelphia, PA.

Sample ID	USEPA	S-119	S-120	S-121	S-122	S-127	S-128	S-129	S-130	S-132
ft bgs	Industrial Soil	0-1	0-1	0-1	0-1	2-4	2-4	2-4	2-4	2-4
Sample Date	Regional Screening Level	4/12/2019	4/24/2019	4/12/2019	4/12/2019	4/17/2019	4/18/2019	4/18/2019	4/17/2019	4/17/2019
METALS - 6010D (mg/kg)										
Antimony	470	ND	**2.3 J**	ND	ND	ND	ND	ND	**0.67 J**	**3.9 J**
Arsenic	3	**57.4**	**105**	**69.3**	**75**	**9.7**	**9.3**	**6.3**	**8.1**	**21.1**
Chromium	—	**19.3**	**15.2**	**21.0**	**16.1**	**22.0 J**	**25.9**	**24.3**	**18.5 J**	**169 J**
Cyanide	150	**1.6**	**1.4 J**	**0.68**	**0.95**	**1.1 J**	**0.38 J**	**0.64**	**8.4 J**	**4.2 J**
Lead	800	**253**	**329**	**241**	**359**	**417**	**769 J**	**279 J**	**181**	**246**
Mercury	46	**0.21**	**0.29 J**	**0.12**	**0.24**	—	**0.93 J**	**0.56 J**	**0.57 J**	**1.4 J**
Selenium	5800	ND	ND	ND	ND	ND	**3 J**	ND	**1.5 J**	ND
POLYCHLORINATED BIPHENYLS (mg/kg)										
Aroclor 1260	0.99	NA	NA	NA	NA	NA	NA	NA	NA	NA
SEMI-VOLATILE ORGANIC COMPOUNDS - 8270D (mg/kg)										
1,1-Biphenyl	200	**0.0202 J**	**0.0109 J**	**0.009 J**	**0.0088 J**	**9.32 D**	**0.0685 J**	**0.0479 J**	**0.098**	**0.195**
2-Methylnaphthalene	3000	**0.0629**	**0.036 J**	**0.0209 J**	**0.0226 J**	**41.1 DJ**	**0.237**	**0.159**	**0.592**	**1.28**
4-Methylphenol	16000	—	—	—	—	—	—	—	—	—
Anthracene	230000	**0.63**	**0.122**	**0.102**	**0.126**	**54.8 DJ**	**2.03**	**1.22**	**0.0285 J**	**13.6 D**
Benz(a)anthracene	21	**1.96**	**0.417 J**	**0.484**	**0.631**	**45.3 DJ**	**5.26 D**	**2.67**	**0.0269 J**	**36.1 D**
Benzo(a)pyrene	2.1	**2.26**	**0.516 J**	**0.821**	**0.848**	**37.6 D**	**5.48 D**	**2.94**	**0.03 J**	**33.5 D**
Benzo(b)fluoranthene	21	**2.81**	**0.638**	**0.821**	**1.01**	**46.1 D**	**7.31 D**	**4.37 D**	**0.0456**	**45.2 D**
Benzo(g,h,i)perylene	—	**1.48**	**0.407 J**	**0.663**	**0.598**	**18.7 D**	**2.85**	**1.43**	**0.038 J**	**19.4 D**
Benzo(k)fluoranthene	210	**0.891**	**0.253**	**0.29**	**0.307**	**15.7 D**	**1.6**	**1.78 D**	ND	**15.6 D**
Carbazole	—	**0.14**	**0.042 J**	**0.0282 J**	**0.0396 J**	**27.5 D**	**0.916**	**0.413**	**0.0214 J**	**2.19 B**
Chrysene	2100	**1.81**	**0.443**	**0.507**	**0.663**	**39.3 D**	**5.53 D**	**2.97**	**0.0531**	**31.2 D**
Dibenz(a,h)anthracene	2.1	**0.349**	**0.0964**	**0.117**	**0.137**	**5.74 DJ**	**1.09**	**0.533**	ND	**5.91 D**
Dibenzofuran	1200	**0.0873**	**0.0364 J**	ND	**0.0199 J**	**46.6 D**	**0.545**	**0.384**	**0.076 J**	**3.19**
Fluoranthene	30000	**3.36**	**0.772 J**	**0.616**	**1.01**	**130 D**	**9.62 D**	**6.35 D**	**0.0299 J**	**73.7 D**
Fluorene	30000	**0.187**	**0.0544**	**0.0204 J**	**0.0275 J**	**64.3 D**	**1.05**	**0.689**	**0.023 J**	**6.94 D**
Indeno[1,2,3-cd]pyrene	21	**1.41**	**0.406 J**	**0.60**	**0.56**	**19.6 D**	**2.83**	**1.41**	**0.0326 J**	**19.7 D**
Naphthalene	8.6	**0.127**	**0.114**	**0.0591**	**0.0505**	**168 D**	**0.51**	**0.352**	**6.71 D**	**2.99**
Phenanthrene	—	**1.74**	**0.574 J**	**0.312**	**0.468**	**216 D**	**8.7 D**	**5.83 D**	**0.249**	**43.8 D**
Phenol	250000	ND	ND	ND	ND	**0.338 J**	ND	ND	**0.647**	**0.196**
Pyrene	23000	**3.26**	**0.713 J**	**0.789**	**1.15**	**82.8 D**	**9.22 D**	**5.93 D**	**0.0347 J**	**53.3 D**
VOLATILE ORGANIC COMPOUNDS - 8260C (mg/kg)										
Benzene	5.1	ND	ND	ND	ND	**0.134 J**	**0.0252**	**0.0012**	**0.0176**	ND

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Table 1. Summary of Arcadis Soil Analytical Data. BP Bridesburg, LLC; 4501 Richmond Ave, Philadelphia, PA.

Sample ID	USEPA	S-133	S-146	S-148	S-149	S-151	S-156	S-156	S-161	S-163
ft bgs	Industrial Soil	2-4	14-16	8-10	8-10	0.5-2	3-5	7.5-9.5	5-7	0.5-2
Sample Date	Regional Screening Level	4/17/2019	4/25/2019	4/25/2019	4/25/2019	4/25/2019	5/3/2019	5/3/2019	5/3/2019	9/19/2019
METALS - 6010D (mg/kg)										
Antimony	470	**2.8 J**	ND	ND	**1.9 J**	**0.87 J**	**2.6 J**	**2.2 J**	0 UJ	ND
Arsenic	3	**11.2**	**2.2 J**	**13.6**	**13.8**	**6.9**	**10.2**	**15.9**	**5.8**	**7.6**
Chromium	—	**107 J**	**14.0**	**118**	**53.3**	**16.7**	**99.4**	**25.1**	**21.3**	**17.4**
Cyanide	150	**0.61 J**	**0.14 J**	**8 J**	**12.6 J**	**0.72 J**	**16 J**	0 UJ	**5.1 J**	**0.96**
Lead	800	**297**	**7.7 J**	**86 J**	**154 J**	**102 J**	**204 J**	**150 J**	**38 J**	**34.5**
Mercury	46	**1.3 J**	ND	**0.26 J**	**1.8 J**	**0.12 J**	**3.1**	**0.83**	**0.032 J**	ND
Selenium	5800	ND	ND	**2.8 J**	**2 J**	**0.74 J**	**2 J**	**4.1 J**	ND	ND
POLYCHLORINATED BIPHENYLS (mg/kg)										
Aroclor 1260	0.99	NA	NA	NA	NA	NA	NA	NA	NA	NA
SEMI-VOLATILE ORGANIC COMPOUNDS - 8270D (mg/kg)										
1,1-Biphenyl	200	0 UB	—	—	—	—	**72.1 D**	**0.0322 J**	**51.9 D**	**3.19**
2-Methylnaphthalene	3000	**0.0745**	ND	**495 D**	**37.3 D**	**22.1 D**	**312 D**	**0.0935**	**155 D**	**15.3**
4-Methylphenol	16000	—	—	—	—	—	—	—	—	—
Anthracene	230000	**0.661**	ND	**969 D**	**163 D**	**78.8 D**	**373 D**	**0.403**	**178 D**	**85.4 D**
Benz(a)anthracene	21	**1.56**	ND	**551 D**	**164 D**	**93.1 D**	**302 D**	**0.957**	**168 D**	**201 D**
Benzo(a)pyrene	2.1	**1.57**	ND	**438 D**	**140 D**	**86.4 D**	**219 D**	**0.837**	**148 D**	**156 D**
Benzo(b)fluoranthene	21	**2.17**	ND	**500 D**	**181 D**	**101 D**	**267 D**	**0.94**	**171 D**	**218 D**
Benzo(g,h,i)perylene	—	**1.15**	ND	**245 D**	**79.8 D**	**64.7 D**	**97.3 D**	**0.418**	**83.6 D**	**79.6 D**
Benzo(k)fluoranthene	210	**0.719**	ND	**212 D**	**55.4 D**	**40.3 D**	**108 D**	**0.386**	**59.9 D**	**66.1 D**
Carbazole	—	**0.355**	ND	**491 D**	**83.5 D**	**29.4 D**	**167 D**	**0.0509 J**	**111 D**	**10.2**
Chrysene	2100	**1.58**	ND	**502 D**	**152 D**	**77 D**	**270 D**	**0.86**	**133 D**	**174 D**
Dibenz(a,h)anthracene	2.1	**0.289**	ND	**81.6 D**	**27.9 D**	**16.4 D**	**28.3 D**	**0.119**	**24.7 D**	**23.8 D**
Dibenzofuran	1200	**0.278**	ND	**720 D**	**101 D**	**52.6 D**	**364 D**	**0.0555 J**	**218 D**	**42 D**
Fluoranthene	30000	**3.52**	ND	**1840 D**	**519 D**	**305 D**	**908 D**	**1.97**	**544 D**	**477 D**
Fluorene	30000	**0.328**	ND	**1100 D**	**168 D**	**91.9 D**	**563 D**	**0.13**	**334 D**	**69.3 D**
Indeno[1,2,3-cd]pyrene	21	**1.13**	**< 0.039**	**237 D**	**68.8 D**	**56.9 D**	**110 D**	**0.489**	**87.9 DJ**	**95.1 D**
Naphthalene	8.6	**0.157**	ND	**2640 D**	**228 D**	**100 D**	**1830 D**	**1.07**	**854 D**	**37.2 D**
Phenanthrene	—	**3.26**	ND	**3120 D**	**623 D**	**354 D**	**1840 D**	**0.872**	**860 D**	**324 D**
Phenol	250000	ND	ND	**37.3 D**	**0.795**	**0.0928 J**	**2.72**	ND	**0.455**	**0.404**
Pyrene	23000	**2.85**	ND	**1200 D**	**381 D**	**227 D**	**611 D**	**1.39**	**348 D**	**353 D**
VOLATILE ORGANIC COMPOUNDS - 8260C (mg/kg)										
Benzene	5.1	ND	ND	**4.01**	**2.31**	ND	**0.368**	**0.001**	**103**	ND

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Sample ID	USEPA	S-167	S-168	S-171	S-172	S-173	TP-30	TP-35	TP-44	TP-44R
ft bgs	Industrial Soil	7-9	6-8	5-7	5-7	5-7	2	4	4	3-5
Sample Date	Regional Screening Level	9/20/2019	9/19/2019	9/19/2019	9/19/2019	9/19/2019	3/14/2005	3/15/2005	3/16/2005	4/22/2019
METALS - 6010D (mg/kg)										
Antimony	470	ND	ND	ND	ND	**7**	**5.8**	**10**	**3.9**	**2.5**
Arsenic	3	**10.1**	**138**	**6**	**14.7**	**7.6**	**8.2**	**35**	**29**	**17**
Chromium	—	**30.3**	**19.8**	**25.7**	**42.8**	**23.7**	**36**	**85**	**7.9**	**8.9**
Cyanide	150	ND	**0.82**	**0.3**	ND	ND	**24**	**4.1**	—	**2.7**
Lead	800	**105**	**91.1**	**127**	**210**	**117**	**860**	**620**	**9600**	**220**
Mercury	46	**0.21**	**0.4**	**0.61**	**0.75**	**1.4**	**0.37**	**1.2**	ND	**0.23 J**
Selenium	5800	ND	ND	ND	ND	ND	**3.3**	ND	**3.2**	**1.2 J**
POLYCHLORINATED BIPHENYLS (mg/kg)										
Aroclor 1260	0.99	NA	NA	NA	NA	NA	NA	NA	NA	NA
SEMI-VOLATILE ORGANIC COMPOUNDS - 8270D (mg/kg)										
1,1-Biphenyl	200	**0.0543 J**	**0.0602 J**	**0.0445 J**	**0.0328 J**	**0.0588 J**	—	—	—	**0.227**
2-Methylnaphthalene	3000	**0.199**	**0.163**	**0.173**	**0.0943**	**0.19**	**0.049 J**	**23**	**24**	**4.11**
4-Methylphenol	16000	—	—	—	—	—	ND	ND	ND	—
Anthracene	230000	**1.82**	**0.743**	**0.91**	**1.18**	**2.51**	**0.28**	**17**	**4.5**	**0.0351 J**
Benz(a)anthracene	21	**7.67 D**	**2.5**	**1.73**	**4.27 D**	**4.91 D**	**1.7**	**24**	**2**	**0.0165 J**
Benzo(a)pyrene	2.1	**6.78 D**	**2.39**	**1.36**	**4.55 D**	**4.32 D**	**1.4**	**21**	**2**	ND
Benzo(b)fluoranthene	21	**7.97 D**	**3.13 D**	**1.69**	**5.33 D**	**5.16 D**	**2.3**	**32**	**1.8**	**0.0192 J**
Benzo(g,h,i)perylene	—	**3.76 D**	**1.58**	**0.796**	**2.63**	**2.68**	**0.77**	**6.3**	**1.1**	ND
Benzo(k)fluoranthene	210	**2.68**	**0.942**	**0.592**	**1.39**	**1.72**	**0.76**	**10**	ND	ND
Carbazole	—	**0.783**	**0.175**	**0.373**	**0.49**	**1.28**	**0.044**	**6.9**	ND	**0.0632 J**
Chrysene	2100	**7.43 D**	**2.56**	**1.63**	**3.96 D**	**4.41 D**	**1.6**	**24**	**2.8**	**0.0398 J**
Dibenz(a,h)anthracene	2.1	**1.14**	**0.443**	**0.218**	**0.928**	**0.671**	**0.31**	**2.8**	ND	ND
Dibenzofuran	1200	**0.204**	**0.4**	**0.347**	**0.22**	**0.617**	**0.055 J**	**7.4**	**4**	**0.219**
Fluoranthene	30000	**16.6 D**	**4.71 D**	**3.84 D**	**7.76 D**	**13 D**	**3.6**	**56**	**3.4**	**0.0232 J**
Fluorene	30000	**0.504**	**0.962**	**0.483**	**0.389**	**1.13**	**0.12**	**16**	**7.8**	**0.161**
Indeno[1,2,3-cd]pyrene	21	**3.82**	**1.6**	**0.865**	**2.55**	**2.5**	**0.75**	**9**	**0.94**	**0.0316 J**
Naphthalene	8.6	**0.513**	**0.347**	**0.406**	**0.605**	**0.453**	**0.24**	**130**	**11**	**1.42**
Phenanthrene	—	**5.3 D**	**1.82**	**3.69 D**	**4.21 D**	**10.2 D**	**0.9**	**44**	**12**	**0.284**
Phenol	250000	ND	ND	ND	ND	ND	ND	ND	ND	ND
Pyrene	23000	**14.6 D**	**4.01 D**	**3.55**	**7.08 D**	**10.5 D**	**2.9**	**40**	**8.2**	**0.0702**
VOLATILE ORGANIC COMPOUNDS - 8260C (mg/kg)										
Benzene	5.1	ND	**1.84**	ND	ND	ND	ND	**0.51**	**0.0018**	**0.494**

Notes:
ft bgs = Feet below ground surface.
mg/kg = Milligrams per kilogram.
USEPA = United States Environmental Protection Agency.
Boxed concentrations exceed the EPA Industrial Soil Regional Screening Levels.
— = Sample not analyzed.
B = Analyte also detected in the laboratory blank.
D = Result reported from dilution analysis.
ND = Not detected.
U = Not detected above laboratory detection limit.
J = Result below the reporting limit (estimated value).
Bold = Detected concentration.

Table 1. Summary of Arcadis Soil Analytical Data. BP Bridesburg, LLC; 4501 Richmond Ave, Philadelphia, PA.

Sample ID	USEPA	TP-64
ft bgs	Industrial Soil	3
Sample Date	Regional Screening Level	3/21/2005
METALS - 6010D (mg/kg)		
Antimony	470	**4**
Arsenic	3	**16**
Chromium	—	**56**
Cyanide	150	**45**
Lead	800	**130**
Mercury	46	**0.54**
Selenium	5800	**3.6**
POLYCHLORINATED BIPHENYLS (mg/kg)		
Aroclor 1260	0.99	NA
SEMI-VOLATILE ORGANIC COMPOUNDS - 8270D (mg/kg)		
1,1-Biphenyl	200	—
2-Methylnaphthalene	3000	**13**
4-Methylphenol	16000	ND
Anthracene	230000	**100**
Benz(a)anthracene	21	**300**
Benzo(a)pyrene	2.1	**280**
Benzo(b)fluoranthene	21	**470**
Benzo(g,h,i)perylene	—	**100**
Benzo(k)fluoranthene	210	**130**
Carbazole	—	**31**
Chrysene	2100	**280**
Dibenz(a,h)anthracene	2.1	**40**
Dibenzofuran	1200	**42**
Fluoranthene	30000	**710**
Fluorene	30000	**59**
Indeno[1,2,3-cd]pyrene	21	**140**
Naphthalene	8.6	**43**
Phenanthrene	—	**340**
Phenol	250000	ND
Pyrene	23000	**460**
VOLATILE ORGANIC COMPOUNDS - 8260C (mg/kg)		
Benzene	5.1	ND

Notes:
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mg/kg = Milligrams per kilogram.
USEPA = United States Environmental Protection Agency.
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Bold = Detected concentration.

Compound	ProUCL Recommended Output Concentration (mg/kg)
METALs	
Arsenic	30.36
Chromium	51.31
Cyanide	43.42
Lead	2444.00
PCBs	
Aroclor 1260	0.20
SVOCs	
1,1-Biphenyl	119.30
2-Methylnaphthalene	232.80
Benzo(a)anthracene	155.80
Benzo(a)pyrene	110.00
Benzo(b)fluoranthene	132.60
Benzo(k)fluoranthene	49.39
Carbazole	149.80
Chrysene	121.20
Dibenz(a,h)anthracene	17.72
Dibenzofuran	175.70
Indeno(1,2,3-cd)pyrene	48.76
Naphthalene	1207.00
Phenanthrene	723.90
VOCs	
Benzene	9.10

Notes:
UCL = Upper confidence limit.
mg = Milligram.
kg = Kilogram
PCBs = Polychlorinated biphenyls.
SVOCs = Semi-volatile organic compounds.
VOCs = Volatile organic compounds.

Compound	ABSd (unitless)[a]	D_{air} (cm^2/sec)[c]	D_{water} (cm^2/sec)[c]	$H_{at\ 25°C}$ (atm-m^3/mol)[c]	H_0 (unitless)[c]	RfD_o (mg/kg/day)[b,c]
Arsenic	3.00E-02	NV	NV	NV	NV	3.00E-04
Chromium	3.00E-02	NV	NV	NV	NV	3.00E-03
Cyanide	1.00E-02	2.10E-01	2.50E-05	4.20E-03	4.15E-03	6.00E-04
Aroclor 1260	1.40E-01	2.20E-02	5.60E-06	3.40E-04	1.37E-02	NV
1,1-Biphenyl	1.30E-01	4.71E-02	7.56E-06	3.08E-04	1.26E-02	5.00E-01
2-Methylnaphthalene	1.30E-01	5.24E-02	7.78E-06	5.18E-04	2.12E-02	4.00E-03
Benzo(a)anthracene	1.30E-01	2.61E-02	6.75E-06	1.20E-05	4.91E-04	NV
Benzo(a)pyrene	1.30E-01	2.55E-02	6.58E-06	4.57E-07	1.87E-05	3.00E-04
Benzo(b)fluoranthene	1.30E-01	2.50E-02	6.43E-06	6.57E-07	2.69E-05	NV
Benzo(k)fluoranthene	1.30E-01	2.50E-02	6.43E-06	5.84E-07	2.39E-05	NV
Carbazole	1.30E-01	NV	NV	NV	NV	NV
Chrysene	1.30E-01	2.61E-02	6.75E-06	5.23E-06	2.14E-04	NV
Dibenz(a,h)anthracene	1.30E-01	2.36E-02	6.02E-06	1.41E-07	5.76E-06	NV
Dibenzofuran	1.30E-01	6.51E-02	7.38E-06	2.13E-04	8.71E-03	1.00E-03
Indeno(1,2,3-cd)pyrene	1.30E-01	2.47E-02	6.37E-06	3.48E-07	1.42E-05	NV
Naphthalene	1.30E-01	6.05E-02	8.38E-06	4.40E-04	1.80E-02	2.00E-02
Phenanthrene	1.30E-01	NV	NV	NV	NV	NV
Benzene	1.00E-02	8.95E-02	1.03E-05	5.55E-03	2.27E-01	4.00E-03

Notes:

[a] = United States Environmental Protection Agency (USEPA) 2004.
[b] = California Environmental Protection Agency (CalEPA), Toxicity Criteria Database (CalEPA 2018).
[c] = USEPA 2019a, 2019b, 2021.
[d] = Henry's law constant at average soil temperature 15.6°C (USEPA 2004).
[e] = USEPA, Health Effects Summary Table (USEPA 2011b).
[f] = ProUCL Recommended Output Concentration.

NV = No value.
atm = Standard atmosphere.
C = Celsius.
cm^2 = Square centimeter.
g = Gram.
kg = Kilogram.
L = Liter.
m^3 = Cubic meter.
mg = Milligram.
mL = Milliliter.
mol = Mole.
sec = Second.
µg = Microgram.

Compound	RfD_d (mg/kg/day)[b,c]	CSF_o [(mg/kg/day)$^{-1}$][b,c,e]	CSF_d [(mg/kg/day)$^{-1}$][b,c,e]	IUR [(µg/m^3)$^{-1}$][b,c]	EPCs (mg/kg)[f]	RBF (unitless)
Arsenic, Inorganic	9.00E-06	1.50E+00	1.50E+00	4.30E-03	3.04E+01	6.00E-01
Chromium, Total	9.00E-05	5.00E-01	2.00E+01	8.40E-02	5.13E+01	1.00E+00
~Cyanide(CN-)	6.00E-06	NV	NV	NV	4.34E+01	1.00E+00
~Aroclor 1260	NV	2.00E+00	2.00E+00	5.71E-04	2.03E-01	1.00E+00
1,1-Biphenyl	6.50E-02	8.00E-03	NV	NV	1.19E+02	1.00E+00
2-Methylnaphthalene	5.20E-04	NV	NV	NV	2.33E+02	1.00E+00
Benzo(a)anthracene	NV	1.00E-01	1.00E-01	5.00E-05	1.56E+02	1.00E+00
Benzo(a)pyrene	3.90E-05	1.00E+00	1.00E+00	5.00E-04	1.10E+02	1.00E+00
Benzo(b)fluoranthene	NV	1.00E-01	1.00E-01	5.00E-05	1.33E+02	1.00E+00
Benzo(k)fluoranthene	NV	NV	NV	NV	4.94E+01	1.00E+00
Carbazole	NV	2.00E-02	2.00E-02	NV	1.50E+02	1.00E+00
Chrysene	NV	NV	NV	NV	1.21E+02	1.00E+00
Dibenz(a,h)anthracene	NV	1.00E+00	1.00E+00	6.00E-04	1.77E+01	1.00E+00
Dibenzofuran	1.30E-04	NV	NV	NV	1.76E+02	1.00E+00
Indeno(1,2,3-cd)pyrene	NV	1.00E-01	1.00E-01	6.00E-05	6.00E-05	1.00E+00
Naphthalene	2.60E-03	1.20E-01	1.20E-01	3.40E-05	1.21E+03	1.00E+00
Phenanthrene	NV	NV	NV	NV	7.24E+02	1.00E+00
Benzene	4.00E-05	5.50E-02	5.50E-02	7.80E-06	9.10E+00	1.00E+00

Notes:

[a] = United States Environmental Protection Agency (USEPA) 2004.
[b] = California Environmental Protection Agency (CalEPA), Toxicity Criteria Database (CalEPA 2018).
[c] = USEPA 2019a, 2019b, 2021.
[d] = Henry's law constant at average soil temperature 15.6°C (USEPA 2004).
[e] = USEPA, Health Effects Summary Table (USEPA 2011b).
[f] = ProUCL Recommended Output Concentration.

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atm = Standard atmosphere.
C = Celsius.
cm² = Square centimeter.
g = Gram.
kg = Kilogram.
L = Liter.
m^3 = Cubic meter.
mg = Milligram.
mL = Milliliter.
mol = Mole.
sec = Second.
µg = Microgram.

Variable	Definition
Θ_{as}	Air-filled porosity of the soil (unitless).
Θ_T	Total soil porosity (unitless).
Θ_{ws}	Water-filled porosity of the soil (unitless).
ρ_b	Dry soil bulk density (g/cm³).
ABSd	Dermal absorption efficiency (unitless).
ADAF	Age-Dependent Adjustment Factor for evaluation of risk from constituents with a mutagenicity mode of action.
AT_C	Averaging time for cancer effects (days).
AT_{NC}	Averaging time for non-cancer effects (days).
BW	Body weight (kg).
CF	Conversion factor 0.042 day/hr.
C_{sat}	Constituent saturation limit in soil (mg/kg).
CSF	Cancer slope factor for oral (CSF_o) or dermal (adjusted to an absorbed dose, CSF_a) exposure ($mg/kg/day^{-1}$).
D_A	Apparent diffusivity in soil (cm^2/sec).
D_{air}	Constituent diffusivity in air (cm^2/sec).
D_{wat}	Constituent diffusivity in water (cm^2/sec).
ED	Exposure duration (years).
EF	Exposure frequency (days/year).
ELCR	Excess lifetime cancer risk (unitless) from the following pathways: oral ($_o$), dermal ($_d$), and inhalation ($_i$).
EPCs	Exposure point concentration in soil (mg/kg).
ET	Exposure time (hr/day).
FI	Fraction ingested from area of concern (unitless).
Foc	Fraction organic carbon in the soil (unitless).
F(x)	Function of Ut/Um (unitless); $F(x) = 0.18 \times (8x^3 + 12x) \times \exp[-(x^2)]$, where $x = 0.886 \times (Ut/Um)$.
HI	Hazard index for non-cancer effects (unitless); sum of the HQs.
H_o	Dimensionless Henry's law constant (unitless); calculated as $H_o = H/RT$.
HQ	Hazard quotient for non-cancer effects (unitless) from the following pathways: oral ($_o$), dermal ($_d$), and inhalation ($_i$).
IRs	Ingestion rate of soil (mg/day).
IUR	Inhalation unit risk ($\mu g/m^3$).
Koc	Organic carbon partition coefficient (cm^3/g = mL/g = L/kg).
PEF_{wind}	Particulate emission factor due to wind (m^3/kg).
Q/C_{vol}	Volatile emission flux per unit concentration [$(g/m^2/sec)/(kg/m^3)$].
Q/C_{wind}	Particulate emission flux per unit concentration [$(g/m^2/sec)/(kg/m^3)$].
RBF	Relative bioavailability factor; constituent specific; default of 100% (i.e., 1) unless otherwise indicated (unitless). RBF for arsenic in soil was set at 60% (i.e., 0.6).
RfC	Reference concentration (mg/m^3).
RfD	Reference dose for oral (RfD_o) and dermal (adjusted to an absorbed dose, RfD_a), exposure (mg/kg/day).
RPF	Respirable particle fraction (0.036 $g/m^2/hr$).
SAR	Soil-to-skin adherence rate ($mg/cm^2/day$).
SSAs	Exposed skin surface area for soil contact (cm^2).
T	Exposure interval (sec).
VF-sl	Soil volatilization factor (m^3/kg).
x	Intermediate value in the calculation of PEF; $x = 0.886 \times (Ut/Um)$.

Notes:
atm = Standard atmosphere.
cm^2 = Square centimeter.
cm^3 = Cubic centimeter.
g = Gram.
hr = Hour.
K = Kelvin.
kg = Kilogram.
L = Liter.
m = Meter.
m^2 = Square meter.
m^3 = Cubic meter.
mg = Milligram.
mL = Milliliter.
mol = Mole.
sec = Second.
µg = Microgram.

		Equations
Oral:		
	$ELCR_o$ or HQ_o =	$\frac{EPCs \times RBF \times ADAF \times FI \times IR_S \times EF \times ED}{(10^6\ mg/kg) \times BW \times (AT_C \text{ or } AT_{NC}) \times ([1/CSF_o] \text{ or } RfD_o)}$
Dermal:		
	$ELCR_d$ or HQ_d =	$\frac{EPCs \times ADAF \times SSAs \times SAR \times ABSd \times EF \times ED}{(10^6\ mg/kg) \times BW \times (AT_C \text{ or } AT_{NC}) \times ([1/CSF_d] \text{ or } RfD_d)}$
Inhalation:		
	$ELCR_i$ or HQ_i =	$\frac{EPCs \times ADAF \times ET \times CF \times EF \times ED}{(VF\text{-}sl) \times (AT_C \text{ or } AT_{NC}) \times ([1/IUR \times 10^{-3}\ mg/\mu g] \text{ or } RfC)}$
(Volatiles)	**VF-sl =**	$\frac{Q/C_{vol} \times [3.14 \times D_A \times T]^{1/2}}{2 \times \rho_b \times D_A \times (10{,}000\ cm^2/m^2)}$
	D_A =	$\frac{[(\Theta_{as}^{10/3} \times D_{air} \times H_o) + (\Theta_{ws}^{10/3} \times D_{wat})]/\Theta_T^2}{(\rho_b \times Koc \times Foc) + \Theta_{ws} + (\Theta_{as} \times H_o)}$
(Non-Volatiles)	**PEF =**	$\frac{Q/C_{wind} \times (3{,}600\ sec/hr)}{RPF \times (1\text{-}V) \times (Um/Ut)^3 \times F(x)}$
Total Cancer Risk:		
	ELCR =	$ELCR_o + ELCR_d + ELCR_i$
Total Non-Cancer Hazard:		
	HI =	$HQ_o + HQ_d + HQ_i$

Notes:
C = Celsius.
cm^2 = Square centimeter.
hr = Hour.
kg = Kilogram.
m^2 = Square meter.
mg = Milligram.
sec = Second.
µg = Microgram.

Variable	Value	Unit	Source
Θ_{as}	0.284	[ ]	= Θ_T - Θ_{ws}.
Θ_T	0.387	[ ]	Total soil porosity for silty clay (USEPA 2004).
Θ_{ws}	0.103	[ ]	Water-filled soil porosity for silty clay (USEPA 2004).
ρ_b	1.62	g/cm^3	Soil dry bulk density for silty clay (USEPA 2004).
ADAF	1	[ ]	Age-Dependent Adjustment Factor for evaluation of risk from constituents with a mutagenicity mode of action (USEPA 2021).
AT_C	25,550	days	Average time for cancer risk is the expected lifespan of 70 years (USEPA 1989 and 2014).
AT_{NC}	365	days	Average time for non-cancer risk is the total exposure duration (USEPA 1989 and 2014).
BW	80	kg	PADEP default body weight.
CF	0.042	day/hr	Conversion for 24 hours in 1 day.
ED	1	year	Assumes one year of construction.
EF	10	days/year	The average duration for work projects utilizing a trench is 2 weeks (5 days/week) (FDOT 2001).
ET	8	hr/day	Assumes 8 hour work days.
FI	1	[ ]	Professional judgement.
Foc	0.002	[ ]	Fraction organic carbon (USEPA 2002 default).
F(x)	0.0759	[ ]	Function of x (USEPA 2002b default).
IRs	330	mg/day	Recommended value for construction worker (USEPA 2002, Exhibit 1-2)
Q/C_{vol}	68.18	(g/m^2/sec)(kg/m^3)	Volatilization flux per unit concentration under passive conditions (USEPA 2002 default).
Q/C_{wind}	93.77	(g/m^2/sec)(kg/m^3)	Volatilization flux per unit concentration under soil invasive conditions (USEPA 2002b default).
RPF	0.036	g/m^2/hr	Respirable particle fraction (USEPA 2002b default).
RT	0.02447	atm-m^3/mol	Calculated with T = 298.15 K.
SAR	0.3	mg/cm^2/event	Recommended value for construction worker (USEPA 2002, 2004), assumed same for utility worker.
SSAs	3,527	cm^2	Recommended value for construction worker (USEPA 2002), assumed same for utility worker.
T	3.15E+07	sec	Exposure interval based on 1 year.
TCR	1.00E-05	[ ]	Target cancer risk value (USEPA 2021).
THQ	1	[ ]	Target hazard quotient value (USEPA 2021).
U_m	4.16	m/sec	Mean annual wind speed for Philadelphia, PA (NOAA 2018).
U_t	11.32	m/sec	Equivalent threshold value of windspeed at 7 meters (USEPA 2002b default).
V	0.75	[ ]	Fraction vegetative cover (default = 0.5, site-specific = 0.75).
x	2.411	[ ]	Function of U_t/U_m (USEPA 2002b default).

Notes:
FDOT = Florida Department of Transportation.
NOAA = National Oceanic and Atmospheric Administration.
PADEP = Pennsylvania Department of Environmental Protection.
USEPA = United State Environmental Protection Agency.
[ ] = Unitless.
atm = Standard atmosphere.
cm² = Square centimeter.
cm^3 = Cubic centimeter.
g = Gram.
hr = Hour.
K = Kelvin.
kg = Kilogram.
L = Liter.
m = Meter.
m^2 = Square meter.
m^3 = Cubic meter.
mg = Milligram.
mL = Milliliter.
mol = Mole.
sec = Second.

Compound	D_A (cm^2/sec)	VF-sl (m^3/kg)	PEF (m^3/kg)	$ELCR_o$	$ELCR_d$	$ELCR_i$	ELCR	HQ_o	HQ_d	HQ_i	HI
Arsenic	NV	NV	9.96E+09	4.41E-08	7.07E-09	1.72E-15	5.12E-08	6.86E-03	3.88E-04	1.87E-06	7.25E-03
Chromium	NV	NV	9.96E+09	4.14E-08	1.59E-07	5.69E-14	2.01E-07	1.93E-03	6.56E-05	4.74E-07	2.00E-03
Cyanide	NV	NV	9.96E+09	NV	NV	NV	0.00E+00	8.18E-03	8.33E-04	5.02E-08	9.01E-03
Aroclor 1260	2.68E-08	1.28E+05	9.96E+09	6.55E-10	2.94E-10	1.53E-18	9.50E-10	NV	NV	NV	0.00E+00
1,1-Biphenyl	3.56E-06	1.11E+04	9.96E+09	1.54E-09	NV	NV	1.54E-09	2.70E-05	2.11E-07	2.76E-07	2.75E-05
2-Methylnaphthalene	1.37E-05	5.65E+03	9.96E+09	NV	NV	NV	0.00E+00	6.58E-03	5.15E-05	NV	6.63E-03
Benzo(a)anthracene	2.29E-09	4.38E+05	9.96E+09	2.52E-08	1.05E-08	1.03E-16	3.56E-08	NV	NV	NV	0.00E+00
Benzo(a)pyrene	3.70E-11	3.44E+06	9.96E+09	1.78E-07	7.40E-08	7.26E-16	2.52E-07	4.14E-02	3.25E-04	5.08E-05	4.18E-02
Benzo(b)fluoranthene	4.61E-11	3.08E+06	9.96E+09	2.14E-08	8.92E-09	8.76E-17	3.03E-08	NV	NV	NV	0.00E+00
Benzo(k)fluoranthene	4.31E-11	3.19E+06	9.96E+09	NV	NV	NV	0.00E+00	NV	NV	NV	0.00E+00
Carbazole	NV	NV	9.96E+09	4.84E-09	2.02E-09	NV	6.85E-09	NV	NV	NV	0.00E+00
Chrysene	9.99E-10	6.63E+05	9.96E+09	NV	NV	NV	0.00E+00	NV	NV	NV	0.00E+00
Dibenz(a,h)anthracene	5.53E-12	8.91E+06	9.96E+09	2.86E-08	1.19E-08	1.40E-16	4.05E-08	NV	NV	NV	0.00E+00
Dibenzofuran	1.91E-06	1.51E+04	9.96E+09	NV	NV	NV	0.00E+00	1.99E-02	1.56E-04	NV	2.00E-02
Indeno(1,2,3-cd)pyrene	9.04E-12	6.97E+06	9.96E+09	9.69E-15	4.04E-15	4.75E-23	1.37E-14	NV	NV	NV	0.00E+00
Naphthalene	2.14E-05	4.53E+03	9.96E+09	2.34E-07	9.75E-08	5.42E-16	3.31E-07	6.82E-03	5.34E-05	3.72E-07	6.87E-03
Phenanthrene	NV	NV	9.96E+09	NV	NV	NV	0.00E+00	NV	NV	NV	0.00E+00
Benzene	3.19E-03	3.71E+02	9.96E+09	8.08E-10	2.59E-11	2.52E-11	8.59E-10	2.57E-04	2.62E-05	7.54E-03	7.82E-03

Total ELCR: 9.52E-07

Total HI: 0.10

Notes:
cm^2 = Square centimeter.
kg = Kilogram.
m^3 = Cubic meter.
mg = Milligram.
sec = Second.
NV = No value.

ATTACHMENTS

A. PADEP Model Environmental Covenant
B. PADEP Act 2 Cleanup Plan
C. PADEP Management of Fill Policy and Clean Fill Certification Form
D. Soil Management Plan
E. Adult Lead Methodology (ALM) Spreadsheet for Calculation

ATTACHMENT A

PADEP Model Environmental Covenant

Environmental Covenant

When recorded, return to:
[name & address of person filing the Environmental Covenant]

The County Parcel Identification No. of the Property is: _____
GRANTOR: _____
PROPERTY ADDRESS: _____

ENVIRONMENTAL COVENANT

This Environmental Covenant is executed pursuant to the Pennsylvania Uniform Environmental Covenants Act, Act No. 68 of 2007, 27 Pa. C.S. §§ 6501 – 6517 (UECA). This Environmental Covenant subjects the Property identified in Paragraph 1 to the activity and/or use limitations in this document. As indicated later in this document, this Environmental Covenant has been approved by the Pennsylvania Department of Environmental Protection (Department).

1. **Property affected**. The property affected (Property) by this Environmental Covenant is located in_____ (name of municipality), _____ County.

The postal street address of the Property [if any] is: _____.
The latitude and longitude of the center of the Property affected by this Environmental Covenant is: [either decimal degrees (DD.DDDDDD) or DD/MM/SS or DD/MM/SS.SSSS; preferred is decimal degrees] _____.
The Property has been known by the following name(s): _____
[For registered tanks, the PADEP Tank Facility ID# is:_____
[For other facilities, the DEP Primary Facility ID# is/are: _____

A complete description of the Property is attached to this Environmental Covenant as Exhibit A. A map of the Property is attached to this Environmental Covenant as Exhibit B.

[Use when Grantor & Grantee are the same, i.e., when Grantor is the only holder.]

2. **Property Owner / GRANTOR / GRANTEE**. _____ is/are the owner(s) of the Property and the GRANTOR and GRANTEE of this Environmental Covenant.

3. The mailing address(es) of the owner(s) is/are: _____.

[Use when there are holders other than Grantor.]

2. **Property Owner / GRANTOR**. _____ is/are the owner(s) of the Property and the GRANTOR of this Environmental Covenant.

3. **Holder(s) / GRANTEE(S)**. The following is/are the GRANTEE(s) and a "holder," as that term is defined in 27 Pa. C.S. § 6502, of this Environmental Covenant: _____ (name & address information).

4. **Description of Contamination & Remedy**. [***This paragraph needs to be consistent with the Final Report / Remedial Action Completion Report!*** As required by 27 Pa. C.S. § 6504(a)(3) and (a)(7) and as allowed by 27 Pa. C.S. § 6504(b)(6), briefly describe the contamination of the Property before remedy implementation; the remedy/corrective action undertaken; any administrative record for the environmental response project relating to the Environmental Covenant; the Land Recycling and Remediation Standards Act (Act 2) standard(s) attained; and any other important information, including the name and date of the Final Act 2 or Remedial Action Completion Report approved by the Department. Reference Act 2 and UECA definitions as necessary; e.g., "nonresidential property" excludes schools, nursing homes or other residential-style facilities or recreational areas.]

5. **Activity & Use Limitations**. ***[This paragraph needs to be consistent with the Final Report / Remedial Action Completion Report, particularly any postremediation care plan!]*** The Property is subject to the following activity and use limitations, which the then current owner of the Property, and its tenants, agents, employees and other persons under its control, shall abide by: [describe each specific restriction on land use, such as whether the property can be used only for non-residential purposes or whether the groundwater may be used as potable water; describe each obligation, such as groundwater monitoring, maintenance of a fence or cap.]

6. **Notice of Limitations in Future Conveyances**. Each instrument hereafter conveying any interest in the Property subject to this Environmental Covenant shall contain a notice of the activity and use limitations set forth in this Environmental Covenant and shall provide the recorded location of this Environmental Covenant.

7. **Compliance Reporting**. [***This paragraph needs to be consistent with the Final Report / Remedial Action Completion Report!]*** After written request by the Department or by the end of [insert interval for reporting determined to be necessary by the Department; e.g., "every January following the Department's approval of this Environmental Covenant" or "every third January following the Department's approval of this Environmental Covenant"], the then current owner of the Property shall submit, to the Department and any Holder listed in Paragraph 3, written documentation stating whether or not the activity and use limitations in this Environmental Covenant are being abided by. In addition, within 1 month after any of the following events, the then current owner of the Property shall submit, to the Department and any Holder listed in Paragraph 3, written documentation: noncompliance with the activity and use limitations in this

Environmental Covenant; transfer of the Property; changes in use of the Property; or filing of applications for building permits for the Property and any proposals for any site work, if the building or proposed site work will affect the contamination on the Property subject to this Environmental Covenant.

8. **Access by the Department**. In addition to any rights already possessed by the Department, this Environmental Covenant grants to the Department a right of reasonable access of the Property in connection with implementation or enforcement of this Environmental Covenant.

9. **Recording & Proof of Notification**. Within 30 days after the date of the Department's approval of this Environmental Covenant, the [insert entity responsible for filing this document] shall file this Environmental Covenant with the Recorder of Deeds for each County in which the Property is located, and send a file-stamped copy of this Environmental Covenant to the Department within 60 days of recording. Within that time period, the [insert entity responsible for filing this document] also shall send a file-stamped copy to each of the following: [insert each Municipality and County in which the Property is located]; any Holder identified in this Environmental Covenant listed in Paragraph 3; [insert each person holding a recorded interest in the Property]; [insert each person in possession of the Property]; and ____ [insert other persons as required by the Department].

10. **Termination or Modification**.

(a) This Environmental Covenant may only be terminated or modified in accordance with 27 Pa. C.S. §§ 6509 or 6510, or in accordance with this paragraph.

(b) This Environmental Covenant may be amended or terminated as to any portion of the Property that is acquired for use as state highway right-of-way by the Commonwealth provided that: (1) the Department waives the requirements for an environmental covenant and for conversion pursuant to 27 Pa. C.S. §6517 to the same extent that this Environmental Covenant is amended or terminated; (2) the Department determines that termination or modification of this Environmental Covenant will not adversely affect human health or the environment; and (3) the Department provides 30-days advance written notice to the current property owner, each holder, and, as practicable, each person that originally signed the Environmental Covenant or successors in interest to such persons.

[In some circumstances, it may be appropriate for the covenant to be limited to a specific duration or the occurrence of a specific event. If so, specify those conditions that must occur for the covenant to be terminated, and also indicate that the Department must approve, in writing, of the termination. The language in (c) illustrates this option The language in (d) provides an option for not requiring the Grantor's consent.

:

(c) This Environmental Covenant shall terminate upon attainment, in accordance with 35 P.S. §§ 6026. 101 – 6026.908, with an unrestricted use remediation standard for the above-described contamination at the Property. The Department must approve, in writing, of such termination.

(d) In accordance with 27 Pa. C.S. § 6510(a)(3)(i), Grantor hereby waives the right to consent to any amendment or termination of the Environmental Covenant by consent; it being intended that any amendment to or termination of this Environmental Covenant by consent in accordance with this Paragraph requires only the following signatures on the instrument amending or terminating this Environmental Covenant: (i) the Holder at the time of such amendment or termination; (ii) the then current owner of the Property and (iii) the Department.*]*

11. **Department's address**. Communications with the Department regarding this Environmental Covenant shall be sent to: [name, address and title of regional Environmental Cleanup Manager or designee.]

12. **Severability**. The paragraphs of this Environmental Covenant shall be severable and should any part hereof be declared invalid or unenforceable, the remainder shall continue in full force and effect between the parties.

ACKNOWLEDGMENTS by Owner(s) and any Holder(s), in the following form:

[Name of Owner], Grantor
Date: By: _____
Name: _____
Title: _____

Date: [Name of Holder], Grantee
By: _____
Name: _____
Title: _____

[REPEAT AS NECESSARY]

APPROVED, by Commonwealth of Pennsylvania,
Department of Environmental Protection
Date: By: _____
Name: _____
Title: _____

COMMONWEALTH OF PENNSYLVANIA)[other state, if executed outside PA]
)
COUNTY OF _____) SS:

On this ___ day of _____, 20__, before me, the undersigned officer, personally appeared _____ [Owner, Grantor] who acknowledged himself/herself to be the person whose name is subscribed to this Environmental Covenant, and acknowledged that s/he executed same for the purposes therein contained.

In witness whereof, I hereunto set my hand and official seal.

_____
Notary Public

COMMONWEALTH OF PENNSYLVANIA)[other state, if executed outside PA]
)
COUNTY OF _____) SS:

On this ___ day of _____, 20__, before me, the undersigned officer, personally appeared _____ [Holder, Grantee] who acknowledged himself/herself to be the person whose name is subscribed to this Environmental Covenant, and acknowledged that s/he executed same for the purposes therein contained.

In witness whereof, I hereunto set my hand and official seal.

_____
Notary Public

[REPEAT AS NECESSARY]

COMMONWEALTH OF PENNSYLVANIA)
)
COUNTY OF _____) SS:

On this ___ day of _____, 20__, before me, the undersigned officer, personally appeared _____, who acknowledged himself/herself to be the _____ [Title] of the Commonwealth of Pennsylvania, Department of Environmental Protection, _____ [insert name of regional office], whose name is subscribed to this Environmental Covenant, and acknowledged that s/he executed same for the purposes therein contained.

In witness whereof, I hereunto set my hand and official seal.

_____
Notary Public

ATTACHMENT B

PADEP Act 2 Cleanup Plan

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SECTION II: ACT 2 REMEDIATION PROCESS

A. Applying Land Recycling Remediation Standards to Your Property

1. Classifying your Site and Considering Options for Remediation

To select a standard for your site, a site assessment is needed to determine site conditions that may require remediation of a release. Characterization of a release includes the identification of specific contaminant concentrations throughout soil and groundwater media, discharges to surface water and air, and any other conditions that may pose a risk to human health and the environment associated with the release. The site characterization may reveal that the remediator needs to interface with other environmental laws and/or Act 2. Under Act 2, the appropriate standard or combination of standards (i.e., background, Statewide health or site-specific) must be determined. The Department will accept notices of intent to remediate (NIRs) for properties on which a release of regulated substances can be documented, or for properties affected by off-property releases of regulated substances for which the remediator is not responsible. The background, Statewide health and site-specific standards may be used at any site. Only certain sites qualify as Special Industrial Areas (SIA).

A person with a property with multiple distinct areas of contamination may submit an NIR for a single area or for multiple individual areas and for one or more than one medium. A distinct area of contamination includes the volume of all media affected by the release causing the contamination. An Act 2 "site" consists of the entire vertical and horizontal area impacted by a release of regulated substance(s). The Act 2 site may cross property boundaries. For example, if soils were contaminated and that contamination migrated to groundwater, both the contaminated soil and groundwater would be part of the distinct area of contamination associated with the release.

In some cases, the Department may agree that characterizing all contaminated media as a distinct area is not practical and may approve a site characterization limited to a single medium. One example of this situation is when a remediator completes a soil media cleanup and an associated groundwater cleanup will take a period of years before attainment can be demonstrated. In this case, the remediator could receive approval of a final report for soils alone (and the associated liability relief), and later when the groundwater is remediated to a point where attainment can be demonstrated, the remediator could submit a separate final report for the groundwater. A second example is the case where a remediator may be approaching multiple areas of concern (AOCs) on the property over a period of years such as multiple soil AOCs, and a groundwater unit which is a combination of the effects of the various soil AOCs. Here the remediator could submit NIRs/final reports for individual soil areas of concern and, at some time in the future when the source areas (all the soil AOCs) have been remediated, submit an NIR for the groundwater unit. The liability protection afforded under Chapter 5 of Act 2 is for contamination from a release identified in the approved final report. Therefore, the more extensive and thorough site characterization is, the more extensive the liability protection. This is true in terms of both size of area included as the site and in the listing of regulated substances which are a part of the site. By example, the lower the censoring level chosen in the site characterization, a larger area and more regulated substances

would likely be included in the site (see Section II.A.4 for an example of applying site characterization to a site).

The Department will specify details of the site in the final report approval letter and attachments, which describe the extent of the liability protection provided under Act 2.

a) Background Standard

A remediator cleaning up a site to the background standard must document that the concentration of any regulated substances remaining are at a level not related to any release of regulated substances at the site. Samples are required both in the area shown to be contaminated by onsite releases (i.e., the site) and in an appropriate background reference area to demonstrate attainment of the background standard. This standard is useful in cases of releases migrating from off-property, for widespread contamination, or naturally occurring conditions.

b) Statewide Health Standard

Chapter 250 establishes Statewide health standards (SHS) for regulated substances in each environmental medium. These standards are referred to as medium-specific concentrations (MSCs), and they must be achieved to demonstrate attainment of the SHS. In addition to demonstrating that a site has attained MSCs based on human health, an ecological screen to demonstrate protection of ecological receptors and a vapor intrusion analysis are part of the SHS.

c) Site-specific Standard

Cleanup levels may be developed which pertain specifically to the unique exposure pathways at a site. This is a more detailed process, both technically and administratively. The human and ecological receptors at the site need to be addressed either through the elimination of the exposure pathways or a risk assessment. A site-specific cleanup also provides an opportunity for public participation.

d) Combination of Standards

A cleanup may be performed by using any combination of the three standards. The remediator may select any one or a combination of standards by regulated substance, by medium of concern, or by distinct area of contamination (see Section II.A.1). Combinations must satisfy all of the requirements of each standard used. For example, in using any combination of standards which includes the site-specific standard, the risk assessment should include only those regulated substances for which site-specific numeric standards are being developed, and for these substances, the cumulative risk requirements of Section 304 of Act 2 (35 P.S. § 6026.304) must be met. Attainment of these site-specific numeric standards must be demonstrated in the final report. In addition, all of the requirements of the site-specific standard, including the reporting requirements, apply. All regulated substances, media, or distinct areas of

contamination meeting another standard (e.g., the SHS) must meet the requirements of that standard. Therefore, in addition to a combination of numerical standards there will be combinations of requirements for reporting, attainment tests, and points of compliance.

e) Special Industrial Areas

A common misconception by users of the land recycling program (LRP) is that there is a separate special industrial area SIA standard. This is not the case. Attainment of one of the three available standards (background, Statewide health or site-specific) can be demonstrated for properties being remediated as SIA sites. However, the focus of the SIA requirements is on characterizing the contamination within the property boundary and addressing immediate, direct or imminent threats to human health and the environment. For further details please refer to Section II.B.4(d)(vii) of this manual.

The SIA designation was created by Act 2 to provide special remediation requirements for a distinct set of properties that were used for industrial activity. SIAs are properties where there is no financially viable responsible party, or where the property is located within an enterprise zone (EZ). EZs are a certain type of distressed property designated by the Department of Community and Economic Development (DCED). Since DCED programs change over time, other property designations may also qualify a property to be an SIA. Remediators are encouraged to consult with DCED to verify that a specific property lies within an established EZ.

The remediator and the reuser afforded these special requirements must demonstrate that he/she did not cause or contribute to releases of regulated substances at the property. The remediator must enter into a Consent Order and Agreement (CO&A) with the Department in order to make use of the SIA designation.

2. Immediate Response

If an immediate hazard exists or is discovered at a site, prompt action is necessary to abate the hazardous condition and prevent future or further release of regulated substances. Leaking tanks or drums, conditions presenting a fire or explosion threat, or a situation involving a threat to human health or the environment warrant a prompt response. Act 2 does not prevent or impede an immediate response to such emergencies. Section 307 of Act 2 (35 P.S. § 6026.307) provides that the provisions under Chapter 3 of the statute, relating to remediation standards and review procedures including SIA cleanups, shall not prevent or impede applicable emergency or interim responses. Final remediation shall comply with that chapter, which will not be prejudiced by the mitigation measures (emergency or interim response) undertaken to that. It is the responsibility of the appropriate person to act in a timely manner to abate immediate threats. The remediator still needs to follow the notification requirements of the Clean Streams Law or Solid Waste Management Act. However, if the final report demonstrating attainment of a standard is submitted within 90 days of the release, the NIR is not required to be filed, and no public notice is required.

3. Notice Requirements and Procedures

a) Notice of Intent to Remediate

Intent to perform a site remediation under the provisions of Act 2 requires municipal, public, and Department notification. The formal process for conducting remediation under Act 2 is initiated with submission of the NIR to the Department. The NIR and instructions are available online at the Land Recycling web page under "Forms and Lists." Submission of the NIR will initiate the notification procedures.

Act 2 provides that any person, firm, corporation, or other entity that proposes or is required to respond to the release of a regulated substance at a site shall comply with public notification requirements except for certain situations defined in Act 2.

The NIR provides basic information on the applicant and the site. The NIR shall include a brief description of the site, ownership information, a listing of the contaminants involved and media affected, proposed remediation (if applicable), and the proposed future use of the site. The NIR may address all of the affected property or may only address those distinct areas of contamination which the remediator chooses to address, which then become sites. Some site characterization is recommended prior to submission of an NIR to obtain sufficient site information to determine the scope of any site contamination and select the remediation standard. Communication with DEP Regional Office staff regarding procedures, assessment, and aspects of remediation is encouraged. The following are the procedures for an NIR:

- Municipal and public notification of the NIR should be submitted at the same time the NIR is submitted to the Department. These notices are accomplished by:
  - Sending a copy of the NIR with an accompanying cover letter to the municipality, or municipalities, where the site is located.
  - Publishing or arranging for the publication of a summary of the NIR in a newspaper of general circulation in the area of the site. This summary should be a legal notice and developed following the model format on the Land Recycling web page under "Forms & Lists."
- At the same time as the submittal of the NIR to the Department, provide the Department with reasonable proof of the public and municipal notification of the NIR. An example of reasonable proof of municipal notification is a copy of the letter mailed to the municipality with the certified mail receipt. A copy of the proposed text of the newspaper notice and expected publication date is an example of proof of public notification. Submit the NIR and reasonable proof of public and

municipal notification to the Department's Environmental Cleanup and Brownfields Program (ECB) office in the region where the site is located. Provide the name and address of a contact person to whom correspondence or communication can be addressed. Provide a copy of the NIR to the owner of the property if the NIR is being prepared and/or submitted by someone other than the property owner. Liability protection is provided to owners of a property. All owners of the properties affected should be included if the area of contamination includes more than one property.

- A 30-day period following submission of the NIR indicating use of the site-specific standard or the SIA process is required by Act 2. The municipality can request to be involved in the development of remediation and reuse plans for the site during this period. The applicant shall inform the municipality of the 30-day comment period when submitting the NIR and should inform the municipality of the provision of Act 2 for requesting a public involvement plan. The newspaper notice shall also provide a statement about the 30-day comment period and the right of a municipality to request involvement in the development of the remediation and reuse plan for the site. The municipality will have received notice prior to publication. The remediator must implement a public involvement plan if the municipality requests involvement in the remediation. The publication date of the NIR notice in the newspaper starts the 30-day comment period. If the model format previously mentioned is used, it will ensure the 30-day comment period and public involvement plan information have been provided. The DEP will not accept reports until after the 30-day comment period. Comments received from the public or a public involvement plan, along with the remediator's responses to the comments, must be submitted with the appropriate final report. A public involvement plan is described below in Section II.A.3(c).

The municipal and public notification requirements of each standard used apply if an NIR is submitted for a combination of standards.

Persons submitting an NIR for background, Statewide health, or a combination of these standards, who later decide to pursue cleanup to a site-specific standard or as an SIA, must re-notice the cleanup according to the appropriate notice provisions.

There are additional public notification requirements for sites being addressed under the One Cleanup Program. If a remediator chooses to enter the One Cleanup Program with coordinated reviews by EPA and DEP, the Memorandum of Agreement (MOA) has established specific site notification requirements. A remediator should submit NIRs to the municipality and a newspaper for publishing. The NIR should include a provision informing the public that any individual may request to receive a copy of the cleanup plan and comment on it prior to its approval and implementation.

Additionally, NIRs submitted for One Cleanup Program sites should include a provision informing the public that any person affected by the release that is the subject of the NIR may request that DEP conduct a site assessment. A DEP official will consider each of these requests and respond as appropriate.

Additional information regarding the One Cleanup Program can be found in Section III.F and in the One Cleanup Program Memorandum of Agreement located on the Land Recycling Program website.

The Department regional ECB office may acknowledge receipt of the NIR and will publish acknowledgment of receipt of the NIR in the *Pennsylvania Bulletin*.

The Department may comment on an NIR if the form is incomplete. An incomplete NIR may not have sufficient information to initiate the Act 2 process. The Department has enforcement authority to require assessment and remediation on sites for which a person does not voluntarily initiate a cleanup under Act 2.

Public notification of submission of the NIR to the Department, the municipality, and the public via the newspaper notice, and publication in the *Pennsylvania Bulletin*, are not required for background or Statewide health standard remediations if the final report demonstrating attainment of the standard is submitted within 90 days of the release.

b) Notice of Proposal for Nonuse Aquifer Determination

Any time a person is proposing to the Department that a site be eligible for a Nonuse Aquifer Determination, notice must be given to the associated municipalities and local water suppliers servicing that area. The notice is similar to that of an NIR in that it is a letter format and identifies the associated "who" and "where" of the proposal. In addition, a copy of the proposal sent to the Department for approval should be attached to these notice letters. Under general conditions, the municipalities and community water suppliers will have 45 days to review this material and, if desired, provide the Department with any information relative to the nonuse aquifer determination requirements specified in Section 250.303(c) of the regulations. These conditions will be those upon which the Department will base its approval decision. In the specific case where a municipality has in place an ordinance meeting the performance criteria of this Technical Guidance Manual (TGM), Section III.E.3 (relating to institutional vs. engineering controls), the 45-day review period may be waived.

c) Public Involvement Plan

All remediators conducting cleanups are encouraged to develop programs with a proactive approach to involving communities in their plans. Remediators selecting the site-specific standard or pursuing remediation as an SIA must provide an NIR to the Department and the municipality, and to the public via notice in a newspaper serving the general area of the site. A 30-day comment period is to be included as part of the initial notice to solicit comments on whether the municipality wishes to be involved in the development of the cleanup and

reuse plans for the site. The remediator of the property shall prepare a public involvement plan which meets the provisions of Section 304(o) of Act 2 if the municipality requests involvement during the comment period (35 P.S. § 6026.304(o)). If requested by a municipality, the remediator is encouraged to collaborate with the municipality in the development of the public involvement plan. This plan shall propose measures to involve the public in the development and review of the remedial investigation report, risk assessment report, cleanup plan, and final report for site-specific standard remediations, and the baseline remedial investigation for SIAs. Public involvement measures may include:

- Development of a proactive community information and consultation program that includes doorstep notice of relevant activities.
- Public meetings located within the county where the site is located.
- Roundtable discussions.
- Public access for document review and discussion, and designation of a single contact person to address questions from the community. Such access should be at locations adjacent to primary highways for the convenience of the public wishing to review the material.
- Formation of a community-based group to solicit suggestions and comments.
- Where needed, retention of a qualified independent third party to facilitate meetings and discussions and to perform mediation services.

The remediator can use these or other appropriate methods, such as a website or social media, to ensure the community has ample notice of intended remedial/reuse actions and the appropriate public concerns are properly addressed. The remediator must submit a copy of the public involvement plan to the Department as outlined in Section 250.6(d) of the regulations. DEP does not approve or disapprove public involvement plans. The reports and plans submitted to the Department must include the comments received from the public and the municipality as well as responses to those comments. The Department will consider these comments as part of its review of the plans and reports.

d) Remediation Report Notification Requirements

i) Background and Statewide Health Standards

When a final report is submitted under the background and Statewide health standards the remediator should provide two copies of the final report to the Department's ECB Program regional office where the site is located. One should be a paper copy and the other can be submitted in another format (CD, flash drive, etc.). A complete submission consists of the report, a Transmittal Sheet, a printout of the online final report summary, the checklist (optional), and the appropriate fee. The

Transmittal Sheet and checklist are available on the Land Recycling website under "Forms and Lists." The name and address of a contact person to whom correspondence or communication can be addressed shall be provided. The Department will acknowledge receipt of the final report. The remediator shall provide municipal and public notification that a final report has been submitted when the final report is submitted to the Department. This notification is accomplished by:

- Sending a notice to the municipality that a final report has been submitted to the Department. (A model format for this notification is available on the Land Recycling website under "Forms and Lists.")

- Providing a notice of submission of the final report to a newspaper of general circulation in the area of the site. This notice shall be a legal notice and developed following the model format (available on the website) or other appropriate format provided by the newspaper and provide the required information.

- Providing the Department with reasonable proof of the public and municipal notification by submitting a copy of the proposed text of the newspaper notice and the anticipated publication date or a photocopy of the published notification showing the publication date. Proof of municipal notification of submission of the final report may be accomplished by submitting a copy of the certified mail receipt and cover letter of the municipal notice to the Department.

The Department has a 60-day review period for the final report and shall notify the remediator of deficiencies. It is the intent of the Department to notify the remediator of both approvals and deficiencies of the final report. The final report shall be deemed approved if the Department does not respond within 60 days.

Other reports that fall outside of the scope of the typical reporting guidelines are reviewed on a case-by-case basis and timeframes for such reviews will vary based on the complexity of the site.

The Department's regional ECB office will publish acknowledgment of receipt of the final report in the *Pennsylvania Bulletin*.

Public notification of submission of the final report to the Department, the municipality, the public via the newspaper notice, and publication in the *Pennsylvania Bulletin* is not required for background or Statewide health standard remediations if the final report demonstrating attainment of the standard is submitted within 90 days of the release.

ii) Site-specific Standard

Under the site-specific standard, when a remedial investigation report, risk assessment report, cleanup plan, or a final report is submitted, the remediator should provide two copies of the document to the Department's ECB Program Regional Office where the site is located. One should be a paper copy, and the other can be submitted in another format (CD, flash drive, etc.). A complete submission consists of the document, a Transmittal Sheet, the checklist (optional) and the appropriate fee(s). The Transmittal Sheet and checklist are available on the Land Recycling website under "Forms and Lists." In addition, the submission of a final report should include a printout of the online final report summary. The name and address of a contact person to whom correspondence or communication can be addressed shall be provided. The Department will acknowledge receipt of the submission. The remediator shall provide municipal and public notification of the submission when the plan and/or reports are submitted to the Department. This notification is accomplished by:

- Sending a notice by certified mail to the municipality that a specific plan and/or report has been submitted to the Department. (A model format for this notification is available on the Land Recycling website under "Forms and Lists.")

- Providing a notice summarizing the findings and recommendations of the plan or report, along with the comments and responses, to a newspaper of general circulation in the area of the site. This notice shall be a legal notice or other appropriate format provided by the newspaper and provide the required information.

- Providing the Department with reasonable proof of the public and municipal notification by submitting a copy of the proposed text of the newspaper notice and the anticipated publication date or a photocopy of the published notification showing the publication date. Proof of municipal notification of submission of the final report may be accomplished by submitting a copy of the certified mail receipt and cover letter of the municipal notice to the Department.

Remedial investigation reports, cleanup plans, and risk assessment reports may be submitted together or separately. It is recommended that the risk assessment be submitted individually because risk assessment reports are considered stand-alone reports with separate fees and are reviewed independently of other reports.

The Department has a 90-day review period for the plan and/or report and shall notify the remediator of deficiencies. It is the intent of the Department to notify the remediator of both approvals and deficiencies of

the final report. The plan and/or report shall be deemed approved if the Department does not respond within 90 days.

Other reports that fall outside the scope of the typical reporting guidelines are reviewed on a case-by-case basis, and timeframes for such reviews will vary based on the complexity of the site.

iii) Special Industrial Areas

Municipal and public notification is required for submission of an NIR to the Department, but it is not required for submission of a baseline environmental report.

e) Fees

The Department is required to collect fees to cover some of the costs of the LRP. Section 703 of Act 2 specifies the appropriate fees involved for submission of plans and reports (35 P.S. § 6026.703). The regulations provide further specification on fees (25 Pa. Code § 250.7).

A fee of $250 is required for the review of final reports for the background and Statewide health standards, and $250 for each remedial investigation, risk assessment report, and cleanup plan for the site-specific standard. A fee of $500 is required at the time of submission of the final report for site-specific standard remediations. No fee is required for submission of the work plan or baseline environmental report required for SIA remediation. It is important to note that submitting a combination of reports under the site-specific standard requires a fee for EACH report submitted. For example, if one report containing a remedial investigation/risk assessment/cleanup plan for a site undergoing a site-specific cleanup is submitted to the Department, then $750 is required to be submitted with the report. A final report submitted under a combination of cleanup standards should be accompanied with a fee representing the higher of the two standards' final report fee.

Resubmission of any of the above required plans and reports will require payment of the above fee upon resubmission. The Department may disapprove a plan or report that does not have the appropriate fee.

Checks are to be made payable to the **Commonwealth of Pennsylvania**.

A *Transmittal Sheet for Plan/Report Submission* is available for remitting the appropriate fee with the submittal and should be used with all plan/report submissions to the Department. This form may be obtained from the LRP web site under "Forms and Lists," or a copy may be requested from the Department's Regional office where the site is located or from the Department's Central office.

4. Site Characterization

a) Importance of Site Characterization Step

Site characterization under Act 2 is a description of contaminated media, including geology and chemical and physical characteristics, that affect movement of regulated substances in environmental media. Site characterization is the process for determining the site under Act 2; i.e., the volume of contaminated media resulting from an environmental release of regulated substances within which attainment of one or a combination of standards will be demonstrated. The site is, in turn, the basis for liability protection under Chapter 5 of Act 2 when the final report is approved. In brief, the liability protection is only as good as the site characterization.

The site characterization activities conducted must result in a thorough investigation which meets the requirements of Pa. Code § 250.204. **A complete and accurate site characterization, including fate and transport analysis, and its documentation in the final report is very important, as it is the basis for making remediation decisions and is used later in identifying the appropriate area for demonstrating attainment. Except for sites involving the excavation option for petroleum-contaminated soil (see 25 Pa. Code § 250.707(b)(1)(iii)), without a proper site characterization, attainment requirements cannot be met and the final report will be disapproved by the Department.**

A remediator must keep in mind the definition of a site under Act 2. As defined in Act 2, a site is "[t]he extent of contamination originating within the property boundaries and all areas in close proximity to the contamination necessary for the implementation of remediation activities to be conducted under the act" (35 P.S. § 6026.103). Thus, a site often does not coincide with a property. A site may occupy several properties, and, conversely, a property may contain more than one site. In this manual, whenever the term "site" is used in connection with the LRP, it is used strictly in the sense as defined in Act 2.

DEP Regional Office staff are a valuable resource and want to assist as needed in evaluating site characterization information. Although not required, working with the Department can help to facilitate approval of the submitted reports. Remediators should always feel free to contact the Department's Regional ECB Program staff when there are questions about site characterization requirements of a property under the LRP.

b) Scope of Characterization

The scope of the site characterization should be designed to help the remediator select an appropriate remedy that will meet the attainment requirements of the selected Act 2 standard. The requirements that a site characterization must meet are described in the regulations at 25 Pa. Code § 250.204. During this phase of the application of Act 2, the remediator should evaluate other applicable regulatory requirements (see Section V of this manual), since information required by other programs may be best collected during the site characterization

phase. The reporting requirements for the selected standard (background, Statewide health or site-specific in Act 2 and Chapter 250 of the regulations) must be met by the person conducting the cleanup. Section II of this TGM describes in detail the reporting requirements for each of the standards available under Act 2. The procedures, documents, and required fees for each standard are summarized in Section II.A.3 (Notice Requirements and Procedures).

Characterization of sites which may require remediation begins with an evaluation of any existing historical information about the release that identifies specific regulated substances. The data objectives of the site characterization will differ somewhat depending on whether soil or groundwater is being investigated. Depending on the size and complexity of the site, the investigation portion of the site characterization is typically an iterative process which expands and builds as the information is gathered (see Figure II-1).

i) Soils

Soils must be characterized horizontally and vertically to concentrations below the selected numeric standards, or to where it can be demonstrated that the pathway elimination measure is adequate to protect human health and the environment. This ensures that all soils containing regulated substances at or above the selected numeric standards have been adequately characterized to support a fate and transport analysis which shows where the contamination is currently located and those areas to which it is moving. The remediator determines the concentration level for characterization beyond the minimal level stated above. The remediator must state what factors were used in determining the level used to define the site boundaries.

A thorough site characterization for soil should be able to provide the following information:

- The types of regulated substances associated with a release that are present, their concentrations, and the spatial variation in concentration of the regulated substances both horizontally and vertically.

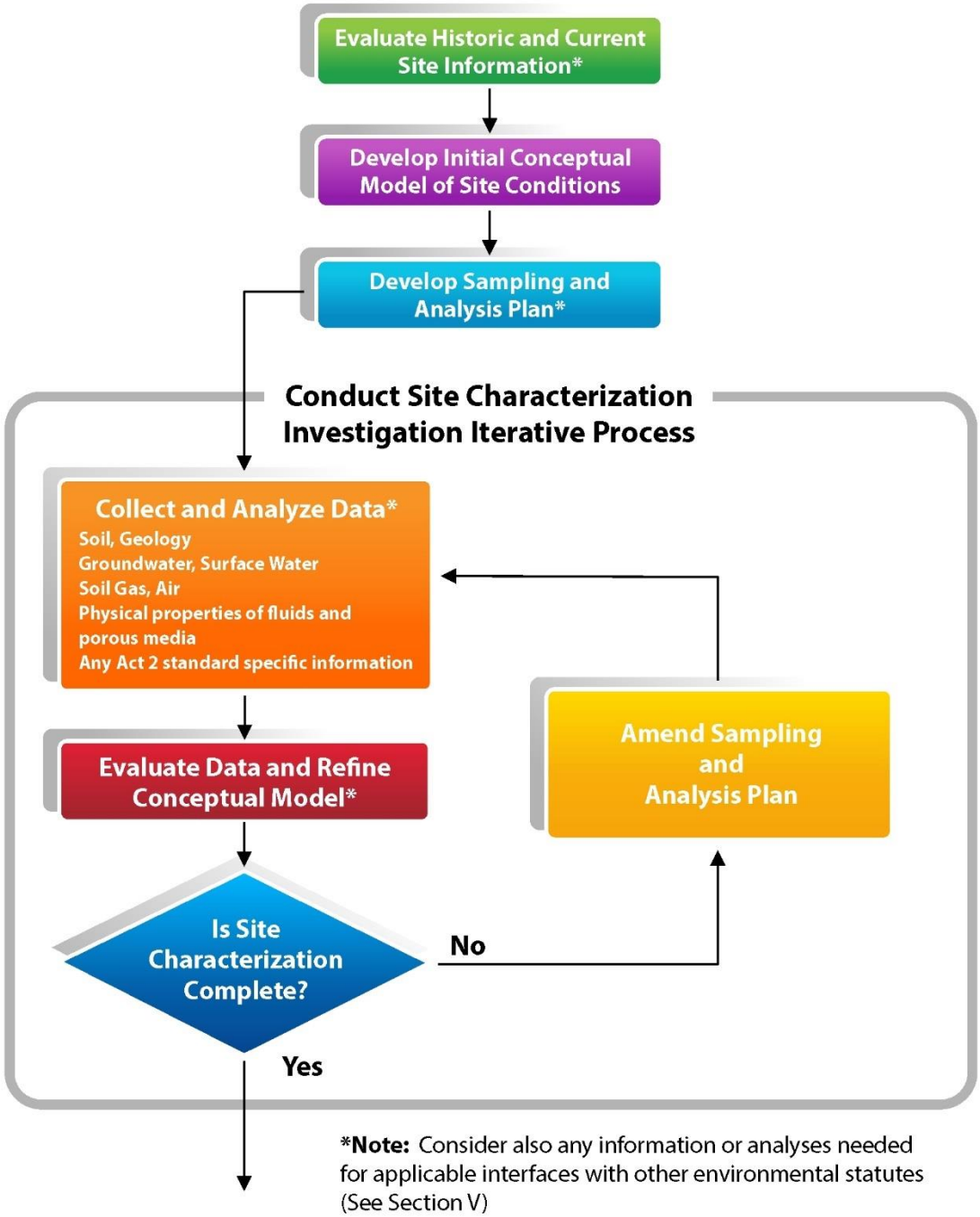
- The physical characteristics of the soil in which the regulated substances associated with a release are present and through which they may be moving. These include the soil type (texture), dry bulk density, permeability, organic carbon content, porosity, and moisture content. Documentation of these properties and any significant variability over the site may be very important later in developing a fate and transport analysis.

Soil characterization samples should be collected from the areas with anticipated highest levels of contamination (i.e., biased sampling). This sampling method identifies the areas of concern (AOC) and helps to

determine the applicability of any proposed remedial action or soil handling and disposal requirements during remediation.

It is important to remember that liability relief is afforded by Act 2 only for the distinct areas of contamination identified and evaluated in reports submitted to and approved by the Department. This is explained in Section 501(a) of Act 2. Thus, liability relief applies to specific releases regardless of when the release occurred or when the data associated with that release was collected. Liability relief is not provided for the entire property unless the entire property is identified as the site. If an additional release has occurred at the site, liability relief is not provided for that release until an Act 2 standard is attained for contamination associated with that specific release. Historical data (i.e., data more than two years old) can be used during site characterization if there is no reasonable expectation that the site conditions associated with the release being investigated have changed (e.g., changes in property use resulting in changes in exposure). Historical data should be provided in the final report as required by 25 Pa. Code § 250.204(c).

Figure II-1: Site Characterization Decision Tree



Note: Figure must be used in conjunction with the text. Reference Sections II.A.4 and IV.

ii) Groundwater

If groundwater is known to be impacted by a release based on knowledge of the site or as a result of soil sampling, a similar process as that used for soils to determine the extent of the release into groundwater may be employed based on knowledge of the site, groundwater monitoring, and fate and transport analysis. A common mistake is to take a limited set of groundwater measurements from a single sampling event, and if the concentrations are below the SHS, conclude that no further Act 2 work is needed. This is not true. Proper characterization requires more than one round of sampling [25 Pa. Code § 250.204(e)]. For further guidance, see Section III.B.

Where groundwater is a medium of concern, the following information at a minimum should be provided by a thorough site characterization:

- The direction of groundwater flow.
- The hydraulic gradient.
- The permeability of the aquifer material(s) through which the groundwater moves.
- The porosity of the aquifer.
- The types of regulated substances present, their concentrations, and the spatial variation in concentration of the regulated substances both horizontally and vertically.

This information is not only necessary to describe and evaluate conditions at the site, but also is often vital to fate and transport analysis, especially when it requires a quantitative approach.

Fate and transport analysis often is an important part of site characterization and demonstration of attainment and is frequently required under all three Act 2 standards. See Section III.A for guidance for conducting fate and transport analyses.

Historic groundwater monitoring data can be useful for establishing trends and under certain circumstances, delineating groundwater COCs. Remediators can use historic data for identifying trends at sites that are not reasonably expected to have changes in site conditions associated with the release being investigated (e.g., natural attenuation or degradation). Historic groundwater data can be used to delineate contaminants from a specific release provided the groundwater quality has remained consistent and no product degradation has occurred. However, be careful in the use of groundwater data collected prior to remediation for attainment purposes. This data may over estimate concentrations of COCs that have

degraded or underestimate the concentrations of daughter products generated by degradation.

iii) Sediment

Act 2 allows for liability relief to be granted for regulated substances in sediment. Specifically, Section 302(b)(1) of Act 2 allows for demonstration of attainment of media of concern which may include sediment.

A remediator may demonstrate attainment of the background standard as described in Subchapter B of the Chapter 250 regulations, and in 25 Pa. Code § 250.707(a). The point of compliance for sediment is not specifically discussed in the regulations but remediators are generally expected to demonstrate attainment throughout the area of the sediment that has become contaminated due to releases on the property.

The LRP has not established numeric cleanup standards for sediments. However, sediment is sometimes only a concern to ecological receptors in which case remediators can address sediment under the SHS through the application of the ecological screening process described in Pa. Code § 250.311. The numeric soil standards published in the regulations cannot be used for sediments, as the exposure assumptions used to develop those values are not applicable to sediments. For remediations under the site-specific standard, the site-specific ecological risk assessment process should be used to demonstrate attainment for sediment.

iv) Conceptual Site Model Including Soil and Groundwater

A complete and comprehensive site characterization will enable the development of a conceptual site model (CSM). The CSM is a representation of the site environmental system and the processes that control the transport and movement of regulated substances through the environmental media and how they interact. The CSM assists in organizing the site investigation by identifying uncertainties and data gaps and focusing data collection efforts. Information from the CSM can also be used in the development of a vapor intrusion analysis or a risk assessment.

The CSM can be depicted in different ways such as written text, a graphic illustration, or a flow chart. The investigation portion of the site characterization is typically an iterative process which expands and builds as information is gathered. Consequentially, the CSM is a dynamic tool to be updated as new information becomes available during site characterization.

The level of complexity of the CSM and the level of detail needed is directly related to the level of complexity of the site, the selected remediation standard and the applicable media of concern. Less complex

sites need only a basic CSM to illustrate contaminant migration pathways, exposure mechanisms and potential receptors. More complicated sites will most likely need a CSM with a higher level of detail to describe all the different routes of exposure through multiple environmental media to various potential receptors.

EPA, American Society for Testing and Materials (ASTM), and Interstate Technology & Regulatory Council (ITRC) all provide additional guidance that may be used when conducting the site characterization investigation and developing the CSM. Appendix A, Groundwater Monitoring Guidance, is also an appropriate source of information. Figure II-2 below provides an example of a graphical CSM. Figure II-3 provides an example CSM of a wood treatment facility in a tabular format.

v) Conceptual Site Model Example

A release of 1,100 gallons of jet fuel to the ground surface at a regional airport resulted from an overfill of an above ground storage tank. A total of 2,500 cubic yards of contaminated soil was excavated. Confirmatory soil samples were collected from the excavation pit and monitoring wells were installed to delineate groundwater impacts. Soil and groundwater samples revealed detections of benzene, ethylbenzene, cumene, naphthalene, toluene, and xylenes. Nine groundwater sampling events were performed over a three-year period. Groundwater monitoring results indicated that the plume had stabilized and groundwater concentrations had decreased below the SHS groundwater MSCs. However, confirmatory soil samples showed that all of these constituents, except ethylbenzene, were detected at concentrations below the SHS MSCs. Therefore, all but ethylbenzene could be carried through the SHS process.

All soil and groundwater detections were compared to the SHS vapor intrusion screening values to delineate a potential vapor intrusion source. Since this was a petroleum release and concentrations exceeding the vapor intrusion screening values were more than 30 horizontal feet from any building and no future buildings were planned in this area, no additional vapor intrusion analysis was needed (see Section IV for vapor intrusion screening values and a discussion of the use of proximity distances).

An evaluation of potentially complete exposure pathways was performed by going through the SHS ecological screen process described in 25 Pa. Code § 250.311. Since jet fuel was the only substance released at the site, it was determined that no additional ecological evaluation was needed for the constituents being evaluated under the SHS (see Section II.B.2(e) for additional information on the SHS ecological screen process).

The ethylbenzene concentrations in soil that exceeded the MSC were the only remaining issue, so the remediator decided that this contaminant would be evaluated using the site-specific standard. The remediator performed a satisfactory receptor evaluation in their CSM and identified

airport workers, construction workers, utility workers, and travelers all as individual receptors with different exposure parameters.

Figure II-2: Graphic Example of Conceptual Site Model

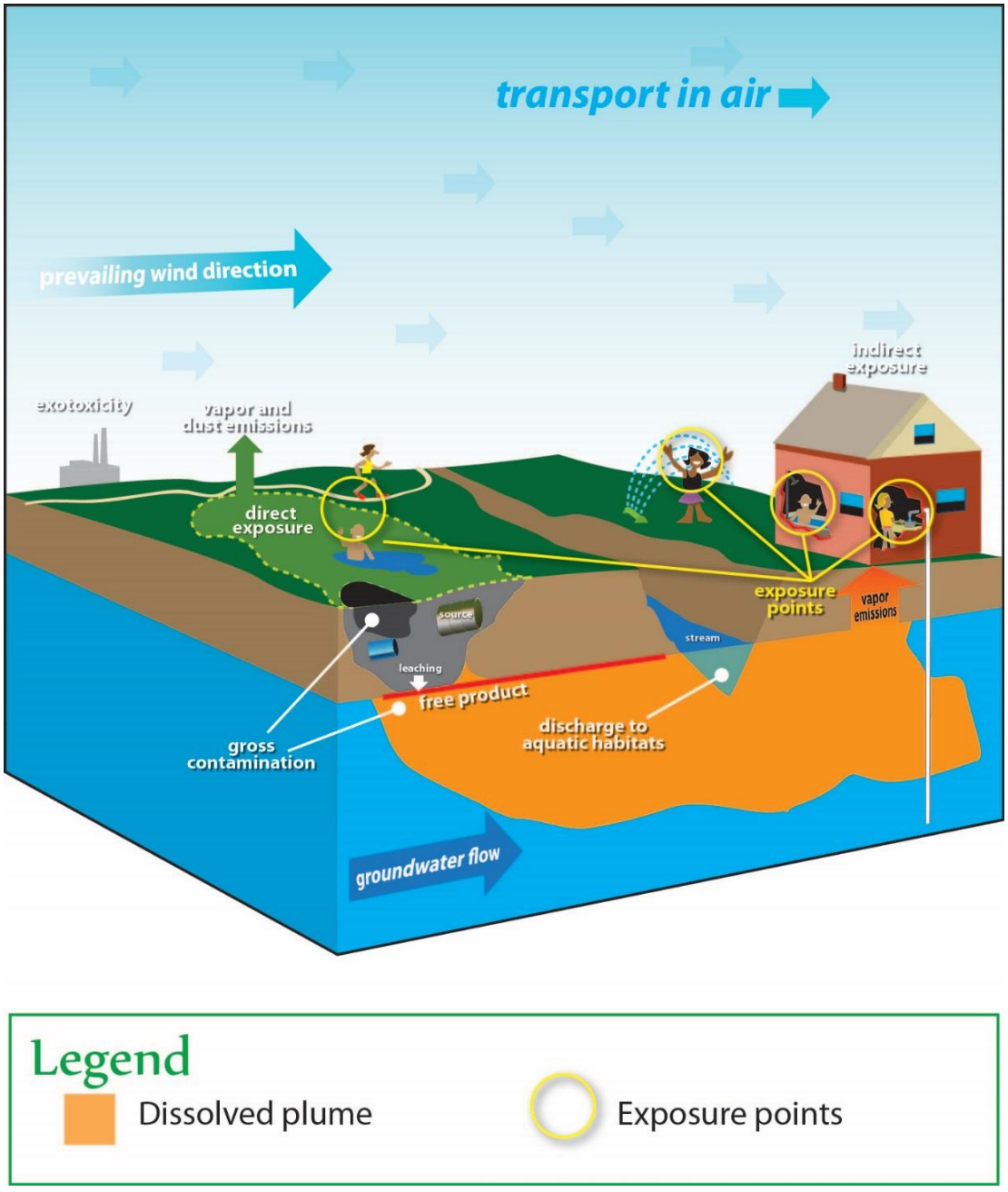
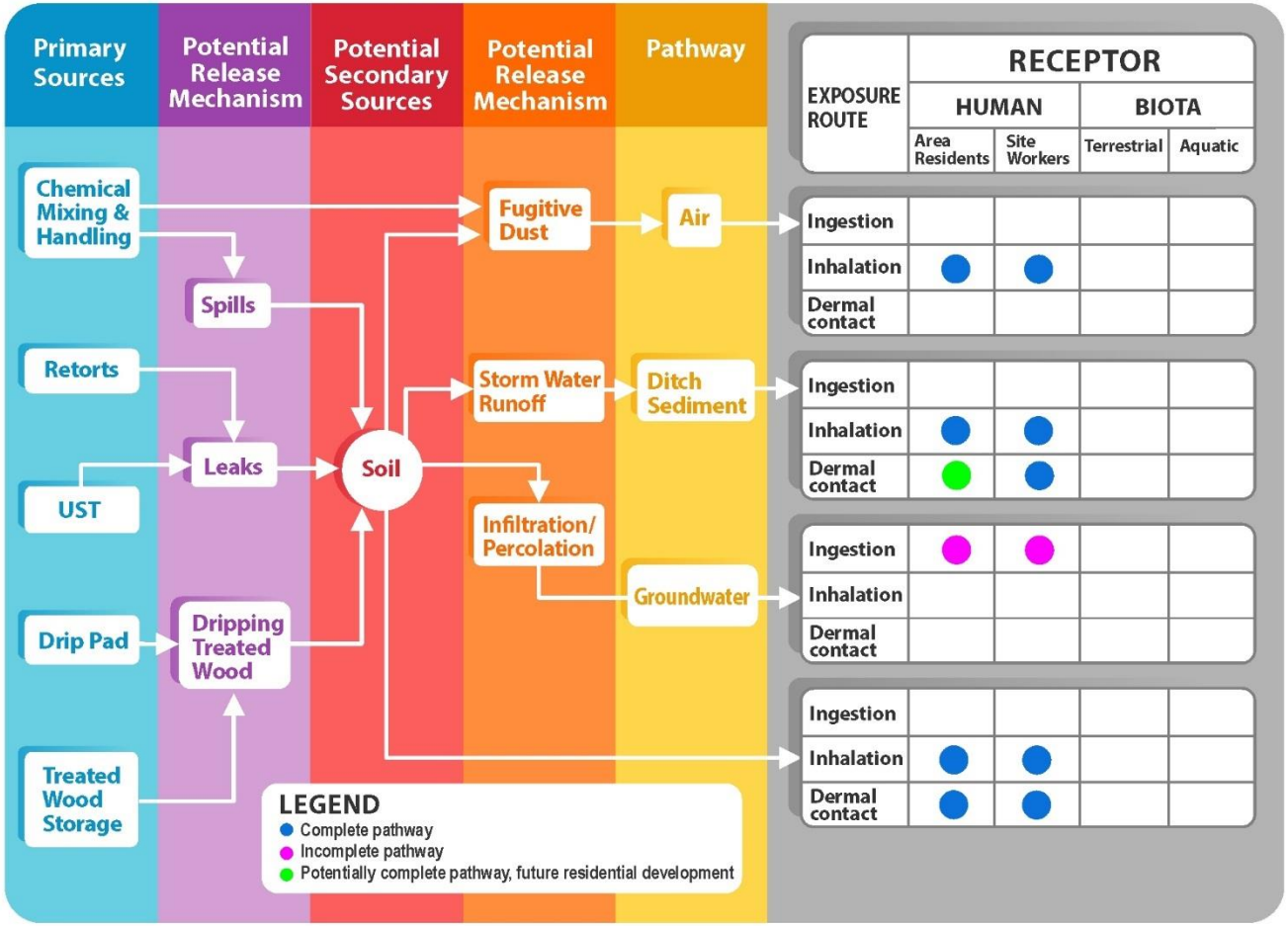


Figure II-3: Flow Chart Example of Conceptual Site Model



Source: ITRC, Decision Making at Contaminated Sites, January 2015

Note: Figure must be used in conjunction with the text. Reference Section II.A.4.

Although the ecological screen process under the SHS was performed for the constituents being evaluated under the SHS, a site-specific ecological risk assessment is still required for constituents being evaluated under the site-specific standard (see Section III.I for additional information on the site-specific ecological risk assessment process). Thus, an ecological receptor evaluation was performed using the Pennsylvania Natural Diversity Index (PNDI) online search tool to identify any habitats or species of concern that may have been impacted by the release. The results of the PNDI search showed that there were no habitats or species of concern identified as potentially impacted by the release at the site.

This is an example of a complete CSM because the remediator accomplished the following characterization goals:

- Delineation of soil contamination down to SHS MSCs and to SHS vapor intrusion screening values.

- Delineation of groundwater contamination down to SHS MSCs and to SHS vapor intrusion screening values. The delineation of groundwater included a robust data set with over four consecutive quarters of groundwater monitoring, which accounted for any potential seasonal variations (while four consecutive quarters of groundwater data are not required for characterization, it helps greatly in evaluating seasonality concerns and with generating a dataset to be used for groundwater modeling, if necessary).

- The vapor intrusion pathway was adequately evaluated by identifying the potential vapor intrusion source and using proximity distances to evaluate exposure.

- Exposure pathways for ecological receptors were effectively evaluated for both the SHS process and the site-specific standard requirements.

- All potential human health receptors and exposure pathway were adequately evaluated, including the pathways that were incomplete.

By fully delineating all impacted environmental media and by performing a complete receptor analysis, the remediator could effectively evaluate all the site environmental systems and the processes that control the transport and movement of regulated substances through the environmental media and how they interact.

c) Applying Site Characterization to an Act 2 NIR – Example

A characterization of soil contamination is shown in Figure II-4. This example considers a large property with several smaller environmental releases. There are two general areas where environmental releases occurred. The remediator has

initial results which suggest these two areas of concern for further study. Furthermore, the remediator of this property wished to obtain Act 2 liability relief for this release so that the property can be more easily sold. With this objective in mind, the remediator plans a site characterization and weighs options. The following are considerations that must be made.

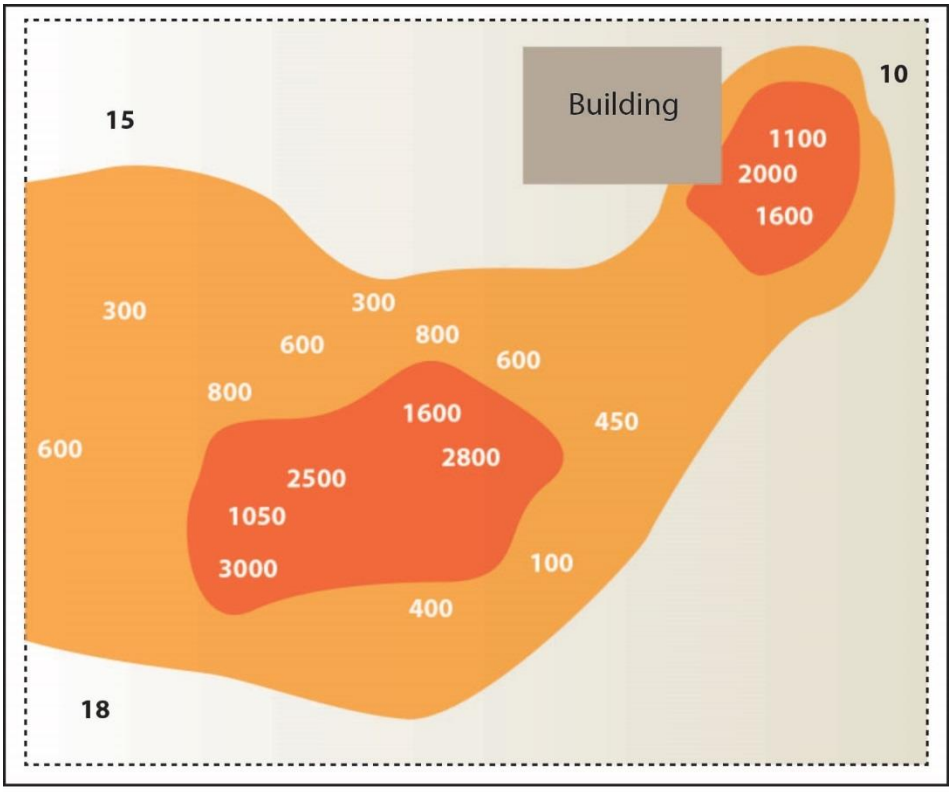
In addition to factors that will help to characterize the hot spots, the remediator must consider, first in designing further investigations and later in finalizing the site characterization, what is the concentration of regulated substance(s) in soil that will represent the boundary of the site. It is technically more difficult and more expensive to define the extent of the contamination to lower concentrations than it would be to define hot spots. However, the Act 2 liability protection only applies to the site, and if the extent of the site is very limited, so too is the liability protection.

To apply attainment in soils, the remediator must at a minimum define the volume which exceeds the selected standard (25 Pa. Code § 250.703(b)). Sampling beyond the initial phase indicates that two areas exceed the SHS MSCs. The remediator reasons that, by choosing the boundary of the site to be concentrations much lower than the standard, the area of the liability protection is increased. The remediator considers 25 percent of the standard, 10 percent of the standard, and the Practical Quantitation Limit (PQL) of the substance(s) as resolution options. The extra cost of characterization allows the remediator to maximize the site area (and consequently the liability protection) by choosing the PQL and applying it across the entire property. Within this site area, the remediator also characterizes factors of the media and regulated substance(s) which affect movement (see Section III.A, Fate and Transport Analysis). Another remediator may have made a different choice and ended up with several smaller sites with liability protection.

In considering the definition of the site in groundwater (i.e., the plume), some phase of the assessment must determine if the contamination extends beyond the property boundary at levels exceeding the selected standard (25 Pa. Code § 250.704). If the determination is that levels off the property do not exceed the standard, then the remediator determines that the standard can be attained at the Point of Compliance (POC). Figure II-5 illustrates this situation.

If the contamination extends beyond the property boundary at levels exceeding the selected standard, then the boundary of the site in groundwater must include the contamination exceeding the appropriately selected standard off the property. Figure II-6 illustrates this situation. A remediator must remember that if the plume exists on both residential and nonresidential properties, then different numeric standards would apply at those properties in most cases. Background values may also be determined (25 Pa. Code § 250.707(a)(2)).

Figure II-4: Site Characterization of Soil Contamination



Legend

800 Soil sample analytical result (mg/kg)

Delineation of soil concentrations >practical quantitation limit

Delineation of soil concentrations >MSC concentrations
MSC = 1,000 mg/kg
PQL = 20 mg/kg

Property boundary

Figure II-5: Site Characterization of Groundwater Contamination
No Off-Property Groundwater Concentrations > MSC

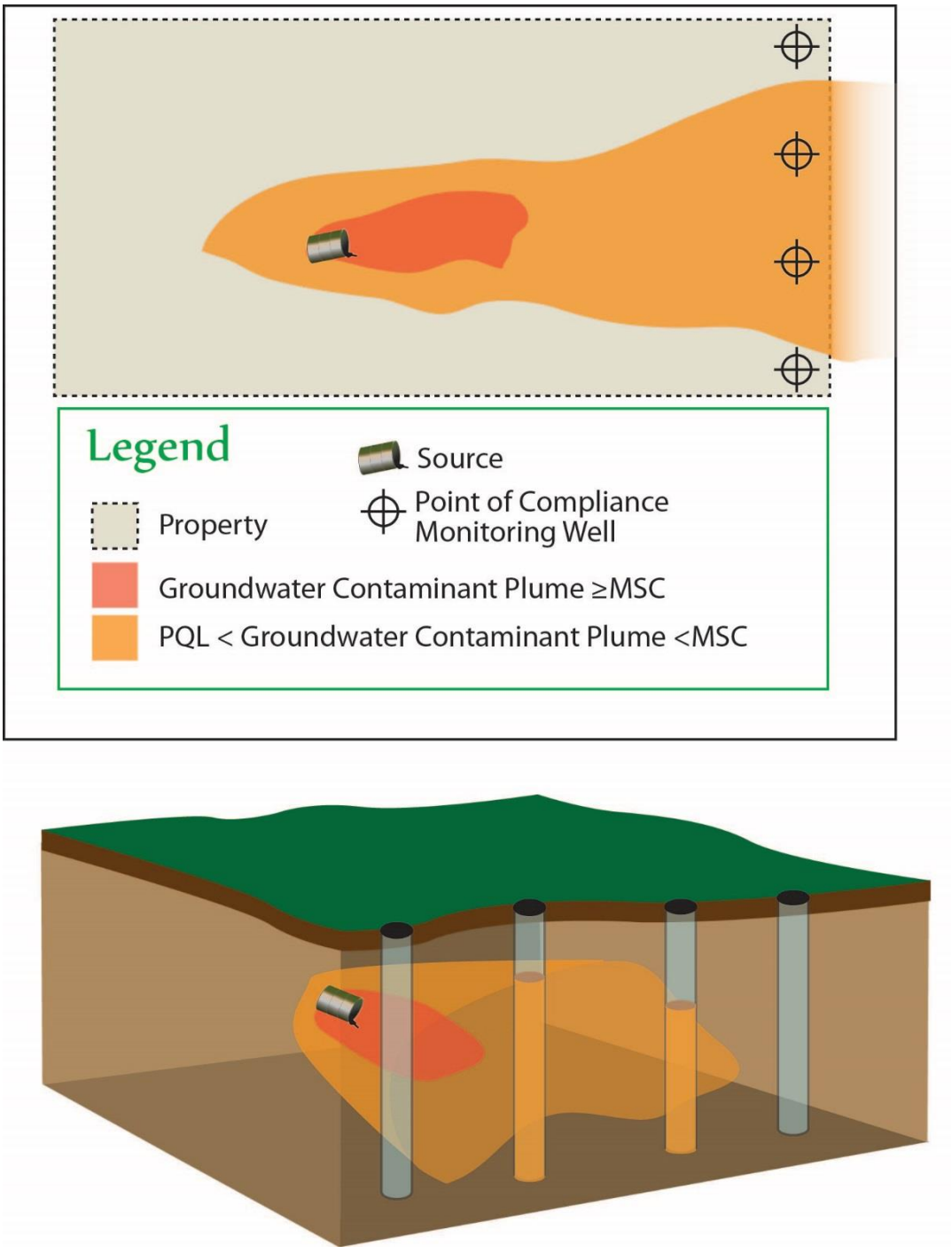
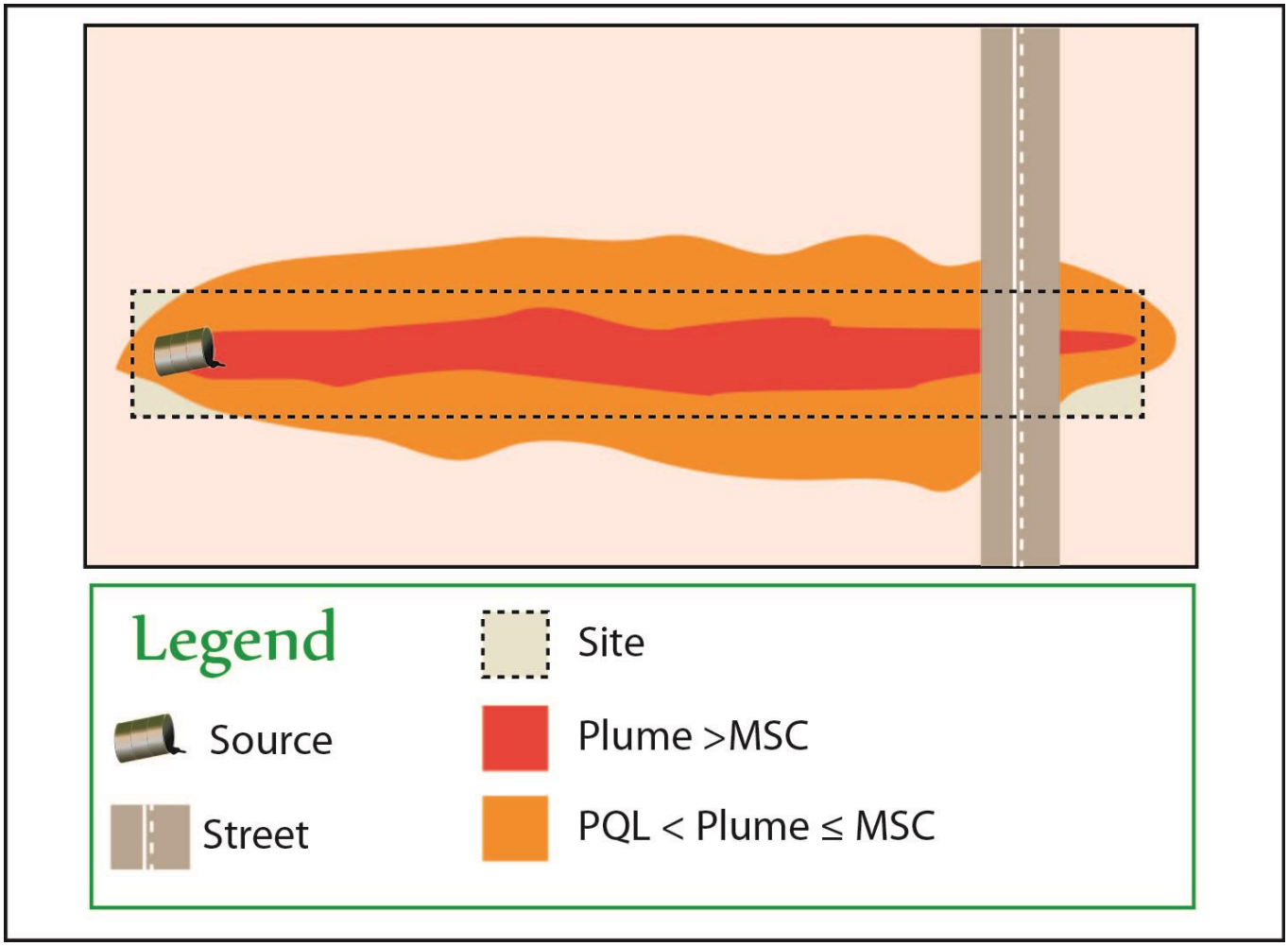


Figure II-6: Site Characterization of Groundwater Contamination Under Statewide Health Standard



Two or more rounds of sampling and analysis must be performed once the extent of contamination in groundwater is established utilizing properly constructed monitoring wells (25 Pa. Code § 250.204(e)).

If no groundwater remediation is needed (e.g., both rounds of sampling are below the selected standard), the remediator may use the site characterization sampling as part of the required attainment demonstration. The Department may approve a reduction in the number of quarters of sampling needed to demonstrate attainment provided there is appropriate justification under 25 Pa. Code § 250.704(d).

B. Remediation Standards

1. Background Standard

a) Introduction

This chapter presents procedures to be used in assessing site contamination and demonstrating attainment of the background standard. Use of this guidance and data submission formats should simplify reporting on the site and reduce delays in obtaining final report approval by the Department. This chapter is designed to help those involved understand and meet the requirement of the background standard under Act 2 and the regulations in 25 Pa. Code Chapter 250. Environmental Cleanup and Brownfields Program staff in the Regional Offices are a valuable resource and will assist in answering questions on the background standard.

Background is the concentration of a regulated substance that is present at a site, but is not related to the release of regulated substances at the property. Attainment of the background standard for a regulated substance may be demonstrated by an analysis of environmental media within and around the site (35 P.S. § 6026.302). Establishing the background concentration is discussed in Subsection II.B.1(d) of this manual. Subchapter B under Chapter 250 of the regulations also discusses the background standard requirements.

The background standard may result in higher than health-based level contamination (e.g. SHS MSCs) moving onto the property from an adjacent property or from constituents which are naturally occurring. Background quality is the concentration of substances which are unrelated to the release on the site.

In order to demonstrate compliance with the background standard, remediators should demonstrate that onsite media do not exceed the background standard for a regulated substance(s) by statistically developing representative contaminant concentrations through onsite and background reference samples of the environmental media. Subchapter G under Chapter 250 of the regulations establishes statistical tests recognized by the Department for the demonstration of attainment. Background statistical attainment requirements are in 25 Pa. Code § 250.707(a)(1) for background soils and Pa. Code § 250.707(a)(2) or (3) for background groundwater. Demonstration of attainment for background is discussed in Subsection II.B.1.e.vi of this manual.

Reporting the completion of a remediation to the Department requires a final report that contains a detailed description of the process taken to reach the background standard and the reasoning for choosing media for testing. Section 250.204 of the regulations discusses the requirements for a final report. Section II.B.1(e) of this manual also contains a discussion on the final report requirements for the background standard. Summaries of sampling methodology and analytical results showing attainment should be included with the report 35 P.S. § 6026.302(b)(2).

Institutional controls such as fencing and future land use restrictions on a site may not be used to attain the background standard. Institutional controls may be used to maintain the background standard after remediation occurs 25 P.S. § 6026.302(b)(4).

If the initial remediation chosen by the remediator fails to attain the background standard, the remediator may choose instead to meet the Statewide health or site-specific standards 35 P.S. § 6026.302(c). Sites attaining and demonstrating compliance with the background standard are not required to meet the deed acknowledgment requirements of the Solid Waste Management Act (SWMA) or the Hazardous Site Cleanup Act (HSCA) or the Uniform Environmental Covenants Act (UECA). An existing acknowledgment contained in a deed prior to demonstrating compliance with the background standard may be removed.

b) Process Checklist for the Background Standard

☐ Review the historic and current information and present use of regulated substances at the property.

☐ Begin the site investigation/characterization and gather information about the area on and around the property.

☐ As an option, begin using the completeness list (see LRP website) to help verify that all requirements have been met.

☐ Determine if property/site is affected by regulated substances not originating from the property.

For the groundwater background concentration, establish if it is naturally occurring/area-wide or from an upgradient source (see 25 Pa. Code § 250.707).

☐ For the soils background concentration, establish if it is a naturally occurring or area-wide problem. The Department has not established background concentrations for naturally occurring substances as they may vary considerably across the Commonwealth. Geochemical references are available for certain rock and soil types in Pennsylvania and should be cited as appropriate. Background concentrations should be determined on a site-by-site basis.

☐ If using the naturally occurring/area-wide background distinction, request in writing and receive back in writing the Department's approval that the site is indeed in an area of widespread contamination for the regulated substance on your property/site before submitting the NIR (see 25 Pa. Code § 250.707(a)(3)(i)).

☐ Continue with the site characterization and required activities needed to complete the final report (see 25 Pa. Code § 250.204).

☐ Submit an NIR for the background standard. Also, send a notice to the municipality, publish a notice in a local newspaper, and attach reasonable proof of required notices for inclusion with the final report to the Department 35 P.S. § 6026.302(e)(1). Procedures for submittal of notifications are contained in Section II.A.3 of this manual. Links to sample forms are located on the LRP website.

☐ Remediate the site to the background standard.

☐ Demonstrate attainment of the background standard pursuant to 25 Pa. Code § 250.203.

☐ Calculate mass of contaminants remediated using the procedure in Section III.D of this manual.

☐ Complete the final report summary and submit electronically as instructed on the LRP website.

☐ Prepare and submit the final report, along with the optional completeness list (if used) to the appropriate DEP Regional Office. See Section 302(b)(2) of Act 2, 35 P.S. § 6026.302(b)(2), 25 Pa. Code § 250.204, and Section II.B.1(e) of this manual.

☐ If the final report is approved, the liability protection set forth in Chapter 5 of Act 2 automatically applies.

☐ If engineering controls were used and postremediation care is required to maintain the standard, continue with the postremediation care program detailed in the final report. Postremediation care would not normally be used for the background standard.

☐ When the background standard can be maintained without engineering controls operating, document this to the Department and receive approval to terminate the postremediation care program.

☐ Submit an environmental covenant, if applicable, to the Department.

c) Point of Compliance (POC) for the Background Standard

For the background standard, the POC for groundwater is throughout the area of contamination (plume) both from the offsite (upgradient) release that migrates onto the property and another release within the property, including areas to which the onsite release has migrated off the property above the background standard as determined by the site characterization (see Figures II-7 and II-8). This differs from the groundwater POC for the Statewide health and site-specific standards. (See 25 Pa. Code § 250.203(a)).

For a property located within areawide contamination, the minimum required POC is the extent of plume contamination on and off the property from an on-property release, as shown in Figures II-9A and II-9B. A remediator may choose to use a larger point of compliance by including all areas on the property which have been affected by an upgradient release. In this example, the remediator could choose to use the entire area shown as being affected by the upgradient release as the POC. In such a case, the remediator would receive liability protection for the entire area affected by the upgradient release.

The POC for the background standard in soil is throughout the area of the soil that has been contaminated (see 25 Pa. Code § 250.203(b)).

For surface water, point source discharges shall be measured at the point of discharge in accordance with limits in the National Pollutant Discharge Elimination System (NPDES) permit (see 25 Pa. Code § 250.203(c)). For spring or diffuse groundwater flow to surface waters, attainment of the background standard for groundwater will satisfy Act 2.

d) Establishing Background Concentration(s)

Background concentrations are determined using analysis of samples of regulated substances present at the property under investigation but not related to any release at the property. If all areas on the property are affected by a release at the property, then background samples will be taken in an area free of contamination from any release at the site, including representative off-property areas. Persons may not obtain Chapter 5 cleanup liability protection by using a contaminated area as a background reference area when they are responsible for the contamination.

Background soil sampling locations must be representative of background conditions for the site, including soil type; physical, chemical, or biological characteristics; and depth below ground surface. Randomization of sampling at background and onsite locations must be comparable (see 25 Pa. Code § 250.204(f)(7)).

Any wells that are used to establish groundwater concentration(s) must be hydrogeologically upgradient or otherwise justified from the groundwater onsite that is affected by any release at the property and that characterizes the flow onto the site. Upgradient wells may not be appropriate to detect movement of a dense non-aqueous phase liquid (DNAPL) since geologic structure rather than hydrogeologic gradient may influence DNAPL movement.

Background concentrations determination will be by a statistically valid method that is consistent with the methods used to demonstrate attainment. Statistical methods are included in 25 Pa. Code § 250.707 and in Section II.B.1(e)(vi) of this manual.

Figure II-7: Point of Compliance for the Background Standard Compliance with Background Standard from Upgradient Release with No On-Property Release

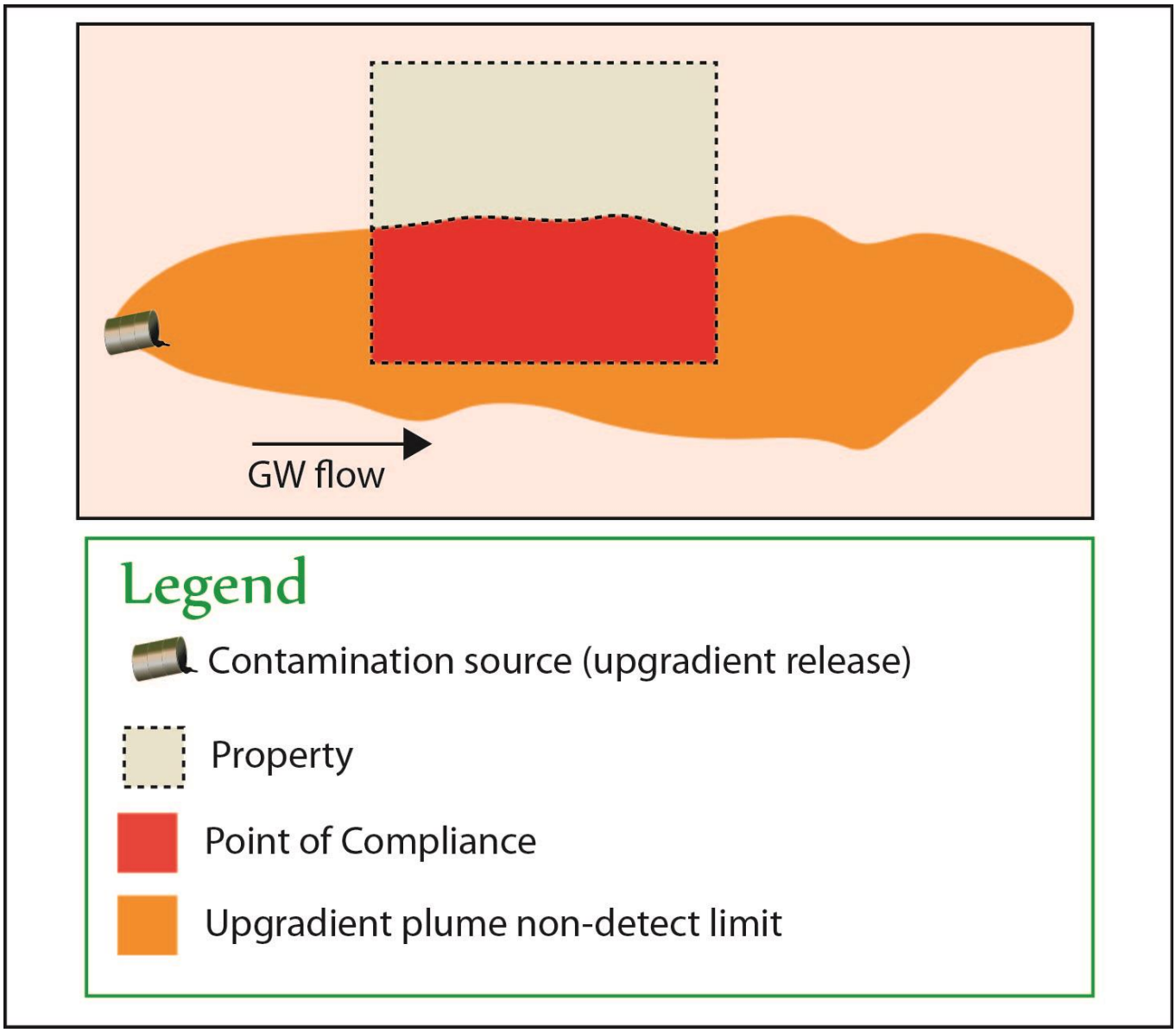


Figure II-8: Point of Compliance for the Background Standard Off-Property Migration with an Upgradient Groundwater Source Area Release

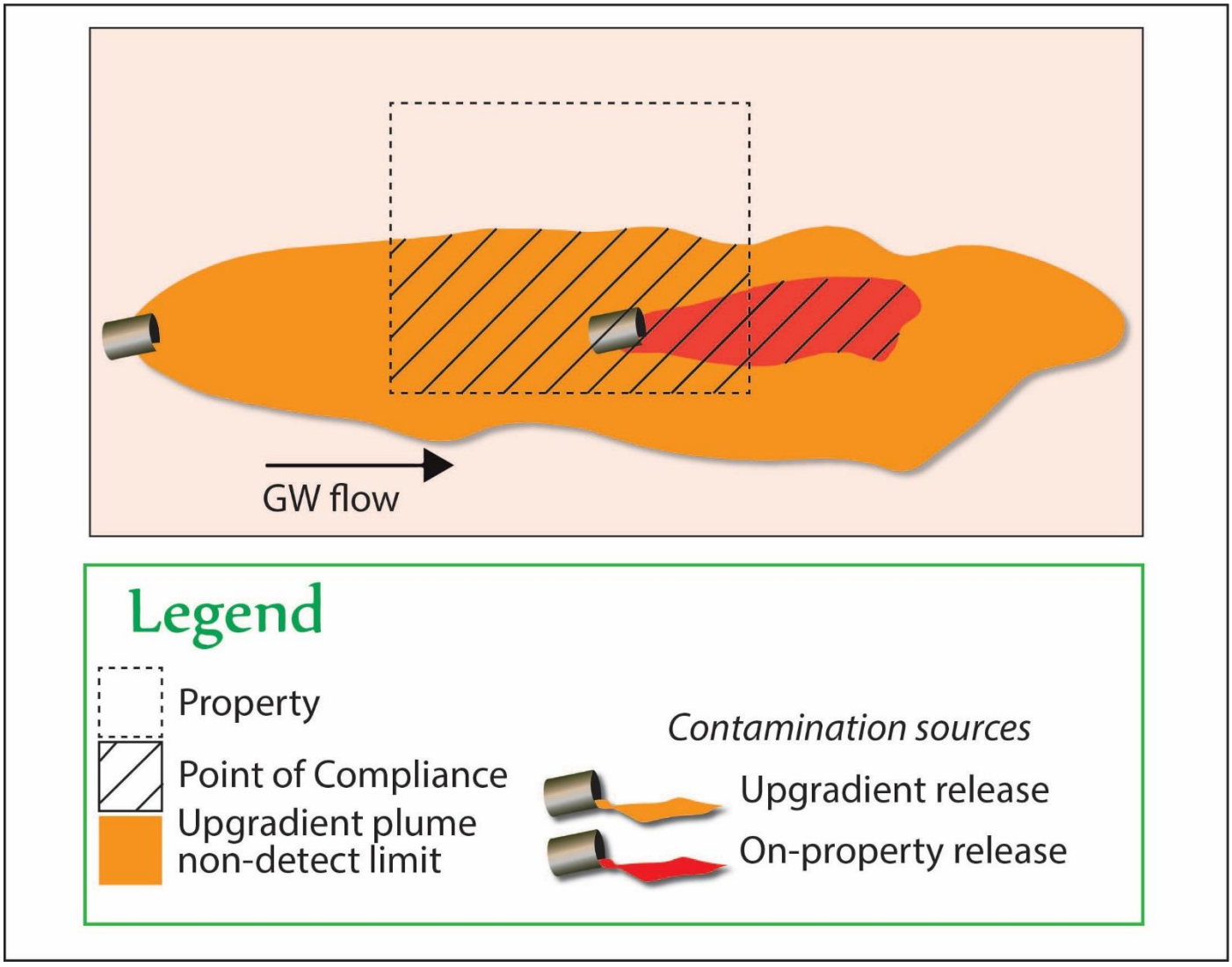
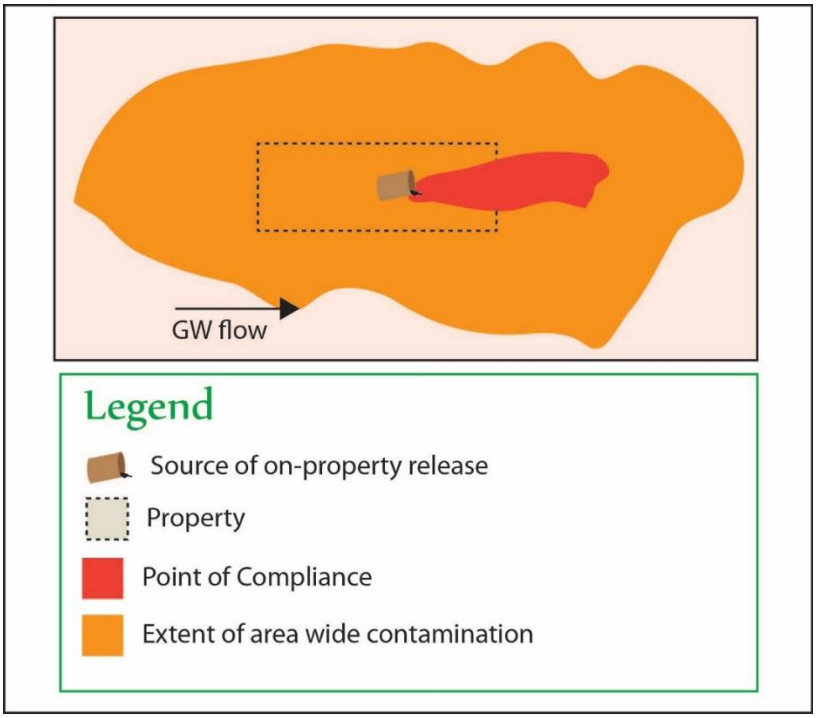
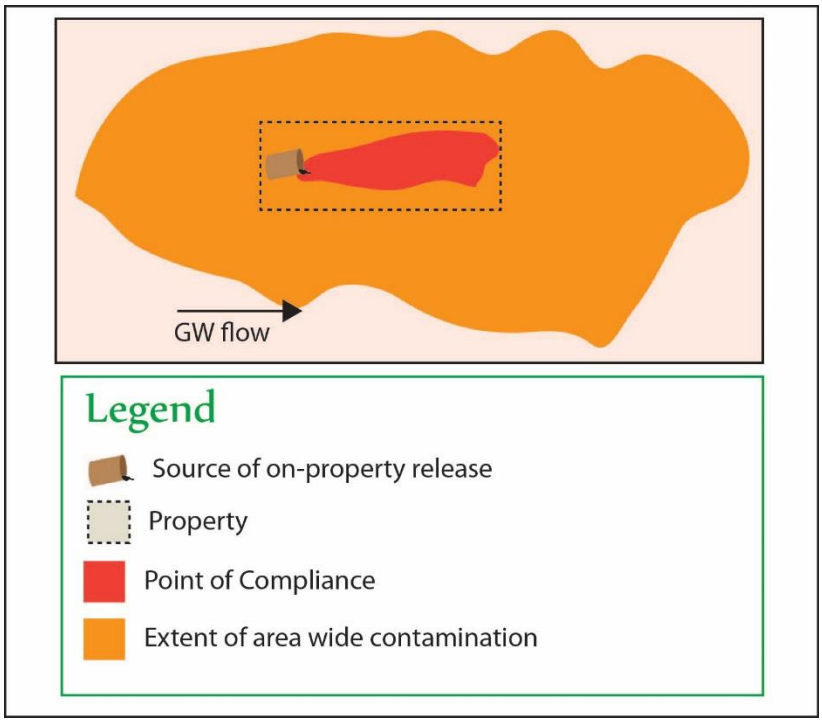


Figure II-9A and 9B: Areawide Contamination Scenarios





For non-naturally occurring regulated substances (primarily organic compounds) the affected area shall be shown to be related to sources other than the release of regulated substance on the site. This may include transport of regulated substances onto the property in the gaseous, liquid, or solid phases and associated mixing with or partitioning to onsite gaseous, liquid, or solid-phase media. For background conditions that are related to ongoing flux onto the site (e.g., regulated substances dissolved in groundwater flowing onto the site or soil vapor transport onto the site), the background concentrations shall be determined by monitoring the concentrations of regulated substances associated with this flux where it enters the property. For background conditions that are not related to a continuing source of chemical flux onto the property (e.g., historical accumulation of airborne contaminants including particulate and associated deposition in surficial soils), the determination of background concentrations shall include the identification of the source(s), if possible, and a demonstration that the areal distribution of the background conditions extends beyond the limits of the property.

These same determinations should be made for naturally occurring regulated substances. However, an additional determination should be made as to the naturally occurring concentrations of these regulated substances independent of impacts from the release(s) or other background sources. Therefore, for naturally occurring regulated substances, the background standard would include the naturally occurring concentration plus contributions from sources not on the property.

Use of breakdown products of a regulated substance from offsite which form on the site undergoing remediation can be included in the assessment of attainment of the background standard. The Department is willing to consider breakdown products of substances released upgradient of the property. The remediator should submit historical information and fate and transport analyses to demonstrate that the substances onsite are a result of chemical breakdown and not a result of a release on the property. Likewise, a conclusion that contamination entering a subject property which transforms or degrades to a compound similar to a spill which occurred on the subject property will be supported by the combined sample analysis and fate and transport analysis determination. The remediator must demonstrate that the concentrations are the result of transformation or direct migration of chemicals from the background area.

The establishment of the groundwater background concentrations for a site using sampling and analysis allows for two different background conditions, as described in 25 Pa. Code § 250.707(a):

- Background from a known upgradient release of regulated substance.

- Background from naturally occurring or areawide contamination (this can also apply to soils).

The Department provides different procedures to establish the background groundwater concentration depending on which background condition is present

upgradient and adjacent to the property. The method used when establishing background and determining attainment of the background standard for a site must be the same.

i) Background from a Known Upgradient Release of a Regulated Substance

(a) Groundwater

This groundwater distinction occurs when an adjacent or nearby property has had a release of the same regulated substance that flows onto the property under consideration for an Act 2 remediation. One option for determining background conditions is through the use of monitoring wells sampled during the site characterization to establish the well with the highest concentration of the groundwater migrating onto the site. Another option is to compare the statistical distribution of the background area with the impacted area onsite. Section 250.707(a)(2) in the regulations, Section II.B.1.e.vi of this manual, and the statistical requirements in Section III.B of this manual discuss the handling of the statistical requirements for groundwater attainment in the background standard.

A remediator who believes that a site meets the conditions for reducing the timeframe for implementing eight groundwater sampling events as found in 25 Pa. Code § 250.707(a)(2)(x), and already has eight or more samples collected in four quarters or less, may request that the Department accept fewer than eight quarters of sampling. The request may be submitted with supporting information to the Regional ECB Program Manager. If the Department is not satisfied that these conditions are met, the remediator shall continue to monitor for the remainder of the eight quarters.

The time frame for taking the background samples when remediation is not undertaken may start before the site characterization is completed. This will allow a remediator who has existing data to establish background without the need to monitor for an additional four or eight quarters if all the consecutive quarterly data total four or eight quarters, as applicable to that background condition.

If remediation action is undertaken, the attainment sampling is done after remediation is completed.

(b) Soil

Soils where a large area was affected by a release of regulated substances off-property do not typically move from one location to

another in comparison with the movement of groundwater. Natural movement of soil in Pennsylvania normally involves surface water transporting sediment, landslides, or airborne transport of soil or contaminants.

ii) Background from Naturally Occurring or Area-wide Contamination

Some areas of the Commonwealth have naturally occurring or widespread contamination. A remediator should obtain a written agreement from the Department if they plan to demonstrate that their site is in an area of naturally occurring or widespread contamination. This decision will be based on evidence presented to the Department in writing by the remediator seeking the determination. When the Department agrees, through written acknowledgment to the remediator that the property under investigation is within a location of areawide contamination, the following approach for establishing background is allowed.

(a) Groundwater

When the background groundwater condition is due to naturally occurring or areawide contamination, a minimum of 12 samples should be collected offsite and 12 samples collected onsite. The number of wells sampled onsite and offsite must be the same in each round of sampling. For example, if three wells are sampled offsite, three wells must be sampled onsite. In this example, each of the wells must be sampled a minimum of four times. The samples must be independent of one another. The onsite and offsite samples must be collected at the same time. The time frame for establishing this condition is not predetermined, as it is in the upgradient release. By increasing the number of wells onsite and offsite, the number of sampling events necessary to meet the minimum of 12 samples can be reduced (two wells will require six sampling events, six wells will require two sampling events). The offsite wells must be located upgradient of the site. The number of wells and the horizontal and vertical location of the wells onsite must be adequate to characterize any release of regulated substance at each site. All sampling data must be reported to the Department.

(b) Soil

When the background soil condition is due to naturally occurring or areawide contamination, the remediator shall compare the analytical results of background reference samples that are representative of naturally occurring or areawide contamination of substances on the site, with the analytical results of onsite concentrations. A minimum of 10 samples should be collected offsite or at the background referenced area, and 10 samples collected onsite. The comparison should be conducted using the

statistical methods summarized in 25 Pa. Code § 250.707(a)(1) and in Section III.B of this manual.

(c) Historic Fill

Some sites may be located in an area where there has been widespread use of fill (Figure II-10). This fill may contain regulated substances. If a spill or discharge of a regulated substance occurs on a site that received fill long ago (historic fill), the remediator can limit his remediation to the discharge that he or she has recently caused. In this case, the remediator would obtain relief from liability only for cleaning up what the remediator has recently spilled. This includes contamination resulting from the onsite release to the soil and groundwater. Remediators who wish to limit their cleanup to the levels that were already present in the fill should provide information to the Department indicating that the fill was historical (placed prior to 1980), not placed at their direction, and widespread or involved more than the subject property.

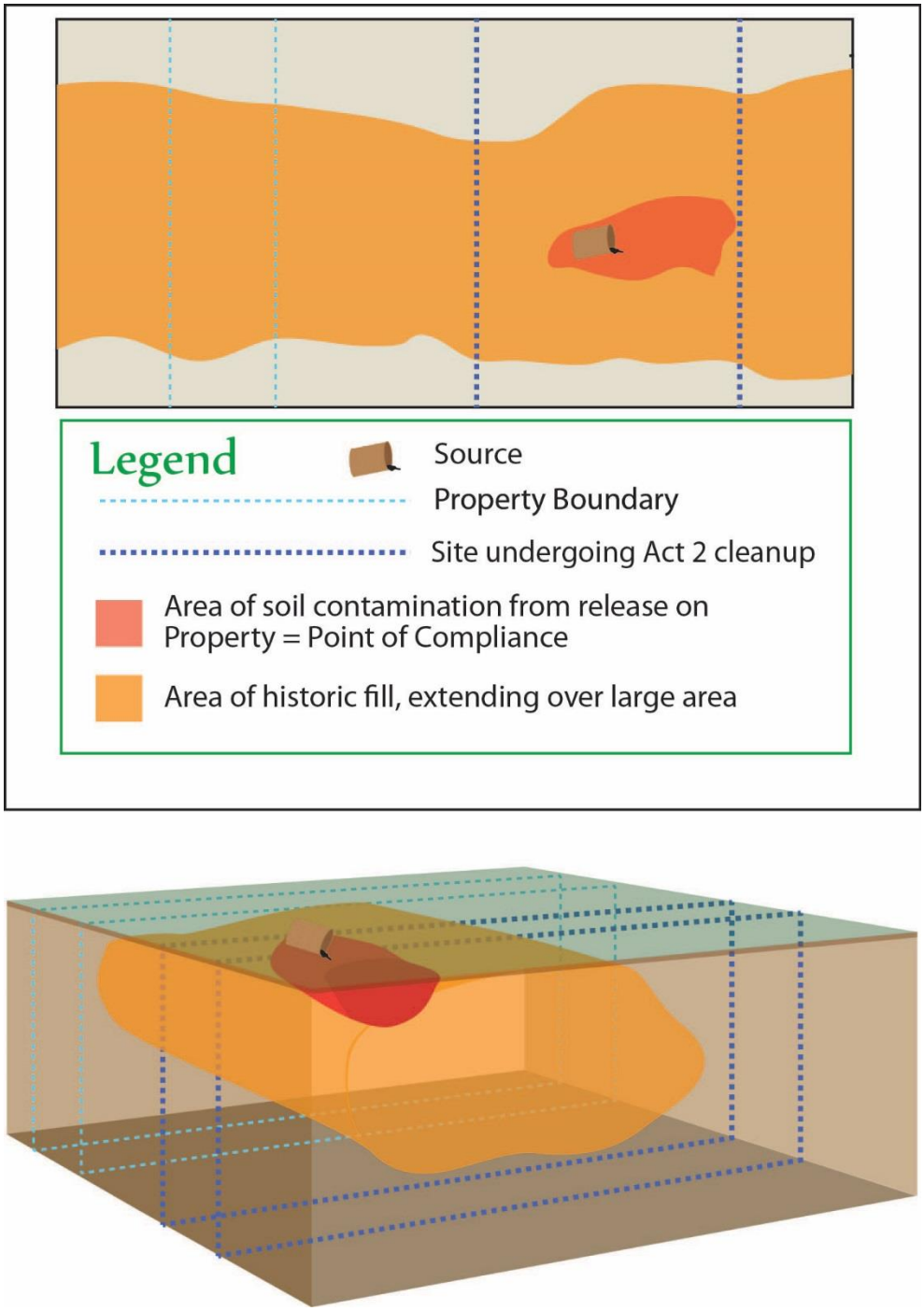
An example of contamination that may have occurred through airborne transport comes from the time when leaded gasoline was commonly used in automobiles. The surface and near-surface soils of properties along highways have been found to have elevated levels of lead. Samples taken from a number of properties near and along the highways would be required to compare the onsite and offsite conditions.

e) Final Report Requirements for the Background Standard

For a site remediated under the background standard, the remediator shall submit a final report to the Department which documents attainment of the selected standard. Section 250.204 of the regulations discusses final report requirements.

A complete final report is prepared in accordance with scientifically recognized principles, standards, and procedures. The report will present a thorough understanding of the site conditions. It will provide a detailed discussion on the AOC and a conceptual site model based on the results of the site characterization. Support for interpretations and conclusions will be based on data collected during all of the investigations at the site. The level of detail in the investigation and methods selected need to be sufficient to define the rate, extent, and movement of the contaminants to assure continued attainment of the remediation standard. In accordance with 25 Pa. Code § 250.204(a), all interpretations of geologic and hydrogeologic data shall be prepared by a professional geologist licensed in Pennsylvania.

Figure II-10: Background Standard Attainment with Areawide Fill



Two copies of the final report should be submitted for the Department's review. One should be a paper copy and the other should be submitted in another format (CD, flash drive, etc.). The final report must include the information in paragraphs (i)-(xi) of this section, and it should be organized according to the outline in Table II-1, below.

The following paragraphs describe the information to be included in the final report:

i) Summary

The Final Report Summary form should be filled in and submitted to the Department electronically. The summary submitted with the final report should be a copy of that completed form.

ii) Site Description

Provide a description of the site in sufficient detail to give the reviewer an overall understanding of the site and its location, and the types of operations that are currently and/or were formerly conducted on the site. As appropriate to the site, the description should include location, physical description of the property, ownership history, site use history, and regulatory action history (past cleanups).

iii) Site Characterization

The site characterization provides important information documenting the current conditions at the site and shall be based on 25 Pa. Code § 250.204. The two principal objectives of an investigation under the background standard are to determine what constitutes background for each of the regulated substances associated with the release, and to characterize the nature, extent, direction, volume and composition of regulated substances that have been released. Considerations for establishing the background concentrations are found in Section II.B.1.d. Section 250.204 of the regulations provides reporting requirements for the background standard.

For sites where there are multiple distinct areas of contamination, the site characterization process should be applied to each area individually.

Table II-1: Suggested Outline for a Final Report under the Background Standard

I. Final Report Summary

The final report summary should be a copy of the electronic form submitted to the Department.

II. Site Description

Provide a description of the site in sufficient detail to give an overall view of the site (Section II.B.1(e)(ii)).

III. Site Characterization

Document current conditions at the site (25 Pa. Code § 250.204 and Section II.B.1(e)(iii)).

IV. Background Standard

Describe how the background standard was established (Section II.B.1(e)(iv)).

V. Remediation

Describe the remedial methodologies used to attain the selected standard (Section II.B.1(e)(v)).

VI. Attainment

A. Soil background standard

B. Groundwater background standard

Both sections A and B should describe the statistical methods used to establish background and to demonstrate attainment of the standard (Section II.B.1(e)(vi)).

VII. Fate and Transport Analysis

Describe fate and transport analyses used and the results and conclusions (Section II.B.1(e)(vii)).

VIII. Postremediation Care Plan

This section is included only if necessary. It describes the engineering and institutional controls necessary to maintain the standard (Section II.B.1(e)(viii)).

IX. References

(Section II.B.1(e)(ix))

X. Attachments

(Section II.B.1(e)(x))

XI. Signatures

(Section II.B.1(e)(xi))

Along with a narrative, the results from the site characterization and all sampling and analysis work should be provided on map(s) illustrating, to the extent possible, the interrelationship of the following:

- All physical site characteristics.
- All groundwater, soil, sediment, and other sample locations, including sample depth and contaminant concentration.
- The surveyed locations for all assessment structures (monitoring wells, soil borings, test pits, etc.). All elevations should be reported in reference to mean sea level (msl), where practical.
- Appropriate number of stratigraphic cross sections that adequately depict site stratigraphy, well locations, well depths, groundwater flow directions, equipotential lines, flow lines, hydraulic conductivity intervals and values, sampling intervals and concentrations. All elevations should be reported in reference to msl, where practical.
- Variation in potentiometric surfaces(s), potentiometric surface map(s), hydraulic gradients, and groundwater flow directions.
- All identified sources of releases.
- The extent and concentrations of contaminant plumes in all media. The horizontal and vertical extent of contaminant plumes, including the relative density and thickness of any separate phase liquids (SPL) present.
- Top of bedrock contour (if encountered).

A conceptual site model should be developed and refined as information is gathered during the site characterization. The conceptual site model provides a description of the site and extent of contamination. Some of the information and data used to develop the site model would include:

- The type, estimated volume, composition, and nature of the released materials, chemicals or chemical compounds (include all calculations and assumptions).
- Source(s) and extent of release(s).
- Background concentrations for constituents of concern.
- The horizontal and vertical extent of contamination.

- Affected aquifer(s) or water bearing formation(s)/member(s), hydrostratigraphic units.

- All existing and potential migration pathways.

- The estimated volume of contaminated soil and water (include all calculations and any assumptions).

For soils, include information on samples and measurements used to characterize the horizontal and vertical extent of contamination, and the direction and rate of contaminant movement based on factors in the soil and the contaminant(s) which affect migration. Soil and boring descriptions should be included as an attachment.

For groundwater, include information on samples and measurements used to characterize the horizontal and vertical extent of contamination, and the direction and velocity of contaminant movement based on factors of the groundwater and the contaminant(s) which affect migration. Geologic boring descriptions and as-built drawings of wells should be included as an attachment. Text, tables, graphics, figures, maps, and cross sections, as appropriate, can be utilized to describe the nature, location, and composition of the regulated substances at the site. Providing the data in an appropriate format will expedite the review of the report.

iv) Background Standard

- How the background concentration was established.

- Type of background condition: upgradient release or area-wide contamination.

- Identify on a map the location of background soil samples and background groundwater wells.

- Document that POC attainment for groundwater is throughout the plume.

- Attainment for each medium is to be determined by the same method as the method used to establish background levels.

- Summary of sampling methodology and analytical results relating to determination of background.

v) Remediation

Provide a description of the remedial methodologies used to attain the selected standard. Examples of the types of information typically included in this section include:

- Identification of areas remediated based on results of site characterization.
- Descriptions of treatment, removal, or decontamination procedures performed in remediation. Description of removal, what was removed, and amount removed. Results of any treatability, bench scale, or pilot scale studies, or other data collected to support the remedial action(s).
- Description of the methodology and analytical results used to direct the remediation and determine the cessation of remediation. This description should document how the remediator determined that remediation was performed to address all areas that exceed the standard.
- Description of treatment technologies.
- Documentation of handling of remediation wastes in accordance with applicable regulations.
- Specific characteristics of the site that affected the implementation or effectiveness of the remedial action, including such characteristics as topography, geology, depth of bedrock, potentiometric surfaces, and the existence of utilities.
- All other site information relevant to the conceptual design, construction, or operation of the remedial action.

In addition to the above, this section should also include the calculation of the mass of contaminants addressed during the remediation of soil and/or groundwater, using the methodology in Section III.D.

vi) Attainment

Appropriate statistical methods, discussed in Section III.B, will confirm the attainment of cleanup under the background standard. Not all the statistical tests discussed in the manual are appropriate for the background standard attainment tests. Section 250.707(a) of the regulations describes statistical tests for the background standard. The following information shall be documented in a final report when a statistical method is applied, except for the highest measurement comparison test described in § 250.707(a)(1)(i) of the regulations:

- Description of the statistical method and the underlying assumptions of the method.

- A clear statement of the applicable decision rule in the form of a statistical hypothesis for each spatial unit and temporal boundary, including the applicable statistical parameter of interest and the specific cleanup standard.

- Documentation showing that the sample data set meets the underlying assumptions of the method and explaining why the method is appropriate to apply to the data.

- Specification of false positive and false negative rates.

- Documentation of input and output data for the statistical test, presented in table and figures, or both, as appropriate; and identification, by medium, contamination levels remaining onsite.

- An interpretation and conclusion of the statistical test.

In demonstrating attainment of the background standard, concentrations of regulated substances are not required to be less than the limit related to the PQL for that substance as provided for in § 250.701(c) of the regulations.

(a) Soil Background Standards

The determination of attainment of soil background standards will be based on a comparison of the distributions of the background concentrations of a regulated substance with the concentrations in an impacted area. Act 2 regulations allow a person to use highest measurement comparison, combination of Mann-Wilcoxon Rank Sum (WRS) test and Quantile test, or other appropriate methods to demonstrate attainment of background standards. No matter which method is used, Act 2 regulations require that the minimum number of soil samples to be collected is 10 from the background reference area and 10 from each cleanup unit. This requirement of 10 samples is to ensure that any selected statistical test has sufficient power to detect contamination.

(b) Groundwater Background Standards

There are two general categories of background conditions for groundwater. The first is naturally occurring background or area-wide contamination. The second is background associated with a release of regulated substances at a location upgradient from the site that may be subject to such patterns and trends.

For naturally occurring background or areawide contamination, it is recommended that a minimum of 12 samples be collected from

any combination of upgradient monitoring wells, provided that all data collected are used in determination of background concentrations. This same number of samples must then be collected from monitoring wells impacted by a release on the site during the same sampling event. In both cases, this sampling may be accelerated such that all samples are collected as quickly as possible so long as the frequency does not result in serial correlation in the data. The resulting values may be compared using either nonparametric or parametric methods to compare the two populations, such as using the combination of the WRS test and the Quantile test. When comparing with the background results, the sampling results in the plume onsite should not exceed the sum of the arithmetic average and three times standard deviation calculated for the background reference area 25 Pa. Code § 250.707(a)(3)(vii).

For background associated with a release of regulated substances at a location upgradient from a property, the background groundwater concentrations will be determined at the hydrogeologically upgradient property line of the property, or a point hydrogeologically upgradient from the upgradient property line that is unaffected by the release.

Section 250.707(a)(2) of the regulations allows the use of the nonparametric tolerance limit procedure for background associated with an upgradient release of regulated substances. The nonparametric tolerance limit procedure requires at least eight samples from each well over eight quarters in order to have sufficient power to detect contamination. Once the nonparametric upper tolerance limit is established for upgradient data, data from downgradient compliance wells can be compared to the limit. A resampling strategy can be used when an analyte exceeds the nonparametric upper tolerance limit. The well is retested for the analyte of concern and the value is compared to the nonparametric upper prediction limit. These two-phase testing strategies can be very effective tools for controlling the facility-wide false positive rate while maintaining a high power of detecting contamination. See Chapter 19 of the EPA Unified Guidance (EPA 530-R-09-007, U.S. EPA, March 2009), which describes the procedures to use.

vii) Fate and Transport Analysis

The Fate and Transport Section (Section III.A) of this manual provides a discussion on fate and transport analysis. The amount of detail in the fate and transport analysis will vary from a simple narrative description to a very extensive detailed model with quantitative modeling as appropriate to the circumstances of the site. Whenever a model is used, the Department must be provided with the assumptions, data, and information on the model necessary for Department staff to evaluate and run the model. Any

parameters used in the analysis or models should use data obtained from the site during the site characterization.

The following are examples of situations where a fate and transport model/analysis is used to justify a special condition when attaining the background standard:

- When shortening the number of groundwater samples for establishing an upgradient release in the background determination (25 Pa. Code § 250.707(a)(2)(x)), it is required that fate and transport be fully evaluated.

- When contamination remains in the unsaturated soil, fate and transport must demonstrate that the contamination in the soils will not impact the groundwater and raise the level of regulated substances above the groundwater standard. This would apply to both the soils and groundwater attaining the background standard or when using a combination of standards; for example, background standard in the groundwater and SHS in the soils.

- When the contamination on the site is the result of chemical transformations (e.g., parent to daughter), fate and transport must demonstrate that the concentrations of regulated substances onsite were the result of offsite releases.

While the previous examples will require detailed evaluation, when the source and any regulated substance that could have migrated from the source are removed before contamination reached the groundwater, the fate and transport analysis could be very short and non-quantitative.

When the background standard is attained in all media, the fate and transport analysis will confirm that no cross-media contamination will cause contamination in one medium to raise the contamination in another medium above the standard.

If the standard will be exceeded in the future, a postremediation care plan is required.

viii) Postremediation Care Plan (if applicable)

If engineering or institutional controls are needed to maintain the standard, a postremediation care plan must be documented in the final report in accordance with 25 Pa. Code § 250.204(g). The plan should include reporting of any instances of non-attainment; reporting of any measure to correct non-attainment conditions; periodic reporting of monitoring; sampling and analysis as required by the Department; maintenance of records at the property where the remediation is being conducted for monitoring, sampling and analysis; and a schedule for operation and maintenance of the controls and submission of any proposed changes. The

Department may ask for documentation of financial ability to implement the remedy and to maintain the postremediation care controls. When the standard can be maintained without the controls operating and documentation of such is provided, the Department will approve termination of the postremediation care program.

ix) References

Any references mentioned in the final report.

x) Attachments

Attachments may include but are not limited to:

- Tables – monitoring well construction summary, groundwater gauging data (including elevation and non-aqueous phase liquid (NAPL) thicknesses), analytical data, historical data.
- Figures – including groundwater elevation maps, extent of NAPL, concentration data for soil/groundwater/surface water, cross-sections.
- Monitoring well construction diagrams, boring logs, stratigraphic logs (including soil/rock characteristics).
- Sampling and analysis plan(s).
- Quality Assurance (QA) and Quality Control (QC)Plan.
- Well search documentation (from PaGWIS).
- Field data sheets, such as low flow purging monitoring.
- Statistical worksheets, software outputs, graphs, etc.
- Disposal documentation of soil/groundwater.
- Remediation system operation, maintenance, monitoring data; mass removal estimates.
- Before and after remediation photographs.
- Copy of municipal notification, reasonable proof of newspaper notice publication, Department acknowledgement of natural or area-wide contamination.

xi) Signatures

If any portions of the submitted report were prepared or reviewed by or under the responsible charge of a registered professional geologist or engineer, the professional geologist or engineer in charge must sign and seal the report.

2. Statewide Health Standard

a) Introduction

The SHS is established by Sections 301 and 303 of Act 2 (35 P.S. §§ 6026.301 and 6026.303) and includes MSCs that must be attained to achieve the liability protection provided for in the Act. The MSCs are calculated in accordance with the methodologies in § 250.304 through 250.310 of the regulations.

The numerical MSCs are contained in Appendix A to Chapter 250, Tables 1 through 6. Cleanup liability protection provided under Act 2 is contingent upon the attainment of the appropriate MSCs determined using the procedure described in Section II.B.2(c) below.

This guidance presents the procedures to be used in assessing site contamination and demonstrating attainment of the SHS. Use of this guidance and data submission formats should simplify reporting on the site and reduce delays in obtaining final report approval by the Department. This guidance is designed to aid in understanding and meeting the requirements of the SHS under Act 2 and the regulations in Chapter 250. ECB staff in the Regional Office are a valuable resource and will assist as requested in answering questions on the SHS.

Failure to demonstrate attainment of the SHS may result in the Department requiring additional remediation measures to be taken to meet the SHS; or the remediator may elect to attain one of the other standards.

b) Process Checklist for Remediations Under the Statewide Health Standard

☐ Review the historical information and present use of regulated substances at the property.

☐ Begin site investigation/characterization and gather information about the area on and around the property.

☐ Optional: Begin using the completeness list (see LRP webpage) to help verify that all requirements have been met.

☐ Optional: Determine if the property/site is affected by regulated substances not from the property to determine if the background standard may be appropriate. Contact DEP Regional Office for information.

☐ Submit an NIR for the SHS. Also, provide notice to the municipality, publish a notice in a local newspaper, and obtain reasonable proof of submittal for inclusion with the final report. Procedures for submittal of notifications are contained in Section II.A.3 of this manual.

☐ Continue with the site characterization and required activities, including vapor intrusion evaluation (see Section IV of this manual), needed to complete the final report.

☐ Remediate the site to the SHS.

☐ Demonstrate attainment of the SHS. Methods for demonstrating attainment are described in 25 Pa. Code § 250.707(b) and in Section III.B of this manual.

☐ Calculate the mass of contaminants remediated using the procedure in Section III.D of this manual.

☐ Complete the Final Report Summary electronically in accordance with the instructions on the LRP webpage.

☐ Prepare and submit final report, along with the optional completeness list (if used), to the Department. Reporting requirements are established by 25 Pa. Code § 250.312 and are described in Section II.B.2(f) of this manual.

☐ A postremediation care program must be implemented and documented in the final report including the information required by § 250.204(g) of the regulations if: (1) engineering controls are needed to attain or maintain the SHS; (2 institutional controls are needed to maintain the standard; (3) the fate and transport analysis indicates that the remediation standard, including the solubility limitation, may be exceeded at the POC in the future; (4) the remediation relies on natural attenuation; (5) a postremedy use is relied upon but is not implemented to eliminate complete exposure pathways to ecological receptors; or, (6) mitigative measures are used.

☐ Submit an environmental covenant, if applicable, to the Department.

☐ Receive approval of the final report from the Department, if the final report documents that the person has demonstrated compliance with the substantive and procedural requirements of the SHS (which automatically confers the Act 2 liability protection as set forth in Chapter 5 of Act 2).

☐ Except for the special case of a nonuse aquifer standard (See Section II.B.4(c), when the SHS can be maintained without engineering controls operating, document this to the Department and receive approval to terminate the postremediation care program.

c) Selection of MSCs

The appropriate MSC for each regulated substance present at a site is determined for each environmental medium, particularly groundwater and soil. The decision tree in Figure II-11 illustrates the thought process that goes into the selection of the appropriate MSCs for groundwater and soil. If values for the compounds on a given site cannot be found in Tables 1 through 4, please check Table 6: Threshold of Regulation Compounds.

The values shown in the MSC tables are generally rounded to two significant figures. Due to rounding the numeric values for placement in the tables, the remediator is also permitted to round the concentrations reported by the laboratory to two significant figures for comparison to the MSC values.

For example: The chosen MSC value for a certain compound is 2.6 µg/L. If the laboratory reports a result of 2.629 µg/L, the remediator is permitted to round the laboratory's reported value to 2.6 µg/L and thus is able to attain the standard. However, if the laboratory's reported concentration is 2.678 µg/L, rounding to two significant figures results in a concentration of 2.7 µg/L and thus exceeds the MSC and is not able to attain the standard.

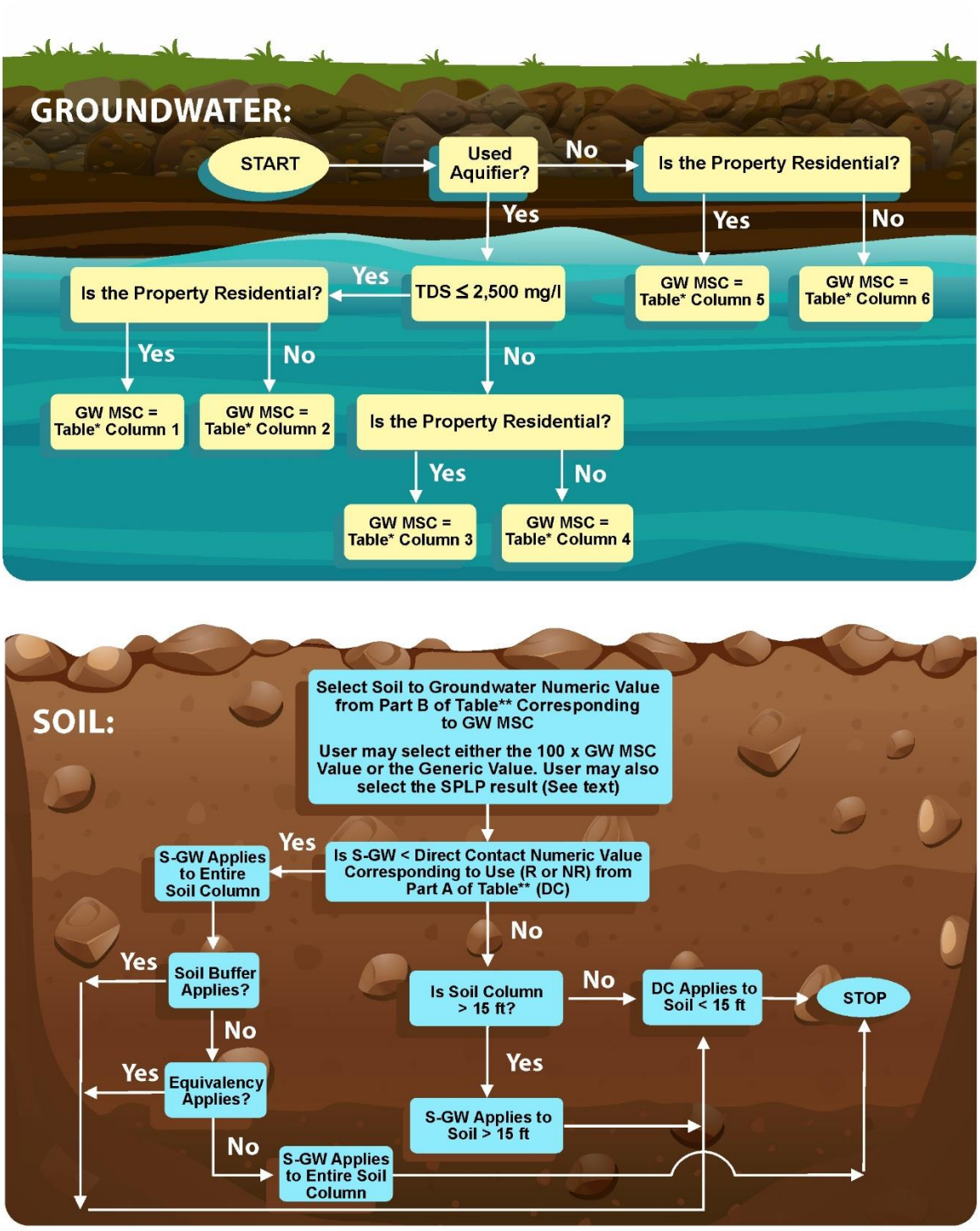
i) Determining Groundwater MSCs

MSCs for regulated substances in groundwater are found in Appendix A to Chapter 250, Table 1 for organic substances, and Table 2 for inorganic substances. To use the tables, the remediator needs to know the use status of the aquifer under the site, the naturally occurring level of Total Dissolved Solids (TDS) in the aquifer, and the land use of the site.

ii) Determining Soil MSCs

In determining the applicable soil standard, the remediator must compare the appropriate soil-to-groundwater numeric value to the direct contact numeric value for the corresponding depth interval within 15 feet from the ground surface. The lower of these two values is the applicable MSC for soil. If either the soil buffer distance (described in 25 Pa. Code § 250.308(b) and (c)) or the equivalency demonstration (described in 25 Pa. Code § 250.308(d)) is met, the soil-to-groundwater numeric value will be deemed to be satisfied, and the soil MSC will be the direct contact numeric value. The soil-to-groundwater numeric value is the MSC for soil at depths below 15 feet, unless either the soil buffer distance or the equivalency demonstration is met. These values are determined in the following manner:

Figure II-11: Decision Tree for Selecting Statewide Health Standard MSCs for Groundwater and Soil



* For Organic Regulated Substances, use Table 1; Use Table 2 for Inorganic Regulated Substances
** For Organic Regulated Substances, use Table 3; Use Table 4 for Inorganic Regulated Substances

Note: Figure must be used in conjunction with the text. Reference Section II.B.2.c)

(a) Choosing the Soil-To-Groundwater Numeric Value

The remediator should begin by determining the appropriate soil-to-groundwater numeric value from Part B of Table 3 for organics or Table 4 for inorganics. The numbers in the table include both the value which is 100 times the appropriate groundwater MSC and the number resulting from application of the soil-to-groundwater equation in the regulations (the "generic value"). The remediator must determine the use status of the aquifer underlying the site, its naturally occurring TDS level, and the land use characteristics of the site. The numeric value may then be selected from the appropriate column on the table and compared to the value for the Synthetic Precipitation Leaching Procedure (SPLP), if appropriate. Since the remediator has the choice of which soil-to-groundwater numeric value to use, the remediator may choose the highest of these three values (i.e., 100x GW MSC, the generic value, or the SPLP result) as the soil-to-groundwater numeric value. The remediator must keep in mind that for periodically saturated soils, the generic value to use in this selection process is one-tenth the value listed in the table (see § 250.308(a)(2)(ii) and (a)(4)(ii) of the regulations). The intent of the one-tenth of the generic numeric value provision in the soil-to-groundwater numeric value calculation is to account for the dilution in contaminant concentrations that occurs in soils that are periodically saturated which does not occur in unsaturated soil. For permanently saturated soils, contamination becomes a groundwater contamination issue as the soil is in constant contact with the groundwater rather than being only periodically saturated.

The value for the SPLP is the concentration of a regulated substance in soil at the site that does not produce a leachate in which the concentration of the regulated substance exceeds the groundwater MSC. Values for the SPLP could not be published in the tables of MSCs in the regulations because this test must be conducted on the actual site soil. The following procedure should be used to determine the alternative soil-to-groundwater value based upon the SPLP:

- During characterization, the remediator should obtain a minimum of ten samples from within the impacted soil area. The four samples with the highest total concentration of the regulated substance should be submitted for SPLP analysis. Samples obtained will be representative of the soil type and horizon impacted by the release of the regulated substance.

- Determine the lowest total concentration (TC) that generates a failing (leachate concentration greater than the

groundwater MSC) SPLP result. The alternative soil-to-groundwater standard will be the next lowest TC.

- If all samples have a passing (leachate concentration less than the groundwater MSC) SPLP result, the alternative soil-to-groundwater standard will be the TC corresponding to the highest SPLP result. The remediator has the option of obtaining additional samples.

- If all samples have a nondetect SPLP result, the alternative soil-to-groundwater standard will be the TC corresponding to the highest concentration of each contaminant. The remediator has the option of obtaining additional samples.

- If none of the samples generates a passing SPLP, the remediator can obtain additional samples and perform concurrent TC/SPLP analyses to satisfy the above requirements for establishing an alternative soil-to-groundwater standard.

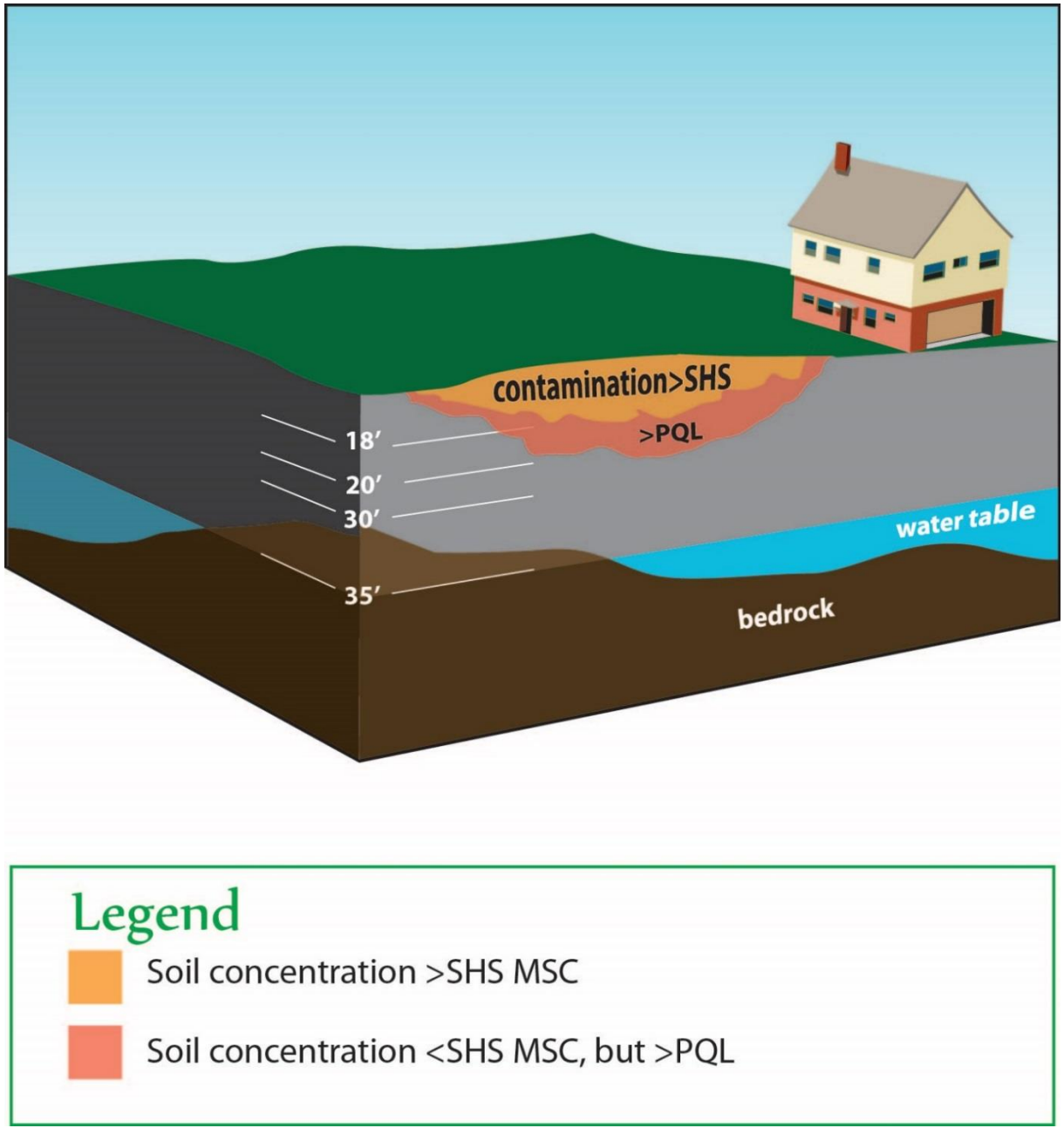
(b) Considering Direct Contact Value in Relation to the Soil-to-Groundwater Value and Soil Depth

The number selected according to the process outlined in Section II.B.3.b.i of this TGM for the soil-to-groundwater pathway numeric value must then be compared to the appropriate residential or nonresidential, surface or subsurface, direct contact numeric value from Part A of Table 3 or Table 4. The lower of the two numbers is the appropriate MSC for the regulated substance. If the soil buffer distance requirements are met or the equivalency demonstration has been made, then the soil-to-groundwater numeric value is deemed to be satisfied and the MSC is the appropriate direct contact numeric value for the regulated substance. The soil buffer approach incorporates fate and transport considerations; therefore, meeting the soil buffer requirements will not require any additional fate and transport analysis.

(c) Selecting Applicable MSCs – Example

The process for selecting the appropriate MSCs for a site is illustrated in Figure II-12. This figure represents the cross section of a nonresidential site with soil contaminated with a petroleum product. The aquifer does not qualify as a nonuse aquifer. The remediator is interested in determining and applying the soil MSCs under the SHS. This example shows the process applied to one of the regulated substances: cumene.

Figure II-12: Application of the MSC Selection Process



Details of the site determined during the site characterization are as follows (see also Figure II-12).

- Soil characterized as contaminated with regulated substances from the petroleum product, including cumene (concentration values > PQL, see Section III.G), is shown and extends to a depth of 20 feet. For this example, the remediator characterized the soil to the level of the PQL, but could have selected any concentration level between the SHS and the PQL, with the appropriate justification.

- Soil contaminated at levels greater than the applicable SHS is shown as a subset of the contaminated area and extends to a depth of 18 feet.

- Samples collected and analyzed according to the methodology in Section II.B.2(c)(ii)(a) established an alternative soil-to-groundwater value of 20 mg/kg.

- SPLP testing of site soil was established at 400 mg/kg.

- Shale bedrock is present at varying depths between 30 and 35 feet.

- The groundwater level is approximately 35 feet, but fluctuates (annual high and low) between 28 to 40 feet and the natural total dissolved solids level in the groundwater is 80 mg/L.

- The vertical distance from the bottom of the contaminated area to groundwater is h = 15 feet.

Scenario #1 - the above conditions apply, and in addition, the results of sample analysis of the groundwater show no values greater than 3,500 μg/L.

Scenario #2 - the above conditions apply, and in addition, free floating product (approximately 1 inch) is found on top of the groundwater level, and the concentration of cumene below the groundwater level is 5,000 μg/L.

The remediator takes the following steps to determine appropriate MSCs for cumene at this site.

Groundwater MSC:

1) For Scenario #1 AND Scenario #2: As a first step, turn to LRP regulations, Chapter 250, Appendix A, Table 1 - Medium-Specific Concentrations (MSCs) for Organic Substances in groundwater. The remediator looks for the row for cumene, under the headings "Used Aquifers," "TDS≤2500 mg/L," "NR" (for Nonresidential). The groundwater MSC is 3,500 μg/L.

Under Scenario #1, the remediator concludes that there is no aquifer area which exceeds the groundwater MSC (3,500 μg/L) and, therefore, no attainment demonstration is needed. Under Scenario #2, the remediator concludes that the aquifer area exceeds the groundwater MSC (3,500 μg/L) and, therefore, attainment demonstration is needed.

Soil MSC:

2) The remediator turns to Chapter 250, Appendix A, Table 3 – Medium-Specific Concentrations (MSCs) for Organic Substances in Soil, Part B, Soil to Groundwater Numeric Values. The remediator looks for the row for cumene, under the Headings "Used Aquifers," "TDS ≤ 2500 mg/L," "Nonresidential." The two values listed are:

- 100x GW MSC – 350 mg/kg
- Generic Value - 2,500 mg/kg

The remediator then looks over to the last column on the right for the soil buffer distance – 15 feet.

3) The remediator assesses the use of numeric soil-to-groundwater values. Three options exist under the regulations (§ 250.308).

- 100x GW MSC – 350 mg/kg
- Generic Value – 2,500 mg/kg
- SPLP value – 400 mg/kg (from analysis of site soil—see site characterization.

Among the three acceptable values, the generic value of 2,500 mg/kg is the highest. The remediator considers using this option, but first wants to see if the site could qualify for the remaining two options for satisfying the soil-to-groundwater numeric value, the soil buffer and groundwater equivalency options.

4) In examining the soil buffer option, the remediator checks to see if the site meets the three regulatory conditions under 25 Pa. Code § 250.308(b), which states:

(b) The soil-to-groundwater pathway soil buffer is the entire area between the bottom of the area of contamination and the groundwater or bedrock and shall meet the following criteria:

(1) The soil depths established in Appendix A, Tables 3B and 4B for each regulated substance.

(2) The concentration of the regulated substance cannot exceed the limit related to the PQL or background throughout the soil buffer.

(3) No karst carbonate formation underlies or is within 100 feet of the perimeter of the contaminated soil area. Karst carbonate formations are limestone or carbonate formations where the formations are greater than 5 feet thick and present at the topmost geologic unit. Areas mapped by the Pennsylvania Geologic Survey as underlain by carbonate formations are considered karst areas unless geologic studies demonstrate the absence of the formations underlying or within 100 feet of the perimeter of the contaminated soil area.

Scenario #1 - The remediator concludes that the site meets the conditions for use of the soil buffer alternative to satisfy the soil-to-groundwater numeric value and, therefore, only the direct contact numeric value applies and becomes the soil MSC for cumene.

Alternatively, the remediator could have considered use of the groundwater equivalency option [§ 250.308(d)], but this includes the condition that he/she monitor the groundwater for 8 quarters prior to submitting the final report. The remediator instead chooses the soil buffer option above.

Scenario #2 - The remediator concludes the site DOES NOT meet the conditions for use of the soil buffer alternative because h=0 since soil contamination extends to the water level and, therefore, there is no depth of clean soil between the bottom of contamination and the groundwater level.

The remediator then checks to see if the site meets the requirements for use of the groundwater equivalency option. (25 Pa. Code § 250.308(d) and Section II.B.6(d) of the Technical Manual). The site does NOT qualify because groundwater is contaminated above SHS and background.

Therefore, the remediator should consider BOTH the soil-to-groundwater numeric value and the direct contact (DC) value.

Chapter 250, Appendix A, Table 3A—Medium-Specific Concentrations (MSCs) for Organic Regulated Substances in Soil, Direct Contact Numeric Values states that the nonresidential numeric value for cumene is:

10,000 mg/kg applied to the 0'-2' zone in soil

10,000 mg/kg applied to the 2'-15' zone in soil.

The remediator chooses the soil-to-groundwater numeric value based on the generic value of 2,500 mg/kg, which applies to the zone(s) of the soil contaminated above this value:

Zone 1—0-18' (see Figure II-12)

Zone 2 – the "smear zone" in the soil column created by groundwater level movement – 28'--40.' Note that this zone also is considered saturated soil under Chapter 250.

Next, the remediator checks to see where each numeric value is applied:

	DC value	Soil-to-GW value	Resulting Soil MSC
Zone 0'-2'	10,000 mg/kg	2,500 mg/kg	2,500 mg/kg
Zone 2'-15'	10,000 mg/kg	2,500 mg/kg	2,500 mg/kg
Zone 15'-18'	NA	2,500 mg/kg	2,500 mg/kg

Zone 28’ to 40’	NA	400 mg/kg	400 mg/kg

Zone 28’ to 40’ is periodically saturated soil. The selection of the applicable soil MSC for this zone must consider the requirement that the published generic value be divided by 10. Therefore, the remediator may choose from the following values:

100x GW MSC	350 mg/kg
Generic Value	250 mg/kg (0.1 x published value)
SPLP Value	400 mg/kg

Therefore, the remediator chooses the SPLP result as the applicable soil MSC.

For both scenarios, analysis of any attainment samples (determined under Section II.B.2(f)(vii) of this manual) would be compared to the appropriate numeric value for the zone in which the sample was taken, and the attainment test (e.g., 75%/10x) would be applied to the sample set as a whole (e.g., the percentage of samples which exceeded the appropriate numeric value must be ≤ 25% and no sample may exceed the appropriate numeric value by more than 10 times [10x]).

d) Nonuse Aquifer Determinations

i) General

Section 250.303 of the regulations provides for options for requesting a nonuse aquifer determination. Anytime a person is proposing an area for nonuse aquifer determination, they must meet the notification requirements of 25 Pa. Code § 250.5, which are described in Section II.A.3, relating to public notice.

- A remediator may request from the Department approval to use alternative MSCs in groundwater at the POC when the aquifer under a site is not used or planned to be used for drinking water or agricultural purposes. This determination is to be requested by the remediator, and the Department’s concurrence must be obtained in writing before the remediation may begin. The notice requirements under the nonuse aquifer request are made separate from those under the NIR. Note that an NIR must be submitted with, or prior to, the nonuse aquifer determination request. Although not required, the Department suggests that this request be submitted in conjunction with an NIR.

A remediator may rely on a "nonuse aquifer certification area" (see below) as documentation that they have satisfied 25 Pa. Code § 250.303(c)(1), (2) and (3) FOR THE SPECIFIC AREA defined as a "nonuse aquifer certification area." If the area they are required to document extends beyond the nonuse aquifer certification area, the remediator still has the obligation to document those requirements in the area NOT covered by the nonuse aquifer certification area.

Another option a remediator may have is using the presence of a municipal ordinance meeting the performance requirements of Section III.E (relating to institutional controls and other postremedial measures) as documentation that the use restriction meets the requirements of 25 Pa. Code § 250.303(c)(1), (2) and (3) IN THE AREA SUBJECT TO THE ORDINANCE.

- Municipal authorities and political subdivisions may request determination that a specific geographic area meets the conditions of 25 Pa. Code § 250.303(c)(1), (2) and (3). The area in question is then referred to as a nonuse aquifer certification area.

ii) Request Initiated by a Remediator as Part of an NIR

This option would be used by a remediator who desires to use the alternative nonuse aquifer MSCs at a specific property. As detailed in 25 Pa. Code § 250.303(b) of the regulations, the area in which the determination is to be made includes the property itself, all areas within a radius of 1,000 ft. downgradient of the property boundary, and all areas where the contamination has migrated, or may reasonably be expected to migrate, at concentrations exceeding the MSC for groundwater used or currently planned to be used. In making the request, the remediator should provide the fate and transport analysis used to determine the area to which the contamination has migrated and is likely to migrate. The Department will accept or reject the remediator's request based primarily upon the adequacy of this analysis. The area determined is the area of geographic interest to which the conditions of 25 Pa. Code § 250.303(c) apply. A form, Request for Nonuse Aquifer Determination, is available on the Department's website to be used by a remediator to expedite the Department's review of a nonuse aquifer demonstration. Use of this form is optional.

iii) Nonuse Aquifer Conditions to be Met in the Area of Geographic Interest

The requirements for demonstrating that an aquifer is not used are contained in 25 Pa. Code § 250.303(c) of the regulations. The remediator may make this demonstration by conducting door-to-door surveys of all downgradient properties or by using other appropriate survey methods,

and by contacting all community water suppliers downgradient of the property for service area information, including plans for future water supply well development and service area expansion. If all of the requirements are met, the Department may determine that the aquifer is not used for drinking water or agricultural purposes. The remediator may use the MSCs for groundwater in aquifers not used for drinking water or agricultural purposes in Tables 1 and 2 of Appendix A to the regulations if the nonuse aquifer determination is made. In some cases, there may be a significant lapse in time between the nonuse aquifer determination approval and the submission of the final report. It is the intent of DEP to ensure that the nonuse aquifer conditions are still representative when the final report is submitted to the Department. Therefore, at the time the final report is submitted to the Department for sites which have a nonuse aquifer determination approval, the DEP may require basic assessment of any changes which may have taken place since the nonuse aquifer determination approval was granted. This assessment would be similar to that applied under the postremediation care plan described below.

A postremediation care plan is required to provide reasonable confidence that the appropriate geographic area continues to meet the conditions of 25 Pa. Code § 250.303(c) if a final report has been submitted to the Department which includes the use of a nonuse aquifer area. Typical elements of such a postremediation care plan, which are relevant to the nonuse aquifer status, would include review of Department of Conservation and Natural Resources (DCNR) records to see if any well drilling reports have been received for the area included in the nonuse aquifer determination, inquiry to the water supplier of the area to determine if properties are still being billed for water, or communication with the municipalities to understand what changes may have taken place which may have an effect on the water use patterns in the area. The ecological screening process and the demonstration of compliance with surface water quality standards continue to apply in the area where the aquifer is determined not to be used for drinking water or agricultural purposes. Furthermore, as described in 25 Pa. Code § 250.303(d)(3), an environmental covenant should include the requirements of the postremediation care plan. This will ensure that subsequent landowners are aware of their responsibilities for postremediation care and monitoring. The postremediation care obligation will continue only until the property owner demonstrates to the Department, by fate and transport analysis, that the MSC for groundwater in aquifers used or currently planned for use is not exceeded at the property boundary and all points downgradient therefrom.

iv) Request for Certification of a Nonuse Aquifer Area Initiated by a Local Government

This option would be used by municipal authorities and political subdivisions which desire to receive certification that a given geographic area meets the conditions of 25 Pa. Code § 250.303(c) (i.e., nonuse aquifer

area conditions) where no specific property to be remediated has been identified. These conditions are based on 25 Pa. Code § 250.303(f), which requires an ordinance prohibiting groundwater use and requires every property to be connected to the public water supply.

v) Example

The following figures illustrate the process for determining the area in which the conditions of 25 Pa. Code § 250.303(c) must be met for a site to qualify for a nonuse aquifer designation. The requirements of 25 Pa. Code § 250.303(c) must be met "within the site on the property and within a radius of 1,000 feet downgradient of the points of compliance, plus any additional areas to which the contamination has migrated and might reasonably be expected to migrate."

Figure II-13 shows this area for an idealized site with a property line parallel to the ground water contour. Note that the area includes, first, all points within 1,000 feet of all compliance points that are at a lower groundwater elevation (downgradient) of the property line compliance point itself, plus any additional area to which the plume has migrated or may be expected to migrate, as determined by site characterization and fate and transport analysis.

Figure II-14 shows the screening area for a site where the site characterization has determined that there is convergent groundwater flow. In this case the screening area is somewhat smaller than in the first figure because the area 1,000 feet downgradient (lower groundwater elevation) from the compliance points is smaller.

Figure II-15 shows the screening area for an idealized site where the site characterization has determined there is divergent groundwater flow. In this case the screening area is somewhat larger than the other figures because the area 1,000 feet downgradient (lower groundwater elevation) from the compliance points is larger.

In areas with complex groundwater flow or other special features, the Department should be consulted to determine the appropriate screening area prior to conducting the required surveys.

e) Ecological Screening

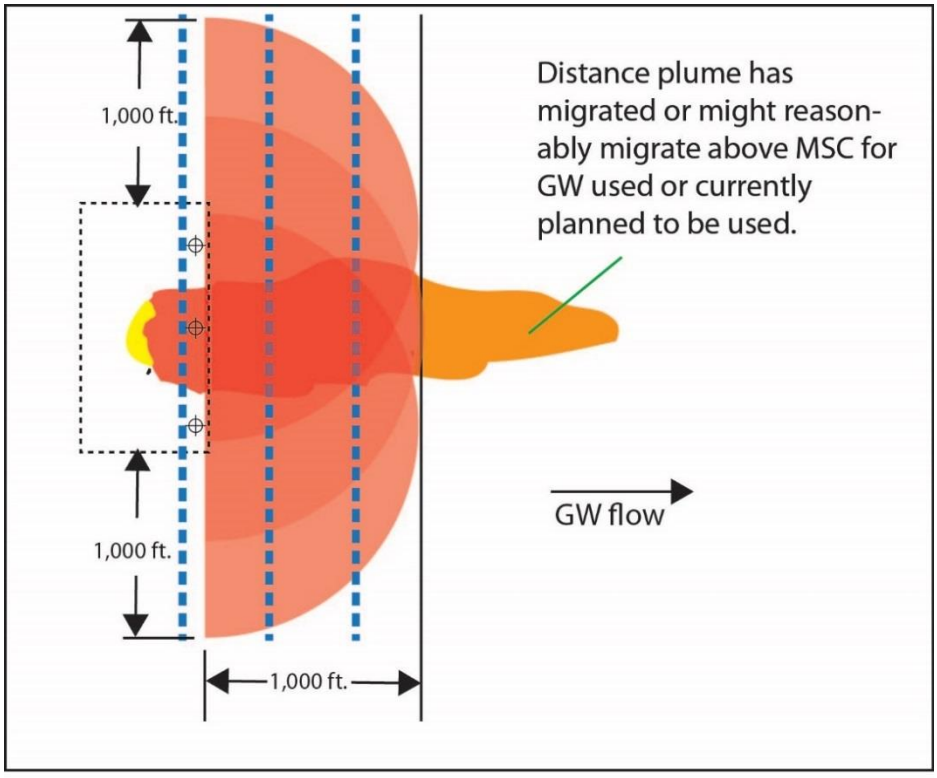
All sites remediated to the SHS must be screened for impacts to the ecological receptors identified in 25 Pa. Code § 250.311(a). The presence of threatened or endangered species as, designated by the U.S. Fish and Wildlife Service under the Endangered Species Act, requires that all requirements of that Act be met in addition to the requirements of 25 Pa. Code § 250.311. The remediator has the option of either remediating the site to one-tenth of the applicable Statewide health MSCs from Tables 3 and 4 of Appendix A to the regulations, as described in 25 Pa. Code § 250.311(b), or using the ecological screening process described

in 25 Pa. Code § 250.311 (b)-(e) and illustrated in Figure II-16. The option of remediating to one-tenth the value in Tables 3 and 4 is not available if constituents of potential ecological concern (CPECs), listed in Chapter 250, Table 8 of Appendix A, are present on the site. This choice, and the results of the screening process, if used, should be documented in the final report.

The objective of the ecological screening procedure is to quickly evaluate whether surface soils or sediments at a site have the potential to pose substantial ecological impact or impacts requiring further evaluation. The site screening procedure defines substantial impact as the potential for constituents detected onsite to cause a greater than 20% change in abundance of species of concern compared to an appropriate reference area, or a greater than 50% change in the extent or diversity of a habitat of concern compared to an appropriate reference area (Suter, 1993; Suter et al., 1995; U.S. EPA, 1989). Individuals of endangered or threatened species and exceptional value wetlands are protected regardless of the percentage of change in the abundance of species or in the extent or diversity of habitat. The goal of the screening procedure is to minimize, to the extent practicable, the number of sites which require detailed ecological risk assessment, while remaining protective of the environment.

The key elements of the screening procedure include the presence of light petroleum product constituents; the size of the site; the presence or absence of CPECs on the site; the presence or absence of species of concern or habitats of concern; and the presence or absence of completed exposure pathways, taking into account the current or planned future use of the site. The ecological screening process is described in this manual as part of the site characterization process because the information required to evaluate a site for ecological receptors is most efficiently collected at the same time as other site characterization data. A more detailed description of the rationale behind each of the steps in the ecological screen is available from the LRP website.

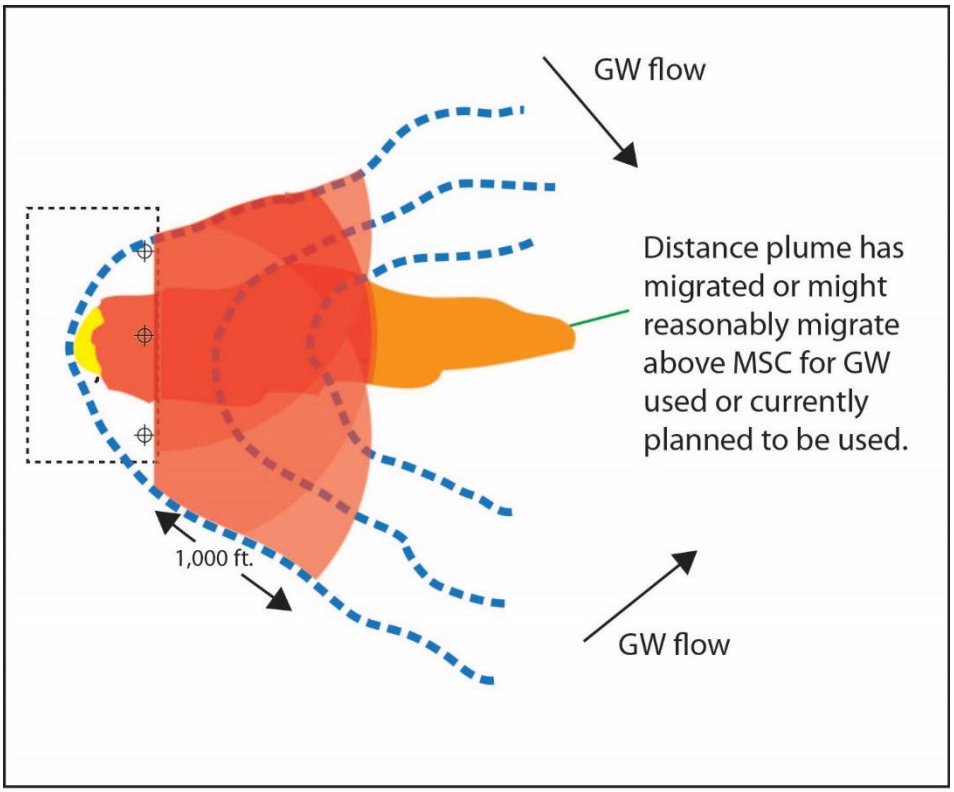
Figure II-13: Nonuse Aquifer Screening Area (Parallel Flow)



Legend

- Area in all cases in which criteria of 250.303(c)(1)(2) and (3) apply.
- Additional area in which criteria may apply based on characterization and fate and transport.
- Contamination source
- Property
- Point of Compliance Monitoring Well
- Groundwater contour

Figure II-14: Nonuse Aquifer Screening Area (Convergent Flow)



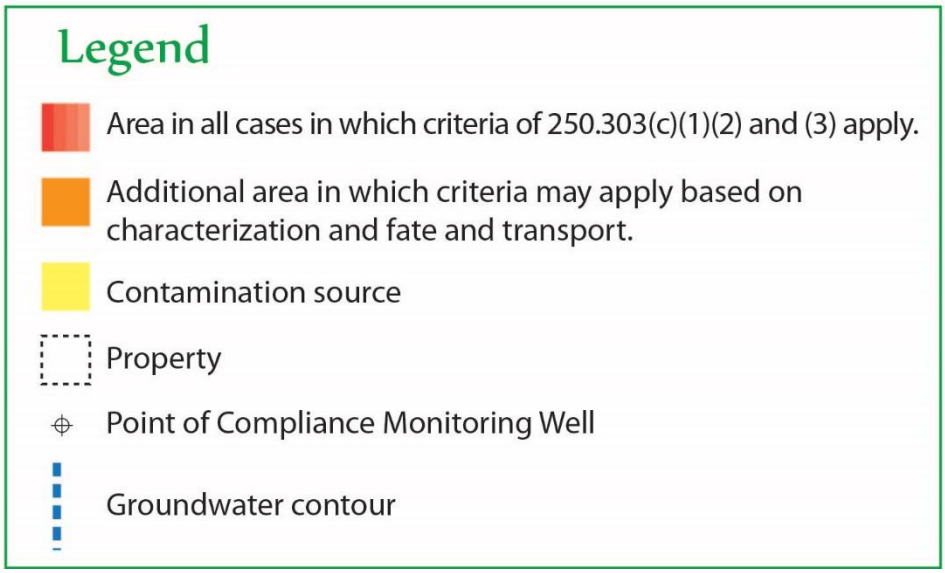
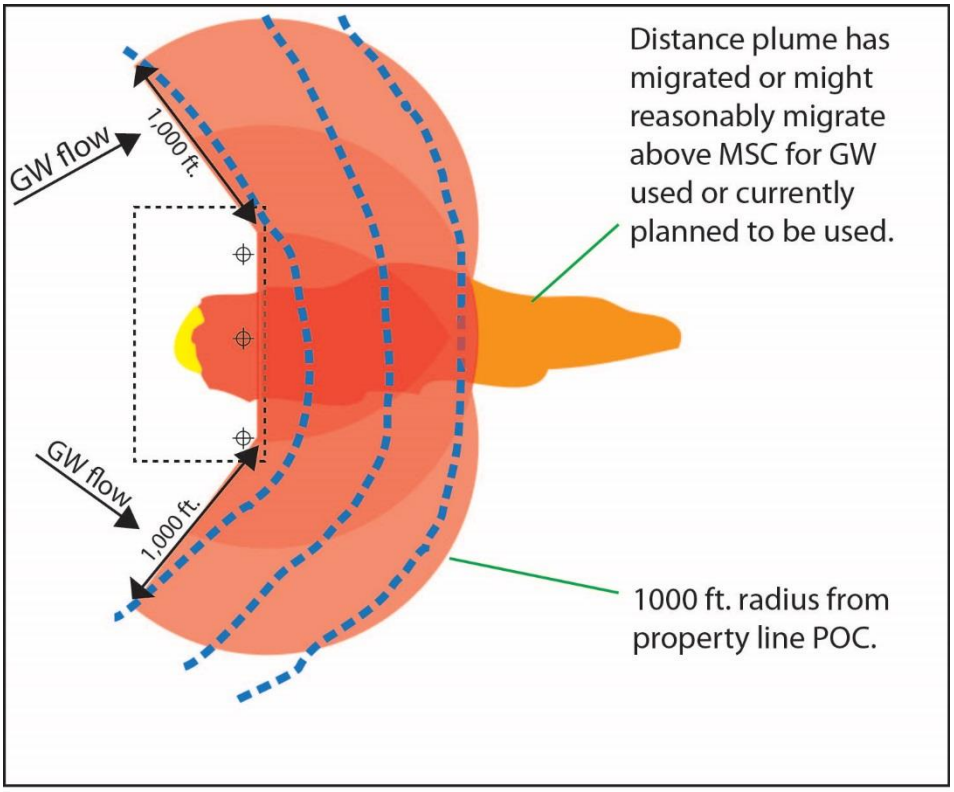


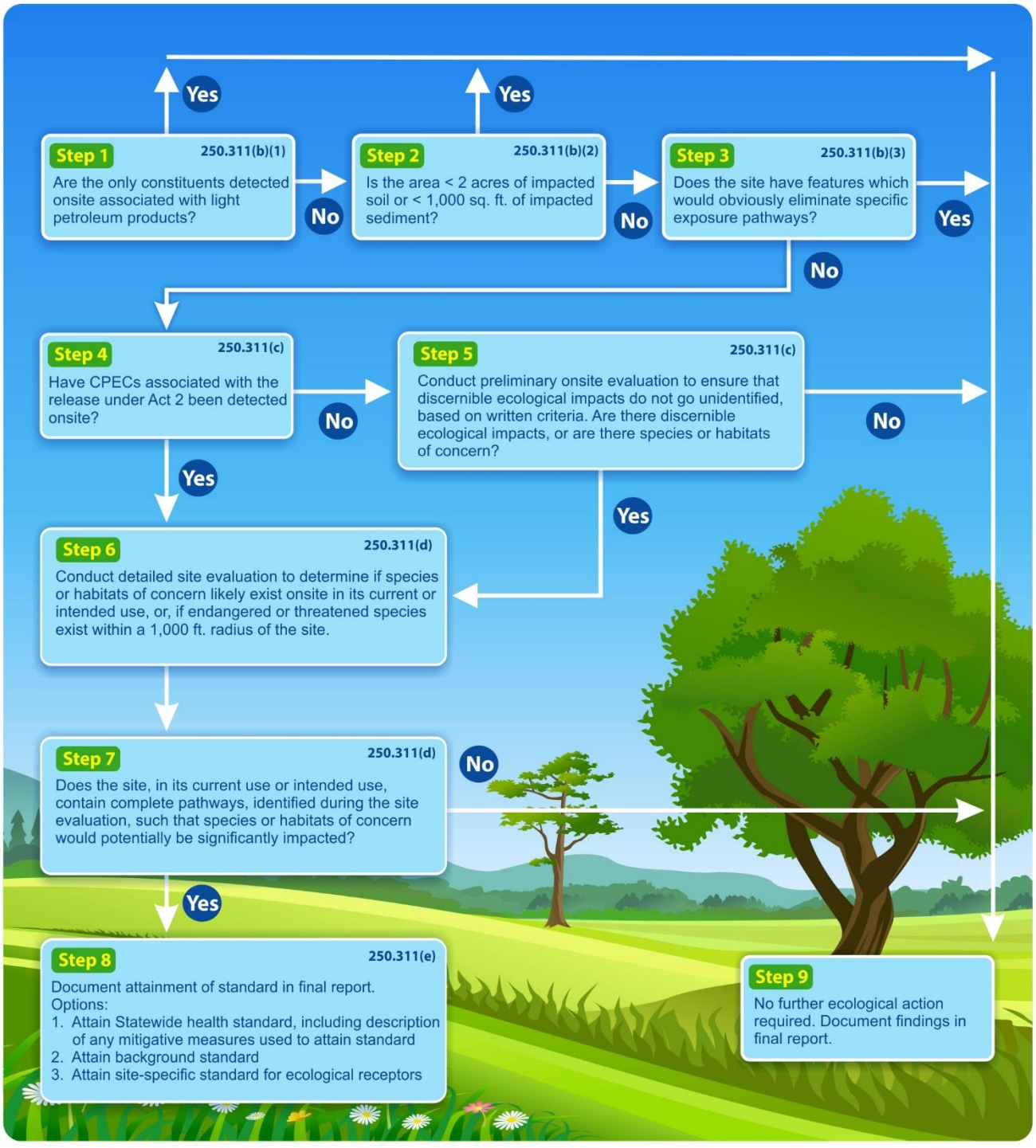
Figure II-15: Nonuse Aquifer Screening Area (Divergent Flow)



Legend

- Area in all cases in which criteria of 250.303(c)(1)(2) and (3) apply.
- Additional area in which criteria may apply based on characterization and fate and transport.
- Contamination source
- Property
- Point of Compliance Monitoring Well
- Groundwater contour

Figure II-16: Ecological Screening Decision Tree



Note: Figure must be used in conjunction with the text. Reference Section II.B.2.e)

Regardless of the outcome of the ecological screening, the results are documented in a written report. It is important to note that if all of the first three steps are not met, i.e., there is contamination other than light petroleum products; the impacted area of surface soil is equal to or greater than 2 acres, the impacted area of sediments is greater than or equal to 1000 square feet; and all pathways are not obviously eliminated, completion of the site ecological screening process requires an onsite evaluation. Using a streamlined set of guidelines, this onsite evaluation is a critical component of the means of identifying those sites that may pose substantial ecological impacts, and of documenting the lack of ecological impacts at other sites. Without such a site evaluation, a weight of evidence-based evaluation cannot be achieved, as required by EPA guidance (e.g., EPA's Framework for Ecological Risk Assessment, 1992) and ASTM standards (ASTM Designation: E1706-95). In addition, this screening procedure is consistent with the initial steps of EPA's ecological risk assessment guidelines for contaminated sites (U.S. EPA, 1997). The remainder of this section discusses each of the steps of the ecological screening procedure in more detail.

i) Step 1: Presence of Light Petroleum Product Constituents

The first step in the site ecological screening process is to determine whether the constituents present in surface soils (soils at a depth of up to two feet) or sediments are related only to light petroleum products (i.e., gasoline, jet fuel A, kerosene, #2 fuel oil/diesel fuel), which have relatively low polyaromatic hydrocarbon (PAH) content (American Society for Testing and Materials (ASTM) Designation: E1739-95). If light petroleum product constituents (including benzene, toluene, ethylbenzene, and xylenes (BTEX)) are the only constituents detected onsite, then the screening process moves to Step 9 (Final Report - No Further Ecological Evaluation Required). If constituents in addition to or other than light petroleum product constituents are present, the screening process continues to Step 2 (Site Size).

The purpose of this step is to eliminate from further evaluation those sites at which the only detected constituents are residual compounds from a release of light petroleum products. In general, remediation of light petroleum product release sites to prevent substantial ecological impacts is not required because the SHSs for these compounds are generally protective of ecological receptors.

ii) Step 2: Site Size

The second step in the ecological screening process is determining the area of exposed and contaminated surface soil (soils at a depth of up to two feet) and sediments that are of potential ecological concern. The minimum areas are 2 acres of exposed and contaminated surface soil, and 1,000 square feet of contaminated sediment.

Sediments are those mineral and organic materials situated beneath an aqueous layer for durations sufficient to permit development of benthic

assemblages. Indicators of benthic assemblages would include macroscopic algae, aquatic invertebrates, or aquatic plants. The aqueous layer may be static, as in lakes, ponds, or other water-covered surface depressions greater than or equal to 1,000 square feet but necessarily contiguous (excluding permitted open water management units), or flowing, as in rivers and streams located on a site (U.S. EPA, 1993b; U.S. EPA, 1991a).

If a site exceeds these specified minimum areas, then the screening process continues to Step 3 (Obvious Pathway Elimination). If the area of the site is smaller than the specified minimum areas, then the screening process moves to Step 9 (Final Report - No Further Ecological Evaluation Required).

iii) Step 3: Obvious Pathway Elimination

The third step accounts for those sites where features such as buildings, paving, or other development of the site are sufficiently extensive as to eliminate specific exposure pathways to ecological receptors. This primarily applies to sites in heavily industrialized or otherwise developed areas such that habitats or species of concern could not occur onsite or within a reasonable distance. Any site with features that obviously eliminate exposure pathways will drop out of the screening process at this point and proceed to Step 9 (Final Report - No Further Ecological Evaluation Required).

iv) Step 4: Presence of Constituents of Potential Ecological Concern

The fourth step in the ecological screening process is the determination of whether any of the constituents detected at the site and related to releases at the site are considered to be CPECs. CPECs are identified in Chapter 250, Table 8 of Appendix A..

In this and the following step, available site information would be reviewed to determine if CPECs are likely to have been released into the environment. If CPECs are not detected at the site, then the screening process continues to Step 5 (Preliminary Onsite Evaluation). If one or more CPECs, either individually or in combination, are detected at the site, then the screening process moves to Step 6 (Detailed Onsite Evaluation and Identification of Species and Habitats of Concern).

The ecological evaluation process that has been developed includes additional evaluation criteria for sites where CPECs are not found. Step 5 is an evaluation of adverse chemical effects that may result from regulated substances other than CPECs, and as such reduces the probability that substantive adverse environmental impacts will go undetected. Also, surface water regulations and standards will remain applicable to those sites, adding to the overall protection of the environment at any site, as

will other regulations applicable to species of concern, such as the Endangered Species Act.

v) Step 5: Preliminary Onsite Evaluation

Prior to performing onsite evaluations, it is recommended that remediators perform internet-based habitat and species of concern searches using online tools such as the Pennsylvania Natural Heritage Program's PNDI and the U.S. Fish and Wildlife Service's National Wetlands Inventory (NWI) mapper. The fifth step of the site ecological screening process is a preliminary onsite evaluation, to be conducted by a qualified environmental scientist (common practice would use a person with a bachelor's degree in an environmental science field and 5 years of experience in an environmental field), using the criteria presented in this guidance. If, after conducting the preliminary onsite evaluation, the qualified environmental scientist determines that substantial ecological impacts are not probable or evident based on the weight of evidence available for the site, the screening process moves to Step 9 (Final Report – No Further Ecological Evaluation Required). It must also document the presence of any endangered or threatened species within a radius of 2,500 ft. of the site or exceptional value wetlands onsite. If after conducting the preliminary onsite evaluation, the qualified environmental scientist determines that substantial ecological impacts or impacts requiring further evaluation are or may be present, the screening process continues to Step 6 (Detailed Onsite Evaluation and Identification of Species and Habitats of Concern).

The objective of the ecological evaluation conducted during the preliminary onsite evaluation is to ensure that ecological impacts resulting from regulated substances which are not CPECs are detected. The preliminary onsite evaluation involves three steps:

1. Review of readily available site information, including the operational history, chemicals used, and probable sources of releases of regulated substances; and, environmental setting with emphasis on physical, chemical and biological factors that would influence the nature and extent of contamination.

2. A preliminary onsite investigation to identify physical and habitat features of the area and to identify nearby reference areas without contamination (if available) that are outside of the probable site (area of contamination associated with a particular release). The following should be noted during the evaluation:

    - signs of stressed or dead vegetation (e.g., chlorotic vegetation),

    - discolored soil, sediment or water (i.e., a sheen),

- presence of non-native materials in sediments resulting from seeps or other discharges emanating from the subject site,
- presence of deformed organisms (if encountered),
- presence of exceptional value wetlands,
- presence of federally designated threatened or endangered species.

3. Preparation of a brief written summary of findings including sketches of the suspected area of contamination and reference areas. To the extent practicable, differences of greater than 50% in the density of species of concern or in the diversity and extent of habitats of concern shall be regarded as potentially substantive (Suter, et al., 1995; U.S. EPA, 1989). However, the presence of federally endangered or threatened species within a 2,500-ft. radius of the site or exceptional value wetlands onsite would trigger further evaluation.

Based on all of the information collected as part of the preliminary onsite evaluation, the investigator makes a determination as to whether substantial ecological impacts exist or are probable even though CPECs were not detected on the site. The conclusion, which documents the weight of evidence from the onsite evaluation, is summarized in bulleted format.

vi) Step 6: Detailed Onsite Evaluation and Identification of Species and Habitats of Concern

The sixth step in the ecological screening process is a detailed onsite evaluation and a determination of whether species or habitats of concern exist on the site or, for endangered and threatened species, if those species exist on the site or within a 2,500-foot radius of the border of the site in its current or intended use or if exceptional value wetlands exist onsite. Species of concern are identified in the PNDI on the PA DCNR webpage. If, during the detailed onsite evaluation, no species or habitats of concern are identified on the site, no threatened or endangered species exist within a 2,500-ft. radius of the border of the site, and no exceptional value wetlands occur onsite, the screening process moves to Step 9 (Final Report – No Further Ecological Evaluation Required). If species or habitats of concern are identified on the site, the screening process continues to Step 7 (Identification of Completed Exposure Pathways).

Identification of species and habitats of concern requires a detailed onsite evaluation. Common practice is to have a certified ecologist, or a trained environmental biologist perform this evaluation. At a minimum, the person conducting the detailed onsite evaluation should be a certified

ecologist or hold a college degree in ecology or environmental science and have at least 5 years of experience conducting ecological field work and risk assessments.

The objective of the detailed onsite evaluation is to identify species or habitats of concern and to make observations that will permit a determination of whether complete exposure pathways are present at the site, as required by Step 7 of the ecological screening process. If the detailed onsite evaluation is being conducted as the result of potential impacts being identified during a preliminary onsite evaluation, the information from the preliminary onsite evaluation may be used at this stage where the information requested duplicates efforts of the previous evaluation. However, depending on the nature of the particular site, it may be necessary to supplement this previously developed information. The detailed onsite evaluation has the following components:

1. Review of readily available site background information including:

    - operational history, chemicals used, and probable sources of releases of CPECs,

    - environmental setting with emphasis on physical, chemical and biological factors that would influence the nature and extent of contamination, and

    - readily available literature and other relevant documents related to recognition of species and habitats of concern, including endangered and threatened species.

2. The qualified investigator shall conduct the following evaluation:

    - complete an onsite investigation to identify physical and habitat features of the area, then identify nearby reference areas, if available, which are outside of the probable site (area of contamination associated with a particular property),

    - qualitatively evaluate whether species or habitats of concern are present at the site and in the reference area, and

    - in comparison to reference areas, the qualified investigator shall evaluate the following to the extent that they can be readily evaluated at a site:

        – signs of stressed or dead vegetation (e.g., chlorotic vegetation),

        – discolored soil, sediment, or water,

- presence of non-native materials in sediments resulting from seeps or other discharges emanating from the subject property,

- community composition differences readily distinguished by U.S. EPA protocols such as the Rapid Bioassessment procedures (U.S. EPA, 1989),

- absence of biota (especially keystone species and ecological dominants) compared with similar areas of the same system,

- presence of non-native or exotic species compared with reference areas (e.g., Phragmites),

- presence of deformed organisms (if encountered), and

- potential for residual contamination of habitats of concern and areas utilized by species of concern.

3. A brief written summary of findings including sketches of the suspected area of contamination and reference areas. Differences of greater than 20% in the density of species of concern or greater than 50% in the diversity or the extent of habitats of concern shall be regarded as potentially substantive (Suter, 1993; Suter, et al., 1995; U.S. EPA, 1989). However, the presence of exceptional value wetlands or federally designated endangered or threatened species would trigger further evaluation.

4. The site ecological screening process defines as species of concern those that have been designated as either of special concern, endangered, threatened or candidate by the Pennsylvania Game Commission, Pennsylvania Fish & Boat Commission, and the DCNR Bureau of Forestry. Links to current lists of such species are summarized on their respective webpages.

5. The ecological screening process defines as habitats of concern:

   - typical wetlands with identifiable function and value, except for exceptional value wetlands, as defined by DCNR,

   - breeding areas for species of concern,

   - migratory stopover areas for species of concern (e.g., migrant shorebirds, raptors or passerines),

- wintering areas for species of concern,
- habitat for State endangered plant and animal species,
- Federal, State, and local parks and wilderness areas,
- areas designated1 as wild, scenic, recreational, and
- areas otherwise designated as critical or of concern by the Pennsylvania Game Commission, Pennsylvania Fish & Boat Commission, and DCNR.

vii) Step 7: Identification of Completed Exposure Pathways

The seventh step in the ecological screening process is a determination of whether a completed exposure pathway from CPECs to species or habitats of concern exists at the site in its current or intended use. The existence of a completed exposure pathway[2] is determined during the detailed onsite evaluation, as described above for Step 6. Note that the CPECs in soil beneath a paved parking lot or below the root zone (top two feet) are not accessible to most species and habitats of concern, and therefore this pathway is classified as incomplete. If a complete pathway exists at the site, then the screening process moves to Step 8 (Attainment of Standard and Mitigative Measures). If no complete exposure pathways are identified during the detailed site evaluation, then the screening process continues to Step 9 (Final Report – No Further Ecological Evaluation Required).

viii) Step 8: Attainment of Standard and Mitigative Measures

If the results of Steps 1 through 7 above do not result in the site being eliminated from further ecological consideration, the person conducting the remediation must demonstrate one of the following:

- attainment of the SHS is protective of ecological receptors,
- if the remediator cannot demonstrate that the SHS MSCs are protective of ecological receptors, the person shall demonstrate either that the postremedy use will result in the elimination of all complete exposure pathways at the time of the final report, or in accordance with a postremediation care plan, or that mitigative measures have been implemented and a postremediation care program has been instituted,

[1] as defined by guidance.

[2] Exposure pathway - the course a regulated substance(s) takes from the source area(s) to an exposed organism of a species of concern including absorption or intake into the organism. Each complete exposure pathway must include a source or release from a source, a point of exposure, and an exposure route into the organism. The mere presence of a regulated substance in the proximity of a receptor does not constitute a completed pathway. The receptor of concern must contact the regulated substance in such a way that there is high probability that the chemical is absorbed into the organism (ASTM E1739-95; modified to accommodate provisions of Act 2).

- attainment of the background standard, or

- that the procedures of 25 Pa. Code § 250.402(c) and 250.409 and Sections II.B.3 and III.H. of this manual have been followed to demonstrate attainment of a site-specific standard for protection of ecological receptors.

Mitigative measures that may be used to demonstrate attainment of the SHS are identified in Section 25 Pa. Code 250.311(f). These mitigative measures may only be used if no exceptional value wetlands have been identified by the screening process, and no state or federal laws or regulations prohibit the destruction of the habitats or species identified in the screening process.

The following mitigative measures may be used, and in the indicated order of preference:

- Restoration onsite of species and habitats identified in the screening process.

- Replacement onsite of species and habitats identified in the screening process.

- Replacement on an area adjacent to the site of species and habitats identified in the screening process.

- Replacement at a location within the municipality where the site is located of species and habitats identified in the screening process.

The Department shall review and approve any proposed mitigative measures prior to implementation to ensure that the intended use of the site minimizes the impact to ecological receptors identified in the screening process. In addition, the postremediation care plan requirements in 25 Pa. Code § 250.312(e) or 250.411(f) and Section III.D of this manual must be implemented.

ix) Step 9: Final Report - No Further Ecological Evaluation Required

The ninth step of the ecological screening process requires that a report be written documenting the findings of the completed steps of the screening process, the basis for the conclusion that a substantial ecological impact does not exist, and that further ecological evaluation is not required. The conclusion that substantial ecological impact does not exist is based on one of the following:

- The presence of light petroleum-related constituents only (findings from Step 1).

- The area of impacted surface soil or sediment is less than the minimum size criterion (findings from Steps 1 and 2).

- All pathways are obviously eliminated by specific site features (findings from Steps 1 through 3).

- No CPECs are present onsite and the preliminary site evaluation indicates that substantial ecological impacts have not been overlooked (findings from Steps 1 through 5).

- No species or habitats of concern, threatened or endangered species, or exceptional value wetlands were identified on the site during the detailed site evaluation (findings from Steps 1 through 6).

- No complete exposure pathways from CPECs or other contaminants onsite to species or habitats of concern were identified during the detailed site evaluation (findings from Steps 1 through 7).

- Complete exposure pathways from CPECs or other contaminants onsite to species or habitats of concern were identified, but no significant impacts were observed during the detailed site evaluation.

f) Final Report Requirements for the Statewide Health Standard

To receive the liability protection afforded under Chapter 5 of Act 2 for sites remediated under the SHS, the remediator shall submit a final report to the Department which documents attainment of the standard. Section 250.312 of the regulations discusses final report requirements.

The final report shall be prepared in accordance with scientifically recognized principles, standards, and procedures. The report should present a thorough understanding of the site conditions. It should provide a detailed discussion on the areas for concern and a conceptual site model based on the results of the site work. The report should support interpretations and conclusions with data collected during all of the investigations at the site. The level of detail in the investigation and the methods selected shall sufficiently define the rate, extent and movement of contaminants to assure continued attainment of the remediation standard. All interpretations of geologic and hydrogeologic data shall be prepared by a professional geologist licensed in Pennsylvania.

Two copies of the final report should be submitted to the Department for review. One should be a paper copy, and the other copy may be submitted in another format (CD, flash drive, etc.). The final report must include the information in Table II-2, and the organization shown in the following outline is preferred:

Table II-2: Suggested Outline for a Final Report under the Statewide Health Standard

I. Final Report Summary

The final report summary should be a copy of the electronic form submitted to the Department.

II. Site Description

Describe the site in sufficient detail to give an overall view of the site (Section II.B.2(f)(ii)).

III. Site Characterization

Document current conditions at the site (§ 250.204 of the regulations and Section II.B.2(f)(iii)).

IV. Statewide Health Standard

Describe how the SHS was established (Section II.B.2(f)(iv)).

V. Ecological Screening

Provide the results of the Ecological Screen described in § 250.311 of the regulations and Section II.B.2(e).

VI. Remediation

Describe the remedial methodologies used to attain the selected standard (Section II.B.2(f)(vi)).

VII. Attainment

A. Soil SHS

B. Groundwater SHS

C. Diffuse groundwater flow into surface water

D. Spring flow into surface water

Sections A, B, C and D describe the statistical methods used to demonstrate attainment of the standard (Section II.B.2(f)(vii)).

VIII. Fate and Transport Analysis

Describe the Fate and Transport analyses used and results and conclusions (Section II.B.2(f)(viii)).

IX. Postremediation Care Plan

This section is included only if necessary. It describes the engineering and institutional controls necessary to attain or maintain the standard (Section II.B.2(f)(ix)).

X. References

(Section II.B.2(f)(x))

XI. Attachments

(Section II.B.2(f)(xi))

XII. Signatures

(Section II.B.2(f)(xii))

i) Summary

The Final Report Summary form is to be filled in and submitted to the Department electronically. The summary submitted with the final report should be a copy of that completed electronic form.

ii) Site Description

Provide a description of the site in sufficient detail to give the reviewer an overall understanding of the site and its location and the types of operations that are currently and were formerly conducted on the site. The description should include location, physical description of the property, ownership history, site use history, and regulatory action history (past cleanups) as appropriate to the site.

iii) Site Characterization

The site characterization provides important information documenting the current conditions at the site, information required by 25 Pa. Code § 250.312, and information required for the proper demonstration of attainment. Information developed during site characterization is primarily intended to describe the nature, extent and potential for movement of all contaminants present on the site or that may have migrated from the site; the information is also used as input for developing a conceptual site model and for the fate and transport analysis. For sites where there are multiple distinct areas of contamination, the site characterization process should be applied to each area individually.

Along with a narrative, the results from the site characterization and all sampling and analysis work should be provided on map(s) illustrating, to the extent possible, the interrelationship of the following:

- All physical site characteristics.
- All groundwater, soil, sediment and other sample locations, including sample depth and contaminant concentration.
- The surveyed locations for all assessment structures (monitoring wells, soil borings, test pits, etc.). All elevations should be reported in reference to mean sea level (msl), where practical.
- Appropriate number of stratigraphic cross sections that adequately depict site stratigraphy, well locations, well depths, groundwater flow directions, equipotential lines, flow lines, hydraulic conductivity intervals and values, sampling intervals and concentrations. All elevations should be reported in reference to msl, where practical.

- Variation in potentiometric surfaces(s), potentiometric surface map(s), hydraulic gradients, and groundwater flow directions.

- All identified sources of releases.

- The extent and concentrations of contaminant plumes in all media. The horizontal and vertical extent of contaminant plumes including density and thickness of any SPL present.

- Top of bedrock contour (if encountered).

A conceptual site model should be developed and refined as information is gathered during the site characterization. The conceptual site model provides a description of the site and extent of contamination. Recommended information and data used to develop the site model include:

- The type, estimated volume, composition, and nature of the released materials, chemicals or chemical compounds (include all calculations and assumptions).

- Source(s) and extent of release(s).

- Background concentrations for constituents of concern.

- The horizontal and vertical extent of contamination.

- The portion of the horizontal and vertical extent of contamination which exceeds the selected standard.

- Affected aquifer(s) or water bearing formation(s)/member(s), hydrostratigraphic units.

- All existing and potential migration pathways.

- The estimated volume of contaminated soil and water (include all calculations and any assumptions).

For soils, include information on samples and measurements used to characterize the horizontal and vertical extent of contamination, and direction and rate of contaminant movement based on factors in the soil and the contaminant which affect migration. Soil and boring descriptions should be included as an attachment.

For groundwater, include information on samples and measurements used to characterize the horizontal and vertical extent of contamination and direction and velocity of contaminant movement based on factors of the groundwater and the contaminant(s) which affect migration. Geologic

boring descriptions and as-built drawings of wells should be included as an attachment. Text, tables, graphics, figures, maps, and cross sections, as appropriate, can be utilized to describe the nature, location, and composition of the regulated substances at the site. Providing the data in an appropriate format will expedite the review of the report.

iv) Selection of the Applicable Statewide Health Standard

Documentation of the basis for selecting residential or nonresidential standards and for selecting the applicable MSCs according to the procedure in Section II.B.2(c) of this manual should be included in this section of the final report.

If the site is in an area where groundwater is not used or planned to be used for drinking water or agricultural purposes, provide the following documentation:

- That no groundwater derived from wells or springs is used or currently planned to be used for drinking water or agricultural purposes.

- That all downgradient properties are connected to a community water system.

- That the nonuse area does not intersect a radius of 0.5 mile from a community water supply well and does not intersect an area designated by the Department as a Zone 2 wellhead protection area as established under Chapter 109.

- Results of the fate and transport analysis used to establish the nonuse area.

- A copy of the letter from the Department approving the use of the nonuse aquifer MSCs, as described in Section II.B.2(d) of this manual.

If the soil buffer option is used to meet the requirements of the soil to groundwater numeric value, submit the following:

- Information demonstrating that the actual site soil column thickness below the contaminated soil is at least the thickness identified in Tables 3B and 4B of Appendix A to the regulations. This information should be taken from soil sample borings conducted during the site characterization.

- Laboratory analyses demonstrating that the contaminant concentrations in the entire soil column below the contaminated zone do not exceed either the limit related to the PQL or background.

- The boring logs and all other data presented in appropriate maps, cross sections, figures, and tables.

If an equivalency demonstration is used to meet the requirements of the soil-to-groundwater numeric value, submit the following:

- Information describing the actual site soil column below the contaminated soil. This information should be taken from soil sample borings conducted during the site characterization.

- Information, including laboratory analyses, gathered during the site characterization that demonstrates that the groundwater is not impacted at levels exceeding either the groundwater MSC or background.

- The boring logs and all other data presented in appropriate maps, cross sections, figures, and tables.

- Sampling data, in a tabular format, that shows no exceedance for eight quarters of groundwater MSCs or the background standard, in accordance with 25 Pa. Code § 250.308(d)(2).

- Results of the fate and transport analysis that demonstrate that the regulated substance(s) will not migrate to bedrock or the groundwater within 30 years at concentrations exceeding the greater of the groundwater MSC or background in groundwater as the end point in soil pore water directly under the site.

v) Ecological Screening

Provide documentation of the implementation of the ecological screen described in 25 Pa. Code § 250.311 and Section II.B.2(e) of this manual.

vi) Remediation

Remediation should be planned to remediate all areas to the selected standard.

Provide a description of the remedial methodologies used to remediate that portion of the contamination which exceeds the selected standard as determined by the site characterization. Examples of the types of information typically included in this section include:

- Identification of areas remediated based on results of site characterization.

- Descriptions of treatment, removal, or decontamination procedures performed in remediation. Description of removal, what was

removed, and amount removed. Results of any treatability, bench scale, or pilot scale studies or other data collected to support the remedial action(s).

- Description of treatment technologies.

- Description of the methodology and analytical results used to direct the remediation and determine the cessation of remediation. This description should document how the remediator determined that remediation was performed to address all areas known to exceed the standard.

- Documentation of handling of remediation wastes in accordance with applicable regulations.

- Specific characteristics of the site that affected the implementation or effectiveness of the remedial action including such characteristics as topography, geology, depth of bedrock, potentiometric surfaces, and the existence of utilities.

- All other site information relevant to the conceptual design, construction, or operation of the remedial action.

In addition to the above, this section should also include the calculation of the mass of contaminants addressed during the remediation of soil and/or groundwater, using the methodology in Section III.C.

Remediation of surface water will typically be accomplished by eliminating or reducing the discharge of regulated substances into surface water to the level where surface water quality standards are being achieved. Given that the usual source of regulated substance discharge to surface water will be via non-point source groundwater discharge, the measures necessary to attain the surface water standard should be incorporated into the design of any groundwater remediation system.

Abatement of air quality discharges associated with the remediation (e.g., vapor discharges from air stripping towers) shall be handled in accordance with the applicable air quality statutes and regulations.

During the implementation of any remediation plan, appropriate record keeping must be performed to provide ample documentation of the remedial actions taken, any changes made from the preplanned activities, and any sampling performed as field controls during implementation.

vii) Attainment

Provide documentation that the remediation has attained the selected standard at the POC and that the standard will not be violated in the future as a result of remaining contamination. The demonstration of attainment,

like the site characterization, should be applied to each distinct area of contamination. Attainment must meet the requirements of Chapter 250 Subchapter G (Demonstration of Attainment).

If the Statewide health standard is numerically less than the background standard, the remediator may elect the background standard, and attainment of the background standard should be demonstrated according to Section 302 of Act 2.

(a) Point of Compliance

(i) Groundwater

The POC for groundwater under SHS is the property boundary. Under certain circumstances the POC may be moved, as described below. Prior approval from the Department to move the POC is required.

The remediator may request the movement of the POC for situations described in § 250.302(a) of the regulations. If any of those conditions exist, the remediator must request, in writing, that the Department approve moving the POC. The Department will respond in writing to the request, and the response must be obtained before the adjusted POC may be used and the final report submitted.

For substances with a Secondary Maximum Contaminant Level (SMCL) established by EPA under the National Secondary Drinking Water Regulations, the remediator may request that the POC be moved for those substances with SMCLs. The Department will consider moving the POC in a range anywhere from the property boundary up to the point of use. Therefore, demonstration of attainment at a site may involve POCs for SMCLs which are different from the POCs applicable to the other identified regulated substances.

(ii) Soil

The POC for soil is the entire area of contamination. Demonstration of attainment of the appropriate standard is to be made in the entire volume shown in the site characterization to be contaminated by regulated substances at concentrations exceeding the SHS. Some sites may have different SHS values for varying depths or conditions of soil. For example, on a nonresidential site, if the soil-to-groundwater numeric value is lower than the direct contact number, there may be one standard for the 0-2 foot interval, another for the 2-15 foot interval, and a third for the soil at

depths greater than 15 feet. In addition, if any of these depths are in the periodically saturated zone, the appropriate standard may be different because of the requirement for reducing the generic value of the soil-to-groundwater numeric value by a factor of 10 (see Section II.B.2(c)(ii)(a)). For the purpose of demonstrating attainment, the saturated zone is considered to extend below the seasonal high water table level.

(iii) Spring flow into surface water

Unless an NPDES permit is required for purposes of complying with surface water quality in a spring, the POC is the point of first designated or existing use as defined in 25 Pa. Code §§ 93.1, 93.4, and 93.9. This could mean right by the spring itself or some point downstream from the spring discharge. Determining the point of first designated use is necessary because it establishes the point where Chapter 93 water quality standards apply.

Technical guidance to determine point of first use is found in *Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers,* DEP document # 391-2000-014, revised April 2008. In essence this guidance relies on biological techniques to determine the first downstream point where aquatic life can be documented. It applies to both perennial and intermittent streams with definable bed and banks, but not to ephemeral streams, that is, areas of overland runoff which occur only during or immediately following rainfall events and where there is no defined stream channel and stream substrate.

(b) Statistical Tests

Attainment tests appropriate for SHS are described in 25 Pa. Code § 250.707(b) and in Section III.B of this manual and include:

- The 75%/10x rule for soil and groundwater at the POC, and the 75%/2x rule for groundwater off the property.
- For groundwater, no exceedance of SHS.
- The 95% upper confidence limit (UCL) test.
- For sites that are remediated without prior full site characterization, a “no exceedance” of SHS.

- A method that meets the performance requirements of 25 Pa. Code § 250.707(d).

If the 75%/10x rule is not used, appropriate statistical tests must be employed to demonstrate attainment of SHS. The following information should be documented in a final report:

- Description of the statistical method, and the underlying assumptions of the method.

- Documentation showing that the sample data set meets the underlying assumptions of the method and explaining why the method is appropriate to apply to the data.

- Specification of false positive rates.

- Documentation of input and output data for the statistical test, presented in table and figures, or both, as appropriate; and identify, by media, contamination levels remaining onsite.

- An interpretation and conclusion of the statistical test.

In addition to the attainment tests described above, the remediator must demonstrate, for groundwater remediated to the SHS, that the standard has been attained and that it will continue to be attained in the future as indicated by a fate and transport analysis.

In demonstrating attainment of SHS, concentrations of regulated substances are not required to be less than the limit related to the PQL for that substance as provided for in 25 Pa. Code § 250.4 and 250.701(c) and as listed in Section III.F of this manual. Where the plume of contamination currently impacts or may impact properties with different land use categories (i.e., residential and nonresidential), the SHS appropriate for the impacted property must be attained and maintained. For example, where a plume of contamination emanating from a nonresidential property adjoins a residential property that will be impacted by the plume, the nonresidential SHS must be attained and maintained at the downgradient boundary of the nonresidential property (see 25 Pa. Code § 250.702), and the residential SHS applies at the residential property. Demonstration that the appropriate standard will be attained and maintained must be demonstrated by a combination of sampling and fate and transport analysis.

In demonstrating attainment of the SHS in groundwater in aquifers not currently used or planned to be used, the remediator must show that the nonuse aquifer MSC has been met at the POC using the appropriate tests for demonstrating attainment described in 25 Pa.

Code § 250.707(b)(2) and further described in Section III.B of this manual. In addition, the requirements of 25 Pa. Code § 250.705 must be met regarding the use of a fate and transport analysis to show that the MSC for groundwater in aquifers used or currently planned to be used will not be exceeded at and beyond all points on a radius of 1,000 feet downgradient from the property boundary within 30 years. This fate and transport analysis should meet the requirements specified in Section III.A of this manual.

(i) 75%/10x rule

The 75%/10x rule is a statistical ad hoc rule that determines if the true site median concentration is below the cleanup standard. This rule requires that 75% of the samples collected for demonstration of attainment be equal to or below the cleanup standard and that no single sample result exceeds the standard by more than ten times.

For the 75%/10x rule, the number of soil sample points required for each distinct area of contamination is specified in the Act 2 regulations and is as follows:

- For soil volumes equal to or less than 125 cubic yards, at least eight samples.
- For soil volumes up to 3,000 cubic yards, at least 12 sample points.
- For each additional volume of up to 3,000 cubic yards, an additional 12 sample points.
- Additional sampling points may be required based on site-specific conditions.

These soil volumes may be comprised of zones where different MSCs apply (e.g., depths of 0-15 feet and greater than 15 feet). For purposes of demonstrating attainment, the analysis of samples, based on their physical location by the systematic random sampling method (Section III.B), must be compared to the applicable MSC for that physical location.

To use this rule for demonstrating attainment of groundwater MSCs, eight samples from each compliance well must be obtained during eight consecutive quarters. If a shorter sampling period is to be used, there must be written approval (preapproval is recommended) from the Department and the no exceedance rule 25 Pa. Code § 250.704(d)(3) must be used rather than the 75%/10x rule.

In groundwater monitoring wells beyond the property boundary, the rule is slightly modified. The attainment criteria are that 75% of the sampling results must be below the standard, with no individual value being more than 2 times the standard (75%/2x rule). This rule would have to be met in each individual monitoring well.

(ii) 95% UCL rule

The minimum number of samples is as specified in Section III.B of this manual.

(iii) No exceedance rule

Per § 250.707(b)(1)(iii) of the regulations: for sites with a release of petroleum products, soil remediation is often conducted based on visual observations or field screening without having conducted a full site characterization. These sites may demonstrate attainment of the SHS using the procedure described in Section III.B.5(b)(i)(c) of this Manual.

viii) Fate and Transport Analysis

The Fate and Transport Section (Section III.A of this manual) provides a discussion on fate and transport analysis. The amount of detail in the fate and transport analysis may vary from a simple description to a very extensive detailed model with quantitative modeling. Whenever a model is used, the Department must be provided with the assumptions, data, and information on the model necessary for Department staff to evaluate and run the model. Any parameters used in the analysis or models used should utilize data obtained from the site during the site characterization.

Following are examples of situations when the SHS will require a fate and transport analysis/model:

- The demonstration of attainment of a standard at the POC includes a fate and transport analysis to show that the standard will not be violated in the future.

- In an area where the groundwater is not used for drinking water or agricultural purposes, a fate and transport analysis is required to show that the used aquifer MSCs are not exceeded at and beyond a radius of 1,000 feet downgradient from the property boundary within 30 years.

- In using the equivalency demonstration to meet the soil-to-groundwater numeric value, a fate and transport analysis is

required to show that soils remediated to the direct contact numeric value will not result in regulated substances migrating to groundwater at concentrations exceeding either the groundwater MSC or background.

ix) Postremediation Care Plan (if applicable)

A postremediation care plan (PRCP), which includes the information required by 25 Pa. Code § 250.204(g), must be documented in the final report in accordance with that section of the regulations if:
(1) engineering controls are needed to attain or maintain the SHS;
(2) institutional controls are needed to maintain the standard; (3) a nonuse aquifer designation has been approved for the site; (4) the fate and transport analysis indicates that the remediation standard, including the solubility limitation, may be exceeded at the POC in the future; (5) the remediation relies on natural attenuation; (6) a postremedy use is relied upon but is not implemented to eliminate complete exposure pathways to ecological receptors; or (7) mitigative measures are used. The PRCP must comply with the applicable deed acknowledgment requirements under SWMA or HSCA, Section 304(m) of Act 2, as well as the requirements of 25 Pa. Code Chapter 253 regarding the application of environmental covenants. Section III.D of this manual provides additional information regarding the application of covenants and deed notices. The plan typically should include:

- Reporting of any instance of nonattainment.
- Reporting of any measures to correct nonattainment conditions.
- Periodic reporting of monitoring, sampling and analysis as required by the Department.
- Maintenance of records at the property where the remediation is being conducted for monitoring, sampling and analysis.
- A schedule for operation and maintenance of the controls and submission of any proposed changes.

If the postremediation care plan is being used to document the continuing applicability of an approved nonuse aquifer designation, the following are required:

- Procedures for documenting that the nonuse criteria continue to be met after the original request is approved.
- Report details and schedule for submittal to the Department.

See Section III.D for the range of institutional controls available to a remediator.

The Department may ask for documentation of financial ability to implement the remedy and to maintain the postremediation care controls. Except for the special case of a nonuse aquifer designation under 25 Pa. Code § 250.303 (c) and (d), when the standard can be maintained without the controls operating, and the fate and transport analysis shows that the standard will not be exceeded in the future, the Department will approve termination of the postremediation care program.

Some remediators choose to use soil management plans (SMPs) and groundwater management plans (GWMPs) in place of PRCPs. This practice can be problematic because PRCPs are intended to be a plan to care for and maintain a remedy which utilizes engineering or institutional controls, while SMPs/GWMPs are often intended to address changes to a remedy that may occur at some point in the future. These plans are based on current waste management or water quality regulations or guidance. The Department cannot grant pre-approval of future soil or groundwater management plans since those guidances or regulations may change at some point in the future, therefore invalidating the SMP or GWMP.

Remediators should avoid using SMPs and GWMPs in place of PRCPs. They should instead have the PRCP and the environmental covenant address how to handle potential changes to a remedy. Any planned change to a remedy would require the approval of the Department at the time of the proposed change.

x) References

Any references cited in the final report.

xi) Attachments

Attachments may include but are not limited to:

- Tables – monitoring well construction summary, groundwater gauging data (including elevation and NAPL thicknesses), analytical data, historical data.
- Figures – including groundwater elevation maps, extent of NAPL, concentration data for soil/groundwater/surface water/vapor or indoor air, cross-sections.
- Monitoring well construction diagrams, boring logs, stratigraphic logs, including soil/rock characteristics.
- Sampling and analysis plan(s).
- QA and QC Plan.

- Ecological survey documentation (from PNDI).
- Well search documentation (from Pa. Geographic Information Systems Mapping Tools (PaGIS).
- Field data sheets, such as low flow purging monitoring.
- Statistical worksheets, software outputs, graphs; modeling inputs/outputs.
- Disposal documentation of soil/groundwater.
- Remediation system operation, maintenance, monitoring data; mass removal estimates.
- Before and after remediation photographs.
- Copy of municipal notification, reasonable proof of newspaper notice publication.
- Laboratory reports and any voluminous attachments may be enclosed on a CD.

xii) Signatures

If any portions of the submitted report were prepared or reviewed by or under the responsible charge of a registered professional geologist or engineer, the professional geologist or engineer in charge must sign and seal the report.

g) References

ASTM Designation: E 1706-05. Standard Test Methods for Measuring the Toxicity of Sediment-Associated Contaminants with Fresh Water Invertebrates. Section 5.1.7.

ASTM Designation: E 1739-95. Standard Guide for Risk-Based Corrective Action Applied at Petroleum Release Sites.

Feenstra, S., D.M. Mackay, and J.A. Cherry. 1991. A Method for Assessing Residual NAPL Based on Organic Chemical Concentrations in Soil Samples. GWMR. Spring.

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Suter II, G.W., B.W. Cornaby, C.T. Haddne, R.N. Hull, M. Stack, and F.A. Zafran. 1995. An Approach for Balancing Health and Ecological Risks at Hazardous Waste Sites. Risk Analysis 15(2).

U.S. EPA. 1999. Rapid Bioassessment Protocols for Use in Streams and Wadeable Rivers: Periphyton, Benthic Macroinvertebrates, and Fish Second Edition. Office of Water. EPA 841-B-99-002.

U.S. EPA. 1991a. Compendium of ERT Surface Water and Sediment Sampling Procedures. EPA/540/P-91/005.

U.S. EPA. 1991b. Risk Assessment Guidance for Superfund: Volume I, Human Health Evaluation manual, Part B: Development of Risk-based Preliminary Remediation Goals. Office of Emergency and Remedial Response. Publication no. 9285.7-01B.

U.S. EPA. 1998. Guidelines for Ecological Risk Assessment. Risk Assessment Forum. EPA/630/R-95/002F.

U.S. EPA. 1993a. Wildlife Exposure Factors Handbook. Office of Research and Development. EPA/600/R-93/187.

U.S. EPA. 1993b. Sediment Quality Criteria for the Protection of Benthic Organisms: Acenaphthene. EPA-822-R-93-013.

U.S. EPA. 1994b. BTAG Forum. EPA/540/F-94/048.

U.S. EPA. 1996. Ecotox Thresholds. Eco Update vol. 3, no. 2. EPA 540/F-95/038. January.

U.S. EPA. 1997. Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments. EPA/540-R-97-006. PB97-963211. June 16, 1997.

Wild Resource Conservation Fund. 1995. Endangered and Threatened Species of Pennsylvania. Published in cooperation with Pennsylvania Game Commission, Pennsylvania Fish & Boat Commission, and Bureau of Forestry.

3. Site-Specific Standard

a) Introduction

The objective of the site-specific standard is to develop and evaluate detailed site information using a rigorous scientific evaluation of a remedy to provide a protective cleanup standard unique to that site. Use of this standard requires the Department's review and approval (as required by statute) of the remedial investigation report, risk assessment report (if necessary), cleanup plan (if necessary) and final report. The relationship of these steps in the site-specific assessment process is illustrated in Figure II-17. The remedial investigation report, risk assessment report, and cleanup plan may be submitted at the same time. In some cases, only a remedial investigation report and final report are required, and these can be combined (see Section II.B.3.g of this manual). In

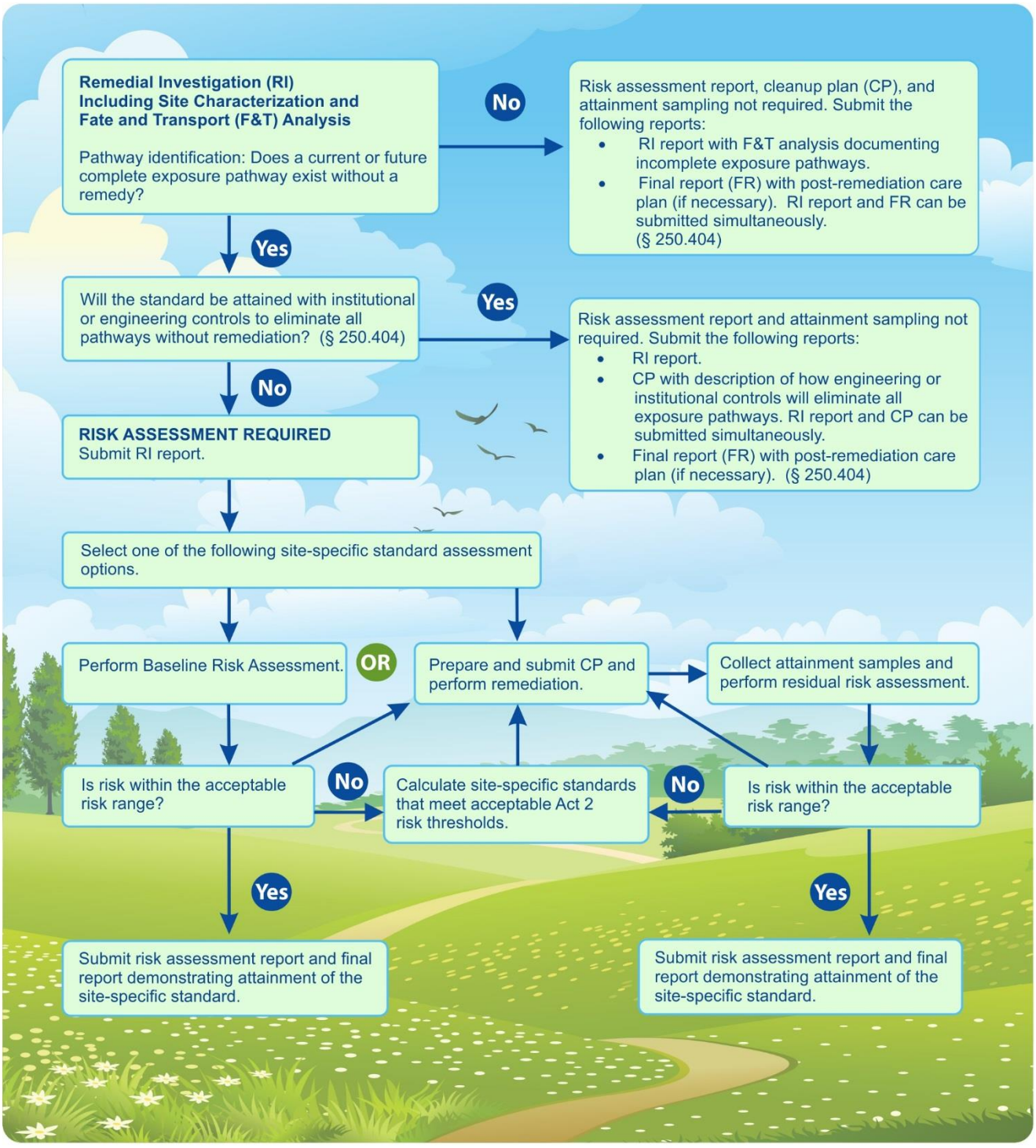
other cases (such as simple pathway elimination of all present and future exposure pathways), the risk assessment report and cleanup plan can be simplified. Note that if one part of a combined report is disapproved, then all other parts of the combined report that depend on the disapproved part will also require re-submittal, with new notices and payment of fees. For example, if a cleanup plan is disapproved, then the cleanup plan and final report must be re-submitted. However, if one part of a combined report is deficient, the remediator may have a chance to correct the deficiency in a prescribed timeframe to avoid re-submittal of notices and payment of fees.

All pathways of exposure are evaluated and the past, current, and future use of the land is considered. The resulting cleanup remedy selected to meet site-specific soil and groundwater standards may be a combination of treatment/removal efforts and engineering and institutional controls. The extent to which treatment and removal efforts are balanced with engineering and institutional controls is determined by the factors used in remedy selection. These factors are described in Section 304(j) of Act 2.

Remediators utilizing the site-specific standards must comply with the applicable deed acknowledgment requirements under the SWMA or HSCA (35 P.S. § 6026.304(m)), notice and review (35 P.S. § 6026.304(n)), and community involvement requirements (35 P.S. § 6026.304(o)) of Act 2 as well as the requirements of 25 Pa. Code Chapter 253 regarding the application of environmental covenants. Section III.D of this manual provides additional information regarding the application of covenants and deed notices.

The site-specific standard is a risk management approach. It offers more flexibility to the person than background or Statewide health standards because detailed site-specific information is collected for the evaluation. The guidance contained in Section II.A.2 of this manual provides a structure and process for this data collection or remedial investigation. The additional information does involve more time and effort to collect, and additional reviews are required by the Department under Act 2. This approach differs in that full and total use of the site may not be possible to the extent that specific land uses were presumed and engineering and institutional controls are used in the final remedy. The site-specific standard approach addresses future use limitations by environmental covenant. Also, use of the site-specific standard requires public involvement if the municipality requests to be involved in the remediation.

Figure II-17: Site-Specific Assessment Decision Tree



Note: Figure must be used in conjunction with the text. Reference Section II.B.3.

In determining soil and groundwater standards, consideration should be given to appropriate exposure factors to receptors based on land use of the site, the effectiveness of institutional or other controls placed on the future land use, potential pathways for human exposure, and appropriate statistical techniques.

b) Process Checklist for the Site-Specific Standard

A checklist for the site-specific standard is provided below and can be used to ensure administrative completeness.

☐ Submit an NIR for the site-specific standard to the Department. Also send a copy of the NIR to the municipality, publish a summary of the notice in a newspaper of general circulation serving the area in which the site is located, and provide reasonable proof of publication to the Department. Procedures are in Section II.A.3 of this manual.

☐ Notify the municipality, publish a notice in a local newspaper, and provide proof of submittal to the Department each time a remedial investigation report, risk assessment report, cleanup plan or final report is submitted to the Department. Procedures are in Section II.A.3 of this manual.

☐ Prepare and submit public involvement plan if requested by municipality. Procedures are in Section II.A.3 of this manual.

☐ Begin the remedial investigation. See Sections II.B.3(c) and II.A.4 of this manual for guidance.

☐ As an option, begin using the completeness list (see LRP web page) to help verify that all requirements have been met.

☐ Prepare and submit a remedial investigation report which includes fate and transport analysis to determine if any exposure pathways including vapor intrusion (Section IV of this manual) exist at the site. A fee of $250 is required. Reporting requirements are established by 25 Pa. Code § 250.404 and 250.408 and are described in Section II.B.3.g of this manual.

☐ Prepare and submit a risk assessment report (baseline risk assessment report and/or risk assessment report to develop site-specific standards) along with a fee of $250 to the Department. A baseline risk assessment report is not required if the Department, in its remedial investigation report or cleanup plan approval, determines that a specific remedial alternative that eliminates all pathways can be implemented to attain the site-specific standard (25 Pa. Code § 250.405(c)). A simplified risk assessment describing how the pathways are eliminated by the remedial alternative should be included in the remedial investigation report. This does not include a no-action remedial alternative. A baseline risk assessment report

is not required if no present or future exposure pathways exist, as documented by a fate and transport analysis. Risk assessment requirements are established by 25 Pa. Code §§ 250.402-407 and 250.409 and Subchapter F. Guidance is provided in Sections III.G and III.H of this manual. Reporting requirements are described in Section II.B.3(g)(v) of this manual.

☐ Prepare a cleanup plan. A cleanup plan is not required if no present or future exposure pathways exist. The cleanup plan is also not required if the approved baseline risk assessment report indicates that the site does not pose unacceptable risks to human health and the environment under current and planned future conditions. Cleanup plan requirements are established by Section 304(j) and (l)(3) of the Act and 25 Pa. Code § 250.410. Guidance on the cleanup plan is provided in Section II.B.3(g)(ii) of this manual.

☐ Submit the cleanup plan, if required, and a fee of $250.

☐ Remediate the site to the site-specific standard in accordance with the approved cleanup plan. A remedy is not required if no present or future exposure pathways exist.

☐ Establish attainment of the site-specific standard in accordance with the requirements in Chapter 250, Subchapter G, of the regulations. Guidance is provided in Sections II.B.3(g) and III.B of this manual.

☐ Calculate the mass of contaminants remediated using the procedure in Section III.C of this manual.

☐ Complete the Final Report Summary and submit electronically as instructed on the LRP web page.

☐ Submit final report, along with the optional completeness list (if used), and a fee of $500 to the Department. Include information in 25 Pa. Code §§ 250.411 and 250.204(f)(1)-(5). Include postremediation care plan in accordance with § 250.204(g) as appropriate. Document cooperation of third parties where access is needed for remediation or monitoring. Reporting requirements for the final report are described in Section II.B.3(g) of this manual.

☐ Upon the Department's approval of the final report demonstrating compliance with substantive and procedural requirements of the site-specific standard, the site is automatically afforded the liability protection as outlined in Chapter 5 of Act 2.

☐ If engineering controls are used and postremediation care is needed to maintain the standard; if fate and transport analysis indicates the standard may be exceeded at the POC in the future; if remediation relies on natural

attenuation; or if mitigation measures are implemented in accordance with 25 Pa. Code § 250.311(f), continue with the postremediation care program detailed in the final report. If areas of the source property were shown to have no current or future complete exposure pathway, the postremediation controls described in Section III.D are needed.

☐ Submit an environmental covenant, if applicable, to the Department.

☐ When the site-specific standard can be maintained without engineering controls operating and mitigation measures have been successfully sustained, document this to the Department and receive approval to end the postremediation care program.

c) Site Investigation

The principal objectives of an investigation under the site-specific standard are to characterize the nature, extent, direction, volume and composition of regulated substances that have been released and to obtain detailed site information, including identification of exposure pathways, in order to develop a protective cleanup standard unique to that site.

Important tasks during the site investigation include site characterization and pathway identification. The development of a conceptual site model and identification of contaminants of concern are also important steps in the site investigation process. This section provides specific information and procedures regarding site characterization and pathway identification. At the conclusion of the site investigation, a remedial investigation report should be submitted to the Department for review and approval (35 P.S. § 6026.304(l)(1)). Section II.A.4 of this manual describes specific information required to be included in the remedial investigation report.

i) Site Characterization

The site characterization should be conducted in accordance with scientifically recognized principles, standards, and procedures. The level of detail in the investigation needs to sufficiently characterize the nature, extent, and composition of the regulated substances that have been released. The determination of the site conditions will be used to select the remedy used to clean up the site. All interpretations of geologic and hydrogeologic data should be prepared by a professional geologist licensed in Pennsylvania.

Methodologies presented in Section II.A.4 of this manual should be followed while conducting the site investigation. When evaluating the nonpoint source groundwater discharge to surface water, a person may consult EPA guidances in "A Review of Methods for Assessing Nonpoint Source Contaminated Ground-Water Discharge to Surface Water, EPA 570/9-91-010, April 1991," and "Handbook: Stream Sampling for Waste Load Allocation Applications. EPA/625/6-86/013." Section III.A.3 of

this manual provides guidance to evaluate impacts on surface water from diffuse flow of contaminated groundwater.

As directed from specific knowledge of the subject property, including historic use or chemical usage information, and based upon the guidance in Section II.A.4 of this manual, an appropriate number of sample locations should be investigated. These sample locations should be from the identified media of concern in order to characterize the nature and composition of the contaminants, including the characterization of the source of the regulated substances. This will allow for development of a conceptual site model taking into account the vertical and horizontal extent of contamination; the direction, rate, extent and fate of contaminant movement within each medium of concern; and to identify the appropriate remedial technology options for each medium of concern.

When determining the relative location of soil or groundwater samples necessary to characterize the horizontal and vertical extent of contamination, factors such as hydraulic conductivity of the soils, heterogeneity of the soils, and the nature of the contaminants should be considered.

If groundwater is determined to be a medium of concern, adequate characterization of the effects of a release on groundwater will require a hydrogeologic study (as summarized in 25 Pa. Code § 250.204), which should include the study of the geological nature and physical properties of the underlying formation and aquifer. This study will determine how naturally occurring physical and geochemical characteristics define the hydrostratigraphy (position of aquifers, aquitards, and aquicludes) of the site, which includes an assessment of the homogeneity and isotropy of aquifer materials based on hydraulic conductivity values (measured or published), and local and regional groundwater flow directions as well as any influence from pumping centers.

Characterizing the horizontal extent of contamination of regulated substance(s) will be defined by a minimum of two rounds of groundwater sampling from properly constructed and developed monitoring wells. In some instances, additional rounds of quarterly sampling may be needed to evaluate seasonal impacts on groundwater contamination and to validate fate and transport assumptions. Please refer to Appendix A, Groundwater Monitoring Guidance, for additional information on construction and development of wells. The initial sampling event should be conducted no less than 14 days from the date of the most recent well development. A shorter time frame is permissible if it is demonstrated that, through development, pH and conductivity of the groundwater has stabilized. The second and subsequent sampling events should ideally occur sixty to ninety days from the preceding sampling event. Site-specific considerations may require adjustments to the time frame. Decisions regarding the duration of groundwater sampling should be made by

communicating with your DEP Project Officer prior to establishing a sampling plan.

When characterizing the vertical extent of groundwater contamination, consider the specific gravity of the regulated substances identified and the potential for naturally occurring or induced downward vertical hydraulic gradients. If characterizing the vertical extent of groundwater contamination is necessary, properly constructed monitoring wells or nested monitoring wells should be utilized to focus groundwater sampling in zones of potential contaminant accumulation (i.e., directly above a confining layer).

The determination of the use of groundwater is also an important task of site characterization. The uses of groundwater may include drinking water use, agricultural use, industrial uses, etc. As mandated by Act 2, groundwater will not be considered a current or potential source of drinking water where groundwater has a background TDS concentration greater than 2,500 milligrams per liter. Other than that mandate, current and future uses of groundwater must be determined on a site-specific basis. Current drinking water or agricultural uses of groundwater, at the time contamination was discovered, should be identified for protection. Additional requirements on the determination of the use of groundwater are in 25 Pa. Code § 250.403.

Development of a conceptual site model is an important step in identifying additional data needs and defining exposure. A conceptual site model identifies all potential or suspected sources of contamination, types and concentrations of contaminants detected at the site, potentially contaminated media, potential exposure pathways, and receptors. Many components of exposure (such as the source, receptors, migration pathways, and routes of exposure) are determined on a site-specific basis. The conceptual site model provides a systematic way to identify and summarize this information to ensure that potential exposures at the site are accounted for accurately.

The conceptual site model may be graphical, tabular or narrative but should provide an accurate understanding of all exposure pathways (complete and incomplete) for the site. Examples of conceptual site models may be found in EPA or ASTM guidance documents, including Section 4.2 of U.S. EPA Risk Assessment Guidance for Superfund, Volume I, Human Health Evaluation Manual (RAGS/HHEM), Part A, ASTM E-1739 RBCA, Tier 2 Guidance Manual, and ASTM E1689-95, Standard Guide for Developing Conceptual Site Models for Contaminated Sites. It is suggested that the development of the conceptual site model be coordinated with the regional project officer to ensure that potential pathways are adequately and appropriately addressed prior to performing the assessment.

ii) Pathway Identification (§ 250.404 of the Regulations)

Once the development of the conceptual site model is completed, current and future exposure pathways should be identified based on this conceptual site model. An exposure pathway describes the course a chemical or physical agent takes from the source to the exposed receptor. An exposure pathway analysis links the sources, locations, and types of environmental releases with population locations and activity patterns to determine the significant pathways of exposure.

A potentially complete exposure pathway generally consists of four elements:

- a source and mechanism of chemical release,
- a retention or transport medium (or media in cases involving media transfer of chemicals),
- a point of potential receptor contact with the contaminated medium (the exposure point), and
- an exposure route (e.g., ingestion) at the exposure point.

The person should consult the most recent U.S EPA or ASTM guidances to identify any potential current and future exposure pathways for both human and environmental receptors. The pathway identification should consider current pathways and the effects of engineering and institutional controls. Future exposure pathways should be based on currently planned and/or probable future land use. Guidance on land use considerations can be found in the USEPA Office of Solid Waste and Emergency Response (OSWER) Directive: *Land Use in The CERCLA Remedy Selection Process*. DEP guidance entitled *Site-Specific Human Health Risk Assessment Procedures* in Section III.G of this manual provides more information on pathway identification for human exposure. Guidance such as described in Sections 6.2 and 6.3 (relating to characterization of exposure setting and relating to identification of exposure pathways) of *U.S. EPA's Risk Assessment Guidance for Superfund, Volume I, Human Health Evaluation Manual* (RAGS/HHEM), *Part A*, provides a framework for pathway identification for human exposure. Subsection 6.3.2 of Risk Assessment Guidance for Superfund/Human Health Evaluation Manual (RAGS/HHEM), Part A in particular, provides guidance to perform fate and transport analysis.

Prior to the identification of exposure routes, a remediator must identify sources and receiving media, evaluate fate and transport in release media, and identify exposure points and potential receptors. The following exposure scenarios contain examples of what should be considered:

(a) Groundwater

The remediator shall identify routes of exposure for groundwater such as human exposure to groundwater by ingestion, inhalation, or dermal exposure routes. The remediator should consider effects of discharge of groundwater into surface water and the effects on ecological receptors. When evaluating the indoor exposure pathways, a remediator needs to address impacts of volatile organic compounds (VOCs) from soil and groundwater, not extraneous sources.

With respect to the groundwater ingestion pathway, the following guidance is provided. When determining whether groundwater on or off the source property must be protected under the site-specific standard for drinking water uses, the following will be applied (from 35 P.S. § 6026.304(d)):

- The ***current and probable*** future use of groundwater shall be identified and protected. Groundwater that has a background TDS content greater than 2,500 milligrams per liter or is not capable of transmitting water in usable quantities shall not be considered a current or potential source of drinking water.

- Site-specific sources of contaminants and potential receptors shall be identified.

- Natural environmental conditions affecting the fate and transport of contaminants, such as natural attenuation, shall be determined by appropriate scientific methods.

From 25 Pa. Code § 250.403 of the regulations, the following apply:

- Except for groundwater excluded by the TDS limitation described above, current and probable future use of groundwater ***shall be determined on a site-specific basis***.

- Drinking water use of groundwater shall be made suitable by at least meeting the primary and secondary MCLs at all points of exposure identified in § 250.404 (relating to pathway identification and elimination) of the regulations.

- Current drinking water or agricultural uses of groundwater, ***at the time contamination was discovered***, shall be protected.

As an example: within a city with an established public water system and groundwater contamination extending off-property, the

complete exposure pathways depend on volatilization potential of contamination and the current use or "probability" that future groundwater ingestion may occur. If surrounding properties are currently developed and have public water service, then it may be assumed that the probability is that those established patterns of water use will continue into the future. Therefore, there are no current or probable future uses of groundwater as a drinking water source; and the groundwater ingestion pathway may (all other information supporting) be determined to be incomplete.

Note that even in cases where the groundwater ingestion pathway is determined to be incomplete, the final report must include one or a combination of institutional controls or postremedial measures which provide assurance that this status continues to exist in the future. See Section III.E.3 of this manual for the range of institutional controls or postremedial measures available to a remediator. If a complete groundwater ingestion pathway is found to exist in the future, then the responsible person must demonstrate attainment of one of the three Act 2 standards.

(b) Soil

The person shall consider current and probable future exposure scenarios, such as human ingestion, dermal contact, inhalation of volatiles and particulates, and leaching to groundwater. When evaluating the indoor exposure pathways, a person needs to address impacts of VOCs from soil and groundwater, not extraneous sources.

(c) Cases Where No Complete Current or Future Exposure Pathway Exists

If no current or probable future complete exposure pathways exist without remediation, then a risk assessment report (RA), cleanup plan (CP), or attainment sampling is not required (see Figure II-17). These cases are distinct from using pathway elimination, which requires a remedy (such as an engineering and/or an institutional control) to attain the standard (see Section II.B.3(c)(ii)(d) below).

A complete exposure pathway is one in which a receptor may be exposed to contamination at any level, even if that concentration equates to an acceptable risk. If the contaminant of concern is a VOC and occupied buildings are present, then the vapor intrusion pathway must be evaluated for buildings within the applicable proximity distances and for preferential pathways (Section IV of this manual). The inhalation pathway would be complete even if vapor intrusion screening values were satisfied.

If no complete exposure pathways exist, then no remedy is required, and a risk assessment is unnecessary. Attainment sampling is also not required because there is no specific numeric concentration value (standard) applied to the site. To demonstrate attainment of the site-specific standard, a pathway elimination analysis described in 25 Pa. Code § 250.702(b)(3)(i) needs to be included in the final report. When no complete current or future exposure pathways exist, it is recommended that the remedial investigation report and the final report be combined following the suggested outline provided in Table II-7.

For groundwater, a discussion of the fate and transport analyses used during site characterization to evaluate contaminant trends for plume stability needs to be provided in the final report as required by 25 Pa. Code § 250.702(b)(2). This discussion should confirm the finding of the fate and transport analysis that the absence of complete exposure pathways will remain and that continued future attainment of the site-specific standard will be maintained. A postremediation care plan may be necessary to ensure all pathways remain incomplete and to therefore maintain attainment of the site-specific standard. The postremediation care plan, if necessary, should be submitted with the final report.

(d) Cases Where Institutional or Engineering Controls Are Needed to Eliminate Pathways

Neither a risk assessment report nor attainment sampling is required if an institutional or engineering control is used as a remedy to eliminate all complete exposure pathways. However, a cleanup plan describing how the engineering or institutional control will eliminate all complete exposure pathways is required (see Figure II-17). A suggested outline for a cleanup plan is provided in Table II-5. The cleanup plan, the remedial investigation report, and the final report can be submitted simultaneously. Fate and transport analysis descriptions and final report requirements as described in Section II.B.3(c)(ii)(c) also apply in this scenario. Note that if one part of a combined report is disapproved, then all other parts of the combined report that depend on the disapproved part will also require re-submittal, with new notices and payment of fees. For example, if a cleanup plan is disapproved, then the cleanup plan and final report must be re-submitted. However, if one part of a combined report is deficient, the remediator may have a chance to correct the deficiency in a prescribed timeframe to avoid re-submittal of notices and payment of fees.

d) Risk Assessment and Development of Site-Specific Standards (§ 250.402)

This section provides general information on risk assessment, developing site-specific standards, and pathway elimination. Sections III.G and H of this manual provide guidance on site-specific human health and ecological risk assessment procedures. This guidance should be followed to conduct a baseline risk assessment or to develop site-specific standards.

Any remediator selecting the site-specific standard established by Section 304 of Act 2 should submit a risk assessment report to the Department for review and approval unless no present or future complete exposure pathways exist as demonstrated by a fate and transport analysis when the site was characterized. If no such complete exposure pathways exist, a person only needs to submit a combined remedial investigation report and final report (see Table II-7). If complete exposure pathways exist, the fate and transport analysis, which is a part of the exposure assessment performed during site characterization, should be documented in the exposure assessment section of the risk assessment report.

Although it might be helpful in some cases to establish the leaching potential of constituents in soil, meeting toxicity characteristic leaching procedure (TCLP) limits does not automatically indicate attainment of the site-specific standard. TCLP analysis is used for Resource Conservation and Recovery Act (RCRA) hazardous waste determinations to simulate leaching in a landfill. These results determine if a waste is hazardous and can or cannot be disposed of in a landfill. TCLP analysis does not provide useful data for calculation of site-specific risk values. The risk associated with the regulated substances is considered in the site-specific risk assessment under Act 2.

To determine if a site-specific risk assessment is necessary, a conceptual site model should be developed that defines potential exposure scenarios and pathways. The exposure scenario (e.g., residential, industrial, recreational), which will define the exposure pathways, must be based on site-specific land use considerations. The pathways, which describe the mechanism by which receptors may be exposed to a source, are also site-specific. Engineering or institutional controls that are to be implemented which will eliminate exposure pathways must be incorporated into the conceptual site model. Then, a risk assessment only needs to be performed if complete exposure pathways for humans and/or ecological receptors exist under current or future planned conditions.

A complete exposure pathway exists if there is a receptor to be exposed through an exposure route. For ecological receptors, a pathway is complete even if the current ecological receptors are not present as a result of the contamination. A pathway is not complete if there is no reasonable exposure route; i.e., the contaminant is not in an available form to affect the receptors.

However, before getting into the mechanics of performing the risk assessment, it is important to clearly define the problem that is to be addressed, the objectives of the study, and how the results will be used to meet these objectives. This initial step is critical to ensure a successful outcome (accurate, protective, timely, cost-

effective evaluation) and that the level of effort is commensurate with the scope of the problem.

Under Act 2, a risk assessment report may include the following:

- A baseline risk assessment report that describes the potential adverse effects to both human and ecological receptors, under both current and planned and/or probable future conditions that are caused by the presence of regulated substances in the absence of any further control, remediation, or mitigation measures.

- A risk assessment report that documents which exposure pathways will be eliminated by a pathway elimination measure so that any substantial present or probable future risk to human health or the environment is eliminated.

- A risk assessment report that describes the methods used to develop a concentration level at which human health and the environment are protected.

- The comments obtained as a result of a public comment period, if any, and the responses to those public comments.

If an unacceptable risk is identified at a site, a person may develop site-specific standards based on a site-specific risk assessment. A baseline risk assessment report is not required if the Department, in its remedial investigation report or cleanup plan approval, determines that a specific remediation measure, other than a no-action remedial alternative, can be implemented to attain the site-specific standard (see 35 P.S. § 6026.304; 25 Pa. Code § 250.405(c)). A baseline risk assessment is that portion of a risk assessment that evaluates a risk in the absence of the proposed site-specific measure.

In developing site-specific standards, a person may use the toxicological data presented in Tables 5a and 5b of Appendix A, Chapter 250, refer to the toxicity database on the Land Recycling website, or refer to the sources listed in 25 Pa. Code § 250.605 for the most up-to-date values.

As an alternative to developing site-specific numerical cleanup standards and remediation, individuals may choose to perform a combination of engineering and institutional controls to achieve pathway elimination for regulated substances of concern. Common methodologies used to eliminate exposure pathways include permanent capping of contaminated soils with parking lots or building slab construction, groundwater and land use restrictions, vapor barriers, or sub-slab depressurization systems.

Remediation measures may require interface with the SWMA (see Section V.A of this manual), particularly for offsite removal of contaminated media or management of existing waste onsite.

To prepare the development of the site-specific standards risk assessment report, all current and probable future complete exposure pathways as identified in the fate and transport analysis should be addressed. When pathway elimination measures are planned and preapproved, the remaining pathways and the eliminated pathways under the postremedial conditions should be identified in the site-specific standard risk assessment report. Site-specific cleanup levels should be developed to address the risks associated with these remaining pathways. Where all pathways have not been eliminated, a risk assessment report is required.

In addition to human health protection, the risk assessment must evaluate ecological receptors. An ecological risk assessment should be conducted with considerations of the site-specific ecological risk assessment procedure provided in Section III.H of this manual and the most recent U.S. EPA or ASTM guidances, including those listed in Table II-4 to determine whether an impact has occurred or will occur if a release goes unabated, to establish acceptable remediation levels or alternative remedies based on current or probable future land use that are protective of the ecological receptors.

Ecological receptors include:

- Individuals of threatened or endangered species as designated by the U.S. Fish and Wildlife Service under the Endangered Species Act.

- Exceptional value wetlands as defined in 25 Pa. Code § 105.17 (relating to wetlands).

- Habitats of concern as defined in 25 Pa. Code § 250.1.

- Species of concern as identified in the PNDI.

At the conclusion of the risk assessment, a risk assessment report should be submitted to the Department for review and approval. Section II.B.3(g) (v) of this manual describes specific information required to be included in the risk assessment report.

To ensure that any substantial present or probable future risk to the environment is eliminated, both human health and ecological risk evaluations are necessary. The objective of the Preliminary Ecological Screening is to quickly evaluate whether surface soil or sediments at a site have the potential to pose significant ecological impact or impacts requiring further evaluation. The site-specific initial screening procedure described in Section III.H of this manual may be used during or immediately after the site characterization process to assess the potential for significant ecological impact. It should be noted that the ecological screening procedures under the SHS (in Section II.B.2(e) of this manual) should not be used to replace the site-specific initial screen procedure (Steps 1-2 in Section III.H of this manual) when the site-specific standard is selected to protect human health and the environment. This is because the assumption to use the ecological screening procedures under the SHS is that the site has met SHS values to protect

human health. This underlying assumption cannot be made when the site-specific standard is selected to protect human health.

- When conducting an ecological screening under the site-specific standard, a screening level ecological risk assessment to determine if an impact has occurred or will occur if the release of a regulated substance goes unabated should be performed. If this risk assessment shows that an impact has or will occur, the following are then necessary: an ecological risk assessment conducted in accordance with Department-approved EPA or ASTM guidance to establish acceptable remediation levels or alternative remedies based on current and future use that are protective of ecological receptors.

Table II-3: List of Ecological Risk Assessment Guidances

U.S. EPA. 1997. Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments. EPA/540-R-97-006. PB97-963211. June 16, 1997.

U.S. EPA. 1991. Ecological Assessment of Hazardous Waste Sites: A Field and Laboratory Reference Document. EPA/540/R-92/003. December, 1991.

U.S. EPA. 1993a. Wildlife Exposure Factors Handbook, Volume I of II. EPA/600/R-93/187a. PB94-174778. December, 1993.

U.S. EPA. 1993b. Wildlife Exposure Factors Handbook, Volume II of II, Appendix: Literature Review Database. EPA/600/R-93/187b. PB94-177789. December, 1993.

U.S. EPA. 1992. Guidelines for Exposure Assessment; 57 FR, 22888-22938, May 29, 1992

ASTM, E 1739, Standard Guide for Risk-Based Corrective Action Applied at Petroleum Release Sites.

Refer to the EPA website for the Region 3 BTAG (Biological Technical Assistance Group) screening tables and the SSL (Soil Screening Levels) tables as well as the National Oceanic and Atmospheric Administration (NOAA) website for the SQuiRT (Screening Quick Reference Tables) ecological screening values.

- Implementation of the selected remedy, which may include mitigation measures under § 250.311(f), that is protective of ecological receptors.

e) Cleanup Plan

Section II.B.3.g.ii and Table II-5 of this manual describe information required to be included in the cleanup plan. A cleanup plan is not required, and no remedy is required to be proposed or completed if neither current nor future exposure pathways exist. Subject to the Department's approval of the baseline risk assessment report, a cleanup plan is also not required if the baseline risk assessment indicates the site is within the human health and environmental protection goals specified in 25 Pa. Code § 250.402 under both current and currently planned future site conditions. After the site has been characterized using the suggested guidelines (or some equivalent technique) and a risk assessment performed to develop site-specific standards for soil and groundwater, a remediation (cleanup) plan should be developed, which consists of identification and evaluation of remedial alternatives, selection of a proposed remedy, and plans for the development, construction, and initial operation of the proposed remedy. A number of factors required by Act 2 for consideration in selecting the remedy are set forth in Section 304(j) of Act 2. As described in Section 304(i) of Act 2, remediation to site-specific standards may include treatment, removal, engineering or institutional controls as well as innovative or other demonstrated measures. However, fences or warning signs generally may not be used as the sole means to address a complete exposure pathway.

To evaluate the short-term and long-term effectiveness of a remedial alternative, the potential risk associated with implementation of the alternative and the risk associated with exposure to the remediated media must be evaluated. The pathways and exposure factors that were defined in the exposure assessment should be used to characterize these potential risks.

The risk characterization associated with short-term effectiveness considers the exposure of workers at the site and exposure of receptors in the vicinity surrounding the site to migrating media during the implementation of the remedial alternative. A comparison of a focused list of remedial alternatives may help predict the risks associated with the implementation of the remedial alternative or whether the implementation of alternatives may have any significant impact to human health and the environment.

The risk characterization associated with long-term effectiveness evaluates whether the remedial alternative may attain the remedial objectives (site-specific standards) and whether postremedial risks may achieve the acceptable levels of risk. At times, a specific cleanup goal for one constituent may not be attained, but the overall postremedial risk may be within acceptable levels. Evaluation of the postremedial risk is based on a prediction of what the postremedial exposure concentration would be. If bioremediation is considered, the remedial objective would be the concentration that provides the basis for characterization of the

postremedial risk. If the calculated postremedial risk is within the acceptable range, the remedial alternative would be considered a viable solution.

A remediator evaluating long-term and short-term risks of remedial alternatives should consider *EPA's Risk Assessment Guidance for Superfund* (RAGS), Volume 1, Part C, Chapter 2 for additional guidance. It should be noted that a quantitative risk assessment of remedial alternatives will not need to be conducted for all sites. In most cases, a qualitative rather than a detailed quantitative evaluation of both long-term and short-term risks is all that is needed to select the most appropriate alternative. However, the Department may require a quantitative risk assessment of the selected remedy if a quantitative risk assessment is needed to select the most appropriate remedy or a perceived risk of a selected remedy is high. No matter whether the risk evaluation is qualitative or quantitative, the cleanup plan should always discuss the degree of uncertainty associated with the risk assessment of the selected remedy.

Where there are imminent or immediate threats to human health or the environment, such as waste releasing from corroding tanks or drums, mitigating measures should be undertaken to prevent releases and further exposure as soon as these threats are identified.

The cleanup plan must document the evaluation of the factors listed in Section 304(j) of Act 2. The Department will review the alternative evaluated, the evaluation of the selected remedy in terms of the Section 304(j) criteria, public comments, and response to the comments in the cleanup plan. The Section 304(j) criteria address a few general areas, such as the effectiveness of the remedy (long/short term) to manage risk; the extent to which the risks are being reduced; the ability to implement the remedy; reduction of toxicity, mobility, or volume of regulated substances; reliability and postremediation care; and cost-benefit considerations.

The Department may require further evaluation of the selected remedy or of one or more alternative remedies on its own analysis of Section 304(j) factors in Act 2 or in response to comments received from the community surrounding the site as a result of the implementation of the community involvement plan or as a result of the Department's review of the cleanup plan. Remediators shall submit to the Department, upon request, such additional information as may reasonably be required to complete the evaluation. A final report cannot be approved prior to a remedy being in place as specified in 25 Pa. Code § 250.411(b).

f) Remediation and Demonstration of Attainment

Remediation to the site-specific standards should be implemented in accordance with the approved cleanup plan.

The POC for demonstration of the attainment of site-specific standards is described in 25 Pa. Code § 250.407. Site-specific standards shall be attained at and beyond the POC, where the plume has migrated beyond the property boundary. For groundwater, the POC is the property boundary that existed at the

time the contamination was discovered. The remediator may request the movement of the POC in certain circumstances described in 25 Pa. Code § 250.407(a). If any of those conditions exist, the remediator must request moving the POC in writing prior to or at the time of submission of the cleanup plan. The Department will provide a written response to the request. The Department's written approval must be obtained before using the adjusted POC.

Unless an NPDES permit is required for purposes of complying with surface water quality in a spring, the POC is the point of first designated or existing use as defined in 25 Pa. Code §§ 93.1, 93.4, and 93.9. This could mean in close proximity to the spring itself or some point downstream from the spring discharge. Determining the point of first designated use is required because it establishes the point where Chapter 93 water quality standards apply.

Technical guidance to determine point of first use is found in *Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers*, DEP document # 391-2000-014, revised April 2008. In essence, this guidance relies on biological techniques to determine the first downstream point where aquatic life can be documented. It applies to both perennial and intermittent streams with definable bed and banks, but not to ephemeral streams, that is, areas of overland runoff which occur only during or immediately following rainfall events and where there is no defined stream channel and stream substrate.

The site characterization will be the basis on which the vertical and horizontal extent of contamination above the standard is determined. Once this volume of the site is determined and remediation, if necessary, has been performed, then attainment of the standard will focus on the environmental media contained within that volume of the site. Where multiple releases occur on a property which produce distinctly separate zones of contamination, the characterization and subsequent attainment demonstrations will apply individually to the separate releases.

The three methods to demonstrate that the site-specific standard has been met are pathway elimination using an engineering/geologic evaluation, the 95% UCL of the arithmetic mean or other appropriate statistical methods to show that the site meets numerical site-specific standards, or a residual risk assessment following implementation of the remedy to demonstrate that the risk associated with the site following remediation falls within the allowable risk range in Act 2. The residual risk assessment will be based on resampling and a reassessment of the cumulative risks associated with concentrations occurring following remediation.

If this residual risk assessment is nothing more than a presentation of the recalculation of risk values that were previously presented in an approved risk assessment report, the presentation of these calculations can be considered as part of the final report and are not subject to the fees and notification requirements of a risk assessment. However, if the residual risk assessment is following remediation done prior to approval of a risk assessment report, or following a change in pathway and exposure factors due to remedial measures not addressed

in the prior report, this must be a full report as defined in § 250.602 of the regulations and explained further in Section III.H of this manual. This type of residual risk assessment is subject to the fees and reporting requirements associated with a risk assessment.

In demonstrating attainment of the site-specific standard, concentrations of regulated substances are not required to be less than the limit related to the PQL for that substance as provided for in 25 Pa. Code § 250.701(c) and as described in Section III.F of this manual.

In demonstrating attainment of the site-specific standard, the removal of SPL is not required if attainment can be demonstrated in accordance with the requirements of 25 Pa. Code § 250.702(b)(3).

If the site-specific standard is numerically less than the background standard, the remediator may select the background standard, and attainment of the background standard should be demonstrated according to Section 303 of Act 2.

To ensure that contaminant concentration at the POC will not exceed the selected standard in the future, a statistical time trend analysis, knowledge of the plume stability, or other acceptable method must be provided in the final report to the Department for review and approval.

Guidance on applying statistical methods to demonstrate attainment can be found in Section III.B of this manual. A remediator should consider the general guidelines of risk assessment in Sections III.H and III.I of this manual to perform the residual risk assessment. When submitting the final report, a remediator should ensure that the items identified in Section II.B.3(g) and Table II-6 of this manual are included.

g) General Report Guidelines for the Site-Specific Standard

The remedial investigation report, risk assessment report, cleanup plan, and final report detailed below are not to be submitted to the Department until the 30-day public and municipal comment period has expired.

i) Remedial Investigation Report (25 Pa. Code § 250.408)

The site characterization shall be conducted in accordance with scientifically recognized principles, standards and procedures. The level of detail in the investigation and the selected methods and analyses, which may include models, shall sufficiently define the rate of movement and the present and future extent and fate of contaminants to ensure continued attainment of the remediation standard. All interpretations of geologic and hydrogeologic data shall be prepared by a professional geologist licensed in Pennsylvania. A suggested outline for a remedial investigation report is provided in Table II-4.

ii) Cleanup Plan (25 Pa. Code § 250.410)

The cleanup plan is not required if no current and probable future exposure pathways exist. The cleanup plan is also not required if the approved baseline risk assessment report indicates that the site does not pose unacceptable risks to human health and the environment under current and planned or probable future conditions. A suggested outline for a cleanup plan is provided in Table II-5.

iii) Final Report (25 Pa. Code § 250.411)

A suggested outline for a final report under the site-specific standard is provided in Table II-6.

iv) Combined Remedial Investigation Report/Final Report

The site characterization shall be conducted in accordance with scientifically recognized principles, standards and procedures. The level of detail in the investigation and the selected methods and analyses, that may include models, shall sufficiently define the rate of movement and the present and future extent and fate of contaminants to ensure continued attainment of the remediation standard. All interpretations of geologic and hydrogeologic data shall be prepared by a professional geologist licensed in Pennsylvania. A suggested outline for the combined remedial investigation report/final report under the site-specific standard is provided in Table II-7.

v) Risk Assessment Report (25 Pa. Code § 250.409)

A baseline risk assessment report is not required if the Department, in its remedial investigation report or cleanup plan approval, concurs that a specific remediation measure that eliminates all pathways, other than a no-action remedial alternative, can be implemented to attain the site-specific standard (see 25 Pa. Code § 250.405(c)). A risk assessment report is not required if no present or future exposure pathways exist, as documented in the remedial investigation report by a fate and transport analysis.

A suggested outline for a risk assessment report is provided in Table II-8. The items in the outline are suggested as minimum requirements for inclusion in the report; the order and titles are not mandatory. If a baseline risk assessment is not required and a remediator submits the development of site-specific standard numerical values as a stand-alone document, more detailed risk assessment information should be provided in the development of the site-specific standard numerical values document.

h) Detailed Report Requirements for the Site-Specific Standard

The following are detailed descriptions of what should to be included in each section of a report. Not all sections are necessary for each report. Please refer to the outlines in the previous section for detailed information.

i) Summary (RIR, FR, RIR/FR)

Provide a summary paragraph(s) which will provide the reviewer with an overview of the site. This will serve to highlight the important issues and conclusion which will be presented in the report.

The Final Report Summary form should be filled in and submitted to the Department electronically. The summary submitted with the final report should be a copy of that electronic form.

ii) Introduction (CP, RA)

Provide a summary of the investigation report(s) and risk assessment report and an interpretation of the conditions at the site (refined conceptual site model). Discuss the chosen method(s) of remediation. The remedy should be evaluated in accordance with the requirements of Section 304(j) of Act 2.

iii) Site Description (RIR, RIR/FR)

Provide a description of the site in sufficient detail to inform the reviewer of the site location and the types of operations that are currently and/or were formerly conducted on the site. As appropriate to the site, the description should include location, physical description of the property, ownership history, site use history, and regulatory action history (past cleanups).

iv) Site Characterization (RIR, RIR/FR, RA)

The site characterization provides important information documenting the current conditions at the site. Information developed during the site characterization is primarily intended to describe the nature, concentrations, extent, and potential for movement of all contaminants present on the site or that may have migrated from the site. For sites where there are multiple distinct areas of contamination, the site characterization process should be applied to each area individually.

v) Source and Identification of Constituents of Concern (Part of Characterization)

For the area being investigated include a description of source characterization, which may be in the form of a conceptual site model.

vi) Nature and Extent of Contamination (Part of Characterization)

Information needed to meet the requirements below should be included here. For soil and groundwater, include information on samples and measurements used to characterize the horizontal and vertical, present and future extent and fate of contamination. Direction and velocity of contaminant movement should be based on factors of the groundwater and soil as well as the contaminant(s) which affect migration.

Text, tables, graphics, figures, maps and cross sections should be used to describe the nature, location, and composition of the regulated substances at the site. Providing the data in an appropriate format will expedite the review of the report.

vii) Other Information Required Under the Site-Specific Standard (RIR, RIR/FR)

Description of the existing or potential public benefits of the use or reuse of the property for employment opportunities, housing, open space, recreation or other uses. Describe the past, present, and future use of the site.

Information obtained from attempts to comply with the background or Statewide health standards, such as background concentrations for constituents of concern.

viii) List of Contacts (ALL)

Name, address, and telephone number of the project manager responsible for submittal of the cleanup plan.

Names, addresses, and telephone numbers of consultants or other persons responsible for preparing the cleanup plan.

Names, addresses, and telephone numbers of the property owner and party responsible for the remediation cost.

ix) Remedial Alternative (CP)

Identify remediation alternatives considered and evaluate the ability and effectiveness of the selected remedy to achieve the site-specific standards, based on the factors set forth in Section 304(j) of Act 2. The cleanup plan must document how each of the factors set forth in Section 304 (j) of Act 2 was evaluated. The evaluation should include an evaluation of the short-term and long-term risks and effectiveness of the proposed remedy. In evaluating the other alternatives, no risk evaluation is required; rather, a narrative describing the consideration of Section 304(j) factors relative to the proposed remedy should be included.

x) Treatability studies (CP)

Provide results of any treatability, bench scale, or pilot scale studies or other data collected to support the remedial action(s).

All other site information relevant to the conceptual design, construction, or operation of the remedial action.

Specific characteristics of the site that may affect the implementation or effectiveness of the remedial action including such characteristics as topography, geology, depth of bedrock, potentiometric surfaces, and the existence of utilities.

xi) Design plans and Specifications (CP)

Consists of adequate design plans and specifications sufficient to evaluate the proposed remedy including, but not limited to:

- Detailed description of the remedial action (treatment and/or removal) and remedial technology to be implemented. Adequate design plans and specifications for all remedial activities, including remedial design, onsite treatment, storage, removal and disposal activities.

- Estimated volume of each medium to be treated and/or removed. Provide methodology and calculations used to estimate contaminant mass.

- Remedial Action Status Plan - To evaluate the short-term and long-term effectiveness of the remedial action to include, but not limited to, the following:

  – Location and construction details of all monitoring points.

  – Sampling and Analysis Plan, including QA/QC Plan.

  – Other site-specific monitoring as appropriate.

- Construction QA/QC Plan including engineering certification.

- Locations, telephone numbers, and contacts of offsite disposal facilities, including names, addresses, and telephone numbers of waste transportation companies.

- Site-specific Health & Safety Plan which includes adherence to all applicable Occupational Safety and Health Administration (OSHA) and National Institute for Occupational Safety and Health (NIOSH) regulations and recommendation.

- Erosion and Sedimentation Control Plan consistent with Chapter 102 (Erosion Control) relating to earth disturbance during remedial activities.

- Site Security Plan.

- A schedule for implementation of the proposed remedial action.

- Operation and Maintenance Plan which shall describe:

  – Startup testing, inspection and maintenance over the first year and subsequent years of operation.

  – Identification of equipment necessary for operation and maintenance.

  – Specification of the type, frequency, and duration of testing or maintenance to verify optimal remedial system performance.

- All federal, State and local permits and approvals and any agreements necessary for the construction and operation of the approved remedial action shall be identified.

xii) Remediation (FR)

Documentation of the methodologies used to attain the site-specific standard. Including removal and/or treatment technologies used, and any engineering and/or institutional controls used to attain or maintain the selected standard. This section should also include the calculation of the mass of contaminants addressed during the remediation of soil and/or groundwater, using the methodology in Section III.C.

xiii) Attainment (FR)

Documentation that the remedy has been completed in accordance with an approved cleanup plan.

- Descriptions of treatment, removal, or decontamination procedures performed in remediation. Documentation of handling of remediation wastes in accordance with applicable regulations.

- Descriptions of the sampling methodology and analytical results.

- All sampling data, including QA/QC data.

The demonstration of attainment should be applied separately for each distinct area of contamination. Demonstration of attainment in a final

report should include one or more of the following three types of information:

- Demonstration of attainment of a numerical standard:

  The information includes demonstration that the calculated numerical site-specific standards have been met through the application of appropriate statistical tests, and demonstration that shows contaminant concentration at the POC will not exceed the selected standard. The following information shall be documented in a final report when a statistical method is applied:

  – A description of the statistical method.

  – A clear statement of the applicable decision rule in the form of statistical hypothesis for each spatial unit and temporal boundary including the applicable statistical parameter of interest and the cleanup standard.

  – A description of the underlying assumptions of the method.

  – Documentation showing that the sample data set meets the underlying assumptions of the method and demonstrate that the method is appropriate to apply to the data.

  – Specification of false positive rates.

  – Documentation of input and output data for the statistical test, presented in tables, figures or both, as appropriate.

  – An interpretation and conclusion of the statistical test.

  Demonstration that contaminant concentration at the POC will not exceed the selected standard should be based on a statistical time trend analysis, knowledge of the plume stability or other acceptable method.

- Demonstration of pathway elimination:

  This demonstration should be based on either an engineering or hydrogeologic analysis, or both, which includes fate and transport analysis that some or all of the exposure pathways have been eliminated. The eliminated pathways and the remaining pathways should be clearly identified. The pathway elimination demonstration should include the following:

- Identifying all exposure pathways prior to the implementation of pathway elimination technology, based on fate and transport analysis.

- Identifying all exposure pathways after the implementation of pathway elimination technology, based on fate and transport analysis.

- Residual Risk Assessment

  As an alternative to demonstrating the attainment of numerical standards, a person may perform a residual risk assessment to show that the risk which remains at a site following remediation is within the acceptable risk range specified in Act 2. The residual risk assessment should be based on resampling and a reassessment of the cumulative risks associated with concentrations occurring following remediation.

  If this residual risk assessment is nothing more than a presentation of the recalculation of risk values that were previously presented in an approved risk assessment report, the presentation of these calculations can be considered as part of the final report and are not subject to the fees and notification requirements of a risk assessment. However, if the residual risk assessment is following remediation done prior to approval of a risk assessment report, or following a change in pathway and exposure factors due to remedial measures not addressed in the prior report, this must be a full report as defined in 25 Pa. Code § 250.602 and explained further in Section III.H of this manual. This type of residual risk assessment is subject to the fees and reporting requirements associated with a risk assessment.

xiv) Fate and Transport Analysis (RIR, FR, RIR/FR, RA)

The Fate and Transport Section (Section III.A of this manual) provides a discussion on fate and transport analysis. The amount of detail in the fate and transport analysis may vary from a basic description to a very extensive detailed model with quantitative modeling. Whenever a model is used, the assumptions, data, and information on the model necessary for Department staff to evaluate and run the model should be included. Any parameters used in the analysis or models used should use data from the site obtained during the site characterization. This includes identified ecological receptors.

Modeling (optional) - Data Interpretation:

- Identify any programs or modeling used to interpret site conditions or predict plume migration. Identify codes used and any modifications made.

- Models should be developed from site-specific data.
- Identify limitations/assumptions used in the model(s).
- Models should be validated to reproduce conditions measured in the field.

xv) Conclusions and Recommendations (RIR, RIR/FR)

In addition to documenting the items listed above, the remedial investigation report should draw conclusions regarding the existence of exposure pathways and the potential effectiveness of institutional or engineering controls in eliminating some or all of these pathways. The report also should identify the appropriate remedial technology options for each medium of concern.

xvi) Postremediation care plan (if applicable) and other postremedial obligations (such as monitoring or institutional controls) (CP, FR, RIR/FR)

If engineering or institutional controls are needed to maintain a standard, if the fate and transport analysis indicates that the remediation standard may be exceeded at the POC in the future, or, if the remediation relies on natural attenuation, a postremediation care plan must be documented in the final report (see 25 Pa. Code 250.411(d)). The plan should include:

- Reporting of any instance of nonattainment.
- Reporting of any measures to correct nonattainment conditions.
- Monitoring on a quarterly basis, or as otherwise approved by the Department, that demonstrates the effectiveness of the remedy and periodic reporting of monitoring results and analysis.
- Maintenance of records at the property where the remediation is being conducted for monitoring, sampling and analysis.
- A schedule for operation and maintenance of the controls and submission of any proposed changes.
- If requested by the Department, documentation of financial ability to implement the remedy and the postremediation care plan.

If mitigation measures are implemented to restore or replace equivalent ecological resources in the local area of the site, a postremediation care plan to maintain the mitigated ecological resources is documented in the final report (see 25 Pa. Code 250.411(f)). The plan should include:

- Reporting of the ongoing success or failure of the mitigation measure implemented.

- Mitigation measures instituted at the time of the final report shall be successfully accomplished and sustained up to five years from final report approval.

- In some cases, postremedial obligations described in Section III.E could require documentation in a postremediation care plan.

xvii) Cooperation or Agreement of Third Party (CP)

When a person proposes a remedy that relies on access to properties owned by third parties for remediation or monitoring, documentation of cooperation or agreement shall be submitted (see 25 Pa. Code 250.410(c)).

xviii) Public comments (ALL)

Include the comments obtained during the public and municipal comment period and the public involvement plan, if any, and the responses to those public comments.

xix) References (ALL)

xx) Attachments (ALL)

Attachments may include but are not limited to:

- Tables – monitoring well construction summary, groundwater gauging data, including elevation and NAPL thicknesses, analytical data, historical data.

- Figures – including groundwater elevation maps, extent of NAPL, concentration data for soil/groundwater/surface water/vapor or indoor air, cross-sections.

- Monitoring well construction diagrams, boring logs, stratigraphic logs, including soil/rock characteristics.

- Sampling and analysis plan(s).

- QA/QC Plan.

- Ecological survey documentation (from PNDI).

- Well search documentation (from PaGIS).

- Field data sheets, such as low flow purging monitoring.

- Statistical worksheets, software outputs, graphs; modeling inputs/outputs.

- Disposal documentation of soil/groundwater.

- Remediation system operation, maintenance, monitoring data; mass removal estimates.

- Before and after remediation photographs.

- Copy of municipal notification, reasonable proof of newspaper notice publication.

- Laboratory reports and any voluminous attachments may be enclosed on a CD.

xxi) Signatures (ALL)

If any portions of the submitted report were prepared or reviewed by or under the responsible charge of a registered professional geologist or engineer, the professional geologist or engineer in charge must sign and seal the report.

Table II-4: Suggested Outline for Remedial Investigation Report under the Site-Specific Standard

I. Summary

(Section II.B.3(h)(i))

II. Site Description

Provide a description of the site in sufficient detail to give an overall view of the site. (Section II.B.3(h)(iii))

III. Site Characterization

Document current conditions at the site. (Section II.B.3(h)(iv-vi))

IV. Fate and Transport Analysis

Description of Fate and Transport analyses used and results and conclusions. Provide detailed conceptual site model including analysis of vapor intrusion pathway. (Sections II.B.3(h)(xiv) and III.A)

V. Other Information Required under the Site-Specific Standard.

Provide the results of ecological receptor evaluation. Describe the public benefits of the use or reuse of the property. Identify complete exposure pathways. (Section II.B.3(h)(vii))

VI. Conclusions and Recommendations

Draw conclusions regarding the existence of exposure pathways and the potential effectiveness of institutional or engineering controls for pathway elimination. Identify the appropriate remedial technology options. (Section II.B.3(h)(xv))

VII. References

VIII. Attachments

(Section II.B.3(h)(xx))

IX. Public Comments

Include the comments obtained as a result of a public involvement plan, if any, and the responses to those public comments. (Section II.B.3(h)(xviii))

X. Signatures

(Section II.B.3(h)(xxi))

Table II-5: Suggested Outline for a Cleanup Plan under the Site-Specific Standard

I. Introduction

(Section II.B.3(h)(ii))

II. List of Contacts

(Section II.B.3(h)(viii))

III. Site Maps

(Section II.B.3(h)(xx))

IV. Remedial Alternative

Identify remediation alternatives considered and evaluate the ability and effectiveness of the selected remedy to achieve the site-specific standards based on the factors set forth in Section 304 (j) of Act 2. (Section II.B.3(h)(ix))

V. Treatability Studies

Provide results of any treatability, bench scale, or pilot scale studies or other data collected to support the remedial action(s). (Section II.B.3(h)(x))

VI. Design Plans and Specifications

Consists of design plans and specifications sufficient to evaluate the proposed remedy. (Section II.B.3(h)(xi))

VII. Postremediation Care Plan

(Section II.B.3(h)(xvi))

VIII. Cooperation or Agreement of Third Party

(Section II.B.3(h)(xvii))

IX. Public Comments

(Section II.B.3(h)(xviii))

X. Signatures

(Section II.B.3(h)(xxi))

Table II-6: Suggested Outline for a Final Report under the Site-Specific Standard

I. Summary

The final report summary should be a copy of the electronic form submitted to the Department. (Section II.B.3(h)(i))

II. Remediation

Description of the remedial methodologies used to attain the selected standard. (Section II.B.3(h)(xii))

III. Attainment

Demonstration of attainment of a numerical standard.

- Soil site-specific standard
- Groundwater site-specific standard
- Surface water site-specific standard, and/or
- Sediment site-specific standard

Describe the statistical methods used to demonstrate attainment of the standard.

Demonstration of Pathway Elimination.

Residual Risk Assessment.

(Section II.B.3(h)(xiii))

IV. Fate and Transport Analysis

Description of Fate and Transport analyses used and results and conclusions. (Section II.B.3(h)(xiv) and III.A)

V. Postremediation Care Plan (if applicable)

This section is included only if necessary. It describes the engineering and institutional controls necessary to maintain the standard. (Section II.B.3(h)(xvi))

VI. References

VII. Attachments

(Section II.B.3(h)(xx))

VIII. Public Comments

(Section II.B.3(h)(xviii))

IX. Signatures

(Section II.B.3(h)(xxi))

Table II-7: Suggested Outline for the Combined Remedial Investigation Report/Final Report under the Site-Specific Standard When No Current and Future Complete Exposure Pathways Exist

I. Final Report Summary

The final report summary should be a copy of the electronic form submitted to the Department. (Section II.B.3(h)(i))

II. Site Description

Provide a description of the site in sufficient detail to give an overall view of the site. (Section II.B.3(h)(iii))

III. Site Characterization

Document current conditions at the site. (Sections II.B.3(h)(iv-vi))

IV. Fate and Transport Analysis

Description of fate and transport analyses used and results and conclusions. (Sections II.B.3(h)(xiv) and III.A)

V. Other Information Required under the Site-Specific Standard

Provide the results of ecological receptor evaluation. Describe the public benefits of the use or reuse of the property. Identify complete exposure pathways. (Section II.B.3(h)(vii))

VI. Conclusions and Recommendations

Draw conclusions regarding the existence of exposure pathways and the potential effectiveness of institutional or engineering controls for pathway elimination. Identify the appropriate remedial technology options. (Section II.B.3(h)(xv))

VII. Postremediation Care Plan (if applicable)

This section is included only if necessary. It describes the engineering and institutional controls necessary to maintain the standard. (Section II.B.3(h)(xvi))

VIII. References

IX. Attachments

(Section II.B.3(h)(xx))

X. Public Comments

(Section II.B.3(h)(xviii))

XI. Signatures

(Section II.B.3(h)(xxi))

Table II-8: Suggested Outline for a Risk Assessment Report under the Site-Specific Standard

EXECUTIVE SUMMARY

PART 1 – Human Health Risk Assessment

I. Introduction

- Objectives of Risk Assessment
- Organization of Report

II. Site Characterization

- Site history (brief)
- Site location/map
- Description of sources
- Nature and extent of contamination
- Identification of constituents of concern
- Conceptual site model

III. Exposure Assessment

- Exposure scenarios based on land use (current and future)
- Potential receptors based on land use (current and future)
- Summary of complete pathways (including fate and transport considerations)
- Quantification of exposure (not required, if all exposure pathways will be eliminated through pathway elimination measures.)

IV. Toxicity Assessment

(Not required if all exposure pathways will be eliminated through pathway elimination measures.)

- Toxicity values for constituents of concern
- Derivation of chemical-specific toxicity criteria (if applicable)
- Supporting data listing all relevant information on toxicity

V. Risk Characterization

- Algorithms (not required if all exposure pathways will be eliminated through pathway elimination measures.)
- Calculations and Results (not required if all exposure pathways will be eliminated through pathway elimination measures.)
- Description and fulfillment of risk assessment objectives
- Discussion of uncertainty for all sections of report, including uncertainties associated with site characterization, toxicity assessment, exposure assessment and risk characterization

VI. References

PART 2 – Ecological Risk Assessment

This section reports the results of the ecological risk assessment conducted using the guidance in Section III.I and, as applicable, EPA guidance.

Public Comments

Include the comments obtained as a result of a public involvement plan, if any, and the responses to those public comments.

Signatures

If any portions of the submitted report were prepared or reviewed by or under the responsible charge of a registered professional geologist or engineer, the professional geologist or engineer in charge should sign and seal the report.

4. Special Industrial Areas

a) Introduction

The SIA provision established in Section 305 of Act 2 creates incentives to reuse industrial properties. Cleanups at these SIAs have reduced remediation requirements which are intended to allow these sites to be put back into productive use in the community. Act 2 established this provision to encourage the redevelopment of properties used for industrial activities. The remediator, reuser, and the property must meet eligibility requirements to be considered as an SIA under Act 2. Under the SIA provision, necessary remediation will be performed, and required notification and reporting requirements will be met.

b) Eligibility Determination

Specific eligibility requirements in § 250.502 of the regulations provide for qualification of a property for reuse as an SIA and for the qualification of a remediator to use this special provision of Act 2. The property must have been used for industrial activity. The extent of industrial activity is defined very broadly and is detailed in Section 103 of Act 2. If the property qualifies as having been used for industrial activity, the following additional qualifications must be met:

- The property must be one where there is no financially viable responsible person, or it is located within a designated EZ.

- The remediator must not have caused or contributed to releases at the property. A person who is interested in purchasing a property and undertaking a reuse of that property should contact the Department before the reuser purchases the property.

- The term “responsible person” includes the owner of the property, regardless of whether he has or has not caused or contributed to the contamination. Therefore, prospective purchasers of property which could be eligible as an SIA are recommended to contact the Department prior to the purchase of the property.

- Actions in themselves that do not cause or contribute to contamination taken under Section 307 of Act 2 relating to emergency and interim responses will not prejudice eligibility determinations under the SIA designation.

- It is the responsibility of the reuser to demonstrate to the Department that the reuser has not had an environmental impact on the property, just as it is the responsibility of the remediator to document that the property meets the other eligibility criteria for an SIA. To accomplish this, certain information must be presented to the Department regarding the above eligibility requirements:

- Documentation that the property has been used for industrial activities by including information on the ownership and operational history of the property as part of the work plan for the baseline remedial investigation.

- Verification that no financially viable responsible party exists to address the contamination on the property. Financial information for existing responsible parties must be included in the ownership and operational history. "Financially viable" is generally defined as having sufficient financial resources to be able to perform part or all of the cleanup required at a particular property.

To qualify as a property within an EZ or Keystone Opportunity Zone (KOZ), the municipality where the property is located must be designated by DCED as an EZ, KOZ, or Keystone Innovation Zone (KIZ). To determine whether a particular property is within an EZ, KOZ, or KIZ, contact DCED or the appropriate local contact person. If a remediator wants to determine the eligibility of a site for the SIA provisions, when a financially viable responsible party is present, the remediator will need to verify the existence of the EZ, KOZ, or KIZ designation for the area where the site is located.

A letter from either DCED or the appropriate zone contact person should be provided with the work plan to verify the status of the property. Persons remediating a site in an EZ where a viable responsible party may still exist are only responsible for remediation of contamination identified in the baseline environmental report and specified in the CO&A with the Department as required for remediation prior to the new use of the property. Additional remediation may be pursued by the Department with the responsible person. Responsible persons under HSCA must resolve their liability to the Department pursuant to HSCA. See Section V.E of this manual.

c) Process Checklist for Special Industrial Areas

☐ Evaluate the property potential for redevelopment.

☐ Determine if the property was used previously for industrial activity or if it is located within an EZ (35 P.S. 6026.305(a) and 25 Pa. Code § 250.502).

☐ Determine if there is a financially viable responsible party. If the property is located within an EZ, financial viability is not a requirement for SIA use (35 P.S. 6026.305(a) and 25 Pa. Code § 250.502).

☐ The remediator must demonstrate to the Department that he did not cause or contribute to contamination on the property (35 P.S. 6026.305(a) and 25 Pa. Code § 250.502).

☐ Review the historical information and present use of regulated substances at the property.

☐ Prepare a work plan for a baseline remedial investigation (35 P.S. 6026.305(b) and 25 Pa. Code § 250.503(b)).

☐ The work plan must be approved by the Department prior to performing the investigation (35 P.S. 6026.305(b) and 25 Pa. Code § 250.503(b)).

☐ Begin baseline remedial investigation (use Section II.B.4.e of this manual, 35 P.S. 6026.305(b) and 25 Pa. Code § 250.503(c)).

☐ Submit NIR for the SIA to the Department. Also provide notice to the municipality, publish a notice of submission of the NIR in a local newspaper, and provide reasonable proof of required notices to the Department.

☐ Prepare public involvement plan (if requested by municipality).

☐ Prepare baseline environmental report based on baseline remedial investigation (35 P.S. 6026.305(b) and 25 Pa. Code § 250.503(d)).

☐ Department review of baseline environmental report.

☐ Meet with the Department and concur on CO&A. The prospective purchaser should enter into the CO&A prior to purchasing the property (35 P.S. 6026.305(e) and 502(a)).

☐ Remediate the property to the SIA requirements specified in the baseline environmental report and agreed to in the CO&A (35 P.S. 6026.502(b)).

☐ Calculate the mass of contaminants remediated using the procedure in Section III.C of this manual.

☐ Complete the Final Report Summary and submit electronically as per the instructions on the Land Recycling Program web page.

☐ Protection from liability occurs upon the signing of the CO&A with the Department, subject to the remediator's compliance with the CO&A demonstrating attainment of the SIA requirements in accordance with Chapters 3 and 5 of Act 2.

☐ Submit an environmental covenant, if applicable, to the Department.

d) Aspects of Special Industrial Areas

i) Immediate, Direct, or Imminent Threats to Human Health and the Environment

One of the significant aspects of Act 2 is the cleanup liability protection provided for SIAs. The cleanup liability for the person undertaking remediation and reuse of an SIA is dependent upon the person performing remediation of immediate, direct or imminent threats to public health or the environment which would prevent the property from being occupied for the remediator's intended purpose.

The immediate, direct, or imminent threats are to be determined by the baseline remedial investigation and defined in the baseline environmental report. The baseline environmental report will become the basis for the CO&A between the Department and the remediator. The exposures, and potential exposures, presented by an SIA site must be identified in the baseline remedial investigation. Defining immediate, direct, or imminent threats is relevant to the remediator's intended use of the property. Therefore, it is necessary for the remediator to specify the intended use of the property. The identification of these threats needs to be addressed at the time of the baseline remedial investigation work plan and in performance of the investigation. Only concerns identified in the baseline environmental report and included in the agreement can be considered in any relief from liability afforded to the remediator by Act 2. For this reason, it is paramount that the remediator performs a comprehensive investigation of an SIA.

Immediate and imminent threats are pending threats likely to happen without delay or momentarily in time. Direct threats, though sometimes similar in immediacy, also include chronic exposure. At a minimum, immediate, direct, or imminent threats will entail:

- Contained wastes which present immediate, direct or imminent threats. Examples are regulated substances in drums, barrels, tanks, or other bulk storage containers; and contained wastes, such as wastes in drums, above or below ground tanks, and small containers.

- All wastes which are not containerized, and which present a direct threat to workers or other persons on the property. These may include, but are not limited to, open containers, pits, waste piles and other situations that allow wastes to be exposed and accessible on the site.

- In addition to situations listed above, actual exposure for onsite human populations to any regulated substances.

- Actual contamination of drinking water by regulated substances. Also, contaminated groundwater, if groundwater use will expose persons on the property to contaminants.

- Contaminated soil presenting a direct contact threat to workers or other persons on the property. Direct contact may occur in a zone of soil at and below the surface. The depth of consideration of surface soil shall be the first two feet from the ground surface, unless reuse of the property presents exposure threats at depths greater than two feet.

- Regulated substances presenting a threat of fire or explosion.

- Surface water and sediments contaminated with regulated substances, if persons are or may become exposed to these contaminants.

- Regulated substances contained as product may remain on the property if maintained according to appropriate regulations. The remediator is responsible for releases occurring as a result of the remediator's actions.

ii) Consideration of Chronic Exposure in Evaluation of the Reuse of a Special Industrial Area

25 Pa. Code Section 250.503(c)(5) pertains to property to be reused and states, "Evaluation of exposure conditions within the portion of the property to be reused to identify existing contamination that poses an immediate, direct or imminent threat to public health or the environment which is inconsistent with the intended reuse of that portion of the property." Initially, the determination of property use for nonresidential or residential purposes will focus on determination of direct contact exposure. In the use of the definition of "immediate, direct or imminent," the word "direct" includes chronic exposure. In the scope of chronic exposure, workers or other persons using a property with existing contamination are to be protected from chronic exposure levels of contaminants as well as to acute exposure levels. Direct contact includes contamination which persons may come in contact with when working, living at, or visiting a site. Direct contact may occur by several routes. Some examples are ingestion of soil, contact with soil, or inhalation of soil particles or vapor from the soil. Additional direct contact pathways may be caused by leaching from the soil to groundwater, vapor intrusion into buildings, inhalation of contaminated process water, surface water run-off to water bodies, and exposure of wildlife and ecosystems. Soil available for direct contact must meet the human health and environmental protection standards established by Act 2.

iii) Contaminant Migration Off-Property

There are no obligations or liability for off-property contamination placed upon an innocent person using the SIA provision. For cases where the off-property pollution is significant, there may be other available options for addressing these risks. If there is an existing viable responsible party (property located within an EZ), the viable responsible party would continue to be responsible for off-property contamination. For sites where there is no viable responsible party, the cleanup may either be remediated by a purchaser of the property (voluntary cleanup) or addressed under other State or federal programs. In either case, the innocent purchaser would not be responsible for off-property contamination, as long as he or she did not cause or contribute to that contamination. Although assessment at the time of the baseline remedial investigation is not required off-property, the remediator should determine whether contamination is moving off the property.

If contamination which requires remediation is found at a future date, and the nature, concentration, and location were not identified in the baseline environmental report, the remediator may be liable to perform cleanup of the contamination to one of the three standards.

iv) Contamination Identified Subsequent to Remediation and Agreement Conditions

Under Section 502(b) of Act 2 the remediator is only relieved from liability for contamination which was identified in the baseline environmental report. For this reason, it is to the remediator's benefit to conduct a comprehensive investigation.

v) Storage Tank Closure and Corrective Action at Special Industrial Areas

Remediators are only responsible for addressing the immediate, direct or imminent threats posed at SIAs. In all cases this includes removal of waste in containers. Materials remaining in tanks must be removed and handled in accordance with applicable laws and regulations. Product may remain in the tanks if it is rendered inert and poses no risk. The actual tanks are required to be removed or rendered safe. The remediator should follow the Storage Tank Program regulations and guidance to achieve a safe closure of tanks. Smaller containers will likely be required to be removed. Releases from tanks that occur after the remediator becomes the owner or operator are the responsibility of the remediator.

vi) Consent Orders and Agreements

Remediation of all threats relevant to an SIA reuse which were detailed in the baseline environmental report will be detailed in a CO&A.

Contamination not identified in the baseline environmental report will become the responsibility of the remediator.

A change in use of the property, from that defined in the Agreement, may necessitate a change in the Agreement or modification of the proposed property reuse. A land use change for an SIA may trigger a reopener under Section 505(4) of Act 2. The CO&A with the Department will require the remediator or reuser to provide the Department with written notice of any change in the use of the property and to remediate any contamination which would prevent the use of the property for its new purpose.

vii) Remediation

Remediation in SIAs must meet the following requirements:

- Cleanup may utilize treatment, containment, removal, control methods, or any combination of the above.
- Cleanup must address all containerized waste at the property in accordance with applicable regulations.
- Soil available for direct contact must meet one of the three remediation standards.
- Cleanup of any wastes or cleanup of any medium contaminated with regulated substances which pose an immediate, direct, or imminent threat to human health or the environment based on the intended use of the property must be to one of the three remediation standards.

If groundwater is to be used at the property, the groundwater must either be remediated in-ground or at the point of use so that it is safe for its intended use and occupation of the property.

viii) Environmental Covenant

An environmental covenant is necessary for SIA remediations that require an activity and use limitation. The environmental covenant may also fulfill any deed acknowledgement requirements specified by SWMA and HSCA. Future activity and use limitations due to disposal of hazardous wastes or regulated substances may be required as part of the remedy and may be identified as part of the environmental covenant.

e) Work Plan for Baseline Remedial Investigation and Baseline Environmental Report

i) Work Plan for Baseline Remedial Investigation

A baseline remedial investigation is required for evaluation of a property that will be part of an SIA agreement. The objective of the baseline remedial investigation is to establish a reference point documenting contamination that existed prior to the redevelopment. A work plan for the baseline remedial investigation is required to be prepared by the remediator and approved by the Department prior to initiation of the investigation. The findings and conclusions of the baseline remedial investigation shall be documented in a report known as a baseline environmental report.

The work plan for the baseline remedial investigation shall be designed considering the unique considerations of SIAs and tailored for the specific property. The work plan shall address how the remediator will perform the baseline remedial investigation and shall address the items below and any additional items determined to be appropriate by the person proposing remediation or requested by the Department. The work plan for the remedial investigation shall include the steps to be taken to document the following:

- A description of the property and detailed ownership history.

- Identification of the historical regulated substance use, handling and disposal activities on the property, and any known or suspected releases associated with these activities. This is obtained by conducting an environmental site characterization, a review of historical records, and interviews with persons who may have knowledge of the property.

- Characterization of the regulated substances on the property. Identification of existing contamination that poses an immediate, direct or imminent threat to public health or the environment which would prevent the property from being occupied for the intended use.

- Identification of potential migration pathways off the property, or onto the property, and any potential receptors from any release on the property. Where migration pathways and receptors have been identified, the remediator shall perform environmental sampling of the groundwater at the downgradient property boundary to determine if regulated substances from releases on the property have migrated off the property.

- In addition to the above, environmental sampling, if indicated by the investigation, in all potential media of concern to confirm whether releases have occurred.

ii) Baseline Environmental Report

The baseline environmental report shall provide the results of the baseline remedial investigation and describe the historical use, location of areas of contamination, the intended reuse, sampling results, contaminant migration occurrence or potential, and the proposed remediation measures to ensure that the SIA requirements are met. Portions of the baseline environmental report containing information about geologic or hydrogeologic investigations shall be prepared and certified by a registered professional geologist licensed in Pennsylvania. The baseline environmental report shall be submitted without binding. The following is a recommended scope of a baseline environmental report:

Summary: Provide a summary paragraph(s) that will give the reviewer an overview of the property. This will serve to highlight the important issues and conclusion that will be presented in the report.

Description of Property: Provide a description of the property in sufficient detail to give the reader an overall idea of the property and its location. Describe the following:

- Buildings and other site features such as lagoons, tanks, treatment plants, and other structures on the property. Include a site map (scale of 1 inch = 200 feet).

- The location of all onsite wells, septic systems, floor drains, sumps and associated piping, storage areas, and chemicals or chemical compounds used, stored, treated or disposed.

- A description of present conditions at the property including any evidence of a release, contaminated media, tanks, and identification of areas of uncontained and/or SPL.

- The location and name of any public or private water supply on or near the property.

- The location, name and elevation of surface water bodies (springs, streams, lakes, ponds, wetlands) within 2,500 feet of the property.

- The location of utility lines at and near the area of investigation including any municipal or private water supply lines or natural gas lines, sanitary or sewer lines, and any other subsurface utilities.

- The location of active and inactive oil and gas wells, injection wells, surface and underground coal and non-coal mines, mine

pool discharge points, landfills, and surface disposal areas within 2,500 feet of the property.

- Identify sensitive features within 2,500 feet of the property, such as threatened or endangered species habitat, recreational river corridors, state and federal forests and parks, historic and archaeological sites, national wildlife refuges, state natural areas, prime farm land, wetlands, special protection watersheds designated under Chapter 93 and other features.

Ownership History: Provide a detailed property ownership history since the release of regulated substances onsite. Include company or individual name and address (if available), ownership period, and the general operational use of the property during each ownership period.

Site Use History: Provide detail on past and current uses of property and adjoining properties; including treatment, storage, and disposal of regulated substances. Indicate the type, estimated volume, composition, and nature of the released materials, chemicals or chemical compounds. Indicate the sources of regulated substances; description of spills, leaks, releases on the property; and migration or migration potential to adjacent properties; and remedial action to date. Include a brief description of agency actions such as violation notices, administrative orders, and environmental permits.

Site Characterization: The site characterization provides important information documenting the current conditions at the property. Information developed during the site characterization is primarily intended to describe the nature, extent, and potential for movement of all contaminants present on the property, or that may have migrated from the property. For sites where there are multiple distinct areas of contamination, the site characterization process should be applied to each area individually. The remediator must use scientifically recognized principles, standards and procedures.

Geology/Hydrogeology: Description should be based on existing literature and data (Soil Classification System (SCS) soil surveys, geologic maps, Water Resource reports, reports on nearby properties and sampling) including:

- Descriptions of the soils, fill materials, geologic, hydrologic and hydrogeologic conditions at and surrounding the property. These descriptions should be detailed enough to provide an understanding of the site with respect to local geologic conditions and to determine if property groundwater is in an aquifer as defined by Act 2.

- A local stratigraphic column including lithology, physical characteristics and the approximate thickness of each stratum, include location and depth of aquifer(s) (if known).

- The geologic structure within the property boundaries and its relation to the regional geologic structure (if known).

- The location(s) of sinkholes, fracture traces, outcrops, and lineaments (if known).

- Screening of soils, sediments and water (as appropriate). Submit all results, include QA/QC documentation. Identify field screening methods and sampling procedures. Cone Penetration Technologies (CPT) and other direct push technologies (DPT) may be used for sampling of solids, soil gases, and groundwater. CPT and DPT results should be useful to more accurately site permanent monitoring wells in areas of concern. Vapor intrusion assessments should be conducted in accordance with Section IV of this manual. All sample locations should be depicted on a site map. Incorporate results from past sampling, if applicable.

Soil investigations shall be performed to establish baseline quality of surface, shallow, and subsurface soils at the site. Investigations will involve actual, as well as potential, sources of contamination, underground storage tanks, stained soils, and building drains, sumps, and storm/sewer systems. Investigations of underground storage tanks will identify any potential impacts from possible leakage of the tanks. Sampling will be performed. Property boundary soil sampling may also be performed to assess soil quality conditions and compared to the appropriate residential or nonresidential standards based on the proposed use of the property. Groundwater investigations shall be performed to establish baseline quality of the shallow and aquifer groundwater conditions. Investigations will involve wells (both monitoring and supply, and including appropriate off-property wells), sample analysis and water quality, and groundwater level measurement.

Identified Contamination: Characterize the source and nature, concentration, location, and extent of the regulated substances. Text, tables, graphics, figures, maps and cross sections may be used to describe the nature, location, and composition of the contaminants on the property. Determine the extent, if any, of regulated substances that have migrated beyond the property boundary. Indicate all existing and potential migration pathways. Indicate the direction and rate of contaminant movement within each medium of concern.

Proposed Remediation Measures: The baseline environmental report shall include the proposed plan for remediation of the property and will serve as the basis for the CO&A. Therefore, the remedial action must be fully defined and described. The remediation of all threats relevant to the

special industrial area reuse will be reiterated in the CO&A. Identification of contamination is very important in establishing what the remediator will be obligated to cleanup, and the extent of the cleanup liability protection afforded by Act 2.

Public Notice: Provide information concerning all public notifications performed. Supply copies of the notifications and reasonable proof of required notices of the NIR in a newspaper of general circulation serving the area where the property is located. Indicate if a municipality requested a public involvement, and if so, include the public involvement plan and all comments received, and responses to those comments.

Public Benefits: The baseline environmental report should include a description of the existing or potential public benefits of the use or reuse of the property for employment opportunities, housing, open space, recreation or other uses. An estimate of the potential employment anticipated by the reuse of the property is also requested.

Signatures: If any portion of the submitted report were prepared or reviewed by or under the responsible charge of a registered professional geologist or engineer, the professional geologist or engineer in charge must sign and seal the report.

Attachments:

Attachments may include but are not limited to:

- Tables – monitoring well construction summary, groundwater gauging data (including elevation and NAPL thicknesses), analytical data, historical data.
- Figures – including groundwater elevation maps, extent of NAPL, concentration data for soil/groundwater/surface water/vapor or indoor air, cross-sections.
- Monitoring well construction diagrams, boring logs, stratigraphic logs, including soil/rock characteristics.
- Sampling and analysis plan(s).
- QA/QC Plan.
- Ecological survey documentation (from PNDI).
- Well search documentation (from PaGIS).
- Field data sheets, such as low flow purging monitoring.

- Statistical worksheets, software outputs, graphs; modeling inputs/outputs.
- Disposal documentation of soil/groundwater.
- Remediation system operation, maintenance, monitoring data; mass removal estimates.
- Before and after remediation photographs.
- Copy of municipal notification, reasonable proof of newspaper notice publication.
- Laboratory reports and any voluminous attachments may be enclosed on a CD.

APPENDIX

Appendix II-A: The Use of Caps as Activity and Use Limitations

Caps are one of the most common mechanisms used by remediators to eliminate exposure pathways at sites with subsurface contamination. As the term is used in this document, caps encompass a broad array of physical features that cover underlying contamination. Capping prevents exposure via direct contact by acting as a barrier between a human receptor and the underlying contaminated media. Low permeability caps can also help limit vertical movement of contaminants via stormwater infiltration or vapor migration. Different caps work more effectively in certain situations, so site-specific information should be used to determine which cap system to select.

The conceptual site model (see the site characterization discussion in Section II of this manual) should be used to identify potential receptors and related contaminant migration and exposure pathways. The receptors and pathways to be addressed should be evaluated before cap construction takes place to ensure that installation of the cap will achieve the desired result. Remediators should clearly understand the nature and extent of contaminants at their site and the current and projected future conditions.

The guidance provided in this addendum applies solely to the use of caps in attaining an Act 2 standard. Caps used at landfills, RCRA sites, or other non-Act 2 sites may have requirements that differ from the guidance provided in this addendum and should follow the relevant regulations of the program/entity regulating the facility. Additionally, this addendum is intended to supplement existing guidance; it is not regulation and should not be interpreted as such. This addendum is provided to inform remediators of pertinent information to consider when selecting cap systems and some of the options that are available. Remediators may choose to consider alternative technologies other than those discussed herein when addressing their specific situation. Remediators may need to develop a different approach than what is described in this guidance to provide the best fit for their specific situation.

A cap is a barrier over contaminated media that eliminates an exposure pathway, controls contaminant migration, or a combination of both. Thus, a cap can be used as an engineering control and/or an institutional control (i.e., an activity and use limitation) to attain an Act 2 standard. As such, remedies that use a cap require a cleanup plan which describes the selected remedy. If a cap already exists at the site (e.g., a parking lot) and needs to be preserved as part of the remedy, then the cleanup plan should describe the way the cap will be maintained. Since a cap is used as an activity and use limitation, a remediator must properly record an environmental covenant pursuant to the Uniform Environmental Covenants Act to ensure the cap is properly maintained in the future. If applicable, the final report should include as-built plans and details of the cap construction and photographs documenting installation of the cap, when available. The post-remediation care plan and environmental covenant should include a map depicting the extent of the cap as well as monitoring and maintenance requirements.

All components of cap utilization for the purpose of attaining an Act 2 standard, including but not limited to, design, construction, and inspection, may be governed by the Engineer, Land Surveyor, and Geologist Registration Law (63 P.S. §§ 148-158.2).

General Goals for Caps – Caps are generally used to address contamination at concentrations resulting in an unacceptable risk for the following purposes:

- Protection from direct contact with contaminated soil.

- Prevention or reduction of the migration of contamination throughout the subsurface (upward, downward, and laterally).

- Prevention of the migration of contamination to surface water via stormwater runoff.

Cap Construction Considerations – The following factors should be considered during the design, construction and maintenance of most caps, where appropriate:

- Erosion from precipitation, surface water flow or wind.

- Cracking and deterioration from natural influences including water saturation and freeze/thaw cycles.

- Expected human activities on the land covered by the cap.

- Settlement and shifting of the cap and subsurface.

- Potential damage from migration of groundwater into the cap.

- Contaminant migration, including migration to the surface of the cap and potential vapor migration. Refer to Section IV of this manual when evaluating the vapor intrusion pathway.

- Construction impacts to site development including storm water management.

Protection from Direct Contact with Contaminants

Design Goals – In addition to the cap construction considerations presented previously, the design should prevent direct contact exposure to contaminated soil for as long as the contaminant concentrations remain at unacceptable levels. Cap designs should consider site-specific factors, including, but not limited to:

- Current and anticipated future land use (anticipated future activities that could result in creating an exposure pathway to the soil should be addressed with land use restrictions).

- The nature of the contaminants (concentrations, mobility, toxicity, etc.).

- The types of potential exposure pathways (e.g., ingestion or inhalation).

- Contaminant degradation and daughter products resulting from such degradation, if any.

- The specifications of the capping material, the quality control of the cap construction, and the operation and maintenance (O&M) and inspection requirements.

- The reliability of the assurances that O&M, and inspections will be performed for as long as direct contact exposure to, or migration through or from the contaminants in soil beneath the cap would result in an unacceptable risk.

Soil Caps – Soil caps can be used to prevent direct contact exposure to contaminated soils. Soil containing regulated substances, at concentrations that do not constitute an unacceptable risk to human health by the direct contact pathway may be used as cap material. Cap thickness depends on various factors including the type and intensity of the land use above the cap and the contours/slope of the area being capped.

In general, it is recommended that caps used to prevent direct contact with contaminated soil are constructed with two feet of acceptable soil including a vegetated cover to prevent erosion and deterioration. The vegetated cover usually consists of six inches of topsoil, with appropriate seeding or sod to establish a good growth of grass. When a vegetated cover is used, consideration can be given to reducing the thickness of the acceptable soil layer by the same amount as the vegetated cover thickness (e.g., 1.5 feet of acceptable soil with an additional six inches of topsoil for a total cap thickness of two feet).

Cap designs of less than two feet thickness may be appropriate when additional design features, such as the use of warning fabrics, are considered or if the likelihood of deterioration is low (e.g. flat surfaces, low foot/vehicle traffic, etc.). Other materials, such as gravel, may substitute for vegetated topsoil as discussed below. Capping materials should be durable and meet the performance specifications required for the site.

DEP recommends placement of a demarcation boundary (warning fabric) on top of the contaminated soil and beneath the soil cap. The slope for an acceptable soil cap with vegetated topsoil cover should normally not be steeper than a 3:1 horizontal-to-vertical ratio. Steeper slopes may be considered on a case-by-case basis if it can be shown that erosion will be adequately controlled through additional design features and/or O&M. Steeper slopes will generally call for an evaluation of the need for slope reinforcement to provide long- term stability. However, cap design should use lower slopes when possible and good cover vegetation to slow down stormwater runoff velocities to prevent erosion. If cap material is suspected to have been impacted by a release, remediators should demonstrate that the material was evaluated using DEP's Management of Fill Policy (DEP ID 258-2182-773).

Pavement covers – Pavement systems may be used to prevent direct contact exposure to contaminated soils. Contaminated soil particles can work their way up through pavement surfaces where pavement settlement, shifting, cracking, freeze/thaw cycles, weathering, and deterioration are not adequately addressed in the design, construction, and maintenance of the cap. Pavement material should have appropriate bottom base soil preparation (grading, recompaction, dewatering, etc.) and sufficient base course to minimize freeze/thaw, settling, and shifting problems, which can cause pavement deterioration. Pavement thickness and overall design can be determined based on normal paving procedures to ensure structural integrity. Generally accepted pavement construction guidance sources should be used such as the American Association of State Highway Transportation Officials.

Buildings or Structures – An existing or new building or structure may be used to prevent direct contact exposure to contaminated soils, provided the building slab or basement walls/floor are evaluated for the general cap construction considerations discussed previously. Buildings with badly cracked slabs or basement floors or walls in contact with contaminated soil should be repaired. Dirt floors in buildings should be treated like any other portion of the site with bare soils.

Other Materials – The following materials, by themselves, might not be acceptable for a direct contact cover system because of the potential for contaminated soil to migrate through them. However, they

may be substituted for the vegetated topsoil portion of the soil direct contact cover system using the thickness indicated:

- Gravel or stone – A layer of gravel or stone thick enough to prevent erosion (usually six inches) is recommended.

  Note: A permeable cap constructed entirely of gravel/stone may be used to prevent direct contact if a mixed grade of aggregate is used and the layer of aggregate will pack sufficiently tightly to keep soils from migrating upward or, if the gravel/stone is used in combination with a geotextile layer to prevent soil particle migration and adequate maintenance is provided to retain the intended thickness of the cap.

- Geomembranes – A synthetic membrane liner made from thin continuous polymeric sheets is acceptable if the material is not considered an untreated geotextile. Geomembranes constructed from low density polyethylene (LDPE), high density polyethylene (HDPE), or polyvinyl chloride (PVC), are generally acceptable. If the geomembrane is not buried beneath a soil cover, resistance of the material to degradation from exposure to ultra-violet light must be considered in the design and postremediation care plan.

- Geotextiles – A woven or nonwoven geotextile is not acceptable for a direct contact cover by itself except as a very short-term temporary cover to prevent erosion. A geotextile layer may be used to:

  - Prevent contaminated soil particles from migrating to layers with concentrations of regulated substances that do not constitute an unacceptable risk.

  - Provide a demarcation layer between the cap material and contaminated soil.

  - Provide physical reinforcement and enhanced stability.

  Note: Use of a geotextile warning fabric is encouraged for sites where future construction or utility work is anticipated.

Horizontal Extent of Cap – The cap should be designed and constructed to provide adequate protection from exposure to all areas that have contaminant concentrations that do not meet an acceptable risk level. The cap design thickness should extend horizontally to a perimeter line beyond where unacceptable contamination has been delineated to ensure adequate protection from direct contact.

Prevention of Migration of Contaminants

Design Goals – If the control of contaminant movement is necessary to meet the chosen Act 2 standard, the cap design should minimize the migration of contaminants from contaminated soil to groundwater or to the surface via soil moisture or vapor migration. The cap construction considerations presented previously should also be considered for caps designed to prevent contaminant migration. The transport of chemicals to receptors of concern could occur via upward or downward movement of dissolved contamination in soil moisture and from volatile contaminant movement upward and downward in soil gas by vapor diffusion or bulk soil-gas flow. The cap may require features to control these modes of transport. If the infiltration of surface water, precipitation, or snow melt through contaminated soil needs to be significantly minimized, then the cover system should include a layer or layers that reduce

such infiltration to the extent necessary to achieve the required minimization. The design of these types of cap systems should consider site-specific factors, including, but not limited to:

- The nature of the contaminants (concentrations, degradation, solubility, mobility, toxicity, etc.).
- Depth of the contamination. (Note: The horizontal extent of the cap may need to extend beyond the direct contact footprint to address contamination in deeper soil horizons.)
- The quality of construction and the operation, maintenance and inspection program for the site.
- The reliability of O&M and inspections to maintain the remedy for as long as the unacceptable soil contaminant concentrations persist.
- Construction impacts to site development including storm water management.

Low-permeability Cap Designs – Typical materials used in the construction of low-permeability caps for reducing water infiltration include, but are not limited to, geomembranes, engineered mixtures of properly compacted fine sand, silt and clay, clay barriers, geosynthetic clay liners, concrete, and pavement. Typical materials used in the construction of vapor barriers include plastic membranes made of polyethylene or propylene, and semisolid barriers that are applied by spraying or pumping.

Buildings or Structures – An existing or new building or structure may be used to prevent infiltration into contaminated soils provided the building has a sound roof and roof runoff is managed to minimize runoff infiltration into contaminated soils. Dirt floors in buildings should be treated like any other portion of the site with bare soils. The potential for vapor intrusion into buildings should be evaluated in accordance with the guidance provided in Section IV of this manual.

Multiple Pathway Designs – A cap that meets the requirements for prevention of infiltration will likely be acceptable for prevention of direct contact. All cap systems should be designed and evaluated for the pathways being addressed.

Horizontal Extent – The guidance provided previously on the horizontal extent of cap designs for protection against direct contact exposure also applies to the prevention of contaminant migration to groundwater using the applicable groundwater protection standards.

VOC (Volatile Organic Compounds) Migration – VOC concentrations in soil and shallow groundwater may be a source of contaminant vapors that can migrate, transporting the VOCs to locations that may not be currently contaminated. Certain types of caps, such as pavement, may limit the upward vertical migration of vapors to the surface but may force them to migrate horizontally to create new contamination in soil and groundwater. The cap may also direct vapors into buildings, increasing indoor air contaminant concentrations. Vapors could migrate into the cap itself contaminating the previously acceptable material and potentially damaging it (for example, certain VOCs can degrade asphalt or kill vegetation). It may be necessary to treat or remove the sources of vapors or provide active or passive venting below and/or adjacent to a cap to remove soil vapors and prevent vapor migration.

Inspections and Maintenance

Post-remediation care plans (PRCPs) and environmental covenants must contain appropriate conditions to ensure that the integrity of the cap is maintained if the cap is used to attain an Act 2 standard. Please

refer to Section III.E of this manual for information on long-term stewardship obligations for post-remediation care plans and environmental covenants. Factors to consider and DEP's recommended best practices include the following:

- The extent of the cap should be well defined such that the owner, contractors, DEP, and other parties can readily identify the restricted area. The cap boundaries should be clearly marked on a map or site figure.

- A professional survey of the cap boundaries is beneficial, for instance when the cap is not readily visible, landmarks used to define the boundaries change, the cap area is large, or the cap boundaries are irregular.

- Caps should be inspected periodically depending on how likely they are expected to require routine maintenance and the potential risks from cap disturbance. In cases where caps are more likely to experience disturbance (e.g., on sloped surfaces or in high-use areas), inspections should be more frequent.

- Inspections should take place during and after any activities that disrupt or penetrate the cap, such as landscaping work, utility trenching, and construction.

- All inspections should be recorded in writing. Photographs are useful documentation of the cap condition. Inspection records should be maintained for a period of three years and must be made available for DEP review upon request.

- Contractors should consider the need to develop a health and safety plan to address potential future exposures to contaminated soil beneath the cap by construction and utility workers.

- Qualitative or quantitative criteria may be developed in the PRCP to determine when disruptions to cap integrity that could impair its effectiveness must be repaired.

- Disruptions of soil caps, including excavation, removal, penetration, erosion, loss of vegetated topsoil, or any other cumulative thinning of the original cap thickness, should be repaired within 30 days of the date of discovery.

- Disruptions of pavement, buildings, and other structural caps, including removal, penetration, significant cracking, erosion, or other opening(s), should be repaired within 30 days of the date of discovery.

Both the discovery and repair of cap disruptions should be reported to DEP as required by the PRCP and environmental covenant within one month of discovery. The reporting should describe the nature and cause of the disruption, explain the corrective actions taken, and document that repairs were made (e.g., photographs).

ATTACHMENT C

PADEP Management of Fill Policy and Clean Fill Certification Form

DEPARTMENT OF ENVIRONMENTAL PROTECTION
Bureau of Waste Management

DOCUMENT NUMBER: 258-2182-773

EFFECTIVE DATE: January 16, 2021

TITLE: Management of Fill Policy

AUTHORITY: This document is established in accordance with the Solid Waste Management Act, 35 P.S. §§ 6018.101 *et seq.* (SWMA); the Clean Streams Law, 35 P.S. §§ 691.1 *et seq.*; Section 1917-A of the Administrative Code, 71 P.S. § 510-17; and the Land Recycling and Environmental Remediation Standards Act, 35 P.S. §§ 6026.101 *et seq.*

POLICY: A person placing solid waste onto the ground is generally required to obtain a disposal permit from the Department of Environmental Protection (Department or DEP). A person is not required to obtain a permit under SWMA if the person can demonstrate that the material qualifies as clean fill in accordance with the municipal and residual waste regulations, 25 Pa. Code § 271.101(b)(3) and § 287.101(b)(6).

PURPOSE: This policy provides DEP's procedures for determining whether fill is "clean fill," as defined in the municipal and residual waste regulations at 25 Pa. Code § 271.1 and § 287.1, respectively, or "regulated fill," as defined in this policy. Regulated fill may not be used outside of a project area or right-of-way of a project unless a SWMA permit has been issued to the person using the regulated fill.

APPLICABILITY: This policy shall be used to evaluate whether a person is required to obtain a permit under the SWMA for the use of fill in accordance with the municipal and residual waste regulations, 25 Pa. Code § 271.101(b)(3) and § 287.101(b)(6). This policy describes the type of fill that qualifies as clean fill or regulated fill. This policy does not apply to mine land reclamation activities subject to a permit or fill used within the same project area or project right-of-way. Excavation, movement or reuse of fill within a project area or right-of-way of a project is not an activity that requires a SWMA permit. This policy does not apply to fill that has been determined to be clean or regulated fill prior to the effective date of this policy, unless the fill is moved to a new receiving site or off the project area or project right-of-way after the effective date of this policy. This policy does not apply to fill that has been determined to be clean or regulated fill prior to the implementation of revised clean fill concentration limits or regulated fill concentration limits, unless the fill is moved to a new receiving site or off the project area or project right-of-way after the effective date of the revised limits.

DISCLAIMER: The policies and procedures outlined in this guidance document are intended to supplement existing requirements. Nothing in the policies or

procedures shall affect regulatory requirements. The policies and procedures herein are not an adjudication or a regulation. There is no intent on the part of the DEP to give the rules in these policies that weight or deference. This document establishes the framework within which DEP will exercise its administrative discretion in the future. DEP reserves the discretion to deviate from this policy statement if circumstances warrant.

PAGE LENGTH: 26 pages

DEFINITIONS:

Acid-producing rock – Stone, rock or other mineral materials that, when exposed to air and water, cause a low pH discharge that adversely affects or endangers public health, safety, welfare, or the environment or causes a public nuisance.

Act 2 – The Land Recycling and Environmental Remediation Standards Act, 35 P.S. §§ 6026.101 *et seq.*

Act 2 site – A site as defined in Section 103 of Act 2, 35 P.S. § 6026.103, for which a notice of intent to remediate has been submitted to DEP.

Background – The concentration of a regulated substance that is present at a site but not related to the release of regulated substances from a specific point source or activity at the site.

Background reference area – The area identified for sampling that: will be used to establish background; is sampled and analyzed to determine the concentration of regulated substances found at or within a close proximity to the donor site, at a depth comparable to that of the area to be excavated at the donor site, in the same soil layer as the donor fill; is unaffected by a release of regulated substances from a specific point source or activity at the site; and meets one of the following criteria:

i. The concentration of regulated substances in the soil is attributable to the parent material from which the soil was derived and the natural processes which produce soil, or

ii. The concentrations of regulated substances in the soil resulted from an atmospheric deposition, including lead or polynuclear aromatic hydrocarbons, but are not attributable to a specific point source or release of a regulated substance. For the purposes of this definition, "atmospheric deposition" refers only to the ubiquitous, widespread deposition of regulated substances from the air that is incapable of being traced to a specific point source or multiple point sources. For example, chromium that has condensed on the ground outside an electroplater air vent would not be due to "atmospheric deposition" because the presence of the chromium is a result of a discharge from a specific point source, even though the chromium was released into the air before being deposited on the ground. However, the presence of lead or benzo-a-pyrene (BAP) in an urban or industrial area that can be traced to the operation of motor vehicles may be due to atmospheric deposition if the concentration levels are demonstrated to be pervasive over the greater urban or industrial area.

Clean fill – Uncontaminated, nonwater-soluble, nondecomposable, inert solid material used to level an area or bring an area to grade. The term does not include materials placed in or on the waters of the Commonwealth. Although the placement of clean fill in or on waters of the Commonwealth cannot be managed under this policy, placement of clean fill in or on waters of the Commonwealth may be approved under a separate DEP authorization. The term includes only those materials that are identified as "fill," as the term is defined in this policy. The term does not include fill that has been blended, mixed or treated with the purpose of meeting the definition of "clean fill" and that without being blended, mixed or treated would fail to meet the numeric limits identified in the definition of "uncontaminated material" contained in this policy.

Clean fill concentration limits (CFCLs) – With the exception of PCBs and chloride, the concentrations of regulated substances that do not exceed the numeric values specified in Table 3 [Medium-Specific Concentrations (MSCs) for Organic Regulated Substances in Soil] and Table 4 [Medium-Specific Concentrations (MSCs) for Inorganic Regulated Substances in Soil] of Appendix A in 25 Pa. Code

Chapter 250 (relating to administration of land recycling program). The applicable numeric limit is determined by comparison of the Generic Soil to Groundwater Value[1] with the Direct Contact Residential Value[2] and selection of the lower of the two values. For PCBs, the sum total of the concentration of all PCB aroclors (total PCB concentration) may not exceed 50 ppm. Fill containing a concentration of total PCBs greater than 2 ppm may be subject to regulation under the Toxic Substances Control Act (TSCA), 15 U.S.C. Section 2601 et seq., and 40 C.F.R. Part 761, which is administered and implemented by the U.S. Environmental Protection Agency (EPA). EPA's TSCA requirements are independent of any use of fill that is otherwise in accordance with the Department's policy and regulations. An applicant should be aware that its characterization and handling of any soils through the guidance of the Management of Fill policy does not necessarily satisfy a potential EPA TSCA inquiry, and that an applicant may need a separate approval from EPA should EPA require it. For all such material, DEP recommends that you contact the PCB Coordinator for EPA Region 3 by email at R3_PCB_Coor@epa.gov to determine whether PCB-containing fill may be used and to obtain information relating to the associated EPA procedures for collecting and analyzing samples. For chloride, the value obtained using the Synthetic Precipitation Leaching Procedure, (SPLP, SW-846, Method 1312) may not exceed the numeric value specified in Table 2 [MSCs for Inorganic Regulated Substances in Groundwater] of Appendix A in 25 Pa. Code, Chapter 250.

Composite sample – A sample collected across a spatial range that typically consists of a set of discrete samples that are combined or "composited." A composite sample should not be confused with a discrete sample that is created from multiple increments taken at a single location to obtain a sample of the desired size, shape and orientation.

Discrete sample – A sample that represents material from a single location. A discrete sample can be composed of more than one increment.

Donor site – The area from which fill originates that is separate from a receiving site. Multiple donor sites may be identified on a single project area.

Environmental due diligence – Investigative techniques used to determine whether fill from a donor site has been affected by a release of a regulated substance. Examples of investigative techniques included in this term are visual property inspections, electronic data base searches, review of ownership and historical use of a property, Sanborn maps, environmental questionnaires, transaction screens, analytical testing, environmental assessments, audits, or procedures outlined in ASTM standard E1527-13. A single investigative technique may not be used as the basis for environmental due diligence. Environmental due diligence includes visual property inspection and a review of ownership and historical property use, at a minimum, unless analytical sampling is performed in lieu of a review of ownership and historical property use.

Fill – The term is limited to clean, regulated and historic fill that is soil, rock, stone, gravel, used asphalt, brick, block or concrete from construction and demolition activities that is separate from other waste and recognizable as such, and "dredged material," as the term is defined by the municipal and residual waste regulations, 25 Pa. Code §§ 271.1 and 287.1, whichever is applicable. The term does not include reclaimed asphalt pavement, naturally occurring asbestos, mine spoils or acid-producing rock.

Grab sample – A discrete sample, consisting of one increment, collected specifically for Volatile Organic Compounds (VOC) analysis.

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[1] Numeric values based on generic leaching modeling for soils at residential properties overlying used aquifers with total dissolved solids at concentrations less than or equal to 2500 mg/L.

[2] Direct contact numeric values for soils at residential properties.

Historic fill – Material, excluding material disposed in landfills, waste piles and impoundments, used to bring an area to grade prior to 1988, and consisting of a conglomeration of soil and residuals, such as ashes from the residential burning of wood and coal, incinerator ash, coal ash, slag, dredged material and construction and demolition waste. The term does not include iron or steel slag that is separate from residuals if it is a coproduct, as the term is defined in 25 Pa. Code § 287.1 and satisfies the requirements of 25 Pa. Code § 287.8. The term does not include coal ash that is separate from residuals if it is beneficially used in accordance with 25 Pa. Code §§ 290.1 – 290.415.

Increment – Material collected in a single operation of the sampling device.

PCB – A chemical substance that is limited to the biphenyl molecule that has been chlorinated to varying degrees or a substance that contains that substance.

ppm – Parts per million.

Project area – The boundary within which earth disturbance activities occur, including areas in close proximity to the earthmoving activities that are necessary for the completion of a construction project, or other human activity which disturbs the surface of the land, including land clearing and grubbing; grading; excavations; embankments; land development; agricultural plowing or tilling; operation of animal heavy use areas; timber harvesting activities; road maintenance activities; linear projects such as utility line work; oil and gas activities; well drilling; mineral extraction; and the moving, depositing, stockpiling, or storing of soil, rock or earth materials. The term includes the boundary within which all earth disturbance activity, construction, materials storage, grading, landscaping and related activities occur.

Reclaimed asphalt pavement (RAP) – Small particles, typically less than one inch in size, of bitumen and inorganic materials produced by the mechanical grinding of bituminous pavement surfaces that have not been subject to a release of regulated substances or mixed with other solid waste. The term does not include "used asphalt," as the term is defined in this policy.

Receiving site – The area to which fill is proposed to be relocated. A receiving site is separate from a donor site and not part of a project area or right-of-way.

Regulated fill – "Fill," as the term is defined in this policy, that has been affected by release of a regulated substance and is not "uncontaminated material," as the term is defined in this policy. The term does not include fill that has been blended, mixed or treated with the purpose of meeting the definition of "regulated fill" and that without being blended, mixed or treated would fail to meet the regulated fill concentration limits, as the term is defined in this policy.

Regulated fill concentration limits (RFCLs) – With the exception of PCBs, the concentrations of regulated substances that do not exceed the numeric values specified in Table 3 [Medium-Specific Concentrations (MSCs) for Organic Regulated Substances in Soil] and Table 4 [Medium-Specific Concentrations (MSCs) for Inorganic Regulated Substances in Soil] of Appendix A in 25 Pa. Code Chapter 250 (relating to administration of land recycling program). The applicable numeric limit is determined by comparison of the Generic Soil to Groundwater Value[3] with the Direct Contact Non-Residential Value[4] and selection of the lower of the two values. For PCBs, the sum total of the

[3] Numeric values based on generic leaching modeling for soils at non-residential properties overlying used aquifers with total dissolved solids at concentrations less than or equal to 2500 mg/L.
[4] Direct contact numeric values for soils at non-residential properties.

concentration of all PCB aroclors (total PCB concentration) may not exceed 50 ppm. Fill containing a concentration of total PCBs greater than 2 ppm may be subject to regulation under the Toxic Substances Control Act (TSCA), 15 U.S.C. Section 2601 et seq., and 40 C.F.R. Part 761, which is administered and implemented by the EPA. EPA's TSCA requirements are independent of any use of fill that is otherwise in accordance with the Department's policy and regulations. An applicant should be aware that its characterization and handling of any soils through the guidance of the Management of Fill policy does not necessarily satisfy a potential EPA TSCA inquiry, and that an applicant may need a separate approval from EPA should EPA require it. For all such material, DEP recommends that you contact the PCB Coordinator for EPA Region 3 by email at R3_PCB_Coor@epa.gov to determine whether PCB-containing fill may be used and to obtain information relating to the associated EPA procedures for collecting and analyzing samples.

Regulated substance – The term includes hazardous substances and contaminants regulated under the Hazardous Sites Cleanup Act, 35 P.S. §§ 6020.101 *et seq.*; and substances regulated by the Clean Streams Law, 35 P.S. §§ 691.1 *et seq.*; the Air Pollution Control Act, 35 P.S. §§ 4001 *et seq.*; the Solid Waste Management Act, 35 P.S. §§ 6018.101 *et seq.*; the Infectious and Chemotherapeutic Waste Law, 35 P.S. §§ 6019.1 *et seq.*; and the Storage Tank and Spill Prevention Act, 35 P.S. §§ 6021.101 *et seq.*

Release – Spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping or disposing of a regulated substance into the environment in a manner not authorized by the Department. The term includes the abandonment or discarding of barrels, containers, vessels and other receptacles containing a regulated substance.

Uncontaminated or *Uncontaminated material* – The term means either of the following:

(1) Fill unaffected by a release of a regulated substance or,

(2) Fill affected by release of a regulated substance, if the concentrations of regulated substances in the fill do not exceed the clean fill concentration limits, as the term is defined in this policy. Analysis should be carried out for only those regulated substances that are suspected to be present due to a release.

The term does not include fill that has been blended, mixed or treated with the purpose of meeting the definition of "uncontaminated material."

Used asphalt **–** Pieces of bitumen and inorganic materials from the demolition of bituminous pavement. The term does not include "reclaimed asphalt pavement," as the term is defined by this policy.

REFERENCES:

25 Pa. Code Chapters 287 to 299 (residual waste regulations)
25 Pa. Code Chapters 271 to 285 (municipal waste regulations)
Solid Waste Management Act, 35 P.S. §§ 6018.101 *et seq.*
Land Recycling and Environmental Remediation Standards Act, 35 P.S. §§ 6026.101 *et seq.*
Section 1917-A of the Administrative Code, 71 P.S. § 510-17
The Clean Streams Law, 35 P.S. §§ 691.1 *et seq.*

TECHNICAL GUIDANCE:

A. Purpose and Applicability

Fill is used in construction or earthmoving projects across the Commonwealth to level an area or bring an area to grade. These projects may involve using fill as a subbase or to fill in low-lying areas. The manner in which fill may be used depends on whether the fill is clean fill or regulated fill. This policy provides procedures for determining whether fill is clean fill or regulated fill and describes how each category may be managed after a fill determination has been performed.

This policy does not apply to the following activities:

- Mine land reclamation activities subject to a permit.
- Management of waste from land clearing, grubbing and excavation, including trees, brush, stumps and vegetative material.[5]
- Movement or use of fill within a project area or right-of-way of a project.
- Use of reclaimed asphalt pavement in accordance with DEP's industry-wide coproduct determination.
- The use of clean fill or regulated fill prior to January 1, 2020, unless the fill is moved to another receiving site, project area or off the project right-of-way after January 1, 2020.

In general, fill that is demonstrated to be clean fill can be used in an unrestricted manner, provided it is not placed in waters of the Commonwealth; it is used in compliance with 25 Pa. Code, Chapters 102 and 105 (relating to erosion and sediment control; and dam safety and waterway management); and it is managed in accordance with Section D of this policy. Persons using fill must also comply with the fugitive emissions regulations under 25 Pa. Code, Chapter 123 (relating to standards for contaminants) issued under the Air Pollution Control Act, 35 P.S. § 4001, and shall comply with all the applicable provisions of 25 Pa. Code §§ 123.1 and 123.2 (relating to prohibition of certain fugitive emissions and fugitive particulate matter). Depending on the manner in which it is generated, clean fill may be a "waste," as that term is defined in the municipal or residual waste regulations, 25 Pa. Code § 271.1 and § 287.1, respectively, whichever is applicable.

This policy does not apply to fill that has been determined to be clean or regulated fill prior to the implementation of revised CFCLs or RFCLs, unless the fill is moved to a new receiving site or off the project area or project right-of-way after the effective date of the revised CFCLs or RFCLs.

Fill that is demonstrated to be regulated fill can be used by persons who have applied for and obtained coverage under the Department's General Permit No. WMGR096, Beneficial Use of

[5] In accordance with 25 Pa. Code § 271.101(b)(4), a person managing waste from land clearing, grubbing and excavation, including trees, brush, stumps and vegetative material, shall implement best management practices developed by the Department. Refer to Document No. 254-5400-001 - *Best Management Practices for the Management of Waste From Land Clearing, Grubbing, and Excavation (LCGE)*.

Regulated Fill. Coverage under General Permit No. WMGR096 is not required in the following instances:

- Remediation activities undertaken entirely on an Act 2 site, pursuant to the requirements of § 902 of Act 2.

- When fill from an Act 2 site is used as construction material at a receiving site that is being remediated to attain an Act 2 standard, provided the procedural and substantive requirements of Act 2 and the conditions specified in Section C.2.a. and b. of this policy are satisfied.

- Use of the regulated fill is limited to the excavation, movement or use of the regulated fill within a project area or right-of-way of a project.

Regulated fill is a "waste," as that term is defined in the municipal or residual waste regulations, 25 Pa. Code § 271.1 and § 287.1, respectively.

B. Procedure for Performing a Fill Determination

Prior to the movement of fill to a receiving site, either the person proposing to provide the fill from a donor site or the person proposing to receive the fill determines whether the fill is clean fill or regulated fill pursuant to this policy. Use the following steps to make that determination:

1. Determine Eligibility: A material is eligible for management as clean or regulated fill under this policy if it satisfies the following criteria:

    a. The material is "fill," as the term is defined in this policy. If the fill under consideration contains acid-producing rock, it is specifically excluded from the definition of fill. Appendix B contains information relevant to identifying acid-producing rock.

    b. The fill does not contain regulated substances that were intentionally released.

    c. The fill has not been blended, mixed or treated with the purpose of meeting the definition, or applicable numeric limits, of "uncontaminated material," "clean fill" or "regulated fill."

    d. The fill does not exhibit a characteristic of toxicity, as determined by 40 CFR § 261.24 (relating to toxicity characteristic). The toxicity characteristic is of concern only when environmental due diligence indicates that the fill being considered for use may have been affected by a release of a regulated substance that is included in Table 1 in 40 CFR § 261.24. If the total concentration of the substance exceeds the limit for the substance in Table 1 of 40 CFR § 261.24 by a factor of 20 or more, the issue regarding potential toxicity should be addressed either by performing the Toxic Characteristic Leaching Procedure (TCLP), in accordance with Method 1311, found in the most recent version of EPA's publication, *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*, also known as SW–846, or providing additional description of the fill, indicating that the substance is bound in the matrix and not leaching.

e. PCB-containing Fill: If the environmental due diligence indicates that the fill may have been subject to a release of PCBs, test it for the presence of PCBs. Fill containing a concentration of total PCBs greater than 2 ppm may be subject to regulation under the Toxic Substances Control Act (TSCA), 15 U.S.C. §§ 2601 *et seq.*, and 40 CFR Part 761, which is administered and implemented by the EPA. EPA's TSCA requirements are independent of any use of fill that is otherwise in accordance with the Department's policy and regulations. An applicant should be aware that its characterization and handling of any soils through the guidance of the Management of Fill policy does not necessarily satisfy a potential EPA TSCA inquiry, and that an applicant may need a separate approval from EPA should EPA require it. For all such material, DEP recommends that you contact the PCB Coordinator for EPA Region 3 by email at R3_PCB_Coor@epa.gov to determine whether PCB-containing fill may be used and to obtain information relating to the associated EPA procedures for collecting and analyzing samples.

2. Perform Environmental Due Diligence: Once determined that the fill is eligible for use under this policy, evaluate the fill to determine whether it has been affected by a release of a regulated substance by performing "environmental due diligence," as the term is defined in this policy. Except for historic fill, analytical testing of the fill is not necessary unless environmental due diligence indicates that the fill may have been affected by a release of a regulated substance. However, a person performing a fill determination may choose to perform analytical testing in lieu of conducting a review of ownership and historic property use to satisfy the minimum condition for performing environmental due diligence.

The use of historic fill as clean fill under this policy is limited to historic fill that is a conglomeration of soil, residuals and fill. Historic fill that is comprised primarily of residuals does not represent a conglomeration of soil, residuals, and fill and therefore, cannot be used as clean fill. Pockets of residuals, such as ash or slag, should be removed and managed separately from other historic fill prior to making a determination that the historic fill can be used as clean fill. Perform analytical testing to demonstrate that the historic fill meets the definition of uncontaminated material. To qualify for use as clean fill, historic fill should be tested for the parameters included in Table 1, below, as well as any additional parameters that are suspected based on historic property use or review of records. The placement of historic fill as clean fill may not contaminate groundwater. For regulated substances detected in the historic fill, the value obtained using the Synthetic Precipitation Leaching Procedure, (SPLP, SW-846, Method 1312) may not exceed the numeric value as identified in Table 1 [MSCs for Organic Regulated Substances in Groundwater] and Table 2 [MSCs for Inorganic Regulated Substances in Groundwater] of Appendix A in 25 Pa. Code, Chapter 250.

a. If due diligence shows no evidence that the fill may have been affected by a release of a regulated substance, the fill may be managed as clean fill in accordance with the Section D of this policy (relating to management of clean fill) unless during movement, transport or placement there are observable indications (such as appearance or odors) which indicate evidence of a release of a regulated substance.

b. If due diligence shows evidence that the fill may have been affected by a release of a regulated substance, test the fill to determine if it is clean fill or regulated fill. Perform the testing in accordance with Appendix A of this policy. Analysis should be carried out for only those regulated substances that are suspected to be present due to a release or based upon historic use of the donor site.

i. Except as provided elsewhere in this policy, if testing reveals that the fill contains regulated substances at concentrations that are below the CFCLs, the fill may be managed as clean fill in accordance with Section D of this policy (relating to management of clean fill). A person may not blend, mix or treat fill that would otherwise fail to meet the CFCLs with the purpose of meeting the definition of uncontaminated material or clean fill. For the purposes of completing Form FP-001 for the certification of clean fill, the CFCLs in effect on the date of submission should be used to evaluate whether the fill qualifies for use as clean fill.

ii. Except as provided elsewhere in this policy, if testing reveals that the fill contains regulated substances at concentrations that exceed the CFCLs but are at or below the RFCLs, the fill may be managed as regulated fill only if coverage under General Permit No. WMGR096 is obtained. A person may not blend, mix or treat fill that would otherwise fail to meet the RFCLs with the purpose of meeting the definition of regulated fill. Manage regulated fill in accordance with the Section C of this policy (relating to management of regulated fill).

iii. Except as provided elsewhere in this policy, if testing reveals that the fill contains regulated substances at concentrations that exceed the RFCLs, the fill may not be managed as clean fill or regulated fill. Fill exceeding the RFCLs may require disposal in accordance with the hazardous, municipal or residual waste regulations, 25 Pa. Code, Articles VII, VIII or IX, respectively, whichever is applicable.

TABLE 1: Screening Parameters for Historic Fill

Regulated Substance	CASRN	Regulated Substance	CASRN	Regulated Substance	CASRN
Aldrin	309-00-2	PCB-1254 (Aroclor)	11097-69-1	Copper	7440-50-8
Anthracene	120-12-7	Phenanthrene	85-01-8	Iron	7439-89-6
Benzene	71-43-2	Pyrene	129-00-0	Lead	7439-92-1
Benzo(a)anthracene	56-55-3	Toluene	108-88-3	Manganese	7439-96-5
Benzo(a)pyrene	50-32-8	Trichloroethane, 1,1,1-	71-55-6	Mercury	7439-97-6
Benzo(b)fluoranthene	205-99-2	Trichloroethylene (TCE)	79-01-6	Molybdenum	7439-98-7
Benzo(ghi)perylene	191-24-2	Xylenes (Total)	1330-20-7	Nickel	7440-02-0
Chrysene	218-01-9	Aluminum	7429-90-5	Selenium	7782-49-2
Cumene (Isopropyl benzene)	98-82-8	Antimony	7440-36-0	Silver	7440-22-4
DDD, 4,4	72-54-8	Arsenic	7440-38-2	Thallium	7440-28-0
DDE, 4,4	72-55-9	Barium	7440-39-3	Vanadium	7440-62-2
DDT, 4,4	50-29-3	Beryllium	7440-41-7	Zinc	7440-66-6

TABLE 1: Screening Parameters for Historic Fill

Regulated Substance	CASRN	Regulated Substance	CASRN	Regulated Substance	CASRN
Dichloroethylene, cis-1,2-	156-59-2	Boron	7440-42-8	Ammonia	7664-41-7
Dieldrin	60-57-1	Cadmium	7440-43-9	Chloride	7647-14-5
Ethylbenzene	100-41-4	Chromium(III)	16065-83-1	Fluoride	7681-49-4
Fluorene	86-73-7	Chromium(VI)	18540-29-9	Sulfate	7757-82-6
Ideno(1,2,3-cd) pyrene	193-39-5	Chromium (total)	7440-47-3		
Napthalene	91-20-3	Cobalt	7440-48-4		

C. Management of Regulated Fill

Regulated fill must be managed in accordance with the Department's municipal or residual waste regulations, 25 Pa. Code § 271.2 and § 287.2, respectively, whichever is applicable, and may be beneficially used in accordance with General Permit No. WMGR096.

Coverage under General Permit No. WMGR096 is not required in the following instances:

1. Remediation activities undertaken entirely on an Act 2 site, pursuant to the requirements of Section 902 of Act 2.

2. When fill from an Act 2 site is used as construction material at a receiving site that is being remediated to attain an Act 2 standard, provided the procedural and substantive requirements of Act 2 and the following are satisfied:

    a. Regulated substances contained in the fill are incorporated into the notice of intent to remediate and the final report for the remediation taking place at the receiving site.

    b. Movement of fill between Act 2 sites is documented in the final reports for both the donor site and receiving site.

    c. Except as provided elsewhere in this policy, placement of the fill does not and will not cause the receiving site undergoing remediation to exceed the selected Act 2 standard.

3. Use of the regulated fill is limited to the excavation, movement or use of the regulated fill within a project area or right-of-way of a project.

A person or municipality interested in obtaining coverage under General Permit No. WMGR096 must apply to the Department in accordance with the application instructions provided in the permit. The terms and conditions of General Permit No. WMGR096 are available on the Department's website.

D. Management of Clean Fill

Pursuant to 25 Pa. Code § 271.101(b)(3) and § 287.101(b)(6), use of clean fill does not require a permit under the SWMA or the municipal or residual waste regulations. Clean fill may be used in accordance with all applicable requirements governing the placement or use of clean fill,

including 25 Pa. Code Chapter 102 (relating to erosion and sediment control) and 25 Pa. Code Chapter 105 (relating to dam safety and waterway management). Persons using fill must also comply with the fugitive emissions regulations under 25 Pa. Code, Chapter 123 (relating to standards for contaminants) issued under the Air Pollution Control Act, 35 P.S. § 4001, and shall comply with all the applicable provisions of 25 Pa. Code §§ 123.1 and 123.2 (relating to prohibition of certain fugitive emissions and fugitive particulate matter). The use of clean fill may be regulated under other environmental laws and regulations.

If the uncontaminated brick, block or concrete from a construction or demolition activity is intended for use as clean fill, best management practices (BMPs) should be followed prior to demolition activities to remove from a building or structure all materials that do not meet the definition of clean fill, such as materials or surfaces covered with lead-based paint, friable asbestos, and hazardous materials such as mercury switches, PCB ballasts, tritium-containing exit signs, and fluorescent light bulbs.

Clean fill may not contain any free liquids based on visual inspection and cannot create a public nuisance (such as an objectionable odor) to users of the receiving site or adjacent properties.

If any person wants to use clean fill under this policy, complete Form FP-001, Certification of Clean Fill, and submit it to DEP electronically on the DEP website at https://www.dep.pa.gov/Business/Land/Waste/SolidWaste/Residual/Pages/default.aspx. Complete and submit the FP-001 prior to movement of clean fill to the receiving site. Complete and submit FP-001 regardless of whether sampling and analysis are performed as part of environmental due diligence.

If the donor site has undergone or is undergoing cleanup or remediation under a local, state or federal regulatory program that requires site characterization, or if the fill proposed to be managed as clean fill has otherwise been subject to analytical testing or other procedures identified in the definition of "environmental due diligence," attach the following to Form FP-001:

- Copies of the sampling plan developed for the fill,
- All laboratory reports,
- Documentation and data associated with a background determination and equivalent site evaluation conducted as part of the fill determination, including the identification and location of point sources, the proximity of identified point sources to the background reference area, identification of areas of imported fill other than imported clean fill, etc.

If a person receives fill from multiple donor sites, a separate Form FP-001 is necessary for each donor site. DEP will accept the completed FP-001 electronically via a link on the DEP website.

If a background demonstration is made, as described in Appendix A of this policy, use the FP-001 to include documentation of the background demonstration along with documentation demonstrating that an equivalent site evaluation has been performed and the provisions of Appendix A have been satisfied.

Both the donor site and the receiving site are responsible for maintaining copies of the completed Form FP-001 for a period of five (5) years. Copies of the form and all supporting documentation, including analytical test reports, should be made available and provided to DEP upon request.

Appendix A
Sample Collection and Analytical Testing Protocol for Performing Environmental Due Diligence

Prior to movement of fill to a receiving site, use Sections B-D of the Management of Fill policy to make a fill determination. Analytical testing of the fill is not necessary unless environmental due diligence indicates a release of a regulated substance. This Appendix provides guidelines for using analytical testing as part of the environmental due diligence.

A. Sampling Plan Development

The first step in a chemical evaluation of fill is to develop a plan for sampling. To use analytical testing as part of the environmental due diligence, develop and implement a scientifically credible sampling plan in accordance with the most recent version of the EPA's publication, *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods,* also known and hereinafter referred to as SW-846, and the *RCRA Waste Sampling Draft Technical Guidance, EPA530-D-02-002*. Chapter 9 of SW-846 describes procedures for developing a sampling plan and the statistical treatment of data. Where there is disagreement between the procedures outlined in this Appendix and the referenced EPA documents, follow the procedures contained in this Appendix.

Employ a systematic planning process, such as the Data Quality Objectives Process identified in the *RCRA Waste Sampling Draft Technical Guidance*, to set objectives for the type, quantity and quality of data needed to demonstrate with a known level of assurance that the applicable standards for clean fill or regulated fill are achieved. The level of complexity and detail needed in the sampling plan are directly related to the size, scope and level of complexity of the donor site.

The following are the minimum scientific objectives of a sampling plan developed under this policy:

- Identify and quantify known or suspected contaminants in the fill.
- Collect samples that will allow measurements of the chemical properties of the fill that are both accurate and precise.
- Collect representative samples, which for the purposes of implementing this policy are samples exhibiting typical properties of the whole volume of fill.
- Collect enough samples, and in no case less than eight discrete samples or two composite samples, to sufficiently represent the variability of the fill.
- Obtain a statistically valid and reliable estimate of the fill's chemical properties.

Characterize the fill both horizontally and vertically to represent the entire volume of fill to be transported off the donor site and used at a receiving site. A thorough characterization will provide the following information:

- Identity of regulated substances associated with a release that are present in the fill, the concentration of each identified regulated substance, and the spatial variation in concentration of each regulated substance both horizontally and vertically.

- The physical characteristics of the fill in which the regulated substances associated with a release are present. Examples of these include the fill type (such as soil, rock, dredge), texture, dry bulk density, permeability, organic carbon content, porosity, and moisture content. Include documentation of physical characteristics and any significant variability over the donor site.

In the sampling plan include a summary of existing information about the donor site, including any previously performed sampling or analysis information, preliminary estimates of summary statistics such as the mean and standard deviation, process descriptions and materials used, spatial boundaries of the donor site to be managed under this policy, information about what is known or suspected at the donor site, releases, and release mechanisms. Document this information by written descriptions of site conditions supported by maps, cross-sections, site diagrams, or other descriptive, graphical, or tabular illustrations necessary to characterize the site conditions.

Sampling units for fill managed under this policy should represent the total volume of fill being characterized pursuant to Sections B and C of this Appendix. Sampling plans may include a combination of probability sampling and authoritative sampling designs depending on conditions at the donor site. Probability sampling should be used to characterize the fill as a whole. Some sites may require additional, more focused sampling, such as authoritative sampling, to evaluate problem areas, such as localized areas that are suspected to contain the highest levels of regulated substances, or "hot spots," or areas that may require further evaluation. For example, areas that housed an underground storage tank or experienced a release of regulated substances should be sampled authoritatively and more frequently than other areas of the donor site. The remaining area of the donor site should be sampled using probability sampling, in which all parts of the fill being characterized have a known probability of being included in the characterization. Samples collected to delineate a "hot spot" are typically in addition to those collected for the overall site characterization.

B. Sampling Procedures for Fill Stored in Piles

There are several variables involved in the sampling of fill stored in piles, including the size and shape of the pile, compactness of the fill, and physical properties of the fill. The size and shape of the pile should be used to calculate volume and plan for the correct number of samples to be taken. Simple random sampling or stratified random sampling should be used to obtain representative samples from a fill pile, in accordance with SW-846 and Sections 5.2.1 – 5.2.2, and 5.3 of the *RCRA Waste Sampling Draft Technical Guidance, EPA530-D-02-002*. A method of random sampling, such as simple random or stratified random sampling should be used unless one of the following conditions exists:

- There are known distinct strata.

- An objective of the sampling is to prove or disprove that there are distinct strata.

- The number of samples is limited, and an objective of the sampling is to statistically minimize the size of a "hot spot" that might not get sampled.

Stratified random sampling can be employed only if all points within the pile can be accessed. In such cases, the pile should be divided into a three-dimensional grid system. The grid cubes should be numbered, and the grid cubes to be sampled should be chosen by random number tables or generators.

Generally, stainless-steel shovels, trowels, or scoops should be used to clear away surface material before samples are collected. Depth samples may be collected using a decontaminated auger. For a sample core, thin-wall tube samplers or grain samplers may be used. Near surfaces, samples can be collected with a clean, stainless-steel spoon or trowel. All samples collected, except those for VOCs analysis, should be placed into a Teflon-lined or stainless-steel pail and mixed thoroughly before transfer to the appropriate sample container. Since volatilization of VOCs can occur rapidly once the matrix is disturbed, grab samples are necessary for VOCs analysis. Grab samples should be handled as intact cores and transferred immediately to the container that will be used for analysis. Refer to SW-846, Method 5035, for container and preservation details specific to samples for VOCs analysis.

The sampling and subsequent analysis of fill stored in piles may be performed by collecting composite or discrete samples.

1. Procedure for Using Composite Samples:

    a. Do not use composite sampling if the integrity of the individual sample changes because of the physical mixing of discrete samples.

    b. For up to 125 cubic yards of fill, collect and handle eight discrete samples (plus two grab samples for VOCs) as follows:

        i. Prior to compositing, field screen the eight discrete samples to identify the two that are most likely to contain the highest concentrations of VOCs.

        ii. In accordance with SW-846, Method 5035, collect grab samples for VOC analysis from the two points identified by the field screening described above.

        iii. For all other substances, combine the eight discrete samples collected into two composite samples comprised of four discrete samples each. Perform the analysis on the two composite samples in accordance with SW-846.

c. For greater than 125 cubic yards and up to and including 3,000 cubic yards, collect and handle 12 discrete samples (plus three grab samples for VOCs) as follows:

i. Prior to compositing, field screen the 12 discrete samples to identify the three samples that are most likely to contain the highest concentrations of VOCs.

ii. In accordance with SW-846, Method 5035, collect grab samples for VOC analysis from the same sampling points as the three discrete samples identified by field screening.

iii. For all other substances, combine the 12 discrete samples collected into three composite samples comprised of four discrete samples each. Perform the analysis on the three composite samples in accordance with SW-846.

d. For each additional 1,000 cubic yards of fill or part thereof over the initial 3,000 cubic yards, collect four additional discrete samples (plus one grab sample for VOCs). Composite and analyze the four discrete samples in accordance with SW-846.

2. Procedure for Using Discrete Samples:

a. For up to 125 cubic yards of fill, collect and analyze a minimum of eight discrete samples (plus two grab samples for VOCs). For volumes of fill greater than 125 cubic yards and up to and including 3,000 cubic yards, collect and analyze a minimum of 12 discrete samples (plus three grab samples for VOCs). For each additional 1,000 cubic yards of fill or part thereof over the initial 3,000 cubic yards, collect and analyze a minimum of four additional discrete samples (plus one grab sample for VOCs).

b. For VOCs analysis, perform grab sampling as described in subsection B.1 of this Appendix.

C. Sampling Procedures for In-situ Fill

For the purposes of this policy, “in-situ fill” refers to fill that is undisturbed in its original location at the donor site or fill that has previously been used as clean or regulated fill and will be subsequently excavated and moved to a receiving site. If conducting sampling on in-situ fill to evaluate whether that fill can be managed as clean or regulated fill, characterize both the vertical and horizontal extent of the fill to be transported and used at a receiving site. Where multiple zones of contamination are possible due to site-specific conditions, including separate and discrete releases or the manner in which fill was originally placed, the characterization and demonstration that the fill meets the CFCLs or RFCLs apply individually to the separate zones.

For in-situ sampling where the purpose of the sampling is to characterize a specific release at the donor site, discrete samples collected using a focused sampling technique, such as authoritative sampling, must be used for analysis. These areas may be:

- Localized areas that are known to contain levels of regulated substances that exceed the CFCLs or RFCLs, whichever is applicable, based on analytical results, or

- Localized areas suspected to contain levels of regulated substances that exceed the CFCLs or RFCLs from a specific release, whichever is applicable, based on the historic use of the site.

Once the specific release at the donor site has been characterized, composite samples may be used to confirm that the remaining fill to be excavated and transported to a receiving site and used as clean or regulated fill meets the CFCLs or RFCLs, respectively.

To characterize the remaining area, the area should be sampled using a method of random sampling, such as simple random or stratified random sampling. Composite samples can then be used to verify that the fill intended for excavation and transportation meet the CFCLs or RFCLs, whichever is applicable. When composite samples are utilized for in-situ samples, the sampling plan must demonstrate that localized areas that are known to contain regulated substances exceeding the CFCLs or RFCLs, whichever is applicable, are not included in the portion of the site evaluated using composite samples.

Apart from known hot spots, which may require further sampling and analysis, as discussed above, the donor site should be divided into a three-dimensional grid. Where possible, each grid unit should be of similar size and shape and be comprised of equal volumes of fill. A method of random sampling, such as simple random or stratified random sampling, should be chosen based on knowledge of the donor site as set forth in SW-846 or the *RCRA Waste Sampling Draft Technical Guidance, EPA530-D-02-002*.

The number of sample points is determined by the volume of fill being characterized. Sampling frequency should account for the depth of donor fill to be removed. If an area of donor fill will be excavated to more than one depth (for example, three feet in one part and six feet in another part), then the samples should be distributed accordingly at multiple depths to be representative of the full depth of each cut. Determine the minimum number of samples using the procedure outlined in subsection B.2 of this Appendix. Additional sampling may be necessary based on site-specific conditions.

D. Evaluation of Data

Evaluate sample data generated in accordance with Sections B and C of this Appendix in accordance with the following:

1. For a composite sample collected in accordance with subsection B.1, the measured numeric value for a parameter may not exceed the CFCL for that parameter for the fill to be managed as clean fill, or the RFCL for that parameter for the fill to be managed as regulated fill.

2. For a grab sample collected for VOC analysis in accordance with the above sections, the measured numeric value for a parameter may not exceed the CFCL for that parameter for the fill to be managed as clean fill, or the RFCL for that parameter for the fill to be managed as regulated fill.

3. For discrete samples collected in accordance with subsection B.2, the measured numeric values for a substance in 75% of the discrete samples may not exceed the CFCL for that parameter for the fill to be managed as clean fill, or the RFCL for that parameter for the fill to be managed as regulated fill. For persons using the discrete sampling method, no single sample may show regulated substances at a concentration that is more than twice the CFCL or RFCL, whichever is applicable, for any parameter.

E. Alternate Evaluation of Data

In lieu of Section D of this Appendix, a person may use the 95% Upper Confidence Limit (UCL) of the arithmetic mean to determine whether the fill meets the CFCL or RFCL, whichever is appropriate, for a parameter. The calculated 95% UCL of the arithmetic mean should be below the appropriate CFCL or RFCL for that parameter. Persons intending to use this method for the treatment of data should determine a minimum number of samples in accordance with SW-846 and the *RCRA Waste Sampling Draft Technical Guidance, EPA530-D-02-002*. The application of the 95% UCL of the arithmetic mean should comply with the following performance standards:

1. The null hypotheses (Ho) is that the true arithmetic average concentration is at or above the CFCL or RFCL for that parameter, whichever is appropriate, and the alternative hypothesis (Ha) is that the true arithmetic average concentration is below the CFCL or RFCL for that parameter, whichever is appropriate.

2. Meet the underlying assumptions of the statistical method, such as data distribution.

3. Compositing cannot be used for VOCs.

4. The censoring level for each non-detect is the assigned value randomly generated that is between zero and the limit related to the practical quantitation limit (PQL).

5. Tests should account for spatial variability, unless otherwise approved by the Department.

6. Statistical testing should be done individually for each parameter for which a single sample result or multiple results exceed(s) a limit.

7. Where a fill has distinct physical, chemical or biological characteristics, or originates from different areas, do the statistical testing separately.

8. Document the following information:

    a. A description of the original areas of the fill and physical, chemical and biological characteristics of the fill.

b. A description of the underlying assumptions of the statistical method.

c. Documentation showing that the sample data set meets the underlying assumptions of the statistical method.

d. Documentation of input and output data for the statistical test, presented in tables or figures, or both, as appropriate.

e. An interpretation and conclusion of the statistical test.

F. Use of the Synthetic Precipitation Leaching Procedure (SPLP, SW-846 Method 1312) to Establish an Alternative Soil-to-Groundwater Value

Fill may be analyzed using SPLP to provide an alternative soil-to-groundwater value for use in making a fill determination. The value obtained using the SPLP represents a concentration of a regulated substance in the fill that does not produce leachate in which the concentration of the regulated substance exceeds the applicable groundwater MSC identified in Table 1 [MSCs for Organic Regulated Substances in Groundwater] or 2 [MSCs for Inorganic Regulated Substances in Groundwater] of Appendix A in 25 Pa. Code, Chapter 250. For both clean and regulated fill, the groundwater MSC for used aquifers with TDS <2,500 mg/L should be used to compare the SPLP result to Tables 1 or 2. For clean fill, use the groundwater MSC for residential use ("R") for comparison. For regulated fill, use the groundwater MSC for non-residential use ("NR") for comparison. If SPLP is used to identify an alternative soil-to-groundwater value, the alternative value is only applicable to the fill that was tested using SPLP.

Use the following procedure to determine an alternative soil-to-groundwater value based upon the SPLP:

1. During characterization of the donor site, obtain a minimum of ten samples from the proposed fill. For volumes of fill less than 125 cubic yards, collection of a minimum of eight samples is acceptable. Submit the four samples with the highest total concentration of the regulated substance for SPLP analysis. Samples obtained will be representative of the soil type and horizon impacted by the release of the regulated substance.

2. Determine the lowest total concentration (TC) that generates a failing SPLP result. The alternative soil-to-groundwater value will be the next lowest TC.

3. If all samples result in a passing SPLP level, the alternative soil-to-groundwater value will be the TC corresponding to the highest SPLP result. Additional samples may be collected.

4. If none of the samples generates a passing SPLP, additional samples may be collected and concurrent TC/SPLP analyses performed to satisfy the above conditions for establishing an alternative soil-to-groundwater value.

5. The alternative soil-to-groundwater value is then compared to the direct contact residential value for clean fill or the direct contact non-residential value for regulated fill

found in Chapter 250, Appendix A, Tables 3[6] or 4[7]. The lower of the compared values is the applicable numeric limit.

G. Performing a Background Demonstration and Equivalent Site Evaluation

A background demonstration may be utilized for both clean fill and regulated fill determinations. For clean fill determinations, use the CFCLs. For regulated fill, use the RFCLs. If fill from the donor site contains regulated substances at concentrations exceeding the CFCL or RFCL, whichever is appropriate, for that parameter, a demonstration may be made to show that the exceedance is due to background at the donor site. If a successful background demonstration is made, perform an equivalent site evaluation prior to movement of fill to a receiving site. The equivalent site evaluation ensures that no new regulated substance is placed on the receiving site other than a regulated substance already determined to be present and that the concentration(s) of regulated substance(s) in the donor fill has been compared to the concentration(s) of the same regulated substance(s) at the receiving site in accordance with subparagraphs G.3.b.i-ii. of this Appendix. Regulated substances detected in the donor fill that are below the CFCL or RFCL, whichever is appropriate, for that parameter, do not require a background demonstration or an equivalent site evaluation.

Generally, only naturally occurring metals, lead and some ubiquitous organics, such as polynuclear aromatic hydrocarbons (PAHs), from widespread atmospheric deposition, are eligible for a background demonstration. When data or other information indicates that a regulated substance has migrated onto the donor site from the release of a regulated substance at another site, the regulated substance is not due to background of that substance at the donor site. Pathways for the migration of a regulated substance due to an offsite release include surface runoff from specific sources (such as runoff from parking lots and storage facilities where spills have occurred); spills at railroad facilities and in railroad rights-of-way; and air deposition of regulated substances from specific sources.

Previously collected background data published by an accredited source with appropriate peer review may be considered, provided the information is sufficiently focused and contains the level of detail on the area used to determine background necessary to legitimately compare it to the donor site. The description of the sampling and analysis performed should be detailed enough to provide statistical validity.

Use the following guidelines when performing a background demonstration under this policy:

1. Select a Background Reference Area:

   The first step in making a demonstration that the presence of a regulated substance is due to background at the donor site and is not due to a release is to select a background reference area, as the term is defined in this policy, to collect samples for the purpose of establishing background at the donor site. Samples may be collected from the background reference area to demonstrate that an exceedance of a CFCL or RFCL, as appropriate, can be attributed to background, as the term is defined in this policy. Background reference areas should not include areas affected by a known or suspected

[6] Direct contact numeric values for soils at residential properties
[7] Direct contact numeric values for soils at non-residential properties

release of a regulated substance, including areas impacted by road runoff, areas near railroads affected by engine exhaust contaminants, and areas near buildings contaminated by paint chips. In urban areas, background reference areas may include areas where widespread, ubiquitous contamination is present that cannot be traced to a specific source.

Background reference areas should be as similar as possible to the donor site. Every attempt should be made to reduce the factors that are different between the background reference area and the donor site. This does not mean that a sample collected at a location that is a considerable distance from an area known or suspected to have been affected by a release of a regulated substance is unacceptable merely because the known or suspected regulated substance is detected in the sample. The presence of regulated substance outside of the area known or suspected to have been affected by a release may indicate that the presence of the regulated substance is truly ubiquitous, widespread and incapable of being traced to a specific source. In this case, the regulated substance may be part of the background at the donor site.

A background reference area, as the term is defined in this policy, should be selected for use in the background demonstration.

2. Sampling, Analysis and Evaluation of Data:

Establish background by a sampling methodology that is statistically valid and consistent with the methodology used to perform the fill determination. Use the same analysis methods for the background samples that were used for performing the fill determination.

Compare the analytical results of the background samples with the results obtained from the fill determination. Use the following statistical methods for the comparison:

a. Demonstrate that the highest measurement from the donor site is not greater than the highest measurement from the background reference area. The Department may accept insignificant variances in numbers. The minimum number of samples to be collected is 10 from the background reference area and 10 from each donor site. Analysis should be carried out on discrete samples.

b. The Department may accept another appropriate statistical method if it meets the conditions below.

    i. For nonparametric and parametric methods, the false-positive rate for a set of data applied to a statistical test may not be greater than 0.05. The minimum number of samples to be collected is 10 from the background reference area and 10 from each donor site.

    ii. For parametric methods, the censoring level for each non-detect (ND) should be the assigned value randomly generated that is between zero and the limit related to the PQL.

3. Equivalent Site Evaluation:

The equivalent site evaluation ensures that no new regulated substance is placed on the receiving site other than a regulated substance that is already determined to be present and that the concentration(s) of regulated substance(s) in the donor fill has been compared to the concentration(s) of the same regulated substance(s) at the receiving site in accordance with subparagraphs G.3.b.i-ii. of this Appendix. Regulated substances detected in the donor fill that are below the CFCLs or RFCLs, as appropriate do not need to be included in the equivalent site evaluation. Perform the equivalent site evaluation prior to the movement of fill to a receiving site. Include documentation in the FP-001 demonstrating that the equivalent site evaluation has been performed and is satisfied in accordance with this section.

a. Develop a Plan for Sampling the Receiving Site.

Make a background determination on the receiving site to determine whether the same regulated substances present in the donor fill due to background are also present at the receiving site, and if so, determine the concentrations of the identified regulated substances. Development of a sampling plan in accordance with Section A of this Appendix is necessary to characterize the receiving site.

In the sampling plan include a summary of existing information about the receiving site, including any previously performed sampling or analysis information, process descriptions and materials used, spatial boundaries of the receiving site, information about what is known or suspected at the receiving site, releases, and release mechanisms. Document this information by written descriptions of site conditions and supported by maps, cross-sections, site diagrams, or other descriptive, graphical, or tabular illustrations necessary to characterize the site conditions.

The receiving site should be sampled using probability sampling, in which all parts of the site being characterized have a known probability of being included in the characterization, except for areas of the receiving site that are known to be or suspected of being affected by a release of a regulated substance, including areas impacted by road runoff, areas near railroads affected by engine exhaust contaminants, and areas near buildings contaminated by paint chips, unless the entire receiving site is part of a larger urban area where ubiquitous, widespread contamination is present that is incapable of being traced to a specific source.

Select the area of the receiving site used for the equivalent site evaluation in accordance with the following:

i. The area sampled is unaffected by a release of a regulated substance.

ii. The area sampled should be at a depth comparable to the area where donor fill is to be placed on the receiving site.

iii. The concentration of regulated substances in the area sampled is attributable to the parent material from which the soil was derived and the

natural processes which produce soil; or the concentrations of regulated substances resulted from an atmospheric deposition, as the term is described in the definition of "background reference area," but are not attributable to a specific point source or release of a regulate substance.

b. Sampling, Analysis and Evaluation of Data.

Establish the background by a sampling methodology that is statistically valid and consistent with the methodology used to perform the fill determination. Use the same analysis methods for background samples that were used for performing the fill determination.

Compare the analytical results of background samples for the receiving site with the results obtained from the donor fill. Use one of the following statistical methods for comparison:

i. Demonstrate that the highest measurement from the donor site is not greater than the highest measurement from the receiving site. The Department may accept insignificant variances in numbers. The minimum number of samples to be collected is 10 from the receiving site and 10 from each donor site.

ii. The Department may accept another appropriate statistical method if it meets the conditions below.

(A) For nonparametric and parametric methods, the false-positive rate for a set of data applied to a statistical test may not be greater than 0.05. The minimum number of samples to be collected is 10 from the receiving site and 10 from each donor site.

(B) For parametric methods, the censoring level for each non-detect (ND) should be the assigned value randomly generated that is between zero and the limit related to the PQL.

Appendix B
Recognition and Identification of Acid-Producing Rock

Pennsylvania's municipal and residual waste regulations define clean fill, in part, as inert solid material. Acid-producing rock reacts when exposed to air or water and therefore does not meet the regulatory definition of clean fill. In addition to presenting abrupt and adverse environmental concerns, exposed acid-producing rock can also have long-term damaging effects on highways and highway structures, including corrosion of concrete and steel structures; destabilization of cut slopes and fill slopes; ground heaving of structures and pavements; toxicity to roadside vegetation and aquatic life; and degradation of drinking water supplies.

Determining whether or not fill contains acid-producing rock begins with determining the presence of or likelihood of encountering acid-bearing rock (ABR), which is widespread in Pennsylvania. The primary source of acidity in Pennsylvania sedimentary rocks is sulfide minerals. Although there are many minerals that contain sulfur, those containing pyrite, or ferrous disulfide, are the major contributors to the release of acid. While pyrite minerals are not always large enough to be visible to the unaided eye, larger crystals have a yellowish, metallic appearance. Deposits containing pyrite concentrations greater than 0.5% have the potential to be significant sources of acid. Various other forms of sulfide minerals are of lesser concern due to their chemical stability, and include chalcopyrite (CuFeS2), galena (PbS) and sphalerite (ZnS), but can be problematic when present with pyrite.

Although there are more than 200 common minerals that contain sulfur, only those classified as iron sulfide are of potential concern due to the ability of these elements to promote oxidation, hydration and the release of acid. In Pennsylvania, there are four potential sulfide deposit types, listed as follows in descending order of pyrite oxidation reactivity:

- Veined Rock Deposits;
- Sedimentary Rock Deposits;
- Mine Spoils; and
- Acid Sulfate Soil Deposits.

Typically, the upper 25- to 35-feet of bedrock does not contain pyrite because pyrite is not stable under atmospheric conditions and will weather away. Therefore, if excavations are shallower than 30 feet, the risk of acid release is generally minimal. This is particularly true if a site is located south of the glacial margin. Within the glaciated regions of Pennsylvania, weathered bedrock may have been removed by glaciers and pyrite may exist closer to the surface. Unconsolidated sediments, such as glacial till, sand, and gravel, are not acid-producing and can be excavated without risk of acidic drainage. With regard to characterization of fill excavated to depths greater than 25 feet, environmental due diligence should include details demonstrating that the fill does not contain acid-producing rock.

The following publicly available resources may also assist in assessing the likelihood of encountering ABR:

- The Pennsylvania Geological Survey's a map of potentially acid bearing rocks (OFMI Report 05-01.1);
- The Pennsylvania Department of Transportation's (PennDOT) Geotechnical Engineering Manual, Publication 293 (4/18) (PUB 293 (4/18)); and
- DEP's Fact Sheet titled, "How to Avoid and Handle Acid-Producing Rock Formations Encountered During Well Site Development" (PA DEP Link)

If ABR is anticipated in the fill based on published information or identified during due diligence, testing should be done to estimate the acid-producing potential. For more information on testing procedures and acid-base accounting procedures, please refer to PennDOT's "Geotechnical Engineering Manual, Publication 293 (4/18) (PUB 293 (4/18))," DEP's "Coal Mine Drainage Prediction and Pollution Prevention in Pennsylvania (Coal Mine Drainage Prediction and Pollution Prevention)" or DEP's "Evaluation of Acid-Base Accounting Using Computer Spreadsheets (Evaluation of Acid-Base Accounting)."

ATTACHMENT D

Soil Management Plan

Soil Management Plan

Former Philadelphia Coke, Co., Inc.,
4501 Richmond Street
Philadelphia, Pennsylvania

EPA ID: PAD000427906

Date When Completed

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A. Arcadis' July 2021, Remedial Investigation Report and Cleanup Plan

1. Introduction

On behalf of BP Bridesburg, LLC (Bridge), Roux Associates, Inc. (Engineer) has prepared this Soil Management Plan (SMP) for the property located at 4501 Richmond Street in Philadelphia, Pennsylvania (Site) as a construction support document associated with the redevelopment of the Site.[1]

Philadelphia Coke, Co., Inc., (PCC) the prior owner of the Site, previously performed extensive soil remediation at specific Hazardous Waste Management Units as part of Resource Conservative and Recovery Act (RCRA) closure activities. Additional remediation work included the removal and disposal of underground storage tanks (USTs) and associated piping, and bioremediation to address contamination in a former fuel blending area. On December 28, 1994, the United States Environmental Protection Agency (USEPA) issued a Certificate of Completion for RCRA. Furthermore, on November 19, 2018, a Notice of Intent to Remediation (NIR) was submitted to the Pennsylvania Department of Environmental Protection (DEP) stating that PCC is seeking a release of liability under the Act 2 Site-Specific Standard. The objective of the Act 2 Site-Specific Standard, and a summary of the previously completed remedial investigation and action activities are documented in Arcadis' July 2021, *Remedial Investigation Report and Cleanup Plan* (provided as **Attachment A**).

The Site is approximately 63 acres in area and is listed in the USEPA Corrective Action Program with EPA ID: PAD000427906. PCC formerly operated at their facility from the mid-1920's through 1989 for manufacturing gas production, metallurgical coke production and fuel oil blending operations. Previous investigation activities completed by PCC determined that Site constituents of concern (COCs) in soil are generally limited to polycyclic aromatic hydrocarbons (PAHs), arsenic, lead and limited polychlorinated biphenyl (PCBs). Visual impacts (e.g., viscous tar, oil-like material, and solidified tar) are limited to the fill layer or the top few feet of the silt and clay layer.

The goal of the SMP is to ensure that all future earth work activities associated with the re-development of the Site are conducted with the ultimate goal for the final development to facilitate a more protective remedy. This SMP has been prepared to provide the selected earth work contractor with direction regarding the management of soils and other environmental issues that result from the presence of any potential contamination that may be encountered during development activities. Specifically, the SMP describes activities to be undertaken during soil cutting and filling activities and describes procedures to be followed in the event that specific unexpected conditions arise.

The best management practices for the anticipated earth work activities are summarized in the following sections. A Site Location Map depicting the Site location and the surrounding area is provided as **Figure 1**.

[1] It is anticipated that future development will consist of two warehouses encompassing a total area of approximately 901,500 square feet.

2. On-Site Soil Management Process

The methods to be implemented whenever soils are being handled at the Site during the re-development phase of work take into account the soil quality at different areas and any restrictions that apply to those areas.[2] Soil/material handling will be managed under three distinct categories: 1.) Non-Restricted Use soils; 2.) Restricted Use soils; and 3.) Unanticipated material. For purposes of on-Site soil/material placement, the Site soils will be divided into two areas: soils from the Non-Restricted Use Area, and soils from the Restricted Use Area. Any unanticipated materials (e.g., USTs,. non-aqueous phase liquids [NAPL], soil deemed insufficient for geotechnical purposes, etc.) identified during the development phase of work will be temporarily staged, characterized and disposed of, or utilized depending on the material and the generated analytical data, as further discussed in Section 2.3.[3] The Non-Restricted Use Area and Restricted Use Area are presented on **Figure 2**.

2.1 Non-Restricted Use Soils

The Non-Restricted Use Area is defined as all areas of the Site with the exception of the Historical Tar/Fill Area, depicted on **Figure 2**; however, USEPA regulated waste may be encountered within the following areas:

- Area 1 – Eastern Part of Former Coal Storage Area
- Area 2 – North/Northwest of Former Tar Storage Area
- Area 3 – South of Former Tar Storage Area
- Area 4 – Former AST Farm East of Former Byproducts Operations

When earthwork is performed within the limits of Area 1 through Area 4, care will be taken to inspect and evaluate the condition of the fill material. If the fill material within Area 1 through Area 4 exhibits any signs of Restricted Use Soils (e.g., through olfactory observation, field screening, laboratory analytical testing, etc.), fill shall be stockpiled for future disposal or utilized within the Restricted Use Area.

As part of future development activities, Bridge plans to excavate soils within this area and relocate to different portions of the Site to achieve the desired grading elevations. As presented on **Figure 3**, approximately 66,000 cubic yards of soil will need to be cut, and approximately 183,000 cubic yards of soil will be used as fill. With the exception of the conditions outlined in the below Restricted Use Soils section, soils within the Non-Restricted Use Area are available to be utilized as fill material throughout the Site.

2.2 Restricted Use Soils

The Restricted Use Area is defined as the Historical Tar/Fill Area, depicted on **Figure 2**. As part of future construction activities, soil encountered within the Restricted Use Area may be moved throughout the Restricted Use Area to allow for redevelopment and to achieve the final desired elevations and grades. During the excavation of soils within the Restricted Use Area, care will be taken to segregate the clean surface materials from the underlying impacted soil to prevent intermingling. In addition, soils excavated from the Restricted Soil Area and have evidence of impact (i.e., staining, NAPL, odor, etc.) or are characterized as hazardous material via laboratory analysis will be stockpiled within a designated area within the limits of the Restricted Soil boundary to avoid mixing with other on-Site materials or imported fill. Erosion and Sediment Control (ESC) plans will include location of the designated soil stockpile area, location of final placement of materials from the Restricted Soils Area and applicable erosion control measures.

All soil and non-soil materials (e.g., riprap, DGA, backfill, etc.) imported to the Site to achieve desired final grades will be reviewed by Bridge and Engineer to ensure compliance with the PADEP's Bureau of Waste

[2] For the purposes of this SMP, excavation is defined as any activity disturbing the underlying material beneath the engineering controls.

[3] As further discussed in Section 2.3, unanticipated material will be temporarily staged, characterized, and disposed of or utilized depending on the material and the generated analytical data.

Management's January 16, 2021, *Management of Fill Policy* (PADEP Fill Policy). This includes, but is not limited to soil, soil like material, backfill, stone, road base, Class B recycled material, gravel, etc. The PADEP Fill Policy describes the type of fill that qualifies as clean fill and outlines the frequency at which imported material will be sampled as well as other requirements. Bridge is currently proposing to raise the grade of the Site with clean fill. If it is determined alternative fill will be used to raise the grade of the Site, an addendum to the SMP will be generated that details the plans for sampling, laboratory analysis, quality control/assurance, health, and safety as well as proper documentation of fill that will be brought on Site. In addition, Bridge understands there are limitations and will adhere to said regulations where regulated fill can be placed as it relates to the 100-year flood plain, surface water and waters of the Commonwealth of Pennsylvania.

2.3 Encountering Unanticipated Material

Although extensive investigation work has been completed at the Site, Engineer has developed an alternative material management approach in the event that any unanticipated material is encountered during development work including but not limited to USTs; and NAPL. Note that if unanticipated material is encountered, it will be considered hazardous waste and will be managed as such until sampling data deems it non-hazardous. The protocols and procedures to manage the unanticipated material are further described below.

2.3.1 Staging and Segregation Protocol

In the event material is encountered that requires off-site disposal, the material will be temporarily placed on plastic sheeting (minimum 12-mil thickness) adjacent to the excavation area and kept covered with appropriately anchored tarps when inactive. If impacted material is selected to be disposed off-site, it will be placed directly within off-site haul vehicles, as practical, to reduce double handling of material. Small quantities of waste, along with drums of used personal protective equipment and similar small debris type items, may be stored in labeled Department of Transportation (DOT) Specification containers before on-Site reuse or off-site disposal. Care will be taken to not contaminate other areas of the Site during the staging and loading process.

2.3.2 Sampling Protocol

Once soils are transported to the staging area, Engineer will coordinate with local PADEP approved disposal facilities to develop the required sampling frequency and analysis protocol to achieve approval for off-site disposal. The sampling plan will include the collection of grab and composite samples and all analyses will be performed using appropriate EPA methods, and within the recommended quality assurance/quality control (QA/QC) parameters. Once a stockpile has been sampled, no additional soil or material will be added to the pile. In addition, soil piles from different portions of the Site or stockpiles with different COCs will not be combined, unless previously authorized by the intended soil disposal facility.

In the event that a UST and associated piping are encountered, the tank and piping will be cleaned, and the generated residual waste will be stockpiled and sampled pursuant to the above-described methods.

2.3.3 Off-Site Transportation and Disposal

The following section of the SMP addresses the off-site transportation and disposal of material that is deemed not suitable for development which includes Site preparation, soil loadout, transport vehicle decontamination and the required truck route. All waste disposal activities will be conducted in accordance with the PADEP Waste Transportation Safety Act.

2.3.3.1 Waste Loadout

Stockpiled materials will be loaded into trucks for transport to the approved soil disposal facility. Conventional equipment, such as front-end loaders and hydraulic excavators, will be used to load the soil piles into the transport vehicles. Transport vehicles will not be loaded in excess of the approved axle rating and care will be taken to prevent the spread of dust and/or contamination of vehicles during load out.

Bridge and Engineer will ensure that the soil trucking company is licensed and permitted in all states through which they will travel with decals/placards appropriate for the waste material removed from the Site. This includes having a PADEP Waste Transporter Authorization issued under Act 90. Bridge and Engineer will ensure that the soil trucking company meets the applicable DOT training requirements, and provides a list of vehicles and DOT approved containers which will be available for use on the project, DOT violation history and a list of other projects similar in magnitude to this project with contact names and telephone numbers.

2.3.3.2 Transportation Vehicle Inspection and Decontamination

Transport vehicles shall be inspected by trucking company personnel upon the completion of loadout activities. Tailgate locks and cover tarps will be inspected to ensure that they are secure and will prevent the release of soil, dust or materials during transport. Truck tires and undercarriage members will be inspected for visible accumulations of soil and will be cleaned as necessary.

Transport vehicles that were exposed to visible accumulations of soil on tires and undercarriage members during loadout will undergo dry decontamination procedures. Dry decontamination consists of the use of brooms and other hand tools to remove accumulated soil, from vehicles prior to leaving the work area. Once loadout of the soil has been completed, the roadways shall be cleaned where visible soil has been deposited during transportation.

2.3.3.3 Manifesting

The appropriate documentation, (i.e., manifests) will accompany each load of soil/material to the intended disposal or recycling facility. The manifest will provide space for identifying the nature of the waste being transported, the date and time that the waste leaves the Site, the truck identification number, and the estimated weight/volume transported will be provided with each truck. The manifest form will be signed by a Bridge representative before the material leaves the Site; by the truck driver before the truck leaves the Site; and by a representative of the facility when the load is received at the disposal facility. Upon receipt of the material, the disposal facility will be required to send one copy of the manifest, completed with all appropriate signatures and final weight information, to Bridge and Engineer.

Waste removed from the Site shall only be transported to facilities which have been approved by Engineer and Bridge. Waste removed from the Site shall only be transported by transportation trucking companies which have received prior approval to the designated disposal/recycling facility.

In the event of an off-site spill during transportation, the transportation subcontractor will immediately take all necessary action to prevent, abate, or minimize the additional release or threat of release of any soil. Off-site spills of soil shall be collected, stored and disposed of with similar Site materials. Any “clean” materials potentially contaminated by an off-site spill shall be excavated and disposed of with the soils that caused the contamination, or shall be cleaned and restored to previous existing conditions, to the satisfaction of local authorities having jurisdiction, Bridge and Engineer.

2.3.3.4 Traffic Management Plan

Prior to the off-site disposal of any material, a Construction Traffic Management Plan (CTMP) will be prepared and will include the following:

- Detail of traffic routes used by construction vehicles on the Site;
- Detail of traffic routes used by construction vehicles from the Site to the disposal facility;
- The number and type of vehicles to be used during the project;
- Speed limits to be observed along routes to and from the Site; and
- Behavioral safety requirements for vehicle drivers to/from the Site and within the Site.

3. Soil Erosion and Sediment Control Measures

Due to the nature and extent of the development work, an ESC plan has been prepared in accordance with state, county and local soil conservation laws and regulations. The ESC plan should, at a minimum, include:

- Narrative description of the project, temporary and permanent ESC procedures, pre- and post-construction stormwater runoff patterns, and Site restoration;
- Calculations, as needed, for stormwater runoff and stability analyses;
- Various Site maps (quadrangle, soils, wetlands (if needed), etc.); and
- Design drawings, including pre- and post-construction elevations, cap locations, ESC controls, limits of disturbance, staging areas, details and required notes.

It is anticipated that stormwater encountered during redevelopment activities will be managed via on-Site ESCs and stored in temporary detention basins and sampled prior to determining where the water will be discharged. Bridge is evaluating the potential for discharge to the Philadelphia Water Department via a groundwater discharge permit. If required, an addendum to the SMP will be completed that details the means and mechanisms on managing stormwater.

Installed ESC measures will be inspected, maintained and replaced (as needed) throughout the duration of the development work. Vegetation is to only be cleared on an as needed basis to ensure that ESC measures remain in place.

4. Fluids Management

With regard to the proposed redevelopment and the potential for adverse impacts to groundwater, the development activities do not call for encountering groundwater with the exception of the potential to do so in the very limited case where utilities are installed. In addition to the limited scenarios where groundwater may be encountered, there is the potential of generating stormwater during precipitation events.[4] If it is determined that a Temporary Groundwater Discharge Permit will be need, the permit will be obtained from the Philadelphia Water Department that will allow for the discharge of groundwater and/or stormwater through the City's sewer system. Prior to discharge, the water will be collected and containerized in frac tanks (or similar). The requirements of the permit will determine if treatment and/or sampling of the fluid is necessary prior to discharge. Otherwise, these liquids will be handled, transported and disposed/recycled in accordance with applicable local, State and Federal regulations.

With regard to impacts to surface water, Bridge will be implementing a series of ESCs that will mitigate any impacts to surface waters (i.e. Delaware River).

[4] Care will be taken to minimize the amount of water in the area of excavation by employing diversion berms or other approved applicable techniques. Proper controls will be employed to minimize erosion and sediment transport of which details will be provided within the ESC plan.

5. Quality Assurance/Quality Control

All construction activities associated with the redevelopment of the Site will be conducted in a safe and prudent manner so that unreasonable hazards to workers and the public are minimized. Prior to initiating work activities, workers shall be trained to ensure a proper understanding of all aspects of their job including:

- Understanding their role and location at the Site;
- Traffic patterns and heavy equipment operations;
- Recognizing, and eliminating or avoiding hazards;
- Understanding flagger signals and safety colors;
- Knowing communication methods and alarms;
- Knowing how to work next to traffic and heavy equipment in a way that prevents accidents;
- Being as visible as possible; and
- Knowing how to operate equipment and vehicles, and specifically prevent rollovers.

This training will be conducted before an individual is allowed to work in the activity area and whenever operations change in the activity area. Additionally, tailgate safety meetings will be conducted on a weekly basis to specifically discuss the work planned for each day and the means by which to prevent incidents.

6. Health and Safety Requirements

A Site-specific Health and Safety Plan (HASP) will be prepared, which will be consistent with the requirements of Occupational Safety and Health Administration OSHA) (29 CFR 1910 and 1926) and all other federal, state and local authorities. In addition, the Site will be secured during all re-development activities in a manner to limit potential human and ecological exposure to contaminated media.

Dust shall be minimized to the greatest extent possible by implementing best management dust suppression practices by utilizing water trucks, street sweepers, misters, etc. Dust monitoring may be conducted by Engineer to evaluate the potential concern of affecting air quality. Proper measures will be taken to meet regulatory requirements to minimize and control dust during construction activities. Dust control during the excavation process is the main engineering control used to minimize potentially contaminated material from becoming airborne and affecting either the worker or environment.

7. Documentation of Soil Reuse, Staging and Placement

All Restricted Use Soils excavated at the Site will be subject to the below described documentation practices. An ongoing log will be maintained to track the soil origin and end use location. At a minimum the soil tracking log will include the following:

- Unique pile identifier code;
- Date and location of original excavation;
- Estimated volume;
- Placement depth, thickness, and aerial extent;
- Date of placement; and
- Lab data summarizing sol characterization activities for soil and material warranting offsite disposal (if warranted).

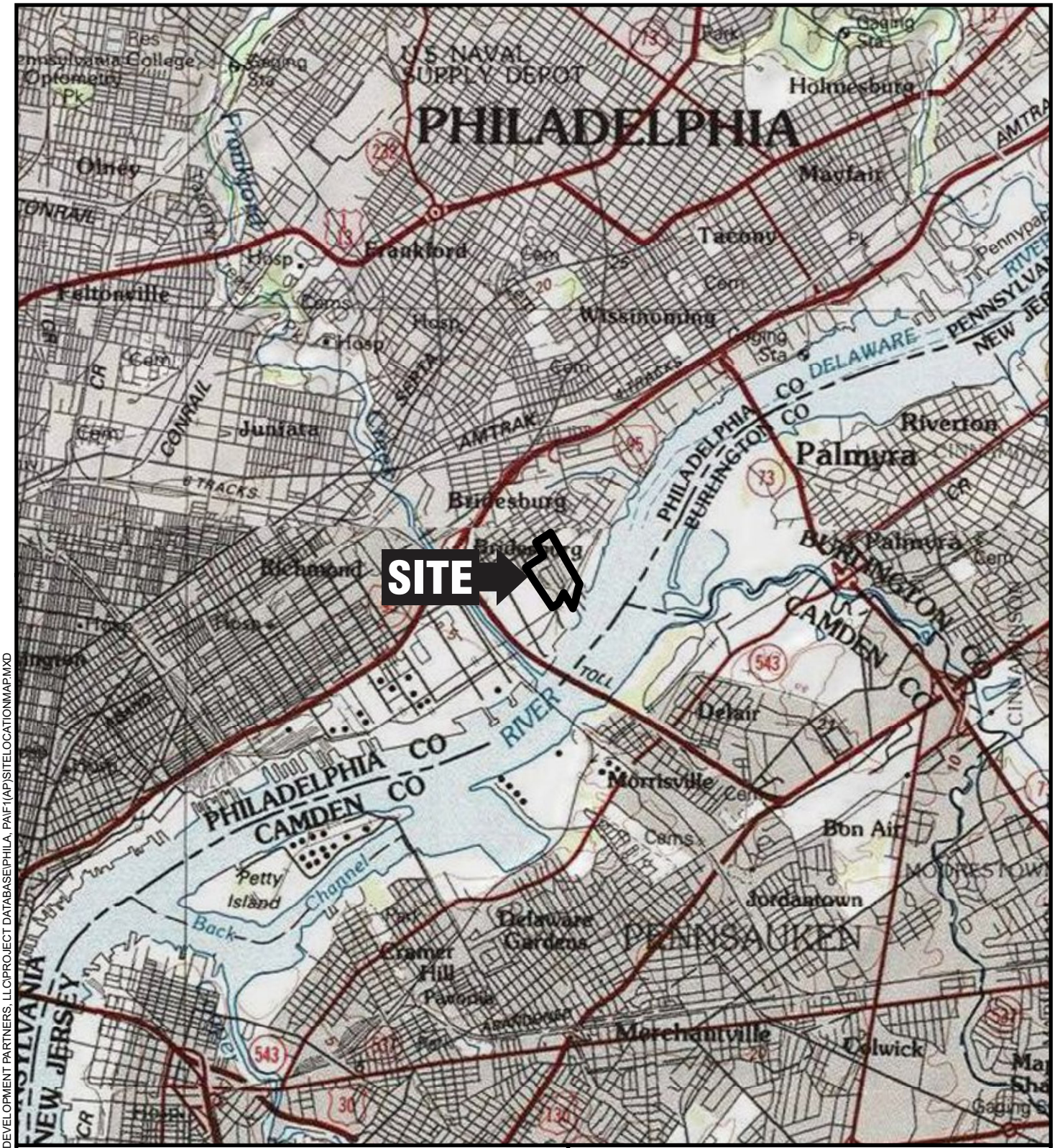
At the completion of the project, a comprehensive report will be prepared that will summarize the soil management activities as well as detail the new enhanced engineering controls.

8. Conclusions

This SMP has been developed to assist in the redevelopment of the Site and to ensure the requirements detailed within Arcadis' July 2021, *Remedial Investigation Report and Cleanup Plan* (provided as **Attachment A**) are adhered to. In addition, and as will be detailed within daily inspection logs, all soils and surface cover material that are disturbed and located within the Restricted Use Areas will remain within the Restricted Use Areas and will be repaired at a minimum to the pre-construction elevation (or greater) with material similar (or equally protective) composition.

FIGURES

1. Site Location Map
2. Site Plan
2. Cut/Fill Plan



QUADRANGLE LOCATION

Pennsylvania

NOTES

EASTING (X): 39.9967600

NORTHING (Y): -75.0683300

N

5,000 0 5,000'

Title:

SITE LOCATION MAP

BRIDGE POINT BRIDESBURG
4501 RICHMOND STREET, PHILADELPHIA, PA, 19137

Prepared for:

BRIDGE INDUSTRIAL

ROUX

Compiled by: EJT	Date: 10/23/20
Prepared by: EJT	Scale: AS SHOWN
Project Mgr: MM	Project: 3165.0012J000
File: F1(AP)	

FIGURE 1

\\SRVLTNJFP1\LIMITED\PROJECTS-08\3165 - BRIDGE DEVELOPMENT PARTNERS, LLC\PROJECT DATABASE\PHILA, PA\F1(AP)\SITELOCATIONMAP.MXD

CASIMIR STREET
RICHMOND STREET
BUCKIUS STREET
LEFEVRE STREET
BATH STREET
ALLEN STREET
GARDEN STREET
BUCKIUS STREET
BATH STREET
AREA 3
South of Former
Tar Storage Area
AREA 2
North/Northwest of
Former Tar Storage
Area
AREA 1
Eastern Part of
Former Coal
Storage Area
ORTHODOX STREET
AREA 4
Former AST Farm East
of Former Byproducts
Operations
PHILADELPHIA BELTWAY / RAILROAD ROW
CARBON STREET
DELAWARE AVENUE
DELAWARE RIVER

LEGEND

- PROPERTY PARCEL
- ECRA EXCAVATION
- AREA OF INTEREST
- RESTRICTED AREA: HISTORICAL TAR / FILL AREAS
- FORMER STRUCTURE / OPERATION

REFERENCE

1.) AERIAL PHOTOGRAPH FROM NJDEP 2020 FLYOVER.

2.) SOIL DELINEATION AREAS NATIONAL GRID FORMER PHILADELPHIA COKE PLANT PHILADELPHIA, PENNSYLVANIA RI REPORT BY ARCADIS.

3.) SITE HORIZONTAL DATUM: NAD83 PENNSYLVANIA STATE PLANES, SOUTH ZONE, US FOOT.

4.) BASE MAP AND REMEDIATION AREAS OBTAINED FROM ARCADIS' JULY 2021 REMEDIAL INVESTIGATION REPORT AND CLEANUP PLAN.

N

100' 0 100'

Title:

SITE PLAN

BRIDGE POINT BRIDESBURG
4501 RICHMOND STREET
PHILADELPHIA, PHILADELPHIA COUNTY, PENNSYLVANIA

Prepared for:

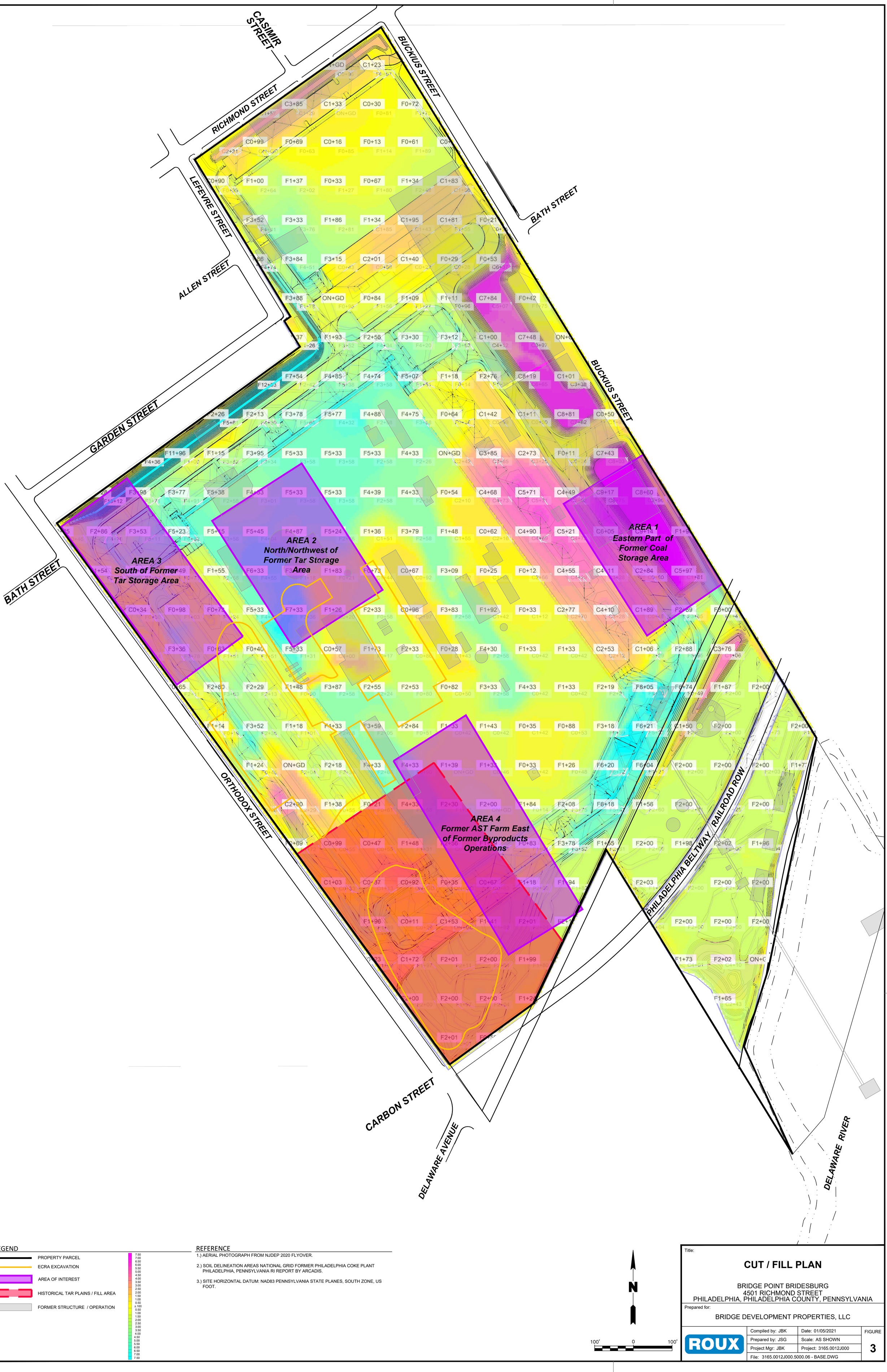
BRIDGE DEVELOPMENT PROPERTIES, LLC

ROUX

Compiled by: HER	Date: 04/19/2022
Prepared by: JSG	Scale: AS SHOWN
Project Mgr: JBK	Project: 3165.0012J000
File: 3165.0012J000.5000.06 - BASE.DWG	

FIGURE 2

G:\PROJECTS--08\3165 - BRIDGE DEVELOPMENT PARTNERS, LLC\0012 - PHILA, PA\J000 - 4501 RICHMOND ST PHASE I\5000 - CAD DRAWINGS\DWGS\3165.0012J000.5000.06 - BASE.DWG



LEGEND

- PROPERTY PARCEL
- ECRA EXCAVATION
- AREA OF INTEREST
- HISTORICAL TAR PLAINS / FILL AREA
- FORMER STRUCTURE / OPERATION

7.50 7.00 6.50 6.00 5.50 5.00 4.50 4.00 3.50 3.00 2.50 2.00 1.50 1.00 0.50 ±.100 0.50 1.00 1.50 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 6.00 6.50 7.00 7.50

REFERENCE

1.) AERIAL PHOTOGRAPH FROM NJDEP 2020 FLYOVER.

2.) SOIL DELINEATION AREAS NATIONAL GRID FORMER PHILADELPHIA COKE PLANT PHILADELPHIA, PENNSYLVANIA RI REPORT BY ARCADIS.

3.) SITE HORIZONTAL DATUM: NAD83 PENNSYLVANIA STATE PLANES, SOUTH ZONE, US FOOT.

N

100' 0 100'

Title:

CUT / FILL PLAN

BRIDGE POINT BRIDESBURG
4501 RICHMOND STREET
PHILADELPHIA, PHILADELPHIA COUNTY, PENNSYLVANIA

Prepared for:

BRIDGE DEVELOPMENT PROPERTIES, LLC

ROUX

Compiled by: JBK	Date: 01/05/2021	FIGURE
Prepared by: JSG	Scale: AS SHOWN	3
Project Mgr: JBK	Project: 3165.0012J000	
File: 3165.0012J000.5000.06 - BASE.DWG		

G:\PROJECTS-08\3165 – BRIDGE DEVELOPMENT PARTNERS, LLC\0012 – PHILA, PA\J000 – 4501 RICHMOND ST PHASE I\5000 – CAD DRAWINGS\DWGS\3165.0012J000.5000.06 – BASE.DWG

A. Arcadis' July 2021, Remedial Investigation Report and Cleanup Plan

Not Provided Here, because this is an Exhibit to Revision 1 of the Remedial Investigation Report and Cleanup Plan

ATTACHMENT E

Adult Lead Methodology (ALM) Spreadsheet for Calculation

Calculations of Blood Lead Concentrations (PbBs) and Risk in Nonresidential Areas
U.S. EPA Technical Review Workgroup for Lead
Version date 06/14/2017

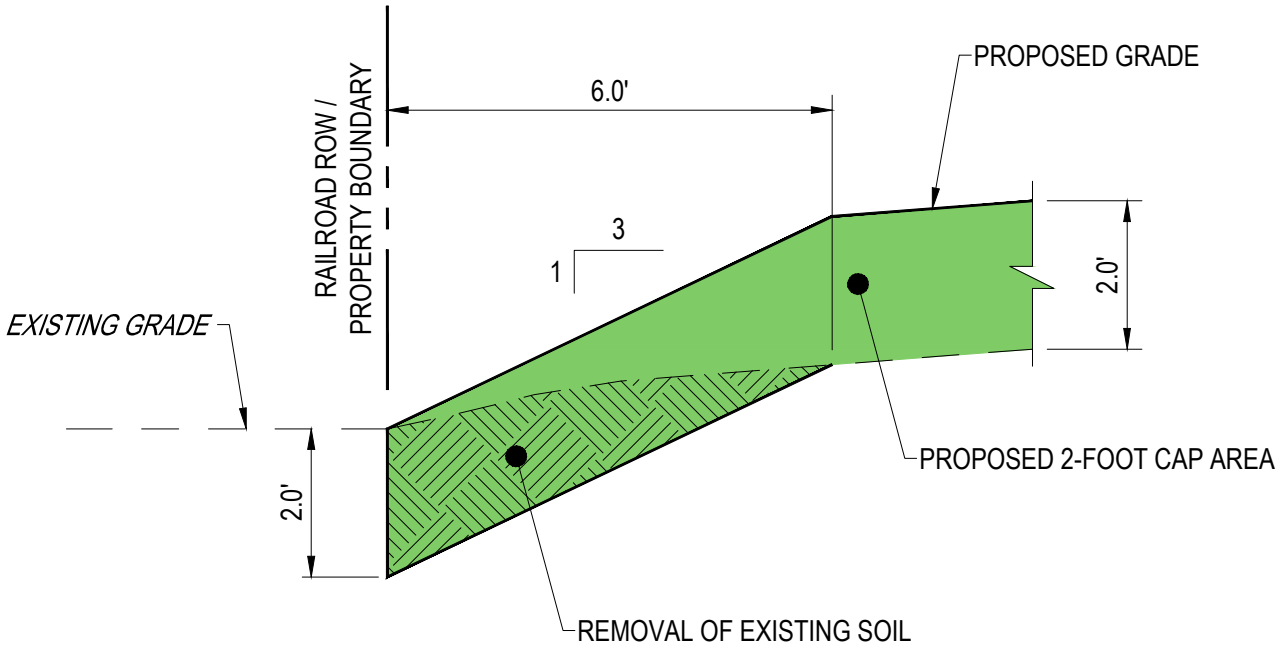
Edit Red Cells

Variable	Description of Variable	Units	GSDi and PbBo from Analysis of NHANES 2009-2014	GSDi and PbBo from Analysis of NHANES 2009-2014
PbS	Soil lead concentration	µg/g or ppm	905	905
$R_{fetal/maternal}$	Fetal/maternal PbB ratio	--	0.9	0.9
BKSF	Biokinetic Slope Factor	µg/dL per µg/day	0.4	0.4
GSD_i	Geometric standard deviation PbB	--	1.8	1.8
PbB_0	Baseline PbB	µg/dL	0.6	0.6
IR_S	Soil ingestion rate (including soil-derived indoor dust)	g/day	0.050	0.050
IR_{S+D}	Total ingestion rate of outdoor soil and indoor dust	g/day	--	--
W_S	Weighting factor; fraction of IR_{S+D} ingested as outdoor soil	--	--	--
K_{SD}	Mass fraction of soil in dust	--	--	--
$AF_{S, D}$	Absorption fraction (same for soil and dust)	--	0.12	0.12
$EF_{S, D}$	Exposure frequency (same for soil and dust)	days/yr	130	130
$AT_{S, D}$	Averaging time (same for soil and dust)	days/yr	182	182
PbB_{adult}	PbB of adult worker, geometric mean	µg/dL	2.2	2.2
$PbB_{fetal, 0.95}$	95th percentile PbB among fetuses of adult workers	µg/dL	5.1	5.1
PbB_t	Target PbB level of concern (e.g., 2-8 ug/dL)	µg/dL	**5.0**	**10.0**
$P(PbB_{fetal} > PbB_t)$	**Probability that fetal PbB exceeds target PbB, assuming lognormal distribution**	**%**	**5.3%**	**0.3%**

Source: U.S. EPA (1996). Recommendations of the Technical Review Workgroup for Lead for an Interim Approach to Assessing Risks Associated with Adult Exposures to Lead in Soil

EXHIBIT 4

2-Foot Cap Transition

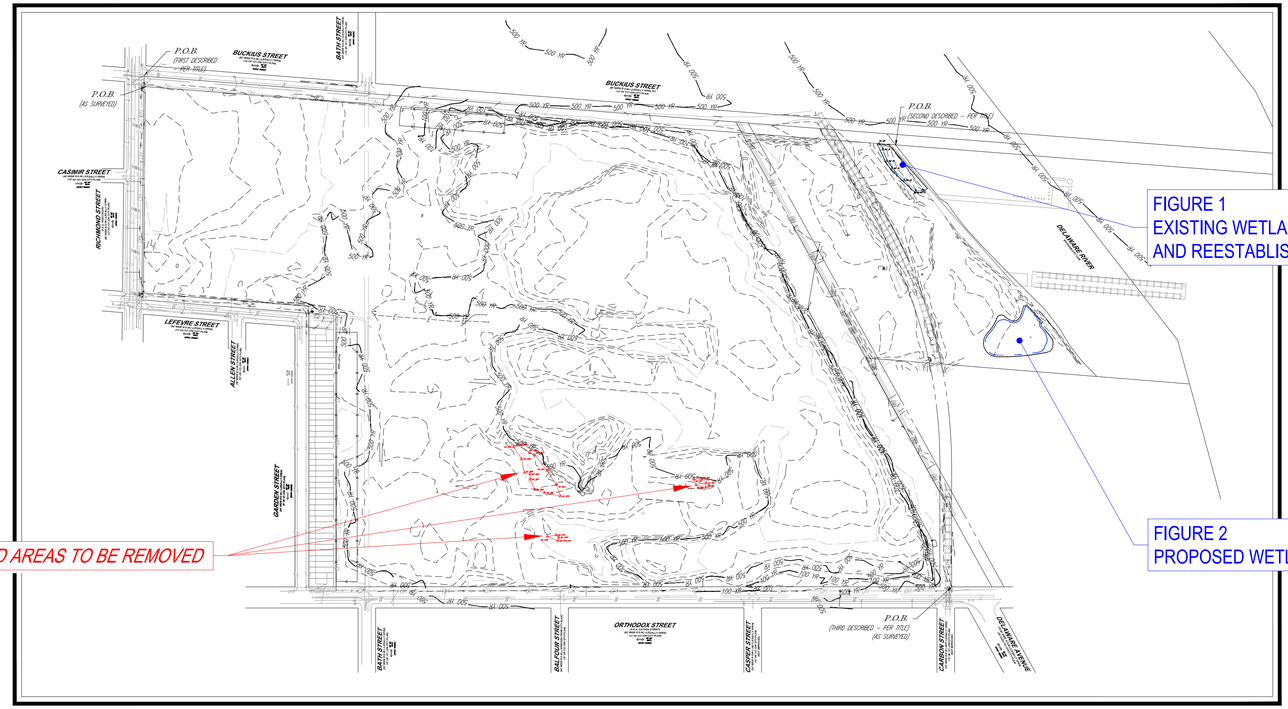


2-FOOT CAP TRANSITION

NOT TO SCALE

EXHIBIT 5

Wetlands Exhibit



OVERALL SITE
SCALE: 1" = 200'

200 100 50 0 200
1"= 200'

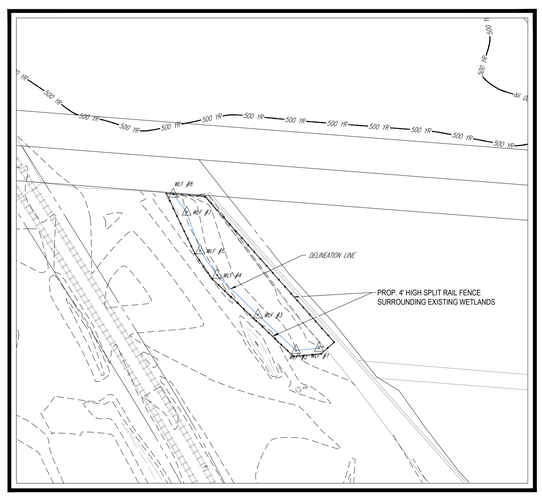


FIGURE 1
SCALE: 1" = 60'

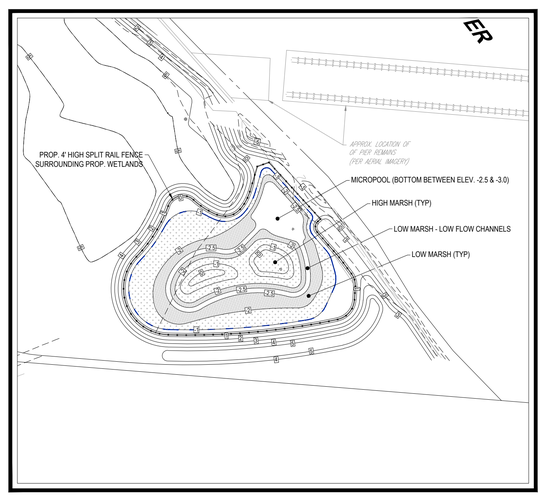


FIGURE 2
SCALE: 1" = 60'

60 30 15 0 60
1"= 60'

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LAND SURVEYING
PROGRAM MANAGEMENT
LANDSCAPE ARCHITECTURE
SUSTAINABLE DESIGN
PERMITTING SERVICES
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FY21-RICH-6344-01

PROJECT No.:	PP203056
DRAWN BY:	JW
CHECKED BY:	KM
DATE:	04/07/2022
CAD I.D.:	PP203056-WFIG-0

PROJECT:

EXHIBIT

FOR
BP BRIDESBURG, LLC

PROPOSED DEVELOPMENT

4501 RICHMOND STREET
PHILADELPHIA, PA 19137

BOHLER
1515 MARKET STREET, SUITE 920
PHILADELPHIA, PA 19102
Phone: (267) 402-3400
Fax: (267) 402-3401
www.BohlerEngineering.com

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C. BROWN
PROFESSIONAL
Corbin J. Brown
PE078317
PROFESSIONAL ENGINEER
PENNSYLVANIA LICENSE No. PE078317
DELAWARE LICENSE No. 20081
NEW JERSEY LICENSE No. 24GE05041400

SHEET TITLE:

WETLANDS EXHIBIT

SHEET NUMBER:

1 of 1

ORG. DATE - 04/07/2022

I:\BOHLER\PP203056\CAD\DRAWINGS\EXHIBITS\WETLANDS FIGURES\PP203056-WFIG-0 — LAYOUT: WETLANDS EXHIBIT
JW

EXHIBIT 6

Delaware River Extension Linework

PRELIMINARY PROPOSED SIGNAL (PENDING TRAFFIC ANALYSIS)

PRELIMINARY PROPOSED SIGNAL (PENDING TRAFFIC ANALYSIS)

PRELIMINARY BUCKIUS ST EXTENSION

PRELIMINARY DELAWARE AVE EXTENSION AND RAILROAD REALIGNMENT CONCEPT

PRELIMINARY PROPOSED SIGNAL (PENDING TRAFFIC ANALYSIS)

NOT FOR CONSTRUCTION

PRELIMINARY LINE WORK FOR DISCUSSION (SUBJECT TO CHANGE)
2/12/2021

LEGEND

- PROPOSED TRAFFIC SIGNAL

- PROPOSED CONSTRUCTION (CUT, SIDEWALK, SHARED USE PATH)

I-95 SECTION BS5

0' 100' 200'

pennsylvania DEPARTMENT OF TRANSPORTATION

CDM Smith

pw:\\cdmsmith-az02-pw.bentley.com:PW_EXT\Documents\118912\230161\10 Transportation\02 Engineering Services NM_100 Percent\01 Roadway Design\10 CADD\01 Working\09 Ra
2/12/2021

EXHIBIT 7

General Permit Plans - Shoreline and Outfall Details

OVERALL DISTURBANCE TABLE

UNIQUE IDENTIFIER	STRUCTURE / CROSSING	WETLANDS DISTURBANCE	WATERS DISTURBANCE	ASSUMED FLOODWAY DISTURBANCE	OVERALL DISTURBANCE	DISTURBANCE TYPE
GP-3-1	N/A	0 SF 0 AC	5,192 SF 0.119 AC	N/A	0 SF 0 AC	PERMANENT
GP-3-2	N/A	0 SF 0 AC	2,735 SF 0.063 AC	N/A	0 SF 0 AC	PERMANENT
GP-4-1	EW-501	0 SF 0 AC	1,722 SF 0.040 AC	N/A	0 SF 0 AC	PERMANENT
EXISTING WETLANDS AREA #1	N/A	0 SF 0 AC	N/A	N/A	0 SF 0 AC	PERMANENT
EXISTING WETLANDS AREA #2	N/A	580 SF 0.013 AC	N/A	N/A	580 SF 0.013 AC	PERMANENT
EXISTING WETLANDS AREA #3	N/A	7,403 SF 0.170 AC	N/A	N/A	7,403 SF 0.170 AC	PERMANENT
EXISTING WETLANDS AREA #4	N/A	276 SF 0.006 AC	N/A	N/A	276 SF 0.006 AC	PERMANENT
TOTAL OVERALL DISTURBANCE		8,259 SF 0.190 AC	9,649 SF 0.222 AC	0 SF 0 AC	2,924 SF 0.068 AC	

TOTAL EXISTING WETLANDS ON SITE: 0.324 AC. (14,130 SF)
TOTAL PROPOSED WETLANDS ON SITE: 0.501 AC. (21,832 SF)

WETLAND MITIGATION AREA TABLE

MITIGATION AREA #	AREA
MITIGATION AREA 1	16,000 SF 0.367 AC

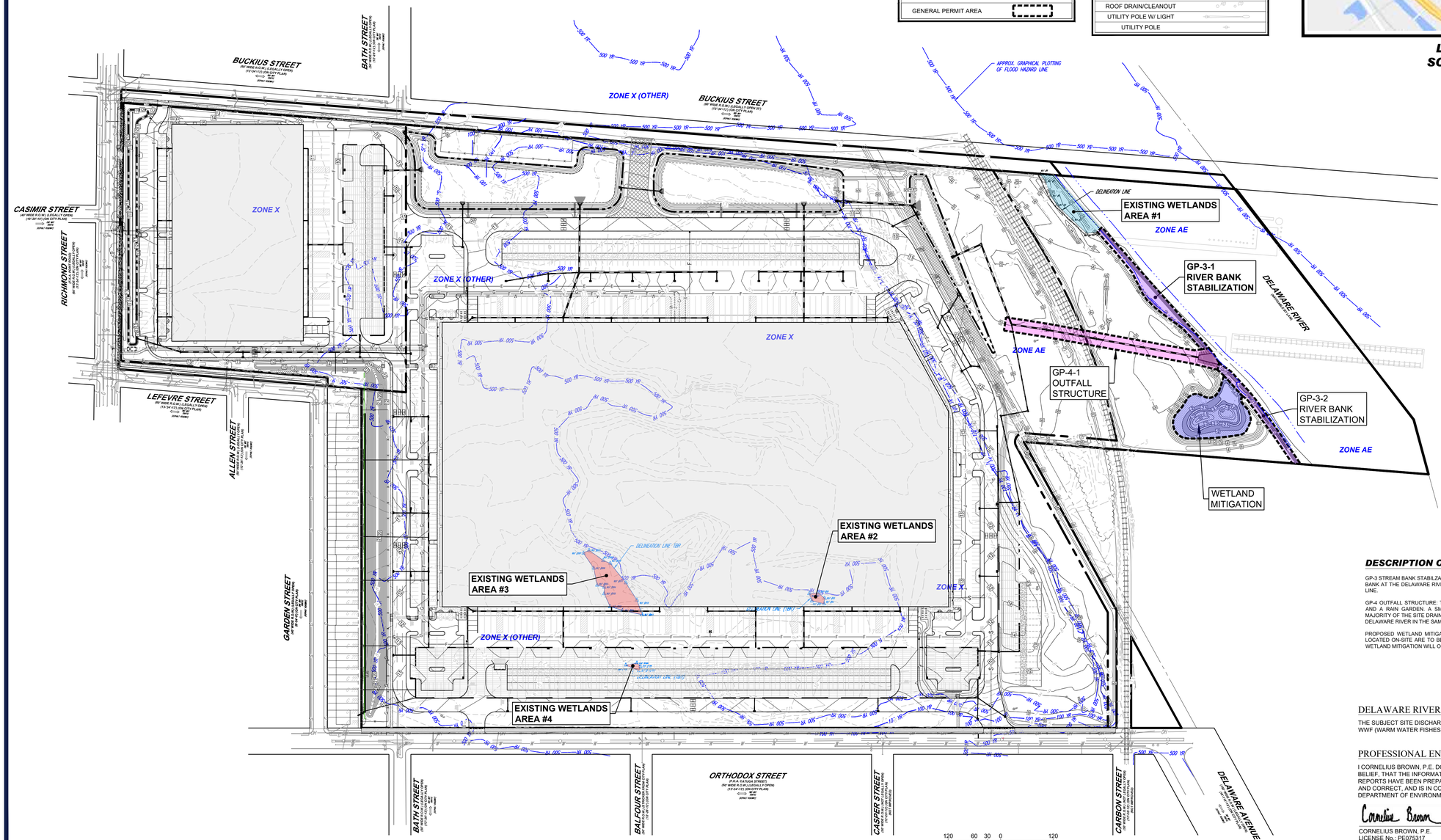
LEGEND
PROPOSED

BUILDING
RETAINING WALL
CONCRETE CURB
FLUSH CURB
FENCE
SIDEWALK
RAMP
SIGN
BOLLARD
DRAINAGE INLET
MANHOLE
ENDWALL
RIPRAP
CLEANOUT
PROPOSED CONTOURS
OVERHEAD UTILITY WIRES
ELECTRIC LINE
TELEPHONE LINE
GAS LINE
WATER LINE
SANITARY SEWER
STORM PIPE
OBSERVATION WELL
RIP RAP
ABOVEGROUND BASIN
GENERAL PERMIT AREA

LEGEND
EXISTING

BUILDING
RETAINING WALL
CONCRETE CURB
FLUSH CURB
FENCE
TREELINE
FLOOD HAZARD LINE
100YR FLOOD PLAIN
EXISTING CONTOURS
PROPERTY LINE
R.O.W. LINE
ADJACENT PROPERTY LINE
OVERHEAD UTILITY WIRES
ELECTRIC LINE
TELEPHONE LINE
GAS LINE
WATER LINE
SANITARY SEWER
STORM PIPE
CONCRETE MONUMENT/ IRON PIN
SIGN
TREE
DRAINAGE INLET
STORM/SANITARY MANHOLE
WATER/GAS VALVES
ROOF DRAIN/CLEANOUT
UTILITY POLE W/ LIGHT
UTILITY POLE

LOCATION MAP
SCALE: 1" = 1,000'



DRAWING SHEET INDEX

SHEET TITLE	SHEET NO.
GENERAL PERMIT LOCATION PLAN	1
GENERAL PERMIT 3	2
GENERAL PERMIT 4	3
WETLANDS MITIGATION AREA PLAN	4
SOIL EROSION & SEDIMENT POLLUTION CONTROL NOTES	5
SOIL EROSION & SEDIMENT POLLUTION CONTROL NOTES	6

DESCRIPTION OF NEED FOR GENERAL PERMITS

GP-3 STREAM BANK STABILIZATION: 2' OF CLEAN FILL IS REQUIRED PER THE ACT 2 PROGRAM. THE STREAM BANK AT THE DELAWARE RIVER WILL NEED TO BE STABILIZED TO PREVENT EROSION ALONG THE SHORE LINE.

GP-4 OUTFALL STRUCTURE: THE SITE IS MANAGED BY ABOVEGROUND BASINS, UNDERGROUND BASINS, AND A RAIN GARDEN. A SMALL PORTION OF THE SITE DRAINS TO RICHMOND STREET, WHILE THE MAJORITY OF THE SITE DRAINS TO THE DELAWARE RIVER. THE PROPOSED OUTFALL DISCHARGES TO THE DELAWARE RIVER IN THE SAME LOCATION AS AN EXISTING SITE DISCHARGE THAT IS IN POOR CONDITION.

PROPOSED WETLAND MITIGATION: THREE POCKETS OF ISOLATED WETLANDS THAT ARE CENTRALLY LOCATED ON-SITE ARE TO BE DISTURBED BY THE PROPOSED ACT 2 REMEDIATION AND DEVELOPMENT. WETLAND MITIGATION WILL OCCUR ON-SITE AT AN APPROXIMATE 2:1 RATIO.

DELAWARE RIVER & CHAPTER 93 DESIGNATION

THE SUBJECT SITE DISCHARGES TO THE DELAWARE RIVER WATERSHED. THE DELAWARE RIVER HAS A WWF (WARM WATER FISHES) & MF (MIGRATORY FISHES) CHAPTER 93 CLASSIFICATION.

PROFESSIONAL ENGINEER'S CERTIFICATION

I CORNELIUS BROWN, P.E. DO HEREBY CERTIFY TO THE BEST OF MY KNOWLEDGE, INFORMATION AND BELIEF, THAT THE INFORMATION CONTAINED IN THE ACCOMPANYING PLANS, SPECIFICATIONS, AND REPORTS HAVE BEEN PREPARED IN ACCORDANCE WITH ACCEPTED ENGINEERING PRACTICE, IS TRUE AND CORRECT, AND IS IN CONFORMANCE WITH CHAPTER 105 OF THE RULES AND REGULATIONS OF THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.

Cornelius Brown

CORNELIUS BROWN, P.E.
LICENSE No.: PE075317

02/21/2022
DATE

BOHLER

SITE CIVIL AND CONSULTING ENGINEERING
LAND SURVEYING
PROGRAM MANAGEMENT
LANDSCAPE ARCHITECTURE
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PROJECT No.: PP203056
DRAWN BY: JW
CHECKED BY: KM
DATE: 2/23/2022
CAD I.D.: PP203056-DEPS-0B

PROJECT:

GENERAL PERMIT PLANS

FOR
BP BRIDESBURG, LLC

PROPOSED DEVELOPMENT

4501 RICHMOND STREET
PHILADELPHIA, PA 19137

BOHLER
1515 MARKET STREET, SUITE 920
PHILADELPHIA, PA 19102
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DELAWARE LICENSE No. 15981
NEW JERSEY LICENSE No. 24GE04061400

SHEET TITLE:

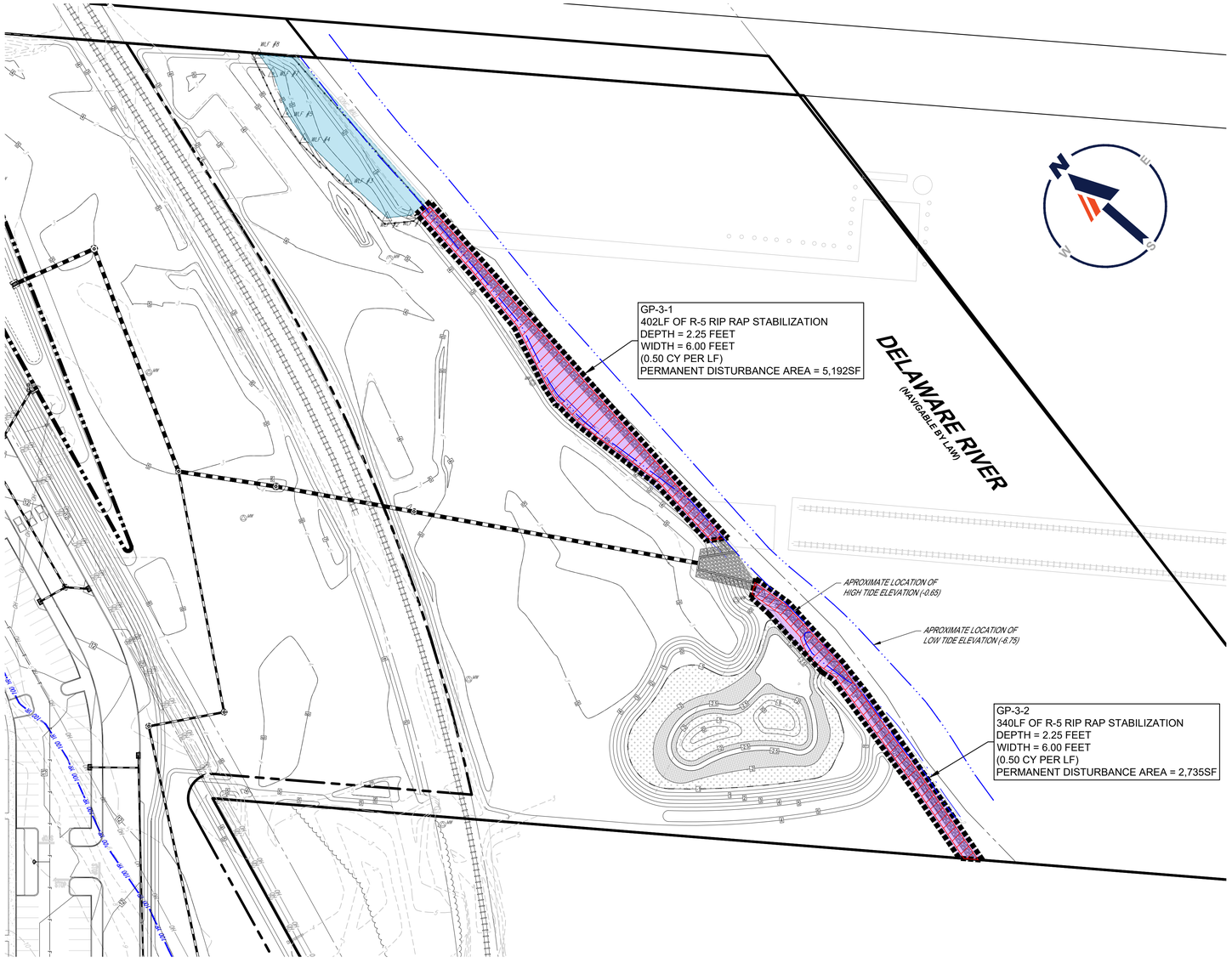
GENERAL PERMIT LOCATION PLAN

SHEET NUMBER:

1

ORG. DATE - 2/23/2022

R:\20\PP203056\CAD\DRAWINGS\PLAN SETS\DEPP203056-DEPS-0B-----LAYOUT: PP1 LOCATION PLAN
JW
R:\20\PP203056\CAD\DRAWINGS\PLAN SETS\DEPP203056-DEPS-0B-----LAYOUT: PP1 LOCATION PLAN
JW



GP-3-1 & GP-3-2 PLAN VIEW

SCALE: 1"=50'

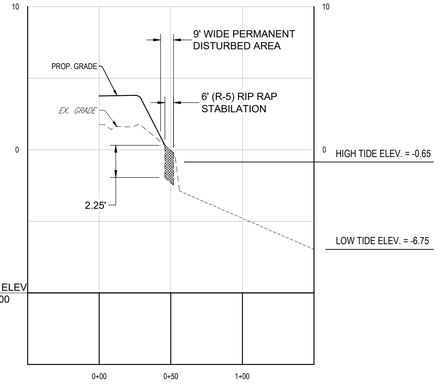
DENOTES PERMANENT DISTURBANCE AREA

50 25 12.5 0 50

1"= 50'

GP-3 GENERAL NOTES

1. CONSTRUCTION OF THE BANK REHABILITATION, BANK PROTECTION PROJECT OR REMOVAL OF A GRAVEL BAR SHOULD NOT CONSTRICT OR INCREASE THE NORMAL CHANNEL WIDTH. THE CONFIGURATION OF THE SHORELINE SHALL REMAIN SUBSTANTIALLY THE SAME AND THE WORK SHALL ALIGN SMOOTHLY WITH, AND NOT PROJECT FURTHER INTO THE CHANNEL THAN ADJACENT UPSTREAM AND DOWNSTREAM BANKS. THE UPSTREAM AND DOWNSTREAM ENDS OF A BANK REHABILITATION OR BANK PROTECTION PROJECT SHALL BE KEYED INTO THE STREAM BANK TO ENSURE STABILITY.
2. CONSTRUCTION AND OTHER ACTIVITIES AUTHORIZED BY THIS GENERAL PERMIT SHALL BE PERFORMED IN A MANNER THAT MINIMIZES USE OF EQUIPMENT WITHIN THE STREAM CHANNEL OR BODY OF WATER.
3. BANK REHABILITATION, BANK PROTECTION AND GRAVEL BAR REMOVAL SHALL TAKE PLACE DURING PERIODS WHEN THE STREAM IS AT LOW FLOW.
4. TO THE GREATEST EXTENT POSSIBLE, THE PROJECT SHALL BE DESIGNED AND CONSTRUCTED IN A MANNER WHICH WILL (A) PREVENT PERMANENT OR LONG-TERM ADVERSE CHANGES IN WATER QUALITY, (B) MINIMIZE ALTERATIONS IN NATURAL AQUATIC HABITAT AND (C) MAINTAIN NATURAL STREAMFLOW VELOCITIES AND MIXING PATTERNS.
5. THE PLACEMENT OF FILL HIGHER THAN THE ELEVATION OF THE EXISTING STREAM BANKS, THE CONSTRUCTION OF LEVEES, THE REALIGNMENT OR RELOCATION OF THE CHANNEL, DREDGING ACTIVITIES IN WATER AND EXCAVATION BELOW EXISTING WATER LEVEL ARE NOT AUTHORIZED BY THIS GENERAL PERMIT.
6. BANK REHABILITATION, BANK PROTECTION AND GRAVEL BAR REMOVAL PROJECTS SHALL NOT EXTEND ACROSS ADJACENT PROPERTY LINES WITHOUT THE WRITTEN PERMISSION OF ALL AFFECTED PROPERTY OWNERS.
7. DURING CONSTRUCTION ACTIVITIES, ALL PUBLIC AND PRIVATE PROPERTY INCLUDING EXISTING VEGETATION, LANDSCAPE FEATURES AND MONUMENTS WITHIN, ALONG AND ADJACENT TO THE WORK AREA, SHALL BE PROTECTED AND PRESERVED TO THE MAXIMUM DEGREE POSSIBLE. THIS SHALL INCLUDE, BUT NOT BE LIMITED TO, PRECAUTIONS TAKEN TO MINIMIZE DAMAGE, EROSION, INJURY OR DESTRUCTION; PREVENT POLLUTION; PROVIDE PROTECTION OF ALL TREES AND OTHER WOODY PLANTS; SPECIAL CARE BEING TAKEN TO PROTECT THE NATURAL VEGETATION AND SURROUNDINGS TO INCLUDE ALL NATURAL DRAINAGEWAYS, PONDS, LAKES, WETLANDS, WOODS AND FIELDS; AND STORAGE OF MATERIALS IN SUCH MANNER TO PREVENT LEACHING WHICH WOULD BE INJURIOUS TO SOILS AND TO PLANTS. PRECAUTIONS SHOULD BE TAKEN TO PREVENT DAMAGE TO PIPES, CONDUITS AND OTHER UNDERGROUND STRUCTURES.
8. ONLY CLEAN, NONPOLLUTING MATERIALS SHALL BE USED FOR BANK REHABILITATION AND PROTECTION PROJECTS IN ORDER TO MINIMIZE EXCESSIVE TURBIDITY BY LEACHING OF FINES AS WELL AS TO PRECLUDE ENTRANCE OF UNDESIRABLE CHEMICAL CONSTITUENTS TO THE WATERCOURSE BY NATURAL RUNOFF OR LEACHING.



TYPICAL RIP RAP STABILIZATION CROSS SECTION

SCALE: 1"= 120 ' HORIZONTAL
1"= 12 ' VERTICAL

LEGEND — PROPOSED

BUILDING	
RETAINING WALL	
CONCRETE CURB	
FLUSH CURB	
FENCE	X
SIDEWALK	
RAMP	
SIGN	
BOLLARD	
DRAINAGE INLET	
MANHOLE	
ENDWALL	
RIPRAP	
CLEANOUT	
PROPOSED CONTOURS	600 / 600
OVERHEAD UTILITY WIRES	OH
ELECTRIC LINE	E
TELEPHONE LINE	T
GAS LINE	G
WATER LINE	W
SANITARY SEWER	S
STORM PIPE	
OBSERVATION WELL	OW
RIP RAP	
ABOVEGROUND BASIN	
GENERAL PERMIT AREA	

LEGEND — EXISTING

BUILDING	
RETAINING WALL	
CONCRETE CURB	
FLUSH CURB	
FENCE	X
TREELINE	
FLOOD HAZARD LINE	FP
100YR FLOOD PLAIN	100 YR
EXISTING CONTOURS	600
PROPERTY LINE	
R.O.W. LINE	
ADJACENT PROPERTY LINE	
OVERHEAD UTILITY WIRES	OH
ELECTRIC LINE	E
TELEPHONE LINE	T
GAS LINE	G
WATER LINE	W
SANITARY SEWER	S
STORM PIPE	
CONCRETE MONUMENT/ IRON PIN	
SIGN	
TREE	
DRAINAGE INLET	
STORM/SANITARY MANHOLE	
WATER/GAS VALVES	
ROOF DRAIN/CLEANOUT	
UTILITY POLE W/ LIGHT	
UTILITY POLE	

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PROJECT No.:	PP203056
DRAWN BY:	JW
CHECKED BY:	KM
DATE:	2/23/2022
CAD I.D.:	PP203056-DEPS-0B

PROJECT:

GENERAL PERMIT PLANS

FOR
BP BRIDESBURG, LLC

PROPOSED DEVELOPMENT

4501 RICHMOND STREET
PHILADELPHIA, PA 19137

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PHILADELPHIA, PA 19102
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PENNSYLVANIA LICENSE NO. PE070317
DELAWARE LICENSE NO. 19899
NEW JERSEY LICENSE NO. 24GE05041400

SHEET TITLE:

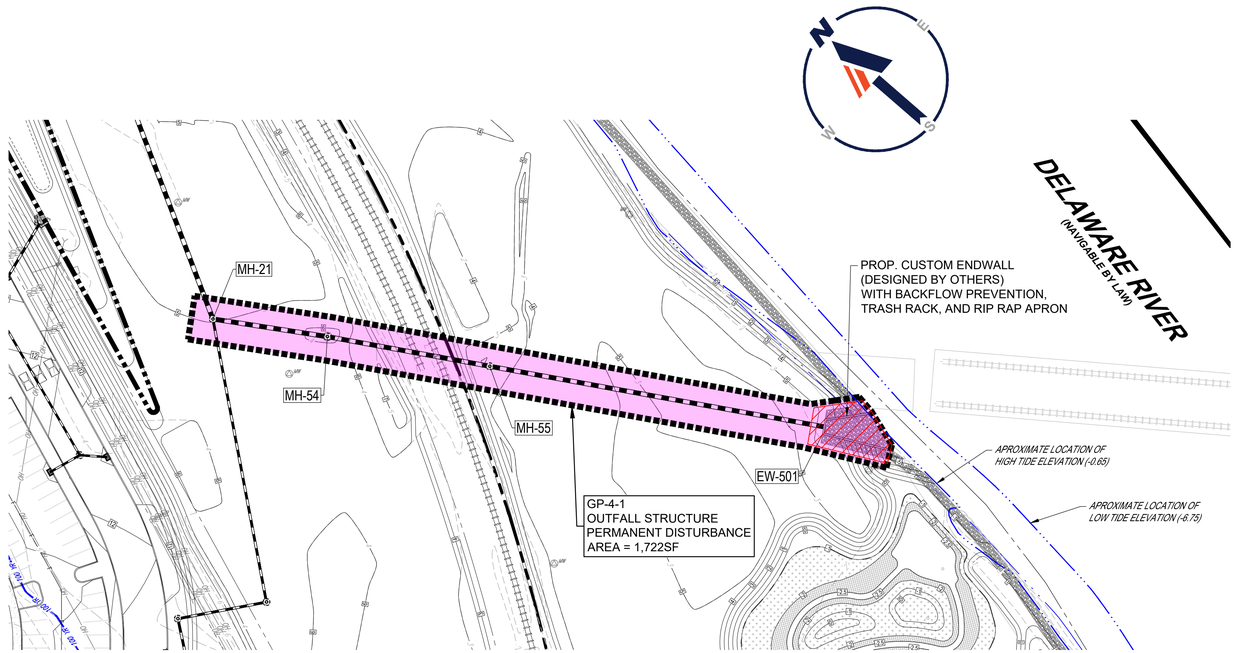
GENERAL PERMIT 3 STABILIZATION PLAN

SHEET NUMBER:

2

ORG. DATE - 2/23/2022

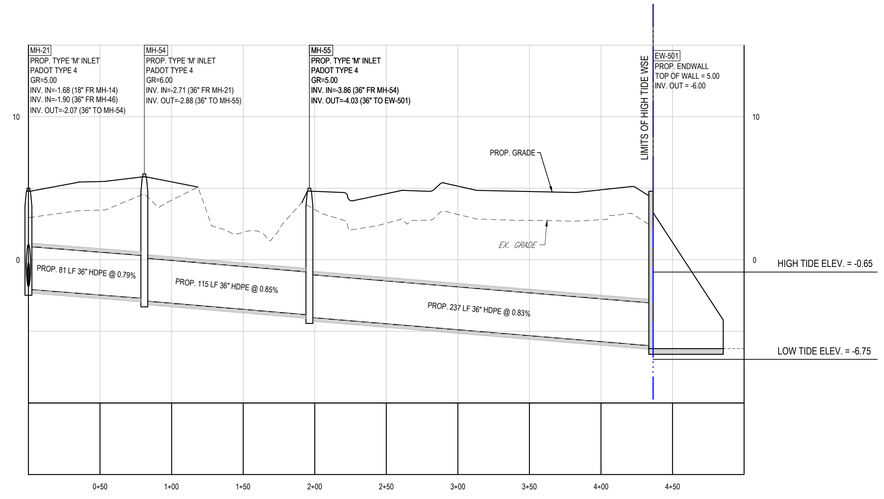
R:\2019\203056\CAD\DRAWINGS\PLAN SETS\DEP\PP203056-DEPS-0B-----LAYOUT: PI02 GENERAL PERMIT 3
JW
R:\2019\203056\CAD\DRAWINGS\PLAN SETS\DEP\PP203056-DEPS-0B-----LAYOUT: PI02 GENERAL PERMIT 3



GP-4-1 PLAN VIEW

SCALE: 1"=50'

DENOTES PERMANENT DISTURBANCE AREA



GP-4-1 PROFILE

SCALE: 1"= 120 ' HORIZONTAL
1"= 12 ' VERTICAL

GP-4 GENERAL NOTES

1. EACH INTAKE AND OUTFALL STRUCTURE SHALL BE CONSTRUCTED IN SUCH MANNER SO THAT THERE IS NO INTERFERENCE WITH ANY NAVIGATION ON THE STREAM, MIGRATION OF FISH OR THE PASSAGE OF FLOOD FLOWS.
2. INTAKE AND OUTFALL STRUCTURES AUTHORIZED UNDER THIS GENERAL PERMIT SHALL NOT INTERFERE WITH STREAM USES AS DESIGNATED IN CHAPTER 93 OF THE DEPARTMENT'S RULES AND REGULATIONS.
3. INTAKE AND OUTFALL STRUCTURES HEREIN AUTHORIZED SHALL BE PROPERLY MAINTAINED WHICH INCLUDES THE REMOVAL OF ANY ACCUMULATION OF DEBRIS.
4. THIS GENERAL PERMIT IS NOT TO BE CONSTRUED AS APPROVAL OF DISCHARGES INTO THE RECEIVING STREAM OR BODY OF WATER WHICH MAY REQUIRE CERTIFICATION UNDER 401(A) OF THE FEDERAL WATER POLLUTION CONTROL ACT (33 USCA §1341(A)) OR OTHER RELEVANT STATE STATUTES.
5. THIS GENERAL PERMIT AUTHORIZES THE CONSTRUCTION ONLY OF THOSE OUTFALL STRUCTURES HAVING A PIPE OUTFALL 36 INCHES IN DIAMETER OR LESS.

LEGEND

PROPOSED

BUILDING	
RETAINING WALL	
CONCRETE CURB	
FLUSH CURB	
FENCE	X
SIDEWALK	
RAMP	
SIGN	
BOLLARD	
DRAINAGE INLET	
MANHOLE	
ENDWALL	
RIPRAP	
CLEANOUT	
PROPOSED CONTOURS	100 / 100
OVERHEAD UTILITY WIRES	OH
ELECTRIC LINE	E
TELEPHONE LINE	T
GAS LINE	G
WATER LINE	W
SANITARY SEWER	S
STORM PIPE	
OBSERVATION WELL	OW
RIP RAP	
ABOVEGROUND BASIN	
GENERAL PERMIT AREA	

LEGEND

EXISTING

BUILDING	
RETAINING WALL	
CONCRETE CURB	
FLUSH CURB	
FENCE	X
TREELINE	
FLOOD HAZARD LINE	FP
100YR FLOOD PLAIN	100 YR
EXISTING CONTOURS	100
PROPERTY LINE	
R.O.W. LINE	
ADJACENT PROPERTY LINE	
OVERHEAD UTILITY WIRES	OH
ELECTRIC LINE	E
TELEPHONE LINE	T
GAS LINE	G
WATER LINE	W
SANITARY SEWER	S
STORM PIPE	
CONCRETE MONUMENT/ IRON PIN	
SIGN	
TREE	
DRAINAGE INLET	
STORM/SANITARY MANHOLE	
WATER/GAS VALVES	
ROOF DRAIN/CLEANOUT	
UTILITY POLE W/ LIGHT	
UTILITY POLE	

50 25 12.5 0 50

1"= 50'

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DATE:	2/23/2022
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PROJECT:

GENERAL PERMIT PLANS

FOR

BP BRIDESBURG, LLC

PROPOSED DEVELOPMENT

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NEW JERSEY LICENSE NO. 24GE05041400

SHEET TITLE:

GENERAL PERMIT 4 OUTFALL PLAN

SHEET NUMBER:

3

ORG. DATE - 2/23/2022

R:\2021\PP203056\CAD\DRAWINGS\PLAN SETS\DEP\PP203056-DEPS-0B-----LAYOUT: P03 GENERAL PERMIT 4
JW
R:\2021\PP203056\CAD\DRAWINGS\PLAN SETS\DEP\PP203056-DEPS-0B-----LAYOUT: P03 GENERAL PERMIT 4

30 15 7.5 0 30

1"= 30'

MITIGATION AREA #	AREA
MITIGATION AREA 1	16,000 SF 0.367 AC

WETLAND PLANTING SCHEDULE

LOW MARSH PLANTING: (4,830± SF: 2,415± SF TO BE USED FOR CALCULATION)

QTY	BOTANICAL NAME	COMMON NAME	ROOT	SPACING	PLANTING RATIO
386	CAREX STRICTA	TUSSOCK SEDGE	2" PLUG	1' O.C.	16%
459	JUNCUS EFFUSUS	SOFT RUSH	2" PLUG	1' O.C.	19%
121	IRIS VERSICOLOR	BLUEFLAG IRIS	2" PLUG	2' O.C.	20%
115	SAGITTARIA LATIFOLIA	DUCK POTATO	QUART POT	2' O.C.	19%
314	SCIRPUS ACUTUS	HARD-STEM BULRUSH	2" PLUG	1' O.C.	13%
314	SCIRPUS TABERNAEMONTANII	SOFT-STEM BULRUSH	2" PLUG	1' O.C.	13%
1,709					

HIGH MARSH PLANTING: (8,640± SF: 4,320± SF TO BE USED FOR CALCULATION)

QTY	BOTANICAL NAME	COMMON NAME	ROOT	SPACING	PLANTING RATIO
864	ASCLEPIAS INCARNATA	SWAMP MILKWEED	2" PLUG	1' O.C.	20%
821	ASTER NOVAE-ANGLIAE	NEW ENGLAND ASTER	2" PLUG	1' O.C.	19%
648	CAREX STRICTA	TUSSOCK SEDGE	2" PLUG	1' O.C.	15%
734	LOBELIA CARDINALIS	CARDINAL FLOWER	2" PLUG	1' O.C.	17%
605	SCIRPUS ACUTUS	HARD-STEM BULRUSH	2" PLUG	1' O.C.	14%
648	SCIRPUS TABERNAEMONTANII	SMOOTH CORDGRASS	2" PLUG	1' O.C.	15%
4,320					

PLEASE REFER TO CONSTRUCTED WETLAND NOTES ON SHEET C-705 FOR SEQUENCE OF CONSTRUCTION.

CONSTRUCTED WETLAND NOTES

SEQUENCE OF CONSTRUCTION

1. ONCE THE STORMWATER WETLAND HAS BEEN EXCAVATED, THE WETLAND SHOULD BE GRADED TO CREATE THE MAJOR INTERNAL FEATURES (POOL, AQUATIC BENCH, DEEP-WATER CHANNELS, ETC).

2. TOP SOIL AND/OR WETLAND MULCH IS ADDED TO THE STORMWATER WETLAND EXCAVATION. SINCE DEEP SUBSOILS OFTEN LACK THE NUTRIENTS AND ORGANIC MATTER TO SUPPORT VIGOROUS PLANT GROWTH, THE ADDITION OF MULCH OR TOPSOIL IS IMPORTANT. IF IT IS AVAILABLE, WETLAND MULCH IS PREFERABLE TO TOPSOIL. AFTER THE MULCH OR TOPSOIL HAS BEEN ADDED, THE STORMWATER WETLAND NEEDS TO BE GRADED TO ITS FINAL ELEVATIONS. ALL WETLAND FEATURES ABOVE THE NORMAL POOL SHOULD BE STABILIZED TEMPORARILY. SEE SOIL EROSION AND SEDIMENT CONTROL PLAN FOR SEED SPECIFICATION.

3. AFTER GRADING TO FINAL ELEVATIONS, THE POND DRAIN SHOULD BE CLOSED AND THE POOL ALLOWED TO FILL. USUALLY NOTHING SHOULD BE DONE TO THE STORMWATER WETLAND FOR SIX TO NINE MONTHS OR UNTIL THE NEXT PLANTING SEASON. A GOOD DESIGN RECOMMENDATION IS TO EVALUATE THE WETLAND ELEVATION DURING A STANDING PERIOD OF APPROXIMATELY SIX MONTHS. DURING THIS TIME THE STORMWATER WETLAND CAN EXPERIENCE STORM FLOWS AND INUNDATION, SO THAT IT CAN BE DETERMINED WHERE THE PONDSCAPING ZONES ARE LOCATED AND WHETHER OR NOT THE FINAL GRADE AND MICROTOPOGRAPHY WILL PERSIST OVERTIME.

4. BEFORE PLANTING, THE STORMWATER WETLAND DEPTHS SHOULD BE MEASURED TO THE NEAREST INCH TO CONFIRM PLANTING DEPTH. THE PONDSCAPE PLAN MAY BE MODIFIED AT THIS TIME TO REFLECT ALTERED DEPTHS OR AVAILABILITY OF PLANT STOCK.

5. EROSION CONTROLS SHOULD BE STRICTLY APPLIED DURING THE STANDING AND PLANTING PERIODS. ALL AREAS ABOVE THE NORMAL POOL ELEVATION SHOULD BE VEGETATIVELY STABILIZED DURING THE STANDING PERIOD.

6. THE STORMWATER WETLAND SHOULD BE DE-WATERED AT LEAST THREE DAYS BEFORE PLANTING FOR EASE OF PLANTING.

7. DURING THE INITIAL PLANTING PRECAUTIONS SHOULD BE UNDERTAKEN TO PREVENT AND PROHIBIT ANIMALS FROM GRAZING UNTIL PLANT COMMUNITIES ARE WELL ESTABLISHED. SUCH PRECAUTIONS COULD BE DEER FENCING, MUSKRAT TRAPPING, PLANTING AFTER SEASONAL BIRD MIGRATIONS OR ATTRACTING BIRDS OF PREY AND BATS TO CONTROL NUTRIA POPULATIONS.

OPERATIONS AND MAINTENANCE NOTES:

1. CONSTRUCTED STORMWATER WETLANDS REQUIRE CONSIDERABLE ROUTINE MAINTENANCE, BUT DO NOT REQUIRE LARGE, INFREQUENT SEDIMENT REMOVAL UNLIKE CONVENTIONAL POND SYSTEMS THAT REQUIRES RELATIVELY MINOR ROUTINE MAINTENANCE AND EXPENSIVE SEDIMENT REMOVAL AT INFREQUENT INTERVALS.

2. CAREFUL OBSERVATION OF THE SYSTEM OVER TIME IS REQUIRED IN THE FIRST THREE YEARS AFTER CONSTRUCTION. WITHIN THE FIRST GROWING SEASON OR UNTIL IT IS DETERMINED THAT THE SYSTEM IS ESTABLISHED, FREQUENT INSPECTIONS WILL BE REQUIRED, POSSIBLY BIWEEKLY OR MONTHLY BASIS. FOLLOWING THIS, TWICE A YEAR INSPECTIONS ARE NEEDED DURING BOTH THE GROWING AND NON-GROWING SEASON. DATA GATHERED DURING THESE INSPECTIONS SHOULD BE RECORDED , MAPPED AND ASSESSED. THE FOLLOWING OBSERVATIONS SHOULD BE MADE DURING THE INSPECTIONS:
   a. TYPES AND DISTRIBUTION OF DOMINANT WETLAND PLANTS IN THE MARSH;
   b. THE PRESENCE AND DISTRIBUTION OF PLANTED WETLAND SPECIES; THE PRESENCE AND DISTRIBUTION OF VOLUNTEER WETLAND SPECIES; SIGNS THAT VOLUNTEER SPECIES ARE REPLACING THE PLANTED WETLAND SPECIES;
   c. PERCENTAGE OF UNVEGETATED STANDING WATER (EXCLUDING THE DEEP WATER CELLS WHICH ARE NOT SUITABLE FOR EMERGENT PLANT GROWTH);
   d. THE MAXIMUM ELEVATION AND THE VEGETATIVE CONDITION IN THIS ZONE, IF THE DESIGN ELEVATION OF THE NORMAL POOL IS BEING MAINTAINED FOR WETLANDS WITH EXTENDED ZONES;
   e. STABILITY OF THE ORIGINAL DEPTH ZONES AND THE MICROTOPOGRAPHIC FEATURES;
   f. ACCUMULATION OF SEDIMENT IN THE FOREBAY AND MICROPOOL;
   g. SURVIVAL RATE OF PLANTS IN THE WETLAND BUFFER;
   h. REGULATION THE SEDIMENT INPUT TO THE WETLAND IS THE PRIORITY MAINTENANCE ACTIVITY. THE MAJORITY OF SEDIMENTS SHOULD BE TRAPPED AND REMOVED BEFORE THEY REACH THE WETLANDS EITHER IN THE FOREBAY OR IN A POND COMPONENT. GRADUAL SEDIMENT ACCUMULATION IN THE WETLAND RESULT IN REDUCED WATER DEPTHS AND CHANGES IN THE GROWING CONDITIONS FOR THE EMERGENT PLANTS. FURTHERMORE, SEDIMENT REMOVAL WITHIN THE WETLAND CAN DESTROY THE WETLAND PLANT COMMUNITY;
   i. SHALLOW MARSH AND EXTENDED DETENTION WETLAND DESIGNS INCLUDE FOREBAYS TO TRAP SEDIMENT BEFORE REACHING THE WETLAND. THEREFORE BAYS SHOULD BE CLEANED OUT EVERY YEAR;
   j. CLEAN OUTS AND DISCHARGE LOCATIONS SHOULD BE INSPECTED MORE FREQUENTLY. INSPECTIONS FOR THEM COULD COINCIDE WITH ABOVE NORMAL OR EXTENDED PERIOD RAINFALL, RATHER THAN JUST INCREASING THE INSPECTION INTERVALS. THUS, IF THERE ARE PERIODS OF DROUGHT OR SMALL INFREQUENT EVENTS IT WOULD NOT BE NECESSARY FOR AN INSPECTION.

LEGEND

PROPOSED

BUILDING	
RETAINING WALL	
CONCRETE CURB	
FLUSH CURB	
FENCE	X
SIDEWALK	
RAMP	
SIGN	
BOLLARD	
DRAINAGE INLET	
MANHOLE	
ENDWALL	
RIPRAP	
CLEANOUT	
PROPOSED CONTOURS	100
OVERHEAD UTILITY WIRES	OH
ELECTRIC LINE	E
TELEPHONE LINE	T
GAS LINE	G
WATER LINE	W
SANITARY SEWER	S
STORM PIPE	
OBSERVATION WELL	OW
RIP RAP	
ABOVEGROUND BASIN	
GENERAL PERMIT AREA	

LEGEND

EXISTING

BUILDING	
RETAINING WALL	
CONCRETE CURB	
FLUSH CURB	
FENCE	X
TREELINE	
FLOOD HAZARD LINE	FP
100YR FLOOD PLAIN	100 YR
EXISTING CONTOURS	100
PROPERTY LINE	
R.O.W. LINE	
ADJACENT PROPERTY LINE	
OVERHEAD UTILITY WIRES	OH
ELECTRIC LINE	E
TELEPHONE LINE	T
GAS LINE	G
WATER LINE	W
SANITARY SEWER	S
STORM PIPE	
CONCRETE MONUMENT/ IRON PIN	
SIGN	
TREE	
DRAINAGE INLET	
STORM/SANITARY MANHOLE	
WATER/GAS VALVES	
ROOF DRAIN/CLEANOUT	
UTILITY POLE W/ LIGHT	
UTILITY POLE	

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DRAWN BY:	JW
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PROJECT:

GENERAL PERMIT PLANS

FOR
BP
BRIDESBURG,
LLC

PROPOSED DEVELOPMENT

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NEW JERSEY LICENSE NO. GE51404971400

SHEET TITLE:

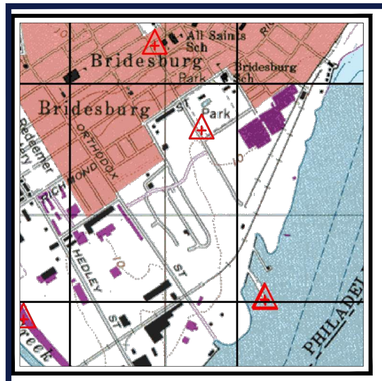
WETLANDS MITIGATION AREA PLAN

SHEET NUMBER:

4

ORG. DATE - 2/23/2022

R:\2021\203056\CAD\DRAWINGS\PLAN SETS\DEP\PP203056-DEPS-0B---LAYOUT: PP4 WETLANDS MITIGATION
JW
R:\2021\203056\CAD\DRAWINGS\PLAN SETS\DEP\PP203056-DEPS-5B---LAYOUT: PP4 WETLANDS MITIGATION
JW



USGS MAP

SCALE: 1" = 1000'
SOURCE: USGS

SOIL MAP

SCALE: 1" = 1000'
SOURCE: WEB SOIL SURVEY

LOCATION OF ALL SURFACE WATERS AND THEIR CLASSIFICATION UNDER CHAPTER 93

§102.4(b)(5)(v)

THE SUBJECT SITE IS LOCATED WITHIN THE DELAWARE DIRECT WATERSHED, WHICH HAS A WWF (WARM WATER FISHES) & MF (MIGRATING FISH) CHAPTER 93 CLASSIFICATION.

RECYCLING OR DISPOSAL OF MATERIALS

§102.4(b)(5)(xi)

THE FOLLOWING IS A LIST THAT INCLUDES, BUT THAT IS NOT LIMITED TO, THE POTENTIAL CONSTRUCTION WASTES THAT MAY EXIST ON-SITE:
- CONCRETE CURB AND SIDEWALK
- ASPHALT
- E&S BMP - COMPOST FILTER SOCKS
- E&S BMP - TEMPORARY RISER
- E&S BMP - EROSION CONTROL MATTING
- E&S BMP - STONE INLET PROTECTION
- E&S BMP - STONE & CONCRETE BLOCK INLET PROTECTION
- E&S BMP - REGULATED FILL MATERIALS

ALL BUILDING MATERIALS AND WASTES SHALL BE REMOVED FROM THE SITE AND RECYCLED OR DISPOSED OF IN ACCORDANCE WITH THE DEPARTMENT'S SOLID WASTE MANAGEMENT REGULATIONS AT 25 Pa. CODE 260.1 ET SEQ., 271.1, AND 287.1 ET SEQ. NO BUILDING MATERIALS OR WASTES OR UNUSED BUILDING MATERIALS SHALL BE BURNED, BURIED, DUMPED, OR DISCHARGED AT THE SITE. BELOW IS A LIST OF METHODS FOR THE PROPER RECYCLING/DISPOSAL OF VARIOUS MATERIALS:

1.) DUST CONTROL - CONSTRUCTION TRAFFIC MUST ENTER AND EXIT THE SITE AT THE STABILIZED CONSTRUCTION ENTRANCE. THE PURPOSE IS TO TRAP DUST AND MUD THAT WOULD OTHERWISE BE CARRIED OFF-SITE BY CONSTRUCTION TRAFFIC. WATER TRUCKS WILL BE USED AS NEEDED DURING CONSTRUCTION TO REDUCE DUST GENERATED ON THE SITE. DUST CONTROL MUST BE PROVIDED BY THE CONTRACTOR TO A DEGREE THAT IS ACCEPTABLE TO THE LOCAL CONSERVATION DISTRICT. AFTER CONSTRUCTION, THE SITE WILL BE STABILIZED, WHICH WILL REDUCE THE POTENTIAL FOR DUST GENERATION.

2.) SOLID WASTE DISPOSAL - NO SOLID MATERIALS, INCLUDING BUILDING MATERIALS, ARE ALLOWED TO BE DISCHARGED FROM THE SITE WITH STORMWATER. ALL SOLID WASTE, INCLUDING DISPOSABLE MATERIALS INCIDENTAL TO THE MAJOR CONSTRUCTION ACTIVITIES, MUST BE COLLECTED AND PLACED IN CONTAINERS. THE CONTAINERS WILL BE EMPTIED AS NECESSARY BY A CONTRACT TRASH DISPOSAL SERVICE AND HAULED AWAY FROM THE SITE.

3.) SANITARY FACILITIES - ALL PERSONNEL INVOLVED WITH CONSTRUCTION ACTIVITIES MUST COMPLY WITH STATE AND LOCAL SANITARY OR SEPTIC SYSTEM REGULATIONS. TEMPORARY SANITARY FACILITIES WILL BE PROVIDED AT THE SITE THROUGHOUT THE CONSTRUCTION PHASE. THEY MUST BE UTILIZED BY ALL CONSTRUCTION PERSONNEL AND WILL BE SERVICED BY A LICENSED COMMERCIAL OPERATOR.

4.) WATER SOURCE - NON-STORMWATER COMPONENTS OF SITE DISCHARGE MUST BE CLEAN WATER. WATER USED FOR CONSTRUCTION WHICH DISCHARGES FROM THE SITE MUST ORIGINATE FROM A PUBLIC WATER SUPPLY OR PRIVATE WELL APPROVED BY THE STATE HEALTH DEPARTMENT. WATER USED FOR CONSTRUCTION THAT DOES NOT ORIGINATE FROM AN APPROVED PUBLIC SUPPLY MUST NOT DISCHARGE FROM THE SITE.

5.) CONCRETE WASTE FROM CONCRETE READY-MIX TRUCKS - DISCHARGE OF EXCESS OR WASTE CONCRETE AND/OR WASH WATER FROM CONCRETE TRUCKS WILL BE ALLOWED ON THE CONSTRUCTION SITE, BUT ONLY IN SPECIFICALLY DESIGNATED DIKED AREAS PREPARED TO PREVENT CONTACT BETWEEN THE CONCRETE AND/OR WASH WATER AND STORMWATER THAT WILL BE DISCHARGED FROM THE SITE.

GEOLOGIC FORMATIONS/SOIL CONDITIONS THAT MAY HAVE THE POTENTIAL TO CAUSE POLLUTION

CHANNEL

THERE ARE NO GEOLOGIC FORMATIONS OR SOIL CONDITIONS THAT COULD CAUSE CONTAMINANT POLLUTION DURING EARTH DISTURBANCE ACTIVITIES.

POTENTIAL THERMAL IMPACTS TO SURFACE WATERS

A POTENTIAL FOR THERMAL IMPACTS EXISTS IN INSTANCES WHERE SURFACE RUNOFF IS DIRECTLY CONVEYED TO A RECEIVING STREAM WITHOUT ADEQUATE ATTENUATION OR COOLING. TO AVOID THERMAL IMPACTS, THE FOLLOWING ARE PROPOSED: UNDERGROUND INFILTRATION BASIN, RETENTION/INFILTRATION EXISTING SWALES, EXISTING DEPRESSIONS, AND SUBSTANTIAL AMOUNTS OF VEGETATION AROUND EACH OF THESE BMP'S. ALL OF THESE MEASURES WILL HELP TO CONTROL RUNOFF VOLUME AND RATE AND THEREBY PROVIDE ADDITIONAL COOLING TIME, THEREBY MINIMIZING THERMAL IMPACTS TO THE RECEIVING STREAM.

TYPES, DEPTH, SLOPE, LOCATIONS, AND LIMITATIONS OF THE SOILS

§102.4(b)(5)(ii)

SOIL DESCRIPTIONS

SOIL	DESCRIPTION	SOIL GROUP
Ub	- URBAN LAND, 0 TO 8 PERCENT SLOPES	C

SOIL USE LIMITATIONS AND THEIR RESOLUTIONS PROVIDED

CONTRACTOR SHALL CONSULT WITH GEOTECHNICAL ENGINEER TO DETERMINE SOIL LIMITATIONS AND RESOLUTIONS SPECIFIC TO THIS PROJECT.

1. SOIL TYPES POORLY SUITED AS SOURCES OF TOPSOIL RESTRICT OR PLACE CONDITIONS ON PLANNING VEGETATIVE STABILIZATION. ACIDIC, LOW FERTILITY, EXCESSIVE DRYNESS AND EXCESSIVE WETNESS LIMIT PLANT GROWTH.

RESOLUTIONS: IDENTIFYING AND RESOLVING CHARACTERISTICS, THAT RENDER THE SOIL TYPES POORLY, SUITED AS TOPSOIL.

2, ACIDIC SOIL TYPES EXHIBITING PH REACTION VALUES LOWER THAN ABOUT 5,5, LIMIT VEGETATIVE STABILIZATION, SOIL TESTS MIGHT BE NECESSARY TO DETERMINE SITE SPECIFIC PH REACTION.

RESOLUTIONS: APPLYING LIME CONSISTENT WITH RATES DETERMINED BY SOIL TESTING; SELECTING VEGETATIVE SPECIES TOLERANT TO ACIDIC SOIL CONDITIONS; AND IMPLEMENTING COMBINATIONS OF THESE AND/OR OTHER METHODS, SPECIFIC TOLERANCE INFORMATION IS PROVIDED IN TABLE 1 OF THE EROSION CONTROL & CONSERVATION PLANTINGS ON NONCROPLAND PUBLISHED BY PENN STATE.

3. LOW FERTILITY SOIL TYPES LACKING IN SUFFICIENT AMOUNTS OF ESSENTIAL PLANT NUTRIENTS SUCH AS: NITRPGEN, PHOSPHOROUS, POTASSIUM, SULFER, MAGNESIUM, CALCIUM, IRON, MANGANESE, BORON, CHLORINE, ZINC, COPPER AND MOLYBDENUM, LIMIT VEGETATION STABILIZATION. SOIL TESTS MIGHT BE NECESSARY TO DETERMINE SITE SPECIFIC SOIL FERTILITY.

RESOLUTIONS: INCORPORATING SOIL NUTRIENTS CONSISTENT WITH RATES DETERMINED BY SOIL TESTING; SELECTIVE VEGETATIVE SPECIES TOLERANT TO LOW FERTILITY SOIL CONDITIONS, AND IMPLEMENTING COMBINATIONS OF THESE AND/OR OTHER METHODS. SPECIFIC TOLERANCE INFORMATION IS PROVIDED IN TABLE 1 OF THE EROSION CONTROL & CONSERVATION PLANTINGS ON NONCROPLAND PUBLISHED BY PENN STATE.

4, ERODIBLE SOIL TYPES EXHIBITING K VALUES GREATER THAN 0,36 OR PLASTICITY INDEX VALUES LOWER THAN 10, LIMIT VEGETATIVE STABILIZATION OF CHANNELS.

RESOLUTIONS: TEMPORARY CHANNEL LINING, PROVIDING PERMANENT CHANNEL LINING, DECREASING CHANNEL GRADE, INCREASING CHANNEL WIDTH, SELECTING VEGETATIVE WITH GREATER RETARDANCE, SELECTING PERMANENT LININGS OTHER THAN GRASSES, AND IMPLEMENTING COMBINATION OF THESE AND/OR METHODS, VEGETATIVE RETARDANCE INFORMATION IS PROVIDED IN TABLES 6 AND 7 OF THE EROSION AND SEDIMENT POLLUTION CONTROL MANUAL PUBLISHED BY PADEP.

5. WET SOIL TYPES HAVE EXCESSIVE ROOT ZONE AND SOIL MOISTURES. SOME SOIL SURVEYS INDICATE WETNESS, HIGH WATER TABLE AND FLOODING. THIS INDICATOR IS AFFECTED BY SOIL DISTURBANCE.

RESOLUTIONS: SELECTING VEGETATIVE SPECIES TOLERANT TO WET CONDITIONS, TILING VEGETATIVE AREAS, AND IMPLEMENTING COMBINATIONS OF THESE AND/OR OTHER METHODS. SPECIFIC TOLERANCE INFORMATION IS PROVIDED IN TABLE 1 OF THE EROSION CONTROL & CONSERVATION PLANTINGS ON NONCROPLAND PUBLISHED BY THE PENN STATE.

6. DRY SOIL TYPES LACK SUFFICIENT ROOT ZONE SOIL MOISTURES. THIS INDICATOR IS AFFECTED BY SOIL DISTURBANCE.

RESOLUTIONS: SELECTING VEGETATIVE SPECIES TOLERANT TO DRY CONDITIONS, IRRIGATING VEGETATED AREAS AND IMPLEMENTING COMBINATION OF THESE AND/OR OTHER METHODS. SPECIFIC TOLERANCE INFORMATION IS PROVIDED IN TABLE 1 OF THE EROSION CONTROL & CONSERVATION PLANTINGS ON NONCROPLAND PUBLISHED BY PENN STATE.

7. SOIL TYPES SUSCEPTIBLE TO SINKHOLE AND SOLUTION CHANNEL/CHAMBER FORMATION POSE LIMITATIONS ON LOCATING RESERVOIR AREAS OF SEDIMENT BASINS, SEDIMENT TRAPS, STORMWATER RETENTION BASINS, AND STORMWATER DETENTION BASINS.

RESOLUTIONS: LOCATING THOSE FACILITIES ON OTHER SOIL TYPES, LINING RESERVOIR AREAS WITH IMPERMEABLE LINNINGS, LIMITING STANDING WATER DEPTHS, LIMITING RETENTION TIMES AND IMPLEMENTING COMBINATIONS OF THESE AND/OR OTHER METHODS.

8. SOIL TYPES THAT EXHIBIT INSTABILITY IN POND EMBANKMENTS OR SUSCEPTIBILITY TO PIPING AND SEEPING POSE LIMITATIONS ON PLANNING EMBANKMENTS OF SEDIMENT BASINS, SEDIMENT TRAPS, STORMWATER RETENTION BASINS AND STORMWATER DETENTION BASINS.

RESOLUTIONS: IMPORTING OTHER SOIL FOR EMBANKMENT OF THOSE FACILITIES, LOCATING THOSE FACILITIES ON OTHER SOIL TYPES, LIMITING EMBANKMENT SLOPE STEEPNESS AND IMPLEMENTING COMBINATIONS OF THESE AND/OR OTHER METHODS.

9. SOIL THAT ARE DIFFICULT TO COMPACT, UNSUITABLE FOR WINTER GRADING, OR SUSCEPTIBLE TO FROST ACTION POSE LIMITATIONS ON PLANNING EMBANKMENTS OF SEDIMENT BASINS, SEDIMENT TRAPS, STORMWATER RETENTION BASINS AND STORMWATER DETENTION BASINS.

RESOLUTIONS: IMPORTING OTHER SOIL FOR EMBANKMENT OF THOSE FACILITIES, LOCATING THOSE FACILITIES ON OTHER SOIL TYPES, NOT CONSTRUCTING EMBANKMENTS DURING PERIODS PRONE TO FROST AND IMPLEMENTING COMBINATIONS OF THESE AND/OR OTHER METHODS

10. SUCCEPTIBILITY FOR THE DEVELOPMENT OF SINKHOLE WITHIN IDENTIFIED SOILS.

RESOLUTIONS: IN THE EVENT THAT PRESENCE OF A SINKHOLE IS DETECTED DURING THE COURSE OF WORK, CORRECTIVE MEASURES SHALL BE PERFORMED UNDER THE OBSERVATION AND GUIDANCE OF THE OWNER'S GEOTECHNICAL CONSULTANT.
EXCAVATE THE LOOSE, WET SOILS SURROUNDING THE SINKHOLE TO EXPOSE THE SINKHOLE "THROAT" (THE OPENING IN THE ROCK) AND THE ADJACENT STABLE SOILS/ROCK WHERE POSSIBLE. THE EXCAVATION SHALL EXTEND A MINIMUM OF TWO FEET (2') BEYOND THE STABLE SOILS OR TO THE ROCK SURFACE, WHICHEVER IS ENCOUNTERED FIRST.
FILL THE EXPOSED SINKHOLE "THROAT" WITH LEAN CONCRETE TO BLOCK THE MIGRATION OF THE UPPER LAYERS OF SOIL THROUGH THE ROCK OPENING. AFTER CONCRETE HAS CURED OVERNIGHT BACKFILL THE REMAINDER OF THE EXCAVATION WITH CLAYEY SOILS TO PROVIDE A LOW PERMEABILITY BARRIER. THE CLAYEY SOILS SHALL BE PLACED IN 8" LIFTS AND EACH LIFT COMPACTED BY REPEATED PASSES OF THE COMPACTION EQUIPMENT UNTIL STABLE. CARE SHALL BE TAKEN TO ASSURE THAT THE SOIL AT THE EDGES OF THE EXCAVATION ARE WELL COMPACTED.

E&S PLAN DESIGNED AND IMPLEMENTED TO BE CONSISTENT WITH PCSM PLAN

§102.4(b)(5)(xiv)

REGARDING THE LOCATIONS OF EXISTING RIPARIAN BUFFERS RELATIVE TO THE LIMIT OF DISTURBANCE AND WHETHER PROPOSED INFILTRATION FACILITIES ARE OUTSIDE OF PROPOSED GRADING AREAS, NOTE THE FOLLOWING:
- THERE ARE NO EXISTING OR PROPOSED RIPARIAN BUFFERS.
- THERE ARE NO PROPOSED INFILTRATION BMPs OUTSIDE OF PROPOSED GRADING AREAS.

EXISTING/PROPOSED RIPARIAN FOREST BUFFERS

§102.4(b)(5)(xv)

REGARDING EXISTING OR PROPOSED RIPARIAN FOREST BUFFERS, NOTE THE FOLLOWING:
- THERE ARE NO EXISTING/PROPOSED RIPARIAN FOREST BUFFERS LOCATED WITHIN OR OUTSIDE THE LIMITS OF DISTURBANCE FOR THIS PROJECT.

SEQUENCE OF CONSTRUCTION

SEQUENCE OF CONSTRUCTION

A. ALL EARTH DISTURBANCE ACTIVITIES SHALL PROCEED IN ACCORDANCE WITH THE FOLLOWING SEQUENCE. EACH STAGE SHALL BE COMPLETED IN COMPLIANCE WITH CHAPTER 102 REGULATIONS BEFORE ANY FOLLOWING STAGE IS INITIATED. CLEARING AND GRUBBING SHALL BE LIMITED ONLY TO THOSE AREAS DESCRIBED IN EACH STAGE. UPON COMPLETION OR TEMPORARY CESSATION OF THE EARTH DISTURBANCE ACTIVITY THAT WILL EXCEED FOUR (4) DAYS, OR ANY STAGE THEREOF, THE PROJECT SITE SHALL BE IMMEDIATELY STABILIZED WITH THE APPROPRIATE TEMPORARY OR PERMANENT STABILIZATION.
B. NO WORK CAN BEGIN WITHIN THE FLOODWAY/ WETLANDS AREA UNTIL CHAPTER 105 AND USACE AUTHORIZATIONS ARE OBTAINED
C. REFERENCES TO 'PADEP' USED THROUGHOUT THIS SEQUENCE ARE MEANT TO REFER TO THE PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION.
D. AT LEAST SEVEN (7) DAYS BEFORE STARTING ANY EARTH DISTURBANCE ACTIVITIES, THE OPERATOR SHALL INVITE ALL CONTRACTORS INVOLVED IN THOSE ACTIVITIES INCLUDING, BUT NOT LIMITED TO: THE LANDOWNER AND/OR THEIR REPRESENTATIVE, GENERAL CONTRACTOR, ALL APPROPRIATE MUNICIPAL OFFICIALS AND A REPRESENTATIVE OF THE PADEP FOR AN ON-SITE PRE-CONSTRUCTION MEETING. ALSO, AT LEAST THREE (3) DAYS BEFORE STARTING ANY EARTH DISTURBANCE ACTIVITIES, ALL CONTRACTORS INVOLVED IN THOSE ACTIVITIES SHALL NOTIFY THE PENNSYLVANIA ONE CALL SYSTEM INC. AT 1-800-242-1776 FOR BURIED UTILITIES LOCATION.
E. BEFORE INITIATING ANY REVISION TO THE APPROVED EROSION AND SEDIMENT CONTROL PLAN OR REVISIONS TO OTHER PLANS WHICH MAY AFFECT THE EFFECTIVENESS OF THE APPROVED E&S CONTROL PLAN, THE OPERATOR MUST RECEIVE APPROVAL OF THE REVISIONS FROM THE PADEP. THE OPERATOR SHALL ASSURE THAT THE APPROVED EROSION AND SEDIMENT CONTROL PLAN IS PROPERLY AND COMPLETELY IMPLEMENTED. IMMEDIATELY UPON DISCOVERING UNFORESEEN CIRCUMSTANCES POSING THE POTENTIAL FOR ACCELERATED EROSION AND/OR SEDIMENT POLLUTION, THE OPERATOR SHALL CONTACT THE PADEP AND IMPLEMENT APPROPRIATE BEST MANAGEMENT PRACTICES TO ELIMINATE POTENTIAL FOR ACCELERATED EROSION AND/OR SEDIMENT POLLUTION.
F. THE TERM 'PERMANENT STABILIZATION' USED THROUGHOUT THIS SEQUENCE IS MEANT TO DESCRIBE THE PROPER PLACING, GRADING, CONSTRUCTING, REINFORCING, LINING, AND COVERING OF SOIL, ROCK OR EARTH TO ENSURE THEIR PERMANENT RESISTANCE TO EROSION, SLIDING OR OTHER MOVEMENT. FOR AN EARTH DISTURBANCE TO BE PERMANENTLY STABILIZED, THE DISTURBED AREA SHALL BE COVERED WITH ONE OF THE FOLLOWING: A MINIMUM UNIFORM 70% PERENNIAL VEGETATIVE COVER, WITH A DENSITY CAPABLE OF RESISTING ACCELERATED EROSION AND SEDIMENTATION; OR AN ACCEPTABLE BMP THAT PERMANENTLY MINIMIZES ACCELERATED EROSION AND SEDIMENTATION.
G. FOR EACH OF THE 'CRITICAL STAGES' SPECIFIED BELOW, THE PERMITTEE SHALL PROVIDE ENGINEERING OVERSIGHT. A LICENSED PROFESSIONAL OR DESIGNEE KNOWLEDGEABLE IN THE DESIGN AND CONSTRUCTION OF SAID BMP, PREFERABLY THE DESIGN ENGINEER, SHALL CONDUCT THE OVERSIGHT.
H. SEDIMENT CONTROL FACILITIES MUST BE PROTECTED FROM UNAUTHORIZED ACTS OF THIRD PARTIES. REFER ALSO TO THE MONITORING, INSPECTION AND REPORTING REQUIREMENTS PROVIDED HEREIN FOR ADDITIONAL REQUIREMENTS DURING CONSTRUCTION.
I. AS SOON AS SLOPES, CHANNELS, DITCHES AND OTHER DISTURBED AREAS REACH FINAL GRADE, THEY MUST BE STABILIZED. WHEN FINAL GRADE IS ACHIEVED DURING NON-GERMINATING MONTHS, THE AREA SHOULD BE MULCHED UNTIL THE BEGINNING OF THE NEXT PLANTING SEASON. AS DISTURBED AREAS WITHIN A PROJECT APPROACH FINAL GRADE, PREPARATIONS SHOULD BE MADE FOR SEEDING AND MULCHING TO BEGIN (I.E. ANTICIPATE THE COMPLETION DATE AND SCHEDULE THE SEEDER). IN NO CASE SHOULD AN AREA EXCEEDING 15,000 SQUARE FEET, WHICH IS TO BE STABILIZED BY VEGETATION, REACH FINAL GRADE WITHOUT BEING SEEDED AND MULCHED. WAITING UNTIL EARTHMOVING IS COMPLETED BEFORE MAKING PREPARATIONS FOR SEEDING AND MULCHING IS NOT ACCEPTABLE. SEEDING AND MULCHING REQUIREMENTS ARE SPECIFIED IN THE GENERAL CONSERVATION NOTES AND SPECIFICATIONS.
J. PLEASE REFER TO THE ENVIRONMENTAL PLAN, SHEET 2, AND ASSOCIATED SOIL MANAGEMENT PLAN FOR PROCEDURES TO MANAGE CONTAMINATED OR POTENTIALLY CONTAMINATED MATERIALS DURING CONSTRUCTION.
K. CONTRACTOR MUST DETERMINE IF AN INDUSTRIAL GROUNDWATER DISCHARGE PERMIT FROM THE PHILADELPHIA WATER DEPARTMENT INDUSTRIAL WASTE UNIT IS REQUIRED PRIOR TO DISCHARGE OF GROUNDWATER OR STORMWATER INTO CITY-OWNED INFRASTRUCTURE. CONTACT PWD INDUSTRIAL WASTE UNIT AT 215-685-6085 FOR INFORMATION.
L. FOR CONTAMINATED SITES PROPOSING TO ATTAIN REMEDIATION STANDARD(S) OUTLINED IN THE LAND RECYCLING AND ENVIRONMENTAL REMEDIATION STANDARDS ACT (ACT 2) - THE PERMITTEE IS RESPONSIBLE FOR ASSURING THAT THE REMEDIATION FOLLOWS ALL REPORTS/PLANS/PROCEDURES APPROVED BY THE DEPARTMENTS ENVIRONMENTAL CLEANUP AND BROWNFIELDS (ECB) PROGRAM. GROUNDWATER EXPOSURE PATHWAYS MUST BE PROPERLY MANAGED TO PREVENT GROUNDWATER POLLUTION. THE REGIONAL ECB PROGRAM SHOULD BE CONTACTED AT 484.250.5960 FOR ANY REMEDIATION QUESTIONS."
M. IF ANY OF THE REQUIREMENTS OR APPROVALS UNDER THE ENVIRONMENTAL CLEANUP AND BROWNFIELDS PROGRAM; SOLID WASTE MANAGEMENT PROGRAM; OR AIR QUALITY PROGRAM REQUIRE MODIFICATIONS, PLEASE CONTACT THOSE PROGRAMS DIRECTLY."
N. CONTAMINATED AREAS SHALL BE AVOIDED TO THE EXTENT THEY ARE NOT WITHIN THE AREA OF CONSTRUCTION. SOIL EROSION AND SEDIMENT POLLUTION CONTROL MEASURES WILL BE INSTALLED, INSPECTED, MAINTAINED AND REPLACED (AS NEEDED) THROUGHOUT THE DURATION OF THE DEVELOPMENT WORK.

STAGE I:

1.INSTALL CONSTRUCTION ENTRANCE ALONG ORTHODOX STREET AS DESIGNATED ON THE PLANS. ENTRANCE SHOULD BE INSPECTED PRIOR TO CONSTRUCTION AND SHOULD BE REFRESHED AS NEEDED.

2.INSTALL ALL PERIMETER COMPOST FILTER SOCKS, CONSTRUCTION FENCING & INLET PROTECTION WITHIN THE DESIGNATED LIMIT OF DISTURBANCE AS INDICATED ON THE PLANS. ONLY LIMITED CLEARING AND GRUBBING NECESSARY TO INSTALL THE PERIMETER EROSION AND SEDIMENT POLLUTION CONTROLS IS PERMITTED.

3.CRITICAL STAGE #1 INSTALL SEDIMENT BASINS - BEGIN NECESSARY EARTHWORK REQUIRED TO CONSTRUCT SEDIMENT BASIN A & B. INSTALL THE PERMANENT STORM CONVEYANCE SYSTEM FROM EW-501 TO OS-105, AND TEMP. RISER TO MH-21. THIS WILL ALSO INCLUDE THE INSTALLATION OF THE SPILLWAY, AND RIP RAP ASSOCIATED WITH EW-501. REFER TO THE EROSION AND SEDIMENTATION POLLUTION CONTROL NOTES AND DETAILS OF THIS PLAN SET FOR SPECIFIC SMP CONSTRUCTION SEQUENCES. WORK ASSOCIATED WITH INSTALLATION OF EW-501 IS GOVERNED BY CHAPTER 105 REGULATED ACTIVITIES. REFER TO THE GENERAL PERMIT FOR ADDITIONAL NOTES, DETAILS AND SEQUENCING FOR THIS INSTALLTION.

4.INSTALL TEMPORARY CONSTRUCTION FENCING AROUND SURFACE SMPS TO PREVENT THE SOIL FROM BEING COMPACTED BY VEHICLES.

5.BEGIN DEMOLITION AND REMOVAL OF EXISTING SITE FEATURES INCLUDING CLEARING AND GRUBBING.

6. ROUGH GRADE PROPOSED WETLAND REMEDIATION AREA. WORK ASSOCIATED WITH INSTALLATION OF THE PROPOSED WETLAND AREA IS GOVERNED BY CHAPTER 105 REGULATED ACTIVITIES. REFER TO THE GENERAL PERMIT FOR ADDITIONAL NOTES, DETAILS AND SEQUENCING FOR THIS INSTALLTION.

7.CONSTRUCT BERMS OR OTHER DIVERSION SYSTEMS TO DIVERT RUNOFF TO THE TWO SEDIMENT BASINS AS THE PRIMARY OPTION AND TO MINIMIZE RUNOFF TO THE PERIMETER SEDIMENT CONTROLS.

8.INITIATE THE NECESSARY EARTHWORK TO REACH THE GRADES INDICATED ON THE PLANS.

A. THE CONTRACTOR MUST PERFORM BULK OF EARTHWORK TO BALANCE CUTS AND FILLS TO THE GREATEST EXTENT POSSIBLE.
B. CONTRACTOR TO DEWATER EXISTING MAN-MADE STORMWATER MANAGEMENT PONDS PRIOR TO FILLING. ANY DEWATERING ACTIVITIES SHALL UTILIZE A PUMP WATER FILTER BAG IN ACCORDANCE WITH THE STANDARD DETAIL.
C. ALL AREAS DISTURBED DURING THE EARTHWORK PHASE OF CONSTRUCTION MUST BE TEMPORARILY SEEDED AND STABILIZED IN ACCORDANCE WITH THE GENERAL CONSERVATION NOTES AND SPECIFICATIONS AND SEEDING SPECIFICATIONS IF PERMANENT STABILIZATION CANNOT BE ACHIEVED WITHIN FOUR (4) DAYS.

STAGE II:

1.CONTINUE THE NECESSARY EARTHWORK TO REACH THE SUB-GRADES INDICATED ON THE DEVELOPMENT PLANS

A. ALL AREAS DISTURBED DURING THE EARTHWORK PHASE OF CONSTRUCTION MUST BE TEMPORARILY SEEDED AND STABILIZED IN ACCORDANCE WITH THE GENERAL CONSERVATION NOTES AND SPECIFICATIONS AND SEEDING SPECIFICATIONS IF PERMANENT STABILIZATION CANNOT BE ACHIEVED WITHIN FOUR (4) DAYS.
B. EARTHWORK SHALL BE PERFORMED PURSUANT TO THE PROCEDURES OUTLINED IN THE SOIL MANAGEMENT PLAN, WHICH MAY BE AMENDED BASED ON FINAL DESIGN PLANS.

2.INSTALL BUILDING FOUNDATIONS WHEN THE BUILDING PADS HAVE BEEN COMPACTED AND PREPARED. PERIMETER EARTHWORK CAN RUN CONCURRENT WITH INSTALLATION OF BUILDING FOUNDATIONS

3.INSTALL UTILITIES AND STORM SEWER PIPING AND STRUCTURES ASSOCIATED WITH THE STORMWATER MANAGEMENT SYSTEMS AS SHOWN ON THE PLANS STARTING WITH THE FURTHEST POINT DOWNSTREAM AND WORKING UP.

4.CRITICAL STAGE #2: INSTALL UNDERGROUND STORMWATER BASINS - AS AREAS ARE BROUGHT TO PROPOSED SUBGRADE ELEVATION, CONTINUE CONSTRUCTION OF ALL UTILITIES SHOWN ON THE STAGED PLANS, INCLUDING BUT NOT LIMITED TO SANITARY, STORM SEWER, WATER AND FIRE HYDRANTS, ELECTRIC, TELEPHONE, AND GAS. INSTALL INLET PROTECTION ON ALL NEW INLETS. PRIOR TO INSTALLATION OF ANY UPSTREAM STORMWATER SEWER STRUCTURES CONTRACTOR MUST CONNECT TO EXISTING TIE-IN POINTS, AS INDICATED ON THE PLANS. TRENCH EXCAVATION SHALL BE LIMITED TO THE LENGTH OF PIPE THAT CAN BE INSTALLED IN ONE (1) DAY; IF INSPECTION INDICATES THAT SOIL SEDIMENT HAS ENTERED ANY OF THE BASINS AND/OR STORM SEWERS, CLEANOUT AND/OR FLUSH THE INSTALLED SYSTEMS OF SEDIMENT.

5.CRITICAL STAGE #3: UPON 70% STABILIZATION OF UPSTREAM DRAINAGE AREA, DEWATER AND CONVERT SEDIMENT BASINS TO ABOVE GROUND BASINS.

A. REMOVE THE TEMPORARY BARREL, RISER, BAFFLES AND ACCUMULATED SEDIMENT AND EXCAVATE TO THE DEPTH AND SIZE REQUIRED.
B. ALL SIDES AND BOTTOM OF THE BED SHALL BE COVERED WITH CONTINUOUS NON-WOVEN GEOTEXTILE. PVC IMPERMEABLE LINER OR APPROVED EQUIVALENT SHALL BE PLACED BETWEEN THE LAYERS OF GEOTEXTILE. INSTALL ENDWALLS AND RIPRAP APRONS.
C. INSTALL PLANTING SOIL MIX AND PRE-SOAK THE PLANTING SOIL PRIOR TO PLANTING VEGETATION.
D. PLANT THE FACILITY WORKING FROM THE BOTTOM OF THE BASIN UP THE SIDES. SEEDING AND SHRUBS SHALL BE INSTALLED PER THE LANDSCAPING PLANS.
E. INSTALL EROSION CONTROL BLANKET AND INLET PROTECTION ON ALL NEW INLETS. REFER TO THE EROSION AND SEDIMENTATION POLLUTION CONTROL NOTES AND DETAILS OF THIS SET FOR SPECIFIC CONSTRUCTION SEQUENCES.

6.INLET PROTECTION AND SILT FENCE SHALL REMAIN IN PLACE UNTIL ALL DISTURBED AREAS ARE ADEQUATELY STABILIZED.

7.INITIATE FINAL GRADING BY PLACING 24" OF CLEAN FILL IN ALL PERVIOUS AREAS AND INSTALL PAVEMENT AND CONCRETE.

8. CRITICAL STAGE #4: INSTALL BANK STABILIZATION MEASURES ALONG THE DELAWARE RIVER AND THE PROPOSED WETLAND REMEDATION AREA. WORK ASSOCIATED WITH INSTALLATION OF THESE AREAS IS GOVERNED BY CHAPTER 105 REGULATED ACTIVITIES. REFER TO THE GENERAL PERMIT FOR ADDITIONAL NOTES, DETAILS AND SEQUENCING FOR THIS INSTALLTION.

8.INSTALL FINAL VEGETATION AND LANDSCAPING.

9.IF FOR ANY REASON STAGE II CONSTRUCTION IS NOT COMPLETED, THE SITE SHALL BE PERMANENTLY STABILIZED TO MIMIC THE EXISTING CONDITIONS. REFER TO PERMANENT STABILIZATION NOTES ON THE PLANS FOR DETAILS.

10. UPON PERMANENT STABILIZATION AND NOTIFICATION TO THE PADEP, REMOVE ANY REMAINING EROSION AND SEDIMENT CONTROL FACILITIES. ANY AREA DISTURBED DURING THE REMOVAL OF EROSION AND SEDIMENT CONTROL FACILITIES SHALL BE STABILIZED IMMEDIATELY.

11.CLEAR SITE OF DEBRIS AND ALL UNWANTED MATERIALS. OPERATOR SHALL REMOVE FROM SITE, RECYCLE OR DISPOSE OF ALL BUILDING MATERIALS AND WASTES IN ACCORDANCE WITH THE DEPARTMENT'S SOLID WASTE MANAGEMENT REGULATIONS AT 25 PA. CODE 260.1 ET SEQ., 271.1 ET SEQ. THE CONTRACTOR SHALL NOT ILLEGALLY BURY, DUMP OR DISCHARGE ANY BUILDING MATERIAL OR WASTE AT THIS SITE.

12. DEMOBILIZE.

13. A NOTICE OF TERMINATION FORM SHOULD BE SUBMITTED TO THE PADEP UPON STABILIZATION AND FINAL COMPLETION OF THIS PROJECT.

STANDARD SEQUENCE OF CONSTRUCTION NOTES

1. AT LEAST SEVEN (7) DAYS PRIOR TO ANY EARTH DISTURBANCE, THE INSPECTIONS COORDINATOR OF PWD (OFFICE: 215-685-6387) MUST BE CALLED TO SCHEDULE A PRECONSTRUCTION MEETING.

2. AT LEAST THREE (3) DAYS PRIOR TO (APPLICANT TO NAME EACH SMP) INSTALLATION, THE INSPECTIONS COORDINATOR OF PWD (OFFICE: 215-685-6387) MUST BE CALLED TO SCHEDULE AN INSPECTION (FOR EACH SMP).

3. ALL STONE THAT MAKES UP THE (APPLICANT TO NAME EACH INFILTRATION SMP) MUST REMAIN FREE OF SEDIMENT. IF SEDIMENT ENTERS THE STONE, THE CONTRACTOR MAY BE REQUIRED TO REMOVE THE SEDIMENT AND REPLACE IT WITH CLEAN-WASHED STONE.

4. UPON COMPLETION OF ALL EARTH DISTURBANCE ACTIVITIES AND PERMANENT STABILIZATION OF ALL DISTURBED AREAS, THE OWNER AND/OR OPERATOR SHALL CONTACT INSPECTIONS COORDINATOR OF PWD (OFFICE: 215-685-6387) FOR A FINAL INSPECTION PRIOR TO REMOVAL/CONVERSION OF THE E&S BMPS.

5. AS SOON AS SLOPES, CHANNELS, DITCHES, AND OTHER DISTURBED AREAS REACH FINAL GRADE, THEY MUST BE STABILIZED. CESSATION OF ACTIVITY FOR FOUR (4) DAYS OR LONGER REQUIRES TEMPORARY STABILIZATION.

6. THE NPDES NOTICE OF TERMINATION (N.O.T.) MUST BE SUBMITTED TO PA DEP UPON COMPLETION OF CONSTRUCTION (WHEN APPLICABLE).

7. WATER PUMPED FROM WORK AREAS SHOULD BE TREATED FOR SEDIMENT REMOVAL PRIOR TO DISCHARGING TO A "SURFACE WATER" (WHEN APPLICABLE).

MAINTENANCE PROGRAM

§102.4(b)(5)(x)

THE FOLLOWING MAINTENANCE PROGRAM HAS BEEN DEVELOPED TO PROVIDE FOR THE INSPECTION OF BMPs ON A WEEKLY BASIS AND AFTER EACH MEASURABLE RUNOFF EVENT, AND TO INCLUDE THE REPAIR OF THE BMPs TO ENSURE THEIR EFFECTIVE AND EFFICIENT

DEFINITION OF CLEAN FILL AND IMPORT/EXPORT MATERIAL NOTES

TO COMPLY WITH SECTION C.3 OF NOI

IF THE SITE WILL NEED TO IMPORT OR EXPORT MATERIAL FROM THE SITE, THE RESPONSIBILITY FOR PERFORMING ENVIRONMENTAL DUE DILIGENCE AND DETERMINATION OF CLEAN FILL WILL REST WITH THE APPLICANT.

1. CLEAN FILL IS DEFINED AS: UNCONTAMINATED, NON-WATER SOLUBLE, NON-DECOMPOSABLE, INERT, SOLID MATERIAL. THE TERM INCLUDES SOIL, ROCK, STONE, DREDGED MATERIAL, USED ASPHALT, AND BRICK, BLOCK OR CONCRETE FROM CONSTRUCTION AND DEMOLITION ACTIVITIES THAT IS SEPARATE FROM OTHER WASTE AND IS RECOGNIZABLE AS SUCH. THE TERM DOES NOT INCLUDE MATERIALS PLACED IN OR ON THE WATERS OF THE COMMONWEALTH UNLESS OTHERWISE AUTHORIZED. (THE TERM "USED ASPHALT" DOES NOT INCLUDE MILLED ASPHALT OR ASPHALT THAT HAS BEEN PROCESSED FOR RE-USE).

2. CLEAN FILL AFFECTED BY A SPILL OR RELEASE OF A REGULATED SUBSTANCE: FILL MATERIALS AFFECTED BY A SPILL OR RELEASE OF A REGULATED SUBSTANCE STILL QUALIFIES AS CLEAN FILL PROVIDED THE TESTING REVEALS THAT THE FILL MATERIAL CONTAINS CONCENTRATIONS OF REGULATED SUBSTANCES THAT ARE BELOW THE RESIDENTIAL LIMITS IN TABLES FP-1A AND FP-1B FOUND IN THE DEPARTMENT'S POLICY "MANAGEMENT OF FILL".

3. ANY PERSON PLACING CLEAN FILL THAT HAS BEEN AFFECTED BY A SPILL OR RELEASE OF A REGULATED SUBSTANCE MUST USE FORM FP-001 TO CERTIFY THE ORIGIN OF THE FILL MATERIAL AND THE RESULTS OF THE ANALYTICAL TESTING TO QUALIFY THE MATERIAL AS CLEAN FILL. FORM FP-001 MUST BE RETAINED BY THE OWNER OF THE PROPERTY RECEIVING THE FILL. A COPY OF FORM FP-001 CAN BE FOUND AT THE END OF THESE INSTRUCTIONS.

4. ENVIRONMENTAL DUE DILIGENCE: THE APPLICANT MUST PERFORM ENVIRONMENTAL DUE DILIGENCE TO DETERMINE IF THE FILL MATERIALS ASSOCIATED WITH THE PROJECT QUALIFY AS CLEAN FILL. ENVIRONMENTAL DUE DILIGENCE IS DEFINED AS: INVESTIGATIVE TECHNIQUES, INCLUDING, BUT NOT LIMITED TO, VISUAL PROPERTY INSPECTIONS, ELECTRONIC DATA BASE SEARCHES, REVIEW OF PROPERTY OWNERSHIP, REVIEW OF PROPERTY USE HISTORY, SANBORN MAPS, ENVIRONMENTAL QUESTIONNAIRES, TRANSACTION SCREENS, ANALYTICAL TESTING, ENVIRONMENTAL ASSESSMENTS OR AUDITS. ANALYTICAL TESTING IS NOT A REQUIRED PART OF DUE DILIGENCE UNLESS VISUAL INSPECTION AND/OR REVIEW OF THE PAST LAND USE OF THE PROPERTY INDICATES THAT THE FILL MAY HAVE BEEN SUBJECTED TO A SPILL OR RELEASE OF REGULATED SUBSTANCE. IF THE FILL MAY HAVE BEEN AFFECTED BY A SPILL OR RELEASE OF A REGULATED SUBSTANCE, IT MUST BE TESTED TO DETERMINE IF IT QUALIFIES AS CLEAN FILL. TESTING SHOULD BE PERFORMED IN ACCORDANCE WITH APPENDIX A OF THE DEPARTMENT'S POLICY "MANAGEMENT OF FILL".

5. WITH THE EXCEPTION OF SITES ENROLLED IN DEP'S LAND RECYCLING AND ENVIRONMENTAL REMEDIATION STANDARDS (ACT 2) PROGRAM AND SITES WITH DEP WASTE MANAGEMENT GENERAL PERMIT (WMGR096) APPROVAL TO USE REGULATED FILL, ALL FILL MATERIAL IMPORTED TO THE SITE MUST MEET THE DEFINITION OF CLEAN FILL, AS DEFINED IN THE NPDES STORMWATER CONSTRUCTION PERMIT. REGULATED FILL MAY ONLY BE USED ON ACT 2 SITES, IN ACCORDANCE WITH STANDARDS ESTABLISHED BY THAT PROGRAM, AND ON SITES WITH DEP GENERAL PERMIT WMGR096 APPROVAL.

6. THE PERMITTEE SHALL CONDUCT ENVIRONMENTAL DUE DILIGENCE TO VERIFY THAT SOILS EXCAVATED ON-SITE THAT IS USED TO ESTABLISH FINAL GRADE AND FILL IMPORTED TO THE PROJECT SITE IS CONSIDERED CLEAN FILL. IF DUE DILIGENCE RESULTS IN EVIDENCE OF A RELEASE, AS DEFINED IN DEP'S MANAGEMENT OF FILL POLICY (285-2182-773), THAT HAS AFFECTED THE FILL MATERIAL, THE PERMITTEE SHALL TEST THE MATERIAL TO DETERMINE WHETHER THE MATERIAL QUALIFIES AS CLEAN FILL, AND DEP'S ELECTRONIC FORM FP-001 (CERTIFICATION OF CLEAN FILL) MUST BE COMPLETED, RETAINED BY THE PERMITTEE OR THE PROPERTY OWNER ON-SITE, AND BE MADE AVAILABLE TO DEP/PWD UPON REQUEST.

7. IF THE PERMITTEE BECOMES AWARE DURING EARTH DISTURBANCE ACTIVITIES THAT SOILS IN THE AREA OF EARTH DISTURBANCE CONTAIN CONCENTRATIONS OF REGULATED SUBSTANCES EXCEEDING THE RESIDENTIAL MEDIUM-SPECIFIC CONCENTRATIONS FOR SOIL IN 25 PA. CODE CHAPTER 250, THAT WERE NOT PREVIOUSLY DISCLOSED TO DEP/CCD, THE PERMITTEE SHALL NOTIFY DEP/CCD IN ACCORDANCE WITH THE STANDARD CONDITION PART A II.D OF THE NPDES STORMWATER CONSTRUCTION PERMIT AND CEASE EARTH DISTURBANCE ACTIVITIES IN AREAS OF KNOWN SOIL CONTAMINATION UNTIL AUTHORIZED TO RESUME BY DEP/PWD

8. IF THE PERMITTEE ENCOUNTERS GROUNDWATER DURING EXCAVATION THAT THE PERMITTEE KNOWS OR HAS REASON TO BELIEVE IS CONTAMINATED BY ONE OR MORE POLLUTANTS AT CONCENTRATIONS EXCEEDING WATER QUALITY CRITERIA CONTAINED IN 25 PA. CODE CHAPTER 93, THAT WERE NOT PREVIOUSLY DISCLOSED TO DEP/CCD, THE PERMITTEE SHALL NOTIFY DEP/CCD IN ACCORDANCE WITH THE STANDARD CONDITION PART A II.D OF THE NPDES STORMWATER CONSTRUCTION PERMIT. CONTAMINATED GROUNDWATER MAY NOT BE PUMPED OR OTHERWISE DIVERTED TO SURFACE WATERS UNLESS SPECIFICALLY AUTHORIZED BY DEP/PWD

FILL MATERIAL THAT DOES NOT QUALIFY AS CLEAN FILL IS REGULATED FILL. REGULATED FILL IS WASTE AND MUST BE MANAGED IN ACCORDANCE WITH THE DEPARTMENT'S MUNICIPAL OR RESIDUAL WASTE REGULATIONS BASED ON 25 PA. CODE CHAPTERS 287 RESIDUAL WASTE MANAGEMENT OR 271 MUNICIPAL WASTE MANAGEMENT, WHICHEVER IS APPLICABLE. THE REGULATIONS ARE AVAILABLE ON-LINE AT WWW.PACODE.COM.

E&S PLAN PLANNING & DESIGN

§102.4(b)(4)

THE FOLLOWING MEASURES ARE TAKEN TO MINIMIZE THE EXTENT AND DURATION OF EARTH DISTURBANCE:
- ACCESS THE SITE THRU DESIGNATED CONSTRUCTION ENTRANCE
- PROTECT WOODLANDS WITH TREE PROTECTION FENCING
- SEQUENCE CONSTRUCTION ACTIVITIES BY LIMITING DISTURBANCES TO A SPECIFIC TASK SUCH THAT EACH TASK IS COMPLETED BEFORE THE NEXT TASK IS INITIATED

THE FOLLOWING MEASURES ARE TAKEN TO MAXIMIZE PROTECTION OF EXISTING DRAINAGE FEATURES AND VEGETATION:
- ACCESS THE SITE THRU DESIGNATED CONSTRUCTION ENTRANCE
- PROTECT WOODLANDS WITH TREE PROTECTION FENCING
- USE OF INLET PROTECTION FOR EXISTING DRAINAGE STRUCTURES

THE FOLLOWING MEASURES ARE TAKEN TO MINIMIZE SOIL COMPACTION:
- ACCESS THE SITE THRU DESIGNATED CONSTRUCTION ENTRANCE
- USE OF TREADED MACHINERY WHERE PRACTICAL DURING EARTHMOVING OPERATIONS
- GRADE SITE TO MINIMIZE EXTENT OF CUTS/FILLS

THE FOLLOWING MEASURES ARE TAKEN TO PREVENT OR MINIMIZE GENERATION OF INCREASED STORM WATER RUNOFF:
- DIRECT RUNOFF TO UNDERGROUND STORM WATER BASINS TO CONTROL RUNOFF RATES
- USE OF A WATER QUALITY STRUCTURE FOR WATER QUALITY REQUIREMENTS

E&S - GENERAL NOTES:

1. THIS PLAN REPRESENTS THE MINIMUM LEVEL OF IMPLEMENTATION OF TEMPORARY EROSION AND SEDIMENTATION CONTROL STRUCTURES. ADDITIONAL FACILITIES OR MEASURES SHALL BE INSTALLED WHERE NECESSARY OR WHERE DIRECTED BY EITHER THE TOWNSHIP OR THE COUNTY CONSERVATION DISTRICT AS CONSTRUCTION PROGRESSES.

2. THE OWNER/CONSTRUCTION MANAGER IS RESPONSIBLE FOR ALL TEMPORARY AND PERMANENT EROSION AND SEDIMENT CONTROLS AND SITE STABILIZATION. THE OWNER SHALL ASSIGN ONE INDIVIDUAL TO BE RESPONSIBLE FOR PROPER INSTALLATION AND MAINTENANCE OF ALL FACILITIES AND MEASURES.

3. PROTECTION TO THE EXISTING TREES AND SHRUBS SHALL BE TAKEN BY THE CONTRACTOR TO ELIMINATE UNNECESSARY DAMAGE.

4. ANY DRY FILL HAULED OFFSITE MUST BE TAKEN TO A LOCATION WITH AN EROSION AND SEDIMENTATION CONTROL PLAN WHICH HAS BEEN REVIEWED BY THE COUNTY CONSERVATION DISTRICT FOR ADEQUACY.

5. EROSION AND SEDIMENTATION CONTROLS MUST BE CONSTRUCTED, STABILIZED, AND FUNCTIONAL BEFORE SITE DISTURBANCE WITHIN TRIBUTARY AREAS OF THOSE CONTROLS.

6. STOCKPILES MUST BE STABILIZED IMMEDIATELY.

7. NO CHANGES SHALL BE MADE IN THE CONTOUR OF THE LAND. NO GRADING, EXCAVATING, REMOVAL OR DESTRUCTION OF THE TOPSOIL, TREES OR OTHER VEGETATIVE COVER OF THE LAND SHALL BE COMMENCED WITHIN A PROPOSED SUBDIVISION OR LAND DEVELOPMENT TRACT UNTIL SUCH TIME THAT A PLAN FOR SEDIMENTATION CONTROL AND MINIMIZING EROSION HAS BEEN REVIEWED AND FOUND SATISFACTORY BY THE COUNTY CONSERVATION DISTRICT AND REVIEWED AND APPROVED BY THE TOWNSHIP, OR THERE HAS BEEN A DETERMINATION BY THE TOWNSHIP, UPON RECOMMENDATION BY THE COUNTY CONSERVATION DISTRICT, THAT SUCH PLANS ARE NOT NECESSARY.

8. BEFORE INITIATING ANY REVISIONS TO THE APPROVED EROSION AND SEDIMENT CONTROL PLAN OR REVISIONS TO OTHER PLANS WHICH MAY AFFECT THE EFFECTIVENESS OF THE APPROVED E&S CONTROL PLAN, THE OPERATOR MUST RECEIVE APPROVAL OF THE REVISIONS FROM THE COUNTY CONSERVATION DISTRICT.

9. THE OPERATOR SHALL ASSURE THAT AN EROSION AND SEDIMENT CONTROL PLAN HAS BEEN PREPARED, APPROVED BY THE COUNTY CONSERVATION DISTRICT, AND IS BEING IMPLEMENTED AND MAINTAINED FOR ALL SOIL AND/OR ROCK SPOIL AND BORROW AREAS, REGARDLESS OF THEIR LOCATIONS.

10. CONTRACTOR SHALL USE TREADED MACHINERY AND MINIMIZE SOIL COMPACTION WHEREVER POSSIBLE.

GENERAL CONSERVATION NOTES AND SPECIFICATIONS

INTENT OF CONSERVATION PROGRAM: THE INTENT OF THIS PROGRAM IS TO PREVENT ACCELERATED EROSION OF THE EXPOSED SITE SOILS DURING THE CONSTRUCTION AND PERMANENT LIFE PERIODS OF THE DEVELOPMENT. THE PROGRAM REQUIRES RETENTION OF ALL SEDIMENTS ON THE CONSTRUCTION SITE TO MINIMIZE THE IMPACT OF DEVELOPMENT ON EXISTING STREAMS AND ADJACENT PROPERTY OWNERS. THESE OBJECTIVES WILL BE ACHIEVED BY MINIMIZING THE EXPOSURE TIME OF POTENTIALLY EROSIVE SOILS TO RUNOFF AND INSTALLATION OF THE TEMPORARY AND PERMANENT CONSERVATION PRACTICES IN PROPER SEQUENCE WITH CONSTRUCTION.
THE INTENT OF THIS PROGRAM SHOULD BE UNDERSTOOD AND IMPLEMENTED THROUGHOUT THE ENTIRE DEVELOPMENT. THE VARIOUS CONSTRUCTION TRADES SHOULD BE APPRISED OF THIS PROGRAM AND DIRECTED TO PREVENT UNDUE DISTURBANCE OF PREPARED AND PROTECTED SURFACES.

SURFACE STABILIZATION CRITERIA: ALL DENUDED SOIL SURFACES, INCLUDING SOIL STOCKPILES, ARE SUBJECT TO EROSION AND SHALL BE STABILIZED EITHER TEMPORARILY OR PERMANENTLY WITHIN TWENTY (20) DAYS, EXCEPT THE RESTORATION OF DRIVEWAYS, OFF-SITE UNDERGROUND UTILITY LINES AND GRADED PERIMETER AREAS SHALL BE ACCOMPLISHED WITHIN FIVE (5) DAYS. DURING NON-GERMINATION PERIODS, MULCH MUST BE APPLIED AT RECOMMENDED RATES. CRUSHED STONE ON PAVEMENT SUB GRADES IS CONSIDERED ADEQUATE PROTECTION. ALL DISTURBED ZONES AND VEGETATED REGIONS SHALL BE STABILIZED, PREFERABLY WITH A PERMANENT TREATMENT AS FOLLOWS:

A. TEMPORARY COVER ON DISTURBED AREAS: DISTURBED AREAS WHICH ARE NOT AT FINISHED GRADE AND WHICH WILL BE REDISTRIBUTED WITHIN ONE YEAR MAY BE SEEDED AND MULCHED WITH A TEMPORARY COVER. PREPARATION OF THE SURFACE, FERTILIZATION AND SEEDING WITH EITHER ANNUAL OR WINTER RYE GRASS SHALL BE DONE IN COMPLIANCE WITH THE CONSERVATION DISTRICT STANDARD FOR "TEMPORARY COVER FOR CRITICAL AREAS". GROUND LIMESTONE SHALL BE APPLIED AT THE RATE OF 100 LBS/1,000 S.F., THE FERTILIZER AND LIMESTONE SHALL BE WORKED INTO THE SOIL TO A DEPTH OF FOUR (4) INCHES PRIOR TO SEEDING. ANNUAL RYE GRASS SHALL BE APPLIED A RATE OF 1.5 LB/1,000 S.F. AND WINTER RYE AT A RATE OF 3.5 LBS/1,000 S.F. ALTERNATIVELY MULCHING WITH HAY OR STRAW (2-3 BALES/1,000 S.F.), NON-ASPHALTIC EMULSION, IN ACCORDANCE WITH THE CONSERVATION DISTRICT "MULCHING" MAY BE USED. MULCHING IS MOST APPLICABLE TO THOSE AREAS SUBJECT TO PERIODIC DISTURBANCE AND REWORKING. CONSERVATION DISTRICT STANDARDS FOR "PERMANENT SEED AND LEGUME COVER ON CRITICAL AREAS ON PREPARED SEED BED AND MULCHING", SHALL BE USED.

1.) GENERAL INFORMATION
A. DISTURBED AREAS ON WHICH EARTH MOVING ACTIVITIES HAVE CEASED AND WHICH WILL REMAIN EXPOSED FOR MORE THAN 20 DAYS MUST BE SEEDED AND MULCHED (INCLUDING STOCKPILES).
B. AREAS THAT FAIL TO GERMINATE MUST BE RESEEDED.
C. WHERE DISTURBED AREAS ARE DIFFICULT TO STABILIZE, NETTING SHOULD BE USED TO HOLD SEED AND MULCH IN PLACE; THIS IS ESPECIALLY IMPORTANT AROUND WATER COURSES, IN SWALES AND AREAS OF CONCENTRATED FLOWS, AND ON STEEP SLOPES.
D. ALL EROSION AND SEDIMENTATION POLLUTION (E&SP) CONTROLS MUST BE PROPERLY MAINTAINED AND CLEANED OF SEDIMENT WHEN NECESSARY, UNTIL THE SITE IS STABILIZED.
E. IF AT ANY TIME PRIOR TO SITE STABILIZATION ANY E&SP PROBLEMS OCCUR WHICH REQUIRE ADDITIONAL CONTROLS, IMMEDIATE ACTION MUST BE TAKEN TO CORRECT THE PROBLEMS.
F. NO SEDIMENT OR SEDIMENT LADEN WATER MUST BE ALLOWED TO LEAVE THE SITE WITHOUT FIRST BEING PROPERLY FILTERED.
G. ANY SEDIMENT THAT IS TRACED ONTO THE ROAD MUST BE CLEANED OFF BEFORE THE END OF THE DAY.
H. CONTRACTOR SHALL NOTIFY CONSERVATION DISTRICT OF DISPOSAL METHOD AND LOCATION OF EXISTING PAVING TO BE REMOVED FROM SITE.

II. STANDARD FOR STABILIZATION WITH MULCH

A. PERFORM ALL CULTURAL OPERATIONS AT RIGHT ANGLES TO SLOPE.
B. GRADE AS NEEDED AND FEASIBLE, SEE STANDARD FOR LAND GRADING.
C. PROTECTIVE MATERIALS TO BE USED:
1. UNROTTED SMALL-GRAIN STRAW OR HAY AT 3,0 TONS PER ACRE SPREAD UNIFORMLY AT 135 LBS/1,000 S.F. AND ANCHORED WITH LIQUID MULCH BINDER ON;
2. WOOD-FIBER OR PAPER-FIBER MULCH AT A RATE OF 1,500 LBS PER ACRE MAY BE APPLIED BY A HYDROSEEDER OR HYDROMULCHER. USE IS LIMITED TO FLATTER SLOPES AND DURING OPTIMUM SEEDING PERIODS IN SPRING AND FALL.
LIQUID MULCH BINDERS
APPLY IMMEDIATELY AFTER PLACEMENT OF HAY OR STRAW MULCH TO MINIMIZE LOSS BY WIND OR WATER. IF EMULSIFIED ASPHALT - (SS-1, CSS-1, CMS-2, MS-2, RS-1, RS-2, CRS-1, AND CRS-2), APPLY 0.04 GAL./SQYRD OR 194 GAL./ACRE ON FLAT SLOPES LESS THAN 8' HIGH. ON SLOPES 8' OR MORE HIGH, USE 0,075 GAL./SQYRD OR 363 GAL./ACRE.

III. STANDARD FOR LAND GRADING

A. DEFINITION
RESHAPING THE GROUND SURFACE BY GRADING TO PLANNED GRADES WHICH ARE DETERMINED BY TOPOGRAPHIC SURVEY AND LAYOUT.
NOTES:
1. PROVISIONS SHALL BE MADE TO SAFELY CONDUCT SURFACE WATER TO STORM DRAINS OR SUITABLE WATER COURSES AND TO PREVENT SURFACE RUNOFF FROM DAMAGING CUT FACES AND FULL SLOPES.
2. ADJOINING PROPERTY SHALL BE PROTECTED FROM EXCAVATION AND FILLING OPERATIONS.

B, INSTALLATION REQUIREMENTS
1. TIMBER, LOGS, BRUSH, RUBBISH, ROCKS, STUMPS AND VEGETABLE MATTER WHICH WILL INTERFERE WITH THE GRADING OPERATION OR AFFECT THE PLANNED STABILITY OR FILL AREAS SHALL BE REMOVED AND DISPOSED OF.
2. FILL MATERIAL IS TO BE FREE OF BRUSH, RUBBISH, TIMBER, LOGS, VEGETATIVE MATTER AND STUMPS IN AMOUNTS THAT WILL BE DETRIMENTAL TO CONSTRUCTING STABLE FILLS,
3. ALL FILLS SHALL BE COMPACTED SUFFICIENTLY FOR THEIR INTENDED PURPOSE AND AS REQUIRED TO REDUCE SLIPPING, EROSION OR EXCESS SATURATION.
4. ALL DISTURBED AREAS SHALL BE LEFT WITH A NEAT AND FINISHED APPEARANCE AND SHALL BE PROTECTED FROM EROSION.
5. (SEE I.A.).
IV STANDARD FOR PERMANENT STABILIZATION WITH SOD

A. METHODS AND MATERIALS
1. CULTIVATED SOD IS PREFERRED OVER NATIVE OR PASTURE SOD, SPECIFY "CERTIFIED SOD" OR OTHER HIGH QUALITY CULTIVATED SOD.
2. SOD SHOULD BE FREE OF WEEDS AND UNDESIRABLE COARSE WEEDY GRASSES,
3. SOD SHOULD BE OF UNIFORM THICKNESS, APPROXIMATELY 5/8 INCH, PLUS OR MINUS 1/4 INCH, AT TIME OF CUTTING, (EXCLUDES TOP GROWTH).
4. SOD SHOULD BE VIGOROUS AND DENSE AND BE ABLE TO RETAIN ITS OWN SHAPE AND WEIGHT WHEN SUSPENDED VERTICALLY WITH A FIRM GRASP FROM THE UPPER 10% OF THE STRIP. BROKEN PADS OR TORN AND UNEVEN ENDS WILL NOT BE ACCEPTABLE.
5. FOR DROUGHTY SITES A SOD OF KENTUCKY 31 TALL FESCUE AND BLUEGRASS IS PREFERRED OVER A STRAIGHT BLUEGRASS SOD.
6. ONLY MOIST, FRESH, UNHEATED SOD SHOULD BE USE. SOD SHOULD BE HARVESTED, DELIVERED AND INSTALLED WITHIN A PERIOD OF 36 HOURS.
B. SITE PREPARATION (SEE STANDARD FOR LAND GRADING)
C. SOIL PREPARATION (SEE SPECIFICATION FOR SEEDING & SOIL TREATMENT FOR PERMANENT VEGETATIVE COVER),
D. SOD PLACEMENT
1. SOD STRIPS SHOULD BE LAID ON THE CONTOUR, NEVER UP AND DOWN THE SLOPE, STARTING AT THE BOTTOM OF THE SLOPE AND WORKING UP. ON STEEP SLOPE, THE USE OF LADDERS WILL FACILITATE THE WORK AND PREVENT DAMAGE TO THE SOD, DURING PERIODS OF HIGH TEMPERATURE, LIGHTLY IRRIGATE THE SOIL IMMEDIATELY PRIOR TO LAYING THE SOD.
2. PLACE SOD STRIPS WITH SNUG EVEN JOINTS THAT ARE STAGGERED, OPEN SPACES INVITE EROSION,
3. ROLL OR TAMP SOD IMMEDIATELY FOLLOWING PLACEMENT TO INSURE SOLID CONTACT OF ROOT, MAT AND SOIL SURFACE, DO NOT OVERLAP SOD. ALL JOINTS SHOULD BE BUTTED TIGHTLY IN ORDER TO PREVENT VOIDS WHICH WOULD CAUSE DRYING OF THE ROOTS,
4. ON SLOPES GREATER THAN 3:1, SECURE SOD TO SURFACE SOIL WITH WOOD PEGS, WIRE STAPLES, OR SPLIT SHINGLES (8 TO 10 INCHES LONG BY 3/4 INCH WIDE).
5. SURFACE WATER CANNOT ALWAYS BE DIVERTED FROM FLOWING OVER THE FACE OF THE SLOPE, BUT A CAPPING STRIP OF HEAVY JUTE OR PLASTIC NETTING, PROPERLY SECURED, ALONG THE CROWN OF THE SLOPE AND EDGES WILL PROVIDE EXTRA PROTECTION AGAINST LIFTING AND UNDERCUTTING OF SOD. THE SAME TECHNIQUE CAN BE USED TO ANCHOR SOD IN WATER - CARRYING CHANNELS AND OTHER CRITICAL AREAS. WIRE STAPLES MUST BE USED TO ANCHOR NETTING IN CHANNEL WORK.
6. IMMEDIATELY FOLLOWING INSTALLATION, SOD SHOULD BE WATERED UNTIL MOISTURE PENETRATES THE SOIL LAYER BENEATH SOD TO A DEPTH OF 4 INCHES. MAINTAIN OPTIMUM MOISTURE FOR AT LEAST TWO WEEKS.
E. TOPDRESSING
IF SLOW RELEASE NITROGEN (300 LBS 38-0-0 PER ACRE OR EQUIVALENT) IS USED IN ADDITION TO SUGGESTED FERTILIZER, THEN A FOLLOW-UP OF TOPDRESSING IS NOT MANDATORY.
1. SPRING INSTALLATION OF SOD WILL REQUIRE AN APPLICATION OF FERTILIZER SUCH AS 10-20-10 OR EQUIVALENT AT 400 LBS/ACRE OR 10 LBS/1,000 S.F. BETWEEN SEPTEMBER 1 AND OCTOBER 15.
2. FALL INSTALLATION OF SOD WILL REQUIRE THE ABOVE BETWEEN MARCH 15 AND MAY 1.

V. SPECIFICATION FOR SEEDING & SOIL TREATMENT FOR PERMANENT VEGETATIVE COVER

A. SITE PREPARATION
1. GRADE AS NEEDED AND FEASIBLE TO PERMIT THE USE OF CONVENTIONAL EQUIPMENT FOR SEEDBED PREPARATION, SEEDING, MULCH APPLICATION AND ANCHORING, AND MAINTENANCE.
2. SUBSOIL SHOULD BE TESTED FOR LIME REQUIREMENT AND LIMESTONE, IF NEEDED SHOULD BE APPLIED TO BRING SOIL PH TO 6.5 AND INCORPORATED INTO THE SOIL AS NEARLY AS PRACTICAL TO A DEPTH OF 4 INCHES.
3. IMMEDIATELY PRIOR TO TOPSOIL DISTRIBUTION, THE SURFACE SHOULD BE SCARIFIED TO PROVIDE A GOOD BOND WITH THE TOPSOIL.

B. APPLYING TOPSOIL
1. TOPSOIL SHOULD BE HANDLED ONLY WHEN IT IS DRY ENOUGH TO WORK WITHOUT DAMAGING SOIL STRUCTURE.
2. A UNIFORM APPLICATION TO A DEPTH OF 5 INCHES (UNSETTLED) IS RECOMMENDED. SOILS WITH A PH OF 4,0 OR LESS OR CONTAINING IRON SULFIDE SHALL BE COVERED WITH A MINIMUM DEPTH OF 12 INCHES OF SOIL HAVING A PH OF 5.0 OR MORE.
C. SEEDBED PREPARATION
1. PERFORM ALL CULTURAL OPERATIONS AT RIGHT ANGLE TO SLOPE.
2. APPLY 10-20-10 OR EQUIVALENT RATED FERTILIZER AT A RATE OF 500 LBS/ACRE OR 11 LBS/1,000 S.F.
3. APPLY 300 LBS 38-0-0/ACRE OR EQUIVALENT OF SLOW RELEASE NITROGEN.
4. APPLY PULVERIZED DOLOMITIC LIMESTONE AT A RATE OF 1/3 TONS/ACRE OR 135 LBS/1000 S.F.
5. WORK LIME AND FERTILIZER INTO THE SOIL AS NEARLY AS PRACTICAL TO A DEPTH OF 4 INCHES. CONTINUE TILLAGE UNTIL A REASONABLY UNIFORM FINE SEEDBED IS PREPARED.
6. REMOVE FROM THE SURFACE ALL STONES TWO INCHES OR LARGER IN ANY DIMENSION, REMOVE ALL OTHER DEBRIS, SUCH AS WIRE, CABLE, TREE ROOTS, PIECES OF CONCRETE, CLODS, LUMPS OR OTHER UNSUITABLE MATERIAL.
7. INSPECT SEEDBED JUST BEFORE SEEDING. IF TRAFFIC HAS LEFT THE SOIL COMPACTED, THE AREA MUST BE RETILLED AND FIRMED AS ABOVE.

D. SEEDING
1. SEED MIXTURE:
PERMANENT AT 30# PER ACRE
KENTUCKY - 31 TALL FESCUE
KENTUCKY BLUEGRASS (LOW MAINTENANCE VARIETY)
SPREADING FESCUE
SEEDING DATES:
3/1 TO 5/15 AND 8/15 TO 10/1
2. APPLY SEED UNIFORMLY, NORMAL SEEDING DEPTH IS FROM 1/4" TO 1/2", HYDROSEEDINGS (INCLUDING FERTILIZER AND SEED IN A SCURRY FORM) WHICH ARE MULCHED MAY BE LEFT ON THE SOIL SURFACE. SOIL CONSERVATION DISTRICT CAN REQUIRE SPECIFIC TECHNIQUES FOR HYDROSEEDING AND/OR HYDROMULCHING IN AREAS WITH DROUGHTY CONDITIONS.
FOR MULCHING REQUIREMENTS SEE STANDARD FOR STABILIZATION WITH MULCH: PROTECTIVE MATERIALS TO BE USED.

E. IRRIGATION - (WHERE FEASIBLE)
IF SOIL MOISTURE IS DEFICIENT AND MULCH IS NOT USED, SUPPLY NEW SEEDINGS WITH ADEQUATE WATER, A MINIMUM OF 1/4" TWICE A DAY UNTIL VEGETATION IS WELL ESTABLISHED. ESPECIALLY WHEN SEEDING IS PERFORMED IN ABNORMALLY DRY OR HOT WEATHER OR ON DROUGHTY SITES.

N 1 GENERAL CONSERVATION NOTES AND SPECIFICATIONS
SCALE: N.T.S. REV.: 2015.06.22

PWD - STANDARD EROSION & SEDIMENT POLLUTION CONTROL NOTES :

1. AN INDUSTRIAL WASTE PERMIT WILL BE REQUIRED SHOULD PUMPING TO CITY-OWNED INFRASTRUCTURE BECOME NECESSARY DURING CONSTRUCTION. ALL PUMPING OF WATER FROM ANY WORK AREA SHALL BE DONE ACCORDING TO THE PROCEDURE DESCRIBED IN THIS PLAN, OVER DISTURBED VEGETATES AREAS.
2. INLET PROTECTION SHOULD BE PROVIDED FOR ALL INLETS OWNED BY PWD THAT ARE LOCATED WITHIN ONE BLOCK OF THE PROJECT SITE,
3. PWD IS NOT RESPONSIBLE FOR ANY CLEANING OR REPAIRS NEEDED ON CITY-OWNED INFRASTRUCTURE DUE TO FAILURE OF ANY EROSION AND SEDIMENT CONTROL PRACTICES.

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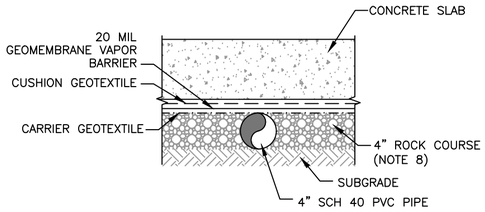
ONE GATEHALL DRIVE
PARSIPPANY, NJ 07054

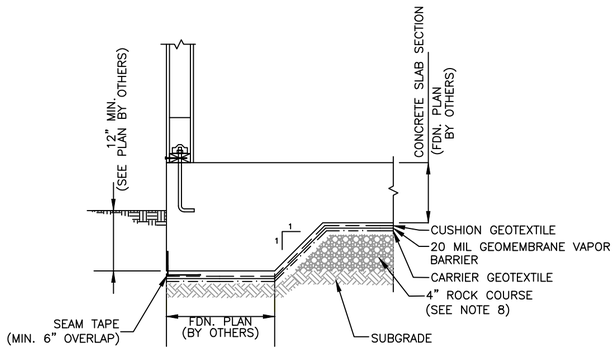
4. INSPECTION AND MAINTENANCE OR ALL EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICES SHALL OCCUR ON A WEEKLY BASIS, BEFORE ANY ANTICIPATED PRECIPITATION EVENTS, AND AFTER ALL PRECIPITATION EVENTS.
5. THE MAXIMUM HEIGHT FOR STOCKPILES AREAS SHALL BE 20 FEET. THE MAXIMUM SIDE SLOP FOR STOCKPILE AREAS SHALL NOT EXCEED 2:1.
6. THE ROCK CONSTRUCTION ENTRANCE THICKNESS SHALL BE CONSTANTLY MAINTAINED ON-SITE, A STOCKPILE SHALL BE MAINTAINED ON-SITE FOR THIS PURPOSE. AT THE END OF EACH CONSTRUCTION DAY, ALL SEDIMENT DEPOSITED ON PAVED ROADWAYS SHALL BE REMOVED AND RETURNED TO THE CONSTRUCTION SITE. IN NO CASE SHALL THE SEDIMENT BE WASHED, SHOVELED, OR SWEPT INTO ANY ROADWAY DITCH, STORM SEWER, OR SURFACE WATER.
7. FILTER FABRIC FENCE SHOULD BE INSTALLED AT LEVEL GRADE. BOTH ENDS OF EACH FENCE SHOULD BE EXTENDED AT LEAST 8 FEET UPSLOPE AT 45 DEGREES TO THE MAIN BARRIER ALIGNMENT. SUPPORT STAKES SHALL BE SPACED AT A MAXIMUM OF 8 FEET. SEDIMENT MUST BE REMOVED WHEN ACCUMULATIONS REACH 1/2 THE ABOVE GROUND HEIGHT OF THE FILTER FENCE.
8. ANY FENCE SECTION WHICH HAS BEEN UNDERMINED OR TOPPED MUST BE IMMEDIATELY REPLACES WITH A ROCK FILTER OUTLET. SEDIMENT MUST BE REMOVED WHEN ACCUMULATIONS REACH 1/3 THE HEIGHT OF THE OUTLET.
9. EROSION CONTROL BLANKETING SHALL BE INSTALLED ON ALL SLOPES 3H:1V OR STEEPER WITHIN 50 FEET OF A SURFACE WATER AND ON ALL OTHER DISTURBED AREAS SPECIFIED ON THE PLAN MAPS AND/OR DETAIL SHEETS.
10. IMMEDIATELY UPON DISCOVERING UNFORESEEN CIRCUMSTANCES POSING THE POTENTIAL FOR ACCELERATE EROSION AND/OR SEDIMENT POLLUTION, THE OPERATOR SHALL IMPLEMENT APPROPRIATE BEST MANAGEMENT PRACTICES TO MINIMIZE THE POTENTIAL FOR EROSION AND SEDIMENT POLLUTION AND NOTIFY PWD AND PA DEP.
11. UNTIL THE SITE IS STABILIZED, ALL E&S BMPS SHALL BE MAINTAINED PROPERLY. MAINTENANCE SHALL INCLUDE INSPECTIONS OF ALL E&S BMPs PRIOR TO ANY ANTICIPATE STORM EVENT, AFTER EACH RUNOFF EVENT AND ON A WEEKLY BASIS, ALL PREVENTATIVE AND REMEDIAL MAINTENANCE WORK, INCLUDING CLEAN OUT, REPAIR, REPLACEMENT, REGRADING, RESEEDING, REMULCHING, AND RENETTING, MUST BE PERFORMED IMMEDIATELY. IF THE E&S BMPs FAIL TO PERFORM AS EXPECTED, REPLACEMENT OR MODIFICATION OF THOSE INSTALLED, WILL BE REQUIRED.
12. ALL EARTH DISTURBANCES, INCLUDING CLEARING AND GRUBBING, AS WELL AS CUTS AND FILLS, SHALL BE DONE IN ACCORDANCE WITH THE APPROVED E&S PLAN. A COPY OF THE APPROVED DRAWINGS MUST BE AVAILABLE AT THE PROJECT SITE AT ALL TIMES. PWD SHALL BE NOTIFIED OF ANY CHANGED TO THE APPROVED PLAN PRIOR TO IMPLEMENTATION OF THOSE CHANGES, PWD MAY REQUIRE A WRITTEN SUBMITTAL OF THOSE CHANGES FOR REVIEW AND APPROVAL AT ITS DISCRETION.
13. AT LEAST THREE (3) DAYS PRIOR TO STARTING ANY EARTH DISTURBANCE ACTIVITIES, OR EXPANDING INTO AN AREA PREVIOUSLY UNMARKED, THE PENNSYLVANIA ONE CALL SYSTEM INC. SHALL BE NOTIFIED AT 1-800-242-1776 FOR THE LOCATION OF EXISTING UNDERGROUND UTILITIES.
14. ALL EARTH DISTURBANCE ACTIVITIES SHALL PROCEED IN ACCORDANCE WITH THE SEQUENCE PROVIDED ON THE PLAN DRAWINGS. DEVIATION FROM THAT SEQUENCE MUST BE APPROVED IN WRITING BY PWD AND THE PA DEP PRIOR TO IMPLEMENTATION.
15. AREAS TO BE FILLED ARE TO BE CLEARED, GRUBBED, AND STRIPPED OF TOPSOIL TO REMOVE TREES, VEGETATION, ROOTS, AND OTHER OBJECTIONABLE MATERIAL.
16. CLEARING, GRUBBING, AND TOPSOIL STRIPPING SHALL BE LIMITED TO THOSE AREAS DESCRIBED IN EACH STAGE OF THE CONSTRUCTION SEQ

EXHIBIT 8

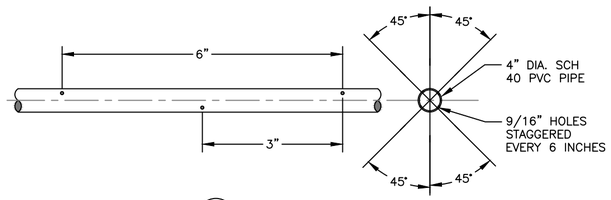
Vapor Mitigation System Details



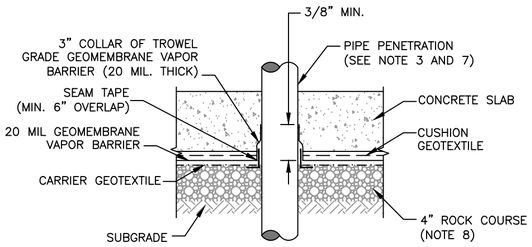
1 F-1 VAPOR BARRIER AND EXTRACTION SYSTEM
NOT TO SCALE



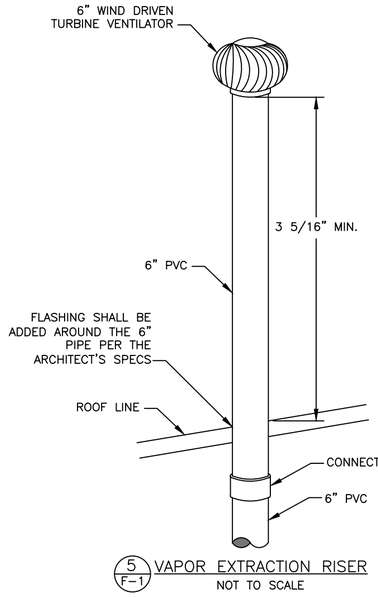
2 F-1 VAPOR BARRIER AT EXTERIOR FOOTING
NOT TO SCALE



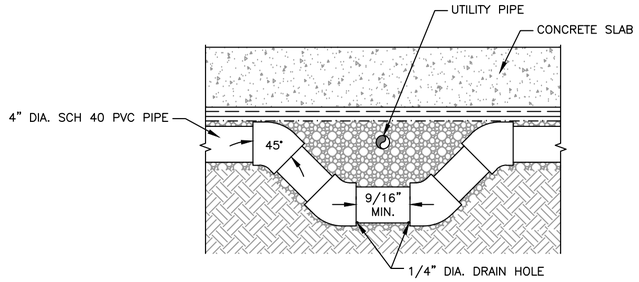
3 F-1 PERFORTATED PVC PIPE
NOT TO SCALE



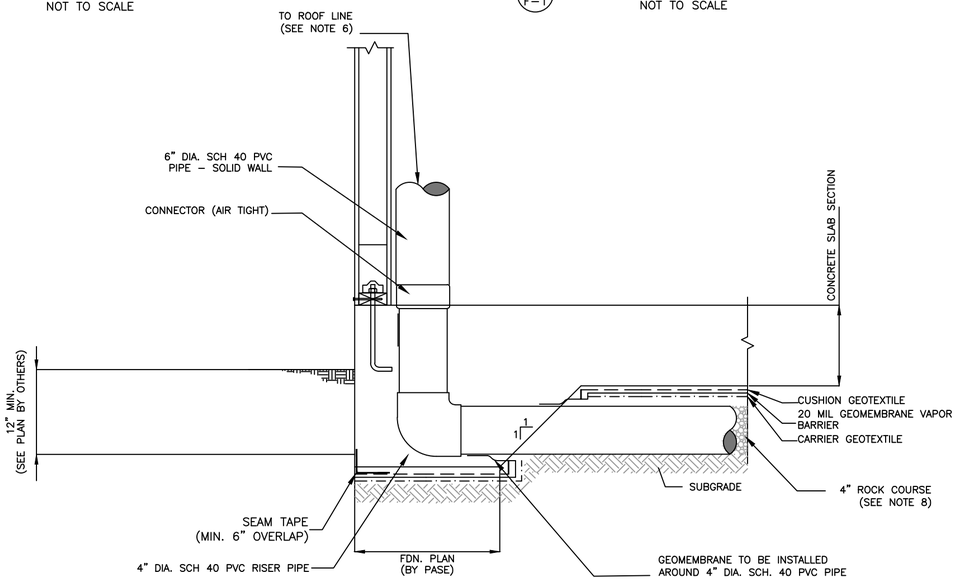
4 F-1 GEOMEMBRANE PENETRATION
NOT TO SCALE



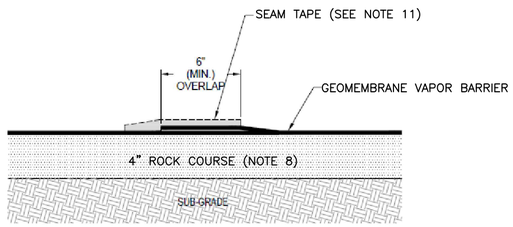
5 F-1 VAPOR EXTRACTION RISER
NOT TO SCALE



6 F-1 UTILITY PIPE CROSSING
NOT TO SCALE



7 F-1 VAPOR CONTROL SYSTEM VERTICAL PIPE TO ROOF LINE
NOT TO SCALE



8 F-1 TYPICAL LINER OVERAP DETAIL
(NOT TO SCALE)

NOTES

1.) GEOSYNTHETICS SHOWN AT EXAGGERATED SCALE.

2.) PVC PIPE SHALL BE JOINED BY THREADED CONNECTIONS OR SELF TAPPING SCREWS. NO SOLVENTS SHALL BE USED.

3.) SOLID PIPE INSTALLED WITHIN CONCRETE SHALL BE WRAPPED WITH CLOSED CELL EXPANDED POLYETHYLENE FOAM.

4.) PROTECT REBAR FROM OVERSPRAY EXCEPT FOR BOTTOM TWO INCHES.

5.) GEOMEMBRANE VAPOR BARRIER SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

6.) SOLID WALL VAPOR EXTRACTION RISER SHALL BE AFFIXED TO THE BUILDING WALL AS APPROVED BY THE ARCHITECT. MINIMUM OF 3 FEET OF PIPE SHALL EXTEND BEYOND ROOF LINE UNLESS OTHERWISE DIRECTED BY ENGINEER OF RECORD. VAPOR EXTRACTION VERTICAL RISER PIPE SHALL BE PLACED A MINIMUM OF 10 FEET FROM HVAC INLETS OR BUILDING OPENINGS. (SEE DETAIL 5)

7.) ELECTRICAL AND TELEPHONE CONDUIT PENETRATING THE CONCRETE SLAB SHALL HAVE THE INSIDE ANNULUS OF THE CONDUIT SEALED USING EXPANDING POLYURETHANE FOAM, OR EQUIVALENT. THE CONDUIT SEAL SHALL EXTEND A MINIMUM OF SIX CONDUIT DIAMETERS OR 6", WHICHEVER IS GREATER, INTO THE CONDUIT. SEAL LOCATION TO BE AT THE FIRST CONDUIT JOINT WITHIN THE STRUCTURE.

8.) ROCK COURSE/VAPOR EXTRACTION AGGREGATE SHALL CONFORM TO THE GRADATION INDICATED IN THE TECHNICAL SPECIFICATIONS.

9.) FOUNDATION CONSTRUCTION DETAILS PER PLANS TO BE PREPARED BY OTHERS.

10.) ALL SOLID AND PERFORATED PIPING SHALL BE INSTALLED LEVEL TO THE EXTENT POSSIBLE. ALL LOW POINTS SHALL BE OUTFITTED WITH ¼" DIA. DRAIN HOLES. (SEE DETAIL 6).

11.) OVERLAP JOINTS 6" AND SEAL WITH MANUFACTURER'S SEAM TAPE. SEAMS MUST BE CLEAN AND DRY BEFORE TAPE APPLICATION.

NO.	DATE	REVISION DESCRIPTION	INT.

UNAUTHORIZED ALTERATION OR ADDITION TO THIS DOCUMENT IS A VIOLATION OF STATE LAW.

THESE DOCUMENTS (OR COPIES OF ANY THEREOF) PREPARED BY OR BEARING THE SEAL OF THE ENGINEER, SHALL NOT BE REUSED FOR ANY EXTENSIONS OF THE PROJECT OR ANY OTHER PROJECT WITHOUT THE WRITTEN CONSENT OF THE ENGINEER.

PROJ. ENGINEER: JBK		DRAWN BY: JSG	
DESIGNED BY: JBK		CHECKED BY: JBK	
DRAWING SCALE: AS SHOWN		PLOT SCALE: 1:1	
DRAWING DATE: 01/25/2022		PRINT TYPE: COLOR	
OFFICE: NJ		PAPER SIZE: ARCH D	
PROJECT NO.: 3165.0012J000			
DRAWING FILE: 3165.0012J000.5000.05 – SSWMS DESIGN			

ROUX
ROUX ASSOCIATES, INC.
Environmental Consulting & Management
402 HERON DRIVE LOGAN TOWNSHIP, NEW JERSEY 08085
1.856.423.8800
New Jersey Certificate of Authorization No. 24GA28026600

PROJECT NAME:
4501 RICHMOND STREET
PHILADELPHIA, PENNSYLVANIA

PROJECT FOR:
BP BRIDESBURG, LLC

TITLE:
DRAWINGS - VAPOR MITIGATION SYSTEM DETAILS

FIGURE
1
1 OF 1

O:\PROJECTS\~GPJ\3165 – BRIDGE DEVELOPMENT PARTNERS, LLC\0012 – PHILA, PA\J000 – 4501 RICHMOND ST PHASE I\5000 – CAD DRAWINGS\DWGS\3165.0012J000.5000.05 – SSWMS DESIGN.DWG

EXHIBIT 9

RICP Newspaper Notice and Proof of Publication

The Philadelphia Inquirer

801 MARKET STREET, SUITE 300, PHILADELPHIA, PA 19107

Affidavit of Publication

On Behalf of:
ARCADIS
One Lincoln Center
110 West Fayette Street, Suite 300
Syracuse, NY 13202

STATE OF PENNSYLVANIA COUNTY OF PHILADELPHIA:

Before the undersigned authority personally appeared the undersigned who, on oath represented a and say: that I am an employee of The Philadelphia Inquirer, LLC, and am authorized to make this affidavit of publication, and being duly sworn, I depose and say:

1. The Philadelphia Inquirer, LLC is the publisher of the Philadelphia Daily News, with its headquarters at 801 Market Street, Suite 300, Philadelphia, Pennsylvania 19107.
2. The Philadelphia Daily News is an edition of The Philadelphia Inquirer. The Philadelphia Daily News is continuously published and distributed Sunday-Friday in the City of Philadelphia, count and state aforesaid.
3. The printed notice or publication attached hereto set forth on attached
hereto was published in all regular print editions of the Philadelphia Daily News on

Legal Notices

as published in **Daily News Legals** in the issue(s) of:

5/2/2022

4. Under oath, I state that the following is true and correct, and that neither I nor The Philadelphia Inquirer, LLC have any is interest in the subject matter of the aforesaid notice or advertisement.

Helene Sweeney

Kathern V. Harley
Notary Public

My Commission Expires:

Commonwealth of Pennsylvania - Notary Seal
KATHERINE V. HARLEY, Notary Public
Philadelphia County
My Commission Expires May 25, 2025
Commission Number 1312829

Ad No: 104054
Customer No: 105030

COPY OF ADVERTISEMENT

Notification of Receipt
of a Plan or Report (for site-specific standard)
(Section 304(n)(2)(i))

Notice is hereby given that on behalf of Philadelphia Coke Co., Inc. (PCC), that a revised Remedial Investigation and Cleanup Plan (RICP) has been submitted to the Pennsylvania Department of Environmental Protection (PADEP), Southeast Regional Office, for a site located at 4501 Richmond Street in Philadelphia, Pennsylvania. The RICP was revised to address PADEP comments presented in a January 14, 2022 letter. These reports provide: (1) site background and a summary of historical site cleanup activities; (2) a summary of the remedial investigation activities and findings delineating the nature and extent of site-related chemical constituents remaining in soil and groundwater at the site; and (3) a cleanup plan to prevent potential future exposure to remaining site-related chemical constituents. The remediation measures are proposed to achieve non-residential site-specific cleanup standards established under the Land Recycling and Environmental Remediation Standards Act, the Act of May 19, 1995, P.L., #4, No. 2. This notice is made under the provision of the Act.

Notification of Receipt of a Plan or Report (for site-specific standard) (Section 304(n)(2)(i))

Notice is hereby given that on behalf of Philadelphia Coke Co., Inc. (PCC), that a revised Remedial Investigation and Cleanup Plan (RICP) has been submitted to the Pennsylvania Department of Environmental Protection (PADEP), Southeast Regional Office, for a site located at 4501 Richmond Street in Philadelphia, Pennsylvania. The RICP was revised to address PADEP comments presented in a January 14, 2022 letter. These reports provide: (1) site background and a summary of historical site cleanup activities; (2) a summary of the remedial investigation activities and findings delineating the nature and extent of site-related chemical constituents remaining in soil and groundwater at the site; and (3) a cleanup plan to prevent potential future exposure to remaining site-related chemical constituents. The remediation measures are proposed to achieve non-residential site-specific cleanup standards established under the Land Recycling and Environmental Remediation Standards Act, the Act of May 19, 1995, P.L., #4, No. 2. This notice is made under the provision of the Act.

NM-00493008

FAMILY COURT
FOR THE STATE OF DELAWARE
NOTICE OF TERMINATION OF PARENTAL RIGHTS ACTION

To: Kahlil Dupree, Respondent
From: Clerk of Family Court
Adoptions From the Heart, Petitioner, has brought a civil action (Petition **#22-00064**) against you to terminate your parental rights of your children Minor Female DOB 09/19/21
A hearing has been scheduled at the Family Court 500 N. King Street, Wilmington, Delaware, on 06/07/22 at 9:30 am. If you do not appear at the hearing the Court may terminate your parental rights without your appearance.

IF YOU WISH TO BE REPRESENTED BY AN ATTORNEY IN THIS MATTER BUT CANNOT AFFORD ONE, YOU MA BE ENTITLED TO HAVE THE COURT APPOINT AN ATTORNEY TO REPRESENT YOU FOR FREE. FOR MORE INFORMATION, PLEASE CONTACT THE CLERK AT FAMILY COURT (302) 255-0390.

STORAGE SALE NOTICE

NOTICE is hereby given that EZ Storage, Lessor, will Sell at Auction to the highest Bidder, At its office at 7425 State Rd. Philadelphia, PA 19136 on the 12th day of May, 2022 at 11:00 am local time. The property of its Lessee (s) described Below for storage costs specified plus Legal costs of sale, all as provided for by the terms of the lease

UNIT	TENANT NAME
429A	Patrick Dambrosio
519C	Kameelah Temple
574C	Rodney Veney
568A	Ian Coen

Extra Space Storage will hold a public auction to sell the contents of leased spaces to satisfy Extra Space's lien at the location indicated:

1553 Grant Ave. Philadelphia, PA 19115
May 12, 2022 at 11:15 AM
362 Brandon Void, 448 Keith Tweneboah

*The auction will be listed and advertised on **www.storagetreasures.com.** Purchases must be made with cash only and paid at the above referenced facility in order to complete the transaction. Extra Space Storage may refuse any bid and may rescind any purchase up until the winning bidder takes possession of the personal property.*

ISAAC'S MOVING AND STORAGE, INC.
AND ISAAC'S STORAGE CITY AUCTION SALE

Storage Facility Operator's Sale for non-payment of Storage Charges pursuant to UCC Section 6A, Par. 7-210, enforcement of the Warehouseman Lien. The following property will be sold at
Isaac's Moving and Storage 4309 G St. Philadelphia, PA 19124 at 10:00 AM. on May 18, 2022

All household furniture, trunks, books, clothes, appliances, tools, antiques and miscellany held for the accounts of: Harry Cromley, Account 92903, Unit # 3554 Sale per order of Isaac's Storage City, Tel. 781-436-4760. Terms: CASH. Units sold by the entirety. Sale subject to postponement and/or cancellation. Barry S. Slosberg Auctioneers, # AU-1487-L. 3455 Edgemont St., Phil., PA 19134.

NOTICE OF PUBLIC SALE

Extra Space Storage will hold a public auction to sell the contents of leased spaces to satisfy Extra Space's lien at the location indicated:

12005 Roosevelt Blvd. Philadelphia, PA. 19154; (215-514-2704) on May 12, 2022 at 12:00P.M.(Noon)

212 Moses Williams, Jr.; 1116 Vanessa Smith; F27 Nelida Sanchez; 515 Stefany Cain; B33 Mark Damirgian and 1128 Lannie Christo

The auction will be listed and advertised on www.storagetreasures.com. Purchases must be made with cash only and paid at the above referenced facility in order to complete the transaction. Extra Space Storage may refuse any bid and may rescind any purchase up until the winning bidder takes possession of the personal property.

NM-00491039

ABOVE ALL SALVAGE INC.
6700 New State Rd. Phila. 19135

A Public Auction will be held at Above All Salvage, Inc., 6700 New State Road Philadelphia, PA 19135, to be auctioned MAY 4TH, 2022 The vehicles will be sold as is and all sales are final. Cash only. Per Chapter 73. MVC.

STOCK#	MAKE	VIN#
9468147	NISSAN	3N1AB7AP6KY417184
9442492	FORD	2FMHK6CC2BBD29608
9441311	HONDA	2HGED6354MH595457
9895109	MAZDA	JM1CW2BL0F0182435
10247548	AUDI	WAUBFAFL5FA075209
9308180	FORD	NM0LS7DNXDT149765

NOTICE OF PUBLIC SALE: The following self-storage Cube contents containing household and other goods will be sold for cash by 1645 N American St, Philadelphia. PA 19122 (445)300-5955 to satisfy a lien on May 10th 2022 at approx. 6:15pm PM: www.storagetreasures.com:

Unit 2034 Adriana Rios
Unit 2052 Tyron Vincent
Unit 2152 Sean Rakidzich

NOTICE OF PUBLIC SALE: The following self-storage Cube contents containing household and other goods will be sold for cash by CubeSmart, 4391 Aramingo Avenue Philadelphia PA 19124, to satisfy a lien on May 10th, 2022, at approximately 7:00pm at www.storagetreasures.com

Unit #609 Robert Hayes
Unit #931 Angelia Sierra
Unit #1906 India Maldonado

Notice of Public Sale

The following self-storage Cube contents containing household and other goods will be sold for cash by CubeSmart, 456 N. Christopher Columbus Blvd., Philadelphia PA 19123 (215)922-3715 to satisfy a lien on **May 10, 2022 at approx. 7:00 PM:** www.storagetreasures.com
B182 Victor Babatunde
C300 Jeff Stepien
C388 Chavon Pope

NOTICE OF STORAGE UNITS PUBLIC SALE

The following public sale shall take place online on or after May 15, 2022: at www.storagetreasures.com to satisfy the liens of Frank Leone, PO Box 296, Abington, PA 19001, 215-658-0123, on Occupant's stored property. 6352-6360 (Rear) Morton St, 19144: Card Edwards #15 4817 Mulberry St, 19124: Gary Palmer #79

APPENDIX A

Notice of Intent to Remediate

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF ENVIRONMENTAL CLEANUP AND BROWNFIELDS

For DEP Use Only
PF #_____
Rem ID #_____

NOTICE OF INTENT TO REMEDIATE

Act 1995-2 requires four general information items to be included in the NIR: the general location, listing of contaminants, intended use of property, and proposed remediation measures. In addition, indicate the standard(s) to be obtained (if known) and attach a scaled site map (if available).

Property Name Former Philadelphia Coke Plant

Former Name(s) / AKA - -

Address / Location 4501 Richmond Street; site bounded by Buckius Street to the north, Orthodox Street to the south, Garden and Richmond Streets to the west, and the Delaware River to the east

City Philadelphia Zip Code 19137

Municipality(s) Philadelphia County(ies) Philadelphia

Latitude 39 º (deg). 59 ‘ (min) 45 “ (sec) Longitude -75 º (deg). 4 ‘ (min) 7 “ (sec)

Horizontal Collection Method GPS

Horizontal Reference Datum NAD 83 - State Plane of Pennsylvania South

☒ Wish to participate in the DEP/EPA MOA. Contact the Land Recycling Program Manager at landrecycling@pa.gov for details.

EPA ID#, if known PAD000427906

DEP ID#(s), if known eFACTS site ID #609978, Storage Tank Facility ID #51-44990
(i.e., eFACTS site ID#, storage tank facility ID#, water quality permit #, watershed permit, air quality permit #, etc.)

Date Release Occurred (if known) Unknown

Provide a brief description of the site contamination in plain language (e.g. fuel oil spill, historical chemical industrial area contamination), the names of any know primary contaminants to be addressed, and the intended future use of the property.

This Notice of Intent (NIR) to remediate has been prepared to enter the former Philadelphia Coke Facility (the Site) into the Pennsylvania Act 2 Land Recycling Program (Administered in Title 25 Chapter 250 of the Pennsylvania Codes) without a contract buyer. The Site is impacted by byproducts from historical facility operations that produced manufactured gas used by the City of Philadelphia. Polycyclic aromatic hydrocarbons (PAHs), arsenic, and lead remain in site soil (primarily within a fill layer), and there are a few isolated pockets of residual tar or oil-like material at the Site. Site conditions have been evaluated most-recently by a groundwater investigation performed earlier this year and a soil and groundwater investigation performed in 2006. Further soil investigation is proposed to: (1) confirm that site conditions have not significantly changed since samples were last collected and analyzed (existing site analytical data are more than 12 years old); and (2) fill existing data gaps from previous investigation activities to complete the delineation of the nature and extent of impacts.

The site was developed in the mid-1920s to provide manufactured gas to the City of Philadelphia. Facility operations from January 1929 to May 1982 focused on the production of metallurgical coke. Principal processes of the operation included coal and coke storage, coke production, tar storage, by-product operations, and iron oxide storage. A fuel oil blending facility operated on the eastern 2.5 acres of the site from approximately 1969 through 1989. All former structures at the site have been demolished to ground level, and the site is currently vacant.

Available data indicate that groundwater quality at the Site is relatively unimpacted by former facility operations. Site soil is primarily impacted by the volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), and inorganics listed below:

- VOCs: benzene, toluene, ethylbenzene, chlorobenzene, dichloromethane, and styrene (monomer)
- SVOCs: 2-methylnaphthalene, 4-methylphenol, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, carbazole, chrysene, dibenzo(a,h)anthracene, dibenzofuran, fluoroanthene, fluorene, indeno(1,2,3-cd)pyrene, naphthalene, phenanthrene, phenol, pyrene
- Inorganics: antimony, arsenic, cyanide, lead

Provide a general description of proposed remediation measures.

The remedy for the Site will employ engineering controls (e.g., capping impacted soil with clean fill, asphalt or concrete paving) and institutional controls (e.g., environmental covenant restricting property to non-residential use and prohibiting groundwater use) to mitigate potential exposure pathways, as afforded by the site-specific cleanup standard. A Post-Remediation Care Plan will outline future maintenance requirements for the Site.

Remediation Standard(s) planned (if known at this time):

☐ Unknown at this time	☐ Soil	☐ Groundwater
☐ Background Contaminants:	☐ Soil	☐ Groundwater
☐ Statewide Health - Residential Contaminants:	☐ Soil	☐ Groundwater
☐ Statewide Health – Non-Residential Contaminants:	☐ Soil	☐ Groundwater
☒ Site Specific Contaminants: PAHs, Metals, select volatile organic compounds	☒ Soil	☒ Groundwater
☐ Special Industrial Area* Contaminants:	☐ Soil	☐ Groundwater

*NOTE: Specific standard or Special Industrial Area require a 30-day municipal comment period

Remediator / Property Owner / Consultant. Complete the form below for *each* recipient obtaining a release of liability upon approval of the final report. Attach additional sheets as necessary.

Remediator

Contact Person/Title Brian M. Stearns, Manager, Site Investigation & Remediation
eFACTS Client ID*

Relationship to Site Owner
Client Type* Other (non-government)
(e.g. owner, remediator, participant in cleanup, consultant, etc.)

Phone Number 315-428-5731
Email Address brian.stearns@nationalgrid.com

Company Name National Grid
EIN or Federal ID # 04-1663150

Address (street, city, state, zip) 300 Erie Boulevard West, Syracuse, New York 13202

Property Owner

Contact Person/Title Michael E. Guerin, Director, Property Strategy & Transactions
eFACTS Client ID* 288280

Relationship to Site Owner
Client Type* Other (non-government)
(e.g. owner, remediator, participant in cleanup, consultant, etc.)

Phone Number 781-907-1741
Email Address Michael.Guerin@nationalgrid.com

Company Name National Grid
EIN or Federal ID # 04-1663150

Address (street, city, state, zip) 40 Sylvan Road, 1st Floor East, Waltham, MA 02451

Consultant

Contact Person/Title Daniel P. Sheehan, PE, Principal in Charge
eFACTS Client ID* 285433

Relationship to Site Consultant
Client Type* Other (non-government)
(e.g. owner, remediator, participant in cleanup, consultant, etc.)

Phone Number 302-884-6919
Email Address Daniel.Sheehan@arcadis.com

Company Name Arcadis U.S., Inc
EIN or Federal ID # 57-0373224

Address (street, city, state, zip) 824 N Market Street, STE 820, Wilmington, Delaware 19801-4939

*Include eFACTS Client ID (if known) – "Client Types" below:

Association/Organization	Limited Liability company	Partnership-General
Authority	Limited Liability Partnership	Partnership-Limited
County	Municipality	School District
Estate/Trust	Non-Pennsylvania Government	Sole Proprietorship
Federal Agency	Other (Non-Government)	State Agency
Individual	Pennsylvania Corporation	

Preparer of Notice of Intent to Remediate

Name Daniel P. Sheehan
Title Principal Engineer/Principal in Charge

Phone Number 302-884-6919
Email Address Daniel.Sheehan@arcadis.com

Company Name Arcadis U.S., Inc
eFACTS Client ID 285433

Address (street, city, state, zip) 824 N Market Street, STE 820, Wilmington, Delaware 19801-4939

ATTACHMENT 1

Site Location Map

NOTE:

1. USGS TOPOGRAPHIC MAP PROVIDED BY ESRI.

0 2,000 4,000 Feet

GRAPHIC SCALE

NATIONAL GRID
FORMER PHILADELPHIA COKE PLANT SITE
PHILADELPHIA, PENNSYLVANIA

SITE LOCATION MAP

ARCADIS Design & Consultancy for natural and built assets

FIGURE 1

City: Syr Div/Group: IM/DV Created By: K. Sinsabaugh Last Saved By: kgpeters
National Grid Philly Coke (B0036790.0000.00001)
\\corpstorage\Data\ArcGisData\GISProjects_ENV\NationalGrid\PhiladelphiaCoke\2016_Report\mxd\Fig1_SiteLocationMap.mxd 5/10/2017 2:12:42 PM

ATTACHMENT 2

Notice to Municipality

Harold T. Epps
Director of Commerce
City of Philadelphia
1515 Arch Street, 12th Floor
Philadelphia, PA 19102

Arcadis U.S., Inc.
One Lincoln Center
110 West Fayette Street
Suite 300
Syracuse
New York 13202
Tel 315 446 9120
Fax 315 449 0017
www.arcadis.com

Subject:
Former Philadelphia Coke Facility
PADEP eFACTS Site ID#609978
4501 Richmond Street
Philadelphia, Philadelphia County, Pennsylvania

ENVIRONMENT

Date:
November 5, 2018

Contact:
Dan Sheehan

Phone:
302.884.6919

Email:
Daniel.Sheehan@arcadis.com

Our ref:
B0036790.0001 #5

Dear Mr. Epps:

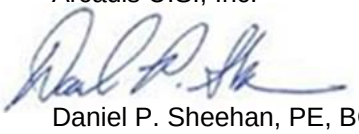
The Pennsylvania Land Recycling and Environmental Remediation Standards Act (Act 2) requires that a Notice of Intent to Remediate (NIR) for a site undergoing investigation and remediation under Act 2 be provided to the municipality in which the site is located. Act 2 also provides that when a site is being remediated to a Site-specific Standard, the municipality is afforded a 30-day comment period. In accordance with the provisions of the Act, we are formally notifying you of our intent to remediate the above-referenced site. A copy of the NIR, which has been sent to the Department of Environmental Protection (DEP), is enclosed. The NIR will be published in the Pennsylvania Bulletin, and a summary of the NIR will appear in a local newspaper (Philadelphia Daily News).

Publication of the NIR summary in a local newspaper initiates the 30-day public and municipal comment period. During this time, your municipality may request to become involved in the development of the remediation and reuse plans for the site. If the municipality wishes to become involved in this project, please send your comments to Brian M. Stearns of National Grid at 300 Erie Boulevard West, Syracuse, New York 13202 with copies submitted to the DEP at the Southeast Regional Office, 2 East Main Street, Norristown, PA 19401, Environmental Cleanup and Brownfields Program.

Should you have any questions or comments on the enclosed NIR, please contact Brian M. Stearns of National Grid at 315.428.5731 or the undersigned at 302.884.6919.

Sincerely,

Arcadis U.S., Inc.



Daniel P. Sheehan, PE, BCEE
Principal Engineer

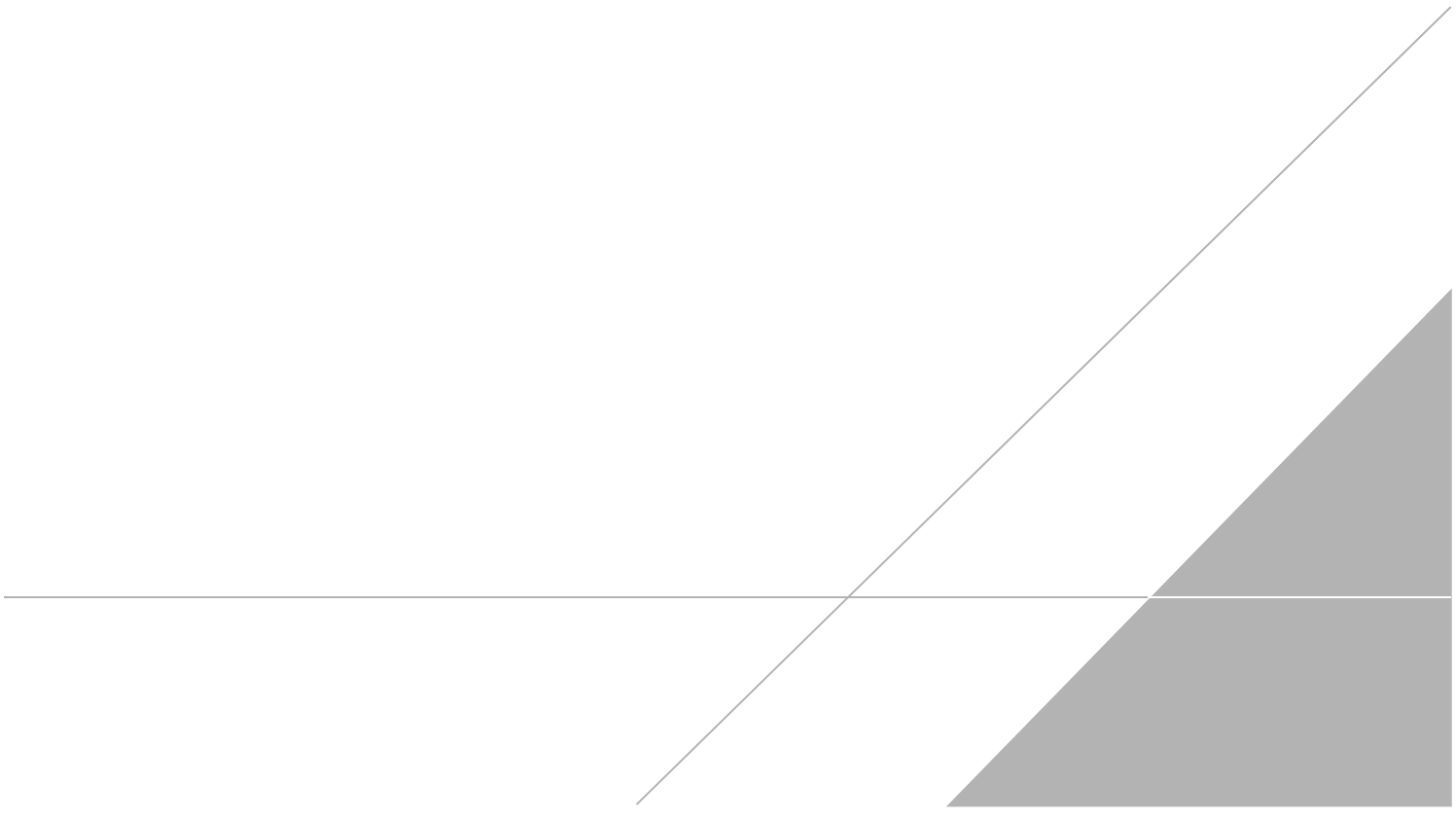
Copies:
Brian M. Steans, National Grid

Enclosure:

Notice of Intent to Remediate Form

ATTACHMENT 3

Delivery Confirmation for Notice to Municipality



SENDER: *COMPLETE THIS SECTION*

- Complete items 1, 2, and 3.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Harold T. Epps, Dir. of Commerce
City of Philadelphia
1515 Arch Street, 12th FL.
Philadelphia, PA 19102

9590 9402 3511 7275 1491 82

2. Article Number *(Transfer from service label)*

015 1520 0002 6705 8773

COMPLETE THIS SECTION ON DELIVERY

A. Signature

X

☐ Agent
☐ Addressee

B. Received by *(Printed Name)*

C. Date of Delivery

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

PHILADELPHIA, PA 19101
NOV 14 2018
USPS

3. Service Type

- ☐ Adult Signature
- ☐ Adult Signature Restricted Delivery
- ☒ Certified Mail®
- ☐ Certified Mail Restricted Delivery
- ☐ Collect on Delivery
- ☐ Collect on Delivery Restricted Delivery
- ☐ Insured Mail
- ☐ Insured Mail Restricted Delivery (over $500)
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- ☐ Return Receipt for Merchandise
- ☐ Signature Confirmation™
- ☐ Signature Confirmation Restricted Delivery

PS Form 3811, July 2015 PSN 7530-02-000-9053 Domestic Return Receipt

ATTACHMENT 4

Newspaper Notice and Proof of Publication

Proof of Publication in The Philadelphia Daily News
Under Act. No 587, Approved May 16, 1929

STATE OF PENNSYLVANIA
COUNTY OF PHILADELPHIA

Helene Sweeney being duly sworn, deposes and says that **The Philadelphia Daily News** is a newspaper published daily, except Sunday, at Philadelphia, Pennsylvania, and was established in said city in 1925, since which date said newspaper has been regularly issued in said County, and that a copy of the printed notice of publication is attached hereto exactly as the same was printed and published in the regular editions and issues of the said newspaper on the following dates:

November 7, 2018

Affiant further deposes and says that she is an employee of the publisher of said newspaper and has been authorized to verify the foregoing statement and that she is not interested in the subject matter of the aforesaid notice of publication, and that all allegations in the foregoing statement as to time, place and character of publication are true.

Helene Sweeney

Sworn to and subscribed before me this 7th day of Novembersw 2018.

Cindy Jakubowski
Notary Public

My Commission Expires:

COMMONWEALTH OF PENNSYLVANIA
NOTARIAL SEAL
CINDY JAKUBOWSKI, Notary Public
City of Philadelphia, Phila. County
My Commission Expires November 30, 2020

Copy of Notice of Publication

NOTICE OF INTENT TO REMEDIATE
FORMER PHILADELPHIA COKE FACILITY

Pursuant to the Land Recycling and Environmental Remediation Standards Act, the act of May 19, 1995, P.L. 4, No. 1995-2., notice is hereby given that National Grid has submitted to the Pennsylvania Department of Environmental Protection a Notice of Intent to Remediate a site located at 4501 Richmond Street in Philadelphia, Pennsylvania. This Notice of Intent to Remediate states that the site was built in the late 1920s to provide manufactured gas to the City of Philadelphia. Subsequent facility operations focused on the production of metallurgical coke and associated products, which continued until facility closure in 1982.

Soil at the site has been found to be impacted with polycyclic aromatic hydrocarbons (PAHs), arsenic, lead, and isolated pockets of residual tar or oil-like material. The proposed remediation measures are anticipated to include engineering controls (e.g., capping impacted areas with clean fill, asphalt, concrete, or soil) and institutional controls (e.g., environmental covenant restricting property to non-residential use and prohibiting groundwater use) to mitigate potential exposure pathways. The proposed future use of the property will be non-residential.

National Grid plans to use the site-specific standard at the site. The Act provides for a 30-day public comment period for site-specific standard remediations. The 30-day comment period is initiated with the publication of this notice. Within this 30-day period, the City of Philadelphia may submit a request to National Grid to be involved in the development of the remediation and reuse plans for the site. The City of Philadelphia may also submit a request to National Grid during this 30-day comment period to develop and implement a public involvement plan. Copies of these requests and of any comments should also be submitted to the Department of Environmental Protection at the Southeast Regional Office, 2 East Main Street, Norristown, PA 19401, Environmental Cleanup and Brownfields Program.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF ENVIRONMENTAL CLEANUP AND BROWNFIELDS

For DEP Use Only
PF #_____
Rem ID #_____

NOTICE OF INTENT TO REMEDIATE

Act 1995-2 requires four general information items to be included in the NIR: the general location, listing of contaminants, intended use of property, and proposed remediation measures. In addition, indicate the standard(s) to be obtained (if known) and attach a scaled site map (if available).

Property Name Former Philadelphia Coke Plant

Former Name(s) / AKA - -

Address / Location 4501 Richmond Street; site bounded by Buckius Street to the north, Orthodox Street to the south, Garden and Richmond Streets to the west, and the Delaware River to the east

City Philadelphia Zip Code 19137

Municipality(s) Philadelphia County(ies) Philadelphia

Latitude 39 º (deg). 59 ‘ (min) 45 “ (sec) Longitude -75 º (deg). 4 ‘ (min) 7 “ (sec)

Horizontal Collection Method GPS

Horizontal Reference Datum NAD 83 - State Plane of Pennsylvania South

☒ Wish to participate in the DEP/EPA MOA. Contact the Land Recycling Program Manager at landrecycling@pa.gov for details.

EPA ID#, if known PAD000427906

DEP ID#(s), if known eFACTS site ID #609978, Storage Tank Facility ID #51-44990
(i.e., eFACTS site ID#, storage tank facility ID#, water quality permit #, watershed permit, air quality permit #, etc.)

Date Release Occurred (if known) Unknown

Provide a brief description of the site contamination in plain language (e.g. fuel oil spill, historical chemical industrial area contamination), the names of any know primary contaminants to be addressed, and the intended future use of the property.

This Notice of Intent (NIR) to remediate has been prepared to enter the former Philadelphia Coke Facility (the Site) into the Pennsylvania Act 2 Land Recycling Program (Administered in Title 25 Chapter 250 of the Pennsylvania Codes) without a contract buyer. The Site is impacted by byproducts from historical facility operations that produced manufactured gas used by the City of Philadelphia. Polycyclic aromatic hydrocarbons (PAHs), arsenic, and lead remain in site soil (primarily within a fill layer), and there are a few isolated pockets of residual tar or oil-like material at the Site. Site conditions have been evaluated most-recently by a groundwater investigation performed earlier this year and a soil and groundwater investigation performed in 2006. Further soil investigation is proposed to: (1) confirm that site conditions have not significantly changed since samples were last collected and analyzed (existing site analytical data are more than 12 years old); and (2) fill existing data gaps from previous investigation activities to complete the delineation of the nature and extent of impacts.

The site was developed in the mid-1920s to provide manufactured gas to the City of Philadelphia. Facility operations from January 1929 to May 1982 focused on the production of metallurgical coke. Principal processes of the operation included coal and coke storage, coke production, tar storage, by-product operations, and iron oxide storage. A fuel oil blending facility operated on the eastern 2.5 acres of the site from approximately 1969 through 1989. All former structures at the site have been demolished to ground level, and the site is currently vacant.

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

December 24, 2018

Mr. Brian M. Stearns
National Grid
300 Erie Boulevard West
Syracuse, New York, 13202

Re: Receipt of Notice of Intent to Remediate
Site-Specific Standard
Philadelphia Coke Plant
eFACTS PF No. 831308
eFACTS Activity No. 52785
4501 Richmond Street
City of Philadelphia
Philadelphia County

Dear Mr. Stearns:

This letter acknowledges receipt of your Notice of Intent to Remediate (NIR) on November 20, 2018, pertaining to the subject property and submitted in accordance with the Land Recycling and Environmental Remediation Standards Act (Act 2). The procedures set forth in Act 2 must be followed in order for this site to qualify for the liability protection provided by the Act. The Department of Environmental Protection (DEP) will not accept plans and reports until after the 30-day comment period following submission of the NIR ends.

The 30-day comment period following submission of the NIR allows the municipality the opportunity to request to be involved in the development of remediation and reuse plans for the property. If the municipality requests a public involvement plan, any comments and responses must be included in any subsequent Site-Specific Standard reports. Remedial investigation reports, risk assessment reports, cleanup plans, and final reports submitted to DEP under the site-specific standard need to be accompanied by the required fees and documentation verifying compliance with the public notification requirements.

Additional technical and program information can be found at www.dep.pa.gov (Business>Land>Land Recycling). Also, please refer to the Land Recycling checklists which are helpful in assuring reports are complete before submittal. DEP uses the checklists to perform administrative and technical completeness reviews when plans and/or reports are submitted. It is strongly encouraged to include the appropriate completed checklist with your Final Report submission. Land Recycling checklists can also be found at the website under 'Forms, Checklists & Notifications' link.

Please refer to the Standard Attachment for considerations of other programs which may be applicable to this property.

Sarah Pantelidou is the project officer assigned to your project and will be working with you towards the remediation of this property. Frequent contact is encouraged between your representatives and our staff. If you have any questions or need further clarifications of our procedures, please contact the project officer by email at spantelido@pa.gov or by telephone at 484.250.5878.

Sincerely,

C. David Brown, P.G.
Professional Geologist Manager
Environmental Cleanup and Brownfields

Enclosure: Standard Attachment

cc: Philadelphia Department of Health
City of Philadelphia
Mr. Guerin (National Grid)
Mr. Sheen (Arcadis U.S., Inc)
Ms. Pantelidou
Ms. Bass
Re 30 (cb18ecb) 358.1

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION
Bureau of Environmental Cleanup and Brownfields

Thank you for participating in the Pennsylvania Department of Environmental Protection's (DEP) Land Recycling Program. You are receiving this Standard Attachment because you have provided a Notice of Intent to Remediate or a Final Report submission to the department. The following program summaries are provided to you as a guide to other programs that are commonly associated with brownfield remediation projects. These programs are important for the successful completion of site remediation and the grant of liability relief for your site. Please note if several of the following items apply to your site, it may be valuable to request a pre-application coordination meeting with your assigned DEP Project Manager. For remediation projects that involve multiple programs, an initial coordination meeting is beneficial to determine required date of submission(s), program participation consideration(s), and priorities.

This list is not meant to be all inclusive, but does summarize a listing of programs that are commonly affiliated with these types of projects.

Land Recycling Program Considerations

Uniform Environmental Covenants Act (UECA)
Based on the remediation standard that you have selected for your remediation/redevelopment project, you may be required to submit an environmental covenant. The covenant, as defined and governed under the auspices of UECA, provides a tool to ensure that the conditions allowing for a risk-based cleanup will continue in the future. UECA requires that a completed and signed environmental covenant shall be submitted to the appropriate regional DEP office no later than 30 days from receipt of the final cleanup approval letter. A $500 fee is required to be submitted with the environmental covenant. Once received, the DEP has 90 days to review and return the signed covenant for recordation. Notifications of recordation of the covenant are subsequently required to be sent within 90 days to the DEP and to the entities listed in Section 6507 of UECA and in accordance with the terms of the covenant. For more information, visit www.dep.pa.gov, under Businesses > Land > Land Recycling, select related information under 'Uniform Environmental Covenants'.

Other Program Requirements

Depending on the specific details of each case, other program requirements may be applicable to your site as cleanup is progressing and/or upon completion of Act 2 activities. These considerations are summarized in the following:

Land Disturbance
Depending on the remediation approach selected for your site, you must carefully evaluate the remedial activities to minimize erosion and sedimentation in conformance with Chapter 102 of the PA Code, Erosion and Sediment Control. These requirements may be satisfied with the development, implementation, and maintenance of erosion and sediment control best management practices. Please note that any future earth disturbance or development at your site after cleanup is completed may require either approvals or permits from the appropriate county soil conservation district. Therefore, you should contact the conservation district before engaging in any such activities. For more information regarding this topic, visit www.dep.pa.gov, search 'Stormwater Management'.

Surface Water Discharges

Surface water discharges from sites undergoing Act 2 cleanups may be considered point or nonpoint sources. Point source discharges to surface water include, as examples, leachate discharge from a disposal unit or runoff from contaminated site discharges through a storm sewer. Discharges such as these are subject to National Pollutant Discharge Elimination System (NPDES) requirements, and as such may require a permit. Additionally, Act 2 requires that any site undergoing cleanup via the Statewide health or site-specific standard also demonstrate compliance with surface water quality criteria when a nonpoint source discharge, such as contaminated groundwater, discharges into surface water. More information regarding these programs may be found at the DEP's website or through your site's assigned Project Manager.

Sewage Facilities Program

The redevelopment of Act 2 sites after completion of cleanup activities may require you to investigate sewage planning considerations. For example, when site utilization is changed from industrial use to residential use as a result of Act 2 implementation, the sewage facilities planning for the property will require analysis/revision. Act 537, Sewage Facilities Program, contains provisions to enable proper municipal planning and permitting for current and future utilization of sewage facilities. For more information, visit www.dep.pa.gov, search 'Act 537 Sewage Facilities Program'.

Water Well Abandonment

Abandoned wells must be reported on required forms to the PA Department of Conservation and Natural Resources (DCNR), Bureau of Topographic and Geologic Survey (BTGS). Information is available on the DCNR website, www.dcnr.pa.gov, select Conservation > Water > Groundwater, under Abandoned Private Water Wells for the water well abandonment guidelines and forms.

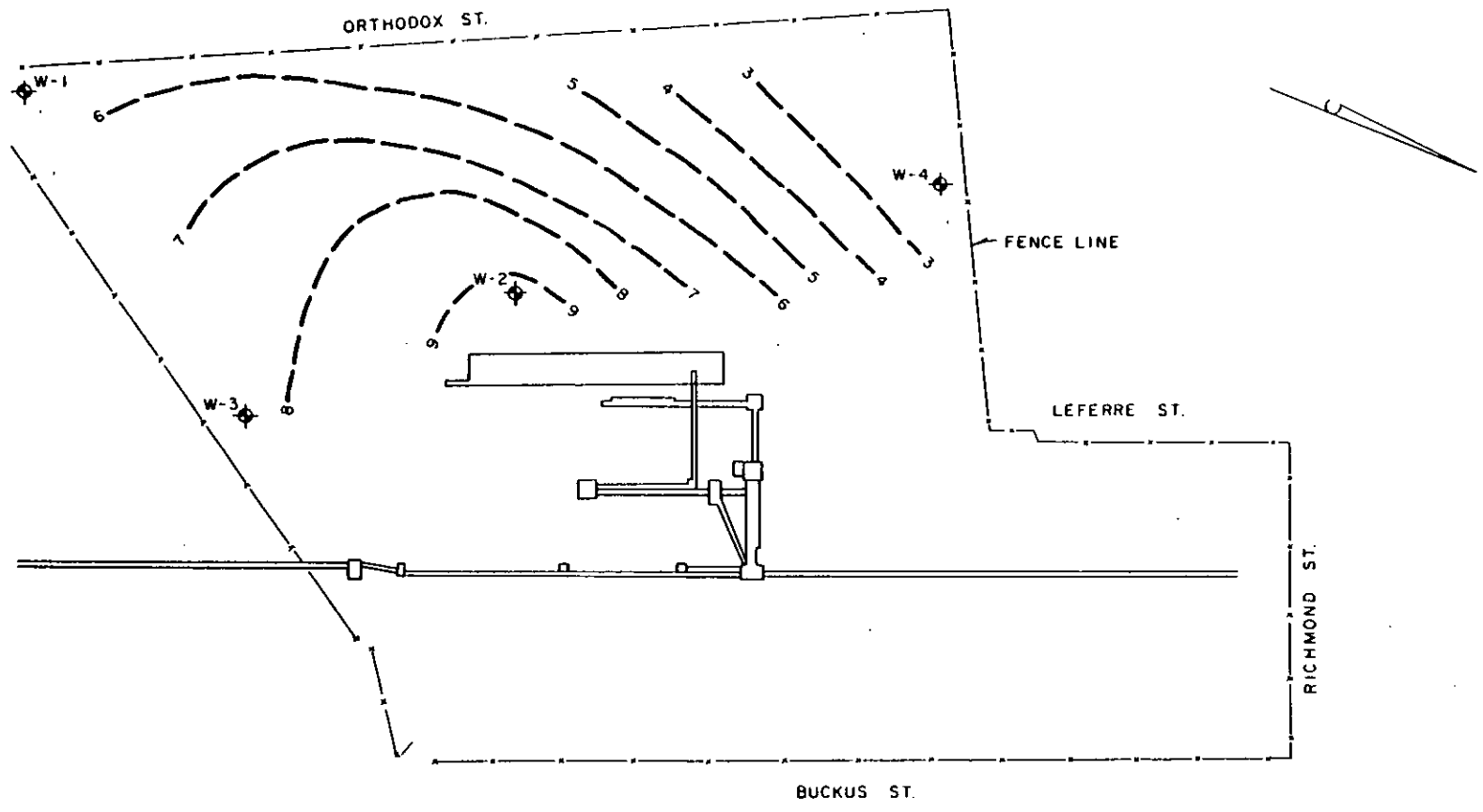
If available, the original driller's log should be included along with the details of the well abandonment procedure. A photograph should be taken of the site, and a reference map should be made to locate the abandoned well. **We recommend that you identify the exact location by GPS** (it also may be appropriate to survey the exact location of the well). If a permit was issued for the well installation (e.g., by a local agency or County Health Department), please provide a copy of your BTGS submission to the issuing agency and to this office.

Oil and Gas Well Site Restoration

If the site specified for remediation is considered to be part of a well site as that term is defined by Section 603a(d) of the Oil and Gas Act, you must ensure restoration of the area under Section 206 of the Oil and Gas Act, 58 P.S. § 601.206. The Department considers a well site to be restored under Section 206 when the disturbed or impacted area is returned to its approximate original contours and restored to conditions that support the same potential uses of the land that existed prior to the spill or release, including the vegetation of those areas. The restored area should be capable of supporting the type of vegetation that was present before the release.

APPENDIX B

Historical Potentiometric Surface Maps



LEGEND:

MONITORING WELL

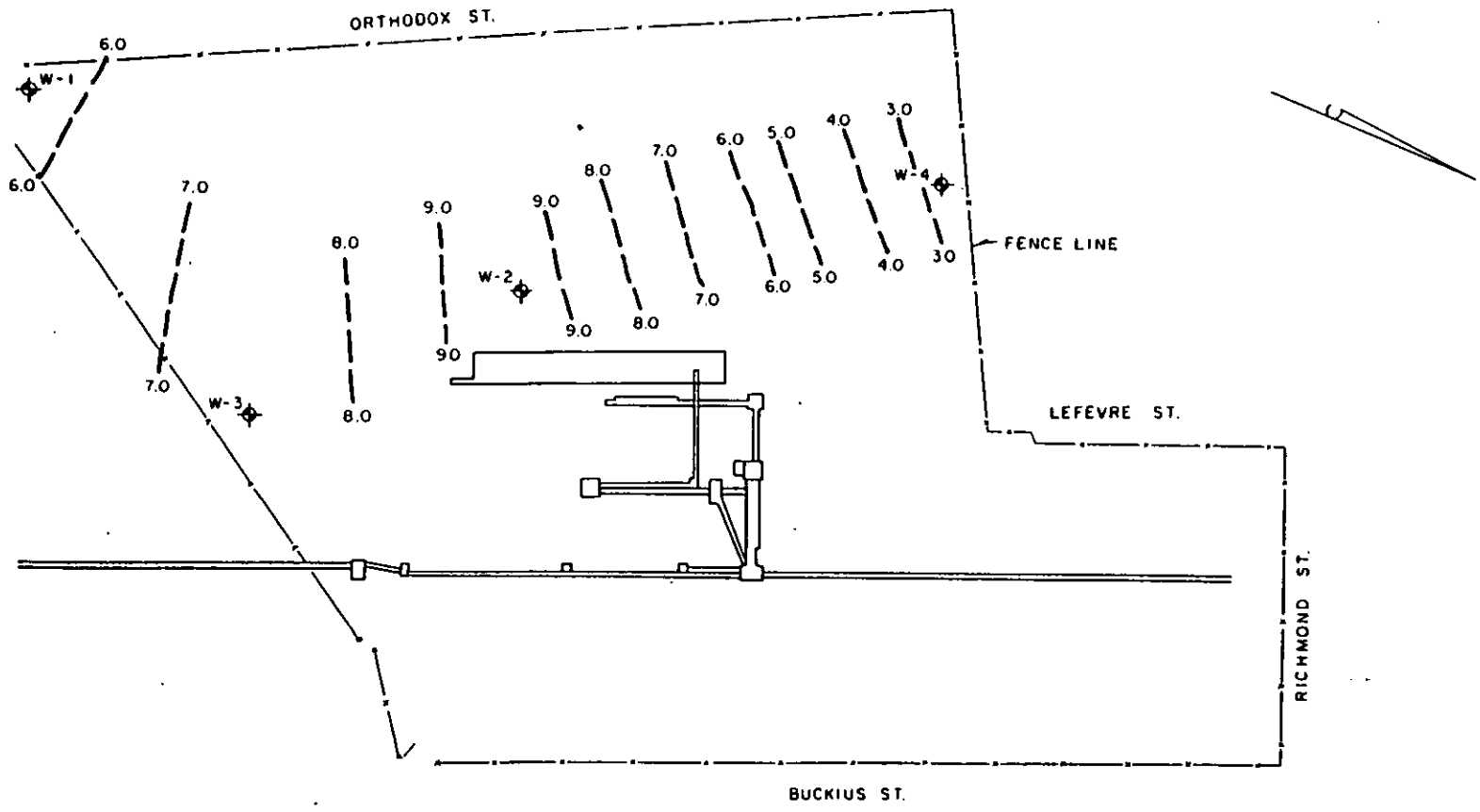
4 GROUNDWATER CONTOUR

GROUNDWATER ELEVATIONS, JUNE 26, 1985
PHILADELPHIA COKE, INC.
PHILADELPHIA, PENNSYLVANIA

WOODWARD-CLYDE CONSULTANTS
CONSULTING ENGINEERS GEOLOGISTS AND ENVIRONMENTAL SCIENTISTS

Drawn by	T. P	SCALE IN FEET 0 200	Date 9/10/85
Checked	T. W. T.		Job 84C2145

PLATE 1



LEGEND:

MONITORING WELL

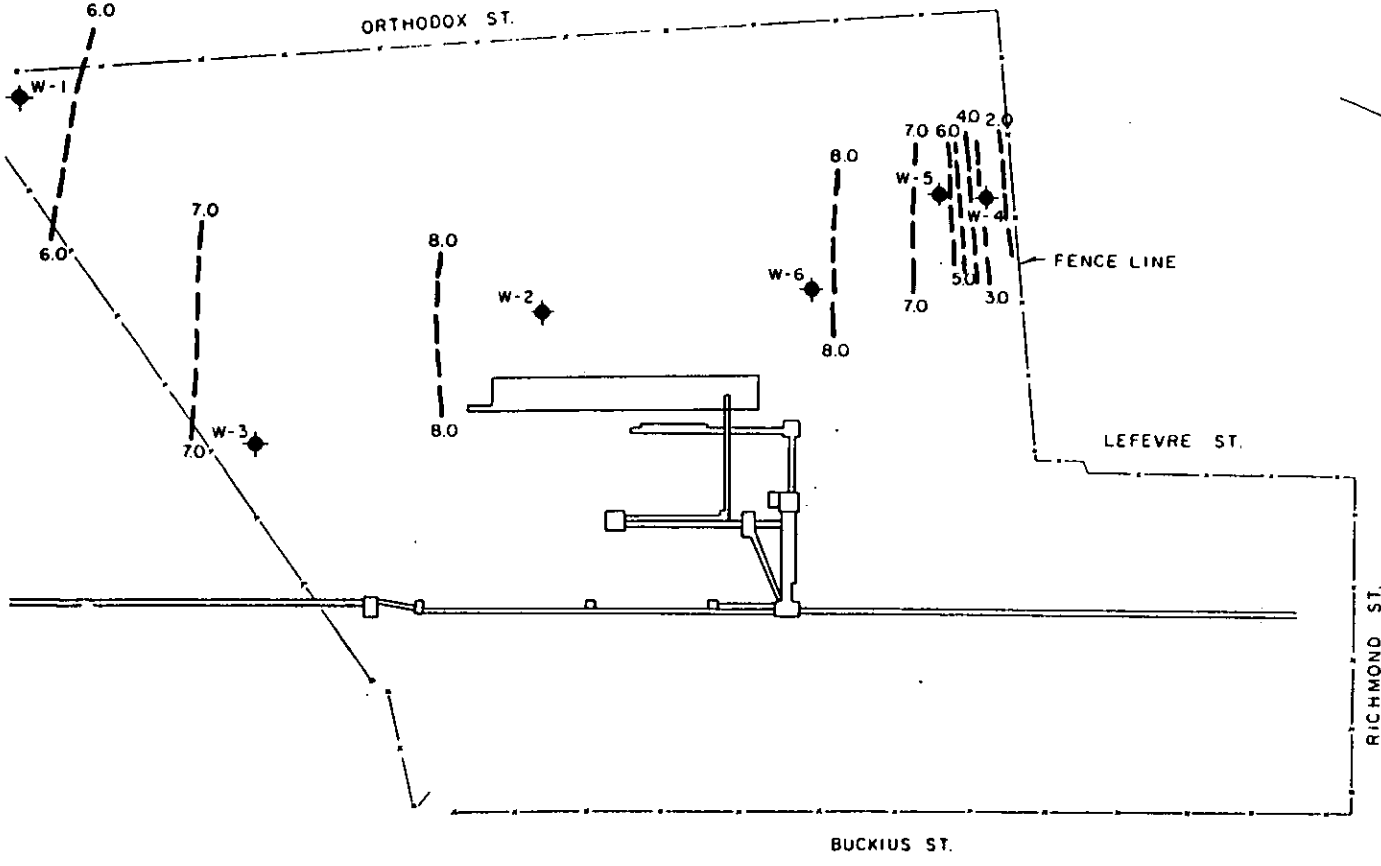
8.0 GROUNDWATER CONTOUR

GROUNDWATER ELEVATIONS, OCT. 10, 1986
PHILADELPHIA COKE COMPANY
PHILADELPHIA, PENNSYLVANIA

WOODWARD-CLYDE CONSULTANTS
CONSULTING ENGINEERS GEOLOGISTS AND ENVIRONMENTAL SCIENTISTS

Drawn By	T. P	SCALE IN FEET 0 200	Date 12-8-86
Checked	T.W.T.		Job No. 84C2145

FIGURE 4-2



LEGEND:

MONITORING WELL

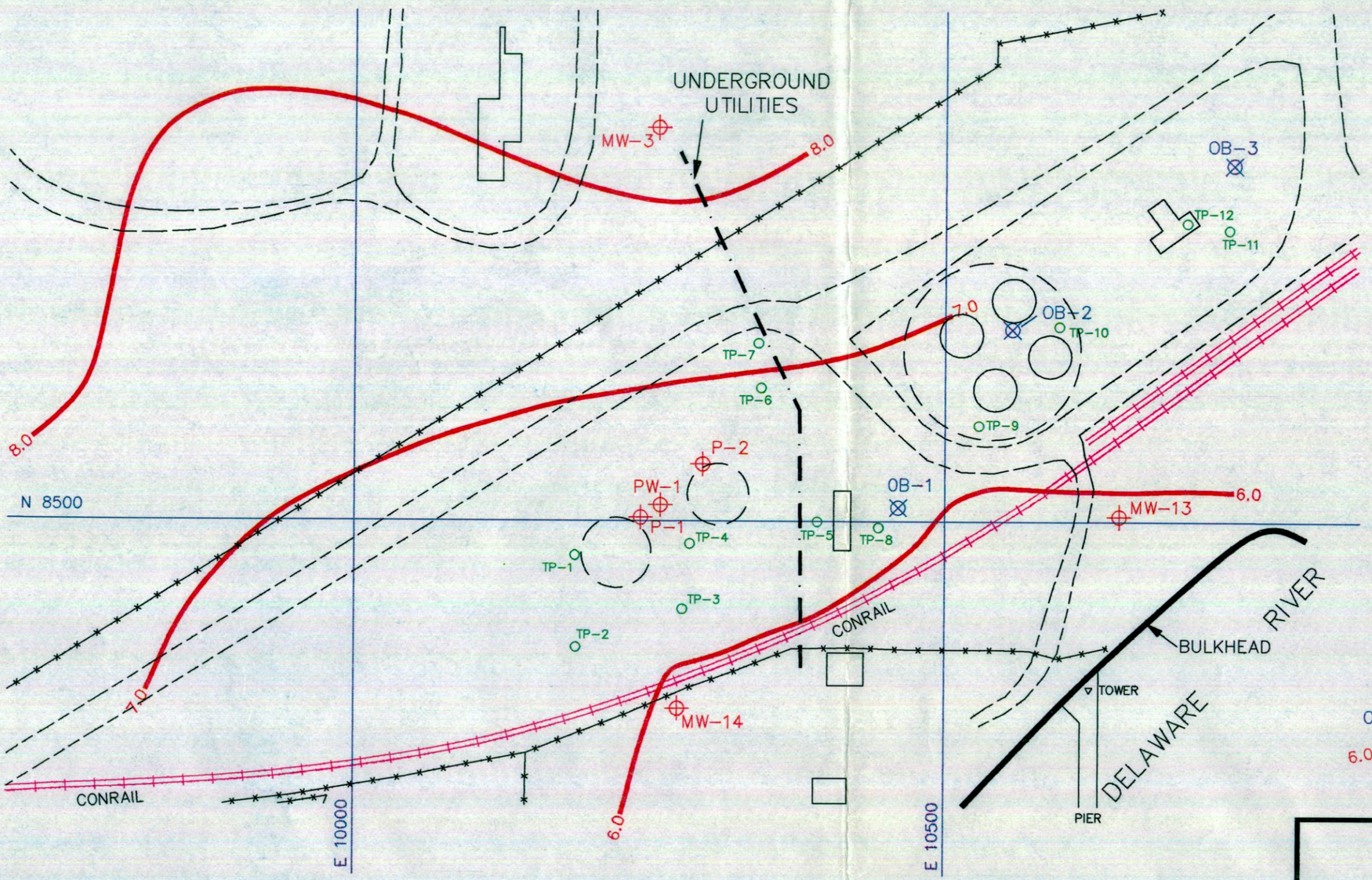
8.0 GROUNDWATER CONTOUR

GROUNDWATER ELEVATIONS, OCT. 27, 1986
PHILADELPHIA COKE COMPANY
PHILADELPHIA, PENNSYLVANIA

WOODWARD-CLYDE CONSULTANTS
CONSULTING ENGINEERS GEOLOGISIS AND ENVIRONMENTAL SCIENTISIS

Drawn By	T. P.	SCALE IN FEET	Date 12/8/86
Checked	T.W.T.	0 200	B4C 2145

FIGURE 4-1



LEGEND:

- MW-13 — WELLS / PIEZOMETERS
- TP-2 — TEST PITS
- OB-3 — BORINGS
- 6.0 — INTERPOLATED WATER TABLE ELEVATION CONTOURS (1' INTERVAL; FT, MSLD)

FORMER FUEL OIL BLENDING AREA
PHILADELPHIA COKE COMPANY
PHILADELPHIA, PENNSYLVANIA

Rev. No.	Date	Type of Revision	Checked by:

Woodward-Clyde Consultants
Consulting Engineers, Geologists and Environmental Scientists

Job No.: 87C2839A-12	Drawing No. 78390190	Date: 10/16/95
Drawn by: TP	Checked by: J.V.H.	FIGURE 2
Scale: 0 — 100 FEET		

APPENDIX C

EPA Environmental Indicator Forms

DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION
Interim Final 2/5/99
RCRA Corrective Action
Environmental Indicator (EI) RCRIS code (CA750)

Migration of Contaminated Groundwater Under Control

Facility Name: **Philadelphia Coke Co., Inc.**
Facility Address: **4501 Richmond Street, Philadelphia, PA 19137**
Facility EPA ID #: **PAD000427906**

1. Has all available relevant/significant information on known and reasonably suspected releases to the groundwater media, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units [SWMU], Regulated Units [RU], and Areas of Concern [AOC]), been **considered** in this EI determination?

   [X] If yes – check here and continue with #2 below.

   [ ] If no – re-evaluate existing data, or

   [ ] If data are not available skip to #6 and enter "IN" (more information needed) status code.

BACKGROUND

Definition of Environmental Indicators (for the RCRA Corrective Action)

Environmental Indicators (EI) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EI developed to-date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future.

Definition of "Migration of Contaminated Groundwater Under Control" EI

A positive "Migration of Contaminated Groundwater Under Control" EI determination ("YE" status code) indicates that the migration of "contaminated" groundwater has stabilized, and that monitoring will be conducted to confirm that contaminated groundwater remains within the original "area of contaminated groundwater" (for all groundwater "contamination" subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

Relationship of EI to Final Remedies

While Final remedies remain the long-term objective of the RCRA Corrective Action program the EI are near-term objectives which are currently being used as Program measures for the Government Performance and Results Act of 1993, GPRA). The "Migration of Contaminated Groundwater Under Control" EI pertains ONLY to the physical migration (i.e., further spread) of contaminated ground water and contaminants within groundwater (e.g., non-aqueous phase liquids or NAPLs). Achieving this EI does not substitute for achieving other stabilization or final remedy requirements and expectations associated with sources of contamination and the need to restore, wherever practicable, contaminated groundwater to be suitable for its designated current and future uses.

Duration / Applicability of EI Determinations

EI Determinations status codes should remain in RCRIS national database ONLY as long as they remain true (i.e., RCRIS status codes must be changed when the regulatory authorities become aware of contrary information).

2. Is **groundwater** known or reasonably suspected to be **"contaminated"**[1] above appropriately protective "levels" (i.e., applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action, anywhere at, or from, the facility?

X If yes - continue after identifying key contaminants, citing appropriate "levels," and referencing supporting documentation.

____ If no - skip to #8 and enter "YE" status code, after citing appropriate "levels," and referencing supporting documentation to demonstrate that groundwater is not "contaminated."

____ If unknown - skip to #8 and enter "IN" status code.

Rationale and Reference(s):

Philadelphia Coke Co., Inc. (PCC) was located at 4501 Richmond Street, Philadelphia, Pennsylvania, on a flat, 63-acre industrial site in the "Bridesburg Section" of Philadelphia. The property is bordered by Richmond, Orthodox, and Buckius Streets, as well as the Delaware River. The main portion of the property, north of the former railroad tracks, is entirely enclosed by a chain linked fence. The property is ten feet above sea level.

The facility had various operations including coke storage, coal storage, coke oven batteries, a rail line, a smoke stack, decanter tar bottoms, gas holders, a boiler house, a machine shop, and other structures and fuel blending operations. The facility was active from January 1929 until its permanent closing on May 12, 1982.

The facility was decommissioned, the structures were dismantled, and various cleanup and closure activities took place from 1982 through 1988, ultimately removing 30,000 tons of contaminated soil and operational related wastes. The site also underwent various environmental investigations including groundwater monitoring and soil sampling activities. Certified closure of the facility was provided to the Pennsylvania Department of Environmental Protection (PADEP) in December 1994. As a result of stabilized groundwater monitoring trends of contamination, PADEP terminated the groundwater monitoring requirement in 1999.

The August 11, 2011 site visit confirmed that all operations of the facility have been decommissioned, dismantled, and removed, with only cracked portions of concrete pads and asphalt paved areas remaining. The entire property is now overgrown with trees, brush and high grasses.

The use of the property currently remains idle, with no development since the facility's closure. The surrounding properties are mixed commercial, industrial, and residential uses. The property is zoned as a Waterfront Redevelopment District (WRD). The City of Philadelphia Property Assessors website identifies the property as zoned Heavy Industrial. The property is served by public water and sewer.

The groundwater at the facility was observed to be at depths that ranged from approximately 2.2 to 9.4 feet bgs during the 1996 CME sampling. Shallow groundwater resides in a shallow layer (approximately 10 foot thick) of surficial deposits of variable thickness, consisting of natural sands and gravels deposited by the Delaware River, as well as man-made fill materials. Groundwater flow in the upper aquifer does not conform to regional trends. It indicates radial groundwater flows away from a centrally high area near MW-2 with relatively flat gradients (0.002 to 0.006 foot/foot typical) both toward the Delaware River to the east and to the west (WCC, 1993). The site lies over both an upper unconfined aquifer and lower confined aquifer.

Upon the facility's closure, the impact to soils and subsequently the groundwater were investigated. Impacted were

[1] "Contamination" and "contaminated" describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriate "levels" (appropriate for the protection of the groundwater resource and its beneficial uses).

remediated through removals and in-situ methods. Monitoring of the groundwater was conducted on a regular basis with oversight from the PADEP and USEPA, eventually reaching acceptable concentrations to permit the discontinuation of future monitoring after 1999.

Concentrations of the COCs in the site groundwater were generally below the residential used aquifer MSCs, EPA MCLs, and EPA RSLs at the site monitoring wells during the 1996 and 1997 CME investigations except for TCE collected from MW-5 in 1996 and 1997, PCE in MW-5 in 1996, benzene in MW-2R in 1996 and 1997 and MW 6 in 1997, and benzo(a)anthracene, benzo(b)fluoranthene, benzo(a) pyrene, and indeno(1,2,3-cd)pyrene in MW-6 in 1996. In general, groundwater concentrations indicated a general decreasing trend over time at the facility, which was why PADEP allowed the facility to discontinue monitoring after 1999. The concentrations were also below detection levels in groundwater collected from MW-1, MW-3 and MW-4 during 1996 and 1997, which were the perimeter downgradient wells for the facility. Results of the 1996 and 1997 CME are presented in the table below.

	1996/1997 CME MONITORING WELL RESULTS						Non-Use Aquifer – Residential MSC	*Used Aquifer – Residential MSC*
PARAMETER (ug/L*)	MW-1R	MW-2R	MW-3	MW-4R	MW-5	MW-6		
PAHs	--/ ND	--/ ND	--/ ND	--/ ND	--/ 43	--/ ND	--	--
TCE	ND/ ND	ND/ ND	ND/ ND	ND/ ND	*33/ 14*	ND/ ND	50	5
PCE	ND/ ND	ND/ ND	ND/ ND	ND/ ND	*55*/ ND	ND/ ND	50	5
Benzene	ND/ ND	*83/ 42*	ND/ ND	ND/ ND	ND/ ND	3/ *10*	500	5
Ethylbenzene	ND/ ND	1/ ND	ND/ ND	ND/ ND	ND/ ND	2/ 3	70,000	700
Toluene	ND/ ND	ND/ ND	ND/ ND	ND/ ND	ND/ ND	2/ 5	100,000	1,000
TOC (mg/L)	29/ 19	28/ 24.4	12/11.2	42/ 45.3	5/ 4.3	8/ 7.2	--	--
TOX	33/ 17.7	42/ 29.5	25/ 20.6	11/ 9.5	71/ 95	6/ 7.1	--	--
pH	7.05/ 6.96	8.45/ 8.17	6.88/ 6.74	6.93/ 6.79	6.39/ 6.6	7.01/ 6.7	--	--
Specific Conductance (umhos/cm)	3,370/ 2,740	2,140/ 1,780	6,640/ 3,630	2,160/ 2,590	293/ 392	1,080/ 828	--	--
Naphthalene	ND/ ND	ND/ ND	ND/ ND	ND/ ND	ND/ ND	ND/ ND	30,000	100
Acenaphthylene	ND/ ND	ND/ ND	ND/ ND	ND/ ND	ND/ ND	ND/ ND	16,000	2,200
Acenaphthene	ND/ ND	ND/ ND	ND/ ND	ND/ ND	ND/ ND	48/ 62	3,800	2,200
Fluorene	ND/ ND	ND/ ND	ND/ ND	ND/ ND	ND/ ND	11.9/ 17.5	1,900	1,500
Phenanthrene	ND/ ND	9.8/ 7.6	ND/ ND	ND/ ND	ND/ ND	ND/ ND	1,100	1,100
Anthracene	ND/ ND	2.1/ 1.5	ND/ ND	ND/ ND	ND/ ND	ND/ ND	66	66
Fluoranthene	ND/ ND	3.12/ 2.61	ND/ ND	ND/ ND	0.78/ ND	1.07/ 0.74	260	260
Pyrene	ND/ ND	ND/ ND	ND/ ND	ND/ ND	ND/ ND	ND/ ND	130	130
Benzo(a)anthracene	ND/ ND	0.17/ 0.14	ND/ ND	ND/ ND	0.25/ ND	*0.49*/ 0.28	11	0.29
Chrysene	ND/ ND	ND/ ND	ND/ ND	ND/ ND	ND/ ND	ND/ ND	1.9	1.9
Benzo(b)fluoranthene	ND/ ND	ND/ ND	ND/ ND	ND/ ND	ND/ ND	*0.44*/ ND	1.2	0.29
Benzo(k)fluoranthene	ND/ ND	ND/ ND	ND/ ND	ND/ ND	ND/ ND	0.24/ 0.13	0.55	0.55
Benzo(a) pyrene	ND/ ND	ND/ ND	ND/ ND	ND/ ND	ND/ ND	*0.55*/ ND	3.8	0.2
Dibenzo(a,h)anthracene	ND/ ND	ND/ ND	ND/ ND	ND/ ND	ND/ ND	ND/ ND	0.6	0.029
Benzo(g,h,i)perylene	ND/ ND	ND/ ND	ND/ ND	ND/ ND	ND/ ND	ND/ ND	0.26	0.26
Indeno(1,2,3-cd)pyrene	ND/ ND	ND/ ND	ND/ ND	ND/ ND	ND/ ND	*0.86*/ ND	62	0.29

Notes: * All results in ug/L except where indicated; 1996 values from WCC / 1997 values from PADEP.
ND = Not Detected;
-- = not applicable

Reference:

Environmental Indicator Inspection Report for Philadelphia Coke Co., Inc., EPA ID No. PAD004427906, Prepared by Michael J. Baker Jr., Inc., January 2012

3. Has the **migration** of contaminated groundwater **stabilized** (such that contaminated groundwater is expected to remain within "existing area of contaminated groundwater"[2] as defined by the monitoring locations designated at the time of this determination)?

X If yes - continue, after presenting or referencing the physical evidence (e.g., groundwater sampling/measurement/migration barrier data) and rationale why contaminated groundwater is expected to remain within the (horizontal or vertical) dimensions of the "existing area of groundwater contamination"[2]).

____ If no (contaminated groundwater is observed or expected to migrate beyond the designated locations defining the "existing area of groundwater contamination"[2]) - skip to #8 and enter "NO" status code, after providing an explanation.

____ If unknown - skip to #8 and enter "IN" status code.

Rationale and Reference(s):

Upon the facility's closure, the impact to soils and subsequently the groundwater were investigated. Impacted were remediated through removals and in-situ methods. Monitoring of the groundwater was conducted on a regular basis with oversight from the PADEP and USEPA, eventually reaching acceptable concentrations to permit the discontinuation of future monitoring after 1999.

4. Does "contaminated" groundwater **discharge** into **surface water** bodies?

____ If yes - continue after identifying potentially affected surface water bodies.

X If no - skip to #7 (and enter a "YE" status code in #8, if #7 = yes) after providing an explanation and/or referencing documentation supporting that groundwater "contamination" does not enter surface water bodies.

____ If unknown - skip to #8 and enter "IN" status code.

Rationale and Reference(s):

The concentrations were also below detection levels in groundwater collected from MW-1, MW-3 and MW-4 during 1996 and 1997, which were the perimeter downgradient wells for the facility. Results of the 1996 and 1997 CME are presented in the table above.

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[2] "existing area of contaminated groundwater" is an area (with horizontal and vertical dimensions) that has been verifiably demonstrated to contain all relevant groundwater contamination for this determination, and is defined by designated (monitoring) locations proximate to the outer perimeter of "contamination" that can and will be sampled/tested in the future to physically verify that all "contaminated" groundwater remains within this area, and that the further migration of "contaminated" groundwater is not occurring. Reasonable allowances in the proximity of the monitoring locations are permissible to incorporate formal remedy decisions (i.e., including public participation) allowing a limited area for natural attenuation.

5. Is the **discharge** of "contaminated" groundwater into surface water likely to be **"insignificant"** (i.e., the maximum concentration[3] of each contaminant discharging into surface water is less than 10 times their appropriate groundwater "level," and there are no other conditions (e.g., the nature, and number, of discharging contaminants, or environmental setting), which significantly increase the potential for unacceptable impacts to surface water, sediments, or eco-systems at these concentrations)?

____ If yes - skip to #7 (and enter "YE" status code in #8 if #7 = yes), after documenting: 1) the maximum known or reasonably suspected concentration[3] of key contaminants discharged above their groundwater "level," the value of the appropriate "level(s)," and if there is evidence that the concentrations are increasing; and 2) provide a statement of professional judgement/explanation (or reference documentation) supporting that the discharge of groundwater contaminants into the surface water is not anticipated to have unacceptable impacts to the receiving surface water, sediments, or eco-system.

____ If no - (the discharge of "contaminated" groundwater into surface water is potentially significant) - continue after documenting: 1) the maximum known or reasonably suspected concentration[3] of each contaminant discharged above its groundwater "level," the value of the appropriate "level(s)," and if there is evidence that the concentrations are increasing; and 2) for any contaminants discharging into surface water in concentrations[3] greater than 100 times their appropriate groundwater "levels," the estimated total amount (mass in kg/yr) of each of these contaminants that are being discharged (loaded) into the surface water body (at the time of the determination), and identify if there is evidence that the amount of discharging contaminants is increasing.

____ If unknown - enter "IN" status code in #8.

Rationale and Reference(s):

[3] As measured in groundwater prior to entry to the groundwater-surface water/sediment interaction (e.g., hyporheic) zone.

6. Can the **discharge** of "contaminated" groundwater into surface water be shown to be "**currently acceptable**" (i.e., not cause impacts to surface water, sediments or eco-systems that should not be allowed to continue until a final remedy decision can be made and implemented[4])?

____ If yes - continue after either: 1) identifying the Final Remedy decision incorporating these conditions, or other site-specific criteria (developed for the protection of the site's surface water, sediments, and eco-systems), and referencing supporting documentation demonstrating that these criteria are not exceeded by the discharging groundwater; OR
2) providing or referencing an interim-assessment,[5] appropriate to the potential for impact, that shows the discharge of groundwater contaminants into the surface water is (in the opinion of a trained specialists, including ecologist) adequately protective of receiving surface water, sediments, and eco-systems, until such time when a full assessment and final remedy decision can be made. Factors which should be considered in the interim-assessment (where appropriate to help identify the impact associated with discharging groundwater) include: surface water body size, flow, use/classification/habitats and contaminant loading limits, other sources of surface water/sediment contamination, surface water and sediment sample results and comparisons to available and appropriate surface water and sediment "levels," as well as any other factors, such as effects on ecological receptors (e.g., via bio-assays/benthic surveys or site-specific ecological Risk Assessments), that the overseeing regulatory agency would deem appropriate for making the EI determination.

____ If no - (the discharge of "contaminated" groundwater can not be shown to be "**currently acceptable**") - skip to #8 and enter "NO" status code, after documenting the currently unacceptable impacts to the surface water body, sediments, and/or eco-systems.

____ If unknown - skip to 8 and enter "IN" status code.

Rationale and Reference(s):

[4] Note, because areas of inflowing groundwater can be critical habitats (e.g., nurseries or thermal refugia) for many species, appropriate specialist (e.g., ecologist) should be included in management decisions that could eliminate these areas by significantly altering or reversing groundwater flow pathways near surface water bodies.

[5] The understanding of the impacts of contaminated groundwater discharges into surface water bodies is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration to be reasonably certain that discharges are not causing currently unacceptable impacts to the surface waters, sediments or eco-systems.

7. Will groundwater **monitoring** / measurement data (and surface water/sediment/ecological data, as necessary) be collected in the future to verify that contaminated groundwater has remained within the horizontal (or vertical, as necessary) dimensions of the "existing area of contaminated groundwater?"

____ If yes - continue after providing or citing documentation for planned activities or future sampling/measurement events. Specifically identify the well/measurement locations which will be tested in the future to verify the expectation (identified in #3) that groundwater contamination will not be migrating horizontally (or vertically, as necessary) beyond the "existing area of groundwater contamination."

X If no - enter "NO" status code in #8.

____ If unknown - enter "IN" status code in #8.

Rationale and Reference(s):

8. Check the appropriate RCRIS status codes for the Migration of Contaminated Groundwater Under Control EI (event code CA750), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (attach appropriate supporting documentation as well as a map of the facility).

__X__ YE Yes, "Migration of Contaminated Groundwater Under Control" has been verified. Based on a review of the information contained in this EI determination, it has been determined that the "Migration of Contaminated Groundwater" is "Under Control" at the **Philadelphia Coke Co., Inc.** facility, EPA ID # **PAD000427906**, located at **4501 Richmond Street, Philadelphia, PA 19137**. Specifically, this determination indicates that the migration of "contaminated" groundwater is under control, and that monitoring will be conducted to confirm that contaminated groundwater remains within the "existing area of contaminated groundwater". This determination will be re-evaluated when the Agency becomes aware of significant changes at the facility.

____ NO - Unacceptable migration of contaminated groundwater is observed or expected.

____ IN - More information is needed to make a determination.

Completed by (signature) _____ Date 4/10/13

(print) Kevin Bilash

(title) RPM

Supervisor (signature) _____ Date 4-10-13

(print) ASSOCIATE DIRECTOR, LCD

(title) EPA Region 3

(EPA Region or State) _____

Locations where References may be found:

USEPA Region III
Waste and Chemical Mgmt. Division
1650 Arch Street
Philadelphia, PA 19103

PADEP
South East Regional Office
2 East Main Street
Norristown, PA 19401

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DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION
Interim Final 2/5/99
RCRA Corrective Action
Environmental Indicator (EI) RCRIS code (CA725)
Current Human Exposures Under Control

Facility Name: **Philadelphia Coke Company**
Facility Address: **4501 Richmond Street, Philadelphia, PA 19137**
Facility EPA ID #: **PAD000427906**

1. Has **all** available relevant/significant information on known and reasonably suspected releases to soil, groundwater, surface water/sediments, and air, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been **considered** in this EI determination?

   [X] If yes – check here and continue with #2 below.

   [ ] If no – re-evaluate existing data, or

   [ ] If data are not available skip to #6 and enter "IN" (more information needed) status code.

BACKGROUND

Definition of Environmental Indicators (for the RCRA Corrective Action)

Environmental Indicators (EI) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EI developed to-date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future.

Definition of "Current Human Exposures Under Control" EI

A positive "Current Human Exposures Under Control" EI determination ("YE" status code) indicates that there are no "unacceptable" human exposures to "contamination" (i.e., contaminants in concentrations in excess of appropriate risk-based levels) that can be reasonably expected under current land- and groundwater-use conditions (for all "contamination" subject to RCRA corrective action at or from the identified facility [i.e., site-wide]).

Relationship of EI to Final Remedies

While Final remedies remain the long-term objective of the RCRA Corrective Action program the EI are near-term objectives which are currently being used as Program measures for the Government Performance and Results Act of 1993, GPRA). The "Current Human Exposures Under Control" EI are for reasonably expected human exposures under current land- and groundwater-use conditions ONLY, and do not consider potential future land- or groundwater-use conditions or ecological receptors. The RCRA Corrective Action program's overall mission to protect human health and the environment requires that Final remedies address these issues (i.e., potential future human exposure scenarios, future land and groundwater uses, and ecological receptors).

Duration / Applicability of EI Determinations

EI Determinations status codes should remain in RCRIS national database ONLY as long as they remain true (i.e., RCRIS status codes must be changed when the regulatory authorities become aware of contrary information).

2. Are groundwater, soil, surface water, sediments, or air **media** known or reasonably suspected to be **"contaminated"**[1] above appropriately protective risk-based "levels" (applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action (from SWMUs, RUs or AOCs)?

	Yes	No	?	Rationale/Key Contaminants
Groundwater	X			Volatile organic compounds (VOCs) and polycyclic aromatic hydrocarbons (PAH) detected in groundwater at the facility above medium specific concentration (MSCs). In the case of the Contaminants of concern (COCs) here, the MSCs are equivalent to EPA's Maximum Contaminant Levels (MCLs) or within the Regional Screening Level (RSL) risk range of 10^{-6} to 10^{-4}.
Air (indoors)[2]		X		No structures remain at the site.
Surface Soil (e.g., <2 ft)		X		Impact limited to specialized areas which were address with subsurface soil remediation. The facility was remediated to removed PAHs with a combined carcinogenic PAH (CPAH) concentrations not to exceed 50 ppm with no individual of the six CPAH exceed 15 ppm. Soils were remediated in 16 areas.
Surface Water		X		Facility is now closed and no discharges are expected.
Sediment		X		COCs in groundwater were below detection in the far downgradient monitoring wells.
Subsurf. Soil (e.g., >2 ft)		X		Impact limited to specialized areas which were address with subsurface soil remediation. The facility was remediated to removed PAHs with a combined CPAH concentrations not to exceed 50 ppm with no individual of the six CPAH exceed 15 ppm. Soils were remediated in 16 areas.
Air (outdoors)		X		Facility operated under air permits on file with City of Philadelphia. Facility in now closed.

[1] "Contamination" and "contaminated" describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriately protective risk-based "levels" (for the media, that identify risks within the acceptable risk range).

[2] Recent evidence (from the Colorado Dept. of Public Health and Environment, and others) suggest that unacceptable indoor air concentrations are more common in structures above groundwater with volatile contaminants than previously believed. This is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration necessary to be reasonably certain that indoor air (in structures located above (and adjacent to) groundwater with volatile contaminants) does not present unacceptable risks.

____ If no (for all media) - skip to #6, and enter "YE," status code after providing or citing appropriate "levels," and referencing sufficient supporting documentation demonstrating that these "levels" are not exceeded.

__X__ If yes (for any media) - continue after identifying key contaminants in each "contaminated" medium, citing appropriate "levels" (or provide an explanation for the determination that the medium could pose an unacceptable risk), and referencing supporting documentation.

____ If unknown (for any media) - skip to #6 and enter "IN" status code.

Rationale and Reference(s):

Background Information

Philadelphia Coke Co., Inc. (PCC) was located at 4501 Richmond Street, Philadelphia, Pennsylvania, on a flat, 63-acre industrial site in the "Bridesburg Section" of Philadelphia. The property is bordered by Richmond, Orthodox, and Buckius Streets, as well as the Delaware River. The main portion of the property, north of the former railroad tracks, is entirely enclosed by a chain linked fence. The property is ten feet above sea level.

The facility had various operations including coke storage, coal storage, coke oven batteries, a rail line, a smoke stack, decanter tar bottoms, gas holders, a boiler house, a machine shop, and other structures and fuel blending operations. The facility was active from January 1929 until its permanent closing on May 12, 1982.

The facility was decommissioned, the structures were dismantled, and various cleanup and closure activities took place from 1982 through 1988, ultimately removing 30,000 tons of contaminated soil and operational related wastes. The site also underwent various environmental investigations including groundwater monitoring and soil sampling activities. Certified closure of the facility was provided to the Pennsylvania Department of Environmental Protection (PADEP) in December 1994. As a result of stabilized groundwater monitoring trends of contamination, PADEP terminated the groundwater monitoring requirement in 1999.

The August 11, 2011 site visit confirmed that all operations of the facility have been decommissioned, dismantled, and removed, with only cracked portions of concrete pads and asphalt paved areas remaining. The entire property is now overgrown with trees, brush and high grasses.

The use of the property currently remains idle, with no development since the facility's closure. The surrounding properties are mixed commercial, industrial, and residential uses. The property is zoned as a Waterfront Redevelopment District (WRD). The City of Philadelphia Property Assessors website identifies the property as zoned Heavy Industrial. The property is served by public water and sewer.

Groundwater:

The groundwater at the facility was observed to be at depths that ranged from approximately 2.2 to 9.4 feet bgs during the 1996 CME sampling. Shallow groundwater resides in a shallow layer (approximately 10 foot thick) of surficial deposits of variable thickness, consisting of natural sands and gravels deposited by the Delaware River, as well as man-made fill materials. Groundwater flow in the upper aquifer does not conform to regional trends. It indicates radial groundwater flows away from a centrally high area near MW-2 with relatively flat gradients (0.002 to 0.006 foot/foot typical) both toward the Delaware River to the east and to the west (WCC, 1993). The site lies over both an upper unconfined aquifer and lower confined aquifer.

Upon the facility's closure, the impact to soils and subsequently the groundwater were investigated. Impacted were remediated through removals and in-situ methods. Monitoring of the groundwater was conducted on a regular basis with oversight from the PADEP and USEPA, eventually reaching acceptable concentrations to permit the discontinuation of future monitoring after 1999.

Concentrations of the COCs in the site groundwater were generally below the residential used aquifer MSCs, EPA MCLs,

and EPA RSLs at the site monitoring wells during the 1996 and 1997 CME investigations except for TCE collected from MW-5 in 1996 and 1997, PCE in MW-5 in 1996, benzene in MW-2R in 1996 and 1997 and MW 6 in 1997, and benzo(a)anthracene, benzo(b)fluoranthene, benzo(a) pyrene, and indeno(1,2,3-cd)pyrene in MW-6 in 1996. In general, groundwater concentrations indicated a general decreasing trend over time at the facility, which was why PADEP allowed the facility to discontinue monitoring after 1999. The concentrations were also below detection levels in groundwater collected from MW-1, MW-3 and MW-4 during 1996 and 1997, which were the perimeter downgradient wells for the facility. Results of the 1996 and 1997 CME are presented in the table below.

	1996/1997 CME MONITORING WELL RESULTS						Non-Use Aquifer – Residential MSC	*Used Aquifer – Residential MSC*
PARAMETER (ug/L*)	MW-1R	MW-2R	MW-3	MW-4R	MW-5	MW-6		
PAHs	--/ ND	--/ ND	--/ ND	--/ ND	--/ 43	--/ ND	--	--
TCE	ND/ ND	ND/ ND	ND/ ND	ND/ ND	*33/ 14*	ND/ ND	50	5
PCE	ND/ ND	ND/ ND	ND/ ND	ND/ ND	*55*/ ND	ND/ ND	50	5
Benzene	ND/ ND	*83/ 42*	ND/ ND	ND/ ND	ND/ ND	3/ *10*	500	5
Ethylbenzene	ND/ ND	1/ ND	ND/ ND	ND/ ND	ND/ ND	2/ 3	70,000	700
Toluene	ND/ ND	ND/ ND	ND/ ND	ND/ ND	ND/ ND	2/ 5	100,000	1,000
TOC (mg/L)	29/ 19	28/ 24.4	12/11.2	42/ 45.3	5/ 4.3	8/ 7.2	--	--
TOX	33/ 17.7	42/ 29.5	25/ 20.6	11/ 9.5	71/ 95	6/ 7.1	--	--
pH	7.05/ 6.96	8.45/ 8.17	6.88/ 6.74	6.93/ 6.79	6.39/ 6.6	7.01/ 6.7	--	--
Specific Conductance (umhos/cm)	3,370/ 2,740	2,140/ 1,780	6,640/ 3,630	2,160/ 2,590	293/ 392	1,080/ 828	--	--
Naphthalene	ND/ ND	ND/ ND	ND/ ND	ND/ ND	ND/ ND	ND/ ND	30,000	100
Acenaphthylene	ND/ ND	ND/ ND	ND/ ND	ND/ ND	ND/ ND	ND/ ND	16,000	2,200
Acenaphthene	ND/ ND	ND/ ND	ND/ ND	ND/ ND	ND/ ND	48/ 62	3,800	2,200
Fluorene	ND/ ND	ND/ ND	ND/ ND	ND/ ND	ND/ ND	11.9/ 17.5	1,900	1,500
Phenanthrene	ND/ ND	9.8/ 7.6	ND/ ND	ND/ ND	ND/ ND	ND/ ND	1,100	1,100
Anthracene	ND/ ND	2.1/ 1.5	ND/ ND	ND/ ND	ND/ ND	ND/ ND	66	66
Fluoranthene	ND/ ND	3.12/ 2.61	ND/ ND	ND/ ND	0.78/ ND	1.07/ 0.74	260	260
Pyrene	ND/ ND	ND/ ND	ND/ ND	ND/ ND	ND/ ND	ND/ ND	130	130
Benzo(a)anthracene	ND/ ND	0.17/ 0.14	ND/ ND	ND/ ND	0.25/ ND	*0.49*/ 0.28	11	0.29
Chrysene	ND/ ND	ND/ ND	ND/ ND	ND/ ND	ND/ ND	ND/ ND	1.9	1.9
Benzo(b)fluoranthene	ND/ ND	ND/ ND	ND/ ND	ND/ ND	ND/ ND	*0.44*/ ND	1.2	0.29
Benzo(k)fluoranthene	ND/ ND	ND/ ND	ND/ ND	ND/ ND	ND/ ND	0.24/ 0.13	0.55	0.55
Benzo(a) pyrene	ND/ ND	ND/ ND	ND/ ND	ND/ ND	ND/ ND	*0.55*/ ND	3.8	0.2
Dibenzo(a,h)anthracene	ND/ ND	ND/ ND	ND/ ND	ND/ ND	ND/ ND	ND/ ND	0.6	0.029
Benzo(g,h,i)perylene	ND/ ND	ND/ ND	ND/ ND	ND/ ND	ND/ ND	ND/ ND	0.26	0.26
Indeno(1,2,3-cd)pyrene	ND/ ND	ND/ ND	ND/ ND	ND/ ND	ND/ ND	*0.86*/ ND	62	0.29

Notes: * All results in ug/L except where indicated; 1996 values from WCC / 1997 values from PADEP.
ND = Not Detected;
-- = not applicable

Air (indoors):

There are no structures remaining at the site thus indoor air quality in no longer relevant. The entire facility has been dismantled and removed and areas where waste material was stored and may have impacted soils have been remediated.

Soil:

Since the facility ceased operations in 1982, access to the property has been restricted by a perimeter fence of the main area. Highly contaminated soils were removed and appropriately disposed, while mildly contaminated soils were remediated with other remedial methods such as bioremediation. The facility was certified as closed in accordance with the closure plan in 1994.

The facility was remediated to removed PAHs with a combined CPAH concentrations not to exceed 50 ppm with no individual of the six CPAH exceed 15 ppm. Soils were remediated in 16. The maximum concentrations of base neutrals in the confirmation samples from the Soil Contamination Assessment (1988) were as follows:

Parameter	Maximum Concentration Remaining On-site (mg/kg)	Sample Area	*Direct Contact Residential MSC*	Direct Contact Nonresidential MSC – Surface Soil	Direct Contact Nonresidential MSC – subsurface surface soil	**Soil to Groundwater Residential Used Aquifer TDS ≤ 2,500**	Soil to Groundwater Non Residential MSC Used Aquifer TDS ≤ 2,500
Acenaphthene	1.27	I	13,000	170,000	190,000	2,700	4,700
Acenaphththylene	1.33	XVI	13,000	170,000	190,000	2,500	6,900
Anthracene	7	XVI	66,000	190,000	190,000	350	350
Benzo(a)anthracene*	*17.7*	XVI	5.7	110	190,000	25	320
Benzo(a)pyrene*	*11*	XVI	0.57	11	190,000	46	46
Benzo(b)fluoranthene *	*22*	XVI	5.7	110	190,000	40	170
Benzo(g,h,i)perylene	8.7	XVI	13,000	170,000	190,000	180	180
Benzo(k) fluoranthene	***	XVI	57	1,100	190,000	610	610
Chrysene*	26.7	XVI	270	11,000	190,000	230	230
Dibenzo(a,h) anthracene*	*2.13*	XVI	0.57	11	190,000	13	160
Fluoranthene	31.7	XVI	8,800	110,000	190,000	3,200	3,200
Fluorene	2.57	V	8,800	110,000	190,000	3,000	3,800
Indeno(1,2,3-c,d)pyrene*	*7*	XVI	5.7	110	190,000	2,200	28,000
Naphthalene	**26.7**	VIII	4,400	56,000	190,000	25	25
Phenanthrene	23	XVI	66,000	190,000	190,000	10,000	10,000
Pyrene	24.7	XVI	6,600	84,000	190,000	2,200	2,200
Total PAHs	188.4	XVI	--	--	--	--	--
Total Carcinogenic PAHs	85.5	XVI	--	--	--	--	--

Notes: Maximum concentration based on 16 confirmation samples from the Soil Contamination Assessment (1988). One confirmatory sample per remedial area.

MSC = PADEP Medium Specific Concentration

Note that samples from Area XIV exceeded the standard so additional excavation was conducted and the area was resampled (sample XIVR).

*** = compound could not be distinguished from benzo (b) fluoranthene in analysis; reported values are the combined concentrations

While the concentrations in area XVI exceeded the required cleanup criteria of 50 ppm of the carcinogenic PAHs, the source was believed to be the former coal tar-derived macadam paving that covered Area XVI and not the decanter tank tar sludge (K087) waste, because no K087 waste was observed in the area. Therefore, no further action was taken in Area 16. Thee concentrations are less than or equal to the non-residential MSCs or within EPA's RSL risk range of 10^{-6} to 10^{-4} for all of the tested PAHs. The maximum naphthalene concentration slightly exceeded the soil to groundwater MSCs in Area VIII. While no monitoring well was specifically located in Area VIII, naphthalene was not detected in groundwater during 1996 and 1997 at any of the existing site six monitoring wells. An insitu biorestoration process where groundwater was withdrawn from the shallow contaminated zone, treated to remove free product and re-dispersed into the shallow zone with nutrient and oxygen supplementation was performed in the south area. Biorestoration was completed when TPH concentrations were less than 300 ppm in the confirmatory soil samples. In summary, concentrations are below non-residential MSCs or within EPA's RSL risk range of 10^{-6} to 10^{-4} for all of the tested PAHs, biorestoration was complete when TPH concentrations were less than 300 ppm in the soil in the south area, access to the site is permissible through the un-maintained perimeter fence.

Surface Water/Sediment: The closest surface water body to the facility is the Delaware River. PCC is 10 feet above sea level and less than 100 feet from the Delaware River. During its operation, several notices of violations (NOVs) were issued pertaining to oily discharges (in minor quantities) in violation of NPDES permits at the time. Upon it closure, the facility posed no further direct discharge impact to the Delaware River. In groundwater, the concentrations of the COCs were below detection at the far downgradient wells (MW-1R and MW 3) in the main area, and therefore, should not be a source of contamination to the surface water/sediment.

Two monitoring wells (MW-13 and MW-14) were installed in December 1989 in the thin saturated zone of the fill down gradient of the tank farm. In-situ biorestoration of groundwater was achieved through the use of sumps screened through the saturated fill layer. Confirmatory samples were collected from soil borings advanced down to the silty clay aquiclude. Biorestoration was completed and TPH concentrations were less than 300 ppm.

No sediment data is available. However, based on the information presented above, EPA has concluded that sediment is not reasonably suspected to be contaminated above appropriately protective risk-based levels.

Air (outdoors): As PCC is no longer operating, air emissions from operations are no longer a factor of concern.

Reference:

Environmental Indicator Inspection Report for Philadelphia Coke Co., Inc., EPA ID No. PAD004427906, Prepared by Michael J. Baker Jr., Inc., January 2012

3. Are there **complete pathways** between "contamination" and human receptors such that exposures can be reasonably expected under the current (land- and groundwater-use) conditions?

Summary Exposure Pathway Evaluation Table

Potential **Human Receptors** (Under Current Conditions)

Contaminated Media	Residents	Workers	Day-Care	Construction	Trespassers	Recreation	Food[3]
Groundwater	No	No	No	No	No	No	No
~~Air (indoors)~~							
~~Soil (surface, e.g., <2 ft.~~							
~~Surface Water~~							
~~Sediment~~							
~~Soil (subsurface e.g., >2 ft.~~							
~~Air (outdoors)~~							

Instructions for Summary Exposure Pathway Evaluation Table:

1. Strike-out specific Media including Human Receptors' spaces for Media which are not "contaminated" as identified in #2 above.

2. enter "yes" or "no" for potential "completeness" under each "Contaminated" Media -- Human Receptor combination (Pathway).

Note: In order to focus the evaluation to the most probable combinations some potential "Contaminated" Media - Human Receptor combinations (Pathways) do not have check spaces ("___"). While these combinations may not be probable in most situations they may be possible in some settings and should be added as necessary.

X If no (pathways are not complete for any contaminated media-receptor combination) - skip to #6, and enter "YE" status code, after explaining and/or referencing condition(s) in-place, whether natural or man-made, preventing a complete exposure pathway from each contaminated medium (e.g., use optional Pathway Evaluation Work Sheet to analyze major pathways).

___ If yes (pathways are complete for any "Contaminated" Media - Human Receptor combination) - continue after providing supporting explanation.

___ If unknown (for any "Contaminated" Media - Human Receptor combination) - skip to #6 and enter "IN" status code.

Rationale and Reference(s):

The use of the property currently remains idle with no development since the facility's closure. Groundwater is not currently or anticipated to be used in the near future. Concentrations of constituents in groundwater above EPA MCLs and EPA RSLs are isolated to a central location on site and do not migrate beyond the facility boundary. Vertically, drilling logs and regional maps show a continuous clay layer which acts as an impermeable barrier resulting in an inability for contaminants to migrate to deeper aquifers. Therefore, EPA has determined that exposures cannot be reasonably expected under the current land and groundwater use.

[3] Indirect Pathway/Receptor (e.g., vegetables, fruits, crops, meat and dairy products, fish, shellfish, etc.

4. Can the **exposures** from any of the complete pathways identified in #3 be reasonably expected to be **"significant"**[4] (i.e., potentially "unacceptable" because exposures can be reasonably expected to be: 1) greater in magnitude (intensity, frequency and/or duration) than assumed in the derivation of the acceptable "levels" (used to identify the "contamination"); or 2) the combination of exposure magnitude (perhaps even though low) and contaminant concentrations (which may be substantially above the acceptable "levels") could result in greater than acceptable risks)?

_____ If no (exposures can not be reasonably expected to be significant (i.e., potentially "unacceptable") for any complete exposure pathway) - skip to #6 and enter "YE" status code after explaining and/or referencing documentation justifying why the exposures (from each of the complete pathways) to "contamination" (identified in #3) are not expected to be "significant."

_____ If yes (exposures could be reasonably expected to be "significant" (i.e., potentially "unacceptable") for any complete exposure pathway) - continue after providing a description (of each potentially "unacceptable" exposure pathway) and explaining and/or referencing documentation justifying why the exposures (from each of the remaining complete pathways) to "contamination" (identified in #3) are not expected to be "significant."

_____ If unknown (for any complete pathway) - skip to #6 and enter "IN" status code

Rationale and Reference(s):

5. Can the "significant" **exposures** (identified in #4) be shown to be within **acceptable** limits?

_____ If yes (all "significant" exposures have been shown to be within acceptable limits) - continue and enter "YE" after summarizing and referencing documentation justifying why all "significant" exposures to "contamination" are within acceptable limits (e.g., a site-specific Human Health Risk Assessment).

_____ If no (there are current exposures that can be reasonably expected to be "unacceptable") - continue and enter "NO" status code after providing a description of each potentially "unacceptable" exposure.

_____ If unknown (for any potentially "unacceptable" exposure) - continue and enter "IN" status code

Rationale and Reference(s):

[4] If there is any question on whether the identified exposures are "significant" (i.e., potentially "unacceptable") consult a human health Risk Assessment specialist with appropriate education, training and experience.

6. Check the appropriate RCRIS status codes for the Current Human Exposures Under Control EI event code (CA725), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (and attach appropriate supporting documentation as well as a map of the facility):

X YE – Yes, "Current Human Exposures Under Control" has been verified. Based on a review of the Information contained in this EI Determination, "Current Human Exposures" are expected to be "Under Control" at the **Philadelphia Coke Company** facility, EPA ID # **PAD000427906**, located at **4501 Richmond Street, Philadelphia, PA 19137** under current and reasonably expected conditions. This determination will be re-evaluated when the Agency/State becomes aware of significant changes at the facility.

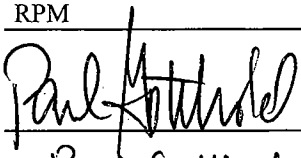
____ NO - "Current Human Exposures" are NOT "Under Control."

____ IN - More information is needed to make a determination.

Completed by (signature) Date 4/10/13

(print) Kevin Bilash

(title) RPM

Supervisor (signature)  Date 4-10-13

(print) Paul Gotthold

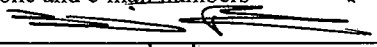
(title) Associate Director, LCD

(EPA Region or State) EPA R3

Locations where References may be found:

USEPA Region III
Land and Chemicals Division
1650 Arch Street
Philadelphia, PA 19103

PADEP
South East Regional Office
2 E Main Street
Norristown, PA 19401

Contact telephone and e-mail numbers
(signature) 
(print) Kevin Bilash
(title) RPM

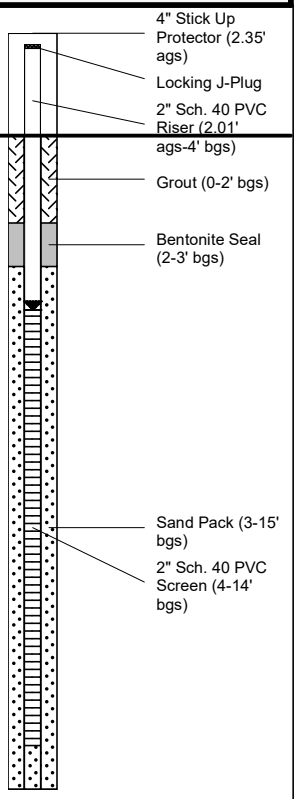
FINAL NOTE: THE HUMAN EXPOSURES EI IS A QUALITATIVE SCREENING OF EXPOSURES AND THE DETERMINATIONS WITHIN THIS DOCUMENT SHOULD NOT BE USED AS THE SOLE BASIS FOR RESTRICTING THE SCOPE OF MORE DETAILED (E.G., SITE-SPECIFIC) ASSESSMENTS OF RISK.

APPENDIX D

Soil Boring, Test Pit, and Monitoring Well Installation Logs

Date Start/Finish:	5/14/2018	**Northing:**	252827.11'	**Well/Boring ID:**	**MW-101**
Drilling Company:	Advanced Drilling, Inc.	**Easting:**	2719591.88'	**Client:**	National Grid
Driller's Name:	Nick	**Top of Inner Casing Elevation:**	14.841'	**Location:**	Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA
Drilling Method:	Hollow Stem Auger	**Surface Elevation:**	12.835' NAVD88		
Sampling Method:	2"x2' Split Spoon	**Borehole Depth:**	16' bgs		
		Descriptions By:	Chris Ortolano		

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Geologic Column	Stratigraphic Description
15						
0						
	1	0-2	15.6"	0.0		SILT; moist, brown. GRAVEL and BRICK. SAND and GRAVEL; coarse, dry.
10	2	2-4	12"	0.0		Silty SAND, coarse; trace Gravel, fine; medium dense, dry.
	3	4-6	7.2"	0.0		SAND, coarse; some Gravel, coarse; dark brown, dense, wet.
5	4	6-8	4.8"	0.0		Split spoon refusal. Drill down to 8' bgs.
5	5	8-10	6"	0.0		SAND, fine to coarse, black; some Roots; dense, wet.
10						GRAVEL, coarse; and SAND, fine to coarse; some broken Glass; black and brown, loose, wet. [FILL]
	6	10-12	6"	0.0		
0	7	12-14	12"	0.0		SAND, fine; some fine to coarse Gravel; little Clay; black, soft, wet.
15	8	14-16	NR	0.0		CLAY; black, soft, wet.
-5						End of boring at 16' bgs.
20						
-10						



Remarks: ags = above ground surface; bgs = below ground surface; NAVD88 = North American Vertical Datum of 1988; PID = photoionization detector; NA = Not Applicable/Available; Coordinate System = NAD83 Penn South Zone US Foot.

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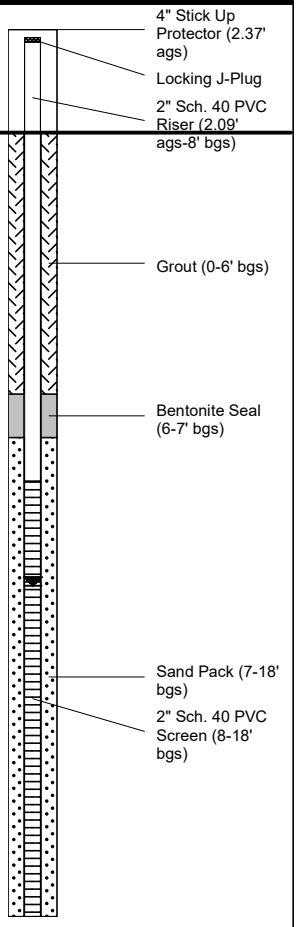
Date Start/Finish:	5/16/2018	**Northing:**	253136.36'	**Well/Boring ID:**	**MW-102**
Drilling Company:	Advanced Drilling, Inc.	**Easting:**	2719716.67'	**Client:**	National Grid
Driller's Name:	Nick	**Top of Inner Casing Elevation:**	16.917'	**Location:**	Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA
Drilling Method:	Geoprobe	**Surface Elevation:**	14.829' NAVD88		
Sampling Method:	5' Macrocore Liner	**Borehole Depth:**	20' bgs		
		Descriptions By:	Chris Ortolano		

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Geologic Column	Stratigraphic Description
0	15						
		1	0-5	31.2"	0.0		Sandy SILT, brown; some Brick and Gravel; moist. [FILL]
5	10	2	5-10	38.4"	0.0		Silty SAND, tan; some Gravel, fine to coarse; moist.
10	5	3	10-15	36"	0.0		SAND, fine to coarse, black; some Gravel; wet. CLAY; gray, wet. GRAVEL, coarse, tan; some fine to coarse Sand; moist. Unknown, white spackle-like material, soft.
15	0	4	15-20	24"	0.0		Sandy CLAY, fine, gray; trace coarse Gravel, wet.
20	-5						End of boring at 20' bgs.
25	-10						

Well/Boring Construction



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Remarks: ags = above ground surface; bgs = below ground surface; NAVD88 = North American Vertical Datum of 1988; PID = photoionization detector; NA = Not Applicable/Available; Coordinate System = NAD83 Penn South Zone US Foot; Macrocore inner diameter = 1".

Date Start/Finish:	5/16/2018	**Northing:**	252909.76'	**Well/Boring ID:**	**MW-103**
Drilling Company:	Advanced Drilling, Inc.	**Easting:**	2720099.75'	**Client:**	National Grid
Driller's Name:	Nick	**Top of Inner Casing Elevation:**	16.087'	**Location:**	Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA
Drilling Method:	Geoprobe	**Surface Elevation:**	13.826' NAVD88		
Sampling Method:	5' Macrocore Liner	**Borehole Depth:**	20' bgs		
		Descriptions By:	Chris Ortolano		

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
15							4" Stick Up Protector (2.53' ags) Locking J-Plug 2" Sch. 40 PVC Riser (2.26' ags-6' bgs)
0							
10	1	0-5	36"	0.0		BRICK; and CONCRETE; and GRAVEL; moist. [FILL]	Grout (0-4' bgs) Bentonite Seal (4-5' bgs)
5						Sandy CLAY; gray, moist to wet.	
	2	5-10	24"	0.0			
5							
10	3	10-15	32.4"	0.0		SAND and GRAVEL; fine to coarse, black, wet.	Sand Pack (5-16' bgs) 2" Sch. 40 PVC Screen (6-16' bgs)
0							
15	4	15-20	43.2"	0.0		CLAY; light to dark gray, wet.	
-5							
20						End of boring at 20' bgs.	
-10							

Remarks: ags = above ground surface; bgs = below ground surface; NAVD88 = North American Vertical Datum of 1988; PID = photoionization detector; NA = Not Applicable/Available; Coordinate System = NAD83 Penn South Zone US Foot; Macrocore inner diameter = 1".

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Date Start/Finish:	5/15/2018	**Northing:**	252335.33'	**Well/Boring ID:**	**MW-104**
Drilling Company:	Advanced Drilling, Inc.	**Easting:**	2719009.93'	**Client:**	National Grid
Driller's Name:	Nick	**Top of Inner Casing Elevation:**	13.928'	**Location:**	Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA
Drilling Method:	Geoprobe	**Surface Elevation:**	11.641' NAVD88		
Sampling Method:	5' Macrocore Liner	**Borehole Depth:**	15' bgs		
		Descriptions By:	Chris Ortolano		

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
0							4" Stick Up Protector (2.42' ags) Locking J-Plug 2" Sch. 40 PVC Riser (2.29' ags-4' bgs)
10 / 5	1	0-5	24"	0.0		SILT, dark brown; some Gravel, coarse; dry. SAND, fine to coarse, tan; some Gravel, fine to coarse; moist.	Grout (0-2' bgs) Bentonite Seal (2-3' bgs)
5 / 0	2	5-10	48"	0.0		Wet at 5' bgs. Gray at 6.8' bgs. Silty SAND; little Gravel, fine to coarse; gray, wet.	Sand Pack (3-11' bgs) 2" Sch. 40 PVC Screen (4-11' bgs)
10 / -5	3	10-15	48"	0.0		Sandy CLAY; trace Gravel, fine; black, wet.	
15 / -10						End of boring at 15' bgs.	
20							

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Remarks: ags = above ground surface; bgs = below ground surface; NAVD88 = North American Vertical Datum of 1988; PID = photoionization detector; NA = Not Applicable/Available; Coordinate System = NAD83 Penn South Zone US Foot; Macrocore inner diameter = 1".

Date Start/Finish:	5/15/2018	**Northing:**	251955.46'	**Well/Boring ID:**	**MW-105**
Drilling Company:	Advanced Drilling, Inc.	**Easting:**	2719250.51'	**Client:**	National Grid
Driller's Name:	Nick	**Top of Inner Casing Elevation:**	13.987'	**Location:**	Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA
Drilling Method:	Geoprobe	**Surface Elevation:**	12.136' NAVD88		
Sampling Method:	5' Macrocore Liner	**Borehole Depth:**	15' bgs		
		Descriptions By:	Chris Ortolano		

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
15							4" Stick Up Protector (2.22' ags)
0							Locking J-Plug
							2" Sch. 40 PVC Riser (1.85' ags-4' bgs)
						SAND, coarse, black; Gravel, fine to coarse; dry.	Grout (0-2' bgs)
						BRICK and CONCRETE. [FILL]	
10	1	0-5	36"	0.0		SAND, fine to coarse; some Gravel; tan, moist.	Bentonite Seal (2-3' bgs)
						CLAY, dark gray, moist.	
5						SAND; fine to coarse, dark gray, wet.	
5	2	5-10	40.8"	0.0		CLAY, black, wet.	
						SAND; fine to coarse, black, wet.	Sand Pack (3-15' bgs)
10						Trace Gravel at 10' bgs.	2" Sch. 40 PVC Screen (4-14' bgs)
0	3	10-15	60"	0.0			
						CLAY, black, wet.	
15						SAND, coarse, black, wet.	
						End of boring at 15' bgs.	
-5							
20							
-10							
25							

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Date Start/Finish:	5/15/2018	**Northing:**	251684.02'	**Well/Boring ID:**	**MW-106**
Drilling Company:	Advanced Drilling, Inc.	**Easting:**	2720437.39'	**Client:**	National Grid
Driller's Name:	Nick	**Top of Inner Casing Elevation:**	9.031'	**Location:**	Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA
Drilling Method:	Geoprobe	**Surface Elevation:**	6.81' NAVD88		
Sampling Method:	5' Macrocore Liner	**Borehole Depth:**	15' bgs		
		Descriptions By:	Chris Ortolano		

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
0							4" Stick Up Protector (2.41' ags) Locking J-Plug 2" Sch. 40 PVC Riser (2.22' ags-4' bgs)
5 / 0	1	0-5	40.8"	0.0		GRAVEL, black; and Silty SAND, moist. SAND, fine to coarse; some Gravel, fine to coarse; moist.	Grout (0-2' bgs) Bentonite Seal (2-3' bgs)
5 / 0	2	5-10	45.6"	0.0		Wet at 5' bgs. Sandy CLAY; gray. Peat.	Sand Pack (3-10' bgs) 2" Sch. 40 PVC Screen (4-10' bgs)
10 / -5	3	10-15	50.4"	0.0		CLAY, gray; some Silt.	
15 / -10 / 20 / -15						End of boring at 15' bgs	

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Remarks: ags = above ground surface; bgs = below ground surface; NAVD88 = North American Vertical Datum of 1988; PID = photoionization detector; NA = Not Applicable/Available; Coordinate System = NAD83 Penn South Zone US Foot; Macrocore inner diameter = 1".

Date Start/Finish:	5/15/2018	**Northing:**	252078.78'	**Well/Boring ID:**	**MW-107**
Drilling Company:	Advanced Drilling, Inc.	**Easting:**	2720497.99'	**Client:**	National Grid
Driller's Name:	Nick	**Top of Inner Casing Elevation:**	10.105'	**Location:**	Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA
Drilling Method:	Geoprobe	**Surface Elevation:**	7.979' NAVD88		
Sampling Method:	5' Macrocore Liner	**Borehole Depth:**	15' bgs		
		Descriptions By:	Chris Ortolano		

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
10							4" Stick Up Protector (2.38' ags) Locking J-Plug 2" Sch. 40 PVC Riser (2.13' ags-4' bgs)
0							
						Silty SAND; dark brown; some fine to coarse Gravel, wet at 2' bgs.	Grout (0-2' bgs)
5	1	0-5	24"	0.0			Bentonite Seal (2-3' bgs)
-5						SAND, black, fine to coarse; trace Glass; wet.	
0	2	5-10	7.2"	0.0			Sand Pack (3-10' bgs) 2" Sch. 40 PVC Screen (4-10' bgs)
10						Sandy CLAY and GRAVEL; fine to coarse; wet.	
-5	3	10-15	19.2"	0.0			
15						End of boring at 15' bgs.	
-10							
20							
-15							
25							

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Remarks: ags = above ground surface; bgs = below ground surface; NAVD88 = North American Vertical Datum of 1988; PID = photoionization detector; NA = Not Applicable/Available; Coordinate System = NAD83 Penn South Zone US Foot; Macrocore inner diameter = 1".

Date Start/Finish: 9/24/2019	**Northing:** 252644.999'	**Well/Boring ID:** **MW-108**	
Drilling Company: Advanced Drilling, Inc.	**Easting:** 2720170.134'	**Client:** National Grid	
Driller's Name: Craig Jablonksi	**Top of Inner Casing Elevation:** 16.964' NAVD88	**Location:** Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA	
Drilling Method: Geoprobe/HSA	**Surface Elevation:** 14.652' NAVD88		
Sampling Method: 5' Macrocore Liner	**Borehole Depth:** 20' bgs		
Rig Type: Track-mounted Geoprobe	**Descriptions By:** Chris Ortolano		

Depth (feet bgs) / Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0 / 15								4" Diameter Stick Up Protector; Locking J-Plug; 3' stickup
0 / 15	1	0-5	36"	0.0 0.0 0.0 NA NA			Brown Sandy SILT, some fine to coarse Gravel, dry. Black at 2.6' bgs.	Grout (0-3' bgs); 2" Sch. 40 PVC Riser (3' ags-9' bgs)
5 / 10	2	5-10	48"	0.0 88.7 120.8 69.9 0.0			Black Sandy Silty CLAY, some fine to coarse Gravel, moist, petroleum-like odor. Tar-like (tacky) material scattered throughout at 6-8' bgs. Purifier material from 6-10' bgs.	Bentonite Seal (3-6' bgs); #00 Choker Sand (6-7' bgs)
10 / 5	3	10-15	36"	0.9 1.1 3.3 NA NA			Wet at 11' bgs. Black Sandy Gravel, wet.	#1 Filter Sand (7-20' bgs); 2" Sch. 40 PVC 0.010" Slotted Screen (9-19' bgs)
15 / 0	4	15-20	60"	0.0 0.0 0.0 0.0 0.0			Gray Silty CLAY, moist to wet. Bronze Sandy Silty CLAY, wet.	2" Sch. 40 PVC 0.010" Slotted Screen (9-19' bgs); #1 Filter Sand (7-20' bgs)
20 / -5							End of boring at 20' bgs.	
25 / -10								
-15								

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Remarks: NAVD88 = North American Vertical Datum of 1988; ags = above ground surface; bgs = below ground surface; HSA = hollow-stem auger; PID = photoionization detector; NA = Not Applicable/Available; Coordinate System = NAD83 Penn South Zone US Foot. Macrocore inner diameter = 1".

Analytical samples collected at 5-7' and 10-12' bgs.

Date Start/Finish: 9/25/2019	**Northing:** 252689.061'	**Well/Boring ID:** **MW-109**	
Drilling Company: Advanced Drilling, Inc.	**Easting:** 2720267.001'	**Client:** National Grid	
Driller's Name: Craig Jablonksi	**Top of Inner Casing Elevation:** 13.185' NAVD88	**Location:** Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA	
Drilling Method: Geoprobe/HSA	**Surface Elevation:** 10.878' NAVD88		
Sampling Method: 5' Macrocore Liner	**Borehole Depth:** 19' bgs		
Rig Type: Track-mounted Geoprobe	**Descriptions By:** Chris Ortolano		

Depth (feet bgs) / Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0								4" Diameter Stick Up Protector; Locking J-Plug; 3' stickup
0 / 10	1	0-5	36"	1.8 2.1 0.9 NA NA			Brown Sandy SILT, some fine to coarse Gravel, dry. Black at 1.5 bgs.	Grout (0-3' bgs); 2" Sch. 40 PVC Riser (3' ags-9' bgs)
5 / 5	2	5-10	36"	0.1 24.1 11.0 NA NA			Black Sandy Clayey SILT, some fine to coarse Gravel, moist. Brown Sandy SILT, moist. Wood at 8' bgs.	Bentonite Seal (3-6' bgs); #00 Choker Sand (6-7' bgs)
10 / 0	3	10-15	48"	0.0 0.0 0.0 0.0 NA			Gray Silty SAND, trace fine Gravel, wet. Gray Silty CLAY, wet.	#1 Filter Sand (7-19' bgs); 2" Sch. 40 PVC 0.010" Slotted Screen (9-14' bgs)
15 / -5	4	15-19	48"	0.0 0.0 0.0 NA				#1 Filter Sand (7-19' bgs)
20 / -10							End of boring at 19' bgs.	
25 / -15								

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Remarks: NAVD88 = North American Vertical Datum of 1988; ags = above ground surface; bgs = below ground surface; HSA = hollow-stem auger; PID = photoionization detector; NA = Not Applicable/Available; Coordinate System = NAD83 Penn South Zone US Foot. Macrocore inner diameter = 1".

Date Start/Finish: 9/25/2019	**Northing:** 252610.933'	**Well/Boring ID:** **MW-110**	
Drilling Company: Advanced Drilling, Inc.	**Easting:** 2720324.165'	**Client:** National Grid	
Driller's Name: Craig Jablonksi	**Top of Inner Casing Elevation:** 10.864' NAVD88	**Location:** Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA	
Drilling Method: Geoprobe/HSA	**Surface Elevation:** 8.38' NAVD88		
Sampling Method: 5' Macrocore Liner	**Borehole Depth:** 22' bgs		
Rig Type: Track-mounted Geoprobe	**Descriptions By:** Chris Ortolano		

Depth (feet bgs) / Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0 / 10								4" Diameter Stick Up Protector; Locking J-Plug; 3' stickup
0 / 0	1	0-5	36"	38.1			Brown Sandy SILT, some fine to coarse Gravel, moist.	Grout (0-2' bgs); 2" Sch. 40 PVC Riser (3' ags-4' bgs); Bentonite Seal (2-2.5' bgs); #00 Choker Sand (2-2.5' bgs)
				29.7			Black Sandy SILT, some fine to coarse Gravel, trace Clay.	
				24.3			Slight petroleum-like odor from 0-3' bgs.	
5 / 5				NA				
				NA			Wet 5 bgs.	
	2	5-10	36"	0.0				
				0.0				
				0.0			Black Sandy GRAVEL, wet.	#1 Filter Sand (3-14' bgs)
10 / 0				NA				
				NA				
	3	10-15	20.4"	0.0				
				0.0				
				NA				2" Sch. 40 PVC 0.010" Slotted Screen (4-14' bgs)
15 / -5				NA				
				NA				
	4	15-20	36"	0.0				Backfilled with native soil (14-22' bgs)
				0.0			Gray Silty CLAY, wet.	
				0.0				
20 / -10				NA			Brown Sandy Gravel, some coarse Gravel, wet.	Backfilled with native soil (14-22' bgs)
				NA				
	5	20-22	24"	0.0				
				0.0				
25 / -15							End of boring at 22' bgs.	
30 / -20								

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Remarks: NAVD88 = North American Vertical Datum of 1988; ags = above ground surface; bgs = below ground surface; HSA = hollow-stem auger; PID = photoionization detector; NA = Not Applicable/Available; Coordinate System = NAD83 Penn South Zone US Foot. Macrocore inner diameter = 1".

Date Start/Finish: 9/23/2019	**Northing:** 251899.935'	**Well/Boring ID:** **MW-111**	
Drilling Company: Advanced Drilling, Inc.	**Easting:** 2719793.692'	**Client:** National Grid	
Driller's Name: Craig Jablonksi	**Top of Inner Casing Elevation:** 19.323' NAVD88	**Location:** Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA	
Drilling Method: Geoprobe/HSA	**Surface Elevation:** 16.709' NAVD88		
Sampling Method: 5' Macrocore Liner	**Borehole Depth:** 22' bgs		
Rig Type: Track-mounted Geoprobe	**Descriptions By:** Chris Ortolano		

Depth (feet bgs) / Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0								4" Diameter Stick Up Protector; Locking J-Plug; 3' stickup
15	1	0-5	36"	0.4 9.9 5.7 NA NA			Brown gray Sandy SILT, some fine to coarse Gravel and Brick, trace Coal, dry.	Grout (0-3' bgs); 2" Sch. 40 PVC Riser (3' ags-9' bgs); Bentonite Seal (3-6' bgs)
5				2.8			Black Sandy SILT, some fine to coarse Gravel and Brick, moist.	
10	2	5-10	36"	1.6 1.1 NA NA			CONCRETE and ROCK Black Clayey and Sandy SILT, some fine to coarse Gravel, moist.	#00 Choker Sand (6-7' bgs)
10	3	10-15	48'	1.9 83.7 183.8 19.3 NA			Black Clayey and Sandy SILT, some fine to coarse Gravel, moist. Sheen at 12.2' bgs. Naphtha-like odor at 12.2-12.4' bgs. Gray Silty and Sandy CLAY, moist.	2" Sch. 40 PVC 0.010" Slotted Screen (9-19' bgs); #1 Filter Sand (7-20' bgs)
15 0	4	15-20	48"	0.0 5.8 5.9 2.9 3.1			Wet at 15.8' bgs.	2" Sch. 40 PVC 0.010" Slotted Screen (9-19' bgs); 2" Sch. 40 PVC Sump (19-20' bgs)
20 -5	5	20-22	24"	0.0 0.0				Backfilled with native soil (20-22' bgs)
25 -10							End of boring at 22' bgs.	

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Remarks: NAVD88 = North American Vertical Datum of 1988; ags = above ground surface; bgs = below ground surface; HSA = hollow-stem auger; PID = photoionization detector; NA = Not Applicable/Available; Coordinate System = NAD83 Penn South Zone US Foot. Macrocore inner diameter = 1".

Date Start/Finish: 9/24/2019	**Northing:** 251769.618'	**Well/Boring ID:** **MW-112**	
Drilling Company: Advanced Drilling, Inc.	**Easting:** 2719952.29'	**Client:** National Grid	
Driller's Name: Craig Jablonksi	**Top of Inner Casing Elevation:** 12.078' NAVD88	**Location:** Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA	
Drilling Method: Geoprobe/HSA	**Surface Elevation:** 9.484' NAVD88		
Sampling Method: 5' Macrocore Liner	**Borehole Depth:** 22' bgs		
Rig Type: Track-mounted Geoprobe	**Descriptions By:** Chris Ortolano		

Depth (feet bgs) / Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0 / 10								4" Diameter Stick Up Protector; Locking J-Plug; 3' stickup
0	1	0-5	36"	0.0 0.0 1.5 NA NA			Brown Sandy SILT, some fine to coarse Gravel, moist. Black and Gray Silty SAND, some fine to coarse Gravel, moist. Black and Gray Sandy Silty CLAY, moist.	Grout (0-2' bgs); 2" Sch. 40 PVC Riser (3' ags-4' bgs); Bentonite Seal (2-3' bgs); #00 Choker Sand (3-3.5' bgs)
5 / 5							Wet at 5 bgs.	
5 / 0	2	5-10	48"	0.0 0.0 0.0 0.0 NA			Gray Silty SAND, wet.	#1 Filter Sand (3-14' bgs)
10	3	10-15	60"	0.0 0.0 0.0 0.0 0.0			Gray Silty CLAY, wet.	2" Sch. 40 PVC 0.010" Slotted Screen (4-14' bgs); Backfilled with native soil (14-22' bgs)
15 / -5	4	15-20	22.8"	0.0 0.0 NA NA NA			Brown Silty SAND, some fine to coarse Gravel, wet.	Backfilled with native soil (14-22' bgs)
20 / -10	5	20-22	24"	0.0 0.0				
25 / -15							End of boring at 22' bgs.	
-20								

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Date Start/Finish: 9/23/2019	**Northing:** 251714.618'	**Well/Boring ID:** **MW-113**	
Drilling Company: Advanced Drilling, Inc.	**Easting:** 2719797.938'	**Client:** National Grid	
Driller's Name: Craig Jablonksi	**Top of Inner Casing Elevation:** 18.414' NAVD88	**Location:** Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA	
Drilling Method: Geoprobe/HSA	**Surface Elevation:** 16.125' NAVD88		
Sampling Method: 5' Macrocore Liner	**Borehole Depth:** 22' bgs		
Rig Type: Track-mounted Geoprobe	**Descriptions By:** Chris Ortolano		

Depth (feet bgs) / Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0 / 15	1	0-5	43.2"	0.0 0.0 0.6 NA NA			Brown Sandy SILT, some fine to coarse Gravel, trace Brick, dry. Gray at 2' bgs.	4" Diameter Stick Up Protector Locking J-Plug 3' stickup Grout (0-3' bgs) 2" Sch. 40 PVC Riser (3' ags-7' bgs) Bentonite Seal (3-4' bgs) #00 Choker Sand (4-5' bgs)
5 / 10	2	5-10	48"	0.0 0.0 0.0 0.0 NA			Gray Clayey and Sandy SILT, some fine to coarse Gravel and Brick, moist. Black Silty and Sandy GRAVEL, wet.	
10 / 5	3	10-15	45.6"	0.0 5.7 7.1 NA NA			Gray and black Silty CLAY, trace fine Gravel, moist to wet.	2" Sch. 40 PVC 0.010" Slotted Screen (7-17' bgs)
15 / 0	4	15-20	60"	0.0 0.0 0.0 0.0 0.0			Gray and black Sandy CLAY, trace fine Gravel, wet. Gray and black Silty CLAY, moist.	2" Sch. 40 PVC 0.010" Slotted Screen (7-17' bgs) #1 Filter Sand (4-14' bgs) Backfilled with native soil (14-22' bgs)
20 / -5	5	20-22	24"	0.0 0.0				
25 / -10							End of boring at 22' bgs.	

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Date Start/Finish: 04/05/2019	**Northing:** 253971.603'	**Well/Boring ID:** **PCSB-01R**	
Drilling Company: Advanced Drilling	**Easting:** 2719455.73'	**Client:** National Grid	
Driller's Name: Craig Jablonski	**Surface Elevation:** 18.2' NAVD88	**Location:** Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA	
Drilling Method: Direct Push	**Borehole Depth:** 20' bgs		
Sampling Method: Macrocore	**Descriptions By:** Evan Green		
Rig Type: Track-Mounted Geoprobe			

Depth (feet bgs) / Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0 / 20							Boring hand cleared to 5' bgs.	
0 / 15		0-5'	NA	NA			No recovery.	
5 / 10	1	5-10'	44"	0.4 0.2 0.1 0.0 0.0			Black COAL FRAGMENTS, some Coal Cinder, some coarse Sand, loose, moist. Gray fine to medium SAND, little subangular fine Gravel, trace Mica, medium dense, moist. Brown fine SAND, trace coarse Sand, dense, moist to wet. Lense of Coal Fragments and Coal Cinder at 8' bgs.	Borehole backfilled with bentonite chips.
10 / 5	2	10-15'	33"	0.5 0.2 0.4 10.1 111.8			Reddish orange fine to medium SAND, trace subrounded fine Gravel, medium dense, moist to wet. Tannish gray very fine to fine SAND, little Silt, medium dense to dense, wet. Brown fine to medium SAND, medium dense, wet. Black fine to medium SAND, medium dense, wet, petroleum-like odor, heavy staining.	
15 / 0	3	15-20'	48"	440.8 >15,000 23.1 6.6 5.9			Light gray SILT and CLAY, little very fine Sand, medium plasticity, dense, moist to wet. Light orange coarse SAND, medium dense, wet.	
20 / -5							End of borehole at 20' bgs.	

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Analytical soil samples collected: PCSB-01R (14-16), PCSB-01R (18-20).

Date Start/Finish: 04/19/2019	**Northing:** 252024.517'	**Well/Boring ID:** **PCSB-26R**	
Drilling Company: Advanced Drilling	**Easting:** 2720514.311'	**Client:** National Grid	
Driller's Name: Craig Jablonski and Ron West	**Surface Elevation:** 6.4' NAVD88	**Location:** Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA	
Drilling Method: Direct Push	**Borehole Depth:** 10' bgs		
Sampling Method: Macrocore	**Descriptions By:** Grayson Basalyga		
Rig Type: Track-Mounted Geoprobe			

Depth (feet bgs) / Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0							Boring hand cleared to 5' bgs.	
0 to 5	1	0-5'	46"	0.0 0.0 0.0 0.0 0.0	X		Black fine to coarse SAND and SILT, loose, moist. Black fine to coarse SAND and SILT, some subangular fine Gravel, trace Woody Debris, trace Brick Fragments, medium dense, wet. Grayish tan fine to medium SAND and SILT, little subangular fine to coarse Gravel, medium dense, wet.	Borehole backfilled with bentonite chips.
5 to 10	2	5-10'	38"	0.0 0.0 0.0 0.0 0.0			Dark gray Peaty SILT and CLAY, medium dense, moist, medium plasticity.	
10							End of borehole at 10' bgs.	

Remarks: NAVD1988 = North American Vertical Datum of 1988; bgs = below ground surface; ' = feet; " = inch; NA = not applicable/available. Coordinate system = NAD83 Penn South Zone US Foot. Vacuum excavator used to soft dig to 5' bgs. Soil boring advanced adjacent to soft dig to record lithology in first five feet. Macrocore length = 5'. Macrocore inner diameter = 1".

Analytical soil sample collected: PCSB-26R (0.5 - 2.0).

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Date Start/Finish: 04/19/2019	**Northing:** 251555.7360'	**Well/Boring ID:** **PCSB-30R**	
Drilling Company: Advanced Drilling	**Easting:** 2720384.850'	**Client:** National Grid	
Driller's Name: Craig Jablonski and Ron West	**Surface Elevation:** 9.7' NAVD88	**Location:** Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA	
Drilling Method: Direct Push	**Borehole Depth:** 15' bgs		
Sampling Method: Macrocore	**Descriptions By:** Grayson Basalyga		
Rig Type: Track-Mounted Geoprobe			

Depth (feet bgs) / Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0 / 10							Boring hand cleared to 5' bgs.	
0 / 10	1	0-5'	43"	0.0 0.0 0.0 0.0 0.0	X		Dark gray fine to medium SAND, some Silt, little subangular fine Gravel, medium dense, moist. Gray, white in part fine to coarse SAND and SILT, some subangular fine Gravel, dense, moist. Dark gray fine SAND and SILT, some subangular fine to coarse Gravel, medium dense, moist.	
5 / 5	2	5-10'	33"	0.0 0.0 0.0 0.0 0.0			Dark gray fine to coarse SAND and SILT, medium dense, wet. Brown, gray in part medium to coarse SAND, some subangular fine to coarse Gravel, medium dense, moist to wet. Brown, gray in part fine to medium SAND, medium dense, moist to wet.	Borehole backfilled with bentonite chips.
10 / 0	3	10-15'	44"	0.0 0.0 0.0 0.0 0.0			Gray Peaty SILT and CLAY, low plasticity, stiff, moist.	
15 / -5							End of borehole at 15' bgs.	
20 / -10								
25 / -15								

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Analytical soil samples collected: PCSB-30R (0.5-2), PCSB-30R (0.5-2) MS, PCSB-30R (0.5-2) MSD.

Date Start/Finish: 04/22/2019	**Northing:** 252342.542'	**Well/Boring ID:** **PCSB-41R**	
Drilling Company: Advanced Drilling	**Easting:** 2720479.812'	**Client:** National Grid	
Driller's Name: Craig Jablonski and Ron West	**Surface Elevation:** 6.6' NAVD88	**Location:** Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA	
Drilling Method: Direct Push	**Borehole Depth:** 15' bgs		
Sampling Method: Macrocore	**Descriptions By:** Grayson Basalyga		
Rig Type: Track-Mounted Geoprobe			

Depth (feet bgs) / Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0							Boring hand cleared to 5' bgs.	
0	1	0-5'	44"	244.7			Dark brown fine to coarse SAND and SILT, loose to medium dense, moist.	
5				349.2			Dark brown fine to coarse SAND and SILT, some subangular fine to coarse Gravel, loose, moist	
				176			Blue to rainbow sheen over 0.5-2' bgs.	
				12.4			Wet at 3' bgs.	
5				10.4				
0	2	5-10'	49"	3.2			Brown, gray in part fine SAND, SILT, and CLAY, low plasticity, medium stiff, moist to wet.	Borehole backfilled with bentonite chips.
				0.0				
				0.3			Dark gray SILT and CLAY, medium plasticity, stiff, moist.	
				0.0				
10				0.0				
-5	3	10-15'	34"	0.0				
				0.0				
				0.0			Gray Peaty SILT and CLAY, medium plasticity, medium stiff, moist.	
15				0.0				
-10							End of borehole at 15' bgs.	
20								
-15								

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Remarks: NAVD88 = North American Vertical Datum of 1988; bgs = below ground surface; ' = feet; " = inch; NA = not applicable/available. Coordinate system = NAD83 Penn South Zone US Foot. Vacuum excavator used to soft dig to 5' bgs. Soil boring advanced adjacent to soft dig to record lithology in first five feet. Macrocore length = 5'. Macrocore inner diameter = 1".

Analytical soil samples collected: PCSB-41R (0.5-2.0), PCSB-41R (9-11).

Date Start/Finish: 04/19/2019	**Northing:** 251904.995'	**Well/Boring ID:** **PCSB-49R**	
Drilling Company: Advanced Drilling	**Easting:** 2720226.123'	**Client:** National Grid	
Driller's Name: Craig Jablonski and Ron West	**Surface Elevation:** 8.2' NAVD 88	**Location:** Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA	
Drilling Method: Direct Push	**Borehole Depth:** 15' bgs		
Sampling Method: Macrocore	**Descriptions By:** Grayson Basalyga		
Rig Type: Track-Mounted Geoprobe			

Depth (feet bgs) / Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0 / 10							Boring hand cleared to 5' bgs.	
0 / 10				0.0			Black fine to coarse SAND and SILT, loose, moist.	
0 / 10				0.0			Brown gray fine to coarse SAND and SILT, some subangular fine to coarse Gravel, trace Coal Fragments, loose to medium dense, moist.	
0 / 10	1	0-5'	23"	0.0				
5 / 5				0.0				
5 / 5				0.0				
5 / 5				0.0				
5 / 5				0.0			Gray medium to coarse SAND and subrounded fine GRAVEL, trace low density Silty Clay, medium dense, moist.	
5 / 5				0.0				
5 / 5	2	5-10'	28"	0.0				
10 / 0				0.0				
10 / 0				0.0				
10 / 0				0.0			Wet at 10' bgs.	
10 / 0				0.0				
10 / 0				0.0				
10 / 0	3	10-15'	56"	0.0			Gray fine Silty SAND and CLAY, low plasticity, medium dense, moist to wet.	
15 / -5				0.0			Dark gray Peaty SILT and CLAY, low plasticity, medium stiff, moist.	
15 / -5				0.0				
15 / -5				0.0				
15 / -5				0.0			End of borehole at 15' bgs.	
20 / -10								
20 / -10								
20 / -15								

Borehole backfilled with bentonite chips.

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Analytical soil samples collected: PCSB-49R (3-5), PCSB-49R (10-12).

Date Start/Finish: 04/05/2019	**Northing:** 253846.113'	**Well/Boring ID:** **PCTP-01R**	
Drilling Company: Advanced Drilling	**Easting:** 2719304.516'	**Client:** National Grid	
Driller's Name: Craig Jablonski	**Surface Elevation:** 19.4' NAVD88	**Location:** Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA	
Drilling Method: Direct Push	**Borehole Depth:** 20' bgs		
Sampling Method: Macrocore	**Descriptions By:** Evan Green		
Rig Type: Track-Mounted Geoprobe			

Depth (feet bgs) / Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0 / 20							Boring hand cleared to 5' bgs.	
5 / 15		0-5'	NA	NA				
10 / 10	1	5-10'	39"	0.0 0.0 0.0 0.0 0.0	X		Black COAL CINDER and COAL FRAGMENTS, little Concrete Fragments, trace Woody Debris (possible purifier waste), trace medium Sand, loose, moist.	Borehole backfilled with bentonite chips.
							Light brown very fine to fine SAND, little angular fine Gravel, trace Brick and Concrete Fragments, loose, moist to wet.	
15 / 5	2	10-15'	50"	0.0 0.0 0.0 0.0 0.2			Light brown medium to coarse SAND, little fine Sand, medium dense, wet.	
							Light brown fine to medium SAND, trace coarse Sand, loose to medium dense, moist to wet.	
							Dark gray coarse SAND, little subangular fine Gravel, loose, moist to wet.	
20 / 0	3	15-20'	57"	0.0 0.0 0.0 0.0 0.0			Light gray CLAY, little Silt, little very fine Sand, medium to high plasticity, medium stiff, moist.	
							Brown medium SAND, little coarse Sand, medium dense, wet.	
							Dark gray fine to medium SAND, little subangular fine Gravel, medium dense, wet.	
25 / -5							End of borehole at 20' bgs.	
-10								

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Remarks: NAVD88 = North American Vertical Datum of 1988; bgs = below ground surface; ' = feet; " = inch; NA = not applicable/available. Coordinate system = NAD83 Penn South Zone US Foot. Vacuum Excavator used to soft dig to 5' bgs. Macrocore length = 5'. Macrocore inner diameter = 1".

Analytical soil sample collected: PCTP-01R (5-7)

Soil boring was hand-cleared from 0-5' bgs.

Date Start/Finish: 04/05/2019	**Northing:** 253544.741'	**Well/Boring ID:** **PCTP-02R**	
Drilling Company: Advanced Drilling	**Easting:** 2719225.224'	**Client:** National Grid	
Driller's Name: Craig Jablonski	**Surface Elevation:** 13.6' NAVD88	**Location:** Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA	
Drilling Method: Direct Push	**Borehole Depth:** 20' bgs		
Sampling Method: Macrocore	**Descriptions By:** Evan Green		
Rig Type: Track-Mounted Geoprobe			

Depth (feet bgs) / Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0 / 15							Boring hand cleared to 5' bgs.	
5 / 10		0-5'	NA	NA				
5 / 10				0.0			Light tannish gray very fine to fine SAND, little Silt, dense to very dense, moist.	
5 / 10				0.2			Dark brown medium SAND, trace coarse Sand, loose to medium dense, moist.	
5 / 10	1	5-10'	36"	0.0			Subangular fine Gravel lense at 8' bgs.	Borehole backfilled with bentonite chips.
5 / 10				0.0				
5 / 10				0.0				
10 / 5				0.8			Light gray fine SAND, loose, wet.	
10 / 5				0.1			Reddish orange fine SAND, trace coarse Sand, loose, wet.	
10 / 5	2	10-15'	45"	0.0				
10 / 5				0.0			Dark brown coarse SAND, some medium Sand, little subangular fine Gravel, loose to medium dense, moist to wet.	
10 / 5				0.2			Light reddish gray SILT and CLAY, little very fine Sand, medium plasticity, soft to medium stiff, moist.	
15 / 0				0.0				
15 / 0				0.0				
15 / 0	3	15-20'	55"	0.0			Orangish gray fine SAND, medium dense, moist to wet.	
15 / 0				0.0				
15 / 0				0.0			Dark brown coarse SAND, little subrounded fine Gravel, little medium Sand, loose to medium dense, wet.	
20 / -5							End of borehole at 20' bgs.	
-10 / 25								
-15 / 30								

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Remarks: NAVD88 = North American Vertical Datum of 1988; bgs = below ground surface; ' = feet; " = inch; NA = not applicable/available. Coordinate system = NAD83 Penn South Zone US Foot. Vacuum Excavator used to soft dig to 5' bgs. Macrocore length = 5'. Macrocore inner diameter = 1".

Analytical soil samples collected: PCTP-02R (4-6).

Soil boring was hand-cleared from 0-5' bgs.

Date Start/Finish: 9/20/2019	**Northing:** 252570.869'	**Well/Boring ID:** **PCTP-07R**	
Drilling Company: Advanced Drilling, Inc.	**Easting:** 2720182.98'	**Client:** National Grid	
Driller's Name: Craig Jablonksi	**Surface Elevation:** 15.425' NAVD88	**Location:** Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA	
Drilling Method: Geoprobe	**Borehole Depth:** 20' bgs		
Sampling Method: 5' Macrocore Liner	**Descriptions By:** Chris Ortolano		
Rig Type: Track-mounted Geoprobe			

Depth (feet bgs) / Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
							Boring hand cleared to 5' bgs.	
0 / 15	NA	0-5	51.6"	0.0 0.0 0.0 0.0 NA			Brown Sandy SILT, some coarse Gravel, trace Brick, dry.	
5 / 10	1	5-10	52.8"	2.9 3.7 4.5 12.9 11.1			Gray Sandy SILT, some fine to coarse, dry. Black, moist. Black Silty SAND, moist.	Backfilled to grade with bentonite/grout slurry.
10 / 5	2	10-15	48"	39.5 20.1 23.7 16.6 0.0			Black Silty GRAVEL, moist. Gray and black Silty CLAY.	
15 / 0	3	15-20	60"	0.0 0.0 0.0 0.0 0.0			Gray and black Silty CLAY.	
20 / -5							End of boring at 20' bgs.	
25 / -10								

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Remarks: NAVD88 = North American Vertical Datum of 1988; bgs = below ground surface; ' = feet; " = inch; NA = not applicable/available. Coordinate system = NAD83 Penn South Zone US Foot. Vacuum Excavator used to soft dig to 5' bgs. Macrocore length = 5'. Macrocore inner diameter = 1".

Analytical sample collected at 10-12' bgs.

Soil boring was hand-cleared from 0-5' bgs. Descriptions for 0-5' bgs interval are based on soil cuttings.

Date Start/Finish: 04/09/2019	**Northing:** 253248.398'	**Well/Boring ID:** **PCTP-08R**	
Drilling Company: Advanced Drilling	**Easting:** 2719480.631'	**Client:** National Grid	
Driller's Name: Craig Jablonski and Ron West	**Surface Elevation:** 12.3' NAVD88	**Location:** Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA	
Drilling Method: Direct Push	**Borehole Depth:** 15' bgs		
Sampling Method: Macrocore	**Descriptions By:** Evan Green		
Rig Type: Track-Mounted Geoprobe			

Depth (feet bgs) / Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0 / 15							Boring hand cleared to 5' bgs.	
0 / 10		0-5'	NA	NA				
5 / 5	1	5-10'	39"	0.0 0.0 0.0 0.0 0.0			Light brown fine SAND, some angular fine Gravel, little Brick Fragments, loose, moist. Black COAL CINDER, some medium to coarse Sand, loose to medium dense, moist. Light brown fine SAND, little Silt, trace angular fine Gravel, trace Brick Fragments, medium dense, moist to wet.	Borehole backfilled with bentonite chips.
10 / 0	2	10-15'	38"	0.0 0.0 0.0 0.0 0.0			Light gray subangular fine GRAVEL, some coarse Sand, loose, wet, very light black staining. Dark gray SILT and CLAY, low plasticity, little very fine Sand, medium stiff, moist.	
15 / -5							End of borehole at 15' bgs.	
20 / -10								
25 / -15								

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Analytical soil sample collected: PCTP-08R (10-12).

Soil boring was hand-cleared from 0-5' bgs.

Date Start/Finish: 04/09/2019	**Northing:** 252937.011'	**Well/Boring ID:** **PCTP-10R**	
Drilling Company: Advanced Drilling	**Easting:** 2719331.859'	**Client:** National Grid	
Driller's Name: Craig Jablonski and Ron West	**Surface Elevation:** 11.7' NAVD88	**Location:** Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA	
Drilling Method: Direct Push	**Borehole Depth:** 20' bgs		
Sampling Method: Macrocore	**Descriptions By:** Evan Green		
Rig Type: Track-Mounted Geoprobe			

Depth (feet bgs) / Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0							Boring hand cleared to 5' bgs.	
10	1	0-5'	NA	NA				
5	2	5-10'	36"	0.7 0.2 0.2 0.1 0.1			Dark gray fine to medium SAND, little subrounded fine Gravel, medium dense, wet, very light black staining. Light brown fine SAND, trace subrounded fine Gravel, loose to medium dense, wet.	Borehole backfilled with bentonite chips.
0	3	10-15'	30"	0.2 0.2 0.0 0.0 0.0			Dark gray fine to medium SAND, trace coarse Sand, medium dense, wet. Light staining from 11-16' bgs.	
-5	4	15'-20'	50"	0.2 0.0 1.1 0.0 0.0			Brownish gray SILT and CLAY, low plasticity, soft, moist to wet. Dark gray coarse SAND, little fine Sand, little Silt, medium dense, wet. Brown CLAY, little Silt, medium plasticity, medium dense to dense, moist.	
-10							End of borehole at 20' bgs.	

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Analytical soil samples collected: PCTP-10R (7-9).

Soil boring was hand-cleared from 0-5' bgs.

Date Start/Finish: 04/12/2019	**Northing:** 252733.408'	**Well/Boring ID:** **PCTP-12R**	
Drilling Company: Advanced Drilling	**Easting:** 2719180.845'	**Client:** National Grid	
Driller's Name: Craig Jablonski and Ron West	**Surface Elevation:** 10.5' NAVD88	**Location:** Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA	
Drilling Method: Direct Push	**Borehole Depth:** 15' bgs		
Sampling Method: Macrocore	**Descriptions By:** Evan Green		
Rig Type: Track-Mounted Geoprobe			

Depth (feet bgs) / Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0							Boring hand cleared to 5' bgs.	
0 / 10				0.0			Brown SILT, little fine Sand, little Woody Debris, soft, moist.	
				0.0			Dark brown, fine SAND, little Coal Cinder, little subrounded fine Gravel, medium dense, wet.	
	1	0-5'	36"	0.0				
				0.0				
5 / 5				0.0			Brown medium SAND, little sub angular fine Gravel, loose, wet.	
				0.0				
	2	5-10'	34"	0.0			Dark gray fine SAND, little Silt, soft, wet.	Borehole back filled with bentonite chips.
				0.0				
10 / 0				0.0			Dark gray fine to medium SAND, little coarse Sand, little Silt, medium dense, wet.	
				0.0			Dark gray SILT and CLAY, low plasticity, little fine Sand, medium stiff, moist.	
	3	10-15'	36"	0.0				
15 / -5				0.0			End of borehole at 15' bgs.	
20 / -10								
25 / -15								

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Analytical soil samples collected: S-112 (2-4), S-112 (9-11).

Soil boring was hand-cleared from 0-5' bgs. Descriptions for 0-5' bgs interval are based on soil cuttings.

Date Start/Finish: 04/15/2019	**Northing:** 252632.811'	**Well/Boring ID:** **PCTP-17R**	
Drilling Company: Advanced Drilling	**Easting:** 2719340.244'	**Client:** National Grid	
Driller's Name: Craig Jablonski and Ron West	**Surface Elevation:** 15.5' NAVD88	**Location:** Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA	
Drilling Method: Direct Push	**Borehole Depth:** 25' bgs		
Sampling Method: Macrocore	**Descriptions By:** Evan Green		
Rig Type: Track-Mounted Geoprobe			

Depth (feet bgs) / Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0 / 15							Boring hand cleared to 5' bgs.	
	1	0-5'	29"	0.0 0.0 0.0 0.0 0.0			Brown very fine to fine SAND, some Silt, trace Brick fragments, trace Coal Ash, soft, moist.	
5 / 10				37.4			Dark gray fine SAND, little sub angular fine Gravel, medium dense, moist to wet, strong Coal tar-like odor.	
	2	5-10'	42"	2.0 0.7 0.0			Brown fine to medium SAND, little coarse Sand, trace Coal Cinder, medium dense, wet. Black, very dense, Coal tar-like material from 5.25 - 5.5' bgs	Borehole backfilled with bentonite chips.
				0.3			Black COAL CINDER, little fine Sand, medium dense, wet.	
10 / 5				0.7			Dark gray SILT, some Coal Cinder, little Clay, low plasticity, soft, wet.	
	3	10-15'	48"	3.2 3.7 8.7 22.1			Dark gray SILT and CLAY, some fine Sand, low plasticity, little Woody Debris, soft, moist, faint petroleum-like odor.	
15 / 0				22.3			Dark gray SILT and CLAY, little fine Sand, low plasticity, soft, moist, moderately strong Coal tar-like odor.	
	4	15-20'	48"	72.9 21.3 26.4 83.4			Liquid coal tar-like material in void spaces within clay at 17' bgs.	
20 / -5				0.7			Dark gray SILT and CLAY, little fine Sand, low plasticity, soft, moist.	
	5	20-25'	48"	10.5 6.8 25.4				
25 / -10				1.0			Brown very SILT and CLAY, some fine Sand, low plasticity, medium stiff, moist to dry.	
							End of borehole at 25' bgs.	

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Analytical soil samples collected: PCTP-17R (5-6), PCTP-17R (7-9), PCTP-17R (9-11), PCTP-17R (18-20), PCTP-17R (24-25).

Soil boring was hand-cleared from 0-5' bgs. Descriptions for 0-5' bgs interval are based on soil cuttings.

Date Start/Finish: 04/11/2019	**Northing:** 252748.917'	**Well/Boring ID:** **PCTP-28R**	
Drilling Company: Advanced Drilling	**Easting:** 2719804.489'	**Client:** National Grid	
Driller's Name: Craig Jablonski and Ron West	**Surface Elevation:** 16.9' NAVD88	**Location:** Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA	
Drilling Method: Direct Push	**Borehole Depth:** 20' bgs		
Sampling Method: Macrocore	**Descriptions By:** Evan Green		
Rig Type: Track-Mounted Geoprobe			

Depth (feet bgs) / Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0 / 15							Boring hand cleared to 5' bgs.	
0 / 15	1	0-5'	42"	0.1 0.2 0.1 0.1 0.1			Brown SILT, some fine Sand, little Concrete Fragments, trace Brick Fragments, loose to medium dense, moist.	
5 / 10	2	5-10'	46"	0.1 0.1 0.0 0.1 0.1	X		Brown SILT, little fine Sand, trace Brick Fragments, medium dense, moist, trace Coal Cinder, medium dense, moist. Black COAL CINDER, little Coal Ash, little Woody Debris (possible purifier waste), trace Brick Fragments, loose, moist. BRICK FRAGMENTS, little Coal Cinder, little coarse Sand, loose, moist.	Borehole backfilled with bentonite chips.
10 / 5	3	10-15'	48"	2.6 75.8 33.2 19.7 3.0	X		Black COAL CINDER, little coarse Sand, loose, wet. Black COAL CINDER, some Coal Ash, little coarse Sand, loose, wet, light rainbow sheen over entire interval, light petroleum-like odor. Dark gray SILT and CLAY, low plasticity, soft, moist. Gray SILT, some Coal Cinder, little Coal Fragments, medium dense, moist.	
15 / 0	4	15-20'	50"	4.3 2.6 1.5 0.0 0.0			Black COAL CINDER, some Coal Ash, little coarse Sand, loose, wet, no odor. Very light rainbow sheen over 15-16' bgs. Dark gray SILT and CLAY, some fine Sand, low plasticity, soft, moist.	
20 / -5							End of borehole at 20' bgs.	
25 / -10								

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Analytical soil samples collected: PCTP-28R (6-8), PCTP-28R (11-12).

Soil boring was hand-cleared from 0-5' bgs. Descriptions for 0-5' bgs interval are based on soil cuttings.

Date Start/Finish: 04/09/2019	**Northing:** 252335.438'	**Well/Boring ID:** **PCTP-32R**	
Drilling Company: Advanced Drilling	**Easting:** 2719414.992'	**Client:** National Grid	
Driller's Name: Craig Jablonski and Ron West	**Surface Elevation:** 12.1' NAVD88	**Location:** Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA	
Drilling Method: Direct Push	**Borehole Depth:** 15' bgs		
Sampling Method: Macrocore	**Descriptions By:** Evan Green		
Rig Type: Track-Mounted Geoprobe			

Depth (feet bgs) / Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0 / 10							Boring hand cleared to 5' bgs.	
0 / 10	1	0-5'	36"	0.0 3.4 14.4 1.6 3.6			Light brown fine SAND, little coarse Sand, trace subangular fine Gravel, trace Brick Fragments, loose, dry to moist. Dark gray fine to medium SAND, some coarse Sand, trace subrounded fine Gravel, medium dense, wet, petroleum-like odor. Petroleum-like odor at 3' bgs. Light rainbow sheen and strong petroleum-like odor at 5.5' bgs.	
5 / 5	2	5-10'	55"	1.1 0.9 0.6 0.4 0.5			Dark gray very fine to fine SAND, little Silt, medium dense, wet, faint petroleum-like odor. Dark gray low to SILT and CLAY, little very fine Sand, medium plasticity, medium dense, moist to wet, faint petroleum-like odor.	Borehole backfilled with bentonite chips.
10 / 0	3	10-15'	55"	1.1 1.6 1.8 3.7 1.8			Light rainbow sheen at 10.5' bgs.	
15 / -5							End of borehole at 15' bgs.	
20 / -10								
25 / -15								

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Analytical soil samples collected: PCTP-32R (6-8).

Soil boring was hand-cleared from 0-5' bgs. Descriptions for 0-5' bgs interval are based on soil cuttings.

Date Start/Finish: 04/09/2019	**Northing:** 252251.584'	**Well/Boring ID:** **PCTP-47R**	
Drilling Company: Advanced Drilling	**Easting:** 2719972.351'	**Client:** National Grid	
Driller's Name: Craig Jablonski and Ron West	**Surface Elevation:** 16.8' NAVD88	**Location:** Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA	
Drilling Method: Direct Push	**Borehole Depth:** 15' bgs		
Sampling Method: Macrocore	**Descriptions By:** Evan Green		
Rig Type: Track-Mounted Geoprobe			

Depth (feet bgs) / Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0 / 15		0-5'	NA				Boring hand cleared to 5' bgs.	
5 / 10	1	5-10'	50"	0.0 0.3 0.0 0.0 0.0			Brown very fine SAND, little Silt, little Brick Fragments, trace Concrete Fragments, loose, moist. Dark gray medium to coarse SAND, trace sub angular fine Gravel, loose to medium dense, wet.	Borehole backfilled with bentonite chips.
10 / 5	2	10-15'	50"	0.1 0.5 0.7 0.0 0.0			Dark gray SILT and CLAY, little very fine Sand, low plasticity, soft to medium dense, wet.	
15 / 0							End of borehole at 15' bgs.	
20 / -5								
25 / -10								

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Analytical soil sample collected: PCTP-47R (5-7).

Soil boring was hand-cleared from 0-5' bgs.

Date Start/Finish: 04/15/2019 / 04/16/2019	**Northing:** 252309.924'	**Well/Boring ID:** **PCTP-49R**	
Drilling Company: Advanced Drilling	**Easting:** 2719106.314'	**Client:** National Grid	
Driller's Name: Craig Jablonski and Ron West	**Surface Elevation:** 12.0' NAVD88	**Location:** Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA	
Drilling Method: Direct Push	**Borehole Depth:** 15' bgs		
Sampling Method: Macrocore	**Descriptions By:** Evan Green		
Rig Type: Track-Mounted Geoprobe			

Depth (feet bgs) / Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
							Boring hand cleared to 5' bgs.	
0				0.0			Brown SILT, some coarse Sand, little Woody Debris, loose, moist.	
				0.7			Black COAL CINDER, some fine to medium Sand, loose to medium dense, moist to wet.	
10	1	0-5'	40"	0.1			Light brown fine SAND, little Silt, medium dense, moist to wet.	
				0.0				
				0.0				
5				0.0			Light brown medium SAND, little subangular fine Gravel, loose to medium dense, wet.	
				0.0				
5	2	5-10'	50"	0.0			Gray fine to medium SAND, trace coarse Sand, medium dense, wet.	Borehole backfilled with bentonite chips.
				0.0				
				0.0				
10				47.9			Dark gray SILT, little fine Sand, soft, wet, moderately strong petroleum-like odor, black staining.	
				1.8			Dark gray SILT and CLAY, little fine Sand, low plasticity, soft, moist, faint petroleum-like odor.	
0	3	10-15'	36"	3.2				
				1.5				
				0.0			Brownish gray SILT and CLAY, little fine Sand, low plasticity, medium stiff, moist to dry.	
15							End of borehole at 15' bgs.	
-5								
20								
-10								
25								
-15								

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Analytical soil samples collected: PCTP-49R (8-10), PCTP-49R (10-11).

Date Start/Finish: 04/18/2019	**Northing:** 251732.6260'	**Well/Boring ID:** **PCTP-51R**	
Drilling Company: Advanced Drilling	**Easting:** 2719602.7550'	**Client:** National Grid	
Driller's Name: Craig Jablonski and Ron West	**Surface Elevation:** 15.7' NAVD88	**Location:** Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA	
Drilling Method: Direct Push	**Borehole Depth:** 15' bgs		
Sampling Method: Macrocore	**Descriptions By:** Grayson Basalyga		
Rig Type: Track-Mounted Geoprobe			

Depth (feet bgs) / Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0							Boring hand cleared to 5' bgs.	
0 / 15	1	0-5'	31"	0.0 0.0 0.0 0.0 0.0			Brown fine to coarse SAND and SILT, loose, moist. BRICK, COAL, and CONCRETE FRAGMENTS, little Woody Debris, medium dense, moist.	
5 / 10	2	5-10'	51"	0.0 0.0 0.0 0.0 0.0				Borehole backfilled with bentonite chips.
10 / 5	3	10-15'	52"	0.0 0.0 0.0 0.0 0.0	X		Dark gray fine to medium SAND and SILT, some Clay, medium plasticity, medium dense, moist. Dark gray SILT and CLAY, high plasticity, medium stiff, moist. Dark gray SILT and CLAY, trace sub angular fine Gravel, trace fine Sand, medium plasticity, stiff, moist,	
15 / 0							End of borehole at 15' bgs.	
20 / -5								
25 / -10								

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Analytical soil sample collected: PCTP-51R (10-12).

Date Start/Finish: 04/10/2019	**Northing:** 253343.042'	**Well/Boring ID:** **PCTP-73R**	
Drilling Company: Advanced Drilling	**Easting:** 2719870.706'	**Client:** National Grid	
Driller's Name: Craig Jablonski and Ron West	**Surface Elevation:** 10.5' NAVD88	**Location:** Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA	
Drilling Method: Direct Push	**Borehole Depth:** 20' bgs		
Sampling Method: Macrocore	**Descriptions By:** Evan Green		
Rig Type: Track-Mounted Geoprobe			

Depth (feet bgs) / Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
							Boring hand cleared to 5' bgs.	
0 / 10				0.0			Brown SILT, little fine Sand, little Woody Debris, loose, moist.	
				0.0				
	1	0-5'	45"	0.0			CONCRETE and BRICK FRAGMENTS, little fine Sand, loose, moist.	
				0.0				
5 / 5				0.0			COAL FRAGMENTS and COAL CINDER, little Concrete Fragments, loose, moist to dry.	
				0.0			Dark gray subangular to angular fine GRAVEL, some coarse Sand, trace Coal Cinder, loose to medium dense, wet.	
	2	5-10'	29"	0.0				Borehole backfilled with bentonite chips.
				0.0				
10 / 0				0.0				
	3	10-15'	42"	0.0				
				0.0				
				0.0				
15 / -5				0.0			Dark gray SILT and CLAY, little very fine Sand, low plasticity, trace Woody Debris, dense, moist.	
	4	15-20'	42"	0.0				
				0.0				
				0.0				
20 / -10				0.0			End of borehole at 20' bgs.	
25 / -15								

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Analytical soil sample collected: PCTP-73R (0.0-0.5).

Soil boring was hand-cleared from 0-5' bgs. Descriptions for 0-5' bgs interval are based on soil cuttings.

Date Start/Finish: 04/11/2019	**Northing:** 252910.907'	**Well/Boring ID:** **PCTP-75R**	
Drilling Company: Advanced Drilling	**Easting:** 2720140.436'	**Client:** National Grid	
Driller's Name: Craig Jablonski and Ron West	**Surface Elevation:** 11.9' NAVD88	**Location:** Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA	
Drilling Method: Direct Push	**Borehole Depth:** 20' bgs		
Sampling Method: Macrocore	**Descriptions By:** Evan Green		
Rig Type: Track-Mounted Geoprobe			

Depth (feet bgs) / Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
							Boring hand cleared to 5' bgs.	
0 / 10	1	0-5'	36"	0.0 0.0 0.0 0.0 0.0			Brown SILT, little fine Sand, little Woody Debris, soft, moist. Gray SILT, little subrounded fine Gravel, little Brick Fragments, little Concrete Fragments, little fine Sand, soft to medium dense, moist.	
5 / 5	2	5-10'	42"	0.5 1.9 0.0 0.0 0.0			Brown SILT, some fine Sand, trace Brick Fragments, soft to medium dense, moist. Gray SILT, some fine Sand, little Clay, low plasticity, trace Brick Fragments, soft, moist. Woody Debris (possible purifer waste) from 6.5 -7' bgs. Dark gray COAL CINDER, some coarse Sand, little Coal Ash, trace Coal Clinker, loose, wet.	Borehole backfilled with bentonite chips.
10 / 0	3	10-15'	36"	0.5 0.2 0.0 0.0 0.0			Dark gray COAL CINDER and COAL ASH, little subangular fine Gravel, little coarse Sand, medium dense, wet, very faint petroleum-like odor. Light rainbow sheen from 10-11' bgs.	
15 / -5	4	15-20'	48"	0.0 0.0 0.0 0.0 0.0			Dark gray SILT and CLAY, little fine Sand, medium plasticity, trace Woody Debris, medium stiff, moist.	
20 / -10							End of borehole at 20' bgs.	
25 / -15								

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Analytical soil samples collected: PCTP-75R (10-12), PCTP-75R (14-16).

Soil boring was hand-cleared from 0-5' bgs. Descriptions for 0-5' bgs interval are based on soil cuttings.

Date Start/Finish: 04/10/2019	**Northing:** 253854.166'	**Well/Boring ID:** **PSSTP-01R**	
Drilling Company: Advanced Drilling	**Easting:** 2719541.788'	**Client:** National Grid	
Driller's Name: Craig Jablonski and Ron West	**Surface Elevation:** 17.5' NAVD88	**Location:** Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA	
Drilling Method: Direct Push	**Borehole Depth:** 15' bgs		
Sampling Method: Macrocore	**Descriptions By:** Evan Green		
Rig Type: Track-Mounted Geoprobe			

Depth (feet bgs) / Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0 / 20							Boring hand cleared to 5' bgs.	
0 / 15	1	0-5'	36"	0.0 0.0 0.0 0.0 0.0			Dark brown SILT, trace Coal Fragments, loose, dry. Brown fine SAND, little coarse Sand, little rounded fine Gravel, trace Brick and Concrete Fragments, loose to medium dense, moist.	Borehole backfilled with bentonite chips.
5 / 10	2	5-10'	43"	21.5 38.4 2.1 1.0 0.1	X		Blueish gray fine SAND, some Concrete Fragments, little coarse Sand, loose, dry to moist. Green stained textile at 5.5' bgs. Light gray COAL CINDER, little Coal Fragments, little Concrete Fragments, trace Woody Debris (possible purifier waste) medium dense, moist. Woody debris (possible purifier waste) at 8' bgs. Light brown coarse SAND, little sub angular fine Gravel, loose, moist.	
10 / 5	3	10-15'	46"	0.0 0.0 0.0 0.0 0.0			Brown medium SAND, little coarse Sand, medium dense, moist. Light gray SILT and CLAY, little very fine Sand, medium plasticity, medium dense, moist.	
15 / 0							End of borehole at 15' bgs.	
20 / -5								
25 / -10								

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Analytical soil sample collected: PSSTP-01R (5-6).

Date Start/Finish: 04/11/2019	**Northing:** 252671.139'	**Well/Boring ID:** **PSSTP-04R**	
Drilling Company: Advanced Drilling	**Easting:** 2720191.549'	**Client:** National Grid	
Driller's Name: Craig Jablonski and Ron West	**Surface Elevation:** 13.6' NAVD88	**Location:** Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA	
Drilling Method: Direct Push	**Borehole Depth:** 20' bgs		
Sampling Method: Macrocore	**Descriptions By:** Evan Green		
Rig Type: Track-Mounted Geoprobe			

Depth (feet bgs) / Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
							Boring hand cleared to 5' bgs.	
0 / 15	1	0-5'	39"	0.1 0.1 0.2 0.2 0.2	X		Brown very fine to fine SAND, some Silt, little Brick Fragments, trace Concrete Fragments.	
5 / 10	2	5-10'	50"	0.9 2.7 58.7 7.5 12.5	X X		Dark gray COAL CINDER, some Coal Fragments, trace coarse Sand, trace Brick Fragments, medium dense, moist. Dark gray very high viscosity COAL TAR-like material, little Coal Cinder, trace Woody Debris, dense, moist, strong coal tar-like odor. Black COAL CINDER, little Coal Fragments, little Coal Ash, trace Woody Debris (possible purifier waste), dense, moist, moderately strong coal tar-like odor.	Borehole backfilled with bentonite chips.
10 / 5	3	10-15'	50"	0.9 4.3 1.0 1.2 0.7			Black COAL CINDER, little Coal Fragments, dense, wet. Light rainbow sheen from 10-11' bgs. Dark gray coarse SAND, some Coal Cinder, medium dense, wet, very faint petroleum-like odor. Black COAL CINDER, some Coal Fragments, little coarse Sand, medium dense, moist to wet.	
15 / 0	4	15-20'	50"	1.0 4.2 0.8 0.4 0.4	X		Black COAL ASH, some Coal Cinder, little coarse Sand, medium dense, wet. Trace liquid COAL TAR stringers from 16-17' bgs. Dark gray SILT and CLAY, low plasticity, medium stiff, moist.	
20 / -5							End of borehole at 20' bgs.	
25 / -10								
-15								

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Analytical soil samples collected: PSSTP-28R (1-2), PSSTP-28R (7-8), PSSTP-28R (8-9), PSSTP-28R (16-17).

Date Start/Finish: 04/18/2019	**Northing:** 251966.784'	**Well/Boring ID:** **PSSTP-07R**	
Drilling Company: Advanced Drilling	**Easting:** 2719374.326'	**Client:** National Grid	
Driller's Name: Craig Jablonski and Ron West	**Surface Elevation:** 12.9' NAVD88	**Location:** Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA	
Drilling Method: Direct Push	**Borehole Depth:** 25' bgs		
Sampling Method: Macrocore	**Descriptions By:** Grayson Basalyga		
Rig Type: Track-Mounted Geoprobe			

Depth (feet bgs) / Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0 / 15							Boring hand cleared to 5' bgs.	
0 / 0							Brown fine to coarse SAND and SILT, loose, moist.	
0 / 0							BRICK and CONCRETE FRAGMENTS, little Coal Fragments loose, dry to moist.	
5 / 10	1	0-5'	37"				Tan fine to coarse SAND and SILT, trace subangular fine Gravel, trace Brick Fragments, medium dense, moist.	
5 / 5	2	5-10'	36"	0.0 0.0 0.0 0.0 0.0				Borehole backfilled with bentonite chips.
10 / 0	3	10-15'	33"	0.0 0.0 0.0 0.0 0.0			Dark gray medium to coarse SAND, medium dense, moist to wet.	
15 / -5	NA	15'-20'	0"	0.0 0.0 0.0 0.0 0.0			No Recovery	
20 / -10	4	20-25'	44"	0.0 0.0 0.0 0.0 0.0			Dark gray medium to coarse SAND, medium dense, moist to wet, light rainbow sheen over interval. Dark gray SILT and CLAY, high plasticity, stiff, moist.	
25 / -15							End of borehole at 25' bgs.	

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Analytical soil sample collected: PSSTP-07R (0.5-2), SO-DUP-0418, PSSTP-07R (8-9), PSSTP-07R (20-22).

Date Start/Finish: 04/16/2019	**Northing:** 252849.686'	**Well/Boring ID:** **PSSTP-10R**
Drilling Company: Advanced Drilling	**Easting:** 2718912.523'	**Client:** National Grid
Driller's Name: Craig Jablonski and Ron West	**Surface Elevation:** 11.1' NAVD88	**Location:** Former Philadelphia Coke Plant, 4501 Richmond St., Philadelphia, PA
Drilling Method: Direct Push	**Borehole Depth:** 20' bgs	
Sampling Method: Macrocore	**Descriptions By:** Evan Green	
Rig Type: Track-Mounted Geoprobe		

Depth (feet bgs) / Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
							Boring hand cleared to 5' bgs.	
0 / 10	1	0-5'	18"	0.0, 0.0, 0.0, 0.0, 0.0	X		Dark brown SILT, little fine Sand, little Woody Debris, loose, moist.	
							Light brown fine SAND, little coarse Sand, trace Silt, loose, moist.	
5 / 5	2	5-10'	32"	0.0, 0.0, 0.0, 0.0, 0.0	X		Brown fine SAND, little coarse Sand, little subangular fine Gravel, medium dense, wet.	
							Gray fine SAND, little Silt, trace coarse Sand, loose to medium dense, wet.	
10 / 0	3	10-15'	6"	0.0, 0.0, 0.0, 0.0, 0.0			Light brown medium to coarse SAND, loose, wet.	
15 / -5	4	15-20'	36"	1.2, 0.9, 0.0, 0.0, 0.0			Gray low to SILT and CLAY, trace fine Sand, medium plasticity, medium stiff, moist.	
20 / -10							End of borehole at 20' bgs.	
25 / -15								

Borehole backfilled with bentonite chips.

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Analytical soil samples collected: PSSTP-10R (1-2), PSSTP-10R (8-9).

Date Start/Finish: 04/23/2019 / 04/24/2019 **Drilling Company:** Advanced Drilling **Driller's Name:** Craig Jablonski and Ron West **Drilling Method:** Direct Push **Sampling Method:** Macrocore **Rig Type:** Track-Mounted Geoprobe	**Northing:** 252669.099' **Easting:** 2719644.652' **Surface Elevation:** 13.0' NAVD88 **Borehole Depth:** 25' bgs **Descriptions By:** Grayson Basalyga	**Well/Boring ID:** **PSSTP-22R** **Client:** National Grid **Location:** Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA

Depth (feet bgs) / Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
15							Boring hand cleared to 5' bgs.	
0				0.0			Brown fine to coarse SAND and SILT, loose, moist.	
				0.0			Dark gray fine to coarse SAND, some subangular fine Gravel, faint coal tar-like odor.	
	1	0-5'	24"	0.0			BRICK FRAGMENTS, loose, moist.	
10				32.9			Dark gray fine to coarse SAND, some Coal Fragments, trace Brick Fragments, faint coal tar-like odor.	
				1.0				
5				0.0				
				0.0			Black COAL FRAGMENTS, little Ceramic and Glass Fragments, loose, moist.	
	2	5-10'	48"	0.0				Borehole backfilled with bentonite chips.
5				0.0			Black fine to medium SAND and SILT, some Coal Ash, little Coal Fragments, trace Brick Fragments, medium dense, moist to wet.	
				0.0				
10				NA			No Recovery from 10 - 20' bgs.	
				NA				
	3	10-15'	0"	NA				
0				NA				
				NA				
15				NA				
				NA				
	4	15-20'	0"	NA				
-5				NA				
				NA				
20				0.0			Gray peaty SILT and CLAY, low plasticity, medium stiff, moist.	
				0.0				
	5	20-25'	43"	0.0				
-10				0.0				
				0.0				
25							End of borehole at 25' bgs.	
-15								

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Analytical soil samples collected: PSSTP-22R (0.5-2), PSSTP-22R (4-6).

Date Start/Finish: 04/10/2019	**Northing:** 252928.367'	**Well/Boring ID:** S-101	
Drilling Company: Advanced Drilling	**Easting:** 2720126.291'	**Client:** National Grid	
Driller's Name: Craig Jablonski and Ron West	**Surface Elevation:** 12.3' NAVD88	**Location:** Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA	
Drilling Method: Direct Push	**Borehole Depth:** 20' bgs		
Sampling Method: Macrocore	**Descriptions By:** Evan Green		
Rig Type: Track-Mounted Geoprobe			

Depth (feet bgs) / Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
15							Boring hand cleared to 5' bgs.	
0								
	1	0-5'	34"	0.0 0.0 0.0 0.0 0.0			Brown SILT, little fine Sand, dense, dry to moist.	
10							Brown very fine SAND, little Coal Cinder, little Brick Fragments, trace Concrete Fragments, dense, dry to moist.	
5	2	5-10'	48"	0.0 0.0 0.0 0.0 0.8			Gray very fine to fine SAND, little Brick Fragments, trace Concrete Fragments, trace Coal Cinder, medium dense, moist.	Borehole backfilled with bentonite chips.
5							Black COAL CINDER, little Coal Fragments, loose, moist to wet.	
10	3	10-15'	50"	1.0 0.0 0.0 0.0 0.0			Dark gray subangular to angular, fine GRAVEL, some coarse Sand, some Coal Cinder, little Coal Fragments, loose, wet.	
0								
15	4	15-20'	45"	0.0 0.0 0.0 0.0 0.0			Gray SILT and CLAY, little very fine Sand, low to medium plasticity, medium stiff, moist.	
-5								
20							End of borehole at 20' bgs.	
-10								
25								
-15								

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Analytical soil samples collected: S-101 (10-12), S-101 (14.5-16.5).

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Date Start/Finish: 04/10/2019	**Northing:** 252920.427'	**Well/Boring ID:** **S-102**	
Drilling Company: Advanced Drilling	**Easting:** 2720154.795'	**Client:** National Grid	
Driller's Name: Craig Jablonski and Ron West	**Surface Elevation:** 11.5' NAVD88	**Location:** Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA	
Drilling Method: Direct Push	**Borehole Depth:** 20' bgs		
Sampling Method: Macrocore	**Descriptions By:** Evan Green		
Rig Type: Track-Mounted Geoprobe			

Depth (feet bgs) / Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0 / 10							Boring hand cleared to 5' bgs.	
0 / 10	1	0-5'	40"	0.0 0.0 0.0 0.0 0.0			Brown SILT, little fine Sand, medium dense, moist. Black COAL CINDER, little fine Sand, little Concrete Fragments, loose, dry to moist.	
5 / 5	2	5-10'	38"	4.1 66.7 0.8 0.0 0.0			Brown fine SAND, little Silt, little Coal Cinder, medium dense, moist to wet, moderately strong petroleum-like odor. Black COAL CINDER, some Coal Fragments, little fine Sand, loose, moist.	Borehole backfilled with bentonite chips.
10 / 0	3	10-15'	36"	1.0 0.5 0.0 0.0 0.0			Medium to coarse SAND, some Coal Cinder, little subangular, fine Gravel, loose, wet. Dark gray subangular fine GRAVEL, some Coal Cinder, little Coal Ash, trace glass and metal fragments, loose, wet.	
15 / -5	4	15-20'	40"	0.0 0.0 0.0 0.0 0.0			Gray SILT and CLAY, trace fine Sand, low to medium plasticity, medium stiff, moist.	
20 / -10							End of borehole at 20' bgs.	
25 / -15								

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Analytical soil samples collected: S-102 (10-12), S-102 (13.5-15.5).

Date Start/Finish: 04/11/2019	**Northing:** 252883.469'	**Well/Boring ID:** **S-103**	
Drilling Company: Advanced Drilling	**Easting:** 2720152.722'	**Client:** National Grid	
Driller's Name: Craig Jablonski and Ron West	**Surface Elevation:** 12.5' NAVD88	**Location:** Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA	
Drilling Method: Direct Push	**Borehole Depth:** 20' bgs		
Sampling Method: Macrocore	**Descriptions By:** Evan Green		
Rig Type: Track-Mounted Geoprobe			

Depth (feet bgs) / Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0 / 15							Boring hand cleared to 5' bgs.	
0 / 10	1	0-5'	48"	0.1 0.1 0.1 0.1 0.1			Brown SILT, some fine Sand, little Brick Fragments, trace Concrete Fragments, loose, moist. Coal Cinder from 2.5 - 3' bgs.	
5 / 5	2	5-10'	33"	0.0 0.0 0.0 0.0 0.0			BRICK FRAGMENTS, Concrete Fragments, loose, dry to moist. Black COAL CINDER, little fine Sand, little Coal Ash, medium dense, wet.	Borehole backfilled with bentonite chips.
10 / 0	3	10-15'	37"	0.8 0.5 0.0 0.0 0.0			Dark gray COAL CINDER, some Coal Ash, trace Coal Fragments, loose, moist, very faint petroleum-like odor. Light rainbow sheen from 10-12' bgs.	
15 / -5	4	15-20'	3"	0.0 0.0 0.0 0.0 0.0			Gray SILT and CLAY, trace fine Sand, low plasticity, medium stiff, moist.	
20 / -10							End of borehole at 20' bgs.	
25 / -15								

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Analytical soil samples collected: S-103 (10-12), S-103 (13-15).

Date Start/Finish: 04/10/2019	**Northing:** 252897.779'	**Well/Boring ID:** **S-104**	
Drilling Company: Advanced Drilling	**Easting:** 2720119.397'	**Client:** National Grid	
Driller's Name: Craig Jablonski and Ron West	**Surface Elevation:** 13.1' NAVD88	**Location:** Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA	
Drilling Method: Direct Push	**Borehole Depth:** 20' bgs		
Sampling Method: Macrocore	**Descriptions By:** Evan Green		
Rig Type: Track-Mounted Geoprobe			

Depth (feet bgs) / Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0 / 15							Boring hand cleared to 5' bgs.	
0 / 15	1	0-5'	42"	0.0 0.0 0.0 0.0 0.0			Light brown SILT, some fine Sand, trace Brick Fragments, medium dense, moist. Brown very fine to fine SAND, little Silt, little Concrete Fragments, trace Brick Fragments, medium dense, moist. Gray very fine SAND, some Coal Cinder, little Brick Fragments, little Woody Debris (possible purifier waste), loose to medium dense, moist.	
5 / 10	2	5-10'	23"	0.0 0.0 0.0 0.0 0.8			Dark gray SILT, little fine Sand, little Brick Fragments, trace Coal Cinder, soft, moist to wet.	Borehole backfilled with bentonite chips.
10 / 5	3	10-15'	33"	1.0 0.0 0.0 0.0 0.0			Gray SILT, some Coal Cinder, little subangular fine Gravel, soft, wet. Black COAL CINDER, some Coal Fragments, little Silt, little fine Sand, loose, wet.	
15 / 0	4	15-20'	50"	0.0 0.0 0.0 0.0 0.0			Dark gray fine to medium SAND, little coarse Sand, little Coal Cinder, loose, wet. Gray SILT and CLAY, little fine Sand, low to medium plasticity, dense, moist.	
20 / -5							End of borehole at 20' bgs.	
25 / -10								
-15								

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Analytical soil samples collected: S-104 (10-12), S-104 (15.5-17.5).

Date Start/Finish: 04/12/2019	**Northing:** 252873.561'	**Well/Boring ID:** **S-105**	
Drilling Company: Advanced Drilling	**Easting:** 2719221.595'	**Client:** National Grid	
Driller's Name: Craig Jablonski and Ron West	**Surface Elevation:** 11.8' NAVD88	**Location:** Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA	
Drilling Method: Direct Push	**Borehole Depth:** 15' bgs		
Sampling Method: Macrocore	**Descriptions By:** Evan Green		
Rig Type: Track-Mounted Geoprobe			

Depth (feet bgs) / Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0							Boring hand cleared to 5' bgs.	
0 / 10	1	0-5'	35"	0.0 0.0 0.0 0.0 0.0			Black COAL CINDER, little coarse Sand, little Coal Fragments, medium dense, moist. Light brown fine to medium SAND, little Coal Cinder, little coarse Sand, medium dense, moist.	
5 / 5	2	5-10'	40"	0.0 0.0 0.0 0.0 0.0			Grayish brown fine to medium SAND, some Silt, little Coal Cinder, soft, wet. Dark gray fine SAND, medium dense, wet.	Borehole backfilled with bentonite chips.
10 / 0	3	10-15'	42"	0.0 0.0 0.0 0.0 0.0			Brownish gray SILT and CLAY, little fine Sand, low plasticity, soft, moist.	
15 / -5							End of borehole at 15' bgs.	
20 / -10								
25 / -15								

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Analytical soil samples collected: S-105 (2-4), S-105 (8-10).

Date Start/Finish:	04/12/2019	**Northing:**	252786.585'	**Well/Boring ID:**	**S-106**
Drilling Company:	Advanced Drilling	**Easting:**	2719274.604'	**Client:**	National Grid
Driller's Name:	Craig Jablonski and Ron West	**Surface Elevation:**	11.331' NAVD88	**Location:**	Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA
Drilling Method:	Direct Push	**Borehole Depth:**	15' bgs		
Sampling Method:	Macrocore	**Descriptions By:**	Evan Green		
Rig Type:	Track-Mounted Geoprobe				

Depth (feet bgs) / Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0							Boring hand cleared to 5' bgs.	
0 / 10	1	0-5'	45"	10.6 282.6 16.9 9.4 14.4	X		Black COAL CINDER, little coarse Sand, loose, moist. Black COAL tar-like material, some Coal Cinder, very dense, moist, coal tar-like odor. Black COAL CINDER, some Coal Ash, little coarse Sand, loose, moist to wet, coal tar-like odor. Brown mottled black fine SAND, some Coal Cinder, medium dense, moist to wet.	
5 / 5	2	5-10'	44"	0.8 0.0 1.1 1.6 0.6	X		Black COAL CINDER, some Coal Ash, little coarse Sand, loose, wet. Dark gray very fine to fine SAND, little Silt, soft to medium dense, wet.	Borehole backfilled with bentonite chips.
10 / 0	3	10-15'	30"	0.4 0.0 0.0 0.0 0.0			Grayish brown SILT and CLAY, some fine Sand, low to medium plasticity, soft, moist.	
15 / -5							End of borehole at 15' bgs.	
20 / -10								
25 / -15								

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Analytical soil samples collected: S-106 (2-4), S-106 (8-10).

Date Start/Finish: 04/15/2019	**Northing:** 252671.776'	**Well/Boring ID:** **S-108**	
Drilling Company: Advanced Drilling	**Easting:** 2719388.25'	**Client:** National Grid	
Driller's Name: Craig Jablonski and Ron West	**Surface Elevation:** 15.0' NAVD88	**Location:** Former Philadelphia Coke Plant, 4501 Richmond St., Philadelphia, PA	
Drilling Method: Direct Push	**Borehole Depth:** 20' bgs		
Sampling Method: Macrocore	**Descriptions By:** Evan Green		
Rig Type: Track-Mounted Geoprobe			

Depth (feet bgs)	Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
								Boring hand cleared to 5' bgs.	
0	15	1	0-5'	37"	0.0			Light brown very fine to fine SAND, little Silt, little Brick Fragments, loose, moist.	
					0.0				
					0.0			Brown fine to medium SAND, some Coal Cinder, little coarse Sand, loose, moist to wet.	
					0.0				
5	10	2	5-10'	37"	0.0				
					0.0				
					0.0				Borehole backfilled with bentonite chips.
					0.4			Black COAL CINDER, little Silt, little Coal Ash, trace fine Sand, soft to wet	
10	5				0.9				
		3	10-15'	33"	1.2			Dark gray SILT, some very fine to fine Sand, medium dense, wet, faint petroleum-like odor, light black staining.	
					4.4				
					2.1			Light rainbow sheen at 12.5' bgs.	
					2.0			Dark gray SILT and CLAY, little fine Sand, low plasticity, soft, moist.	
15	0				2.4				
		4	15-20'	40"	71.4			Dark gray SILT and CLAY, little fine Sand, low plasticity, soft to medium stiff, moist.	
					129.6				
					20.1			Light staining and faint petroleum-like odor from 15-18' bgs.	
					6.9				
20	5				5.5				
								End of borehole at 20' bgs.	
25	-10								

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Analytical soil samples collected: S-108 (2-4), SO-DUP-0415, S-108 (8-10), S-108 (15-17).

Date Start/Finish: 04/15/2019	**Northing:** 252593.435'	**Well/Boring ID:** **S-109**	
Drilling Company: Advanced Drilling	**Easting:** 2719444.946'	**Client:** National Grid	
Driller's Name: Craig Jablonski and Ron West	**Surface Elevation:** 14.4' NAVD88	**Location:** Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA	
Drilling Method: Direct Push	**Borehole Depth:** 15' bgs		
Sampling Method: Macrocore	**Descriptions By:** Evan Green		
Rig Type: Track-Mounted Geoprobe			

Depth (feet bgs) / Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0 / 15							Boring hand cleared to 5' bgs.	
0 / 15	1	0-5'	36"	0.0 0.0 0.0 0.0 0.0	X		Light brown SILT, some fine Sand, little subangular fine Gravel, medium dense, moist.	
5 / 10							Black COAL CINDER, some coarse Sand, little Concrete Fragments, medium dense, moist.	
5 / 10	2	5-10'	24"	0.0 0.0 0.0 0.8 1.0	X		Brown medium SAND, some subrounded fine Gravel, little Coal Cinder, little Silt, medium dense, wet.	Borehole backfilled with bentonite chips.
10 / 5							Dark gray SILT, some Coal Cinder, little coarse Sand, trace liquid coal tar-like material, soft, wet, faint coal tar-like odor.	
10 / 5	3	10-15'	48"	0.2 1.4 0.1 0.0 0.0			Gray SILT, some very fine Sand, little Clay, low plasticity, soft, wet. Light rainbow sheen at 11.5' bgs. Dark gray SILT and CLAY, some very fine Sand, low plasticity, soft to medium stiff, moist.	
15 / 0							End of borehole at 15' bgs.	
20 / -5								
25 / -10								
-15								

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Analytical soil samples collected: S-109 (2-4), S-109 (8-10).

Date Start/Finish: 04/12/2019	**Northing:** 252774.8680'	**Well/Boring ID:** **S-110**	
Drilling Company: Advanced Drilling	**Easting:** 2719155.1690'	**Client:** National Grid	
Driller's Name: Craig Jablonski and Ron West	**Surface Elevation:** 11.2' NAVD88	**Location:** Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA	
Drilling Method: Direct Push	**Borehole Depth:** 15' bgs		
Sampling Method: Macrocore	**Descriptions By:** Evan Green		
Rig Type: Track-Mounted Geoprobe			

Depth (feet bgs) / Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0							Boring hand cleared to 5' bgs.	
0 / 10	1	0-5'	35"	0.0 0.0 0.0 0.0 0.0	X		Black, dark brown in part COAL CINDER, some coarse Sand, loose, moist to dry.	
5							Brown fine SAND, little coarse Sand, trace Coal Cinder, medium dense, wet.	
							Black COAL CINDER, some Coal Ash, little coarse Sand, loose, wet.	
5 / 5	2	5-10'	40"	0.0 0.0 0.0 0.0 0.0	X		Dark gray fine SAND, little coarse Sand, loose to medium dense, wet.	Borehole backfilled with bentonite chips.
10 / 0	3	10-15'	42"	0.0 0.0 0.0 0.0 0.0			Dark gray SILT, some Clay, little fine Sand, low plasticity, soft, wet.	
15 / -5							End of borehole at 15' bgs.	
20 / -10								
25 / -15								

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Analytical soil samples collected: S-110 (2-4), S-110 (8-10).

Date Start/Finish: 04/12/2019	**Northing:** 252707.166'	**Well/Boring ID:** **S-112**	
Drilling Company: Advanced Drilling	**Easting:** 2719145.128'	**Client:** National Grid	
Driller's Name: Craig Jablonski and Ron West	**Surface Elevation:** 9.1' NAVD88	**Location:** Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA	
Drilling Method: Direct Push	**Borehole Depth:** 15' bgs		
Sampling Method: Macrocore	**Descriptions By:** Evan Green		
Rig Type: Track-Mounted Geoprobe			

Depth (feet bgs) / Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0 / 10							Boring hand cleared to 5' bgs.	
0 / 10	1	0-5'	36"	0.0 0.0 0.0 0.0 0.0			Black COAL CINDER, some Coal Ash, little coarse Sand, loose, wet.	
5 / 5							Brown fine SAND, little Silt, little Coal Cinder, medium dense, moist to wet.	
5 / 5	2	5-10'	48"	0.0 0.0 0.0 0.0 0.0			Gray fine SAND, little Silt, soft, wet.	Borehole backfilled with bentonite chips.
10 / 0	3	10-15'	40"	0.0 0.0 0.0 0.0 0.0			Gray SILT and CLAY, little fine Sand, low plasticity, soft, moist.	
15 / -5							End of borehole at 15' bgs.	
20 / -10								
25 / -15								
-20								

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Analytical soil samples collected: S-112 (2-4), S-112 (8-10).

Date Start/Finish: 04/22/2019 / 04/24/2019	**Northing:** 252631.179'	**Well/Boring ID:** **S-113B**	
Drilling Company: Advanced Drilling	**Easting:** 2719223.815'	**Client:** National Grid	
Driller's Name: Craig Jablonski and Ron West	**Surface Elevation:** 10.5' NAVD88	**Location:** Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA	
Drilling Method: Direct Push	**Borehole Depth:** 20' bgs		
Sampling Method: Macrocore	**Descriptions By:** Grayson Basalyga		
Rig Type: Track-Mounted Geoprobe			

Depth (feet bgs) / Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0							Boring hand cleared to 5' bgs.	
0 / 10	1	0-5'	24"	0.0 0.3 0.0 0.0 0.0	X		Brown fine to coarse SAND and SILT, some subangular fine to coarse Gravel, trace Brick Fragments, loose to medium dense, moist to wet.	
5 / 5	2	5-10'	35"	1.8 0.0 0.0 0.0 0.0			Brown fine to coarse SAND and SILT, loose, moist to wet. Dark gray fine to medium SAND and SILT, medium dense, wet.	Borehole backfilled with bentonite chips.
10 / 0	3	10-15'	52"	9.3 20.0 8.6 88 9.6	X		Gray SILT and CLAY, medium plasticity, medium stiff, moist. Dark gray very dense coal tar-like material, strong coal tar-like odor from 12 - 13' bgs.	
15 / -5	4	15-20'	35"	0.1 0.1 0.0 0.0 0.0	X		Brown Peaty SILT and CLAY, medium plasticity, medium stiff, moist.	
20 / -10							End of borehole at 20' bgs.	
25 / -15								

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Analytical soil samples collected: S-113B (1-3), S-113B (1-3) MS, S-113B (1-3) MSD, S-113B (10-12), S-113B (13-15), S-113B (15-17),

Date Start/Finish: 04/15/2019	**Northing:** 252583.331'	**Well/Boring ID:** **S-114**	
Drilling Company: Advanced Drilling	**Easting:** 2719328.469'	**Client:** National Grid	
Driller's Name: Craig Jablonski and Ron West	**Surface Elevation:** 16.7' NAVD88	**Location:** Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA	
Drilling Method: Direct Push	**Borehole Depth:** 25' bgs		
Sampling Method: Macrocore	**Descriptions By:** Evan Green		
Rig Type: Track-Mounted Geoprobe			

Depth (feet bgs) / Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0 / 15							Boring hand cleared to 5' bgs.	
0 / 15	1	0-5'	31"	0.0 0.0 0.0 0.0 0.0	X		Brown SILT, little fine Sand, trace Brick Fragments, trace Concrete Fragments, medium dense, moist to wet.	
5 / 10	2	5-10'	24"	0.0 0.7 1.0 0.4 0.0	X		Dark gray SILT, some fine Sand, little Clay, low plasticity, soft, moist to wet. Trace liquid coal tar stringers in void spaces at 7.5' bgs.	Borehole backfilled with bentonite chips.
10 / 5	3	10-15'	30"	0.4 2.8 1.9 2.4 166.7	X		Dark gray SILT, some fine Sand, little Clay, low plasticity, soft, wet, coal tar-like odor. Heavy liquid coal tar blebs over 14 - 15' bgs.	
15 / 0	4	15-20'	43"	30.9 7.8 12.5 10.5 63.2			Dark gray SILT and CLAY, some fine Sand, low plasticity, soft, moist to wet, coal tar-like odor.	
20 / -5	5	20-25'	34"	43.6 35.1 2.0 0.9 0.6	X		Grayish brown SILT and CLAY, little fine Sand, low plasticity, medium dense, moist.	
25 / -10							End of borehole at 25' bgs.	

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Analytical soil samples collected: S-114 (2-4), S-114 (2-4) MS, S-114 (2-4) MSD, S-114 (8-10), S-114 (14-15), S-114 (23-25).

Date Start/Finish: 04/16/2019	**Northing:** 252567.816'	**Well/Boring ID:** **S-115**	
Drilling Company: Advanced Drilling	**Easting:** 2719016.266'	**Client:** National Grid	
Driller's Name: Craig Jablonski and Ron West	**Surface Elevation:** 11.9' NAVD88	**Location:** Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA	
Drilling Method: Direct Push	**Borehole Depth:** 15' bgs		
Sampling Method: Macrocore	**Descriptions By:** Evan Green		
Rig Type: Track-Mounted Geoprobe			

Depth (feet bgs) / Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0							Boring hand cleared to 5' bgs.	
0 / 10	1	0-5'	48"	0.0 0.0 0.0 0.0 0.0	X		Black COAL CINDER, some Coal Ash, little coarse Sand, little Coal Fragments, medium dense, moist.	
5 / 5	2	5-10'	46"	0.0 0.0 0.9 4.6 0.7			Black COAL ASH, some Coal Cinder, little coarse Sand, loose, wet. Gray fine to medium SAND, little coarse Sand, medium dense, wet.	Borehole backfilled with bentonite chips.
10 / 0	3	10-15'	42"	0.0 0.0 0.0 0.4 0.8			Brownish gray fine SAND, trace coarse Sand, medium dense, wet. Brownish gray SILT and CLAY, some fine Sand, low plasticity, medium stiff, moist to wet.	
15 / -5							End of borehole at 15' bgs.	
20 / -10								
25 / -15								

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Analytical soil sample collected: S-115 (4-6), SO-DUP-0416.

Date Start/Finish: 04/16/2019	**Northing:** 252562.037'	**Well/Boring ID:** **S-116**	
Drilling Company: Advanced Drilling	**Easting:** 2719049.407'	**Client:** National Grid	
Driller's Name: Craig Jablonski and Ron West	**Surface Elevation:** 11.5' NAVD88	**Location:** Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA	
Drilling Method: Direct Push	**Borehole Depth:** 15' bgs		
Sampling Method: Macrocore	**Descriptions By:** Evan Green		
Rig Type: Track-Mounted Geoprobe			

Depth (feet bgs) / Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0							Boring hand cleared to 5' bgs.	
0 / 10	1	0-5'	46"	0.2 0.4 42.5 38.7 9.2	X		Black COAL CINDER, little coarse Sand, dense, moist to wet, hard. Solid Coal tar-like material at 2.5' bgs. Black COAL ASH, some Coal Cinder, little subrounded fine Gravel, medium dense, moist to wet.	
5 / 5	2	5-10'	45"	3.1 0.0 0.0 0.0 0.0			Gray medium SAND, little coarse Sand, trace Coal Cinder, loose to medium dense, wet.	Borehole backfilled with bentonite chips.
10 / 0	3	10-15'	48"	0.3 0.9 1.9 2.4 0.8			Gray SILT and CLAY, some fine Sand, low plasticity, medium stiff, wet.	
15 / -5							End of borehole at 15' bgs.	
20 / -10								
25 / -15								

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Analytical soil sample collected: S-116 (4-6), S-116 (4-6) MS, S-116 (4-6) MSD.

Date Start/Finish: 04/16/2019	**Northing:** 252536.1060	**Well/Boring ID:** **S-117**	
Drilling Company: Advanced Drilling	**Easting:** 2719009.3700	**Client:** National Grid	
Driller's Name: Craig Jablonski and Ron West	**Surface Elevation:** 12.2' NAVD88	**Location:** Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA	
Drilling Method: Direct Push	**Borehole Depth:** 15' bgs		
Sampling Method: Macrocore	**Descriptions By:** Evan Green		
Rig Type: Track-Mounted Geoprobe			

Depth (feet bgs) / Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0 / 15							Boring hand cleared to 5' bgs.	
0 / 10	1	0-5'	48"	0.0 0.0 0.0 0.0 0.0	X		Black COAL CINDER, some Coal Ash, trace coarse Sand, trace Concrete Fragments, loose, moist.	
5 / 5	2	5-10'	46"	0.0 0.0 0.0 0.0 0.0	X		Black COAL ASH, some Coal Cinder, little coarse Sand, medium dense, wet.	Borehole backfilled with bentonite chips.
10 / 0	3	10-15'	46"	0.0 0.0 0.2 4.1 1.2	X		Gray rounded fine GRAVEL, some coarse Sand, little fine Sand, medium dense, moist to wet. Brownish gray fine SAND, little Silt, trace coarse Sand, medium dense, wet. Brownish gray SILT and CLAY, little fine Sand, low plasticity, medium stiff, moist.	
15 / -5							End of borehole at 15' bgs.	
20 / -10								
25 / -15								

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Analytical soil samples collected: S-117 (4-6)..

Date Start/Finish: 04/16/2019	**Northing:** 252528.5510	**Well/Boring ID:** **S-118**	
Drilling Company: Advanced Drilling	**Easting:** 2719045.0050	**Client:** National Grid	
Driller's Name: Craig Jablonski and Ron West	**Surface Elevation:** 11.6' NAVD88	**Location:** Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA	
Drilling Method: Direct Push	**Borehole Depth:** 15' bgs		
Sampling Method: Macrocore	**Descriptions By:** Evan Green		
Rig Type: Track-Mounted Geoprobe			

Depth (feet bgs) / Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0 / 10							Boring hand cleared to 5' bgs.	
0 / 10	1	0-5'	47"	0.0 0.0 0.0 0.0 0.0	X		Black COAL CINDER, little Coal Fragments, trace medium Sand, loose, moist to dry.	
5 / 5					X		Brown fine to medium SAND, some Coal Cinder, trace subround fine Gravel, trace Coal Ash, medium dense, moist.	
5 / 5	2	5-10'	45"	0.0 0.0 0.0 0.4 0.1			Black COAL ASH, some Coal Cinder, little Coal Fragments, little coarse Sand, medium dense, wet. Gray fine SAND, little Silt, medium dense, wet.	Borehole backfilled with bentonite chips.
10 / 0	3	10-15'	47"	0.0 0.0 2.3 4.6 2.0			Brownish gray fine SAND, little Silt, medium dense, wet. Brownish gray SILT and CLAY, some fine Sand, low plasticity, medium stiff, moist. Faint petroleum-like odor at 13' bgs.	
15 / -5							End of borehole at 15' bgs.	
20 / -10								
25 / -15								

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Analytical soil samples collected: S-118 (4-6).

Date Start/Finish: 04/09/2019	**Northing:** 252707.315'	**Well/Boring ID:** **S-119**	
Drilling Company: Advanced Drilling	**Easting:** 2718720.721'	**Client:** National Grid	
Driller's Name: Craig Jablonski and Ron West	**Surface Elevation:** 12.9' NAVD88	**Location:** Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA	
Drilling Method: Direct Push	**Borehole Depth:** 15' bgs		
Sampling Method: Macrocore	**Descriptions By:** Evan Green		
Rig Type: Track-Mounted Geoprobe			

Depth (feet bgs) / Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0 / 15							Boring hand cleared to 5' bgs.	
0 to 5 / 15 to 10	1	0-5'	40"	0.3 1.0 1.6 0.4 0.2	X		Black COAL FRAGMENTS, little Coal Cinder, little fine Sand, trace subrounded fine Gravel, medium dense, moist.	
5 to 10 / 10 to 5	2	5-10'	40"	1.0 2.5 0.1 0.3 0.3			Light brown fine SAND, trace coarse Sand, medium dense, moist. Light gray SILT, some very fine Sand, medium dense, wet. Gray SILT and CLAY, little very fine, Sand, medium plasticity, soft, moist.	Borehole backfilled with bentonite chips.
10 to 15 / 5 to 0	3	10-15'	30"	2.5 1.7 0.6 0.2 0.0			Tannish gray SILT and CLAY, some very fine to Fine Sand, little medium Sand, low plasticity, soft, wet.	
15 / 0							End of borehole at 15' bgs.	

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Analytical soil samples collected: S-119 (0-1).

Date Start/Finish: 04/09/2019	**Northing:** 252675.797'	**Well/Boring ID:** **S-121**	
Drilling Company: Advanced Drilling	**Easting:** 2718720.658'	**Client:** National Grid	
Driller's Name: Craig Jablonski and Ron West	**Surface Elevation:** 14.0' NAVD88	**Location:** Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA	
Drilling Method: Direct Push	**Borehole Depth:** 20' bgs		
Sampling Method: Macrocore	**Descriptions By:** Evan Green		
Rig Type: Track-Mounted Geoprobe			

Depth (feet bgs) / Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
15							Boring hand cleared to 5' bgs.	
0	1	0-5'	39"	0.0, 0.0, 0.0, 0.0, 0.0	X		Black COAL FRAGMENTS, some coarse Sand, little Coal Cinder, loose to medium dense, moist.	
10							Orangish brown fine SAND, trace coarse Sand, medium dense, moist.	
5	2	5-10'	40"	0.0, 0.0, 0.0, 0.0, 0.0			Dark gray fine SAND, little Silt, medium dense, wet.	
5							Gray coarse SAND, little subangular fine Gravel, loose to medium dense, wet.	
10	3	10-15'	36"	0.0, 0.0, 0.0, 0.0, 0.0			Dark gray coarse SAND, little fine Sand, little subrounded to subangular fine Gravel, loose, wet.	Borehole backfilled with bentonite chips.
0							Gray SILT, some coarse Sand, little subrounded fine Gravel, medium dense, wet.	
15	4	15-20'	35"	0.0, 0.0, 0.0, 0.0, 0.0			Gray angular fine GRAVEL, some coarse Sand, medium dense, wet.	
-5							Light gray SILT and CLAY, trace fine Sand, low to medium plasticity, medium dense, moist.	
20							End of borehole at 20' bgs.	
-10								
25								
-15								

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Analytical soil samples collected: S-121 (0-1).

Date Start/Finish: 04/09/2019	**Northing:** 252666.855'	**Well/Boring ID:** **S-122**	
Drilling Company: Advanced Drilling	**Easting:** 2718748.633'	**Client:** National Grid	
Driller's Name: Craig Jablonski and Ron West	**Surface Elevation:** 12.9' NAVD88	**Location:** Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA	
Drilling Method: Direct Push	**Borehole Depth:** 15' bgs		
Sampling Method: Macrocore	**Descriptions By:** Evan Green		
Rig Type: Track-Mounted Geoprobe			

Depth (feet bgs) / Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0 / 15							Boring hand cleared to 5' bgs.	
0 / 15	1	0-5'	39"	0.0	X		Black COAL FRAGMENTS, little Coal Cinder, little fine Sand, loose to medium dense, dry to moist.	
0 / 15	1	0-5'	39"	0.4	X		Brown medium to coarse SAND, little fine Sand, trace angular fine Gravel, trace Coal Fragments, medium dense, moist.	
5 / 10	1	0-5'	39"	0.0	X		Light brown fine SAND, little subrounded fine Gravel, trace coarse Sand, loose to medium dense, moist.	
5 / 10	1	0-5'	39"	0.0	X		Light brown medium SAND, some coarse Sand, little fine Sand, medium dense, wet.	
5 / 10	2	5-10'	46"	0.0	X		Dark gray fine SAND, little Silt, medium dense, wet.	
5 / 10	2	5-10'	46"	0.0	X		Dark gray SILT and CLAY, little fine Sand, medium plasticity, medium dense, moist.	
10 / 5	2	5-10'	46"	0.0	X		Dark gray SILT and CLAY, little fine Sand, medium plasticity, medium dense, moist, light rainbow sheen at 10.5' bgs, faint petroleum-like odor.	
10 / 5	3	10-15'	40"	10.8				
10 / 5	3	10-15'	40"	2.7				
15 / 0	3	10-15'	40"	8.8				
15 / 0	3	10-15'	40"	2.3				
15 / 0	3	10-15'	40"	1.5				
15 / 0							End of borehole at 15' bgs.	

Borehole backfilled with bentonite chips.

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Analytical soil sample collected: S-122 (0-1), S-122 (10-12).

Date Start/Finish: 04/18/2019	**Northing:** 252189.006'	**Well/Boring ID:** **S-123**	
Drilling Company: Advanced Drilling	**Easting:** 2719742.16'	**Client:** National Grid	
Driller's Name: Craig Jablonski and Ron West	**Surface Elevation:** 15.2' NAVD88	**Location:** Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA	
Drilling Method: Direct Push	**Borehole Depth:** 15' bgs		
Sampling Method: Macrocore	**Descriptions By:** Grayson Basalyga		
Rig Type: Track-Mounted Geoprobe			

Depth (feet bgs)	Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
								Boring hand cleared to 5' bgs.	
0	15	1	0-5'	37"	0.0 0.0 0.0 0.0 0.0			Brown BRICK and CONCRETE FRAGMENTS, some fine to coarse Sand, little Silt, trace Coal Fragments, loose to medium dense, moist.	
5	10	2	5-10'	51"	0.0 0.0 0.0 0.0 0.0			Dark gray medium to coarse SAND, some subangular fine Gravel, trace Silt, trace Coal Fragments, medium dense, moist to wet.	Borehole backfilled with bentonite chips.
10	5	3	10-15'	52"	0.0 0.0 0.0 0.0 0.0 0.0			Dark gray fine to medium SAND and SILT, some CLAY, medium plasticity, medium dense, moist to wet. Dark gray SILT and CLAY, high plasticity, medium stiff, moist.	
15	0							End of borehole at 15' bgs.	
20	-5								
25	-10								

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Analytical soil sample collected: S-123 (7-9), S-123 (13-15).

Date Start/Finish: 04/18/2019	**Northing:** 252103.949'	**Well/Boring ID:** **S-124**	
Drilling Company: Advanced Drilling	**Easting:** 2719788.022'	**Client:** National Grid	
Driller's Name: Craig Jablonski and Ron West	**Surface Elevation:** 15.4' NAVD88	**Location:** Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA	
Drilling Method: Direct Push	**Borehole Depth:** 15' bgs		
Sampling Method: Macrocore	**Descriptions By:** Grayson Basalyga		
Rig Type: Track-Mounted Geoprobe			

Depth (feet bgs)	Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
								Boring hand cleared to 5' bgs.	
0	15				0.0			Brown fine to coarse SAND and SILT, loose, moist.	
					0.0			Red BRICK FRAGMENTS, loose, dry.	
		1	0-5'	45"	0.0			Brown fine to medium SAND and SILT, little interbedded Clay bands, low plasticity, medium dense, moist.	
					0.0				
5					0.0				
	10				0.0				
					0.0			Dark gray medium to coarse SAND, some subangular fine Gravel, trace Coal Slag, medium dense, moist, light rainbow sheen over interval.	
		2	5-10'	46"	0.0			Interbedded low plasticity Clay layer at 7' bgs.	
					0.0				
					0.0				
10	5				0.0			Dark gray SILT and CLAY, high plasticity, stiff, moist.	Borehole backfilled with bentonite chips.
					0.0				
		3	10-15'	43"	0.0				
					0.0				
15					0.0				
	0							End of borehole at 15' bgs.	
20	-5								
25	-10								

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Analytical soil sample collected: S-124 (7-9), S-124 (10-12).

Date Start/Finish: 04/18/2019	**Northing:** 252033.989'	**Well/Boring ID:** **S-125**	
Drilling Company: Advanced Drilling	**Easting:** 2719772.337'	**Client:** National Grid	
Driller's Name: Craig Jablonski and Ron West	**Surface Elevation:** 15.1' NAVD88	**Location:** Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA	
Drilling Method: Direct Push	**Borehole Depth:** 15' bgs		
Sampling Method: Macrocore	**Descriptions By:** Grayson Basalyga		
Rig Type: Track-Mounted Geoprobe			

Depth (feet bgs)	Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
								Boring hand cleared to 5' bgs.	
0	15				0.0			Brown fine to coarse SAND and SILT, loose, moist.	
					0.0			Gray BRICK and CONCRETE FRAGMENTS, little fine Sand, loose, moist.	
		1	0-5'	28"	0.0				
					0.0				
					0.0				
5	10				0.0				
					0.0			Brown fine to coarse SAND, little subangular fine to coarse Gravel, trace Silt, medium dense, moist.	
		2	5-10'	46"	0.9			Gray coarse SAND and subangular fine GRAVEL, medium dense, moist, light rainbow sheen over interval.	
					0.0				
					2.2			Black COAL Fragments, some Coal Ash, loose, moist.	
10	5				2.6			Gray coarse SAND and subangular fine GRAVEL, little fine to medium Sand, trace Silts, medium dense, moist to wet, light rainbow sheen over interval.	Borehole backfilled with bentonite chips.
					150.6				
		3	10-15'	35"	115.0			Reddish gray, blue in part, CLAY, high plasticity, stiff, moist, moderately heavy rainbow sheen over interval.	
					0.0			Dark gray CLAY, high plasticity, stiff, moist.	
					0.0				
15	0							End of borehole at 15' bgs.	
20	-5								
25	-10								

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Analytical soil sample collected: S-125 (7-9), S-125 (11-13), S-125 (13-15)..

Date Start/Finish: 04/17/2019	**Northing:** 252209.321'	**Well/Boring ID:** **S-126**	
Drilling Company: Advanced Drilling	**Easting:** 2719572.373'	**Client:** National Grid	
Driller's Name: Craig Jablonski and Ron West	**Surface Elevation:** 15.7' NAVD88	**Location:** Former Philadelphia Coke Plant, 4501 Richmond St., Philadelphia, PA	
Drilling Method: Direct Push	**Borehole Depth:** 15' bgs		
Sampling Method: Macrocore	**Descriptions By:** Grayson Basalyga		
Rig Type: Track-Mounted Geoprobe			

Depth (feet bgs) / Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0 / 15							Boring hand cleared to 5' bgs.	
0 / 15	1	0-5'	39"	0.0 0.0 0.0 0.0 0.0			Brown BRICK and CONCRETE FRAGMENTS, some fine to coarse SAND, little fine Gravel, medium dense, moist.	
5 / 10	2	5-10'	47"	0.0 0.0 0.0 0.0 0.0	X		Brown fine to coarse SAND, some Silt, little fine Gravel, medium dense, moist. Brown fine to coarse SAND, little Silt, little fine Gravel, medium dense, wet.	Borehole backfilled with bentonite chips.
10 / 5	3	10-15'	49"	0.0 0.0 0.1 0.1 0.1	X		Dark gray SILT and CLAY, some fine to medium Sand, medium plasticity, dense, moist to wet. Dark gray CLAY, medium plasticity, stiff, moist.	
15 / 0							End of borehole at 15' bgs.	
20 / -5								
25 / -10								

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Analytical soil sample collected: S-126 (7-9), S-126 (13-15).

Date Start/Finish: 04/17/2019	**Northing:** 252071.409'	**Well/Boring ID:** **S-127**	
Drilling Company: Advanced Drilling	**Easting:** 2719629.064'	**Client:** National Grid	
Driller's Name: Craig Jablonski and Ron West	**Surface Elevation:** 14.8' NAVD88	**Location:** Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA	
Drilling Method: Direct Push	**Borehole Depth:** 15' bgs		
Sampling Method: Macrocore	**Descriptions By:** Grayson Basalyga		
Rig Type: Track-Mounted Geoprobe			

Depth (feet bgs)	Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
								Boring hand cleared to 5' bgs.	
0	15				0.1			BRICK, CONCRETE, and ASPHALT FRAGMENTS, loose, dry.	
					8.2				
		1	0-5'	41"	0.7			Brown fine to coarse SAND, some Silt, little subangular fine Gravel, loose to medium dense, wet.	
					0.1				
5	10				0.1				
					0.6				
		2	5-10'	56"	9.7			Gray fine to coarse SAND, some Silt, little subangular fine Gravel, loose, rainbow sheen over interval.	
					1.1			Tar from 6-8' bgs.	
					1.0			Gray SILT and CLAY, some fine to medium Sand, low plasticity, medium stiff, moist.	
10	5				0.9				Borehole backfilled with bentonite chips.
					0.7				
					0.7			Rainbow sheen over 11-12' interval.	
		3	10-15'	55"	0.6			Gray SILT and CLAY, little fine to coarse Sand, medium plasticity, medium stiff, moist.	
					0.7			Gray medium to CLAY, high plasticity, very stiff, moist.	
15	0				0.1				
								End of borehole at 15' bgs.	
20	-5								
25	-10								
	-15								

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Analytical soil sample collected: S-127 (2-4), SO-DUP-0417, S-127 (6-8), S-127 (13-15)..

Date Start/Finish: 04/18/2019	**Northing:** 252010.697'	**Well/Boring ID:** **S-128**	
Drilling Company: Advanced Drilling	**Easting:** 2719731.305'	**Client:** National Grid	
Driller's Name: Craig Jablonski and Ron West	**Surface Elevation:** 14.1' NAVD88	**Location:** Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA	
Drilling Method: Direct Push	**Borehole Depth:** 15' bgs		
Sampling Method: Macrocore	**Descriptions By:** Grayson Basalyga		
Rig Type: Track-Mounted Geoprobe			

Depth (feet bgs) / Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0 / 15							Boring hand cleared to 5' bgs.	
0 / 15	1	0-5'	38"	0.0 0.0 0.0 0.0 0.0			Gray BRICK and CONCRETE FRAGMENTS, some fine to coarse Sand, little Silt, loose to medium dense, moist.	
5 / 10	2	5-10'	44"	0.0 0.0 0.0 0.0 2.0			Dark gray fine to coarse SAND and SILT, medium dense, wet. Brown WOODY DEBRIS (possible purifier waste) medium dense, moist, light rainbow sheen throughout interval.	Borehole backfilled with bentonite chips.
10 / 5	3	10-15'	49"	2.5 0.2 0.0 0.0 0.0			Gray medium to coarse SAND, some subangular fine to coarse Gravel, medium dense, moist to wet, light rainbow sheen throughout interval. Gray SILT, some fine Sand, little Clay, low plasticity, medium dense to dense, moist. Gray SILT and CLAY, medium to high plasticity, medium stiff to stiff, moist.	
15 / 0							End of borehole at 15' bgs.	
20 / -5								
25 / -10								
-15								

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Analytical soil sample collected: S-128 (2-4), S-128 (10-12), S-128 (13-15)..

Date Start/Finish:	04/18/2019	**Northing:**	251986.5'	**Well/Boring ID:**	**S-129**
Drilling Company:	Advanced Drilling	**Easting:**	2719691.697'	**Client:**	National Grid
Driller's Name:	Craig Jablonski and Ron West	**Surface Elevation:**	14.5' NAVD88	**Location:**	Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA
Drilling Method:	Direct Push	**Borehole Depth:**	15' bgs		
Sampling Method:	Macrocore	**Descriptions By:**	Grayson Basalyga		
Rig Type:	Track-Mounted Geoprobe				

Depth (feet bgs) / Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0 / 15							Boring hand cleared to 5' bgs.	
0 / 15	1	0-5'	37"	0.0			Brown fine to coarse SAND, some SILT, little subangular fine Gravel, medium dense, moist.	
5 / 10				0.0			Brown medium to coarse SAND, some Concrete Fragments, little Coal Fragments, loose to medium dense, moist.	
5 / 10				0.0			Dark gray fine to coarse SAND, some subangular fine to coarse Gravel, little Coal Ash, medium dense, moist.	
5 / 10				0.0				
5 / 10	2	5-10'	44"	4.8			Brown fine to coarse SAND, some Silt, little subangular fine to coarse Gravel, medium dense, moist to wet.	
10 / 5				4.9			Dark gray fine to coarse SAND and SILT, little fine to coarse Gravel, medium dense, moist to wet.	
10 / 5				4.8			Gray coarse SAND and fine to coarse GRAVEL, medium dense, moist, coal tar-like material.	
10 / 5				5.9			Dark gray CLAY, medium plasticity, medium stiff, moist.	
10 / 5				3.2				
15 / 0	3	10-15'	47"	0.0				
15 / 0				0.0				
15 / 0				0.0				
15 / 0				0.0			End of borehole at 15' bgs.	
20 / -5								
25 / -10								
-15								

Well/Boring Construction: Borehole backfilled with bentonite chips.

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Analytical soil sample collected: S-129 (2-4), S-129 (8-10), S-129 (10-12)..

Date Start/Finish: 04/17/2019	**Northing:** 252137.45'	**Well/Boring ID:** **S-130**	
Drilling Company: Advanced Drilling	**Easting:** 2719550.641'	**Client:** National Grid	
Driller's Name: Craig Jablonski and Ron West	**Surface Elevation:** 12.8' NAVD88	**Location:** Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA	
Drilling Method: Direct Push	**Borehole Depth:** 15' bgs		
Sampling Method: Macrocore	**Descriptions By:** Grayson Basalyga		
Rig Type: Track-Mounted Geoprobe			

Depth (feet bgs) / Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0 / 15							Boring hand cleared to 5' bgs.	
0 / 10	1	0-5'	34"	0.0			Brown fine to coarse SAND, some Silt, little fine Gravel, medium dense, moist.	
				0.0				
				0.0			Gray medium to coarse SAND, some fine Gravel, little Silt, medium dense, wet.	
				0.0				
5 / 5				0.0				
	2	5-10'	48"	0.0			Dark gray fine to coarse GRAVEL, little Coal Cinder, medium dense, moist to wet.	
				0.0				
				0.0			Gray subangular fine GRAVEL, some Clay, low plasticity, medium dense, moist.	
10 / 0				0.6			Dark gray SILT and CLAY, low plasticity, medium stiff, moist, coal tar-like odor.	
				0.9				
				0.2			Dark gray SILT and CLAY, low plasticity, blebs of coal tar-like material, medium stiff, moist.	
				0.4				
15 / -5	3	10-15'	47"	0.1			Gray SILT and CLAY, low plasticity, medium stiff, moist.	
				0.0				
				0.0				
20 / -10							End of borehole at 15' bgs.	
25 / -15								

Borehole backfilled with bentonite chips.

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Analytical soil sample collected: S-130 (2-4), S-130 (7-8), S-130 (10-12), S-130 (13-15).

Date Start/Finish: 04/17/2019	**Northing:** 252071.409'	**Well/Boring ID:** **S-131**	
Drilling Company: Advanced Drilling	**Easting:** 2719629.064'	**Client:** National Grid	
Driller's Name: Craig Jablonski and Ron West	**Surface Elevation:** 14.8' NAVD88	**Location:** Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA	
Drilling Method: Direct Push	**Borehole Depth:** 10' bgs		
Sampling Method: Macrocore	**Descriptions By:** Grayson Basalyga		
Rig Type: Track-Mounted Geoprobe			

Depth (feet bgs) / Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0 / 15							Boring hand cleared to 5' bgs.	
				0.0			Dark brown fine to medium SAND, some Silt, little subangular fine Gravel, medium dense, moist.	
				0.9			Brown fine to medium SAND, some Silt, little Clay, low plasticity, medium dense, moist.	
	1	0-5'	39"	0.0				
				0.0				
5 / 10				0.0				
				0.0			Gray fine to coarse SAND, little Clay, medium plasticity, dense, wet.	
				0.0				
	2	5-10'	52"	0.0			Dark gray CLAY, high plasticity, stiff, moist.	Borehole backfilled with bentonite chips.
				0.0				
10 / 5				0.0			End of borehole at 10' bgs.	
15 / 0								
20 / -5								
25 / -10								
/ -15								

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Remarks: NAVD88 = North American Vertical Datum of 1988; bgs = below ground surface; ' = feet; " = inch; NA = not applicable/available. Coordinate system = NAD83 Penn South Zone US Foot. Vacuum excavator used to soft dig to 5' bgs. Soil boring advanced adjacent to soft dig to record lithology in first five feet. Macrocore length = 5'. Macrocore inner diameter = 1".

Analytical soil sample collected: S-131 (2-4), S-131 (7-9).

Date Start/Finish: 04/17/2019	**Northing:** 251996.03'	**Well/Boring ID:** **S-132**	
Drilling Company: Advanced Drilling	**Easting:** 2719614.355'	**Client:** National Grid	
Driller's Name: Craig Jablonski and Ron West	**Surface Elevation:** 13.0' NAVD88	**Location:** Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA	
Drilling Method: Direct Push	**Borehole Depth:** 10' bgs		
Sampling Method: Macrocore	**Descriptions By:** Grayson Basalyga		
Rig Type: Track-Mounted Geoprobe			

Depth (feet bgs) / Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0 / 15							Boring hand cleared to 5' bgs.	
0 / 10	1	0-5'	31"	0.9 0.3 0.1 0.1 0.0	X		BRICK and CONCRETE FRAGMENTS, some fine to coarse Sand, little Silt, medium dense, moist.	
5 / 5	2	5-10'	53"	0.0 0.0 0.0 0.0 0.0	X		Gray fine to coarse SAND, some Silt, little subangular fine Gravel, medium dense, moist. Gray fine to medium SAND, little Silt, medium dense, moist to wet. Dark gray CLAY, high plasticity, stiff, moist.	Borehole backfilled with bentonite chips.
10 / 0							End of borehole at 10' bgs.	
15 / -5								
20 / -10								
25 / -15								

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Remarks: NAVD88 = North American Vertical Datum of 1988; bgs = below ground surface; ' = feet; " = inch; NA = not applicable/available. Coordinate system = NAD83 Penn South Zone US Foot. Vacuum excavator used to soft dig to 5' bgs. Soil boring advanced adjacent to soft dig to record lithology in first five feet. Macrocore length = 5'. Macrocore inner diameter = 1".

Analytical soil sample collected: S-132 (2-4), S-132 (8-10).

Date Start/Finish: 04/17/2019	**Northing:** 251960.675'	**Well/Boring ID:** **S-133**	
Drilling Company: Advanced Drilling	**Easting:** 2719644.737'	**Client:** National Grid	
Driller's Name: Craig Jablonski and Ron West	**Surface Elevation:** 15.2' NAVD88	**Location:** Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA	
Drilling Method: Direct Push	**Borehole Depth:** 15' bgs		
Sampling Method: Macrocore	**Descriptions By:** Grayson Basalyga		
Rig Type: Track-Mounted Geoprobe			

Depth (feet bgs)	Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
								Boring hand cleared to 5' bgs.	
0	15				0.0			Reddish brown fine to coarse SAND, some fine to medium subangular Gravel, medium dense, moist.	
					0.0			Light gray CONCRETE FRAGMENTS, loose, dry.	
		1	0-5'	37"	0.0			Brown fine to coarse SAND, some subangular fine Gravel, medium dense, moist.	
					0.1			Bluish gray subangular fine to coarse GRAVEL, little fine to coarse Sand, medium dense, moist.	
5	10				0.1				
					0.0			Brown fine to coarse SAND, some subangular fine to coarse Gravel, trace fine Cobble, dense, moist.	
					0.0				
		2	5-10'	41"	0.0			Gray subangular fine to coarse GRAVEL, some fine Cobble, dense, wet. Sheen from 7-8' bgs.	
					0.0			Gray SILT and CLAY, some fine Sand, medium plasticity, medium stiff, moist to wet.	
10	5				0.0				Borehole backfilled with bentonite chips.
					0.0				
		3	10-15'	42"	0.0				
					0.0			Dark gray CLAY, high plasticity, stiff, moist.	
15	0				0.0				
								End of borehole at 15' bgs.	
20	-5								
25	-10								

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Analytical soil sample collected: S-133 (2-4), S-133 (7-9), S-133 (13-15).

Date Start/Finish: 04/09/2019	**Northing:** 253007.605'	**Well/Boring ID:** S-134	
Drilling Company: Advanced Drilling	**Easting:** 2718965.395'	**Client:** National Grid	
Driller's Name: Craig Jablonski and Ron West	**Surface Elevation:** 14.7' NAVD88	**Location:** Former Philadelphia Coke Plant, 4501 Richmond St., Philadelphia, PA	
Drilling Method: Direct Push	**Borehole Depth:** 15' bgs		
Sampling Method: Macrocore	**Descriptions By:** Evan Green		
Rig Type: Track-Mounted Geoprobe			

Depth (feet bgs) / Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0 / 15							Boring hand cleared to 5' bgs.	
		0-5'	NA	NA			No recovery.	
5 / 10	1	5-10'	31"	0.0 0.0 0.0 0.0 0.0			Orangish brown very fine to fine SAND, little Silt, trace coarse Sand, soft to medium dense, moist to wet.	Borehole backfilled with bentonite chips.
10 / 5	2	10-15'	34"	0.0 0.0 0.0 0.0 0.0			Dark gray fine to medium SAND, little coarse Sand, medium dense, moist to wet. Light brown coarse SAND, little fine to medium Sand, little subrounded fine Gravel, dense, wet. Light gray SILT and CLAY, little fine Sand, low plasticity, dense, moist.	
15 / 0							End of borehole at 15' bgs.	
20 / -5								
25 / -10								
-15								

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No analytical soil samples collected due to absence of visual impacts.

Date Start/Finish: 04/22/2019	**Northing:** 252356.764'	**Well/Boring ID:** **S-135**	
Drilling Company: Advanced Drilling	**Easting:** 2720186.161'	**Client:** National Grid	
Driller's Name: Craig Jablonski and Ron West	**Surface Elevation:** 9.4' NAVD88	**Location:** Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA	
Drilling Method: Direct Push	**Borehole Depth:** 10' bgs		
Sampling Method: Macrocore	**Descriptions By:** Grayson Basalyga		
Rig Type: Track-Mounted Geoprobe			

Depth (feet bgs) / Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0 / 10							Boring hand cleared to 5' bgs.	
0	1	0-5'	42"	0.2			BRICK, CONCRETE, and COAL FRAGMENTS, some fine to coarse Sand, little Silt, medium dense, moist.	
				0.6				
				0.7				
				0.7			Brown fine to medium SAND and SILT, some angular fine Gravel, medium dense, moist.	
5 / 5				108.9			Dark gray fine to coarse SAND and subangular fine to coarse GRAVEL, trace Silt, medium dense, wet, moderately strong petroleum-like odor.	
				7.4			Gray fine to medium SAND and SILT, medium dense, wet, faint petroleum-like odor.	
				3.2			Gray SILT and CLAY, high plasticity, medium stiff, moist.	
	2	5-10'	36"	0.0				Borehole backfilled with bentonite chips.
10 / 0				0.0				
				0.0				
10							End of borehole at 10' bgs.	
15 / -5								
20 / -10								
25 / -15								
-20								

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Analytical soil samples collected: S-135 (4-6), S-135 (8-10).

Date Start/Finish: 04/22/2019	**Northing:** 251591.032'	**Well/Boring ID:** **S-136**	
Drilling Company: Advanced Drilling	**Easting:** 2719840.536'	**Client:** National Grid	
Driller's Name: Craig Jablonski and Ron West	**Surface Elevation:** 8.1' NAVD88	**Location:** Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA	
Drilling Method: Direct Push	**Borehole Depth:** 10' bgs		
Sampling Method: Macrocore	**Descriptions By:** Grayson Basalyga		
Rig Type: Track-Mounted Geoprobe			

Depth (feet bgs) / Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
10							Boring hand cleared to 5' bgs.	
0	1	0-5'	42"	0.0 0.0 0.0 0.0 7.5			Brown, dark gray in part, fine to coarse SAND, some Silt, little Brick and Concrete Fragments, medium dense, moist. Gray fine to coarse SAND and subangular fine to coarse GRAVEL, medium dense, moist. Black SILT and CLAY, some fine Sand, high plasticity, medium stiff, moist. Blue to rainbow sheen at 4.5' bgs.	
5	2	5-10'	36"	0.0 0.0 0.0 0.0 0.0				Borehole backfilled with bentonite chips.
0							End of borehole at 10' bgs.	
10								
-5								
15								
-10								
20								
-15								
25								
-20								

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Analytical soil samples collected: S-136 (4-6), S-136 (7-9).

Date Start/Finish: 04/19/2019	**Northing:** 251505.647'	**Well/Boring ID:** S-137	
Drilling Company: Advanced Drilling	**Easting:** 2719571.152'	**Client:** National Grid	
Driller's Name: Craig Jablonski and Ron West	**Surface Elevation:** 9.7' NAVD88	**Location:** Former Philadelphia Coke Plant, 4501 Richmond St., Philadelphia, PA	
Drilling Method: Direct Push	**Borehole Depth:** 15' bgs		
Sampling Method: Macrocore	**Descriptions By:** Grayson Basalyga		
Rig Type: Track-Mounted Geoprobe			

Depth (feet bgs)	Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description
	10							Boring hand cleared to 5' bgs.
0		1	0-5'	37"	0.0			Brown fine to coarse SAND and SILT, trace subangular fine Gravel, medium dense, moist.
					0.0			Gray subangular fine GRAVEL, loose, moist.
					0.0			Brown fine to coarse SAND and SILT, little Brick Fragments, medium dense, moist.
					0.0			Blue to green subangular fine GRAVEL, some Coal Fragments, medium dense, moist.
					0.0			Brown medium to coarse SAND, some subangular fine to coarse Gravel, trace Silt, medium dense, moist.
5	5				0.0			Dark gray, brown in part, fine to medium SAND and SILT, medium dense, moist.
		2	5-10'	33"	0.0			Dark brown medium to coarse SAND, some subangular fine Gravel, trace Silt, loose to medium dense, moist.
					0.0			Brown medium to coarse SAND, some Silt, little subangular fine Gravel, medium dense, moist to wet.
					0.0			Brown medium to coarse SAND some subangular fine to coarse Gravel, little Silt, loose to medium dense, wet.
10	0				0.0			
		3	10-15'	42"	0.0			Gray fine to coarse SAND and SILT, some subangular fine Gravel, medium dense, wet.
					0.0			
					0.0			Bluish gray CLAY, some Silt, little fine Sand, high plasticity, medium stiff, moist.
15	-5				0.0			
								End of borehole at 15' bgs.
20	-10							
25	-15							
	-20							

Well/Boring Construction: Borehole backfilled with bentonite chips.

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No analytical soil samples collected due to lack of visible impacts.

Date Start/Finish: 04/05/2019	**Northing:** 253728.592'	**Well/Boring ID:** **S-138**	
Drilling Company: Advanced Drilling	**Easting:** 2719645.191'	**Client:** National Grid	
Driller's Name: Craig Jablonski	**Surface Elevation:** 16.7' NAVD88	**Location:** Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA	
Drilling Method: Direct Push	**Borehole Depth:** 15' bgs		
Sampling Method: Macrocore	**Descriptions By:** Evan Green		
Rig Type: Track-Mounted Geoprobe			

Depth (feet bgs) / Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0 / 15							Boring hand cleared to 5' bgs.	
0 / 15		0-5'	NA	NA	X		No recovery.	
5 / 10	1	5-10'	41"	0.0			Dark gray coarse SAND, some Coal Cinder, little subangular coarse Gravel, trace Brick Fragments, loose, moist.	
				0.3			Brown fine to medium SAND, little subangular to angular fine Gravel, medium dense, moist to wet.	
				0.0				
				0.0				
				0.0				
10 / 5	2	10-15'	40"	0.0			Brown medium SAND, little coarse Sand, medium dense, wet.	
				0.0			Light gray SILT and CLAY, some very fine Sand, low plasticity, dense, moist.	
				0.0				
				0.0				
15 / 0				0.0			Light gray medium SAND, medium dense, wet.	
							End of borehole at 15' bgs.	
20 / -5								
25 / -10								

Borehole backfilled with bentonite chips.

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Analytical soil samples collected: S-138 (0-0.5), S-138 (0.5-2).

Date Start/Finish: 04/10/2019	**Northing:** 2719720.015'	**Well/Boring ID:** **S-139**	
Drilling Company: Advanced Drilling	**Easting:** 253603.372'	**Client:** National Grid	
Driller's Name: Craig Jablonski and Ron West	**Surface Elevation:** 14.6' NAVD88	**Location:** Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA	
Drilling Method: Direct Push	**Borehole Depth:** 20' bgs		
Sampling Method: Macrocore	**Descriptions By:** Evan Green		
Rig Type: Track-Mounted Geoprobe			

Depth (feet bgs) / Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0 / 15							Boring hand cleared to 5' bgs.	
	1	0-5'	36"	0.0 0.0 0.0 0.0 0.0			Brown SILT, little fine Sand, trace Woody Debris, trace Concrete Fragments, loose, moist. CONCRETE and BRICK FRAGMENTS, little fine Sand, loose, dry. COAL FRAGMENTS and COAL CINDER, loose, dry. CONCRETE and BRICK FRAGMENTS, little fine Sand, loose, moist to dry.	
5 / 10	2	5-10'	43"	0.0 0.0 0.0 0.0 0.0			Brown medium to coarse SAND, little subrounded fine Gravel, trace Concrete Fragments, loose, moist. Coal Cinder at 5' bgs. Brown medium SAND, little coarse Sand, medium dense, moist to wet.	Borehole backfilled with bentonite chips.
10 / 5	3	10-15'	46"	0.0 0.0 0.0 0.0 0.0			Light gray SILT, little Clay, low plasticity, little very fine Sand, dense, dry. Orangish brown medium SAND, little very fine to fine Sand, medium dense, wet.	
15 / 0	4	15-20'	42"	0.0 0.0 0.0 0.0 0.0			Brown SILT and CLAY, low plasticity, little fine Sand, medium dense, moist.	
20 / -5							End of borehole at 20' bgs.	
25 / -10								
-15								

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Analytical soil samples collected: S-139 (0.0-0.5), S-139 (0.5-2.0).

Date Start/Finish:	04/10/2019	**Northing:**	253290.836'	**Well/Boring ID:**	**S-140**
Drilling Company:	Advanced Drilling	**Easting:**	2719920.434'	**Client:**	National Grid
Driller's Name:	Craig Jablonski and Ron West	**Surface Elevation:**	11.7' NAVD88	**Location:**	Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA
Drilling Method:	Direct Push	**Borehole Depth:**	20' bgs		
Sampling Method:	Macrocore	**Descriptions By:**	Evan Green		
Rig Type:	Track-Mounted Geoprobe				

Depth (feet bgs) / Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0 / 10							Boring hand cleared to 5' bgs.	
	1	0-5'	40"	0.0 0.0 0.0 0.0 0.0			Brown SILT, little fine Sand, trace Brick Fragments, soft to medium dense, moist. Brown medium SAND, little Concrete Fragments, trace Brick Fragments, medium dense, dry to moist. Dark gray coarse SAND, some Coal Cinder, little Coal Fragments, trace angular fine Gravel, medium dense, moist.	
5 / 5	2	5-10'	9"	0.0 0.0 0.0 0.0 0.0			Dark gray fine SAND, some Coal Cinder, little subrounded fine Gravel, dense, wet. Brown coarse SAND, little Coal Cinder, dense, wet.	
10 / 0	3	10-15'	32"	0.0 0.0 0.0 0.0 0.0			Dark gray coarse SAND, some angular fine Gravel, trace Brick Fragments, little Coal Cinder, loose, wet.	Borehole backfilled with bentonite chips.
15 / -5	4	15-20'	23"	0.0 0.0 0.0 0.0 0.0			Gray SILT and CLAY, low plasticity, little fine Sand, dense, moist.	
20 / -10							End of borehole at 20' bgs.	
25 / -15								

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Analytical soil samples collected: S-140 (0.0-0.5), S-140 (0.5-2.0).

Date Start/Finish: 04/23/2019 / 04/24/2019 **Drilling Company:** Advanced Drilling **Driller's Name:** Craig Jablonski and Ron West **Drilling Method:** Direct Push **Sampling Method:** Macrocore **Rig Type:** Track-Mounted Geoprobe	**Northing:** 253980.807' **Easting:** 2719432.906' **Surface Elevation:** 18.3' NAVD88 **Borehole Depth:** 25' bgs **Descriptions By:** Grayson Basalyga	**Well/Boring ID:** **S-144** **Client:** National Grid **Location:** Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA	

Depth (feet bgs) / Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
							Boring hand cleared to 5' bgs.	
0 / 20	1	0-5'	43"	0.0 0.0 0.0 0.0 0.0			Brown fine to coarse SAND and SILT, loose, moist. Black COAL FRAGMENTS, some coarse Sand, loose, moist. Tan medium to coarse SAND, some Silt, medium dense, moist.	
5 / 15	2	5-10'	55"	0.0 0.0 0.0 0.0 0.0			Tan medium to coarse SAND, some Silt, little subangular fine to coarse Gravel, medium dense, moist to wet.	Borehole backfilled with bentonite chips.
10 / 10	3	10-15'	47"	0.4 0.5 1.3 0.4 458.9				
15 / 5	4	15-20'	53"	13.8 69.0 4.8 0.3 0.1			Dark gray fine to coarse SAND and SILT, medium dense, wet, purple and black staining throughout interval, moderately strong petroleum-like odor. Light gray SILT and CLAY, high plasticity, medium stiff to stiff, moist. Fine Sand lense at 18.5' and 19.5' bgs.	
20 / 0	5	20-25'	58"	0.1 0.0 0.0 0.0 0.0			Tan fine to coarse SAND, some Silt and Clay, low plasticity, dense, moist. Gray SILT and CLAY, trace fine Sand, medium plasticity, stiff, moist.	
25 / -5							End of borehole at 25' bgs.	
-10								

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Analytical soil samples collected: S-144 (15-17), S-144 (22-24).

Date Start/Finish: 04/25/2019	**Northing:** 253992.724'	**Well/Boring ID:** **S-145**	
Drilling Company: Advanced Drilling	**Easting:** 2719462.629'	**Client:** National Grid	
Driller's Name: Craig Jablonski and Ron West	**Surface Elevation:** 18.0' NAVD88	**Location:** Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA	
Drilling Method: Direct Push	**Borehole Depth:** 25' bgs		
Sampling Method: Macrocore	**Descriptions By:** Grayson Basalyga		
Rig Type: Track-Mounted Geoprobe			

Depth (feet bgs) / Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0 / 20							Boring hand cleared to 5' bgs.	
0 / 15	1	0-5'	49"	0.2, 0.5, 0.0, 0.0, 0.1			Black ASPHALT Reddish brown fine to coarse SAND and SILT, medium dense, moist.	
5 / 10	2	5-10'	56"	0.5, 0.0, 0.0, 0.0, 0.0			Dark gray subangular fine to coarse GRAVEL and coarse SAND, loose, medium dense. Brown fine to coarse SAND and SILT, trace subangular fine to coarse Gravel, medium dense, moist.	Borehole backfilled with bentonite chips.
10 / 5	3	10-15'	52"	0.0, 0.0, 0.0, 0.0, 0.0			Brown fine to coarse SAND and SILT, medium dense, moist	
15 / 0	4	15-20'	57"	0.0, 0.0, 0.0, 0.0, 0.0			Reddish brown fine to coarse SAND and SILT, some subangular fine to coarse Gravel medium dense, moist to wet. Gray SILT and CLAY, high plasticity, stiff, moist.	
20 / -5	5	20-25'	56"	0.0, 0.0, 0.0, 0.0, 0.0			Gray fine to coarse SAND and SILT, some subangular fine Gravel, medium dense, moist. Red SILT and CLAY, some fine Sand, medium plasticity, stiff, moist.	
25 / -10							End of borehole at 25' bgs.	

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No analytical soil sample collected due to lack of visual impacts.

Date Start/Finish: 04/24/2019 / 04/25/2019	**Northing:** 253953.275'	**Well/Boring ID:** **S-146**	
Drilling Company: Advanced Drilling	**Easting:** 2719470.595'	**Client:** National Grid	
Driller's Name: Craig Jablonski and Ron West	**Surface Elevation:** 18.3' NAVD88	**Location:** Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA	
Drilling Method: Direct Push	**Borehole Depth:** 25' bgs		
Sampling Method: Macrocore	**Descriptions By:** Grayson Basalyga		
Rig Type: Track-Mounted Geoprobe			

Depth (feet bgs) / Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0 / 20							Boring hand cleared to 5' bgs.	
0 / 20				0.0			Brown fine to coarse SAND and SILT, loose, moist.	
0 / 20				0.0			Reddish brown fine to coarse SAND, some Silt, soft to medium dense, moist.	
0 / 20	1	0-5'	39"	0.0				
0 / 20				0.0				
0 / 20				0.0				
5 / 15				0.0			Trace subangular fine to coarse Gravel from 5-9' bgs.	
5 / 15				0.0				
5 / 15	2	5-10'	45"	0.0				Borehole backfilled with bentonite chips.
5 / 15				0.0				
5 / 15				0.0				
10 / 10				0.0			Brown fine to medium SAND and SILT, medium dense, moist.	
10 / 10				0.0				
10 / 10	3	10-15'	51"	0.0				
10 / 10				0.1				
10 / 10				7.8				
15 / 5				5.1			Brown fine to coarse SAND and SILT, medium dense, moist, light black staining, faint petroleum-like odor.	
15 / 5				0.0			Light gray SILT and CLAY, medium plasticity, medium stiff, moist.	
15 / 5	4	15-20'	56"	0.0				
15 / 5				0.0			Tan medium to coarse SAND, some Silt, medium dense, moist to wet.	
15 / 5				0.0				
20 / 0				0.0				
20 / 0				0.0				
20 / 0	5	20-25'	45"	0.0			Red SILT and CLAY, some fine Sand, medium plasticity, stiff, moist.	
20 / 0				0.0				
20 / 0				0.0				
25 / -5							End of borehole at 25' bgs.	

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Analytical soil samples collected: S-146 (14-16), S-146 (17-19).

Date Start/Finish:	04/24/2019 / 04/25/2019	**Northing:**	252690.267'	**Well/Boring ID:**	**S-147**
Drilling Company:	Advanced Drilling	**Easting:**	2720204.081'	**Client:**	National Grid
Driller's Name:	Craig Jablonski and Ron West	**Surface Elevation:**	13.7' NAVD88	**Location:**	Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA
Drilling Method:	Direct Push	**Borehole Depth:**	20' bgs		
Sampling Method:	Macrocore	**Descriptions By:**	Grayson Basalyga		
Rig Type:	Track-Mounted Geoprobe				

Depth (feet bgs) / Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0 / 15							Boring hand cleared to 5' bgs.	
0 / 15	1	0-5'	48"	0.0 0.0 0.0 0.0 0.0			Tan fine to medium SAND and SILT, some subrounded fine to coarse Gravel, little Brick Fragments, medium dense, moist.	
5 / 10	2	5-10'	54"	0.0 0.2 13.3 9.5 38.5			Black COAL FRAGMENTS, some Brick Fragments, loose to medium dense, moist. Black COAL FRAGMENTS, some Coal Ash, little Woody Debris, loose, moist. Dense Coal tar-like material at 9' bgs.	Borehole backfilled with bentonite chips.
10 / 5	3	10-15'	56"	3.9 9.5 2.9 56.9 2.5			Light rainbow sheen at 12.5' bgs. Gray subangular coarse GRAVEL, some medium to coarse Sand, trace Silt, medium dense, moist. Light rainbow sheen over 15-18' bgs.	
15 / 0	4	15-20'	56"	1.0 0.1 0.0 0.0 0.0			Gray SILT and CLAY, high plasticity, stiff, moist.	
20 / -5							End of borehole at 20' bgs.	
25 / -10								
-15								

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Analytical soil samples collected: S-147 (12-14), S-147 (18-20).

Date Start/Finish: 04/24/2019 / 04/25/2019 **Drilling Company:** Advanced Drilling **Driller's Name:** Craig Jablonski and Ron West **Drilling Method:** Direct Push **Sampling Method:** Macrocore **Rig Type:** Track-Mounted Geoprobe	**Northing:** 252648.537' **Easting:** 2720196.184' **Surface Elevation:** 14.3' NAVD88 **Borehole Depth:** 20' bgs **Descriptions By:** Grayson Basalyga	**Well/Boring ID:** S-148 **Client:** National Grid **Location:** Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA	

Depth (feet bgs) / Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0 / 15							Boring hand cleared to 5' bgs.	
0 / 15	1	0-5'	36"	0.0 0.0 0.0 0.0 0.0			Brown fine to coarse SAND and SILT, some Brick and Concrete Fragments, medium dense, moist. Brick and Concrete Fragments, medium dense, moist. Black COAL FRAGMENTS, loose, dry to moist.	
5 / 10	2	5-10'	55"	1.1 22.9 63.0 61.8 101.9	X		Black COAL tar-like material, dense, moist, strong coal tar-like odor.	Borehole backfilled with bentonite chips.
10 / 5	3	10-15'	38"	1.1 1.5 1.8 2.3 1.9			Dark gray fine to coarse SAND and subangular fine to coarse GRAVEL, little Silt, medium dense, moist. Dark gray SILT and CLAY, high plasticity, stiff, moist. Dark gray fine to coarse SAND, medium dense, moist, rainbow sheen throughout interval. Gray fine to coarse SAND, some Silt, little subangular fine to coarse Gravel, medium dense, moist.	
15 / 0	4	15-20'	38"	0.0 0.0 0.0 0.0 0.0	X		Dark gray Peaty SILT and CLAY, high plasticity, stiff, moist.	
20 / -5							End of borehole at 20' bgs.	
25 / -10								
-15								

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Analytical soil samples collected: S-148 (8-10), S-148 (16-18).

Date Start/Finish: 04/25/2019	**Northing:** 252668.423'	**Well/Boring ID:** **S-149**	
Drilling Company: Advanced Drilling	**Easting:** 2720168.155'	**Client:** National Grid	
Driller's Name: Craig Jablonski and Ron West	**Surface Elevation:** 14.0' NAVD88	**Location:** Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA	
Drilling Method: Direct Push	**Borehole Depth:** 25' bgs		
Sampling Method: Macrocore	**Descriptions By:** Grayson Basalyga		
Rig Type: Track-Mounted Geoprobe			

Depth (feet bgs) / Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
15							Boring hand cleared to 5' bgs.	
0	1	0-5'	48"	0.0 0.0 0.0 0.0 0.2			Brown SILT, some Brick Fragments, little coarse Sand, trace Coal Fragments, medium dense, moist.	
10							Black COAL CINDER, little Coal Fragments, little Woody Debris (possible purifier waste), medium dense, moist, faint burnt odor, moist.	
5	2	5-10'	50"	0.2 0.4 14.8 11.3 9.9			Black COAL CINDER, little Coal Fragments, trace Coal Clinker, trace coarse Sand, medium dense, moist to wet. Dense coal tar-like material at 8.5' bgs.	Borehole backfilled with bentonite chips.
5 10	3	10-15'	45"	0.8 0.3 0.3 0.3 0.2			Black COAL CINDER, little Silt, little coarse Sand, soft to medium dense, wet. Black COAL CINDER, some coarse Sand, little Coal Ash, little subangular fine Gravel, dense, wet.	
0 15							Gray SILT, some fine Sand, little Clay, low plasticity, medium dense, wet.	
	4	15-20'	38"	0.2 0.2 0.2 0.2 0.2			Dark gray medium SAND, little Coal Cinder, trace Coal Fragments, medium dense, wet.	
-5 20							Grayish brown SILT and CLAY, little fine Sand, low plasticity, moist, medium stiff.	
	5	20-25'	26"	0.1 0.1 0.0 0.0 0.0				
-10 25							End of borehole at 25' bgs.	
-15								

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Analytical soil samples collected: S-149 (8-10), S-149 (18.5-20.5).

Date Start/Finish: 04/24/2019	**Northing:** 252338.704'	**Well/Boring ID:** **S-150**	
Drilling Company: Advanced Drilling	**Easting:** 2720459.968'	**Client:** National Grid	
Driller's Name: Craig Jablonski and Ron West	**Surface Elevation:** 7.0' NAVD88	**Location:** Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA	
Drilling Method: Direct Push	**Borehole Depth:** 5' bgs		
Sampling Method: Macrocore	**Descriptions By:** Grayson Basalyga		
Rig Type: Track-Mounted Geoprobe			

Depth (feet bgs) / Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0							Boring hand cleared to 5' bgs.	
0	1	0-5'	41"	0.0 0.0 0.0 0.0 0.0			Brown fine to coarse SAND and SILT, trace Woody Debris, medium dense, moist. Gray subangular fine to coarse GRAVEL, some Coal Fragments, little Brick Fragments, little fine to coarse Sand, trace Silt, medium dense, wet.	Borehole back filled with bentonite chips.
5							End of borehole at 5' bgs.	

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No analytical soil samples collected due to lack of visible impacts.

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Date Start/Finish: 04/24/2019	**Northing:** 252337.2257'	**Well/Boring ID:** **S-151**	
Drilling Company: Advanced Drilling	**Easting:** 2720498.0201'	**Client:** National Grid	
Driller's Name: Craig Jablonski and Ron West	**Surface Elevation:** 7.0' NAVD88	**Location:** Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA	
Drilling Method: Direct Push	**Borehole Depth:** 5' bgs		
Sampling Method: Macrocore	**Descriptions By:** Grayson Basalyga		
Rig Type: Track-Mounted Geoprobe			

Depth (feet bgs) / Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0							Boring hand cleared to 5' bgs.	
0	1	0-5'	40"	0.0	X		Brown fine to coarse SAND and SILT, little Woody Debris, medium dense, moist.	Borehole backfilled with bentonite chips.
				284				
5				0.1			Brown fine to coarse SAND and SILT, some fine to coarse Gravel, medium dense, moist. Coal tar-like material, low density at 2' bgs.	
				0.1	X		Black COAL FRAGMENTS, loose, moist.	
5				0.0			BRICK, CONCRETE, and COAL FRAGMENTS, loose, moist to wet.	
							End of borehole at 5' bgs.	

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Analytical soil samples collected: S-151 (0.5-2), S-151 (3-5), SO-DUP-0424.

Date Start/Finish: 04/25/2019	**Northing:** 252360.176'	**Well/Boring ID:** **S-152**	
Drilling Company: Advanced Drilling	**Easting:** 2720468.288'	**Client:** National Grid	
Driller's Name: Craig Jablonski and Ron West	**Surface Elevation:** 7.2' NAVD88	**Location:** Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA	
Drilling Method: Direct Push	**Borehole Depth:** 5' bgs		
Sampling Method: Macrocore	**Descriptions By:** Evan Green		
Rig Type: Track-Mounted Geoprobe			

Depth (feet bgs) / Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
10								
							Boring hand cleared to 5' bgs.	
0								
				0.0			Black COAL CINDER, little coarse Sand, trace subangular fine Gravel, medium dense, moist.	
				0.0				
5	1	0-5'	36"	0.0			Gray coarse SAND, little Coal Cinder, little Coal Ash, little subangular fine Gravel, medium dense, wet.	Borehole back filled with bentonite chips.
				0.0				
				0.0				
5							End of borehole at 5' bgs.	
0								
10								
-5								
15								
-10								
20								
-15								
25								
-20								

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No analytical soil samples collected due to lack of visible impacts.

Date Start/Finish: 04/26/2019	**Northing:** 251954.432'	**Well/Boring ID:** **S-153**	
Drilling Company: Advanced Drilling	**Easting:** 2719678.232'	**Client:** National Grid	
Driller's Name: Craig Jablonski and Ron West	**Surface Elevation:** 14.3' NAVD88	**Location:** Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA	
Drilling Method: Direct Push	**Borehole Depth:** 15' bgs		
Sampling Method: Macrocore	**Descriptions By:** Evan Green		
Rig Type: Track-Mounted Geoprobe			

Depth (feet bgs) / Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0 / 15							Boring hand cleared to 5' bgs.	
0 / 15	1	0-5'	21"	4.6 0.0 0.0 0.0 0.0			Brown SILT, little Woody Debris, trace fine Sand, loose, moist. Brown medium to coarse SAND, some fine Sand, little Brick Fragments, medium dense, moist. Gray angular fine GRAVEL, some fine Sand, loose, moist to dry.	Borehole backfilled with bentonite chips.
5 / 10	2	5-10'	40"	9.1 2.3 4.0 6.1 0.8	X		Light brown fine SAND, little coarse Sand, medium dense, moist. Dark gray fine Sand, some Silt, little angular fine Gravel, medium dense, wet, coal tar-like odor. Gray SILT and CLAY, little fine Sand, low plasticity, soft, moist. Liquid, moderately fluid coal tar-like material at 9' bgs.	
10 / 5	3	10-15'	50"	6.8 4.9 2.8 2.8 0.8	X		Very dark gray SILT and CLAY, little fine Sand, low plasticity, faint coal tar-like odor, wet. Blebs of liquid coal tar-like material imbedded in the void spaces of the Clay layer at 11' and 13' bgs. Gray SILT and CLAY, some fine Sand, low plasticity, soft to medium stiff, moist.	
15 / 0							End of borehole at 15' bgs.	
20 / -5								
25 / -10								
-15								

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Analytical soil samples collected: S-153 (7-9), S-153 (13.5-15).

Date Start/Finish: 04/26/2019	**Northing:** 251965.0870'	**Well/Boring ID:** **S-154**	
Drilling Company: Advanced Drilling	**Easting:** 2719707.5160'	**Client:** National Grid	
Driller's Name: Craig Jablonski and Ron West	**Surface Elevation:** 14.6' NAVD88	**Location:** Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA	
Drilling Method: Direct Push	**Borehole Depth:** 15' bgs		
Sampling Method: Macrocore	**Descriptions By:** Grayson Basalyga		
Rig Type: Track-Mounted Geoprobe			

Depth (feet bgs) / Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0 / 15							Boring hand cleared to 5' bgs.	
0 / 15	1	0-5'	31"	0.1 0.0 0.0 0.0 0.0			Brown fine to coarse SAND and SILT, little Woody Debris, loose, moist. CONCRETE FRAGMENTS, loose, moist. Brown fine to coarse SAND and SILT, some subangular fine to coarse Gravel, little Brick Fragments, loose, dry to moist.	
5 / 10	2	5-10'	45"	0.0 0.1 0.1 0.3 1.1			Gray subangular fine to coarse GRAVEL, some Coal Fragments, loose, moist. Brown fine to coarse SAND and SILT, some subangular fine to coarse Gravel, medium dense, moist to wet. Gray rounded fine to coarse GRAVEL, medium dense, wet. Light rainbow sheen at 9.75' bgs.	Borehole backfilled with bentonite chips.
10 / 5	3	10-15'	56"	0.7 0.0 0.0 0.0 0.0			Dark gray SILT and CLAY, high plasticity, stiff, moist.	
15 / 0							End of borehole at 15' bgs.	
20 / -5								
25 / -10								
-15								

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Analytical soil samples collected: S-154 (9-11), S-154 (12-14), SO-DUP-0426-1.

Date Start/Finish: 04/26/2019	**Northing:** 251986.658'	**Well/Boring ID:** **S-155**	
Drilling Company: Advanced Drilling	**Easting:** 2719755.269'	**Client:** National Grid	
Driller's Name: Craig Jablonski and Ron West	**Surface Elevation:** 15.1' NAVD88	**Location:** Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA	
Drilling Method: Direct Push	**Borehole Depth:** 15' bgs		
Sampling Method: Macrocore	**Descriptions By:** Grayson Basalyga		
Rig Type: Track-Mounted Geoprobe			

Depth (feet bgs)	Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
								Boring hand cleared to 5' bgs.	
0	15				0.2			Brown fine to coarse SAND and SILT, medium dense, moist.	
					0.0			BRICK FRAGMENTS, loose, moist.	
		1	0-5'	31"	0.0			Tannish brown fine to medium SAND and SILT, some subangular fine Gravel, little Brick Fragments, trace Coal Ash, medium dense, moist.	
					0.0				
					0.0				
5	10				0.0			BRICK FRAGMENTS, loose, moist.	
					0.0			Black COAL FRAGMENTS, some subangular fine to coarse Gravel, little coarse Sand, loose, moist.	
					0.0				
		2	5-10'	44"	0.0			Tannish brown fine to coarse SAND and SILT, some subangular fine to coarse Gravel, medium dense, moist.	Borehole backfilled with bentonite chips.
					0.0				
					0.0				
10	5				3.4			Very dark gray SILT and CLAY, little Woody Debris (possible purifier waste), low plasticity, stiff, moist, blebs of viscous liquid coal tar-like material, light rainbow sheen, coal tar-like odor.	
					33.6			Dark gray fine SAND and SILT, some Clay, low plasticity, dense, moist to wet.	
		3	10-15'	44"	4.1				
					0.0			Dark gray SILT and CLAY, high plasticity, stiff, moist.	
15	0				0.0			End of borehole at 15' bgs.	
20	-5								
25	-10								

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Analytical soil samples collected: S-155 (10-12), S-155 (13-15).

Date Start/Finish: 05/03/2019	**Northing:** 252703.971'	**Well/Boring ID:** **S-156**	
Drilling Company: Advanced Drilling	**Easting:** 2720281.985'	**Client:** National Grid	
Driller's Name: Craig Jablonski and Ron West	**Surface Elevation:** 15.8' NAVD88	**Location:** Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA	
Drilling Method: Direct Push	**Borehole Depth:** 20' bgs		
Sampling Method: Macrocore	**Descriptions By:** Evan Green		
Rig Type: Track-Mounted Geoprobe			

Depth (feet bgs) / Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0 / 15							Boring hand cleared to 5' bgs.	
0 / 15	1	0-5'	45"	0.0 0.0 0.8 40.8 80.7	X		Black COAL CINDER, some fine Sand, little Coal Fragments, medium dense, moist. Black COAL TAR-like material, some Coal Fragments, little Coal Cinder, trace Brick Fragments, medium dense, moist, strong coal tar-like odor.	
5 / 10	2	5-10'	50"	83.2 8.3 84.3 60.9 6.0	X		Dark gray medium SAND, little angular fine Gravel, medium dense, wet, black staining, light petroleum-like odor. Grayish brown SILT, little medium Sand, medium dense, moist. Dark gray coarse SAND and subangular fine GRAVEL, little fine Sand, loose, wet, light rainbow sheen, light black staining, faint petroleum-like odor.	
10 / 5	3	10-15'	52"	1.0 0.4 0.1 0.1 0.1	X		Black COAL CINDER, some Silt, little Coal Fragments, trace Brick Fragments, medium dense, wet. Gray SILT and CLAY, low plasticity, little fine Sand, dense, moist.	Borehole backfilled with bentonite chips.
15 / 0	4	15-20'	41"	0.4 0.1 0.1 0.1 0.1	X			
20 / -5							End of borehole at 20' bgs.	
25 / -10								

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Analytical soil samples collected: S-156 (3-5), S-156 (7.5-9.5), S-156 (14-16), SO-DUP-0503.

Date Start/Finish: 05/03/2019 Drilling Company: Advanced Drilling Driller's Name: Craig Jablonski and Ron West Drilling Method: Direct Push Sampling Method: Macrocore Rig Type: Track-Mounted Geoprobe	Northing: 252624.276' Easting: 2720252.45' Surface Elevation: 14.9' NAVD88 Borehole Depth: 25' bgs Descriptions By: Grayson Basalyga	Well/Boring ID: S-157 Client: National Grid Location: Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA	

Depth (feet bgs)	Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
								Boring hand cleared to 5' bgs.	
0	15	1	0-5'	46"	0.0 0.0 0.0 0.0 14.7			Gray subangular fine to coarse GRAVEL, some medium to coarse Sand, little Coal Fragments, loose, moist. Wet at 4' bgs. Rainbow sheen at 4.5' bgs.	
5	10	2	5-10'	54"	11.0 80.0 29.9 82.6 32.6	X		Gray subangular fine to coarse GRAVEL, some medium to coarse Sand, little Coal Fragments, loose, moist, petroleum-like odor, rainbow sheen throughout entire interval.	Borehole backfilled with bentonite chips.
10	5	3	10-15'	47"	66.2 7.1 2.9 3.4 3.1			Dark gray CLAY, medium plasticity, medium stiff, moist, petroleum-like odor, black staining.	
15	0	4	15-20'	50"	1.5 1.7 3.6 3.7 1.1			Brown SILT and CLAY, medium plasticity, stiff, dry to moist.	
20	-5	5	20-25'	22"	0.2 0.2 0.1 0.0 0.0	X		Brown rounded fine to coarse GRAVEL, some fine to coarse Sand, little Silt, medium dense, wet.	
25	-10							End of borehole at 25' bgs.	
30	-15								

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Analytical soil samples collected: S-157 (7-9), S-157 (23-25).

Date Start/Finish: 04/26/2019 Drilling Company: Advanced Drilling Driller's Name: Craig Jablonski and Ron West Drilling Method: Direct Push Sampling Method: Macrocore Rig Type: Track-Mounted Geoprobe	Northing: 252608.441' Easting: 2720098.04' Surface Elevation: 16.3' NAVD88 Borehole Depth: 20' bgs Descriptions By: Grayson Basalyga	Well/Boring ID: S-158 Client: National Grid Location: Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA	

Depth (feet bgs) / Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
							Boring hand cleared to 5' bgs.	
0 / 15	1	0-5'	38"	0.0 0.0 0.0 0.0 0.0			Brown fine to coarse SAND and SILT, little Woody Debris, loose, moist. BRICK and CONCRETE FRAGMENTS, loose, dry to moist. Brown fine to medium SAND and SILT, some subangular fine to coarse Gravel, little Coal Fragments, medium dense, moist.	
5 / 10	2	5-10'	46"	0.0 0.0 0.0 0.0 0.0			BRICK and CONCRETE FRAGMENTS, loose, moist. Brown fine to medium SAND and SILT, some subangular fine to coarse Gravel, medium dense, moist. Red BRICK FRAGMENTS, some Coal Cinder, little subrounded fine Gravel, medium dense, moist. Black COAL CINDER, little Concrete Fragments, loose, moist, faint burnt odor.	Borehole backfilled with bentonite chips.
10 / 5	3	10-15'	55"	0.9 38.6 1.7 1.2 0.1			BRICK and CONCRETE FRAGMENTS, some fine to coarse Sand, little subrounded fine Gravel, little Brick Fragments, little low viscosity coal tar-like material, loose, moist, strong coal tar-like odor. Light blue and rainbow sheen at 11' bgs. Black COAL CINDER, loose, moist. Gray SILT and CLAY, little Woody Debris, medium plasticity, medium stiff, moist.	
15 / 0	4	15-20'	56"	0.6 1.2 0.3 0.0 0.0			Gray CLAY, high plasticity, stiff, moist. Dark gray SILT and CLAY, medium plasticity, stiff, moist.	
20 / -5							End of borehole at 20' bgs.	
25 / -10								

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Analytical soil samples collected: S-158 (11-13), S-158 (18-20), S-158 (18-20) MS, S-158 (18-20) MSD.

Date Start/Finish: 04/26/2019 Drilling Company: Advanced Drilling Driller's Name: Craig Jablonski and Ron West Drilling Method: Direct Push Sampling Method: Macrocore Rig Type: Track-Mounted Geoprobe	Northing: 252751.01' Easting: 2720148.792' Surface Elevation: 14.0' NAVD88 Borehole Depth: 20' bgs Descriptions By: Grayson Basalyga	Well/Boring ID: S-159 Client: National Grid Location: Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA	

Depth (feet bgs) / Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
15							Boring hand cleared to 5' bgs.	
0	1	0-5'	49"	0.0 0.0 0.0 0.0 0.0			Gray fine to coarse SAND and SILT, some subangular fine to coarse Gravel, little Brick Fragments, medium dense, moist. Wet at 5' bgs.	
10 5	2	5-10'	32"	0.0 0.0 0.0 0.0 0.0			Black COAL CINDER, some Coal Ash, some fine to coarse Gravel, loose, moist.	Borehole backfilled with bentonite chips.
5 10	3	10-15'	40"	0.1 0.3 4.9 38.6 7.1			Yellow, red in part fine to coarse SAND, medium dense, moist. Gray subangular fine to coarse GRAVEL and fine to coarse SAND, little Coal Fragments, medium dense, moist. Light rainbow sheen over 11-13' bgs.	
0 15	4	15-20'	39"	0.6 0.3 0.1 0.0 0.0			Gray Peaty SILT and CLAY, medium plasticity, stiff, moist.	
-5 20							End of borehole at 20' bgs.	
-10 25								
-15								

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Analytical soil samples collected: S-159 (11-13), S-159 (18-20).

Date Start/Finish: 05/03/2019	**Northing:** NA	**Well/Boring ID:** **S-160**	
Drilling Company: Advanced Drilling	**Easting:** NA	**Client:** National Grid	
Driller's Name: Craig Jablonski and Ron West	**Surface Elevation:** NA	**Location:** Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA	
Drilling Method: Direct Push	**Borehole Depth:** 15' bgs		
Sampling Method: Macrocore	**Descriptions By:** Evan Green		
Rig Type: Track-Mounted Geoprobe			

Depth (feet bgs)	Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
								Boring hand cleared to 5' bgs.	
0	0	1	0-5'	30"	0.0			Brown SILT, some fine Sand, loose, moist.	
					0.0				
					0.0			CONCRETE FRAGMENTS, loose, moist.	
					0.0			Brown SILT, some coarse Sand, little subangular fine Gravel, loose, moist.	
5	-5				0.0				
		2	5-10'	42"	0.0			Black COAL CINDER, little coarse Sand, loose, wet.	
					0.0				
					0.0			Brown fine to medium SAND, little coarse Sand, little Coal Cinder, medium dense, moist to wet.	
					0.0				
10	-10				27.5			Black low viscosity COAL TAR-like material, some fine Sand, medium dense, moist to wet.	Borehole backfilled with bentonite chips.
		3	10-15'	45"	3.5			Dark gray SILT and CLAY, some fine Sand, low plasticity, medium stiff, moist.	
					0.6				
					0.1				
15	-15				0.1			End of borehole at 15' bgs.	
20	-20								
25	-25								

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Analytical soil samples collected: S-160 (6-8), S-160 (10-12).

Date Start/Finish: 05/03/2019	**Northing:** NA	**Well/Boring ID:** S-161	
Drilling Company: Advanced Drilling	**Easting:** NA	**Client:** National Grid	
Driller's Name: Craig Jablonski and Ron West	**Surface Elevation:** NA	**Location:** Former Philadelphia Coke Plant, 4501 Richmond St., Philadelphia, PA	
Drilling Method: Direct Push	**Borehole Depth:** 15' bgs		
Sampling Method: Macrocore	**Descriptions By:** Evan Green		
Rig Type: Track-Mounted Geoprobe			

Depth (feet bgs)	Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
								Boring hand cleared to 5' bgs.	
0	0	1	0-5'	45"	2.6			Brown SILT, some coarse Sand, some Brick Fragments, loose, moist.	
					0.0				
					0.0				
					0.0				
					0.0			Gray SILT, little fine Sand, very dense, dry.	
5	-5	2	5-10'	42"	23.3			Light brown medium SAND, little coarse Sand, medium dense, moist to wet, strong coal tar-like odor. Low viscosity coal tar-like material at 5' bgs.	
					1.0				
					1.8			Black COAL CINDER, some coarse Sand, little Coal Fragments, medium dense, wet.	
					0.0				
					0.0			Brown SILT, some Brick and Concrete Fragments, loose, wet.	
10	-10	3	10-15'	50"	0.0			Dark gray fine SAND, SILT and CLAY, low plasticity, wet, medium dense.	Borehole backfilled with bentonite chips.
					0.0			Dark gray SILT and CLAY, some fine Sand, low plasticity, soft to medium stiff, moist.	
					0.0				
					0.0				
					0.0				
15	-15							End of borehole at 15' bgs.	
20	-20								
25	-25								

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Analytical soil samples collected: S-161 (5-7), S-161 (10-12), S-161 (10-12) MS, S-161 (10-12) MSD.

Date Start/Finish: 05/03/2019	**Northing:** NA	**Well/Boring ID:** **S-162**	
Drilling Company: Advanced Drilling	**Easting:** NA	**Client:** National Grid	
Driller's Name: Craig Jablonski and Ron West	**Surface Elevation:** NA	**Location:** Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA	
Drilling Method: Direct Push	**Borehole Depth:** 20' bgs		
Sampling Method: Macrocore	**Descriptions By:** Evan Green		
Rig Type: Track-Mounted Geoprobe			

Depth (feet bgs) / Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
							Boring hand cleared to 5' bgs.	
0 / 0	1	0-5'	40"	0.0 0.0 0.0 0.0 0.0			Light brown SILT, little coarse Sand, trace Concrete and Brick Fragments, medium dense, moist. Brown fine SAND, little coarse Sand, trace Brick Fragments, dense, moist.	
5 / -5	2	5-10'	30"	8.9 4.1 0.2 0.1 0.0			Black solid COAL TAR-like material, some coarse Sand, little Coal Cinder, little Woody Debris (possible purifier waste), medium dense, moist to wet, strong coal tar-like odor. Brown medium SAND, little Coal Cinder, little coarse Sand, medium dense, moist to wet.	Borehole backfilled with bentonite chips.
10 / -10	3	10-15'	10"	0.0 0.0 0.0 0.0 0.0			Black COAL CINDER, some coarse Sand, soft, wet.	
15 / -15	4	15-20'	55"	0.0 0.0 0.0 0.0 0.0			Brownish SILT and CLAY, low plasticity, gray, soft, moist.	
20 / -20							End of borehole at 20' bgs.	
25 / -25								

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Analytical soil samples collected: S-162 (7-9), S-162 (15-17).

Date Start/Finish: 9/19/2019	**Northing:** 252797.477'	**Well/Boring ID:** S-163	
Drilling Company: Advanced Drilling, Inc.	**Easting:** 2719336.704'	**Client:** National Grid	
Driller's Name: Craig Jablonksi	**Surface Elevation:** 10.989' NAVD88	**Location:** Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA	
Drilling Method: Geoprobe	**Borehole Depth:** 15' bgs		
Sampling Method: 5' Macrocore Liner	**Descriptions By:** Chris Ortolano		
Rig Type: Track-mounted Geoprobe			

Depth (feet bgs) / Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0 / 10	NA	0-5	48"	0.0 0.0 0.0 0.0 NA			Black Sandy SILT and fine to coarse GRAVEL, dry.	
5 / 5							Wet at 5 bgs.	
	1	5-10	36"	0.0 0.0 NA NA NA			Black Silty SAND, trace fine Gravel, wet.	
10 / 0							Some Clay at 10 bgs.	Backfilled to grade with bentonite/grout slurry.
	2	10-15	60"	0.0 0.0 0.0 0.0 0.0			Gray Sandy CLAY, moist.	
15 / -5							End of boring at 15' bgs.	
20 / -10								
25 / -15								

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Analytical samples collected at 0.5-2' bgs and 2-4' bgs.

Soil boring was hand-cleared from 0-5' bgs. Descriptions for 0-5' bgs interval are based on soil cuttings.

Date Start/Finish: 9/19/2019	**Northing:** 252313.5032'	**Well/Boring ID:** **S-164**	
Drilling Company: Advanced Drilling, Inc.	**Easting:** 2720528.287'	**Client:** National Grid	
Driller's Name: Craig Jablonksi	**Surface Elevation:** 6.74' NAVD88	**Location:** Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA	
Drilling Method: Geoprobe	**Borehole Depth:** 10' bgs		
Sampling Method: 5' Macrocore Liner	**Descriptions By:** Chris Ortolano		
Rig Type: Track-mounted Geoprobe			

Depth (feet bgs) / Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0				0.0			Dark brown SILT, some fine Gravel, dry.	
5				0.0			Brown Sandy SILT, some fine Gravel, moist.	
	NA	0-5	48"	96.4			Olive black Clayey SILT, moist, petroleum-like odor.	
				98.1				
5				NA				
				4.6			Wet at 6' bgs.	
0				2.0				Backfilled to grade with bentonite/grout slurry.
	1	5-10	42"	0.1			Dark brown GRAVEL, wet.	
10				NA				
				NA				
							End of boring at 10' bgs.	
-5								
15								
-10								
20								
-15								
25								
-20								

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Analytical sample collected at 4-6' bgs.

Soil boring was hand-cleared from 0-5' bgs. Descriptions for 0-5' bgs interval are based on soil cuttings.

Date Start/Finish: 9/19/2019	**Northing:** 252295.431'	**Well/Boring ID:** **S-165**	
Drilling Company: Advanced Drilling, Inc.	**Easting:** 2720502.78'	**Client:** National Grid	
Driller's Name: Craig Jablonksi	**Surface Elevation:** 6.542' NAVD88	**Location:** Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA	
Drilling Method: Geoprobe	**Borehole Depth:** 5' bgs		
Sampling Method: 5' Macrocore Liner	**Descriptions By:** Chris Ortolano		
Rig Type: Track-mounted Geoprobe			

Depth (feet bgs) / Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0								
5	NA	0-5	36"	0.0 0.0 0.0 NA NA			Dark brown SILT, trace fine Gravel, dry. BRICK. Dark brown Silty GRAVEL, wet.	Backfilled to grade with bentonite/grout slurry.
5 / 0							End of boring at 5' bgs.	
10 / -5								
15 / -10								
20 / -15								
25 / -20								

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Soil boring was hand-cleared from 0-5' bgs. Descriptions for 0-5' bgs interval are based on soil cuttings.

Date Start/Finish: 9/19/2019	**Northing:** 252682.897'	**Well/Boring ID:** **S-166**	
Drilling Company: Advanced Drilling, Inc.	**Easting:** 2720115.393'	**Client:** National Grid	
Driller's Name: Craig Jablonksi	**Surface Elevation:** 15.565' NAVD88	**Location:** Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA	
Drilling Method: Geoprobe	**Borehole Depth:** 15' bgs		
Sampling Method: 5' Macrocore Liner	**Descriptions By:** Chris Ortolano		
Rig Type: Track-mounted Geoprobe			

Depth (feet bgs) / Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0 / 15	NA	0-5	60"	0.0 0.0 0.0 0.0 0.0			Brown Sandy SILT, some fine to coarse Gravel, trace Brick, dry.	
5 / 10	1	5-10	36"	0.0 0.0 0.0 NA NA			Black Sandy SILT, some fine to coarse Gravel, dry. Pink SANDSTONE and fine to coarse SAND, dry. Tan and brown Silty SAND, some fine to coarse Gravel, dry. Wet at 8 bgs.	Backfilled to grade with bentonite/grout mix.
10 / 5	2	10-15	60"	0.0 0.0 0.0 0.0 0.0			Black Silty CLAY, moist.	
15 / 0							End of boring at 15' bgs.	
20 / -5								
25 / -10								

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Soil boring was hand-cleared from 0-5' bgs. Descriptions for 0-5' bgs interval are based on soil cuttings.

Date Start/Finish: 9/20/2019	**Northing:** 252762.087'	**Well/Boring ID:** **S-167**	
Drilling Company: Advanced Drilling, Inc.	**Easting:** 2720248.622'	**Client:** National Grid	
Driller's Name: Craig Jablonksi	**Surface Elevation:** 10.049' NAVD88	**Location:** Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA	
Drilling Method: Geoprobe	**Borehole Depth:** 20' bgs		
Sampling Method: 5' Macrocore Liner	**Descriptions By:** Chris Ortolano		
Rig Type: Track-mounted Geoprobe			

Depth (feet bgs)	Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0	10								
					0.0			Brown Sandy SILT, some fine to coarse Gravel, dry.	
					0.0			Dark brown Sandy SILT, some fine to coarse Gravel and Brick, dry.	
		NA	0-5	42"	0.0			Black Sandy SILT, some fine to coarse Gravel, trace Ash, dry.	
					0.0				
					NA				
5	5				0.8				
					2.2				Backfilled to grade with bentonite/grout slurry.
		1	5-10	48"	13.4			Black and tan Sandy Clayey SILT, some Gravel, trace Brick, sheen, moist at 7' bgs.	
					8.3			Silty CLAY.	
					NA			Sandy SILT.	
10	0				0.8			Black Silty SAND, some fine to coarse Gravel, wet.	
					0.2				
		2	10-15	60"	0.2				
					0.0			Gray and black fine to coarse GRAVEL, some Sand, wet.	
					0.0				
15	-5				0.0			Gray Silty CLAY, wet.	
					0.0				
		3	15-20	36"	0.0				
					NA				
					NA				
20	-10							End of boring at 20' bgs.	
25	-15								

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Analytical sample collected at 7-9' bgs.

Soil boring was hand-cleared from 0-5' bgs. Descriptions for 0-5' bgs interval are based on soil cuttings.

Date Start/Finish: 9/19/2019	**Northing:** 251954.1622'	**Well/Boring ID:** **S-168**	
Drilling Company: Advanced Drilling, Inc.	**Easting:** 2719839.388'	**Client:** National Grid	
Driller's Name: Craig Jablonksi	**Surface Elevation:** 16.988' NAVD88	**Location:** Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA	
Drilling Method: Geoprobe	**Borehole Depth:** 15' bgs		
Sampling Method: 5' Macrocore Liner	**Descriptions By:** Chris Ortolano		
Rig Type: Track-mounted Geoprobe			

Depth (feet bgs) / Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0 / 15	NA	0-5	48"	0.0 0.0 0.0 0.0 NA			Light brown Sandy SILT, some large Gravel and Concrete chunks, dry. BRICK. Brown trace fine to coarse SAND and Clayey SILT, some Gravel, dry.	
5 / 10	1	5-10	60"	284.7 1.6 0.8 0.4 0.6			Black Sandy SILT, dry. CONCRETE and ROCK. Black and olive fine SAND and Clayey SILT, some Gravel, dry. Coal chunks at 9.2 bgs.	Backfilled to grade with bentonite/grout slurry.
10 / 5	2	10-15	36"	4.4 0.4 0.6 NA NA			Gray Silty GRAVEL, wet. Gray Silty CLAY, moist.	
15 / 0							End of boring at 15' bgs.	
20 / -5								
25 / -10								

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Analytical sample collected at 6-8' bgs.

Soil boring was hand-cleared from 0-5' bgs. Descriptions for 0-5' bgs interval are based on soil cuttings.

Date Start/Finish: 9/19/2019	**Northing:** 251902.6979	**Well/Boring ID:** **S-169**	
Drilling Company: Advanced Drilling, Inc.	**Easting:** 2719877.123	**Client:** National Grid	
Driller's Name: Craig Jablonksi	**Surface Elevation:** 19.652' NAVD88	**Location:** Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA	
Drilling Method: Geoprobe	**Borehole Depth:** 15' bgs		
Sampling Method: 5' Macrocore Liner	**Descriptions By:** Chris Ortolano		
Rig Type: Track-mounted Geoprobe			

Depth (feet bgs)	Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0	20								
					0.0			Brown SILT, some Roots.	
					0.0			BRICK, some Silt.	
		NA	0-5	54"	0.0			Gray Sandy SILT, some Gravel and trace Brick, dry.	
					0.0				
5	15				0.0				
					0.0				
					0.0				Backfilled to grade with bentonite/grout mix.
		1	5-10	60"	0.0			Black Sandy SILT, some Gravel, dry to moist.	
10	10				0.0				
					0.0			Wet from 10-12.2' bgs.	
					0.0				
		2	10-15	60"	0.0			Gray Silty CLAY, moist.	
					0.0				
15	5				0.0				
								End of boring at 15' bgs.	
20	0								
25	-5								
	-10								

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Soil boring was hand-cleared from 0-5' bgs. Descriptions for 0-5' bgs interval are based on soil cuttings.

Date Start/Finish: 9/19/2019	**Northing:** 251876.838'	**Well/Boring ID:** **S-170**	
Drilling Company: Advanced Drilling, Inc.	**Easting:** 2719818.66'	**Client:** National Grid	
Driller's Name: Craig Jablonksi	**Surface Elevation:** 19.717' NAVD88	**Location:** Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA	
Drilling Method: Geoprobe	**Borehole Depth:** 15' bgs		
Sampling Method: 5' Macrocore Liner	**Descriptions By:** Chris Ortolano		
Rig Type: Track-mounted Geoprobe			

Depth (feet bgs)	Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0	20								
					0.0			Brown Sandy SILT, some Gravel, trace Roots, dry.	
					0.0			Gray GRAVEL and CONCRETE, dry.	
		1	0-5	36"	0.0			Brown Sandy SILT, some Gravel, dry.	
					NA				
5	15				NA				
					0.0			Brown Sandy Silty CLAY, some Gravel, moist.	
					0.0				Backfilled to grade with bentonite/grout mix.
		2	5-10	29"	0.0				
					NA				
10	10				NA				
					NA			Gray Sandy SILT, some Gravel, moist to wet.	
					NA				
		3	10-15	42"	NA			Gray Silty CLAY, moist.	
					NA				
15	5				NA				
								End of boring at 15' bgs.	
20	0								
25	-5								
	-10								

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Soil boring was hand-cleared from 0-5' bgs. Descriptions for 0-5' bgs interval are based on soil cuttings.

Date Start/Finish: 9/19/2019	**Northing:** 251848.494'	**Well/Boring ID:** S-171	
Drilling Company: Advanced Drilling, Inc.	**Easting:** 2719745.955'	**Client:** National Grid	
Driller's Name: Craig Jablonksi	**Surface Elevation:** 16.96' NAVD88	**Location:** Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA	
Drilling Method: Geoprobe	**Borehole Depth:** 15' bgs		
Sampling Method: 5' Macrocore Liner	**Descriptions By:** Chris Ortolano		
Rig Type: Track-mounted Geoprobe			

Depth (feet bgs) / Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0 / 15	NA	0-5	60"	0.0 0.0 0.0 0.0 0.0			Brown SILT, some Roots, dry. Tan Sandy CLAY. Gray Sandy SILT, some Gravel, dry. Brown Sandy SILT, some Gravel, dry. BRICK. Grayish black Sandy SILT, some Gravel, dry.	
5 / 10	1	5-10	60"	0.0 0.0 0.0 0.0 0.0	X		Brown Sandy SILT, some Gravel, trace Brick, dry. GRAVEL. Blackish gray Sandy-Silty CLAY, some Gravel, dry.	Backfilled to grade with bentonite/grout slurry.
10 / 5	2	10-15	60"	0.0 0.0 0.0 0.0 0.0			Black Sandy GRAVEL, wet. Black Silty CLAY.	
15 / 0							End of boring at 15' bgs.	
20 / -5								
25 / -10								

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Analytical sample collected at 5-7' bgs.

Soil boring was hand-cleared from 0-5' bgs. Descriptions for 0-5' bgs interval are based on soil cuttings.

Date Start/Finish: 9/19/2019	**Northing:** 251823.855'	**Well/Boring ID:** **S-172**	
Drilling Company: Advanced Drilling, Inc.	**Easting:** 2719691.72'	**Client:** National Grid	
Driller's Name: Craig Jablonksi	**Surface Elevation:** 17.547' NAVD88	**Location:** Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA	
Drilling Method: Geoprobe	**Borehole Depth:** 15' bgs		
Sampling Method: 5' Macrocore Liner	**Descriptions By:** Chris Ortolano		
Rig Type: Track-mounted Geoprobe			

Depth (feet bgs) / Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0 / 20								
5 / 15	NA	0-5	24"	0.0 0.0 NA NA NA			Brown and tan Sandy SILT, some Gravel and Brick, dry.	
10 / 10	1	5-10	48"	0.0 0.0 0.0 0.0 NA	X		Brown Sandy SILT, some Gravel and Brick, dry. Brown Sandy Clayey SILT, some Gravel, dry.	Backfilled to grade with bentonite/grout slurry.
15 / 5	2	10-15	60"	0.0 0.0 0.0 0.0 0.0			Moist at 10' bgs. Gray and black Silty CLAY, moist.	
							End of boring at 15' bgs.	
0								
20								
-5								
25								
-10								

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Remarks: NAVD88 = North American Vertical Datum of 1988; ags = above ground surface; bgs = below ground surface; HSA = hollow-stem auger; PID = photoionization detector; NA = Not Applicable/Available; Coordinate System = NAD83 Penn South Zone US Foot. Macrocore inner diameter = 1".

Analytical sample collected at 5-7' bgs.

Soil boring was hand-cleared from 0-5' bgs. Descriptions for 0-5' bgs interval are based on soil cuttings.

Date Start/Finish: 9/19/2019	**Northing:** 251870.674'	**Well/Boring ID:** S-173	
Drilling Company: Advanced Drilling, Inc.	**Easting:** 2719657.286'	**Client:** National Grid	
Driller's Name: Craig Jablonksi	**Surface Elevation:** 17.598' NAVD88	**Location:** Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA	
Drilling Method: Geoprobe	**Borehole Depth:** 15' bgs		
Sampling Method: 5' Macrocore Liner	**Descriptions By:** Chris Ortolano		
Rig Type: Track-mounted Geoprobe			

Depth (feet bgs) / Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0 / 20								
5 / 15	NA	0-5	36"	0.0 0.0 0.0 NA NA			Brown Sandy SILT, some Gravel and Brick, dry.	
10 / 10	1	5-10	60"	0.0 0.0 0.0 0.0 0.0	X		Brown Sandy Clayey SILT, some Gravel, moist.	Backfilled to grade with bentonite/grout slurry.
15 / 5	2	10-15	60"	0.0 0.0 0.0 0.0 0.0			Moist at 10' bgs. Gray to black Silty CLAY, moist.	
							End of boring at 15' bgs.	
0 / 0								
5 / -5								
10 / -10								
15 / -15								

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Remarks: NAVD88 = North American Vertical Datum of 1988; ags = above ground surface; bgs = below ground surface; HSA = hollow-stem auger; PID = photoionization detector; NA = Not Applicable/Available; Coordinate System = NAD83 Penn South Zone US Foot. Macrocore inner diameter = 1".

Analytical sample collected at 5-7' bgs.

Soil boring was hand-cleared from 0-5' bgs. Descriptions for 0-5' bgs interval are based on soil cuttings.

Date Start/Finish: 04/16/2019	**Northing:** 252547.94'	**Well/Boring ID:** **TP-15R**	
Drilling Company: Advanced Drilling	**Easting:** 2719031.286'	**Client:** National Grid	
Driller's Name: Craig Jablonski and Ron West	**Surface Elevation:** 11.4' NAVD88	**Location:** Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA	
Drilling Method: Direct Push	**Borehole Depth:** 15' bgs		
Sampling Method: Macrocore	**Descriptions By:** Evan Green		
Rig Type: Track-Mounted Geoprobe			

Depth (feet bgs) / Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
							Boring hand cleared to 5' bgs.	
0 / 10	1	0-5'	48"	0.1 0.2 0.0 0.0 0.0			Black COAL CINDER, little Coal Ash, little coarse Sand, trace subrounded fine Gravel, trace Coal Fragments, loose, moist.	
5 / 5	2	5-10'	46"	0.2 86.2 1.0 0.6 0.0			Black COAL ASH, some Coal Cinder, loose, wet, coal tar-like odor. Brownish gray fine SAND, some Silt, trace coarse Sand, medium dense, wet. Solid Coal tar-like material fragment at 7' bgs.	Borehole backfilled with bentonite chips.
10 / 0	3	10-15'	39"	0.0 0.0 0.2 0.3 0.4			Brownish gray SILT and CLAY, some fine Sand, low plastcity, soft, wet.	
15 / -5							End of borehole at 15' bgs.	

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Remarks: NAVD88 = North American Vertical Datum of 1988; bgs = below ground surface; ' = feet; " = inch; NA = not applicable/available. Coordinate system = NAD83 Penn South Zone US Foot. Vacuum excavator used to soft dig to 5' bgs. Soil boring advanced adjacent to soft dig to record lithology in first five feet. Macrocore length = 5'. Macrocore inner diameter = 1".

Analytical soil samples collected: TP-15R (5-7), TP-15R (10.5 - 12.5).

Date Start/Finish: 04/22/2019	**Northing:** 252287.87'	**Well/Boring ID:** **TP-44R**	
Drilling Company: Advanced Drilling	**Easting:** 2720365.627'	**Client:** National Grid	
Driller's Name: Craig Jablonski and Ron West	**Surface Elevation:** 11.0' NAVD88	**Location:** Former Philadelphia Coke Plant, 4501 Richmond St., Philadelphia, PA	
Drilling Method: Direct Push	**Borehole Depth:** 10' bgs		
Sampling Method: Macrocore	**Descriptions By:** Grayson Basalyga		
Rig Type: Track-Mounted Geoprobe			

Depth (feet bgs) / Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
							Boring hand cleared to 5' bgs.	
0 / 10	1	0-5'	33"	0.0			Dark brown fine to coarse SAND and SILT, trace subangular fine to coarse Gravel, loose, moist.	
				0.0			Tan fine to coarse SAND and SILT, some subrounded fine to coarse Gravel, loose, moist.	
				0.0			Dark gray, brown in part fine to coarse SAND and subangular fine to coarse GRAVEL, trace Silt, medium dense, moist.	
				0.0			Gray and tan fine Sandy SILT, medium plasticity, very stiff.	
5 / 5				13.4			Dark gray fine to coarse SAND and subrounded fine to coarse GRAVEL, little Silt, medium dense, moist to wet, petroleum-like odor.	
	2	5-10'	35"	31.8			Gray fine to coarse SAND, dense, wet, light rainbow sheen throughout interval.	
				0.0			No sheen over 7-8' bgs interval.	Borehole backfilled with bentonite chips.
				0.0			Gray SILT and CLAY, high plasticity, medium stiff, moist.	
10 / 0				0.0			End of borehole at 10' bgs.	
15 / -5								

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Remarks: NAVD88 = North American Vertical Datum of 1988; bgs = below ground surface; ' = feet; " = inch; NA = not applicable/available. Coordinate system = NAD83 Penn South Zone US Foot. Vacuum excavator used to soft dig to 5' bgs. Soil boring advanced adjacent to soft dig to record lithology in first five feet. Macrocore length = 5'. Macrocore inner diameter = 1".

Analytical soil samples collected: TP-44R (3-5), TP-44R (5-7), TP-44R (7-9).

Date Start/Finish: 04/18/2019	**Northing:** 252076.866'	**Well/Boring ID:** **TP-63R**	
Drilling Company: Advanced Drilling	**Easting:** 2719747.858'	**Client:** National Grid	
Driller's Name: Craig Jablonski and Ron West	**Surface Elevation:** 14.9' NAVD88	**Location:** Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA	
Drilling Method: Direct Push	**Borehole Depth:** 15' bgs		
Sampling Method: Macrocore	**Descriptions By:** Grayson Basalyga		
Rig Type: Track-Mounted Geoprobe			

Depth (feet bgs) / Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
							Boring hand cleared to 5' bgs.	
0 / 15	1	0-5'	28"	0.0 0.0 0.0 0.0 0.0			Brown fine to coarse SAND and SILT, loose, moist. BRICK and CONCRETE Fragments, loose, dry to moist. Dark gray medium to coarse SAND, little subangular fine Gravel, little fine Sand, little Coal Fragments, trace Silt, medium dense, wet.	
5 / 10	2	5-10'	22"	0.0 0.0 0.0 0.0 0.0				Borehole backfilled with bentonite chips.
10 / 5	3	10-15'	47"	0.0 0.0 0.0 0.0 0.0			Gray fine SAND and SILT, little Clay, medium plasticity, dense, moist to wet. Dark gray SILT and CLAY, high plasticity, stiff, moist.	
15 / 0							End of borehole at 15' bgs.	

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Remarks: NAVD88 = North American Vertical Datum of 1988; bgs = below ground surface; ' = feet; " = inch; NA = not applicable/available. Coordinate system = NAD83 Penn South Zone US Foot. Vacuum excavator used to soft dig to 5' bgs. Soil boring advanced adjacent to soft dig to record lithology in first five feet. Macrocore length = 5'. Macrocore inner diameter = 1".

Analytical soil sample collected: TP-63R (7-9), TP-63R (11-13).

Date Start/Finish: 04/16/2019	**Northing:** 252547.94'	**Well/Boring ID:** **TP-15R**	
Drilling Company: Advanced Drilling	**Easting:** 2719031.286'	**Client:** National Grid	
Driller's Name: Craig Jablonski and Ron West	**Surface Elevation:** 11.4' NAVD88	**Location:** Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA	
Drilling Method: Direct Push	**Borehole Depth:** 15' bgs		
Sampling Method: Macrocore	**Descriptions By:** Evan Green		
Rig Type: Track-Mounted Geoprobe			

Depth (feet bgs) / Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
							Boring hand cleared to 5' bgs.	
0 / 10	1	0-5'	48"	0.1 0.2 0.0 0.0 0.0			Black COAL CINDER, little Coal Ash, little coarse Sand, trace subrounded fine Gravel, trace Coal Fragments, loose, moist.	
5 / 5	2	5-10'	46"	0.2 86.2 1.0 0.6 0.0			Black COAL ASH, some Coal Cinder, loose, wet, coal tar-like odor. Brownish gray fine SAND, some Silt, trace coarse Sand, medium dense, wet. Solid Coal tar-like material fragment at 7' bgs.	Borehole backfilled with bentonite chips.
10 / 0	3	10-15'	39"	0.0 0.0 0.2 0.3 0.4			Brownish gray SILT and CLAY, some fine Sand, low plastcity, soft, wet.	
15 / -5							End of borehole at 15' bgs.	

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Remarks: NAVD88 = North American Vertical Datum of 1988; bgs = below ground surface; ' = feet; " = inch; NA = not applicable/available. Coordinate system = NAD83 Penn South Zone US Foot. Vacuum excavator used to soft dig to 5' bgs. Soil boring advanced adjacent to soft dig to record lithology in first five feet. Macrocore length = 5'. Macrocore inner diameter = 1".

Analytical soil samples collected: TP-15R (5-7), TP-15R (10.5 - 12.5).

Date Start/Finish: 04/22/2019	Northing: 252287.87'	Well/Boring ID: TP-44R	
Drilling Company: Advanced Drilling	Easting: 2720365.627'	Client: National Grid	
Driller's Name: Craig Jablonski and Ron West	Surface Elevation: 11.0' NAVD88	Location: Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA	
Drilling Method: Direct Push	Borehole Depth: 10' bgs		
Sampling Method: Macrocore	Descriptions By: Grayson Basalyga		
Rig Type: Track-Mounted Geoprobe			

Depth (feet bgs) / Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0 / 11							Boring hand cleared to 5' bgs.	
0 / 11	1	0-5'	33"	0.0			Dark brown fine to coarse SAND and SILT, trace subangular fine to coarse Gravel, loose, moist.	
				0.0			Tan fine to coarse SAND and SILT, some subrounded fine to coarse Gravel, loose, moist.	
				0.0			Dark gray, brown in part fine to coarse SAND and subangular fine to coarse GRAVEL, trace Silt, medium dense, moist.	
				0.0			Gray and tan fine Sandy SILT, medium plasticity, very stiff.	
				13.4			Dark gray fine to coarse SAND and subrounded fine to coarse GRAVEL, little Silt, medium dense, moist to wet, petroleum-like odor.	
5 / 6	2	5-10'	35"	31.8			Gray fine to coarse SAND, dense, wet, light rainbow sheen throughout interval.	
				0.0			No sheen over 7-8' bgs interval.	
				0.0			Gray SILT and CLAY, high plasticity, medium stiff, moist.	
				0.0				
10 / 1							End of borehole at 10' bgs.	
15 / -4								
20 / -9								

Borehole backfilled with bentonite chips.

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Remarks: NAVD88 = North American Vertical Datum of 1988; bgs = below ground surface; ' = feet; " = inch; NA = not applicable/available. Coordinate system = NAD83 Penn South Zone US Foot. Vacuum excavator used to soft dig to 5' bgs. Soil boring advanced adjacent to soft dig to record lithology in first five feet. Macrocore length = 5'. Macrocore inner diameter = 1".

Analytical soil samples collected: TP-44R (3-5), TP-44R (5-7), TP-44R (7-9).

Date Start/Finish: 04/18/2019 Drilling Company: Advanced Drilling Driller's Name: Craig Jablonski and Ron West Drilling Method: Direct Push Sampling Method: Macrocore Rig Type: Track-Mounted Geoprobe	Northing: 252076.866' Easting: 2719747.858' Surface Elevation: 14.9' NAVD88 Borehole Depth: 15' bgs Descriptions By: Grayson Basalyga	Well/Boring ID: TP-63R Client: National Grid Location: Former Philadelphia Coke Plant 4501 Richmond St. Philadelphia, PA	

Depth (feet bgs)	Elevation (feet NAVD88)	Sample Run Number	Sample/Int/Type	Recovery (inches)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
								Boring hand cleared to 5' bgs.	
0	15	1	0-5'	28"	0.0 0.0 0.0 0.0 0.0			Brown fine to coarse SAND and SILT, loose, moist. BRICK and CONCRETE Fragments, loose, dry to moist. Dark gray medium to coarse SAND, little subangular fine Gravel, little fine Sand, little Coal Fragments, trace Silt, medium dense, wet.	
5	10	2	5-10'	22"	0.0 0.0 0.0 0.0 0.0				Borehole backfilled with bentonite chips.
10	5	3	10-15'	47"	0.0 0.0 0.0 0.0 0.0			Gray fine SAND and SILT, little Clay, medium plasticity, dense, moist to wet. Dark gray SILT and CLAY, high plasticity, stiff, moist.	
15	0							End of borehole at 15' bgs.	

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Remarks: NAVD88 = North American Vertical Datum of 1988; bgs = below ground surface; ' = feet; " = inch; NA = not applicable/available. Coordinate system = NAD83 Penn South Zone US Foot. Vacuum excavator used to soft dig to 5' bgs. Soil boring advanced adjacent to soft dig to record lithology in first five feet. Macrocore length = 5'. Macrocore inner diameter = 1".

Analytical soil sample collected: TP-63R (7-9), TP-63R (11-13).

DRAFT

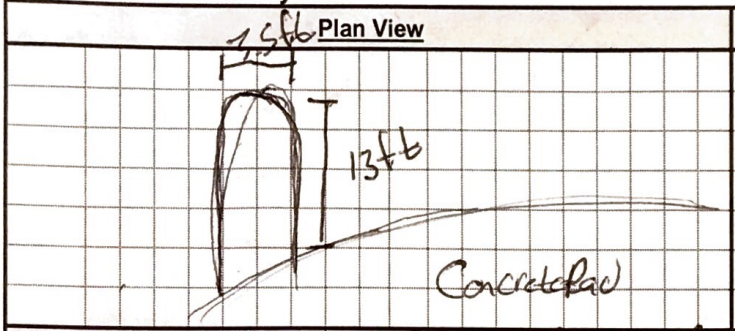
Test Pit Log

Test Pit ID: TP-44R

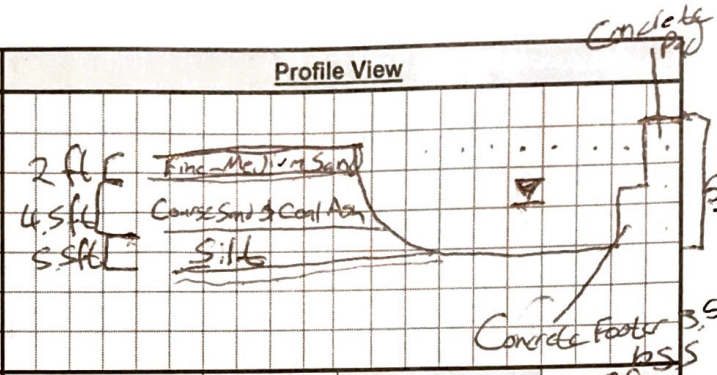
Client:	National Grid	**Date:**	4/24/19
Project:	Philly Cola	**Weather:**	Sunny
Location:	Philadelphia PA	**Temperature:**	70's
Project #:		**Wind:**	light
Geologist:	E Green	**Subcontractor:**	Advanced Drilling
Coordinates:		**Equipment:**	Back Hoe

Sketch of Test Pit Layout:

Plan View



Profile View



Test Pit Dimensions:	13 ft x 3.5 ft x 5.5 ft	**Total Depth:**	5.5 ft	**Depth to Water:**	3.5 ft

Depth Interval (feet)	PID Screening Result (ppm)	Description of Soil/Material	Samples Collected
0-2	0.2	0-1 Dark brown SAND, some Coal Cinder, little Course Sand, moist, loose 1-2 Light brown medium SAND, little Course Sand, little subrounded fine Gravel, moist loose	
2-4	1.6	2-4 Brown Coarse SAND, some Coal Ash, little Coal Clinker, loose, wet. water table at 3.5ft bgs	
4-5.5	62.1	4-5.5 SAA ~~water/petroleum~~ 4.5-5.5 Gray Fine SAND, some Silt, trace Coarse Sand, wet, loose Petroleum like odor	

Notes:

NA = Not Available/Applicable; bgs = below ground surface.

Concrete pad greater than 5.5 ft.
Concrete footer to pad extends from 3.5 ft to more than 5.5 ft
* No Samples collected because Samples were collected during TP-44R boring on 4/22/19

Photograph Summary:

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Test Pit Log 1 of 2

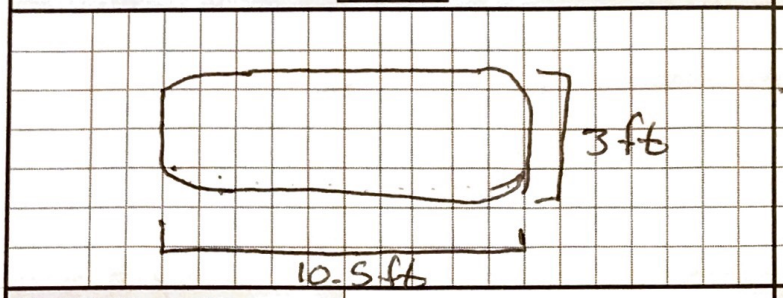
ARCADIS

Test Pit ID: PCTP-66R

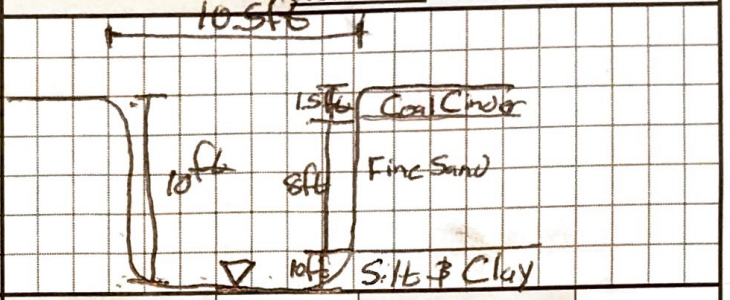
Client:	National Grid	**Date:**	4/24/19
Project:	Philly Coke	**Weather:**	sunny
Location:	Philadelphia PA	**Temperature:**	60's
Project #:		**Wind:**	Light
Geologist:	E Green	**Subcontractor:**	Advanced Drilling
Coordinates:		**Equipment:**	Back hoe

Sketch of Test Pit Layout:

Plan View



Profile View



Test Pit Dimensions: | **Total Depth:** | **Depth to Water:**

Depth Interval (feet)	PID Screening Result (ppm)	Description of Soil/Material	Samples Collected (0-0.5)
0-2	3.6	0-1.5 Black COAL CINDER little Coal fragments, trace Coal Tar, very dense, Solid, trace fine Sand, trace sub rounded fine Gravel, moist, loose, faint Coal Tar like odor 1.5-2 Tan Fine SAND, little Coal Cinder, trace coarse Sand, loose, moist	ID PCTP-66R Time 0900 ID SO-DUP-0424 Time —:—
2-4	0.1	2-4 Tan Fine Sand, little sub rounded fine Gravel, little Coal Cinder, loose, moist	ID PCTP-66R(0.5-2.0) Time 0910
4-6	0.0	4-6 SAA	

Notes:

NA = Not Available/Applicable; bgs = below ground surface.

Test Pit Completed to 10ft due to Cave in

Duplicate Sample Collected over 0-0.5 ft interval

Photograph Summary:

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Test Pit Log 2 of 2

Test Pit ID: PCTP-66R

Client:	National Grid	**Date:**	4/24/19
Project:	Philly Coke	**Weather:**	Sunny
Location:	Philadelphia PA	**Temperature:**	60's
Project #:		**Wind:**	Light
Geologist:	E Green	**Subcontractor:**	Advanced Drilling
Coordinates:		**Equipment:**	Back hoe

Sketch of Test Pit Layout:

Plan View	Profile View
See page 1	

Test Pit Dimensions:		Total Depth:		Depth to Water:	

Depth Interval (feet)	PID Screening Result (ppm)	Description of Soil/Material	Samples Collected
6-8	6.2	6-7.75 SAA 7.75-8 Gray Fine SAND, trace Coarse Sand, trace Silt, loose, moist - wet	
8-10	21.6	8-10 Gray SILT & CLAY some fine SAND low Plasticity, moderately strong Petroleum like odor, water table at 10ft bgs.	PCTP-66R(8-10) Time 0930

Notes:

NA = Not Available/Applicable; bgs = below ground surface.

Photograph Summary:

DRAFT

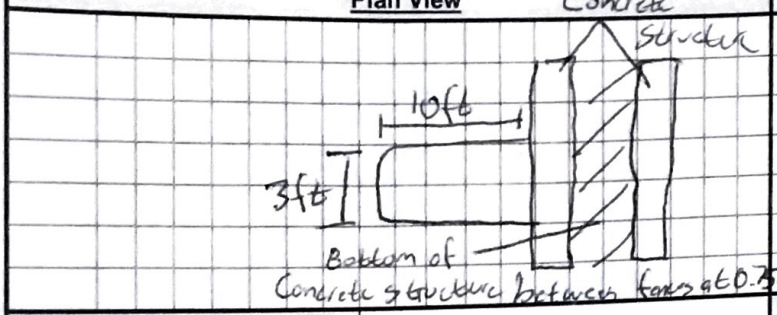
ARCADIS Test Pit Log

Test Pit ID: S-107

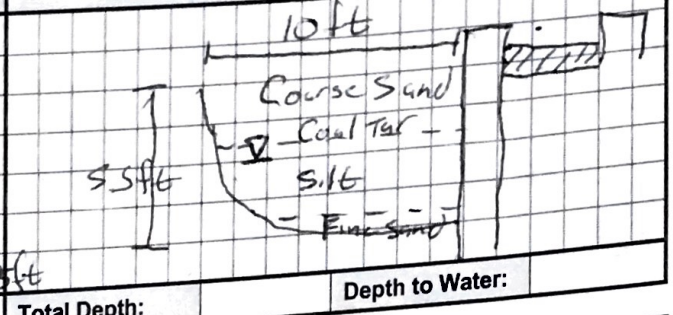
Client:	National Grid	**Date:**	4/23/15
Project:	Philly Coke	**Weather:**	80's Sunny
Location:	Philadelphia PA	**Temperature:**	
Project #:		**Wind:**	Light
Geologist:	E. Green	**Subcontractor:**	Advanced Drilling
Coordinates:		**Equipment:**	Track Hoe

Sketch of Test Pit Layout:

Plan View



Profile View



Test Pit Dimensions:

Total Depth:

Depth to Water:

Depth Interval (feet)	PID Screening Result (ppm)	Description of Soil/Material	Samples Collected
0-2	0.2	0-2 Brown Coarse SAND, little Fine-medium Sand, little Coal Ash, loose, moist	
2-4	188.8	2-4 Light brown fine SAND, little subrounded fine gravel, little Coal Clinker, Coal Tar at 3ft bgs loose, wet Odor at 3.5 ft bgs, Very strong Coal Tar like odor	ID S-107(2-4) Time 1335
4-5.5	0.4	4-5 Gray SILT, some fine Sand, little sub angular fine Gravel, Brick fragments, trace Coal Clinker, loose, wet 5-5.5 Light brown fine Sand, little Coarse Sand, trace Coal Clinker, loose-medium dense, wet	ID S-107(4-5.5) Time 1345

Notes:

NA = Not Available/Applicable; bgs = below ground surface.

Test Pit completed to 5.5ft bgs due to Cave in. Concrete structure extend more than 5.5ft bgs. Floor of Concrete structure between Concrete walls is below 0.75ft of soil

Photograph Summary:

Forms from Dave TP Template.docx

DRAFT

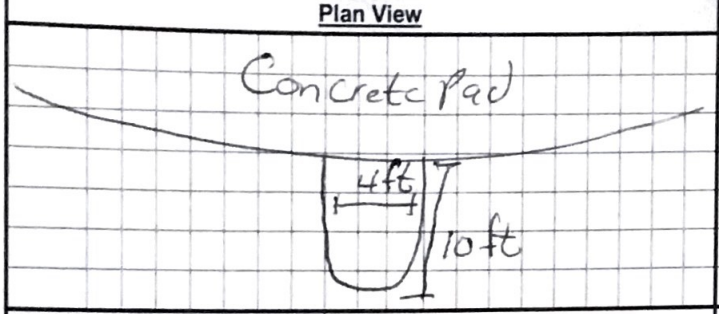
Test Pit Log

Test Pit ID: S-111

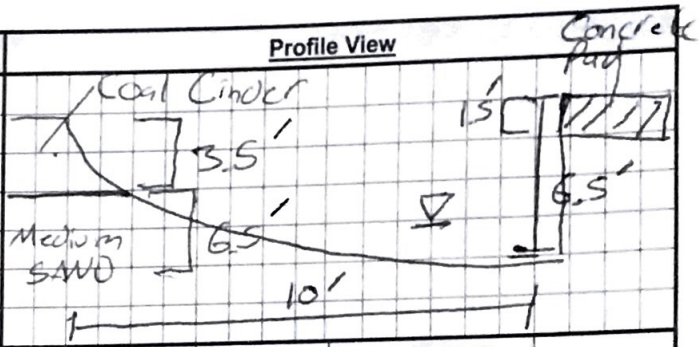
Client:	National Grid	**Date:**	4/23/19
Project:	Philly Coke	**Weather:**	Sunny
Location:	Philadelphia PA	**Temperature:**	70's
Project #:		**Wind:**	Light
Geologist:	EGreen	**Subcontractor:**	Advanced drilling
Coordinates:		**Equipment:**	Back hoes

Sketch of Test Pit Layout:

Plan View



Profile View



Test Pit Dimensions:		**Total Depth:**		**Depth to Water:**	

Depth Interval (feet)	PID Screening Result (ppm)	Description of Soil/Material	Samples Collected
0-2	0.1	0-2 Black COAL CINDER, some Coarse Sand little Coal Ash, trace Subangular fine Gravel, moist, loose	
2-4	0.2	2-3.5 SAA 3.5-4 Light brown fine-medium sand, little coarse sand, little Coal Cinder, loose, mois-wet	ID S-111(2-4) Time 1210
4-6.5	0.1	4-6.5 Light brown fine-medium SAND, little Coarse Sand, little sub angular fine Gravel trace coal Cinder, loose, wet Water table at 5ft bgs	ID S-111(4.5-6.5) Time 1220

Notes:

NA = Not Available/Applicable; bgs = below ground surface.

Test pit completed to 6.5ft bgs
Due to cave in

Photograph Summary:

DRAFT

ARCADIS

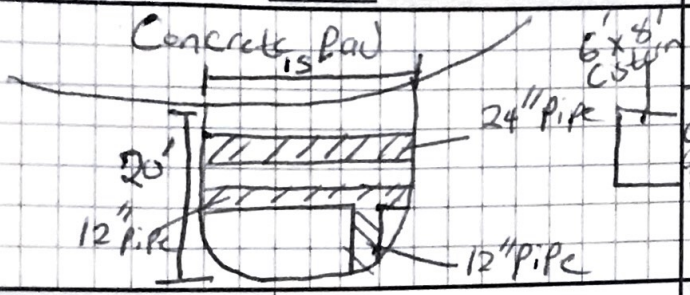
Test Pit Log

Test Pit ID: S-113

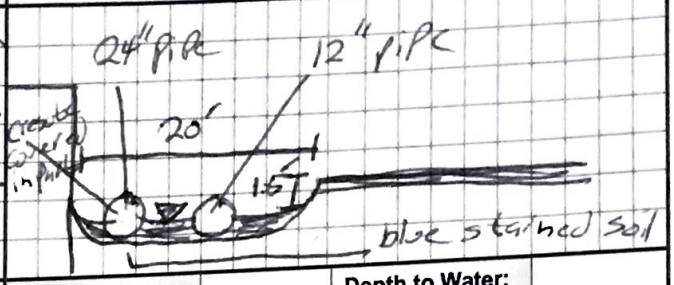
Client:	National Grid	**Date:**	4/23/19
Project:	Philly Coke	**Weather:**	Sunny
Location:	Philadelphia PA	**Temperature:**	70's
Project #:		**Wind:**	Light
Geologist:	E Crew	**Subcontractor:**	Advanced Drilling
Coordinates:		**Equipment:**	Backhoe

Sketch of Test Pit Layout:

Plan View



Profile View



Test Pit Dimensions:		**Total Depth:**	**Depth to Water:**

Depth Interval (feet)	PID Screening Result (ppm)	Description of Soil/Material	Samples Collected
		0-1 Blue Stain Coarse SAND, Some Sub-rounded fine gravel, 24" Pipe coated in solid coal tar found 1ft bgs wr at 1ft bgs, loose, wet, wet loose	
		* Creosote wraped pipe only located in some areas around 24" Pipe. Blue Prussian stained Sand only found in first 1' bgs immediately around the 24" pipe	

Photograph Summary:

Notes:

NA = Not Available/Applicable; bgs = below ground surface.

3 Pipes located within test Pit.
One 24" & two 12"

DRAFT

ARCADIS

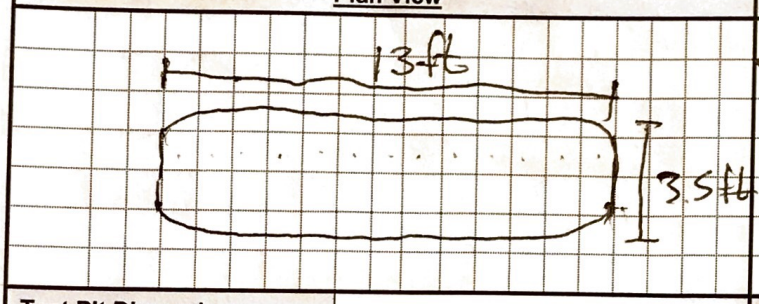
Test Pit Log 1 of 2

Test Pit ID: S-120

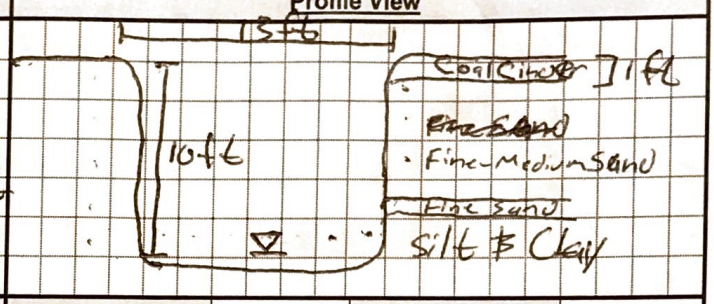
Client:	National Grid	**Date:**	4/24/19
Project:	Philly Coke	**Weather:**	Sunny
Location:	Philadelphia PA	**Temperature:**	70's
Project #:		**Wind:**	Light
Geologist:	E Green	**Subcontractor:**	Advanced Drilling
Coordinates:		**Equipment:**	Backhoe

Sketch of Test Pit Layout:

Plan View



Profile View



Test Pit Dimensions:		**Total Depth:**		**Depth to Water:**	

Depth Interval (feet)	PID Screening Result (ppm)	Description of Soil/Material	Samples Collected
0-2	0.2	0-1 Black COAL CINDER, little Coal Fragments, little Coarse Sand, loose, moist-dry. 1-2 Brown Fine-medium SAND, little rounded fine Gravel, little Coal Cinder	ID S-120 (0-1) Time 1050
2-4	0.1	loose, moist 2-4 SAND,	
4-6	0.1	4-6 Brown Medium SAND, little Subrounded fine Gravel, loose, moist	

Notes:

NA = Not Available/Applicable; bgs = below ground surface.

Photograph Summary:

DRAFT

ARCADIS

Test Pit Log 2of2

Test Pit ID:

Client:	National Grid	**Date:**	4/24/19
Project:	Phillx Coke	**Weather:**	70's
Location:	Philadelphia PA	**Temperature:**	Sunny
Project #:		**Wind:**	Light
Geologist:	EGreen	**Subcontractor:**	Advanced Drilling
Coordinates:		**Equipment:**	Back Hoe

Sketch of Test Pit Layout:

Plan View	Profile View
See Page 1	

Test Pit Dimensions:		**Total Depth:**		**Depth to Water:**	

Depth Interval (feet)	PID Screening Result (ppm)	Description of Soil/Material	Samples Collected
6-8	0.6	6-7.5 SAA 7-7.5 Gray fine SAND, some silt, loose-medium dense, moist-wet 7.5-8 Gray low plasticity SILT & CLAY, medium stiff, moist-wet	
8-10	3.0	Some fine sand, very faint petroleum like odor 8-10 SAA	
		water table at 9.5ft	

Notes:

NA = Not Available/Applicable; bgs = below ground surface.

Photograph Summary:

DRAFT

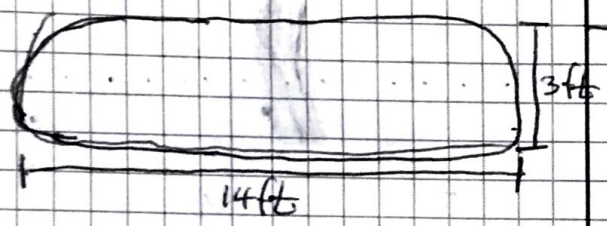
ARCADIS Test Pit Log 1 of 2

Test Pit ID: S-141

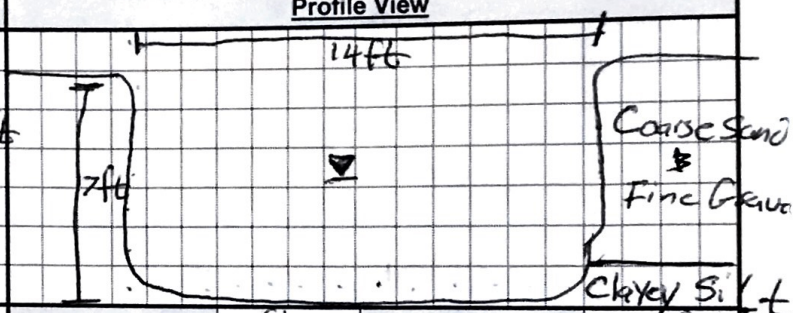
Client:	National Grid	**Date:**	4/25/19
Project:	Philly Coke	**Weather:**	60's, Sunny
Location:	philadelphia PA	**Temperature:**	Sunny
Project #:		**Wind:**	None
Geologist:	E Green	**Subcontractor:**	Advanced Drilling
Coordinates:		**Equipment:**	Back Hoe

Sketch of Test Pit Layout:

Plan View



Profile View



Test Pit Dimensions:	14ft x 3ft x 7ft	**Total Depth:**	7ft	**Depth to Water:**	2.5ft

Depth Interval (feet)	PID Screening Result (ppm)	Description of Soil/Material	Samples Collected
0-2	0.2	0-2 Gray Coarse SAND, Some Subrounded fine Gravel little Coal Cinder, little fine Sand, trace Coal Clinker wet, loose	
2-4	0.1	2-4 Brown Coarse SAND, Some Coal Cinder, little Subrounded Fine Gravel, little Coal Clinker, trace fine sand, wet, loose water table at 2.5ft bgs	
4-6	0.1	4-6 Gray Medium-Coarse SAND, Some Subrounded fine Gravel little Coal Cinder, little Coal Clinker, little fine sand, loose, wet	

Notes:

NA = Not Available/Applicable; bgs = below ground surface.

NO visual impacts or elevated PID readinss noted in S-141 therefore no samples were collected

Photograph Summary:

DRAFT

ARCADIS

Test Pit Log 2 of 2

Client:	National Grid	Test Pit ID:	S-141
Project:	Philly Cake	Date:	4/25/19
Location:	Philadelphia PA	Weather:	Sunny
Project #:		Temperature:	60's
Geologist:	EGreen	Wind:	Light
Coordinates:		Subcontractor:	Advanced Drilling
		Equipment:	Backhoe

Sketch of Test Pit Layout:

Plan View	Profile View
See Page 1	
Test Pit Dimensions: 14x3x7 ft	Total Depth: 7 ft / Depth to Water: 2.5 ft

Depth Interval (feet)	PID Screening Result (ppm)	Description of Soil/Material	Samples Collected
6-7	0.2	6-7 Light gray SILT, some very low plastic Clay, little fine ~~sand~~, soft, wet	

Notes:

NA = Not Available/Applicable; bgs = below ground surface.

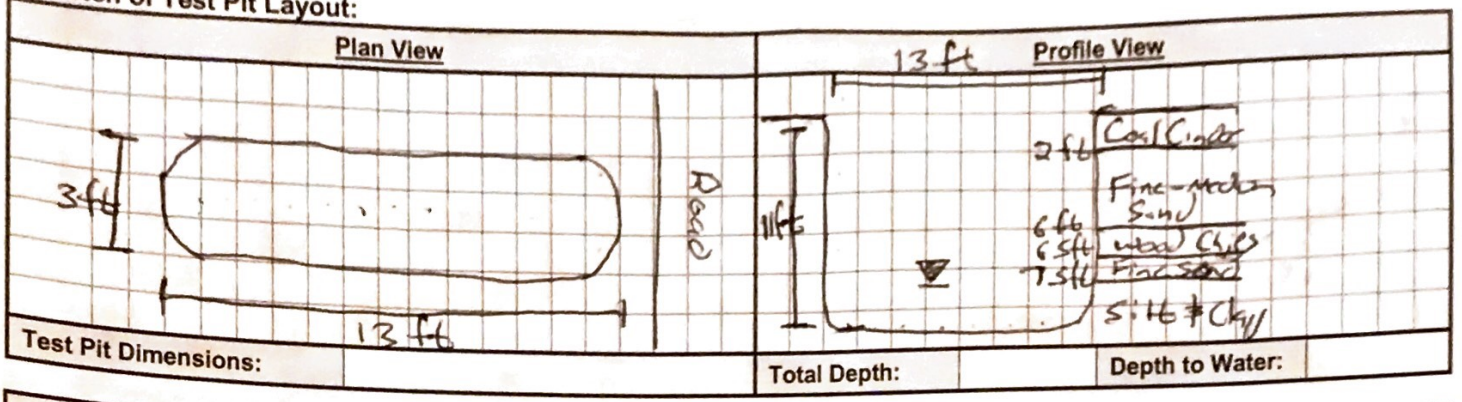
Photograph Summary:

DRAFT

ARCADIS Test Pit Log 1 of 2

Client:	National Grid	Test Pit ID:	S-142
Project:	Philly cote	Date:	4/25/19
Location:	Philadelphia PA	Weather:	Overcast
Project #:		Temperature:	60's
Geologist:	EGreen	Wind:	Light
Coordinates:		Subcontractor:	Advancer Drilling
		Equipment:	Back Hoe

Sketch of Test Pit Layout:



Test Pit Dimensions:		Total Depth:		Depth to Water:	

Depth Interval (feet)	PID Screening Result (ppm)	Description of Soil/Material	Samples Collected
0-2	0.2	0-2 Black COAL CINDER, little coarse Sand, little sub rounded fine Gravel, little Coal fragments moist, loose	
2-4	0.2	2-2.5 SAA 2.5-4 Brown fine-medium SAND, little Coal Cinder little sub angular fine Gravel, trace coal Cinder, trace Coal fragments, loose, moist	
4-6	0.3	4-5.5 SAA 5.5-6 Dark gray SILT, little woody debris, little very low plasticity clay, high Weathered/decomposed wood Chips at 6ft bgs No signs of blue staining	

Notes:

NA = Not Available/Applicable; bgs = below ground surface.

Sample collected from wood Chips, possible purifier waste, & first clean sample

*MS/MSD collected over 2-6ft interval

* 6-6.5ft sample only sampled for cyanide

Photograph Summary:

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ARCADIS

Test Pit Log

2 of 2

Test Pit ID: S-142

Client:	National Grid	**Date:**	4/25/17
Project:	Philly Coke	**Weather:**	Overcast
Location:	Philadelphia PA	**Temperature:**	60's
Project #:		**Wind:**	Light
Geologist:	EGTech	**Subcontractor:**	Advanced Drilling
Coordinates:		**Equipment:**	Back Hoe

Sketch of Test Pit Layout:

Plan View	Profile View
See Page 1	

Test Pit Dimensions:		**Total Depth:**		**Depth to Water:**	

Depth Interval (feet)	PID Screening Result (ppm)	Description of Soil/Material	Samples Collected
6-8	0.4	6-6.5 Light tan highly decomposed wood CHIPS wet, loose 6.5-7.5 Gray fine SAND, little silt, loose, wet 7.5-8 Gray low plasticity SILT & CLAY, little fine sand	ID S-142(6-6.5) Time 1030
8-10	6.2	soft, moist-wet water table at 7.5ft bgs 8-11 Gray low-medium plasticity SILT & CLAY, trace fine sand, soft, wet	ID: S-142(7-8) Time 1040 MS/MSD collected
10-11	0.2	* Water Table at 7.5 ft bgs	ID S-142(7-8)MS ID S-142(7-8)MSD

Notes:

NA = Not Available/Applicable; bgs = below ground surface.

Photograph Summary:

APPENDIX E

Groundwater Monitoring and Purge Logs

LOW FLOW FIELD SAMPLING LOG
GROUNDWATER QUALITY PARAMETERS
GROUNDWATER MONITORING - 2005

Project:	Former Philadelphia Coke Plant Site	Weather:	sunny, 50's
Project Location:	4501 Richmond Street	Personnel:	PMD
	Philadelphia, Pennsylvania	Date:	November 7, 2005

Well Number:	PCMW-10	Pump Depth:	15'	Pumping Rate:	350 ml/min
Water Level:	10.67	Pump Start Time:	1025	Total Purged:	12.25 liters
Screened Interval: (ft bgs)	5-15	PID Reading (ppm)	0.0	Purge Method:	Submersible Pump

TIME	TEMP (^{o}C)	pH (SU)	SPEC. COND. (mS/cm)	DO (PPM)	TURBIDITY (NTU)	ORP (mv)	WATER LEVEL (ft.)	COMMENTS
1025	17.40	6.56	3.160	16.55	380.0	-101	11.02	
1030	17.60	6.47	3.150	7.66	777.0	-121	11.02	
1035	18.00	6.48	3.150	6.99	99.7	-128	11.02	
1040	18.10	6.49	3.160	6.73	13.5	-132	11.02	
1045	18.10	6.49	3.210	6.60	4.8	-134	11.02	
1050	17.90	6.50	3.240	6.59	9.9	-135	11.02	
1055	17.80	6.50	3.230	6.60	10.5	-135	11.02	
1100	17.80	6.50	3.280	6.60	10.0	-136	11.02	

LOW FLOW FIELD SAMPLING LOG
GROUNDWATER QUALITY PARAMETERS
GROUNDWATER MONITORING - 2005

Project:	Former Philadelphia Coke Plant Site	Weather:	sunny mid 50's
Project Location:	4501 Richmond Street	Personnel:	PMD
	Philadelphia, Pennsylvania	Date:	November 7, 2005

Well Number:	PCMW-10D	Pump Depth:	32.5	Pumping Rate:	250 ml/ min
Water Level:	14	Pump Start Time:	1237	Total Purged:	11.25 liters
Screened Interval: (ft bgs)	23-33	PID Reading (ppm)	0.0	Purge Method:	Submersible Pump

TIME	TEMP (^{o}C)	pH (SU)	SPEC. COND. (mS/cm)	DO (PPM)	TURBIDITY (NTU)	ORP (mv)	WATER LEVEL (ft.)	COMMENTS
1240	14.80	6.68	2.050	12.56	108.0	-78	14.11	
1245	14.60	6.22	2.040	8.22	315.0	-84	14.14	
1250	14.90	6.11	2.090	7.92	183.0	-90	14.14	
1255	15.30	6.08	2.160	7.63	58.3	-98	14.14	
1300	15.30	6.08	2.160	7.61	10.0	-102	14.14	
1305	15.40	6.08	2.160	7.44	5.9	-103	14.14	
1310	15.00	6.08	2.200	7.48	6.0	-105	14.14	
1315	14.80	6.08	2.200	7.43	0.7	-106	14.14	
1320	14.70	6.08	2.200	7.36	0.5	-108	14.14	
1325	14.80	6.08	2.200	7.29	0.5	-109	14.14	

LOW FLOW FIELD SAMPLING LOG
GROUNDWATER QUALITY PARAMETERS
GROUNDWATER MONITORING - 2005

Project:	Former Philadelphia Coke Plant Site	Weather:	sunny 50's windy
Project Location:	4501 Richmond Street	Personnel:	PMD
	Philadelphia, Pennsylvania	Date:	November 7, 2005

Well Number:	PCMW-11	Pump Depth:	15.5'	Pumping Rate:	350 ml/min
Water Level:	11.82	Pump Start Time:	1407	Total Purged:	10.5 liters
Screened Interval: (ft bgs)	5-15	PID Reading (ppm)	0.0	Purge Method:	Submersible Pump

TIME	TEMP (^{o}C)	pH (SU)	SPEC. COND. (mS/cm)	DO (PPM)	TURBIDITY (NTU)	ORP (mv)	WATER LEVEL (ft.)	COMMENTS
1410	18.60	6.49	2.080	7.57	601.0	-103	11.92	
1415	19.30	6.34	1.770	6.21	53.2	-118	11.95	
1420	19.60	6.30	1.680	5.96	23.6	-114	11.95	
1425	19.70	6.29	1.660	5.91	19.5	-113	11.95	
1430	19.70	6.28	1.640	5.87	18.4	-113	11.95	
1435	19.30	6.27	1.610	5.93	17.1	-109	11.95	
1440	19.30	6.27	1.610	5.91	17.4	-107	11.95	

LOW FLOW FIELD SAMPLING LOG
GROUNDWATER QUALITY PARAMETERS
GROUNDWATER MONITORING - 2005

Project:	Former Philadelphia Coke Plant Site	Weather:	sunny high 40's
Project Location:	4501 Richmond Street	Personnel:	PMD
	Philadelphia, Pennsylvania	Date:	November 8, 2005

Well Number:	PCMW-11D	Pump Depth:	36.5	Pumping Rate:	325 ml/min
Water Level:	16.63	Pump Start Time:	713	Total Purged:	17.875 liters
Screened Interval: (ft bgs)	27-37	PID Reading (ppm)	0.0	Purge Method:	Submersible Pump

TIME	TEMP (^{o}C)	pH (SU)	SPEC. COND. (mS/cm)	DO (PPM)	TURBIDITY (NTU)	ORP (mv)	WATER LEVEL (ft.)	COMMENTS
715	14.80	6.81	1.450	13.43	100.0	-32	16.78	
720	15.00	6.52	1.470	7.48	162.0	-62	16.78	
725	15.40	6.48	1.480	6.99	78.6	-76	16.78	
730	15.80	6.47	1.490	6.90	41.0	-88	16.78	
735	15.70	6.47	1.490	6.78	32.2	-91	16.75	
740	15.90	6.45	1.490	6.73	22.0	-95	16.70	
745	16.10	6.46	1.500	6.64	16.6	-98	16.70	
750	16.00	6.46	1.500	6.67	12.2	-99	16.70	
755	16.00	6.46	1.500	6.68	8.1	-100	16.70	
800	16.10	6.46	1.500	6.64	5.7	-102	16.70	
805	16.20	6.46	1.500	6.64	6.1	-102	16.70	
810	16.20	6.46	1.500	6.64	6.2	-103	16.70	

LOW FLOW FIELD SAMPLING LOG
GROUNDWATER QUALITY PARAMETERS
GROUNDWATER MONITORING - 2005

Project:	Former Philadelphia Coke Plant Site	Weather:	50's windy
Project Location:	4501 Richmond Street	Personnel:	PMD
	Philadelphia, Pennsylvania	Date:	November 8, 2005

Well Number:	PCMW-12	Pump Depth:	10'	Pumping Rate:	250 ml/ min
Water Level:	5.54	Pump Start Time:	923	Total Purged:	11.25 liters
Screened Interval: (ft bgs)	2-10	PID Reading (ppm)	0.0	Purge Method:	Submersible Pump

TIME	TEMP (^{o}C)	pH (SU)	SPEC. COND. (mS/cm)	DO (PPM)	TURBIDITY (NTU)	ORP (mv)	WATER LEVEL (ft.)	COMMENTS
925	15.70	6.61	0.645	9.51	80.2	-26	5.85	
930	15.80	6.18	0.671	8.33	15.2	-14	5.85	
935	16.20	6.05	0.717	7.27	0.7	-28	5.85	
940	16.30	6.02	0.712	7.10	-3.8	-35	5.85	
945	16.40	6.03	0.722	7.02	-5.4	-38	5.85	
950	16.50	6.03	0.716	6.94	-6.9	-39	5.85	
955	16.60	6.04	0.723	6.87	-7.8	-42	5.85	
1000	16.60	6.04	0.715	6.81	-7.6	-42	5.85	
1005	16.60	6.04	0.714	6.80	-7.9	-42	5.85	
1010	16.60	6.04	0.717	6.80	-7.8	-42	5.85	

LOW FLOW FIELD SAMPLING LOG
GROUNDWATER QUALITY PARAMETERS
GROUNDWATER MONITORING - 2005

Project:	Former Philadelphia Coke Plant Site	Weather:	sunny high 50's
Project Location:	4501 Richmond Street	Personnel:	PMD
	Philadelphia, Pennsylvania	Date:	November 8, 2005

Well Number:	PCMW-12D	Pump Depth:	32.5'	Pumping Rate:	300 ml/ min
Water Level:	12.47	Pump Start Time:	1114	Total Purged:	15 liters
Screened Interval: (ft bgs)	23-33	PID Reading (ppm)	0.0	Purge Method:	Submersible Pump

TIME	TEMP (^{o}C)	pH (SU)	SPEC. COND. (mS/cm)	DO (PPM)	TURBIDITY (NTU)	ORP (mv)	WATER LEVEL (ft.)	COMMENTS
1115	14.90	6.30	1.710	10.06	329.0	-64	12.57	
1120	15.10	6.19	1.710	7.94	141.0	-79	12.62	
1125	15.40	6.18	1.720	7.64	100.0	-83	12.62	
1130	15.70	6.17	1.740	7.13	19.0	-103	12.62	
1135	16.00	6.18	1.740	7.01	10.0	-107	12.62	
1140	16.00	6.19	1.750	6.94	9.3	-108	12.62	
1145	16.00	6.20	1.750	6.85	7.5	-115	12.62	
1150	16.10	6.21	1.750	6.78	5.1	-116	12.62	
1155	16.20	6.20	1.750	6.74	3.2	-117	12.62	
1200	16.20	6.20	1.750	6.73	3.2	-117	12.62	
1205	16.20	6.20	1.750	6.73	2.8	-118	12.62	

LOW FLOW FIELD SAMPLING LOG
GROUNDWATER QUALITY PARAMETERS
GROUNDWATER MONITORING - 2005

Project:	Former Philadelphia Coke Plant Site	Weather:	
Project Location:	4501 Richmond Street	Personnel:	PMD
	Philadelphia, Pennsylvania	Date:	November 9, 2005

Well Number:	PCMW-13	Pump Depth:	19'	Pumping Rate:	350ml/min
Water Level:	10.8'	Pump Start Time:	639	Total Purged:	15.75
Screened Interval: (ft bgs)	5-20	PID Reading (ppm)	0.0	Purge Method:	Submersible Pump

TIME	TEMP (^{o}C)	pH (SU)	SPEC. COND. (mS/cm)	DO (PPM)	TURBIDITY (NTU)	ORP (mv)	WATER LEVEL (ft.)	COMMENTS
640	15.00	7.11	1.340	12.88	999.0	92	10.82	
645	15.50	6.73	1.300	7.13	999.0	-15	10.85	
650	15.80	6.70	1.330	6.80	449.0	-50	10.85	
655	16.00	6.71	1.330	6.69	210.0	-62	10.85	
700	16.00	6.70	1.340	6.61	113.0	-68	10.85	
705	16.00	6.69	1.340	6.59	56.0	-72	10.85	
710	15.90	6.69	1.330	6.60	42.1	-75	10.85	
715	15.90	6.69	1.350	6.57	?	-76	10.85	
720	15.90	6.69	1.350	6.55	?	-77	10.85	
725	15.90	6.69	1.350	6.52	?	-79	10.85	

LOW FLOW FIELD SAMPLING LOG
GROUNDWATER QUALITY PARAMETERS
GROUNDWATER MONITORING - 2005

Project:	Former Philadelphia Coke Plant Site	Weather:	cloudy low 50's
Project Location:	4501 Richmond Street	Personnel:	PMD
	Philadelphia, Pennsylvania	Date:	November 9, 2005

Well Number:	PCMW-13D	Pump Depth:	37.5'	Pumping Rate:	350 ml/min
Water Level:	12.48'	Pump Start Time:	839	Total Purged:	15.75 liters
Screened Interval: (ft bgs)	23-33	PID Reading (ppm)	0.0	Purge Method:	Submersible Pump

TIME	TEMP (^{o}C)	pH (SU)	SPEC. COND. (mS/cm)	DO (PPM)	TURBIDITY (NTU)	ORP (mv)	WATER LEVEL (ft.)	COMMENTS
840	13.90	6.45	1.360	8.64	27.7	43	12.46	
845	13.90	6.48	1.360	8.13	16.6	25	12.47	
850	14.00	6.52	1.330	7.76	5.1	6	12.47	
855	14.30	6.54	1.320	7.51	-6.0	-7	12.47	
900	14.40	6.55	1.320	7.36	-5.8	-17	12.47	
905	14.50	6.53	1.330	7.25	-6.3	-20	12.47	
910	14.70	6.54	1.330	7.16	-8.5	-26	12.47	
915	14.60	6.54	1.340	7.11	-9.0	-29	12.47	
920	14.70	6.55	1.340	7.08	-9.7	-30	12.47	
925	14.70	6.55	1.340	7.07	-9.8	-31	12.47	

LOW FLOW FIELD SAMPLING LOG
GROUNDWATER QUALITY PARAMETERS
GROUNDWATER MONITORING - 2005

Project:	Former Philadelphia Coke Plant Site	Weather:	cloudy, low 50's
Project Location:	4501 Richmond Street	Personnel:	PMD
	Philadelphia, Pennsylvania	Date:	November 1, 2005

Well Number:	PCMW-14	Pump Depth:	15'	Pumping Rate:	350 ml/min
Water Level:	8.58'	Pump Start Time:	1119	Total Purged:	19.25 liters
Screened Interval: (ft bgs)	5-15	PID Reading (ppm)	0.0	Purge Method:	Submersible Pump

TIME	TEMP (^{o}C)	pH (SU)	SPEC. COND. (mS/cm)	DO (PPM)	TURBIDITY (NTU)	ORP (mv)	WATER LEVEL (ft.)	COMMENTS
1120	17.20	8.60	1.350	9.41	166.0	-134	8.60	
1125	17.20	8.52	1.390	7.21	37.9	-159	8.62	
1130	17.30	8.48	1.420	6.91	4.7	-197	8.62	
1135	17.40	8.49	1.420	6.52	-2.7	-224	8.63	
1140	17.30	8.50	1.410	6.39	7.0	-251	8.63	
1145	17.50	8.50	1.380	6.17	7.0	-260	8.63	
1150	17.90	8.51	1.380	6.12	7.0	-268	8.63	
1155	16.80	8.41	1.420	6.21	14.4	-284	8.85	
1200	16.50	8.41	1.420	6.27	11.1	-304	8.89	
1205	16.50	8.40	1.430	6.35	9.9	-312	8.89	
1210	16.40	8.39	1.440	6.35	9.1	-316	8.89	
1215	16.40	8.39	1.440	6.34	8.9	-318	8.89	

LOW FLOW FIELD SAMPLING LOG
GROUNDWATER QUALITY PARAMETERS
GROUNDWATER MONITORING - 2005

Project:	Former Philadelphia Coke Plant Site	Weather:	cloudy 50's
Project Location:	4501 Richmond Street	Personnel:	PMD
	Philadelphia, Pennsylvania	Date:	November 9, 2005

Well Number:	PCMW-14D	Pump Depth:	39'	Pumping Rate:	350 ml / min
Water Level:	12.85	Pump Start Time:	1314	Total Purged:	19.25 liters
Screened Interval: (ft bgs)	30-40	PID Reading (ppm)	0.0	Purge Method:	Submersible Pump

TIME	TEMP (^{o}C)	pH (SU)	SPEC. COND. (mS/cm)	DO (PPM)	TURBIDITY (NTU)	ORP (mv)	WATER LEVEL (ft.)	COMMENTS
1315	14.90	6.76	1.600	14.64	526.0	-49	13.57	
1320	15.30	5.97	1.600	7.39	240.0	-35	13.59	
1325	15.40	5.92	1.600	7.19	132.0	-35	13.59	
1330	15.50	5.91	1.600	7.12	68.3	-35	13.60	
1335	15.50	5.90	1.600	7.04	40.0	-34	13.60	
1340	15.40	5.90	1.600	6.98	40.1	-34	13.60	
1345	15.20	5.89	1.600	7.00	15.3	-34	13.60	
1350	15.20	5.89	1.600	6.90	32.2	-35	13.60	
1355	15.20	5.89	1.600	6.90	32.1	-35	13.60	
1400	15.20	5.89	1.600	6.89	30.0	-35	13.60	
1405	15.20	5.89	1.600	6.89	29.7	-35	13.60	
1410	15.20	5.89	1.600	6.88	29.5	-35	13.60	

LOW FLOW FIELD SAMPLING LOG
GROUNDWATER QUALITY PARAMETERS
GROUNDWATER MONITORING - 2005

Project:	Former Philadelphia Coke Plant Site	Weather:	sunny cold, vy windy
Project Location:	4501 Richmond Street	Personnel:	PMD
	Philadelphia, Pennsylvania	Date:	November 10, 2005

Well Number:	PCMW-15	Pump Depth:	14'	Pumping Rate:	300ml/min
Water Level:	9.95'	Pump Start Time:	654	Total Purged:	12 liters
Screened Interval: (ft bgs)	5-15	PID Reading (ppm)	0.0	Purge Method:	Submersible Pump

TIME	TEMP (^{o}C)	pH (SU)	SPEC. COND. (mS/cm)	DO (PPM)	TURBIDITY (NTU)	ORP (mv)	WATER LEVEL (ft.)	COMMENTS
655	16.40	7.09	2.810	11.77	260.0	-57	10.85	
700	16.40	6.77	2.700	7.68	93.6	-106	10.89	
705	17.30	6.66	2.770	6.45	-1.8	-142	10.89	
710	17.70	6.65	2.710	6.12	-10.0	-148	10.89	
715	17.60	6.65	2.700	6.09	-10.0	-149	10.89	
720	17.70	6.65	2.710	6.04	-10.0	-149	10.89	
725	17.80	6.64	2.720	6.02	-10.0	-149	10.89	
730	17.90	6.64	2.740	6.01	-10.0	-150	10.89	
735	17.70	6.64	2.750	6.05	-10.0	-150	10.89	

LOW FLOW FIELD SAMPLING LOG
GROUNDWATER QUALITY PARAMETERS
GROUNDWATER MONITORING - 2005

Project:	Former Philadelphia Coke Plant Site	Weather:	very windy 20-30 mph
Project Location:	4501 Richmond Street	Personnel:	PMD
	Philadelphia, Pennsylvania	Date:	November 1, 2005

Well Number:	PCMW-15D	Pump Depth:	40'	Pumping Rate:	300ml/min
Water Level:	17.63	Pump Start Time:	843	Total Purged:	10.5 liters
Screened Interval: (ft bgs)	31-41	PID Reading (ppm)	0.0	Purge Method:	Submersible Pump

TIME	TEMP (^{o}C)	pH (SU)	SPEC. COND. (mS/cm)	DO (PPM)	TURBIDITY (NTU)	ORP (mv)	WATER LEVEL (ft.)	COMMENTS
845	14.90	6.04	1.410	6.37	-3.6	13	17.71	
850	15.20	6.34	1.410	5.32	-8.5	-41	17.72	
855	15.50	6.42	1.410	4.94	-10.0	-88	17.73	
900	15.60	6.42	1.420	4.80	-10.0	-104	17.73	
905	15.60	6.42	1.420	4.73	-10.0	-111	17.73	
910	15.70	6.42	1.420	4.68	-10.0	-115	17.73	
915	15.70	6.42	1.420	4.68	-10.0	-116	17.73	
920	15.60	6.42	1.420	4.67	-10.0	-117	17.73	

LOW FLOW FIELD SAMPLING LOG
GROUNDWATER QUALITY PARAMETERS
GROUNDWATER MONITORING - 2005

Project:	Former Philadelphia Coke Plant Site	Weather:	
Project Location:	4501 Richmond Street	Personnel:	PMD
	Philadelphia, Pennsylvania	Date:	November 10, 2005

Well Number:	PCMW-16	Pump Depth:	14.8	Pumping Rate:	250ml/min
Water Level:	9.8	Pump Start Time:	1029	Total Purged:	11.25 liters
Screened Interval: (ft bgs)	4-14	PID Reading (ppm)	0.0	Purge Method:	Submersible Pump

TIME	TEMP (^{o}C)	pH (SU)	SPEC. COND. (mS/cm)	DO (PPM)	TURBIDITY (NTU)	ORP (mv)	WATER LEVEL (ft.)	COMMENTS
1030	16.10	6.66	1.910	10.86	509.0	-39	9.85	
1035	16.70	6.42	1.930	4.66	365.0	-110	9.88	
1040	16.30	6.37	1.880	4.67	152.0	-111	9.88	
1045	16.30	6.37	1.890	4.66	42.7	-114	9.88	
1050	16.30	6.38	1.890	4.61	9.1	-118	9.88	
1055	16.20	6.39	1.890	4.61	-3.2	-122	9.88	
1100	16.20	6.39	1.900	4.60	-7.8	-125	9.88	
1105	16.20	6.40	1.900	4.58	-9.1	-127	9.88	
1110	16.20	6.40	1.900	4.58	-10.0	-127	9.88	
1115	16.20	6.40	1.900	4.57	-10.0	-128	9.88	

LOW FLOW FIELD SAMPLING LOG
GROUNDWATER QUALITY PARAMETERS
GROUNDWATER MONITORING - 2005

Project:	Former Philadelphia Coke Plant Site	Weather:	partly sunny, windy
Project Location:	4501 Richmond Street	Personnel:	PMD
	Philadelphia, Pennsylvania	Date:	November 10, 2005

Well Number:	PCMW-16D	Pump Depth:	333.5	Pumping Rate:	275ml/min
Water Level:	11.77	Pump Start Time:	1227	Total Purged:	15.125 liters
Screened Interval: (ft bgs)	23-33	PID Reading (ppm)	0.0	Purge Method:	Submersible Pump

TIME	TEMP (^{o}C)	pH (SU)	SPEC. COND. (mS/cm)	DO (PPM)	TURBIDITY (NTU)	ORP (mv)	WATER LEVEL (ft.)	COMMENTS
1230	15.10	6.57	0.970	5.65	999.0	-67	11.76	
1235	15.20	6.41	0.960	5.15	999.0	-85	11.74	
1240	15.70	6.36	0.960	4.89	999.0	-96	11.74	
1245	16.30	6.35	0.950	4.71	453.0	-103	11.74	
1250	16.00	6.35	0.950	4.69	214.0	-108	11.74	
1255	16.20	6.36	0.950	4.61	110.0	-113	11.74	
1300	16.40	6.37	0.950	4.53	104.0	-117	11.74	
1305	16.40	6.38	0.950	4.52	93.4	-119	11.74	
1310	16.20	6.37	0.950	4.54	90.9	-121	11.74	
1315	16.10	6.39	0.950	4.55	94.7	-124	11.74	
1320	16.30	6.40	0.950	4.46	96.1	-125	11.74	
1325	16.30	6.41	0.950	4.51	94.8	-125	11.74	

LOW FLOW FIELD SAMPLING LOG
GROUNDWATER QUALITY PARAMETERS
GROUNDWATER MONITORING - 2005

Project:	Former Philadelphia Coke Plant Site	Weather:	cold, low 40's
Project Location:	4501 Richmond Street	Personnel:	PMD
	Philadelphia, Pennsylvania	Date:	November 11, 2005

Well Number:	PCMW-17	Pump Depth:	14'	Pumping Rate:	250 ml/min
Water Level:	7.05	Pump Start Time:	704	Total Purged:	13.75 liters
Screened Interval: (ft bgs)	4-14	PID Reading (ppm)	0.0	Purge Method:	Submersible Pump

TIME	TEMP (^{o}C)	pH (SU)	SPEC. COND. (mS/cm)	DO (PPM)	TURBIDITY (NTU)	ORP (mv)	WATER LEVEL (ft.)	COMMENTS
705	15.50	6.01	1.080	10.19	530.0	90	7.61	
710	15.30	6.02	1.070	6.36	306.0	-20	7.80	
715	15.40	6.02	1.080	6.25	258.0	-35	7.84	
720	15.90	6.02	1.080	6.01	160.0	-62	7.84	
725	16.50	6.03	1.080	5.76	119.0	-82	7.84	
730	16.80	6.04	1.080	5.64	103.0	-93	7.84	
735	16.70	6.03	1.120	5.57	63.6	-99	7.84	
740	16.60	6.04	1.130	5.54	43.9	-102	7.84	
745	16.70	6.04	1.120	5.53	37.6	-105	7.84	
750	16.60	6.04	1.130	5.55	19.6	-108	7.84	
755	16.70	6.05	1.130	5.52	17.1	-111	7.84	
800	16.70	6.05	1.130	5.53	17.0	-113	7.84	

LOW FLOW FIELD SAMPLING LOG
GROUNDWATER QUALITY PARAMETERS
GROUNDWATER MONITORING - 2005

Project:	Former Philadelphia Coke Plant Site	Weather:	
Project Location:	4501 Richmond Street	Personnel:	PMD
	Philadelphia, Pennsylvania	Date:	November 11, 2005

Well Number:	PCMW-17D	Pump Depth:	40.5	Pumping Rate:	350ml/ min
Water Level:	14.75	Pump Start Time:	913	Total Purged:	14 liters
Screened Interval: (ft bgs)	30-40	PID Reading (ppm)	0.0	Purge Method:	Submersible Pump

TIME	TEMP (^{o}C)	pH (SU)	SPEC. COND. (mS/cm)	DO (PPM)	TURBIDITY (NTU)	ORP (mv)	WATER LEVEL (ft.)	COMMENTS
915	15.20	6.12	1.030	8.36	55.2	-22	13.94	
920	15.50	5.70	1.020	6.28	130.0	-25	13.94	
925	15.80	5.66	1.020	6.01	37.4	-26	13.94	
930	15.80	5.65	1.020	5.94	8.3	-28	13.94	
935	15.70	5.65	1.020	5.89	-3.8	-30	13.94	
940	15.60	5.65	1.020	5.86	-8.6	-31	13.94	
945	15.70	5.65	1.020	5.86	-10.0	-32	13.94	
950	15.60	5.65	1.020	5.89	-10.0	-33	13.94	
955	15.60	5.65	1.020	5.89	-10.0	-33	13.94	

LOW FLOW FIELD SAMPLING LOG
GROUNDWATER QUALITY PARAMETERS
GROUNDWATER MONITORING - 2005

Project:	Former Philadelphia Coke Plant Site	Weather:	cloudy low 40's
Project Location:	4501 Richmond Street	Personnel:	PMD
	Philadelphia, Pennsylvania	Date:	November 11, 2005

Well Number:	PCMW-18	Pump Depth:	19.7	Pumping Rate:	300 ml / min
Water Level:	18.44	Pump Start Time:	1109	Total Purged:	10.5 liters
Screened Interval: (ft bgs)	5-15	PID Reading (ppm)	0.0	Purge Method:	Submersible Pump

TIME	TEMP (^{o}C)	pH (SU)	SPEC. COND. (mS/cm)	DO (PPM)	TURBIDITY (NTU)	ORP (mv)	WATER LEVEL (ft.)	COMMENTS
1110	16.10	6.53	0.949	8.40	999.0	4	18.56	
1115	16.50	5.68	0.888	7.20	45.2	47	18.56	
1120	16.90	5.66	0.892	7.04	13.2	50	18.56	
1125	17.10	5.65	0.887	7.01	-1.2	54	18.56	
1130	17.30	5.62	0.885	6.99	-1.2	59	18.56	
1135	16.60	5.61	0.883	7.17	-1.3	64	18.56	

LOW FLOW FIELD SAMPLING LOG
GROUNDWATER QUALITY PARAMETERS
GROUNDWATER MONITORING - 2005

Project:	Former Philadelphia Coke Plant Site	Weather:	cloudy low 40's
Project Location:	4501 Richmond Street	Personnel:	PMD
	Philadelphia, Pennsylvania	Date:	November 11, 2005

Well Number:	PCMW-18D	Pump Depth:	35.5	Pumping Rate:	400 ml/min
Water Level:	17.45	Pump Start Time:	1219	Total Purged:	14 liters
Screened Interval: (ft bgs)	27-37	PID Reading (ppm)	0.0	Purge Method:	Submersible Pump

TIME	TEMP (^{o}C)	pH (SU)	SPEC. COND. (mS/cm)	DO (PPM)	TURBIDITY (NTU)	ORP (mv)	WATER LEVEL (ft.)	COMMENTS
1225	14.20	5.80	0.821	8.34	151.0	101	17.49	
1230	15.00	5.21	0.831	6.93	206.0	117	17.49	
1235	15.00	5.20	0.831	6.90	162.0	117	17.49	
1240	15.20	5.18	0.830	6.78	38.0	120	17.49	
1245	15.20	5.17	0.832	6.78	13.0	120	17.49	
1250	15.10	5.17	0.834	6.78	-4.6	122	17.49	
1255	15.10	5.17	0.834	6.75	-4.6	122	17.49	
1300	15.10	5.17	0.834	6.74	-4.6	122	17.49	

LOW FLOW FIELD SAMPLING LOG
GROUNDWATER QUALITY PARAMETERS
GROUNDWATER MONITORING - 2005

Project:	Former Philadelphia Coke Plant Site	Weather:	partly sunny, 50's
Project Location:	4501 Richmond Street	Personnel:	PMD
	Philadelphia, Pennsylvania	Date:	November 14, 2005

Well Number:	PCMW-19	Pump Depth:	13.5	Pumping Rate:	350 ml/min
Water Level:	7.71	Pump Start Time:	647	Total Purged:	14 liters
Screened Interval: (ft bgs)	3-13	PID Reading (ppm)	0.0	Purge Method:	Submersible Pump

TIME	TEMP (^{o}C)	pH (SU)	SPEC. COND. (mS/cm)	DO (PPM)	TURBIDITY (NTU)	ORP (mv)	WATER LEVEL (ft.)	COMMENTS
650	16.60	6.45	0.731	13.36	278.0	-38	7.80	
655	16.80	6.40	0.725	10.11	17.2	-61	7.80	
700	17.20	6.34	0.714	6.69	7.9	-97	7.80	
705	17.20	6.32	0.706	6.45	10.0	-113	7.80	
710	17.60	6.33	0.706	6.36	1.7	-115	7.80	
715	17.20	6.37	0.689	6.40	-10.0	-125	7.80	
720	16.40	6.40	0.695	6.51	-10.0	-132	7.80	
725	16.50	6.40	0.696	6.51	-10.0	-134	7.80	
730	16.50	6.40	0.696	6.51	-10.0	-135	7.80	

LOW FLOW FIELD SAMPLING LOG
GROUNDWATER QUALITY PARAMETERS
GROUNDWATER MONITORING - 2005

Project:	Former Philadelphia Coke Plant Site	Weather:	sunny 50's
Project Location:	4501 Richmond Street	Personnel:	PMD
	Philadelphia, Pennsylvania	Date:	November 14, 2005

Well Number:	PCMW-19D	Pump Depth:	36'	Pumping Rate:	400 ml/min
Water Level:	12.3	Pump Start Time:	839	Total Purged:	16 liters
Screened Interval: (ft bgs)	27-37	PID Reading (ppm)	6.0	Purge Method:	Submersible Pump

TIME	TEMP (^{o}C)	pH (SU)	SPEC. COND. (mS/cm)	DO (PPM)	TURBIDITY (NTU)	ORP (mv)	WATER LEVEL (ft.)	COMMENTS
840	15.80	5.98	1.170	14.49	393.0	-23	12.32	
845	16.20	5.89	1.170	7.52	422.0	-31	12.34	
850	16.30	5.86	1.170	6.81	199.0	-40	12.34	
855	16.40	5.86	1.180	6.61	88.3	-46	12.34	
900	16.50	5.87	1.180	6.50	44.2	-50	12.34	
905	16.30	5.87	1.180	6.50	20.3	-53	12.34	
910	16.10	5.87	1.180	6.63	-0.7	-55	12.34	
915	16.10	5.87	1.180	6.62	-2.8	-57	12.34	
920	16.10	5.87	1.180	6.62	-2.8	-58	12.34	

LOW FLOW FIELD SAMPLING LOG
GROUNDWATER QUALITY PARAMETERS
GROUNDWATER MONITORING - 2005

Project:	Former Philadelphia Coke Plant Site	Weather:	sunny 50's
Project Location:	4501 Richmond Street	Personnel:	PMD
	Philadelphia, Pennsylvania	Date:	November 14, 2005

Well Number:	PCMW-20	Pump Depth:	13	Pumping Rate:	350 ml/min
Water Level:	8.66	Pump Start Time:	1049	Total Purged:	14 liters
Screened Interval: (ft bgs)	3-13	PID Reading (ppm)	0.0	Purge Method:	Submersible Pump

TIME	TEMP (^{o}C)	pH (SU)	SPEC. COND. (mS/cm)	DO (PPM)	TURBIDITY (NTU)	ORP (mv)	WATER LEVEL (ft.)	COMMENTS
1050	17.50	5.89	0.265	7.86	191.0	49	9.52	
1055	17.60	5.86	0.237	6.64	172.0	9	9.54	
1100	17.90	5.82	0.239	6.35	23.9	-11	9.54	
1105	17.70	5.80	0.243	6.37	23.6	-17	9.54	
1110	18.10	5.72	0.237	6.12	17.2	-26	9.54	
1115	18.00	5.76	0.237	6.10	13.5	-33	9.54	
1120	18.10	5.78	0.240	6.00	22.7	-35	9.54	
1125	18.10	5.78	0.241	6.06	23.7	-36	9.54	
1130	18.10	5.78	0.241	6.06	29.5	-36	9.54	

LOW FLOW FIELD SAMPLING LOG
GROUNDWATER QUALITY PARAMETERS
GROUNDWATER MONITORING - 2005

Project:	Former Philadelphia Coke Plant Site	Weather:	sunny high 50's
Project Location:	4501 Richmond Street	Personnel:	PMD
	Philadelphia, Pennsylvania	Date:	November 14, 2005

Well Number:	PCMW-20D	Pump Depth:	25	Pumping Rate:	400 ml/ min
Water Level:	13.3	Pump Start Time:	1219	Total Purged:	16 liters
Screened Interval: (ft bgs)	18-28	PID Reading (ppm)	0.0	Purge Method:	Submersible Pump

TIME	TEMP (^{o}C)	pH (SU)	SPEC. COND. (mS/cm)	DO (PPM)	TURBIDITY (NTU)	ORP (mv)	WATER LEVEL (ft.)	COMMENTS
1220	16.10	6.61	8.610	8.92	52.5	-45	14.31	
1225	16.30	6.55	7.460	7.14	27.4	-98	14.31	
1230	16.30	6.55	7.180	7.07	11.7	-107	14.31	
1235	16.30	6.56	6.880	6.84	0.3	-117	14.31	
1240	16.30	6.56	6.790	6.70	-1.9	-122	14.31	
1245	16.30	6.57	6.600	6.59	-6.3	-126	14.31	
1250	16.30	6.57	6.490	6.55	-8.0	-129	14.31	
1255	16.30	6.57	6.470	6.47	-10.0	-132	14.31	
1300	16.30	6.57	6.420	6.45	-10.0	-131	14.31	

LOW FLOW FIELD SAMPLING LOG
GROUNDWATER QUALITY PARAMETERS
GROUNDWATER MONITORING - 2006

Project:	Former Philadelphia Coke Plant Site	Weather:	
Project Location:	4501 Richmond Street	Personnel:	PD & JD
	Philadelphia, Pennsylvania	Date:	January 30, 2006

Well Number:	PCMW-01	Pump Depth:	9.5	Pumping Rate:	500 ml/min
Water Level:	5.35	Pump Start Time:	1315	Total Purged:	30 liters
Screened Interval: (ft bgs)	1-9	PID Reading (ppm)	0.0	Purge Method:	Submersible Pump

TIME	TEMP (^{o}C)	pH (SU)	SPEC. COND. (mS/cm)	DO (PPM)	TURBIDITY (NTU)	ORP (mv)	WATER LEVEL (ft.)	COMMENTS
1325	7.94	6.07	0.696	7.34	100.0	-2	5.37	
1335	7.49	6.55	3.060	0.75	57.0	-128	5.38	
1340	7.89	6.57	8.000	1.61	56.0	-133	5.38	
1345	7.19	6.58	16.800	0.98	47.0	-133	5.38	
1350	6.83	6.60	4.510	0.63	28.0	-139	5.38	
1355	6.39	6.62	3.460	0.53	16.0	-141	5.38	
1400	6.34	6.64	3.120	0.50	15.0	-143	5.38	
1405	6.19	6.68	2.760	0.51	14.0	-144	5.38	
1410	6.06	6.70	2.570	0.48	15.0	-145	5.38	
1415	5.85	6.72	2.120	0.48	8.0	-145	5.38	
1420	5.33	6.77	1.700	0.47	7.0	-148	5.38	
1425	5.31	6.79	1.520	0.47	11.0	-149	5.38	

LOW FLOW FIELD SAMPLING LOG
GROUNDWATER QUALITY PARAMETERS
GROUNDWATER MONITORING - 2006

Project:	Former Philadelphia Coke Plant Site	Weather:	
Project Location:	4501 Richmond Street	Personnel:	PD & JD
	Philadelphia, Pennsylvania	Date:	January 30, 2006

Well Number:	PCMW-02	Pump Depth:	approx 12'	Pumping Rate:	950 ml/min
Water Level:	5.42	Pump Start Time:	1355	Total Purged:	32.3 liters
Screened Interval: (ft bgs)	1-9	PID Reading (ppm)	0.0	Purge Method:	Submersible Pump

TIME	TEMP (^{o}C)	pH (SU)	SPEC. COND. (mS/cm)	DO (PPM)	TURBIDITY (NTU)	ORP (mv)	WATER LEVEL (ft.)	COMMENTS
1400	10.93	6.23	0.723	0.88	390.0	-2	5.45	
1404	10.86	6.33	0.699	0.68	350.0	27	5.45	
1408	10.81	6.37	0.678	0.66	350.0	6	5.45	
1412	10.70	6.40	0.653	0.66	200.0	-12	5.45	
1419	10.70	6.44	0.633	0.64	200.0	-26	5.44	
1424	10.80	6.46	0.623	0.68	180.0	-32	5.43	
1428	10.80	6.48	0.617	0.62	190.0	-37	5.44	
1430	10.80	6.49	0.600	0.66	68.0	-40	5.44	
1434	10.80	6.50	0.581	0.62	80.0	-43	5.44	

LOW FLOW FIELD SAMPLING LOG
GROUNDWATER QUALITY PARAMETERS
GROUNDWATER MONITORING - 2006

Project:	Former Philadelphia Coke Plant Site	Weather:	
Project Location:	4501 Richmond Street	Personnel:	PD & JD
	Philadelphia, Pennsylvania	Date:	January 30, 2006

Well Number:	PCMW-03	Pump Depth:	approx 5'	Pumping Rate:	860 ml/min
Water Level:	2.03	Pump Start Time:	1539	Total Purged:	30.96 liters
Screened Interval: (ft bgs)	1-10	PID Reading (ppm)	0.0	Purge Method:	Submersible Pump

TIME	TEMP (^{o}C)	pH (SU)	SPEC. COND. (mS/cm)	DO (PPM)	TURBIDITY (NTU)	ORP (mv)	WATER LEVEL (ft.)	COMMENTS
1544	10.80	6.68	0.523	0.79	-5.0	40		pumping stopped &
1558	10.40	6.64	0.491	0.93	380.0	11	2.14	restarted @1558
1600	10.30	6.64	0.484	0.88	310.0	11		orange tint to GW
1605	10.40	6.63	0.498	0.77	280.0	10	2.15	no odor
1608	10.40	6.64	0.503	0.74	2.3	9		
1612	10.40	6.64	0.503	0.69	200.0	7	2.16	
1615	10.50	6.64	0.505	0.70	150.0	6	2.17	
1620	10.50	6.65	0.514	0.69	130.0	3	2.17	

LOW FLOW FIELD SAMPLING LOG
GROUNDWATER QUALITY PARAMETERS
GROUNDWATER MONITORING - 2006

Project:	Former Philadelphia Coke Plant Site	Weather:	
Project Location:	4501 Richmond Street	Personnel:	PD & JD
	Philadelphia, Pennsylvania	Date:	January 30, 2006

Well Number:	PCMW04	Pump Depth:	10'	Pumping Rate:	500 ml/min
Water Level:	6.29	Pump Start Time:	1525	Total Purged:	17.5 liters
Screened Interval: (ft bgs)	1-9	PID Reading (ppm)	0.0	Purge Method:	Submersible Pump

TIME	TEMP (^{o}C)	pH (SU)	SPEC. COND. (mS/cm)	DO (PPM)	TURBIDITY (NTU)	ORP (mv)	WATER LEVEL (ft.)	COMMENTS
1525	6.91	6.81	1.050	5.33	120.0	23	6.31	
1535	3.08	6.84	4.950	0.89	49.0	-7	6.32	
1545	1.73	6.89	6.070	0.93	35.0	-84	6.32	temperature error
1550	1.66	6.90	5.750	0.89	30.0	-89	6.32	
1555	1.20	6.91	5.570	0.91	33.0	-93	6.32	
1600	0.85	6.92	5.470	0.90	28.0	-96	6.32	

LOW FLOW FIELD SAMPLING LOG
GROUNDWATER QUALITY PARAMETERS
GROUNDWATER MONITORING - 2006

Project:	Former Philadelphia Coke Plant Site	Weather:	
Project Location:	4501 Richmond Street	Personnel:	PD & JD
	Philadelphia, Pennsylvania	Date:	January 31, 2006

Well Number:	PCMW-05	Pump Depth:	approx 12'	Pumping Rate:	1 l/m
Water Level:	5.73	Pump Start Time:	817	Total Purged:	16 liters
Screened Interval: (ft bgs)	1-10	PID Reading (ppm)	23.2	Purge Method:	Submersible Pump

TIME	TEMP (^{o}C)	pH (SU)	SPEC. COND. (mS/cm)	DO (PPM)	TURBIDITY (NTU)	ORP (mv)	WATER LEVEL (ft.)	COMMENTS
824	8.60	6.59	0.591	0.59	47.0	134	6.34	
830	8.50	6.65	0.641	0.54	40.0	83	6.35	
834	8.50	6.70	0.654	0.55	41.0	35	6.44	
840	8.40	6.75	0.697	0.49	36.0	-9	6.42	

LOW FLOW FIELD SAMPLING LOG
GROUNDWATER QUALITY PARAMETERS
GROUNDWATER MONITORING - 2006

Project:	Former Philadelphia Coke Plant Site	Weather:	
Project Location:	4501 Richmond Street	Personnel:	PD & JD
	Philadelphia, Pennsylvania	Date:	January 31, 2006

Well Number:	PCMW-06	Pump Depth:	10'	Pumping Rate:	500 ml/min
Water Level:	5.31	Pump Start Time:	815	Total Purged:	22.5 liters
Screened Interval: (ft bgs)	2-10	PID Reading (ppm)	0.0	Purge Method:	Submersible Pump

TIME	TEMP (^{o}C)	pH (SU)	SPEC. COND. (mS/cm)	DO (PPM)	TURBIDITY (NTU)	ORP (mv)	WATER LEVEL (ft.)	COMMENTS
815	4.75	6.09	0.672	3.23	71.0	307	5.69	
820	3.78	6.31	1.550	1.01	39.0	297	5.70	
825	3.40	6.40	3.060	0.38	31.0	231	5.70	
835	2.98	6.49	2.060	0.76	28.0	-5	5.70	
840	3.00	6.55	2.260	0.72	16.0	-46	5.70	
845	3.02	6.57	1.590	0.66	15.0	-85	5.70	
850	3.05	6.62	2.200	0.66	14.0	-74	5.70	
855	2.65	6.66	1.590	0.64	15.0	-82	5.70	
900	2.62	6.67	1.560	0.62	15.0	-85	5.70	

LOW FLOW FIELD SAMPLING LOG
GROUNDWATER QUALITY PARAMETERS
GROUNDWATER MONITORING - 2006

Project:	Former Philadelphia Coke Plant Site	Weather:	
Project Location:	4501 Richmond Street	Personnel:	PD & JD
	Philadelphia, Pennsylvania	Date:	January 31, 2006

Well Number:	PCMW-07	Pump Depth:	9.06	Pumping Rate:	500 ml/min
Water Level:	5.09	Pump Start Time:	1050	Total Purged:	17.5 liters
Screened Interval: (ft bgs)	1-10	PID Reading (ppm)	0.0	Purge Method:	Submersible Pump

TIME	TEMP (^{o}C)	pH (SU)	SPEC. COND. (mS/cm)	DO (PPM)	TURBIDITY (NTU)	ORP (mv)	WATER LEVEL (ft.)	COMMENTS
1050	4.66	6.70	1.560	1.75	250.0	-56	5.21	
1055	4.07	6.78	2.700	0.75	160.0	-82	5.21	
1100	3.83	6.83	3.160	0.67	130.0	-96	5.21	
1105	3.12	6.86	3.350	0.86	120.0	-103	5.21	
1110	2.99	6.87	2.940	1.03	130.0	-106	5.21	
1115	2.60	6.89	2.380	1.16	91.0	-108	5.21	
1120	2.04	6.90	2.220	1.16	92.0	-108	5.21	
1125	2.00	6.90	2.020	1.14	83.0	-108	5.21	

LOW FLOW FIELD SAMPLING LOG
GROUNDWATER QUALITY PARAMETERS
GROUNDWATER MONITORING - 2006

Project:	Former Philadelphia Coke Plant Site	Weather:	
Project Location:	4501 Richmond Street	Personnel:	PD & JD
	Philadelphia, Pennsylvania	Date:	January 31, 2006

Well Number:	PCMW-08	Pump Depth:	15'	Pumping Rate:	630 ml/min
Water Level:	9.98	Pump Start Time:	1226	Total Purged:	12.6 liters
Screened Interval: (ft bgs)	5-15	PID Reading (ppm)	0.0	Purge Method:	Submersible Pump

TIME	TEMP (^{o}C)	pH (SU)	SPEC. COND. (mS/cm)	DO (PPM)	TURBIDITY (NTU)	ORP (mv)	WATER LEVEL (ft.)	COMMENTS
1230	8.70	7.14	1.590	0.73	14.0	22	10.24	
1235	8.80	7.18	1.600	0.62	14.0	23		
1240	8.80	7.19	1.600	0.53	16.0	25	10.24	
1245	8.90	7.18	1.590	0.52	18.0	27		
1250	8.90	7.17	1.610	0.52	4.0	28	10.25	

LOW FLOW FIELD SAMPLING LOG
GROUNDWATER QUALITY PARAMETERS
GROUNDWATER MONITORING - 2006

Project:	Former Philadelphia Coke Plant Site	Weather:	
Project Location:	4501 Richmond Street	Personnel:	PD & JD
	Philadelphia, Pennsylvania	Date:	January 31, 2006

Well Number:	PCMW-08D	Pump Depth:	32'	Pumping Rate:	1 l/min
Water Level:	16.99	Pump Start Time:	1112	Total Purged:	15 liters
Screened Interval: (ft bgs)	26-36	PID Reading (ppm)	0.0	Purge Method:	Submersible Pump

TIME	TEMP (^{o}C)	pH (SU)	SPEC. COND. (mS/cm)	DO (PPM)	TURBIDITY (NTU)	ORP (mv)	WATER LEVEL (ft.)	COMMENTS
1117	14.30	6.08	1.230	2.64	61.0	-24	17.31	
1122	14.30	6.09	1.260	2.66	41.0	-43	17.31	
1127	14.40	6.11	1.270	2.65	27.0	-39	17.27	
1132	14.40	6.11	1.280	2.65	22.0	-26		

LOW FLOW FIELD SAMPLING LOG
GROUNDWATER QUALITY PARAMETERS
GROUNDWATER MONITORING - 2006

Project:	Former Philadelphia Coke Plant Site	Weather:	
Project Location:	4501 Richmond Street	Personnel:	PD & JD
	Philadelphia, Pennsylvania	Date:	January 31, 2006

Well Number:	PCMW-09	Pump Depth:	approx 14'	Pumping Rate:	1 l/min
Water Level:	9.76'	Pump Start Time:	1334	Total Purged:	15 liters
Screened Interval: (ft bgs)	4-14	PID Reading (ppm)	0.0	Purge Method:	Submersible Pump

TIME	TEMP (^{o}C)	pH (SU)	SPEC. COND. (mS/cm)	DO (PPM)	TURBIDITY (NTU)	ORP (mv)	WATER LEVEL (ft.)	COMMENTS
1340	12.40	6.69	1.76	0.620	290.0	-11	9.80	
1345	12.40	6.70	1.75	0.540	230.0	-12	9.79	
1350	12.50	6.69	1.76	0.560	220.0	-12	9.79	
1355	12.50	6.69	1.75	0.530	210.0	-12	9.76	

Site: Philadelphia Coke

GROUND-WATER SAMPLING LOG

Event: Phase 1 – Preliminary GW Inv.

Sampling Personnel: CS
Client / Job Number: National Grid / B0036790.0001.00002
Weather: SUNNY 40°
Well ID: PCMW-01
Date: 3/19/18
Time In: 1050 **Time Out:** 1300

Well Information

Depth to Water (ft):	6.02	(from TIC)
Total Depth (ft):	13.47	(from TIC)
Length of Water Column (ft):	7.45	
Volume of Water in Well (gal):	4.84	

Well Type:	Flushmount		Stick-Up
Well Material:	Stainless Steel		PVC
Well Locked:	Yes		No
Measuring Point Marked:	Yes		No
Well Diameter:	1"	2"	Other: 4"

Purging Information

Purging Method:	Bailer	Peristaltic	Bladder	Other:
Tubing/Bailer Material:	Steel	Polyethylene	Teflon	Other:
Sampling Method:	Bailer	Peristaltic	Bladder	Other:
Duration of Pumping (min):	30 mi			
Average Pumping Rate (ml/min):	400	Water-Quality Meter Type:	Horiba U-52	~~YSI/Turbidimeter~~
Total Volume Removed (~~gal~~):	ML 12000	Did well go dry:	Yes	No

Conversion Factors

gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469

1 gal = 3.785 L =3785 ml = 0.1337 cubic feet

Unit Stability

pH	DO/Turb.	Cond/temp	ORP
± 0.1	±10%	± 3.0%	± 10 mV

Parameter:	1	2	3	4	5	6	7	8	9	10	11	12
Volume Purged (~~gal~~) ML	2000 ~~400~~	~~400~~ 4000	6000	8000	10000	12000						
Rate (mL/min)	400	400	400	400	400	400						
Depth to Water (ft.)	6.12	6.12	6.12	6.12	6.12	6.12						
pH	5.73	6.34	6.91	6.92	6.92	6.91						
Temp. (C)	10.76	11.16	11.18	11.29	11.32	11.30						
Conductivity (mS/cm)	.706	.580	.573	.572	.570	.570						
Dissolved Oxygen (mg/L)	1.05	0	0	0	0	0						
ORP (mV)	-14	-124	-166	-168	-168	-167						
Turbidity (NTU)	9.4	11.0	12.3	13.0	11.3	12.5						
Notes: TIME:	1120	1125	1130	1135	1140	1145						

Sampling Information

Analyses	#	Laboratory
TCL VOC	8260	SGS
TCL SVOC	8270	
CN		
PEST.	8081	
PCB	8082	
METALS		
Sample ID: PCMW-01	Sample Time: 1158	
MS/MSD: Yes	No	
Duplicate: Yes	No	
Duplicate ID —	Dup. Time: —	
Chain of Custody Signed By: —		

Problems / Observations

Initial: NO PROBLEMS

Final:

PID: 0.0

Pg ____ of ____

Site: Philadelphia Coke

GROUND-WATER SAMPLING LOG

Event: Phase 1 – Preliminary GW Inv.

Sampling Personnel: CO
Well ID: PCMW-04
Client / Job Number: National Grid / B0036790.0001.00002
Date: 3/19/18
Weather: SUNNY 40
Time In: 1215 **Time Out:** 1330

Well Information

Depth to Water (ft):	6.64	(from TIC)
Total Depth (ft):	13.40	(from TIC)
Length of Water Column (ft):	6.76	
Volume of Water in Well (gal):	4.39	

Well Type:		Flushmount		(Stick-Up)
Well Material:		Stainless Steel		(PVC)
Well Locked:		Yes		(No)
Measuring Point Marked:		(Yes)		No
Well Diameter:	1"	2"	Other:	4"

Purging Information

Purging Method:	Bailer	Peristaltic	(Bladder)	Other:
Tubing/Bailer Material:	Steel	(Polyethylene)	Teflon	Other:
Sampling Method:	Bailer	Peristaltic	(Bladder)	Other:

Duration of Pumping (min): 45
Average Pumping Rate (ml/min): 250
Water-Quality Meter Type: H02113A YSI/Turbidimeter
Total Volume Removed (~~gal~~) mL: 11250
Did well go dry: Yes (No)

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469
1 gal = 3.785 L =3785 ml = 0.1337 cubic feet				

Unit Stability			
pH	DO/Turb.	Cond/temp	ORP
± 0.1	±10%	± 3.0%	± 10 mV

Parameter:	1	2	3	4	5	6	7	8	9	10	11	12
Volume Purged (~~gal~~) mL	1250	2500	3750	5000	6250	7500	8750	10000	11250			
Rate (mL/min)	250	250	250	250	250	250	250	250	250			
Depth to Water (ft.)	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70			
pH	6.52	6.49	6.51	6.65	6.61	6.50	6.48	6.47	6.47			
Temp. (C)	10.70	10.43	9.70	9.43	9.33	9.12	8.81	8.70	8.68			
Conductivity (mS/cm)	.923	.925	.918	.907	.904	.895	.874	.871	.874			
Dissolved Oxygen (mg/L)	0	0	0	0	0	0	0	0	0			
ORP (mV)	-111	-113	-121	-129	-126	-121	-114	-111	-110			
Turbidity (NTU)	149	129	78.1	50.7	47.4	39.2	28.7	26.4	21.6			
Notes: TIME	1225	1230	1235	1240	1245	1250	1255	1300	1305			

Sampling Information

Analyses	#	Laboratory
TCL VOC		
TCL SVOC		
CN		
PEST		
PCB		
METALS		
Sample ID: PCMW-04	Sample Time: 1310	
MS/MSD: Yes (No)		
Duplicate: Yes (No)		
Duplicate ID: —	Dup. Time: —	
Chain of Custody Signed By: —		

Problems / Observations

Initial: NO PROBLEMS

Final:

PID: 0.0

Pg ____ of ____

Site: Philadelphia Coke

GROUND-WATER SAMPLING LOG

Event: Phase 1 – Preliminary GW Inv.

Sampling Personnel: CO
Client / Job Number: National Grid / B0036790.0001.00002
Weather:
Well ID: PCMW - 05
Date: 3/23/18
Time In: 0730 **Time Out:** 0840

Well Information

Depth to Water (ft):	5.40	(from TIC)
Total Depth (ft):	14.30	(from TIC)
Length of Water Column (ft):		
Volume of Water in Well (gal):		

Well Type:	Flushmount		Stick-Up
Well Material:	Stainless Steel		PVC
Well Locked:	Yes		No
Measuring Point Marked:	Yes		No
Well Diameter:	1"	2"	Other: 4

Purging Information

Purging Method:	Bailer	Peristaltic	Bladder	Other:
Tubing/Bailer Material:	Steel	Polyethylene	Teflon	Other:
Sampling Method:	Bailer	Peristaltic	Bladder	Other:

Duration of Pumping (min): 30
Average Pumping Rate (ml/min): 300
Water-Quality Meter Type: ~~YSI/Turbidimeter~~
Total Volume Removed ~~(gal)~~: ML 9000
Did well go dry: Yes No

Conversion Factors

gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469

1 gal = 3.785 L =3785 ml = 0.1337 cubic feet

Unit Stability

pH	DO/Turb.	Cond/temp	ORP
± 0.1	±10%	± 3.0%	± 10 mV

Parameter:	1	2	3	4	5	6	7	8	9	10	11	12
Volume Purged ~~(gal)~~ ML	1500	3000	4500	6000	7500	9000						
Rate (mL/min)	300	300	300	300	300	300						
Depth to Water (ft.)	5.61	5.70	5.70	5.700	5.70	5.70						
pH	5.29	5.53	6.18	6.80	6.33	6.33						
Temp. (C)	5.67	6.90	6.83	6.80	6.84	6.88						
Conductivity (mS/cm)	.625	.551	.547	.566	.569	.571						
Dissolved Oxygen (mg/L)	1.30	0	0	0	0	0						
ORP (mV)	90	-27	-51	-58	-62	-65						
Turbidity (NTU)	46.5	18.8	15.8	15.8	16.6	16.5						
Notes: TIME	735	740	745	750	755	800						

Sampling Information

Analyses	#	Laboratory
VOC		
SVOC		
Metals		
CN		
PCB		
PEST		
Sample ID: PCMW - 05	Sample Time: 0805	
MS/MSD: Yes	No	
Duplicate: Yes	No	
Duplicate ID DUP-032320180	Dup. Time: —	
Chain of Custody Signed By:		

Problems / Observations

Initial: No PROB

Final:

PID:

Pg _____ of _____

Site: Philadelphia Coke

GROUND-WATER SAMPLING LOG

Event: Phase 1 – Preliminary GW Inv.

Sampling Personnel: CO
Client / Job Number: National Grid / B0036790.0001.00002
Weather:
Well ID: PCMW-06
Date: 3/23/18
Time In: 545 **Time Out:**

Well Information

Depth to Water (ft):	4.98	(from TIC)
Total Depth (ft):	13.20	(from TIC)
Length of Water Column (ft):		
Volume of Water in Well (gal):		

Well Type:	Flushmount		(Stick-Up)
Well Material:	Stainless Steel		(PVC)
Well Locked:	Yes		(No)
Measuring Point Marked:	(Yes)		No
Well Diameter:	1"	2"	Other: 4

Purging Information

Purging Method:	Bailer	Peristaltic	(Bladder)	Other:
Tubing/Bailer Material:	Steel	(Polyethylene)	Teflon	Other:
Sampling Method:	Bailer	Peristaltic	(Bladder)	Other:

Duration of Pumping (min):	30		
Average Pumping Rate (ml/min):	300	Water-Quality Meter Type:	YSI/Turbidimeter
Total Volume Removed (gal):	9000	Did well go dry: Yes	(No)

Conversion Factors

gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469

1 gal = 3.785 L =3785 ml = 0.1337 cubic feet

Unit Stability

pH	DO/Turb.	Cond/temp	ORP
± 0.1	±10%	± 3.0%	± 10 mV

Parameter:	1	2	3	4	5	6	7	8	9	10	11	12
Volume Purged (gal)	1500	3000	4500	6000	7500	9000						
Rate (mL/min)	300	300	300	300	300	300						
Depth to Water (ft.)	5.00	5.18	5.20	5.20	5.20	5.20						
pH	7.02	7.02	6.54	6.87	6.93	6.92						
Temp. (C)	6.13	7.26	7.31	7.28	7.36	7.36						
Conductivity (mS/cm)	.432	.417	.416	.414	.411	.411						
Dissolved Oxygen (mg/L)	3.70	.61	.62	.62	.62	.65						
ORP (mV)	-24	9	2	-13	-11	-10						
Turbidity (NTU)	19.3	22.6	8.4	8.1	5.8	5.7						
Notes: TIME	850	855	900	905	910	915						

Sampling Information

Analyses	#	Laboratory
Sample ID: PCMW-06	Sample Time: 0920	
MS/MSD: Yes	(No)	
Duplicate: Yes	(No)	
Duplicate ID	Dup. Time:	
Chain of Custody Signed By:		

Problems / Observations

Initial:

Final:

PID:

Site: Philadelphia Coke

GROUND-WATER SAMPLING LOG

Event: Phase 1 – Preliminary GW Inv.

Sampling Personnel: CO
Well ID: PCMW-89
Client / Job Number: National Grid / B0036790.0001.00002
Date: 3/22/18
Weather: 60 cloudy 35
Time In: 0780 **Time Out:** 0820

Well Information

Depth to Water (ft):	10.02	(from TIC)
Total Depth (ft):	17.60	(from TIC)
Length of Water Column (ft):		
Volume of Water in Well (gal):		

Well Type:	Flushmount		Stick-Up
Well Material:	Stainless Steel		PVC
Well Locked:	Yes		No
Measuring Point Marked:	Yes		No
Well Diameter:	1"	2"	Other:

Purging Information

Purging Method:	Bailer	Peristaltic	Bladder	Other:
Tubing/Bailer Material:	Steel	Polyethylene	Teflon	Other:
Sampling Method:	Bailer	Peristaltic	Bladder	Other:

Duration of Pumping (min): 40
Average Pumping Rate (ml/min): 300
Water-Quality Meter Type: Horiba YSI/Turbidimeter
Total Volume Removed (gal): ~~ML~~ 9000
Did well go dry: Yes (No)

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469
1 gal = 3.785 L =3785 ml = 0.1337 cubic feet				

Unit Stability			
pH	DO/Turb.	Cond/temp	ORP
± 0.1	±10%	± 3.0%	± 10 mV

Parameter:	1	2	3	4	5	6	7	8	9	10	11	12
Volume Purged (gal) ML	1500	3000	4500	6000	7500	9000						
Rate (mL/min)	300	300	300	300	300	300						
Depth to Water (ft.)	10.02	10.08	10.08	10.08	10.08	10.08						
pH	7.10	7.22	7.22	7.21	7.21	7.21						
Temp. (C)	5.01	5.87	6.11	6.43	6.41	6.43						
Conductivity (mS/cm)	1.87	1.85	1.84	1.83	1.83	1.83						
Dissolved Oxygen (mg/L)	5.87	4.23	3.75	2.77	2.71	2.66						
ORP (mV)	80	85	65	55	50	41						
Turbidity (NTU)	44.4	15.5	8.9	0.9	0.8	0.5						
Notes: ~~TIME 735~~	735	740	745	750	755	800						

Sampling Information

Analyses	#	Laboratory
VOC		
SVOC		
CN		
PEST		
METAL		
PCB		
Sample ID: PCMW-89	Sample Time: 0805	
MS/MSD: Yes	(No)	
Duplicate: Yes	(No)	
Duplicate ID	Dup. Time:	
Chain of Custody Signed By:		

Problems / Observations

Initial: No PROB.

Final:

PID:

Pg ____ of ____

Site: Philadelphia Coke

GROUND-WATER SAMPLING LOG

Event: Phase 1 – Preliminary GW Inv.

Sampling Personnel: CO
Well ID: PCMW - 8D
Client / Job Number: National Grid / B0036790.0001.00002
Date: 3/22/16
Weather: cloudy 35°
Time In: 0820 **Time Out:**

Well Information

Depth to Water (ft):	14.82	(from TIC)
Total Depth (ft):	37.20	(from TIC)
Length of Water Column (ft):		
Volume of Water in Well (gal):		

Well Type:	Flushmount	Stick-Up	
Well Material:	Stainless Steel	PVC	
Well Locked:	Yes	No	
Measuring Point Marked:	Yes	No	
Well Diameter:	1"	2"	Other:

Purging Information

Purging Method:	Bailer	Peristaltic	Bladder	Other:
Tubing/Bailer Material:	Steel	Polyethylene	Teflon	Other:
Sampling Method:	Bailer	Peristaltic	Bladder	Other:

Duration of Pumping (min):
Average Pumping Rate (ml/min): 300
Water-Quality Meter Type: ~~YSI/Turbidimeter~~ HORIBA
Total Volume Removed (gal):
Did well go dry: Yes / No

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469
1 gal = 3.785 L =3785 ml = 0.1337 cubic feet				

Unit Stability			
pH	DO/Turb.	Cond/temp	ORP
± 0.1	±10%	± 3.0%	± 10 mV

Parameter:	1	2	3	4	5	6	7	8	9	10	11	12
Volume Purged (gal)	1500	3000	4500	6000	7500	9000						
Rate (mL/min)	300	300	300	300	300	300						
Depth to Water (ft.)	14.95	15.00	15.01	15.01	15.01	15.01						
pH	7.74	6.23	6.22	6.21	6.21	6.21						
Temp. (C)	4.26	9.74	9.76	10.00	10.11	10.17						
Conductivity (mS/cm)	1.49	1.53	1.53	1.52	1.51	1.50						
Dissolved Oxygen (mg/L)	2.79	0	0	0	0	0						
ORP (mV)	-132	-114	-121	-124	-126	-127						
Turbidity (NTU)	48.5	36.8	19.3	12.6	9.2	7.7						
Notes: TIME	0830	835	840	845	850	855						

Sampling Information

Analyses	#	Laboratory
VOC		
SVOC		
CN		
PEST		
PCB		
METALS		
Sample ID: PCMW-8D	Sample Time: 0905	
MS/MSD: (Yes)	No	
Duplicate: Yes	(No)	
Duplicate ID	Dup. Time:	
Chain of Custody Signed By:		

Problems / Observations

Initial:

Final:

PID:

Pg _____ of _____

Site: Philadelphia Coke

GROUND-WATER SAMPLING LOG

Event: Phase 1 – Preliminary GW Inv.

Sampling Personnel:
Client / Job Number: National Grid / B0036790.0001.00002
Weather: Sunny 40

Well ID: PCMW-09S
Date: 3/19/18
Time In: 1330 **Time Out:** 1430

Well Information

Depth to Water (ft):	9.72 (from TIC)
Total Depth (ft):	16.18 (from TIC)
Length of Water Column (ft):	6.46
Volume of Water in Well (gal):	1.03

Well Type:	Flushmount		Stick-Up
Well Material:	Stainless Steel		PVC
Well Locked:	Yes		No
Measuring Point Marked:	Yes		No
Well Diameter:	1"	2"	Other: L

Purging Information

Purging Method:	Bailer	Peristaltic	Bladder	Other:
Tubing/Bailer Material:	Steel	Polyethylene	Teflon	Other:
Sampling Method:	Bailer	Peristaltic	Bladder	Other:

Duration of Pumping (min): 30
Average Pumping Rate (ml/min): 200 Water-Quality Meter Type: ~~Horiba~~ ~~YSI/Turbidimeter~~
Total Volume Removed (gal): 6000 Did well go dry: Yes No

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469
1 gal = 3.785 L =3785 ml = 0.1337 cubic feet				

Unit Stability			
pH	DO/Turb.	Cond/temp	ORP
± 0.1	±10%	± 3.0%	± 10 mV

Parameter:	1	2	3	4	5	6	7	8	9	10	11	12
Volume Purged (~~gal~~) NL	1000	2000	3000	4000	5000	6000						
Rate (mL/min)	200	200	200	200	200	200						
Depth to Water (ft.)	9.72	9.73	9.73	9.73	9.73	9.73						
pH	6.66	6.44	6.55	6.76	6.80	6.80						
Temp. (C)	13.40	12.90	12.94	12.91	12.95	12.94						
Conductivity (mS/cm)	1.56	1.57	1.57	1.57	1.57	1.56						
Dissolved Oxygen (mg/L)	0	0	0	0	0	8						
ORP (mV)	-39	-39	-53	-54	-63	-65						
Turbidity (NTU)	100	80.1	61.7	49.7	44.4	41.7						
Notes: TIME:	1340	1345	1350	1355	1400	1405						

Sampling Information

Analyses	#	Laboratory
VOC		
SVOC		
CN		
PEST		
PCB		
Metals		
Sample ID: PCMW-09S	Sample Time: 1410	
MS/MSD: Yes	No	
Duplicate: Yes	No	
Duplicate ID: —	Dup. Time: —	
Chain of Custody Signed By: —		

Problems / Observations

Initial: NO PROBS

Final:

PID: 0.0

Pg _____ of _____

Site: Philadelphia Coke

GROUND-WATER SAMPLING LOG

Event: Phase 1 – Preliminary GW Inv.

Sampling Personnel: CD
Client / Job Number: National Grid / B0036790.0001.00002
Weather:
Well ID: PCMW-10S
Date: 3/22/18
Time In: 1230 **Time Out:** 1315

Well Information

Depth to Water (ft):	9.27 (from TIC)
Total Depth (ft):	17.70 (from TIC)
Length of Water Column (ft):	
Volume of Water in Well (gal):	

Well Type:	Flushmount		Stick-Up
Well Material:	Stainless Steel		PVC
Well Locked:	Yes		No
Measuring Point Marked:	Yes		No
Well Diameter:	1"	2"	Other:

Purging Information

Purging Method:	Bailer	Peristaltic	Bladder	Other:
Tubing/Bailer Material:	Steel	Polyethylene	Teflon	Other:
Sampling Method:	Bailer	Peristaltic	Bladder	Other:

Duration of Pumping (min): 30
Average Pumping Rate (ml/min): 250 Water-Quality Meter Type: YSI/Turbidimeter
Total Volume Removed (gal): 7500 Did well go dry: Yes No

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469
1 gal = 3.785 L =3785 ml = 0.1337 cubic feet				

Unit Stability			
pH	DO/Turb.	Cond/temp	ORP
± 0.1	±10%	± 3.0%	± 10 mV

Parameter:	1	2	3	4	5	6	7	8	9	10	11	12
Volume Purged (gal)	1250	2500	3750	5000	6250	7500						
Rate (mL/min)	250	250	250	250	250	250						
Depth to Water (ft.)	9.25	9.33	9.35	9.35	9.35	9.35						
pH	7.28	7.29	7.27	7.26	7.24	7.21						
Temp. (C)	14.32	13.20	11.61	11.42	11.38	11.29						
Conductivity (mS/cm)	2.15	2.12	2.20	2.21	2.22	2.23						
Dissolved Oxygen (mg/L)	.54	.45	.32	.20	.04	0						
ORP (mV)	21	21	21	22	21	21.9						
Turbidity (NTU)	133	100	65	65.2	22.2	22.7						
Notes: TIME	1235	1240	1245	1250	1255	1300						

Sampling Information

Analyses	#	Laboratory
Sample ID: PCMW-10S	Sample Time: 1305	
MS/MSD: Yes	No	
Duplicate: Yes	No	
Duplicate ID	Dup. Time:	
Chain of Custody Signed By:		

Problems / Observations

Initial:

Final:

PID:

Site: Philadelphia Coke

GROUND-WATER SAMPLING LOG

Event: Phase 1 – Preliminary GW Inv.

Sampling Personnel: LO
Client / Job Number: National Grid / B0036790.0001.00002
Weather:
Well ID: PCMW-10D
Date: 3/22/18
Time In: 1320 **Time Out:** 1715

Well Information

Depth to Water (ft):	12.78	(from TIC)
Total Depth (ft):	34.20	(from TIC)
Length of Water Column (ft):		
Volume of Water in Well (gal):		

Well Type:	Flushmount	Stick-Up	
Well Material:	Stainless Steel	PVC	
Well Locked:	Yes	No	
Measuring Point Marked:	Yes	No	
Well Diameter:	1"	2"	Other:

Purging Information

Purging Method:	Bailer	Peristaltic	Bladder	Other:
Tubing/Bailer Material:	Steel	Polyethylene	Teflon	Other:
Sampling Method:	Bailer	Peristaltic	Bladder	Other:

Duration of Pumping (min): 50
Average Pumping Rate (ml/min): 300 Water-Quality Meter Type: YSI/Turbidimeter
Total Volume Removed (gal): 4000 Did well go dry: Yes No

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469
1 gal = 3.785 L =3785 ml = 0.1337 cubic feet				

Unit Stability			
pH	DO/Turb.	Cond/temp	ORP
± 0.1	±10%	± 3.0%	± 10 mV

Parameter:	1	2	3	4	5	6	7	8	9	10	11	12
Volume Purged (gal) ~~ML~~	1500	3000	4500	6000	7500	9000						
Rate (mL/min)	300	300	300	300	300	300						
Depth to Water (ft.)	12.95	12.95	12.95	12.95	12.95	12.95						
pH	6.54	6.33	6.36	6.39	6.41	6.46						
Temp. (C)	12.57	13.17	13.47	13.52	13.54	13.55						
Conductivity (mS/cm)	2.18	2.19	2.17	2.15	2.16	2.16						
Dissolved Oxygen (mg/L)	0	0	0	0	0	0						
ORP (mV)	-109	-131	-141	-146	-149	-151						
Turbidity (NTU)	546	127	138	133	121	117						
Notes: TIME	1320	1325	1330	1335	1340	1345						

Sampling Information

Analyses	#	Laboratory
Sample ID: PCMW-10D	Sample Time: 1350	
MS/MSD: Yes	No	
Duplicate: Yes	No	
Duplicate ID	Dup. Time:	
Chain of Custody Signed By:		

Problems / Observations

Initial:

Final:

PID:

Site: Philadelphia Coke

GROUND-WATER SAMPLING LOG

Event: Phase 1 – Preliminary GW Inv.

Sampling Personnel: CO
Client / Job Number: National Grid / B0036790.0001.00002
Weather:
Well ID: PCMW-11S
Date: 3/23/16
Time In: 0540 **Time Out:**

Well Information

Depth to Water (ft):	9.93 (from TIC)
Total Depth (ft):	17.50 (from TIC)
Length of Water Column (ft):	
Volume of Water in Well (gal):	

Well Type:	Flushmount	Stick-Up
Well Material:	Stainless Steel	PVC
Well Locked:	Yes	No
Measuring Point Marked:	Yes	No
Well Diameter:	1" 2"	Other:

Purging Information

Purging Method:	Bailer	Peristaltic	Bladder	Other:
Tubing/Bailer Material:	Steel	Polyethylene	Teflon	Other:
Sampling Method:	Bailer	Peristaltic	Bladder	Other:

Duration of Pumping (min): 30
Average Pumping Rate (ml/min): 250
Water-Quality Meter Type: YSI/Turbidimeter
Total Volume Removed (gal): ~7500
Did well go dry: Yes No

Conversion Factors

gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469

1 gal = 3.785 L =3785 ml = 0.1337 cubic feet

Unit Stability

pH	DO/Turb.	Cond/temp	ORP
± 0.1	±10%	± 3.0%	± 10 mV

Parameter:	1	2	3	4	5	6	7	8	9	10	11	12
Volume Purged (gal)	1250	2500	3750	5000	6250	7500						
Rate (mL/min)	250	250	250	250	250	250						
Depth to Water (ft.)	9.97	9.97	9.97	9.97	9.97	9.97						
pH	6.39	6.61	6.65	6.72	6.73	6.74						
Temp. (C)	10.10	10.33	10.30	10.29	10.29	10.33						
Conductivity (mS/cm)	2.52	2.21	2.11	1.89	1.85	1.84						
Dissolved Oxygen (mg/L)	2.21	1.55	.33	0	0	0						
ORP (mV)	-76	-102	-106	-112	-113	-114						
Turbidity (NTU)	501	115	31.9	11.8	9.9	9.3						
Notes: TIME	955	1000	1005	1010	1015	1020						

Sampling Information

Analyses	#	Laboratory

Sample ID: PCMW-11S Sample Time: 1025
MS/MSD: Yes No
Duplicate: Yes No
Duplicate ID Dup. Time:
Chain of Custody Signed By:

Problems / Observations

Initial: NO PROB

Final:

PID:

Pg _____ of _____

Site: Philadelphia Coke

GROUND-WATER SAMPLING LOG

Event: Phase 1 – Preliminary GW Inv.

Sampling Personnel:
Well ID: ~~MW-1~~ PCMW-15S
Client / Job Number: National Grid / B0036790.0001.00002
Date: 3/20/18
Weather:
Time In: **Time Out:**

Well Information

Depth to Water (ft):	8.67' (from TIC)
Total Depth (ft):	16.41' (from TIC)
Length of Water Column (ft):	
Volume of Water in Well (gal):	

Well Type:	Flushmount		~~Stick-Up~~
Well Material:	Stainless Steel		PVC
Well Locked:	Yes		No
Measuring Point Marked:	Yes		No
Well Diameter:	1"	2"	Other:

Purging Information

Purging Method:	Bailer	Peristaltic	Bladder	Other:
Tubing/Bailer Material:	Steel	Polyethylene	Teflon	Other:
Sampling Method:	Bailer	Peristaltic	Bladder	Other:

Duration of Pumping (min): 0920/
Average Pumping Rate (ml/min): Water-Quality Meter Type: YSI/Turbidimeter
Total Volume Removed (gal): Did well go dry: Yes No

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469
1 gal = 3.785 L =3785 ml = 0.1337 cubic feet				

Unit Stability			
pH	DO/Turb.	Cond/temp	ORP
± 0.1	±10%	± 3.0%	± 10 mV

Parameter:	1	2	3	4	5	6	7	8	9	10	11	12
	0925	0930	0935	0940	0945	0950	0955					
Volume Purged (gal)	0.2	0.4	0.6	0.8	1.0	1.2	1.4					
Rate (mL/min)	200	200	200	200	200	200	200					
Depth to Water (ft.)	8.77'	8.83'	8.88'	8.96'	9.01'	9.06'	9.07					
pH	6.56	6.69	6.69	6.71	6.75	6.78	6.79					
Temp. (C)	5.14	6.27	6.55	6.36	6.38	6.48	6.56					
Conductivity (mS/cm)	2.00	2.01	1.92	1.78	1.67	1.65	1.64					
Dissolved Oxygen (mg/L)	~~2~~.16	1.73	0.61	0.00	0.00	0.00	0.00					
ORP (mV)	-31	-90	-100	-103	-106	-107	-109					
Turbidity (NTU)	41.3	30.8	30.1	12.0	7.7	2.5	1.7					
Notes:												

Sampling Information

Analyses	#	Laboratory

Sample ID: PCMW-15S Sample Time: 1000
MS/MSD: Yes ~~No~~
Duplicate: Yes ~~No~~
~~Duplicate ID~~ ~~Dup. Time:~~
Chain of Custody Signed By:

Problems / Observations

Initial:

Final:

PID:

Site: Philadelphia Coke

GROUND-WATER SAMPLING LOG

Event: Phase 1 – Preliminary GW Inv.

Sampling Personnel:
Client / Job Number: National Grid / B0036790.0001.00002
Weather:
Well ID: MW-15D
Date: 3/20/18
Time In: **Time Out:**

Well Information

Depth to Water (ft):	15.05'	(from TIC)
Total Depth (ft):	42.4'	(from TIC)
Length of Water Column (ft):		
Volume of Water in Well (gal):		

Well Type:		Flushmount	Stick-Up
Well Material:		Stainless Steel	PVC
Well Locked:		Yes	No
Measuring Point Marked:		Yes	No
Well Diameter:	1"	2"	Other:

Purging Information

Purging Method:	Bailer	~~Peristaltic~~	Bladder	Other:
Tubing/Bailer Material:	Steel	~~Polyethylene~~	Teflon	Other:
Sampling Method:	Bailer	Peristaltic	Bladder	Other:

Duration of Pumping (min): 1020
Average Pumping Rate (ml/min): 250 Water-Quality Meter Type: YSI/Turbidimeter
Total Volume Removed (gal): Did well go dry: Yes No

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469
1 gal = 3.785 L =3785 ml = 0.1337 cubic feet				

Unit Stability			
pH	DO/Turb.	Cond/temp	ORP
± 0.1	±10%	± 3.0%	± 10 mV

Parameter:	1	2	3	4	5	6	7	8	9	10	11	12
	1025	1030	1035	1040	1045	1050						
Volume Purged (gal)	0.2	0.4	0.6	0.8	1.0							
Rate (mL/min)	250	250	250	250	250							
Depth to Water (ft.)	15.11'	15.15'	15.17'	15.23'	15.29'							
pH	6.82	6.72	6.69	6.69	6.68	6.67						
Temp. (C)	6.57	8.26	8.53	8.90	9.09	9.12						
Conductivity (mS/cm)	1.41	1.43	1.44	1.40	1.39	1.36						
Dissolved Oxygen (mg/L)	1.40	0.67	0.17	0.00	0.00	0.00						
ORP (mV)	-92	-101	-106	-110	-111	-111						
Turbidity (NTU)	5.4	10.4	11.1	8.3	8.2	8.0						
Notes:												

Sampling Information

Analyses	#	Laboratory

Sample ID: PGMW-15D Sample Time: 1055
MS/MSD: Yes (No)
Duplicate: Yes (No)
Duplicate ID Dup. Time:
Chain of Custody Signed By:

Problems / Observations

Initial:

Final:

PID:

Site: Philadelphia Coke

GROUND-WATER SAMPLING LOG

Event: Phase 1 – Preliminary GW Inv.

Sampling Personnel:
Client / Job Number: National Grid / B0036790.0001.00002
Weather: Sunny, 45°F

Well ID: PCMW-16D
Date: 3/19/18
Time In: **Time Out:**

Well Information

Depth to Water (ft): 12.21' (from TIC)
Total Depth (ft): 35.65 (from TIC)
Length of Water Column (ft): 33.44'
Volume of Water in Well (gal):

Well Type:	Flushmount		Stick-Up
Well Material:	Stainless Steel		PVC
Well Locked:	Yes		No
Measuring Point Marked:	Yes		No
Well Diameter:	1"	2"	Other:

Purging Information

Purging Method:	Bailer	Peristaltic	Bladder	Other:
Tubing/Bailer Material:	Steel	Polyethylene	Teflon	Other:
Sampling Method:	Bailer	Peristaltic	Bladder	Other:

Duration of Pumping (min): 1230 / 1310
Average Pumping Rate (ml/min): Water-Quality Meter Type: YSI/Turbidimeter
Total Volume Removed (gal): Did well go dry: Yes No

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469
1 gal = 3.785 L =3785 ml = 0.1337 cubic feet				

Unit Stability			
pH	DO/Turb.	Cond/temp	ORP
± 0.1	±10%	± 3.0%	± 10 mV

Parameter:	1	2	3	4	5	6	7	8	9	10	11	12
	1235	1240	1245	1250	1255	1300						
Volume Purged (gal)	0.2	0.4	0.6	0.8	1.0	1.2						
Rate (mL/min)	250	250	250	250	250	250						
Depth to Water (ft.)	12.31'	12.31	12.31'	12.31'	12.31'	12.31						
pH	6.87	6.73	6.78	6.75	6.75	6.75						
Temp. (C)	13.92	14.48	14.60	14.67	14.75	14.91						
Conductivity (mS/cm)	1.05	1.07	1.07	1.06	1.06	1.06						
Dissolved Oxygen (mg/L)	0.38	0.00	0.00	0.00	0.00	0.00						
ORP (mV)	-144	-159	-164	-164	-166	-167						
Turbidity (NTU)	198	120	84.7	37.3	31.8	28.1						
Notes:												

Sampling Information

Analyses	#	Laboratory
Sample ID: PCMW-16D	Sample Time: 1305	
MS/MSD: Yes / No		
Duplicate: Yes / No		
Duplicate ID	Dup. Time:	
Chain of Custody Signed By:		

Problems / Observations

Initial:

Final:

PID:

Site: Philadelphia Coke

GROUND-WATER SAMPLING LOG

Event: Phase 1 – Preliminary GW Inv.

Sampling Personnel: CO
Client / Job Number: National Grid / B0036790.0001.00002
Weather:
Well ID: PCMW-17S
Date: 3/22/18
Time In: 1008 **Time Out:** 1035

Well Information

Depth to Water (ft):	9.82	(from TIC)
Total Depth (ft):	16.70	(from TIC)
Length of Water Column (ft):		
Volume of Water in Well (gal):		

Well Type:	Flushmount		Stick-Up
Well Material:	Stainless Steel		PVC
Well Locked:	Yes		No
Measuring Point Marked:	Yes		No
Well Diameter:	1"	2"	Other:

Purging Information

Purging Method:	Bailer	Peristaltic	Bladder	Other:
Tubing/Bailer Material:	Steel	Polyethylene	Teflon	Other:
Sampling Method:	Bailer	Peristaltic	Bladder	Other:

Duration of Pumping (min): 30
Average Pumping Rate (ml/min): 300 Water-Quality Meter Type: YSI/Turbidimeter
Total Volume Removed (gal): 9000 Did well go dry: Yes / No

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469
1 gal = 3.785 L =3785 ml = 0.1337 cubic feet				

Unit Stability			
pH	DO/Turb.	Cond/temp	ORP
± 0.1	±10%	± 3.0%	± 10 mV

Parameter:	1	2	3	4	5	6	7	8	9	10	11	12
Volume Purged (gal)	1500	3000	4500	6000	7500	9000						
Rate (mL/min)	300	300	300	300	300	300						
Depth to Water (ft.)	4.90	5.25	5.30	5.30	5.31	5.30						
pH	6.99	5.87	5.75	5.72	5.71	5.70						
Temp. (C)	16.23	13.60	11.26	10.45	10.38	10.35						
Conductivity (mS/cm)	1.03	1.01	1.06	1.10	1.12	1.15						
Dissolved Oxygen (mg/L)	1.03	0	0	0	0	0						
ORP (mV)	-77	-1	17	20	18	19						
Turbidity (NTU)	660	518	113	100	79.2	74.1						
Notes: TIME	1005	1010	1015	1020	1025	1030						

Sampling Information

Analyses	#	Laboratory
VOC		
SVOC		
Metal		
GW		
PEST		
PCB		
Sample ID: PCMW-17S	Sample Time: 1035	
MS/MSD: Yes / No		
Duplicate: Yes / No		
Duplicate ID	Dup. Time:	
Chain of Custody Signed By:		

Problems / Observations

Initial: NO PROBS.

Final:

PID:

Site: Philadelphia Coke

GROUND-WATER SAMPLING LOG

Event: Phase 1 – Preliminary GW Inv.

Sampling Personnel: CO
Client / Job Number: National Grid / B0036790.0001.00002
Weather:
Well ID: PCMW-17D
Date: 3/22/18
Time In: 1055 **Time Out:** 1204

Well Information

Depth to Water (ft):	12.08	(from TIC)
Total Depth (ft):	43.40	(from TIC)
Length of Water Column (ft):		
Volume of Water in Well (gal):		

Well Type:	Flushmount		Stick-Up
Well Material:	Stainless Steel		PVC
Well Locked:	Yes		No
Measuring Point Marked:	Yes		No
Well Diameter:	1"	2"	Other:

Purging Information

Purging Method:	Bailer	Peristaltic	Bladder	Other:
Tubing/Bailer Material:	Steel	Polyethylene	Teflon	Other:
Sampling Method:	Bailer	Peristaltic	Bladder	Other:

Duration of Pumping (min): 330
Average Pumping Rate (ml/min): 300 Water-Quality Meter Type: YSI/Turbidimeter
Total Volume Removed (gal): ~~ML~~ 9000 Did well go dry: Yes No

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469
1 gal = 3.785 L =3785 ml = 0.1337 cubic feet				

Unit Stability			
pH	DO/Turb.	Cond/temp	ORP
± 0.1	±10%	± 3.0%	± 10 mV

Parameter:	1	2	3	4	5	6	7	8	9	10	11	12
Volume Purged (gal)	1500	3000	4500	6000	7500	9000						
Rate (mL/min)	300	300	300	300	300	300						
Depth to Water (ft.)	12.12	12.12	12.12	12.12	12.12	12.12						
pH	5.62	5.63	5.61	5.70	5.76	5.77						
Temp. (C)	10.93	12.04	12.76	12.78	12.80	12.81						
Conductivity (mS/cm)	.934	.863	.844	.851	.853	.853						
Dissolved Oxygen (mg/L)	0	0	0	0	0	0						
ORP (mV)	18	28	38	42	35	34						
Turbidity (NTU)	552	397	263	156	139	144						
Notes: TIME	1055	1100	1105	1110	1115	1120						

Sampling Information

Analyses	#	Laboratory
VOC		
SVOC		
Metals		
CN		
PEST		
PCB		
Sample ID: PCMW-17D	Sample Time: 1125	
MS/MSD: (Yes)	No	
Duplicate: Yes	No	
Duplicate ID	Dup. Time:	
Chain of Custody Signed By:		

Problems / Observations

Initial: NO PROBS

Final:

PID:

Pg _____ of _____

Site: Philadelphia Coke

GROUND-WATER SAMPLING LOG

Event: Phase 1 – Preliminary GW Inv.

Sampling Personnel: Ian Campbell
Well ID: 18S
Client / Job Number: National Grid / B0036790.0001.00002
Date: 3/23/18
Weather: Sunny
Time In: 0845 **Time Out:** 0915

Well Information

Depth to Water (ft):	16.65	(from TIC)
Total Depth (ft):	21.30	(from TIC)
Length of Water Column (ft):		
Volume of Water in Well (gal):		

Well Type:	Flushmount	(Stick-Up)	
Well Material:	Stainless Steel	(PVC)	
Well Locked:	Yes	(No)	
Measuring Point Marked:	Yes	No	
Well Diameter:	1"	(2")	Other:

Purging Information

Purging Method:	Bailer	Peristaltic	(Bladder)	Other:
Tubing/Bailer Material:	Steel	(Polyethylene)	Teflon	Other:
Sampling Method:	Bailer	Peristaltic	(Bladder)	Other:

Duration of Pumping (min): 60
Average Pumping Rate (ml/min): 250 Water-Quality Meter Type: YSI/Turbidimeter
Total Volume Removed (gal): 3.96 Did well go dry: Yes No

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469
1 gal = 3.785 L =3785 ml = 0.1337 cubic feet				

Unit Stability			
pH	DO/Turb.	Cond/temp	ORP
± 0.1	±10%	± 3.0%	± 10 mV

Parameter:	1	2	3	4	5	6	7	8	9	10	11	12
Volume Purged (gal)	0.33	→										
Rate (mL/min)	250	250	250	250	250	250	250	250	250	250	250	250
Depth to Water (ft.)	16.65	16.65	16.65	16.65	16.65	16.65	16.65	16.60	16.60	16.65	16.65	16.60
pH	6.92	7.07	7.11	7.12	7.06	7.10	6.99	7.05	7.03	7.02	7.03	7.02
Temp. (C)	5.83	7.95	8.97	9.09	9.88	9.77	9.81	9.48	9.61	9.70	9.80	9.75
Conductivity (mS/cm)	7.08	2.93	1.97	1.90	1.88	1.85	1.85	1.82	1.81	1.70	1.75	1.72
Dissolved Oxygen (mg/L)	8.16	7.95	7.61	7.22	7.33	7.01	6.51	6.49	6.40	6.11	6.05	6.00
ORP (mV)	-78	-90	-99	-81	-85	-80	-74	-81	-83	-81	-80	-75
Turbidity (NTU)	755	300	58.1	35.9	10.5	8.1	8.5	6.8	5.1	4.3	3.5	3.3
Notes:	grey	cloudy	cloudy	clear	clear	clear	clear	clear	clear	clear	clear	clear

Sampling Information

Analyses	#	Laboratory
Sample ID:	Sample Time:	
MS/MSD:	Yes	No
Duplicate:	Yes	No
Duplicate ID	Dup. Time:	
Chain of Custody Signed By:		

Problems / Observations

Initial:

Final:

PID:

Site: Philadelphia Coke

GROUND-WATER SAMPLING LOG

Event: Phase 1 – Preliminary GW Inv.

Sampling Personnel: Ian Campbell
Well ID: 18D
Client / Job Number: National Grid / B0036790.0001.00002
Date: 3/23/18
Weather: Sunny
Time In: 1000 **Time Out:** 1100

Well Information

Depth to Water (ft):	15.81	(from TIC)
Total Depth (ft):	39.95	(from TIC)
Length of Water Column (ft):		
Volume of Water in Well (gal):		

Well Type:	Flushmount	(Stick-Up)	
Well Material:	Stainless Steel	(PVC)	
Well Locked:	Yes	(No)	
Measuring Point Marked:	Yes	No	
Well Diameter:	1"	(2")	Other:

Purging Information

Purging Method:	Bailer	Peristaltic	(Bladder)	Other:
Tubing/Bailer Material:	Steel	(Polyethylene)	Teflon	Other:
Sampling Method:	Bailer	Peristaltic	(Bladder)	Other:

Duration of Pumping (min): 60
Average Pumping Rate (ml/min): 250 Water-Quality Meter Type: (YSI)/Turbidimeter
Total Volume Removed (gal): 3.96 Did well go dry: Yes (No)

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469
1 gal = 3.785 L =3785 ml = 0.1337 cubic feet				

Unit Stability			
pH	DO/Turb.	Cond/temp	ORP
± 0.1	±10%	± 3.0%	± 10 mV

Parameter:	1	2	3	4	5	6	7	8	9	10	11	12
Volume Purged (gal)	0.33	→	→	→	→	→	→	→	→	→	→	→
Rate (mL/min)	250	250	250	250	250	250	250	250	250	250	250	250
Depth to Water (ft.)	15.81	15.81	15.81	15.81	15.85	15.81	15.81	15.81	15.81	15.81	15.81	15.81
pH	7.24	7.07	7.04	7.01	7.11	7.12	7.14	7.15	7.18	7.09	7.10	7.09
Temp. (C)	13.87	13.44	13.51	13.55	13.81	13.77	13.75	13.50	13.61	13.65	13.75	13.70
Conductivity (mS/cm)	0.615	1.27	0.913	0.955	1.11	1.05	0.951	0.931	0.927	0.941	0.959	0.981
Dissolved Oxygen (mg/L)	8.29	7.81	7.85	7.04	6.84	6.75	6.51	6.69	6.68	6.95	7.04	6.95
ORP (mV)	37	17	18	14	18	19	21	23	24	24	24	25
Turbidity (NTU)	667	300	300	300	280	275	270	260	260	230	200	190
Notes:	red, clayey	same	same	same	same	same	same	same	same	same	same	same

Sampling Information

Analyses	#	Laboratory
Sample ID:	Sample Time:	
MS/MSD:	Yes	No
Duplicate:	Yes	No
Duplicate ID	Dup. Time:	
Chain of Custody Signed By:		

Problems / Observations

Initial: Dropped bladder pump too low to start, red clayey sediment jammed the pump, had to decon and throw in new pump & tubing

Final:

PID:

Site: Philadelphia Coke

GROUND-WATER SAMPLING LOG

Event: Phase 1 – Preliminary GW Inv.

Sampling Personnel:
Client / Job Number: National Grid / B0036790.0001.00002
Weather:
Well ID: PCMW-19S
Date: 3/22/18
Time In: **Time Out:**

Well Information

Depth to Water (ft): ~~7.77~~ (from TIC)
Total Depth (ft): 15.99 (from TIC)
Length of Water Column (ft):
Volume of Water in Well (gal):

Well Type: Flushmount (Stick-Up)
Well Material: Stainless Steel (PVC)
Well Locked: Yes (No)
Measuring Point Marked: (Yes) No
Well Diameter: 1" (2") Other:

Purging Information

Purging Method: Bailer Peristaltic (Bladder) Other:
Tubing/Bailer Material: Steel (Polyethylene) Teflon Other:
Sampling Method: Bailer Peristaltic (Bladder) Other:
Duration of Pumping (min): 1105
Average Pumping Rate (ml/min): Water-Quality Meter Type: YSI/Turbidimeter
Total Volume Removed (gal): Did well go dry: Yes No

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469
1 gal = 3.785 L =3785 ml = 0.1337 cubic feet				

Unit Stability			
pH	DO/Turb.	Cond/temp	ORP
± 0.1	±10%	± 3.0%	± 10 mV

Parameter:	1	2	3	4	5	6	7	8	9	10	11	12
	1110	1115	1120	1125	1130							
Volume Purged (gal)	0.2	0.4	0.6	0.8	1.0							
Rate (mL/min)	250	250	250	250	250							
Depth to Water (ft.)	7.75	7.77	7.81	7.81	7.81							
pH	6.96	6.92	7.01	7.05	7.06							
Temp. (C)	17.09	12.14	11.67	11.31	11.10							
Conductivity (mS/cm)	0.777	0.577	0.565	0.560	0.564							
Dissolved Oxygen (mg/L)	11.84	0.04	0.00	0.00	0.00							
ORP (mV)	-96	-124	-137	-143	-145							
Turbidity (NTU)	622	527	449	216	111							
Notes:												

Sampling Information

Analyses	#	Laboratory
Sample ID: PCMW-19S	Sample Time: 1135	
MS/MSD: Yes (No)		
Duplicate: Yes (No)		
~~Duplicate ID~~	~~Dup. Time:~~	
Chain of Custody Signed By:		

Problems / Observations

Initial:

Final:

PID:

Pg ____ of ____

Site: Philadelphia Coke

GROUND-WATER SAMPLING LOG

Event: Phase 1 – Preliminary GW Inv.

Sampling Personnel:
Client / Job Number: National Grid / B0036790.0001.00002
Weather:
Well ID: PCMW-17D
Date: 3/22/18
Time In: **Time Out:**

Well Information

Depth to Water (ft): 10.57' (from TIC)
Total Depth (ft): 38.1' (from TIC)
Length of Water Column (ft):
Volume of Water in Well (gal):

Well Type:	Flushmount	Stick-Up
Well Material:	Stainless Steel	PVC
Well Locked:	Yes	No
Measuring Point Marked:	Yes	No
Well Diameter:	1"	2" Other:

Purging Information

Purging Method:	Bailer	Peristaltic	Bladder	Other:
Tubing/Bailer Material:	Steel	Polyethylene	Teflon	Other:
Sampling Method:	Bailer	Peristaltic	Bladder	Other:

Duration of Pumping (min): 0950/1
Average Pumping Rate (ml/min): 250
Water-Quality Meter Type: YSI/Turbidimeter
Total Volume Removed (gal):
Did well go dry: Yes No

Conversion Factors

gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469

1 gal = 3.785 L =3785 ml = 0.1337 cubic feet

Unit Stability

pH	DO/Turb.	Cond/temp	ORP
± 0.1	±10%	± 3.0%	± 10 mV

Parameter:	1	2	3	4	5	6	7	8	9	10	11	12
	0955	1000	1005	1010	1015	1020						
Volume Purged (gal)	0.2	0.4	0.6	0.8	1.0	1.2						
Rate (mL/min)	250	250	250	250	250	25						
Depth to Water (ft.)	10.58	10.60	10.60	10.60	~~13.00~~ 10.60	10.60						
pH	6.67	6.58	6.52	6.52	6.51	6.52						
Temp. (C)	10.82	12.14	12.44	12.81	13.51	13.25						
Conductivity (mS/cm)	1.06	1.04	1.04	1.04	1.04	1.04						
Dissolved Oxygen (mg/L)	10.89	0.00	0.00	0.00	0.00	0.00						
ORP (mV)	-60	-76	-79	-82	-84	-84						
Turbidity (NTU)	6.0	0.0	0.0	839	566	54.2						
Notes:	*	too high	*									

Sampling Information

Analyses	#	Laboratory

Sample ID: PCMW-R&D Sample Time: 1025
MS/MSD: ~~Yes~~ ~~No~~
Duplicate: Yes No
Duplicate ID: DUP-03222018 Dup. Time: —
Chain of Custody Signed By:

Problems / Observations

Initial:

Final:

PID:

Site: Philadelphia Coke

GROUND-WATER SAMPLING LOG

Event: Phase 1 – Preliminary GW Inv.

Sampling Personnel:
Client / Job Number: National Grid / B0036790.0001.00002
Weather:
Well ID: ~~MW-20~~ PCMW-205
Date: 3/22/19
Time In: 0730 **Time Out:**

Well Information

Depth to Water (ft):	7.77 (from TIC)
Total Depth (ft):	16' (from TIC)
Length of Water Column (ft):	
Volume of Water in Well (gal):	

Well Type:	Flushmount	Stick-Up	
Well Material:	Stainless Steel	PVC	
Well Locked:	Yes	No	
Measuring Point Marked:	Yes	~~No~~	
Well Diameter:	1"	2"	Other:

Purging Information

Purging Method:	Bailer	Peristaltic	Bladder	Other:
Tubing/Bailer Material:	Steel	Polyethylene	Teflon	Other:
Sampling Method:	Bailer	Peristaltic	Bladder	Other:

Duration of Pumping (min): 0740 / 0825
Average Pumping Rate (ml/min): Water-Quality Meter Type: YSI/Turbidimeter
Total Volume Removed (gal): Did well go dry: Yes No

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469
1 gal = 3.785 L =3785 ml = 0.1337 cubic feet				

Unit Stability			
pH	DO/Turb.	Cond/temp	ORP
± 0.1	±10%	± 3.0%	± 10 mV

Parameter:	1	2	3	4	5	6	7	8	9	10	11	12
	0745	0750	0755	0800	0805	0810						
Volume Purged (gal)	0.2	0.4	0.6	0.8	1.0	1.2						
Rate (mL/min)	250	250	250	250	250	250						
Depth to Water (ft.)	8.05	8.13	8.11	8.11	8.11	8.11						
pH	6.63	6.78	6.64	6.61	6.58	6.52						
Temp. (C)	5.42	5.68	5.79	6.05	6.20	6.48						
Conductivity (mS/cm)	0.253	0.251	0.252	0.255	0.254	0.253						
Dissolved Oxygen (mg/L)	7.33	2.32	0.07	0.00	0.00	0.00						
ORP (mV)	TNT-61	-64	-63	-74	-79	-77						
Turbidity (NTU)	190	121	129	68.0	35.9	26.3						
Notes:												

Sampling Information

Analyses	#	Laboratory
Sample ID: PCMW-205	Sample Time: 0815	
MS/MSD: Yes	~~No~~	
Duplicate: Yes	No	
~~Duplicate ID~~	~~Dup. Time:~~	
Chain of Custody Signed By:		

Problems / Observations

Initial:

Final:

PID:

Pg ____ of ____

Site: Philadelphia Coke

GROUND-WATER SAMPLING LOG

Event: Phase 1 – Preliminary GW Inv.

Sampling Personnel:
Client / Job Number: National Grid / B0036790.0001.00002
Weather:
Well ID: ~~MW-20D~~ PCMW-20D
Date:
Time In: **Time Out:**

Well Information

Depth to Water (ft):	11.87	(from TIC)
Total Depth (ft):	23.8'	(from TIC)
Length of Water Column (ft):		
Volume of Water in Well (gal):		

Well Type:	Flushmount		Stick-Up
Well Material:	Stainless Steel		PVC
Well Locked:		Yes	No
Measuring Point Marked:		Yes	No
Well Diameter:	1"	2"	Other:

Purging Information

Purging Method:	Bailer	Peristaltic	Bladder	Other:
Tubing/Bailer Material:	Steel	Polyethylene	Teflon	Other:
Sampling Method:	Bailer	Peristaltic	Bladder	Other:
Duration of Pumping (min):	0835			
Average Pumping Rate (ml/min):		Water-Quality Meter Type:	YSI/Turbidimeter	
Total Volume Removed (gal):		Did well go dry:	Yes	No

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469
1 gal = 3.785 L =3785 ml = 0.1337 cubic feet				

Unit Stability			
pH	DO/Turb.	Cond/temp	ORP
± 0.1	±10%	± 3.0%	± 10 mV

Parameter:	1	2	3	4	5	6	7	8	9	10	11	12
	0840	0845	0850	0855	0900	0905	0910					
Volume Purged (gal)	0.2	0.4	0.6	0.8	1.0	1.2	1.4					
Rate (mL/min)	250	250	250	250	250	250	250					
Depth to Water (ft.)	11.92	11.95'	11.94'	11.90'	11.90	11.90	11.90					
pH	7.02	7.03	7.04	7.06	7.06	7.04	7.06					
Temp. (C)	10.73	10.50	10.61	10.97	11.05	11.16	11.22					
Conductivity (mS/cm)	4.50	3.97	3.66	3.29	3.01	2.95	2.93					
Dissolved Oxygen (mg/L)	3.06	0.00	0.00	0.00	0.00	0.00	0.00					
ORP (mV)	-139	-141	-166	-147	-146	-151	-151					
Turbidity (NTU)	301	210	166	101	65.8	52.8	40.9					
Notes:												

Sampling Information

Analyses	#	Laboratory
Sample ID: PCMW-20D	Sample Time: 0915	
MS/MSD:	Yes	No
Duplicate:	Yes	No
Duplicate ID	Dup. Time:	
Chain of Custody Signed By:		

Problems / Observations

Initial:

Final:

PID:

Site: Philadelphia Coke

GROUND-WATER SAMPLING LOG

Event: Phase 1 – Preliminary GW Inv.

Sampling Personnel:
Client / Job Number: National Grid / B0036790.0001.00002
Weather: Sunny, 45°F
Well ID: MW-5
Date:
Time In: **Time Out:**

Well Information

Depth to Water (ft):	6.15 (from TIC)
Total Depth (ft):	16.50 (from TIC)
Length of Water Column (ft):	
Volume of Water in Well (gal):	

Well Type:	Flushmount		Stick-Up
Well Material:	Stainless Steel		PVC
Well Locked:	Yes		No
Measuring Point Marked:	Yes		No
Well Diameter:	1"	2"	Other:

Purging Information

Purging Method:	Bailer	Peristaltic	Bladder	Other:
Tubing/Bailer Material:	Steel	Polyethylene	Teflon	Other:
Sampling Method:	Bailer	Peristaltic	Bladder	Other:
Duration of Pumping (min):	135			
Average Pumping Rate (ml/min):		Water-Quality Meter Type:	YSI/Turbidimeter	
Total Volume Removed (gal):		Did well go dry:	Yes	No

Conversion Factors

gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469

1 gal = 3.785 L =3785 ml = 0.1337 cubic feet

Unit Stability

pH	DO/Turb.	Cond/temp	ORP
± 0.1	±10%	± 3.0%	± 10 mV

Parameter:	1	2	3	4	5	6	7	8	9	10	11	12
	1350	1355	1400	1405	1410	1415						
Volume Purged (gal)	0.2	0.4	0.6	0.8	1.0	2.2						
Rate (mL/min)	200	200	200	200	200	200						
Depth to Water (ft.)	6.57	6.57	6.57	6.57	6.57	6.57						
pH	6.49	6.41	6.38	6.36	6.34	6.34						
Temp. (C)	15.09	14.05	13.79	13.63	13.50	13.20						
Conductivity (mS/cm)	0.331	0.300	0.297	0.300	0.307	0.315						
Dissolved Oxygen (mg/L)	0.79	0.00	0.00	0.00	0.00	0.00						
ORP (mV)	-52	-51	-56	-61	-65	-69						
Turbidity (NTU)	7.0	6.2	4.6	2.3	0.7	0.0						
Notes:												

Sampling Information

Analyses	#	Laboratory
Sample ID: MW-5	Sample Time: 1420	
MS/MSD: Yes	No	
Duplicate: Yes	No	
Duplicate ID	Dup. Time:	
Chain of Custody Signed By:		

Problems / Observations

Initial:

Final:

PID:

Site: Philadelphia Coke

GROUND-WATER SAMPLING LOG

Event: Phase 1 – Preliminary GW Inv.

Sampling Personnel:
Client / Job Number: National Grid / B0036790.0001.00002
Weather:
Well ID: MW-6
Date: 3/22/18
Time In: **Time Out:**

Well Information

Depth to Water (ft):	4.05'	(from TIC)
Total Depth (ft):	15.51'	(from TIC)
Length of Water Column (ft):		
Volume of Water in Well (gal):		

Well Type:	Flushmount	(Stick-Up)
Well Material:	Stainless Steel	(PVC)
Well Locked:	Yes	(No)
Measuring Point Marked:	(Yes)	No
Well Diameter:	1" (2")	Other:

Purging Information

Purging Method:	Bailer	Peristaltic	(Bladder)	Other:
Tubing/Bailer Material:	Steel	(Polyethylene)	Teflon	Other:
Sampling Method:	Bailer	Peristaltic	(Bladder)	Other:

Duration of Pumping (min): 1310
Average Pumping Rate (ml/min): Water-Quality Meter Type: YSI/Turbidimeter
Total Volume Removed (gal): Did well go dry: Yes No

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469
1 gal = 3.785 L =3785 ml = 0.1337 cubic feet				

Unit Stability			
pH	DO/Turb.	Cond/temp	ORP
± 0.1	±10%	± 3.0%	± 10 mV

Parameter:	1	2	3	4	5	6	7	8	9	10	11	12
	1315	1320	1325	1330	1335	1340	1345					
Volume Purged (gal)	0.2	0.4	0.6	0.8	1.0	1.2	1.4					
Rate (mL/min)	250	250	250	250	250	250	250					
Depth to Water (ft.)	9.10	4.05	4.05	4.05	4.05	4.05	4.05					
pH	7.14	6.84	6.62	6.58	6.54	6.53	6.52					
Temp. (C)	10.85	9.84	9.66	9.69	9.58	9.47	9.33					
Conductivity (mS/cm)	0.325	0.352	0.477	0.520	0.539	0.544	0.549					
Dissolved Oxygen (mg/L)	13.62	8.89	6.42	5.19	4.05	3.99	3.82					
ORP (mV)	15	18	-22	-36	-43	-48	-52					
Turbidity (NTU)	34.9	83.3	4.4	8.4	9.8	5.7	2.9					
Notes:												

Sampling Information

Analyses	#	Laboratory
Sample ID: MW-6	Sample Time:	(1350)
~~MS/MSD:~~	~~Yes~~	(No)
Duplicate:	Yes	(No)
~~Duplicate ID~~	~~Dup. Time:~~	
Chain of Custody Signed By:		

Problems / Observations

Initial:

Final:

PID:

CHAIN OF CUSTODY

PAGE ___ OF ___

SGS North America Inc. - Dayton
2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200 FAX 732-329-3499
www.sgs.com/ehsusa

FED-EX Tracking #	Bottle Order Control #
SGS Quote #	SGS Job #

Client / Reporting Information

Company Name: Arcadis
Street Address: 824 N. Market St Suite 820
City: Wilmington State: DE Zip: 19801
Project Contact: E-mail:
Phone #: Fax #:
Sampler(s) Name(s): Adam Wissner, Ian Campbell Phone #:

Project Information

Project Name: National Grid - Philadelphia Coke Site
Street:
City: State:
Project #: B0036790.0001
Client Purchase Order #:
Project Manager:

Billing Information (if different from Report to)

Company Name: Arcadis
Street Address: 824 N. Market St Ste 820
City: Wilmington State: DE Zip: 19801
Attention:

Requested Analysis (see TEST CODE sheet)

Lab Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	Number of preserved bottles: HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	VB2,60TCL20	ATS8270TCL20 - InDX	MTAL	CN	HG	P3b812PESTCL	10803,24CB11
	MW-106		05/29/18	14:50	AW		11	3		2		6				X	X	X	X	X	X	X
	PCMW-195		05/29/18	14:00	IC		1			1								X				
	Trip Blank															X						

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL- Sludge; SED-Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB-Field Blank; EB-Equipment Blank; RB- Rinse Blank; TB-Trip Blank

LAB USE ONLY

Turnaround Time (Business days)

- [X] Std. 10 Business Days
- [ ] 5 Day RUSH
- [ ] 3 Day RUSH
- [ ] 2 Day RUSH
- [ ] 1 Day RUSH
- [ ] other _____

Emergency & Rush T/A data available via LabLink

Approved by (SGS Project Manager)/Date:

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULLT1 (Level 3+4)
- [ ] NJ Reduced
- [ ] Commercial "C"
- [ ] NJ Data of Known Quality Protocol Reporting
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format _____
- [ ] Other _____

Commercial "A" = Results Only; Commercial "B" = Results + QC Summary

NJ Reduced = Results + QC Summary + Partial Raw data

Comments / Special Instructions

Sample inventory is verified upon receipt in the Laboratory

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler: 1	Date Time: 5/29/18 1600	Received By: 1	Relinquished By: 2	Date Time:	Received By: 2
Relinquished by Sampler: 3	Date Time:	Received By: 3	Relinquished By: 4	Date Time:	Received By: 4
Relinquished by: 5	Date Time:	Received By: 5	Custody Seal #	[ ] Intact [ ] Not intact	Preserved where applicable [ ] On Ice [ ] Cooler Temp.

http://www.sgs.com/en/terms-and-conditions.

CHAIN OF CUSTODY

PAGE ___ OF ___

SGS North America Inc. - Dayton
2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200 FAX 732-329-3499
www.sgs.com/ehsusa

FED-EX Tracking #	Bottle Order Control #
SGS Quote #	SGS Job #

Client / Reporting Information

Company Name: Arcadis
Street Address: 824 N. Market St. Suite 920
City: Wilmington State: DE Zip: 19801
Project Contact: Carey Healy E-mail: lawrence.healy@arcadis.com
Phone #: ~~302-358-7064~~ 315-671-9339 Fax #:
Sampler(s) Name(s): Adam Wissner; Ian Cahill Phone #: 302-358-7064

Project Information

Project Name: Philly Coke
Street: Richmond St & Cedar St.
City: Bridesburg State: PA
Project #:
Client Purchase Order #:
Project Manager:

Billing Information (if different from Report to)

Company Name:
Street Address:
City State Zip:
Attention:

Requested Analysis (see TEST CODE sheet)

Lab Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	AR8270TCL20 - 140DX	VB60TCL20	MTAL	CN	Hg	P8081PESTTCL	P8082PCB11					LAB USE ONLY
	MW-104		5/30/18	1120	AW	GW	12	3	1	2		6				X	X	X	X	X	X	X					
	MW-101			1320	AW	GW	12	3	1	2		6				X	X	X	X	X	X	X					
	MW-105			0952	AW	GW	12	3	1	2		6				X	X	X	X	X	X	X					
	PCMW-06			1310	IC	GW	1											X									
	PCMW-05			1205	IC	GW	1											X									
	PCMW-04			1110	IC	GW	1											X									
	MW-107			0850	IC	GW	12	3	1	2		6				X	X	X	X	X	X	X					
	Trip Blank		—	—	—	—	2	2								X				X							

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
SED-Sediment
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe
FB-Field Blank
EB-Equipment Blank
RB- Rinse Blank
TB-Trip Blank

Turnaround Time (Business days)

Approved by (SGS Project Manager)/Date:

- ☐ Std. 10 Business Days
- ☐ 5 Day RUSH
- ☐ 3 Day RUSH
- ☐ 2 Day RUSH
- ☐ 1 Day RUSH
- ☐ other _____

Emergency & Rush T/A data available via LabLink

Data Deliverable Information

- ☐ Commercial "A" (Level 1)
- ☐ Commercial "B" (Level 2)
- ☐ FULLT1 (Level 3+4)
- ☐ NJ Reduced
- ☐ Commercial "C"
- ☐ NJ Data of Known Quality Protocol Reporting
- ☐ NYASP Category A
- ☐ NYASP Category B
- ☐ State Forms
- ☐ EDD Format _____
- ☐ Other _____

Commercial "A" = Results Only; Commercial "B" = Results + QC Summary
NJ Reduced = Results + QC Summary + Partial Raw data

Comments / Special Instructions

Sample inventory is verified upon receipt in the Laboratory

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished By Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1 Adam Wissner	5/30/18 1400	1	2		2
3		3	4		4
5		5	Custody Seal # ☐ Intact ☐ Not intact	Preserved where applicable ☐	On Ice ☐ Cooler Temp.

Form:SM088-03C (revised 2/12/18)

http://www.sgs.com/en/terms-and-conditions.

Site: Philadelphia Coke

GROUND-WATER SAMPLING LOG

Event: Phase 1 – Preliminary GW Inv.

Sampling Personnel: A. Wissner
Well ID: MW-101
Client / Job Number: National Grid / B0036790.0001.00002
Date: 5/30/18
Weather: Cloudy, 70°F
Time In: 1225
Time Out:

Well Information

Depth to Water (ft):	6.86' (from TIC)
Total Depth (ft):	16.35' (from TIC)
Length of Water Column (ft):	
Volume of Water in Well (gal):	

Well Type:	Flushmount	(Stick-Up)
Well Material:	Stainless Steel	(PVC)
Well Locked:	(Yes)	No
Measuring Point Marked:	Yes	(No)
Well Diameter:	1"	(2") Other:

Purging Information

Purging Method:	Bailer	Peristaltic	(Bladder)	Other:
Tubing/Bailer Material:	Steel	(Polyethylene)	Teflon	Other:
Sampling Method:	Bailer	Peristaltic	(Bladder)	Other:

Duration of Pumping (min):
Average Pumping Rate (ml/min): Water-Quality Meter Type: YSI/Turbidimeter
Total Volume Removed (gal): Did well go dry: Yes No

Conversion Factors

gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469

1 gal = 3.785 L =3785 ml = 0.1337 cubic feet

Unit Stability

pH	DO/Turb.	Cond/temp	ORP
± 0.1	±10%	± 3.0%	± 10 mV

Parameter:	1	2	3	4	5	6	7	8	9	10	11	12
	1240	1245	1250	1255	1300	1305	1310	1315				
Volume Purged (gal)	.25	.5	.75	1	1.25	1.5	1.75					
Rate (mL/min)	350	350	350	350	350	350	350					
Depth to Water (ft.)	6.87	6.90	6.92	6.93	~~7.00~~ 6.99	6.93	6.93					
pH	6.11	6.73	7.59	7.59	7.60	7.53	7.50					
Temp. (C)	14.71	13.90	13.31	13.30	13.09	13.00	12.97					
Conductivity (mS/cm)	0.37	0.91	1.45	1.47	1.55	1.54	1.52					
Dissolved Oxygen (mg/L)	0.00	0.00	0.00	0.00	0.00	0.00	0.00					
ORP (mV)	12	-5	-252	-266	-282	-286	-294					
Turbidity (NTU)	0.0	972	571	337	127	62.4	60.7					
Notes:												

Sampling Information

Analyses	#	Laboratory

Sample ID: Sample Time: 1326
MS/MSD: Yes No
Duplicate: Yes No
Duplicate ID: Dup. Time:
Chain of Custody Signed By:

Problems / Observations

Initial:

Final:

PID:

Site: Philadelphia Coke

GROUND-WATER SAMPLING LOG

Event: Phase 1 – Preliminary GW Inv.

Sampling Personnel: IMC
Well ID: MW-102
Client / Job Number: National Grid / B0036790.0001.00002
Date: 5/31/18
Weather: Cloudy 62°F
Time In: 0745 **Time Out:** 0940

Well Information

Depth to Water (ft):	10.64	(from TIC)
Total Depth (ft):	20.35	(from TIC)
Length of Water Column (ft):		
Volume of Water in Well (gal):		

Well Type:	Flushmount		Stick-Up
Well Material:	Stainless Steel		PVC
Well Locked:	Yes		No
Measuring Point Marked:	Yes		No
Well Diameter:	1"	2"	Other:

Purging Information

Purging Method:	Bailer	Peristaltic	Bladder	Other:
Tubing/Bailer Material:	Steel	Polyethylene	Teflon	Other:
Sampling Method:	Bailer	Peristaltic	Bladder	Other:

Duration of Pumping (min):
Average Pumping Rate (ml/min): Water-Quality Meter Type: ~~YSI~~/Turbidimeter Horiba
Total Volume Removed (gal): Did well go dry: Yes No

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469
1 gal = 3.785 L =3785 ml = 0.1337 cubic feet				

Unit Stability			
pH	DO/Turb.	Cond/temp	ORP
± 0.1	±10%	± 3.0%	± 10 mV

Parameter:	1	2	3	4	5	6	7	8	9	10	11	12
	0800	0805	0810	0815	0820	0825	0830					
Volume Purged (gal)	0.3	0.3	0.3	0.3	0.3	0.3	0.3					
Rate (mL/min)	300	300	300	300	300	300	300					
Depth to Water (ft.)	10.70	10.70	10.70	10.70	10.70	10.70	10.70					
pH	8.47	8.49	8.45	8.43	8.43	8.41	8.41					
Temp. (C)	16.42	15.75	14.87	13.84	13.99	13.72	13.68					
Conductivity (mS/cm)	1.55	1.55	1.53	1.52	1.51	1.51	1.51					
Dissolved Oxygen (mg/L)	0.48	0.00	0.00	0.00	0.00	0.00	0.00					
ORP (mV)	-205	-211	-215	-218	-218	-218	-219					
Turbidity (NTU)	215	178	169	157	100	82.7	40.5					
Notes:												

Sampling Information

Analyses	#	Laboratory
TCL VOCs, TCL SVOCs		
Metals		
CN		
PCBs		
Pesticides		
Sample ID: MW-102	Sample Time: 0850	
MS/MSD: Yes (No)		
Duplicate: (Yes) No		
Duplicate ID DUP-05312018	Dup. Time: 0920	
Chain of Custody Signed By:		

Problems / Observations

Initial: none

Final:

PID: 1.5 ppm

Site: Philadelphia Coke

GROUND-WATER SAMPLING LOG

Event: Phase 1 – Preliminary GW Inv.

Sampling Personnel: IMC
Well ID: MW-103
Client / Job Number: National Grid / B0036790.0001.00002
Date: 5/31/18
Weather: 65° cloudy
Time In: 1015 **Time Out:** 1200

Well Information

Depth to Water (ft):	10.52 (from TIC)
Total Depth (ft):	17.15 (from TIC)
Length of Water Column (ft):	
Volume of Water in Well (gal):	

Well Type:	Flushmount		Stick-Up
Well Material:	Stainless Steel		PVC
Well Locked:	Yes		No
Measuring Point Marked:	Yes		No
Well Diameter:	1"	2"	Other:

Purging Information

Purging Method:	Bailer	Peristaltic	Bladder	Other:
Tubing/Bailer Material:	Steel	Polyethylene	Teflon	Other:
Sampling Method:	Bailer	Peristaltic	Bladder	Other:

Duration of Pumping (min):
Average Pumping Rate (ml/min): Water-Quality Meter Type: ~~YSI/Turbidimeter~~ Horiba
Total Volume Removed (gal): Did well go dry: Yes No

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469
1 gal = 3.785 L =3785 ml = 0.1337 cubic feet				

Unit Stability			
pH	DO/Turb.	Cond/temp	ORP
± 0.1	±10%	± 3.0%	± 10 mV

Parameter:	1	2	3	4	5	6	7	8	9	10	11	12
	1030	1035	1040	1045	1050	1055	1100					
Volume Purged (gal)	0.3	0.3	0.3	0.3	0.3	0.3	0.3					
Rate (mL/min)	300	300	300	300	300	300	300					
Depth to Water (ft.)	11.00	11.00	11.00	11.00	11.00	11.00	11.00					
pH	8.09	8.09	8.11	8.10	8.13	8.11	8.09					
Temp. (C)	14.01	13.22	13.25	13.23	13.79	13.54	13.45					
Conductivity (mS/cm)	2.25	2.19	2.20	2.18	2.15	2.17	2.19					
Dissolved Oxygen (mg/L)	0.50	0.00	0.00	0.00	0.00	0.00	0.00					
ORP (mV)	-185	-177	-179	-180	-175	-176	-174					
Turbidity (NTU)	405	263	108	89.5	69.9	55.8	48.1					
Notes:	water was black											

Sampling Information

Analyses	#	Laboratory
TCL VOCs, TCL SVOCs		
Metals		
CN		
PCBs		
Pesticides		

Sample ID: MW-103 Sample Time:
MS/MSD: (Yes) No MW-103 MS/MSD
Duplicate: Yes (No)
Duplicate ID Dup. Time:
Chain of Custody Signed By:

Problems / Observations

Initial: water was black with sediment

Final: none

PID: 0.8 ppm

Pg _____ of _____

Site: Philadelphia Coke

GROUND-WATER SAMPLING LOG

Event: Phase 1 – Preliminary GW Inv.

Sampling Personnel:
Well ID: MW-104
Client / Job Number: National Grid / B0036790.0001.00002
Date: 5/30/18
Weather: Cloudy, 70°F
Time In: **Time Out:**

Well Information

Depth to Water (ft):	6.59 (from TIC)
Total Depth (ft):	12.40' (from TIC)
Length of Water Column (ft):	
Volume of Water in Well (gal):	

Well Type:	Flushmount		Stick-Up
Well Material:	Stainless Steel		PVC
Well Locked:		Yes	No
Measuring Point Marked:		Yes	No
Well Diameter:	1"	2"	Other:

Purging Information

Purging Method:	Bailer	Peristaltic	Bladder	Other:
Tubing/Bailer Material:	Steel	Polyethylene	Teflon	Other:
Sampling Method:	Bailer	Peristaltic	Bladder	Other:

Duration of Pumping (min):
Average Pumping Rate (ml/min): Water-Quality Meter Type: YSI/Turbidimeter
Total Volume Removed (gal): Did well go dry: Yes No

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469
1 gal = 3.785 L =3785 ml = 0.1337 cubic feet				

Unit Stability			
pH	DO/Turb.	Cond/temp	ORP
± 0.1	±10%	± 3.0%	± 10 mV

Parameter:	1	2	3	4	5	6	7	8	9	10	11	12
	1030	1035	1040	1045	1050	1055	1100	1105	1110	1115		
Volume Purged (gal)	0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.6	1.8	2.0		
Rate (mL/min)	250	250	250	250	250	250	250	250	250	250		
Depth to Water (ft.)	6.89	6.90	6.90	6.90	6.90	6.90	6.90	6.90	6.90	6.90		
pH	6.46	6.48	6.46	6.43	6.46	6.37	6.33	6.32	6.32	6.32		
Temp. (C)	16.27	16.71	16.37	16.31	17.64	17.90	17.92	18.06	18.09	18.13		
Conductivity (mS/cm)	0.873	0.721	0.373	0.376	0.370	0.374	0.378	0.380	0.380	0.380		
Dissolved Oxygen (mg/L)	0.00	0.00	0.00	0.00	0.37	0.34	0.00	0.00	0.00	0.00		
ORP (mV)	76	12	-5	-18	-31	-39	-47	-53	-57	-60		
Turbidity (NTU)	0.0	1000	594	541	520	430	329	150	147	142		
Notes:												

Sampling Information

Analyses	#	Laboratory
Sample ID: MW-104	Sample Time: 1120	
MS/MSD: Yes	No	
Duplicate: Yes	No	
Duplicate ID —	Dup. Time: —	
Chain of Custody Signed By:		

Problems / Observations

Initial:

Final:

PID:

Site: Philadelphia Coke

GROUND-WATER SAMPLING LOG

Event: Phase 1 – Preliminary GW Inv.

Sampling Personnel:
Well ID: MW-105
Client / Job Number: National Grid / B0036790.0001.00002
Date: 5/30/18
Weather: Cloudy, 70°F
Time In: 0855 **Time Out:**

Well Information

Depth to Water (ft):	8.41 (from TIC)
Total Depth (ft):	16.62 (from TIC)
Length of Water Column (ft):	
Volume of Water in Well (gal):	

Well Type:	Flushmount		Stick-Up
Well Material:	Stainless Steel		PVC
Well Locked:		Yes	No
Measuring Point Marked:		Yes	No
Well Diameter:	1"	2"	Other:

Purging Information

Purging Method:	Bailer	Peristaltic	Bladder	Other:
Tubing/Bailer Material:	Steel	Polyethylene	Teflon	Other:
Sampling Method:	Bailer	Peristaltic	Bladder	Other:

Duration of Pumping (min):
Average Pumping Rate (ml/min): Water-Quality Meter Type: YSI/Turbidimeter
Total Volume Removed (gal): Did well go dry: Yes No

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469
1 gal = 3.785 L =3785 ml = 0.1337 cubic feet				

Unit Stability			
pH	DO/Turb.	Cond/temp	ORP
± 0.1	±10%	± 3.0%	± 10 mV

Parameter:	1	2	3	4	5	6	7	8	9	10	11	12
	0907	0912	0917	0922	0927	0932	0937	0942	0947			
Volume Purged (gal)	0.25	0.50	0.75	1.0	1.25	1.5	1.75	2.00	2.25			
Rate (mL/min)	300	300	300	300	300	300	300	300	300			
Depth to Water (ft.) 8.70	~~8.46~~	8.73	8.76	8.78	8.90	8.94	8.99	9.01	9.05			
pH	6.46	6.51	6.51	6.54	6.54	6.54	6.53	6.53	6.54			
Temp. (C)	17.31	15.47	15.26	15.09	15.50	15.59	15.35	15.25	15.34			
Conductivity (mS/cm)	~~2.35~~	2.57	2.60	2.69	2.66	2.63	2.64	2.64	2.65			
Dissolved Oxygen (mg/L)	0.00	0.00	0.00	0.00	0.56	0.77	0.00	0.00	1.00			
ORP (mV)	-85	-105	-111	-118	-118	-116	-118	-118	-122			
Turbidity (NTU)	0.0	1000	394	428	127	15.2	10.6	10.7	10.6			
Notes:	black silty											

Sampling Information

Analyses	#	Laboratory

Sample ID:		Sample Time:	0952
MS/MSD:	Yes	No	
Duplicate:	Yes	No	
Duplicate ID		Dup. Time:	
Chain of Custody Signed By:			

Problems / Observations

Initial:

Final:

PID:

Site: Philadelphia Coke

GROUND-WATER SAMPLING LOG

Event: Phase 1 – Preliminary GW Inv.

Sampling Personnel: A. Wissner
Well ID: MW-106
Client / Job Number: National Grid / B0036790.0001.00002
Date: 5/29/18
Weather: sunny, 80°F
Time In: 1345 **Time Out:**

Well Information

Depth to Water (ft): 4.22 (from TIC)
Total Depth (ft): 12.34 (from TIC)
Length of Water Column (ft):
Volume of Water in Well (gal):

Well Type:	Flushmount	Stick-Up
Well Material:	Stainless Steel	PVC
Well Locked:	Yes	No
Measuring Point Marked:	Yes	No
Well Diameter:	1" 2"	Other:

Purging Information

Purging Method:	Bailer	Peristaltic	(Bladder)	Other:
Tubing/Bailer Material:	Steel	(Polyethylene)	Teflon	Other:
Sampling Method:	Bailer	Peristaltic	(Bladder)	Other:

Duration of Pumping (min): 1355
Average Pumping Rate (ml/min): Water-Quality Meter Type: YSI/Turbidimeter
Total Volume Removed (gal): Did well go dry: Yes (No)

Conversion Factors

gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469

1 gal = 3.785 L =3785 ml = 0.1337 cubic feet

Unit Stability

pH	DO/Turb.	Cond/temp	ORP
± 0.1	±10%	± 3.0%	± 10 mV

Parameter:	1	2	3	4	5	6	7	8	9	10	11	12
	1400	1405	1410	1415	1420	1425	1430	1435	1440	1445		
Volume Purged (gal)	0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.6	1.8			
Rate (mL/min)	350	350	350	350	350	350	350	350	350			
Depth to Water (ft.)	4.22	4.22	4.22	4.22	4.22	4.22	4.22	4.22	4.22			
pH	6.56	6.55	6.53	6.54	6.55	6.56	6.56	6.54	6.55			
Temp. (C)	22.36	23.78	21.66	20.60	21.21	21.04	20.98	20.68	20.45			
Conductivity (mS/cm)	0.992	0.912	0.818	0.766	0.771	0.772	0.768	0.759	0.751			
Dissolved Oxygen (mg/L)	0.00	0.00	0.00	1.47	1.27	1.21	1.02	0.98	0.96			
ORP (mV)	-99	-99	-103	-106	-111	-114	-114	-113	-112			
Turbidity (NTU)	0.0	0.0	614	329	191	117	96.6	73.3	67.2			
Notes:	too turbid →											

Sampling Information

Analyses	#	Laboratory

Sample ID: MW-106 Sample Time: 1450
MS/MSD: Yes (No)
Duplicate: Yes (No)
Duplicate ID: — Dup. Time: —
Chain of Custody Signed By:

Problems / Observations

Initial:

Final:

PID:

Pg ____ of ____

Site: Philadelphia Coke

GROUND-WATER SAMPLING LOG

Event: Phase 1 – Preliminary GW Inv.

Sampling Personnel: IMC
Well ID: MW-107
Client / Job Number: National Grid / B0036790.0001.00002
Date: 5/30/18
Weather: cloudy 65°F
Time In: 0745 **Time Out:** 0910

Well Information

Depth to Water (ft):	5.19	(from TIC)
Total Depth (ft):	12.71	(from TIC)
Length of Water Column (ft):		
Volume of Water in Well (gal):		

Well Type:	Flushmount		(Stick-Up)
Well Material:	Stainless Steel		(PVC)
Well Locked:	(Yes)	No	
Measuring Point Marked:	(Yes)	No	
Well Diameter:	1"	(2")	Other:

Purging Information

Purging Method:	Bailer	Peristaltic	(Bladder)	Other:
Tubing/Bailer Material:	Steel	(Polyethylene)	Teflon	Other:
Sampling Method:	Bailer	Peristaltic	(Bladder)	Other:

Duration of Pumping (min):
Average Pumping Rate (ml/min):
Water-Quality Meter Type: ~~YSI/Turbidimeter~~ Horiba
Total Volume Removed (gal):
Did well go dry: Yes (No)

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469
1 gal = 3.785 L =3785 ml = 0.1337 cubic feet				

Unit Stability			
pH	DO/Turb.	Cond/temp	ORP
± 0.1	±10%	± 3.0%	± 10 mV

Parameter:	1	2	3	4	5	6	7	8	9	10	11	12
	0800	0805	0810	0815	0820	0825	0830	0835				
Volume Purged (gal)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2				
Rate (mL/min)	250	250	250	250	250	250	250	250				
Depth to Water (ft.)	5.19	5.19	5.19	5.19	5.19	5.19	5.19	5.19				
pH	7.17	7.00	6.96	6.99	7.00	7.03	7.02	7.00				
Temp. (C)	19.95	16.84	15.06	14.91	14.65	14.55	13.25	13.29				
Conductivity (mS/cm)	1.22	1.11	1.12	1.12	1.12	1.11	1.12	1.13				
Dissolved Oxygen (mg/L)	8.66	7.49	4.86	1.55	0.04	0.00	0.00	0.00				
ORP (mV)	-105	-106	-103	-103	-102	-100	-97	-99				
Turbidity (NTU)	690	584	561	450	395	205	134	121				
Notes:												

Sampling Information

Analyses	#	Laboratory
Metals		
CN		
Tcl SVOC		
Tcl VOC		
Hg		
PCBs, Pesticides		
Sample ID: MW-107	Sample Time: 0850	
MS/MSD: Yes (No)		
Duplicate: Yes (No)		
Duplicate ID	Dup. Time:	
Chain of Custody Signed By:		

Problems / Observations

Initial: None

Final: None

PID: 0.9 ppm

Site: Philadelphia Coke

GROUND-WATER SAMPLING LOG

Event: Phase 1 – Preliminary GW Inv.

Sampling Personnel: JMC
Well ID: PCMW-04
Client / Job Number: National Grid / B0036790.0001.00002
Date: 5/30/18
Weather: 65°F cloudy
Time In: 1020 **Time Out:** 1125

Well Information

Depth to Water (ft):	6.84 (from TIC)
Total Depth (ft):	13.48 (from TIC)
Length of Water Column (ft):	
Volume of Water in Well (gal):	

Well Type:	Flushmount			(Stick-Up)
Well Material:	Stainless Steel			(PVC)
Well Locked:	Yes			(No)
Measuring Point Marked:	(Yes)			No
Well Diameter:	1"	2"	(Other:)	4"

Purging Information

Purging Method:	Bailer	Peristaltic	(Bladder)	Other:
Tubing/Bailer Material:	Steel	(Polyethylene)	Teflon	Other:
Sampling Method:	Bailer	Peristaltic	(Bladder)	Other:

Duration of Pumping (min):
Average Pumping Rate (ml/min):
Water-Quality Meter Type: Horiba YSI/Turbidimeter
Total Volume Removed (gal):
Did well go dry: Yes (No)

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469
1 gal = 3.785 L =3785 ml = 0.1337 cubic feet				

Unit Stability			
pH	DO/Turb.	Cond/temp	ORP
± 0.1	±10%	± 3.0%	± 10 mV

Parameter:	1	2	3	4	5	6	7	8	9	10	11	12
	1035	1040	1045	1050	1055	1100	1105					
Volume Purged (gal)	0.2	0.2	0.2	0.2	0.2	0.2	0.2					
Rate (mL/min)	250	250	250	250	250	250	250					
Depth to Water (ft.)	6.84	6.84	6.84	6.84	6.84	6.84	6.84	W				
pH	6.95	6.98	7.04	7.00	7.01	7.03	7.07					
Temp. (C)	16.81	16.05	15.47	15.11	14.35	13.81	13.80					
Conductivity (mS/cm)	1.12	1.17	1.14	1.05	1.09	0.905	0.821					
Dissolved Oxygen (mg/L)	0.5	0.2	0.0	0.0	0.0	0.0	0.0					
ORP (mV)	-103	-105	-100	-111	-109	-105	-85					
Turbidity (NTU)	35.0	31.5	24.8	22.1	15.5	14.3	8.4					
Notes:												

Sampling Information

Analyses	#	Laboratory
Metals		
Sample ID: PCMW-04	Sample Time: 1110	
MS/MSD: Yes	(No)	
Duplicate: Yes	(No)	
Duplicate ID	Dup. Time:	
Chain of Custody Signed By:		

Problems / Observations

Initial: None

Final: none

PID: 0.3 ppm

Pg _____ of _____

Site: Philadelphia Coke

GROUND-WATER SAMPLING LOG

Event: Phase 1 – Preliminary GW Inv.

Sampling Personnel: IMC
Well ID: PCMW-05
Client / Job Number: National Grid / B0036790.0001.00002
Date: 5/30/18
Weather: 65 cloudy
Time In: 1115 **Time Out:** 1220

Well Information

Depth to Water (ft):	6.14	(from TIC)
Total Depth (ft):	14.35	(from TIC)
Length of Water Column (ft):		
Volume of Water in Well (gal):		

Well Type:		Flushmount		Stick-Up
Well Material:		Stainless Steel		PVC
Well Locked:		Yes		No
Measuring Point Marked:		Yes		No
Well Diameter:	1"	2"	Other:	4"

Purging Information

Purging Method:	Bailer	Peristaltic	Bladder	Other:
Tubing/Bailer Material:	Steel	Polyethylene	Teflon	Other:
Sampling Method:	Bailer	Peristaltic	Bladder	Other:

Duration of Pumping (min):
Average Pumping Rate (ml/min): Water-Quality Meter Type: Horiba YSI/Turbidimeter
Total Volume Removed (gal): Did well go dry: Yes No

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469
1 gal = 3.785 L =3785 ml = 0.1337 cubic feet				

Unit Stability			
pH	DO/Turb.	Cond/temp	ORP
± 0.1	±10%	± 3.0%	± 10 mV

Parameter:	1	2	3	4	5	6	7	8	9	10	11	12
	1130	1135	1140	1145	1150	1155	1200					
Volume Purged (gal)	0.3	0.3	0.3	0.3	0.3	0.3	0.3					
Rate (mL/min)	300	300	300	300	300	300	300					
Depth to Water (ft.)	6.18	6.18	6.18	6.18	6.18	6.18	6.18					
pH	7.45	7.39	7.35	7.23	7.20	7.17	7.10					
Temp. (C)	15.05	14.45	14.65	14.50	14.42	14.59	14.73					
Conductivity (mS/cm)	1.20	1.05	1.03	1.03	1.02	0.910	0.905					
Dissolved Oxygen (mg/L)	1.54	0.70	0.57	0.95	0.86	0.72	0.62					
ORP (mV)	-225	-209	-150	-135	-130	-125	-122					
Turbidity (NTU)	55.0	49.4	39.5	38.9	35.3	25.1	18.7					
Notes:												

Sampling Information

Analyses	#	Laboratory
Metals		
Sample ID: PCMW-05	Sample Time: 1205	
MS/MSD: Yes	No	
Duplicate: Yes	No	
Duplicate ID	Dup. Time:	
Chain of Custody Signed By:		

Problems / Observations

Initial: none

Final: none

PID: 0.0ppm

Site: Philadelphia Coke | **GROUND-WATER SAMPLING LOG** | Event: Phase 1 – Preliminary GW Inv.

Sampling Personnel: IMC | **Well ID:** PCMW-06
Client / Job Number: National Grid / B0036790.0001.00002 | **Date:** 5/30
Weather: 68 Bloody | **Time In:** 1225 **Time Out:** 1325

Well Information

Depth to Water (ft):	6.74 (from TIC)
Total Depth (ft):	13.30 (from TIC)
Length of Water Column (ft):	
Volume of Water in Well (gal):	

Well Type:	Flushmount		Stick-Up
Well Material:	Stainless Steel		PVC
Well Locked:	Yes		No
Measuring Point Marked:	Yes		No
Well Diameter:	1"	2"	Other: 4"

Purging Information

Purging Method:	Bailer	Peristaltic	Bladder	Other:
Tubing/Bailer Material:	Steel	Polyethylene	Teflon	Other:
Sampling Method:	Bailer	Peristaltic	Bladder	Other:

Duration of Pumping (min):
Average Pumping Rate (ml/min): Water-Quality Meter Type: Horiba YSI/Turbidimeter
Total Volume Removed (gal): Did well go dry: Yes No

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469
1 gal = 3.785 L =3785 ml = 0.1337 cubic feet				

Unit Stability			
pH	DO/Turb.	Cond/temp	ORP
± 0.1	±10%	± 3.0%	± 10 mV

Parameter:	1	2	3	4	5	6	7	8	9	10	11	12
	1235	1240	1245	1250	1255	1300	1305					
Volume Purged (gal)	[illegible]	0.3	0.3	0.3	0.3	0.3	0.3	[illegible]				
Rate (mL/min)	300	300	300	300	300	300	300					
Depth to Water (ft.)	6.80	6.80	6.80	6.80	6.80	6.80	6.80					
pH	7.41	7.45	7.40	7.38	7.35	7.35	7.33					
Temp. (C)	19.13	19.10	19.00	18.43	17.95	17.31	16.42					
Conductivity (mS/cm)	0.535	0.611	0.605	0.575	0.568	0.534	0.516					
Dissolved Oxygen (mg/L)	2.00	1.89	1.87	1.75	1.73	1.69	1.65					
ORP (mV)	-22	-39	-29	-25	-35	-37	-39					
Turbidity (NTU)	1.1	1.5	1.3	0.9	1.0	1.0	0.2					
Notes:												

Sampling Information

Analyses	#	Laboratory
Metals		
Sample ID: PCMW-06	Sample Time: 1310	
MS/MSD: Yes	No	
Duplicate: Yes	No	
Duplicate ID	Dup. Time:	
Chain of Custody Signed By:		

Problems / Observations

Initial: None

Final: none

PID: 0.0 ppm

Pg _____ of _____

Site: Philadelphia Coke | **GROUND-WATER SAMPLING LOG** | Event: Phase 1 – Preliminary GW Inv.

Sampling Personnel: A. Wissner | **Well ID:** PCMW-085
Client / Job Number: National Grid / B0036790.0001.00002 | **Date:** 5/31/18
Weather: Cloudy / mist. 65°F | **Time In:** 0830 | **Time Out:**

Well Information

Depth to Water (ft):	10.47' (from TIC)
Total Depth (ft):	17.45' (from TIC)
Length of Water Column (ft):	
Volume of Water in Well (gal):	

Well Type:	Flushmount		Stick-Up
Well Material:	Stainless Steel		PVC
Well Locked:	Yes		No
Measuring Point Marked:	Yes		No
Well Diameter:	1"	2"	Other:

Purging Information

Purging Method:	Bailer	Peristaltic	Bladder	Other:
Tubing/Bailer Material:	Steel	Polyethylene	Teflon	Other:
Sampling Method:	Bailer	Peristaltic	Bladder	Other:

Duration of Pumping (min):
Average Pumping Rate (ml/min): | Water-Quality Meter Type: YSI/Turbidimeter
Total Volume Removed (gal): | Did well go dry: Yes No

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469
1 gal = 3.785 L =3785 ml = 0.1337 cubic feet				

Unit Stability			
pH	DO/Turb.	Cond/temp	ORP
± 0.1	±10%	± 3.0%	± 10 mV

Parameter:	1	2	3	4	5	6	7	8	9	10	11	12
	0840	0845	0850	0855	0900	0905						
Volume Purged (gal)	.25	.5	.75	~~1.25~~	1.25	1.5						
Rate (mL/min)	300	300	300	300	300	300						
Depth to Water (ft.)	10.69	10.69	10.68	10.69	10.69	10.69						
pH	7.11	6.83	6.72	6.71	6.69	6.69						
Temp. (C)	12.00	12.08	12.13	12.53	12.90	12.60						
Conductivity (mS/cm)	2.41	2.00	1.94	1.94	1.91	1.92						
Dissolved Oxygen (mg/L)	0.00	0.00	0.00	0.00	0.00	0.00						
ORP (mV)	5	-18	-37	-38	-42	-45						
Turbidity (NTU)	6.0	1000	359	180	170	192						
Notes:												

Sampling Information

Analyses	#	Laboratory

Sample ID: | Sample Time: 0910
MS/MSD: Yes (No)
Duplicate: Yes (No)
Duplicate ID: — | Dup. Time: —
Chain of Custody Signed By:

Problems / Observations

Initial:

Final:

PID:

Pg _____ of _____

Site: Philadelphia Coke

GROUND-WATER SAMPLING LOG

Event: Phase 1 – Preliminary GW Inv.

Sampling Personnel:
Well ID: RCMW-08S
Client / Job Number: National Grid / B0036790.0001.00002
Date: 5/31/18
Weather:
Time In: **Time Out:**

Well Information

Depth to Water (ft):	10.35 (from TIC)
Total Depth (ft):	(from TIC)
Length of Water Column (ft):	
Volume of Water in Well (gal):	

Well Type:	Flushmount		Stick-Up
Well Material:	Stainless Steel		PVC
Well Locked:	Yes		No
Measuring Point Marked:	Yes		No
Well Diameter:	1"	2"	Other:

Purging Information

Purging Method:	Bailer	Peristaltic	Bladder	Other:
Tubing/Bailer Material:	Steel	Polyethylene	Teflon	Other:
Sampling Method:	Bailer	Peristaltic	Bladder	Other:

Duration of Pumping (min):
Average Pumping Rate (ml/min): Water-Quality Meter Type: YSI/Turbidimeter
Total Volume Removed (gal): Did well go dry: Yes No

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469
1 gal = 3.785 L =3785 ml = 0.1337 cubic feet				

Unit Stability			
pH	DO/Turb.	Cond/temp	ORP
± 0.1	±10%	± 3.0%	± 10 mV

Parameter:	1	2	3	4	5	6	7	8	9	10	11	12
	1007	1012	1017	1022	1027	1032						
Volume Purged (gal)	0.25	0.45	0.65	0.85	1.05	1.25						
Rate (mL/min)	300	250	250	250	250	250						
Depth to Water (ft.)	10.11	10.41	10.50	10.53	10.54	10.54						
pH	7.86	7.34	6.99	6.63	6.62	6.61						
Temp. (C)	11.02	11.56	11.17	11.64	11.63	11.65						
Conductivity (mS/cm)	2.52	2.15	2.01	1.84	1.83	1.82						
Dissolved Oxygen (mg/L)	0.01	0.00	0.00	0.00	0.00	0.00						
ORP (mV)	-100	-96	-63	-61	-59	-56						
Turbidity (NTU)	128	74	36.	13.2	12.2	10.8						
Notes:												

Sampling Information

Analyses	#	Laboratory

Sample ID:		Sample Time:	1037
MS/MSD:	Yes	No	
Duplicate:	Yes	No	
Duplicate ID		Dup. Time:	
Chain of Custody Signed By:			

Problems / Observations

Initial:

Final:

PID:

Site: Philadelphia Coke

GROUND-WATER SAMPLING LOG

Event: Phase 1 – Preliminary GW Inv.

Sampling Personnel: A. Wissner
Well ID: ~~MW-16D~~ PCMW-16D
Client / Job Number: National Grid / B0036790.0001.00002
Date: 5/30/18
Weather: cloudy, 70°F
Time In: 0755 **Time Out:**

Well Information

Depth to Water (ft):	11.10' (from TIC)
Total Depth (ft):	35.60 (from TIC)
Length of Water Column (ft):	
Volume of Water in Well (gal):	

Well Type:	Flushmount		Stick-Up
Well Material:	Stainless Steel		PVC
Well Locked:	Yes		No
Measuring Point Marked:	Yes		No
Well Diameter:	1"	2"	Other:

Purging Information

Purging Method:	Bailer	Peristaltic	Bladder	Other:
Tubing/Bailer Material:	Steel	Polyethylene	Teflon	Other:
Sampling Method:	Bailer	Peristaltic	Bladder	Other:

Duration of Pumping (min): 0855
Average Pumping Rate (ml/min): Water-Quality Meter Type: YSI/Turbidimeter
Total Volume Removed (gal): Did well go dry: Yes No

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469
1 gal = 3.785 L =3785 ml = 0.1337 cubic feet				

Unit Stability			
pH	DO/Turb.	Cond/temp	ORP
± 0.1	±10%	± 3.0%	± 10 mV

Parameter:	1	2	3	4	5	6	7	8	9	10	11	12
	0810	0825	0820	0835	0830	0835	0840	0845				
Volume Purged (gal)	0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.6				
Rate (mL/min)	250	250	250	250	250	250	250	250				
Depth to Water (ft.)	~~6~~ 10.75	10.78	10.76	10.76	10.76	10.76	10.76	10.76				
pH	6.62	6.61	6.59	6.57	6.55	6.55	6.54	6.54				
Temp. (C)	17.31	16.59	16.19	16.65	16.65	16.52	16.15	16.06				
Conductivity (mS/cm)	1.26	1.25	1.24	1.16	1.18	1.13	1.18	1.18				
Dissolved Oxygen (mg/L)	0.00	0.00	0.30	0.65	0.70	0.73	0.69	0.64				
ORP (mV)	+107	-98	-78	-70	-67	-69	-70	-69				
Turbidity (NTU)	0.0	793	642	583	128	36	24	5				
Notes:												

Sampling Information

Analyses	#	Laboratory
Sample ID: ~~MW-16D~~ PCMW-16D	Sample Time: 0850	
MS/MSD: Yes	No	
Duplicate: Yes	No	
Duplicate ID	Dup. Time:	
Chain of Custody Signed By:		

Problems / Observations

Initial:

Final:

PID:

Site: Philadelphia Coke

GROUND-WATER SAMPLING LOG

Event: Phase 1 – Preliminary GW Inv.

Sampling Personnel: IMC
Well ID: PCMW-19S
Client / Job Number: National Grid / B0036790.0001.00002
Date: 5/29/18
Weather: Sunny 75°
Time In: **Time Out:**

Well Information

Depth to Water (ft): 7.80 (from TIC)
Total Depth (ft): 15.50 (from TIC)
Length of Water Column (ft):
Volume of Water in Well (gal):

Well Type:	Flushmount		Stick-Up
Well Material:	Stainless Steel		PVC
Well Locked:	Yes		No
Measuring Point Marked:	Yes		No
Well Diameter:	1"	2"	Other:

Purging Information

Purging Method:	Bailer	Peristaltic	Bladder	Other:
Tubing/Bailer Material:	Steel	Polyethylene	Teflon	Other:
Sampling Method:	Bailer	Peristaltic	Bladder	Other:

Duration of Pumping (min):
Average Pumping Rate (ml/min): Water-Quality Meter Type: YSI/Turbidimeter
Total Volume Removed (gal): Did well go dry: Yes No

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469
1 gal = 3.785 L =3785 ml = 0.1337 cubic feet				

Unit Stability			
pH	DO/Turb.	Cond/temp	ORP
± 0.1	±10%	± 3.0%	± 10 mV

Parameter:	1	2	3	4	5	6	7	8	9	10	11	12
	1330	1335	1340	1345	1350	1355						
Volume Purged (gal)	0.2	0.4	0.6	0.8	1.0	1.2						
Rate (mL/min)	250	250	250	250	250	250						
Depth to Water (ft.)	7.80	7.82	7.83	7.83	7.81	7.82						
pH	7.05	7.03	7.02	6.98	6.95	7.04						
Temp. (C)	18.00	17.82	17.01	16.53	16.10	16.55						
Conductivity (mS/cm)	0.649	0.677	0.631	0.640	0.648	0.645						
Dissolved Oxygen (mg/L)	6.39	4.80	0.50	0.31	0.00	0.00						
ORP (mV)	-138	-140	-141	-132	-138	-140						
Turbidity (NTU)	137	125	89	58	8.7	5.3						
Notes:												

Sampling Information

Analyses	#	Laboratory
Metals	1	
Sample ID: PCMW-19S	Sample Time:	
MS/MSD:	Yes	No
Duplicate:	Yes	No
Duplicate ID	Dup. Time:	
Chain of Custody Signed By:		

Problems / Observations

Initial: None

Final: None

PID: 0.2 ppm

Pg _____ of _____

Site: Philadelphia Coke

GROUND-WATER SAMPLING LOG

Event: Phase 1 – Preliminary GW Inv.

Sampling Personnel: A. Wisner
Well ID: PCMW-15S
Client / Job Number: National Grid / B0036790.0001.00002
Date: 7/25/18
Weather: Sunny, 90°F
Time In: **Time Out:**

Well Information

Depth to Water (ft): 9.37 (from TIC)
Total Depth (ft): (from TIC)
Length of Water Column (ft):
Volume of Water in Well (gal):

Well Type:	Flushmount	(Stick-Up)	
Well Material:	Stainless Steel	(PVC)	
Well Locked:	(Yes)	No	
Measuring Point Marked:	(Yes)	No	
Well Diameter:	1"	(2")	Other:

Purging Information

Purging Method:	Bailer	Peristaltic	(Bladder)	Other:
Tubing/Bailer Material:	Steel	(Polyethylene)	Teflon	Other:
Sampling Method:	Bailer	Peristaltic	(Bladder)	Other:

Duration of Pumping (min): 1130 / 1230
Average Pumping Rate (ml/min): Water-Quality Meter Type: YSI/Turbidimeter
Total Volume Removed (gal): Did well go dry: Yes (No)

Conversion Factors

gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469

1 gal = 3.785 L = 3785 ml = 0.1337 cubic feet

Unit Stability

pH	DO/Turb.	Cond/temp	ORP
± 0.1	±10%	± 3.0%	± 10 mV

Parameter:	1 5	2 10	3 15	4 20	5 25	6 30	7 35	8 40	9 45	10 50	11 55	12 60
Volume Purged (gal)	0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.6	1.8	2.0	2.2	2.4
Rate (mL/min)	250	250	250	250	250	250	250	250	250	250	250	250
Depth to Water (ft.)	9.46	9.49	9.51	9.51	9.51	9.51	9.51	9.51	9.51	9.51	9.51	9.51
pH	4.56	5.59	6.43	6.46	6.46	6.49	6.51	6.50	6.55	6.55	6.57	6.56
Temp. (C)	16.73	19.11	18.73	19.26	19.74	19.95	20.01	20.11	20.48	20.56	20.99	20.91
Conductivity (mS/cm)	1.113	1.100	1.002	0.996	0.512	0.303	0.303	0.303	0.303	0.303	0.303	0.303
Dissolved Oxygen (mg/L)	4.23	3.11	1.67	1.52	0.75	0.34	0.33	0.22	0.34	0.12	0.18	0.26
ORP (mV)	112.1	98.1	65.3	68.1	69.4	68.7	69.2	69.9	69.1	69.6	72.4	75.6
Turbidity (NTU)	0.0*	0.0*	1000	994	637	552	256	98	54	36	22.1	18.5
Notes:												

Sampling Information

Analyses	#	Laboratory
Free Cyanide		

Sample ID: PCMW-15S Sample Time: 1230
MS/MSD: Yes (No)
Duplicate: (Yes) No
Duplicate ID: Dup. Time:
Chain of Custody Signed By:

*DUP-07252018

Problems / Observations

Initial: turbidity too high to read.

Final:

PID:

Site: Philadelphia Coke

GROUND-WATER SAMPLING LOG

Event: Phase 1 – Preliminary GW Inv.

Sampling Personnel:
Well ID: PCMW-10D
Client / Job Number: National Grid / B0036790.0001.00002
Date: 7/22/19
Weather: Sunny, 95°F
Time In: **Time Out:**

Well Information

Depth to Water (ft):	13.06	(from TIC)
Total Depth (ft):		(from TIC)
Length of Water Column (ft):		
Volume of Water in Well (gal):		

Well Type:	Flushmount		Stick-Up
Well Material:	Stainless Steel		PVC
Well Locked:	Yes		No
Measuring Point Marked:	Yes		No
Well Diameter:	1"	2"	Other:

Purging Information

Purging Method:	Bailer	Peristaltic	Bladder	Other:
Tubing/Bailer Material:	Steel	Polyethylene	Teflon	Other:
Sampling Method:	Bailer	Peristaltic	Bladder	Other:
Duration of Pumping (min):				
Average Pumping Rate (ml/min):		Water-Quality Meter Type:	YSI/Turbidimeter	
Total Volume Removed (gal):		Did well go dry:	Yes	No

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469
1 gal = 3.785 L =3785 ml = 0.1337 cubic feet				

Unit Stability			
pH	DO/Turb.	Cond/temp	ORP
± 0.1	±10%	± 3.0%	± 10 mV

Parameter:	1 5	2 10	3 15	4 20	5 25	6 30	7 35	8 40	9 45	10 50	11 55	12 60
Volume Purged (gal)												
Rate (mL/min)	300	300	300	300	300	300	300	300	300	300	300	300
Depth to Water (ft.)	13.12	13.24	13.28	13.29	13.27	13.30	13.31	13.33	13.36	13.36	13.35	13.37
pH	7.16	7.24	7.24	7.24	7.27	7.31	7.4	7.38	7.37	7.32	7.35	7.35
Temp. (C)	22.96	22.91	22.80	22.34	21.91	21.34	22.11	21.13	21.65	21.70	21.79	21.82
Conductivity (mS/cm)	2.367	1.924	1.990	1.789	1.777	1.772	1.692	1.668	1.673	1.664	1.660	1.668
Dissolved Oxygen (mg/L)	1.75	1.02	0.94	0.73	0.64	0.63	0.63	0.62	0.64	0.64	0.63	0.60
ORP (mV)	-11.4	-23.6	-54.2	-101.7	-110.3	-111.1	-117.2	-118.3	-120.1	-120.6	-121.9	-122.8
Turbidity (NTU)	0.0*	0.0*	862	501	373	191.7	93.6	95.7	71.3	55.3	302	32.7
Notes:												

Sampling Information

Analyses	#	Laboratory

Sample ID:	PCMW-10D	Sample Time:	1340
MS/MSD:	Yes	No	
Duplicate:	Yes	No	
Duplicate ID		Dup. Time:	
Chain of Custody Signed By:			

Problems / Observations

Initial: turb unreadable @ begin.

Final:

PID:

Site

Event

GROUND-WATER SAMPLING LOG

Sampling Personnel: Evan Green
Client / Job Number: National Grid / Philx Coke
Weather: Mid 30's, Sunny

Well ID: MW-107
Date: 3/28/14
Time In: 0814 Time Out: 1020

Well Information

Depth to Water:	(feet)	5.11	(from MP)
Total Depth:	(feet)	12.68	(from MP)
Length of Water Column:	(feet)	7.57	
Volume of Water in Well:	(gal)	1.23	
Three Well Volumes:	(gal)	3.70	

Well Type:		Flushmount		(Stick-Up)
Well Material:		Stainless Steel		(PVC)
Well Locked:		(Yes)		No
Measuring Point Marked:		(Yes)		No
Well Diameter:	1"	(2")	Other:	

Purging Information

Pump on 0847 Pump off 1020

Purging Method:	Bailer	(Peristaltic)	Waterra	Other:
Tubing/Bailer Material:	Steel	(Polyethylene)	Teflon	Other:
Sampling Method:	Bailer	(Peristaltic)	Waterra	Other:

Duration of Pumping: 97 (min)
Average Pumping Rate: 100 (ml/min)
Water-Quality Meter Type: Horiba U-50
Total Volume Removed: 1.65 (gal)
Did well go dry: Yes (No)

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469
1 gal = 3.785 L =3785 ml = 0.1337 cubic feet				

Unit Stability			
pH	DO	Cond.	ORP
± 0.1	±10%	± 3.0%	± 10 mV

	1	2	3	4	5	6	7	8	9
Parameter:	0855	0905	0910	0915	0920	0925	0930	0935	0940
Volume Purged (gal)	0	0.25	0.40	0.5	0.6	0.7	0.85	0.95	1.1
Rate (mL/min)	150	125	100	100	100	100	100	100	100
Depth to Water (ft.)	5.13	5.14	5.14	5.13	5.12	5.12	5.12	5.13	5.12
pH	5.87	6.97	7.06	7.07	7.08	7.09	7.09	7.09	7.09
Temp. (C)	9.51	9.77	9.41	9.83	10.01	10.09	10.03	10.05	10.06
Conductivity (mS/cm)	1.22	1.13	1.10	1.09	1.07	1.06	1.04	1.03	1.02
Dissolved Oxygen (mg/L)	4.25	1.18	0.98	0.97	0.90	0.84	0.77	0.68	0.70
ORP (mV)	-105	-206	-210	-211	-212	-214	-214	-215	-215
Turbidity (NTU)	812	333	256	225	157	148	114	96	75
Notes:	water in 45 gal drum								

Sampling Information

Analyses	#	Laboratory
MTAL [DISSLF]	3	
TDS	3	

Sample ID: MW-107 Sample Time: 1000
MS/MSD: (Yes) No
Duplicate: Yes No
Duplicate ID Dup. Time:
Chain of Custody Signed By: Evan Green

Problems / Observations

PID: 0.9

* MS/MSD ID:

MW-107 MS

MW-107 MSD

Site

Event

GROUND-WATER SAMPLING LOG

Sampling Personnel: Evan Greig
Client / Job Number:
Weather: See page 1

Well ID: MW-107
Date: 3/28/19
Time In: Time Out:

Well Information

Depth to Water:	(feet)	(from MP)
Total Depth:	(feet)	(from MP)
Length of Water Column:	(feet)	
Volume of Water in Well:	(gal)	
Three Well Volumes:	(gal)	

Well Type:	Flushmount		Stick-Up
Well Material:	Stainless Steel		PVC
Well Locked:	Yes		No
Measuring Point Marked:	Yes		No
Well Diameter:	1"	2"	Other:

Purging Information

Purging Method:	Bailer	Peristaltic	Waterra	Other:
Tubing/Bailer Material:	Steel	Polyethylene	Teflon	Other:
Sampling Method:	Bailer	Peristaltic	Waterra	Other:
Duration of Pumping:	(min)			
Average Pumping Rate:	(ml/min)	Water-Quality Meter Type:		
Total Volume Removed:	(gal)	Did well go dry:	Yes	No

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469
1 gal = 3.785 L =3785 ml = 0.1337 cubic feet				

Unit Stability			
pH	DO	Cond.	ORP
± 0.1	±10%	± 3.0%	± 10 mV

	1	2	3	4	5	6	7	8	9
Parameter:	0945	0950	0955						
Volume Purged (gal)	1.25	1.46	1.55						
Rate (mL/min)	100	100	100						
Depth to Water (ft.)	5.12	5.12	5.12						
pH	7.10	7.10	7.11						
Temp. (C)	10.11	10.09	10.12						
Conductivity (mS/cm)	1.01	0.99	0.98						
Dissolved Oxygen (mg/L)	0.65	0.68	0.66						
ORP (mV)	-215	-216	-216						
Turbidity (NTU)	64	51	44						
Notes:									

Sampling Information

Analyses	#	Laboratory

Sample ID:	MW-107	Sample Time: 1000
MS/MSD:	(Yes) No	
Duplicate:	Yes No	
Duplicate ID		Dup. Time:
Chain of Custody Signed By:		

Problems / Observations

Site

Event

GROUND-WATER SAMPLING LOG

Sampling Personnel: Evan Green
Client / Job Number: National Grid / Philly Coke
Weather: 40's, Sunny

Well ID: PCMW-05
Date: 3/28/14
Time In: 1024 **Time Out:** 1156

Well Information

Depth to Water:	6.0 (feet)	(from MP)
Total Depth:	14.24 (feet)	(from MP)
Length of Water Column:	8.24 (feet)	
Volume of Water in Well:	1.34 (gal)	
Three Well Volumes:	16.2 (gal)	

Well Type:	Flushmount		(Stick-Up)
Well Material:	Stainless Steel		(PVC)
Well Locked:	Yes		(No)
Measuring Point Marked:	(Yes)		No
Well Diameter:	1"	2"	Other: 4"

Purging Information

Purging Method:	Bailer	(Peristaltic)	Waterra	Other:
Tubing/Bailer Material:	Steel	(Polyethylene)	Teflon	Other:
Sampling Method:	Bailer	(Peristaltic)	Waterra	Other:

Duration of Pumping: 66 (min)
Average Pumping Rate: 125 (ml/min) Water-Quality Meter Type: Horiba U-50
Total Volume Removed: 1.75 (gal) Did well go dry: Yes (No)

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469
1 gal = 3.785 L =3785 ml = 0.1337 cubic feet				

Unit Stability			
pH	DO	Cond.	ORP
± 0.1	±10%	± 3.0%	± 10 mV

Parameter:	1	2	3	4	5	6	7	8	9
	1050	1100	1105	1110	1115	1120	1125	1130	1135
Volume Purged (gal)	0	0.35	0.55	0.70	0.85	1.0	1.15	1.30	1.45
Rate (mL/min)	175	150	150	150	125	125	125	125	125
Depth to Water (ft.)	~~6.20~~	6.38	6.42	6.53	6.51	6.50	6.50	6.50	6.49
pH	7.37	7.09	7.06	7.05	7.09	7.09	7.09	7.08	7.08
Temp. (C)	9.73	10.23	10.34	10.38	10.86	11.16	11.22	11.25	11.38
Conductivity (mS/cm)	0.481	0.470	0.466	0.462	0.459	0.458	0.458	0.457	0.456
Dissolved Oxygen (mg/L)	3.34	0.76	0.59	0.46	0.42	0.39	0.37	0.37	0.37
ORP (mV)	-130	-150	-154	-156	-163	-166	-169	-173	-175
Turbidity (NTU)	38.7	16.6	12.5	10.5	7.7	5.2	4.9	4.6	4.1
Notes:	Faint odor								

Sampling Information

Analyses	#	Laboratory
MTAL [OBS LF]	2	
TDS	2	

Sample ID: PCMW-05 Sample Time: 1145
MS/MSD: Yes (No)
Duplicate: (Yes) No
Duplicate ID: GW-DUP-0328 Dup. Time: —
Chain of Custody Signed By: Evan Green

Problems / Observations

PID: 6.6

*Duplicate ID: GW-DUP-0328

Site

Event

GROUND-WATER SAMPLING LOG

Sampling Personnel: EErez
Client / Job Number:
Weather:

Well ID: PCMW-05
Date: 3/28/19
Time In: **Time Out:**

Well Information

See Page 1

Depth to Water:	(feet)	(from MP)
Total Depth:	(feet)	(from MP)
Length of Water Column:	(feet)	
Volume of Water in Well:	(gal)	
Three Well Volumes:	(gal)	

Well Type:	Flushmount	Stick-Up
Well Material:	Stainless Steel	PVC
Well Locked:	Yes	No
Measuring Point Marked:	Yes	No
Well Diameter:	1" 2"	Other:

Purging Information

Purging Method:	Bailer	Peristaltic	Waterra	Other:
Tubing/Bailer Material:	Steel	Polyethylene	Teflon	Other:
Sampling Method:	Bailer	Peristaltic	Waterra	Other:
Duration of Pumping:	(min)			
Average Pumping Rate:	(ml/min)	Water-Quality Meter Type:		
Total Volume Removed:	(gal)	Did well go dry:	Yes	No

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469
1 gal = 3.785 L =3785 ml = 0.1337 cubic feet				

Unit Stability			
pH	DO	Cond.	ORP
± 0.1	±10%	± 3.0%	± 10 mV

Parameter:	1	2	3	4	5	6	7	8	9
	1140								
Volume Purged (gal)	1.60								
Rate (mL/min)	125								
Depth to Water (ft.)	6.49								
pH	7.07								
Temp. (C)	11.31								
Conductivity (mS/cm)	6.456								
Dissolved Oxygen (mg/L)	0.36								
ORP (mV)	-177								
Turbidity (NTU)	3.8								
Notes:									

Sampling Information

Analyses	#	Laboratory

Sample ID: PCMW-05 Sample Time: 1145

MS/MSD: Yes No

Duplicate: Yes No

Duplicate ID Dup. Time:

Chain of Custody Signed By:

Problems / Observations

Site

Event

GROUND-WATER SAMPLING LOG

Sampling Personnel: Evan Green
Client / Job Number: National Grid / Philly Coke
Weather: 40's Sunny

Well ID: PCMW-160
Date: 5/28/19
Time In: 1220 Time Out: 1345

Well Information

Depth to Water: 11.04 (feet) (from MP)
Total Depth: 35.6 (feet) (from MP)
Length of Water Column: 24.6 (feet)
Volume of Water in Well: 4 (gal)
Three Well Volumes: 12 (gal)

Well Type: Flushmount (Stick-Up)
Well Material: Stainless Steel (PVC)
Well Locked: Yes (No)
Measuring Point Marked: (Yes) No
Well Diameter: 1" (2") Other:

Purging Information

Pump On 1237

Purging Method: Bailer (Peristaltic) Waterra Other:
Tubing/Bailer Material: Steel (Polyethylene) Teflon Other:
Sampling Method: Bailer (Peristaltic) Waterra Other:

Duration of Pumping: 67 (min)
Average Pumping Rate: 100 (ml/min) Water-Quality Meter Type: Horiba U-50
Total Volume Removed: 1.75 (gal) Did well go dry: Yes (No)

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469
1 gal = 3.785 L =3785 ml = 0.1337 cubic feet				

Unit Stability			
pH	DO	Cond.	ORP
± 0.1	±10%	± 3.0%	± 10 mV

Parameter:	1	2	3	4	5	6	7	8	9
	1240	1250	1255	1300	1305	1310	1315	1320	1325
Volume Purged (gal)	0	0.4	0.55	0.70	0.85	1.0	1.15	1.30	1.45
Rate (mL/min)	200	150	100	100	100	100	100	100	100
Depth to Water (ft.)	11.12	11.15	11.16	11.16	11.15	11.14	11.14	11.15	11.16
pH	7.05	6.85	6.86	6.89	6.88	6.86	6.89	6.89	6.87
Temp. (C)	17.58	12.85	12.70	12.86	12.89	12.91	12.94	12.95	12.95
Conductivity (mS/cm)	0.940	0.955	0.952	0.948	0.944	0.938	0.934	0.932	0.932
Dissolved Oxygen (mg/L)	1.47	0.43	0.38	0.35	0.31	0.28	0.29	0.29	0.27
ORP (mV)	-197	-198	-200	-200	-200	-201	-200	-199	-199
Turbidity (NTU)	386	176	126	112	93.5	77.1	62.4	59.5	53.4
Notes:									

Sampling Information

Analyses	#	Laboratory
MTAL[DISSLF]	1	
TDS	1	

Sample ID: PCMW-160 Sample Time: 1335
MS/MSD: Yes (No)
Duplicate: Yes (No)
Duplicate ID Dup. Time:
Chain of Custody Signed By: Evan Green

Problems / Observations

PID: 0.0

Site

Event

GROUND-WATER SAMPLING LOG

Sampling Personnel: EGreen
Client / Job Number: National Grid / Philly C&E
Weather:
Well ID: PCMW-16D
Date: 3/28/19
Time In: **Time Out:**

Well Information

See page 1

Depth to Water:	(feet)	(from MP)
Total Depth:	(feet)	(from MP)
Length of Water Column:	(feet)	
Volume of Water in Well:	(gal)	
Three Well Volumes:	(gal)	

Well Type:	Flushmount	Stick-Up
Well Material:	Stainless Steel	PVC
Well Locked:	Yes	No
Measuring Point Marked:	Yes	No
Well Diameter:	1" 2"	Other:

Purging Information

Purging Method:	Bailer	Peristaltic	Waterra	Other:
Tubing/Bailer Material:	Steel	Polyethylene	Teflon	Other:
Sampling Method:	Bailer	Peristaltic	Waterra	Other:

Duration of Pumping:	(min)			
Average Pumping Rate:	(ml/min)	Water-Quality Meter Type:		
Total Volume Removed:	(gal)	Did well go dry:	Yes	No

Conversion Factors

gal / ft. of water	1" ID	2" ID	4" ID	6" ID
	0.041	0.163	0.653	1.469

1 gal = 3.785 L =3785 ml = 0.1337 cubic feet

Unit Stability

pH	DO	Cond.	ORP
± 0.1	±10%	± 3.0%	± 10 mV

Parameter:	1	2	3	4	5	6	7	8	9
	1330								
Volume Purged (gal)	1.66								
Rate (mL/min)	100								
Depth to Water (ft.)	11.16								
pH	6.586								
Temp. (C)	12.96								
Conductivity (mS/cm)	0.597								
Dissolved Oxygen (mg/L)	0.27								
ORP (mV)	-195								
Turbidity (NTU)	47.1								
Notes:									

Sampling Information

Analyses	#	Laboratory

Sample ID: PCMW-16D Sample Time: 1335

MS/MSD: Yes (No)

Duplicate: Yes (No)

Duplicate ID Dup. Time:

Chain of Custody Signed By:

Problems / Observations

ARCADIS Design & Consultancy for natural and built assets

GROUNDWATER SAMPLING LOG

Project No. 30004026 MW-109

Page 1 of 1

Project Name/Location Former Philadelphia Coke Facility

Date 10/4/2019

Measuring Pt. Description TOC

Screen Setting (ft-bmp)

Casing Diameter (in.) 2

Weather

Static Water Level (ft-bmp) 13.49

Total Depth (ft-bmp) 27.84

Water Column/ Gallons in Well 1.52 gl

Well Material x PVC ___ SS

MP Elevation

Pump Intake (ft-bmp) 21

Purge Method: Peri-Pump / Centrifugal / Submersible / Other

Pump On/Off 900 1020

Volumes Purged

Sample Method Peri-Pump Low Flow

Sample Time: Label 950 Start 941 End ~~945~~ 1020

Replicate/ Code No. Dup-100419

Sampled by GB

Time	Minutes Elapsed	Rate (gpm) (mL/min)	Depth to Water (ft)	~~Gallons~~ mL Purged	pH	Cond. (mMhos) (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temp. (°C) (°F)	Redox (mV)	Appearance Color	Appearance Odor
905	5	100	13.47	500	9.28	0.930	290	2.42	15.35	-95	Clear	None
910	10	"	13.49	1000	8.52	0.922	363	0.92	14.81	-98	Grey	Petrol
915	15	"	1350	1500	8.20	0.918	28.1	1.42	14.76	-96	Clear	"
920	20	"	13.49	2000	7.94	0.915	31.0	1.65	14.77	-94	"	"
925	25	"	13.49	2500	7.86	0.913	20.6	1.50	15.21	~~-97~~	"	"
930	30	"	1349	3000	7.76	0.902	9.8	1.69	15.35	-86	"	"
935	35	"	1349	3500	7.72	0.964	8.9	1.77	15.30	-87	"	"
940	40	"	13.49	4000	7.65	0.903	6.9	1.89	15.28	-86	"	"

Constituents Sampled	Container	Number	Preservative
V8260TCL20	40mL Vial	3	HCl
AB8270TCL20	1L Amber Glass	2	NP
MTAL	60mL Glass	1	NaOH+Ascorbic acid
CN	500mL Plastic	1	HNO3
MTAL (Diss, LF)	60mL Glass	1	NP
CN (Diss, LF)	500mL Plastic	1	NP
TDS	500mL Plastic	1	NP

Well Casing Volumes

Gallons/Foot: 1" = 0.04; 1.25" = 0.06; 1.5" = 0.09; 2" = 0.16; 2.5" = 0.26; 3" = 0.37; 3.5" = 0.50; 4" = 0.65; 6" = 1.47

Well Information

Well Location:

Condition of Well: Good

Well Completion: Flush Mount / Stick Up

Well Locked at Arrival: Yes / No

Well Locked at Departure: Yes / No

Key Number To Well:

Parent of Dup-100419

ARCADIS Design & Consultancy for natural and built assets

GROUNDWATER SAMPLING LOG

Page 1 of 1

Project No. 30004026 MW-109

Date 10/4/2019

Project Name/Location Former Philadelphia Coke Facility

Weather Clear, 66°

Measuring Pt. Description TOC

Screen Setting (ft-bmp)

Casing Diameter (in.) 2

Well Material x PVC ___ SS

Static Water Level (ft-bmp) 9.54

Total Depth (ft-bmp) 21.90

Water Column/ Gallons in Well

MP Elevation

Pump Intake (ft-bmp)

Purge Method: Peri-Pump ___ Centrifugal ___ Submersible ___ Other

Sample Method Peri-Pump Low Flow

Pump On/Off ~~Start~~ 925

Volumes Purged

Sample Time: Label MW-109 Start 1005 End 1026

Replicate/ Code No.

Sampled by James Mack

Time	Minutes Elapsed	Rate (gpm) (mL/min)	Depth to Water (ft)	Gallons Purged L	pH	Cond. (mMhos) (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temp. (°C) (°F)	Redox (mV)	Appearance Color	Appearance Odor
0930	5	100	9.54	1	7.07	1.49	7.09	0.11	17.15	-98	clear	
0935	10	100	9.54	1.5	6.91	1.70	11.26	0.00	17.21	-96	clear	
0940	15	100	9.54	2	6.87	1.68	7.68	0.00	16.66	-115	clear	
0945	20	100	9.54	2.5	6.93	1.52	8.83	0.00	16.31	-125	clear	
0950	25	100	9.54	3	7.00	1.48	7.45	0.00	16.02	-140	clear	
0955	30	100	9.54	3.5	7.07	1.39	5.26	0.00	16.04	-146	clear	
1000	35	100	9.54	4	7.12	1.32	7.16	0.00	16.01	-150	clear	

Constituents Sampled	Container	Number	Preservative
V8260TCL20	40mL Vial	3	HCl
AB8270TCL20	1L Amber Glass	2	NP
MTAL	60mL Glass	1	NaOH+Ascorbic acid
CN	500mL Plastic	1	HNO3
MTAL (Diss, LF)	60mL Glass	1	NP
CN (Diss, LF)	500mL Plastic	1	NP

Well Casing Volumes

Gallons/Foot 1" = 0.04 1.25" = 0.06 1.5" = 0.09 2" = 0.16 2.5" = 0.26 3" = 0.37 3.5" = 0.50 4" = 0.65 6" = 1.47

Well Information

Well Location: middle of EW2 field / trees

Condition of Well: brand new

Well Completion: Flush Mount / (Stick Up)

Well Locked at Arrival: (Yes) / No

Well Locked at Departure: (Yes) / No

Key Number To Well:

ARCADIS Design & Consultancy for natural and built assets

GROUNDWATER SAMPLING LOG

Project No. 30004026 MW-110 Date 10/4/2019

Project Name/Location Former Philadelphia Coke Facility Weather sunny, 63

Measuring Pt. Description TOC | Screen Setting (ft-bmp) | Casing Diameter (in.) 2 | Well Material x PVC ___ SS

Static Water Level (ft-bmp) 7.42 | Total Depth (ft-bmp) 16.94 | Water Column/ Gallons in Well

MP Elevation | Pump Intake (ft-bmp) | Purge Method: Peri-Pump, Centrifugal, Submersible, Other | Sample Method Peri-Pump Low Flow

Pump On/Off Start 0805 | Volumes Purged

Sample Time: Label MW-110 | Start 0845 | End 0900 | Replicate/ Code No.

Sampled by James Mauk

Time	Minutes Elapsed	Rate (gpm) (mL/min)	Depth to Water (ft)	Gallons Purged L	pH	Cond. (mMhos) (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temp. (°C) (°F)	Redox (mV)	Appearance Color	Appearance Odor
0810	5	100	7.42	1	7.19	1.10	9.05	0.90	16.19	-77	clear	
0815	10	100	7.42	1.5	6.70	1.10	18.9	0.12	16.43	-76	clear	
0820	15	100	7.42	2	6.75	1.10	11.3	0.00	16.59	-89	clear	
0825	20	100	7.43	2.5	6.81	1.10	8.18	0.00	16.74	-94	clear	
0830	25	100	7.43	3	6.83	1.09	5.67	0.00	16.86	-97	clear	
0835	30	100	7.42	3.5	6.85	1.09	3.00	0.00	16.91	-95	clear	
0840	35	100	7.42	4	6.92	1.09	3.68	0.00	17.01	-98	clear	

Constituents Sampled	Container	Number	Preservative
V8260TCL20	40mL Vial	3	HCl
AB8270TCL20	1L Amber Glass	2	NP
MTAL	60mL Glass	1	NaOH+Ascorbic acid
CN	500mL Plastic	1	HNO3
MTAL (Diss, LF)	60mL Glass	1	NP
CN (Diss, LF)	500mL Plastic	1	NP

Well Casing Volumes

Gallons/Foot: 1" = 0.04; 1.25" = 0.06; 1.5" = 0.09; 2" = 0.16; 2.5" = 0.26; 3" = 0.37; 3.5" = 0.50; 4" = 0.65; 6" = 1.47

Well Information

Well Location: Field cut out brush

Condition of Well: brand new

Well Completion: Flush Mount / Stick Up

Well Locked at Arrival: Yes / No

Well Locked at Departure: Yes / No

Key Number To Well:

ARCADIS Design & Consultancy for natural and built assets

GROUNDWATER SAMPLING LOG

Project No. 30004026 MW-11B Date 10/4/2019

Project Name/Location Former Philadelphia Coke Facility Weather

Measuring Pt. Description TOC | Screen Setting (ft-bmp) | Casing Diameter (in.) | Well Material x PVC ___ SS

Static Water Level (ft-bmp) 12.40 | Total Depth (ft-bmp) 22.19 | Water Column/ Gallons in Well 1.60

MP Elevation | Pump Intake (ft-bmp) 20 | Purge Method: Peri-Pump / Centrifugal / Submersible / Other | Sample Method Peri-Pump Low Flow

Pump On/Off 1049/1250 | Volumes Purged

Sample Time: Label 1135 Start 1120 End 1250 | Replicate/ Code No. MS/MSD | Sampled by GD

Time	Minutes Elapsed	Rate (~~gpm~~) (mL/min)	Depth to Water (ft)	~~Gallons~~ mL Purged	pH	Cond. (mMhos) (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temp. (°C) (°F)	Redox (mV)	Appearance Color	Appearance Odor
1050	5	100	12.79	500	6.96	0.947	14.9	8.27	15.46	-56	Clear	None
1055	10	100	13.12	1000	6.90	0.956	30.6	7.00	18.10	-56	"	"
1100	15	100	13.81	1500	6.91	0.954	44.8	6.06	18.51	-68	"	"
1105	20	100	14.56	2000	6.88	0.977	57.3	5.73	18.62	-68	Cloudy	"
1110	25	100	14.92	2500	6.80	0.982	61.4	5.64	18.74	-62	"	"
1115	30	100	14.96	3000	6.79	1.00	64.4	5.13	19.54	-58	"	"
1120	35	100	14.95	3500	6.79	1.00	65.6	5.04	19.66	-56	"	"

Constituents Sampled	Container	Number	Preservative
V8260TCL20	40mL Vial	3 ~~8~~	HCl
AB8270TCL20	1L Amber Glass	2	NP
MTAL	60mL Glass	1	NaOH+Ascorbic acid
CN	500mL Plastic	1	HNO3
MTAL (Diss, LF)	60mL Glass	1	NP
CN (Diss, LF)	500mL Plastic	1	NP
TDS	500mL Plastic	2	NP
Effervescent Sample			

Well Casing Volumes

Gallons/Foot: 1" = 0.04 | 1.25" = 0.06 | 1.5" = 0.09 | 2" = 0.16 | 2.5" = 0.26 | 3" = 0.37 | 3.5" = 0.50 | 4" = 0.65 | 6" = 1.47

Well Information

Well Location: | Condition of Well: Good | Well Completion: Flush Mount / Stick Up

Well Locked at Arrival: Yes / No

Well Locked at Departure: Yes / No

Key Number To Well:

* MS/MSD Parent.
* MS has 4 VOA vials
* MSD does not have TDS

ARCADIS Design & Consultancy for natural and built assets

GROUNDWATER SAMPLING LOG

Project No. 30004026 MW-112 Date 10/4/2019

Project Name/Location Former Philadelphia Coke Facility Weather sunny, 69

Measuring Pt. Description TOC | Screen Setting (ft-bmp) | Casing Diameter (in.) 2 | Well Material x PVC ___ SS

Static Water Level (ft-bmp) 8.07 | Total Depth (ft-bmp) 16.62 | Water Column/ Gallons in Well

MP Elevation | Pump Intake (ft-bmp) | Purge Method: Peri-Pump, Centrifugal, Submersible, Other | Sample Method Peri-Pump Low Flow

Pump On/Off Start 1040 | Volumes Purged

Sample Time: Label MW-112 Replicate/ Code No.
Start 1120
End 1135

Sampled by Jared Mack

Time	Minutes Elapsed	Rate (gpm) (mL/min)	Depth to Water (ft)	Gallons Purged L	pH	Cond. (mMhos) (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temp. (°C) (°F)	Redox (mV)	Appearance Color	Appearance Odor
1045	5	100	8.50	1	6.94	1.86	14.3	0.02	17.58	-7	clear	
1050	10	100	8.53	1.5	6.88	1.57	4.58	0.00	17.41	2	clear	
1055	15	100	8.57	2	6.88	1.34	4.55	0.00	17.63	-16	clear	
1100	20	100	8.63	2.5	6.86	1.35	3.78	0.00	17.95	-26	clear	
1105	25	100	8.66	3	6.86	1.34	4.84	0.00	17.83	-42	clear	
1110	30	100	8.69	3.5	6.85	1.36	4.01	0.00	17.93	-52	clear	
1115	35	100	8.71	4	6.85	1.36	4.66	0.00	18.16	-63	clear	

Constituents Sampled	Container	Number	Preservative
V8260TCL20	40mL Vial	3	HCl
AB8270TCL20	1L Amber Glass	2	NP
MTAL	60mL Glass	1	NaOH+Ascorbic acid
CN	500mL Plastic	1	HNO3
MTAL (Diss, LF)	60mL Glass	1	NP
CN (Diss, LF)	500mL Plastic	1	NP

Well Casing Volumes

Gallons/Foot: 1" = 0.04; 1.25" = 0.06; 1.5" = 0.09; 2" = 0.16; 2.5" = 0.26; 3" = 0.37; 3.5" = 0.50; 4" = 0.65; 6" = 1.47

Well Information

Well Location: middle of field / rut path / near utility line
Condition of Well: brand new
Well Completion: Flush Mount / (Stick Up)

Well Locked at Arrival: (Yes) / No
Well Locked at Departure: (Yes) / No
Key Number To Well:

ARCADIS Design & Consultancy for natural and built assets

GROUNDWATER SAMPLING LOG

Project No. 30004026 MW-113 Date 10/4/2019

Project Name/Location Former Philadelphia Coke Facility Weather sunny, 70°F

Measuring Pt. Description: TOC | Screen Setting (ft-bmp): | Casing Diameter (in.): 2 | Well Material: x PVC, SS

Static Water Level (ft-bmp): 12.85 | Total Depth (ft-bmp): 22.14 | Water Column/ Gallons in Well:

MP Elevation: | Pump Intake (ft-bmp): | Purge Method: Peri-Pump, Centrifugal, Submersible, Other | Sample Method: Peri-Pump Low Flow

Pump On/Off: steady 1205 | Volumes Purged:

Sample Time: Label MW-113, Start 1245, End 1300 | Replicate/ Code No.:

Sampled by James Mack

Time	Minutes Elapsed	Rate (gpm) (mL/min)	Depth to Water (ft)	Gallons Purged L	pH	Cond. (mMhos) (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temp. (°C) (°F)	Redox (mV)	Appearance Color	Appearance Odor
1210	5	100	12.49	1	6.96	0.674	1.93	0.54	20.18	-92	clear	
1215	10	100	12.49	1.5	6.82	0.669	1.58	0.00	18.92	-90	clear	
1220	15	100	12.50	2	6.83	0.671	2.46	0.00	18.40	-97	clear	
1225	20	100	12.51	2.5	6.84	0.674	2.45	0.00	18.20	-99	clear	
1230	25	100	12.51	3	6.85	0.671	2.95	0.00	18.12	-101	clear	
1235	30	100	12.51	3.5	6.86	0.676	2.17	0.00	18.08	-102	clear	
1240	35	100	12.51	4	6.86	0.675	2.43	0.00	18.12	-103	clear	

Constituents Sampled	Container	Number	Preservative
V8260TCL20	40mL Vial	3	HCl
AB8270TCL20	1L Amber Glass	2	NP
MTAL	60mL Glass	1	NaOH+Ascorbic acid
CN	500mL Plastic	1	HNO3
MTAL (Diss, LF)	60mL Glass	1	NP
CN (Diss, LF)	500mL Plastic	1	NP

Well Casing Volumes

Gallons/Foot: 1" = 0.04; 1.25" = 0.06; 1.5" = 0.09; 2" = 0.16; 2.5" = 0.26; 3" = 0.37; 3.5" = 0.50; 4" = 0.65; 6" = 1.47

Well Information

Well Location:	middle of field cut brush	Well Locked at Arrival:	Yes / No
Condition of Well:	brand new	Well Locked at Departure:	Yes / No
Well Completion:	Flush Mount / Stick Up	Key Number To Well:	

APPENDIX F

Soil Physical Parameter Laboratory Reports

PAULUS SOKOLOWSKI and SARTOR
CONSULTING ENGINEERS

~PHILA. COKE~ JOB. NO. 2522-212-074 PROJECT ENGINEER JP TESTED BY LLSR SL DATE 3/21/06 (1)

	PCMW-10D	K TEST PCMW-10D	PCMW-10D	K TEST PCMW-10D	PCMW-10D	K TEST PCMW-10D	PCMW-14D	K TEST PCMW-14D	PCMW-14D	K TEST PCMW-14D	PCMW-
SAMPLE #	S1 10'-12'	S1 10'-12'	S3 17'-19'	S3 17'-19'	S4 33'-35'	S4 33'-35'	S1 10'-12'	S1 10'-12'	S2 16'-18'	S2 16-18'	
TARE #	21		36		23		27		37		
WGT. TARE & WET SOIL	601.23		539.12		509.39		396.30		592.11		
WGT. TARE & DRY SOIL	550.74		336.61		466.76		317.11		427.85		
WGT. WATER	50.49		202.51		42.66		79.19		164.26		
WGT. TARE	85.27		76.98		106.26		110.16		80.28		
WGT. DRY SOIL	465.47		259.63		360.50		206.95		397.57		
MOIST. CONT. %	10.8		78.0		11.8		38.3		47.3		
		Reconst. to:		Reconst to:		Reconst. to:		Reconst to:		Reconst. to:	
WGT. TARE & WET SOIL	2568.36	1175.52	539.12	325.49	1159.23	1091.15	1313.48	1696.5	592.11	503.91	
WGT. TARE	98.07	510.9	76.98	71.48	115.76	510.9	120.36	510.9	80.28	160.2	
WGT. WET SOIL (grams)	2470.29	664.62	462.14	254.01	1043.47	580.25	1193.12	585.6	511.83	343.71	
HEIGHT (in)	17.5	3.39	4.0	1.61	7.5	3.0	9.3	3.39	4.0	1.949	
Φ (in)	2.46	2.875	2.46	2.875	2.46	2.875	2.46	2.875	2.46	2.875	
VOLUME (ft³)	0.0481	0.0127	0.0110	0.0060	0.0206	0.0113	0.0256	0.0127	0.0110	0.0073	
γ_t (lb/ft³)	113.22	115.4	92.62	93.33	111.67	113.2	102.75	101.7	102.58	103.80	
M.C. %	10.8	10.8	78.0	77.5	11.8	11.8	38.3	38.3	47.3	48.0	
γ_d (lb/ft³)	102.18	104.2	52.03	52.58	99.88	101.1	74.3	73.5	69.64	70.14	
G_s	2.67	2.67	2.41	2.41	2.70	2.70	2.53	2.53	2.43	2.43	
e_o	0.631	0.599	1.89	1.86	0.686	0.666	1.125	1.148	1.18	1.16	
S_o	45.7%	48.1%	99.5%	100%	46.4%	47.8%	86.1%	84.4%	97.4%	100	
n	0.387	0.375	0.654	0.650	0.407	0.399	0.529	0.534	0.541	0.537	
USCS I.D.	(SP-SM)	(SP-SM)	(OH)	(OH)	(GC)	(GC)	(SM)/(GM)	(SM)/(GM)	(OH)	(OH)	
K (in/hr)		2.52		0.00012		99.8		0.21		0.000195	
K (cm/sec)		1.78×10^{-3}		8.76×10^{-8}		7.04×10^{-2}		1.47×10^{-4}		1.38×10^{-7}	

~MOIST. CONT.~

~DENSITY~

PAULUS SOKOLOWSKI and SARTOR
CONSULTING ENGINEERS

~PHILA. COKE~ JOB. NO. 2522-212-074 PROJECT ENGINEER JP TESTED BY LLSR SL DATE 3/21/06 (2)

	PCMW-14D	K-TEST PCMW-14D	PCMW-16D	K-TEST PCMW-16D	PCMW-16D	K-TEST PCMW-16D	PCMW-17D bot. 14"	K TEST PCMW-17D bot 14"	PCMW-18D	K TEST PCMW-18D	PCMW-
SAMPLE #	S3 38'-40'	S3 38'-40'	S1 9'-11'	S1 9'-11'	S3 29'-31'	S3 29'-31'	S1 18'-26'	S1 18'-20'	S1 18'-20'	S1 18'-26'	
TARE #	28		29		33		38		34		
WGT. TARE & WET SOIL	605.20		246.67		851.63		443.70		471.23		
WGT. TARE & DRY SOIL	564.71		221.71		797.79		223.86		453.18		
WGT. WATER	40.49		24.96		53.84		219.84		18.05		
WGT. TARE	109.93		109.89		77.68		78.70		78.10		
WGT. DRY SOIL	454.78		111.82		720.11		145.16		375.08		
MOIST CONT. %	8.9		22.3		7.5		151.45		4.8		
		Reconst. to:		Reconst. to:		Reconst. to:		Reconst to: (*)		Reconst to:	
WGT. TARE & WET SOIL	2583.40	1163.51	716.30	966.14	2213.36	1231.25	443.70	971.80	1788.81	1039.8	
WGT. TARE	119.93	510.9	118.59	510.9	86.28	510.9	78.70	510.9	86.80	510.9	
WGT. WET SOIL (grams)	2463.47	652.61	597.71	455.24	2127.08	720.35	365.0	460.9	1702.01	528.9	
HEIGHT (in)	18.0"	3.47"	5.0"	2.72"	13.0"	3.20"	3.75"	3.1"	13.0"	2.94"	
Φ (in)	2.46	2.875	2.46	2.875	2.46	2.875	2.46	2.875	2.44	2.875	
VOLUME (ft³)	0.0495	0.0130	0.0137	0.0102	0.0357	0.0120	0.0103	0.0116	0.0351	0.0110	
γ_t (lb/ft³)	109.72	110.7	96.18	98.4	131.35	132.3	78.12	87.59	106.9	106.0	
M.C. %	8.9	8.9	22.3	22.3	7.5	7.5	151.45	108.53	4.8	4.8	
γ_d (lb/ft³)	100.75	101.6	78.64	80.46	122.19	123.07	31.07	39.9	102.0	101.1	
G_s	2.71	2.71	2.68	2.68	2.70	2.70	2.11	2.11	2.65	2.65	
e_o	0.678	0.664	1.127	1.078	0.379	0.369	3.24	2.30	0.621	0.636	
S_o	35.6%	36.3%	53.0%	55.4%	53.4%	54.9%	98.6%	99.6%	20.5%	20.0%	
n	0.404	0.399	0.530	0.519	0.275	0.269	0.764	0.697	0.383	0.389	
USCS I.D.	(GP-GM)	(GP-GM)	(SM)	(SM)	(GP-GM) / (SP-SM)	(GP-GM) / (SP-SM)	(OH)	(OH)	(SP-SM)	(SP-SM)	
K (in/hr)		254.0		4.15		23.89		0.00125		10.96	
K (cm/sec)		1.79×10^{-1}		2.93×10^{-3}		1.69×10^{-2}		8.64×10^{-7}		7.73×10^{-3}	

~ MOIST. CONT. ~

~ DENSITY ~

* IMPOSSIBLE TO OBTAIN RECONSTITUTED SAMPLE SIMILAR TO IN-SITU PROP's. DUE TO THE VARIABLE M.C.'S & AMT. OF ORGANIC MATTER WITHIN SAMPLE.

PAULUS SOKOLOWSKI and SARTOR
CONSULTING ENGINEERS

~ PHILA. COKE ~ JOB. NO. 2522-212-074 PROJECT ENGINEER JP TESTED BY LLSR SL DATE 3/21/06 (3)

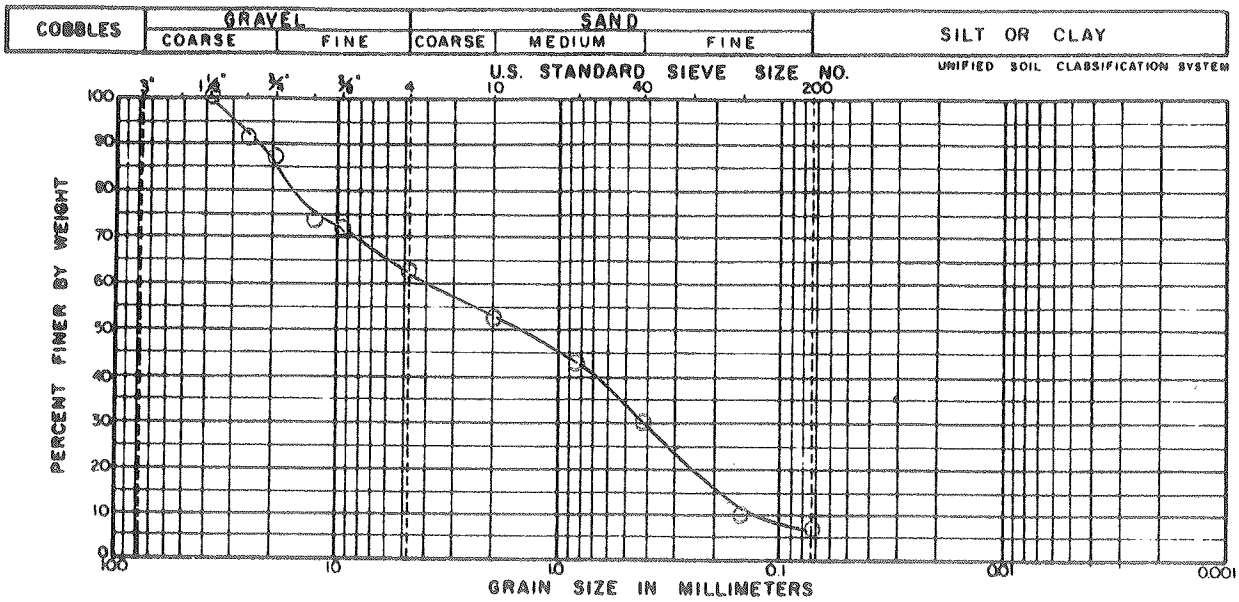
~ MOIST. CONT. ~

~ DENSITY ~

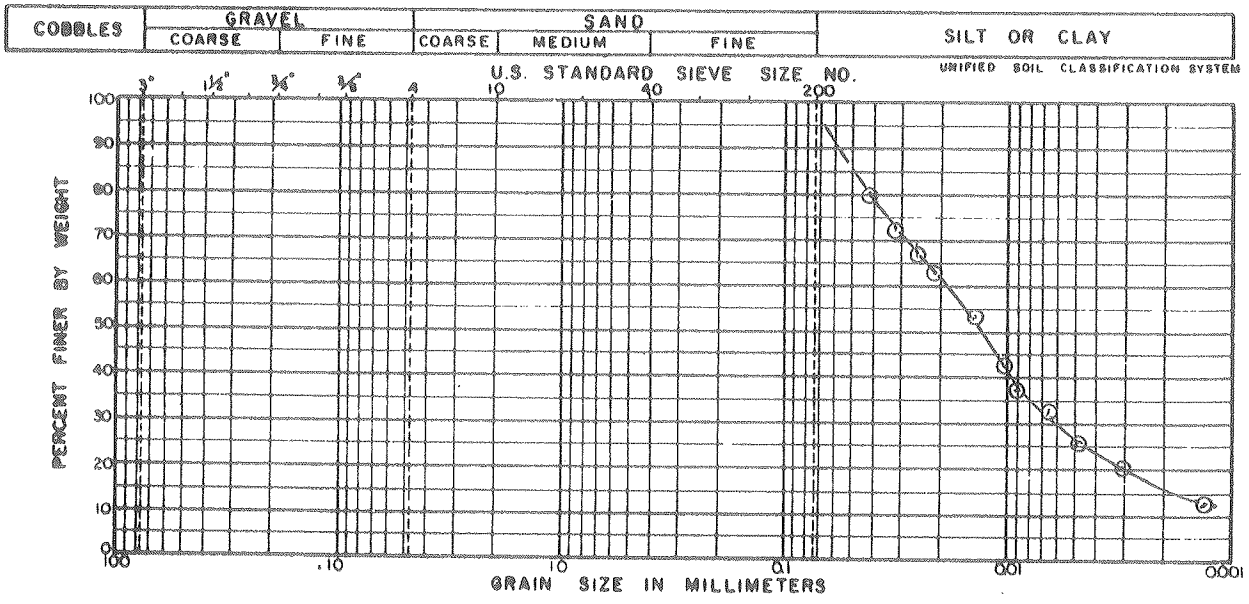
	PCMW-18D	K TEST PCMW-18D	PCMW-	PCMW-	PCMW-	PCMW-	PCMW-	PCMW-	PCMW-	PCMW-	PCMW-
SAMPLE #	S2 34'-36'	S2 34'-36'									
TARE #	35										
WGT. TARE & WET SOIL	515.27										
WGT. TARE & DRY SOIL	486.58										
WGT. WATER	28.69										
WGT. TARE	77.42										
WGT. DRY SOIL	409.16										
MOIST. CONT. %	7.0										
		Reconst to:									
WGT. TARE & WET SOIL	2872.02	1078.43									
WGT. TARE	92.52	510.9									
WGT. WET SOIL (grams)	2779.50	567.53									
HEIGHT (in)	22.5"	3.28									
Φ (in)	2.44	2.875									
VOLUME (ft^3)	0.0608	0.0123									
γ_t (lb/ft^3)	100.78	101.72									
M.C. %	7.0	7.0									
γ_d (lb/ft^3)	94.2	95.1									
G_s	2.67	2.67									
e_o	0.769	0.752									
S_o	24.3 %	24.9 %									
n	0.435	0.429									
USCS I.D.	(SP-SM)	(SP-SM)									
K (in/hr)		3.87									
K (cm/sec)		2.73×10^{-3}									

GRAIN-SIZE DISTRIBUTION

PROJ. NO. ~ 2522-212-074 ~



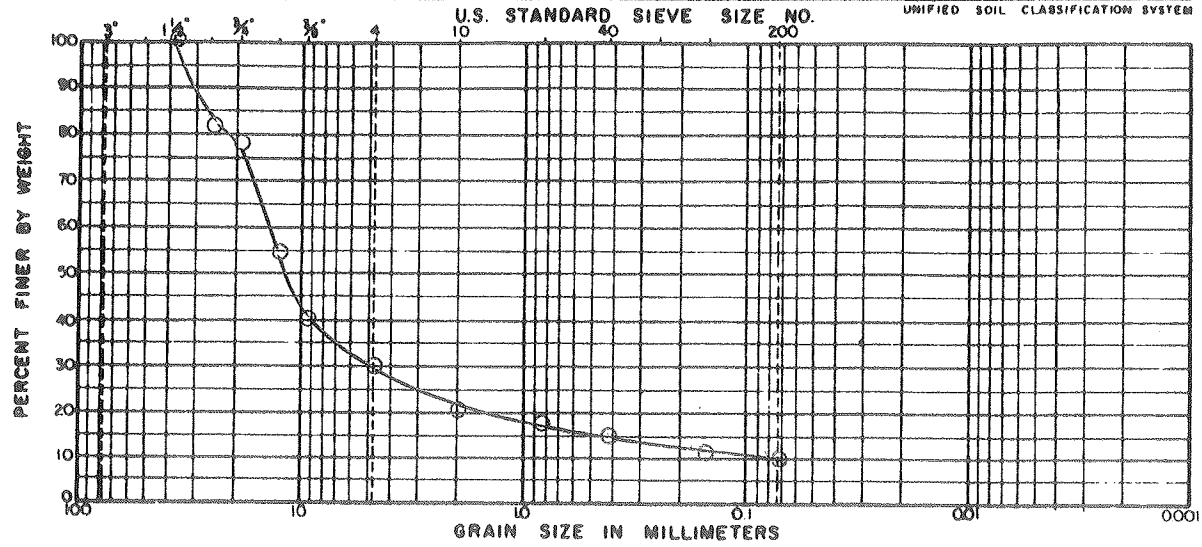
BORING	SAMPLE	DEPTH	SYMBOL	CLASSIFICATION	MC	LL	PL
PCMW-10D	S1	10'-12'		GRAY BR. F+C SAND, AND F+C GRAVEL, TR+ SILT, NUM. COAL FRAGS (SP-SM) (FILL)	10.8	~	~



BORING	SAMPLE	DEPTH	SYMBOL	CLASSIFICATION	MC	LL	PL
PCMW-10D	S3	17'-19'		DK. GRAY ORGANIC SILTY CLAY, OCC. ROOTS, TWIGS & PEAT FIBERS (OH)	78.0	~	~

GRAIN-SIZE DISTRIBUTION

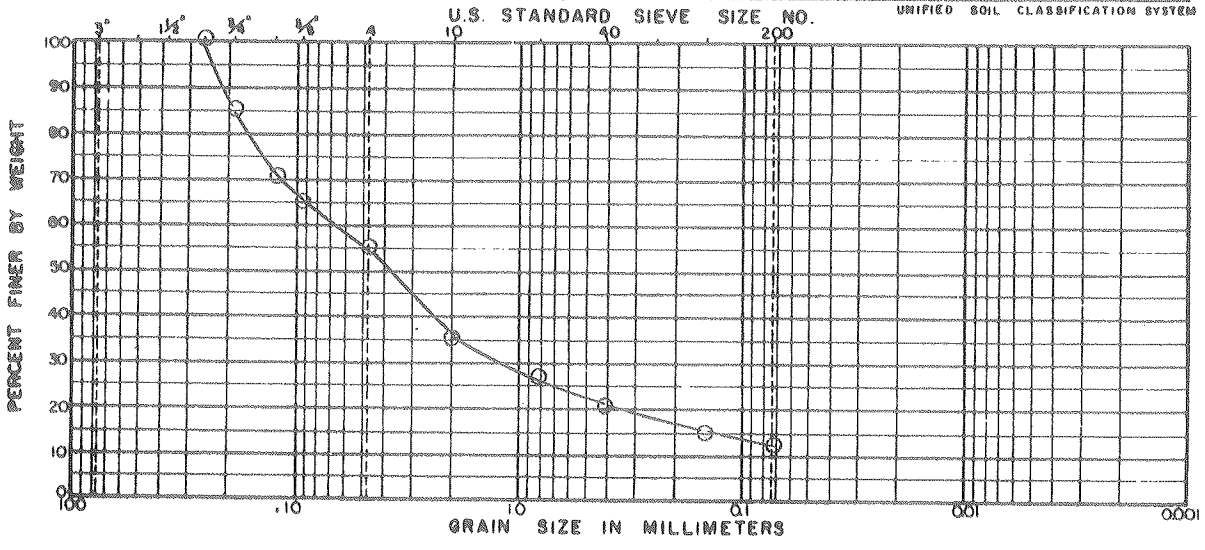
COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	



BORING	SAMPLE	DEPTH	SYMBOL	CLASSIFICATION	MC	LL	PL
PCMW-10D	S4	33'-35'		BR. GRAY F+C GRAVEL, SOME C-F SAND, LITTLE SILTY CLAY (GC)	11.8	~	~

PROJ. NO. ~ 2522-212-074 ~

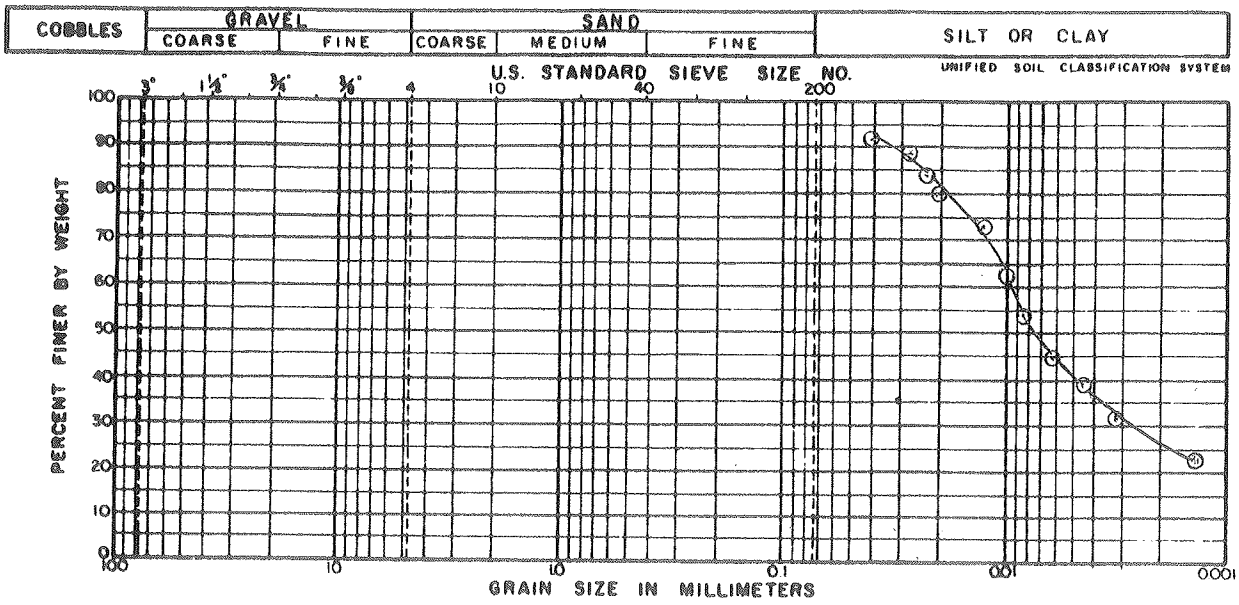
COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	



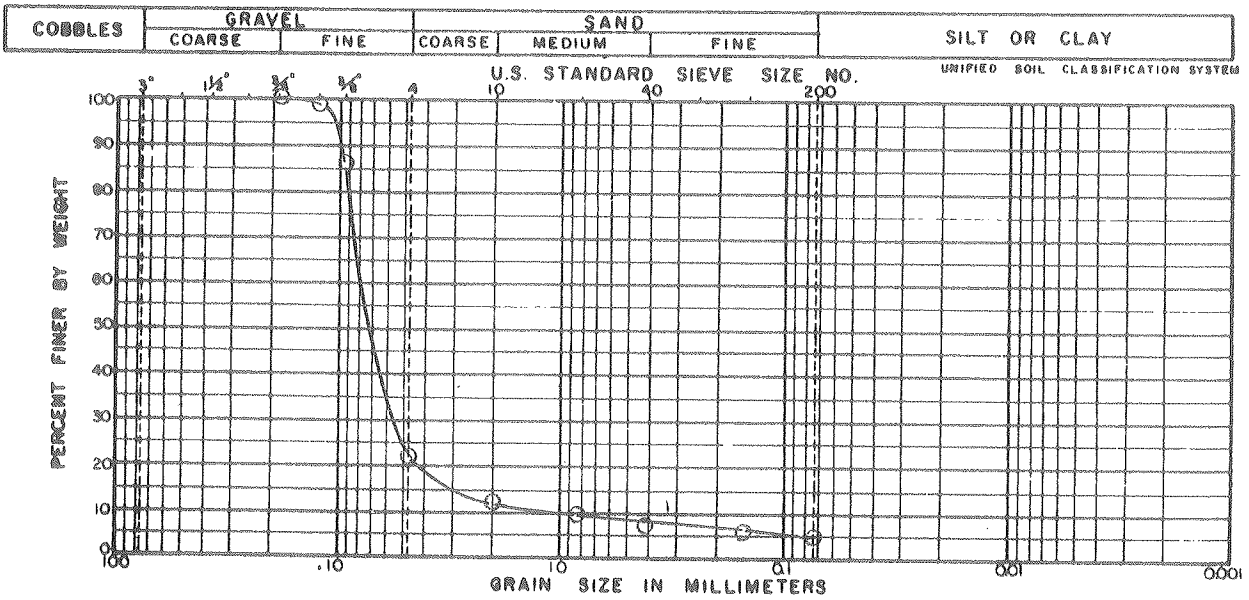
BORING	SAMPLE	DEPTH	SYMBOL	CLASSIFICATION	MC	LL	PL
PCMW-14D	S1	10'-12'		GRAY BR. C-F SAND & F-C GRVL., LITTLE SILT, NUM. CINDERS, GLASS, METAL, WOOD & MISC. DEBRIS (SM)/(GM) (FILL)	38.3	~	~

PROJ. NO. ~ 2522-212-074 ~

GRAIN-SIZE DISTRIBUTION



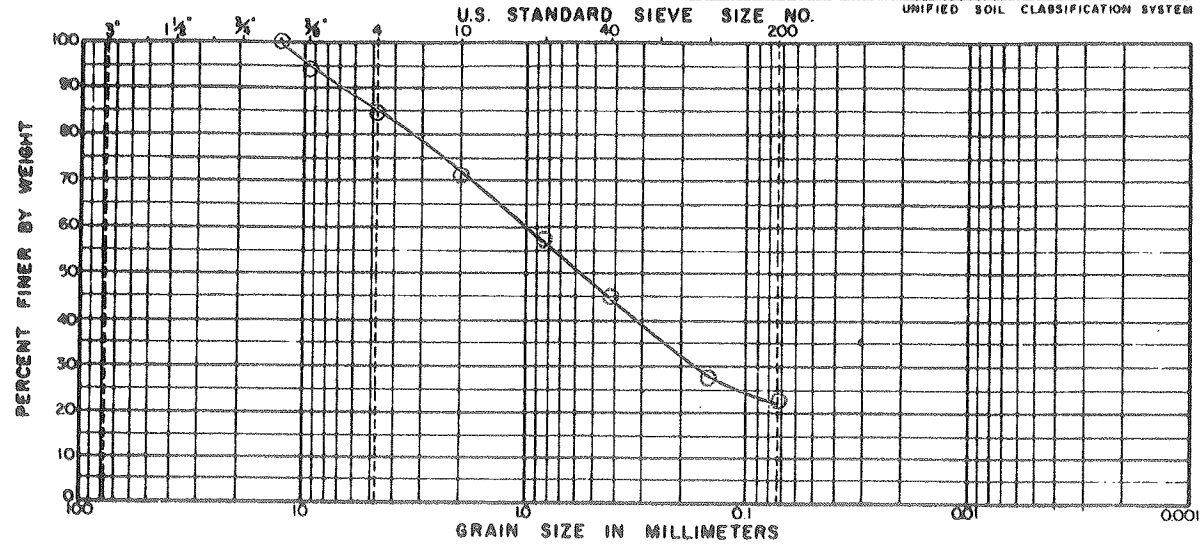
BORING	SAMPLE	DEPTH	SYMBOL	CLASSIFICATION	MC	LL	PL
PCMW-14D	S2	16'-18'		DK. GRAY ORGANIC SILTY CLAY, TR. F SAND, OCC. ROOTS & PEAT FIBERS (OH)	47.2	~	~



BORING	SAMPLE	DEPTH	SYMBOL	CLASSIFICATION	MC	LL	PL
PCMW-14D	S3	38'-40'		BR. GRAY F GRAVEL, LITTLE C-F SAND, TR. SILT (GP-GM)	8.9	~	~

GRAIN-SIZE DISTRIBUTION

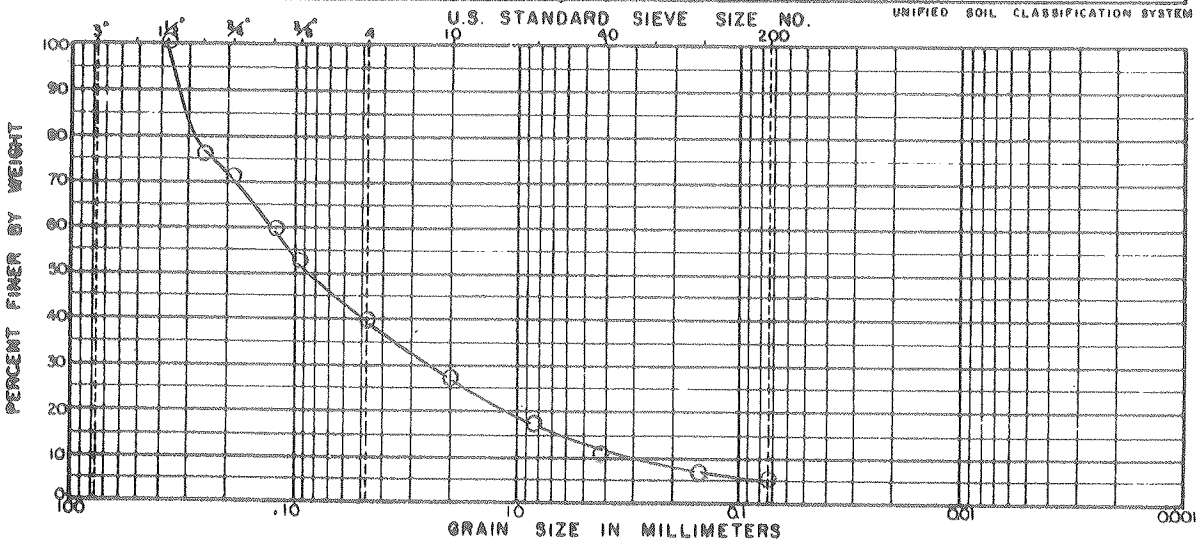
COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	



BORING	SAMPLE	DEPTH	SYMBOL	CLASSIFICATION	MC	LL	PL
PCMW-16D	S1	9'-11'		DK. GRAY F-M+C SAND, SOME CLAYEY SILT, LITTLE F GRAVEL (SM) (FILL)	22.3	~	~

PROJ. NO. ~ 2522-212-074 ~

COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	



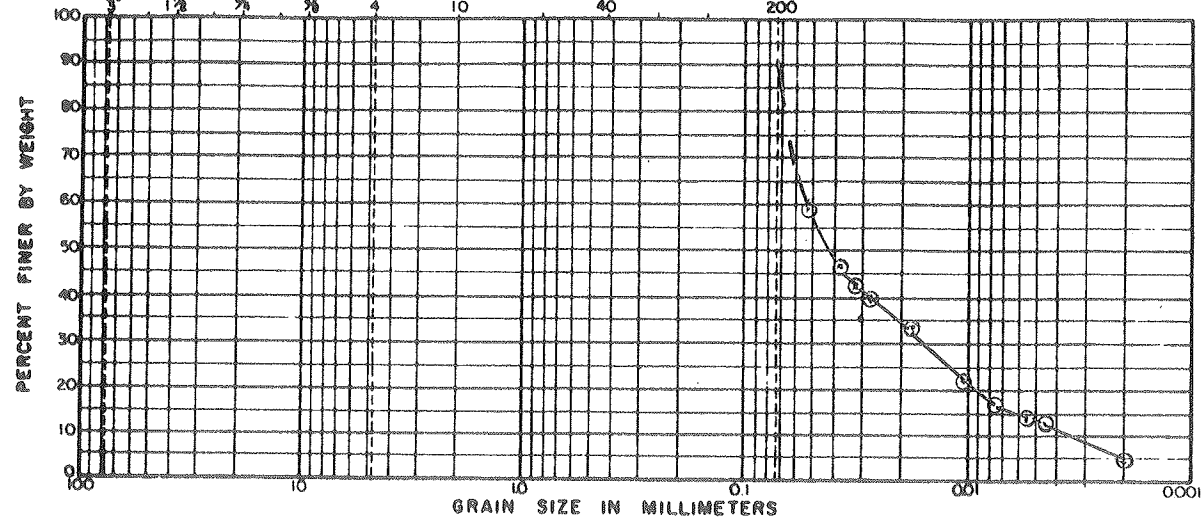
BORING	SAMPLE	DEPTH	SYMBOL	CLASSIFICATION	MC	LL	PL
PCMW-16D	S3	29'-31'		TAN GRAY BR. F-C GRAVEL, SOME C-F SAND, TR. SILT (GP-GM)/(SP-SM)	7.5	~	~

GRAIN-SIZE DISTRIBUTION

COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

U.S. STANDARD SIEVE SIZE NO. (3", 1½", ¾", ⅜", 4, 10, 40, 200)

UNIFIED SOIL CLASSIFICATION SYSTEM

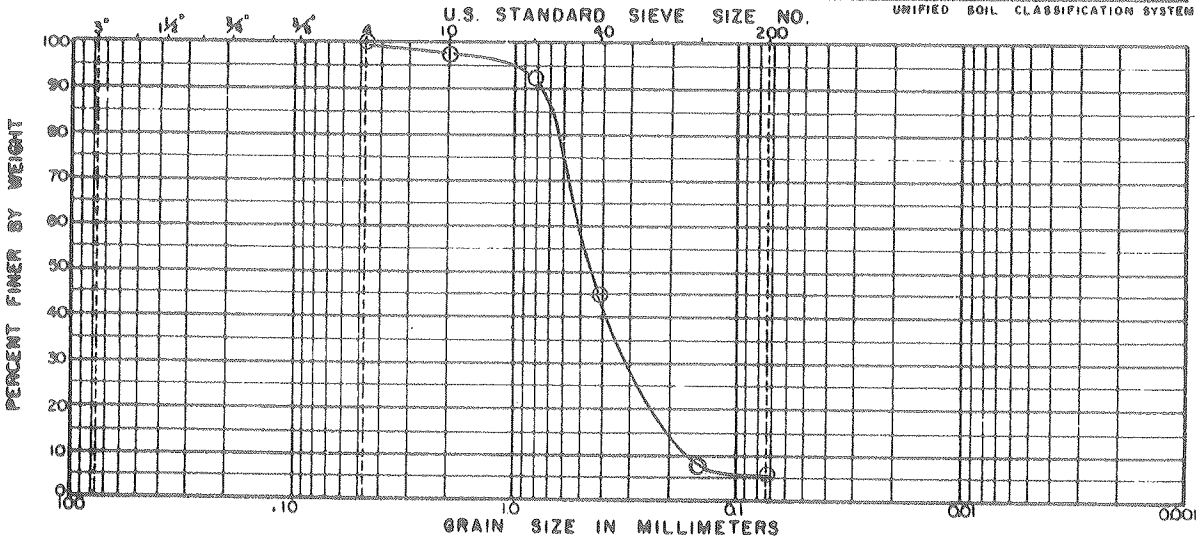


BORING	SAMPLE	DEPTH	SYMBOL	CLASSIFICATION	MC	LL	PL
PCMW	S1	18'-20'		DK. GRAY ORGANIC CLAYEY SILT,	154.5	~	~
-17D		BOT. 14"		TR+ F SAND, NUM. ROOTS & PEAT			
				FIBERS (OH)			

COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

U.S. STANDARD SIEVE SIZE NO. (3", 1½", ¾", ⅜", 4, 10, 40, 200)

UNIFIED SOIL CLASSIFICATION SYSTEM



BORING	SAMPLE	DEPTH	SYMBOL	CLASSIFICATION	MC	LL	PL
PCMW	S1	18'-20'		ORANGE BR. F-M SAND, TR. SILT	4.8	~	~
-18D				(SP-SM)			

PROJ. NO. ~ 252-212-024 ~

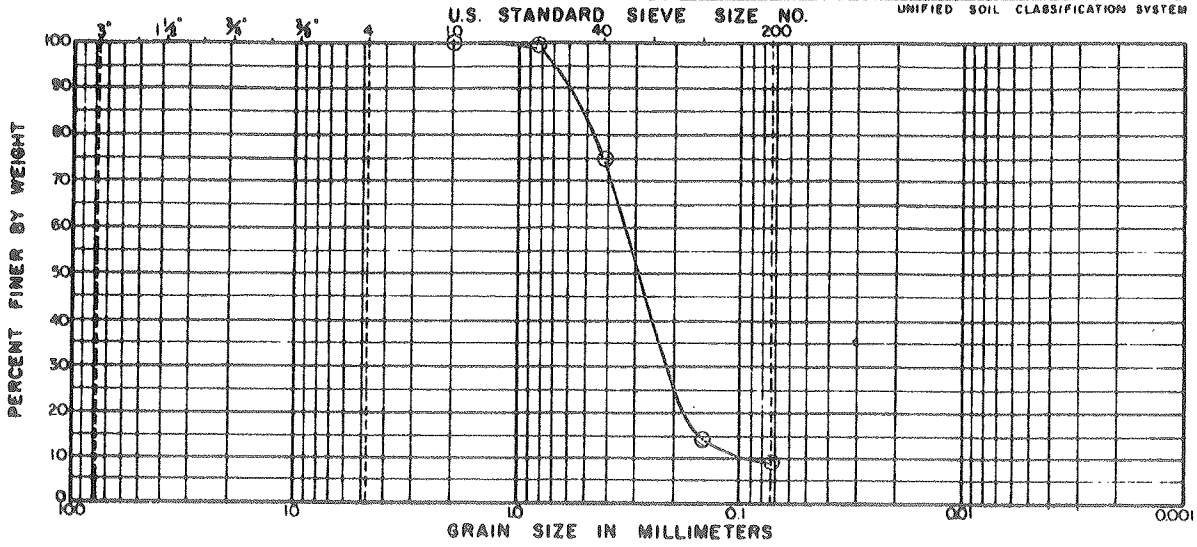
GRAIN-SIZE DISTRIBUTION

PROJ. NO. ~ 2522-212-074 ~

COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

U.S. STANDARD SIEVE SIZE NO.

UNIFIED SOIL CLASSIFICATION SYSTEM

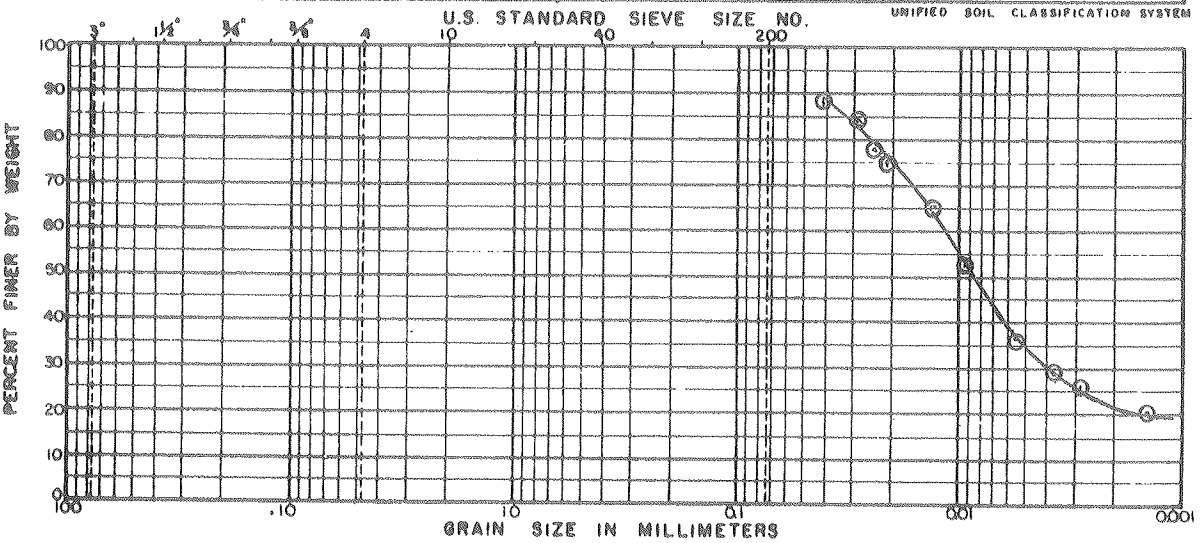


BORING	SAMPLE	DEPTH	SYMBOL	CLASSIFICATION	MC	LL	PL
PCMW-1BD	S2	34'-36'		TAN BR. F+-M SAND, TR+ SILT (SP-SM)	7.0	~	~

COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

U.S. STANDARD SIEVE SIZE NO.

UNIFIED SOIL CLASSIFICATION SYSTEM



BORING	SAMPLE	DEPTH	SYMBOL	CLASSIFICATION	MC	LL	PL
PCMW-11D	S2	18'-20'		DK. GRAY ORGANIC SILTY CLAY,	—	~	~
				OCC. F SAND LENSES, OCC. PEAT			
	JAR	SAMPLE		FIBERS (OH)			

SIEVE ANALYSIS

~UNIFIED~

Job No.: 2522-212-074
Owner: PHILA. COKE
Location: PHILADELPHIA, PA
Sheet ___ of ___

Boring No.: PCMW-100
Sample No. + Depth: S1 10'-12'
Tested By: LLSR, SL
Date: 3/1/06

1. Wt. of Sample + Tare (No. 21)	601.23 gms.	7. Loss of Moisture (3-6)	50.49 gms.
2. Wt. of Tare	85.27 gms.	8. Field Moisture Content (7÷6)	10.8 %
3. Wt. of Sample (at field m.c.)	515.96 gms.	9. Wt. of Sample after Wash & Drying + Tare	525.49 gms.
4. Wt. of Dry Sample + Tare	550.74 gms.	10. Wt. of Tare	85.27 gms.
5. Wt. of Tare	85.27 gms.	11. Wt. of Sample (9-10)	440.22 gms.
6. Wt. of Dry Sample	465.47 gms.	12. Wt. Lost in Washing (6-11)	25.25 gms.

U.S. Std. Sieve No.		Dish + Soil Retained	Wt. of Dish	Wt. Soil Retained	Percent Retained	Cumulative Percent Ret.	% Finer
Larger							
							100.0
1"		124.45	85.27	39.18		8.4	91.6
3/4"	13.0	145.79		60.52		13.0	87.0
1/2"		205.35		120.08		25.8	74.2
3/8"	24.0	214.98		129.71		27.9	72.1
No. 4		257.63		172.36		37.0	63.0
No. 10	9.9	303.69		218.42		46.9	53.1
No. 20		346.48		261.21		56.1	43.9
No. 40	22.8	409.58		324.31		69.7	30.3
No. 100		505.12		419.85		90.2	9.8
No. 200	22.3	518.30		433.03		93.0	7.0
Pan	7.0	525.49		440.22	7.0		
Wt. Lost in Wash (Item 12)				25.25			
TOTAL				465.47 Ⓐ			

37.0 G
56.0 S
7.0 $
100.0 %

Ⓐ – should equal Item 6

PAULUS SOKOLOWSKI and SARTOR CONSULTING ENG

GRAIN SIZE ANALYSIS · HYDROMETER METHOD

Project PHILA. COKE — Job No. 2522-212-074

Location of Project PHILADELPHIA, PA — Boring No. PCMW-10D — Sample No. S3

Description of Soil Dk gray organic silty clay, occ. roots, twigs; peat fibers (OH) — Depth of Sample 17'-19'

Tested By LL SR / SL — Date of Testing 3/7/06

Hydrometer analysis CYL. 1

Hydrometer no. 152H — G_s of solids = 2.41 — a = 1.06

Dispersing agent $(NaPO_3)_6$ — Amount 4% 125ML — Wt. of soil, W_s = 50.0

Zero correction +5.0 — Meniscus correction 1.0

START 11:06 Date	Time of reading	Elapsed time, min	Temp., °C	R_a Actual Hyd. reading R_a	R_c Corr. Hyd. reading R_c	N % Finer	Hyd. Corr. only for meniscus, R	L from Table 6-5	$\frac{L}{t}$	K from Table 6-4	D, mm	N'
3.7.06	11:07	1	23	42	37.7	79.9	43	9.2	9.2	0.0143	0.0434	
	11:08	2	"	38.5	34.2	72.5	39.5	9.8	4.9	"	0.0317	
	11:09	3	"	36	31.7	67.2	37	10.2	3.4	"	0.0264	
	11:10	4	"	34	29.7	63.0	35	10.5	2.63	"	0.0232	
	11:17	11	"	29.5	25.2	53.4	30.5	11.3	1.03	"	0.0145	
	11:26	20	"	24	19.7	41.8	25	12.2	0.61	"	0.0111	
	11:36	30	"	22	17.7	37.5	23	12.5	0.42	"	0.009	
	12:06	60	"	20	15.7	33.3	21	12.9	0.215	"	0.0066	
	13:06	120	"	16.5	12.2	25.9	17.5	13.4	0.112	"	0.0048	
	16:06	300	"	14	9.7	20.6	15	13.8	0.046	"	0.0031	
3.8.06	13:06	1560	22	10.5	5.9	12.5	11.5	14.4	0.0092	0.0144	0.0014	

$R_c = R_{actual}$ − zero correction + C_T — % finer = $R_c(a)/W_s$ — $D = K\sqrt{L/t}$

$N' = N \cdot$ % FINER $\times$ .01

SIEVE ANALYSIS

~UNIFIED~

Job No.: 2522-212-074
Owner: PHILA. COKE
Location: PHILADELPHIA, PA
Sheet ___ of ___

Boring No.: PCMW-100
Sample No. + Depth: S4 33'-35'
Tested By: LLSR, SL
Date: 3/1/06

1. Wt. of Sample + Tare (No. 23) 509.39 gms.
2. Wt. of Tare 106.26 gms.
3. Wt. of Sample (at field m.c.) 403.16 gms.
4. Wt. of Dry Sample + Tare 466.76 gms.
5. Wt. of Tare 106.26 gms.
6. Wt. of Dry Sample 360.50 gms.
7. Loss of Moisture (3-6) 42.66 gms.
8. Field Moisture Content (7÷6) 11.8 %
9. Wt. of Sample after Wash & Drying + Tare 429.67 gms.
10. Wt. of Tare 106.26 gms.
11. Wt. of Sample (9-10) 323.41 gms.
12. Wt. Lost in Washing (6-11) 37.09 gms.

U.S. Std. Sieve No.	Dish + Soil Retained	Wt. of Dish	Wt. Soil Retained	Percent Retained	Cumulative Percent Ret.	% Finer
Larger						
						100
1"	171.36	106.26	65.10		18.1	81.9
3/4" 21.9	185.22		78.96		21.9	78.1
1/2"	269.27		163.01		45.2	54.8
3/8" 47.4	322.46		216.20		60.0	40.0
No. 4	356.09		249.83		69.3	30.7
No. 10 9.8	391.40		285.14		79.1	20.9
No. 20	400.60		294.34		81.6	18.4
No. 40 5.1	409.78		303.52		84.2	15.8
No. 100	424.17		317.91		88.2	11.8
No. 200 5.1	428.35		322.09		89.3	10.7
Pan 10.7	429.67		323.41	10.7		
Wt. Lost in Wash (Item 12)			37.09			
TOTAL			360.50 Ⓐ			

69.3 % G
20.0 % S
10.7 % Silt & C
100 %

Ⓐ – should equal Item 6

PAULUS SOKOLOWSKI and SARTOR CONSULTING ENG.

GRAIN SIZE ANALYSIS - HYDROMETER METHOD

Project PHILA. COKE Job No. 2522-212-074

Location of Project PHILADELPHIA, PA Boring No. PCMW-11D Sample No. S2 (JAR)

Description of Soil Dk. gray organic silty clay, occ. f sand lenses, occ. peat fibers (OH) Depth of Sample 18'-20'

Tested By LL SR / SL Date of Testing 3/9/06

Hydrometer analysis

Hydrometer no. 152H G_s of solids = 2.45 α = 1.05

Dispersing agent $(NaPO_3)_6$ Amount 4% 125ML Wt. of soil, W_s 50.0

Zero correction +5.0 Meniscus correction 1.0

START 11:35 Date	Time of reading	Elapsed time, min	Temp., °C	Actual Hyd. reading R_a	Corr. Hyd. reading R_c	N % Finer	Hyd. Corr. only for meniscus, R	L from Table 6-5	$\frac{L}{t}$	K from Table 6-4	D, mm	N'
3.9.06	11:36	1	24	46	42	88.2	47	8.6	8.6	0.0139	0.0408	
	11:37	2	"	44	40	84.0	45	8.9	4.45	"	0.0293	
	11:38	3	"	41	37	77.7	42	9.4	3.13	"	0.0246	
	11:39	4	"	40	36	75.6	41	9.6	2.40	"	0.0215	
	11:45	10	"	35	31	65.1	36	10.4	1.04	"	0.0142	
	12:00	25	"	29	25	52.5	30	11.4	0.46	"	0.0094	
	13:00	85	"	21	17	35.7	22	12.7	0.149	"	0.0054	
	14:35	180	23	18	13.7	28.8	19	13.2	0.073	0.0141	0.0038	
	17:05	330	22	17	12.4	26.0	18	13.3	0.040	0.0144	0.0028	
3.10.06	9:05	1290	23	14	9.7	20.4	15	13.8	0.011	0.0141	0.0015	

$R_c = R_{actual}$ − zero correction + C_T % finer = $R_c(a)/W_s$ $D = K\sqrt{L/t}$

N' = N · % FINER ÷ 100

SIEVE ANALYSIS

~UNIFIED~

Job No.: 2522-212-074
Owner: PHILA. COKE
Location: PHILADELPHIA, PA
Sheet ___ of ___

Boring No.: PCMW-14D
Sample No. + Depth: S1 10'-12'
Tested By: LLSR, SL
Date: 3/3/06

1. Wt. of Sample + Tare (No. 27)	396.30 gms.	7. Loss of Moisture (3-6)	79.19 gms.
2. Wt. of Tare	110.16 gms.	8. Field Moisture Content (7÷6)	38.3 %
3. Wt. of Sample (at field m.c.)	286.14 gms.	9. Wt. of Sample after Wash & Drying + Tare	293.23 gms.
4. Wt. of Dry Sample + Tare	317.11 gms.	10. Wt. of Tare	110.16 gms.
5. Wt. of Tare	110.16 gms.	11. Wt. of Sample (9-10)	183.07 gms.
6. Wt. of Dry Sample	206.95 gms.	12. Wt. Lost in Washing (6-11)	23.88 gms.

U.S. Std. Sieve No.		Dish + Soil Retained	Wt. of Dish	Wt. Soil Retained	Percent Retained	Cumulative Percent Ret.	% Finer
Larger							
1"			110.16				100 %
3/4"	14.9	140.97	110.16	30.81		14.9	85.1
1/2"		169.42		59.26		28.6	71.4
3/8"	29.6	181.99		71.83		34.7	65.3
No. 4		202.15		91.99		44.5	55.5
No. 10	20.2	244.14		133.98		64.7	35.3
No. 20		260.68		150.52		72.7	27.3
No. 40	14.3	273.62		163.46		79.0	21.0
No. 100		286.32		176.16		85.1	14.9
No. 200	7.8	289.78		179.62		86.8	13.2
Pan	13.2	293.23		183.07	13.2		
Wt. Lost in Wash (Item 12)				23.88			
TOTAL				206.95 Ⓐ			

44.5 G
42.3 S
13.2 $
100 %

Ⓐ – should equal Item 6

PAULUS SOKOLOWSKI and SARTOR CONSULTING ENG.

GRAIN SIZE ANALYSIS - HYDROMETER METHOD

Project PHILA. COKE — Job No. 2522-212-074

Location of Project PHILADELPHIA, PA — Boring No. PCMW-14D — Sample No. S2

Description of Soil Dk. gray organic silty clay, tr. f sand, occ. roots & peat fibers (OH) — Depth of Sample 16'-18'

Tested By LLSR SL — Date of Testing 3/7/06

Hydrometer analysis Cyl. 2

Hydrometer no. 152H — G_s of solids = 2.43 — a = 1.06

Dispersing agent $(NaPO_3)_6$ — Amount 4% 125 ML — Wt. of soil, W_s = 50.0

Zero correction +5.0 — Meniscus correction 1.0

START 12:00 Date	Time of reading	Elapsed time, min	Temp., °C	Actual Hyd. reading R_a	Corr. Hyd. reading R_c	N % Finer	Hyd. Corr. only for meniscus, R	L from Table 6-5	$\frac{L}{t}$	K from Table 6-4	D, mm	N'
3/7/06	12:01	1	23	48	43.7	92.6	49	8.3	8.3	0.0141	0.041	
	12:02	2	"	46	41.7	88.4	47	8.6	4.3	"	0.029	
	12:03	3	"	44	39.7	84.2	45	8.9	2.9	"	0.024	
	12:04	4	"	43	38.7	79.5	44	9.1	2.3	"	0.021	
	12:10	10	"	39	34.7	73.5	40	9.7	0.97	"	0.0139	
	12:20	20	"	34	29.7	63.0	35	10.5	0.53	"	0.0102	
	12:30	30	"	30	25.7	54.5	31	11.2	0.37	"	0.0086	
	13:00	60	"	25.5	21.2	44.9	26.5	11.95	0.199	"	0.0063	
	14:00	120	"	23	18.7	39.6	24	12.4	0.103	"	0.0045	
	16:00	240	"	19	14.7	31.2	20	13.0	0.054	"	0.0033	
3.8.06	13:00	1500	22	15	10.4	22.0	16	13.7	0.0091	0.0143	0.0014	

$R_c = R_{actual}$ − zero correction + C_T — % finer = $R_c(a)/W_s$ — $D = K\sqrt{L/t}$

$N' = N \cdot$ % FINER $\times$ .0

SIEVE ANALYSIS

~UNIFIED~

Job No.: 2522-212-074
Owner: PHILA. COKE
Location: PHILADELPHIA, PA
Sheet ___ of ___

Boring No.: PCMW-14D
Sample No. + Depth: SS 38'-40'
Tested By: LLSR, SL
Date: 3/2/06

1. Wt. of Sample + Tare (No. 28) 605.20 gms.
2. Wt. of Tare 109.93 gms.
3. Wt. of Sample (at field m.c.) 495.27 gms.
4. Wt. of Dry Sample + Tare 564.71 gms.
5. Wt. of Tare 109.93 gms.
6. Wt. of Dry Sample 454.78 gms.
7. Loss of Moisture (3-6) 40.49 gms.
8. Field Moisture Content (7÷6) 8.9 %
9. Wt. of Sample after Wash & Drying + Tare 548.21 gms.
10. Wt. of Tare 109.93 gms.
11. Wt. of Sample (9-10) 438.28 gms.
12. Wt. Lost in Washing (6-11) 16.50 gms.

U.S. Std. Sieve No.	Dish + Soil Retained	Wt. of Dish	Wt. Soil Retained	Percent Retained	Cumulative Percent Ret.	% Finer
Larger						
1 "						
3/4"						100.0
1/2"	116.21	109.93	6.28		1.4	98.6
3/8" 78.2	170.79		60.86		13.4	86.6
No. 4	465.53		355.60		78.2	21.8
No. 10 9.0	506.40		396.47		87.2	12.8
No. 20	521.13		411.20		90.4	9.6
No. 40 5.3	530.62		420.69		92.5	7.5
No. 100	535.41		425.48		93.6	6.4
No. 200 2.2	540.72		430.79		94.7	5.3
Pan 5.3	548.21		438.28	5.3		
Wt. Lost in Wash (Item 12)			16.5			
TOTAL			454.78 Ⓐ			

78.2 % G
16.5 % S
5.3 % F
100 %

Ⓐ – should equal Item 6

PAULUS SOKOLOWSKI and SARTOR CONSULTING ENG.

SIEVE ANALYSIS

~UNIFIED~

Job No.: 2522-212-074
Owner: PHILA. COKE
Location: PHILADELPHIA, PA
Sheet ___ of ___

Boring No.: PCMW-16D
Sample No. + Depth: S1 9'-11'
Tested By: LLSR, SL
Date: 3/2/06

1. Wt. of Sample + Tare (No. 29) 246.67 gms.
2. Wt. of Tare 109.89 gms.
3. Wt. of Sample (at field m.c.) 136.78 gms.
4. Wt. of Dry Sample + Tare 221.71 gms.
5. Wt. of Tare 109.89 gms.
6. Wt. of Dry Sample 111.82 gms.
7. Loss of Moisture (3-6) 24.96 gms.
8. Field Moisture Content (7÷6) 22.3 %
9. Wt. of Sample after Wash & Drying + Tare 196.77 gms.
10. Wt. of Tare 109.89 gms.
11. Wt. of Sample (9-10) 86.88 gms.
12. Wt. Lost in Washing (6-11) 24.94 gms.

U.S. Std. Sieve No.		Dish + Soil Retained	Wt. of Dish	Wt. Soil Retained	Percent Retained	Cumulative Percent Ret.	% Finer
Larger							
1 "							
3/4"							
1/2"			109.89				100
3/8"		116.35	109.89	6.46		5.8	94.2
No. 4	15.2	126.86		16.97		15.2	84.8
No. 10	13.6	142.12		32.23		28.8	71.2
No. 20		156.55		46.66		41.7	58.3
No. 40	26.3	171.51		61.62		55.1	44.9
No. 100		190.32		80.43		71.9	28.1
No. 200	21.0	194.94		85.05		76.1	23.9
Pan	23.9	196.77		86.88	23.9		
Wt. Lost in Wash (Item 12)				24.94		occ. metal frags	
TOTAL				111.82 Ⓐ			

Ⓐ – should equal Item 6

15.2% G
60.9% S
23.9% Cy & Si
100%

PAULUS SOKOLOWSKI and SARTOR CONSULTING ENG.

SIEVE ANALYSIS

~UNIFIED~

Job No.: 2522-212-074
Owner: PHILA. COKE
Location: PHILADELPHIA, PA
Sheet ___ of ___

Boring No.: PCMW-160
Sample No. + Depth: S3 29'-31'
Tested By: LLSR, SL
Date: 3/2/06

1. Wt. of Sample + Tare (No. 33)	851.63 gms.	7. Loss of Moisture (3-6)	53.84 gms.
2. Wt. of Tare	77.68 gms.	8. Field Moisture Content (7÷6)	7.5 %
3. Wt. of Sample (at field m.c.)	773.95 gms.	9. Wt. of Sample after Wash & Drying + Tare	759.20 gms.
4. Wt. of Dry Sample + Tare	797.79 gms.	10. Wt. of Tare	77.68 gms.
5. Wt. of Tare	77.68 gms.	11. Wt. of Sample (9-10)	681.52 gms.
6. Wt. of Dry Sample	720.11 gms.	12. Wt. Lost in Washing (6-11)	38.59 gms.

U.S. Std. Sieve No.		Dish + Soil Retained	Wt. of Dish	Wt. Soil Retained	Percent Retained	Cumulative Percent Ret.	% Finer
Larger							
							100.0
1"	28.2	243.76	77.68	166.08		23.1	76.9
3/4"		280.56		202.88		28.2	71.8
1/2"		368.37		290.69		40.4	59.6
3/8"	31.8	413.77		336.09		46.7	53.3
No. 4		509.59		431.91		60.0	40.0
No. 10	12.2	597.26		519.58		72.2	27.8
No. 20	16.0	667.33		589.65		81.9	18.1
No. 40		712.86		635.18		88.2	11.8
No. 100	6.1	746.69		669.01		92.9	7.1
No. 200		756.79		679.11		94.3	5.7
Pan	5.7	759.20		681.52	5.7		
Wt. Lost in Wash (Item 12)				38.59			
TOTAL				720.11 Ⓐ			

60.0 G
34.3 S
5.7 +
100 %

Ⓐ – should equal Item 6

PAULUS SOKOLOWSKI and SARTOR CONSULTING ENG.

GRAIN SIZE ANALYSIS- HYDROMETER METHOD

Project PHILA. COKE Job No. 2522-212-074

Location of Project PHILADELPHIA, PA Boring No. PCMW-17D Sample No. S1

Description of Soil Dk. gray organic clayey silt, tr* f sand, num. roots; peat fibers (OH) Depth of Sample 18'-20'

Tested By LL SR SL Date of Testing 3/4/06

Hydrometer analysis

Hydrometer no. 152H G_s of solids = 2.11 a = 1.18

Dispersing agent $(NaPO_3)_6$ Amount 4% 125 ML Wt. of soil, W_s 50.0

Zero correction +5.0 Meniscus correction 1.0

START 17:04 Date	Time of reading	Elapsed time, min	Temp., °C	Actual Hyd. reading R_a	Corr. Hyd. reading R_c	N % Finer	Hyd. Corr. only for meniscus, R	L from Table 6-5	L/t	K from Table 6-4	D, mm	N'
3/4/06	17:05	1	24	29.0	25	59.0	30	11.4	11.4	0.0159	0.0537	
	17:06	2	"	23.5	19.5	46.0	24.5	12.1	6.05	"	0.0391	
	17:07	3	"	22	18	42.5	23	12.5	4.17	"	0.0325	
	17:08	4	"	21	17	40.1	22	12.7	3.18	"	0.0284	
	17:14	10	"	18.5	14.5	34.2	19.5	13.1	1.31	"	0.0182	
	17:34	30	"	13	9	21.2	14	14.0	0.47	"	0.0109	
	18:04	60	"	11	7	16.5	12	14.3	0.238	"	0.0078	
	19:04	120	"	10	6	14.2	11	14.5	0.121	"	0.0055	
	20:04	180	"	9.5	5.5	13.0	10.5	14.6	0.081	"	0.0045	
3/6/06	09:56	1012	23	6	1.7	4.0	7	15.2	0.015	0.0161	0.0020	

$R_c = R_{actual}$ − zero correction + C_T % finer = $R_c(a)/W_s$ $D = K\sqrt{L/t}$

N' = N · % FINER = 0

SIEVE ANALYSIS

~UNIFIED~

Job No.: 2522-212-074
Owner: PHILA. COKE
Location: PHILADELPHIA, PA
Sheet ___ of ___

Boring No.: PCMW-18D
Sample No. + Depth: S1 18'-20'
Tested By: LLSR, SL
Date: 3/2/06

1. Wt. of Sample + Tare (No. 34) 471.23 gms.
2. Wt. of Tare 78.10 gms.
3. Wt. of Sample (at field m.c.) 393.13 gms.
4. Wt. of Dry Sample + Tare 453.18 gms.
5. Wt. of Tare 78.10 gms.
6. Wt. of Dry Sample 375.08 gms.
7. Loss of Moisture (3-6) 18.05 gms.
8. Field Moisture Content (7÷6) 4.8 %
9. Wt. of Sample after Wash & Drying + Tare 432.47 gms.
10. Wt. of Tare 78.10 gms.
11. Wt. of Sample (9-10) 354.37 gms.
12. Wt. Lost in Washing (6-11) 20.71 gms.

U.S. Std. Sieve No.	Dish + Soil Retained	Wt. of Dish	Wt. Soil Retained	Percent Retained	Cumulative Percent Ret.	% Finer
Larger						
1"						
3/4"						
1/2"						
3/8"						
No. 4						100 %
No. 10 2.0	85.50	78.10	7.40		2.0	98.0
No. 20	107.82		29.72		7.9	92.1
No. 40 52.7	286.97		208.87		55.7	45.3
No. 100	423.34		345.24		92.0	8.0
No. 200 39.3	430.63		352.53		94.0	6.0
Pan 6.0	432.47		354.37	6.0		
Wt. Lost in Wash (Item 12)	1.84		20.71			
TOTAL			375.08 Ⓐ			

94.0% S
6.0% $
100.0%

Ⓐ – should equal Item 6

PAULUS SOKOLOWSKI and SARTOR CONSULTING ENG.

SIEVE ANALYSIS

~UNIFIED~

Job No.: 2522-212-074
Owner: PHILA. COKE
Location: PHILADELPHIA, PA
Sheet ___ of ___

Boring No.: PCMW-18D
Sample No. + Depth: SZ 34'-36'
Tested By: LLSR, SL
Date: 3/2/06

1. Wt. of Sample + Tare (No. 35) 515.27 gms.
2. Wt. of Tare 77.42 gms.
3. Wt. of Sample (at field m.c.) 437.85 gms.
4. Wt. of Dry Sample + Tare 486.58 gms.
5. Wt. of Tare 77.42 gms.
6. Wt. of Dry Sample 409.16 gms.
7. Loss of Moisture (3-6) 28.69 gms.
8. Field Moisture Content (7÷6) 7.0 %
9. Wt. of Sample after Wash & Drying + Tare 449.03 gms.
10. Wt. of Tare 77.42 gms.
11. Wt. of Sample (9-10) 371.61 gms.
12. Wt. Lost in Washing (6-11) 37.55 gms.

U.S. Std. Sieve No.	Dish + Soil Retained	Wt. of Dish	Wt. Soil Retained	Percent Retained	Cumulative Percent Ret.	% Finer
Larger						
1 "						
3/4"						
1/2"						
3/8"						
No. 4		77.42				100
No. 10 0.1	77.88		0.46		0.1	99.9
No. 20	79.73		2.31		0.6	99.4
No. 40 25.0	180.13		102.71		25.1	74.9
No. 100	429.41		351.99		86.0	14.0
No. 200 65.2	446.88		369.46		90.3	9.7
Pan 9.7	449.03		371.61	9.7		
Wt. Lost in Wash (Item 12)			37.55			
TOTAL			409.16 Ⓐ			

90.3% S
9.7% $
100.0%

Ⓐ – should equal Item 6

PAULUS SOKOLOWSKI and SARTOR CONSULTING ENG.

APPENDIX G

Completed Monitoring Well Integrity Surveys

ARCADIS

Monitoring Well Integrity Assessment Form

(For each item, check appropriate response or fill in the blank)

Date: 2/27/18

Well ID: PCMW-01 ID Clearly Marked? NO

Project Name: PHILLY COKE

Photo filename:

Project Number:

Weather: SUNNY 55

Field Personnel: CO/AW

General Description of Surroundings: RIGHT NEXT TO RIVER

Well Condition:

Damaged? NO (Describe Below)

Abandoned? NO

Stick Up: YES

Flush Mount: NO

Lockable cover? YES

Lock present? NO

Key number:

Stick up height

Casing material: PVC

Well diameter: 4"

Protective casing material: STEEL

Protective casing diameter: 6"

Cap present? Type: NO

Vented? If so, how: YES - NO PLUG

Measuring point clearly marked? NO

Total depth reported: 10' (3' STICK UP)

Total depth measured: 13.30

DTW: 5.75

Well obstructed? If so, depth? NO

Well bottom soft (sediment) or firm? SOFT

Flush Mount Wells Only

Gasket present?

Bolts present?

Teflon washers present?

Surface Condition:

Damaged? (Describe Below)

Pad/cement intact?

Curb box/well cover present?

Intact?

Seal condition

All bolts present?

Ground surface slopes away from well?

Location Sketch

Comments/Recommendations:

LABELED / MP MARKED

ARCADIS

Monitoring Well Integrity Assessment Form

(For each item, check appropriate response or fill in the blank)

Date 2/27/18

Well ID PCNW-02 ID Clearly Marked? _____

Project Name Philly Coke

Photo filename _____

Project Number _____

Weather _____

Field Personnel CO/AH

General Description of Surroundings _____

Well Condition:

Damaged? ☐ Abandoned? ☐
(Describe Below)

Stick Up ☐ Flush Mount ☐

Lockable cover? _____

Lock present? _____

Key number: _____

Stick up height _____

Casing material _____

Well diameter _____

Protective casing material: _____

Protective casing diameter: _____

Cap present? Type? _____

Vented? If so, how? _____

Measuring point clearly marked? _____

Total depth reported: _____

Total depth measured: _____

DTW: _____

Well obstructed? If so, depth? _____

Well bottom soft (sediment) or firm? _____

Flush Mount Wells Only

Gasket present? _____

Bolts present? _____

Teflon washers present?

Surface Condition:

Damaged? ☐
(Describe Below)

Pad/cement intact? _____

Curb box/well cover present? _____

Intact? _____

Seal condition _____

All bolts present? _____

Ground surface slopes away from well? _____

Location Sketch

Comments/Recommendations:

UNABLE TO LOCATE

ARCADIS

Monitoring Well Integrity Assessment Form

(For each item, check appropriate response or fill in the blank)

Date 2/27/18

Well ID PCNW-03 ID Clearly Marked? _____ Project Name Philly Coke

Photo filename _____ Project Number _____

Weather _____ Field Personnel CO/AN

General Description of Surroundings _____

Well Condition:

Damaged? ☐ Abandoned? ☐
(Describe Below)

Stick Up ☐ Flush Mount ☐

Lockable cover? _____

Lock present? _____

Key number: _____

Stick up height _____

Casing material _____

Well diameter _____

Protective casing material: _____

Protective casing diameter: _____

Cap present? Type? _____

Vented? If so, how? _____

Measuring point clearly marked? _____

Total depth reported: _____

Total depth measured: _____

DTW: _____

Well obstructed? If so, depth? _____

Well bottom soft (sediment) or firm? _____

Flush Mount Wells Only

Gasket present? _____

Bolts present? _____

Teflon washers present?

Surface Condition:

Damaged? ☐
(Describe Below)

Pad/cement intact? _____

Curb box/well cover present? _____

Intact? _____

Seal condition _____

All bolts present? _____

Ground surface slopes away from well? _____

Location Sketch

Comments/Recommendations:

UNABLE TO LOCATE

ARCADIS

Monitoring Well Integrity Assessment Form

(For each item, check appropriate response or fill in the blank)

Date: 2/26/18

Well ID: PCNN-04 ID Clearly Marked? NO

Project Name: PHILLY COKE

Photo filename:

Project Number:

Weather: CLOUDY 40

Field Personnel: CO/AW

General Description of Surroundings: TALL GRASS

Well Condition:

Damaged? NO (*Describe Below*)

Abandoned? NO

Stick Up: YES

Flush Mount: NO

Lockable cover? YES

Lock present? YES - CUT OFF

Key number:

Stick up height:

Casing material: PVC

Well diameter: 4"

Protective casing material: STEEL

Protective casing diameter: 6"

Cap present? Type? J PLUG

Vented? If so, how? NO

Measuring point clearly marked? NO

Total depth reported: 13 (1' STICK UP)

Total depth measured: 13.40

DTW: 6.75

Well obstructed? If so, depth? NO

Well bottom soft (sediment) or firm? SOFT

Flush Mount Wells Only

Gasket present?

Bolts present?

Teflon washers present?

Surface Condition:

Damaged? (*Describe Below*)

Pad/cement intact?

Curb box/well cover present?

Intact?

Seal condition

All bolts present?

Ground surface slopes away from well?

Location Sketch

Comments/Recommendations:

LABELED / MP MAIZICED

ARCADIS

Monitoring Well Integrity Assessment Form

(For each item, check appropriate response or fill in the blank)

Date: 2/27/18

Well ID: PCMW-05 ID Clearly Marked? NO

Project Name: PHILLY COKE

Photo filename:

Project Number:

Weather: SUNNY 50

Field Personnel: CO/MW

General Description of Surroundings: TALL GRASS

Well Condition:

Damaged? NO (*Describe Below*)

Abandoned? NO

Stick Up: YES

Flush Mount: NO

Lockable cover? YES

Lock present? YES - CUT OFF

Key number:

Stick up height

Casing material: PVC

Well diameter: 4"

Protective casing material: STEEL

Protective casing diameter: 6"

Cap present? Type? YES J PLUG

Vented? If so, how? NO

Measuring point clearly marked? NO

Total depth reported: 10' (4' STICK UP)

Total depth measured: 14.20

DTW: 8.02

Well obstructed? If so, depth? NO

Well bottom soft (sediment) or firm? SOFT

Flush Mount Wells Only

Gasket present?

Bolts present?

Teflon washers present?

Surface Condition:

Damaged? (*Describe Below*)

Pad/cement intact?

Curb box/well cover present?

Intact?

Seal condition

All bolts present?

Ground surface slopes away from well?

Location Sketch

Comments/Recommendations:

WELL LABELED / MP MARKED

ARCADIS

Monitoring Well Integrity Assessment Form

(For each item, check appropriate response or fill in the blank)

Date 2/23/15

Well ID PCNW-6 ID Clearly Marked? NO

Project Name PHILLY COKE

Photo filename

Project Number

Weather SUNNY 50

Field Personnel CO/AN

General Description of Surroundings TALL GRASS

Well Condition:

Damaged? NO *(Describe Below)*

Abandoned? NO

Stick Up YES

Flush Mount NO

Lockable cover? YES

Lock present? YES - CUT OFF

Key number:

Stick up height

Casing material PVC

Well diameter 4"

Protective casing material: STEEL

Protective casing diameter: 6"

Cap present? Type? J-PLUG

Vented? If so, how? NO

Measuring point clearly marked? NO

Total depth reported: 10' (3' STICK UP)

Total depth measured: 13.25

DTW: 5.43

Well obstructed? If so, depth? NO

Well bottom soft (sediment) or firm? HARD

Flush Mount Wells Only

Gasket present?

Bolts present?

Teflon washers present?

Surface Condition:

Damaged? *(Describe Below)*

Pad/cement intact?

Curb box/well cover present?

Intact?

Seal condition

All bolts present?

Ground surface slopes away from well?

Location Sketch

Comments/Recommendations:

LABELED / MP MARKED

ARCADIS

Monitoring Well Integrity Assessment Form

(For each item, check appropriate response or fill in the blank)

Date 2/27/18

Well ID PLMW-07 ID Clearly Marked? _____

Project Name Philly Lake

Photo filename _____

Project Number _____

Weather sunny, 55°F

Field Personnel A. Wismer

General Description of Surroundings _____

Well Condition:

Damaged? no *(Describe Below)*

Abandoned? no

Stick Up yes

Flush Mount no

Lockable cover? yes

Lock present? cut off, requires lock

Key number: n/a

Stick up height _____

Casing material PVC

Well diameter 4"

Protective casing material: steel

Protective casing diameter: 6"

Cap present? Type? yes, J-plug

Vented? If so, how? no

Measuring point clearly marked? yes

Total depth reported: ~~—~~ 10' (2' stick up)

Total depth measured: 4.4

DTW: ~~* well dry~~ nm

Well obstructed? If so, depth? yes

Well bottom soft (sediment) or firm? firm

Flush Mount Wells Only

Gasket present? _____

Bolts present? _____

Teflon washers present? _____

Surface Condition:

Damaged? _____ *(Describe Below)*

Pad/cement intact? _____

Curb box/well cover present? _____

Intact? _____

Seal condition _____

All bolts present? _____

Ground surface slopes away from well? _____

Location Sketch

Comments/Recommendations:

well is dry

ARCADIS

Monitoring Well Integrity Assessment Form

(For each item, check appropriate response or fill in the blank)

Date 2/27/18

Well ID PCMW-8S ID Clearly Marked? yes Project Name Philly Coke

Photo filename _____ Project Number _____

Weather 55°F, sunny Field Personnel A. Wissner

General Description of Surroundings _____

Well Condition:

Damaged? no *(Describe Below)* Abandoned? no

Stick Up yes Flush Mount no

Lockable cover? yes

Lock present? lock cut-off

Key number: n/a

Stick up height _____

Casing material PVC

Well diameter 2"

Protective casing material: steel

Protective casing diameter: 4"

Cap present? Type? yes, J-plug

Vented? If so, how? n/a

Measuring point clearly marked? yes

Total depth reported: 15' (2.88' stick up)

Total depth measured: 17.17'

DTW: 10.40'

Well obstructed? If so, depth? no

Well bottom soft (sediment) or firm? soft

Flush Mount Wells Only

Gasket present? _____

Bolts present? _____

Teflon washers present? _____

Surface Condition:

Damaged? _____ *(Describe Below)*

Pad/cement intact? _____

Curb box/well cover present? _____

Intact? _____

Seal condition _____

All bolts present? _____

Ground surface slopes away from well? _____

Location Sketch

Comments/Recommendations:

WELL LABELED & M.P. MARKED

ARCADIS

Monitoring Well Integrity Assessment Form

(For each item, check appropriate response or fill in the blank)

Date 2/27/18

Well ID PCMW-8D ID Clearly Marked? _____ Project Name Philly Coke

Photo filename ~~55°F~~ Project Number _____

Weather 55°F, sunny Field Personnel A. Wissner

General Description of Surroundings _____

Well Condition:

Damaged? no Abandoned? no
(Describe Below)

Stick Up yes Flush Mount no

Lockable cover? yes

Lock present? lock was cut off

Key number: n/a

Stick up height _____

Casing material ~~steel~~ PVC

Well diameter 2"

Protective casing material: steel

Protective casing diameter: 6"

Cap present? Type? yes, J-plug

Vented? If so, how? n/a

Measuring point clearly marked? yes

Total depth reported: ~~37.39'~~ 36' (1.5 STICK UP)

Total depth measured: ~~to~~ 37.39

DTW: 16.41'

Well obstructed? If so, depth? no

Well bottom soft (sediment) or firm? soft

Flush Mount Wells Only

Gasket present? _____

Bolts present? _____

Teflon washers present? _____

Surface Condition:

Damaged?
(Describe Below)

Pad/cement intact? _____

Curb box/well cover present? _____

Intact? _____

Seal condition _____

All bolts present? _____

Ground surface slopes away from well? _____

Location Sketch

Comments/Recommendations:

ARCADIS

Monitoring Well Integrity Assessment Form

(For each item, check appropriate response or fill in the blank)

Date 2/27/08

Well ID PCMW-9S ID Clearly Marked? yes Project Name Philly Coke

Photo filename Project Number

Weather 55°F, sunny Field Personnel A Wissner

General Description of Surroundings

Well Condition:

Damaged? no Abandoned? no
(Describe Below)

Stick Up yes Flush Mount no

Lockable cover? yes

Lock present? lock was cut-off

Key number: n/a

Stick up height

Casing material PVC

Well diameter 2"

Protective casing material: steel

Protective casing diameter: ~~steel~~ 4"

Cap present? Type? yes, J-plug

Vented? If so, how? n/a

Measuring point clearly marked? yes

Total depth reported: 14' (2.27 stick up)

Total depth measured: 16.26'

DTW: 10.52'

Well obstructed? If so, depth? n/a

Well bottom soft (sediment) or firm? soft

Flush Mount Wells Only

Gasket present?

Bolts present?

Teflon washers present?

Surface Condition:

Damaged?
(Describe Below)

Pad/cement intact?

Curb box/well cover present?

Intact?

Seal condition

All bolts present?

Ground surface slopes away from well?

Location Sketch

Comments/Recommendations:

ARCADIS

Monitoring Well Integrity Assessment Form

(For each item, check appropriate response or fill in the blank)

Date 2/27/18

Well ID PLMW-9D ID Clearly Marked? _____ Project Name Philly Lake

Photo filename _____ Project Number _____

Weather 55°F, sunny Field Personnel _____

General Description of Surroundings _____

Well Condition:

Damaged? ☐ Abandoned? ☐
(Describe Below)

Stick Up ☐ Flush Mount ☐

Lockable cover? _____

Lock present? _____

Key number: _____

Stick up height _____

Casing material _____

Well diameter _____

Protective casing material: _____

Protective casing diameter: _____

Cap present? Type? _____

Vented? If so, how? _____

Measuring point clearly marked? _____

Total depth reported: _____

Total depth measured: _____

DTW: _____

Well obstructed? If so, depth? _____

Well bottom soft (sediment) or firm? _____

Flush Mount Wells Only

Gasket present? _____

Bolts present? _____

Teflon washers present?

Surface Condition:

Damaged? ☐
(Describe Below)

Pad/cement intact? _____

Curb box/well cover present? _____

Intact? _____

Seal condition _____

All bolts present? _____

Ground surface slopes away from well? _____

Location Sketch

Comments/Recommendations:

* can not find well *

ARCADIS

Monitoring Well Integrity Assessment Form

(For each item, check appropriate response or fill in the blank)

Date: 2/27/18

Well ID: PENN-105 ID Clearly Marked? NO

Project Name: PHILLY COKE

Photo filename:

Project Number:

Weather: 55 SUNNY

Field Personnel: CO / AW

General Description of Surroundings: WOODS

Well Condition:

Damaged? NO (*Describe Below*)

Abandoned? NO

Stick Up: YES

Flush Mount: NO

Lockable cover? YES

Lock present? LOCK WAS CUT OFF

Key number: —

Stick up height:

Casing material: PVC

Well diameter: 2"

Protective casing material: STEEL

Protective casing diameter: 6"

Cap present? Type? YES

Vented? If so, how? NO

Measuring point clearly marked? NO

Total depth reported: ~~16.65~~ 15' (2.42 STICK UP)

Total depth measured: ~~9.34~~ 16.65

DTW: 9.34

Well obstructed? If so, depth? NO

Well bottom soft (sediment) or firm? SOFT

Flush Mount Wells Only

Gasket present?

Bolts present?

Teflon washers present?

Surface Condition:

Damaged? NO (*Describe Below*)

Pad/cement intact? NA

Curb box/well cover present?

Intact?

Seal condition

All bolts present?

Ground surface slopes away from well?

Location Sketch

Comments/Recommendations:

WELLS ARE LABELED NOW W/ M.P. MARKED

ARCADIS

Monitoring Well Integrity Assessment Form

(For each item, check appropriate response or fill in the blank)

Date: 2/27/15

Well ID: PENN-10D ID Clearly Marked? NO

Project Name: PHILLY COKE

Photo filename:

Project Number:

Weather: 55 SUNNY

Field Personnel: CO/AN

General Description of Surroundings: WOODS

Well Condition:

Damaged? NO (*Describe Below*)

Abandoned? NO

Stick Up: YES

Flush Mount: NO

Lockable cover? YES

Lock present? YES - CUT OFF

Key number: —

Stick up height: 1

Casing material: PVC

Well diameter: 2"

Protective casing material: STEEL

Protective casing diameter: 6"

Cap present? Type? J-PLUG

Vented? If so, how? NO

Measuring point clearly marked? NO

Total depth reported: 33' (1' STICK UP)

Total depth measured: 34.45

DTW: 12.85

Well obstructed? If so, depth? NO

Well bottom soft (sediment) or firm? SOFT

Flush Mount Wells Only

Gasket present?

Bolts present?

Teflon washers present?

Surface Condition:

Damaged? (*Describe Below*)

Pad/cement intact?

Curb box/well cover present?

Intact?

Seal condition

All bolts present?

Ground surface slopes away from well?

Location Sketch

Comments/Recommendations:

WELL LABELED & M.P. MARKED

ARCADIS

Monitoring Well Integrity Assessment Form

(For each item, check appropriate response or fill in the blank)

Date: 2/27/18

Well ID: PCNW-11S ID Clearly Marked? NO

Project Name: PHILLY COKE

Photo filename:

Project Number:

Weather: 55° SUNNY

Field Personnel: CO / AH

General Description of Surroundings: WOODS / BRUSH

Well Condition:

Damaged? NO Abandoned? NO
(Describe Below)

Stick Up: YES Flush Mount: NO

Lockable cover? YES

Lock present? YES - CUT OFF

Key number: —

Stick up height

Casing material: PVC

Well diameter: 2"

Protective casing material: STEEL

Protective casing diameter: 6"

Cap present? Type: J-PLUG

Vented? If so, how?

Measuring point clearly marked? NO

Total depth reported: 15' (2.8 STICK UP)

Total depth measured: 17.50

DTW: 10.43

Well obstructed? If so, depth? NO

Well bottom soft (sediment) or firm? SOFT

Flush Mount Wells Only

Gasket present?

Bolts present?

Teflon washers present?

Surface Condition:

Damaged?
(Describe Below)

Pad/cement intact?

Curb box/well cover present?

Intact?

Seal condition

All bolts present?

Ground surface slopes away from well?

Location Sketch

Comments/Recommendations:

WELL LABELED & M.P. MARKED

ARCADIS

Monitoring Well Integrity Assessment Form

(For each item, check appropriate response or fill in the blank)

Date 2/27/15

Well ID PENN-113 ID Clearly Marked? _____

Project Name PHILLY COKE

Photo filename _____

Project Number _____

Weather _____

Field Personnel CO/AN

General Description of Surroundings _____

Well Condition:

Damaged? ☐ Abandoned? ☐
(Describe Below)

Stick Up ☐ Flush Mount ☐

Lockable cover? _____

Lock present? _____

Key number: _____

Stick up height _____

Casing material _____

Well diameter _____

Protective casing material: _____

Protective casing diameter: _____

Cap present? Type? _____

Vented? If so, how? _____

Measuring point clearly marked? _____

Total depth reported: _____

Total depth measured: _____

DTW: _____

Well obstructed? If so, depth? _____

Well bottom soft (sediment) or firm? _____

Flush Mount Wells Only

Gasket present? _____

Bolts present? _____

Teflon washers present?

Surface Condition:

Damaged? ☐
(Describe Below)

Pad/cement intact? _____

Curb box/well cover present? _____

Intact? _____

Seal condition _____

All bolts present? _____

Ground surface slopes away from well? _____

Location Sketch

Comments/Recommendations:

UNABLE TO LOCATE USED GPS COORD.

ARCADIS

Monitoring Well Integrity Assessment Form

(For each item, check appropriate response or fill in the blank)

Date 2/27/18

Well ID PCMW-125 ID Clearly Marked? NO

Project Name PHILLY COKE

Photo filename

Project Number

Weather 55 SUNNY

Field Personnel CO/AN

General Description of Surroundings

Well Condition:

Damaged? NO (*Describe Below*)

Abandoned? NO

Stick Up YES

Flush Mount NO

Lockable cover? YES

Lock present? YES - CUT OFF

Key number: —

Stick up height

Casing material PVC

Well diameter 2"

Protective casing material: STEEL

Protective casing diameter: 6"

Cap present? Type? J-PLUG

Vented? If so, how? NO

Measuring point clearly marked? NO

Total depth reported: 10' (2.47 STICK UP)

Total depth measured: 4.63

DTW: 3.30

Well obstructed? If so, depth? NO ?

Well bottom soft (sediment) or firm? SOFT

Flush Mount Wells Only

Gasket present?

Bolts present?

Teflon washers present?

Surface Condition:

Damaged? (*Describe Below*)

Pad/cement intact?

Curb box/well cover present?

Intact?

Seal condition

All bolts present?

Ground surface slopes away from well?

Location Sketch

Comments/Recommendations:

WELL LABELED + M.P. MARKED

ARCADIS

Monitoring Well Integrity Assessment Form

(For each item, check appropriate response or fill in the blank)

Date 2/22/18

Well ID PENN-12D ID Clearly Marked? _____

Project Name PHILLY COKE

Photo filename _____

Project Number _____

Weather 55° SUNNY

Field Personnel _____

General Description of Surroundings _____

Well Condition:

Damaged? ☐ *(Describe Below)* Abandoned? ☐

Stick Up ☐ Flush Mount ☐

Lockable cover? _____

Lock present? _____

Key number: _____

Stick up height _____

Casing material _____

Well diameter _____

Protective casing material: _____

Protective casing diameter: _____

Cap present? Type? _____

Vented? If so, how? _____

Measuring point clearly marked? _____

Total depth reported: _____

Total depth measured: _____

DTW: _____

Well obstructed? If so, depth? _____

Well bottom soft (sediment) or firm? _____

Flush Mount Wells Only

Gasket present? _____

Bolts present? _____

Teflon washers present?

Surface Condition:

Damaged? ☐ *(Describe Below)*

Pad/cement intact? _____

Curb box/well cover present? _____

Intact? _____

Seal condition _____

All bolts present? _____

Ground surface slopes away from well? _____

Location Sketch

Comments/Recommendations:

UNABLE TO LOCATE

ARCADIS

Monitoring Well Integrity Assessment Form

(For each item, check appropriate response or fill in the blank)

Date _____

Well ID PENN-13S ID Clearly Marked? _____ Project Name _____

Photo filename _____ Project Number _____

Weather _____ Field Personnel _____

General Description of Surroundings _____

Well Condition:

Damaged? YES Abandoned? _____
(Describe Below)

Stick Up _____ Flush Mount _____

Lockable cover? _____

Lock present? _____

Key number: _____

Stick up height _____

Casing material _____

Well diameter _____

Protective casing material: _____

Protective casing diameter: _____

Cap present? Type? _____

Vented? If so, how? _____

Measuring point clearly marked? _____

Total depth reported: _____

Total depth measured: _____

DTW: _____

Well obstructed? If so, depth? _____

Well bottom soft (sediment) or firm? _____

Flush Mount Wells Only

Gasket present? _____

Bolts present? _____

Teflon washers present?

Surface Condition:

Damaged? _____
(Describe Below)

Pad/cement intact? _____

Curb box/well cover present? _____

Intact? _____

Seal condition _____

All bolts present? _____

Ground surface slopes away from well? _____

Location Sketch

Comments/Recommendations:

FOUND STEEL WELL CASING / J PLUG LYING ON ITS SIDE. UNABLE TO LOCATE WELL

ARCADIS

Monitoring Well Integrity Assessment Form

(For each item, check appropriate response or fill in the blank)

Date 2/26/18

Well ID PCMW-13D ID Clearly Marked? _____ Project Name _____

Photo filename _____ Project Number _____

Weather _____ Field Personnel CO/AN

General Description of Surroundings _____

Well Condition:

Damaged? ☐ Abandoned? ☐
(Describe Below)

Stick Up ☐ Flush Mount ☐

Lockable cover? _____

Lock present? _____

Key number: _____

Stick up height _____

Casing material _____

Well diameter _____

Protective casing material: _____

Protective casing diameter: _____

Cap present? Type? _____

Vented? If so, how? _____

Measuring point clearly marked? _____

Total depth reported: _____

Total depth measured: _____

DTW: _____

Well obstructed? If so, depth? _____

Well bottom soft (sediment) or firm? _____

Flush Mount Wells Only

Gasket present? _____

Bolts present? _____

Teflon washers present?

Surface Condition:

Damaged? ☐
(Describe Below)

Pad/cement intact? _____

Curb box/well cover present? _____

Intact? _____

Seal condition _____

All bolts present? _____

Ground surface slopes away from well? _____

Location Sketch

Comments/Recommendations:

UNABLE TO LOCATE

ARCADIS

Monitoring Well Integrity Assessment Form

(For each item, check appropriate response or fill in the blank)

Date 2/27/16

Well ID PCMW-145 ID Clearly Marked? _____ Project Name PHILLY COKE

Photo filename _____ Project Number _____

Weather _____ Field Personnel LD/AW

General Description of Surroundings _____

Well Condition:

Damaged? ☐ Abandoned? ☐
(Describe Below)

Stick Up ☐ Flush Mount ☐

Lockable cover? _____

Lock present? _____

Key number: _____

Stick up height _____

Casing material _____

Well diameter _____

Protective casing material: _____

Protective casing diameter: _____

Cap present? Type? _____

Vented? If so, how? _____

Measuring point clearly marked? _____

Total depth reported: _____

Total depth measured: _____

DTW: _____

Well obstructed? If so, depth? _____

Well bottom soft (sediment) or firm? _____

Flush Mount Wells Only

Gasket present? _____

Bolts present? _____

Teflon washers present?

Surface Condition:

Damaged? ☐
(Describe Below)

Pad/cement intact? _____

Curb box/well cover present? _____

Intact? _____

Seal condition _____

All bolts present? _____

Ground surface slopes away from well? _____

Location Sketch

Comments/Recommendations:

UNABLE TO LOCATE

ARCADIS

Monitoring Well Integrity Assessment Form

(For each item, check appropriate response or fill in the blank)

Date 2/27/15

Well ID PCMW-14D ID Clearly Marked? _____

Project Name PHILLY COKE

Photo filename _____

Project Number _____

Weather _____

Field Personnel CO/AW

General Description of Surroundings _____

Well Condition:

Damaged? ☐ Abandoned? ☐
(Describe Below)

Stick Up ☐ Flush Mount ☐

Lockable cover? _____

Lock present? _____

Key number: _____

Stick up height _____

Casing material _____

Well diameter _____

Protective casing material: _____

Protective casing diameter: _____

Cap present? Type? _____

Vented? If so, how? _____

Measuring point clearly marked? _____

Total depth reported: _____

Total depth measured: _____

DTW: _____

Well obstructed? If so, depth? _____

Well bottom soft (sediment) or firm? _____

Flush Mount Wells Only

Gasket present? _____

Bolts present? _____

Teflon washers present?

Surface Condition:

Damaged? ☐
(Describe Below)

Pad/cement intact? _____

Curb box/well cover present? _____

Intact? _____

Seal condition _____

All bolts present? _____

Ground surface slopes away from well? _____

Location Sketch

Comments/Recommendations:

UNABLE TO LOCATE

ARCADIS

Monitoring Well Integrity Assessment Form

(For each item, check appropriate response or fill in the blank)

Date: 2/26/18

Well ID: PCMW-155 ID Clearly Marked? NO

Project Name: PHILLY COKE

Photo filename:

Project Number:

Weather: CLOUDY 40

Field Personnel: CO/AW

General Description of Surroundings: WOODS / TALL GRASS

Well Condition:

Damaged? NO (*Describe Below*)

Abandoned? NO

Stick Up: YES

Flush Mount: NO

Lockable cover? YES

Lock present? YES - CUT OFF

Key number: -

Stick up height:

Casing material: PVC

Well diameter: 2"

Protective casing material: STEEL

Protective casing diameter: 6"

Cap present? Type? YES

Vented? If so, how? J-PLUG

Measuring point clearly marked? NO

Total depth reported: 15' (2.6 STICK UP)

Total depth measured: 16.50

DTW: 9.08

Well obstructed? If so, depth? NO

Well bottom soft (sediment) or firm? SOFT

Flush Mount Wells Only

Gasket present?

Bolts present?

Teflon washers present?

Surface Condition:

Damaged? (*Describe Below*)

Pad/cement intact?

Curb box/well cover present?

Intact?

Seal condition

All bolts present?

Ground surface slopes away from well?

Location Sketch

Comments/Recommendations:

WELL LABELED & MP MARKED

ARCADIS

Monitoring Well Integrity Assessment Form

(For each item, check appropriate response or fill in the blank)

Date: 2/26/18

Well ID: PCMW-151 | ID Clearly Marked? NO | Project Name: PHILLY COKE

Photo filename: | Project Number:

Weather: CLOUDY 40 | Field Personnel: CU / AW

General Description of Surroundings: WOODS / TALL GRASS

Well Condition:

Damaged? NO | Abandoned? NO
(Describe Below)

Stick Up: YES | Flush Mount: NO

Lockable cover? YES

Lock present? YES - CUT OFF

Key number:

Stick up height

Casing material: PVC

Well diameter: 2"

Protective casing material: STEEL

Protective casing diameter: 6"

Cap present? Type? YES - J PLUG

Vented? If so, how? NO

Measuring point clearly marked? NO

Total depth reported: 41' (1.8 STICK UP)

Total depth measured: 42.30

DTW: 15.07

Well obstructed? If so, depth? NO

Well bottom soft (sediment) or firm? SOFT

Flush Mount Wells Only

Gasket present?

Bolts present?

Teflon washers present?

Surface Condition:

Damaged?
(Describe Below)

Pad/cement intact?

Curb box/well cover present?

Intact?

Seal condition

All bolts present?

Ground surface slopes away from well?

Location Sketch

Comments/Recommendations:

WELL LABELED / MP MARKED

ARCADIS

Monitoring Well Integrity Assessment Form

(For each item, check appropriate response or fill in the blank)

Date 2/27/18

Well ID PCMW-16S ID Clearly Marked? _____ Project Name PHILLY COKE

Photo filename _____ Project Number _____

Weather _____ Field Personnel CO/MW

General Description of Surroundings _____

Well Condition:

Damaged? ☐ Abandoned? ☐
(Describe Below)

Stick Up ☐ Flush Mount ☐

Lockable cover? _____

Lock present? _____

Key number: _____

Stick up height _____

Casing material _____

Well diameter _____

Protective casing material: _____

Protective casing diameter: _____

Cap present? Type? _____

Vented? If so, how? _____

Measuring point clearly marked? _____

Total depth reported: _____

Total depth measured: _____

DTW: _____

Well obstructed? If so, depth? _____

Well bottom soft (sediment) or firm? _____

Flush Mount Wells Only

Gasket present? _____

Bolts present? _____

Teflon washers present?

Surface Condition:

Damaged? ☐
(Describe Below)

Pad/cement intact? _____

Curb box/well cover present? _____

Intact? _____

Seal condition _____

All bolts present? _____

Ground surface slopes away from well? _____

Location Sketch

Comments/Recommendations:

UNABLE TO LOCATE

ARCADIS

Monitoring Well Integrity Assessment Form

(For each item, check appropriate response or fill in the blank)

Date: 2/22/18

Well ID: PENN-16D | ID Clearly Marked? NO | Project Name: PHILLY COKE

Photo filename: | Project Number:

Weather: 55° SUNNY | Field Personnel: CO/AN

General Description of Surroundings:

Well Condition:

Damaged? YES | Abandoned? NO
(Describe Below)

Stick Up YES | Flush Mount NO

Lockable cover? NO - LID BROKE

Lock present? NO

Key number: —

Stick up height:

Casing material: PVC

Well diameter: 2"

Protective casing material: STEEL

Protective casing diameter: 6"

Cap present? Type? J-PLUG

Vented? If so, how?

Measuring point clearly marked? NO

Total depth reported: 34' (1.7 STICK UP)

Total depth measured: 35.80

DTW: 11.68

Well obstructed? If so, depth? NO

Well bottom soft (sediment) or firm? SOFT

Flush Mount Wells Only

Gasket present?

Bolts present?

Teflon washers present?

Surface Condition:

Damaged?
(Describe Below)

Pad/cement intact?

Curb box/well cover present?

Intact?

Seal condition

All bolts present?

Ground surface slopes away from well?

Location Sketch

Comments/Recommendations:

WELL LABELED & M.P. MARKED.

TAB BROKEN ON LID - NO WAY TO LOCK

ARCADIS

Monitoring Well Integrity Assessment Form

(For each item, check appropriate response or fill in the blank)

Date 2/22/18

Well ID PCMW-175 ID Clearly Marked? NO

Project Name Philly Coke

Photo filename

Project Number

Weather cloudy 40

Field Personnel CO/AN

General Description of Surroundings WOODS / TALL GRASS

Well Condition:

Damaged? NO (*Describe Below*)

Abandoned? NO

Stick Up YES

Flush Mount NO

Lockable cover? YES

Lock present? YES - CUT OFF

Key number:

Stick up height

Casing material PVC

Well diameter 2"

Protective casing material: STEEL

Protective casing diameter: 6"

Cap present? Type? YES J PLUG

Vented? If so, how? NO

Measuring point clearly marked? NO

Total depth reported: 14' (2.7 STICK UP)

Total depth measured: 16.30

DTW: 5.22

Well obstructed? If so, depth? NO

Well bottom soft (sediment) or firm? SOFT

Flush Mount Wells Only

Gasket present?

Bolts present?

Teflon washers present?

Surface Condition:

Damaged? (*Describe Below*)

Pad/cement intact?

Curb box/well cover present?

Intact?

Seal condition

All bolts present?

Ground surface slopes away from well?

Location Sketch

Comments/Recommendations:

WELL LABELED / MP MARKED

ARCADIS

Monitoring Well Integrity Assessment Form

(For each item, check appropriate response or fill in the blank)

Date: 2/26/18

Well ID: PCMW-171 ID Clearly Marked? NO

Project Name: PHILLY COKE

Photo filename:

Project Number:

Weather: CLOUDY 40

Field Personnel: CO/MW

General Description of Surroundings: WOODS / TALL GRASS

Well Condition:

Damaged? YES (Describe Below)

Abandoned? NO

Stick Up: YES

Flush Mount: NO

Lockable cover? YES

Lock present? YES - CUT OFF

Key number:

Stick up height

Casing material: PVC

Well diameter: 2"

Protective casing material: STEEL - MOVES

Protective casing diameter: 6"

Cap present? Type? YES

Vented? If so, how? NO

Measuring point clearly marked? NO

Total depth reported: 41' (2.) STICK UP)

Total depth measured: 43.00

DTW: 12.60

Well obstructed? If so, depth? NO

Well bottom soft (sediment) or firm? SOFT

Flush Mount Wells Only

Gasket present?

Bolts present?

Teflon washers present?

Surface Condition:

Damaged? (Describe Below)

Pad/cement intact?

Curb box/well cover present?

Intact?

Seal condition

All bolts present?

Ground surface slopes away from well?

Location Sketch

Comments/Recommendations:

WELL CASING MOVES AROUND / LOOSE

WELL LABELED / MP MARKED

ARCADIS

Monitoring Well Integrity Assessment Form

(For each item, check appropriate response or fill in the blank)

Date 2/26/15

Well ID PENN-185 ID Clearly Marked? NO

Project Name PHILLY COKE

Photo filename

Project Number

Weather CLOUDY

Field Personnel C/AN

General Description of Surroundings

Well Condition:

Damaged? NO (Describe Below)

Abandoned? NO

Stick Up YES

Flush Mount NO

Lockable cover? YES

Lock present? YES - CUT OFF

Key number: -

Stick up height

Casing material PVC

Well diameter 2"

Protective casing material: STEEL

Protective casing diameter: 6"

Cap present? Type? J-PLUG

Vented? If so, how? NO

Measuring point clearly marked? NO

Total depth reported: ~~20~~ 21' (2-1 STICK UP)

Total depth measured: 21.03

DTW: 18.59

Well obstructed? If so, depth? NO

Well bottom soft (sediment) or firm? SOFT

Flush Mount Wells Only

Gasket present?

Bolts present?

Teflon washers present?

Surface Condition:

Damaged? (Describe Below)

Pad/cement intact?

Curb box/well cover present?

Intact?

Seal condition

All bolts present?

Ground surface slopes away from well?

Location Sketch

Comments/Recommendations:

WELL LABELED & M.P MARKED

ARCADIS

Monitoring Well Integrity Assessment Form

(For each item, check appropriate response or fill in the blank)

Date: 2/26/18

Well ID: PCNN-18D ID Clearly Marked? NO Project Name: PHILLY COKE

Photo filename: Project Number:

Weather: CLOUDY 40 Field Personnel: CO / AN

General Description of Surroundings:

Well Condition:

Damaged? YES Abandoned? NO
(Describe Below)

Stick Up YES Flush Mount NO

Lockable cover? NO

Lock present? NO

Key number:

Stick up height

Casing material: PVC

Well diameter: 2"

Protective casing material: STEEL

Protective casing diameter: 6"

Cap present? Type? NO

Vented? If so, how? NO

Measuring point clearly marked? NO

Total depth reported: 39' (1' STICK UP)

Total depth measured: 38.26

DTW: 17.30

Well obstructed? If so, depth? NO

Well bottom soft (sediment) or firm? SOFT

Flush Mount Wells Only

Gasket present?

Bolts present?

Teflon washers present?

Surface Condition:

Damaged?
(Describe Below)

Pad/cement intact?

Curb box/well cover present?

Intact?

Seal condition

All bolts present?

Ground surface slopes away from well?

Location Sketch

Comments/Recommendations:

WELL LABELED & M.P. MARKED

NO LOCKABLE COVER / WELL CASING BENT

ARCADIS

Monitoring Well Integrity Assessment Form

(For each item, check appropriate response or fill in the blank)

Date: 2/26/18

Well ID: PCMW-195 ID Clearly Marked? NO

Project Name: PHILLY COKE

Photo filename:

Project Number:

Weather: CLOUDY

Field Personnel: CO/AW

General Description of Surroundings: TALL GRASS

Well Condition:

Damaged? NO (*Describe Below*)

Abandoned? NO

Stick Up: YES

Flush Mount: NO

Lockable cover? YES

Lock present? YES - CUT OFF

Key number:

Stick up height

Casing material: PVC

Well diameter: 2"

Protective casing material: STEEL

Protective casing diameter: 6"

Cap present? Type: J-PLUG

Vented? If so, how?

Measuring point clearly marked? NO

Total depth reported: 13' (2.8 STICK UP)

Total depth measured: 15.87

DTW: 6.36

Well obstructed? If so, depth? NO

Well bottom soft (sediment) or firm? SOFT

Flush Mount Wells Only

Gasket present?

Bolts present?

Teflon washers present?

Surface Condition:

Damaged? (*Describe Below*)

Pad/cement intact?

Curb box/well cover present?

Intact?

Seal condition

All bolts present?

Ground surface slopes away from well?

Location Sketch

Comments/Recommendations:

WELL LABELED / M.P. MARKED

ARCADIS

Monitoring Well Integrity Assessment Form

(For each item, check appropriate response or fill in the blank)

Date: 2/26/18

Well ID: PCMW-19D | ID Clearly Marked?: NO | Project Name: PHILLY COKE

Photo filename: | Project Number:

Weather: CLOUDY | Field Personnel: CO/AN

General Description of Surroundings: TALL GRASS

Well Condition:

Damaged? NO | Abandoned? NO
(Describe Below)

Stick Up: YES | Flush Mount: NO

Lockable cover? YES

Lock present? YES - CUT OFF

Key number:

Stick up height

Casing material: PVC

Well diameter: 2"

Protective casing material: STEEL

Protective casing diameter: 6"

Cap present? Type? T-PLUG

Vented? If so, how?

Measuring point clearly marked? NO

Total depth reported: 37' (1.3 STICK UP)

Total depth measured: 38.31

DTW: 11.57

Well obstructed? If so, depth? NO

Well bottom soft (sediment) or firm? SOFT

Flush Mount Wells Only

Gasket present?

Bolts present?

Teflon washers present?

Surface Condition:

Damaged?
(Describe Below)

Pad/cement intact?

Curb box/well cover present?

Intact?

Seal condition

All bolts present?

Ground surface slopes away from well?

Location Sketch

Comments/Recommendations:

WELL LABELED / M.P. MARKED

ARCADIS

Monitoring Well Integrity Assessment Form

(For each item, check appropriate response or fill in the blank)

Date: 2/26/18

Well ID: PCMW-20S | ID Clearly Marked?: NO | Project Name: PHILLY COKE

Photo filename: | Project Number:

Weather: CLOUDY 40 | Field Personnel: CO/AN

General Description of Surroundings: TALL GRASS

Well Condition:

Damaged? NO (Describe Below) | Abandoned? NO

Stick Up: YES | Flush Mount: NO

Lockable cover? YES

Lock present? YES - CUT OFF

Key number:

Stick up height:

Casing material: PVC

Well diameter: 2"

Protective casing material: STEEL

Protective casing diameter: 6"

Cap present? Type? J-PLUG

Vented? If so, how? NO

Measuring point clearly marked? NO

Total depth reported: 13' (2.7 STICK UP)

Total depth measured: 7.00

DTW: DRY

Well obstructed? If so, depth? NO

Well bottom soft (sediment) or firm? HARD

Flush Mount Wells Only

Gasket present?

Bolts present?

Teflon washers present?

Surface Condition:

Damaged? (Describe Below)

Pad/cement intact?

Curb box/well cover present?

Intact?

Seal condition

All bolts present?

Ground surface slopes away from well?

Location Sketch

Comments/Recommendations:

WELL LABELED / M.P. MARKED

ARCADIS

Monitoring Well Integrity Assessment Form

(For each item, check appropriate response or fill in the blank)

Date: 2/26/18

Well ID: PCMW-19(1) ID Clearly Marked? NO

Project Name: PHILLY COKE

Photo filename:

Project Number:

Weather: CLOUDY

Field Personnel: CO / MW

General Description of Surroundings:

Well Condition:

Damaged? YES (Describe Below)

Abandoned? NO

Stick Up: YES

Flush Mount: NO

Lockable cover? NO

Lock present? NO

Key number:

Stick up height:

Casing material: PVC

Well diameter: 2"

Protective casing material: STEEL

Protective casing diameter: 6"

Cap present? Type? NO

Vented? If so, how? YES - NO PLUG

Measuring point clearly marked? NO

Total depth reported: 28' (1.3 STICK UP)

Total depth measured: 28.90

DTW: 12.77

Well obstructed? If so, depth? NO

Well bottom soft (sediment) or firm? SOFT

Flush Mount Wells Only

Gasket present?

Bolts present?

Teflon washers present?

Surface Condition:

Damaged? (Describe Below)

Pad/cement intact?

Curb box/well cover present?

Intact?

Seal condition

All bolts present?

Ground surface slopes away from well?

Location Sketch

Comments/Recommendations:

WELL LABELED / M.P. MARKED

ARCADIS

Monitoring Well Integrity Assessment Form

(For each item, check appropriate response or fill in the blank)

Date: 2/27/18

Well ID: MW-5 ID Clearly Marked? NO

Project Name: PHILLY COKE

Photo filename:

Project Number:

Weather: 55 SUNNY

Field Personnel: CO/AW

General Description of Surroundings: TALL GRASS

Well Condition:

Damaged? NO (*Describe Below*)

Abandoned? NO

Stick Up: YES

Flush Mount: NO

Lockable cover? YES

Lock present? YES - CUT OFF

Key number:

Stick up height

Casing material: PVC

Well diameter: 2"

Protective casing material: STEEL

Protective casing diameter: 6"

Cap present? Type: J-PLUG

Vented? If so, how? NO

Measuring point clearly marked? NO

Total depth reported: NA

Total depth measured: 16.27

DTW: 6.35

Well obstructed? If so, depth? NO

Well bottom soft (sediment) or firm? SOFT

Flush Mount Wells Only

Gasket present?

Bolts present?

Teflon washers present?

Surface Condition:

Damaged? (*Describe Below*)

Pad/cement intact?

Curb box/well cover present?

Intact?

Seal condition

All bolts present?

Ground surface slopes away from well?

Location Sketch

Comments/Recommendations:

WELL LABELED + M.P. MARKED

ARCADIS

Monitoring Well Integrity Assessment Form

(For each item, check appropriate response or fill in the blank)

Date: 2/26/18

Well ID: MW-6 ID Clearly Marked? YES

Project Name: PHILLY COKE

Photo filename:

Project Number:

Weather: CLOUDY 40

Field Personnel: CO/AN

General Description of Surroundings: WOODS/TALL GRASS

Well Condition:

Damaged? YES *(Describe Below)*

Abandoned? NO

Stick Up: YES

Flush Mount: NO

Lockable cover? NO - MISSING

Lock present? NO

Key number:

Stick up height:

Casing material: PVC

Well diameter: 2"

Protective casing material: STEEL

Protective casing diameter: 6"

Cap present? Type? YES - PVC CAP

Vented? If so, how? NO

Measuring point clearly marked? NO

Total depth reported: NA

Total depth measured: 14.70

DTW: 4.10

Well obstructed? If so, depth? NO

Well bottom soft (sediment) or firm? SOFT

Flush Mount Wells Only

Gasket present?

Bolts present?

Teflon washers present?

Surface Condition:

Damaged? *(Describe Below)*

Pad/cement intact?

Curb box/well cover present?

Intact?

Seal condition

All bolts present?

Ground surface slopes away from well?

Location Sketch

Comments/Recommendations:

WELL LABELED / MP MARKED

ARCADIS

Monitoring Well Integrity Assessment Form

(For each item, check appropriate response or fill in the blank)

Date: 2/27/18

Well ID: UNKNOWN-1 ID Clearly Marked? NO

Project Name: PHILLY COKE

Photo filename:

Project Number:

Weather: SUNNY 55

Field Personnel: CO/AN

General Description of Surroundings: TAIL GATES BY PCMW-07 / PCMW-06

Well Condition:

Damaged? YES Abandoned? NO
(Describe Below)

Stick Up YES Flush Mount NO

Lockable cover? NO

Lock present? NO

Key number:

Stick up height

Casing material: PVC

Well diameter: 2"

Protective casing material: STEEL

Protective casing diameter: 6"

Cap present? Type? NO

Vented? If so, how? YES - NO PLUG

Measuring point clearly marked? NO

Total depth reported: NA

Total depth measured: 11.70

DTW: 3.77

Well obstructed? If so, depth? NO

Well bottom soft (sediment) or firm? SOFT

Flush Mount Wells Only

Gasket present?

Bolts present?

Teflon washers present?

Surface Condition:

Damaged?
(Describe Below)

Pad/cement intact?

Curb box/well cover present?

Intact?

Seal condition

All bolts present?

Ground surface slopes away from well?

Location Sketch

Comments/Recommendations:

UNKNOWN - NOT ON MAP
SURVEYOR GPS'D LOCATION

ARCADIS

Monitoring Well Integrity Assessment Form

(For each item, check appropriate response or fill in the blank)

Date: 2/27/16

Well ID: UNKNOWN-2 ID Clearly Marked? NO

Project Name: PHILLY COKE

Photo filename:

Project Number:

Weather: SUNNY 55

Field Personnel: CO/AW

General Description of Surroundings: BETWEEN PENN-07 / PENW-06

Well Condition:

Damaged? YES (*Describe Below*) Abandoned? NO

Stick Up YES Flush Mount NO

Lockable cover? NO

Lock present? NO

Key number:

Stick up height

Casing material: PVC

Well diameter: 4"

Protective casing material: STEEL

Protective casing diameter: 6"

Cap present? Type? NO

Vented? If so, how? YES - NO PLUG

Measuring point clearly marked? NO

Total depth reported: NA

Total depth measured: 11.55

DTW: 4.36

Well obstructed? If so, depth? NO

Well bottom soft (sediment) or firm? SOFT

Flush Mount Wells Only

Gasket present?

Bolts present?

Teflon washers present?

Surface Condition:

Damaged? (*Describe Below*)

Pad/cement intact?

Curb box/well cover present?

Intact?

Seal condition

All bolts present?

Ground surface slopes away from well?

Location Sketch

Comments/Recommendations:

UNKNOWN NOT ON MAP

SURVEYOR GPS'D LOCATION

APPENDIX H

Data Usability Summary Reports

ARCADIS Design & Consultancy for natural and built assets

National Grid
Philly Coke

DATA REVIEW

Philadelphia, Pennsylvania

Volatile Organic Compound (VOC), Semivolatile Organic Compound (SVOC), Pesticides, Polychlorinated Biphenyls (PCBs), Metals, and Cyanide Analyses

SDG #: JC62879

Analyses Performed By:
SGS Laboratories
Dayton, New Jersey

Report #: 29630R
Review Level: Tier II
Project: B0036790.0001.00003

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # JC62879 for samples collected in association with the National Grid Philly Coke site in Philadelphia, Pennsylvania. The review was conducted as a Tier II evaluation and included review of data package completeness. Only analytical data as reported by the laboratory were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets and chain of custody. Analyses were performed for the following samples:

SDG	Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis				
						VOCs	SVOC	Pest./ PCB	Metals	CN-
JC62879	PCMW 01	JC62879-1	Water	03/19/2018		X	X	X	X	X
	PCMW 04	JC62879-2	Water	03/19/2018		X	X	X	X	X
	PCMW 9S	JC62879-3	Water	03/19/2018		X	X	X	X	X
	PCMW 16D	JC62879-4	Water	03/19/2018		X	X	X	X	X
	MW-5	JC62879-5	Water	03/19/2018		X	X	X	X	X
	PCMW 15S	JC62879-6	Water	03/20/2018		X	X	X	X	X
	PCMW 15D	JC62879-7	Water	03/20/2018		X	X	X	X	X
	PCMW 8S	JC62879-8	Water	03/22/2018		X	X	X	X	X
	PCMW 8D	JC62879-9	Water	03/22/2018		X	X	X	X	X
	PCMW 17S	JC62879-10	Water	03/22/2018		X	X	X	X	X
	PCMW 17D	JC62879-11	Water	03/22/2018		X	X	X	X	X
	PCMW 20S	JC62879-12	Water	03/22/2018		X	X	X	X	X
	PCMW 20D	JC62879-13	Water	03/22/2018		X	X	X	X	X
	PCMW 19S	JC62879-14	Water	03/22/2018		X	X	X	X	X
	PCMW 19D	JC62879-15	Water	03/22/2018		X	X	X	X	X
	DUP-03222018	JC62879-16	Water	03/22/2018	PCMW 19D	X	X	X	X	X
	PCMW 10S	JC62879-17	Water	03/22/2018		X	X	X	X	X
	PCMW 10D	JC62879-18	Water	03/22/2018		X	X	X	X	X
	TRIP BLANK	JC62879-19	Water	03/22/2018		X				
	MW-6	JC62879-20	Water	03/22/2018		X	X	X	X	X

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of quality assurance (QA) or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Methods 8260C, 8270D, 8081B and 8082A. Validation was performed following the procedures specified in *USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review* (October 1999).

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers
  - U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
  - B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- Quantitation (Q) Qualifiers
  - E The compound was quantitated above the calibration range.
  - D Concentration is based on a diluted sample analysis.
- Validation Qualifiers
  - J The compound was positively identified; however, the associated numerical value is an estimated concentration only.
  - UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.
  - JN The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.
  - UB Compound considered non-detect at the listed value due to associated blank contamination.
  - N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.
  - R The sample results are rejected as unusable. The compound may or may not be present in the sample.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is

that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
VOCs by 8260C	Water	14 days from collection to analysis (preserved) 7 days from collection to analysis (non-preserved)	Cool to <6 °C; preserved to a pH of less than 2 s.u.

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e. laboratory method blanks, trip blanks, and equipment rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Trip blanks measure sample storage contamination. Rinse blanks also measure contamination of samples during field operations.

If an analyte is detected in a blank at a concentration greater than the method detection limit (MDL), a blank action level (BAL) is calculated as five times the concentration detected in the blank. The BAL for common laboratory contaminants (e.g. acetone, methylene chloride) is calculated at ten times the blank concentration. Detected analytes in the associated samples are compared to the BAL. If the result is greater than the BAL, no qualification is required, and any laboratory-assigned flags are removed.

Target compounds were not detected above the MDL in the associated blanks; therefore, detected sample results are not associated with blank contamination.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. VOC analysis requires that all surrogates associated with the analysis exhibit recoveries within the laboratory-established acceptance limits.

All samples exhibited surrogate recoveries within the control limits.

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The spiked compounds used in the MS/MSD analysis must exhibit recoveries within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS and MSD results must be within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSDs performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD spiking concentration by a factor of four or greater. Sample results associated with MS/MSD exceedances where the parent samples are not site-specific are not qualified.

Sample locations associated with the MS/MSD exhibiting recoveries outside of the control limits are presented in the following table.

Sample Locations	Compound	MS Recovery	MSD Recovery
MW-6	Styrene	<LL but >10%	--

Note:

AC Acceptable

The criteria used to evaluate the MS/MSD recoveries are presented in the following table. In the case of an MS/MSD deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> the upper control limit (UL)	Non-detect	No Action
	Detect	J
< the lower control limit (LL) but > 10%	Non-detect	UJ
	Detect	J
< 10%	Non-detect	R
	Detect	J
Parent sample concentration > four times the MS/MSD spiking solution concentration.	Detect	No Action
	Non-detect	

5. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the accuracy of the analytical method independent of matrix interferences. The spiked compounds used in the LCS analysis must exhibit recoveries within the laboratory-established acceptance limits.

Sample locations associated with LCS analysis exhibiting recoveries outside of the control limits presented in the following table.

Sample Locations	Compound	LCS Recovery
MW-6	Bromoform	>UL
	1,2-Dibromo-3-chloropropane	>UL

The criteria used to evaluate the LCS/LCSD recoveries are presented in the following table. In the case of an LCS/LCSD deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> the upper control limit (UL)	Non-detect	No Action
	Detect	J
< the lower control limit (LL) but > 10%	Non-detect	UJ
	Detect	J
< 10%	Non-detect	R
	Detect	J

6. Field Duplicate Sample Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
PCMW 19D / DUP-03222018	All compounds	U	U	AC

Notes:

AC Acceptable

The calculated RPDs between the parent sample and field duplicate were acceptable.

7. System Performance and Overall Assessment

The laboratory narrative states that several compounds exhibited continuing calibration verification percent differences (%D) greater than the control limit of 20%.

The criteria used to evaluate the initial and continuing calibration are presented in the following table. In the case of a calibration deviation, the sample results are qualified as presented in the following table.

Initial/Continuing	Criteria	Sample Result	Qualification
Continuing Calibration	%D >20% (increase in sensitivity)	Non-detect	No Action
		Detect	J
	%D >20% (decrease in sensitivity)	Non-detect	UJ
		Detect	J

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: SW-846 8260B	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks	X				X
C. Trip blanks		X		X	
Laboratory Control Sample (LCS)		X	X		
Laboratory Control Sample Duplicate(LCSD)	X				X
LCS/LCSD Precision (RPD)	X				X
Matrix Spike (MS)		X	X		
Matrix Spike Duplicate(MSD)		X		X	
MS/MSD Precision (RPD)		X		X	
Field/Lab Duplicate (RPD)		X		X	
Surrogate Spike Recoveries		X		X	
Dilution Factor		X		X	
Moisture Content	X				X

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

SEMI-VOLATILE ORGANIC COMPOUNDS (SVOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SVOCs by 8270D	Water	28 days from collection to extraction and 28 days from extraction to analysis	Cool to <6 °C; preserved with Sodium Bisulfate (NaHSO4) to a pH of less than 4 s.u.

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

If an analyte is detected in a blank at a concentration greater than the method detection limit (MDL), a blank action level (BAL) is calculated as five times the concentration detected in the blank. The BAL for common laboratory contaminants (e.g. acetone, methylene chloride) is calculated at ten times the blank concentration. Detected analytes in the associated samples are compared to the BAL. If the result is greater than the BAL, no qualification is required, and any laboratory-assigned flags are removed.

Target compounds were not detected above the MDL in the associated blanks; therefore, detected sample results are not associated with blank contamination.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. SVOC analysis requires that two of the three SVOC surrogate compounds within each fraction exhibit recoveries within the laboratory-established acceptance limits.

All surrogate recoveries were within control limits.

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

Sample locations associated with MS/MSD recoveries exhibiting an RPD greater than the control limit are presented in the following table.

Sample Locations	Compound
PCMW 8D	4-Chloroaniline

The criteria used to evaluate the RPD between the MS/MSD recoveries are presented in the following table. In the case of an RPD deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> UL	Non-detect	UJ
	Detect	J

5. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

All compounds associated with the LCS analysis exhibited recoveries within the control limits.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
PCMW 19D / DUP-03222018	All compounds	U	U	AC

Notes:

AC Acceptable

The calculated RPDs between the parent sample and field duplicate were acceptable.

7. System Performance and Overall Assessment

The laboratory narrative states that several compounds exhibited continuing calibration verification percent differences (%D) greater than the control limit of 20%.

The criteria used to evaluate the initial and continuing calibration are presented in the following table. In the case of a calibration deviation, the sample results are qualified as presented in the following table.

Initial/Continuing	Criteria	Sample Result	Qualification
Continuing Calibration	%D >20% (increase in sensitivity)	Non-detect	No Action
		Detect	J
	%D >20% (decrease in sensitivity)	Non-detect	UJ
		Detect	J

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR SVOCs

SVOCs: 8270D	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks	X				X
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R	X				X
LCS/LCSD Precision (RPD)	X				X
Matrix Spike (MS) %R		X		X	
Matrix Spike Duplicate(MSD) %R		X		X	
MS/MSD Precision (RPD)		X	X		
Field/Lab Duplicate (RPD)		X		X	
Surrogate Spike Recoveries		X		X	
Dilution Factor		X		X	
Moisture Content	X				X

Notes:

%R Percent recovery

RPD Relative percent difference

PESTICIDES ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8081A	Water	7 days from collection to extraction and 40 days from extraction to analysis	Cool to < 6 °C

All samples were extracted and analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore, detected sample results were not associated with blank contamination.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. Pesticide analysis requires that at least one of the two pesticide surrogate compounds exhibit recoveries within the laboratory-established acceptance limits.

All samples exhibited surrogate recoveries within the control limits.

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The spiked compounds used in the MS/MSD analysis must exhibit recoveries within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS and MSD results must be within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSDs performed on samples where the compound concentration detected in the parent sample exceeds the MS/MSD spiking concentration by a factor of four or greater. Sample results associated with MS/MSD exceedances where the parent samples are not site-specific are not qualified.

Sample locations associated with the MS/MSD exhibiting recoveries outside of the control limits are presented in the following table.

Sample	Compound	MS Recovery	MSD Recovery
PCMW 8D	Aldrin	>UL	>UL
PCMW 17D	Endrin ketone	AC	>UL

AC = Acceptable

The criteria used to evaluate the MS/MSD recoveries are presented in the following table. In the case of MS/MSD deviations, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> the upper control limit (UL)	Non-detect	No Action
	Detect	J
< the lower control limit (LL) but > 10%	Non-detect	UJ
	Detect	J
< 10%	Non-detect	R
	Detect	J
Parent sample concentration > 4x the MS/MSD spiking solution concentration.	Detect	No Action
	Non-detect	

5. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) Analysis

The LCS/LCSD analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The spiked compounds used in the LCS/LCSD analysis must exhibit recoveries within the laboratory-established acceptance limits. The relative percent difference (RPD) between the LCS and LCSD results must be within the laboratory-established acceptance limits.

All compounds associated with the LCS analysis exhibited recoveries within the control limits.

6. Field Duplicate Sample Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
PCMW 19D / DUP-03222018	All compounds	U	U	AC

Notes:

AC Acceptable

The calculated RPDs between the parent sample and field duplicate were acceptable.

7. Compound Identification

The retention times of all quantitated peaks must fall within the calculated retention time windows for both the primary and confirmation columns. When dual column analysis is performed the relative percent difference (%RPD) of detected sample results must be less than 40%.

Sample locations associated with RPD analysis exhibiting recoveries outside of the control limits presented in the following table.

Sample Locations	Compound	RPD
PCMW-04	gamma-Chlordane	47.5%

The criteria used to evaluate the RPD are presented in the following table. In the case of a RPD deviation, the sample results are qualified as documented in the table below.

Control Limit (%D)	Qualification
>40% to 70%	J
>70% to 100%	JN
>100% [1]	R
>100% to 200% (Interference detected)[2]	J or JN
>50% (PCB sample results less than the RL)	U

When the PCB sample results are less than the RL and the RPD greater than 50% the sample result are raised to the RL and reported as non-detect.

Note 1: If the pattern is confirmed sample results will be qualified as estimated (J). If pattern exhibits interference or if the PCB cannot be positively determined due to weathering the sample results will be qualified as tentative identification estimate (JN).

Note 2: If interference is detected in either column the sample results will be qualified as tentative identification estimate (JN).

9. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR PESTICIDES

Pesticides: SW-846 8081A	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Gas Chromatography (GC/ECD)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks	X				X
Laboratory Control Sample (LCS)		X		X	
Laboratory Control Sample Duplicate (LCSD)		X		X	
LCS/LCSD Precision (RPD)		X		X	
Matrix Spike (MS)		X	X		
Matrix Spike Duplicate (MSD)		X	X		
MS/MSD Precision (RPD)		X		X	
Laboratory Duplicate Sample RPD	X				X
Field Duplicate Sample RPD		X		X	
Surrogate Spike Recoveries		X		X	
Column %D $\leq$ 40% (If dual column is performed for reporting - not confirmation)		X	X		
Dilution Factor		X		X	
Compound identification and quantitation		X		X	

Notes:
%R = percent recovery
RPD = relative percent difference

POLYCHLORINATED BIPHENYLS (PCBs) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8082A	Water	7 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C

Note:
The holding time above is a recommendation. PCBs are very stable in a variety of matrices, and holding times, under the conditions listed above, may be as long as a year per SW-846 8082A (February 2007).

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore, detected sample results were not associated with blank contamination.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. PCB analysis requires that the two PCB surrogate compounds exhibit recoveries within the laboratory-established acceptance limits.

All surrogate recoveries reported from the primary column were within control limits.

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

The MS/MSD exhibited acceptable recoveries and RPD between the MS/MSD recoveries.

5. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

All compounds associated with the LCS analysis exhibited recoveries within the control limits.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
PCMW 19D / DUP-03222018	All compounds	U	U	AC

Notes:

AC Acceptable

The calculated RPDs between the parent sample and field duplicate were acceptable.

7. Compound Identification

The retention times of all quantitated peaks must fall within the calculated retention time windows for both the primary and confirmation columns. When dual column analysis is performed the relative percent difference (%RPD) of detected sample results must be less than 40%.

The dual column analysis exhibited an acceptable %RPD between columns.

8. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR PCBs

PCBs: SW-846 8082A	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY (GC/ECD)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks	X				X
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate (LCSD) %R	X				X
LCS/LCSD Precision (RPD)	X				X
Matrix Spike (MS) %R		X		X	
Matrix Spike Duplicate (MSD) %R		X		X	
MS/MSD Precision (RPD)		X		X	
Field/Lab Duplicate (RPD)		X		X	
Surrogate Spike Recoveries		X		X	
Column (RPD) (If dual column is performed-not confirmation purposes only)		X		X	
Dilution Factor		X		X	
Moisture Content	X				X

Notes:

%R Percent recovery

RPD Relative percent difference

INORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) Methods 6010C, 7470A, and 335.4. Data were reviewed in accordance with USEPA National Functional Guidelines of October 2002.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and that it was already subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with the USEPA National Functional Guidelines:

- Concentration (C) Qualifiers
  - U The analyte was analyzed for but not detected. The associated value is the analyte instrument detection limit.
  - J The reported value was obtained from a reading less than the reporting limit (RL), but greater than or equal to the method detection limit (MDL).
- Quantitation (Q) Qualifiers
  - E The reported value is estimated due to the presence of interference.
  - N Spiked sample recovery is not within control limits.
  - * Duplicate analysis is not within control limits.
- Validation Qualifiers
  - J The analyte was positively identified; however, the associated numerical value is an estimated concentration only.
  - UJ The analyte was not detected above the reporting limit. However, the reported limit is approximate and may or may not represent the actual limit of detection.
  - UB Analyte considered non-detect at the listed value due to associated blank contamination.
  - R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

METALS ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW846 6010C	Water	180 days from collection to analysis	Preserved to a pH of less than 2.
SW-846 7470A	Water	28 days from collection to analysis	Cool to <6 °C; preserved to a pH of less than 2.

All samples were analyzed within the specified holding times.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Analytes were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis /Laboratory Duplicate Analysis

MS/MSD and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

3.1 MS/MSD Analysis

All metal analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the analyte's concentration detected in the parent sample exceeds the MS concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

The MS/MSD exhibited acceptable recoveries and RPD between the MS/MSD recoveries.

3.2 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the RL. A control limit of 20% for water matrices and 35% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of one times the RL is applied for water matrices and two times the RL for soil matrices.

MS/MSD analysis was performed in replacement of the laboratory duplicate analysis. The MS/MSD recoveries exhibited acceptable RPD.

4. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Analyte	Sample Result	Duplicate Result	RPD
PCMW 19D / DUP-03222018	Aluminum	1440	1130	24.1%
	Arsenic	13.4	12.8	4.6%
	Calcium	83900	81800	2.5%
	Iron	213	201	AC
	Lead	3.5	3.0 U	AC
	Magnesium	359	349	2.8%
	Manganese	5690	5530	2.9%
	Nickel	11.9	11.7	AC
	Sodium	34600	33400	3.5%

AC = Acceptable

The calculated RPDs between the parent sample and field duplicate were acceptable.

5. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The analytes associated with the LCS analysis must exhibit a percent recovery between the control limits of 80% and 120%.

The LCS analysis exhibited recoveries within the control limits.

6. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR METAL

METALS; 6010C/7470A	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Inductively Coupled Plasma-Atomic Emission Spectrometry (ICP-AES)					
Tier II Validation					
Holding Times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Instrument Blanks		X		X	
B. Method Blanks		X		X	
C. Equipment/Field Blanks		X		X	
Laboratory Control Sample (LCS)		X		X	
Matrix Spike (MS) %R		X		X	
Matrix Spike Duplicate (MSD) %R		X		X	
MS/MSD Precision (RPD)		X		X	
Field/Lab Duplicate (RPD)		X		X	
Total vs. Dissolved	X				X
Reporting Limit Verification		X		X	

Notes:

%R Percent recovery

RPD Relative percent difference

GENERAL CHEMISTRY ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
Cyanide by EPA 335.4	Water	14 days from collection to analysis	Cool to <6 °C; preserved to a pH of greater than 12.

All samples were analyzed within the specified holding times.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

The correct number and type of standards were analyzed. The correlation coefficient of the initial calibration was greater than 0.995 and all initial calibration verification standard recoveries were within control limits.

All calibration standard recoveries were within the control limit.

4. Matrix Spike (MS)/Laboratory Duplicate Analysis

MS and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

4.1 MS Analysis

All analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The MS recovery control limits do not apply for MS performed on sample locations where the analyte's concentration detected in the parent sample exceeds the MS concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

All analytes associated with MS recoveries were within control limits with the exception of the following analytes present in the table below.

Sample Location	Analytes	MS Recovery
PCMW 8D	Cyanide	<30%
PCMW 17D	Cyanide	74.4%

The criteria used to evaluate MS recoveries are presented in the following table. In the case of an MS deviation, the sample results are qualified. The qualifications are applied to all sample results associated with this SDG.

Control limit	Sample Result	Qualification
MS percent recovery 30% to 75%	Non-detect	UJ
	Detect	J
MS percent recovery <30%	Non-detect	R
	Detect	J
MS percent recovery >125%	Non-detect	No Action
	Detect	J

Sample PCMW 8D had a detection of cyanide close to the spiking concentration but not four times higher. Due to the significant amount of cyanide in the sample, the related samples will be qualified as estimated (J or UJ) and not rejected.

4.2 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the RL. A control limit of 20% for water matrices and 35% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of one times the RL is applied for water matrices and two times the RL for soil matrices.

All analytes associated with laboratory duplicate RPD were within the control limit, with the exception of the analytes presented in the following table.

Sample Location	Analytes	Laboratory RPD
PCMW-8D	Cyanide	92.7%

The criteria used to evaluate laboratory duplicate RPD are presented in the following table. In the case of a laboratory duplicate RPD deviation, the sample results are qualified. The qualifications are applied to all sample results associated with this SDG except those which an acceptable laboratory duplicate analysis was performed.

Sample Concentration	Control Limit	Sample Result	Qualification
Parent sample and laboratory sample concentration >5 times RL	Water 20%	Non-detect	UJ
		Detect	J

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
PCMW 19D / DUP-03222018	All compounds	U	U	AC

Notes:

AC Acceptable

The calculated RPDs between the parent sample and field duplicate were acceptable.

6. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The analytes associated with the LCS analysis must exhibit a percent recovery between the control limits of 80% and 120%.

The LCS analysis exhibited recoveries within the control limits.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR GENERAL CHEMISTRY

General Chemistry: 335.4	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Miscellaneous Instrumentation					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks		X		X	
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R		X		X	
LCS/LCSD Precision (RPD)		X		X	
Matrix Spike (MS) %R		X	X		
Matrix Spike Duplicate(MSD) %R	X				X
MS/MSD Precision (RPD)	X				X
Field/Lab Duplicate (RPD)		X	X		
Dilution Factor		X		X	
Moisture Content	X				X

Notes:

%RSD – relative standard deviation
%R - percent recovery
RPD - relative percent difference,

%D – difference

VALIDATION PERFORMED BY: Andrew Korycinski

SIGNATURE:

DATE: April 30, 2018

PEER REVIEW: Dennis Capria

DATE: May 4, 2018

CHAIN OF CUSTODY AND CORRECTED SAMPLE ANALYSIS DATA SHEETS

SGS ACCUTEST

GW WTB

CHAIN OF CUSTODY

Quick

SGS Accutest - Dayton
2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200 FAX: 732-329-3499/3480
www.accutest.com

FED-EX Tracking #

Bottle Order Control # D14-031218-61

SGS Accutest Quote #

SGS Accutest Job # JC62879

Client / Reporting Information

Company Name: ARCADIS
Street Address: 824 N. Market St Ste 820
City: Wilmington State: DE Zip: 19801
Project Contact: Carey Healy E-mail:
Phone #: 315-335-9493 Fax #:
Sampler(s) Name(s): Chris Ostrander Phone #:

Project Information

Project Name: National Grid / Philly Coke
Street: Richmond & Lefevre
City: Philly State: PA
Project #:
Client Purchase Order #:
Project Manager: Dan Sheehan

Billing Information (if different from Report to)

Company Name: Same
Street Address:
City State Zip:
Attention:

Requested Analysis (see TEST CODE sheet)

SGS Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	Number of preserved Bottles: HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	8260 TCL VOC	8270 TCL SVOC	3534 CN	METALS	8081 PESTICIDE	8082 PCB	LAB USE ONLY
-1	PCMW-01		3/19/18	1150	CO	GW	11	3		1						X	X	X	X	X	X	A36
-2	PCMW-04			1310	CO											X	X	X	X	X	X	B28
-3	PCMW-9S			1410	CO											X	X	X	X	X	X	G46T3
-4	PCMW-16D			1305	AN											X	X	X	X	X	X	V1210
-5	MW-5			1420	AN											X	X	X	X	X	X	V1211
-6	PCMW-15S		3/20/18	1000	AN											X	X	X	X	X	X	
-7	PCMW-15D		3/20/18	1055	AN											X	X	X	X	X	X	
-8	PCMW-8S		3/22/18	0805	CO											X	X	X	X	X	X	
-9	PCMW-8D MS/MSD			0905	CO		33	9	3	3		18				X	X	X	X	X	X	
-10	PCMW-17S			1035	CO		11	3	1	1		6				X	X	X	X	X	X	
-11	PCMW-17D MS/MSD			1125	CO		33	9	3	3		18				X	X	X	X	X	X	

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
SED-Sediment
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe
FB-Field Blank
EB-Equipment Blank
RB- Rinse Blank
TB-Trip Blank

Turnaround Time (Business days)

Approved By (SGS Accutest PM): / Date:

- [x] Std. 10 Business Days
- [ ] 5 Day RUSH
- [ ] 3 Day RUSH
- [ ] 2 Day RUSH
- [ ] 1 Day RUSH
- [ ] other

Emergency & Rush T/A data available VIA Lablink

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [x] FULLT1 (Level 3+4)
- [ ] NJ Reduced
- [ ] Commercial "C"
- [ ] NJ Data of Known Quality Protocol Reporting
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format
- [ ] Other

Commercial "A" = Results Only, Commercial "B" = Results + QC Summary
NJ Reduced = Results + QC Summary + Partial Raw data

Comments / Special Instructions

Sample inventory is verified upon receipt in the Laboratory

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by Sampler	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1	ARCA	3/22/18 1540	1	2		2
3		3/23/18 16:30	3	4		4
5	Relinquished by:	Date Time:	Received By: 5	Custody Seal #	Intact / Not intact	Preserved where applicable

16 coolers On Ice ☑ Cooler Temp. 3.2° cg

Form:SM088-01CRev.Date:9/13/16

3.1° 3.1° 2.8° 2.2° 2.4° 2.4° 2.8° 2.6° 1.1° 1.1° 1.8° 1.9° 2.4° 2.5° 3.8°

SGS ACCUTEST

GW WTB

CHAIN OF CUSTODY

SGS Accutest - Dayton
2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200 FAX: 732-329-3499/3480
www.accutest.com

quick

FED-EX Tracking #

Bottle Order Control # DK-031218-61

SGS Accutest Quote #

SGS Accutest Job # JC62879

Company Name: ARCADIS	Project Name: NATIONAL GRID / PHILLY COKE	
Street Address: SEE PAGE 1	Street: RICHMOND & LEVERE	Billing Information (if different from Report to)
City / State / Zip	City: PHILA State: PA	Company Name
Project Contact / E-mail	Project #	Street Address
Phone # / Fax #	Client Purchase Order #	City / State / Zip
Sampler(s) Name(s) / Phone #	Project Manager: DAN SHEEHAN	Attention:

SGS Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	Number of preserved Bottles: HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	8260 VR	8270 SVOC	335.4 CN	MERCURY	8081 PESTICIDES	8082 PCB	LAB USE ON
-12	PCMW-20S		3/22/18	0815	MW	GW	11	3	1	1		6				X	X	X	X	X	X	V1211
-13	PCMW-20D			0915	MW											X	X	X	X	X	X	A36
-14	PCMW-19S			1135	MW											X	X	X	X	X	X	B28
-15	PCMW-19D			1025	MW											X	X	X	X	X	X	G46T3
-16	DUP-03222018			—	MW											X	X	X	X	X	X	V1246
-17	PCMW-10S			1305	CO											X	X	X	X	X	X	
-18	PCMW-10D			1350	CO											X	X	X	X	X	X	
-19	TRIP BLANK		—	—	—	W	3	3								X						
-20	MW-6		3/22/18	1350	MW	GW	11	3	1	1		6				X	X	X	X	X	X	

Matrix Codes: DW - Drinking W; GW - Ground W; WW - Wate; SW - Surface W; SO - Soil; SL- Sludge; SED-Sedime; OI - Oil; LIQ - Other Liq; AIR - Air; SOL - Other S; WP - Wipe; FB-Field Blan; EB-Equipment B; RB- Rinse Bla; TB-Trip Blan

Turnaround Time (Business days)

Approved By (SGS Accutest PM): / Date:

- [X] Std. 10 Business Days
- [ ] 5 Day RUSH
- [ ] 3 Day RUSH
- [ ] 2 Day RUSH
- [ ] 1 Day RUSH
- [ ] other _____

Emergency & Rush T/A data available VIA Lablink

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [X] FULLT1 (Level 3+4)
- [ ] NJ Reduced
- [ ] Commercial "C"
- [ ] NJ Data of Known Quality Protocol Reporting
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format _____
- [ ] Other _____

Commercial "A" = Results Only, Commercial "B" = Results + QC Summary
NJ Reduced = Results + QC Summary + Partial Raw data

Comments / Special Instructions

Sample inventory is verified upon receipt in the Laboratory

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1	[signature]	3/22/18 1540	1	2		2
3	Relinquished by Sampler: [signature]	Date Time: 3/23/18 16:30	Received By: 3	Relinquished By: 4	Date Time:	Received By: 4
5	Relinquished by:	Date Time:	Received By: 5	Custody Seal #	Intact / Not intact	Preserved where applicable / On Ice / Cooler Temp.

Form:SM088-01CRev.Date:9/13/16

SGS LabLink@996135 15:37 10-Apr-2018

Report of Analysis

Client Sample ID:	PCMW-01		
Lab Sample ID:	JC62879-1	**Date Sampled:**	03/19/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2D174436.D	1	03/27/18 13:51	JP	n/a	n/a	V2D7344
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone [a]	ND	10	5.0	ug/l	UJ
71-43-2	Benzene	ND	0.50	0.17	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.38	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.22	ug/l	
75-25-2	Bromoform	ND	1.0	0.42	ug/l	
74-83-9	Bromomethane	ND	2.0	1.4	ug/l	
78-93-3	2-Butanone (MEK) [a]	ND	10	4.8	ug/l	UJ
75-15-0	Carbon disulfide	ND	2.0	0.50	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.34	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.24	ug/l	
75-00-3	Chloroethane [b]	ND	1.0	0.59	ug/l	
67-66-3	Chloroform	ND	1.0	0.29	ug/l	
74-87-3	Chloromethane	ND	1.0	0.53	ug/l	
110-82-7	Cyclohexane	ND	5.0	0.63	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.69	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.16	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.21	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.50	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.50	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.50	ug/l	
75-71-8	Dichlorodifluoromethane [b]	ND	2.0	1.9	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.21	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.20	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.47	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.50	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.40	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.24	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.25	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.22	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.22	ug/l	
76-13-1	Freon 113	ND	5.0	1.2	ug/l	
591-78-6	2-Hexanone	ND	5.0	3.3	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCMW-01		
Lab Sample ID:	JC62879-1	**Date Sampled:**	03/19/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	1.0	0.25	ug/l	
79-20-9	Methyl Acetate	ND	5.0	3.1	ug/l	
108-87-2	Methylcyclohexane	ND	5.0	1.8	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.25	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	3.0	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.24	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.17	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.50	ug/l	
108-88-3	Toluene	ND	1.0	0.25	ug/l	
87-61-6	1,2,3-Trichlorobenzene [b]	ND	1.0	0.50	ug/l	
120-82-1	1,2,4-Trichlorobenzene [b]	ND	1.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.24	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.27	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.60	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.62	ug/l	
	m,p-Xylene	ND	1.0	0.43	ug/l	
95-47-6	o-Xylene	ND	1.0	0.22	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.22	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%		80-120%
17060-07-0	1,2-Dichloroethane-D4	106%		81-124%
2037-26-5	Toluene-D8	99%		80-120%
460-00-4	4-Bromofluorobenzene	98%		80-120%

(a) Associated CCV outside of control limits low.
(b) Associated CCV outside of control limits high, sample was ND.

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B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS LabLink@996135 15:37 10-Apr-2018

Report of Analysis

Client Sample ID:	PCMW-01		
Lab Sample ID:	JC62879-1	**Date Sampled:**	03/19/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	F175216.D	1	03/27/18 15:37	CS	03/26/18 18:30	OP10877	EF7460
Run #2							

	Initial Volume	Final Volume
Run #1	950 ml	1.0 ml
Run #2		

ABN TCL List (SOM0 1.1)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	5.3	0.86	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	5.3	0.94	ug/l	
120-83-2	2,4-Dichlorophenol	ND	2.1	1.3	ug/l	
105-67-9	2,4-Dimethylphenol	ND	5.3	2.6	ug/l	
51-28-5	2,4-Dinitrophenol	ND	5.3	1.6	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	5.3	1.4	ug/l	
95-48-7	2-Methylphenol	ND	2.1	0.93	ug/l	
	3&4-Methylphenol	ND	2.1	0.93	ug/l	
88-75-5	2-Nitrophenol	ND	5.3	1.0	ug/l	
100-02-7	4-Nitrophenol	ND	11	1.2	ug/l	
87-86-5	Pentachlorophenol [a]	ND	4.2	1.5	ug/l	
108-95-2	Phenol	ND	2.1	0.41	ug/l	
58-90-2	2,3,4,6-Tetrachlorophenol [a]	ND	5.3	1.5	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	5.3	1.4	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	5.3	0.97	ug/l	
83-32-9	Acenaphthene	ND	1.1	0.20	ug/l	
208-96-8	Acenaphthylene	ND	1.1	0.14	ug/l	
98-86-2	Acetophenone	ND	2.1	0.22	ug/l	
120-12-7	Anthracene	ND	1.1	0.22	ug/l	
1912-24-9	Atrazine	ND	2.1	0.47	ug/l	
100-52-7	Benzaldehyde	ND	5.3	0.30	ug/l	
56-55-3	Benzo(a)anthracene	ND	1.1	0.21	ug/l	
50-32-8	Benzo(a)pyrene	ND	1.1	0.22	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	1.1	0.22	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	1.1	0.36	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	1.1	0.22	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	2.1	0.43	ug/l	
85-68-7	Butyl benzyl phthalate	ND	2.1	0.48	ug/l	
92-52-4	1,1'-Biphenyl	ND	1.1	0.22	ug/l	
91-58-7	2-Chloronaphthalene	ND	2.1	0.25	ug/l	
106-47-8	4-Chloroaniline	ND	5.3	0.36	ug/l	
86-74-8	Carbazole	ND	1.1	0.24	ug/l	

ND = Not detected MDL = Method Detection Limit
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N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCMW-01		
Lab Sample ID:	JC62879-1	**Date Sampled:**	03/19/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

ABN TCL List (SOM0 1.1)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	2.1	0.68	ug/l	
218-01-9	Chrysene	ND	1.1	0.19	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	2.1	0.29	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	2.1	0.26	ug/l	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	2.1	0.42	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	2.1	0.39	ug/l	
121-14-2	2,4-Dinitrotoluene [a]	ND	1.1	0.58	ug/l	
606-20-2	2,6-Dinitrotoluene [a]	ND	1.1	0.50	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	2.1	0.53	ug/l	
53-70-3	Dibenzo(a,h)anthracene [a]	ND	1.1	0.35	ug/l	
132-64-9	Dibenzofuran	ND	5.3	0.23	ug/l	
84-74-2	Di-n-butyl phthalate	ND	2.1	0.52	ug/l	
117-84-0	Di-n-octyl phthalate	ND	2.1	0.25	ug/l	
84-66-2	Diethyl phthalate	ND	2.1	0.28	ug/l	
131-11-3	Dimethyl phthalate	ND	2.1	0.23	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.1	1.7	ug/l	
206-44-0	Fluoranthene	ND	1.1	0.18	ug/l	
86-73-7	Fluorene	ND	1.1	0.18	ug/l	
118-74-1	Hexachlorobenzene	ND	1.1	0.34	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.1	0.52	ug/l	
77-47-4	Hexachlorocyclopentadiene [a]	ND	11	2.9	ug/l	
67-72-1	Hexachloroethane	ND	2.1	0.41	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	1.1	0.35	ug/l	
78-59-1	Isophorone	ND	2.1	0.29	ug/l	
91-57-6	2-Methylnaphthalene	ND	1.1	0.22	ug/l	
88-74-4	2-Nitroaniline	ND	5.3	0.29	ug/l	
99-09-2	3-Nitroaniline	ND	5.3	0.41	ug/l	
100-01-6	4-Nitroaniline	ND	5.3	0.46	ug/l	
91-20-3	Naphthalene	ND	1.1	0.24	ug/l	
98-95-3	Nitrobenzene	ND	2.1	0.68	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	2.1	0.51	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.3	0.23	ug/l	
85-01-8	Phenanthrene	ND	1.1	0.18	ug/l	
129-00-0	Pyrene	ND	1.1	0.23	ug/l	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	2.1	0.39	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	58%		10-110%
4165-62-2	Phenol-d5	38%		10-110%

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J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCMW-01		
Lab Sample ID:	JC62879-1	**Date Sampled:**	03/19/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

ABN TCL List (SOM0 1.1)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
118-79-6	2,4,6-Tribromophenol	103%		36-151%
4165-60-0	Nitrobenzene-d5	74%		34-128%
321-60-8	2-Fluorobiphenyl	76%		38-119%
1718-51-0	Terphenyl-d14	89%		26-129%

(a) Associated CCV outside of control limits high, sample was ND.

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J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PCMW-01		
Lab Sample ID:	JC62879-1	**Date Sampled:**	03/19/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8081B SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4G90993.D	1	03/27/18 12:10	CP	03/26/18 18:20	OP10876	G4G2399
Run #2							

	Initial Volume	Final Volume
Run #1	275 ml	2.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	0.0073	0.0038	ug/l	
319-84-6	alpha-BHC	ND	0.0073	0.0038	ug/l	
319-85-7	beta-BHC	ND	0.0073	0.0058	ug/l	
319-86-8	delta-BHC	ND	0.0073	0.0048	ug/l	
58-89-9	gamma-BHC (Lindane)	ND	0.0073	0.0044	ug/l	
5103-71-9	alpha-Chlordane	ND	0.0073	0.0036	ug/l	
5103-74-2	gamma-Chlordane	ND	0.0073	0.0031	ug/l	
60-57-1	Dieldrin	ND	0.0073	0.0056	ug/l	
72-54-8	4,4'-DDD	ND	0.0073	0.0042	ug/l	
72-55-9	4,4'-DDE	ND	0.0073	0.0037	ug/l	
50-29-3	4,4'-DDT	ND	0.0073	0.0050	ug/l	
72-20-8	Endrin	ND	0.0073	0.0044	ug/l	
1031-07-8	Endosulfan sulfate	ND	0.0073	0.0040	ug/l	
7421-93-4	Endrin aldehyde	ND	0.0073	0.0049	ug/l	
53494-70-5	Endrin ketone	ND	0.0073	0.0045	ug/l	
959-98-8	Endosulfan-I	ND	0.0073	0.0038	ug/l	
33213-65-9	Endosulfan-II	ND	0.0073	0.0035	ug/l	
76-44-8	Heptachlor	ND	0.0073	0.0033	ug/l	
1024-57-3	Heptachlor epoxide	ND	0.0073	0.0044	ug/l	
72-43-5	Methoxychlor	ND	0.015	0.0049	ug/l	
8001-35-2	Toxaphene	ND	0.18	0.12	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	84%		13-153%
877-09-8	Tetrachloro-m-xylene	84%		13-153%
2051-24-3	Decachlorobiphenyl	73%		10-138%
2051-24-3	Decachlorobiphenyl	66%		10-138%

ND = Not detected MDL = Method Detection Limit
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B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PCMW-01		
Lab Sample ID:	JC62879-1	**Date Sampled:**	03/19/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8082A SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EF181182.D	1	03/27/18 14:15	HB	03/26/18 18:20	OP10875	GEF6202
Run #2							

	Initial Volume	Final Volume
Run #1	275 ml	2.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	0.36	0.14	ug/l	
11104-28-2	Aroclor 1221	ND	0.36	0.30	ug/l	
11141-16-5	Aroclor 1232	ND	0.36	0.19	ug/l	
53469-21-9	Aroclor 1242	ND	0.36	0.17	ug/l	
12672-29-6	Aroclor 1248	ND	0.36	0.092	ug/l	
11097-69-1	Aroclor 1254	ND	0.36	0.30	ug/l	
11096-82-5	Aroclor 1260	ND	0.36	0.11	ug/l	
11100-14-4	Aroclor 1268	ND	0.36	0.13	ug/l	
37324-23-5	Aroclor 1262	ND	0.36	0.14	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	77%		11-166%
877-09-8	Tetrachloro-m-xylene	82%		11-166%
2051-24-3	Decachlorobiphenyl	70%		10-150%
2051-24-3	Decachlorobiphenyl	70%		10-150%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PCMW-01
Lab Sample ID: JC62879-1
Matrix: AQ - Ground Water
Project: National Grid, Philly Coke, Philadelphia PA

Date Sampled: 03/19/18
Date Received: 03/23/18
Percent Solids: n/a

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	< 200	200	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Antimony	< 6.0	6.0	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Arsenic	< 3.0	3.0	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Barium	< 200	200	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Beryllium	< 1.0	1.0	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Cadmium	< 3.0	3.0	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Calcium	72200	5000	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Chromium	< 10	10	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Cobalt	< 50	50	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Copper	< 10	10	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Iron	7790	100	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Lead	< 3.0	3.0	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Magnesium	19300	5000	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Manganese	863	15	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Mercury	< 0.20	0.20	ug/l	1	03/27/18	03/27/18	JA	SW846 7470A [1]	SW846 7470A [3]
Nickel	< 10	10	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Potassium	< 10000	10000	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Selenium	< 10	10	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Silver	< 10	10	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Sodium	14100	10000	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Thallium	< 2.0	2.0	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Vanadium	< 50	50	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Zinc	34.6	20	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]

(1) Instrument QC Batch: MA44080
(2) Instrument QC Batch: MA44135
(3) Prep QC Batch: MP6364
(4) Prep QC Batch: MP6402

RL = Reporting Limit

Report of Analysis

Client Sample ID:	PCMW-01		
Lab Sample ID:	JC62879-1	**Date Sampled:**	03/19/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
		Percent Solids:	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Cyanide	< 0.010 UJ	0.010	mg/l	1	03/29/18 09:18	BM	EPA 335.4/LACHAT

RL = Reporting Limit

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Report of Analysis

Client Sample ID:	PCMW-04		
Lab Sample ID:	JC62879-2	**Date Sampled:**	03/19/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2D174437.D	1	03/27/18 14:21	JP	n/a	n/a	V2D7344
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone [a]	ND	10	5.0	ug/l	UJ
71-43-2	Benzene	ND	0.50	0.17	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.38	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.22	ug/l	
75-25-2	Bromoform	ND	1.0	0.42	ug/l	
74-83-9	Bromomethane	ND	2.0	1.4	ug/l	
78-93-3	2-Butanone (MEK) [a]	ND	10	4.8	ug/l	UJ
75-15-0	Carbon disulfide	ND	2.0	0.50	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.34	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.24	ug/l	
75-00-3	Chloroethane [b]	ND	1.0	0.59	ug/l	
67-66-3	Chloroform	ND	1.0	0.29	ug/l	
74-87-3	Chloromethane	ND	1.0	0.53	ug/l	
110-82-7	Cyclohexane	ND	5.0	0.63	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.69	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.16	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.21	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.50	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.50	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.50	ug/l	
75-71-8	Dichlorodifluoromethane [b]	ND	2.0	1.9	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.21	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.20	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.47	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.50	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.40	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.24	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.25	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.22	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.22	ug/l	
76-13-1	Freon 113	ND	5.0	1.2	ug/l	
591-78-6	2-Hexanone	ND	5.0	3.3	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCMW-04		
Lab Sample ID:	JC62879-2	**Date Sampled:**	03/19/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	1.0	0.25	ug/l	
79-20-9	Methyl Acetate	ND	5.0	3.1	ug/l	
108-87-2	Methylcyclohexane	ND	5.0	1.8	ug/l	
1634-04-4	Methyl Tert Butyl Ether	4.8	1.0	0.25	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	3.0	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.24	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.17	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.50	ug/l	
108-88-3	Toluene	ND	1.0	0.25	ug/l	
87-61-6	1,2,3-Trichlorobenzene [b]	ND	1.0	0.50	ug/l	
120-82-1	1,2,4-Trichlorobenzene [b]	ND	1.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.24	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.27	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.60	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.62	ug/l	
	m,p-Xylene	ND	1.0	0.43	ug/l	
95-47-6	o-Xylene	ND	1.0	0.22	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.22	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%		80-120%
17060-07-0	1,2-Dichloroethane-D4	105%		81-124%
2037-26-5	Toluene-D8	99%		80-120%
460-00-4	4-Bromofluorobenzene	98%		80-120%

(a) Associated CCV outside of control limits low.
(b) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
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J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PCMW-04		
Lab Sample ID:	JC62879-2	**Date Sampled:**	03/19/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	F175217.D	1	03/27/18 16:05	CS	03/26/18 18:30	OP10877	EF7460
Run #2							

	Initial Volume	Final Volume
Run #1	940 ml	1.0 ml
Run #2		

ABN TCL List (SOM0 1.1)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	5.3	0.87	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	5.3	0.95	ug/l	
120-83-2	2,4-Dichlorophenol	ND	2.1	1.4	ug/l	
105-67-9	2,4-Dimethylphenol	ND	5.3	2.6	ug/l	
51-28-5	2,4-Dinitrophenol	ND	5.3	1.6	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	5.3	1.4	ug/l	
95-48-7	2-Methylphenol	ND	2.1	0.94	ug/l	
	3&4-Methylphenol	ND	2.1	0.94	ug/l	
88-75-5	2-Nitrophenol	ND	5.3	1.0	ug/l	
100-02-7	4-Nitrophenol	ND	11	1.2	ug/l	
87-86-5	Pentachlorophenol [a]	ND	4.3	1.5	ug/l	
108-95-2	Phenol	ND	2.1	0.42	ug/l	
58-90-2	2,3,4,6-Tetrachlorophenol [a]	ND	5.3	1.6	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	5.3	1.4	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	5.3	0.98	ug/l	
83-32-9	Acenaphthene	ND	1.1	0.20	ug/l	
208-96-8	Acenaphthylene	ND	1.1	0.14	ug/l	
98-86-2	Acetophenone	ND	2.1	0.22	ug/l	
120-12-7	Anthracene	ND	1.1	0.22	ug/l	
1912-24-9	Atrazine	ND	2.1	0.48	ug/l	
100-52-7	Benzaldehyde	ND	5.3	0.31	ug/l	
56-55-3	Benzo(a)anthracene	ND	1.1	0.22	ug/l	
50-32-8	Benzo(a)pyrene	ND	1.1	0.23	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	1.1	0.22	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	1.1	0.36	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	1.1	0.22	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	2.1	0.43	ug/l	
85-68-7	Butyl benzyl phthalate	ND	2.1	0.49	ug/l	
92-52-4	1,1'-Biphenyl	ND	1.1	0.23	ug/l	
91-58-7	2-Chloronaphthalene	ND	2.1	0.25	ug/l	
106-47-8	4-Chloroaniline	ND	5.3	0.36	ug/l	
86-74-8	Carbazole	ND	1.1	0.24	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PCMW-04
Lab Sample ID: JC62879-2
Matrix: AQ - Ground Water
Method: SW846 8270D SW846 3510C
Project: National Grid, Philly Coke, Philadelphia PA

Date Sampled: 03/19/18
Date Received: 03/23/18
Percent Solids: n/a

ABN TCL List (SOM0 1.1)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	2.1	0.69	ug/l	
218-01-9	Chrysene	ND	1.1	0.19	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	2.1	0.30	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	2.1	0.26	ug/l	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	2.1	0.43	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	2.1	0.39	ug/l	
121-14-2	2,4-Dinitrotoluene [a]	ND	1.1	0.59	ug/l	
606-20-2	2,6-Dinitrotoluene [a]	ND	1.1	0.51	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	2.1	0.54	ug/l	
53-70-3	Dibenzo(a,h)anthracene [a]	ND	1.1	0.35	ug/l	
132-64-9	Dibenzofuran	ND	5.3	0.23	ug/l	
84-74-2	Di-n-butyl phthalate	ND	2.1	0.53	ug/l	
117-84-0	Di-n-octyl phthalate	ND	2.1	0.25	ug/l	
84-66-2	Diethyl phthalate	ND	2.1	0.28	ug/l	
131-11-3	Dimethyl phthalate	ND	2.1	0.23	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.1	1.8	ug/l	
206-44-0	Fluoranthene	ND	1.1	0.18	ug/l	
86-73-7	Fluorene	ND	1.1	0.18	ug/l	
118-74-1	Hexachlorobenzene	ND	1.1	0.35	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.1	0.52	ug/l	
77-47-4	Hexachlorocyclopentadiene [a]	ND	11	3.0	ug/l	
67-72-1	Hexachloroethane	ND	2.1	0.41	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	1.1	0.35	ug/l	
78-59-1	Isophorone	ND	2.1	0.29	ug/l	
91-57-6	2-Methylnaphthalene	ND	1.1	0.22	ug/l	
88-74-4	2-Nitroaniline	ND	5.3	0.29	ug/l	
99-09-2	3-Nitroaniline	ND	5.3	0.41	ug/l	
100-01-6	4-Nitroaniline	ND	5.3	0.47	ug/l	
91-20-3	Naphthalene	ND	1.1	0.25	ug/l	
98-95-3	Nitrobenzene	ND	2.1	0.68	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	2.1	0.51	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.3	0.24	ug/l	
85-01-8	Phenanthrene	ND	1.1	0.19	ug/l	
129-00-0	Pyrene	ND	1.1	0.23	ug/l	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	2.1	0.39	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	50%		10-110%
4165-62-2	Phenol-d5	35%		10-110%

ND = Not detected MDL = Method Detection Limit
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E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCMW-04		
Lab Sample ID:	JC62879-2	**Date Sampled:**	03/19/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

ABN TCL List (SOM0 1.1)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
118-79-6	2,4,6-Tribromophenol	83%		36-151%
4165-60-0	Nitrobenzene-d5	53%		34-128%
321-60-8	2-Fluorobiphenyl	60%		38-119%
1718-51-0	Terphenyl-d14	76%		26-129%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
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E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PCMW-04		
Lab Sample ID:	JC62879-2	**Date Sampled:**	03/19/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8081B SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4G90994.D	1	03/27/18 12:27	CP	03/26/18 18:20	OP10876	G4G2399
Run #2							

	Initial Volume	Final Volume
Run #1	300 ml	2.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	0.0067	0.0034	ug/l	
319-84-6	alpha-BHC	ND	0.0067	0.0035	ug/l	
319-85-7	beta-BHC	ND	0.0067	0.0053	ug/l	
319-86-8	delta-BHC	ND	0.0067	0.0044	ug/l	
58-89-9	gamma-BHC (Lindane)	ND	0.0067	0.0040	ug/l	
5103-71-9	alpha-Chlordane	ND	0.0067	0.0033	ug/l	
5103-74-2	gamma-Chlordane [a]	0.0045	0.0067	0.0028	ug/l	J
60-57-1	Dieldrin	ND	0.0067	0.0051	ug/l	
72-54-8	4,4'-DDD	ND	0.0067	0.0038	ug/l	
72-55-9	4,4'-DDE	ND	0.0067	0.0034	ug/l	
50-29-3	4,4'-DDT	ND	0.0067	0.0046	ug/l	
72-20-8	Endrin	ND	0.0067	0.0040	ug/l	
1031-07-8	Endosulfan sulfate	ND	0.0067	0.0036	ug/l	
7421-93-4	Endrin aldehyde	ND	0.0067	0.0045	ug/l	
53494-70-5	Endrin ketone	ND	0.0067	0.0041	ug/l	
959-98-8	Endosulfan-I	ND	0.0067	0.0035	ug/l	
33213-65-9	Endosulfan-II	ND	0.0067	0.0033	ug/l	
76-44-8	Heptachlor	ND	0.0067	0.0030	ug/l	
1024-57-3	Heptachlor epoxide	ND	0.0067	0.0040	ug/l	
72-43-5	Methoxychlor	ND	0.013	0.0045	ug/l	
8001-35-2	Toxaphene	ND	0.17	0.11	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	57%		13-153%
877-09-8	Tetrachloro-m-xylene	60%		13-153%
2051-24-3	Decachlorobiphenyl	56%		10-138%
2051-24-3	Decachlorobiphenyl	51%		10-138%

(a) More than 40 % RPD for detected concentrations between the two GC columns.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PCMW-04		
Lab Sample ID:	JC62879-2	**Date Sampled:**	03/19/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8082A SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EF181183.D	1	03/27/18 14:40	HB	03/26/18 18:20	OP10875	GEF6202
Run #2							

	Initial Volume	Final Volume
Run #1	300 ml	2.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	0.33	0.13	ug/l	
11104-28-2	Aroclor 1221	ND	0.33	0.28	ug/l	
11141-16-5	Aroclor 1232	ND	0.33	0.17	ug/l	
53469-21-9	Aroclor 1242	ND	0.33	0.15	ug/l	
12672-29-6	Aroclor 1248	ND	0.33	0.084	ug/l	
11097-69-1	Aroclor 1254	ND	0.33	0.28	ug/l	
11096-82-5	Aroclor 1260	ND	0.33	0.10	ug/l	
11100-14-4	Aroclor 1268	ND	0.33	0.12	ug/l	
37324-23-5	Aroclor 1262	ND	0.33	0.13	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	52%		11-166%
877-09-8	Tetrachloro-m-xylene	52%		11-166%
2051-24-3	Decachlorobiphenyl	49%		10-150%
2051-24-3	Decachlorobiphenyl	52%		10-150%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PCMW-04
Lab Sample ID: JC62879-2
Matrix: AQ - Ground Water
Project: National Grid, Philly Coke, Philadelphia PA

Date Sampled: 03/19/18
Date Received: 03/23/18
Percent Solids: n/a

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	209	200	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Antimony	< 6.0	6.0	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Arsenic	6.3	3.0	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Barium	< 200	200	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Beryllium	< 1.0	1.0	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Cadmium	< 3.0	3.0	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Calcium	119000	5000	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Chromium	< 10	10	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Cobalt	< 50	50	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Copper	23.5	10	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Iron	7130	100	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Lead	17.8	3.0	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Magnesium	37400	5000	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Manganese	654	15	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Mercury	< 0.20	0.20	ug/l	1	03/27/18	03/27/18	JA	SW846 7470A [1]	SW846 7470A [3]
Nickel	< 10	10	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Potassium	< 10000	10000	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Selenium	< 10	10	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Silver	< 10	10	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Sodium	< 10000	10000	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Thallium	< 2.0	2.0	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Vanadium	< 50	50	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Zinc	58.0	20	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]

(1) Instrument QC Batch: MA44080
(2) Instrument QC Batch: MA44135
(3) Prep QC Batch: MP6364
(4) Prep QC Batch: MP6402

RL = Reporting Limit

Report of Analysis

Client Sample ID:	PCMW-04		
Lab Sample ID:	JC62879-2	**Date Sampled:**	03/19/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
		Percent Solids:	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Cyanide	< 0.010 UJ	0.010	mg/l	1	03/29/18 09:19	BM	EPA 335.4/LACHAT

RL = Reporting Limit

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Report of Analysis

Client Sample ID:	PCMW-9S		
Lab Sample ID:	JC62879-3	**Date Sampled:**	03/19/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2D174438.D	1	03/27/18 14:51	JP	n/a	n/a	V2D7344
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone [a]	ND	10	5.0	ug/l	UJ
71-43-2	Benzene	ND	0.50	0.17	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.38	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.22	ug/l	
75-25-2	Bromoform	ND	1.0	0.42	ug/l	
74-83-9	Bromomethane	ND	2.0	1.4	ug/l	
78-93-3	2-Butanone (MEK) [a]	ND	10	4.8	ug/l	UJ
75-15-0	Carbon disulfide	ND	2.0	0.50	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.34	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.24	ug/l	
75-00-3	Chloroethane [b]	ND	1.0	0.59	ug/l	
67-66-3	Chloroform	ND	1.0	0.29	ug/l	
74-87-3	Chloromethane	ND	1.0	0.53	ug/l	
110-82-7	Cyclohexane	ND	5.0	0.63	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.69	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.16	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.21	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.50	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.50	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.50	ug/l	
75-71-8	Dichlorodifluoromethane [b]	ND	2.0	1.9	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.21	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.20	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.47	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.50	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.40	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.24	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.25	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.22	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.22	ug/l	
76-13-1	Freon 113	ND	5.0	1.2	ug/l	
591-78-6	2-Hexanone	ND	5.0	3.3	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCMW-9S		
Lab Sample ID:	JC62879-3	**Date Sampled:**	03/19/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	1.0	0.25	ug/l	
79-20-9	Methyl Acetate	ND	5.0	3.1	ug/l	
108-87-2	Methylcyclohexane	ND	5.0	1.8	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.25	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	3.0	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.24	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.17	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.50	ug/l	
108-88-3	Toluene	ND	1.0	0.25	ug/l	
87-61-6	1,2,3-Trichlorobenzene [b]	ND	1.0	0.50	ug/l	
120-82-1	1,2,4-Trichlorobenzene [b]	ND	1.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.24	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.27	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.60	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.62	ug/l	
	m,p-Xylene	ND	1.0	0.43	ug/l	
95-47-6	o-Xylene	ND	1.0	0.22	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.22	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%		80-120%
17060-07-0	1,2-Dichloroethane-D4	105%		81-124%
2037-26-5	Toluene-D8	100%		80-120%
460-00-4	4-Bromofluorobenzene	99%		80-120%

(a) Associated CCV outside of control limits low.
(b) Associated CCV outside of control limits high, sample was ND.

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J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PCMW-9S		
Lab Sample ID:	JC62879-3	**Date Sampled:**	03/19/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	F175218.D	1	03/27/18 16:33	CS	03/26/18 18:30	OP10877	EF7460
Run #2							

	Initial Volume	Final Volume
Run #1	950 ml	1.0 ml
Run #2		

ABN TCL List (SOM0 1.1)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	5.3	0.86	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	5.3	0.94	ug/l	
120-83-2	2,4-Dichlorophenol	ND	2.1	1.3	ug/l	
105-67-9	2,4-Dimethylphenol	ND	5.3	2.6	ug/l	
51-28-5	2,4-Dinitrophenol	ND	5.3	1.6	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	5.3	1.4	ug/l	
95-48-7	2-Methylphenol	ND	2.1	0.93	ug/l	
	3&4-Methylphenol	ND	2.1	0.93	ug/l	
88-75-5	2-Nitrophenol	ND	5.3	1.0	ug/l	
100-02-7	4-Nitrophenol	ND	11	1.2	ug/l	
87-86-5	Pentachlorophenol [a]	ND	4.2	1.5	ug/l	
108-95-2	Phenol	ND	2.1	0.41	ug/l	
58-90-2	2,3,4,6-Tetrachlorophenol [a]	ND	5.3	1.5	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	5.3	1.4	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	5.3	0.97	ug/l	
83-32-9	Acenaphthene	ND	1.1	0.20	ug/l	
208-96-8	Acenaphthylene	ND	1.1	0.14	ug/l	
98-86-2	Acetophenone	ND	2.1	0.22	ug/l	
120-12-7	Anthracene	ND	1.1	0.22	ug/l	
1912-24-9	Atrazine	ND	2.1	0.47	ug/l	
100-52-7	Benzaldehyde	ND	5.3	0.30	ug/l	
56-55-3	Benzo(a)anthracene	ND	1.1	0.21	ug/l	
50-32-8	Benzo(a)pyrene	ND	1.1	0.22	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	1.1	0.22	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	1.1	0.36	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	1.1	0.22	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	2.1	0.43	ug/l	
85-68-7	Butyl benzyl phthalate	ND	2.1	0.48	ug/l	
92-52-4	1,1'-Biphenyl	ND	1.1	0.22	ug/l	
91-58-7	2-Chloronaphthalene	ND	2.1	0.25	ug/l	
106-47-8	4-Chloroaniline	ND	5.3	0.36	ug/l	
86-74-8	Carbazole	ND	1.1	0.24	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCMW-9S		
Lab Sample ID:	JC62879-3	**Date Sampled:**	03/19/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

ABN TCL List (SOM0 1.1)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	2.1	0.68	ug/l	
218-01-9	Chrysene	ND	1.1	0.19	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	2.1	0.29	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	2.1	0.26	ug/l	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	2.1	0.42	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	2.1	0.39	ug/l	
121-14-2	2,4-Dinitrotoluene [a]	ND	1.1	0.58	ug/l	
606-20-2	2,6-Dinitrotoluene [a]	ND	1.1	0.50	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	2.1	0.53	ug/l	
53-70-3	Dibenzo(a,h)anthracene [a]	ND	1.1	0.35	ug/l	
132-64-9	Dibenzofuran	ND	5.3	0.23	ug/l	
84-74-2	Di-n-butyl phthalate	ND	2.1	0.52	ug/l	
117-84-0	Di-n-octyl phthalate	ND	2.1	0.25	ug/l	
84-66-2	Diethyl phthalate	ND	2.1	0.28	ug/l	
131-11-3	Dimethyl phthalate	ND	2.1	0.23	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.1	1.7	ug/l	
206-44-0	Fluoranthene	ND	1.1	0.18	ug/l	
86-73-7	Fluorene	ND	1.1	0.18	ug/l	
118-74-1	Hexachlorobenzene	ND	1.1	0.34	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.1	0.52	ug/l	
77-47-4	Hexachlorocyclopentadiene [a]	ND	11	2.9	ug/l	
67-72-1	Hexachloroethane	ND	2.1	0.41	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	1.1	0.35	ug/l	
78-59-1	Isophorone	ND	2.1	0.29	ug/l	
91-57-6	2-Methylnaphthalene	ND	1.1	0.22	ug/l	
88-74-4	2-Nitroaniline	ND	5.3	0.29	ug/l	
99-09-2	3-Nitroaniline	ND	5.3	0.41	ug/l	
100-01-6	4-Nitroaniline	ND	5.3	0.46	ug/l	
91-20-3	Naphthalene	ND	1.1	0.24	ug/l	
98-95-3	Nitrobenzene	ND	2.1	0.68	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	2.1	0.51	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.3	0.23	ug/l	
85-01-8	Phenanthrene	ND	1.1	0.18	ug/l	
129-00-0	Pyrene	ND	1.1	0.23	ug/l	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	2.1	0.39	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	52%		10-110%
4165-62-2	Phenol-d5	36%		10-110%

ND = Not detected MDL = Method Detection Limit
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J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCMW-9S		
Lab Sample ID:	JC62879-3	**Date Sampled:**	03/19/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

ABN TCL List (SOM0 1.1)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
118-79-6	2,4,6-Tribromophenol	94%		36-151%
4165-60-0	Nitrobenzene-d5	67%		34-128%
321-60-8	2-Fluorobiphenyl	72%		38-119%
1718-51-0	Terphenyl-d14	71%		26-129%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
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J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PCMW-9S		
Lab Sample ID:	JC62879-3	**Date Sampled:**	03/19/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8081B SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4G90995.D	1	03/27/18 12:44	CP	03/26/18 18:20	OP10876	G4G2399
Run #2							

	Initial Volume	Final Volume
Run #1	280 ml	2.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	0.0071	0.0037	ug/l	
319-84-6	alpha-BHC	ND	0.0071	0.0037	ug/l	
319-85-7	beta-BHC	ND	0.0071	0.0057	ug/l	
319-86-8	delta-BHC	ND	0.0071	0.0047	ug/l	
58-89-9	gamma-BHC (Lindane)	ND	0.0071	0.0043	ug/l	
5103-71-9	alpha-Chlordane	ND	0.0071	0.0035	ug/l	
5103-74-2	gamma-Chlordane	ND	0.0071	0.0030	ug/l	
60-57-1	Dieldrin	ND	0.0071	0.0055	ug/l	
72-54-8	4,4'-DDD	ND	0.0071	0.0041	ug/l	
72-55-9	4,4'-DDE	ND	0.0071	0.0036	ug/l	
50-29-3	4,4'-DDT	ND	0.0071	0.0049	ug/l	
72-20-8	Endrin	ND	0.0071	0.0043	ug/l	
1031-07-8	Endosulfan sulfate	ND	0.0071	0.0039	ug/l	
7421-93-4	Endrin aldehyde	ND	0.0071	0.0048	ug/l	
53494-70-5	Endrin ketone	ND	0.0071	0.0044	ug/l	
959-98-8	Endosulfan-I	ND	0.0071	0.0038	ug/l	
33213-65-9	Endosulfan-II	ND	0.0071	0.0035	ug/l	
76-44-8	Heptachlor	ND	0.0071	0.0032	ug/l	
1024-57-3	Heptachlor epoxide	ND	0.0071	0.0043	ug/l	
72-43-5	Methoxychlor	ND	0.014	0.0048	ug/l	
8001-35-2	Toxaphene	ND	0.18	0.11	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	87%		13-153%
877-09-8	Tetrachloro-m-xylene	86%		13-153%
2051-24-3	Decachlorobiphenyl	63%		10-138%
2051-24-3	Decachlorobiphenyl	58%		10-138%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
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J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PCMW-9S		
Lab Sample ID:	JC62879-3	**Date Sampled:**	03/19/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8082A SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EF181184.D	1	03/27/18 15:05	HB	03/26/18 18:20	OP10875	GEF6202
Run #2							

	Initial Volume	Final Volume
Run #1	280 ml	2.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	0.36	0.14	ug/l	
11104-28-2	Aroclor 1221	ND	0.36	0.30	ug/l	
11141-16-5	Aroclor 1232	ND	0.36	0.19	ug/l	
53469-21-9	Aroclor 1242	ND	0.36	0.16	ug/l	
12672-29-6	Aroclor 1248	ND	0.36	0.090	ug/l	
11097-69-1	Aroclor 1254	ND	0.36	0.30	ug/l	
11096-82-5	Aroclor 1260	ND	0.36	0.11	ug/l	
11100-14-4	Aroclor 1268	ND	0.36	0.12	ug/l	
37324-23-5	Aroclor 1262	ND	0.36	0.14	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	84%		11-166%
877-09-8	Tetrachloro-m-xylene	88%		11-166%
2051-24-3	Decachlorobiphenyl	60%		10-150%
2051-24-3	Decachlorobiphenyl	61%		10-150%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PCMW-9S
Lab Sample ID: JC62879-3
Matrix: AQ - Ground Water
Project: National Grid, Philly Coke, Philadelphia PA

Date Sampled: 03/19/18
Date Received: 03/23/18
Percent Solids: n/a

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	275	200	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [5]
Antimony	< 6.0	6.0	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [5]
Arsenic	19.2	3.0	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [5]
Barium	< 200	200	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [5]
Beryllium	< 1.0	1.0	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [5]
Cadmium	< 3.0	3.0	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [5]
Calcium	186000	5000	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [5]
Chromium	< 10	10	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [5]
Cobalt	< 50	50	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [5]
Copper	24.5	10	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [5]
Iron	6760	100	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [5]
Lead	21.2	3.0	ug/l	1	03/29/18	04/04/18		SW846 6010C [3]	SW846 3010A [5]
Magnesium	101000	5000	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [5]
Manganese	515	15	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [5]
Mercury	< 0.20	0.20	ug/l	1	03/27/18	03/27/18	JA	SW846 7470A [1]	SW846 7470A [4]
Nickel	20.0	10	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [5]
Potassium	13600	10000	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [5]
Selenium	11.3	10	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [5]
Silver	< 10	10	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [5]
Sodium	21900	10000	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [5]
Thallium	< 2.0	2.0	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [5]
Vanadium	< 50	50	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [5]
Zinc	85.2	20	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [5]

(1) Instrument QC Batch: MA44080
(2) Instrument QC Batch: MA44135
(3) Instrument QC Batch: MA44142
(4) Prep QC Batch: MP6364
(5) Prep QC Batch: MP6402

RL = Reporting Limit

Report of Analysis

Client Sample ID:	PCMW-9S		
Lab Sample ID:	JC62879-3	**Date Sampled:**	03/19/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
		Percent Solids:	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Cyanide	< 0.010 UJ	0.010	mg/l	1	03/29/18 09:23	BM	EPA 335.4/LACHAT

RL = Reporting Limit

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Report of Analysis

Client Sample ID:	PCMW-16D		
Lab Sample ID:	JC62879-4	**Date Sampled:**	03/19/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2D174439.D	1	03/27/18 15:21	JP	n/a	n/a	V2D7344
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone [a]	ND	10	5.0	ug/l	UJ
71-43-2	Benzene	ND	0.50	0.17	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.38	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.22	ug/l	
75-25-2	Bromoform	ND	1.0	0.42	ug/l	
74-83-9	Bromomethane	ND	2.0	1.4	ug/l	
78-93-3	2-Butanone (MEK) [a]	ND	10	4.8	ug/l	UJ
75-15-0	Carbon disulfide	ND	2.0	0.50	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.34	ug/l	
108-90-7	Chlorobenzene	1.4	1.0	0.24	ug/l	
75-00-3	Chloroethane [b]	ND	1.0	0.59	ug/l	
67-66-3	Chloroform	ND	1.0	0.29	ug/l	
74-87-3	Chloromethane	ND	1.0	0.53	ug/l	
110-82-7	Cyclohexane	ND	5.0	0.63	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.69	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.16	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.21	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.50	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.50	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.50	ug/l	
75-71-8	Dichlorodifluoromethane [b]	ND	2.0	1.9	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.21	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.20	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.47	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.50	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.40	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.24	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.25	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.22	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.22	ug/l	
76-13-1	Freon 113	ND	5.0	1.2	ug/l	
591-78-6	2-Hexanone	ND	5.0	3.3	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCMW-16D		
Lab Sample ID:	JC62879-4	**Date Sampled:**	03/19/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	1.0	0.25	ug/l	
79-20-9	Methyl Acetate	ND	5.0	3.1	ug/l	
108-87-2	Methylcyclohexane	ND	5.0	1.8	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.25	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	3.0	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.24	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.17	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.50	ug/l	
108-88-3	Toluene	ND	1.0	0.25	ug/l	
87-61-6	1,2,3-Trichlorobenzene [b]	ND	1.0	0.50	ug/l	
120-82-1	1,2,4-Trichlorobenzene [b]	ND	1.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.24	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.27	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.60	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.62	ug/l	
	m,p-Xylene	ND	1.0	0.43	ug/l	
95-47-6	o-Xylene	ND	1.0	0.22	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.22	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%		80-120%
17060-07-0	1,2-Dichloroethane-D4	105%		81-124%
2037-26-5	Toluene-D8	98%		80-120%
460-00-4	4-Bromofluorobenzene	99%		80-120%

(a) Associated CCV outside of control limits low.
(b) Associated CCV outside of control limits high, sample was ND.

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J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PCMW-16D		
Lab Sample ID:	JC62879-4	**Date Sampled:**	03/19/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	F175219.D	1	03/27/18 17:01	CS	03/26/18 18:30	OP10877	EF7460
Run #2							

	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2		

ABN TCL List (SOM0 1.1)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	5.0	0.82	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	5.0	0.89	ug/l	
120-83-2	2,4-Dichlorophenol	ND	2.0	1.3	ug/l	
105-67-9	2,4-Dimethylphenol	ND	5.0	2.4	ug/l	
51-28-5	2,4-Dinitrophenol	ND	5.0	1.6	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	5.0	1.3	ug/l	
95-48-7	2-Methylphenol	ND	2.0	0.89	ug/l	
	3&4-Methylphenol	ND	2.0	0.88	ug/l	
88-75-5	2-Nitrophenol	ND	5.0	0.96	ug/l	
100-02-7	4-Nitrophenol	ND	10	1.2	ug/l	
87-86-5	Pentachlorophenol [a]	ND	4.0	1.4	ug/l	
108-95-2	Phenol	ND	2.0	0.39	ug/l	
58-90-2	2,3,4,6-Tetrachlorophenol [a]	ND	5.0	1.5	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	5.0	1.3	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	5.0	0.92	ug/l	
83-32-9	Acenaphthene	ND	1.0	0.19	ug/l	
208-96-8	Acenaphthylene	ND	1.0	0.14	ug/l	
98-86-2	Acetophenone	ND	2.0	0.21	ug/l	
120-12-7	Anthracene	ND	1.0	0.21	ug/l	
1912-24-9	Atrazine	ND	2.0	0.45	ug/l	
100-52-7	Benzaldehyde	ND	5.0	0.29	ug/l	
56-55-3	Benzo(a)anthracene	ND	1.0	0.20	ug/l	
50-32-8	Benzo(a)pyrene	ND	1.0	0.21	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	1.0	0.21	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	1.0	0.34	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	1.0	0.21	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	2.0	0.40	ug/l	
85-68-7	Butyl benzyl phthalate	ND	2.0	0.46	ug/l	
92-52-4	1,1'-Biphenyl	ND	1.0	0.21	ug/l	
91-58-7	2-Chloronaphthalene	ND	2.0	0.24	ug/l	
106-47-8	4-Chloroaniline	ND	5.0	0.34	ug/l	
86-74-8	Carbazole	ND	1.0	0.23	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PCMW-16D
Lab Sample ID: JC62879-4
Matrix: AQ - Ground Water
Method: SW846 8270D SW846 3510C
Project: National Grid, Philly Coke, Philadelphia PA

Date Sampled: 03/19/18
Date Received: 03/23/18
Percent Solids: n/a

ABN TCL List (SOM0 1.1)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	2.0	0.65	ug/l	
218-01-9	Chrysene	ND	1.0	0.18	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	2.0	0.28	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	2.0	0.25	ug/l	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	2.0	0.40	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	2.0	0.37	ug/l	
121-14-2	2,4-Dinitrotoluene [b]	13.3	1.0	0.55	ug/l	J
606-20-2	2,6-Dinitrotoluene [a]	ND	1.0	0.48	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	2.0	0.51	ug/l	
53-70-3	Dibenzo(a,h)anthracene [a]	ND	1.0	0.33	ug/l	
132-64-9	Dibenzofuran	ND	5.0	0.22	ug/l	
84-74-2	Di-n-butyl phthalate	ND	2.0	0.50	ug/l	
117-84-0	Di-n-octyl phthalate	ND	2.0	0.23	ug/l	
84-66-2	Diethyl phthalate	ND	2.0	0.26	ug/l	
131-11-3	Dimethyl phthalate	ND	2.0	0.22	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.0	1.7	ug/l	
206-44-0	Fluoranthene	ND	1.0	0.17	ug/l	
86-73-7	Fluorene	ND	1.0	0.17	ug/l	
118-74-1	Hexachlorobenzene	ND	1.0	0.33	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.49	ug/l	
77-47-4	Hexachlorocyclopentadiene [a]	ND	10	2.8	ug/l	
67-72-1	Hexachloroethane	ND	2.0	0.39	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	1.0	0.33	ug/l	
78-59-1	Isophorone	ND	2.0	0.28	ug/l	
91-57-6	2-Methylnaphthalene	ND	1.0	0.21	ug/l	
88-74-4	2-Nitroaniline	ND	5.0	0.28	ug/l	
99-09-2	3-Nitroaniline	ND	5.0	0.39	ug/l	
100-01-6	4-Nitroaniline	ND	5.0	0.44	ug/l	
91-20-3	Naphthalene	ND	1.0	0.23	ug/l	
98-95-3	Nitrobenzene	ND	2.0	0.64	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	2.0	0.48	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.0	0.22	ug/l	
85-01-8	Phenanthrene	ND	1.0	0.18	ug/l	
129-00-0	Pyrene	ND	1.0	0.22	ug/l	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	2.0	0.37	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	58%		10-110%
4165-62-2	Phenol-d5	37%		10-110%

ND = Not detected MDL = Method Detection Limit
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E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCMW-16D		
Lab Sample ID:	JC62879-4	**Date Sampled:**	03/19/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

ABN TCL List (SOM0 1.1)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
118-79-6	2,4,6-Tribromophenol	96%		36-151%
4165-60-0	Nitrobenzene-d5	77%		34-128%
321-60-8	2-Fluorobiphenyl	75%		38-119%
1718-51-0	Terphenyl-d14	80%		26-129%

(a) Associated CCV outside of control limits high, sample was ND.
(b) Associated CCV outside of control limits high.

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E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PCMW-16D		
Lab Sample ID:	JC62879-4	**Date Sampled:**	03/19/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8081B SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4G90996.D	1	03/27/18 13:01	CP	03/26/18 18:20	OP10876	G4G2399
Run #2							

	Initial Volume	Final Volume
Run #1	300 ml	2.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	0.0067	0.0034	ug/l	
319-84-6	alpha-BHC	ND	0.0067	0.0035	ug/l	
319-85-7	beta-BHC	ND	0.0067	0.0053	ug/l	
319-86-8	delta-BHC	ND	0.0067	0.0044	ug/l	
58-89-9	gamma-BHC (Lindane)	ND	0.0067	0.0040	ug/l	
5103-71-9	alpha-Chlordane	ND	0.0067	0.0033	ug/l	
5103-74-2	gamma-Chlordane	ND	0.0067	0.0028	ug/l	
60-57-1	Dieldrin	0.038	0.0067	0.0051	ug/l	
72-54-8	4,4'-DDD	ND	0.0067	0.0038	ug/l	
72-55-9	4,4'-DDE	ND	0.0067	0.0034	ug/l	
50-29-3	4,4'-DDT	ND	0.0067	0.0046	ug/l	
72-20-8	Endrin	ND	0.0067	0.0040	ug/l	
1031-07-8	Endosulfan sulfate	ND	0.0067	0.0036	ug/l	
7421-93-4	Endrin aldehyde	ND	0.0067	0.0045	ug/l	
53494-70-5	Endrin ketone	ND	0.0067	0.0041	ug/l	
959-98-8	Endosulfan-I	ND	0.0067	0.0035	ug/l	
33213-65-9	Endosulfan-II	ND	0.0067	0.0033	ug/l	
76-44-8	Heptachlor	ND	0.0067	0.0030	ug/l	
1024-57-3	Heptachlor epoxide	ND	0.0067	0.0040	ug/l	
72-43-5	Methoxychlor	ND	0.013	0.0045	ug/l	
8001-35-2	Toxaphene	ND	0.17	0.11	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	68%		13-153%
877-09-8	Tetrachloro-m-xylene	71%		13-153%
2051-24-3	Decachlorobiphenyl	59%		10-138%
2051-24-3	Decachlorobiphenyl	56%		10-138%

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B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PCMW-16D		
Lab Sample ID:	JC62879-4	**Date Sampled:**	03/19/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8082A SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EF181189.D	1	03/27/18 17:10	HB	03/26/18 18:20	OP10875	GEF6202
Run #2							

	Initial Volume	Final Volume
Run #1	300 ml	2.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	0.33	0.13	ug/l	
11104-28-2	Aroclor 1221	ND	0.33	0.28	ug/l	
11141-16-5	Aroclor 1232	ND	0.33	0.17	ug/l	
53469-21-9	Aroclor 1242	ND	0.33	0.15	ug/l	
12672-29-6	Aroclor 1248	ND	0.33	0.084	ug/l	
11097-69-1	Aroclor 1254	ND	0.33	0.28	ug/l	
11096-82-5	Aroclor 1260	ND	0.33	0.10	ug/l	
11100-14-4	Aroclor 1268	ND	0.33	0.12	ug/l	
37324-23-5	Aroclor 1262	ND	0.33	0.13	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	74%		11-166%
877-09-8	Tetrachloro-m-xylene	82%		11-166%
2051-24-3	Decachlorobiphenyl	64%		10-150%
2051-24-3	Decachlorobiphenyl	65%		10-150%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PCMW-16D
Lab Sample ID: JC62879-4
Matrix: AQ - Ground Water
Project: National Grid, Philly Coke, Philadelphia PA

Date Sampled: 03/19/18
Date Received: 03/23/18
Percent Solids: n/a

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	343	200	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Antimony	< 6.0	6.0	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Arsenic	93.5	3.0	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Barium	< 200	200	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Beryllium	< 1.0	1.0	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Cadmium	< 3.0	3.0	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Calcium	51800	5000	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Chromium	< 10	10	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Cobalt	< 50	50	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Copper	< 10	10	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Iron	61600	100	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Lead	< 3.0	3.0	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Magnesium	28900	5000	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Manganese	3610	15	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Mercury	< 0.20	0.20	ug/l	1	03/27/18	03/27/18	JA	SW846 7470A [1]	SW846 7470A [3]
Nickel	< 10	10	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Potassium	< 10000	10000	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Selenium	< 10	10	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Silver	< 10	10	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Sodium	61300	10000	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Thallium	< 2.0	2.0	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Vanadium	< 50	50	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Zinc	< 20	20	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]

(1) Instrument QC Batch: MA44080
(2) Instrument QC Batch: MA44135
(3) Prep QC Batch: MP6364
(4) Prep QC Batch: MP6402

RL = Reporting Limit

Report of Analysis

Client Sample ID:	PCMW-16D		
Lab Sample ID:	JC62879-4	**Date Sampled:**	03/19/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
		Percent Solids:	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Cyanide	< 0.010 UJ	0.010	mg/l	1	03/29/18 09:25	BM	EPA 335.4/LACHAT

RL = Reporting Limit

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Report of Analysis

Client Sample ID:	MW-5		
Lab Sample ID:	JC62879-5	**Date Sampled:**	03/19/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2D174440.D	1	03/27/18 15:51	JP	n/a	n/a	V2D7344
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone [a]	ND	10	5.0	ug/l	UJ
71-43-2	Benzene	ND	0.50	0.17	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.38	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.22	ug/l	
75-25-2	Bromoform	ND	1.0	0.42	ug/l	
74-83-9	Bromomethane	ND	2.0	1.4	ug/l	
78-93-3	2-Butanone (MEK) [a]	ND	10	4.8	ug/l	UJ
75-15-0	Carbon disulfide	ND	2.0	0.50	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.34	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.24	ug/l	
75-00-3	Chloroethane [b]	ND	1.0	0.59	ug/l	
67-66-3	Chloroform	ND	1.0	0.29	ug/l	
74-87-3	Chloromethane	ND	1.0	0.53	ug/l	
110-82-7	Cyclohexane	ND	5.0	0.63	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.69	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.16	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.21	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.50	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.50	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.50	ug/l	
75-71-8	Dichlorodifluoromethane [b]	ND	2.0	1.9	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.21	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.20	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.47	ug/l	
156-59-2	cis-1,2-Dichloroethene	28.3	1.0	0.50	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.40	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.24	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.25	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.22	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.22	ug/l	
76-13-1	Freon 113	ND	5.0	1.2	ug/l	
591-78-6	2-Hexanone	ND	5.0	3.3	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW-5		
Lab Sample ID:	JC62879-5	**Date Sampled:**	03/19/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	1.0	0.25	ug/l	
79-20-9	Methyl Acetate	ND	5.0	3.1	ug/l	
108-87-2	Methylcyclohexane	ND	5.0	1.8	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.25	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	3.0	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.24	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.17	ug/l	
127-18-4	Tetrachloroethene	1.1	1.0	0.50	ug/l	
108-88-3	Toluene	ND	1.0	0.25	ug/l	
87-61-6	1,2,3-Trichlorobenzene [b]	ND	1.0	0.50	ug/l	
120-82-1	1,2,4-Trichlorobenzene [b]	ND	1.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.24	ug/l	
79-01-6	Trichloroethene	6.1	1.0	0.27	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.60	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.62	ug/l	
	m,p-Xylene	ND	1.0	0.43	ug/l	
95-47-6	o-Xylene	ND	1.0	0.22	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.22	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%		80-120%
17060-07-0	1,2-Dichloroethane-D4	105%		81-124%
2037-26-5	Toluene-D8	99%		80-120%
460-00-4	4-Bromofluorobenzene	99%		80-120%

(a) Associated CCV outside of control limits low.
(b) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	MW-5		
Lab Sample ID:	JC62879-5	**Date Sampled:**	03/19/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	F175220.D	1	03/27/18 17:29	CS	03/26/18 18:30	OP10877	EF7460
Run #2							

	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2		

ABN TCL List (SOM0 1.1)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	5.0	0.82	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	5.0	0.89	ug/l	
120-83-2	2,4-Dichlorophenol	ND	2.0	1.3	ug/l	
105-67-9	2,4-Dimethylphenol	ND	5.0	2.4	ug/l	
51-28-5	2,4-Dinitrophenol	ND	5.0	1.6	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	5.0	1.3	ug/l	
95-48-7	2-Methylphenol	ND	2.0	0.89	ug/l	
	3&4-Methylphenol	ND	2.0	0.88	ug/l	
88-75-5	2-Nitrophenol	ND	5.0	0.96	ug/l	
100-02-7	4-Nitrophenol	ND	10	1.2	ug/l	
87-86-5	Pentachlorophenol [a]	ND	4.0	1.4	ug/l	
108-95-2	Phenol	ND	2.0	0.39	ug/l	
58-90-2	2,3,4,6-Tetrachlorophenol [a]	ND	5.0	1.5	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	5.0	1.3	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	5.0	0.92	ug/l	
83-32-9	Acenaphthene	0.78	1.0	0.19	ug/l	J
208-96-8	Acenaphthylene	ND	1.0	0.14	ug/l	
98-86-2	Acetophenone	ND	2.0	0.21	ug/l	
120-12-7	Anthracene	ND	1.0	0.21	ug/l	
1912-24-9	Atrazine	ND	2.0	0.45	ug/l	
100-52-7	Benzaldehyde	ND	5.0	0.29	ug/l	
56-55-3	Benzo(a)anthracene	ND	1.0	0.20	ug/l	
50-32-8	Benzo(a)pyrene	ND	1.0	0.21	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	1.0	0.21	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	1.0	0.34	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	1.0	0.21	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	2.0	0.40	ug/l	
85-68-7	Butyl benzyl phthalate	ND	2.0	0.46	ug/l	
92-52-4	1,1'-Biphenyl	ND	1.0	0.21	ug/l	
91-58-7	2-Chloronaphthalene	ND	2.0	0.24	ug/l	
106-47-8	4-Chloroaniline	ND	5.0	0.34	ug/l	
86-74-8	Carbazole	ND	1.0	0.23	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: MW-5
Lab Sample ID: JC62879-5
Matrix: AQ - Ground Water
Method: SW846 8270D SW846 3510C
Project: National Grid, Philly Coke, Philadelphia PA

Date Sampled: 03/19/18
Date Received: 03/23/18
Percent Solids: n/a

ABN TCL List (SOM0 1.1)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	2.0	0.65	ug/l	
218-01-9	Chrysene	ND	1.0	0.18	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	2.0	0.28	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	2.0	0.25	ug/l	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	2.0	0.40	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	2.0	0.37	ug/l	
121-14-2	2,4-Dinitrotoluene [a]	ND	1.0	0.55	ug/l	
606-20-2	2,6-Dinitrotoluene [a]	ND	1.0	0.48	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	2.0	0.51	ug/l	
53-70-3	Dibenzo(a,h)anthracene [a]	ND	1.0	0.33	ug/l	
132-64-9	Dibenzofuran	ND	5.0	0.22	ug/l	
84-74-2	Di-n-butyl phthalate	ND	2.0	0.50	ug/l	
117-84-0	Di-n-octyl phthalate	0.0	2.0	0.23	ug/l	
84-66-2	Diethyl phthalate	ND	2.0	0.26	ug/l	
131-11-3	Dimethyl phthalate	ND	2.0	0.22	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.0	1.7	ug/l	
206-44-0	Fluoranthene	ND	1.0	0.17	ug/l	
86-73-7	Fluorene	ND	1.0	0.17	ug/l	
118-74-1	Hexachlorobenzene	ND	1.0	0.33	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.49	ug/l	
77-47-4	Hexachlorocyclopentadiene [a]	ND	10	2.8	ug/l	
67-72-1	Hexachloroethane	ND	2.0	0.39	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	1.0	0.33	ug/l	
78-59-1	Isophorone	ND	2.0	0.28	ug/l	
91-57-6	2-Methylnaphthalene	ND	1.0	0.21	ug/l	
88-74-4	2-Nitroaniline	ND	5.0	0.28	ug/l	
99-09-2	3-Nitroaniline	ND	5.0	0.39	ug/l	
100-01-6	4-Nitroaniline	ND	5.0	0.44	ug/l	
91-20-3	Naphthalene	ND	1.0	0.23	ug/l	
98-95-3	Nitrobenzene	ND	2.0	0.64	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	2.0	0.48	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.0	0.22	ug/l	
85-01-8	Phenanthrene	ND	1.0	0.18	ug/l	
129-00-0	Pyrene	ND	1.0	0.22	ug/l	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	2.0	0.37	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	47%		10-110%
4165-62-2	Phenol-d5	30%		10-110%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW-5		
Lab Sample ID:	JC62879-5	**Date Sampled:**	03/19/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

ABN TCL List (SOM0 1.1)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
118-79-6	2,4,6-Tribromophenol	91%		36-151%
4165-60-0	Nitrobenzene-d5	62%		34-128%
321-60-8	2-Fluorobiphenyl	66%		38-119%
1718-51-0	Terphenyl-d14	79%		26-129%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
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J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	MW-5		
Lab Sample ID:	JC62879-5	**Date Sampled:**	03/19/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8081B SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4G90997.D	1	03/27/18 13:18	CP	03/26/18 18:20	OP10876	G4G2399
Run #2							

	Initial Volume	Final Volume
Run #1	300 ml	2.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	0.0067	0.0034	ug/l	
319-84-6	alpha-BHC	ND	0.0067	0.0035	ug/l	
319-85-7	beta-BHC	ND	0.0067	0.0053	ug/l	
319-86-8	delta-BHC	ND	0.0067	0.0044	ug/l	
58-89-9	gamma-BHC (Lindane)	ND	0.0067	0.0040	ug/l	
5103-71-9	alpha-Chlordane	ND	0.0067	0.0033	ug/l	
5103-74-2	gamma-Chlordane	ND	0.0067	0.0028	ug/l	
60-57-1	Dieldrin	ND	0.0067	0.0051	ug/l	
72-54-8	4,4'-DDD	ND	0.0067	0.0038	ug/l	
72-55-9	4,4'-DDE	ND	0.0067	0.0034	ug/l	
50-29-3	4,4'-DDT	ND	0.0067	0.0046	ug/l	
72-20-8	Endrin	ND	0.0067	0.0040	ug/l	
1031-07-8	Endosulfan sulfate	ND	0.0067	0.0036	ug/l	
7421-93-4	Endrin aldehyde	ND	0.0067	0.0045	ug/l	
53494-70-5	Endrin ketone	ND	0.0067	0.0041	ug/l	
959-98-8	Endosulfan-I	ND	0.0067	0.0035	ug/l	
33213-65-9	Endosulfan-II	ND	0.0067	0.0033	ug/l	
76-44-8	Heptachlor	ND	0.0067	0.0030	ug/l	
1024-57-3	Heptachlor epoxide	ND	0.0067	0.0040	ug/l	
72-43-5	Methoxychlor	ND	0.013	0.0045	ug/l	
8001-35-2	Toxaphene	ND	0.17	0.11	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	73%		13-153%
877-09-8	Tetrachloro-m-xylene	75%		13-153%
2051-24-3	Decachlorobiphenyl	56%		10-138%
2051-24-3	Decachlorobiphenyl	52%		10-138%

ND = Not detected MDL = Method Detection Limit
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J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	MW-5		
Lab Sample ID:	JC62879-5	**Date Sampled:**	03/19/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8082A SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EF181190.D	1	03/27/18 17:35	HB	03/26/18 18:20	OP10875	GEF6202
Run #2							

	Initial Volume	Final Volume
Run #1	300 ml	2.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	0.33	0.13	ug/l	
11104-28-2	Aroclor 1221	ND	0.33	0.28	ug/l	
11141-16-5	Aroclor 1232	ND	0.33	0.17	ug/l	
53469-21-9	Aroclor 1242	ND	0.33	0.15	ug/l	
12672-29-6	Aroclor 1248	ND	0.33	0.084	ug/l	
11097-69-1	Aroclor 1254	ND	0.33	0.28	ug/l	
11096-82-5	Aroclor 1260	ND	0.33	0.10	ug/l	
11100-14-4	Aroclor 1268	ND	0.33	0.12	ug/l	
37324-23-5	Aroclor 1262	ND	0.33	0.13	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	77%		11-166%
877-09-8	Tetrachloro-m-xylene	82%		11-166%
2051-24-3	Decachlorobiphenyl	57%		10-150%
2051-24-3	Decachlorobiphenyl	58%		10-150%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: MW-5
Lab Sample ID: JC62879-5
Matrix: AQ - Ground Water
Project: National Grid, Philly Coke, Philadelphia PA

Date Sampled: 03/19/18
Date Received: 03/23/18
Percent Solids: n/a

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	< 200	200	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Antimony	< 6.0	6.0	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Arsenic	3.7	3.0	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Barium	< 200	200	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Beryllium	< 1.0	1.0	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Cadmium	< 3.0	3.0	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Calcium	29800	5000	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Chromium	< 10	10	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Cobalt	< 50	50	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Copper	< 10	10	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Iron	14100	100	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Lead	4.2	3.0	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Magnesium	15500	5000	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Manganese	326	15	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Mercury	< 0.20	0.20	ug/l	1	03/27/18	03/27/18	JA	SW846 7470A [1]	SW846 7470A [3]
Nickel	< 10	10	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Potassium	< 10000	10000	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Selenium	< 10	10	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Silver	< 10	10	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Sodium	< 10000	10000	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Thallium	< 2.0	2.0	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Vanadium	< 50	50	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Zinc	< 20	20	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]

(1) Instrument QC Batch: MA44080
(2) Instrument QC Batch: MA44135
(3) Prep QC Batch: MP6364
(4) Prep QC Batch: MP6402

RL = Reporting Limit

Report of Analysis

Client Sample ID:	MW-5		
Lab Sample ID:	JC62879-5	**Date Sampled:**	03/19/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
		Percent Solids:	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Cyanide	< 0.010 UJ	0.010	mg/l	1	03/29/18 09:26	BM	EPA 335.4/LACHAT

RL = Reporting Limit

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Report of Analysis

Client Sample ID:	PCMW-15S		
Lab Sample ID:	JC62879-6	**Date Sampled:**	03/20/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2D174441.D	1	03/27/18 16:20	JP	n/a	n/a	V2D7344
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone [a]	ND	10	5.0	ug/l	UJ
71-43-2	Benzene	0.20	0.50	0.17	ug/l	J
74-97-5	Bromochloromethane	ND	1.0	0.38	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.22	ug/l	
75-25-2	Bromoform	ND	1.0	0.42	ug/l	
74-83-9	Bromomethane	ND	2.0	1.4	ug/l	
78-93-3	2-Butanone (MEK) [a]	ND	10	4.8	ug/l	UJ
75-15-0	Carbon disulfide	ND	2.0	0.50	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.34	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.24	ug/l	
75-00-3	Chloroethane [b]	ND	1.0	0.59	ug/l	
67-66-3	Chloroform	ND	1.0	0.29	ug/l	
74-87-3	Chloromethane	ND	1.0	0.53	ug/l	
110-82-7	Cyclohexane	ND	5.0	0.63	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.69	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.16	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.21	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.50	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.50	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.50	ug/l	
75-71-8	Dichlorodifluoromethane [b]	ND	2.0	1.9	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.21	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.20	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.47	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.50	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.40	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.24	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.25	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.22	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.22	ug/l	
76-13-1	Freon 113	ND	5.0	1.2	ug/l	
591-78-6	2-Hexanone	ND	5.0	3.3	ug/l	

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RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCMW-15S		
Lab Sample ID:	JC62879-6	**Date Sampled:**	03/20/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	1.0	0.25	ug/l	
79-20-9	Methyl Acetate	ND	5.0	3.1	ug/l	
108-87-2	Methylcyclohexane	ND	5.0	1.8	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.25	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	3.0	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.24	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.17	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.50	ug/l	
108-88-3	Toluene	ND	1.0	0.25	ug/l	
87-61-6	1,2,3-Trichlorobenzene [b]	ND	1.0	0.50	ug/l	
120-82-1	1,2,4-Trichlorobenzene [b]	ND	1.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.24	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.27	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.60	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.62	ug/l	
	m,p-Xylene	ND	1.0	0.43	ug/l	
95-47-6	o-Xylene	ND	1.0	0.22	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.22	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%		80-120%
17060-07-0	1,2-Dichloroethane-D4	107%		81-124%
2037-26-5	Toluene-D8	99%		80-120%
460-00-4	4-Bromofluorobenzene	99%		80-120%

(a) Associated CCV outside of control limits low.
(b) Associated CCV outside of control limits high, sample was ND.

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B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PCMW-15S		
Lab Sample ID:	JC62879-6	**Date Sampled:**	03/20/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	F175221.D	1	03/27/18 17:57	CS	03/26/18 18:30	OP10877	EF7460
Run #2							

	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2		

ABN TCL List (SOM0 1.1)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	5.0	0.82	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	5.0	0.89	ug/l	
120-83-2	2,4-Dichlorophenol	ND	2.0	1.3	ug/l	
105-67-9	2,4-Dimethylphenol	ND	5.0	2.4	ug/l	
51-28-5	2,4-Dinitrophenol	ND	5.0	1.6	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	5.0	1.3	ug/l	
95-48-7	2-Methylphenol	ND	2.0	0.89	ug/l	
	3&4-Methylphenol	ND	2.0	0.88	ug/l	
88-75-5	2-Nitrophenol	ND	5.0	0.96	ug/l	
100-02-7	4-Nitrophenol	ND	10	1.2	ug/l	
87-86-5	Pentachlorophenol [a]	ND	4.0	1.4	ug/l	
108-95-2	Phenol	ND	2.0	0.39	ug/l	
58-90-2	2,3,4,6-Tetrachlorophenol [a]	ND	5.0	1.5	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	5.0	1.3	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	5.0	0.92	ug/l	
83-32-9	Acenaphthene	ND	1.0	0.19	ug/l	
208-96-8	Acenaphthylene	ND	1.0	0.14	ug/l	
98-86-2	Acetophenone	ND	2.0	0.21	ug/l	
120-12-7	Anthracene	ND	1.0	0.21	ug/l	
1912-24-9	Atrazine	ND	2.0	0.45	ug/l	
100-52-7	Benzaldehyde	ND	5.0	0.29	ug/l	
56-55-3	Benzo(a)anthracene	ND	1.0	0.20	ug/l	
50-32-8	Benzo(a)pyrene	ND	1.0	0.21	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	1.0	0.21	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	1.0	0.34	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	1.0	0.21	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	2.0	0.40	ug/l	
85-68-7	Butyl benzyl phthalate	ND	2.0	0.46	ug/l	
92-52-4	1,1'-Biphenyl	ND	1.0	0.21	ug/l	
91-58-7	2-Chloronaphthalene	ND	2.0	0.24	ug/l	
106-47-8	4-Chloroaniline	ND	5.0	0.34	ug/l	
86-74-8	Carbazole	ND	1.0	0.23	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

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B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCMW-15S		
Lab Sample ID:	JC62879-6	**Date Sampled:**	03/20/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

ABN TCL List (SOM0 1.1)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	2.0	0.65	ug/l	
218-01-9	Chrysene	ND	1.0	0.18	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	2.0	0.28	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	2.0	0.25	ug/l	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	2.0	0.40	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	2.0	0.37	ug/l	
121-14-2	2,4-Dinitrotoluene [a]	ND	1.0	0.55	ug/l	
606-20-2	2,6-Dinitrotoluene [a]	ND	1.0	0.48	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	2.0	0.51	ug/l	
53-70-3	Dibenzo(a,h)anthracene [a]	ND	1.0	0.33	ug/l	
132-64-9	Dibenzofuran	ND	5.0	0.22	ug/l	
84-74-2	Di-n-butyl phthalate	ND	2.0	0.50	ug/l	
117-84-0	Di-n-octyl phthalate	ND	2.0	0.23	ug/l	
84-66-2	Diethyl phthalate	ND	2.0	0.26	ug/l	
131-11-3	Dimethyl phthalate	ND	2.0	0.22	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.0	1.7	ug/l	
206-44-0	Fluoranthene	ND	1.0	0.17	ug/l	
86-73-7	Fluorene	ND	1.0	0.17	ug/l	
118-74-1	Hexachlorobenzene	ND	1.0	0.33	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.49	ug/l	
77-47-4	Hexachlorocyclopentadiene [a]	ND	10	2.8	ug/l	
67-72-1	Hexachloroethane	ND	2.0	0.39	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	1.0	0.33	ug/l	
78-59-1	Isophorone	ND	2.0	0.28	ug/l	
91-57-6	2-Methylnaphthalene	ND	1.0	0.21	ug/l	
88-74-4	2-Nitroaniline	ND	5.0	0.28	ug/l	
99-09-2	3-Nitroaniline	ND	5.0	0.39	ug/l	
100-01-6	4-Nitroaniline	ND	5.0	0.44	ug/l	
91-20-3	Naphthalene	ND	1.0	0.23	ug/l	
98-95-3	Nitrobenzene	ND	2.0	0.64	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	2.0	0.48	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.0	0.22	ug/l	
85-01-8	Phenanthrene	ND	1.0	0.18	ug/l	
129-00-0	Pyrene	ND	1.0	0.22	ug/l	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	2.0	0.37	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	51%		10-110%
4165-62-2	Phenol-d5	33%		10-110%

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B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCMW-15S		
Lab Sample ID:	JC62879-6	**Date Sampled:**	03/20/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

ABN TCL List (SOM0 1.1)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
118-79-6	2,4,6-Tribromophenol	95%		36-151%
4165-60-0	Nitrobenzene-d5	68%		34-128%
321-60-8	2-Fluorobiphenyl	69%		38-119%
1718-51-0	Terphenyl-d14	79%		26-129%

(a) Associated CCV outside of control limits high, sample was ND.

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N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PCMW-15S		
Lab Sample ID:	JC62879-6	**Date Sampled:**	03/20/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8081B SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4G90998.D	1	03/27/18 13:34	CP	03/26/18 18:20	OP10876	G4G2399
Run #2							

	Initial Volume	Final Volume
Run #1	295 ml	2.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	0.0068	0.0035	ug/l	
319-84-6	alpha-BHC	ND	0.0068	0.0035	ug/l	
319-85-7	beta-BHC	ND	0.0068	0.0054	ug/l	
319-86-8	delta-BHC	ND	0.0068	0.0045	ug/l	
58-89-9	gamma-BHC (Lindane)	ND	0.0068	0.0041	ug/l	
5103-71-9	alpha-Chlordane	ND	0.0068	0.0033	ug/l	
5103-74-2	gamma-Chlordane	ND	0.0068	0.0029	ug/l	
60-57-1	Dieldrin	ND	0.0068	0.0052	ug/l	
72-54-8	4,4'-DDD	ND	0.0068	0.0039	ug/l	
72-55-9	4,4'-DDE	ND	0.0068	0.0034	ug/l	
50-29-3	4,4'-DDT	ND	0.0068	0.0046	ug/l	
72-20-8	Endrin	ND	0.0068	0.0041	ug/l	
1031-07-8	Endosulfan sulfate	ND	0.0068	0.0037	ug/l	
7421-93-4	Endrin aldehyde	ND	0.0068	0.0045	ug/l	
53494-70-5	Endrin ketone	ND	0.0068	0.0042	ug/l	
959-98-8	Endosulfan-I	ND	0.0068	0.0036	ug/l	
33213-65-9	Endosulfan-II	ND	0.0068	0.0033	ug/l	
76-44-8	Heptachlor	ND	0.0068	0.0030	ug/l	
1024-57-3	Heptachlor epoxide	ND	0.0068	0.0041	ug/l	
72-43-5	Methoxychlor	ND	0.014	0.0045	ug/l	
8001-35-2	Toxaphene	ND	0.17	0.11	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	83%		13-153%
877-09-8	Tetrachloro-m-xylene	82%		13-153%
2051-24-3	Decachlorobiphenyl	80%		10-138%
2051-24-3	Decachlorobiphenyl	74%		10-138%

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Report of Analysis

Client Sample ID:	PCMW-15S		
Lab Sample ID:	JC62879-6	**Date Sampled:**	03/20/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8082A SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EF181191.D	1	03/27/18 18:00	HB	03/26/18 18:20	OP10875	GEF6202
Run #2							

	Initial Volume	Final Volume
Run #1	295 ml	2.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	0.34	0.13	ug/l	
11104-28-2	Aroclor 1221	ND	0.34	0.28	ug/l	
11141-16-5	Aroclor 1232	ND	0.34	0.18	ug/l	
53469-21-9	Aroclor 1242	ND	0.34	0.16	ug/l	
12672-29-6	Aroclor 1248	ND	0.34	0.085	ug/l	
11097-69-1	Aroclor 1254	ND	0.34	0.28	ug/l	
11096-82-5	Aroclor 1260	ND	0.34	0.10	ug/l	
11100-14-4	Aroclor 1268	ND	0.34	0.12	ug/l	
37324-23-5	Aroclor 1262	ND	0.34	0.13	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	68%		11-166%
877-09-8	Tetrachloro-m-xylene	74%		11-166%
2051-24-3	Decachlorobiphenyl	68%		10-150%
2051-24-3	Decachlorobiphenyl	67%		10-150%

ND = Not detected MDL = Method Detection Limit
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E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PCMW-15S
Lab Sample ID: JC62879-6
Matrix: AQ - Ground Water
Project: National Grid, Philly Coke, Philadelphia PA

Date Sampled: 03/20/18
Date Received: 03/23/18
Percent Solids: n/a

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	267	200	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [5]
Antimony	< 6.0	6.0	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [5]
Arsenic [a]	< 15	15	ug/l	5	03/29/18	04/04/18		SW846 6010C [3]	SW846 3010A [5]
Barium	< 200	200	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [5]
Beryllium	< 1.0	1.0	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [5]
Cadmium	< 3.0	3.0	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [5]
Calcium	210000	5000	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [5]
Chromium	< 10	10	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [5]
Cobalt	< 50	50	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [5]
Copper	< 10	10	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [5]
Iron	10300	100	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [5]
Lead [a]	< 15	15	ug/l	5	03/29/18	04/04/18		SW846 6010C [3]	SW846 3010A [5]
Magnesium	135000	5000	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [5]
Manganese	5290	15	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [5]
Mercury	0.29	0.20	ug/l	1	03/27/18	03/27/18	JA	SW846 7470A [1]	SW846 7470A [4]
Nickel	< 10	10	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [5]
Potassium	< 10000	10000	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [5]
Selenium	< 10	10	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [5]
Silver	< 10	10	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [5]
Sodium	90300	10000	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [5]
Thallium [a]	< 10	10	ug/l	5	03/29/18	04/04/18		SW846 6010C [3]	SW846 3010A [5]
Vanadium	< 50	50	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [5]
Zinc	25.9	20	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [5]

(1) Instrument QC Batch: MA44080
(2) Instrument QC Batch: MA44135
(3) Instrument QC Batch: MA44142
(4) Prep QC Batch: MP6364
(5) Prep QC Batch: MP6402

(a) Elevated detection limit due to dilution required for high interfering element.

RL = Reporting Limit

Report of Analysis

Client Sample ID:	PCMW-15S		
Lab Sample ID:	JC62879-6	**Date Sampled:**	03/20/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
		Percent Solids:	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Cyanide	0.21 J	0.010	mg/l	1	03/29/18 09:27	BM	EPA 335.4/LACHAT

RL = Reporting Limit

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Report of Analysis

Client Sample ID:	PCMW-15D		
Lab Sample ID:	JC62879-7	**Date Sampled:**	03/20/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2D174442.D	1	03/27/18 16:50	JP	n/a	n/a	V2D7344
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone [a]	ND	10	5.0	ug/l	UJ
71-43-2	Benzene	ND	0.50	0.17	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.38	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.22	ug/l	
75-25-2	Bromoform	ND	1.0	0.42	ug/l	
74-83-9	Bromomethane	ND	2.0	1.4	ug/l	
78-93-3	2-Butanone (MEK) [a]	ND	10	4.8	ug/l	UJ
75-15-0	Carbon disulfide	ND	2.0	0.50	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.34	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.24	ug/l	
75-00-3	Chloroethane [b]	ND	1.0	0.59	ug/l	
67-66-3	Chloroform	ND	1.0	0.29	ug/l	
74-87-3	Chloromethane	ND	1.0	0.53	ug/l	
110-82-7	Cyclohexane	ND	5.0	0.63	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.69	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.16	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.21	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.50	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.50	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.50	ug/l	
75-71-8	Dichlorodifluoromethane [b]	ND	2.0	1.9	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.21	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.20	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.47	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.50	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.40	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.24	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.25	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.22	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.22	ug/l	
76-13-1	Freon 113	ND	5.0	1.2	ug/l	
591-78-6	2-Hexanone	ND	5.0	3.3	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCMW-15D		
Lab Sample ID:	JC62879-7	**Date Sampled:**	03/20/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	1.0	0.25	ug/l	
79-20-9	Methyl Acetate	ND	5.0	3.1	ug/l	
108-87-2	Methylcyclohexane	ND	5.0	1.8	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.25	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	3.0	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.24	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.17	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.50	ug/l	
108-88-3	Toluene	ND	1.0	0.25	ug/l	
87-61-6	1,2,3-Trichlorobenzene [b]	ND	1.0	0.50	ug/l	
120-82-1	1,2,4-Trichlorobenzene [b]	ND	1.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.24	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.27	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.60	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.62	ug/l	
	m,p-Xylene	ND	1.0	0.43	ug/l	
95-47-6	o-Xylene	ND	1.0	0.22	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.22	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%		80-120%
17060-07-0	1,2-Dichloroethane-D4	107%		81-124%
2037-26-5	Toluene-D8	99%		80-120%
460-00-4	4-Bromofluorobenzene	98%		80-120%

(a) Associated CCV outside of control limits low.
(b) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
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J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PCMW-15D		
Lab Sample ID:	JC62879-7	**Date Sampled:**	03/20/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	F175222.D	1	03/27/18 18:25	CS	03/26/18 18:30	OP10877	EF7460
Run #2							

	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2		

ABN TCL List (SOM0 1.1)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	5.0	0.82	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	5.0	0.89	ug/l	
120-83-2	2,4-Dichlorophenol	ND	2.0	1.3	ug/l	
105-67-9	2,4-Dimethylphenol	ND	5.0	2.4	ug/l	
51-28-5	2,4-Dinitrophenol	ND	5.0	1.6	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	5.0	1.3	ug/l	
95-48-7	2-Methylphenol	ND	2.0	0.89	ug/l	
	3&4-Methylphenol	ND	2.0	0.88	ug/l	
88-75-5	2-Nitrophenol	ND	5.0	0.96	ug/l	
100-02-7	4-Nitrophenol	ND	10	1.2	ug/l	
87-86-5	Pentachlorophenol [a]	ND	4.0	1.4	ug/l	
108-95-2	Phenol	ND	2.0	0.39	ug/l	
58-90-2	2,3,4,6-Tetrachlorophenol [a]	ND	5.0	1.5	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	5.0	1.3	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	5.0	0.92	ug/l	
83-32-9	Acenaphthene	ND	1.0	0.19	ug/l	
208-96-8	Acenaphthylene	ND	1.0	0.14	ug/l	
98-86-2	Acetophenone	ND	2.0	0.21	ug/l	
120-12-7	Anthracene	ND	1.0	0.21	ug/l	
1912-24-9	Atrazine	ND	2.0	0.45	ug/l	
100-52-7	Benzaldehyde	ND	5.0	0.29	ug/l	
56-55-3	Benzo(a)anthracene	ND	1.0	0.20	ug/l	
50-32-8	Benzo(a)pyrene	ND	1.0	0.21	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	1.0	0.21	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	1.0	0.34	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	1.0	0.21	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	2.0	0.40	ug/l	
85-68-7	Butyl benzyl phthalate	ND	2.0	0.46	ug/l	
92-52-4	1,1'-Biphenyl	ND	1.0	0.21	ug/l	
91-58-7	2-Chloronaphthalene	ND	2.0	0.24	ug/l	
106-47-8	4-Chloroaniline	ND	5.0	0.34	ug/l	
86-74-8	Carbazole	ND	1.0	0.23	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCMW-15D		
Lab Sample ID:	JC62879-7	**Date Sampled:**	03/20/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

ABN TCL List (SOM0 1.1)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	2.0	0.65	ug/l	
218-01-9	Chrysene	ND	1.0	0.18	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	2.0	0.28	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	2.0	0.25	ug/l	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	2.0	0.40	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	2.0	0.37	ug/l	
121-14-2	2,4-Dinitrotoluene [a]	ND	1.0	0.55	ug/l	
606-20-2	2,6-Dinitrotoluene [a]	ND	1.0	0.48	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	2.0	0.51	ug/l	
53-70-3	Dibenzo(a,h)anthracene [a]	ND	1.0	0.33	ug/l	
132-64-9	Dibenzofuran	ND	5.0	0.22	ug/l	
84-74-2	Di-n-butyl phthalate	ND	2.0	0.50	ug/l	
117-84-0	Di-n-octyl phthalate	ND	2.0	0.23	ug/l	
84-66-2	Diethyl phthalate	ND	2.0	0.26	ug/l	
131-11-3	Dimethyl phthalate	ND	2.0	0.22	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.0	1.7	ug/l	
206-44-0	Fluoranthene	ND	1.0	0.17	ug/l	
86-73-7	Fluorene	ND	1.0	0.17	ug/l	
118-74-1	Hexachlorobenzene	ND	1.0	0.33	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.49	ug/l	
77-47-4	Hexachlorocyclopentadiene [a]	ND	10	2.8	ug/l	
67-72-1	Hexachloroethane	ND	2.0	0.39	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	1.0	0.33	ug/l	
78-59-1	Isophorone	ND	2.0	0.28	ug/l	
91-57-6	2-Methylnaphthalene	ND	1.0	0.21	ug/l	
88-74-4	2-Nitroaniline	ND	5.0	0.28	ug/l	
99-09-2	3-Nitroaniline	ND	5.0	0.39	ug/l	
100-01-6	4-Nitroaniline	ND	5.0	0.44	ug/l	
91-20-3	Naphthalene	ND	1.0	0.23	ug/l	
98-95-3	Nitrobenzene	ND	2.0	0.64	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	2.0	0.48	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.0	0.22	ug/l	
85-01-8	Phenanthrene	ND	1.0	0.18	ug/l	
129-00-0	Pyrene	ND	1.0	0.22	ug/l	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	2.0	0.37	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	49%		10-110%
4165-62-2	Phenol-d5	32%		10-110%

ND = Not detected MDL = Method Detection Limit
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J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCMW-15D		
Lab Sample ID:	JC62879-7	**Date Sampled:**	03/20/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

ABN TCL List (SOM0 1.1)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
118-79-6	2,4,6-Tribromophenol	85%		36-151%
4165-60-0	Nitrobenzene-d5	65%		34-128%
321-60-8	2-Fluorobiphenyl	68%		38-119%
1718-51-0	Terphenyl-d14	72%		26-129%

(a) Associated CCV outside of control limits high, sample was ND.

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J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PCMW-15D		
Lab Sample ID:	JC62879-7	**Date Sampled:**	03/20/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8081B SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4G90999.D	1	03/27/18 13:51	CP	03/26/18 18:20	OP10876	G4G2399
Run #2							

	Initial Volume	Final Volume
Run #1	290 ml	2.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	0.0069	0.0036	ug/l	
319-84-6	alpha-BHC	ND	0.0069	0.0036	ug/l	
319-85-7	beta-BHC	ND	0.0069	0.0055	ug/l	
319-86-8	delta-BHC	ND	0.0069	0.0045	ug/l	
58-89-9	gamma-BHC (Lindane)	ND	0.0069	0.0041	ug/l	
5103-71-9	alpha-Chlordane	ND	0.0069	0.0034	ug/l	
5103-74-2	gamma-Chlordane	ND	0.0069	0.0029	ug/l	
60-57-1	Dieldrin	ND	0.0069	0.0053	ug/l	
72-54-8	4,4'-DDD	ND	0.0069	0.0040	ug/l	
72-55-9	4,4'-DDE	ND	0.0069	0.0035	ug/l	
50-29-3	4,4'-DDT	ND	0.0069	0.0047	ug/l	
72-20-8	Endrin	ND	0.0069	0.0042	ug/l	
1031-07-8	Endosulfan sulfate	ND	0.0069	0.0038	ug/l	
7421-93-4	Endrin aldehyde	ND	0.0069	0.0046	ug/l	
53494-70-5	Endrin ketone	ND	0.0069	0.0043	ug/l	
959-98-8	Endosulfan-I	ND	0.0069	0.0036	ug/l	
33213-65-9	Endosulfan-II	ND	0.0069	0.0034	ug/l	
76-44-8	Heptachlor	ND	0.0069	0.0031	ug/l	
1024-57-3	Heptachlor epoxide	ND	0.0069	0.0041	ug/l	
72-43-5	Methoxychlor	ND	0.014	0.0046	ug/l	
8001-35-2	Toxaphene	ND	0.17	0.11	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	75%		13-153%
877-09-8	Tetrachloro-m-xylene	76%		13-153%
2051-24-3	Decachlorobiphenyl	62%		10-138%
2051-24-3	Decachlorobiphenyl	56%		10-138%

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Report of Analysis

Client Sample ID:	PCMW-15D		
Lab Sample ID:	JC62879-7	**Date Sampled:**	03/20/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8082A SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EF181192.D	1	03/27/18 18:25	HB	03/26/18 18:20	OP10875	GEF6202
Run #2							

	Initial Volume	Final Volume
Run #1	290 ml	2.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	0.34	0.14	ug/l	
11104-28-2	Aroclor 1221	ND	0.34	0.29	ug/l	
11141-16-5	Aroclor 1232	ND	0.34	0.18	ug/l	
53469-21-9	Aroclor 1242	ND	0.34	0.16	ug/l	
12672-29-6	Aroclor 1248	ND	0.34	0.087	ug/l	
11097-69-1	Aroclor 1254	ND	0.34	0.29	ug/l	
11096-82-5	Aroclor 1260	ND	0.34	0.10	ug/l	
11100-14-4	Aroclor 1268	ND	0.34	0.12	ug/l	
37324-23-5	Aroclor 1262	ND	0.34	0.13	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	76%		11-166%
877-09-8	Tetrachloro-m-xylene	83%		11-166%
2051-24-3	Decachlorobiphenyl	69%		10-150%
2051-24-3	Decachlorobiphenyl	63%		10-150%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PCMW-15D
Lab Sample ID: JC62879-7
Matrix: AQ - Ground Water
Project: National Grid, Philly Coke, Philadelphia PA

Date Sampled: 03/20/18
Date Received: 03/23/18
Percent Solids: n/a

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	< 200	200	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Antimony	< 6.0	6.0	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Arsenic	27.3	3.0	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Barium	< 200	200	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Beryllium	< 1.0	1.0	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Cadmium	< 3.0	3.0	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Calcium	124000	5000	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Chromium	< 10	10	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Cobalt	< 50	50	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Copper	< 10	10	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Iron	26800	100	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Lead	< 3.0	3.0	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Magnesium	49600	5000	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Manganese	5070	15	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Mercury	< 0.20	0.20	ug/l	1	03/27/18	03/27/18	JA	SW846 7470A [1]	SW846 7470A [3]
Nickel	< 10	10	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Potassium	13300	10000	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Selenium	< 10	10	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Silver	< 10	10	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Sodium	54800	10000	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Thallium	< 2.0	2.0	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Vanadium	< 50	50	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Zinc	< 20	20	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]

(1) Instrument QC Batch: MA44080
(2) Instrument QC Batch: MA44135
(3) Prep QC Batch: MP6364
(4) Prep QC Batch: MP6402

RL = Reporting Limit

Report of Analysis

Client Sample ID:	PCMW-15D		
Lab Sample ID:	JC62879-7	**Date Sampled:**	03/20/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
		Percent Solids:	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

General Chemistry

Analyte	Result		RL	Units	DF	Analyzed	By	Method
Cyanide	0.020	J	0.010	mg/l	1	03/29/18 09:29	BM	EPA 335.4/LACHAT

RL = Reporting Limit

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Report of Analysis

Client Sample ID:	PCMW-8S		
Lab Sample ID:	JC62879-8	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2D174443.D	1	03/27/18 17:21	JP	n/a	n/a	V2D7344
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone [a]	ND	10	5.0	ug/l	UJ
71-43-2	Benzene	ND	0.50	0.17	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.38	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.22	ug/l	
75-25-2	Bromoform	ND	1.0	0.42	ug/l	
74-83-9	Bromomethane	ND	2.0	1.4	ug/l	
78-93-3	2-Butanone (MEK) [a]	ND	10	4.8	ug/l	UJ
75-15-0	Carbon disulfide	ND	2.0	0.50	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.34	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.24	ug/l	
75-00-3	Chloroethane [b]	ND	1.0	0.59	ug/l	
67-66-3	Chloroform	ND	1.0	0.29	ug/l	
74-87-3	Chloromethane	ND	1.0	0.53	ug/l	
110-82-7	Cyclohexane	ND	5.0	0.63	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.69	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.16	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.21	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.50	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.50	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.50	ug/l	
75-71-8	Dichlorodifluoromethane [b]	ND	2.0	1.9	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.21	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.20	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.47	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.50	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.40	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.24	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.25	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.22	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.22	ug/l	
76-13-1	Freon 113	ND	5.0	1.2	ug/l	
591-78-6	2-Hexanone	ND	5.0	3.3	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCMW-8S		
Lab Sample ID:	JC62879-8	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	1.0	0.25	ug/l	
79-20-9	Methyl Acetate	ND	5.0	3.1	ug/l	
108-87-2	Methylcyclohexane	ND	5.0	1.8	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.25	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	3.0	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.24	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.17	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.50	ug/l	
108-88-3	Toluene	ND	1.0	0.25	ug/l	
87-61-6	1,2,3-Trichlorobenzene [b]	ND	1.0	0.50	ug/l	
120-82-1	1,2,4-Trichlorobenzene [b]	ND	1.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.24	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.27	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.60	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.62	ug/l	
	m,p-Xylene	ND	1.0	0.43	ug/l	
95-47-6	o-Xylene	ND	1.0	0.22	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.22	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%		80-120%
17060-07-0	1,2-Dichloroethane-D4	107%		81-124%
2037-26-5	Toluene-D8	100%		80-120%
460-00-4	4-Bromofluorobenzene	98%		80-120%

(a) Associated CCV outside of control limits low.
(b) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
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J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PCMW-8S		
Lab Sample ID:	JC62879-8	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2P78143.D	1	03/28/18 21:17	JB	03/28/18 00:25	OP10883	E2P3440
Run #2							

	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2		

ABN TCL List (SOM0 1.1)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	5.0	0.82	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	5.0	0.89	ug/l	
120-83-2	2,4-Dichlorophenol	ND	2.0	1.3	ug/l	
105-67-9	2,4-Dimethylphenol	ND	5.0	2.4	ug/l	
51-28-5	2,4-Dinitrophenol	ND	5.0	1.6	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	5.0	1.3	ug/l	
95-48-7	2-Methylphenol	ND	2.0	0.89	ug/l	
	3&4-Methylphenol	ND	2.0	0.88	ug/l	
88-75-5	2-Nitrophenol	ND	5.0	0.96	ug/l	
100-02-7	4-Nitrophenol	ND	10	1.2	ug/l	
87-86-5	Pentachlorophenol	ND	4.0	1.4	ug/l	
108-95-2	Phenol	ND	2.0	0.39	ug/l	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	5.0	1.5	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	5.0	1.3	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	5.0	0.92	ug/l	
83-32-9	Acenaphthene	ND	1.0	0.19	ug/l	
208-96-8	Acenaphthylene	ND	1.0	0.14	ug/l	
98-86-2	Acetophenone	ND	2.0	0.21	ug/l	
120-12-7	Anthracene	ND	1.0	0.21	ug/l	
1912-24-9	Atrazine	ND	2.0	0.45	ug/l	
100-52-7	Benzaldehyde	ND	5.0	0.29	ug/l	
56-55-3	Benzo(a)anthracene	ND	1.0	0.20	ug/l	
50-32-8	Benzo(a)pyrene	ND	1.0	0.21	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	1.0	0.21	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	1.0	0.34	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	1.0	0.21	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	2.0	0.40	ug/l	
85-68-7	Butyl benzyl phthalate	ND	2.0	0.46	ug/l	
92-52-4	1,1'-Biphenyl	ND	1.0	0.21	ug/l	
91-58-7	2-Chloronaphthalene	ND	2.0	0.24	ug/l	
106-47-8	4-Chloroaniline	ND	5.0	0.34	ug/l	
86-74-8	Carbazole	ND	1.0	0.23	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCMW-8S		
Lab Sample ID:	JC62879-8	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

ABN TCL List (SOM0 1.1)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	2.0	0.65	ug/l	
218-01-9	Chrysene	ND	1.0	0.18	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	2.0	0.28	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	2.0	0.25	ug/l	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	2.0	0.40	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	2.0	0.37	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	1.0	0.55	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	1.0	0.48	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	2.0	0.51	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	1.0	0.33	ug/l	
132-64-9	Dibenzofuran	ND	5.0	0.22	ug/l	
84-74-2	Di-n-butyl phthalate	ND	2.0	0.50	ug/l	
117-84-0	Di-n-octyl phthalate	ND	2.0	0.23	ug/l	
84-66-2	Diethyl phthalate	ND	2.0	0.26	ug/l	
131-11-3	Dimethyl phthalate	ND	2.0	0.22	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.0	1.7	ug/l	
206-44-0	Fluoranthene	ND	1.0	0.17	ug/l	
86-73-7	Fluorene	ND	1.0	0.17	ug/l	
118-74-1	Hexachlorobenzene	ND	1.0	0.33	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.49	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	10	2.8	ug/l	
67-72-1	Hexachloroethane	ND	2.0	0.39	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	1.0	0.33	ug/l	
78-59-1	Isophorone	ND	2.0	0.28	ug/l	
91-57-6	2-Methylnaphthalene	ND	1.0	0.21	ug/l	
88-74-4	2-Nitroaniline	ND	5.0	0.28	ug/l	
99-09-2	3-Nitroaniline	ND	5.0	0.39	ug/l	
100-01-6	4-Nitroaniline	ND	5.0	0.44	ug/l	
91-20-3	Naphthalene	ND	1.0	0.23	ug/l	
98-95-3	Nitrobenzene	ND	2.0	0.64	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	2.0	0.48	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.0	0.22	ug/l	
85-01-8	Phenanthrene	ND	1.0	0.18	ug/l	
129-00-0	Pyrene	ND	1.0	0.22	ug/l	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	2.0	0.37	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	34%		10-110%
4165-62-2	Phenol-d5	24%		10-110%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCMW-8S		
Lab Sample ID:	JC62879-8	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

ABN TCL List (SOM0 1.1)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
118-79-6	2,4,6-Tribromophenol	86%		36-151%
4165-60-0	Nitrobenzene-d5	59%		34-128%
321-60-8	2-Fluorobiphenyl	67%		38-119%
1718-51-0	Terphenyl-d14	72%		26-129%

ND = Not detected MDL = Method Detection Limit
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Report of Analysis

Client Sample ID:	PCMW-8S		
Lab Sample ID:	JC62879-8	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8081B SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1G144707.D	1	03/28/18 02:18	CP	03/27/18 18:10	OP10885	G1G4598
Run #2							

	Initial Volume	Final Volume
Run #1	300 ml	2.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	0.0067	0.0034	ug/l	
319-84-6	alpha-BHC	ND	0.0067	0.0035	ug/l	
319-85-7	beta-BHC	ND	0.0067	0.0053	ug/l	
319-86-8	delta-BHC	ND	0.0067	0.0044	ug/l	
58-89-9	gamma-BHC (Lindane)	ND	0.0067	0.0040	ug/l	
5103-71-9	alpha-Chlordane	ND	0.0067	0.0033	ug/l	
5103-74-2	gamma-Chlordane	ND	0.0067	0.0028	ug/l	
60-57-1	Dieldrin	ND	0.0067	0.0051	ug/l	
72-54-8	4,4'-DDD	ND	0.0067	0.0038	ug/l	
72-55-9	4,4'-DDE	ND	0.0067	0.0034	ug/l	
50-29-3	4,4'-DDT	ND	0.0067	0.0046	ug/l	
72-20-8	Endrin	ND	0.0067	0.0040	ug/l	
1031-07-8	Endosulfan sulfate	ND	0.0067	0.0036	ug/l	
7421-93-4	Endrin aldehyde	ND	0.0067	0.0045	ug/l	
53494-70-5	Endrin ketone	ND	0.0067	0.0041	ug/l	
959-98-8	Endosulfan-I	ND	0.0067	0.0035	ug/l	
33213-65-9	Endosulfan-II	ND	0.0067	0.0033	ug/l	
76-44-8	Heptachlor	ND	0.0067	0.0030	ug/l	
1024-57-3	Heptachlor epoxide	ND	0.0067	0.0040	ug/l	
72-43-5	Methoxychlor	ND	0.013	0.0045	ug/l	
8001-35-2	Toxaphene	ND	0.17	0.11	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	84%		13-153%
877-09-8	Tetrachloro-m-xylene	80%		13-153%
2051-24-3	Decachlorobiphenyl	109%		10-138%
2051-24-3	Decachlorobiphenyl	83%		10-138%

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B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PCMW-8S		
Lab Sample ID:	JC62879-8	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8082A SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EF181224.D	1	03/28/18 20:19	HB	03/27/18 18:10	OP10884	GEF6203
Run #2							

	Initial Volume	Final Volume
Run #1	300 ml	2.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	0.33	0.13	ug/l	
11104-28-2	Aroclor 1221	ND	0.33	0.28	ug/l	
11141-16-5	Aroclor 1232	ND	0.33	0.17	ug/l	
53469-21-9	Aroclor 1242	ND	0.33	0.15	ug/l	
12672-29-6	Aroclor 1248	ND	0.33	0.084	ug/l	
11097-69-1	Aroclor 1254	ND	0.33	0.28	ug/l	
11096-82-5	Aroclor 1260	ND	0.33	0.10	ug/l	
11100-14-4	Aroclor 1268	ND	0.33	0.12	ug/l	
37324-23-5	Aroclor 1262	ND	0.33	0.13	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	84%		11-166%
877-09-8	Tetrachloro-m-xylene	89%		11-166%
2051-24-3	Decachlorobiphenyl	80%		10-150%
2051-24-3	Decachlorobiphenyl	82%		10-150%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PCMW-8S
Lab Sample ID: JC62879-8
Matrix: AQ - Ground Water
Project: National Grid, Philly Coke, Philadelphia PA

Date Sampled: 03/22/18
Date Received: 03/23/18
Percent Solids: n/a

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	< 200	200	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Antimony	9.9	6.0	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Arsenic	3.4	3.0	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Barium	< 200	200	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Beryllium	< 1.0	1.0	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Cadmium	< 3.0	3.0	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Calcium	170000	5000	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Chromium	< 10	10	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Cobalt	< 50	50	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Copper	< 10	10	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Iron	163	100	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Lead	5.3	3.0	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Magnesium	149000	5000	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Manganese	41.7	15	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Mercury	< 0.20	0.20	ug/l	1	03/27/18	03/27/18	JA	SW846 7470A [1]	SW846 7470A [3]
Nickel	< 10	10	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Potassium	17400	10000	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Selenium	11.9	10	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Silver	< 10	10	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Sodium	13900	10000	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Thallium	< 2.0	2.0	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Vanadium	< 50	50	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Zinc	48.2	20	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]

(1) Instrument QC Batch: MA44080
(2) Instrument QC Batch: MA44135
(3) Prep QC Batch: MP6364
(4) Prep QC Batch: MP6402

RL = Reporting Limit

Report of Analysis

Client Sample ID:	PCMW-8S		
Lab Sample ID:	JC62879-8	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
		Percent Solids:	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

General Chemistry

Analyte	Result		RL	Units	DF	Analyzed	By	Method
Cyanide	0.018	J	0.010	mg/l	1	03/29/18 09:30	BM	EPA 335.4/LACHAT

RL = Reporting Limit

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Report of Analysis

Client Sample ID:	PCMW-8D		
Lab Sample ID:	JC62879-9	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2D174435.D	1	03/27/18 13:21	JP	n/a	n/a	V2D7344
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone [a]	ND	10	5.0	ug/l	UJ
71-43-2	Benzene	ND	0.50	0.17	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.38	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.22	ug/l	
75-25-2	Bromoform	ND	1.0	0.42	ug/l	
74-83-9	Bromomethane	ND	2.0	1.4	ug/l	
78-93-3	2-Butanone (MEK) [a]	ND	10	4.8	ug/l	UJ
75-15-0	Carbon disulfide	ND	2.0	0.50	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.34	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.24	ug/l	
75-00-3	Chloroethane [b]	ND	1.0	0.59	ug/l	
67-66-3	Chloroform	ND	1.0	0.29	ug/l	
74-87-3	Chloromethane	ND	1.0	0.53	ug/l	
110-82-7	Cyclohexane	ND	5.0	0.63	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.69	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.16	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.21	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.50	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.50	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.50	ug/l	
75-71-8	Dichlorodifluoromethane [b]	ND	2.0	1.9	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.21	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.20	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.47	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.50	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.40	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.24	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.25	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.22	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.22	ug/l	
76-13-1	Freon 113	ND	5.0	1.2	ug/l	
591-78-6	2-Hexanone	ND	5.0	3.3	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCMW-8D		
Lab Sample ID:	JC62879-9	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	1.0	0.25	ug/l	
79-20-9	Methyl Acetate	ND	5.0	3.1	ug/l	
108-87-2	Methylcyclohexane	ND	5.0	1.8	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.25	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	3.0	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.24	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.17	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.50	ug/l	
108-88-3	Toluene	ND	1.0	0.25	ug/l	
87-61-6	1,2,3-Trichlorobenzene [b]	ND	1.0	0.50	ug/l	
120-82-1	1,2,4-Trichlorobenzene [b]	ND	1.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.24	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.27	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.60	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.62	ug/l	
	m,p-Xylene	ND	1.0	0.43	ug/l	
95-47-6	o-Xylene	ND	1.0	0.22	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.22	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		80-120%
17060-07-0	1,2-Dichloroethane-D4	105%		81-124%
2037-26-5	Toluene-D8	99%		80-120%
460-00-4	4-Bromofluorobenzene	98%		80-120%

(a) Associated CCV outside of control limits low.
(b) Associated CCV outside of control limits high, sample was ND.

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RL = Reporting Limit
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J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PCMW-8D		
Lab Sample ID:	JC62879-9	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2P78144.D	1	03/28/18 21:38	JB	03/28/18 00:25	OP10883	E2P3440
Run #2							

	Initial Volume	Final Volume
Run #1	980 ml	1.0 ml
Run #2		

ABN TCL List (SOM0 1.1)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	5.1	0.84	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	5.1	0.91	ug/l	
120-83-2	2,4-Dichlorophenol	ND	2.0	1.3	ug/l	
105-67-9	2,4-Dimethylphenol	ND	5.1	2.5	ug/l	
51-28-5	2,4-Dinitrophenol	ND	5.1	1.6	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	5.1	1.3	ug/l	
95-48-7	2-Methylphenol	ND	2.0	0.91	ug/l	
	3&4-Methylphenol	ND	2.0	0.90	ug/l	
88-75-5	2-Nitrophenol	ND	5.1	0.98	ug/l	
100-02-7	4-Nitrophenol	ND	10	1.2	ug/l	
87-86-5	Pentachlorophenol	ND	4.1	1.4	ug/l	
108-95-2	Phenol	ND	2.0	0.40	ug/l	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	5.1	1.5	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	5.1	1.4	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	5.1	0.94	ug/l	
83-32-9	Acenaphthene	3.9	1.0	0.19	ug/l	
208-96-8	Acenaphthylene	ND	1.0	0.14	ug/l	
98-86-2	Acetophenone	ND	2.0	0.21	ug/l	
120-12-7	Anthracene	ND	1.0	0.22	ug/l	
1912-24-9	Atrazine	ND	2.0	0.46	ug/l	
100-52-7	Benzaldehyde	ND	5.1	0.29	ug/l	
56-55-3	Benzo(a)anthracene	ND	1.0	0.21	ug/l	
50-32-8	Benzo(a)pyrene	ND	1.0	0.22	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	1.0	0.21	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	1.0	0.35	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	1.0	0.21	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	2.0	0.41	ug/l	
85-68-7	Butyl benzyl phthalate	ND	2.0	0.47	ug/l	
92-52-4	1,1'-Biphenyl	ND	1.0	0.22	ug/l	
91-58-7	2-Chloronaphthalene	ND	2.0	0.24	ug/l	
106-47-8	4-Chloroaniline	ND	5.1	0.35	ug/l	UJ
86-74-8	Carbazole	ND	1.0	0.23	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCMW-8D		
Lab Sample ID:	JC62879-9	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

ABN TCL List (SOM0 1.1)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	2.0	0.66	ug/l	
218-01-9	Chrysene	ND	1.0	0.18	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	2.0	0.28	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	2.0	0.25	ug/l	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	2.0	0.41	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	2.0	0.37	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	1.0	0.56	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	1.0	0.49	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	2.0	0.52	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	1.0	0.34	ug/l	
132-64-9	Dibenzofuran	ND	5.1	0.22	ug/l	
84-74-2	Di-n-butyl phthalate	ND	2.0	0.51	ug/l	
117-84-0	Di-n-octyl phthalate	ND	2.0	0.24	ug/l	
84-66-2	Diethyl phthalate	1.0	2.0	0.27	ug/l	J
131-11-3	Dimethyl phthalate	ND	2.0	0.22	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.0	1.7	ug/l	
206-44-0	Fluoranthene	ND	1.0	0.17	ug/l	
86-73-7	Fluorene	ND	1.0	0.17	ug/l	
118-74-1	Hexachlorobenzene	ND	1.0	0.33	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.50	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	10	2.8	ug/l	
67-72-1	Hexachloroethane	ND	2.0	0.40	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	1.0	0.34	ug/l	
78-59-1	Isophorone	ND	2.0	0.28	ug/l	
91-57-6	2-Methylnaphthalene	ND	1.0	0.21	ug/l	
88-74-4	2-Nitroaniline	ND	5.1	0.28	ug/l	
99-09-2	3-Nitroaniline	ND	5.1	0.39	ug/l	
100-01-6	4-Nitroaniline	ND	5.1	0.45	ug/l	
91-20-3	Naphthalene	ND	1.0	0.24	ug/l	
98-95-3	Nitrobenzene	ND	2.0	0.66	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	2.0	0.49	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.1	0.23	ug/l	
85-01-8	Phenanthrene	ND	1.0	0.18	ug/l	
129-00-0	Pyrene	ND	1.0	0.22	ug/l	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	2.0	0.38	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	37%		10-110%
4165-62-2	Phenol-d5	27%		10-110%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCMW-8D		
Lab Sample ID:	JC62879-9	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

ABN TCL List (SOM0 1.1)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
118-79-6	2,4,6-Tribromophenol	95%		36-151%
4165-60-0	Nitrobenzene-d5	65%		34-128%
321-60-8	2-Fluorobiphenyl	72%		38-119%
1718-51-0	Terphenyl-d14	71%		26-129%

ND = Not detected MDL = Method Detection Limit
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Report of Analysis

Client Sample ID:	PCMW-8D		
Lab Sample ID:	JC62879-9	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8081B SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1G144708.D	1	03/28/18 02:35	CP	03/27/18 18:10	OP10885	G1G4598
Run #2							

	Initial Volume	Final Volume
Run #1	290 ml	2.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	0.0069	0.0036	ug/l	
319-84-6	alpha-BHC	ND	0.0069	0.0036	ug/l	
319-85-7	beta-BHC	ND	0.0069	0.0055	ug/l	
319-86-8	delta-BHC	ND	0.0069	0.0045	ug/l	
58-89-9	gamma-BHC (Lindane)	ND	0.0069	0.0041	ug/l	
5103-71-9	alpha-Chlordane	ND	0.0069	0.0034	ug/l	
5103-74-2	gamma-Chlordane	ND	0.0069	0.0029	ug/l	
60-57-1	Dieldrin	ND	0.0069	0.0053	ug/l	
72-54-8	4,4'-DDD	ND	0.0069	0.0040	ug/l	
72-55-9	4,4'-DDE	ND	0.0069	0.0035	ug/l	
50-29-3	4,4'-DDT	ND	0.0069	0.0047	ug/l	
72-20-8	Endrin	ND	0.0069	0.0042	ug/l	
1031-07-8	Endosulfan sulfate	ND	0.0069	0.0038	ug/l	
7421-93-4	Endrin aldehyde	ND	0.0069	0.0046	ug/l	
53494-70-5	Endrin ketone	ND	0.0069	0.0043	ug/l	
959-98-8	Endosulfan-I	ND	0.0069	0.0036	ug/l	
33213-65-9	Endosulfan-II	ND	0.0069	0.0034	ug/l	
76-44-8	Heptachlor	ND	0.0069	0.0031	ug/l	
1024-57-3	Heptachlor epoxide	ND	0.0069	0.0041	ug/l	
72-43-5	Methoxychlor	ND	0.014	0.0046	ug/l	
8001-35-2	Toxaphene	ND	0.17	0.11	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	49%		13-153%
877-09-8	Tetrachloro-m-xylene	53%		13-153%
2051-24-3	Decachlorobiphenyl	22%		10-138%
2051-24-3	Decachlorobiphenyl	23%		10-138%

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Report of Analysis

Client Sample ID:	PCMW-8D		
Lab Sample ID:	JC62879-9	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8082A SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EF181220.D	1	03/28/18 18:39	HB	03/27/18 18:10	OP10884	GEF6203
Run #2							

	Initial Volume	Final Volume
Run #1	290 ml	2.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	0.34	0.14	ug/l	
11104-28-2	Aroclor 1221	ND	0.34	0.29	ug/l	
11141-16-5	Aroclor 1232	ND	0.34	0.18	ug/l	
53469-21-9	Aroclor 1242	ND	0.34	0.16	ug/l	
12672-29-6	Aroclor 1248	ND	0.34	0.087	ug/l	
11097-69-1	Aroclor 1254	ND	0.34	0.29	ug/l	
11096-82-5	Aroclor 1260	ND	0.34	0.10	ug/l	
11100-14-4	Aroclor 1268	ND	0.34	0.12	ug/l	
37324-23-5	Aroclor 1262	ND	0.34	0.13	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	54%		11-166%
877-09-8	Tetrachloro-m-xylene	53%		11-166%
2051-24-3	Decachlorobiphenyl	29%		10-150%
2051-24-3	Decachlorobiphenyl	28%		10-150%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCMW-8D		
Lab Sample ID:	JC62879-9	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
		Percent Solids:	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum [a]	< 1000	1000	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Antimony [a]	< 30	30	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Arsenic [a]	< 15	15	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Barium [a]	< 1000	1000	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Beryllium [a]	< 5.0	5.0	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Cadmium [a]	< 15	15	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Calcium [a]	63500	25000	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Chromium [a]	< 50	50	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Cobalt [a]	< 250	250	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Copper [a]	< 50	50	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Iron [a]	165000	500	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Lead [a]	< 15	15	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Magnesium [a]	26800	25000	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Manganese [a]	6640	75	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Mercury [a]	< 0.60	0.60	ug/l	1	03/27/18	03/27/18	JA	SW846 7470A [1]	SW846 7470A [3]
Nickel [a]	< 50	50	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Potassium [a]	< 50000	50000	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Selenium [a]	< 50	50	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Silver [a]	< 50	50	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Sodium [a]	79000	50000	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Thallium [a]	< 10	10	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Vanadium [a]	< 250	250	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Zinc [a]	< 100	100	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]

(1) Instrument QC Batch: MA44080
(2) Instrument QC Batch: MA44114
(3) Prep QC Batch: MP6364
(4) Prep QC Batch: MP6399

(a) Elevated sample detection limit due to difficult sample matrix.

RL = Reporting Limit

Report of Analysis

Client Sample ID:	PCMW-8D		
Lab Sample ID:	JC62879-9	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
		Percent Solids:	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

General Chemistry

Analyte	Result		RL	Units	DF	Analyzed	By	Method
Cyanide	0.060	J	0.010	mg/l	1	03/29/18 09:31	BM	EPA 335.4/LACHAT

RL = Reporting Limit

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Report of Analysis

Client Sample ID:	PCMW-17S		
Lab Sample ID:	JC62879-10	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2D174444.D	1	03/27/18 17:51	JP	n/a	n/a	V2D7344
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone [a]	ND	10	5.0	ug/l	UJ
71-43-2	Benzene	1.1	0.50	0.17	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.38	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.22	ug/l	
75-25-2	Bromoform	ND	1.0	0.42	ug/l	
74-83-9	Bromomethane	ND	2.0	1.4	ug/l	
78-93-3	2-Butanone (MEK) [a]	ND	10	4.8	ug/l	UJ
75-15-0	Carbon disulfide	ND	2.0	0.50	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.34	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.24	ug/l	
75-00-3	Chloroethane [b]	ND	1.0	0.59	ug/l	
67-66-3	Chloroform	ND	1.0	0.29	ug/l	
74-87-3	Chloromethane	ND	1.0	0.53	ug/l	
110-82-7	Cyclohexane	ND	5.0	0.63	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.69	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.16	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.21	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.50	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.50	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.50	ug/l	
75-71-8	Dichlorodifluoromethane [b]	ND	2.0	1.9	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.21	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.20	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.47	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.50	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.40	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.24	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.25	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.22	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.22	ug/l	
76-13-1	Freon 113	ND	5.0	1.2	ug/l	
591-78-6	2-Hexanone	ND	5.0	3.3	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCMW-17S		
Lab Sample ID:	JC62879-10	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	1.0	0.25	ug/l	
79-20-9	Methyl Acetate	ND	5.0	3.1	ug/l	
108-87-2	Methylcyclohexane	ND	5.0	1.8	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.25	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	3.0	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.24	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.17	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.50	ug/l	
108-88-3	Toluene	ND	1.0	0.25	ug/l	
87-61-6	1,2,3-Trichlorobenzene [b]	ND	1.0	0.50	ug/l	
120-82-1	1,2,4-Trichlorobenzene [b]	ND	1.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.24	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.27	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.60	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.62	ug/l	
	m,p-Xylene	ND	1.0	0.43	ug/l	
95-47-6	o-Xylene	ND	1.0	0.22	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.22	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	104%		80-120%
17060-07-0	1,2-Dichloroethane-D4	106%		81-124%
2037-26-5	Toluene-D8	99%		80-120%
460-00-4	4-Bromofluorobenzene	98%		80-120%

(a) Associated CCV outside of control limits low.
(b) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PCMW-17S		
Lab Sample ID:	JC62879-10	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2P78145.D	1	03/28/18 22:00	JB	03/28/18 00:25	OP10883	E2P3440
Run #2							

	Initial Volume	Final Volume
Run #1	980 ml	1.0 ml
Run #2		

ABN TCL List (SOM0 1.1)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	5.1	0.84	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	5.1	0.91	ug/l	
120-83-2	2,4-Dichlorophenol	ND	2.0	1.3	ug/l	
105-67-9	2,4-Dimethylphenol	ND	5.1	2.5	ug/l	
51-28-5	2,4-Dinitrophenol	ND	5.1	1.6	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	5.1	1.3	ug/l	
95-48-7	2-Methylphenol	ND	2.0	0.91	ug/l	
	3&4-Methylphenol	ND	2.0	0.90	ug/l	
88-75-5	2-Nitrophenol	ND	5.1	0.98	ug/l	
100-02-7	4-Nitrophenol	ND	10	1.2	ug/l	
87-86-5	Pentachlorophenol	ND	4.1	1.4	ug/l	
108-95-2	Phenol	ND	2.0	0.40	ug/l	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	5.1	1.5	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	5.1	1.4	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	5.1	0.94	ug/l	
83-32-9	Acenaphthene	1.2	1.0	0.19	ug/l	
208-96-8	Acenaphthylene	ND	1.0	0.14	ug/l	
98-86-2	Acetophenone	ND	2.0	0.21	ug/l	
120-12-7	Anthracene	ND	1.0	0.22	ug/l	
1912-24-9	Atrazine	ND	2.0	0.46	ug/l	
100-52-7	Benzaldehyde	ND	5.1	0.29	ug/l	
56-55-3	Benzo(a)anthracene	ND	1.0	0.21	ug/l	
50-32-8	Benzo(a)pyrene	ND	1.0	0.22	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	1.0	0.21	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	1.0	0.35	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	1.0	0.21	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	2.0	0.41	ug/l	
85-68-7	Butyl benzyl phthalate	ND	2.0	0.47	ug/l	
92-52-4	1,1'-Biphenyl	ND	1.0	0.22	ug/l	
91-58-7	2-Chloronaphthalene	ND	2.0	0.24	ug/l	
106-47-8	4-Chloroaniline	ND	5.1	0.35	ug/l	
86-74-8	Carbazole	ND	1.0	0.23	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCMW-17S		
Lab Sample ID:	JC62879-10	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

ABN TCL List (SOM0 1.1)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	2.0	0.66	ug/l	
218-01-9	Chrysene	ND	1.0	0.18	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	2.0	0.28	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	2.0	0.25	ug/l	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	2.0	0.41	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	2.0	0.37	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	1.0	0.56	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	1.0	0.49	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	2.0	0.52	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	1.0	0.34	ug/l	
132-64-9	Dibenzofuran	ND	5.1	0.22	ug/l	
84-74-2	Di-n-butyl phthalate	ND	2.0	0.51	ug/l	
117-84-0	Di-n-octyl phthalate	ND	2.0	0.24	ug/l	
84-66-2	Diethyl phthalate	ND	2.0	0.27	ug/l	
131-11-3	Dimethyl phthalate	ND	2.0	0.22	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.0	1.7	ug/l	
206-44-0	Fluoranthene	ND	1.0	0.17	ug/l	
86-73-7	Fluorene	0.76	1.0	0.17	ug/l	J
118-74-1	Hexachlorobenzene	ND	1.0	0.33	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.50	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	10	2.8	ug/l	
67-72-1	Hexachloroethane	ND	2.0	0.40	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	1.0	0.34	ug/l	
78-59-1	Isophorone	ND	2.0	0.28	ug/l	
91-57-6	2-Methylnaphthalene	ND	1.0	0.21	ug/l	
88-74-4	2-Nitroaniline	ND	5.1	0.28	ug/l	
99-09-2	3-Nitroaniline	ND	5.1	0.39	ug/l	
100-01-6	4-Nitroaniline	ND	5.1	0.45	ug/l	
91-20-3	Naphthalene	ND	1.0	0.24	ug/l	
98-95-3	Nitrobenzene	ND	2.0	0.66	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	2.0	0.49	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.1	0.23	ug/l	
85-01-8	Phenanthrene	ND	1.0	0.18	ug/l	
129-00-0	Pyrene	ND	1.0	0.22	ug/l	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	2.0	0.38	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	35%		10-110%
4165-62-2	Phenol-d5	25%		10-110%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCMW-17S		
Lab Sample ID:	JC62879-10	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

ABN TCL List (SOM0 1.1)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
118-79-6	2,4,6-Tribromophenol	89%		36-151%
4165-60-0	Nitrobenzene-d5	59%		34-128%
321-60-8	2-Fluorobiphenyl	67%		38-119%
1718-51-0	Terphenyl-d14	72%		26-129%

ND = Not detected MDL = Method Detection Limit
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B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PCMW-17S		
Lab Sample ID:	JC62879-10	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8081B SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1G144711.D	1	03/28/18 03:27	CP	03/27/18 18:10	OP10885	G1G4598
Run #2							

	Initial Volume	Final Volume
Run #1	290 ml	2.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	0.0069	0.0036	ug/l	
319-84-6	alpha-BHC	ND	0.0069	0.0036	ug/l	
319-85-7	beta-BHC	ND	0.0069	0.0055	ug/l	
319-86-8	delta-BHC	ND	0.0069	0.0045	ug/l	
58-89-9	gamma-BHC (Lindane)	ND	0.0069	0.0041	ug/l	
5103-71-9	alpha-Chlordane	ND	0.0069	0.0034	ug/l	
5103-74-2	gamma-Chlordane	ND	0.0069	0.0029	ug/l	
60-57-1	Dieldrin	ND	0.0069	0.0053	ug/l	
72-54-8	4,4'-DDD	ND	0.0069	0.0040	ug/l	
72-55-9	4,4'-DDE	ND	0.0069	0.0035	ug/l	
50-29-3	4,4'-DDT	ND	0.0069	0.0047	ug/l	
72-20-8	Endrin	ND	0.0069	0.0042	ug/l	
1031-07-8	Endosulfan sulfate	ND	0.0069	0.0038	ug/l	
7421-93-4	Endrin aldehyde	ND	0.0069	0.0046	ug/l	
53494-70-5	Endrin ketone	ND	0.0069	0.0043	ug/l	
959-98-8	Endosulfan-I	ND	0.0069	0.0036	ug/l	
33213-65-9	Endosulfan-II	ND	0.0069	0.0034	ug/l	
76-44-8	Heptachlor	ND	0.0069	0.0031	ug/l	
1024-57-3	Heptachlor epoxide	ND	0.0069	0.0041	ug/l	
72-43-5	Methoxychlor	ND	0.014	0.0046	ug/l	
8001-35-2	Toxaphene	ND	0.17	0.11	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	80%		13-153%
877-09-8	Tetrachloro-m-xylene	74%		13-153%
2051-24-3	Decachlorobiphenyl	105%		10-138%
2051-24-3	Decachlorobiphenyl	75%		10-138%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PCMW-17S		
Lab Sample ID:	JC62879-10	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8082A SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EF181229.D	1	03/28/18 22:24	HB	03/27/18 18:10	OP10884	GEF6203
Run #2							

	Initial Volume	Final Volume
Run #1	290 ml	2.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	0.34	0.14	ug/l	
11104-28-2	Aroclor 1221	ND	0.34	0.29	ug/l	
11141-16-5	Aroclor 1232	ND	0.34	0.18	ug/l	
53469-21-9	Aroclor 1242	ND	0.34	0.16	ug/l	
12672-29-6	Aroclor 1248	ND	0.34	0.087	ug/l	
11097-69-1	Aroclor 1254	ND	0.34	0.29	ug/l	
11096-82-5	Aroclor 1260	ND	0.34	0.10	ug/l	
11100-14-4	Aroclor 1268	ND	0.34	0.12	ug/l	
37324-23-5	Aroclor 1262	ND	0.34	0.13	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	76%		11-166%
877-09-8	Tetrachloro-m-xylene	79%		11-166%
2051-24-3	Decachlorobiphenyl	73%		10-150%
2051-24-3	Decachlorobiphenyl	73%		10-150%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PCMW-17S
Lab Sample ID: JC62879-10
Matrix: AQ - Ground Water
Project: National Grid, Philly Coke, Philadelphia PA

Date Sampled: 03/22/18
Date Received: 03/23/18
Percent Solids: n/a

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	1020	200	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [5]
Antimony	< 6.0	6.0	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [5]
Arsenic [a]	< 15	15	ug/l	5	03/29/18	04/04/18		SW846 6010C [3]	SW846 3010A [5]
Barium	< 200	200	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [5]
Beryllium	< 1.0	1.0	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [5]
Cadmium	3.3	3.0	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [5]
Calcium	188000	5000	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [5]
Chromium	< 10	10	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [5]
Cobalt	< 50	50	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [5]
Copper	30.6	10	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [5]
Iron	22100	100	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [5]
Lead [a]	< 15	15	ug/l	5	03/29/18	04/04/18		SW846 6010C [3]	SW846 3010A [5]
Magnesium	34500	5000	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [5]
Manganese	2120	15	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [5]
Mercury	< 0.20	0.20	ug/l	1	03/27/18	03/27/18	JA	SW846 7470A [1]	SW846 7470A [4]
Nickel	93.4	10	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [5]
Potassium	< 10000	10000	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [5]
Selenium	< 10	10	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [5]
Silver	< 10	10	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [5]
Sodium	11100	10000	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [5]
Thallium [a]	< 10	10	ug/l	5	03/29/18	04/04/18		SW846 6010C [3]	SW846 3010A [5]
Vanadium	< 50	50	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [5]
Zinc	1130	20	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [5]

(1) Instrument QC Batch: MA44080
(2) Instrument QC Batch: MA44135
(3) Instrument QC Batch: MA44142
(4) Prep QC Batch: MP6364
(5) Prep QC Batch: MP6402

(a) Elevated detection limit due to dilution required for high interfering element.

RL = Reporting Limit

Report of Analysis

Client Sample ID:	PCMW-17S		
Lab Sample ID:	JC62879-10	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
		Percent Solids:	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Cyanide	< 0.010 UJ	0.010	mg/l	1	03/29/18 09:33	BM	EPA 335.4/LACHAT

RL = Reporting Limit

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Report of Analysis

Client Sample ID:	PCMW-17D		
Lab Sample ID:	JC62879-11	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2E141954.D	1	03/29/18 10:03	SS	n/a	n/a	V2E6206
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone [a]	ND	10	5.0	ug/l	UJ
71-43-2	Benzene	ND	0.50	0.17	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.38	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.22	ug/l	
75-25-2	Bromoform	ND	1.0	0.42	ug/l	
74-83-9	Bromomethane	ND	2.0	1.4	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	4.8	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.50	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.34	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.24	ug/l	
75-00-3	Chloroethane	ND	1.0	0.59	ug/l	
67-66-3	Chloroform	ND	1.0	0.29	ug/l	
74-87-3	Chloromethane	ND	1.0	0.53	ug/l	
110-82-7	Cyclohexane	ND	5.0	0.63	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.69	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.16	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.21	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.50	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.50	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.50	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.9	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.21	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.20	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.47	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.50	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.40	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.24	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.25	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.22	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.22	ug/l	
76-13-1	Freon 113	ND	5.0	1.2	ug/l	
591-78-6	2-Hexanone	ND	5.0	3.3	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCMW-17D		
Lab Sample ID:	JC62879-11	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	1.0	0.25	ug/l	
79-20-9	Methyl Acetate	ND	5.0	3.1	ug/l	
108-87-2	Methylcyclohexane	ND	5.0	1.8	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.25	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	3.0	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.24	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.17	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.50	ug/l	
108-88-3	Toluene	ND	1.0	0.25	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.50	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.24	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.27	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.60	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.62	ug/l	
	m,p-Xylene	ND	1.0	0.43	ug/l	
95-47-6	o-Xylene	ND	1.0	0.22	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.22	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%		80-120%
17060-07-0	1,2-Dichloroethane-D4	102%		81-124%
2037-26-5	Toluene-D8	102%		80-120%
460-00-4	4-Bromofluorobenzene	101%		80-120%

(a) Associated CCV outside of control limits low.

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RL = Reporting Limit
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J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PCMW-17D		
Lab Sample ID:	JC62879-11	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2P78146.D	1	03/28/18 22:21	JB	03/28/18 00:25	OP10883	E2P3440
Run #2							

	Initial Volume	Final Volume
Run #1	900 ml	1.0 ml
Run #2		

ABN TCL List (SOM0 1.1)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	5.6	0.91	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	5.6	0.99	ug/l	
120-83-2	2,4-Dichlorophenol	ND	2.2	1.4	ug/l	
105-67-9	2,4-Dimethylphenol	ND	5.6	2.7	ug/l	
51-28-5	2,4-Dinitrophenol	ND	5.6	1.7	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	5.6	1.4	ug/l	
95-48-7	2-Methylphenol	ND	2.2	0.99	ug/l	
	3&4-Methylphenol	ND	2.2	0.98	ug/l	
88-75-5	2-Nitrophenol	ND	5.6	1.1	ug/l	
100-02-7	4-Nitrophenol	ND	11	1.3	ug/l	
87-86-5	Pentachlorophenol	ND	4.4	1.5	ug/l	
108-95-2	Phenol	ND	2.2	0.44	ug/l	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	5.6	1.6	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	5.6	1.5	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	5.6	1.0	ug/l	
83-32-9	Acenaphthene	ND	1.1	0.21	ug/l	
208-96-8	Acenaphthylene	ND	1.1	0.15	ug/l	
98-86-2	Acetophenone	ND	2.2	0.23	ug/l	
120-12-7	Anthracene	ND	1.1	0.23	ug/l	
1912-24-9	Atrazine	ND	2.2	0.50	ug/l	
100-52-7	Benzaldehyde	ND	5.6	0.32	ug/l	
56-55-3	Benzo(a)anthracene	ND	1.1	0.23	ug/l	
50-32-8	Benzo(a)pyrene	ND	1.1	0.24	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	1.1	0.23	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	1.1	0.38	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	1.1	0.23	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	2.2	0.45	ug/l	
85-68-7	Butyl benzyl phthalate	ND	2.2	0.51	ug/l	
92-52-4	1,1'-Biphenyl	ND	1.1	0.24	ug/l	
91-58-7	2-Chloronaphthalene	ND	2.2	0.26	ug/l	
106-47-8	4-Chloroaniline	ND	5.6	0.38	ug/l	
86-74-8	Carbazole	ND	1.1	0.25	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCMW-17D		
Lab Sample ID:	JC62879-11	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

ABN TCL List (SOM0 1.1)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	2.2	0.72	ug/l	
218-01-9	Chrysene	ND	1.1	0.20	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	2.2	0.31	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	2.2	0.28	ug/l	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	2.2	0.45	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	2.2	0.41	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	1.1	0.61	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	1.1	0.53	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	2.2	0.56	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	1.1	0.37	ug/l	
132-64-9	Dibenzofuran	ND	5.6	0.24	ug/l	
84-74-2	Di-n-butyl phthalate	ND	2.2	0.55	ug/l	
117-84-0	Di-n-octyl phthalate	ND	2.2	0.26	ug/l	
84-66-2	Diethyl phthalate	ND	2.2	0.29	ug/l	
131-11-3	Dimethyl phthalate	ND	2.2	0.24	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.2	1.8	ug/l	
206-44-0	Fluoranthene	ND	1.1	0.19	ug/l	
86-73-7	Fluorene	ND	1.1	0.19	ug/l	
118-74-1	Hexachlorobenzene	ND	1.1	0.36	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.1	0.55	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	11	3.1	ug/l	
67-72-1	Hexachloroethane	ND	2.2	0.43	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	1.1	0.37	ug/l	
78-59-1	Isophorone	ND	2.2	0.31	ug/l	
91-57-6	2-Methylnaphthalene	ND	1.1	0.23	ug/l	
88-74-4	2-Nitroaniline	ND	5.6	0.31	ug/l	
99-09-2	3-Nitroaniline	ND	5.6	0.43	ug/l	
100-01-6	4-Nitroaniline	ND	5.6	0.49	ug/l	
91-20-3	Naphthalene	ND	1.1	0.26	ug/l	
98-95-3	Nitrobenzene	ND	2.2	0.71	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	2.2	0.53	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.6	0.25	ug/l	
85-01-8	Phenanthrene	ND	1.1	0.19	ug/l	
129-00-0	Pyrene	ND	1.1	0.24	ug/l	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	2.2	0.41	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	42%		10-110%
4165-62-2	Phenol-d5	31%		10-110%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCMW-17D		
Lab Sample ID:	JC62879-11	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

ABN TCL List (SOM0 1.1)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
118-79-6	2,4,6-Tribromophenol	91%		36-151%
4165-60-0	Nitrobenzene-d5	71%		34-128%
321-60-8	2-Fluorobiphenyl	73%		38-119%
1718-51-0	Terphenyl-d14	60%		26-129%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PCMW-17D		
Lab Sample ID:	JC62879-11	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8081B SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1G144712.D	1	03/28/18 03:44	CP	03/27/18 18:10	OP10885	G1G4598
Run #2							

	Initial Volume	Final Volume
Run #1	290 ml	2.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	0.0069	0.0036	ug/l	
319-84-6	alpha-BHC	ND	0.0069	0.0036	ug/l	
319-85-7	beta-BHC	ND	0.0069	0.0055	ug/l	
319-86-8	delta-BHC	ND	0.0069	0.0045	ug/l	
58-89-9	gamma-BHC (Lindane)	ND	0.0069	0.0041	ug/l	
5103-71-9	alpha-Chlordane	ND	0.0069	0.0034	ug/l	
5103-74-2	gamma-Chlordane	ND	0.0069	0.0029	ug/l	
60-57-1	Dieldrin	0.046	0.0069	0.0053	ug/l	
72-54-8	4,4'-DDD	ND	0.0069	0.0040	ug/l	
72-55-9	4,4'-DDE	ND	0.0069	0.0035	ug/l	
50-29-3	4,4'-DDT	ND	0.0069	0.0047	ug/l	
72-20-8	Endrin	ND	0.0069	0.0042	ug/l	
1031-07-8	Endosulfan sulfate	ND	0.0069	0.0038	ug/l	
7421-93-4	Endrin aldehyde	ND	0.0069	0.0046	ug/l	
53494-70-5	Endrin ketone	ND	0.0069	0.0043	ug/l	
959-98-8	Endosulfan-I	ND	0.0069	0.0036	ug/l	
33213-65-9	Endosulfan-II	ND	0.0069	0.0034	ug/l	
76-44-8	Heptachlor	ND	0.0069	0.0031	ug/l	
1024-57-3	Heptachlor epoxide	ND	0.0069	0.0041	ug/l	
72-43-5	Methoxychlor	ND	0.014	0.0046	ug/l	
8001-35-2	Toxaphene	ND	0.17	0.11	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	82%		13-153%
877-09-8	Tetrachloro-m-xylene	79%		13-153%
2051-24-3	Decachlorobiphenyl	77%		10-138%
2051-24-3	Decachlorobiphenyl	69%		10-138%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PCMW-17D		
Lab Sample ID:	JC62879-11	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8082A SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EF181230.D	1	03/28/18 22:49	HB	03/27/18 18:10	OP10884	GEF6203
Run #2							

	Initial Volume	Final Volume
Run #1	290 ml	2.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	0.34	0.14	ug/l	
11104-28-2	Aroclor 1221	ND	0.34	0.29	ug/l	
11141-16-5	Aroclor 1232	ND	0.34	0.18	ug/l	
53469-21-9	Aroclor 1242	ND	0.34	0.16	ug/l	
12672-29-6	Aroclor 1248	ND	0.34	0.087	ug/l	
11097-69-1	Aroclor 1254	ND	0.34	0.29	ug/l	
11096-82-5	Aroclor 1260	ND	0.34	0.10	ug/l	
11100-14-4	Aroclor 1268	ND	0.34	0.12	ug/l	
37324-23-5	Aroclor 1262	ND	0.34	0.13	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	87%		11-166%
877-09-8	Tetrachloro-m-xylene	92%		11-166%
2051-24-3	Decachlorobiphenyl	80%		10-150%
2051-24-3	Decachlorobiphenyl	69%		10-150%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCMW-17D		
Lab Sample ID:	JC62879-11	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
		Percent Solids:	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	1170	200	ug/l	1	03/29/18	03/30/18	ND	SW846 6010C [2]	SW846 3010A [4]
Antimony	< 6.0	6.0	ug/l	1	03/29/18	03/30/18	ND	SW846 6010C [2]	SW846 3010A [4]
Arsenic	< 3.0	3.0	ug/l	1	03/29/18	03/30/18	ND	SW846 6010C [2]	SW846 3010A [4]
Barium	< 200	200	ug/l	1	03/29/18	03/30/18	ND	SW846 6010C [2]	SW846 3010A [4]
Beryllium	< 1.0	1.0	ug/l	1	03/29/18	03/30/18	ND	SW846 6010C [2]	SW846 3010A [4]
Cadmium	< 3.0	3.0	ug/l	1	03/29/18	03/30/18	ND	SW846 6010C [2]	SW846 3010A [4]
Calcium	58900	5000	ug/l	1	03/29/18	03/30/18	ND	SW846 6010C [2]	SW846 3010A [4]
Chromium	< 10	10	ug/l	1	03/29/18	03/30/18	ND	SW846 6010C [2]	SW846 3010A [4]
Cobalt	< 50	50	ug/l	1	03/29/18	03/30/18	ND	SW846 6010C [2]	SW846 3010A [4]
Copper	< 10	10	ug/l	1	03/29/18	03/30/18	ND	SW846 6010C [2]	SW846 3010A [4]
Iron	5830	100	ug/l	1	03/29/18	03/30/18	ND	SW846 6010C [2]	SW846 3010A [4]
Lead	< 3.0	3.0	ug/l	1	03/29/18	03/30/18	ND	SW846 6010C [2]	SW846 3010A [4]
Magnesium	32000	5000	ug/l	1	03/29/18	03/30/18	ND	SW846 6010C [2]	SW846 3010A [4]
Manganese	4750	15	ug/l	1	03/29/18	03/30/18	ND	SW846 6010C [2]	SW846 3010A [4]
Mercury	< 0.20	0.20	ug/l	1	03/27/18	03/27/18	JA	SW846 7470A [1]	SW846 7470A [3]
Nickel	< 10	10	ug/l	1	03/29/18	03/30/18	ND	SW846 6010C [2]	SW846 3010A [4]
Potassium	< 10000	10000	ug/l	1	03/29/18	03/30/18	ND	SW846 6010C [2]	SW846 3010A [4]
Selenium	< 10	10	ug/l	1	03/29/18	03/30/18	ND	SW846 6010C [2]	SW846 3010A [4]
Silver	< 10	10	ug/l	1	03/29/18	03/30/18	ND	SW846 6010C [2]	SW846 3010A [4]
Sodium	50100	10000	ug/l	1	03/29/18	03/30/18	ND	SW846 6010C [2]	SW846 3010A [4]
Thallium	< 2.0	2.0	ug/l	1	03/29/18	03/30/18	ND	SW846 6010C [2]	SW846 3010A [4]
Vanadium	< 50	50	ug/l	1	03/29/18	03/30/18	ND	SW846 6010C [2]	SW846 3010A [4]
Zinc	< 20	20	ug/l	1	03/29/18	03/30/18	ND	SW846 6010C [2]	SW846 3010A [4]

(1) Instrument QC Batch: MA44080
(2) Instrument QC Batch: MA44103
(3) Prep QC Batch: MP6364
(4) Prep QC Batch: MP6402

RL = Reporting Limit

Report of Analysis

Client Sample ID:	PCMW-17D		
Lab Sample ID:	JC62879-11	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
		Percent Solids:	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Cyanide	< 0.010 UJ	0.010	mg/l	1	03/29/18 09:34	BM	EPA 335.4/LACHAT

RL = Reporting Limit

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Report of Analysis

Client Sample ID:	PCMW-20S		
Lab Sample ID:	JC62879-12	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3B145279.D	1	03/29/18 00:11	EH	n/a	n/a	V3B6426
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	5.0	ug/l	
71-43-2	Benzene	ND	0.50	0.17	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.38	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.22	ug/l	
75-25-2	Bromoform	ND	1.0	0.42	ug/l	
74-83-9	Bromomethane [a]	ND	2.0	1.4	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	4.8	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.50	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.34	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.24	ug/l	
75-00-3	Chloroethane	ND	1.0	0.59	ug/l	
67-66-3	Chloroform	ND	1.0	0.29	ug/l	
74-87-3	Chloromethane	ND	1.0	0.53	ug/l	
110-82-7	Cyclohexane	ND	5.0	0.63	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.69	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.16	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.21	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.50	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.50	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.50	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.9	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.21	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.20	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.47	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.50	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.40	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.24	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.25	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.22	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.22	ug/l	
76-13-1	Freon 113	ND	5.0	1.2	ug/l	
591-78-6	2-Hexanone	ND	5.0	3.3	ug/l	

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E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCMW-20S		
Lab Sample ID:	JC62879-12	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	1.0	0.25	ug/l	
79-20-9	Methyl Acetate	ND	5.0	3.1	ug/l	
108-87-2	Methylcyclohexane	ND	5.0	1.8	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.25	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	3.0	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.24	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.17	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.50	ug/l	
108-88-3	Toluene	ND	1.0	0.25	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.50	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.24	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.27	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.60	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.62	ug/l	
	m,p-Xylene	ND	1.0	0.43	ug/l	
95-47-6	o-Xylene	ND	1.0	0.22	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.22	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	106%		80-120%
17060-07-0	1,2-Dichloroethane-D4	109%		81-124%
2037-26-5	Toluene-D8	95%		80-120%
460-00-4	4-Bromofluorobenzene	93%		80-120%

(a) Associated CCV outside of control limits high, sample was ND.

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J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PCMW-20S		
Lab Sample ID:	JC62879-12	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2P78147.D	1	03/28/18 22:43	JB	03/28/18 00:25	OP10883	E2P3440
Run #2							

	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2		

ABN TCL List (SOM0 1.1)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	5.0	0.82	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	5.0	0.89	ug/l	
120-83-2	2,4-Dichlorophenol	ND	2.0	1.3	ug/l	
105-67-9	2,4-Dimethylphenol	ND	5.0	2.4	ug/l	
51-28-5	2,4-Dinitrophenol	ND	5.0	1.6	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	5.0	1.3	ug/l	
95-48-7	2-Methylphenol	ND	2.0	0.89	ug/l	
	3&4-Methylphenol	ND	2.0	0.88	ug/l	
88-75-5	2-Nitrophenol	ND	5.0	0.96	ug/l	
100-02-7	4-Nitrophenol	ND	10	1.2	ug/l	
87-86-5	Pentachlorophenol	ND	4.0	1.4	ug/l	
108-95-2	Phenol	ND	2.0	0.39	ug/l	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	5.0	1.5	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	5.0	1.3	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	5.0	0.92	ug/l	
83-32-9	Acenaphthene	ND	1.0	0.19	ug/l	
208-96-8	Acenaphthylene	ND	1.0	0.14	ug/l	
98-86-2	Acetophenone	ND	2.0	0.21	ug/l	
120-12-7	Anthracene	ND	1.0	0.21	ug/l	
1912-24-9	Atrazine	ND	2.0	0.45	ug/l	
100-52-7	Benzaldehyde	ND	5.0	0.29	ug/l	
56-55-3	Benzo(a)anthracene	ND	1.0	0.20	ug/l	
50-32-8	Benzo(a)pyrene	ND	1.0	0.21	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	1.0	0.21	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	1.0	0.34	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	1.0	0.21	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	2.0	0.40	ug/l	
85-68-7	Butyl benzyl phthalate	ND	2.0	0.46	ug/l	
92-52-4	1,1'-Biphenyl	ND	1.0	0.21	ug/l	
91-58-7	2-Chloronaphthalene	ND	2.0	0.24	ug/l	
106-47-8	4-Chloroaniline	ND	5.0	0.34	ug/l	
86-74-8	Carbazole	ND	1.0	0.23	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
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B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCMW-20S		
Lab Sample ID:	JC62879-12	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

ABN TCL List (SOM0 1.1)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	2.0	0.65	ug/l	
218-01-9	Chrysene	ND	1.0	0.18	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	2.0	0.28	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	2.0	0.25	ug/l	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	2.0	0.40	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	2.0	0.37	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	1.0	0.55	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	1.0	0.48	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	2.0	0.51	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	1.0	0.33	ug/l	
132-64-9	Dibenzofuran	ND	5.0	0.22	ug/l	
84-74-2	Di-n-butyl phthalate	ND	2.0	0.50	ug/l	
117-84-0	Di-n-octyl phthalate	ND	2.0	0.23	ug/l	
84-66-2	Diethyl phthalate	ND	2.0	0.26	ug/l	
131-11-3	Dimethyl phthalate	ND	2.0	0.22	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.0	1.7	ug/l	
206-44-0	Fluoranthene	ND	1.0	0.17	ug/l	
86-73-7	Fluorene	ND	1.0	0.17	ug/l	
118-74-1	Hexachlorobenzene	ND	1.0	0.33	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.49	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	10	2.8	ug/l	
67-72-1	Hexachloroethane	ND	2.0	0.39	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	1.0	0.33	ug/l	
78-59-1	Isophorone	ND	2.0	0.28	ug/l	
91-57-6	2-Methylnaphthalene	ND	1.0	0.21	ug/l	
88-74-4	2-Nitroaniline	ND	5.0	0.28	ug/l	
99-09-2	3-Nitroaniline	ND	5.0	0.39	ug/l	
100-01-6	4-Nitroaniline	ND	5.0	0.44	ug/l	
91-20-3	Naphthalene	ND	1.0	0.23	ug/l	
98-95-3	Nitrobenzene	ND	2.0	0.64	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	2.0	0.48	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.0	0.22	ug/l	
85-01-8	Phenanthrene	ND	1.0	0.18	ug/l	
129-00-0	Pyrene	ND	1.0	0.22	ug/l	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	2.0	0.37	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	35%		10-110%
4165-62-2	Phenol-d5	25%		10-110%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
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J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCMW-20S		
Lab Sample ID:	JC62879-12	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

ABN TCL List (SOM0 1.1)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
118-79-6	2,4,6-Tribromophenol	85%		36-151%
4165-60-0	Nitrobenzene-d5	65%		34-128%
321-60-8	2-Fluorobiphenyl	69%		38-119%
1718-51-0	Terphenyl-d14	68%		26-129%

ND = Not detected MDL = Method Detection Limit
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E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PCMW-20S		
Lab Sample ID:	JC62879-12	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8081B SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1G144715.D	1	03/28/18 04:35	CP	03/27/18 18:10	OP10885	G1G4598
Run #2							

	Initial Volume	Final Volume
Run #1	300 ml	2.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	0.0067	0.0034	ug/l	
319-84-6	alpha-BHC	ND	0.0067	0.0035	ug/l	
319-85-7	beta-BHC	ND	0.0067	0.0053	ug/l	
319-86-8	delta-BHC	ND	0.0067	0.0044	ug/l	
58-89-9	gamma-BHC (Lindane)	ND	0.0067	0.0040	ug/l	
5103-71-9	alpha-Chlordane	ND	0.0067	0.0033	ug/l	
5103-74-2	gamma-Chlordane	ND	0.0067	0.0028	ug/l	
60-57-1	Dieldrin	ND	0.0067	0.0051	ug/l	
72-54-8	4,4'-DDD	ND	0.0067	0.0038	ug/l	
72-55-9	4,4'-DDE	ND	0.0067	0.0034	ug/l	
50-29-3	4,4'-DDT	ND	0.0067	0.0046	ug/l	
72-20-8	Endrin	ND	0.0067	0.0040	ug/l	
1031-07-8	Endosulfan sulfate	ND	0.0067	0.0036	ug/l	
7421-93-4	Endrin aldehyde	ND	0.0067	0.0045	ug/l	
53494-70-5	Endrin ketone	ND	0.0067	0.0041	ug/l	
959-98-8	Endosulfan-I	ND	0.0067	0.0035	ug/l	
33213-65-9	Endosulfan-II	ND	0.0067	0.0033	ug/l	
76-44-8	Heptachlor	ND	0.0067	0.0030	ug/l	
1024-57-3	Heptachlor epoxide	ND	0.0067	0.0040	ug/l	
72-43-5	Methoxychlor	ND	0.013	0.0045	ug/l	
8001-35-2	Toxaphene	ND	0.17	0.11	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	90%		13-153%
877-09-8	Tetrachloro-m-xylene	89%		13-153%
2051-24-3	Decachlorobiphenyl	98%		10-138%
2051-24-3	Decachlorobiphenyl	80%		10-138%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PCMW-20S		
Lab Sample ID:	JC62879-12	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8082A SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EF181233.D	1	03/29/18 00:04	HB	03/27/18 18:10	OP10884	GEF6203
Run #2							

	Initial Volume	Final Volume
Run #1	300 ml	2.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	0.33	0.13	ug/l	
11104-28-2	Aroclor 1221	ND	0.33	0.28	ug/l	
11141-16-5	Aroclor 1232	ND	0.33	0.17	ug/l	
53469-21-9	Aroclor 1242	ND	0.33	0.15	ug/l	
12672-29-6	Aroclor 1248	ND	0.33	0.084	ug/l	
11097-69-1	Aroclor 1254	ND	0.33	0.28	ug/l	
11096-82-5	Aroclor 1260	ND	0.33	0.10	ug/l	
11100-14-4	Aroclor 1268	ND	0.33	0.12	ug/l	
37324-23-5	Aroclor 1262	ND	0.33	0.13	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	81%		11-166%
877-09-8	Tetrachloro-m-xylene	84%		11-166%
2051-24-3	Decachlorobiphenyl	82%		10-150%
2051-24-3	Decachlorobiphenyl	73%		10-150%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCMW-20S		
Lab Sample ID:	JC62879-12	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
		Percent Solids:	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	< 200	200	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Antimony	< 6.0	6.0	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Arsenic	< 3.0	3.0	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Barium	< 200	200	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Beryllium	< 1.0	1.0	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Cadmium	< 3.0	3.0	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Calcium	31300	5000	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Chromium	< 10	10	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Cobalt	< 50	50	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Copper	< 10	10	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Iron	7420	100	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Lead	4.0	3.0	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Magnesium	< 5000	5000	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Manganese	613	15	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Mercury	< 0.20	0.20	ug/l	1	03/27/18	03/27/18	JA	SW846 7470A [1]	SW846 7470A [3]
Nickel	< 10	10	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Potassium	< 10000	10000	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Selenium	< 10	10	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Silver	< 10	10	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Sodium	< 10000	10000	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Thallium	< 2.0	2.0	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Vanadium	< 50	50	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Zinc	42.4	20	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]

(1) Instrument QC Batch: MA44080
(2) Instrument QC Batch: MA44135
(3) Prep QC Batch: MP6364
(4) Prep QC Batch: MP6402

RL = Reporting Limit

Report of Analysis

Client Sample ID:	PCMW-20S		
Lab Sample ID:	JC62879-12	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
		Percent Solids:	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Cyanide	< 0.010 UJ	0.010	mg/l	1	03/29/18 09:36	BM	EPA 335.4/LACHAT

RL = Reporting Limit

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Report of Analysis

Client Sample ID:	PCMW-20D		
Lab Sample ID:	JC62879-13	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3B145280.D	1	03/29/18 00:40	EH	n/a	n/a	V3B6426
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	5.0	ug/l	
71-43-2	Benzene	ND	0.50	0.17	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.38	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.22	ug/l	
75-25-2	Bromoform	ND	1.0	0.42	ug/l	
74-83-9	Bromomethane [a]	ND	2.0	1.4	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	4.8	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.50	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.34	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.24	ug/l	
75-00-3	Chloroethane	ND	1.0	0.59	ug/l	
67-66-3	Chloroform	ND	1.0	0.29	ug/l	
74-87-3	Chloromethane	ND	1.0	0.53	ug/l	
110-82-7	Cyclohexane	ND	5.0	0.63	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.69	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.16	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.21	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.50	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.50	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.50	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.9	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.21	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.20	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.47	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.50	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.40	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.24	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.25	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.22	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.22	ug/l	
76-13-1	Freon 113	ND	5.0	1.2	ug/l	
591-78-6	2-Hexanone	ND	5.0	3.3	ug/l	

ND = Not detected MDL = Method Detection Limit
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E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCMW-20D		
Lab Sample ID:	JC62879-13	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	1.0	0.25	ug/l	
79-20-9	Methyl Acetate	ND	5.0	3.1	ug/l	
108-87-2	Methylcyclohexane	ND	5.0	1.8	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.25	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	3.0	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.24	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.17	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.50	ug/l	
108-88-3	Toluene	ND	1.0	0.25	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.50	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.24	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.27	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.60	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.62	ug/l	
	m,p-Xylene	ND	1.0	0.43	ug/l	
95-47-6	o-Xylene	ND	1.0	0.22	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.22	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	107%		80-120%
17060-07-0	1,2-Dichloroethane-D4	110%		81-124%
2037-26-5	Toluene-D8	95%		80-120%
460-00-4	4-Bromofluorobenzene	93%		80-120%

(a) Associated CCV outside of control limits high, sample was ND.

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J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PCMW-20D		
Lab Sample ID:	JC62879-13	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2P78148.D	1	03/28/18 23:04	JB	03/28/18 00:25	OP10883	E2P3440
Run #2							

	Initial Volume	Final Volume
Run #1	1020 ml	1.0 ml
Run #2		

ABN TCL List (SOM0 1.1)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	4.9	0.80	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	4.9	0.87	ug/l	
120-83-2	2,4-Dichlorophenol	ND	2.0	1.2	ug/l	
105-67-9	2,4-Dimethylphenol	ND	4.9	2.4	ug/l	
51-28-5	2,4-Dinitrophenol	ND	4.9	1.5	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	4.9	1.3	ug/l	
95-48-7	2-Methylphenol	ND	2.0	0.87	ug/l	
	3&4-Methylphenol	ND	2.0	0.86	ug/l	
88-75-5	2-Nitrophenol	ND	4.9	0.94	ug/l	
100-02-7	4-Nitrophenol	ND	9.8	1.1	ug/l	
87-86-5	Pentachlorophenol	ND	3.9	1.4	ug/l	
108-95-2	Phenol	ND	2.0	0.38	ug/l	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	4.9	1.4	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	4.9	1.3	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	4.9	0.91	ug/l	
83-32-9	Acenaphthene	ND	0.98	0.19	ug/l	
208-96-8	Acenaphthylene	ND	0.98	0.13	ug/l	
98-86-2	Acetophenone	ND	2.0	0.20	ug/l	
120-12-7	Anthracene	ND	0.98	0.21	ug/l	
1912-24-9	Atrazine	ND	2.0	0.44	ug/l	
100-52-7	Benzaldehyde	ND	4.9	0.28	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.98	0.20	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.98	0.21	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.98	0.20	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.98	0.33	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.98	0.20	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	2.0	0.40	ug/l	
85-68-7	Butyl benzyl phthalate	ND	2.0	0.45	ug/l	
92-52-4	1,1'-Biphenyl	ND	0.98	0.21	ug/l	
91-58-7	2-Chloronaphthalene	ND	2.0	0.23	ug/l	
106-47-8	4-Chloroaniline	ND	4.9	0.33	ug/l	
86-74-8	Carbazole	ND	0.98	0.22	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
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B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCMW-20D		
Lab Sample ID:	JC62879-13	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

ABN TCL List (SOM0 1.1)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	2.0	0.64	ug/l	
218-01-9	Chrysene	ND	0.98	0.17	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	2.0	0.27	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	2.0	0.24	ug/l	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	2.0	0.40	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	2.0	0.36	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	0.98	0.54	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	0.98	0.47	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	2.0	0.50	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.98	0.32	ug/l	
132-64-9	Dibenzofuran	ND	4.9	0.22	ug/l	
84-74-2	Di-n-butyl phthalate	ND	2.0	0.49	ug/l	
117-84-0	Di-n-octyl phthalate	ND	2.0	0.23	ug/l	
84-66-2	Diethyl phthalate	ND	2.0	0.26	ug/l	
131-11-3	Dimethyl phthalate	ND	2.0	0.21	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.0	1.6	ug/l	
206-44-0	Fluoranthene	ND	0.98	0.17	ug/l	
86-73-7	Fluorene	ND	0.98	0.17	ug/l	
118-74-1	Hexachlorobenzene	ND	0.98	0.32	ug/l	
87-68-3	Hexachlorobutadiene	ND	0.98	0.48	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	9.8	2.7	ug/l	
67-72-1	Hexachloroethane	ND	2.0	0.38	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.98	0.33	ug/l	
78-59-1	Isophorone	ND	2.0	0.27	ug/l	
91-57-6	2-Methylnaphthalene	ND	0.98	0.21	ug/l	
88-74-4	2-Nitroaniline	ND	4.9	0.27	ug/l	
99-09-2	3-Nitroaniline	ND	4.9	0.38	ug/l	
100-01-6	4-Nitroaniline	ND	4.9	0.43	ug/l	
91-20-3	Naphthalene	ND	0.98	0.23	ug/l	
98-95-3	Nitrobenzene	ND	2.0	0.63	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	2.0	0.47	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	4.9	0.22	ug/l	
85-01-8	Phenanthrene	ND	0.98	0.17	ug/l	
129-00-0	Pyrene	ND	0.98	0.21	ug/l	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	2.0	0.36	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	32%		10-110%
4165-62-2	Phenol-d5	23%		10-110%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCMW-20D		
Lab Sample ID:	JC62879-13	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

ABN TCL List (SOM0 1.1)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
118-79-6	2,4,6-Tribromophenol	78%		36-151%
4165-60-0	Nitrobenzene-d5	70%		34-128%
321-60-8	2-Fluorobiphenyl	65%		38-119%
1718-51-0	Terphenyl-d14	54%		26-129%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PCMW-20D		
Lab Sample ID:	JC62879-13	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8081B SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1G144716.D	1	03/28/18 04:52	CP	03/27/18 18:10	OP10885	G1G4598
Run #2							

	Initial Volume	Final Volume
Run #1	300 ml	2.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	0.0067	0.0034	ug/l	
319-84-6	alpha-BHC	ND	0.0067	0.0035	ug/l	
319-85-7	beta-BHC	ND	0.0067	0.0053	ug/l	
319-86-8	delta-BHC	ND	0.0067	0.0044	ug/l	
58-89-9	gamma-BHC (Lindane)	ND	0.0067	0.0040	ug/l	
5103-71-9	alpha-Chlordane	ND	0.0067	0.0033	ug/l	
5103-74-2	gamma-Chlordane	ND	0.0067	0.0028	ug/l	
60-57-1	Dieldrin	ND	0.0067	0.0051	ug/l	
72-54-8	4,4'-DDD	ND	0.0067	0.0038	ug/l	
72-55-9	4,4'-DDE	ND	0.0067	0.0034	ug/l	
50-29-3	4,4'-DDT	ND	0.0067	0.0046	ug/l	
72-20-8	Endrin	ND	0.0067	0.0040	ug/l	
1031-07-8	Endosulfan sulfate	ND	0.0067	0.0036	ug/l	
7421-93-4	Endrin aldehyde	ND	0.0067	0.0045	ug/l	
53494-70-5	Endrin ketone	ND	0.0067	0.0041	ug/l	
959-98-8	Endosulfan-I	ND	0.0067	0.0035	ug/l	
33213-65-9	Endosulfan-II	ND	0.0067	0.0033	ug/l	
76-44-8	Heptachlor	ND	0.0067	0.0030	ug/l	
1024-57-3	Heptachlor epoxide	ND	0.0067	0.0040	ug/l	
72-43-5	Methoxychlor	ND	0.013	0.0045	ug/l	
8001-35-2	Toxaphene	ND	0.17	0.11	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	52%		13-153%
877-09-8	Tetrachloro-m-xylene	62%		13-153%
2051-24-3	Decachlorobiphenyl	48%		10-138%
2051-24-3	Decachlorobiphenyl	46%		10-138%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PCMW-20D		
Lab Sample ID:	JC62879-13	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8082A SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EF181234.D	1	03/29/18 00:29	HB	03/27/18 18:10	OP10884	GEF6203
Run #2							

	Initial Volume	Final Volume
Run #1	300 ml	2.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	0.33	0.13	ug/l	
11104-28-2	Aroclor 1221	ND	0.33	0.28	ug/l	
11141-16-5	Aroclor 1232	ND	0.33	0.17	ug/l	
53469-21-9	Aroclor 1242	ND	0.33	0.15	ug/l	
12672-29-6	Aroclor 1248	ND	0.33	0.084	ug/l	
11097-69-1	Aroclor 1254	ND	0.33	0.28	ug/l	
11096-82-5	Aroclor 1260	ND	0.33	0.10	ug/l	
11100-14-4	Aroclor 1268	ND	0.33	0.12	ug/l	
37324-23-5	Aroclor 1262	ND	0.33	0.13	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	72%		11-166%
877-09-8	Tetrachloro-m-xylene	64%		11-166%
2051-24-3	Decachlorobiphenyl	54%		10-150%
2051-24-3	Decachlorobiphenyl	56%		10-150%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCMW-20D		
Lab Sample ID:	JC62879-13	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
		Percent Solids:	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	996	200	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Antimony	< 6.0	6.0	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Arsenic	17.4	3.0	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Barium	< 200	200	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Beryllium	< 1.0	1.0	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Cadmium	< 3.0	3.0	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Calcium	28300	5000	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Chromium	< 10	10	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Cobalt	< 50	50	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Copper	< 10	10	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Iron	8400	100	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Lead	< 3.0	3.0	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Magnesium	13900	5000	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Manganese	641	15	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Mercury [a]	< 0.40	0.40	ug/l	1	03/27/18	03/27/18	JA	SW846 7470A [1]	SW846 7470A [3]
Nickel	< 10	10	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Potassium	< 10000	10000	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Selenium	< 10	10	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Silver	< 10	10	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Sodium	241000	10000	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Thallium	< 2.0	2.0	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Vanadium	< 50	50	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Zinc	< 20	20	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]

(1) Instrument QC Batch: MA44080
(2) Instrument QC Batch: MA44135
(3) Prep QC Batch: MP6364
(4) Prep QC Batch: MP6402

(a) Elevated sample detection limit due to difficult sample matrix.

RL = Reporting Limit

Report of Analysis

Client Sample ID:	PCMW-20D		
Lab Sample ID:	JC62879-13	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
		Percent Solids:	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

General Chemistry

Analyte	Result		RL	Units	DF	Analyzed	By	Method
Cyanide	0.12	J	0.010	mg/l	1	03/29/18 09:40	BM	EPA 335.4/LACHAT

RL = Reporting Limit

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Report of Analysis

Client Sample ID:	PCMW-19S		
Lab Sample ID:	JC62879-14	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3B145281.D	1	03/29/18 01:08	EH	n/a	n/a	V3B6426
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	5.0	ug/l	
71-43-2	Benzene	ND	0.50	0.17	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.38	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.22	ug/l	
75-25-2	Bromoform	ND	1.0	0.42	ug/l	
74-83-9	Bromomethane [a]	ND	2.0	1.4	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	4.8	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.50	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.34	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.24	ug/l	
75-00-3	Chloroethane	ND	1.0	0.59	ug/l	
67-66-3	Chloroform	ND	1.0	0.29	ug/l	
74-87-3	Chloromethane	ND	1.0	0.53	ug/l	
110-82-7	Cyclohexane	ND	5.0	0.63	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.69	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.16	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.21	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.50	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.50	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.50	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.9	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.21	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.20	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.47	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.50	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.40	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.24	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.25	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.22	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.22	ug/l	
76-13-1	Freon 113	ND	5.0	1.2	ug/l	
591-78-6	2-Hexanone	ND	5.0	3.3	ug/l	

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J = Indicates an estimated value
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N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCMW-19S		
Lab Sample ID:	JC62879-14	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	1.0	0.25	ug/l	
79-20-9	Methyl Acetate	ND	5.0	3.1	ug/l	
108-87-2	Methylcyclohexane	ND	5.0	1.8	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.25	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	3.0	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.24	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.17	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.50	ug/l	
108-88-3	Toluene	ND	1.0	0.25	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.50	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.24	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.27	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.60	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.62	ug/l	
	m,p-Xylene	ND	1.0	0.43	ug/l	
95-47-6	o-Xylene	ND	1.0	0.22	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.22	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	107%		80-120%
17060-07-0	1,2-Dichloroethane-D4	108%		81-124%
2037-26-5	Toluene-D8	94%		80-120%
460-00-4	4-Bromofluorobenzene	92%		80-120%

(a) Associated CCV outside of control limits high, sample was ND.

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E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PCMW-19S		
Lab Sample ID:	JC62879-14	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2P78149.D	1	03/28/18 23:26	JB	03/28/18 00:25	OP10883	E2P3440
Run #2							

	Initial Volume	Final Volume
Run #1	1050 ml	1.0 ml
Run #2		

ABN TCL List (SOM0 1.1)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	4.8	0.78	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	4.8	0.85	ug/l	
120-83-2	2,4-Dichlorophenol	ND	1.9	1.2	ug/l	
105-67-9	2,4-Dimethylphenol	ND	4.8	2.3	ug/l	
51-28-5	2,4-Dinitrophenol	ND	4.8	1.5	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	4.8	1.2	ug/l	
95-48-7	2-Methylphenol	ND	1.9	0.85	ug/l	
	3&4-Methylphenol	ND	1.9	0.84	ug/l	
88-75-5	2-Nitrophenol	ND	4.8	0.91	ug/l	
100-02-7	4-Nitrophenol	ND	9.5	1.1	ug/l	
87-86-5	Pentachlorophenol	ND	3.8	1.3	ug/l	
108-95-2	Phenol	ND	1.9	0.37	ug/l	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	4.8	1.4	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	4.8	1.3	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	4.8	0.88	ug/l	
83-32-9	Acenaphthene	ND	0.95	0.18	ug/l	
208-96-8	Acenaphthylene	ND	0.95	0.13	ug/l	
98-86-2	Acetophenone	ND	1.9	0.20	ug/l	
120-12-7	Anthracene	ND	0.95	0.20	ug/l	
1912-24-9	Atrazine	ND	1.9	0.43	ug/l	
100-52-7	Benzaldehyde	ND	4.8	0.28	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.95	0.19	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.95	0.20	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.95	0.20	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.95	0.32	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.95	0.20	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	1.9	0.38	ug/l	
85-68-7	Butyl benzyl phthalate	ND	1.9	0.44	ug/l	
92-52-4	1,1'-Biphenyl	ND	0.95	0.20	ug/l	
91-58-7	2-Chloronaphthalene	ND	1.9	0.22	ug/l	
106-47-8	4-Chloroaniline	ND	4.8	0.32	ug/l	
86-74-8	Carbazole	ND	0.95	0.22	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCMW-19S		
Lab Sample ID:	JC62879-14	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

ABN TCL List (SOM0 1.1)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	1.9	0.62	ug/l	
218-01-9	Chrysene	ND	0.95	0.17	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	1.9	0.26	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	1.9	0.24	ug/l	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	1.9	0.38	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	1.9	0.35	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	0.95	0.53	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	0.95	0.45	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	1.9	0.48	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.95	0.32	ug/l	
132-64-9	Dibenzofuran	ND	4.8	0.21	ug/l	
84-74-2	Di-n-butyl phthalate	ND	1.9	0.47	ug/l	
117-84-0	Di-n-octyl phthalate	ND	1.9	0.22	ug/l	
84-66-2	Diethyl phthalate	ND	1.9	0.25	ug/l	
131-11-3	Dimethyl phthalate	ND	1.9	0.21	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	1.9	1.6	ug/l	
206-44-0	Fluoranthene	ND	0.95	0.16	ug/l	
86-73-7	Fluorene	ND	0.95	0.16	ug/l	
118-74-1	Hexachlorobenzene	ND	0.95	0.31	ug/l	
87-68-3	Hexachlorobutadiene	ND	0.95	0.47	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	9.5	2.6	ug/l	
67-72-1	Hexachloroethane	ND	1.9	0.37	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.95	0.32	ug/l	
78-59-1	Isophorone	ND	1.9	0.26	ug/l	
91-57-6	2-Methylnaphthalene	ND	0.95	0.20	ug/l	
88-74-4	2-Nitroaniline	ND	4.8	0.26	ug/l	
99-09-2	3-Nitroaniline	ND	4.8	0.37	ug/l	
100-01-6	4-Nitroaniline	ND	4.8	0.42	ug/l	
91-20-3	Naphthalene	ND	0.95	0.22	ug/l	
98-95-3	Nitrobenzene	ND	1.9	0.61	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	1.9	0.46	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	4.8	0.21	ug/l	
85-01-8	Phenanthrene	ND	0.95	0.17	ug/l	
129-00-0	Pyrene	ND	0.95	0.21	ug/l	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	1.9	0.35	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	34%		10-110%
4165-62-2	Phenol-d5	24%		10-110%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCMW-19S		
Lab Sample ID:	JC62879-14	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

ABN TCL List (SOM0 1.1)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
118-79-6	2,4,6-Tribromophenol	81%		36-151%
4165-60-0	Nitrobenzene-d5	63%		34-128%
321-60-8	2-Fluorobiphenyl	70%		38-119%
1718-51-0	Terphenyl-d14	66%		26-129%

ND = Not detected MDL = Method Detection Limit
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Report of Analysis

Client Sample ID:	PCMW-19S		
Lab Sample ID:	JC62879-14	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8081B SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1G144717.D	1	03/28/18 05:09	CP	03/27/18 18:10	OP10885	G1G4598
Run #2							

	Initial Volume	Final Volume
Run #1	300 ml	2.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	0.0067	0.0034	ug/l	
319-84-6	alpha-BHC	ND	0.0067	0.0035	ug/l	
319-85-7	beta-BHC	ND	0.0067	0.0053	ug/l	
319-86-8	delta-BHC	ND	0.0067	0.0044	ug/l	
58-89-9	gamma-BHC (Lindane)	ND	0.0067	0.0040	ug/l	
5103-71-9	alpha-Chlordane	ND	0.0067	0.0033	ug/l	
5103-74-2	gamma-Chlordane	ND	0.0067	0.0028	ug/l	
60-57-1	Dieldrin	ND	0.0067	0.0051	ug/l	
72-54-8	4,4'-DDD	ND	0.0067	0.0038	ug/l	
72-55-9	4,4'-DDE	ND	0.0067	0.0034	ug/l	
50-29-3	4,4'-DDT	ND	0.0067	0.0046	ug/l	
72-20-8	Endrin	ND	0.0067	0.0040	ug/l	
1031-07-8	Endosulfan sulfate	ND	0.0067	0.0036	ug/l	
7421-93-4	Endrin aldehyde	ND	0.0067	0.0045	ug/l	
53494-70-5	Endrin ketone	ND	0.0067	0.0041	ug/l	
959-98-8	Endosulfan-I	ND	0.0067	0.0035	ug/l	
33213-65-9	Endosulfan-II	ND	0.0067	0.0033	ug/l	
76-44-8	Heptachlor	ND	0.0067	0.0030	ug/l	
1024-57-3	Heptachlor epoxide	ND	0.0067	0.0040	ug/l	
72-43-5	Methoxychlor	ND	0.013	0.0045	ug/l	
8001-35-2	Toxaphene	ND	0.17	0.11	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	79%		13-153%
877-09-8	Tetrachloro-m-xylene	81%		13-153%
2051-24-3	Decachlorobiphenyl	56%		10-138%
2051-24-3	Decachlorobiphenyl	45%		10-138%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PCMW-19S		
Lab Sample ID:	JC62879-14	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8082A SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EF181235.D	1	03/29/18 00:54	HB	03/27/18 18:10	OP10884	GEF6203
Run #2							

	Initial Volume	Final Volume
Run #1	300 ml	2.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	0.33	0.13	ug/l	
11104-28-2	Aroclor 1221	ND	0.33	0.28	ug/l	
11141-16-5	Aroclor 1232	ND	0.33	0.17	ug/l	
53469-21-9	Aroclor 1242	ND	0.33	0.15	ug/l	
12672-29-6	Aroclor 1248	ND	0.33	0.084	ug/l	
11097-69-1	Aroclor 1254	ND	0.33	0.28	ug/l	
11096-82-5	Aroclor 1260	ND	0.33	0.10	ug/l	
11100-14-4	Aroclor 1268	ND	0.33	0.12	ug/l	
37324-23-5	Aroclor 1262	ND	0.33	0.13	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	86%		11-166%
877-09-8	Tetrachloro-m-xylene	88%		11-166%
2051-24-3	Decachlorobiphenyl	52%		10-150%
2051-24-3	Decachlorobiphenyl	52%		10-150%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PCMW-19S
Lab Sample ID: JC62879-14
Matrix: AQ - Ground Water
Project: National Grid, Philly Coke, Philadelphia PA

Date Sampled: 03/22/18
Date Received: 03/23/18
Percent Solids: n/a

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	393	200	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Antimony	< 6.0	6.0	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Arsenic	33.2	3.0	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Barium	< 200	200	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Beryllium	< 1.0	1.0	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Cadmium	< 3.0	3.0	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Calcium	87800	5000	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Chromium	< 10	10	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Cobalt	< 50	50	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Copper	< 10	10	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Iron	12700	100	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Lead	11.5	3.0	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Magnesium	15800	5000	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Manganese	1300	15	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Mercury	< 0.20	0.20	ug/l	1	03/27/18	03/27/18	JA	SW846 7470A [1]	SW846 7470A [3]
Nickel	< 10	10	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Potassium	< 10000	10000	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Selenium	< 10	10	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Silver	< 10	10	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Sodium	< 10000	10000	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Thallium	< 2.0	2.0	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Vanadium	< 50	50	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Zinc	23.2	20	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]

(1) Instrument QC Batch: MA44080
(2) Instrument QC Batch: MA44135
(3) Prep QC Batch: MP6364
(4) Prep QC Batch: MP6402

RL = Reporting Limit

Report of Analysis

Client Sample ID:	PCMW-19S		
Lab Sample ID:	JC62879-14	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
		Percent Solids:	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Cyanide	< 0.010 UJ	0.010	mg/l	1	03/29/18 09:41	BM	EPA 335.4/LACHAT

RL = Reporting Limit

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Report of Analysis

Client Sample ID:	PCMW-19D		
Lab Sample ID:	JC62879-15	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3B145282.D	1	03/29/18 01:37	EH	n/a	n/a	V3B6426
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	5.0	ug/l	
71-43-2	Benzene	ND	0.50	0.17	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.38	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.22	ug/l	
75-25-2	Bromoform	ND	1.0	0.42	ug/l	
74-83-9	Bromomethane [a]	ND	2.0	1.4	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	4.8	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.50	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.34	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.24	ug/l	
75-00-3	Chloroethane	ND	1.0	0.59	ug/l	
67-66-3	Chloroform	ND	1.0	0.29	ug/l	
74-87-3	Chloromethane	ND	1.0	0.53	ug/l	
110-82-7	Cyclohexane	ND	5.0	0.63	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.69	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.16	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.21	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.50	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.50	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.50	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.9	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.21	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.20	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.47	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.50	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.40	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.24	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.25	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.22	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.22	ug/l	
76-13-1	Freon 113	ND	5.0	1.2	ug/l	
591-78-6	2-Hexanone	ND	5.0	3.3	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCMW-19D		
Lab Sample ID:	JC62879-15	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	1.0	0.25	ug/l	
79-20-9	Methyl Acetate	ND	5.0	3.1	ug/l	
108-87-2	Methylcyclohexane	ND	5.0	1.8	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.25	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	3.0	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.24	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.17	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.50	ug/l	
108-88-3	Toluene	ND	1.0	0.25	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.50	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.24	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.27	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.60	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.62	ug/l	
	m,p-Xylene	ND	1.0	0.43	ug/l	
95-47-6	o-Xylene	ND	1.0	0.22	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.22	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	106%		80-120%
17060-07-0	1,2-Dichloroethane-D4	109%		81-124%
2037-26-5	Toluene-D8	95%		80-120%
460-00-4	4-Bromofluorobenzene	93%		80-120%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PCMW-19D		
Lab Sample ID:	JC62879-15	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2P78150.D	1	03/28/18 23:47	JB	03/28/18 00:25	OP10883	E2P3440
Run #2							

	Initial Volume	Final Volume
Run #1	1020 ml	1.0 ml
Run #2		

ABN TCL List (SOM0 1.1)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	4.9	0.80	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	4.9	0.87	ug/l	
120-83-2	2,4-Dichlorophenol	ND	2.0	1.2	ug/l	
105-67-9	2,4-Dimethylphenol	ND	4.9	2.4	ug/l	
51-28-5	2,4-Dinitrophenol	ND	4.9	1.5	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	4.9	1.3	ug/l	
95-48-7	2-Methylphenol	ND	2.0	0.87	ug/l	
	3&4-Methylphenol	ND	2.0	0.86	ug/l	
88-75-5	2-Nitrophenol	ND	4.9	0.94	ug/l	
100-02-7	4-Nitrophenol	ND	9.8	1.1	ug/l	
87-86-5	Pentachlorophenol	ND	3.9	1.4	ug/l	
108-95-2	Phenol	ND	2.0	0.38	ug/l	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	4.9	1.4	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	4.9	1.3	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	4.9	0.91	ug/l	
83-32-9	Acenaphthene	ND	0.98	0.19	ug/l	
208-96-8	Acenaphthylene	ND	0.98	0.13	ug/l	
98-86-2	Acetophenone	ND	2.0	0.20	ug/l	
120-12-7	Anthracene	ND	0.98	0.21	ug/l	
1912-24-9	Atrazine	ND	2.0	0.44	ug/l	
100-52-7	Benzaldehyde	ND	4.9	0.28	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.98	0.20	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.98	0.21	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.98	0.20	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.98	0.33	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.98	0.20	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	2.0	0.40	ug/l	
85-68-7	Butyl benzyl phthalate	ND	2.0	0.45	ug/l	
92-52-4	1,1'-Biphenyl	ND	0.98	0.21	ug/l	
91-58-7	2-Chloronaphthalene	ND	2.0	0.23	ug/l	
106-47-8	4-Chloroaniline	ND	4.9	0.33	ug/l	
86-74-8	Carbazole	ND	0.98	0.22	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCMW-19D		
Lab Sample ID:	JC62879-15	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

ABN TCL List (SOM0 1.1)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	2.0	0.64	ug/l	
218-01-9	Chrysene	ND	0.98	0.17	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	2.0	0.27	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	2.0	0.24	ug/l	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	2.0	0.40	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	2.0	0.36	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	0.98	0.54	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	0.98	0.47	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	2.0	0.50	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.98	0.32	ug/l	
132-64-9	Dibenzofuran	ND	4.9	0.22	ug/l	
84-74-2	Di-n-butyl phthalate	ND	2.0	0.49	ug/l	
117-84-0	Di-n-octyl phthalate	ND	2.0	0.23	ug/l	
84-66-2	Diethyl phthalate	ND	2.0	0.26	ug/l	
131-11-3	Dimethyl phthalate	ND	2.0	0.21	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.0	1.6	ug/l	
206-44-0	Fluoranthene	ND	0.98	0.17	ug/l	
86-73-7	Fluorene	ND	0.98	0.17	ug/l	
118-74-1	Hexachlorobenzene	ND	0.98	0.32	ug/l	
87-68-3	Hexachlorobutadiene	ND	0.98	0.48	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	9.8	2.7	ug/l	
67-72-1	Hexachloroethane	ND	2.0	0.38	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.98	0.33	ug/l	
78-59-1	Isophorone	ND	2.0	0.27	ug/l	
91-57-6	2-Methylnaphthalene	ND	0.98	0.21	ug/l	
88-74-4	2-Nitroaniline	ND	4.9	0.27	ug/l	
99-09-2	3-Nitroaniline	ND	4.9	0.38	ug/l	
100-01-6	4-Nitroaniline	ND	4.9	0.43	ug/l	
91-20-3	Naphthalene	ND	0.98	0.23	ug/l	
98-95-3	Nitrobenzene	ND	2.0	0.63	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	2.0	0.47	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	4.9	0.22	ug/l	
85-01-8	Phenanthrene	ND	0.98	0.17	ug/l	
129-00-0	Pyrene	ND	0.98	0.21	ug/l	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	2.0	0.36	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	34%		10-110%
4165-62-2	Phenol-d5	25%		10-110%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCMW-19D		
Lab Sample ID:	JC62879-15	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

ABN TCL List (SOM0 1.1)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
118-79-6	2,4,6-Tribromophenol	83%		36-151%
4165-60-0	Nitrobenzene-d5	66%		34-128%
321-60-8	2-Fluorobiphenyl	72%		38-119%
1718-51-0	Terphenyl-d14	63%		26-129%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS LabLink@996135 15:37 10-Apr-2018

Report of Analysis

Client Sample ID:	PCMW-19D		
Lab Sample ID:	JC62879-15	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8081B SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1G144718.D	1	03/28/18 05:27	CP	03/27/18 18:10	OP10885	G1G4598
Run #2							

	Initial Volume	Final Volume
Run #1	290 ml	2.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	0.0069	0.0036	ug/l	
319-84-6	alpha-BHC	ND	0.0069	0.0036	ug/l	
319-85-7	beta-BHC	ND	0.0069	0.0055	ug/l	
319-86-8	delta-BHC	ND	0.0069	0.0045	ug/l	
58-89-9	gamma-BHC (Lindane)	ND	0.0069	0.0041	ug/l	
5103-71-9	alpha-Chlordane	ND	0.0069	0.0034	ug/l	
5103-74-2	gamma-Chlordane	ND	0.0069	0.0029	ug/l	
60-57-1	Dieldrin	ND	0.0069	0.0053	ug/l	
72-54-8	4,4'-DDD	ND	0.0069	0.0040	ug/l	
72-55-9	4,4'-DDE	ND	0.0069	0.0035	ug/l	
50-29-3	4,4'-DDT	ND	0.0069	0.0047	ug/l	
72-20-8	Endrin	ND	0.0069	0.0042	ug/l	
1031-07-8	Endosulfan sulfate	ND	0.0069	0.0038	ug/l	
7421-93-4	Endrin aldehyde	ND	0.0069	0.0046	ug/l	
53494-70-5	Endrin ketone	ND	0.0069	0.0043	ug/l	
959-98-8	Endosulfan-I	ND	0.0069	0.0036	ug/l	
33213-65-9	Endosulfan-II	ND	0.0069	0.0034	ug/l	
76-44-8	Heptachlor	ND	0.0069	0.0031	ug/l	
1024-57-3	Heptachlor epoxide	ND	0.0069	0.0041	ug/l	
72-43-5	Methoxychlor	ND	0.014	0.0046	ug/l	
8001-35-2	Toxaphene	ND	0.17	0.11	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	70%		13-153%
877-09-8	Tetrachloro-m-xylene	68%		13-153%
2051-24-3	Decachlorobiphenyl	51%		10-138%
2051-24-3	Decachlorobiphenyl	38%		10-138%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS LabLink@996135 15:37 10-Apr-2018

Report of Analysis

Client Sample ID:	PCMW-19D		
Lab Sample ID:	JC62879-15	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8082A SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EF181240.D	1	03/29/18 02:59	HB	03/27/18 18:10	OP10884	GEF6203
Run #2							

	Initial Volume	Final Volume
Run #1	290 ml	2.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	0.34	0.14	ug/l	
11104-28-2	Aroclor 1221	ND	0.34	0.29	ug/l	
11141-16-5	Aroclor 1232	ND	0.34	0.18	ug/l	
53469-21-9	Aroclor 1242	ND	0.34	0.16	ug/l	
12672-29-6	Aroclor 1248	ND	0.34	0.087	ug/l	
11097-69-1	Aroclor 1254	ND	0.34	0.29	ug/l	
11096-82-5	Aroclor 1260	ND	0.34	0.10	ug/l	
11100-14-4	Aroclor 1268	ND	0.34	0.12	ug/l	
37324-23-5	Aroclor 1262	ND	0.34	0.13	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	73%		11-166%
877-09-8	Tetrachloro-m-xylene	74%		11-166%
2051-24-3	Decachlorobiphenyl	44%		10-150%
2051-24-3	Decachlorobiphenyl	43%		10-150%

ND = Not detected MDL = Method Detection Limit
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N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCMW-19D		
Lab Sample ID:	JC62879-15	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
		Percent Solids:	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	1440	200	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Antimony	< 6.0	6.0	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Arsenic	13.4	3.0	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Barium	< 200	200	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Beryllium	< 1.0	1.0	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Cadmium	< 3.0	3.0	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Calcium	83900	5000	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Chromium	< 10	10	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Cobalt	< 50	50	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Copper	< 10	10	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Iron	21300	100	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Lead	3.5	3.0	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Magnesium	35900	5000	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Manganese	5690	15	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Mercury	< 0.20	0.20	ug/l	1	03/27/18	03/27/18	JA	SW846 7470A [1]	SW846 7470A [3]
Nickel	11.9	10	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Potassium	< 10000	10000	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Selenium	< 10	10	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Silver	< 10	10	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Sodium	34600	10000	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Thallium	< 2.0	2.0	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Vanadium	< 50	50	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Zinc	< 20	20	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]

(1) Instrument QC Batch: MA44080
(2) Instrument QC Batch: MA44135
(3) Prep QC Batch: MP6364
(4) Prep QC Batch: MP6402

RL = Reporting Limit

Report of Analysis

Client Sample ID:	PCMW-19D		
Lab Sample ID:	JC62879-15	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
		Percent Solids:	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Cyanide	< 0.010 UJ	0.010	mg/l	1	03/29/18 09:42	BM	EPA 335.4/LACHAT

RL = Reporting Limit

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Report of Analysis

Client Sample ID:	DUP-03222018		
Lab Sample ID:	JC62879-16	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3B145283.D	1	03/29/18 02:05	EH	n/a	n/a	V3B6426
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	5.0	ug/l	
71-43-2	Benzene	ND	0.50	0.17	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.38	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.22	ug/l	
75-25-2	Bromoform	ND	1.0	0.42	ug/l	
74-83-9	Bromomethane [a]	ND	2.0	1.4	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	4.8	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.50	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.34	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.24	ug/l	
75-00-3	Chloroethane	ND	1.0	0.59	ug/l	
67-66-3	Chloroform	ND	1.0	0.29	ug/l	
74-87-3	Chloromethane	ND	1.0	0.53	ug/l	
110-82-7	Cyclohexane	ND	5.0	0.63	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.69	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.16	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.21	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.50	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.50	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.50	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.9	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.21	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.20	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.47	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.50	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.40	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.24	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.25	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.22	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.22	ug/l	
76-13-1	Freon 113	ND	5.0	1.2	ug/l	
591-78-6	2-Hexanone	ND	5.0	3.3	ug/l	

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Report of Analysis

Client Sample ID:	DUP-03222018		
Lab Sample ID:	JC62879-16	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	1.0	0.25	ug/l	
79-20-9	Methyl Acetate	ND	5.0	3.1	ug/l	
108-87-2	Methylcyclohexane	ND	5.0	1.8	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.25	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	3.0	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.24	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.17	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.50	ug/l	
108-88-3	Toluene	ND	1.0	0.25	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.50	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.24	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.27	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.60	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.62	ug/l	
	m,p-Xylene	ND	1.0	0.43	ug/l	
95-47-6	o-Xylene	ND	1.0	0.22	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.22	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	108%		80-120%
17060-07-0	1,2-Dichloroethane-D4	110%		81-124%
2037-26-5	Toluene-D8	96%		80-120%
460-00-4	4-Bromofluorobenzene	93%		80-120%

(a) Associated CCV outside of control limits high, sample was ND.

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J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	DUP-03222018		
Lab Sample ID:	JC62879-16	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2P78151.D	1	03/29/18 00:09	JB	03/28/18 00:25	OP10883	E2P3440
Run #2							

	Initial Volume	Final Volume
Run #1	1050 ml	1.0 ml
Run #2		

ABN TCL List (SOM0 1.1)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	4.8	0.78	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	4.8	0.85	ug/l	
120-83-2	2,4-Dichlorophenol	ND	1.9	1.2	ug/l	
105-67-9	2,4-Dimethylphenol	ND	4.8	2.3	ug/l	
51-28-5	2,4-Dinitrophenol	ND	4.8	1.5	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	4.8	1.2	ug/l	
95-48-7	2-Methylphenol	ND	1.9	0.85	ug/l	
	3&4-Methylphenol	ND	1.9	0.84	ug/l	
88-75-5	2-Nitrophenol	ND	4.8	0.91	ug/l	
100-02-7	4-Nitrophenol	ND	9.5	1.1	ug/l	
87-86-5	Pentachlorophenol	ND	3.8	1.3	ug/l	
108-95-2	Phenol	ND	1.9	0.37	ug/l	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	4.8	1.4	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	4.8	1.3	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	4.8	0.88	ug/l	
83-32-9	Acenaphthene	ND	0.95	0.18	ug/l	
208-96-8	Acenaphthylene	ND	0.95	0.13	ug/l	
98-86-2	Acetophenone	ND	1.9	0.20	ug/l	
120-12-7	Anthracene	ND	0.95	0.20	ug/l	
1912-24-9	Atrazine	ND	1.9	0.43	ug/l	
100-52-7	Benzaldehyde	ND	4.8	0.28	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.95	0.19	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.95	0.20	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.95	0.20	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.95	0.32	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.95	0.20	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	1.9	0.38	ug/l	
85-68-7	Butyl benzyl phthalate	ND	1.9	0.44	ug/l	
92-52-4	1,1'-Biphenyl	ND	0.95	0.20	ug/l	
91-58-7	2-Chloronaphthalene	ND	1.9	0.22	ug/l	
106-47-8	4-Chloroaniline	ND	4.8	0.32	ug/l	
86-74-8	Carbazole	ND	0.95	0.22	ug/l	

ND = Not detected MDL = Method Detection Limit
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E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	DUP-03222018		
Lab Sample ID:	JC62879-16	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

ABN TCL List (SOM0 1.1)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	1.9	0.62	ug/l	
218-01-9	Chrysene	ND	0.95	0.17	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	1.9	0.26	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	1.9	0.24	ug/l	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	1.9	0.38	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	1.9	0.35	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	0.95	0.53	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	0.95	0.45	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	1.9	0.48	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.95	0.32	ug/l	
132-64-9	Dibenzofuran	ND	4.8	0.21	ug/l	
84-74-2	Di-n-butyl phthalate	ND	1.9	0.47	ug/l	
117-84-0	Di-n-octyl phthalate	ND	1.9	0.22	ug/l	
84-66-2	Diethyl phthalate	ND	1.9	0.25	ug/l	
131-11-3	Dimethyl phthalate	ND	1.9	0.21	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	1.9	1.6	ug/l	
206-44-0	Fluoranthene	ND	0.95	0.16	ug/l	
86-73-7	Fluorene	ND	0.95	0.16	ug/l	
118-74-1	Hexachlorobenzene	ND	0.95	0.31	ug/l	
87-68-3	Hexachlorobutadiene	ND	0.95	0.47	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	9.5	2.6	ug/l	
67-72-1	Hexachloroethane	ND	1.9	0.37	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.95	0.32	ug/l	
78-59-1	Isophorone	ND	1.9	0.26	ug/l	
91-57-6	2-Methylnaphthalene	ND	0.95	0.20	ug/l	
88-74-4	2-Nitroaniline	ND	4.8	0.26	ug/l	
99-09-2	3-Nitroaniline	ND	4.8	0.37	ug/l	
100-01-6	4-Nitroaniline	ND	4.8	0.42	ug/l	
91-20-3	Naphthalene	ND	0.95	0.22	ug/l	
98-95-3	Nitrobenzene	ND	1.9	0.61	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	1.9	0.46	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	4.8	0.21	ug/l	
85-01-8	Phenanthrene	ND	0.95	0.17	ug/l	
129-00-0	Pyrene	ND	0.95	0.21	ug/l	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	1.9	0.35	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	34%		10-110%
4165-62-2	Phenol-d5	24%		10-110%

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J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	DUP-03222018		
Lab Sample ID:	JC62879-16	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

ABN TCL List (SOM0 1.1)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
118-79-6	2,4,6-Tribromophenol	89%		36-151%
4165-60-0	Nitrobenzene-d5	62%		34-128%
321-60-8	2-Fluorobiphenyl	68%		38-119%
1718-51-0	Terphenyl-d14	63%		26-129%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS LabLink@996135 15:37 10-Apr-2018

Report of Analysis

Client Sample ID:	DUP-03222018		
Lab Sample ID:	JC62879-16	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8081B SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1G144719.D	1	03/28/18 05:44	CP	03/27/18 18:10	OP10885	G1G4598
Run #2							

	Initial Volume	Final Volume
Run #1	300 ml	2.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	0.0069	0.0036	ug/l	
319-84-6	alpha-BHC	ND	0.0069	0.0036	ug/l	
319-85-7	beta-BHC	ND	0.0069	0.0055	ug/l	
319-86-8	delta-BHC	ND	0.0069	0.0045	ug/l	
58-89-9	gamma-BHC (Lindane)	ND	0.0069	0.0041	ug/l	
5103-71-9	alpha-Chlordane	ND	0.0069	0.0034	ug/l	
5103-74-2	gamma-Chlordane	ND	0.0069	0.0029	ug/l	
60-57-1	Dieldrin	ND	0.0069	0.0053	ug/l	
72-54-8	4,4'-DDD	ND	0.0069	0.0040	ug/l	
72-55-9	4,4'-DDE	ND	0.0069	0.0035	ug/l	
50-29-3	4,4'-DDT	ND	0.0069	0.0047	ug/l	
72-20-8	Endrin	ND	0.0069	0.0042	ug/l	
1031-07-8	Endosulfan sulfate	ND	0.0069	0.0038	ug/l	
7421-93-4	Endrin aldehyde	ND	0.0069	0.0046	ug/l	
53494-70-5	Endrin ketone	ND	0.0069	0.0043	ug/l	
959-98-8	Endosulfan-I	ND	0.0069	0.0036	ug/l	
33213-65-9	Endosulfan-II	ND	0.0069	0.0034	ug/l	
76-44-8	Heptachlor	ND	0.0069	0.0031	ug/l	
1024-57-3	Heptachlor epoxide	ND	0.0069	0.0041	ug/l	
72-43-5	Methoxychlor	ND	0.014	0.0046	ug/l	
8001-35-2	Toxaphene	ND	0.17	0.11	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	74%		13-153%
877-09-8	Tetrachloro-m-xylene	72%		13-153%
2051-24-3	Decachlorobiphenyl	52%		10-138%
2051-24-3	Decachlorobiphenyl	38%		10-138%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS LabLink@996135 15:37 10-Apr-2018

Report of Analysis

Client Sample ID:	DUP-03222018		
Lab Sample ID:	JC62879-16	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8082A SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EF181241.D	1	03/29/18 03:24	HB	03/27/18 18:10	OP10884	GEF6203
Run #2							

	Initial Volume	Final Volume
Run #1	300 ml	2.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	0.33	0.13	ug/l	
11104-28-2	Aroclor 1221	ND	0.33	0.28	ug/l	
11141-16-5	Aroclor 1232	ND	0.33	0.17	ug/l	
53469-21-9	Aroclor 1242	ND	0.33	0.15	ug/l	
12672-29-6	Aroclor 1248	ND	0.33	0.084	ug/l	
11097-69-1	Aroclor 1254	ND	0.33	0.28	ug/l	
11096-82-5	Aroclor 1260	ND	0.33	0.10	ug/l	
11100-14-4	Aroclor 1268	ND	0.33	0.12	ug/l	
37324-23-5	Aroclor 1262	ND	0.33	0.13	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	71%		11-166%
877-09-8	Tetrachloro-m-xylene	75%		11-166%
2051-24-3	Decachlorobiphenyl	40%		10-150%
2051-24-3	Decachlorobiphenyl	40%		10-150%

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RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
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N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	DUP-03222018		
Lab Sample ID:	JC62879-16	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
		Percent Solids:	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	1130	200	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Antimony	< 6.0	6.0	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Arsenic	12.8	3.0	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Barium	< 200	200	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Beryllium	< 1.0	1.0	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Cadmium	< 3.0	3.0	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Calcium	81800	5000	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Chromium	< 10	10	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Cobalt	< 50	50	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Copper	< 10	10	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Iron	20100	100	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Lead	< 3.0	3.0	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Magnesium	34900	5000	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Manganese	5530	15	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Mercury	< 0.20	0.20	ug/l	1	03/27/18	03/27/18	JA	SW846 7470A [1]	SW846 7470A [3]
Nickel	11.7	10	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Potassium	< 10000	10000	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Selenium	< 10	10	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Silver	< 10	10	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Sodium	33400	10000	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Thallium	< 2.0	2.0	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Vanadium	< 50	50	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Zinc	< 20	20	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]

(1) Instrument QC Batch: MA44080
(2) Instrument QC Batch: MA44135
(3) Prep QC Batch: MP6364
(4) Prep QC Batch: MP6402

RL = Reporting Limit

Report of Analysis

Client Sample ID:	DUP-03222018		
Lab Sample ID:	JC62879-16	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
		Percent Solids:	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Cyanide	< 0.010 UJ	0.010	mg/l	1	03/29/18 09:44	BM	EPA 335.4/LACHAT

RL = Reporting Limit

SGS LabLink@996135 15:37 10-Apr-2018

Report of Analysis

Client Sample ID:	PCMW-10S		
Lab Sample ID:	JC62879-17	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2E141955.D	1	03/29/18 11:26	SS	n/a	n/a	V2E6206
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone [a]	ND	10	5.0	ug/l	UJ
71-43-2	Benzene	ND	0.50	0.17	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.38	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.22	ug/l	
75-25-2	Bromoform	ND	1.0	0.42	ug/l	
74-83-9	Bromomethane	ND	2.0	1.4	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	4.8	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.50	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.34	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.24	ug/l	
75-00-3	Chloroethane	ND	1.0	0.59	ug/l	
67-66-3	Chloroform	ND	1.0	0.29	ug/l	
74-87-3	Chloromethane	ND	1.0	0.53	ug/l	
110-82-7	Cyclohexane	ND	5.0	0.63	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.69	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.16	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.21	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.50	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.50	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.50	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.9	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.21	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.20	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.47	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.50	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.40	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.24	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.25	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.22	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.22	ug/l	
76-13-1	Freon 113	ND	5.0	1.2	ug/l	
591-78-6	2-Hexanone	ND	5.0	3.3	ug/l	

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Report of Analysis

Client Sample ID:	PCMW-10S		
Lab Sample ID:	JC62879-17	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	1.0	0.25	ug/l	
79-20-9	Methyl Acetate	ND	5.0	3.1	ug/l	
108-87-2	Methylcyclohexane	ND	5.0	1.8	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.25	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	3.0	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.24	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.17	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.50	ug/l	
108-88-3	Toluene	ND	1.0	0.25	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.50	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.24	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.27	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.60	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.62	ug/l	
	m,p-Xylene	ND	1.0	0.43	ug/l	
95-47-6	o-Xylene	ND	1.0	0.22	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.22	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		80-120%
17060-07-0	1,2-Dichloroethane-D4	102%		81-124%
2037-26-5	Toluene-D8	101%		80-120%
460-00-4	4-Bromofluorobenzene	100%		80-120%

(a) Associated CCV outside of control limits low.

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RL = Reporting Limit
E = Indicates value exceeds calibration range
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B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS LabLink@996135 15:37 10-Apr-2018

Report of Analysis

Client Sample ID:	PCMW-10S		
Lab Sample ID:	JC62879-17	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2P78152.D	1	03/29/18 00:30	JB	03/28/18 00:25	OP10883	E2P3440
Run #2							

	Initial Volume	Final Volume
Run #1	900 ml	1.0 ml
Run #2		

ABN TCL List (SOM0 1.1)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	5.6	0.91	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	5.6	0.99	ug/l	
120-83-2	2,4-Dichlorophenol	ND	2.2	1.4	ug/l	
105-67-9	2,4-Dimethylphenol	ND	5.6	2.7	ug/l	
51-28-5	2,4-Dinitrophenol	ND	5.6	1.7	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	5.6	1.4	ug/l	
95-48-7	2-Methylphenol	ND	2.2	0.99	ug/l	
	3&4-Methylphenol	ND	2.2	0.98	ug/l	
88-75-5	2-Nitrophenol	ND	5.6	1.1	ug/l	
100-02-7	4-Nitrophenol	ND	11	1.3	ug/l	
87-86-5	Pentachlorophenol	ND	4.4	1.5	ug/l	
108-95-2	Phenol	ND	2.2	0.44	ug/l	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	5.6	1.6	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	5.6	1.5	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	5.6	1.0	ug/l	
83-32-9	Acenaphthene	ND	1.1	0.21	ug/l	
208-96-8	Acenaphthylene	ND	1.1	0.15	ug/l	
98-86-2	Acetophenone	ND	2.2	0.23	ug/l	
120-12-7	Anthracene	ND	1.1	0.23	ug/l	
1912-24-9	Atrazine	ND	2.2	0.50	ug/l	
100-52-7	Benzaldehyde	ND	5.6	0.32	ug/l	
56-55-3	Benzo(a)anthracene	ND	1.1	0.23	ug/l	
50-32-8	Benzo(a)pyrene	ND	1.1	0.24	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	1.1	0.23	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	1.1	0.38	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	1.1	0.23	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	2.2	0.45	ug/l	
85-68-7	Butyl benzyl phthalate	ND	2.2	0.51	ug/l	
92-52-4	1,1'-Biphenyl	ND	1.1	0.24	ug/l	
91-58-7	2-Chloronaphthalene	ND	2.2	0.26	ug/l	
106-47-8	4-Chloroaniline	ND	5.6	0.38	ug/l	
86-74-8	Carbazole	ND	1.1	0.25	ug/l	

ND = Not detected MDL = Method Detection Limit
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Report of Analysis

Client Sample ID:	PCMW-10S		
Lab Sample ID:	JC62879-17	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

ABN TCL List (SOM0 1.1)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	2.2	0.72	ug/l	
218-01-9	Chrysene	ND	1.1	0.20	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	2.2	0.31	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	2.2	0.28	ug/l	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	2.2	0.45	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	2.2	0.41	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	1.1	0.61	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	1.1	0.53	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	2.2	0.56	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	1.1	0.37	ug/l	
132-64-9	Dibenzofuran	ND	5.6	0.24	ug/l	
84-74-2	Di-n-butyl phthalate	ND	2.2	0.55	ug/l	
117-84-0	Di-n-octyl phthalate	ND	2.2	0.26	ug/l	
84-66-2	Diethyl phthalate	ND	2.2	0.29	ug/l	
131-11-3	Dimethyl phthalate	ND	2.2	0.24	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.2	1.8	ug/l	
206-44-0	Fluoranthene	ND	1.1	0.19	ug/l	
86-73-7	Fluorene	ND	1.1	0.19	ug/l	
118-74-1	Hexachlorobenzene	ND	1.1	0.36	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.1	0.55	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	11	3.1	ug/l	
67-72-1	Hexachloroethane	ND	2.2	0.43	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	1.1	0.37	ug/l	
78-59-1	Isophorone	ND	2.2	0.31	ug/l	
91-57-6	2-Methylnaphthalene	ND	1.1	0.23	ug/l	
88-74-4	2-Nitroaniline	ND	5.6	0.31	ug/l	
99-09-2	3-Nitroaniline	ND	5.6	0.43	ug/l	
100-01-6	4-Nitroaniline	ND	5.6	0.49	ug/l	
91-20-3	Naphthalene	ND	1.1	0.26	ug/l	
98-95-3	Nitrobenzene	ND	2.2	0.71	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	2.2	0.53	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.6	0.25	ug/l	
85-01-8	Phenanthrene	ND	1.1	0.19	ug/l	
129-00-0	Pyrene	ND	1.1	0.24	ug/l	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	2.2	0.41	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	30%		10-110%
4165-62-2	Phenol-d5	21%		10-110%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCMW-10S		
Lab Sample ID:	JC62879-17	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

ABN TCL List (SOM0 1.1)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
118-79-6	2,4,6-Tribromophenol	82%		36-151%
4165-60-0	Nitrobenzene-d5	53%		34-128%
321-60-8	2-Fluorobiphenyl	62%		38-119%
1718-51-0	Terphenyl-d14	52%		26-129%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PCMW-10S		
Lab Sample ID:	JC62879-17	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8081B SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1G144720.D	1	03/28/18 06:01	CP	03/27/18 18:10	OP10885	G1G4598
Run #2							

	Initial Volume	Final Volume
Run #1	300 ml	2.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	0.0067	0.0034	ug/l	
319-84-6	alpha-BHC	ND	0.0067	0.0035	ug/l	
319-85-7	beta-BHC	ND	0.0067	0.0053	ug/l	
319-86-8	delta-BHC	ND	0.0067	0.0044	ug/l	
58-89-9	gamma-BHC (Lindane)	ND	0.0067	0.0040	ug/l	
5103-71-9	alpha-Chlordane	ND	0.0067	0.0033	ug/l	
5103-74-2	gamma-Chlordane	ND	0.0067	0.0028	ug/l	
60-57-1	Dieldrin	ND	0.0067	0.0051	ug/l	
72-54-8	4,4'-DDD	ND	0.0067	0.0038	ug/l	
72-55-9	4,4'-DDE	ND	0.0067	0.0034	ug/l	
50-29-3	4,4'-DDT	ND	0.0067	0.0046	ug/l	
72-20-8	Endrin	ND	0.0067	0.0040	ug/l	
1031-07-8	Endosulfan sulfate	ND	0.0067	0.0036	ug/l	
7421-93-4	Endrin aldehyde	ND	0.0067	0.0045	ug/l	
53494-70-5	Endrin ketone	ND	0.0067	0.0041	ug/l	
959-98-8	Endosulfan-I	ND	0.0067	0.0035	ug/l	
33213-65-9	Endosulfan-II	ND	0.0067	0.0033	ug/l	
76-44-8	Heptachlor	ND	0.0067	0.0030	ug/l	
1024-57-3	Heptachlor epoxide	ND	0.0067	0.0040	ug/l	
72-43-5	Methoxychlor	ND	0.013	0.0045	ug/l	
8001-35-2	Toxaphene	ND	0.17	0.11	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	86%		13-153%
877-09-8	Tetrachloro-m-xylene	82%		13-153%
2051-24-3	Decachlorobiphenyl	101%		10-138%
2051-24-3	Decachlorobiphenyl	83%		10-138%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PCMW-10S		
Lab Sample ID:	JC62879-17	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8082A SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EF181242.D	1	03/29/18 03:49	HB	03/27/18 18:10	OP10884	GEF6203
Run #2							

	Initial Volume	Final Volume
Run #1	300 ml	2.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	0.33	0.13	ug/l	
11104-28-2	Aroclor 1221	ND	0.33	0.28	ug/l	
11141-16-5	Aroclor 1232	ND	0.33	0.17	ug/l	
53469-21-9	Aroclor 1242	ND	0.33	0.15	ug/l	
12672-29-6	Aroclor 1248	ND	0.33	0.084	ug/l	
11097-69-1	Aroclor 1254	ND	0.33	0.28	ug/l	
11096-82-5	Aroclor 1260	ND	0.33	0.10	ug/l	
11100-14-4	Aroclor 1268	ND	0.33	0.12	ug/l	
37324-23-5	Aroclor 1262	ND	0.33	0.13	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	90%		11-166%
877-09-8	Tetrachloro-m-xylene	92%		11-166%
2051-24-3	Decachlorobiphenyl	82%		10-150%
2051-24-3	Decachlorobiphenyl	83%		10-150%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PCMW-10S
Lab Sample ID: JC62879-17
Matrix: AQ - Ground Water
Project: National Grid, Philly Coke, Philadelphia PA

Date Sampled: 03/22/18
Date Received: 03/23/18
Percent Solids: n/a

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	< 200	200	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [5]
Antimony	< 6.0	6.0	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [5]
Arsenic [a]	< 9.0	9.0	ug/l	3	03/29/18	04/04/18		SW846 6010C [3]	SW846 3010A [5]
Barium	< 200	200	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [5]
Beryllium	< 1.0	1.0	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [5]
Cadmium	< 3.0	3.0	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [5]
Calcium	299000	15000	ug/l	3	03/29/18	04/04/18		SW846 6010C [3]	SW846 3010A [5]
Chromium	< 10	10	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [5]
Cobalt	< 50	50	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [5]
Copper	15.2	10	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [5]
Iron	462	100	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [5]
Lead [a]	< 9.0	9.0	ug/l	3	03/29/18	04/04/18		SW846 6010C [3]	SW846 3010A [5]
Magnesium	165000	5000	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [5]
Manganese	125	15	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [5]
Mercury	< 0.20	0.20	ug/l	1	03/27/18	03/27/18	JA	SW846 7470A [1]	SW846 7470A [4]
Nickel	< 10	10	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [5]
Potassium	20700	10000	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [5]
Selenium	< 10	10	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [5]
Silver	< 10	10	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [5]
Sodium	14700	10000	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [5]
Thallium [a]	< 6.0	6.0	ug/l	3	03/29/18	04/04/18		SW846 6010C [3]	SW846 3010A [5]
Vanadium	< 50	50	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [5]
Zinc	88.6	20	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [5]

(1) Instrument QC Batch: MA44080
(2) Instrument QC Batch: MA44135
(3) Instrument QC Batch: MA44142
(4) Prep QC Batch: MP6364
(5) Prep QC Batch: MP6402

(a) Elevated detection limit due to dilution required for high interfering element.

RL = Reporting Limit

Report of Analysis

Client Sample ID:	PCMW-10S		
Lab Sample ID:	JC62879-17	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
		Percent Solids:	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Cyanide	< 0.010 UJ	0.010	mg/l	1	03/29/18 09:45	BM	EPA 335.4/LACHAT

RL = Reporting Limit

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Report of Analysis

Client Sample ID:	PCMW-10D		
Lab Sample ID:	JC62879-18	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2E141956.D	1	03/29/18 11:53	SS	n/a	n/a	V2E6206
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone [a]	ND	10	5.0	ug/l	UJ
71-43-2	Benzene	ND	0.50	0.17	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.38	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.22	ug/l	
75-25-2	Bromoform	ND	1.0	0.42	ug/l	
74-83-9	Bromomethane	ND	2.0	1.4	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	4.8	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.50	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.34	ug/l	
108-90-7	Chlorobenzene	0.28	1.0	0.24	ug/l	J
75-00-3	Chloroethane	ND	1.0	0.59	ug/l	
67-66-3	Chloroform	ND	1.0	0.29	ug/l	
74-87-3	Chloromethane	ND	1.0	0.53	ug/l	
110-82-7	Cyclohexane	ND	5.0	0.63	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.69	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.16	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.21	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.50	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.50	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.50	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.9	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.21	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.20	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.47	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.50	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.40	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.24	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.25	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.22	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.22	ug/l	
76-13-1	Freon 113	ND	5.0	1.2	ug/l	
591-78-6	2-Hexanone	ND	5.0	3.3	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCMW-10D		
Lab Sample ID:	JC62879-18	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	1.0	0.25	ug/l	
79-20-9	Methyl Acetate	ND	5.0	3.1	ug/l	
108-87-2	Methylcyclohexane	ND	5.0	1.8	ug/l	
1634-04-4	Methyl Tert Butyl Ether	0.80	1.0	0.25	ug/l	J
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	3.0	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.24	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.17	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.50	ug/l	
108-88-3	Toluene	ND	1.0	0.25	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.50	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.24	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.27	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.60	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.62	ug/l	
	m,p-Xylene	ND	1.0	0.43	ug/l	
95-47-6	o-Xylene	ND	1.0	0.22	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.22	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		80-120%
17060-07-0	1,2-Dichloroethane-D4	102%		81-124%
2037-26-5	Toluene-D8	102%		80-120%
460-00-4	4-Bromofluorobenzene	101%		80-120%

(a) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PCMW-10D		
Lab Sample ID:	JC62879-18	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2P78153.D	1	03/29/18 00:51	JB	03/28/18 00:25	OP10883	E2P3440
Run #2							

	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2		

ABN TCL List (SOM0 1.1)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	5.0	0.82	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	5.0	0.89	ug/l	
120-83-2	2,4-Dichlorophenol	ND	2.0	1.3	ug/l	
105-67-9	2,4-Dimethylphenol	ND	5.0	2.4	ug/l	
51-28-5	2,4-Dinitrophenol	ND	5.0	1.6	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	5.0	1.3	ug/l	
95-48-7	2-Methylphenol	ND	2.0	0.89	ug/l	
	3&4-Methylphenol	ND	2.0	0.88	ug/l	
88-75-5	2-Nitrophenol	ND	5.0	0.96	ug/l	
100-02-7	4-Nitrophenol	ND	10	1.2	ug/l	
87-86-5	Pentachlorophenol	ND	4.0	1.4	ug/l	
108-95-2	Phenol	ND	2.0	0.39	ug/l	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	5.0	1.5	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	5.0	1.3	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	5.0	0.92	ug/l	
83-32-9	Acenaphthene	ND	1.0	0.19	ug/l	
208-96-8	Acenaphthylene	ND	1.0	0.14	ug/l	
98-86-2	Acetophenone	ND	2.0	0.21	ug/l	
120-12-7	Anthracene	ND	1.0	0.21	ug/l	
1912-24-9	Atrazine	ND	2.0	0.45	ug/l	
100-52-7	Benzaldehyde	ND	5.0	0.29	ug/l	
56-55-3	Benzo(a)anthracene	ND	1.0	0.20	ug/l	
50-32-8	Benzo(a)pyrene	ND	1.0	0.21	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	1.0	0.21	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	1.0	0.34	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	1.0	0.21	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	2.0	0.40	ug/l	
85-68-7	Butyl benzyl phthalate	ND	2.0	0.46	ug/l	
92-52-4	1,1'-Biphenyl	ND	1.0	0.21	ug/l	
91-58-7	2-Chloronaphthalene	ND	2.0	0.24	ug/l	
106-47-8	4-Chloroaniline	ND	5.0	0.34	ug/l	
86-74-8	Carbazole	ND	1.0	0.23	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCMW-10D		
Lab Sample ID:	JC62879-18	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

ABN TCL List (SOM0 1.1)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	2.0	0.65	ug/l	
218-01-9	Chrysene	ND	1.0	0.18	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	2.0	0.28	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	2.0	0.25	ug/l	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	2.0	0.40	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	2.0	0.37	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	1.0	0.55	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	1.0	0.48	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	2.0	0.51	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	1.0	0.33	ug/l	
132-64-9	Dibenzofuran	ND	5.0	0.22	ug/l	
84-74-2	Di-n-butyl phthalate	ND	2.0	0.50	ug/l	
117-84-0	Di-n-octyl phthalate	ND	2.0	0.23	ug/l	
84-66-2	Diethyl phthalate	ND	2.0	0.26	ug/l	
131-11-3	Dimethyl phthalate	ND	2.0	0.22	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.0	1.7	ug/l	
206-44-0	Fluoranthene	ND	1.0	0.17	ug/l	
86-73-7	Fluorene	ND	1.0	0.17	ug/l	
118-74-1	Hexachlorobenzene	ND	1.0	0.33	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.49	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	10	2.8	ug/l	
67-72-1	Hexachloroethane	ND	2.0	0.39	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	1.0	0.33	ug/l	
78-59-1	Isophorone	ND	2.0	0.28	ug/l	
91-57-6	2-Methylnaphthalene	ND	1.0	0.21	ug/l	
88-74-4	2-Nitroaniline	ND	5.0	0.28	ug/l	
99-09-2	3-Nitroaniline	ND	5.0	0.39	ug/l	
100-01-6	4-Nitroaniline	ND	5.0	0.44	ug/l	
91-20-3	Naphthalene	ND	1.0	0.23	ug/l	
98-95-3	Nitrobenzene	ND	2.0	0.64	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	2.0	0.48	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.0	0.22	ug/l	
85-01-8	Phenanthrene	ND	1.0	0.18	ug/l	
129-00-0	Pyrene	ND	1.0	0.22	ug/l	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	2.0	0.37	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	36%		10-110%
4165-62-2	Phenol-d5	27%		10-110%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCMW-10D		
Lab Sample ID:	JC62879-18	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

ABN TCL List (SOM0 1.1)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
118-79-6	2,4,6-Tribromophenol	85%		36-151%
4165-60-0	Nitrobenzene-d5	59%		34-128%
321-60-8	2-Fluorobiphenyl	65%		38-119%
1718-51-0	Terphenyl-d14	55%		26-129%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PCMW-10D		
Lab Sample ID:	JC62879-18	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8081B SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1G144725.D	1	03/28/18 07:27	CP	03/27/18 18:10	OP10885	G1G4598
Run #2							

	Initial Volume	Final Volume
Run #1	300 ml	2.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	0.0067	0.0034	ug/l	
319-84-6	alpha-BHC	ND	0.0067	0.0035	ug/l	
319-85-7	beta-BHC	ND	0.0067	0.0053	ug/l	
319-86-8	delta-BHC	ND	0.0067	0.0044	ug/l	
58-89-9	gamma-BHC (Lindane)	ND	0.0067	0.0040	ug/l	
5103-71-9	alpha-Chlordane	ND	0.0067	0.0033	ug/l	
5103-74-2	gamma-Chlordane	ND	0.0067	0.0028	ug/l	
60-57-1	Dieldrin	ND	0.0067	0.0051	ug/l	
72-54-8	4,4'-DDD	ND	0.0067	0.0038	ug/l	
72-55-9	4,4'-DDE	ND	0.0067	0.0034	ug/l	
50-29-3	4,4'-DDT	ND	0.0067	0.0046	ug/l	
72-20-8	Endrin	ND	0.0067	0.0040	ug/l	
1031-07-8	Endosulfan sulfate	ND	0.0067	0.0036	ug/l	
7421-93-4	Endrin aldehyde	ND	0.0067	0.0045	ug/l	
53494-70-5	Endrin ketone	ND	0.0067	0.0041	ug/l	
959-98-8	Endosulfan-I	ND	0.0067	0.0035	ug/l	
33213-65-9	Endosulfan-II	ND	0.0067	0.0033	ug/l	
76-44-8	Heptachlor	ND	0.0067	0.0030	ug/l	
1024-57-3	Heptachlor epoxide	ND	0.0067	0.0040	ug/l	
72-43-5	Methoxychlor	ND	0.013	0.0045	ug/l	
8001-35-2	Toxaphene	ND	0.17	0.11	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	68%		13-153%
877-09-8	Tetrachloro-m-xylene	79%		13-153%
2051-24-3	Decachlorobiphenyl	26%		10-138%
2051-24-3	Decachlorobiphenyl	23%		10-138%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PCMW-10D		
Lab Sample ID:	JC62879-18	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8082A SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EF181243.D	1	03/29/18 04:14	HB	03/27/18 18:10	OP10884	GEF6203
Run #2							

	Initial Volume	Final Volume
Run #1	300 ml	2.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	0.33	0.13	ug/l	
11104-28-2	Aroclor 1221	ND	0.33	0.28	ug/l	
11141-16-5	Aroclor 1232	ND	0.33	0.17	ug/l	
53469-21-9	Aroclor 1242	ND	0.33	0.15	ug/l	
12672-29-6	Aroclor 1248	ND	0.33	0.084	ug/l	
11097-69-1	Aroclor 1254	ND	0.33	0.28	ug/l	
11096-82-5	Aroclor 1260	ND	0.33	0.10	ug/l	
11100-14-4	Aroclor 1268	ND	0.33	0.12	ug/l	
37324-23-5	Aroclor 1262	ND	0.33	0.13	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	84%		11-166%
877-09-8	Tetrachloro-m-xylene	82%		11-166%
2051-24-3	Decachlorobiphenyl	33%		10-150%
2051-24-3	Decachlorobiphenyl	25%		10-150%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PCMW-10D
Lab Sample ID: JC62879-18
Matrix: AQ - Ground Water
Project: National Grid, Philly Coke, Philadelphia PA

Date Sampled: 03/22/18
Date Received: 03/23/18
Percent Solids: n/a

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	1740	1000	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Antimony	< 30	30	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Arsenic	< 15	15	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Barium	< 1000	1000	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Beryllium	< 5.0	5.0	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Cadmium	< 15	15	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Calcium	92400	25000	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Chromium	< 50	50	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Cobalt	< 250	250	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Copper	< 50	50	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Iron	64600	500	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Lead	< 15	15	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Magnesium	38000	25000	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Manganese	7650	75	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Mercury [a]	< 0.60	0.60	ug/l	1	03/27/18	03/27/18	JA	SW846 7470A [1]	SW846 7470A [3]
Nickel	< 50	50	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Potassium	< 50000	50000	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Selenium	< 50	50	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Silver	< 50	50	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Sodium	103000	50000	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Thallium	< 10	10	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Vanadium	< 250	250	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Zinc	< 100	100	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]

(1) Instrument QC Batch: MA44080
(2) Instrument QC Batch: MA44135
(3) Prep QC Batch: MP6364
(4) Prep QC Batch: MP6402

(a) Elevated sample detection limit due to difficult sample matrix.

RL = Reporting Limit

Report of Analysis

Client Sample ID:	PCMW-10D		
Lab Sample ID:	JC62879-18	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
		Percent Solids:	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Cyanide	0.35 J	0.010	mg/l	1	03/29/18 09:46	BM	EPA 335.4/LACHAT

RL = Reporting Limit

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Report of Analysis

Client Sample ID:	TRIP BLANK		
Lab Sample ID:	JC62879-19	**Date Sampled:**	03/22/18
Matrix:	AQ - Trip Blank Water	**Date Received:**	03/23/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2E141957.D	1	03/29/18 12:22	SS	n/a	n/a	V2E6206
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone [a]	ND	10	5.0	ug/l	UJ
71-43-2	Benzene	ND	0.50	0.17	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.38	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.22	ug/l	
75-25-2	Bromoform	ND	1.0	0.42	ug/l	
74-83-9	Bromomethane	ND	2.0	1.4	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	4.8	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.50	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.34	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.24	ug/l	
75-00-3	Chloroethane	ND	1.0	0.59	ug/l	
67-66-3	Chloroform	ND	1.0	0.29	ug/l	
74-87-3	Chloromethane	ND	1.0	0.53	ug/l	
110-82-7	Cyclohexane	ND	5.0	0.63	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.69	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.16	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.21	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.50	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.50	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.50	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.9	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.21	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.20	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.47	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.50	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.40	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.24	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.25	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.22	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.22	ug/l	
76-13-1	Freon 113	ND	5.0	1.2	ug/l	
591-78-6	2-Hexanone	ND	5.0	3.3	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TRIP BLANK		
Lab Sample ID:	JC62879-19	**Date Sampled:**	03/22/18
Matrix:	AQ - Trip Blank Water	**Date Received:**	03/23/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	1.0	0.25	ug/l	
79-20-9	Methyl Acetate	ND	5.0	3.1	ug/l	
108-87-2	Methylcyclohexane	ND	5.0	1.8	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.25	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	3.0	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.24	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.17	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.50	ug/l	
108-88-3	Toluene	ND	1.0	0.25	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.50	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.24	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.27	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.60	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.62	ug/l	
	m,p-Xylene	ND	1.0	0.43	ug/l	
95-47-6	o-Xylene	ND	1.0	0.22	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.22	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%		80-120%
17060-07-0	1,2-Dichloroethane-D4	101%		81-124%
2037-26-5	Toluene-D8	102%		80-120%
460-00-4	4-Bromofluorobenzene	101%		80-120%

(a) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	MW-6		
Lab Sample ID:	JC62879-20	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4B80684.D	1	03/30/18 16:02	HT	n/a	n/a	V4B3335
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	5.0	ug/l	
71-43-2	Benzene	ND	0.50	0.17	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.38	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.22	ug/l	
75-25-2	Bromoform [a]	ND	1.0	0.42	ug/l	
74-83-9	Bromomethane	ND	2.0	1.4	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	4.8	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.50	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.34	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.24	ug/l	
75-00-3	Chloroethane	ND	1.0	0.59	ug/l	
67-66-3	Chloroform	ND	1.0	0.29	ug/l	
74-87-3	Chloromethane	ND	1.0	0.53	ug/l	
110-82-7	Cyclohexane	ND	5.0	0.63	ug/l	
96-12-8	1,2-Dibromo-3-chloropropan [a]	ND	2.0	0.69	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.16	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.21	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.50	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.50	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.50	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.9	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.21	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.20	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.47	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.50	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.40	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.24	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.25	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.22	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.22	ug/l	
76-13-1	Freon 113	ND	5.0	1.2	ug/l	
591-78-6	2-Hexanone	ND	5.0	3.3	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW-6		
Lab Sample ID:	JC62879-20	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	1.0	0.25	ug/l	
79-20-9	Methyl Acetate	ND	5.0	3.1	ug/l	
108-87-2	Methylcyclohexane	ND	5.0	1.8	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.25	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK [a]	ND	5.0	3.0	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.24	ug/l	UJ
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.17	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.50	ug/l	
108-88-3	Toluene	ND	1.0	0.25	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.50	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.24	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.27	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.60	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.62	ug/l	
	m,p-Xylene	ND	1.0	0.43	ug/l	
95-47-6	o-Xylene	ND	1.0	0.22	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.22	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	99%		80-120%
17060-07-0	1,2-Dichloroethane-D4	99%		81-124%
2037-26-5	Toluene-D8	88%		80-120%
460-00-4	4-Bromofluorobenzene	93%		80-120%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS LabLink@996135 15:37 10-Apr-2018

Report of Analysis

Client Sample ID:	MW-6		
Lab Sample ID:	JC62879-20	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2P78154.D	1	03/29/18 01:13	JB	03/28/18 00:25	OP10883	E2P3440
Run #2							

	Initial Volume	Final Volume
Run #1	1020 ml	1.0 ml
Run #2		

ABN TCL List (SOM0 1.1)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	4.9	0.80	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	4.9	0.87	ug/l	
120-83-2	2,4-Dichlorophenol	ND	2.0	1.2	ug/l	
105-67-9	2,4-Dimethylphenol	ND	4.9	2.4	ug/l	
51-28-5	2,4-Dinitrophenol	ND	4.9	1.5	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	4.9	1.3	ug/l	
95-48-7	2-Methylphenol	ND	2.0	0.87	ug/l	
	3&4-Methylphenol	ND	2.0	0.86	ug/l	
88-75-5	2-Nitrophenol	ND	4.9	0.94	ug/l	
100-02-7	4-Nitrophenol	ND	9.8	1.1	ug/l	
87-86-5	Pentachlorophenol	ND	3.9	1.4	ug/l	
108-95-2	Phenol	ND	2.0	0.38	ug/l	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	4.9	1.4	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	4.9	1.3	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	4.9	0.91	ug/l	
83-32-9	Acenaphthene	1.6	0.98	0.19	ug/l	
208-96-8	Acenaphthylene	ND	0.98	0.13	ug/l	
98-86-2	Acetophenone	ND	2.0	0.20	ug/l	
120-12-7	Anthracene	ND	0.98	0.21	ug/l	
1912-24-9	Atrazine	ND	2.0	0.44	ug/l	
100-52-7	Benzaldehyde	ND	4.9	0.28	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.98	0.20	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.98	0.21	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.98	0.20	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.98	0.33	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.98	0.20	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	2.0	0.40	ug/l	
85-68-7	Butyl benzyl phthalate	ND	2.0	0.45	ug/l	
92-52-4	1,1'-Biphenyl	ND	0.98	0.21	ug/l	
91-58-7	2-Chloronaphthalene	ND	2.0	0.23	ug/l	
106-47-8	4-Chloroaniline	ND	4.9	0.33	ug/l	
86-74-8	Carbazole	ND	0.98	0.22	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW-6		
Lab Sample ID:	JC62879-20	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

ABN TCL List (SOM0 1.1)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	2.0	0.64	ug/l	
218-01-9	Chrysene	ND	0.98	0.17	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	2.0	0.27	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	2.0	0.24	ug/l	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	2.0	0.40	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	2.0	0.36	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	0.98	0.54	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	0.98	0.47	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	2.0	0.50	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.98	0.32	ug/l	
132-64-9	Dibenzofuran	ND	4.9	0.22	ug/l	
84-74-2	Di-n-butyl phthalate	ND	2.0	0.49	ug/l	
117-84-0	Di-n-octyl phthalate	ND	2.0	0.23	ug/l	
84-66-2	Diethyl phthalate	ND	2.0	0.26	ug/l	
131-11-3	Dimethyl phthalate	ND	2.0	0.21	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.0	1.6	ug/l	
206-44-0	Fluoranthene	ND	0.98	0.17	ug/l	
86-73-7	Fluorene	ND	0.98	0.17	ug/l	
118-74-1	Hexachlorobenzene	ND	0.98	0.32	ug/l	
87-68-3	Hexachlorobutadiene	ND	0.98	0.48	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	9.8	2.7	ug/l	
67-72-1	Hexachloroethane	ND	2.0	0.38	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.98	0.33	ug/l	
78-59-1	Isophorone	ND	2.0	0.27	ug/l	
91-57-6	2-Methylnaphthalene	ND	0.98	0.21	ug/l	
88-74-4	2-Nitroaniline	ND	4.9	0.27	ug/l	
99-09-2	3-Nitroaniline	ND	4.9	0.38	ug/l	
100-01-6	4-Nitroaniline	ND	4.9	0.43	ug/l	
91-20-3	Naphthalene	ND	0.98	0.23	ug/l	
98-95-3	Nitrobenzene	ND	2.0	0.63	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	2.0	0.47	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	4.9	0.22	ug/l	
85-01-8	Phenanthrene	ND	0.98	0.17	ug/l	
129-00-0	Pyrene	ND	0.98	0.21	ug/l	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	2.0	0.36	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	34%		10-110%
4165-62-2	Phenol-d5	23%		10-110%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW-6		
Lab Sample ID:	JC62879-20	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

ABN TCL List (SOM0 1.1)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
118-79-6	2,4,6-Tribromophenol	84%		36-151%
4165-60-0	Nitrobenzene-d5	61%		34-128%
321-60-8	2-Fluorobiphenyl	63%		38-119%
1718-51-0	Terphenyl-d14	68%		26-129%

ND = Not detected MDL = Method Detection Limit
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E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	MW-6		
Lab Sample ID:	JC62879-20	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8081B SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1G144726.D	1	03/28/18 07:44	CP	03/27/18 18:10	OP10885	G1G4598
Run #2							

	Initial Volume	Final Volume
Run #1	300 ml	2.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	0.0067	0.0034	ug/l	
319-84-6	alpha-BHC	ND	0.0067	0.0035	ug/l	
319-85-7	beta-BHC	ND	0.0067	0.0053	ug/l	
319-86-8	delta-BHC	ND	0.0067	0.0044	ug/l	
58-89-9	gamma-BHC (Lindane)	ND	0.0067	0.0040	ug/l	
5103-71-9	alpha-Chlordane	ND	0.0067	0.0033	ug/l	
5103-74-2	gamma-Chlordane	ND	0.0067	0.0028	ug/l	
60-57-1	Dieldrin	ND	0.0067	0.0051	ug/l	
72-54-8	4,4'-DDD	ND	0.0067	0.0038	ug/l	
72-55-9	4,4'-DDE	ND	0.0067	0.0034	ug/l	
50-29-3	4,4'-DDT	ND	0.0067	0.0046	ug/l	
72-20-8	Endrin	ND	0.0067	0.0040	ug/l	
1031-07-8	Endosulfan sulfate	ND	0.0067	0.0036	ug/l	
7421-93-4	Endrin aldehyde	ND	0.0067	0.0045	ug/l	
53494-70-5	Endrin ketone	ND	0.0067	0.0041	ug/l	
959-98-8	Endosulfan-I	ND	0.0067	0.0035	ug/l	
33213-65-9	Endosulfan-II	ND	0.0067	0.0033	ug/l	
76-44-8	Heptachlor	ND	0.0067	0.0030	ug/l	
1024-57-3	Heptachlor epoxide	ND	0.0067	0.0040	ug/l	
72-43-5	Methoxychlor	ND	0.013	0.0045	ug/l	
8001-35-2	Toxaphene	ND	0.17	0.11	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	83%		13-153%
877-09-8	Tetrachloro-m-xylene	76%		13-153%
2051-24-3	Decachlorobiphenyl	104%		10-138%
2051-24-3	Decachlorobiphenyl	77%		10-138%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
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J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	MW-6		
Lab Sample ID:	JC62879-20	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8082A SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EF181223.D	1	03/28/18 19:54	HB	03/27/18 18:10	OP10884	GEF6203
Run #2							

	Initial Volume	Final Volume
Run #1	300 ml	2.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	0.33	0.13	ug/l	
11104-28-2	Aroclor 1221	ND	0.33	0.28	ug/l	
11141-16-5	Aroclor 1232	ND	0.33	0.17	ug/l	
53469-21-9	Aroclor 1242	ND	0.33	0.15	ug/l	
12672-29-6	Aroclor 1248	ND	0.33	0.084	ug/l	
11097-69-1	Aroclor 1254	ND	0.33	0.28	ug/l	
11096-82-5	Aroclor 1260	ND	0.33	0.10	ug/l	
11100-14-4	Aroclor 1268	ND	0.33	0.12	ug/l	
37324-23-5	Aroclor 1262	ND	0.33	0.13	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	79%		11-166%
877-09-8	Tetrachloro-m-xylene	82%		11-166%
2051-24-3	Decachlorobiphenyl	82%		10-150%
2051-24-3	Decachlorobiphenyl	78%		10-150%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW-6		
Lab Sample ID:	JC62879-20	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
		Percent Solids:	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	< 200	200	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Antimony	< 6.0	6.0	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Arsenic	< 3.0	3.0	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Barium	< 200	200	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Beryllium	< 1.0	1.0	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Cadmium	< 3.0	3.0	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Calcium	71100	5000	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Chromium	< 10	10	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Cobalt	< 50	50	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Copper	< 10	10	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Iron	12300	100	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Lead	3.0	3.0	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Magnesium	20200	5000	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Manganese	948	15	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Mercury	< 0.20	0.20	ug/l	1	03/27/18	03/27/18	JA	SW846 7470A [1]	SW846 7470A [3]
Nickel	< 10	10	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Potassium	< 10000	10000	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Selenium	< 10	10	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Silver	< 10	10	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Sodium	< 10000	10000	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Thallium	< 2.0	2.0	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Vanadium	< 50	50	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]
Zinc	< 20	20	ug/l	1	03/29/18	04/03/18	ND	SW846 6010C [2]	SW846 3010A [4]

(1) Instrument QC Batch: MA44080
(2) Instrument QC Batch: MA44135
(3) Prep QC Batch: MP6364
(4) Prep QC Batch: MP6402

RL = Reporting Limit

Report of Analysis

Client Sample ID:	MW-6		
Lab Sample ID:	JC62879-20	**Date Sampled:**	03/22/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
		Percent Solids:	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

General Chemistry

Analyte	Result		RL	Units	DF	Analyzed	By	Method
Cyanide	0.010	J	0.010	mg/l	1	03/29/18 09:48	BM	EPA 335.4/LACHAT

RL = Reporting Limit

ARCADIS Design & Consultancy for natural and built assets

National Grid
Philly Coke

DATA REVIEW

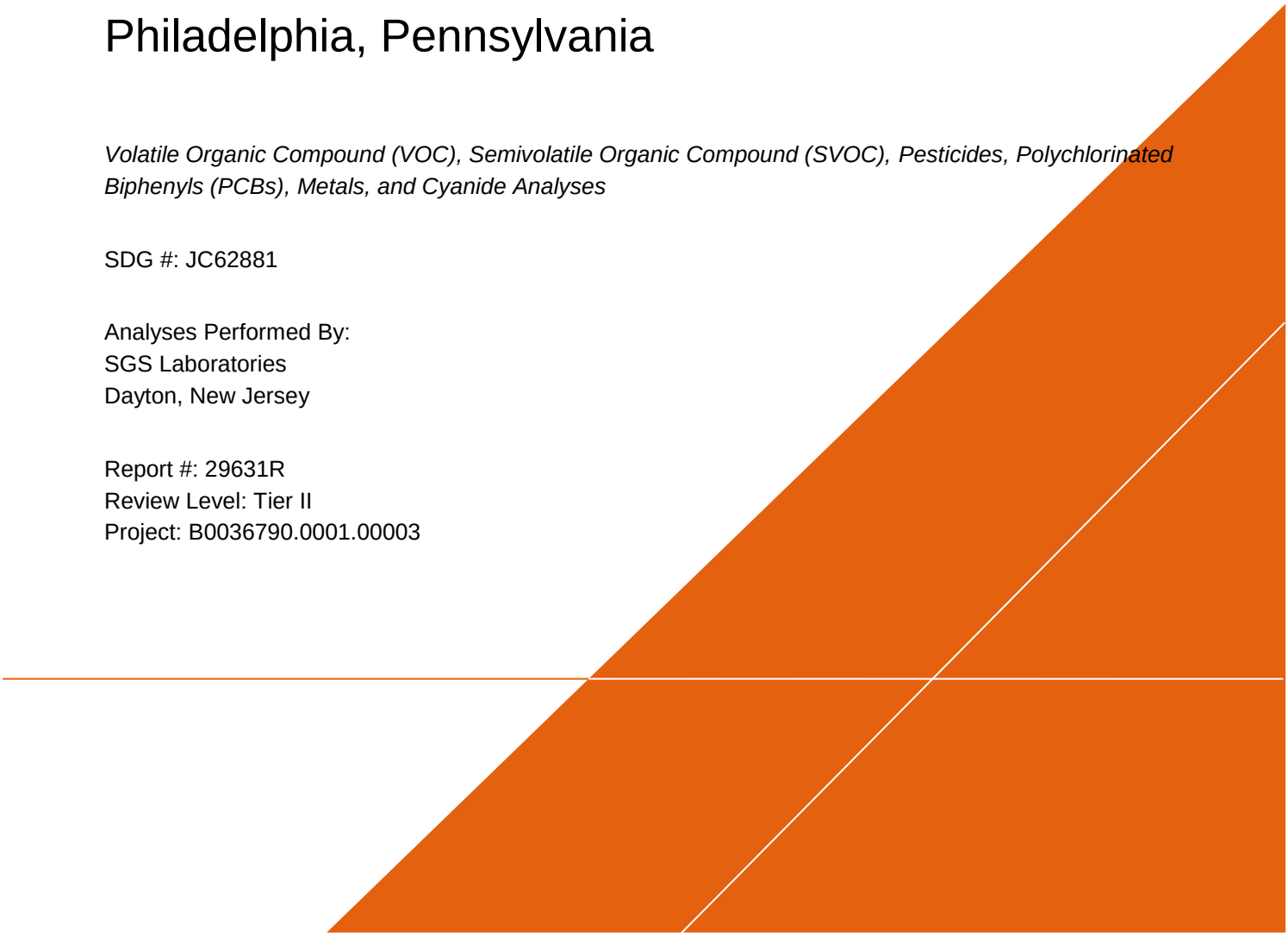
Philadelphia, Pennsylvania

Volatile Organic Compound (VOC), Semivolatile Organic Compound (SVOC), Pesticides, Polychlorinated Biphenyls (PCBs), Metals, and Cyanide Analyses

SDG #: JC62881

Analyses Performed By:
SGS Laboratories
Dayton, New Jersey

Report #: 29631R
Review Level: Tier II
Project: B0036790.0001.00003



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # JC62881 for samples collected in association with the National Grid Philly Coke site in Philadelphia, Pennsylvania. The review was conducted as a Tier II evaluation and included review of data package completeness. Only analytical data as reported by the laboratory were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets and chain of custody. Analyses were performed for the following samples:

SDG	Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis				
						VOCs	SVOC	Pest./ PCB	Metals	CN-
JC62881	PCMW-05	JC62881-1	Water	03/23/2018		X	X	X	X	X
	DUP-03232018	JC62881-2	Water	03/23/2018	PCMW-05	X	X	X	X	X
	PCMW-06	JC62881-3	Water	03/23/2018		X	X	X	X	X
	PCMW-11S	JC62881-4	Water	03/23/2018		X	X	X	X	X
	PCMW-18S	JC62881-5	Water	03/23/2018		X	X	X	X	X
	PCMW-18D	JC62881-6	Water	03/23/2018		X	X	X	X	X
	TRIP BLANK	JC62881-7	Water	03/23/2018		X	X	X	X	X

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of quality assurance (QA) or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Methods 8260C, 8270D, 8081B and 8082A. Validation was performed following the procedures specified in *USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review* (October 1999).

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers
  - U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
  - B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- Quantitation (Q) Qualifiers
  - E The compound was quantitated above the calibration range.
  - D Concentration is based on a diluted sample analysis.
- Validation Qualifiers
  - J The compound was positively identified; however, the associated numerical value is an estimated concentration only.
  - UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.
  - JN The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.
  - UB Compound considered non-detect at the listed value due to associated blank contamination.
  - N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.
  - R The sample results are rejected as unusable. The compound may or may not be present in the sample.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is

that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
VOCs by 8260C	Water	14 days from collection to analysis (preserved) 7 days from collection to analysis (non-preserved)	Cool to <6 °C; preserved to a pH of less than 2 s.u.

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e. laboratory method blanks, trip blanks, and equipment rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Trip blanks measure sample storage contamination. Rinse blanks also measure contamination of samples during field operations.

If an analyte is detected in a blank at a concentration greater than the method detection limit (MDL), a blank action level (BAL) is calculated as five times the concentration detected in the blank. The BAL for common laboratory contaminants (e.g. acetone, methylene chloride) is calculated at ten times the blank concentration. Detected analytes in the associated samples are compared to the BAL. If the result is greater than the BAL, no qualification is required, and any laboratory-assigned flags are removed.

Target compounds were not detected above the MDL in the associated blanks; therefore, detected sample results are not associated with blank contamination.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. VOC analysis requires that all surrogates associated with the analysis exhibit recoveries within the laboratory-established acceptance limits.

All samples exhibited surrogate recoveries within the control limits.

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The spiked compounds used in the MS/MSD analysis must exhibit recoveries within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS and MSD results must be within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSDs performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD spiking concentration by a factor of four or greater. Sample results associated with MS/MSD exceedances where the parent samples are not site-specific are not qualified.

The MS analysis exhibited acceptable recoveries.

5. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the accuracy of the analytical method independent of matrix interferences. The spiked compounds used in the LCS analysis must exhibit recoveries within the laboratory-established acceptance limits.

Sample locations associated with LCS analysis exhibiting recoveries outside of the control limits presented in the following table.

Sample Locations	Compound	LCS Recovery
PCMW-05 DUP-03232018 PCMW-06 PCMW-11S PCMW-18S PCMW-18D TRIP BLANK	Bromoform	>UL
	1,2-Dibromo-3-chloropropane	>UL

The criteria used to evaluate the LCS/LCSD recoveries are presented in the following table. In the case of an LCS/LCSD deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> the upper control limit (UL)	Non-detect	No Action
	Detect	J
< the lower control limit (LL) but > 10%	Non-detect	UJ
	Detect	J
< 10%	Non-detect	R
	Detect	J

6. Field Duplicate Sample Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
PCMW-05/DUP-03232018	All compounds	U	U	AC

Notes:

AC Acceptable

The calculated RPDs between the parent sample and field duplicate were acceptable.

7. System Performance and Overall Assessment

The laboratory narrative states that several compounds exhibited continuing calibration verification percent differences (%D) greater than the control limit of 20%.

The criteria used to evaluate the initial and continuing calibration are presented in the following table. In the case of a calibration deviation, the sample results are qualified as presented in the following table.

Initial/Continuing	Criteria	Sample Result	Qualification
Continuing Calibration	%D >20% (increase in sensitivity)	Non-detect	No Action
		Detect	J
	%D >20% (decrease in sensitivity)	Non-detect	UJ
		Detect	J

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: SW-846 8260B	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks	X				X
C. Trip blanks		X		X	
Laboratory Control Sample (LCS)		X	X		
Laboratory Control Sample Duplicate(LCSD)	X				X
LCS/LCSD Precision (RPD)	X				X
Matrix Spike (MS)		X		X	
Matrix Spike Duplicate(MSD)	X				X
MS/MSD Precision (RPD)	X				X
Field/Lab Duplicate (RPD)		X		X	
Surrogate Spike Recoveries		X		X	
Dilution Factor		X		X	
Moisture Content	X				X

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

SEMI-VOLATILE ORGANIC COMPOUNDS (SVOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SVOCs by 8270D	Water	7 days from collection to extraction and 28 days from extraction to analysis	Cool to <6 °C; preserved with Sodium Bisulfate (NaHSO4) to a pH of less than 4 s.u.

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

If an analyte is detected in a blank at a concentration greater than the method detection limit (MDL), a blank action level (BAL) is calculated as five times the concentration detected in the blank. The BAL for common laboratory contaminants (e.g. acetone, methylene chloride) is calculated at ten times the blank concentration. Detected analytes in the associated samples are compared to the BAL. If the result is greater than the BAL, no qualification is required, and any laboratory-assigned flags are removed.

Target compounds were not detected above the MDL in the associated blanks; therefore, detected sample results are not associated with blank contamination.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. SVOC analysis requires that two of the three SVOC surrogate compounds within each fraction exhibit recoveries within the laboratory-established acceptance limits.

All surrogate recoveries were within control limits.

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

The MS/MSD was not performed on a sample within this SDG.

5. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) Analysis

The LCS/LCSD analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS/LCSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the LCS/LCSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Sample locations associated with LCS/LCSD recoveries exhibiting an RPD greater than the control limit are presented in the following table.

Sample Locations	Compound
PCMW-05	4-Chloroaniline

The criteria used to evaluate the RPD between the MS/MSD recoveries are presented in the following table. In the case of an RPD deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> UL	Non-detect	UJ
	Detect	J

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
PCMW-05/DUP-03232018	3&4-Methylphenol	4.3	4.6	AC

Notes:

AC Acceptable

The calculated RPDs between the parent sample and field duplicate were acceptable.

7. System Performance and Overall Assessment

The laboratory narrative states that several compounds exhibited continuing calibration verification percent differences (%D) greater than the control limit of 20%.

The criteria used to evaluate the initial and continuing calibration are presented in the following table. In the case of a calibration deviation, the sample results are qualified as presented in the following table.

Initial/Continuing	Criteria	Sample Result	Qualification
Continuing Calibration	%D >20% (increase in sensitivity)	Non-detect	No Action
		Detect	J
	%D >20% (decrease in sensitivity)	Non-detect	UJ
		Detect	J

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR SVOCs

SVOCs: 8270D	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks	X				X
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R		X		X	
LCS/LCSD Precision (RPD)		X	X		
Matrix Spike (MS) %R	X				X
Matrix Spike Duplicate(MSD) %R	X				X
MS/MSD Precision (RPD)	X				X
Field/Lab Duplicate (RPD)		X		X	
Surrogate Spike Recoveries		X		X	
Dilution Factor		X		X	
Moisture Content	X				X

Notes:

%R Percent recovery

RPD Relative percent difference

PESTICIDES ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8081A	Water	7 days from collection to extraction and 40 days from extraction to analysis	Cool to < 6 °C

All samples were extracted and analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore, detected sample results were not associated with blank contamination.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. Pesticide analysis requires that at least one of the two pesticide surrogate compounds exhibit recoveries within the laboratory-established acceptance limits.

All samples exhibited surrogate recoveries within the control limits.

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The spiked compounds used in the MS/MSD analysis must exhibit recoveries within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS and MSD results must be within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSDs performed on samples where the compound concentration detected in the parent sample exceeds the MS/MSD spiking concentration by a factor of four or greater. Sample results associated with MS/MSD exceedances where the parent samples are not site-specific are not qualified.

The MS/MSD was not performed on a sample within this SDG.

5. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) Analysis

The LCS/LCSD analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The spiked compounds used in the LCS/LCSD analysis must exhibit recoveries within the laboratory-established acceptance limits. The relative percent difference (RPD) between the LCS and LCSD results must be within the laboratory-established acceptance limits.

All compounds associated with the LCS analysis exhibited recoveries within the control limits.

6. Field Duplicate Sample Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
PCMW-05/DUP-03232018	All compounds	U	U	AC

Notes:

AC Acceptable

The calculated RPDs between the parent sample and field duplicate were acceptable.

7. Compound Identification

The retention times of all quantitated peaks must fall within the calculated retention time windows for both the primary and confirmation columns. When dual column analysis is performed the relative percent difference (%RPD) of detected sample results must be less than 40%.

Pesticides were not detected in the samples; therefore, column RPD was not evaluated.

9. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR PESTICIDES

Pesticides: SW-846 8081A	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Gas Chromatography (GC/ECD)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks	X				X
Laboratory Control Sample (LCS)		X		X	
Laboratory Control Sample Duplicate (LCSD)		X		X	
LCS/LCSD Precision (RPD)		X		X	
Matrix Spike (MS)	X				X
Matrix Spike Duplicate (MSD)	X				X
MS/MSD Precision (RPD)	X				X
Laboratory Duplicate Sample RPD	X				X
Field Duplicate Sample RPD		X		X	
Surrogate Spike Recoveries		X		X	
Column %D $\leq$ 40% (If dual column is performed for reporting - not confirmation)		X		X	
Dilution Factor		X		X	
Compound identification and quantitation		X		X	

Notes:
%R = percent recovery
RPD = relative percent difference

POLYCHLORINATED BIPHENYLS (PCBs) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8082A	Water	7 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C

Note:
The holding time above is a recommendation. PCBs are very stable in a variety of matrices, and holding times, under the conditions listed above, may be as long as a year per SW-846 8082A (February 2007).

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore, detected sample results were not associated with blank contamination.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. PCB analysis requires that the two PCB surrogate compounds exhibit recoveries within the laboratory-established acceptance limits.

All surrogate recoveries reported from the primary column were within control limits.

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

The MS/MSD exhibited acceptable recoveries and RPD between the MS/MSD recoveries.

5. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

All compounds associated with the LCS analysis exhibited recoveries within the control limits.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
PCMW-05/DUP-03232018	All compounds	U	U	AC

Notes:

AC Acceptable

The calculated RPDs between the parent sample and field duplicate were acceptable.

7. Compound Identification

The retention times of all quantitated peaks must fall within the calculated retention time windows for both the primary and confirmation columns. When dual column analysis is performed the relative percent difference (%RPD) of detected sample results must be less than 40%.

The dual column analysis exhibited an acceptable %RPD between columns.

8. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR PCBs

PCBs: SW-846 8082A	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY (GC/ECD)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks	X				X
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate (LCSD) %R	X				X
LCS/LCSD Precision (RPD)	X				X
Matrix Spike (MS) %R	X				X
Matrix Spike Duplicate (MSD) %R	X				X
MS/MSD Precision (RPD)	X				X
Field/Lab Duplicate (RPD)		X		X	
Surrogate Spike Recoveries		X		X	
Column (RPD) (If dual column is performed-not confirmation purposes only)		X		X	
Dilution Factor		X		X	
Moisture Content	X				X

Notes:

%R Percent recovery

RPD Relative percent difference

INORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) Methods 6010C, 7470A, and 335.4. Data were reviewed in accordance with USEPA National Functional Guidelines of October 2002.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and that it was already subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with the USEPA National Functional Guidelines:

- Concentration (C) Qualifiers
  - U The analyte was analyzed for but not detected. The associated value is the analyte instrument detection limit.
  - J The reported value was obtained from a reading less than the reporting limit (RL), but greater than or equal to the method detection limit (MDL).
- Quantitation (Q) Qualifiers
  - E The reported value is estimated due to the presence of interference.
  - N Spiked sample recovery is not within control limits.
  - * Duplicate analysis is not within control limits.
- Validation Qualifiers
  - J The analyte was positively identified; however, the associated numerical value is an estimated concentration only.
  - UJ The analyte was not detected above the reporting limit. However, the reported limit is approximate and may or may not represent the actual limit of detection.
  - UB Analyte considered non-detect at the listed value due to associated blank contamination.
  - R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

METALS ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW846 6010C	Water	180 days from collection to analysis	Preserved to a pH of less than 2.
SW-846 7470A	Water	28 days from collection to analysis	Cool to <6 °C; preserved to a pH of less than 2.

All samples were analyzed within the specified holding times.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Analytes were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis /Laboratory Duplicate Analysis

MS/MSD and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

3.1 MS/MSD Analysis

All metal analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the analyte's concentration detected in the parent sample exceeds the MS concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

The MS/MSD was not performed on a sample within this SDG.

3.2 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the RL. A control limit of 20% for water matrices and 35% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of one times the RL is applied for water matrices and two times the RL for soil matrices.

MS/MSD analysis was performed in replacement of the laboratory duplicate analysis. The MS/MSD was not performed on a sample within this SDG.

4. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Analyte	Sample Result	Duplicate Result	RPD
PCMW-05/DUP-03232018	Arsenic	3.4	3.7	AC
	Barium	240	238	AC
	Calcium	104000	104000	0.0%
	Copper	27.4	28.6	4.3%
	Iron	3130	3090	1.3%
	Lead	112	110	1.8%
	Magnesium	113	112	0.9%
	Manganese	157	160	1.9%
	Nickel	450	465	3.3%
	Zinc	2680	2700	0.7%

AC = Acceptable

The calculated RPDs between the parent sample and field duplicate were acceptable.

5. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The analytes associated with the LCS analysis must exhibit a percent recovery between the control limits of 80% and 120%.

The LCS analysis exhibited recoveries within the control limits.

6. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR METAL

METALS; 6010C/7470A	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Inductively Coupled Plasma-Atomic Emission Spectrometry (ICP-AES)					
Tier II Validation					
Holding Times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Instrument Blanks		X		X	
B. Method Blanks		X		X	
C. Equipment/Field Blanks	X				X
Laboratory Control Sample (LCS)		X		X	
Matrix Spike (MS) %R	X				X
Matrix Spike Duplicate (MSD) %R	X				X
MS/MSD Precision (RPD)	X				X
Field/Lab Duplicate (RPD)		X		X	
Total vs. Dissolved	X				X
Reporting Limit Verification		X		X	

Notes:

%R Percent recovery

RPD Relative percent difference

GENERAL CHEMISTRY ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
Cyanide by EPA 335.4	Water	14 days from collection to analysis	Cool to <6 °C; preserved to a pH of greater than 12.

All samples were analyzed within the specified holding times.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore, detected sample results were not associated with blank contamination.

3. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

The correct number and type of standards were analyzed. The correlation coefficient of the initial calibration was greater than 0.995 and all initial calibration verification standard recoveries were within control limits.

All calibration standard recoveries were within the control limit.

4. Matrix Spike (MS)/Laboratory Duplicate Analysis

MS and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

4.1 MS Analysis

All analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The MS recovery control limits do not apply for MS performed on sample locations where the analyte's concentration detected in the parent sample exceeds the MS concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

All analytes associated with MS recoveries were within control limits with the exception of the following analytes present in the table below.

Sample Location	Analytes	MS Recovery
DUP-03232018	Cyanide	44.4%

The criteria used to evaluate MS recoveries are presented in the following table. In the case of an MS deviation, the sample results are qualified. The qualifications are applied to all sample results associated with this SDG except those which an acceptable laboratory duplicate analysis was performed.

Control limit	Sample Result	Qualification
MS percent recovery 30% to 75%	Non-detect	UJ
	Detect	J
MS percent recovery <30%	Non-detect	R
	Detect	J
MS percent recovery >125%	Non-detect	No Action
	Detect	J

4.2 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the RL. A control limit of 20% for water matrices and 35% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of one times the RL is applied for water matrices and two times the RL for soil matrices.

All analytes associated with laboratory duplicate RPD were within the control limit.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
PCMW-05/DUP-03232018	All compounds	U	U	AC

Notes:

AC Acceptable

The calculated RPDs between the parent sample and field duplicate were acceptable.

6. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The analytes associated with the LCS analysis must exhibit a percent recovery between the control limits of 80% and 120%.

The LCS analysis exhibited recoveries within the control limits.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR GENERAL CHEMISTRY

General Chemistry: 335.4	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Miscellaneous Instrumentation					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks		X		X	
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R		X		X	
LCS/LCSD Precision (RPD)		X		X	
Matrix Spike (MS) %R		X	X		
Matrix Spike Duplicate(MSD) %R	X				X
MS/MSD Precision (RPD)	X				X
Field/Lab Duplicate (RPD)		X	X		
Dilution Factor		X		X	
Moisture Content	X				X

Notes:

%RSD – relative standard deviation
%R - percent recovery
RPD - relative percent difference,

%D – difference

VALIDATION PERFORMED BY: Andrew Korycinski

SIGNATURE:

DATE: May 1, 2018

PEER REVIEW: Dennis Capria

DATE: May 4, 2018

CHAIN OF CUSTODY AND CORRECTED SAMPLE ANALYSIS DATA SHEETS

SGS ACCUTEST

GW WTB

CHAIN OF CUSTODY

Quick

SGS Accutest - Dayton
2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200 FAX: 732-329-3499/3480
www.accutest.com

PAGE ___ OF ___

FED-EX Tracking #: L
Bottle Order Control #: DR-031218-61
SGS Accutest Quote #:
SGS Accutest Job #: JC62881

Company Name: ARCADIS	Project Name: NATIONAL GRID / PHILLY COKE		
Street Address: 824 N. MARKET St Ste 820	Street: RICHMOND & LEHIGH	Billing Information (If different from Report to)	
City: WILMINGTON State: DE Zip: 19801	City: PHILA State: PA	Company Name: SAME	
Project Contact: CARRY ITALY E-mail:	Project #:	Street Address:	
Phone #: 315-335-9493 Fax #:	Client Purchase Order #:	City State Zip:	
Sampler(s) Name(s): CHRIS CATALANO Phone #:	Project Manager: DAN SHEEHAN	Attention:	

SGS Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	8260 VOC	8270 SVOC	8151 Herbicide	Metals	8081 Pesticide	8082 PCB	LAB USE ON
-1	PCMW-05		3/23/18	0805	CC	GW	11	3	1	1		6				X	X	X	X	X	X	A36
-2	DUP-03232018			—												X	X	X	X	X	X	E8
-3	PCMW-06			0920												X	X	X	X	X	X	G7E2
-4	PCMW-11S			1025												X	X	X	X	X	X	V1212
-5	PCMW-18S			1030												X	X	X	X	X	X	
-6	PCMW-18D			1115												X	X	X	X	X	X	
-7	TRIP BLANK		—	—	—	H2O	2	2								X						

Matrix Cod
DW - Drinking W
GW - Ground W
WW - Wate
SW - Surface W
SO - Soil
SL- Sludge
SED-Sedime
OI - Oil
LIQ - Other Liq
AIR - Air
SOL - Other S
WP - Wipe
FB-Field Blan
EB-Equipment B
RB- Rinse Blan
TB-Trip Blan

Turnaround Time (Business days)

Approved By (SGS Accutest PM): / Date:

- [x] Std. 10 Business Days
- [ ] 5 Day RUSH
- [ ] 3 Day RUSH
- [ ] 2 Day RUSH
- [ ] 1 Day RUSH
- [ ] other

INITIAL ASSESSMENT 3/3/4H

LABEL VERIFICATION

Emergency & Rush T/A data available VIA Lablink

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [x] FULLT1 (Level 3+4)
- [ ] NJ Reduced
- [ ] Commercial "C"
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format
- [ ] Other

NJ Data of Known Quality Protocol Reporting

Commercial "A" = Results Only, Commercial "B" = Results + QC Summary
NJ Reduced = Results + QC Summary + Partial Raw data

Comments / Special Instructions

Sample inventory is verified upon receipt in the Laboratory

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Date/Time			Date Time		
Relinquished by Sampler: 1	3/23/18	Received By: 1	Relinquished By: 2		Received By: 2	
Relinquished by Sampler: 3	3/23/18 16:30	Received By: 3	Relinquished By: 4		Received By: 4	
Relinquished by: 5		Received By: 5	Custody Seal #	Intact / Not intact	Preserved where applicable	On Ice / Cooler Temp. 8 Coolers

2.8°, 3.1°, 3.1°, 2.9° 4.1° [illegible]

JC62881: Chain of Custody
Page 1 of 4

SGS LabLink@996135 15:38 10-Apr-2018

Report of Analysis

Client Sample ID:	PCMW-05		
Lab Sample ID:	JC62881-1	**Date Sampled:**	03/23/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2B159329.D	1	03/30/18 11:37	SS	n/a	n/a	V2B7094
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	5.0	ug/l	
71-43-2	Benzene	ND	0.50	0.17	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.38	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.22	ug/l	
75-25-2	Bromoform [a]	ND	1.0	0.42	ug/l	
74-83-9	Bromomethane	ND	2.0	1.4	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	4.8	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.50	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.34	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.24	ug/l	
75-00-3	Chloroethane	ND	1.0	0.59	ug/l	
67-66-3	Chloroform	ND	1.0	0.29	ug/l	
74-87-3	Chloromethane	ND	1.0	0.53	ug/l	
110-82-7	Cyclohexane	ND	5.0	0.63	ug/l	
96-12-8	1,2-Dibromo-3-chloropropan [a]	ND	2.0	0.69	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.16	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.21	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.50	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.50	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.50	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.9	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.21	ug/l	
107-06-2	1,2-Dichloroethane [b]	ND	1.0	0.20	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.47	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.50	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.40	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.24	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.25	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.22	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.22	ug/l	
76-13-1	Freon 113	ND	5.0	1.2	ug/l	
591-78-6	2-Hexanone	ND	5.0	3.3	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCMW-05		
Lab Sample ID:	JC62881-1	**Date Sampled:**	03/23/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	1.0	0.25	ug/l	
79-20-9	Methyl Acetate	ND	5.0	3.1	ug/l	
108-87-2	Methylcyclohexane	ND	5.0	1.8	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.25	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	3.0	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.24	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.17	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.50	ug/l	
108-88-3	Toluene	ND	1.0	0.25	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.50	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.24	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.27	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.60	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.62	ug/l	
	m,p-Xylene	ND	1.0	0.43	ug/l	
95-47-6	o-Xylene	ND	1.0	0.22	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.22	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	95%		80-120%
17060-07-0	1,2-Dichloroethane-D4	122%		81-124%
2037-26-5	Toluene-D8	93%		80-120%
460-00-4	4-Bromofluorobenzene	92%		80-120%

(a) Associated CCV outside of control limits high, sample was ND. This compound in BS is outside in house QC limits bias high.
(b) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS LabLink@996135 15:38 10-Apr-2018

Report of Analysis

Client Sample ID:	PCMW-05		
Lab Sample ID:	JC62881-1	**Date Sampled:**	03/23/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2M102973.D	1	04/02/18 17:56	CC	03/30/18 17:00	OP10986	E2M4581
Run #2							

	Initial Volume	Final Volume
Run #1	955 ml	1.0 ml
Run #2		

ABN TCL List (SOM0 1.1)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	5.2	0.86	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	5.2	0.93	ug/l	
120-83-2	2,4-Dichlorophenol	ND	2.1	1.3	ug/l	
105-67-9	2,4-Dimethylphenol	ND	5.2	2.6	ug/l	
51-28-5	2,4-Dinitrophenol	ND	5.2	1.6	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	5.2	1.4	ug/l	
95-48-7	2-Methylphenol	ND	2.1	0.93	ug/l	
	3&4-Methylphenol	4.3	2.1	0.92	ug/l	
88-75-5	2-Nitrophenol	ND	5.2	1.0	ug/l	
100-02-7	4-Nitrophenol	ND	10	1.2	ug/l	
87-86-5	Pentachlorophenol	ND	4.2	1.4	ug/l	
108-95-2	Phenol	ND	2.1	0.41	ug/l	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	5.2	1.5	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	5.2	1.4	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	5.2	0.97	ug/l	
83-32-9	Acenaphthene	ND	1.0	0.20	ug/l	
208-96-8	Acenaphthylene	ND	1.0	0.14	ug/l	
98-86-2	Acetophenone	ND	2.1	0.22	ug/l	
120-12-7	Anthracene	ND	1.0	0.22	ug/l	
1912-24-9	Atrazine	ND	2.1	0.47	ug/l	
100-52-7	Benzaldehyde	ND	5.2	0.30	ug/l	
56-55-3	Benzo(a)anthracene	ND	1.0	0.21	ug/l	
50-32-8	Benzo(a)pyrene	ND	1.0	0.22	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	1.0	0.21	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	1.0	0.36	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	1.0	0.21	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	2.1	0.42	ug/l	
85-68-7	Butyl benzyl phthalate	ND	2.1	0.48	ug/l	
92-52-4	1,1'-Biphenyl	ND	1.0	0.22	ug/l	
91-58-7	2-Chloronaphthalene	ND	2.1	0.25	ug/l	
106-47-8	4-Chloroaniline	ND	5.2	0.36	ug/l	UJ
86-74-8	Carbazole	ND	1.0	0.24	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCMW-05		
Lab Sample ID:	JC62881-1	**Date Sampled:**	03/23/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

ABN TCL List (SOM0 1.1)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	2.1	0.68	ug/l	
218-01-9	Chrysene	ND	1.0	0.18	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	2.1	0.29	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	2.1	0.26	ug/l	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	2.1	0.42	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	2.1	0.38	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	1.0	0.58	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	1.0	0.50	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	2.1	0.53	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	1.0	0.35	ug/l	
132-64-9	Dibenzofuran	ND	5.2	0.23	ug/l	
84-74-2	Di-n-butyl phthalate	ND	2.1	0.52	ug/l	
117-84-0	Di-n-octyl phthalate [a]	ND	2.1	0.25	ug/l	
84-66-2	Diethyl phthalate	ND	2.1	0.27	ug/l	
131-11-3	Dimethyl phthalate	ND	2.1	0.23	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.1	1.7	ug/l	
206-44-0	Fluoranthene	ND	1.0	0.18	ug/l	
86-73-7	Fluorene	ND	1.0	0.18	ug/l	
118-74-1	Hexachlorobenzene	ND	1.0	0.34	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.52	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	10	2.9	ug/l	
67-72-1	Hexachloroethane	ND	2.1	0.41	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	1.0	0.35	ug/l	
78-59-1	Isophorone	ND	2.1	0.29	ug/l	
91-57-6	2-Methylnaphthalene	ND	1.0	0.22	ug/l	
88-74-4	2-Nitroaniline	ND	5.2	0.29	ug/l	
99-09-2	3-Nitroaniline	ND	5.2	0.41	ug/l	
100-01-6	4-Nitroaniline	ND	5.2	0.46	ug/l	
91-20-3	Naphthalene	ND	1.0	0.24	ug/l	
98-95-3	Nitrobenzene	ND	2.1	0.67	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	2.1	0.50	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.2	0.23	ug/l	
85-01-8	Phenanthrene	ND	1.0	0.18	ug/l	
129-00-0	Pyrene	ND	1.0	0.23	ug/l	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	2.1	0.39	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	57%		10-110%
4165-62-2	Phenol-d5	40%		10-110%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCMW-05		
Lab Sample ID:	JC62881-1	**Date Sampled:**	03/23/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

ABN TCL List (SOM0 1.1)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
118-79-6	2,4,6-Tribromophenol	89%		36-151%
4165-60-0	Nitrobenzene-d5	80%		34-128%
321-60-8	2-Fluorobiphenyl	72%		38-119%
1718-51-0	Terphenyl-d14	70%		26-129%

(a) Associated CCV outside of control limits high,sample was ND.

SGS LabLink@996135 15:38 10-Apr-2018

Report of Analysis

Client Sample ID:	PCMW-05		
Lab Sample ID:	JC62881-1	**Date Sampled:**	03/23/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8081B SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1G144727.D	1	03/28/18 08:02	CP	03/27/18 18:10	OP10885	G1G4598
Run #2							

	Initial Volume	Final Volume
Run #1	300 ml	2.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	0.0067	0.0034	ug/l	
319-84-6	alpha-BHC	ND	0.0067	0.0035	ug/l	
319-85-7	beta-BHC	ND	0.0067	0.0053	ug/l	
319-86-8	delta-BHC	ND	0.0067	0.0044	ug/l	
58-89-9	gamma-BHC (Lindane)	ND	0.0067	0.0040	ug/l	
5103-71-9	alpha-Chlordane	ND	0.0067	0.0033	ug/l	
5103-74-2	gamma-Chlordane	ND	0.0067	0.0028	ug/l	
60-57-1	Dieldrin	ND	0.0067	0.0051	ug/l	
72-54-8	4,4'-DDD	ND	0.0067	0.0038	ug/l	
72-55-9	4,4'-DDE	ND	0.0067	0.0034	ug/l	
50-29-3	4,4'-DDT	ND	0.0067	0.0046	ug/l	
72-20-8	Endrin	ND	0.0067	0.0040	ug/l	
1031-07-8	Endosulfan sulfate	ND	0.0067	0.0036	ug/l	
7421-93-4	Endrin aldehyde	ND	0.0067	0.0045	ug/l	
53494-70-5	Endrin ketone	ND	0.0067	0.0041	ug/l	
959-98-8	Endosulfan-I	ND	0.0067	0.0035	ug/l	
33213-65-9	Endosulfan-II	ND	0.0067	0.0033	ug/l	
76-44-8	Heptachlor	ND	0.0067	0.0030	ug/l	
1024-57-3	Heptachlor epoxide	ND	0.0067	0.0040	ug/l	
72-43-5	Methoxychlor	ND	0.013	0.0045	ug/l	
8001-35-2	Toxaphene	ND	0.17	0.11	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	72%		13-153%
877-09-8	Tetrachloro-m-xylene	69%		13-153%
2051-24-3	Decachlorobiphenyl	71%		10-138%
2051-24-3	Decachlorobiphenyl	58%		10-138%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS LabLink@996135 15:38 10-Apr-2018

Report of Analysis

Client Sample ID:	PCMW-05		
Lab Sample ID:	JC62881-1	**Date Sampled:**	03/23/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8082A SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EF181245.D	1	03/29/18 05:04	HB	03/27/18 18:10	OP10884	GEF6203
Run #2							

	Initial Volume	Final Volume
Run #1	300 ml	2.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	0.33	0.13	ug/l	
11104-28-2	Aroclor 1221	ND	0.33	0.28	ug/l	
11141-16-5	Aroclor 1232	ND	0.33	0.17	ug/l	
53469-21-9	Aroclor 1242	ND	0.33	0.15	ug/l	
12672-29-6	Aroclor 1248	ND	0.33	0.084	ug/l	
11097-69-1	Aroclor 1254	ND	0.33	0.28	ug/l	
11096-82-5	Aroclor 1260	ND	0.33	0.10	ug/l	
11100-14-4	Aroclor 1268	ND	0.33	0.12	ug/l	
37324-23-5	Aroclor 1262	ND	0.33	0.13	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	70%		11-166%
877-09-8	Tetrachloro-m-xylene	68%		11-166%
2051-24-3	Decachlorobiphenyl	49%		10-150%
2051-24-3	Decachlorobiphenyl	52%		10-150%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PCMW-05
Lab Sample ID: JC62881-1
Matrix: AQ - Ground Water
Project: National Grid, Philly Coke, Philadelphia PA

Date Sampled: 03/23/18
Date Received: 03/23/18
Percent Solids: n/a

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	< 200	200	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Antimony	< 6.0	6.0	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Arsenic	3.4	3.0	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Barium	240	200	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Beryllium	< 1.0	1.0	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Cadmium	< 3.0	3.0	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Calcium	104000	5000	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Chromium	< 10	10	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Cobalt	< 50	50	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Copper	27.4	10	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Iron	3130	100	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Lead	112	3.0	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Magnesium	11300	5000	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Manganese	157	15	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Mercury [a]	< 0.40	0.40	ug/l	1	03/26/18	03/26/18	MS	SW846 7470A [1]	SW846 7470A [3]
Nickel	450	10	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Potassium	< 10000	10000	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Selenium	< 10	10	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Silver	< 10	10	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Sodium	< 10000	10000	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Thallium	< 2.0	2.0	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Vanadium	< 50	50	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Zinc	2680	20	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]

(1) Instrument QC Batch: MA44075
(2) Instrument QC Batch: MA44114
(3) Prep QC Batch: MP6361
(4) Prep QC Batch: MP6399

(a) Elevated sample detection limit due to difficult sample matrix.

RL = Reporting Limit

Report of Analysis

Client Sample ID:	PCMW-05		
Lab Sample ID:	JC62881-1	**Date Sampled:**	03/23/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
		Percent Solids:	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Cyanide	< 0.010	0.010	mg/l	1	03/30/18 11:58	TG	EPA 335.4/LACHAT

RL = Reporting Limit

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Report of Analysis

Client Sample ID:	DUP-03232018		
Lab Sample ID:	JC62881-2	**Date Sampled:**	03/23/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2B159330.D	1	03/30/18 12:07	SS	n/a	n/a	V2B7094
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	5.0	ug/l	
71-43-2	Benzene	ND	0.50	0.17	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.38	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.22	ug/l	
75-25-2	Bromoform [a]	ND	1.0	0.42	ug/l	
74-83-9	Bromomethane	ND	2.0	1.4	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	4.8	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.50	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.34	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.24	ug/l	
75-00-3	Chloroethane	ND	1.0	0.59	ug/l	
67-66-3	Chloroform	ND	1.0	0.29	ug/l	
74-87-3	Chloromethane	ND	1.0	0.53	ug/l	
110-82-7	Cyclohexane	ND	5.0	0.63	ug/l	
96-12-8	1,2-Dibromo-3-chloropropan [a]	ND	2.0	0.69	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.16	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.21	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.50	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.50	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.50	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.9	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.21	ug/l	
107-06-2	1,2-Dichloroethane [b]	ND	1.0	0.20	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.47	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.50	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.40	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.24	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.25	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.22	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.22	ug/l	
76-13-1	Freon 113	ND	5.0	1.2	ug/l	
591-78-6	2-Hexanone	ND	5.0	3.3	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	DUP-03232018		
Lab Sample ID:	JC62881-2	**Date Sampled:**	03/23/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	1.0	0.25	ug/l	
79-20-9	Methyl Acetate	ND	5.0	3.1	ug/l	
108-87-2	Methylcyclohexane	ND	5.0	1.8	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.25	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	3.0	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.24	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.17	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.50	ug/l	
108-88-3	Toluene	ND	1.0	0.25	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.50	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.24	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.27	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.60	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.62	ug/l	
	m,p-Xylene	ND	1.0	0.43	ug/l	
95-47-6	o-Xylene	ND	1.0	0.22	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.22	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	95%		80-120%
17060-07-0	1,2-Dichloroethane-D4	121%		81-124%
2037-26-5	Toluene-D8	92%		80-120%
460-00-4	4-Bromofluorobenzene	94%		80-120%

(a) Associated CCV outside of control limits high, sample was ND. This compound in BS is outside in house QC limits bias high.
(b) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	DUP-03232018		
Lab Sample ID:	JC62881-2	**Date Sampled:**	03/23/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M144918.D	1	03/28/18 20:03	CC	03/28/18 06:30	OP10886	EM6152
Run #2							

	Initial Volume	Final Volume
Run #1	920 ml	1.0 ml
Run #2		

ABN TCL List (SOM0 1.1)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	5.4	0.89	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	5.4	0.97	ug/l	
120-83-2	2,4-Dichlorophenol	ND	2.2	1.4	ug/l	
105-67-9	2,4-Dimethylphenol	ND	5.4	2.7	ug/l	
51-28-5	2,4-Dinitrophenol	ND	5.4	1.7	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	5.4	1.4	ug/l	
95-48-7	2-Methylphenol	ND	2.2	0.97	ug/l	
	3&4-Methylphenol	4.6	2.2	0.96	ug/l	
88-75-5	2-Nitrophenol	ND	5.4	1.0	ug/l	
100-02-7	4-Nitrophenol [a]	ND	11	1.3	ug/l	
87-86-5	Pentachlorophenol	ND	4.3	1.5	ug/l	
108-95-2	Phenol	ND	2.2	0.43	ug/l	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	5.4	1.6	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	5.4	1.4	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	5.4	1.0	ug/l	
83-32-9	Acenaphthene	ND	1.1	0.21	ug/l	
208-96-8	Acenaphthylene	ND	1.1	0.15	ug/l	
98-86-2	Acetophenone	ND	2.2	0.23	ug/l	
120-12-7	Anthracene	ND	1.1	0.23	ug/l	
1912-24-9	Atrazine	ND	2.2	0.49	ug/l	
100-52-7	Benzaldehyde	ND	5.4	0.31	ug/l	
56-55-3	Benzo(a)anthracene	ND	1.1	0.22	ug/l	
50-32-8	Benzo(a)pyrene	ND	1.1	0.23	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	1.1	0.22	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	1.1	0.37	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	1.1	0.22	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	2.2	0.44	ug/l	
85-68-7	Butyl benzyl phthalate	ND	2.2	0.50	ug/l	
92-52-4	1,1'-Biphenyl	ND	1.1	0.23	ug/l	
91-58-7	2-Chloronaphthalene	ND	2.2	0.26	ug/l	
106-47-8	4-Chloroaniline	ND	5.4	0.37	ug/l	
86-74-8	Carbazole	ND	1.1	0.25	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	DUP-03232018		
Lab Sample ID:	JC62881-2	**Date Sampled:**	03/23/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

ABN TCL List (SOM0 1.1)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam [a]	ND	2.2	0.71	ug/l	
218-01-9	Chrysene	ND	1.1	0.19	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	2.2	0.30	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	2.2	0.27	ug/l	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	2.2	0.44	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	2.2	0.40	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	1.1	0.60	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	1.1	0.52	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	2.2	0.55	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	1.1	0.36	ug/l	
132-64-9	Dibenzofuran	ND	5.4	0.24	ug/l	
84-74-2	Di-n-butyl phthalate	ND	2.2	0.54	ug/l	
117-84-0	Di-n-octyl phthalate	ND	2.2	0.25	ug/l	
84-66-2	Diethyl phthalate	ND	2.2	0.28	ug/l	
131-11-3	Dimethyl phthalate	ND	2.2	0.24	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.2	1.8	ug/l	
206-44-0	Fluoranthene	ND	1.1	0.18	ug/l	
86-73-7	Fluorene	ND	1.1	0.19	ug/l	
118-74-1	Hexachlorobenzene	ND	1.1	0.35	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.1	0.53	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	11	3.0	ug/l	
67-72-1	Hexachloroethane	ND	2.2	0.42	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	1.1	0.36	ug/l	
78-59-1	Isophorone	ND	2.2	0.30	ug/l	
91-57-6	2-Methylnaphthalene	ND	1.1	0.23	ug/l	
88-74-4	2-Nitroaniline	ND	5.4	0.30	ug/l	
99-09-2	3-Nitroaniline	ND	5.4	0.42	ug/l	
100-01-6	4-Nitroaniline	ND	5.4	0.48	ug/l	
91-20-3	Naphthalene	ND	1.1	0.25	ug/l	
98-95-3	Nitrobenzene	ND	2.2	0.70	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	2.2	0.52	ug/l	
86-30-6	N-Nitrosodiphenylamine [b]	ND	5.4	0.24	ug/l	UJ
85-01-8	Phenanthrene	ND	1.1	0.19	ug/l	
129-00-0	Pyrene	ND	1.1	0.24	ug/l	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	2.2	0.40	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	30%		10-110%
4165-62-2	Phenol-d5	24%		10-110%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	DUP-03232018		
Lab Sample ID:	JC62881-2	**Date Sampled:**	03/23/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

ABN TCL List (SOM0 1.1)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
118-79-6	2,4,6-Tribromophenol	74%		36-151%
4165-60-0	Nitrobenzene-d5	75%		34-128%
321-60-8	2-Fluorobiphenyl	62%		38-119%
1718-51-0	Terphenyl-d14	35%		26-129%

(a) Associated CCV outside of control limits high, sample was ND.
(b) Associated CCV outside of control limits low.

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J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	DUP-03232018		
Lab Sample ID:	JC62881-2	**Date Sampled:**	03/23/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8081B SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1G144728.D	1	03/28/18 08:19	CP	03/27/18 18:10	OP10885	G1G4598
Run #2							

	Initial Volume	Final Volume
Run #1	300 ml	2.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	0.0067	0.0034	ug/l	
319-84-6	alpha-BHC	ND	0.0067	0.0035	ug/l	
319-85-7	beta-BHC	ND	0.0067	0.0053	ug/l	
319-86-8	delta-BHC	ND	0.0067	0.0044	ug/l	
58-89-9	gamma-BHC (Lindane)	ND	0.0067	0.0040	ug/l	
5103-71-9	alpha-Chlordane	ND	0.0067	0.0033	ug/l	
5103-74-2	gamma-Chlordane	ND	0.0067	0.0028	ug/l	
60-57-1	Dieldrin	ND	0.0067	0.0051	ug/l	
72-54-8	4,4'-DDD	ND	0.0067	0.0038	ug/l	
72-55-9	4,4'-DDE	ND	0.0067	0.0034	ug/l	
50-29-3	4,4'-DDT	ND	0.0067	0.0046	ug/l	
72-20-8	Endrin	ND	0.0067	0.0040	ug/l	
1031-07-8	Endosulfan sulfate	ND	0.0067	0.0036	ug/l	
7421-93-4	Endrin aldehyde	ND	0.0067	0.0045	ug/l	
53494-70-5	Endrin ketone	ND	0.0067	0.0041	ug/l	
959-98-8	Endosulfan-I	ND	0.0067	0.0035	ug/l	
33213-65-9	Endosulfan-II	ND	0.0067	0.0033	ug/l	
76-44-8	Heptachlor	ND	0.0067	0.0030	ug/l	
1024-57-3	Heptachlor epoxide	ND	0.0067	0.0040	ug/l	
72-43-5	Methoxychlor	ND	0.013	0.0045	ug/l	
8001-35-2	Toxaphene	ND	0.17	0.11	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	82%		13-153%
877-09-8	Tetrachloro-m-xylene	76%		13-153%
2051-24-3	Decachlorobiphenyl	78%		10-138%
2051-24-3	Decachlorobiphenyl	65%		10-138%

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Report of Analysis

Client Sample ID:	DUP-03232018		
Lab Sample ID:	JC62881-2	**Date Sampled:**	03/23/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8082A SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EF181246.D	1	03/29/18 05:29	HB	03/27/18 18:10	OP10884	GEF6203
Run #2							

	Initial Volume	Final Volume
Run #1	300 ml	2.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	0.33	0.13	ug/l	
11104-28-2	Aroclor 1221	ND	0.33	0.28	ug/l	
11141-16-5	Aroclor 1232	ND	0.33	0.17	ug/l	
53469-21-9	Aroclor 1242	ND	0.33	0.15	ug/l	
12672-29-6	Aroclor 1248	ND	0.33	0.084	ug/l	
11097-69-1	Aroclor 1254	ND	0.33	0.28	ug/l	
11096-82-5	Aroclor 1260	ND	0.33	0.10	ug/l	
11100-14-4	Aroclor 1268	ND	0.33	0.12	ug/l	
37324-23-5	Aroclor 1262	ND	0.33	0.13	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	73%		11-166%
877-09-8	Tetrachloro-m-xylene	70%		11-166%
2051-24-3	Decachlorobiphenyl	53%		10-150%
2051-24-3	Decachlorobiphenyl	59%		10-150%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: DUP-03232018
Lab Sample ID: JC62881-2
Matrix: AQ - Ground Water
Project: National Grid, Philly Coke, Philadelphia PA

Date Sampled: 03/23/18
Date Received: 03/23/18
Percent Solids: n/a

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	< 200	200	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Antimony	< 6.0	6.0	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Arsenic	3.7	3.0	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Barium	238	200	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Beryllium	< 1.0	1.0	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Cadmium	< 3.0	3.0	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Calcium	104000	5000	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Chromium	< 10	10	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Cobalt	< 50	50	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Copper	28.6	10	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Iron	3090	100	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Lead	110	3.0	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Magnesium	11200	5000	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Manganese	160	15	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Mercury	< 0.20	0.20	ug/l	1	03/26/18	03/26/18	MS	SW846 7470A [1]	SW846 7470A [3]
Nickel	465	10	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Potassium	< 10000	10000	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Selenium	< 10	10	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Silver	< 10	10	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Sodium	< 10000	10000	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Thallium	< 2.0	2.0	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Vanadium	< 50	50	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Zinc	2700	20	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]

(1) Instrument QC Batch: MA44075
(2) Instrument QC Batch: MA44114
(3) Prep QC Batch: MP6361
(4) Prep QC Batch: MP6399

RL = Reporting Limit

Report of Analysis

Client Sample ID:	DUP-03232018		
Lab Sample ID:	JC62881-2	**Date Sampled:**	03/23/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
		Percent Solids:	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Cyanide	< 0.010 UJ	0.010	mg/l	1	03/30/18 12:00	TG	EPA 335.4/LACHAT

RL = Reporting Limit

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Report of Analysis

Client Sample ID:	PCMW-06		
Lab Sample ID:	JC62881-3	**Date Sampled:**	03/23/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2B159334.D	1	03/30/18 14:08	SS	n/a	n/a	V2B7094
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	5.0	ug/l	
71-43-2	Benzene	ND	0.50	0.17	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.38	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.22	ug/l	
75-25-2	Bromoform [a]	ND	1.0	0.42	ug/l	
74-83-9	Bromomethane	ND	2.0	1.4	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	4.8	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.50	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.34	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.24	ug/l	
75-00-3	Chloroethane	ND	1.0	0.59	ug/l	
67-66-3	Chloroform	ND	1.0	0.29	ug/l	
74-87-3	Chloromethane	ND	1.0	0.53	ug/l	
110-82-7	Cyclohexane	ND	5.0	0.63	ug/l	
96-12-8	1,2-Dibromo-3-chloropropan [a]	ND	2.0	0.69	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.16	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.21	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.50	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.50	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.50	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.9	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.21	ug/l	
107-06-2	1,2-Dichloroethane [b]	ND	1.0	0.20	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.47	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.50	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.40	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.24	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.25	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.22	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.22	ug/l	
76-13-1	Freon 113	ND	5.0	1.2	ug/l	
591-78-6	2-Hexanone	ND	5.0	3.3	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCMW-06		
Lab Sample ID:	JC62881-3	**Date Sampled:**	03/23/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	1.0	0.25	ug/l	
79-20-9	Methyl Acetate	ND	5.0	3.1	ug/l	
108-87-2	Methylcyclohexane	ND	5.0	1.8	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.25	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	3.0	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.24	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.17	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.50	ug/l	
108-88-3	Toluene	ND	1.0	0.25	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.50	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.24	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.27	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.60	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.62	ug/l	
	m,p-Xylene	ND	1.0	0.43	ug/l	
95-47-6	o-Xylene	ND	1.0	0.22	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.22	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	97%		80-120%
17060-07-0	1,2-Dichloroethane-D4	123%		81-124%
2037-26-5	Toluene-D8	93%		80-120%
460-00-4	4-Bromofluorobenzene	91%		80-120%

(a) Associated CCV outside of control limits high, sample was ND. This compound in BS is outside in house QC limits bias high.
(b) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PCMW-06		
Lab Sample ID:	JC62881-3	**Date Sampled:**	03/23/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M144919.D	1	03/28/18 20:32	CC	03/28/18 06:30	OP10886	EM6152
Run #2							

	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2		

ABN TCL List (SOM0 1.1)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	5.0	0.82	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	5.0	0.89	ug/l	
120-83-2	2,4-Dichlorophenol	ND	2.0	1.3	ug/l	
105-67-9	2,4-Dimethylphenol	ND	5.0	2.4	ug/l	
51-28-5	2,4-Dinitrophenol	ND	5.0	1.6	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	5.0	1.3	ug/l	
95-48-7	2-Methylphenol	ND	2.0	0.89	ug/l	
	3&4-Methylphenol	ND	2.0	0.88	ug/l	
88-75-5	2-Nitrophenol	ND	5.0	0.96	ug/l	
100-02-7	4-Nitrophenol [a]	ND	10	1.2	ug/l	
87-86-5	Pentachlorophenol	ND	4.0	1.4	ug/l	
108-95-2	Phenol	ND	2.0	0.39	ug/l	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	5.0	1.5	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	5.0	1.3	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	5.0	0.92	ug/l	
83-32-9	Acenaphthene	ND	1.0	0.19	ug/l	
208-96-8	Acenaphthylene	ND	1.0	0.14	ug/l	
98-86-2	Acetophenone	ND	2.0	0.21	ug/l	
120-12-7	Anthracene	ND	1.0	0.21	ug/l	
1912-24-9	Atrazine	ND	2.0	0.45	ug/l	
100-52-7	Benzaldehyde	ND	5.0	0.29	ug/l	
56-55-3	Benzo(a)anthracene	ND	1.0	0.20	ug/l	
50-32-8	Benzo(a)pyrene	ND	1.0	0.21	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	1.0	0.21	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	1.0	0.34	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	1.0	0.21	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	2.0	0.40	ug/l	
85-68-7	Butyl benzyl phthalate	ND	2.0	0.46	ug/l	
92-52-4	1,1'-Biphenyl	ND	1.0	0.21	ug/l	
91-58-7	2-Chloronaphthalene	ND	2.0	0.24	ug/l	
106-47-8	4-Chloroaniline	ND	5.0	0.34	ug/l	
86-74-8	Carbazole	ND	1.0	0.23	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PCMW-06
Lab Sample ID: JC62881-3
Matrix: AQ - Ground Water
Method: SW846 8270D SW846 3510C
Project: National Grid, Philly Coke, Philadelphia PA

Date Sampled: 03/23/18
Date Received: 03/23/18
Percent Solids: n/a

ABN TCL List (SOM0 1.1)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam [a]	ND	2.0	0.65	ug/l	
218-01-9	Chrysene	ND	1.0	0.18	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	2.0	0.28	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	2.0	0.25	ug/l	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	2.0	0.40	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	2.0	0.37	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	1.0	0.55	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	1.0	0.48	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	2.0	0.51	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	1.0	0.33	ug/l	
132-64-9	Dibenzofuran	ND	5.0	0.22	ug/l	
84-74-2	Di-n-butyl phthalate	ND	2.0	0.50	ug/l	
117-84-0	Di-n-octyl phthalate	ND	2.0	0.23	ug/l	
84-66-2	Diethyl phthalate	ND	2.0	0.26	ug/l	
131-11-3	Dimethyl phthalate	ND	2.0	0.22	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.0	1.7	ug/l	
206-44-0	Fluoranthene	ND	1.0	0.17	ug/l	
86-73-7	Fluorene	ND	1.0	0.17	ug/l	
118-74-1	Hexachlorobenzene	ND	1.0	0.33	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.49	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	10	2.8	ug/l	
67-72-1	Hexachloroethane	ND	2.0	0.39	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	1.0	0.33	ug/l	
78-59-1	Isophorone	ND	2.0	0.28	ug/l	
91-57-6	2-Methylnaphthalene	ND	1.0	0.21	ug/l	
88-74-4	2-Nitroaniline	ND	5.0	0.28	ug/l	
99-09-2	3-Nitroaniline	ND	5.0	0.39	ug/l	
100-01-6	4-Nitroaniline	ND	5.0	0.44	ug/l	
91-20-3	Naphthalene	ND	1.0	0.23	ug/l	
98-95-3	Nitrobenzene	ND	2.0	0.64	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	2.0	0.48	ug/l	
86-30-6	N-Nitrosodiphenylamine [b]	ND	5.0	0.22	ug/l	UJ
85-01-8	Phenanthrene	ND	1.0	0.18	ug/l	
129-00-0	Pyrene	ND	1.0	0.22	ug/l	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	2.0	0.37	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	32%		10-110%
4165-62-2	Phenol-d5	24%		10-110%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCMW-06		
Lab Sample ID:	JC62881-3	**Date Sampled:**	03/23/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

ABN TCL List (SOM0 1.1)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
118-79-6	2,4,6-Tribromophenol	78%		36-151%
4165-60-0	Nitrobenzene-d5	87%		34-128%
321-60-8	2-Fluorobiphenyl	75%		38-119%
1718-51-0	Terphenyl-d14	58%		26-129%

(a) Associated CCV outside of control limits high, sample was ND.
(b) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PCMW-06		
Lab Sample ID:	JC62881-3	**Date Sampled:**	03/23/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8081B SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1G144729.D	1	03/28/18 08:36	CP	03/27/18 18:10	OP10885	G1G4598
Run #2							

	Initial Volume	Final Volume
Run #1	300 ml	2.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	0.0067	0.0034	ug/l	
319-84-6	alpha-BHC	ND	0.0067	0.0035	ug/l	
319-85-7	beta-BHC	ND	0.0067	0.0053	ug/l	
319-86-8	delta-BHC	ND	0.0067	0.0044	ug/l	
58-89-9	gamma-BHC (Lindane)	ND	0.0067	0.0040	ug/l	
5103-71-9	alpha-Chlordane	ND	0.0067	0.0033	ug/l	
5103-74-2	gamma-Chlordane	ND	0.0067	0.0028	ug/l	
60-57-1	Dieldrin	ND	0.0067	0.0051	ug/l	
72-54-8	4,4'-DDD	ND	0.0067	0.0038	ug/l	
72-55-9	4,4'-DDE	ND	0.0067	0.0034	ug/l	
50-29-3	4,4'-DDT	ND	0.0067	0.0046	ug/l	
72-20-8	Endrin	ND	0.0067	0.0040	ug/l	
1031-07-8	Endosulfan sulfate	ND	0.0067	0.0036	ug/l	
7421-93-4	Endrin aldehyde	ND	0.0067	0.0045	ug/l	
53494-70-5	Endrin ketone	ND	0.0067	0.0041	ug/l	
959-98-8	Endosulfan-I	ND	0.0067	0.0035	ug/l	
33213-65-9	Endosulfan-II	ND	0.0067	0.0033	ug/l	
76-44-8	Heptachlor	ND	0.0067	0.0030	ug/l	
1024-57-3	Heptachlor epoxide	ND	0.0067	0.0040	ug/l	
72-43-5	Methoxychlor	ND	0.013	0.0045	ug/l	
8001-35-2	Toxaphene	ND	0.17	0.11	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	72%		13-153%
877-09-8	Tetrachloro-m-xylene	81%		13-153%
2051-24-3	Decachlorobiphenyl	98%		10-138%
2051-24-3	Decachlorobiphenyl	87%		10-138%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS LabLink@996135 15:38 10-Apr-2018

Report of Analysis

Client Sample ID:	PCMW-06		
Lab Sample ID:	JC62881-3	**Date Sampled:**	03/23/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8082A SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EF181251.D	1	03/29/18 07:34	HB	03/27/18 18:10	OP10884	GEF6203
Run #2							

	Initial Volume	Final Volume
Run #1	300 ml	2.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	0.33	0.13	ug/l	
11104-28-2	Aroclor 1221	ND	0.33	0.28	ug/l	
11141-16-5	Aroclor 1232	ND	0.33	0.17	ug/l	
53469-21-9	Aroclor 1242	ND	0.33	0.15	ug/l	
12672-29-6	Aroclor 1248	ND	0.33	0.084	ug/l	
11097-69-1	Aroclor 1254	ND	0.33	0.28	ug/l	
11096-82-5	Aroclor 1260	ND	0.33	0.10	ug/l	
11100-14-4	Aroclor 1268	ND	0.33	0.12	ug/l	
37324-23-5	Aroclor 1262	ND	0.33	0.13	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	75%		11-166%
877-09-8	Tetrachloro-m-xylene	73%		11-166%
2051-24-3	Decachlorobiphenyl	76%		10-150%
2051-24-3	Decachlorobiphenyl	78%		10-150%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCMW-06		
Lab Sample ID:	JC62881-3	**Date Sampled:**	03/23/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
		Percent Solids:	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	< 200	200	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Antimony	< 6.0	6.0	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Arsenic	3.2	3.0	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Barium	< 200	200	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Beryllium	< 1.0	1.0	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Cadmium	< 3.0	3.0	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Calcium	72100	5000	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Chromium	< 10	10	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Cobalt	< 50	50	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Copper	16.9	10	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Iron	1030	100	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Lead	42.3	3.0	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Magnesium	8070	5000	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Manganese	48.9	15	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Mercury	< 0.20	0.20	ug/l	1	03/26/18	03/26/18	MS	SW846 7470A [1]	SW846 7470A [3]
Nickel	< 10	10	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Potassium	< 10000	10000	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Selenium	< 10	10	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Silver	< 10	10	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Sodium	< 10000	10000	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Thallium	< 2.0	2.0	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Vanadium	< 50	50	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Zinc	158	20	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]

(1) Instrument QC Batch: MA44075
(2) Instrument QC Batch: MA44114
(3) Prep QC Batch: MP6361
(4) Prep QC Batch: MP6399

RL = Reporting Limit

Report of Analysis

Client Sample ID:	PCMW-06		
Lab Sample ID:	JC62881-3	**Date Sampled:**	03/23/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
		Percent Solids:	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Cyanide	< 0.010 UJ	0.010	mg/l	1	03/30/18 12:01	TG	EPA 335.4/LACHAT

RL = Reporting Limit

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Report of Analysis

Client Sample ID:	PCMW-11S		
Lab Sample ID:	JC62881-4	**Date Sampled:**	03/23/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2B159327.D	1	03/30/18 10:37	SS	n/a	n/a	V2B7094
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	5.0	ug/l	
71-43-2	Benzene	0.23	0.50	0.17	ug/l	J
74-97-5	Bromochloromethane	ND	1.0	0.38	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.22	ug/l	
75-25-2	Bromoform [a]	ND	1.0	0.42	ug/l	
74-83-9	Bromomethane	ND	2.0	1.4	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	4.8	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.50	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.34	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.24	ug/l	
75-00-3	Chloroethane	ND	1.0	0.59	ug/l	
67-66-3	Chloroform	ND	1.0	0.29	ug/l	
74-87-3	Chloromethane	ND	1.0	0.53	ug/l	
110-82-7	Cyclohexane	ND	5.0	0.63	ug/l	
96-12-8	1,2-Dibromo-3-chloropropan [a]	ND	2.0	0.69	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.16	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.21	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.50	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.50	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.50	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.9	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.21	ug/l	
107-06-2	1,2-Dichloroethane [b]	ND	1.0	0.20	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.47	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.50	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.40	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.24	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.25	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.22	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.22	ug/l	
76-13-1	Freon 113	ND	5.0	1.2	ug/l	
591-78-6	2-Hexanone	ND	5.0	3.3	ug/l	

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E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCMW-11S		
Lab Sample ID:	JC62881-4	**Date Sampled:**	03/23/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	1.0	0.25	ug/l	
79-20-9	Methyl Acetate	ND	5.0	3.1	ug/l	
108-87-2	Methylcyclohexane	ND	5.0	1.8	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.25	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	3.0	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.24	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.17	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.50	ug/l	
108-88-3	Toluene	ND	1.0	0.25	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.50	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.24	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.27	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.60	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.62	ug/l	
	m,p-Xylene	ND	1.0	0.43	ug/l	
95-47-6	o-Xylene	ND	1.0	0.22	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.22	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	95%		80-120%
17060-07-0	1,2-Dichloroethane-D4	121%		81-124%
2037-26-5	Toluene-D8	92%		80-120%
460-00-4	4-Bromofluorobenzene	94%		80-120%

(a) Associated CCV outside of control limits high, sample was ND. This compound in BS is outside in house QC limits bias high.
(b) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PCMW-11S		
Lab Sample ID:	JC62881-4	**Date Sampled:**	03/23/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M144920.D	1	03/28/18 21:01	CC	03/28/18 06:30	OP10886	EM6152
Run #2							

	Initial Volume	Final Volume
Run #1	900 ml	1.0 ml
Run #2		

ABN TCL List (SOM0 1.1)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	5.6	0.91	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	5.6	0.99	ug/l	
120-83-2	2,4-Dichlorophenol	ND	2.2	1.4	ug/l	
105-67-9	2,4-Dimethylphenol	ND	5.6	2.7	ug/l	
51-28-5	2,4-Dinitrophenol	ND	5.6	1.7	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	5.6	1.4	ug/l	
95-48-7	2-Methylphenol	ND	2.2	0.99	ug/l	
	3&4-Methylphenol	ND	2.2	0.98	ug/l	
88-75-5	2-Nitrophenol	ND	5.6	1.1	ug/l	
100-02-7	4-Nitrophenol [a]	ND	11	1.3	ug/l	
87-86-5	Pentachlorophenol	ND	4.4	1.5	ug/l	
108-95-2	Phenol	ND	2.2	0.44	ug/l	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	5.6	1.6	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	5.6	1.5	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	5.6	1.0	ug/l	
83-32-9	Acenaphthene	ND	1.1	0.21	ug/l	
208-96-8	Acenaphthylene	ND	1.1	0.15	ug/l	
98-86-2	Acetophenone	ND	2.2	0.23	ug/l	
120-12-7	Anthracene	ND	1.1	0.23	ug/l	
1912-24-9	Atrazine	ND	2.2	0.50	ug/l	
100-52-7	Benzaldehyde	ND	5.6	0.32	ug/l	
56-55-3	Benzo(a)anthracene	ND	1.1	0.23	ug/l	
50-32-8	Benzo(a)pyrene	ND	1.1	0.24	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	1.1	0.23	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	1.1	0.38	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	1.1	0.23	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	2.2	0.45	ug/l	
85-68-7	Butyl benzyl phthalate	ND	2.2	0.51	ug/l	
92-52-4	1,1'-Biphenyl	ND	1.1	0.24	ug/l	
91-58-7	2-Chloronaphthalene	ND	2.2	0.26	ug/l	
106-47-8	4-Chloroaniline	ND	5.6	0.38	ug/l	
86-74-8	Carbazole	ND	1.1	0.25	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PCMW-11S
Lab Sample ID: JC62881-4
Matrix: AQ - Ground Water
Method: SW846 8270D SW846 3510C
Project: National Grid, Philly Coke, Philadelphia PA

Date Sampled: 03/23/18
Date Received: 03/23/18
Percent Solids: n/a

ABN TCL List (SOM0 1.1)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam [a]	ND	2.2	0.72	ug/l	
218-01-9	Chrysene	ND	1.1	0.20	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	2.2	0.31	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	2.2	0.28	ug/l	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	2.2	0.45	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	2.2	0.41	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	1.1	0.61	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	1.1	0.53	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	2.2	0.56	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	1.1	0.37	ug/l	
132-64-9	Dibenzofuran	ND	5.6	0.24	ug/l	
84-74-2	Di-n-butyl phthalate	ND	2.2	0.55	ug/l	
117-84-0	Di-n-octyl phthalate	ND	2.2	0.26	ug/l	
84-66-2	Diethyl phthalate	ND	2.2	0.29	ug/l	
131-11-3	Dimethyl phthalate	ND	2.2	0.24	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.2	1.8	ug/l	
206-44-0	Fluoranthene	ND	1.1	0.19	ug/l	
86-73-7	Fluorene	ND	1.1	0.19	ug/l	
118-74-1	Hexachlorobenzene	ND	1.1	0.36	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.1	0.55	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	11	3.1	ug/l	
67-72-1	Hexachloroethane	ND	2.2	0.43	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	1.1	0.37	ug/l	
78-59-1	Isophorone	ND	2.2	0.31	ug/l	
91-57-6	2-Methylnaphthalene	ND	1.1	0.23	ug/l	
88-74-4	2-Nitroaniline	ND	5.6	0.31	ug/l	
99-09-2	3-Nitroaniline	ND	5.6	0.43	ug/l	
100-01-6	4-Nitroaniline	ND	5.6	0.49	ug/l	
91-20-3	Naphthalene	ND	1.1	0.26	ug/l	
98-95-3	Nitrobenzene	ND	2.2	0.71	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	2.2	0.53	ug/l	
86-30-6	N-Nitrosodiphenylamine [b]	ND	5.6	0.25	ug/l	UJ
85-01-8	Phenanthrene	ND	1.1	0.19	ug/l	
129-00-0	Pyrene	ND	1.1	0.24	ug/l	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	2.2	0.41	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	34%		10-110%
4165-62-2	Phenol-d5	27%		10-110%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCMW-11S		
Lab Sample ID:	JC62881-4	**Date Sampled:**	03/23/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

ABN TCL List (SOM0 1.1)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
118-79-6	2,4,6-Tribromophenol	76%		36-151%
4165-60-0	Nitrobenzene-d5	85%		34-128%
321-60-8	2-Fluorobiphenyl	70%		38-119%
1718-51-0	Terphenyl-d14	60%		26-129%

(a) Associated CCV outside of control limits high, sample was ND.
(b) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
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J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PCMW-11S		
Lab Sample ID:	JC62881-4	**Date Sampled:**	03/23/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8081B SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1G144730.D	1	03/28/18 08:53	CP	03/27/18 18:10	OP10885	G1G4598
Run #2							

	Initial Volume	Final Volume
Run #1	300 ml	2.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	0.0067	0.0034	ug/l	
319-84-6	alpha-BHC	ND	0.0067	0.0035	ug/l	
319-85-7	beta-BHC	ND	0.0067	0.0053	ug/l	
319-86-8	delta-BHC	ND	0.0067	0.0044	ug/l	
58-89-9	gamma-BHC (Lindane)	ND	0.0067	0.0040	ug/l	
5103-71-9	alpha-Chlordane	ND	0.0067	0.0033	ug/l	
5103-74-2	gamma-Chlordane	ND	0.0067	0.0028	ug/l	
60-57-1	Dieldrin	ND	0.0067	0.0051	ug/l	
72-54-8	4,4'-DDD	ND	0.0067	0.0038	ug/l	
72-55-9	4,4'-DDE	ND	0.0067	0.0034	ug/l	
50-29-3	4,4'-DDT	ND	0.0067	0.0046	ug/l	
72-20-8	Endrin	ND	0.0067	0.0040	ug/l	
1031-07-8	Endosulfan sulfate	ND	0.0067	0.0036	ug/l	
7421-93-4	Endrin aldehyde	ND	0.0067	0.0045	ug/l	
53494-70-5	Endrin ketone	ND	0.0067	0.0041	ug/l	
959-98-8	Endosulfan-I	ND	0.0067	0.0035	ug/l	
33213-65-9	Endosulfan-II	ND	0.0067	0.0033	ug/l	
76-44-8	Heptachlor	ND	0.0067	0.0030	ug/l	
1024-57-3	Heptachlor epoxide	ND	0.0067	0.0040	ug/l	
72-43-5	Methoxychlor	ND	0.013	0.0045	ug/l	
8001-35-2	Toxaphene	ND	0.17	0.11	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	76%		13-153%
877-09-8	Tetrachloro-m-xylene	76%		13-153%
2051-24-3	Decachlorobiphenyl	63%		10-138%
2051-24-3	Decachlorobiphenyl	47%		10-138%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PCMW-11S		
Lab Sample ID:	JC62881-4	**Date Sampled:**	03/23/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8082A SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EF181252.D	1	03/29/18 07:59	HB	03/27/18 18:10	OP10884	GEF6203
Run #2							

	Initial Volume	Final Volume
Run #1	300 ml	2.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	0.33	0.13	ug/l	
11104-28-2	Aroclor 1221	ND	0.33	0.28	ug/l	
11141-16-5	Aroclor 1232	ND	0.33	0.17	ug/l	
53469-21-9	Aroclor 1242	ND	0.33	0.15	ug/l	
12672-29-6	Aroclor 1248	ND	0.33	0.084	ug/l	
11097-69-1	Aroclor 1254	ND	0.33	0.28	ug/l	
11096-82-5	Aroclor 1260	ND	0.33	0.10	ug/l	
11100-14-4	Aroclor 1268	ND	0.33	0.12	ug/l	
37324-23-5	Aroclor 1262	ND	0.33	0.13	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	77%		11-166%
877-09-8	Tetrachloro-m-xylene	67%		11-166%
2051-24-3	Decachlorobiphenyl	31%		10-150%
2051-24-3	Decachlorobiphenyl	36%		10-150%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PCMW-11S
Lab Sample ID: JC62881-4
Matrix: AQ - Ground Water
Project: National Grid, Philly Coke, Philadelphia PA

Date Sampled: 03/23/18
Date Received: 03/23/18
Percent Solids: n/a

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	226	200	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [5]
Antimony	< 6.0	6.0	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [5]
Arsenic	6.3	3.0	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [5]
Barium	< 200	200	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [5]
Beryllium	< 1.0	1.0	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [5]
Cadmium	< 3.0	3.0	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [5]
Calcium	203000	5000	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [5]
Chromium	< 10	10	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [5]
Cobalt	< 50	50	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [5]
Copper	23.4	10	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [5]
Iron	40500	100	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [5]
Lead	< 3.0	3.0	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [5]
Magnesium	96300	5000	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [5]
Manganese	1300	15	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [5]
Mercury	< 0.20	0.20	ug/l	1	03/26/18	03/26/18	MS	SW846 7470A [1]	SW846 7470A [4]
Nickel	68.3	10	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [5]
Potassium	13800	10000	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [5]
Selenium	< 10	10	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [5]
Silver	< 10	10	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [5]
Sodium	19000	10000	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [5]
Thallium [a]	< 4.0	4.0	ug/l	2	03/29/18	04/04/18		SW846 6010C [3]	SW846 3010A [5]
Vanadium	< 50	50	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [5]
Zinc	233	20	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [5]

(1) Instrument QC Batch: MA44075
(2) Instrument QC Batch: MA44114
(3) Instrument QC Batch: MA44142
(4) Prep QC Batch: MP6361
(5) Prep QC Batch: MP6399

(a) Elevated detection limit due to dilution required for high interfering element.

RL = Reporting Limit

Report of Analysis

Client Sample ID:	PCMW-11S		
Lab Sample ID:	JC62881-4	**Date Sampled:**	03/23/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
		Percent Solids:	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Cyanide	< 0.010 UJ	0.010	mg/l	1	03/30/18 12:02	TG	EPA 335.4/LACHAT

RL = Reporting Limit

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Report of Analysis

Client Sample ID:	PCMW-18S		
Lab Sample ID:	JC62881-5	**Date Sampled:**	03/23/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2B159328.D	1	03/30/18 11:07	SS	n/a	n/a	V2B7094
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	5.0	ug/l	
71-43-2	Benzene	ND	0.50	0.17	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.38	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.22	ug/l	
75-25-2	Bromoform [a]	ND	1.0	0.42	ug/l	
74-83-9	Bromomethane	ND	2.0	1.4	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	4.8	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.50	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.34	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.24	ug/l	
75-00-3	Chloroethane	ND	1.0	0.59	ug/l	
67-66-3	Chloroform	ND	1.0	0.29	ug/l	
74-87-3	Chloromethane	ND	1.0	0.53	ug/l	
110-82-7	Cyclohexane	ND	5.0	0.63	ug/l	
96-12-8	1,2-Dibromo-3-chloropropan [a]	ND	2.0	0.69	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.16	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.21	ug/l	
95-50-1	1,2-Dichlorobenzene	0.71	1.0	0.50	ug/l	J
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.50	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.50	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.9	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.21	ug/l	
107-06-2	1,2-Dichloroethane [b]	ND	1.0	0.20	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.47	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.50	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.40	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.24	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.25	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.22	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.22	ug/l	
76-13-1	Freon 113	ND	5.0	1.2	ug/l	
591-78-6	2-Hexanone	ND	5.0	3.3	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCMW-18S		
Lab Sample ID:	JC62881-5	**Date Sampled:**	03/23/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	1.0	0.25	ug/l	
79-20-9	Methyl Acetate	ND	5.0	3.1	ug/l	
108-87-2	Methylcyclohexane	ND	5.0	1.8	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.25	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	3.0	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.24	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.17	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.50	ug/l	
108-88-3	Toluene	ND	1.0	0.25	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.50	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.24	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.27	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.60	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.62	ug/l	
	m,p-Xylene	ND	1.0	0.43	ug/l	
95-47-6	o-Xylene	ND	1.0	0.22	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.22	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	95%		80-120%
17060-07-0	1,2-Dichloroethane-D4	120%		81-124%
2037-26-5	Toluene-D8	93%		80-120%
460-00-4	4-Bromofluorobenzene	93%		80-120%

(a) Associated CCV outside of control limits high, sample was ND. This compound in BS is outside in house QC limits bias high.
(b) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PCMW-18S		
Lab Sample ID:	JC62881-5	**Date Sampled:**	03/23/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M144921.D	1	03/28/18 21:31	CC	03/28/18 06:30	OP10886	EM6152
Run #2							

	Initial Volume	Final Volume
Run #1	900 ml	1.0 ml
Run #2		

ABN TCL List (SOM0 1.1)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	5.6	0.91	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	5.6	0.99	ug/l	
120-83-2	2,4-Dichlorophenol	ND	2.2	1.4	ug/l	
105-67-9	2,4-Dimethylphenol	ND	5.6	2.7	ug/l	
51-28-5	2,4-Dinitrophenol	ND	5.6	1.7	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	5.6	1.4	ug/l	
95-48-7	2-Methylphenol	ND	2.2	0.99	ug/l	
	3&4-Methylphenol	ND	2.2	0.98	ug/l	
88-75-5	2-Nitrophenol	ND	5.6	1.1	ug/l	
100-02-7	4-Nitrophenol [a]	ND	11	1.3	ug/l	
87-86-5	Pentachlorophenol	ND	4.4	1.5	ug/l	
108-95-2	Phenol	ND	2.2	0.44	ug/l	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	5.6	1.6	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	5.6	1.5	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	5.6	1.0	ug/l	
83-32-9	Acenaphthene	ND	1.1	0.21	ug/l	
208-96-8	Acenaphthylene	ND	1.1	0.15	ug/l	
98-86-2	Acetophenone	ND	2.2	0.23	ug/l	
120-12-7	Anthracene	ND	1.1	0.23	ug/l	
1912-24-9	Atrazine	ND	2.2	0.50	ug/l	
100-52-7	Benzaldehyde	ND	5.6	0.32	ug/l	
56-55-3	Benzo(a)anthracene	ND	1.1	0.23	ug/l	
50-32-8	Benzo(a)pyrene	ND	1.1	0.24	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	1.1	0.23	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	1.1	0.38	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	1.1	0.23	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	2.2	0.45	ug/l	
85-68-7	Butyl benzyl phthalate	ND	2.2	0.51	ug/l	
92-52-4	1,1'-Biphenyl	ND	1.1	0.24	ug/l	
91-58-7	2-Chloronaphthalene	ND	2.2	0.26	ug/l	
106-47-8	4-Chloroaniline	ND	5.6	0.38	ug/l	
86-74-8	Carbazole	ND	1.1	0.25	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PCMW-18S
Lab Sample ID: JC62881-5
Matrix: AQ - Ground Water
Method: SW846 8270D SW846 3510C
Project: National Grid, Philly Coke, Philadelphia PA

Date Sampled: 03/23/18
Date Received: 03/23/18
Percent Solids: n/a

ABN TCL List (SOM0 1.1)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam [a]	ND	2.2	0.72	ug/l	
218-01-9	Chrysene	ND	1.1	0.20	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	2.2	0.31	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	2.2	0.28	ug/l	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	2.2	0.45	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	2.2	0.41	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	1.1	0.61	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	1.1	0.53	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	2.2	0.56	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	1.1	0.37	ug/l	
132-64-9	Dibenzofuran	ND	5.6	0.24	ug/l	
84-74-2	Di-n-butyl phthalate	ND	2.2	0.55	ug/l	
117-84-0	Di-n-octyl phthalate	ND	2.2	0.26	ug/l	
84-66-2	Diethyl phthalate	ND	2.2	0.29	ug/l	
131-11-3	Dimethyl phthalate	ND	2.2	0.24	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	3.7	2.2	1.8	ug/l	
206-44-0	Fluoranthene	ND	1.1	0.19	ug/l	
86-73-7	Fluorene	ND	1.1	0.19	ug/l	
118-74-1	Hexachlorobenzene	ND	1.1	0.36	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.1	0.55	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	11	3.1	ug/l	
67-72-1	Hexachloroethane	ND	2.2	0.43	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	1.1	0.37	ug/l	
78-59-1	Isophorone	ND	2.2	0.31	ug/l	
91-57-6	2-Methylnaphthalene	ND	1.1	0.23	ug/l	
88-74-4	2-Nitroaniline	ND	5.6	0.31	ug/l	
99-09-2	3-Nitroaniline	ND	5.6	0.43	ug/l	
100-01-6	4-Nitroaniline	ND	5.6	0.49	ug/l	
91-20-3	Naphthalene	ND	1.1	0.26	ug/l	
98-95-3	Nitrobenzene	ND	2.2	0.71	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	2.2	0.53	ug/l	
86-30-6	N-Nitrosodiphenylamine [b]	ND	5.6	0.25	ug/l	UJ
85-01-8	Phenanthrene	ND	1.1	0.19	ug/l	
129-00-0	Pyrene	ND	1.1	0.24	ug/l	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	2.2	0.41	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	34%		10-110%
4165-62-2	Phenol-d5	26%		10-110%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCMW-18S		
Lab Sample ID:	JC62881-5	**Date Sampled:**	03/23/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

ABN TCL List (SOM0 1.1)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
118-79-6	2,4,6-Tribromophenol	77%		36-151%
4165-60-0	Nitrobenzene-d5	86%		34-128%
321-60-8	2-Fluorobiphenyl	72%		38-119%
1718-51-0	Terphenyl-d14	65%		26-129%

(a) Associated CCV outside of control limits high, sample was ND.
(b) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PCMW-18S		
Lab Sample ID:	JC62881-5	**Date Sampled:**	03/23/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8081B SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1G144731.D	1	03/28/18 09:11	CP	03/27/18 18:10	OP10885	G1G4598
Run #2							

	Initial Volume	Final Volume
Run #1	290 ml	2.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	0.0069	0.0036	ug/l	
319-84-6	alpha-BHC	ND	0.0069	0.0036	ug/l	
319-85-7	beta-BHC	ND	0.0069	0.0055	ug/l	
319-86-8	delta-BHC	ND	0.0069	0.0045	ug/l	
58-89-9	gamma-BHC (Lindane)	ND	0.0069	0.0041	ug/l	
5103-71-9	alpha-Chlordane	ND	0.0069	0.0034	ug/l	
5103-74-2	gamma-Chlordane	ND	0.0069	0.0029	ug/l	
60-57-1	Dieldrin	ND	0.0069	0.0053	ug/l	
72-54-8	4,4'-DDD	ND	0.0069	0.0040	ug/l	
72-55-9	4,4'-DDE	ND	0.0069	0.0035	ug/l	
50-29-3	4,4'-DDT	ND	0.0069	0.0047	ug/l	
72-20-8	Endrin	ND	0.0069	0.0042	ug/l	
1031-07-8	Endosulfan sulfate	ND	0.0069	0.0038	ug/l	
7421-93-4	Endrin aldehyde	ND	0.0069	0.0046	ug/l	
53494-70-5	Endrin ketone	ND	0.0069	0.0043	ug/l	
959-98-8	Endosulfan-I	ND	0.0069	0.0036	ug/l	
33213-65-9	Endosulfan-II	ND	0.0069	0.0034	ug/l	
76-44-8	Heptachlor	ND	0.0069	0.0031	ug/l	
1024-57-3	Heptachlor epoxide	ND	0.0069	0.0041	ug/l	
72-43-5	Methoxychlor	ND	0.014	0.0046	ug/l	
8001-35-2	Toxaphene	ND	0.17	0.11	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	80%		13-153%
877-09-8	Tetrachloro-m-xylene	67%		13-153%
2051-24-3	Decachlorobiphenyl	80%		10-138%
2051-24-3	Decachlorobiphenyl	55%		10-138%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PCMW-18S		
Lab Sample ID:	JC62881-5	**Date Sampled:**	03/23/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8082A SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EF181253.D	1	03/29/18 08:24	HB	03/27/18 18:10	OP10884	GEF6203
Run #2							

	Initial Volume	Final Volume
Run #1	290 ml	2.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	0.34	0.14	ug/l	
11104-28-2	Aroclor 1221	ND	0.34	0.29	ug/l	
11141-16-5	Aroclor 1232	ND	0.34	0.18	ug/l	
53469-21-9	Aroclor 1242	ND	0.34	0.16	ug/l	
12672-29-6	Aroclor 1248	ND	0.34	0.087	ug/l	
11097-69-1	Aroclor 1254	ND	0.34	0.29	ug/l	
11096-82-5	Aroclor 1260	ND	0.34	0.10	ug/l	
11100-14-4	Aroclor 1268	ND	0.34	0.12	ug/l	
37324-23-5	Aroclor 1262	ND	0.34	0.13	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	61%		11-166%
877-09-8	Tetrachloro-m-xylene	72%		11-166%
2051-24-3	Decachlorobiphenyl	52%		10-150%
2051-24-3	Decachlorobiphenyl	55%		10-150%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PCMW-18S
Lab Sample ID: JC62881-5
Matrix: AQ - Ground Water
Project: National Grid, Philly Coke, Philadelphia PA

Date Sampled: 03/23/18
Date Received: 03/23/18
Percent Solids: n/a

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	< 200	200	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [5]
Antimony	< 6.0	6.0	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [5]
Arsenic	4.9	3.0	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [5]
Barium	< 200	200	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [5]
Beryllium	< 1.0	1.0	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [5]
Cadmium	< 3.0	3.0	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [5]
Calcium	217000	5000	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [5]
Chromium	< 10	10	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [5]
Cobalt	< 50	50	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [5]
Copper	< 10	10	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [5]
Iron	2960	100	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [5]
Lead	< 3.0	3.0	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [5]
Magnesium	77600	5000	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [5]
Manganese	4430	15	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [5]
Mercury	< 0.20	0.20	ug/l	1	03/26/18	03/26/18	MS	SW846 7470A [1]	SW846 7470A [4]
Nickel	< 10	10	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [5]
Potassium	95000	10000	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [5]
Selenium	< 10	10	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [5]
Silver	< 10	10	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [5]
Sodium	49100	10000	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [5]
Thallium [a]	< 4.0	4.0	ug/l	2	03/29/18	04/04/18		SW846 6010C [3]	SW846 3010A [5]
Vanadium	< 50	50	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [5]
Zinc	< 20	20	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [5]

(1) Instrument QC Batch: MA44075
(2) Instrument QC Batch: MA44114
(3) Instrument QC Batch: MA44142
(4) Prep QC Batch: MP6361
(5) Prep QC Batch: MP6399

(a) Elevated detection limit due to dilution required for high interfering element.

RL = Reporting Limit

Report of Analysis

Client Sample ID:	PCMW-18S		
Lab Sample ID:	JC62881-5	**Date Sampled:**	03/23/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
		Percent Solids:	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Cyanide	< 0.010 UJ	0.010	mg/l	1	03/30/18 12:04	TG	EPA 335.4/LACHAT

RL = Reporting Limit

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Report of Analysis

Client Sample ID:	PCMW-18D		
Lab Sample ID:	JC62881-6	**Date Sampled:**	03/23/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2B159336.D	1	03/30/18 15:08	SS	n/a	n/a	V2B7094
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	5.0	ug/l	
71-43-2	Benzene	ND	0.50	0.17	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.38	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.22	ug/l	
75-25-2	Bromoform [a]	ND	1.0	0.42	ug/l	
74-83-9	Bromomethane	ND	2.0	1.4	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	4.8	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.50	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.34	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.24	ug/l	
75-00-3	Chloroethane	ND	1.0	0.59	ug/l	
67-66-3	Chloroform	12.3	1.0	0.29	ug/l	
74-87-3	Chloromethane	ND	1.0	0.53	ug/l	
110-82-7	Cyclohexane	ND	5.0	0.63	ug/l	
96-12-8	1,2-Dibromo-3-chloropropan [a]	ND	2.0	0.69	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.16	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.21	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.50	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.50	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.50	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.9	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.21	ug/l	
107-06-2	1,2-Dichloroethane [b]	ND	1.0	0.20	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.47	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.50	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.40	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.24	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.25	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.22	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.22	ug/l	
76-13-1	Freon 113	ND	5.0	1.2	ug/l	
591-78-6	2-Hexanone	ND	5.0	3.3	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCMW-18D		
Lab Sample ID:	JC62881-6	**Date Sampled:**	03/23/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	1.0	0.25	ug/l	
79-20-9	Methyl Acetate	ND	5.0	3.1	ug/l	
108-87-2	Methylcyclohexane	ND	5.0	1.8	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.25	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	3.0	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.24	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.17	ug/l	
127-18-4	Tetrachloroethene	1.5	1.0	0.50	ug/l	
108-88-3	Toluene	ND	1.0	0.25	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.50	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.24	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.27	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.60	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.62	ug/l	
	m,p-Xylene	ND	1.0	0.43	ug/l	
95-47-6	o-Xylene	ND	1.0	0.22	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.22	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	98%		80-120%
17060-07-0	1,2-Dichloroethane-D4	123%		81-124%
2037-26-5	Toluene-D8	93%		80-120%
460-00-4	4-Bromofluorobenzene	92%		80-120%

(a) Associated CCV outside of control limits high, sample was ND. This compound in BS is outside in house QC limits bias high.
(b) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PCMW-18D		
Lab Sample ID:	JC62881-6	**Date Sampled:**	03/23/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M144922.D	1	03/28/18 22:00	CC	03/28/18 06:30	OP10886	EM6152
Run #2							

	Initial Volume	Final Volume
Run #1	900 ml	1.0 ml
Run #2		

ABN TCL List (SOM0 1.1)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	5.6	0.91	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	5.6	0.99	ug/l	
120-83-2	2,4-Dichlorophenol	ND	2.2	1.4	ug/l	
105-67-9	2,4-Dimethylphenol	ND	5.6	2.7	ug/l	
51-28-5	2,4-Dinitrophenol	ND	5.6	1.7	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	5.6	1.4	ug/l	
95-48-7	2-Methylphenol	ND	2.2	0.99	ug/l	
	3&4-Methylphenol	ND	2.2	0.98	ug/l	
88-75-5	2-Nitrophenol	ND	5.6	1.1	ug/l	
100-02-7	4-Nitrophenol [a]	ND	11	1.3	ug/l	
87-86-5	Pentachlorophenol	ND	4.4	1.5	ug/l	
108-95-2	Phenol	ND	2.2	0.44	ug/l	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	5.6	1.6	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	5.6	1.5	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	5.6	1.0	ug/l	
83-32-9	Acenaphthene	ND	1.1	0.21	ug/l	
208-96-8	Acenaphthylene	ND	1.1	0.15	ug/l	
98-86-2	Acetophenone	ND	2.2	0.23	ug/l	
120-12-7	Anthracene	ND	1.1	0.23	ug/l	
1912-24-9	Atrazine	ND	2.2	0.50	ug/l	
100-52-7	Benzaldehyde	ND	5.6	0.32	ug/l	
56-55-3	Benzo(a)anthracene	ND	1.1	0.23	ug/l	
50-32-8	Benzo(a)pyrene	ND	1.1	0.24	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	1.1	0.23	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	1.1	0.38	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	1.1	0.23	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	2.2	0.45	ug/l	
85-68-7	Butyl benzyl phthalate	ND	2.2	0.51	ug/l	
92-52-4	1,1'-Biphenyl	ND	1.1	0.24	ug/l	
91-58-7	2-Chloronaphthalene	ND	2.2	0.26	ug/l	
106-47-8	4-Chloroaniline	ND	5.6	0.38	ug/l	
86-74-8	Carbazole	ND	1.1	0.25	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PCMW-18D
Lab Sample ID: JC62881-6
Matrix: AQ - Ground Water
Method: SW846 8270D SW846 3510C
Project: National Grid, Philly Coke, Philadelphia PA

Date Sampled: 03/23/18
Date Received: 03/23/18
Percent Solids: n/a

ABN TCL List (SOM0 1.1)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam [a]	ND	2.2	0.72	ug/l	
218-01-9	Chrysene	ND	1.1	0.20	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	2.2	0.31	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	2.2	0.28	ug/l	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	2.2	0.45	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	2.2	0.41	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	1.1	0.61	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	1.1	0.53	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	2.2	0.56	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	1.1	0.37	ug/l	
132-64-9	Dibenzofuran	ND	5.6	0.24	ug/l	
84-74-2	Di-n-butyl phthalate	ND	2.2	0.55	ug/l	
117-84-0	Di-n-octyl phthalate	ND	2.2	0.26	ug/l	
84-66-2	Diethyl phthalate	ND	2.2	0.29	ug/l	
131-11-3	Dimethyl phthalate	ND	2.2	0.24	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.2	1.8	ug/l	
206-44-0	Fluoranthene	ND	1.1	0.19	ug/l	
86-73-7	Fluorene	ND	1.1	0.19	ug/l	
118-74-1	Hexachlorobenzene	ND	1.1	0.36	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.1	0.55	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	11	3.1	ug/l	
67-72-1	Hexachloroethane	ND	2.2	0.43	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	1.1	0.37	ug/l	
78-59-1	Isophorone	ND	2.2	0.31	ug/l	
91-57-6	2-Methylnaphthalene	ND	1.1	0.23	ug/l	
88-74-4	2-Nitroaniline	ND	5.6	0.31	ug/l	
99-09-2	3-Nitroaniline	ND	5.6	0.43	ug/l	
100-01-6	4-Nitroaniline	ND	5.6	0.49	ug/l	
91-20-3	Naphthalene	ND	1.1	0.26	ug/l	
98-95-3	Nitrobenzene	ND	2.2	0.71	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	2.2	0.53	ug/l	
86-30-6	N-Nitrosodiphenylamine [b]	ND	5.6	0.25	ug/l	UJ
85-01-8	Phenanthrene	ND	1.1	0.19	ug/l	
129-00-0	Pyrene	ND	1.1	0.24	ug/l	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	2.2	0.41	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	27%		10-110%
4165-62-2	Phenol-d5	21%		10-110%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCMW-18D		
Lab Sample ID:	JC62881-6	**Date Sampled:**	03/23/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

ABN TCL List (SOM0 1.1)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
118-79-6	2,4,6-Tribromophenol	64%		36-151%
4165-60-0	Nitrobenzene-d5	70%		34-128%
321-60-8	2-Fluorobiphenyl	54%		38-119%
1718-51-0	Terphenyl-d14	52%		26-129%

(a) Associated CCV outside of control limits high, sample was ND.
(b) Associated CCV outside of control limits low.

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Report of Analysis

Client Sample ID:	PCMW-18D		
Lab Sample ID:	JC62881-6	**Date Sampled:**	03/23/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8081B SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1G144732.D	1	03/28/18 09:28	CP	03/27/18 18:10	OP10885	G1G4598
Run #2							

	Initial Volume	Final Volume
Run #1	295 ml	2.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	0.0068	0.0035	ug/l	
319-84-6	alpha-BHC	ND	0.0068	0.0035	ug/l	
319-85-7	beta-BHC	ND	0.0068	0.0054	ug/l	
319-86-8	delta-BHC	ND	0.0068	0.0045	ug/l	
58-89-9	gamma-BHC (Lindane)	ND	0.0068	0.0041	ug/l	
5103-71-9	alpha-Chlordane	ND	0.0068	0.0033	ug/l	
5103-74-2	gamma-Chlordane	ND	0.0068	0.0029	ug/l	
60-57-1	Dieldrin	ND	0.0068	0.0052	ug/l	
72-54-8	4,4'-DDD	ND	0.0068	0.0039	ug/l	
72-55-9	4,4'-DDE	ND	0.0068	0.0034	ug/l	
50-29-3	4,4'-DDT	ND	0.0068	0.0046	ug/l	
72-20-8	Endrin	ND	0.0068	0.0041	ug/l	
1031-07-8	Endosulfan sulfate	ND	0.0068	0.0037	ug/l	
7421-93-4	Endrin aldehyde	ND	0.0068	0.0045	ug/l	
53494-70-5	Endrin ketone	ND	0.0068	0.0042	ug/l	
959-98-8	Endosulfan-I	ND	0.0068	0.0036	ug/l	
33213-65-9	Endosulfan-II	ND	0.0068	0.0033	ug/l	
76-44-8	Heptachlor	ND	0.0068	0.0030	ug/l	
1024-57-3	Heptachlor epoxide	ND	0.0068	0.0041	ug/l	
72-43-5	Methoxychlor	ND	0.014	0.0045	ug/l	
8001-35-2	Toxaphene	ND	0.17	0.11	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	69%		13-153%
877-09-8	Tetrachloro-m-xylene	77%		13-153%
2051-24-3	Decachlorobiphenyl	58%		10-138%
2051-24-3	Decachlorobiphenyl	43%		10-138%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS LabLink@996135 15:38 10-Apr-2018

Report of Analysis

Client Sample ID:	PCMW-18D		
Lab Sample ID:	JC62881-6	**Date Sampled:**	03/23/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
Method:	SW846 8082A SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EF181254.D	1	03/29/18 08:49	HB	03/27/18 18:10	OP10884	GEF6203
Run #2							

	Initial Volume	Final Volume
Run #1	295 ml	2.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	0.34	0.13	ug/l	
11104-28-2	Aroclor 1221	ND	0.34	0.28	ug/l	
11141-16-5	Aroclor 1232	ND	0.34	0.18	ug/l	
53469-21-9	Aroclor 1242	ND	0.34	0.16	ug/l	
12672-29-6	Aroclor 1248	ND	0.34	0.085	ug/l	
11097-69-1	Aroclor 1254	ND	0.34	0.28	ug/l	
11096-82-5	Aroclor 1260	ND	0.34	0.10	ug/l	
11100-14-4	Aroclor 1268	ND	0.34	0.12	ug/l	
37324-23-5	Aroclor 1262	ND	0.34	0.13	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	73%		11-166%
877-09-8	Tetrachloro-m-xylene	86%		11-166%
2051-24-3	Decachlorobiphenyl	47%		10-150%
2051-24-3	Decachlorobiphenyl	47%		10-150%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCMW-18D		
Lab Sample ID:	JC62881-6	**Date Sampled:**	03/23/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
		Percent Solids:	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum [a]	9320	1000	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Antimony [a]	< 30	30	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Arsenic [a]	< 15	15	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Barium [a]	< 1000	1000	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Beryllium [a]	< 5.0	5.0	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Cadmium [a]	< 15	15	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Calcium [a]	48300	25000	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Chromium [a]	< 50	50	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Cobalt [a]	< 250	250	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Copper [a]	< 50	50	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Iron [a]	245000	500	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Lead [a]	< 15	15	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Magnesium [a]	< 25000	25000	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Manganese [a]	611	75	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Mercury [a]	< 0.60	0.60	ug/l	1	03/26/18	03/26/18	MS	SW846 7470A [1]	SW846 7470A [3]
Nickel [a]	< 50	50	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Potassium [a]	< 50000	50000	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Selenium [a]	< 50	50	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Silver [a]	< 50	50	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Sodium [a]	58500	50000	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Thallium [a]	< 10	10	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Vanadium [a]	< 250	250	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]
Zinc [a]	< 100	100	ug/l	1	03/29/18	03/31/18		SW846 6010C [2]	SW846 3010A [4]

(1) Instrument QC Batch: MA44075
(2) Instrument QC Batch: MA44114
(3) Prep QC Batch: MP6361
(4) Prep QC Batch: MP6399

(a) Elevated sample detection limit due to difficult sample matrix.

RL = Reporting Limit

Report of Analysis

Client Sample ID:	PCMW-18D		
Lab Sample ID:	JC62881-6	**Date Sampled:**	03/23/18
Matrix:	AQ - Ground Water	**Date Received:**	03/23/18
		Percent Solids:	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

General Chemistry

Analyte	Result		RL	Units	DF	Analyzed	By	Method
Cyanide	0.012	J	0.010	mg/l	1	03/30/18 12:05	TG	EPA 335.4/LACHAT

RL = Reporting Limit

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Report of Analysis

Client Sample ID:	TRIP BLANK		
Lab Sample ID:	JC62881-7	**Date Sampled:**	03/23/18
Matrix:	AQ - Trip Blank Water	**Date Received:**	03/23/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2B159335.D	1	03/30/18 14:38	SS	n/a	n/a	V2B7094
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	5.0	ug/l	
71-43-2	Benzene	ND	0.50	0.17	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.38	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.22	ug/l	
75-25-2	Bromoform [a]	ND	1.0	0.42	ug/l	
74-83-9	Bromomethane	ND	2.0	1.4	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	4.8	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.50	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.34	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.24	ug/l	
75-00-3	Chloroethane	ND	1.0	0.59	ug/l	
67-66-3	Chloroform	ND	1.0	0.29	ug/l	
74-87-3	Chloromethane	ND	1.0	0.53	ug/l	
110-82-7	Cyclohexane	ND	5.0	0.63	ug/l	
96-12-8	1,2-Dibromo-3-chloropropan [a]	ND	2.0	0.69	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.16	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.21	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.50	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.50	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.50	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.9	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.21	ug/l	
107-06-2	1,2-Dichloroethane [b]	ND	1.0	0.20	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.47	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.50	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.40	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.24	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.25	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.22	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.22	ug/l	
76-13-1	Freon 113	ND	5.0	1.2	ug/l	
591-78-6	2-Hexanone	ND	5.0	3.3	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TRIP BLANK		
Lab Sample ID:	JC62881-7	**Date Sampled:**	03/23/18
Matrix:	AQ - Trip Blank Water	**Date Received:**	03/23/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	1.0	0.25	ug/l	
79-20-9	Methyl Acetate	ND	5.0	3.1	ug/l	
108-87-2	Methylcyclohexane	ND	5.0	1.8	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.25	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	3.0	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.24	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.17	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.50	ug/l	
108-88-3	Toluene	ND	1.0	0.25	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.50	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.24	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.27	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.60	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.62	ug/l	
	m,p-Xylene	ND	1.0	0.43	ug/l	
95-47-6	o-Xylene	ND	1.0	0.22	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.22	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	98%		80-120%
17060-07-0	1,2-Dichloroethane-D4	123%		81-124%
2037-26-5	Toluene-D8	93%		80-120%
460-00-4	4-Bromofluorobenzene	92%		80-120%

(a) Associated CCV outside of control limits high, sample was ND. This compound in BS is outside in house QC limits bias high.
(b) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

ARCADIS Design & Consultancy for natural and built assets

National Grid
Philly Coke

DATA REVIEW

Philadelphia, Pennsylvania

Volatile Organic Compound (VOC), Semivolatile Organic Compound (SVOC), Pesticides, Polychlorinated Biphenyls (PCBs), Metals, and Cyanide Analyses

SDGs #: JC66384, JC66927, JC67003, JC67110, J136777-1

Analyses Performed By:
SGS Laboratories
Dayton, New Jersey

TestAmeirca
Amherst, New York

Report #: 30058R
Review Level: Tier II
Project: B0036790.0001.00003

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Groups (SDGs) # JC66384, JC66927, JC67003, JC67110, J136777-1 for samples collected in association with the National Grid Philly Coke site in Philadelphia, Pennsylvania. The review was conducted as a Tier II evaluation and included review of data package completeness. Only analytical data as reported by the laboratory were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets and chain of custody. Analyses were performed for the following samples:

SDG	Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis				
						VOCs	SVOC	Pest./ PCB	Metals	CN-
JC66384	MW-103(6-7)	JC66384-1	Soil	5/16/2018		X	X	X	X	X
	MW-103(15-16)	JC66384-2	Soil	5/16/2018		X	X	X	X	X
	TRIP BLANK	JC66384-3	Water	5/16/2018		X	X	X	X	X
	MW-102(12-13)	JC66384-4	Soil	5/16/2018		X	X	X	X	X
JC66927	MW-106	JC66927-1	Water	5/29/2018		X	X	X	X	X
	PCMW-19S	JC66927-2	Water	5/29/2018					X	
	TRIP BLANK	JC66927-3	Water	5/29/2018		X				
JC67003	MW-104	JC67003-1	Water	5/30/2018		X	X	X	X	X
	MW-101	JC67003-2	Water	5/30/2018		X	X	X	X	X
	MW-105	JC67003-3	Water	5/30/2018		X	X	X	X	X
	PCMW-06	JC67003-4	Water	5/30/2018					X	
	PCMW-05	JC67003-5	Water	5/30/2018					X	
	PCMW-04	JC67003-6	Water	5/30/2018					X	
	MW-107	JC67003-7	Water	5/30/2018		X	X	X	X	X
	TRIP BLANK	JC67003-8	Water	5/30/2018		X				
JC67110	PCMW-08S	JC67110-1	Water	5/31/2018					X	
	PCMW-09S	JC67110-2	Water	5/31/2018					X	
	MW-102	JC67110-3	Water	5/31/2018		X	X	X	X	X
	MW-103	JC67110-4	Water	5/31/2018		X	X	X	X	X
	DUP-05312018	JC67110-5	Water	5/31/2018	MW-102	X	X	X	X	X
480-136777-1	PCMW-16D	480-136777-1	Water	5/30/2018						X
	DUP-05302018	480-136777-2	Water	5/30/2018						X

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X	X		
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of quality assurance (QA) or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

Note: The Trip Blank for SDG JC67110 was indicated on the COC but was not received at the laboratory.

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Methods 8260C, 8270D, 8081B and 8082A. Validation was performed following the procedures specified in *USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review* (October 1999).

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers
  - U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
  - B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- Quantitation (Q) Qualifiers
  - E The compound was quantitated above the calibration range.
  - D Concentration is based on a diluted sample analysis.
- Validation Qualifiers
  - J The compound was positively identified; however, the associated numerical value is an estimated concentration only.
  - UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.
  - JN The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.
  - UB Compound considered non-detect at the listed value due to associated blank contamination.
  - N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.
  - R The sample results are rejected as unusable. The compound may or may not be present in the sample.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is

that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
VOCs by 8260C	Water	14 days from collection to analysis (preserved) 7 days from collection to analysis (non-preserved)	Cool to <6 °C; preserved to a pH of less than 2 s.u.

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e. laboratory method blanks, trip blanks, and equipment rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Trip blanks measure sample storage contamination. Rinse blanks also measure contamination of samples during field operations.

If an analyte is detected in a blank at a concentration greater than the method detection limit (MDL), a blank action level (BAL) is calculated as five times the concentration detected in the blank. The BAL for common laboratory contaminants (e.g. acetone, methylene chloride) is calculated at ten times the blank concentration. Detected analytes in the associated samples are compared to the BAL. If the result is greater than the BAL, no qualification is required, and any laboratory-assigned flags are removed.

Target compounds were not detected above the MDL in the associated blanks; therefore, detected sample results are not associated with blank contamination.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. VOC analysis requires that all surrogates associated with the analysis exhibit recoveries within the laboratory-established acceptance limits.

All samples exhibited surrogate recoveries within the control limits.

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The spiked compounds used in the MS/MSD analysis must exhibit recoveries within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS and MSD results must be within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSDs performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD spiking concentration by a factor of four or greater. Sample results associated with MS/MSD exceedances where the parent samples are not site-specific are not qualified.

Sample locations associated with the MS/MSD exhibiting recoveries outside of the control limits are presented in the following table.

Sample Locations	Compound	MS Recovery	MSD Recovery
SDG JC67003 MW-101	Dichlorodifluoromethane	>UL	--
SDG JC67110 MW-103	Bromoform	>UL	AC
	1,2-Dibromo-3-chloropropane	>UL	AC
	1,1,2,2-Tetrachloroethane	>UL	AC

Note:

AC Acceptable

The criteria used to evaluate the MS/MSD recoveries are presented in the following table. In the case of an MS/MSD deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> the upper control limit (UL)	Non-detect	No Action
	Detect	J
< the lower control limit (LL) but > 10%	Non-detect	UJ
	Detect	J
< 10%	Non-detect	R
	Detect	J
Parent sample concentration > four times the MS/MSD spiking solution concentration.	Detect	No Action
	Non-detect	

Sample locations associated with MS/MSD recoveries exhibiting an RPD greater than of the control limit presented in the following table.

Sample Locations	Compound
SDG JC67110 MW-103	Bromomethane

The criteria used to evaluate the RPD between the MS/MSD recoveries are presented in the following table. In the case of an RPD deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> UL	Non-detect	UJ
	Detect	J

5. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the accuracy of the analytical method independent of matrix interferences. The spiked compounds used in the LCS analysis must exhibit recoveries within the laboratory-established acceptance limits.

Sample locations associated with LCS analysis exhibiting recoveries outside of the control limits presented in the following table.

Sample Locations	Compound	LCS Recovery
SDG JC67003 MW-101 MW-105 MW-107 TRIP BLANK	Dichlorodifluoromethane	>UL

The criteria used to evaluate the LCS/LCSD recoveries are presented in the following table. In the case of an LCS/LCSD deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> the upper control limit (UL)	Non-detect	No Action
	Detect	J
< the lower control limit (LL) but > 10%	Non-detect	UJ
	Detect	J
< 10%	Non-detect	R
	Detect	J

6. Field Duplicate Sample Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
MW-102/DUP-05312018	All compounds	U	U	AC

Notes:

AC Acceptable

The calculated RPDs between the parent sample and field duplicate were acceptable.

7. System Performance and Overall Assessment

The laboratory narrative states that several compounds exhibited continuing calibration verification percent differences (%D) greater than the control limit of 20%.

The criteria used to evaluate the initial and continuing calibration are presented in the following table. In the case of a calibration deviation, the sample results are qualified as presented in the following table.

Initial/Continuing	Criteria	Sample Result	Qualification
Continuing Calibration	%D >20% (increase in sensitivity)	Non-detect	No Action
		Detect	J
	%D >20% (decrease in sensitivity)	Non-detect	UJ
		Detect	J

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: SW-846 8260B	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks	X				X
C. Trip blanks		X		X	
Laboratory Control Sample (LCS)		X	X		
Laboratory Control Sample Duplicate(LCSD)	X				X
LCS/LCSD Precision (RPD)	X				X
Matrix Spike (MS)		X	X		
Matrix Spike Duplicate(MSD)		X		X	
MS/MSD Precision (RPD)		X	X		
Field/Lab Duplicate (RPD)		X		X	
Surrogate Spike Recoveries		X		X	
Dilution Factor		X		X	
Moisture Content	X				X

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

SEMI-VOLATILE ORGANIC COMPOUNDS (SVOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SVOCs by 8270D	Water	28 days from collection to extraction and 28 days from extraction to analysis	Cool to <6 °C; preserved with Sodium Bisulfate (NaHSO4) to a pH of less than 4 s.u.

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

If an analyte is detected in a blank at a concentration greater than the method detection limit (MDL), a blank action level (BAL) is calculated as five times the concentration detected in the blank. The BAL for common laboratory contaminants (e.g. acetone, methylene chloride) is calculated at ten times the blank concentration. Detected analytes in the associated samples are compared to the BAL. If the result is greater than the BAL, no qualification is required, and any laboratory-assigned flags are removed.

Target compounds were not detected above the MDL in the associated blanks; therefore, detected sample results are not associated with blank contamination.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. SVOC analysis requires that two of the three SVOC surrogate compounds within each fraction exhibit recoveries within the laboratory-established acceptance limits.

Sample locations associated with surrogates exhibiting recoveries outside of the control limits presented in the following table.

Sample Locations	Surrogate	Recovery
MW-102(12-13)	Phenol-d5	AC
	2-Fluorophenol	<LL but >10%
	2,4,6-Tribromophenol	< 10%
	Nitrobenzene-d5	AC
	2-Fluorobiphenyl	AC
	Terphenyl-d14	AC

Notes:

AC Acceptable

The criteria used to evaluate the surrogate recoveries are presented in the following table. In the case of a surrogate deviation, the sample results associated with the deviant fraction are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> UL	Non-detect	No Action
	Detect	J
< LL but > 10%	Non-detect	UJ
	Detect	J
< 10%	Non-detect	R
	Detect	J

Note:

The sample was reanalized and the surrogate recoveries were confirmed. The associated non-detect sample results were qualified as rejected and detected results were qualified as estimated.

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

The MS/MSD exhibited acceptable recoveries and RPD between the MS/MSD recoveries.

5. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

Sample locations associated with LCS analysis exhibiting recoveries outside of the control limits presented in the following table.

Sample Locations	Compound	LCS Recovery
SDG JC66384 MW-103(6-7) MW-103(15-16) MW-102(12-13)	4-Chloroaniline	<LL but >10%

The criteria used to evaluate the LCS/LCSD recoveries are presented in the following table. In the case of an LCS/LCSD deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> the upper control limit (UL)	Non-detect	No Action
	Detect	J
< the lower control limit (LL) but > 10%	Non-detect	UJ
	Detect	J
< 10%	Non-detect	R
	Detect	J

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
MW-102/DUP-05312018	All compounds	U	U	AC

Notes:

AC Acceptable

The calculated RPDs between the parent sample and field duplicate were acceptable.

7. System Performance and Overall Assessment

The laboratory narrative states that several compounds exhibited continuing calibration verification percent differences (%D) greater than the control limit of 20%.

The criteria used to evaluate the initial and continuing calibration are presented in the following table. In the case of a calibration deviation, the sample results are qualified as presented in the following table.

Initial/Continuing	Criteria	Sample Result	Qualification
Continuing Calibration	%D >20% (increase in sensitivity)	Non-detect	No Action
		Detect	J
	%D >20% (decrease in sensitivity)	Non-detect	UJ
		Detect	J

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR SVOCs

SVOCs: 8270D	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks	X				X
Laboratory Control Sample (LCS) %R		X	X		
Laboratory Control Sample Duplicate(LCSD) %R	X				X
LCS/LCSD Precision (RPD)	X				X
Matrix Spike (MS) %R		X		X	
Matrix Spike Duplicate(MSD) %R		X		X	
MS/MSD Precision (RPD)		X		X	
Field/Lab Duplicate (RPD)		X		X	
Surrogate Spike Recoveries		X	X		
Dilution Factor		X		X	
Moisture Content	X				X

Notes:

%R Percent recovery

RPD Relative percent difference

PESTICIDES ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8081B	Water	7 days from collection to extraction and 40 days from extraction to analysis	Cool to < 6 °C

All samples were extracted and analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore, detected sample results were not associated with blank contamination.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. Pesticide analysis requires that at least one of the two pesticide surrogate compounds exhibit recoveries within the laboratory-established acceptance limits.

All samples exhibited surrogate recoveries within the control limits.

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The spiked compounds used in the MS/MSD analysis must exhibit recoveries within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS and MSD results must be within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSDs performed on samples where the compound concentration detected in the parent sample exceeds the MS/MSD spiking concentration by a factor of four or greater. Sample results associated with MS/MSD exceedances where the parent samples are not site-specific are not qualified.

The MS/MSD exhibited acceptable recoveries and RPD between the MS/MSD recoveries.

5. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) Analysis

The LCS/LCSD analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The spiked compounds used in the LCS/LCSD analysis must exhibit

recoveries within the laboratory-established acceptance limits. The relative percent difference (RPD) between the LCS and LCSD results must be within the laboratory-established acceptance limits.

Sample locations associated with LCS/LCSD recoveries exhibiting an RPD greater than of the control limit presented in the following table.

Sample Locations	Compound
SDG JC66384	Aldrin
MW-103(6-7)	alpha-BHC
MW-103(15-16)	gamma-BHC (Lindane)
MW-102(12-13)	Heptachlor

The criteria used to evaluate the RPD between the LCS/LCSD recoveries are presented in the following table. In the case of an RPD deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> UL	Non-detect	UJ
	Detect	J

6. Field Duplicate Sample Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
MW-102/DUP-05312018	All compounds	U	U	AC

Notes:

AC Acceptable

The calculated RPDs between the parent sample and field duplicate were acceptable.

7. Compound Identification

The retention times of all quantitated peaks must fall within the calculated retention time windows for both the primary and confirmation columns. When dual column analysis is performed the relative percent difference (%RPD) of detected sample results must be less than 40%.

The dual column analysis exhibited an acceptable %RPD between columns.

9. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR PESTICIDES

Pesticides: SW-846 8081B	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Gas Chromatography (GC/ECD)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks	X				X
Laboratory Control Sample (LCS)		X		X	
Laboratory Control Sample Duplicate (LCSD)		X		X	
LCS/LCSD Precision (RPD)		X	X		
Matrix Spike (MS)		X		X	
Matrix Spike Duplicate (MSD)		X		X	
MS/MSD Precision (RPD)		X		X	
Laboratory Duplicate Sample RPD	X				X
Field Duplicate Sample RPD		X		X	
Surrogate Spike Recoveries		X		X	
Column %D $\leq$ 40% (If dual column is performed for reporting - not confirmation)		X		X	
Dilution Factor		X		X	
Compound identification and quantitation		X		X	

Notes:
%R = percent recovery
RPD = relative percent difference

POLYCHLORINATED BIPHENYLS (PCBs) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8082A	Water	7 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C

Note:
The holding time above is a recommendation. PCBs are very stable in a variety of matrices, and holding times, under the conditions listed above, may be as long as a year per SW-846 8082A (February 2007).

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore, detected sample results were not associated with blank contamination.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. PCB analysis requires that the two PCB surrogate compounds exhibit recoveries within the laboratory-established acceptance limits.

All surrogate recoveries reported from the primary column were within control limits.

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

The MS/MSD exhibited acceptable recoveries and RPD between the MS/MSD recoveries.

5. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

All compounds associated with the LCS analysis exhibited recoveries within the control limits.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
MW-102/DUP-05312018	All compounds	U	U	AC

Notes:

AC Acceptable

The calculated RPDs between the parent sample and field duplicate were acceptable.

7. Compound Identification

The retention times of all quantitated peaks must fall within the calculated retention time windows for both the primary and confirmation columns. When dual column analysis is performed the relative percent difference (%RPD) of detected sample results must be less than 40%.

The dual column analysis exhibited an acceptable %RPD between columns.

8. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR PCBs

PCBs: SW-846 8082A	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY (GC/ECD)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks	X				X
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate (LCSD) %R	X				X
LCS/LCSD Precision (RPD)	X				X
Matrix Spike (MS) %R		X		X	
Matrix Spike Duplicate (MSD) %R		X		X	
MS/MSD Precision (RPD)		X		X	
Field/Lab Duplicate (RPD)		X		X	
Surrogate Spike Recoveries		X		X	
Column (RPD) (If dual column is performed-not confirmation purposes only)		X		X	
Dilution Factor		X		X	
Moisture Content	X				X

Notes:

%R Percent recovery

RPD Relative percent difference

INORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) Methods 6010C, 7470A, and 335.4. Data were reviewed in accordance with USEPA National Functional Guidelines of October 2002.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and that it was already subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with the USEPA National Functional Guidelines:

- Concentration (C) Qualifiers
  - U The analyte was analyzed for but not detected. The associated value is the analyte instrument detection limit.
  - J The reported value was obtained from a reading less than the reporting limit (RL), but greater than or equal to the method detection limit (MDL).
- Quantitation (Q) Qualifiers
  - E The reported value is estimated due to the presence of interference.
  - N Spiked sample recovery is not within control limits.
  - * Duplicate analysis is not within control limits.
- Validation Qualifiers
  - J The analyte was positively identified; however, the associated numerical value is an estimated concentration only.
  - UJ The analyte was not detected above the reporting limit. However, the reported limit is approximate and may or may not represent the actual limit of detection.
  - UB Analyte considered non-detect at the listed value due to associated blank contamination.
  - R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

METALS ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW846 6010C	Water	180 days from collection to analysis	Preserved to a pH of less than 2.
SW-846 7470A	Water	28 days from collection to analysis	Cool to <6 °C; preserved to a pH of less than 2.

All samples were analyzed within the specified holding times.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Analytes were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis /Laboratory Duplicate Analysis

MS/MSD and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

3.1 MS/MSD Analysis

All metal analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the analyte's concentration detected in the parent sample exceeds the MS concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

The MS/MSD exhibited acceptable recoveries and RPD between the MS/MSD recoveries.

3.2 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the RL. A control limit of 20% for water matrices and 35% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of one times the RL is applied for water matrices and two times the RL for soil matrices.

MS/MSD analysis was performed in replacement of the laboratory duplicate analysis. The MS/MSD recoveries exhibited acceptable RPD.

4. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Analyte	Sample Result	Duplicate Result	RPD
MW-102/DUP-05312018	Aluminum	661	275	AC
	Arsenic	6.7	6.6	1.5%
	Barium	352	350	0.6%
	Calcium	103000	103000	0.0%
	Iron	3560	2900	20.4%
	Lead	4.8	3.0 U	AC
	Magnesium	74200	74900	0.9%
	Manganese	383	370	3.5%
	Potassium	14900	15000	0.7%
	Sodium	47600	47800	0.4%

AC = Acceptable

The calculated RPDs between the parent sample and field duplicate were acceptable.

5. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The analytes associated with the LCS analysis must exhibit a percent recovery between the control limits of 80% and 120%.

The LCS analysis exhibited recoveries within the control limits.

6. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR METAL

METALS; 6010C/7470A	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Inductively Coupled Plasma-Atomic Emission Spectrometry (ICP-AES)					
Tier II Validation					
Holding Times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Instrument Blanks		X		X	
B. Method Blanks		X		X	
C. Equipment/Field Blanks		X		X	
Laboratory Control Sample (LCS)		X		X	
Matrix Spike (MS) %R		X		X	
Matrix Spike Duplicate (MSD) %R		X		X	
MS/MSD Precision (RPD)		X		X	
Field/Lab Duplicate (RPD)		X		X	
Total vs. Dissolved	X				X
Reporting Limit Verification		X		X	

Notes:

%R Percent recovery

RPD Relative percent difference

GENERAL CHEMISTRY ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
Cyanide by EPA 335.4	Water	14 days from collection to analysis	Cool to <6 °C; preserved to a pH of greater than 12.

All samples were analyzed within the specified holding times.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

The correct number and type of standards were analyzed. The correlation coefficient of the initial calibration was greater than 0.995 and all initial calibration verification standard recoveries were within control limits.

All calibration standard recoveries were within the control limit.

4. Matrix Spike (MS)/Laboratory Duplicate Analysis

MS and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

4.1 MS Analysis

All analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The MS recovery control limits do not apply for MS performed on sample locations where the analyte's concentration detected in the parent sample exceeds the MS concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

All analytes associated with MS recoveries were within control limits with the exception of the following analytes present in the table below.

Sample Location	Analytes	MS Recovery
MW-102	Cyanide	69.6%
PCMW-16D	Cyanide	69%

The criteria used to evaluate MS recoveries are presented in the following table. In the case of an MS deviation, the sample results are qualified. The qualifications are applied to all associated sample results in this SDG.

Control limit	Sample Result	Qualification
MS percent recovery 30% to 75%	Non-detect	UJ
	Detect	J
MS percent recovery <30%	Non-detect	R
	Detect	J
MS percent recovery >125%	Non-detect	No Action
	Detect	J

4.2 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the RL. A control limit of 20% for water matrices and 35% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of one times the RL is applied for water matrices and two times the RL for soil matrices.

All analytes associated with laboratory duplicate RPD were within the control limit.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
MW-102/DUP-05312018	All compounds	U	U	AC
PCMW-16D/DUP-05302018	Cyanide	9.1	18.0	65.7%

Notes:

AC Acceptable

Cyanide associated with sample locations PCMW-16D and DUP-05302018exhibited a field duplicate RPD greater than the control limit. The associated sample results from sample locations for the listed analyte were qualified as estimated.

6. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The analytes associated with the LCS analysis must exhibit a percent recovery between the control limits of 80% and 120%.

The LCS analysis exhibited recoveries within the control limits.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR GENERAL CHEMISTRY

General Chemistry: 335.4	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Miscellaneous Instrumentation					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks		X		X	
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R		X		X	
LCS/LCSD Precision (RPD)		X		X	
Matrix Spike (MS) %R		X	X		
Matrix Spike Duplicate(MSD) %R	X				X
MS/MSD Precision (RPD)	X				X
Field/Lab Duplicate (RPD)		X	X		
Dilution Factor		X		X	
Moisture Content	X				X

Notes:

%RSD – relative standard deviation
%R - percent recovery
RPD - relative percent difference,

%D – difference

VALIDATION PERFORMED BY: Andrew Korycinski

SIGNATURE:

DATE: July 2, 2018

PEER REVIEW: Joseph C. Houser

DATE: July 5, 2018

CHAIN OF CUSTODY AND CORRECTED SAMPLE ANALYSIS DATA SHEETS

SGS

SLL
STB

CHAIN OF CUSTODY

SGS North America Inc. - Dayton
2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200 FAX 732-329-3499
www.sgs.com/ehsusa

PAGE ___ OF ___

FED-EX Tracking #:
Bottle Order Control #: DK05818-157
SGS Quote #:
SGS Job #: JC66384

Client / Reporting Information

Company Name: ARCADIS
Street Address: 824 N. MARKET ST Ste 820
City / State / Zip: WILMINGTON DE 19801
Project Contact / E-mail: CAREY HEALY
Phone # / Fax #:
Sampler(s) Name(s) / Phone #: CHRIS ORTOLANO

Project Information

Project Name: NATIONAL GRID - PHILLY COKE
Street: RICHMOND & LEXINGTON
City / State: PHILA PA
Project #:
Client Purchase Order #:
Project Manager: JOHN BRUSSELS

Billing Information (if different from Report to)

Company Name:
Street Address:
City / State / Zip:
Attention:

Requested Analysis (see TEST CODE sheet)

Lab Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	Number of preserved bottles: HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	VOC	SVOC	METALS	CN	PESTICIDES	PCB	LAB USE ONLY
1	MW-103 (6-7)		5/16/18	0900	CO	SO	5					2	2	1		X	X	X	X	X	X	C22
2	MW-103 (15-16)		5/16/18	0920	CO	SO	5					2	2	1		X	X	X	X	X	X	P93
3	TRIP BLANK		-	-	-	H2O	2	2								X						L403
4	MW-102 (12-13)		5/16/18	1215	CO	SO	5					2	2	1		X	X	X	X	X	X	49119
																						V486

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL - Sludge
SED-Sediment
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe
FB-Field Blank
EB-Equipment Blank
RB- Rinse Blank
TB-Trip Blank

Turnaround Time (Business days)

- [X] Std. 10 Business Days
- [ ] 5 Day RUSH
- [ ] 3 Day RUSH
- [ ] 2 Day RUSH
- [ ] 1 Day RUSH
- [ ] other _____

Emergency & Rush T/A data available via LabLink

Approved by (SGS Project Manager)/Date:

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULL T1 (Level 3+4)
- [ ] NJ Reduced
- [ ] Commercial "C"
- [ ] NJ Data of Known Quality Protocol Reporting
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format
- [ ] Other

Commercial "A" = Results Only; Commercial "B" = Results + QC Summary
NJ Reduced = Results + QC Summary + Partial Raw data

Comments / Special Instructions

INITIAL ASESSMENT 7d/18
LABEL VERIFICATION

Sample inventory is verified upon receipt in the Laboratory

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by Sampler	Date Time	Received By	Relinquished By	Date Time	Received By
1		5/17/18 0800	1	2	5/17/18 1300	2
3		5/17/18 1650	3	4		4
5			5	Custody Seal #	Intact / Not intact	Preserved where applicable / On Ice / Cooler Temp 3.0 C

Form:SM088-03C (revised 2/12/18)

http://www.sgs.com/en/terms-and-conditions.

SGS LabLink@1003731 16:45 15-Jun-2018

Report of Analysis

Client Sample ID:	MW-103(6-7)		
Lab Sample ID:	JC66384-1	**Date Sampled:**	05/16/18
Matrix:	SO - Soil	**Date Received:**	05/17/18
Method:	SW846 8260C	**Percent Solids:**	80.1
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	C222006.D	1	05/19/18 15:24	RS	n/a	n/a	VC8227
Run #2							

	Initial Weight
Run #1	6.1 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone [a]	38.0	10	6.6	ug/kg	J
71-43-2	Benzene	ND	0.51	0.11	ug/kg	
74-97-5	Bromochloromethane	ND	5.1	0.45	ug/kg	
75-27-4	Bromodichloromethane	ND	2.0	0.25	ug/kg	
75-25-2	Bromoform	ND	5.1	0.32	ug/kg	
74-83-9	Bromomethane	ND	5.1	0.72	ug/kg	
78-93-3	2-Butanone (MEK)	ND	10	5.4	ug/kg	
75-15-0	Carbon disulfide	ND	2.0	0.62	ug/kg	
56-23-5	Carbon tetrachloride	ND	2.0	0.66	ug/kg	
108-90-7	Chlorobenzene	ND	2.0	0.29	ug/kg	
75-00-3	Chloroethane	ND	5.1	0.92	ug/kg	
67-66-3	Chloroform	ND	2.0	0.33	ug/kg	
74-87-3	Chloromethane	ND	5.1	1.0	ug/kg	
110-82-7	Cyclohexane	ND	2.0	0.35	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.69	ug/kg	
124-48-1	Dibromochloromethane	ND	2.0	0.39	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.0	0.25	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.53	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.29	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.49	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	5.1	0.62	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.0	0.27	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.0	0.18	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.0	0.72	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.41	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.60	ug/kg	
78-87-5	1,2-Dichloropropane	ND	2.0	0.41	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	2.0	0.39	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2.0	0.24	ug/kg	
100-41-4	Ethylbenzene	ND	1.0	0.30	ug/kg	
76-13-1	Freon 113	ND	5.1	0.69	ug/kg	
591-78-6	2-Hexanone	ND	5.1	2.9	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW-103(6-7)		
Lab Sample ID:	JC66384-1	**Date Sampled:**	05/16/18
Matrix:	SO - Soil	**Date Received:**	05/17/18
Method:	SW846 8260C	**Percent Solids:**	80.1
Project:	National Grid, Philly Coke, Philadelphia PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	2.0	0.25	ug/kg	
79-20-9	Methyl Acetate [b]	ND	5.1	2.6	ug/kg	
108-87-2	Methylcyclohexane	ND	2.0	0.56	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.44	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.1	1.8	ug/kg	
75-09-2	Methylene chloride	3.5	5.1	2.6	ug/kg	J
100-42-5	Styrene	ND	2.0	0.51	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.0	0.26	ug/kg	
127-18-4	Tetrachloroethene	ND	2.0	0.65	ug/kg	
108-88-3	Toluene	ND	1.0	0.56	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	5.1	1.0	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	5.1	1.0	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	2.0	0.59	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2.0	0.43	ug/kg	
79-01-6	Trichloroethene	ND	1.0	0.56	ug/kg	
75-69-4	Trichlorofluoromethane	ND	5.1	0.49	ug/kg	
75-01-4	Vinyl chloride	ND	2.0	0.78	ug/kg	
	m,p-Xylene	ND	1.0	0.56	ug/kg	
95-47-6	o-Xylene	ND	1.0	0.26	ug/kg	
1330-20-7	Xylene (total)	ND	1.0	0.26	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	111%		75-127%
17060-07-0	1,2-Dichloroethane-D4	106%		75-130%
2037-26-5	Toluene-D8	105%		80-120%
460-00-4	4-Bromofluorobenzene	104%		79-127%

(a) Associated CCV outside of control limits low.
(b) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS LabLink@1003731 16:45 15-Jun-2018

Report of Analysis

Client Sample ID:	MW-103(6-7)		
Lab Sample ID:	JC66384-1	**Date Sampled:**	05/16/18
Matrix:	SO - Soil	**Date Received:**	05/17/18
Method:	SW846 8270D SW846 3546	**Percent Solids:**	80.1
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2M104472.D	1	05/27/18 02:45	GS	05/23/18 16:50	OP12196	E2M4641
Run #2							

	Initial Weight	Final Volume
Run #1	30.8 g	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	81	20	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	200	25	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	200	35	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	200	72	ug/kg	
51-28-5	2,4-Dinitrophenol [a]	ND	200	150	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	200	43	ug/kg	
95-48-7	2-Methylphenol	ND	81	26	ug/kg	
	3&4-Methylphenol	ND	81	33	ug/kg	
88-75-5	2-Nitrophenol	ND	200	27	ug/kg	
100-02-7	4-Nitrophenol [a]	ND	410	110	ug/kg	
87-86-5	Pentachlorophenol	ND	160	38	ug/kg	
108-95-2	Phenol	ND	81	21	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	200	27	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	200	30	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	200	24	ug/kg	
83-32-9	Acenaphthene	291	41	14	ug/kg	
208-96-8	Acenaphthylene	94.5	41	21	ug/kg	
98-86-2	Acetophenone	ND	200	8.7	ug/kg	
120-12-7	Anthracene	708	41	25	ug/kg	
1912-24-9	Atrazine	ND	81	17	ug/kg	
56-55-3	Benzo(a)anthracene	1340	41	11	ug/kg	
50-32-8	Benzo(a)pyrene	1210	41	18	ug/kg	
205-99-2	Benzo(b)fluoranthene	1450	41	18	ug/kg	
191-24-2	Benzo(g,h,i)perylene	776	41	20	ug/kg	
207-08-9	Benzo(k)fluoranthene	482	41	19	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	81	16	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	81	9.9	ug/kg	
92-52-4	1,1'-Biphenyl	22.3	81	5.6	ug/kg	J
100-52-7	Benzaldehyde	24.8	200	10	ug/kg	J
91-58-7	2-Chloronaphthalene	ND	81	9.6	ug/kg	
106-47-8	4-Chloroaniline	ND	200	15	ug/kg	UJ
86-74-8	Carbazole	236	81	5.9	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: MW-103(6-7)
Lab Sample ID: JC66384-1
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia PA

Date Sampled: 05/16/18
Date Received: 05/17/18
Percent Solids: 80.1

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	81	16	ug/kg	
218-01-9	Chrysene	1380	41	13	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	81	8.7	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	81	17	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	81	15	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	81	13	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	41	13	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	41	20	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	81	34	ug/kg	
123-91-1	1,4-Dioxane	ND	41	27	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	191	41	18	ug/kg	
132-64-9	Dibenzofuran	179	81	16	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	81	6.6	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	81	10	ug/kg	
84-66-2	Diethyl phthalate	ND	81	8.6	ug/kg	
131-11-3	Dimethyl phthalate	ND	81	7.2	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	81	9.5	ug/kg	
206-44-0	Fluoranthene	2930	41	18	ug/kg	
86-73-7	Fluorene	342	41	19	ug/kg	
118-74-1	Hexachlorobenzene	ND	81	10	ug/kg	
87-68-3	Hexachlorobutadiene	ND	41	16	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	410	16	ug/kg	
67-72-1	Hexachloroethane	ND	200	20	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	836	41	19	ug/kg	
78-59-1	Isophorone	ND	81	8.7	ug/kg	
91-57-6	2-Methylnaphthalene	60.4	41	9.2	ug/kg	
88-74-4	2-Nitroaniline	ND	200	9.6	ug/kg	
99-09-2	3-Nitroaniline	ND	200	10	ug/kg	
100-01-6	4-Nitroaniline	ND	200	10	ug/kg	
91-20-3	Naphthalene	189	41	11	ug/kg	
98-95-3	Nitrobenzene	ND	81	16	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	81	12	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	200	15	ug/kg	
85-01-8	Phenanthrene	2330	41	14	ug/kg	
129-00-0	Pyrene	2720	41	13	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	200	10	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	67%		23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW-103(6-7)		
Lab Sample ID:	JC66384-1	**Date Sampled:**	05/16/18
Matrix:	SO - Soil	**Date Received:**	05/17/18
Method:	SW846 8270D SW846 3546	**Percent Solids:**	80.1
Project:	National Grid, Philly Coke, Philadelphia PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	68%		27-114%
118-79-6	2,4,6-Tribromophenol	71%		19-152%
4165-60-0	Nitrobenzene-d5	73%		26-134%
321-60-8	2-Fluorobiphenyl	72%		39-124%
1718-51-0	Terphenyl-d14	81%		36-134%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS LabLink@1003731 16:45 15-Jun-2018

Report of Analysis

Client Sample ID:	MW-103(6-7)		
Lab Sample ID:	JC66384-1	**Date Sampled:**	05/16/18
Matrix:	SO - Soil	**Date Received:**	05/17/18
Method:	SW846 8081B SW846 3546	**Percent Solids:**	80.1
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6G56749.D	1	05/30/18 12:39	CP	05/25/18 07:20	OP12247	G6G1694
Run #2							

	Initial Weight	Final Volume
Run #1	15.2 g	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	0.82	0.68	ug/kg	UJ
319-84-6	alpha-BHC	ND	0.82	0.67	ug/kg	UJ
319-85-7	beta-BHC	ND	0.82	0.74	ug/kg	
319-86-8	delta-BHC	ND	0.82	0.79	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	0.82	0.61	ug/kg	UJ
5103-71-9	alpha-Chlordane	ND	0.82	0.66	ug/kg	
5103-74-2	gamma-Chlordane	ND	0.82	0.37	ug/kg	
60-57-1	Dieldrin	ND	0.82	0.56	ug/kg	
72-54-8	4,4'-DDD	ND	0.82	0.75	ug/kg	
72-55-9	4,4'-DDE	ND	0.82	0.72	ug/kg	
50-29-3	4,4'-DDT	ND	0.82	0.73	ug/kg	
72-20-8	Endrin	ND	0.82	0.64	ug/kg	
1031-07-8	Endosulfan sulfate	ND	0.82	0.64	ug/kg	
7421-93-4	Endrin aldehyde	ND	0.82	0.47	ug/kg	
959-98-8	Endosulfan-I	ND	0.82	0.47	ug/kg	
33213-65-9	Endosulfan-II	ND	0.82	0.51	ug/kg	
76-44-8	Heptachlor	ND	0.82	0.71	ug/kg	UJ
1024-57-3	Heptachlor epoxide	ND	0.82	0.58	ug/kg	
72-43-5	Methoxychlor	ND	1.6	0.65	ug/kg	
53494-70-5	Endrin ketone	ND	0.82	0.59	ug/kg	
8001-35-2	Toxaphene	ND	21	19	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	76%		25-135%
877-09-8	Tetrachloro-m-xylene	71%		25-135%
2051-24-3	Decachlorobiphenyl	28%		10-156%
2051-24-3	Decachlorobiphenyl	10%		10-156%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS LabLink@1003731 16:45 15-Jun-2018

Report of Analysis

Client Sample ID:	MW-103(6-7)		
Lab Sample ID:	JC66384-1	**Date Sampled:**	05/16/18
Matrix:	SO - Soil	**Date Received:**	05/17/18
Method:	SW846 8082A SW846 3546	**Percent Solids:**	80.1
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2G164445.D	1	05/28/18 05:48	TR	05/25/18 07:20	OP12244	G2G4347
Run #2							

	Initial Weight	Final Volume
Run #1	15.2 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	41	17	ug/kg	
11104-28-2	Aroclor 1221	ND	41	17	ug/kg	
11141-16-5	Aroclor 1232	ND	41	11	ug/kg	
53469-21-9	Aroclor 1242	ND	41	6.5	ug/kg	
12672-29-6	Aroclor 1248	ND	41	24	ug/kg	
11097-69-1	Aroclor 1254	200	41	10	ug/kg	
11096-82-5	Aroclor 1260	ND	41	13	ug/kg	
11100-14-4	Aroclor 1268	ND	41	6.1	ug/kg	
37324-23-5	Aroclor 1262	ND	41	3.1	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	94%		24-152%
877-09-8	Tetrachloro-m-xylene	91%		24-152%
2051-24-3	Decachlorobiphenyl	94%		10-166%
2051-24-3	Decachlorobiphenyl	101%		10-166%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: MW-103(6-7)
Lab Sample ID: JC66384-1
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia PA

Date Sampled: 05/16/18
Date Received: 05/17/18
Percent Solids: 80.1

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	9660	61	mg/kg	1	05/21/18	05/22/18	ND	SW846 6010C [2]	SW846 3050B [4]
Antimony	< 2.4	2.4	mg/kg	1	05/21/18	05/22/18	ND	SW846 6010C [2]	SW846 3050B [4]
Arsenic	5.4	2.4	mg/kg	1	05/21/18	05/22/18	ND	SW846 6010C [2]	SW846 3050B [4]
Barium	118	24	mg/kg	1	05/21/18	05/22/18	ND	SW846 6010C [2]	SW846 3050B [4]
Beryllium	0.53	0.24	mg/kg	1	05/21/18	05/22/18	ND	SW846 6010C [2]	SW846 3050B [4]
Cadmium	< 0.61	0.61	mg/kg	1	05/21/18	05/22/18	ND	SW846 6010C [2]	SW846 3050B [4]
Calcium	16100	610	mg/kg	1	05/21/18	05/22/18	ND	SW846 6010C [2]	SW846 3050B [4]
Chromium	22.9	1.2	mg/kg	1	05/21/18	05/22/18	ND	SW846 6010C [2]	SW846 3050B [4]
Cobalt	6.2	6.1	mg/kg	1	05/21/18	05/22/18	ND	SW846 6010C [2]	SW846 3050B [4]
Copper	36.2	3.1	mg/kg	1	05/21/18	05/22/18	ND	SW846 6010C [2]	SW846 3050B [4]
Iron	17500	61	mg/kg	1	05/21/18	05/22/18	ND	SW846 6010C [2]	SW846 3050B [4]
Lead	229	2.4	mg/kg	1	05/21/18	05/22/18	ND	SW846 6010C [2]	SW846 3050B [4]
Magnesium	4000	610	mg/kg	1	05/21/18	05/22/18	ND	SW846 6010C [2]	SW846 3050B [4]
Manganese	228	1.8	mg/kg	1	05/21/18	05/22/18	ND	SW846 6010C [2]	SW846 3050B [4]
Mercury	0.30	0.037	mg/kg	1	05/18/18	05/18/18	JA	SW846 7471B [1]	SW846 7471B [3]
Nickel	14.3	4.9	mg/kg	1	05/21/18	05/22/18	ND	SW846 6010C [2]	SW846 3050B [4]
Potassium	1260	1200	mg/kg	1	05/21/18	05/22/18	ND	SW846 6010C [2]	SW846 3050B [4]
Selenium	< 2.4	2.4	mg/kg	1	05/21/18	05/22/18	ND	SW846 6010C [2]	SW846 3050B [4]
Silver	< 0.61	0.61	mg/kg	1	05/21/18	05/22/18	ND	SW846 6010C [2]	SW846 3050B [4]
Sodium	< 1200	1200	mg/kg	1	05/21/18	05/22/18	ND	SW846 6010C [2]	SW846 3050B [4]
Thallium	< 1.2	1.2	mg/kg	1	05/21/18	05/22/18	ND	SW846 6010C [2]	SW846 3050B [4]
Vanadium	23.3	6.1	mg/kg	1	05/21/18	05/22/18	ND	SW846 6010C [2]	SW846 3050B [4]
Zinc	169	6.1	mg/kg	1	05/21/18	05/22/18	ND	SW846 6010C [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA44439
(2) Instrument QC Batch: MA44471
(3) Prep QC Batch: MP7227
(4) Prep QC Batch: MP7257

RL = Reporting Limit

Report of Analysis

Client Sample ID:	MW-103(6-7)		
Lab Sample ID:	JC66384-1	**Date Sampled:**	05/16/18
Matrix:	SO - Soil	**Date Received:**	05/17/18
		Percent Solids:	80.1
Project:	National Grid, Philly Coke, Philadelphia PA		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Cyanide	0.25	0.22	mg/kg	1	05/24/18 16:54	BM	SW846 9012B/LACHAT
Solids, Percent	80.1		%	1	05/21/18 22:50	JV	SM2540 G-97

RL = Reporting Limit

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Report of Analysis

Client Sample ID: MW-103(15-16)
Lab Sample ID: JC66384-2
Matrix: SO - Soil
Method: SW846 8260C
Project: National Grid, Philly Coke, Philadelphia PA

Date Sampled: 05/16/18
Date Received: 05/17/18
Percent Solids: 70.7

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	C222007.D	1	05/19/18 15:53	RS	n/a	n/a	VC8227
Run #2							

	Initial Weight
Run #1	5.9 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone [a]	94.0	12	7.7	ug/kg	J
71-43-2	Benzene	ND	0.60	0.13	ug/kg	
74-97-5	Bromochloromethane	ND	6.0	0.52	ug/kg	
75-27-4	Bromodichloromethane	ND	2.4	0.29	ug/kg	
75-25-2	Bromoform	ND	6.0	0.37	ug/kg	
74-83-9	Bromomethane	ND	6.0	0.84	ug/kg	
78-93-3	2-Butanone (MEK)	23.9	12	6.3	ug/kg	
75-15-0	Carbon disulfide	ND	2.4	0.73	ug/kg	
56-23-5	Carbon tetrachloride	ND	2.4	0.78	ug/kg	
108-90-7	Chlorobenzene	ND	2.4	0.35	ug/kg	
75-00-3	Chloroethane	ND	6.0	1.1	ug/kg	
67-66-3	Chloroform	ND	2.4	0.39	ug/kg	
74-87-3	Chloromethane	ND	6.0	1.2	ug/kg	
110-82-7	Cyclohexane	ND	2.4	0.41	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.4	0.81	ug/kg	
124-48-1	Dibromochloromethane	ND	2.4	0.46	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.2	0.29	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.2	0.62	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.2	0.34	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.2	0.57	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	6.0	0.73	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.2	0.31	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.2	0.22	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.2	0.85	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.2	0.48	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.2	0.70	ug/kg	
78-87-5	1,2-Dichloropropane	ND	2.4	0.48	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	2.4	0.46	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2.4	0.28	ug/kg	
100-41-4	Ethylbenzene	ND	1.2	0.35	ug/kg	
76-13-1	Freon 113	ND	6.0	0.81	ug/kg	
591-78-6	2-Hexanone	ND	6.0	3.3	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW-103(15-16)		
Lab Sample ID:	JC66384-2	**Date Sampled:**	05/16/18
Matrix:	SO - Soil	**Date Received:**	05/17/18
Method:	SW846 8260C	**Percent Solids:**	70.7
Project:	National Grid, Philly Coke, Philadelphia PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	2.4	0.30	ug/kg	
79-20-9	Methyl Acetate [b]	ND	6.0	3.0	ug/kg	
108-87-2	Methylcyclohexane	ND	2.4	0.65	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.2	0.51	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	6.0	2.2	ug/kg	
75-09-2	Methylene chloride	3.6	6.0	3.0	ug/kg	J
100-42-5	Styrene	ND	2.4	0.59	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.4	0.30	ug/kg	
127-18-4	Tetrachloroethene	ND	2.4	0.76	ug/kg	
108-88-3	Toluene	ND	1.2	0.66	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	6.0	1.2	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	6.0	1.2	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	2.4	0.70	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2.4	0.50	ug/kg	
79-01-6	Trichloroethene	ND	1.2	0.66	ug/kg	
75-69-4	Trichlorofluoromethane	ND	6.0	0.58	ug/kg	
75-01-4	Vinyl chloride	ND	2.4	0.92	ug/kg	
	m,p-Xylene	ND	1.2	0.66	ug/kg	
95-47-6	o-Xylene	ND	1.2	0.30	ug/kg	
1330-20-7	Xylene (total)	ND	1.2	0.30	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	112%		75-127%
17060-07-0	1,2-Dichloroethane-D4	109%		75-130%
2037-26-5	Toluene-D8	105%		80-120%
460-00-4	4-Bromofluorobenzene	103%		79-127%

(a) Associated CCV outside of control limits low.
(b) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	MW-103(15-16)		
Lab Sample ID:	JC66384-2	**Date Sampled:**	05/16/18
Matrix:	SO - Soil	**Date Received:**	05/17/18
Method:	SW846 8270D SW846 3546	**Percent Solids:**	70.7
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2M104467.D	1	05/27/18 00:35	GS	05/23/18 16:50	OP12196	E2M4641
Run #2							

	Initial Weight	Final Volume
Run #1	30.4 g	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	93	23	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	230	29	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	230	40	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	230	83	ug/kg	
51-28-5	2,4-Dinitrophenol [a]	ND	230	170	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	230	50	ug/kg	
95-48-7	2-Methylphenol	ND	93	30	ug/kg	
	3&4-Methylphenol	ND	93	38	ug/kg	
88-75-5	2-Nitrophenol	ND	230	31	ug/kg	
100-02-7	4-Nitrophenol [a]	ND	470	120	ug/kg	
87-86-5	Pentachlorophenol	ND	190	44	ug/kg	
108-95-2	Phenol	ND	93	24	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	230	31	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	230	35	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	230	28	ug/kg	
83-32-9	Acenaphthene	ND	47	16	ug/kg	
208-96-8	Acenaphthylene	ND	47	24	ug/kg	
98-86-2	Acetophenone	ND	230	10	ug/kg	
120-12-7	Anthracene	ND	47	29	ug/kg	
1912-24-9	Atrazine	ND	93	20	ug/kg	
56-55-3	Benzo(a)anthracene	24.8	47	13	ug/kg	J
50-32-8	Benzo(a)pyrene	ND	47	21	ug/kg	
205-99-2	Benzo(b)fluoranthene	27.8	47	21	ug/kg	J
191-24-2	Benzo(g,h,i)perylene	ND	47	23	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	47	22	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	93	18	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	93	11	ug/kg	
92-52-4	1,1'-Biphenyl	ND	93	6.4	ug/kg	
100-52-7	Benzaldehyde	ND	230	12	ug/kg	
91-58-7	2-Chloronaphthalene	ND	93	11	ug/kg	
106-47-8	4-Chloroaniline	ND	230	17	ug/kg	UJ
86-74-8	Carbazole	ND	93	6.7	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: MW-103(15-16)
Lab Sample ID: JC66384-2
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia PA

Date Sampled: 05/16/18
Date Received: 05/17/18
Percent Solids: 70.7

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	93	18	ug/kg	
218-01-9	Chrysene	21.2	47	15	ug/kg	J
111-91-1	bis(2-Chloroethoxy)methane	ND	93	10	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	93	20	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	93	17	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	93	15	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	47	14	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	47	23	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	93	39	ug/kg	
123-91-1	1,4-Dioxane	ND	47	31	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	47	21	ug/kg	
132-64-9	Dibenzofuran	ND	93	19	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	93	7.6	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	93	12	ug/kg	
84-66-2	Diethyl phthalate	ND	93	9.9	ug/kg	
131-11-3	Dimethyl phthalate	ND	93	8.3	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	93	11	ug/kg	
206-44-0	Fluoranthene	29.6	47	21	ug/kg	J
86-73-7	Fluorene	ND	47	21	ug/kg	
118-74-1	Hexachlorobenzene	ND	93	12	ug/kg	
87-68-3	Hexachlorobutadiene	ND	47	19	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	470	19	ug/kg	
67-72-1	Hexachloroethane	ND	230	23	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	47	22	ug/kg	
78-59-1	Isophorone	ND	93	10	ug/kg	
91-57-6	2-Methylnaphthalene	ND	47	11	ug/kg	
88-74-4	2-Nitroaniline	ND	230	11	ug/kg	
99-09-2	3-Nitroaniline	ND	230	12	ug/kg	
100-01-6	4-Nitroaniline	ND	230	12	ug/kg	
91-20-3	Naphthalene	16.7	47	13	ug/kg	J
98-95-3	Nitrobenzene	ND	93	18	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	93	13	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	230	17	ug/kg	
85-01-8	Phenanthrene	17.4	47	16	ug/kg	J
129-00-0	Pyrene	39.8	47	15	ug/kg	J
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	230	12	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	69%		23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW-103(15-16)		
Lab Sample ID:	JC66384-2	**Date Sampled:**	05/16/18
Matrix:	SO - Soil	**Date Received:**	05/17/18
Method:	SW846 8270D SW846 3546	**Percent Solids:**	70.7
Project:	National Grid, Philly Coke, Philadelphia PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	68%		27-114%
118-79-6	2,4,6-Tribromophenol	73%		19-152%
4165-60-0	Nitrobenzene-d5	72%		26-134%
321-60-8	2-Fluorobiphenyl	72%		39-124%
1718-51-0	Terphenyl-d14	83%		36-134%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	MW-103(15-16)		
Lab Sample ID:	JC66384-2	**Date Sampled:**	05/16/18
Matrix:	SO - Soil	**Date Received:**	05/17/18
Method:	SW846 8081B SW846 3546	**Percent Solids:**	70.7
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6G56750.D	1	05/30/18 12:57	CP	05/25/18 07:20	OP12247	G6G1694
Run #2							

	Initial Weight	Final Volume
Run #1	16.3 g	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	0.87	0.72	ug/kg	UJ
319-84-6	alpha-BHC	ND	0.87	0.71	ug/kg	UJ
319-85-7	beta-BHC	ND	0.87	0.78	ug/kg	
319-86-8	delta-BHC	ND	0.87	0.83	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	0.87	0.64	ug/kg	UJ
5103-71-9	alpha-Chlordane	ND	0.87	0.70	ug/kg	
5103-74-2	gamma-Chlordane	ND	0.87	0.39	ug/kg	
60-57-1	Dieldrin	ND	0.87	0.60	ug/kg	
72-54-8	4,4'-DDD	ND	0.87	0.80	ug/kg	
72-55-9	4,4'-DDE	ND	0.87	0.76	ug/kg	
50-29-3	4,4'-DDT	ND	0.87	0.77	ug/kg	
72-20-8	Endrin	ND	0.87	0.67	ug/kg	
1031-07-8	Endosulfan sulfate	ND	0.87	0.68	ug/kg	
7421-93-4	Endrin aldehyde	ND	0.87	0.49	ug/kg	
959-98-8	Endosulfan-I	ND	0.87	0.50	ug/kg	
33213-65-9	Endosulfan-II	ND	0.87	0.54	ug/kg	
76-44-8	Heptachlor	ND	0.87	0.75	ug/kg	UJ
1024-57-3	Heptachlor epoxide	ND	0.87	0.61	ug/kg	
72-43-5	Methoxychlor	ND	1.7	0.69	ug/kg	
53494-70-5	Endrin ketone	ND	0.87	0.63	ug/kg	
8001-35-2	Toxaphene	ND	22	20	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	64%		25-135%
877-09-8	Tetrachloro-m-xylene	60%		25-135%
2051-24-3	Decachlorobiphenyl	64%		10-156%
2051-24-3	Decachlorobiphenyl	69%		10-156%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	MW-103(15-16)		
Lab Sample ID:	JC66384-2	**Date Sampled:**	05/16/18
Matrix:	SO - Soil	**Date Received:**	05/17/18
Method:	SW846 8082A SW846 3546	**Percent Solids:**	70.7
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2G164523.D	1	05/29/18 11:06	TR	05/25/18 07:20	OP12244	G2G4348
Run #2							

	Initial Weight	Final Volume
Run #1	16.3 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	43	17	ug/kg	
11104-28-2	Aroclor 1221	ND	43	18	ug/kg	
11141-16-5	Aroclor 1232	ND	43	12	ug/kg	
53469-21-9	Aroclor 1242	ND	43	6.9	ug/kg	
12672-29-6	Aroclor 1248	ND	43	25	ug/kg	
11097-69-1	Aroclor 1254	ND	43	11	ug/kg	
11096-82-5	Aroclor 1260	ND	43	14	ug/kg	
11100-14-4	Aroclor 1268	ND	43	6.5	ug/kg	
37324-23-5	Aroclor 1262	ND	43	3.3	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	87%		24-152%
877-09-8	Tetrachloro-m-xylene	86%		24-152%
2051-24-3	Decachlorobiphenyl	73%		10-166%
2051-24-3	Decachlorobiphenyl	76%		10-166%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: MW-103(15-16)
Lab Sample ID: JC66384-2
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia PA

Date Sampled: 05/16/18
Date Received: 05/17/18
Percent Solids: 70.7

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	21700	68	mg/kg	1	05/21/18	05/22/18	ND	SW846 6010C [2]	SW846 3050B [4]
Antimony	< 2.7	2.7	mg/kg	1	05/21/18	05/22/18	ND	SW846 6010C [2]	SW846 3050B [4]
Arsenic	4.4	2.7	mg/kg	1	05/21/18	05/22/18	ND	SW846 6010C [2]	SW846 3050B [4]
Barium	159	27	mg/kg	1	05/21/18	05/22/18	ND	SW846 6010C [2]	SW846 3050B [4]
Beryllium	1.1	0.27	mg/kg	1	05/21/18	05/22/18	ND	SW846 6010C [2]	SW846 3050B [4]
Cadmium	< 0.68	0.68	mg/kg	1	05/21/18	05/22/18	ND	SW846 6010C [2]	SW846 3050B [4]
Calcium	2510	680	mg/kg	1	05/21/18	05/22/18	ND	SW846 6010C [2]	SW846 3050B [4]
Chromium	43.9	1.4	mg/kg	1	05/21/18	05/22/18	ND	SW846 6010C [2]	SW846 3050B [4]
Cobalt	12.4	6.8	mg/kg	1	05/21/18	05/22/18	ND	SW846 6010C [2]	SW846 3050B [4]
Copper	9.3	3.4	mg/kg	1	05/21/18	05/22/18	ND	SW846 6010C [2]	SW846 3050B [4]
Iron	24900	68	mg/kg	1	05/21/18	05/22/18	ND	SW846 6010C [2]	SW846 3050B [4]
Lead	46.5	2.7	mg/kg	1	05/21/18	05/22/18	ND	SW846 6010C [2]	SW846 3050B [4]
Magnesium	5320	680	mg/kg	1	05/21/18	05/22/18	ND	SW846 6010C [2]	SW846 3050B [4]
Manganese	320	2.0	mg/kg	1	05/21/18	05/22/18	ND	SW846 6010C [2]	SW846 3050B [4]
Mercury	0.17	0.040	mg/kg	1	05/18/18	05/18/18	JA	SW846 7471B [1]	SW846 7471B [3]
Nickel	28.4	5.4	mg/kg	1	05/21/18	05/22/18	ND	SW846 6010C [2]	SW846 3050B [4]
Potassium	1690	1400	mg/kg	1	05/21/18	05/22/18	ND	SW846 6010C [2]	SW846 3050B [4]
Selenium	< 2.7	2.7	mg/kg	1	05/21/18	05/22/18	ND	SW846 6010C [2]	SW846 3050B [4]
Silver	< 0.68	0.68	mg/kg	1	05/21/18	05/22/18	ND	SW846 6010C [2]	SW846 3050B [4]
Sodium	< 1400	1400	mg/kg	1	05/21/18	05/22/18	ND	SW846 6010C [2]	SW846 3050B [4]
Thallium	< 1.4	1.4	mg/kg	1	05/21/18	05/22/18	ND	SW846 6010C [2]	SW846 3050B [4]
Vanadium	44.3	6.8	mg/kg	1	05/21/18	05/22/18	ND	SW846 6010C [2]	SW846 3050B [4]
Zinc	66.8	6.8	mg/kg	1	05/21/18	05/22/18	ND	SW846 6010C [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA44439
(2) Instrument QC Batch: MA44471
(3) Prep QC Batch: MP7227
(4) Prep QC Batch: MP7257

RL = Reporting Limit

Report of Analysis

Client Sample ID:	MW-103(15-16)		
Lab Sample ID:	JC66384-2	**Date Sampled:**	05/16/18
Matrix:	SO - Soil	**Date Received:**	05/17/18
		Percent Solids:	70.7
Project:	National Grid, Philly Coke, Philadelphia PA		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Cyanide	< 0.24	0.24	mg/kg	1	05/24/18 16:55	BM	SW846 9012B/LACHAT
Solids, Percent	70.7		%	1	05/21/18 22:50	JV	SM2540 G-97

RL = Reporting Limit

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Report of Analysis

Client Sample ID:	TRIP BLANK		
Lab Sample ID:	JC66384-3	**Date Sampled:**	05/16/18
Matrix:	AQ - Trip Blank Soil	**Date Received:**	05/17/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2D175680.D	1	05/19/18 17:04	OI	n/a	n/a	V2D7409
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	5.0	ug/l	
71-43-2	Benzene	ND	0.50	0.17	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.38	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.22	ug/l	
75-25-2	Bromoform	ND	1.0	0.42	ug/l	
74-83-9	Bromomethane	ND	2.0	1.4	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	4.8	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.50	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.34	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.24	ug/l	
75-00-3	Chloroethane	ND	1.0	0.59	ug/l	
67-66-3	Chloroform	ND	1.0	0.29	ug/l	
74-87-3	Chloromethane	ND	1.0	0.53	ug/l	
110-82-7	Cyclohexane	ND	5.0	0.63	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.69	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.16	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.21	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.50	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.50	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.50	ug/l	
75-71-8	Dichlorodifluoromethane [a]	ND	2.0	1.9	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.21	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.20	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.47	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.50	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.40	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.24	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.25	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.22	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.22	ug/l	
76-13-1	Freon 113	ND	5.0	1.2	ug/l	
591-78-6	2-Hexanone	ND	5.0	3.3	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TRIP BLANK		
Lab Sample ID:	JC66384-3	**Date Sampled:**	05/16/18
Matrix:	AQ - Trip Blank Soil	**Date Received:**	05/17/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	1.0	0.25	ug/l	
79-20-9	Methyl Acetate	ND	5.0	3.1	ug/l	
108-87-2	Methylcyclohexane	ND	5.0	1.8	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.25	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	3.0	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.24	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.17	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.50	ug/l	
108-88-3	Toluene	ND	1.0	0.25	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.50	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.24	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.27	ug/l	
75-69-4	Trichlorofluoromethane [a]	ND	2.0	0.60	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.62	ug/l	
	m,p-Xylene	ND	1.0	0.43	ug/l	
95-47-6	o-Xylene	ND	1.0	0.22	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.22	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	107%		80-120%
17060-07-0	1,2-Dichloroethane-D4	110%		81-124%
2037-26-5	Toluene-D8	100%		80-120%
460-00-4	4-Bromofluorobenzene	101%		80-120%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	MW-102(12-13)		
Lab Sample ID:	JC66384-4	**Date Sampled:**	05/16/18
Matrix:	SO - Soil	**Date Received:**	05/17/18
Method:	SW846 8260C	**Percent Solids:**	53.3
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1C156909.D	1	05/21/18 13:57	PS	n/a	n/a	V1C6921
Run #2							

	Initial Weight
Run #1	4.0 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	38.3	23	15	ug/kg	
71-43-2	Benzene	1.2	1.2	0.25	ug/kg	
74-97-5	Bromochloromethane	ND	12	1.0	ug/kg	
75-27-4	Bromodichloromethane	ND	4.7	0.57	ug/kg	
75-25-2	Bromoform	ND	12	0.73	ug/kg	
74-83-9	Bromomethane	ND	12	1.6	ug/kg	
78-93-3	2-Butanone (MEK)	ND	23	12	ug/kg	
75-15-0	Carbon disulfide	33.4	4.7	1.4	ug/kg	
56-23-5	Carbon tetrachloride	ND	4.7	1.5	ug/kg	
108-90-7	Chlorobenzene	ND	4.7	0.68	ug/kg	
75-00-3	Chloroethane	ND	12	2.1	ug/kg	
67-66-3	Chloroform	ND	4.7	0.76	ug/kg	
74-87-3	Chloromethane	ND	12	2.3	ug/kg	
110-82-7	Cyclohexane	ND	4.7	0.80	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	4.7	1.6	ug/kg	
124-48-1	Dibromochloromethane	ND	4.7	0.89	ug/kg	
106-93-4	1,2-Dibromoethane	ND	2.3	0.57	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	2.3	1.2	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	2.3	0.67	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	2.3	1.1	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	12	1.4	ug/kg	
75-34-3	1,1-Dichloroethane	ND	2.3	0.61	ug/kg	
107-06-2	1,2-Dichloroethane	ND	2.3	0.42	ug/kg	
75-35-4	1,1-Dichloroethene	ND	2.3	1.7	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	2.3	0.94	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	2.3	1.4	ug/kg	
78-87-5	1,2-Dichloropropane	ND	4.7	0.93	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	4.7	0.90	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	4.7	0.56	ug/kg	
100-41-4	Ethylbenzene	ND	2.3	0.68	ug/kg	
76-13-1	Freon 113	ND	12	1.6	ug/kg	
591-78-6	2-Hexanone	ND	12	6.5	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW-102(12-13)		
Lab Sample ID:	JC66384-4	**Date Sampled:**	05/16/18
Matrix:	SO - Soil	**Date Received:**	05/17/18
Method:	SW846 8260C	**Percent Solids:**	53.3
Project:	National Grid, Philly Coke, Philadelphia PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	4.7	0.58	ug/kg	
79-20-9	Methyl Acetate	ND	12	5.9	ug/kg	
108-87-2	Methylcyclohexane	ND	4.7	1.3	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	2.3	1.0	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	12	4.2	ug/kg	
75-09-2	Methylene chloride	ND	12	5.9	ug/kg	
100-42-5	Styrene	ND	4.7	1.2	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	4.7	0.60	ug/kg	
127-18-4	Tetrachloroethene	ND	4.7	1.5	ug/kg	
108-88-3	Toluene	2.0	2.3	1.3	ug/kg	J
87-61-6	1,2,3-Trichlorobenzene	ND	12	2.3	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	12	2.3	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	4.7	1.4	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	4.7	0.98	ug/kg	
79-01-6	Trichloroethene	ND	2.3	1.3	ug/kg	
75-69-4	Trichlorofluoromethane	ND	12	1.1	ug/kg	
75-01-4	Vinyl chloride	ND	4.7	1.8	ug/kg	
	m,p-Xylene	ND	2.3	1.3	ug/kg	
95-47-6	o-Xylene	ND	2.3	0.59	ug/kg	
1330-20-7	Xylene (total)	ND	2.3	0.59	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	76%		75-127%
17060-07-0	1,2-Dichloroethane-D4	96%		75-130%
2037-26-5	Toluene-D8	101%		80-120%
460-00-4	4-Bromofluorobenzene	97%		79-127%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	MW-102(12-13)		
Lab Sample ID:	JC66384-4	**Date Sampled:**	05/16/18
Matrix:	SO - Soil	**Date Received:**	05/17/18
Method:	SW846 8270D SW846 3546	**Percent Solids:**	53.3
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2M104480.D	1	05/27/18 06:12	GS	05/23/18 16:50	OP12196	E2M4641
Run #2 [a]	M146640.D	1	06/05/18 13:12	AR	06/04/18 15:00	OP12509	EM6233

	Initial Weight	Final Volume
Run #1	30.8 g	1.0 ml
Run #2	15.9 g	1.0 ml

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	120	30	ug/kg	R
59-50-7	4-Chloro-3-methyl phenol	ND	300	37	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	300	52	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	300	110	ug/kg	
51-28-5	2,4-Dinitrophenol [b]	ND	300	230	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	300	65	ug/kg	
95-48-7	2-Methylphenol	ND	120	39	ug/kg	
	3&4-Methylphenol	ND	120	50	ug/kg	
88-75-5	2-Nitrophenol	ND	300	40	ug/kg	
100-02-7	4-Nitrophenol [b]	ND	610	160	ug/kg	
87-86-5	Pentachlorophenol	ND	240	57	ug/kg	
108-95-2	Phenol	150	120	32	ug/kg	J
58-90-2	2,3,4,6-Tetrachlorophenol	ND	300	40	ug/kg	R
95-95-4	2,4,5-Trichlorophenol	ND	300	46	ug/kg	R
88-06-2	2,4,6-Trichlorophenol	ND	300	36	ug/kg	R
83-32-9	Acenaphthene	106	61	21	ug/kg	
208-96-8	Acenaphthylene	ND	61	31	ug/kg	
98-86-2	Acetophenone	ND	300	13	ug/kg	
120-12-7	Anthracene	84.2	61	37	ug/kg	
1912-24-9	Atrazine	ND	120	26	ug/kg	
56-55-3	Benzo(a)anthracene	156	61	17	ug/kg	
50-32-8	Benzo(a)pyrene	94.4	61	28	ug/kg	
205-99-2	Benzo(b)fluoranthene	87.5	61	27	ug/kg	
191-24-2	Benzo(g,h,i)perylene	61.0	61	30	ug/kg	
207-08-9	Benzo(k)fluoranthene	37.2	61	28	ug/kg	J
101-55-3	4-Bromophenyl phenyl ether	ND	120	24	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	120	15	ug/kg	
92-52-4	1,1'-Biphenyl	54.8	120	8.3	ug/kg	J
100-52-7	Benzaldehyde	ND	300	15	ug/kg	
91-58-7	2-Chloronaphthalene	ND	120	14	ug/kg	
106-47-8	4-Chloroaniline	ND	300	22	ug/kg	UJ
86-74-8	Carbazole	45.0	120	8.8	ug/kg	J

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW-102(12-13)		
Lab Sample ID:	JC66384-4	**Date Sampled:**	05/16/18
Matrix:	SO - Soil	**Date Received:**	05/17/18
Method:	SW846 8270D SW846 3546	**Percent Solids:**	53.3
Project:	National Grid, Philly Coke, Philadelphia PA		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	120	24	ug/kg	
218-01-9	Chrysene	322	61	19	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	120	13	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	120	26	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	120	22	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	120	20	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	61	19	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	61	31	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	120	51	ug/kg	
123-91-1	1,4-Dioxane	ND	61	40	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	61	27	ug/kg	
132-64-9	Dibenzofuran	181	120	25	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	120	9.9	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	120	15	ug/kg	
84-66-2	Diethyl phthalate	ND	120	13	ug/kg	
131-11-3	Dimethyl phthalate	ND	120	11	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	120	14	ug/kg	
206-44-0	Fluoranthene	150	61	27	ug/kg	
86-73-7	Fluorene	175	61	28	ug/kg	
118-74-1	Hexachlorobenzene	ND	120	15	ug/kg	
87-68-3	Hexachlorobutadiene	ND	61	24	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	610	24	ug/kg	
67-72-1	Hexachloroethane	ND	300	30	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	48.8	61	29	ug/kg	J
78-59-1	Isophorone	ND	120	13	ug/kg	
91-57-6	2-Methylnaphthalene	244	61	14	ug/kg	
88-74-4	2-Nitroaniline	ND	300	14	ug/kg	
99-09-2	3-Nitroaniline	ND	300	15	ug/kg	
100-01-6	4-Nitroaniline	ND	300	16	ug/kg	
91-20-3	Naphthalene	614	61	17	ug/kg	
98-95-3	Nitrobenzene	ND	120	24	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	120	18	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	300	22	ug/kg	
85-01-8	Phenanthrene	475	61	20	ug/kg	
129-00-0	Pyrene	259	61	19	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	300	15	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	10% [d]	8% [c]	23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW-102(12-13)		
Lab Sample ID:	JC66384-4	**Date Sampled:**	05/16/18
Matrix:	SO - Soil	**Date Received:**	05/17/18
Method:	SW846 8270D SW846 3546	**Percent Solids:**	53.3
Project:	National Grid, Philly Coke, Philadelphia PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	42%	37%	27-114%
118-79-6	2,4,6-Tribromophenol	0% [d]	0% [c]	19-152%
4165-60-0	Nitrobenzene-d5	60%	62%	26-134%
321-60-8	2-Fluorobiphenyl	62%	62%	39-124%
1718-51-0	Terphenyl-d14	60%	70%	36-134%

(a) Confirmation run for surrogate recoveries.
(b) Associated CCV outside of control limits high, sample was ND.
(c) Outside control limits due to matrix interference.
(d) Outside control limits due to matrix interference. The results confirmed by re-extraction outside the holding time.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS LabLink@1003731 16:45 15-Jun-2018

Report of Analysis

Client Sample ID:	MW-102(12-13)		
Lab Sample ID:	JC66384-4	**Date Sampled:**	05/16/18
Matrix:	SO - Soil	**Date Received:**	05/17/18
Method:	SW846 8081B SW846 3546	**Percent Solids:**	53.3
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6G56628.D	1	05/26/18 11:49	DS	05/25/18 07:20	OP12247	G6G1691
Run #2							

	Initial Weight	Final Volume
Run #1	16.3 g	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	1.2	0.95	ug/kg	UJ
319-84-6	alpha-BHC	ND	1.2	0.94	ug/kg	UJ
319-85-7	beta-BHC	ND	1.2	1.0	ug/kg	
319-86-8	delta-BHC	ND	1.2	1.1	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	1.2	0.85	ug/kg	UJ
5103-71-9	alpha-Chlordane	ND	1.2	0.93	ug/kg	
5103-74-2	gamma-Chlordane	ND	1.2	0.52	ug/kg	
60-57-1	Dieldrin	ND	1.2	0.79	ug/kg	
72-54-8	4,4'-DDD	ND	1.2	1.1	ug/kg	
72-55-9	4,4'-DDE	ND	1.2	1.0	ug/kg	
50-29-3	4,4'-DDT	ND	1.2	1.0	ug/kg	
72-20-8	Endrin	ND	1.2	0.89	ug/kg	
1031-07-8	Endosulfan sulfate	ND	1.2	0.90	ug/kg	
7421-93-4	Endrin aldehyde	ND	1.2	0.65	ug/kg	
959-98-8	Endosulfan-I	ND	1.2	0.66	ug/kg	
33213-65-9	Endosulfan-II	ND	1.2	0.72	ug/kg	
76-44-8	Heptachlor	ND	1.2	0.99	ug/kg	UJ
1024-57-3	Heptachlor epoxide	ND	1.2	0.81	ug/kg	
72-43-5	Methoxychlor	ND	2.3	0.92	ug/kg	
53494-70-5	Endrin ketone	ND	1.2	0.83	ug/kg	
8001-35-2	Toxaphene	ND	29	27	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	81%		25-135%
877-09-8	Tetrachloro-m-xylene	75%		25-135%
2051-24-3	Decachlorobiphenyl	54%		10-156%
2051-24-3	Decachlorobiphenyl	56%		10-156%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS LabLink@1003731 16:45 15-Jun-2018

Report of Analysis

Client Sample ID:	MW-102(12-13)		
Lab Sample ID:	JC66384-4	**Date Sampled:**	05/16/18
Matrix:	SO - Soil	**Date Received:**	05/17/18
Method:	SW846 8082A SW846 3546	**Percent Solids:**	53.3
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2G164453.D	1	05/28/18 08:04	TR	05/25/18 07:20	OP12244	G2G4347
Run #2							

	Initial Weight	Final Volume
Run #1	16.3 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	58	23	ug/kg	
11104-28-2	Aroclor 1221	ND	58	23	ug/kg	
11141-16-5	Aroclor 1232	ND	58	15	ug/kg	
53469-21-9	Aroclor 1242	ND	58	9.2	ug/kg	
12672-29-6	Aroclor 1248	ND	58	34	ug/kg	
11097-69-1	Aroclor 1254	ND	58	14	ug/kg	
11096-82-5	Aroclor 1260	ND	58	18	ug/kg	
11100-14-4	Aroclor 1268	ND	58	8.6	ug/kg	
37324-23-5	Aroclor 1262	ND	58	4.4	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	89%		24-152%
877-09-8	Tetrachloro-m-xylene	80%		24-152%
2051-24-3	Decachlorobiphenyl	52%		10-166%
2051-24-3	Decachlorobiphenyl	45%		10-166%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW-102(12-13)		
Lab Sample ID:	JC66384-4	**Date Sampled:**	05/16/18
Matrix:	SO - Soil	**Date Received:**	05/17/18
		Percent Solids:	53.3
Project:	National Grid, Philly Coke, Philadelphia PA		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Cyanide	1.0	0.33	mg/kg	1	05/24/18 16:57	BM	SW846 9012B/LACHAT
Solids, Percent	53.3		%	1	05/21/18 22:50	JV	SM2540 G-97

RL = Reporting Limit

Report of Analysis

Client Sample ID: MW-102(12-13)
Lab Sample ID: JC66384-4
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia PA

Date Sampled: 05/16/18
Date Received: 05/17/18
Percent Solids: 53.3

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	1440	92	mg/kg	1	05/21/18	05/22/18	ND	SW846 6010C [2]	SW846 3050B [5]
Antimony	< 3.7	3.7	mg/kg	1	05/21/18	05/22/18	ND	SW846 6010C [2]	SW846 3050B [5]
Arsenic	9.4	3.7	mg/kg	1	05/21/18	05/22/18	ND	SW846 6010C [2]	SW846 3050B [5]
Barium	< 37	37	mg/kg	1	05/21/18	05/22/18	ND	SW846 6010C [2]	SW846 3050B [5]
Beryllium	< 0.37	0.37	mg/kg	1	05/21/18	05/22/18	ND	SW846 6010C [2]	SW846 3050B [5]
Cadmium	< 0.92	0.92	mg/kg	1	05/21/18	05/22/18	ND	SW846 6010C [2]	SW846 3050B [5]
Calcium	164000	4600	mg/kg	5	05/21/18	05/22/18	ND	SW846 6010C [3]	SW846 3050B [5]
Chromium	6.6	1.8	mg/kg	1	05/21/18	05/22/18	ND	SW846 6010C [2]	SW846 3050B [5]
Cobalt	< 9.2	9.2	mg/kg	1	05/21/18	05/22/18	ND	SW846 6010C [2]	SW846 3050B [5]
Copper	6.0	4.6	mg/kg	1	05/21/18	05/22/18	ND	SW846 6010C [2]	SW846 3050B [5]
Iron	3250	92	mg/kg	1	05/21/18	05/22/18	ND	SW846 6010C [2]	SW846 3050B [5]
Lead	22.6	3.7	mg/kg	1	05/21/18	05/22/18	ND	SW846 6010C [2]	SW846 3050B [5]
Magnesium	141000	4600	mg/kg	5	05/21/18	05/22/18	ND	SW846 6010C [3]	SW846 3050B [5]
Manganese	216	2.8	mg/kg	1	05/21/18	05/22/18	ND	SW846 6010C [2]	SW846 3050B [5]
Mercury	0.075	0.049	mg/kg	1	05/18/18	05/18/18	JA	SW846 7471B [1]	SW846 7471B [4]
Nickel	9.4	7.4	mg/kg	1	05/21/18	05/22/18	ND	SW846 6010C [2]	SW846 3050B [5]
Potassium	< 1800	1800	mg/kg	1	05/21/18	05/22/18	ND	SW846 6010C [2]	SW846 3050B [5]
Selenium	< 3.7	3.7	mg/kg	1	05/21/18	05/22/18	ND	SW846 6010C [2]	SW846 3050B [5]
Silver [a]	< 4.6	4.6	mg/kg	5	05/21/18	05/22/18	ND	SW846 6010C [3]	SW846 3050B [5]
Sodium	< 1800	1800	mg/kg	1	05/21/18	05/22/18	ND	SW846 6010C [2]	SW846 3050B [5]
Thallium	< 1.8	1.8	mg/kg	1	05/21/18	05/22/18	ND	SW846 6010C [2]	SW846 3050B [5]
Vanadium	10.3	9.2	mg/kg	1	05/21/18	05/22/18	ND	SW846 6010C [2]	SW846 3050B [5]
Zinc	15.4	9.2	mg/kg	1	05/21/18	05/22/18	ND	SW846 6010C [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA44439
(2) Instrument QC Batch: MA44471
(3) Instrument QC Batch: MA44478
(4) Prep QC Batch: MP7227
(5) Prep QC Batch: MP7257

(a) Elevated detection limit due to dilution required for high interfering element.

RL = Reporting Limit

CHAIN OF CUSTODY

SGS North America Inc. - Dayton
2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200 FAX 732-329-3499
www.sgs.com/ehsusa

GW
WTB

PAGE ___ OF ___

FED-EX Tracking #:
Bottle Order Control #: DH-052218-49
SGS Quote #:
SGS Job #: JC66927

Client / Reporting Information

Company Name: Arcadis
Street Address: 824 N. Market St. Ste 820
City: Wilmington State: DE Zip: 19801
Project Contact: E-mail:
Phone #: Fax #:
Sampler(s) Name(s): Adam Wissner, Ian Campbell Phone #:

Project Information

Project Name: National Grid - Philadelphia Coke Site
Street:
City: State:
Project #: B0036790.0001
Client Purchase Order #:
Project Manager:

Billing Information (If different from Report to)

Company Name: Arcadis
Street Address: 824 N. Market St Ste 820
City: Wilmington State: DE Zip: 19801
Attention:

Requested Analysis (see TEST CODE sheet)

Lab Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	V8260TCL20	ATS8270TCL20-1+DX	MTAL	CN	HG	PB08IPESTCL	PB08IRCB11	LAB USE ONLY
1	MW-106		05/29/18	14:30	AW		11	3		2		6				X	X	X	X	X	X	X	E48
2	PCMW-195		05/29/18	14:00	IC		1			i								X					A4
3	Trip Blank															X							G1472
																							V582

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL- Sludge; SED-Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB-Field Blank; EB-Equipment Blank; RB- Rinse Blank; TB-Trip Blank

Turnaround Time (Business days)

- [X] Std. 10 Business Days
- [ ] 5 Day RUSH
- [ ] 3 Day RUSH
- [ ] 2 Day RUSH
- [ ] 1 Day RUSH
- [ ] other

Approved by (SGS Project Manager)/Date:

Emergency & Rush T/A data available via LabLink

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULLT1 (Level 3+4)
- [ ] NJ Reduced
- [ ] Commercial "C"
- [ ] NJ Data of Known Quality Protocol Reporting
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format
- [ ] Other

Commercial "A" = Results Only; Commercial "B" = Results + QC Summary
NJ Reduced = Results + QC Summary + Partial Raw data

Comments / Special Instructions

INITIAL ASESSMENT JR 3/4
LABEL VERIFICATION

Sample inventory is verified upon receipt in the Laboratory

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1	5/29/18 1600	1	2	5/29/18 1840	2
Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
3		3	4		4
Relinquished by:	Date Time:	Received By:	Custody Seal #	Intact / Not intact	Preserved where applicable
5		5			On Ice 1, 8 Cooler Temp

Form:SM088-03C (revised 2/12/18)

http://www.sgs.com/en/terms-and-conditions.

5.1 5

SGS LabLink@1003731 16:47 15-Jun-2018

Report of Analysis

Client Sample ID:	MW-106		
Lab Sample ID:	JC66927-1	**Date Sampled:**	05/29/18
Matrix:	AQ - Ground Water	**Date Received:**	05/29/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2D175995.D	1	05/31/18 17:53	JP	n/a	n/a	V2D7423
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	5.0	ug/l	
71-43-2	Benzene	ND	0.50	0.17	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.38	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.22	ug/l	
75-25-2	Bromoform	ND	1.0	0.42	ug/l	
74-83-9	Bromomethane	ND	2.0	1.4	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	4.8	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.50	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.34	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.24	ug/l	
75-00-3	Chloroethane	ND	1.0	0.59	ug/l	
67-66-3	Chloroform	ND	1.0	0.29	ug/l	
74-87-3	Chloromethane	ND	1.0	0.53	ug/l	
110-82-7	Cyclohexane	ND	5.0	0.63	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.69	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.16	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.21	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.50	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.50	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.50	ug/l	
75-71-8	Dichlorodifluoromethane [a]	ND	2.0	1.9	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.21	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.20	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.47	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.50	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.40	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.24	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.25	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.22	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.22	ug/l	
76-13-1	Freon 113	ND	5.0	1.2	ug/l	
591-78-6	2-Hexanone	ND	5.0	3.3	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW-106		
Lab Sample ID:	JC66927-1	**Date Sampled:**	05/29/18
Matrix:	AQ - Ground Water	**Date Received:**	05/29/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	1.0	0.25	ug/l	
79-20-9	Methyl Acetate	ND	5.0	3.1	ug/l	
108-87-2	Methylcyclohexane	ND	5.0	1.8	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.25	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	3.0	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.24	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.17	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.50	ug/l	
108-88-3	Toluene	ND	1.0	0.25	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.50	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.24	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.27	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.60	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.62	ug/l	
	m,p-Xylene	ND	1.0	0.43	ug/l	
95-47-6	o-Xylene	ND	1.0	0.22	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.22	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%		80-120%
17060-07-0	1,2-Dichloroethane-D4	90%		81-124%
2037-26-5	Toluene-D8	100%		80-120%
460-00-4	4-Bromofluorobenzene	98%		80-120%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS LabLink@1003731 16:47 15-Jun-2018

Report of Analysis

Client Sample ID:	MW-106		
Lab Sample ID:	JC66927-1	**Date Sampled:**	05/29/18
Matrix:	AQ - Ground Water	**Date Received:**	05/29/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2P79968.D	1	06/01/18 08:40	CS	05/31/18 07:15	OP12401	E2P3526
Run #2							

	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2		

ABN TCL List (SOM0 1.1)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	5.0	0.82	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	5.0	0.89	ug/l	
120-83-2	2,4-Dichlorophenol	ND	2.0	1.3	ug/l	
105-67-9	2,4-Dimethylphenol	ND	5.0	2.4	ug/l	
51-28-5	2,4-Dinitrophenol [a]	ND	5.0	1.6	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	5.0	1.3	ug/l	
95-48-7	2-Methylphenol	ND	2.0	0.89	ug/l	
	3&4-Methylphenol	ND	2.0	0.88	ug/l	
88-75-5	2-Nitrophenol	ND	5.0	0.96	ug/l	
100-02-7	4-Nitrophenol	ND	10	1.2	ug/l	
87-86-5	Pentachlorophenol	ND	4.0	1.4	ug/l	
108-95-2	Phenol	ND	2.0	0.39	ug/l	
58-90-2	2,3,4,6-Tetrachlorophenol [a]	ND	5.0	1.5	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	5.0	1.3	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	5.0	0.92	ug/l	
83-32-9	Acenaphthene	ND	1.0	0.19	ug/l	
208-96-8	Acenaphthylene	ND	1.0	0.14	ug/l	
98-86-2	Acetophenone	ND	2.0	0.21	ug/l	
120-12-7	Anthracene	ND	1.0	0.21	ug/l	
1912-24-9	Atrazine	ND	2.0	0.45	ug/l	
100-52-7	Benzaldehyde	ND	5.0	0.29	ug/l	
56-55-3	Benzo(a)anthracene	ND	1.0	0.20	ug/l	
50-32-8	Benzo(a)pyrene	ND	1.0	0.21	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	1.0	0.21	ug/l	
191-24-2	Benzo(g,h,i)perylene [a]	ND	1.0	0.34	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	1.0	0.21	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	2.0	0.40	ug/l	
85-68-7	Butyl benzyl phthalate	ND	2.0	0.46	ug/l	
92-52-4	1,1'-Biphenyl	ND	1.0	0.21	ug/l	
91-58-7	2-Chloronaphthalene	ND	2.0	0.24	ug/l	
106-47-8	4-Chloroaniline	ND	5.0	0.34	ug/l	
86-74-8	Carbazole	ND	1.0	0.23	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW-106		
Lab Sample ID:	JC66927-1	**Date Sampled:**	05/29/18
Matrix:	AQ - Ground Water	**Date Received:**	05/29/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

ABN TCL List (SOM0 1.1)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	2.0	0.65	ug/l	
218-01-9	Chrysene	ND	1.0	0.18	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	2.0	0.28	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	2.0	0.25	ug/l	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	2.0	0.40	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether [a]	ND	2.0	0.37	ug/l	
121-14-2	2,4-Dinitrotoluene [a]	ND	1.0	0.55	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	1.0	0.48	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	2.0	0.51	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	1.0	0.33	ug/l	
132-64-9	Dibenzofuran	ND	5.0	0.22	ug/l	
84-74-2	Di-n-butyl phthalate	ND	2.0	0.50	ug/l	
117-84-0	Di-n-octyl phthalate	ND	2.0	0.23	ug/l	
84-66-2	Diethyl phthalate	ND	2.0	0.26	ug/l	
131-11-3	Dimethyl phthalate	ND	2.0	0.22	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.0	1.7	ug/l	
206-44-0	Fluoranthene	ND	1.0	0.17	ug/l	
86-73-7	Fluorene	ND	1.0	0.17	ug/l	
118-74-1	Hexachlorobenzene	ND	1.0	0.33	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.49	ug/l	
77-47-4	Hexachlorocyclopentadiene [a]	ND	10	2.8	ug/l	
67-72-1	Hexachloroethane	ND	2.0	0.39	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene [a]	ND	1.0	0.33	ug/l	
78-59-1	Isophorone	ND	2.0	0.28	ug/l	
91-57-6	2-Methylnaphthalene	ND	1.0	0.21	ug/l	
88-74-4	2-Nitroaniline	ND	5.0	0.28	ug/l	
99-09-2	3-Nitroaniline	ND	5.0	0.39	ug/l	
100-01-6	4-Nitroaniline	ND	5.0	0.44	ug/l	
91-20-3	Naphthalene	ND	1.0	0.23	ug/l	
98-95-3	Nitrobenzene	ND	2.0	0.64	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	2.0	0.48	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.0	0.22	ug/l	
85-01-8	Phenanthrene	ND	1.0	0.18	ug/l	
129-00-0	Pyrene	ND	1.0	0.22	ug/l	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	2.0	0.37	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	34%		10-110%
4165-62-2	Phenol-d5	25%		10-110%

ND = Not detected MDL = Method Detection Limit
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E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW-106		
Lab Sample ID:	JC66927-1	**Date Sampled:**	05/29/18
Matrix:	AQ - Ground Water	**Date Received:**	05/29/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

ABN TCL List (SOM0 1.1)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
118-79-6	2,4,6-Tribromophenol	88%		36-151%
4165-60-0	Nitrobenzene-d5	67%		34-128%
321-60-8	2-Fluorobiphenyl	86%		38-119%
1718-51-0	Terphenyl-d14	60%		26-129%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	MW-106		
Lab Sample ID:	JC66927-1	**Date Sampled:**	05/29/18
Matrix:	AQ - Ground Water	**Date Received:**	05/29/18
Method:	SW846 8081B SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6G56778.D	1	05/31/18 05:42	CP	05/30/18 16:50	OP12372	G6G1694
Run #2							

	Initial Volume	Final Volume
Run #1	300 ml	2.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	0.0067	0.0034	ug/l	
319-84-6	alpha-BHC	ND	0.0067	0.0035	ug/l	
319-85-7	beta-BHC	ND	0.0067	0.0053	ug/l	
319-86-8	delta-BHC	ND	0.0067	0.0044	ug/l	
58-89-9	gamma-BHC (Lindane)	ND	0.0067	0.0040	ug/l	
5103-71-9	alpha-Chlordane	ND	0.0067	0.0033	ug/l	
5103-74-2	gamma-Chlordane	ND	0.0067	0.0028	ug/l	
60-57-1	Dieldrin	ND	0.0067	0.0051	ug/l	
72-54-8	4,4'-DDD	ND	0.0067	0.0038	ug/l	
72-55-9	4,4'-DDE	ND	0.0067	0.0034	ug/l	
50-29-3	4,4'-DDT	ND	0.0067	0.0046	ug/l	
72-20-8	Endrin	ND	0.0067	0.0040	ug/l	
1031-07-8	Endosulfan sulfate	ND	0.0067	0.0036	ug/l	
7421-93-4	Endrin aldehyde	ND	0.0067	0.0045	ug/l	
53494-70-5	Endrin ketone	ND	0.0067	0.0041	ug/l	
959-98-8	Endosulfan-I	ND	0.0067	0.0035	ug/l	
33213-65-9	Endosulfan-II	ND	0.0067	0.0033	ug/l	
76-44-8	Heptachlor	ND	0.0067	0.0030	ug/l	
1024-57-3	Heptachlor epoxide	ND	0.0067	0.0040	ug/l	
72-43-5	Methoxychlor	ND	0.013	0.0045	ug/l	
8001-35-2	Toxaphene	ND	0.17	0.11	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	61%		13-153%
877-09-8	Tetrachloro-m-xylene	68%		13-153%
2051-24-3	Decachlorobiphenyl	21%		10-138%
2051-24-3	Decachlorobiphenyl	24%		10-138%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	MW-106		
Lab Sample ID:	JC66927-1	**Date Sampled:**	05/29/18
Matrix:	AQ - Ground Water	**Date Received:**	05/29/18
Method:	SW846 8082A SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2G164630.D	1	05/31/18 05:42	CP	05/30/18 16:50	OP12371	G2G4349
Run #2							

	Initial Volume	Final Volume
Run #1	300 ml	2.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	0.33	0.13	ug/l	
11104-28-2	Aroclor 1221	ND	0.33	0.28	ug/l	
11141-16-5	Aroclor 1232	ND	0.33	0.17	ug/l	
53469-21-9	Aroclor 1242	ND	0.33	0.15	ug/l	
12672-29-6	Aroclor 1248	ND	0.33	0.084	ug/l	
11097-69-1	Aroclor 1254	ND	0.33	0.28	ug/l	
11096-82-5	Aroclor 1260	ND	0.33	0.10	ug/l	
11100-14-4	Aroclor 1268	ND	0.33	0.12	ug/l	
37324-23-5	Aroclor 1262	ND	0.33	0.13	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	73%		11-166%
877-09-8	Tetrachloro-m-xylene	71%		11-166%
2051-24-3	Decachlorobiphenyl	23%		10-150%
2051-24-3	Decachlorobiphenyl	26%		10-150%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: MW-106
Lab Sample ID: JC66927-1
Matrix: AQ - Ground Water
Project: National Grid, Philly Coke, Philadelphia PA

Date Sampled: 05/29/18
Date Received: 05/29/18
Percent Solids: n/a

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	781	200	ug/l	1	05/31/18	06/01/18	EAL	SW846 6010C [2]	SW846 3010A [5]
Antimony	< 6.0	6.0	ug/l	1	05/31/18	06/01/18	EAL	SW846 6010C [2]	SW846 3010A [5]
Arsenic	< 3.0	3.0	ug/l	1	05/31/18	06/01/18	EAL	SW846 6010C [2]	SW846 3010A [5]
Barium	< 200	200	ug/l	1	05/31/18	06/01/18	EAL	SW846 6010C [2]	SW846 3010A [5]
Beryllium	< 1.0	1.0	ug/l	1	05/31/18	06/01/18	EAL	SW846 6010C [2]	SW846 3010A [5]
Cadmium	< 3.0	3.0	ug/l	1	05/31/18	06/01/18	EAL	SW846 6010C [2]	SW846 3010A [5]
Calcium	59100	5000	ug/l	1	05/31/18	06/01/18	EAL	SW846 6010C [2]	SW846 3010A [5]
Chromium	< 10	10	ug/l	1	05/31/18	06/01/18	EAL	SW846 6010C [2]	SW846 3010A [5]
Cobalt	< 50	50	ug/l	1	05/31/18	06/01/18	EAL	SW846 6010C [2]	SW846 3010A [5]
Copper	< 10	10	ug/l	1	05/31/18	06/01/18	EAL	SW846 6010C [2]	SW846 3010A [5]
Iron	20500	100	ug/l	1	05/31/18	06/01/18	EAL	SW846 6010C [2]	SW846 3010A [5]
Lead	94.4	3.0	ug/l	1	05/31/18	06/01/18	EAL	SW846 6010C [2]	SW846 3010A [5]
Magnesium	27300	5000	ug/l	1	05/31/18	06/01/18	EAL	SW846 6010C [2]	SW846 3010A [5]
Manganese	1030	15	ug/l	1	05/31/18	06/01/18	EAL	SW846 6010C [2]	SW846 3010A [5]
Mercury	< 0.20	0.20	ug/l	1	05/30/18	05/30/18	DP	SW846 7470A [1]	SW846 7470A [4]
Nickel	< 10	10	ug/l	1	05/31/18	06/01/18	EAL	SW846 6010C [2]	SW846 3010A [5]
Potassium	< 10000	10000	ug/l	1	05/31/18	06/01/18	EAL	SW846 6010C [2]	SW846 3010A [5]
Selenium	< 10	10	ug/l	1	05/31/18	06/01/18	EAL	SW846 6010C [2]	SW846 3010A [5]
Silver	< 10	10	ug/l	1	05/31/18	06/01/18	EAL	SW846 6010C [2]	SW846 3010A [5]
Sodium	14200	10000	ug/l	1	05/31/18	06/01/18	EAL	SW846 6010C [2]	SW846 3010A [5]
Thallium	< 2.0	2.0	ug/l	1	05/31/18	06/04/18	EAL	SW846 6010C [3]	SW846 3010A [5]
Vanadium	< 50	50	ug/l	1	05/31/18	06/01/18	EAL	SW846 6010C [2]	SW846 3010A [5]
Zinc	41.6	20	ug/l	1	05/31/18	06/01/18	EAL	SW846 6010C [2]	SW846 3010A [5]

(1) Instrument QC Batch: MA44537
(2) Instrument QC Batch: MA44572
(3) Instrument QC Batch: MA44586
(4) Prep QC Batch: MP7394
(5) Prep QC Batch: MP7404

RL = Reporting Limit

Report of Analysis

Client Sample ID:	MW-106		
Lab Sample ID:	JC66927-1	**Date Sampled:**	05/29/18
Matrix:	AQ - Ground Water	**Date Received:**	05/29/18
		Percent Solids:	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Cyanide	< 0.010	0.010	mg/l	1	06/05/18 11:50	BM	EPA 335.4/LACHAT

RL = Reporting Limit

Report of Analysis

Client Sample ID: PCMW-19S
Lab Sample ID: JC66927-2
Matrix: AQ - Ground Water
Project: National Grid, Philly Coke, Philadelphia PA

Date Sampled: 05/29/18
Date Received: 05/29/18
Percent Solids: n/a

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	< 200	200	ug/l	1	05/31/18	06/01/18	EAL	SW846 6010C [2]	SW846 3010A [5]
Antimony	< 6.0	6.0	ug/l	1	05/31/18	06/01/18	EAL	SW846 6010C [2]	SW846 3010A [5]
Arsenic	38.1	3.0	ug/l	1	05/31/18	06/01/18	EAL	SW846 6010C [2]	SW846 3010A [5]
Barium	< 200	200	ug/l	1	05/31/18	06/01/18	EAL	SW846 6010C [2]	SW846 3010A [5]
Beryllium	< 1.0	1.0	ug/l	1	05/31/18	06/01/18	EAL	SW846 6010C [2]	SW846 3010A [5]
Cadmium	< 3.0	3.0	ug/l	1	05/31/18	06/01/18	EAL	SW846 6010C [2]	SW846 3010A [5]
Calcium	81300	5000	ug/l	1	05/31/18	06/01/18	EAL	SW846 6010C [2]	SW846 3010A [5]
Chromium	< 10	10	ug/l	1	05/31/18	06/01/18	EAL	SW846 6010C [2]	SW846 3010A [5]
Cobalt	< 50	50	ug/l	1	05/31/18	06/01/18	EAL	SW846 6010C [2]	SW846 3010A [5]
Copper	< 10	10	ug/l	1	05/31/18	06/01/18	EAL	SW846 6010C [2]	SW846 3010A [5]
Iron	12000	100	ug/l	1	05/31/18	06/01/18	EAL	SW846 6010C [2]	SW846 3010A [5]
Lead	7.3	3.0	ug/l	1	05/31/18	06/01/18	EAL	SW846 6010C [2]	SW846 3010A [5]
Magnesium	15000	5000	ug/l	1	05/31/18	06/01/18	EAL	SW846 6010C [2]	SW846 3010A [5]
Manganese	1210	15	ug/l	1	05/31/18	06/01/18	EAL	SW846 6010C [2]	SW846 3010A [5]
Mercury	< 0.20	0.20	ug/l	1	05/30/18	05/30/18	DP	SW846 7470A [1]	SW846 7470A [4]
Nickel	< 10	10	ug/l	1	05/31/18	06/01/18	EAL	SW846 6010C [2]	SW846 3010A [5]
Potassium	< 10000	10000	ug/l	1	05/31/18	06/01/18	EAL	SW846 6010C [2]	SW846 3010A [5]
Selenium	< 10	10	ug/l	1	05/31/18	06/01/18	EAL	SW846 6010C [2]	SW846 3010A [5]
Silver	< 10	10	ug/l	1	05/31/18	06/01/18	EAL	SW846 6010C [2]	SW846 3010A [5]
Sodium	< 10000	10000	ug/l	1	05/31/18	06/01/18	EAL	SW846 6010C [2]	SW846 3010A [5]
Thallium	< 2.0	2.0	ug/l	1	05/31/18	06/04/18	EAL	SW846 6010C [3]	SW846 3010A [5]
Vanadium	< 50	50	ug/l	1	05/31/18	06/01/18	EAL	SW846 6010C [2]	SW846 3010A [5]
Zinc	< 20	20	ug/l	1	05/31/18	06/01/18	EAL	SW846 6010C [2]	SW846 3010A [5]

(1) Instrument QC Batch: MA44537
(2) Instrument QC Batch: MA44572
(3) Instrument QC Batch: MA44586
(4) Prep QC Batch: MP7394
(5) Prep QC Batch: MP7404

RL = Reporting Limit

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Report of Analysis

Client Sample ID:	TRIP BLANK		
Lab Sample ID:	JC66927-3	**Date Sampled:**	05/29/18
Matrix:	AQ - Trip Blank Water	**Date Received:**	05/29/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2D175992.D	1	05/31/18 16:22	JP	n/a	n/a	V2D7423
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	5.0	ug/l	
71-43-2	Benzene	ND	0.50	0.17	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.38	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.22	ug/l	
75-25-2	Bromoform	ND	1.0	0.42	ug/l	
74-83-9	Bromomethane	ND	2.0	1.4	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	4.8	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.50	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.34	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.24	ug/l	
75-00-3	Chloroethane	ND	1.0	0.59	ug/l	
67-66-3	Chloroform	ND	1.0	0.29	ug/l	
74-87-3	Chloromethane	ND	1.0	0.53	ug/l	
110-82-7	Cyclohexane	ND	5.0	0.63	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.69	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.16	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.21	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.50	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.50	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.50	ug/l	
75-71-8	Dichlorodifluoromethane [a]	ND	2.0	1.9	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.21	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.20	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.47	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.50	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.40	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.24	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.25	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.22	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.22	ug/l	
76-13-1	Freon 113	ND	5.0	1.2	ug/l	
591-78-6	2-Hexanone	ND	5.0	3.3	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TRIP BLANK		
Lab Sample ID:	JC66927-3	**Date Sampled:**	05/29/18
Matrix:	AQ - Trip Blank Water	**Date Received:**	05/29/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	1.0	0.25	ug/l	
79-20-9	Methyl Acetate	ND	5.0	3.1	ug/l	
108-87-2	Methylcyclohexane	ND	5.0	1.8	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.25	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	3.0	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.24	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.17	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.50	ug/l	
108-88-3	Toluene	ND	1.0	0.25	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.50	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.24	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.27	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.60	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.62	ug/l	
	m,p-Xylene	ND	1.0	0.43	ug/l	
95-47-6	o-Xylene	ND	1.0	0.22	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.22	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		80-120%
17060-07-0	1,2-Dichloroethane-D4	89%		81-124%
2037-26-5	Toluene-D8	100%		80-120%
460-00-4	4-Bromofluorobenzene	97%		80-120%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

CHAIN OF CUSTODY

SGS North America Inc. - Dayton
2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200 FAX 732-329-3499
www.sgs.com/ehsusa

GW WTB

PAGE ___ OF ___

FED-EX Tracking #: | Bottle Order Control #: DK-052218-49
SGS Quote #: | SGS Job #: JC67003

Client / Reporting Information

Company Name: Arcadis
Street Address: 824 N. Market St. Suite 920
City: Wilmington State: DE Zip: 19801
Project Contact: Carey/Healy E-mail: lawrence.healy@arcadis-us.com
Phone #: 302-358-3284 315-671-9338 Fax #:
Sampler(s) Name(s): Adam Wissner; Ian Lobell Phone #: 302-358-7064

Project Information

Project Name: Philly Coke
Street: Richmond St & Lefevre St.
City: bridesburg State: PA
Project #:
Client Purchase Order #:
Project Manager:

Billing Information (if different from Report to)

Company Name:
Street Address:
City State Zip:
Attention:

Requested Analysis (see TEST CODE sheet)

Lab Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	ABB270TCL20-14DX	VB260TCL20	MTAL	CN	HG	P8081PESTTCL	P8082PCB11
1	MW-104		5/30/18	1120	AW	GW	12	3	1	2		6				X	X	X	X	X	X	X
2	MW-101			1320	AW	GW	12	3	1	2		6				X	X	X	X	X	X	X
3	MW-105			0952	AW	GW	12	3	1	2		6				X	X	X	X	X	X	X
4	PCMW-06			1310	IC	GW	1					1						X				
5	PCMW-05			1205	IC	GW	1					1						X				
6	PCMW-04			1110	IC	GW	1					1						X				
7	MW-107			0850	IC	GW	12	3	1	2		6				X	X	X	X	X	X	X
8	Trip Blank		—	—	—	—	2	2								X						

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
SED-Sediment
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe
FB-Field Blank
EB-Equipment Blank
RB- Rinse Blank
TB-Trip Blank

LAB USE ONLY

E8
E75
A20
G2212
V598

Turnaround Time (Business days)

Approved by (SGS Project Manager)/Date:

- [ ] Std. 10 Business Days
- [ ] 5 Day RUSH
- [ ] 3 Day RUSH
- [ ] 2 Day RUSH
- [ ] 1 Day RUSH
- [ ] other

Emergency & Rush T/A data available via LabLink

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULLT1 (Level 3+4)
- [ ] NJ Reduced
- [ ] Commercial "C"
- [ ] NJ Data of Known Quality Protocol Reporting
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format
- [ ] Other

Commercial "A" = Results Only; Commercial "B" = Results + QC Summary
NJ Reduced = Results + QC Summary + Partial Raw data

Comments / Special Instructions

INITIAL ASESSMENT PA.
LABEL VERIFICATION
Sample inventory is verified upon receipt in the Laboratory

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by Sampler	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1	Adam Wissner	5/30/18 1400	1	2	5/30/18 1600	2
3		5/30/18 2100	3	4	Date Time:	4
5	Relinquished by:	Date Time:	Received By: 5	Custody Seal #	☐ Intact ☐ Not intact	Preserved where applicable ☐

On Ice ☐ Cooler Temp 2.6, 2.1

Form:SM088-03C (revised 2/12/18)

http://www.sgs.com/en/terms-and-conditions.

SGS LabLink@1003731 16:45 15-Jun-2018

Report of Analysis

Client Sample ID:	MW-104		
Lab Sample ID:	JC67003-1	**Date Sampled:**	05/30/18
Matrix:	AQ - Ground Water	**Date Received:**	05/30/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4B82374.D	1	06/01/18 12:07	HT	n/a	n/a	V4B3421
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	5.0	ug/l	
71-43-2	Benzene	ND	0.50	0.17	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.38	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.22	ug/l	
75-25-2	Bromoform	ND	1.0	0.42	ug/l	
74-83-9	Bromomethane	ND	2.0	1.4	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	4.8	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.50	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.34	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.24	ug/l	
75-00-3	Chloroethane	ND	1.0	0.59	ug/l	
67-66-3	Chloroform	ND	1.0	0.29	ug/l	
74-87-3	Chloromethane	ND	1.0	0.53	ug/l	
110-82-7	Cyclohexane	ND	5.0	0.63	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.69	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.16	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.21	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.50	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.50	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.50	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.9	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.21	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.20	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.47	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.50	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.40	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.24	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.25	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.22	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.22	ug/l	
76-13-1	Freon 113	ND	5.0	1.2	ug/l	
591-78-6	2-Hexanone	ND	5.0	3.3	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW-104		
Lab Sample ID:	JC67003-1	**Date Sampled:**	05/30/18
Matrix:	AQ - Ground Water	**Date Received:**	05/30/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	1.0	0.25	ug/l	
79-20-9	Methyl Acetate	ND	5.0	3.1	ug/l	
108-87-2	Methylcyclohexane	ND	5.0	1.8	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.25	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	3.0	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.24	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.17	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.50	ug/l	
108-88-3	Toluene	ND	1.0	0.25	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.50	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.24	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.27	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.60	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.62	ug/l	
	m,p-Xylene	ND	1.0	0.43	ug/l	
95-47-6	o-Xylene	ND	1.0	0.22	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.22	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	107%		80-120%
17060-07-0	1,2-Dichloroethane-D4	111%		81-124%
2037-26-5	Toluene-D8	98%		80-120%
460-00-4	4-Bromofluorobenzene	96%		80-120%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS LabLink@1003731 16:45 15-Jun-2018

Report of Analysis

Client Sample ID:	MW-104		
Lab Sample ID:	JC67003-1	**Date Sampled:**	05/30/18
Matrix:	AQ - Ground Water	**Date Received:**	05/30/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6P473601.D	1	06/08/18 05:15	GS	06/01/18 16:00	OP12443	E6P2238
Run #2							

	Initial Volume	Final Volume
Run #1	1050 ml	1.0 ml
Run #2		

ABN TCL List (SOM0 1.1)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	4.8	0.78	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	4.8	0.85	ug/l	
120-83-2	2,4-Dichlorophenol	ND	1.9	1.2	ug/l	
105-67-9	2,4-Dimethylphenol	ND	4.8	2.3	ug/l	
51-28-5	2,4-Dinitrophenol [a]	ND	4.8	1.5	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	4.8	1.2	ug/l	
95-48-7	2-Methylphenol	ND	1.9	0.85	ug/l	
	3&4-Methylphenol	ND	1.9	0.84	ug/l	
88-75-5	2-Nitrophenol	ND	4.8	0.91	ug/l	
100-02-7	4-Nitrophenol	ND	9.5	1.1	ug/l	
87-86-5	Pentachlorophenol	ND	3.8	1.3	ug/l	
108-95-2	Phenol	ND	1.9	0.37	ug/l	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	4.8	1.4	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	4.8	1.3	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	4.8	0.88	ug/l	
83-32-9	Acenaphthene	0.92	0.95	0.18	ug/l	J
208-96-8	Acenaphthylene	ND	0.95	0.13	ug/l	
98-86-2	Acetophenone	ND	1.9	0.20	ug/l	
120-12-7	Anthracene	ND	0.95	0.20	ug/l	
1912-24-9	Atrazine	ND	1.9	0.43	ug/l	
100-52-7	Benzaldehyde	ND	4.8	0.28	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.95	0.19	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.95	0.20	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.95	0.20	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.95	0.32	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.95	0.20	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	1.9	0.38	ug/l	
85-68-7	Butyl benzyl phthalate	ND	1.9	0.44	ug/l	
92-52-4	1,1'-Biphenyl	ND	0.95	0.20	ug/l	
91-58-7	2-Chloronaphthalene	ND	1.9	0.22	ug/l	
106-47-8	4-Chloroaniline	ND	4.8	0.32	ug/l	
86-74-8	Carbazole	ND	0.95	0.22	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: MW-104
Lab Sample ID: JC67003-1
Matrix: AQ - Ground Water
Method: SW846 8270D SW846 3510C
Project: National Grid, Philly Coke, Philadelphia PA

Date Sampled: 05/30/18
Date Received: 05/30/18
Percent Solids: n/a

ABN TCL List (SOM0 1.1)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	1.9	0.62	ug/l	
218-01-9	Chrysene	ND	0.95	0.17	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	1.9	0.26	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	1.9	0.24	ug/l	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	1.9	0.38	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	1.9	0.35	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	0.95	0.53	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	0.95	0.45	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	1.9	0.48	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.95	0.32	ug/l	
132-64-9	Dibenzofuran	ND	4.8	0.21	ug/l	
84-74-2	Di-n-butyl phthalate	ND	1.9	0.47	ug/l	
117-84-0	Di-n-octyl phthalate	ND	1.9	0.22	ug/l	
84-66-2	Diethyl phthalate	ND	1.9	0.25	ug/l	
131-11-3	Dimethyl phthalate	ND	1.9	0.21	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	1.9	1.6	ug/l	
206-44-0	Fluoranthene	0.57	0.95	0.16	ug/l	J
86-73-7	Fluorene	0.48	0.95	0.16	ug/l	J
118-74-1	Hexachlorobenzene	ND	0.95	0.31	ug/l	
87-68-3	Hexachlorobutadiene	ND	0.95	0.47	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	9.5	2.6	ug/l	
67-72-1	Hexachloroethane	ND	1.9	0.37	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.95	0.32	ug/l	
78-59-1	Isophorone	ND	1.9	0.26	ug/l	
91-57-6	2-Methylnaphthalene	ND	0.95	0.20	ug/l	
88-74-4	2-Nitroaniline	ND	4.8	0.26	ug/l	
99-09-2	3-Nitroaniline	ND	4.8	0.37	ug/l	
100-01-6	4-Nitroaniline	ND	4.8	0.42	ug/l	
91-20-3	Naphthalene	ND	0.95	0.22	ug/l	
98-95-3	Nitrobenzene	ND	1.9	0.61	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	1.9	0.46	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	4.8	0.21	ug/l	
85-01-8	Phenanthrene	ND	0.95	0.17	ug/l	
129-00-0	Pyrene	0.57	0.95	0.21	ug/l	J
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	1.9	0.35	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	33%		10-110%
4165-62-2	Phenol-d5	23%		10-110%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW-104		
Lab Sample ID:	JC67003-1	**Date Sampled:**	05/30/18
Matrix:	AQ - Ground Water	**Date Received:**	05/30/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

ABN TCL List (SOM0 1.1)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
118-79-6	2,4,6-Tribromophenol	82%		36-151%
4165-60-0	Nitrobenzene-d5	69%		34-128%
321-60-8	2-Fluorobiphenyl	71%		38-119%
1718-51-0	Terphenyl-d14	76%		26-129%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS LabLink@1003731 16:45 15-Jun-2018

Report of Analysis

Client Sample ID:	MW-104		
Lab Sample ID:	JC67003-1	**Date Sampled:**	05/30/18
Matrix:	AQ - Ground Water	**Date Received:**	05/30/18
Method:	SW846 8081B SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6G56983.D	1	06/06/18 11:41	RK	06/01/18 19:40	OP12449	G6G1701
Run #2 [a]	8G15850.D	5	06/12/18 13:27	DS	06/01/18 19:40	OP12449	G8G513

	Initial Volume	Final Volume
Run #1	300 ml	2.0 ml
Run #2	300 ml	2.0 ml

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	0.0067	0.0034	ug/l	
319-84-6	alpha-BHC	ND	0.0067	0.0035	ug/l	
319-85-7	beta-BHC	ND	0.0067	0.0053	ug/l	
319-86-8	delta-BHC	ND	0.0067	0.0044	ug/l	
58-89-9	gamma-BHC (Lindane)	ND	0.0067	0.0040	ug/l	
5103-71-9	alpha-Chlordane	ND	0.0067	0.0033	ug/l	
5103-74-2	gamma-Chlordane	ND	0.0067	0.0028	ug/l	
60-57-1	Dieldrin	ND	0.0067	0.0051	ug/l	
72-54-8	4,4'-DDD	ND	0.0067	0.0038	ug/l	
72-55-9	4,4'-DDE	ND	0.0067	0.0034	ug/l	
50-29-3	4,4'-DDT	ND	0.0067	0.0046	ug/l	
72-20-8	Endrin	ND	0.0067	0.0040	ug/l	
1031-07-8	Endosulfan sulfate	ND	0.0067	0.0036	ug/l	
7421-93-4	Endrin aldehyde	ND	0.0067	0.0045	ug/l	
53494-70-5	Endrin ketone	ND	0.0067	0.0041	ug/l	
959-98-8	Endosulfan-I	ND	0.0067	0.0035	ug/l	
33213-65-9	Endosulfan-II	ND	0.0067	0.0033	ug/l	
76-44-8	Heptachlor	ND	0.0067	0.0030	ug/l	
1024-57-3	Heptachlor epoxide	ND	0.0067	0.0040	ug/l	
72-43-5	Methoxychlor	ND	0.013	0.0045	ug/l	
8001-35-2	Toxaphene	ND	0.17	0.11	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	3% [b]	85%	13-153%
877-09-8	Tetrachloro-m-xylene	60%	89%	13-153%
2051-24-3	Decachlorobiphenyl	1% [b]	55%	10-138%
2051-24-3	Decachlorobiphenyl	38%	54%	10-138%

(a) Confirmation run.
(b) Outside control limits due to matrix interference with the internal standard.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS LabLink@1003731 16:45 15-Jun-2018

Report of Analysis

Client Sample ID:	MW-104		
Lab Sample ID:	JC67003-1	**Date Sampled:**	05/30/18
Matrix:	AQ - Ground Water	**Date Received:**	05/30/18
Method:	SW846 8082A SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XX229852.D	1	06/03/18 05:02	EAL	06/01/18 19:40	OP12448	GXX6375
Run #2							

	Initial Volume	Final Volume
Run #1	300 ml	2.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	0.33	0.13	ug/l	
11104-28-2	Aroclor 1221	ND	0.33	0.28	ug/l	
11141-16-5	Aroclor 1232	ND	0.33	0.17	ug/l	
53469-21-9	Aroclor 1242	ND	0.33	0.15	ug/l	
12672-29-6	Aroclor 1248	ND	0.33	0.084	ug/l	
11097-69-1	Aroclor 1254	ND	0.33	0.28	ug/l	
11096-82-5	Aroclor 1260	ND	0.33	0.10	ug/l	
11100-14-4	Aroclor 1268	ND	0.33	0.12	ug/l	
37324-23-5	Aroclor 1262	ND	0.33	0.13	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	63%		11-166%
877-09-8	Tetrachloro-m-xylene	60%		11-166%
2051-24-3	Decachlorobiphenyl	34%		10-150%
2051-24-3	Decachlorobiphenyl	36%		10-150%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: MW-104
Lab Sample ID: JC67003-1
Matrix: AQ - Ground Water
Project: National Grid, Philly Coke, Philadelphia PA

Date Sampled: 05/30/18
Date Received: 05/30/18
Percent Solids: n/a

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	1080	200	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Antimony	< 6.0	6.0	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Arsenic	4.1	3.0	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Barium	< 200	200	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Beryllium	< 1.0	1.0	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Cadmium	< 3.0	3.0	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Calcium	60200	5000	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Chromium	< 10	10	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Cobalt	< 50	50	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Copper	< 10	10	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Iron	2900	100	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Lead	7.7	3.0	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [3]	SW846 3010A [5]
Magnesium	10800	5000	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Manganese	639	15	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Mercury	< 0.20	0.20	ug/l	1	06/01/18	06/01/18	DP	SW846 7470A [1]	SW846 7470A [4]
Nickel	< 10	10	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Potassium	< 10000	10000	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Selenium	< 10	10	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Silver	< 10	10	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Sodium	< 10000	10000	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Thallium	< 2.0	2.0	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [3]	SW846 3010A [5]
Vanadium	< 50	50	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Zinc	34.1	20	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]

(1) Instrument QC Batch: MA44562
(2) Instrument QC Batch: MA44612
(3) Instrument QC Batch: MA44616
(4) Prep QC Batch: MP7430
(5) Prep QC Batch: MP7493

RL = Reporting Limit

Report of Analysis

Client Sample ID:	MW-104		
Lab Sample ID:	JC67003-1	**Date Sampled:**	05/30/18
Matrix:	AQ - Ground Water	**Date Received:**	05/30/18
		Percent Solids:	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Cyanide	0.67	0.010	mg/l	1	06/05/18 14:08	BM	EPA 335.4/LACHAT

RL = Reporting Limit

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Report of Analysis

Client Sample ID:	MW-101		
Lab Sample ID:	JC67003-2	**Date Sampled:**	05/30/18
Matrix:	AQ - Ground Water	**Date Received:**	05/30/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2B160775.D	1	06/01/18 02:25	DG	n/a	n/a	V2B7179
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	5.0	ug/l	
71-43-2	Benzene	3.8	0.50	0.17	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.38	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.22	ug/l	
75-25-2	Bromoform	ND	1.0	0.42	ug/l	
74-83-9	Bromomethane	ND	2.0	1.4	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	4.8	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.50	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.34	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.24	ug/l	
75-00-3	Chloroethane [a]	ND	1.0	0.59	ug/l	
67-66-3	Chloroform	ND	1.0	0.29	ug/l	
74-87-3	Chloromethane [a]	ND	1.0	0.53	ug/l	
110-82-7	Cyclohexane	ND	5.0	0.63	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.69	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.16	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.21	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.50	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.50	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.50	ug/l	
75-71-8	Dichlorodifluoromethane [b]	ND	2.0	1.9	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.21	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.20	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.47	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.50	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.40	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.24	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.25	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.22	ug/l	
100-41-4	Ethylbenzene	0.23	1.0	0.22	ug/l	J
76-13-1	Freon 113	ND	5.0	1.2	ug/l	
591-78-6	2-Hexanone	ND	5.0	3.3	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW-101		
Lab Sample ID:	JC67003-2	**Date Sampled:**	05/30/18
Matrix:	AQ - Ground Water	**Date Received:**	05/30/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	1.0	0.25	ug/l	
79-20-9	Methyl Acetate	ND	5.0	3.1	ug/l	
108-87-2	Methylcyclohexane	ND	5.0	1.8	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.25	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	3.0	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.24	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.17	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.50	ug/l	
108-88-3	Toluene	ND	1.0	0.25	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.50	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.24	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.27	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.60	ug/l	
75-01-4	Vinyl chloride [a]	ND	1.0	0.62	ug/l	
	m,p-Xylene	0.59	1.0	0.43	ug/l	J
95-47-6	o-Xylene	1.7	1.0	0.22	ug/l	
1330-20-7	Xylene (total)	2.3	1.0	0.22	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	118%		80-120%
17060-07-0	1,2-Dichloroethane-D4	107%		81-124%
2037-26-5	Toluene-D8	101%		80-120%
460-00-4	4-Bromofluorobenzene	103%		80-120%

(a) Associated CCV outside of control limits high, sample was ND.
(b) Associated CCV outside of control limits high, sample was ND. This compound in BS is outside in house QC limits bias high.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	MW-101		
Lab Sample ID:	JC67003-2	**Date Sampled:**	05/30/18
Matrix:	AQ - Ground Water	**Date Received:**	05/30/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6P473602.D	1	06/08/18 05:40	GS	06/01/18 16:00	OP12443	E6P2238
Run #2							

	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2		

ABN TCL List (SOM0 1.1)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	5.0	0.82	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	5.0	0.89	ug/l	
120-83-2	2,4-Dichlorophenol	ND	2.0	1.3	ug/l	
105-67-9	2,4-Dimethylphenol	ND	5.0	2.4	ug/l	
51-28-5	2,4-Dinitrophenol [a]	ND	5.0	1.6	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	5.0	1.3	ug/l	
95-48-7	2-Methylphenol	ND	2.0	0.89	ug/l	
	3&4-Methylphenol	ND	2.0	0.88	ug/l	
88-75-5	2-Nitrophenol	ND	5.0	0.96	ug/l	
100-02-7	4-Nitrophenol	ND	10	1.2	ug/l	
87-86-5	Pentachlorophenol	ND	4.0	1.4	ug/l	
108-95-2	Phenol	ND	2.0	0.39	ug/l	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	5.0	1.5	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	5.0	1.3	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	5.0	0.92	ug/l	
83-32-9	Acenaphthene	0.76	1.0	0.19	ug/l	J
208-96-8	Acenaphthylene	ND	1.0	0.14	ug/l	
98-86-2	Acetophenone	ND	2.0	0.21	ug/l	
120-12-7	Anthracene	ND	1.0	0.21	ug/l	
1912-24-9	Atrazine	ND	2.0	0.45	ug/l	
100-52-7	Benzaldehyde	ND	5.0	0.29	ug/l	
56-55-3	Benzo(a)anthracene	ND	1.0	0.20	ug/l	
50-32-8	Benzo(a)pyrene	ND	1.0	0.21	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	1.0	0.21	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	1.0	0.34	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	1.0	0.21	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	2.0	0.40	ug/l	
85-68-7	Butyl benzyl phthalate	ND	2.0	0.46	ug/l	
92-52-4	1,1'-Biphenyl	ND	1.0	0.21	ug/l	
91-58-7	2-Chloronaphthalene	ND	2.0	0.24	ug/l	
106-47-8	4-Chloroaniline	ND	5.0	0.34	ug/l	
86-74-8	Carbazole	0.70	1.0	0.23	ug/l	J

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: MW-101
Lab Sample ID: JC67003-2
Matrix: AQ - Ground Water
Method: SW846 8270D SW846 3510C
Project: National Grid, Philly Coke, Philadelphia PA

Date Sampled: 05/30/18
Date Received: 05/30/18
Percent Solids: n/a

ABN TCL List (SOM0 1.1)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	2.0	0.65	ug/l	
218-01-9	Chrysene	ND	1.0	0.18	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	2.0	0.28	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	2.0	0.25	ug/l	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	2.0	0.40	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	2.0	0.37	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	1.0	0.55	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	1.0	0.48	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	2.0	0.51	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	1.0	0.33	ug/l	
132-64-9	Dibenzofuran	0.44	5.0	0.22	ug/l	J
84-74-2	Di-n-butyl phthalate	ND	2.0	0.50	ug/l	
117-84-0	Di-n-octyl phthalate	ND	2.0	0.23	ug/l	
84-66-2	Diethyl phthalate	ND	2.0	0.26	ug/l	
131-11-3	Dimethyl phthalate	ND	2.0	0.22	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.0	1.7	ug/l	
206-44-0	Fluoranthene	0.44	1.0	0.17	ug/l	J
86-73-7	Fluorene	0.85	1.0	0.17	ug/l	J
118-74-1	Hexachlorobenzene	ND	1.0	0.33	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.49	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	10	2.8	ug/l	
67-72-1	Hexachloroethane	ND	2.0	0.39	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	1.0	0.33	ug/l	
78-59-1	Isophorone	ND	2.0	0.28	ug/l	
91-57-6	2-Methylnaphthalene	ND	1.0	0.21	ug/l	
88-74-4	2-Nitroaniline	ND	5.0	0.28	ug/l	
99-09-2	3-Nitroaniline	ND	5.0	0.39	ug/l	
100-01-6	4-Nitroaniline	ND	5.0	0.44	ug/l	
91-20-3	Naphthalene	1.9	1.0	0.23	ug/l	
98-95-3	Nitrobenzene	ND	2.0	0.64	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	2.0	0.48	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.0	0.22	ug/l	
85-01-8	Phenanthrene	1.1	1.0	0.18	ug/l	
129-00-0	Pyrene	ND	1.0	0.22	ug/l	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	2.0	0.37	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	39%		10-110%
4165-62-2	Phenol-d5	27%		10-110%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW-101		
Lab Sample ID:	JC67003-2	**Date Sampled:**	05/30/18
Matrix:	AQ - Ground Water	**Date Received:**	05/30/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

ABN TCL List (SOM0 1.1)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
118-79-6	2,4,6-Tribromophenol	74%		36-151%
4165-60-0	Nitrobenzene-d5	68%		34-128%
321-60-8	2-Fluorobiphenyl	71%		38-119%
1718-51-0	Terphenyl-d14	64%		26-129%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	MW-101		
Lab Sample ID:	JC67003-2	**Date Sampled:**	05/30/18
Matrix:	AQ - Ground Water	**Date Received:**	05/30/18
Method:	SW846 8081B SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6G56984.D	1	06/06/18 11:59	RK	06/01/18 19:40	OP12449	G6G1701
Run #2							

	Initial Volume	Final Volume
Run #1	300 ml	2.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	0.0067	0.0034	ug/l	
319-84-6	alpha-BHC	ND	0.0067	0.0035	ug/l	
319-85-7	beta-BHC	ND	0.0067	0.0053	ug/l	
319-86-8	delta-BHC	ND	0.0067	0.0044	ug/l	
58-89-9	gamma-BHC (Lindane)	ND	0.0067	0.0040	ug/l	
5103-71-9	alpha-Chlordane	ND	0.0067	0.0033	ug/l	
5103-74-2	gamma-Chlordane	ND	0.0067	0.0028	ug/l	
60-57-1	Dieldrin	ND	0.0067	0.0051	ug/l	
72-54-8	4,4'-DDD	ND	0.0067	0.0038	ug/l	
72-55-9	4,4'-DDE	ND	0.0067	0.0034	ug/l	
50-29-3	4,4'-DDT	ND	0.0067	0.0046	ug/l	
72-20-8	Endrin	ND	0.0067	0.0040	ug/l	
1031-07-8	Endosulfan sulfate	ND	0.0067	0.0036	ug/l	
7421-93-4	Endrin aldehyde	ND	0.0067	0.0045	ug/l	
53494-70-5	Endrin ketone	ND	0.0067	0.0041	ug/l	
959-98-8	Endosulfan-I	ND	0.0067	0.0035	ug/l	
33213-65-9	Endosulfan-II	ND	0.0067	0.0033	ug/l	
76-44-8	Heptachlor	ND	0.0067	0.0030	ug/l	
1024-57-3	Heptachlor epoxide	ND	0.0067	0.0040	ug/l	
72-43-5	Methoxychlor	ND	0.013	0.0045	ug/l	
8001-35-2	Toxaphene	ND	0.17	0.11	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	70%		13-153%
877-09-8	Tetrachloro-m-xylene	69%		13-153%
2051-24-3	Decachlorobiphenyl	53%		10-138%
2051-24-3	Decachlorobiphenyl	53%		10-138%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	MW-101		
Lab Sample ID:	JC67003-2	**Date Sampled:**	05/30/18
Matrix:	AQ - Ground Water	**Date Received:**	05/30/18
Method:	SW846 8082A SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XX229853.D	1	06/03/18 05:18	EAL	06/01/18 19:40	OP12448	GXX6375
Run #2							

	Initial Volume	Final Volume
Run #1	300 ml	2.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	0.33	0.13	ug/l	
11104-28-2	Aroclor 1221	ND	0.33	0.28	ug/l	
11141-16-5	Aroclor 1232	ND	0.33	0.17	ug/l	
53469-21-9	Aroclor 1242	ND	0.33	0.15	ug/l	
12672-29-6	Aroclor 1248	ND	0.33	0.084	ug/l	
11097-69-1	Aroclor 1254	ND	0.33	0.28	ug/l	
11096-82-5	Aroclor 1260	ND	0.33	0.10	ug/l	
11100-14-4	Aroclor 1268	ND	0.33	0.12	ug/l	
37324-23-5	Aroclor 1262	ND	0.33	0.13	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	69%		11-166%
877-09-8	Tetrachloro-m-xylene	73%		11-166%
2051-24-3	Decachlorobiphenyl	52%		10-150%
2051-24-3	Decachlorobiphenyl	53%		10-150%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: MW-101
Lab Sample ID: JC67003-2
Matrix: AQ - Ground Water
Project: National Grid, Philly Coke, Philadelphia PA

Date Sampled: 05/30/18
Date Received: 05/30/18
Percent Solids: n/a

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	508	200	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Antimony	< 6.0	6.0	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Arsenic	< 3.0	3.0	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Barium	543	200	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Beryllium	< 1.0	1.0	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Cadmium	< 3.0	3.0	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Calcium	112000	5000	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Chromium	< 10	10	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Cobalt	< 50	50	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Copper	12.2	10	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Iron	2600	100	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Lead	60.7	3.0	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [3]	SW846 3010A [5]
Magnesium	63000	5000	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Manganese	156	15	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Mercury	< 0.20	0.20	ug/l	1	06/01/18	06/01/18	DP	SW846 7470A [1]	SW846 7470A [4]
Nickel	< 10	10	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Potassium	< 10000	10000	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Selenium	< 10	10	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Silver	< 10	10	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Sodium	37000	10000	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Thallium	< 2.0	2.0	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [3]	SW846 3010A [5]
Vanadium	< 50	50	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Zinc	54.5	20	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]

(1) Instrument QC Batch: MA44562
(2) Instrument QC Batch: MA44612
(3) Instrument QC Batch: MA44616
(4) Prep QC Batch: MP7430
(5) Prep QC Batch: MP7493

RL = Reporting Limit

Report of Analysis

Client Sample ID:	MW-101		
Lab Sample ID:	JC67003-2	**Date Sampled:**	05/30/18
Matrix:	AQ - Ground Water	**Date Received:**	05/30/18
		Percent Solids:	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Cyanide	0.20	0.010	mg/l	1	06/05/18 14:12	BM	EPA 335.4/LACHAT

RL = Reporting Limit

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Report of Analysis

Client Sample ID:	MW-105		
Lab Sample ID:	JC67003-3	**Date Sampled:**	05/30/18
Matrix:	AQ - Ground Water	**Date Received:**	05/30/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2B160776.D	1	06/01/18 02:54	DG	n/a	n/a	V2B7179
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	5.0	ug/l	
71-43-2	Benzene	ND	0.50	0.17	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.38	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.22	ug/l	
75-25-2	Bromoform	ND	1.0	0.42	ug/l	
74-83-9	Bromomethane	ND	2.0	1.4	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	4.8	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.50	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.34	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.24	ug/l	
75-00-3	Chloroethane [a]	ND	1.0	0.59	ug/l	
67-66-3	Chloroform	ND	1.0	0.29	ug/l	
74-87-3	Chloromethane [a]	ND	1.0	0.53	ug/l	
110-82-7	Cyclohexane	ND	5.0	0.63	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.69	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.16	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.21	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.50	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.50	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.50	ug/l	
75-71-8	Dichlorodifluoromethane [b]	ND	2.0	1.9	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.21	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.20	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.47	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.50	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.40	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.24	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.25	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.22	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.22	ug/l	
76-13-1	Freon 113	ND	5.0	1.2	ug/l	
591-78-6	2-Hexanone	ND	5.0	3.3	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW-105		
Lab Sample ID:	JC67003-3	**Date Sampled:**	05/30/18
Matrix:	AQ - Ground Water	**Date Received:**	05/30/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	1.0	0.25	ug/l	
79-20-9	Methyl Acetate	ND	5.0	3.1	ug/l	
108-87-2	Methylcyclohexane	ND	5.0	1.8	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.25	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	3.0	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.24	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.17	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.50	ug/l	
108-88-3	Toluene	ND	1.0	0.25	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.50	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.24	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.27	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.60	ug/l	
75-01-4	Vinyl chloride [a]	ND	1.0	0.62	ug/l	
	m,p-Xylene	ND	1.0	0.43	ug/l	
95-47-6	o-Xylene	ND	1.0	0.22	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.22	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	119%		80-120%
17060-07-0	1,2-Dichloroethane-D4	106%		81-124%
2037-26-5	Toluene-D8	101%		80-120%
460-00-4	4-Bromofluorobenzene	104%		80-120%

(a) Associated CCV outside of control limits high, sample was ND.
(b) Associated CCV outside of control limits high, sample was ND. This compound in BS is outside in house QC limits bias high.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	MW-105		
Lab Sample ID:	JC67003-3	**Date Sampled:**	05/30/18
Matrix:	AQ - Ground Water	**Date Received:**	05/30/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6P473603.D	1	06/08/18 06:04	GS	06/01/18 16:00	OP12443	E6P2238
Run #2							

	Initial Volume	Final Volume
Run #1	1050 ml	1.0 ml
Run #2		

ABN TCL List (SOM0 1.1)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	4.8	0.78	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	4.8	0.85	ug/l	
120-83-2	2,4-Dichlorophenol	ND	1.9	1.2	ug/l	
105-67-9	2,4-Dimethylphenol	ND	4.8	2.3	ug/l	
51-28-5	2,4-Dinitrophenol [a]	ND	4.8	1.5	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	4.8	1.2	ug/l	
95-48-7	2-Methylphenol	ND	1.9	0.85	ug/l	
	3&4-Methylphenol	ND	1.9	0.84	ug/l	
88-75-5	2-Nitrophenol	ND	4.8	0.91	ug/l	
100-02-7	4-Nitrophenol	ND	9.5	1.1	ug/l	
87-86-5	Pentachlorophenol	ND	3.8	1.3	ug/l	
108-95-2	Phenol	ND	1.9	0.37	ug/l	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	4.8	1.4	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	4.8	1.3	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	4.8	0.88	ug/l	
83-32-9	Acenaphthene	1.3	0.95	0.18	ug/l	
208-96-8	Acenaphthylene	ND	0.95	0.13	ug/l	
98-86-2	Acetophenone	ND	1.9	0.20	ug/l	
120-12-7	Anthracene	ND	0.95	0.20	ug/l	
1912-24-9	Atrazine	ND	1.9	0.43	ug/l	
100-52-7	Benzaldehyde	ND	4.8	0.28	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.95	0.19	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.95	0.20	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.95	0.20	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.95	0.32	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.95	0.20	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	1.9	0.38	ug/l	
85-68-7	Butyl benzyl phthalate	ND	1.9	0.44	ug/l	
92-52-4	1,1'-Biphenyl	ND	0.95	0.20	ug/l	
91-58-7	2-Chloronaphthalene	ND	1.9	0.22	ug/l	
106-47-8	4-Chloroaniline	ND	4.8	0.32	ug/l	
86-74-8	Carbazole	ND	0.95	0.22	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW-105		
Lab Sample ID:	JC67003-3	**Date Sampled:**	05/30/18
Matrix:	AQ - Ground Water	**Date Received:**	05/30/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

ABN TCL List (SOM0 1.1)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	1.9	0.62	ug/l	
218-01-9	Chrysene	ND	0.95	0.17	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	1.9	0.26	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	1.9	0.24	ug/l	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	1.9	0.38	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	1.9	0.35	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	0.95	0.53	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	0.95	0.45	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	1.9	0.48	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.95	0.32	ug/l	
132-64-9	Dibenzofuran	ND	4.8	0.21	ug/l	
84-74-2	Di-n-butyl phthalate	ND	1.9	0.47	ug/l	
117-84-0	Di-n-octyl phthalate	ND	1.9	0.22	ug/l	
84-66-2	Diethyl phthalate	ND	1.9	0.25	ug/l	
131-11-3	Dimethyl phthalate	ND	1.9	0.21	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	1.9	1.6	ug/l	
206-44-0	Fluoranthene	0.45	0.95	0.16	ug/l	J
86-73-7	Fluorene	ND	0.95	0.16	ug/l	
118-74-1	Hexachlorobenzene	ND	0.95	0.31	ug/l	
87-68-3	Hexachlorobutadiene	ND	0.95	0.47	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	9.5	2.6	ug/l	
67-72-1	Hexachloroethane	ND	1.9	0.37	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.95	0.32	ug/l	
78-59-1	Isophorone	ND	1.9	0.26	ug/l	
91-57-6	2-Methylnaphthalene	ND	0.95	0.20	ug/l	
88-74-4	2-Nitroaniline	ND	4.8	0.26	ug/l	
99-09-2	3-Nitroaniline	ND	4.8	0.37	ug/l	
100-01-6	4-Nitroaniline	ND	4.8	0.42	ug/l	
91-20-3	Naphthalene	ND	0.95	0.22	ug/l	
98-95-3	Nitrobenzene	ND	1.9	0.61	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	1.9	0.46	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	4.8	0.21	ug/l	
85-01-8	Phenanthrene	ND	0.95	0.17	ug/l	
129-00-0	Pyrene	0.47	0.95	0.21	ug/l	J
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	1.9	0.35	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	39%		10-110%
4165-62-2	Phenol-d5	27%		10-110%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW-105		
Lab Sample ID:	JC67003-3	**Date Sampled:**	05/30/18
Matrix:	AQ - Ground Water	**Date Received:**	05/30/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

ABN TCL List (SOM0 1.1)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
118-79-6	2,4,6-Tribromophenol	75%		36-151%
4165-60-0	Nitrobenzene-d5	70%		34-128%
321-60-8	2-Fluorobiphenyl	70%		38-119%
1718-51-0	Terphenyl-d14	65%		26-129%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	MW-105		
Lab Sample ID:	JC67003-3	**Date Sampled:**	05/30/18
Matrix:	AQ - Ground Water	**Date Received:**	05/30/18
Method:	SW846 8081B SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6G56985.D	1	06/06/18 12:17	RK	06/01/18 19:40	OP12449	G6G1701
Run #2							

	Initial Volume	Final Volume
Run #1	300 ml	2.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	0.0067	0.0034	ug/l	
319-84-6	alpha-BHC	ND	0.0067	0.0035	ug/l	
319-85-7	beta-BHC	ND	0.0067	0.0053	ug/l	
319-86-8	delta-BHC	ND	0.0067	0.0044	ug/l	
58-89-9	gamma-BHC (Lindane)	ND	0.0067	0.0040	ug/l	
5103-71-9	alpha-Chlordane	ND	0.0067	0.0033	ug/l	
5103-74-2	gamma-Chlordane	ND	0.0067	0.0028	ug/l	
60-57-1	Dieldrin	ND	0.0067	0.0051	ug/l	
72-54-8	4,4'-DDD	ND	0.0067	0.0038	ug/l	
72-55-9	4,4'-DDE	ND	0.0067	0.0034	ug/l	
50-29-3	4,4'-DDT	ND	0.0067	0.0046	ug/l	
72-20-8	Endrin	ND	0.0067	0.0040	ug/l	
1031-07-8	Endosulfan sulfate	ND	0.0067	0.0036	ug/l	
7421-93-4	Endrin aldehyde	ND	0.0067	0.0045	ug/l	
53494-70-5	Endrin ketone	ND	0.0067	0.0041	ug/l	
959-98-8	Endosulfan-I	ND	0.0067	0.0035	ug/l	
33213-65-9	Endosulfan-II	ND	0.0067	0.0033	ug/l	
76-44-8	Heptachlor	ND	0.0067	0.0030	ug/l	
1024-57-3	Heptachlor epoxide	ND	0.0067	0.0040	ug/l	
72-43-5	Methoxychlor	ND	0.013	0.0045	ug/l	
8001-35-2	Toxaphene	ND	0.17	0.11	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	62%		13-153%
877-09-8	Tetrachloro-m-xylene	68%		13-153%
2051-24-3	Decachlorobiphenyl	34%		10-138%
2051-24-3	Decachlorobiphenyl	38%		10-138%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	MW-105		
Lab Sample ID:	JC67003-3	**Date Sampled:**	05/30/18
Matrix:	AQ - Ground Water	**Date Received:**	05/30/18
Method:	SW846 8082A SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XX229854.D	1	06/03/18 05:35	EAL	06/01/18 19:40	OP12448	GXX6375
Run #2							

	Initial Volume	Final Volume
Run #1	300 ml	2.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	0.33	0.13	ug/l	
11104-28-2	Aroclor 1221	ND	0.33	0.28	ug/l	
11141-16-5	Aroclor 1232	ND	0.33	0.17	ug/l	
53469-21-9	Aroclor 1242	ND	0.33	0.15	ug/l	
12672-29-6	Aroclor 1248	ND	0.33	0.084	ug/l	
11097-69-1	Aroclor 1254	ND	0.33	0.28	ug/l	
11096-82-5	Aroclor 1260	ND	0.33	0.10	ug/l	
11100-14-4	Aroclor 1268	ND	0.33	0.12	ug/l	
37324-23-5	Aroclor 1262	ND	0.33	0.13	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	76%		11-166%
877-09-8	Tetrachloro-m-xylene	83%		11-166%
2051-24-3	Decachlorobiphenyl	46%		10-150%
2051-24-3	Decachlorobiphenyl	45%		10-150%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: MW-105
Lab Sample ID: JC67003-3
Matrix: AQ - Ground Water
Project: National Grid, Philly Coke, Philadelphia PA

Date Sampled: 05/30/18
Date Received: 05/30/18
Percent Solids: n/a

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	< 200	200	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Antimony	< 6.0	6.0	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Arsenic	< 3.0	3.0	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Barium	< 200	200	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Beryllium	< 1.0	1.0	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Cadmium	< 3.0	3.0	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Calcium	242000	5000	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Chromium	< 10	10	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Cobalt	< 50	50	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Copper	< 10	10	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Iron	42600	100	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Lead [a]	< 15	15	ug/l	5	06/05/18	06/08/18	ND	SW846 6010C [3]	SW846 3010A [5]
Magnesium	42500	5000	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Manganese	2330	15	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Mercury	< 0.20	0.20	ug/l	1	06/01/18	06/01/18	DP	SW846 7470A [1]	SW846 7470A [4]
Nickel	< 10	10	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Potassium	< 10000	10000	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Selenium	< 10	10	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Silver	< 10	10	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Sodium	14600	10000	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Thallium [a]	< 10	10	ug/l	5	06/05/18	06/08/18	ND	SW846 6010C [3]	SW846 3010A [5]
Vanadium	< 50	50	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Zinc	< 20	20	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]

(1) Instrument QC Batch: MA44562
(2) Instrument QC Batch: MA44612
(3) Instrument QC Batch: MA44616
(4) Prep QC Batch: MP7430
(5) Prep QC Batch: MP7493

(a) Elevated detection limit due to dilution required for high interfering element.

RL = Reporting Limit

Report of Analysis

Client Sample ID:	MW-105		
Lab Sample ID:	JC67003-3	**Date Sampled:**	05/30/18
Matrix:	AQ - Ground Water	**Date Received:**	05/30/18
		Percent Solids:	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Cyanide	0.11	0.010	mg/l	1	06/05/18 14:13	BM	EPA 335.4/LACHAT

RL = Reporting Limit

Report of Analysis

Client Sample ID: PCMW-06
Lab Sample ID: JC67003-4
Matrix: AQ - Ground Water
Project: National Grid, Philly Coke, Philadelphia PA

Date Sampled: 05/30/18
Date Received: 05/30/18
Percent Solids: n/a

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	< 200	200	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Antimony	< 6.0	6.0	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Arsenic	< 3.0	3.0	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Barium	227	200	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Beryllium	< 1.0	1.0	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Cadmium	< 3.0	3.0	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Calcium	82900	5000	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Chromium	< 10	10	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Cobalt	< 50	50	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Copper	< 10	10	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Iron	912	100	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Lead	24.1	3.0	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [3]	SW846 3010A [5]
Magnesium	8650	5000	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Manganese	45.4	15	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Mercury	< 0.20	0.20	ug/l	1	06/01/18	06/01/18	DP	SW846 7470A [1]	SW846 7470A [4]
Nickel	< 10	10	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Potassium	< 10000	10000	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Selenium	< 10	10	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Silver	< 10	10	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Sodium	< 10000	10000	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Thallium	< 2.0	2.0	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [3]	SW846 3010A [5]
Vanadium	< 50	50	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Zinc	117	20	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]

(1) Instrument QC Batch: MA44562
(2) Instrument QC Batch: MA44612
(3) Instrument QC Batch: MA44616
(4) Prep QC Batch: MP7430
(5) Prep QC Batch: MP7493

RL = Reporting Limit

Report of Analysis

Client Sample ID: PCMW-05
Lab Sample ID: JC67003-5
Matrix: AQ - Ground Water
Project: National Grid, Philly Coke, Philadelphia PA

Date Sampled: 05/30/18
Date Received: 05/30/18
Percent Solids: n/a

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	< 200	200	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Antimony	< 6.0	6.0	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Arsenic	4.2	3.0	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Barium	318	200	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Beryllium	< 1.0	1.0	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Cadmium	< 3.0	3.0	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Calcium	159000	5000	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Chromium	< 10	10	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Cobalt	< 50	50	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Copper	28.4	10	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Iron	2990	100	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Lead	80.1	3.0	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [3]	SW846 3010A [5]
Magnesium	14600	5000	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Manganese	360	15	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Mercury	< 0.20	0.20	ug/l	1	06/01/18	06/01/18	DP	SW846 7470A [1]	SW846 7470A [4]
Nickel	524	10	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Potassium	< 10000	10000	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Selenium	< 10	10	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Silver	< 10	10	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Sodium	< 10000	10000	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Thallium	< 2.0	2.0	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [3]	SW846 3010A [5]
Vanadium	< 50	50	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Zinc	2070	20	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]

(1) Instrument QC Batch: MA44562
(2) Instrument QC Batch: MA44612
(3) Instrument QC Batch: MA44616
(4) Prep QC Batch: MP7430
(5) Prep QC Batch: MP7493

RL = Reporting Limit

Report of Analysis

Client Sample ID: PCMW-04
Lab Sample ID: JC67003-6
Matrix: AQ - Ground Water
Project: National Grid, Philly Coke, Philadelphia PA

Date Sampled: 05/30/18
Date Received: 05/30/18
Percent Solids: n/a

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	< 200	200	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Antimony	< 6.0	6.0	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Arsenic	3.7	3.0	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Barium	< 200	200	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Beryllium	< 1.0	1.0	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Cadmium	< 3.0	3.0	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Calcium	97200	5000	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [3]	SW846 3010A [5]
Chromium	< 10	10	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Cobalt	< 50	50	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Copper	14.9	10	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Iron	8270	100	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [3]	SW846 3010A [5]
Lead	9.0	3.0	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [3]	SW846 3010A [5]
Magnesium	33900	5000	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [3]	SW846 3010A [5]
Manganese	593	15	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Mercury	< 0.20	0.20	ug/l	1	06/01/18	06/01/18	DP	SW846 7470A [1]	SW846 7470A [4]
Nickel	< 10	10	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Potassium	13700	10000	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Selenium	< 10	10	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Silver	< 10	10	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Sodium	< 10000	10000	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Thallium	< 2.0	2.0	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [3]	SW846 3010A [5]
Vanadium	< 50	50	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Zinc	< 20	20	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]

(1) Instrument QC Batch: MA44562
(2) Instrument QC Batch: MA44612
(3) Instrument QC Batch: MA44616
(4) Prep QC Batch: MP7430
(5) Prep QC Batch: MP7493

RL = Reporting Limit

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Report of Analysis

Client Sample ID:	MW-107		
Lab Sample ID:	JC67003-7	**Date Sampled:**	05/30/18
Matrix:	AQ - Ground Water	**Date Received:**	05/30/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2B160777.D	1	06/01/18 03:24	DG	n/a	n/a	V2B7179
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	5.0	ug/l	
71-43-2	Benzene	ND	0.50	0.17	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.38	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.22	ug/l	
75-25-2	Bromoform	ND	1.0	0.42	ug/l	
74-83-9	Bromomethane	ND	2.0	1.4	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	4.8	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.50	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.34	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.24	ug/l	
75-00-3	Chloroethane [a]	ND	1.0	0.59	ug/l	
67-66-3	Chloroform	ND	1.0	0.29	ug/l	
74-87-3	Chloromethane [a]	ND	1.0	0.53	ug/l	
110-82-7	Cyclohexane	ND	5.0	0.63	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.69	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.16	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.21	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.50	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.50	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.50	ug/l	
75-71-8	Dichlorodifluoromethane [b]	ND	2.0	1.9	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.21	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.20	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.47	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.50	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.40	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.24	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.25	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.22	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.22	ug/l	
76-13-1	Freon 113	ND	5.0	1.2	ug/l	
591-78-6	2-Hexanone	ND	5.0	3.3	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW-107		
Lab Sample ID:	JC67003-7	**Date Sampled:**	05/30/18
Matrix:	AQ - Ground Water	**Date Received:**	05/30/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	1.0	0.25	ug/l	
79-20-9	Methyl Acetate	ND	5.0	3.1	ug/l	
108-87-2	Methylcyclohexane	ND	5.0	1.8	ug/l	
1634-04-4	Methyl Tert Butyl Ether	20.7	1.0	0.25	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	3.0	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.24	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.17	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.50	ug/l	
108-88-3	Toluene	ND	1.0	0.25	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.50	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.24	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.27	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.60	ug/l	
75-01-4	Vinyl chloride [a]	ND	1.0	0.62	ug/l	
	m,p-Xylene	ND	1.0	0.43	ug/l	
95-47-6	o-Xylene	ND	1.0	0.22	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.22	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	118%		80-120%
17060-07-0	1,2-Dichloroethane-D4	107%		81-124%
2037-26-5	Toluene-D8	101%		80-120%
460-00-4	4-Bromofluorobenzene	104%		80-120%

(a) Associated CCV outside of control limits high, sample was ND.
(b) Associated CCV outside of control limits high, sample was ND. This compound in BS is outside in house QC limits bias high.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	MW-107		
Lab Sample ID:	JC67003-7	**Date Sampled:**	05/30/18
Matrix:	AQ - Ground Water	**Date Received:**	05/30/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6P473604.D	1	06/08/18 06:29	GS	06/01/18 16:00	OP12443	E6P2238
Run #2							

	Initial Volume	Final Volume
Run #1	950 ml	1.0 ml
Run #2		

ABN TCL List (SOM0 1.1)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	5.3	0.86	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	5.3	0.94	ug/l	
120-83-2	2,4-Dichlorophenol	ND	2.1	1.3	ug/l	
105-67-9	2,4-Dimethylphenol	ND	5.3	2.6	ug/l	
51-28-5	2,4-Dinitrophenol [a]	ND	5.3	1.6	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	5.3	1.4	ug/l	
95-48-7	2-Methylphenol	ND	2.1	0.93	ug/l	
	3&4-Methylphenol	ND	2.1	0.93	ug/l	
88-75-5	2-Nitrophenol	ND	5.3	1.0	ug/l	
100-02-7	4-Nitrophenol	ND	11	1.2	ug/l	
87-86-5	Pentachlorophenol	ND	4.2	1.5	ug/l	
108-95-2	Phenol	ND	2.1	0.41	ug/l	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	5.3	1.5	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	5.3	1.4	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	5.3	0.97	ug/l	
83-32-9	Acenaphthene	ND	1.1	0.20	ug/l	
208-96-8	Acenaphthylene	0.46	1.1	0.14	ug/l	J
98-86-2	Acetophenone	ND	2.1	0.22	ug/l	
120-12-7	Anthracene	ND	1.1	0.22	ug/l	
1912-24-9	Atrazine	ND	2.1	0.47	ug/l	
100-52-7	Benzaldehyde	ND	5.3	0.30	ug/l	
56-55-3	Benzo(a)anthracene	1.3	1.1	0.21	ug/l	
50-32-8	Benzo(a)pyrene	1.2	1.1	0.22	ug/l	
205-99-2	Benzo(b)fluoranthene	1.7	1.1	0.22	ug/l	
191-24-2	Benzo(g,h,i)perylene	0.95	1.1	0.36	ug/l	J
207-08-9	Benzo(k)fluoranthene	0.53	1.1	0.22	ug/l	J
101-55-3	4-Bromophenyl phenyl ether	ND	2.1	0.43	ug/l	
85-68-7	Butyl benzyl phthalate	ND	2.1	0.48	ug/l	
92-52-4	1,1'-Biphenyl	ND	1.1	0.22	ug/l	
91-58-7	2-Chloronaphthalene	ND	2.1	0.25	ug/l	
106-47-8	4-Chloroaniline	ND	5.3	0.36	ug/l	
86-74-8	Carbazole	ND	1.1	0.24	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: MW-107
Lab Sample ID: JC67003-7
Matrix: AQ - Ground Water
Method: SW846 8270D SW846 3510C
Project: National Grid, Philly Coke, Philadelphia PA

Date Sampled: 05/30/18
Date Received: 05/30/18
Percent Solids: n/a

ABN TCL List (SOM0 1.1)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	2.1	0.68	ug/l	
218-01-9	Chrysene	1.1	1.1	0.19	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	2.1	0.29	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	2.1	0.26	ug/l	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	2.1	0.42	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	2.1	0.39	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	1.1	0.58	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	1.1	0.50	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	2.1	0.53	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	1.1	0.35	ug/l	
132-64-9	Dibenzofuran	ND	5.3	0.23	ug/l	
84-74-2	Di-n-butyl phthalate	ND	2.1	0.52	ug/l	
117-84-0	Di-n-octyl phthalate	ND	2.1	0.25	ug/l	
84-66-2	Diethyl phthalate	ND	2.1	0.28	ug/l	
131-11-3	Dimethyl phthalate	ND	2.1	0.23	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.1	1.7	ug/l	
206-44-0	Fluoranthene	2.6	1.1	0.18	ug/l	
86-73-7	Fluorene	ND	1.1	0.18	ug/l	
118-74-1	Hexachlorobenzene	ND	1.1	0.34	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.1	0.52	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	11	2.9	ug/l	
67-72-1	Hexachloroethane	ND	2.1	0.41	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	0.74	1.1	0.35	ug/l	J
78-59-1	Isophorone	ND	2.1	0.29	ug/l	
91-57-6	2-Methylnaphthalene	ND	1.1	0.22	ug/l	
88-74-4	2-Nitroaniline	ND	5.3	0.29	ug/l	
99-09-2	3-Nitroaniline	ND	5.3	0.41	ug/l	
100-01-6	4-Nitroaniline	ND	5.3	0.46	ug/l	
91-20-3	Naphthalene	ND	1.1	0.24	ug/l	
98-95-3	Nitrobenzene	ND	2.1	0.68	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	2.1	0.51	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.3	0.23	ug/l	
85-01-8	Phenanthrene	0.98	1.1	0.18	ug/l	J
129-00-0	Pyrene	2.0	1.1	0.23	ug/l	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	2.1	0.39	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	39%		10-110%
4165-62-2	Phenol-d5	27%		10-110%

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J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW-107		
Lab Sample ID:	JC67003-7	**Date Sampled:**	05/30/18
Matrix:	AQ - Ground Water	**Date Received:**	05/30/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

ABN TCL List (SOM0 1.1)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
118-79-6	2,4,6-Tribromophenol	75%		36-151%
4165-60-0	Nitrobenzene-d5	72%		34-128%
321-60-8	2-Fluorobiphenyl	72%		38-119%
1718-51-0	Terphenyl-d14	66%		26-129%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
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E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	MW-107		
Lab Sample ID:	JC67003-7	**Date Sampled:**	05/30/18
Matrix:	AQ - Ground Water	**Date Received:**	05/30/18
Method:	SW846 8081B SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6G56986.D	1	06/06/18 12:35	RK	06/01/18 19:40	OP12449	G6G1701
Run #2							

	Initial Volume	Final Volume
Run #1	300 ml	2.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	0.0067	0.0034	ug/l	
319-84-6	alpha-BHC	ND	0.0067	0.0035	ug/l	
319-85-7	beta-BHC	ND	0.0067	0.0053	ug/l	
319-86-8	delta-BHC	ND	0.0067	0.0044	ug/l	
58-89-9	gamma-BHC (Lindane)	ND	0.0067	0.0040	ug/l	
5103-71-9	alpha-Chlordane	ND	0.0067	0.0033	ug/l	
5103-74-2	gamma-Chlordane	ND	0.0067	0.0028	ug/l	
60-57-1	Dieldrin	ND	0.0067	0.0051	ug/l	
72-54-8	4,4'-DDD	ND	0.0067	0.0038	ug/l	
72-55-9	4,4'-DDE	ND	0.0067	0.0034	ug/l	
50-29-3	4,4'-DDT	ND	0.0067	0.0046	ug/l	
72-20-8	Endrin	ND	0.0067	0.0040	ug/l	
1031-07-8	Endosulfan sulfate	ND	0.0067	0.0036	ug/l	
7421-93-4	Endrin aldehyde	ND	0.0067	0.0045	ug/l	
53494-70-5	Endrin ketone	ND	0.0067	0.0041	ug/l	
959-98-8	Endosulfan-I	ND	0.0067	0.0035	ug/l	
33213-65-9	Endosulfan-II	ND	0.0067	0.0033	ug/l	
76-44-8	Heptachlor	ND	0.0067	0.0030	ug/l	
1024-57-3	Heptachlor epoxide	ND	0.0067	0.0040	ug/l	
72-43-5	Methoxychlor	ND	0.013	0.0045	ug/l	
8001-35-2	Toxaphene	ND	0.17	0.11	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	71%		13-153%
877-09-8	Tetrachloro-m-xylene	65%		13-153%
2051-24-3	Decachlorobiphenyl	38%		10-138%
2051-24-3	Decachlorobiphenyl	40%		10-138%

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J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	MW-107		
Lab Sample ID:	JC67003-7	**Date Sampled:**	05/30/18
Matrix:	AQ - Ground Water	**Date Received:**	05/30/18
Method:	SW846 8082A SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XX229855.D	1	06/03/18 05:51	EAL	06/01/18 19:40	OP12448	GXX6375
Run #2							

	Initial Volume	Final Volume
Run #1	300 ml	2.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	0.33	0.13	ug/l	
11104-28-2	Aroclor 1221	ND	0.33	0.28	ug/l	
11141-16-5	Aroclor 1232	ND	0.33	0.17	ug/l	
53469-21-9	Aroclor 1242	ND	0.33	0.15	ug/l	
12672-29-6	Aroclor 1248	ND	0.33	0.084	ug/l	
11097-69-1	Aroclor 1254	ND	0.33	0.28	ug/l	
11096-82-5	Aroclor 1260	ND	0.33	0.10	ug/l	
11100-14-4	Aroclor 1268	ND	0.33	0.12	ug/l	
37324-23-5	Aroclor 1262	ND	0.33	0.13	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	65%		11-166%
877-09-8	Tetrachloro-m-xylene	73%		11-166%
2051-24-3	Decachlorobiphenyl	35%		10-150%
2051-24-3	Decachlorobiphenyl	38%		10-150%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: MW-107
Lab Sample ID: JC67003-7
Matrix: AQ - Ground Water
Project: National Grid, Philly Coke, Philadelphia PA

Date Sampled: 05/30/18
Date Received: 05/30/18
Percent Solids: n/a

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	1570	200	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Antimony	< 6.0	6.0	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Arsenic	9.4	3.0	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Barium	242	200	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Beryllium	< 1.0	1.0	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Cadmium	< 3.0	3.0	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Calcium	104000	5000	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Chromium	< 10	10	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Cobalt	< 50	50	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Copper	16.8	10	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Iron	17100	100	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Lead	206	3.0	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [3]	SW846 3010A [5]
Magnesium	44200	5000	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Manganese	1120	15	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Mercury	< 0.20	0.20	ug/l	1	06/01/18	06/01/18	DP	SW846 7470A [1]	SW846 7470A [4]
Nickel	< 10	10	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Potassium	16400	10000	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Selenium	< 10	10	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Silver	< 10	10	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Sodium	12000	10000	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Thallium	< 2.0	2.0	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [3]	SW846 3010A [5]
Vanadium	< 50	50	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]
Zinc	135	20	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [5]

(1) Instrument QC Batch: MA44562
(2) Instrument QC Batch: MA44612
(3) Instrument QC Batch: MA44616
(4) Prep QC Batch: MP7430
(5) Prep QC Batch: MP7493

RL = Reporting Limit

Report of Analysis

Client Sample ID:	MW-107		
Lab Sample ID:	JC67003-7	**Date Sampled:**	05/30/18
Matrix:	AQ - Ground Water	**Date Received:**	05/30/18
		Percent Solids:	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Cyanide	< 0.010	0.010	mg/l	1	06/05/18 14:15	BM	EPA 335.4/LACHAT

RL = Reporting Limit

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Report of Analysis

Client Sample ID:	TRIP BLANK		
Lab Sample ID:	JC67003-8	**Date Sampled:**	05/30/18
Matrix:	AQ - Trip Blank Water	**Date Received:**	05/30/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2B160773.D	1	06/01/18 01:25	DG	n/a	n/a	V2B7179
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	5.0	ug/l	
71-43-2	Benzene	ND	0.50	0.17	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.38	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.22	ug/l	
75-25-2	Bromoform	ND	1.0	0.42	ug/l	
74-83-9	Bromomethane	ND	2.0	1.4	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	4.8	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.50	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.34	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.24	ug/l	
75-00-3	Chloroethane [a]	ND	1.0	0.59	ug/l	
67-66-3	Chloroform	ND	1.0	0.29	ug/l	
74-87-3	Chloromethane [a]	ND	1.0	0.53	ug/l	
110-82-7	Cyclohexane	ND	5.0	0.63	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.69	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.16	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.21	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.50	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.50	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.50	ug/l	
75-71-8	Dichlorodifluoromethane [b]	ND	2.0	1.9	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.21	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.20	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.47	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.50	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.40	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.24	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.25	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.22	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.22	ug/l	
76-13-1	Freon 113	ND	5.0	1.2	ug/l	
591-78-6	2-Hexanone	ND	5.0	3.3	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TRIP BLANK		
Lab Sample ID:	JC67003-8	**Date Sampled:**	05/30/18
Matrix:	AQ - Trip Blank Water	**Date Received:**	05/30/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	1.0	0.25	ug/l	
79-20-9	Methyl Acetate	ND	5.0	3.1	ug/l	
108-87-2	Methylcyclohexane	ND	5.0	1.8	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.25	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	3.0	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.24	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.17	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.50	ug/l	
108-88-3	Toluene	ND	1.0	0.25	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.50	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.24	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.27	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.60	ug/l	
75-01-4	Vinyl chloride [a]	ND	1.0	0.62	ug/l	
	m,p-Xylene	ND	1.0	0.43	ug/l	
95-47-6	o-Xylene	ND	1.0	0.22	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.22	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	120%		80-120%
17060-07-0	1,2-Dichloroethane-D4	107%		81-124%
2037-26-5	Toluene-D8	100%		80-120%
460-00-4	4-Bromofluorobenzene	104%		80-120%

(a) Associated CCV outside of control limits high, sample was ND.
(b) Associated CCV outside of control limits high, sample was ND. This compound in BS is outside in house QC limits bias high.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS ACCUTEST — CHAIN OF CUSTODY

GW in TB
(R) 5/31/18

SGS Accutest - Dayton
2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200 FAX: 732-329-3499/3480
www.accutest.com

PAGE ___ OF ___ (1)

FED-EX Tracking #: | Bottle Order Control #: DK052218-49
SGS Accutest Quote #: | SGS Accutest Job #: JC67110

Client / Reporting Information

Company Name: Arcadis
Street Address: 824 N. Market St. Suite 820
City: Wilmington State: DE Zip: 19801
Project Contact: Carey Healy E-mail: Lawrence.Healy@arcadis.com
Phone #: Fax #:
Sampler(s) Name(s): Adam Wisser, Jan Campbell Phone #: 3237582469

Project Information

Project Name: Philly Coke
Street: Richmond St & Lakewest
City: Bridesburg State: PA
Project #:
Client Purchase Order #:
Project Manager:

Billing Information (if different from Report to)

Company Name:
Street Address:
City: State: Zip:
Attention:

Requested Analysis (see TEST CODE sheet)

SGS Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	V8260TCL20	AS8270TCL20-140X	MTBE	CN	Hg	P8081PESTCL	P8082PCB11	LAB USE ONLY
1	PCMW-085		5/31/18	0910	AW	GW	1			1								X					E25
2	PCMW-095			1037	AW	GW	1			1								X					E104
3	MW-102			0850	IC	GW	12	3	1	2		6				X	X	X	X	X	X	X	A32
4	MW-103			1115	IC	GW	12	3	1	2		6				X	X	X	X	X	X	X	A223
5	DUP-05312018		5/31/18	—	—	GW	12	3	1	2		6				X	X	X	X	X	X	X	V618
6	Trip Blank		—	—	—	—	2	2								X							
(R) 5/31/18																							

Turnaround Time (Business days)

Approved By (SGS Accutest PM): / Date:

- [ ] Std. 10 Business Days
- [ ] 5 Day RUSH
- [ ] 3 Day RUSH
- [ ] 2 Day RUSH
- [ ] 1 Day RUSH
- [ ] other

Emergency & Rush T/A data available VIA Lablink

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULLT1 (Level 3+4)
- [ ] NJ Reduced
- [ ] Commercial "C"
- [ ] NJ Data of Known Quality Protocol Reporting
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format
- [ ] Other

Commercial "A" = Results Only, Commercial "B" = Results + QC Summary
NJ Reduced = Results + QC Summary + Partial Raw data

Comments / Special Instructions

INITIAL ASESSMENT 31/18

LABEL VERIFICATION

Sample inventory is verified upon receipt in the Laboratory

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1		5/31/18 1345	1	2	5/31/18 1500	2
3		5/31/18 2110	3	4	Date Time:	4
5	Relinquished by:	Date Time:	5	Custody Seal #	Intact / Not intact	Preserved where applicable

On Ice: 2.1, 1.6, 1.9 Cooler Temp

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL - Sludge; SED-Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB-Field Blank; EB-Equipment Blank; RB- Rinse Blank; TB-Trip Blank

Form:SM088-01CRev.Date:9/13/16

Report of Analysis

Client Sample ID: PCMW-08S
Lab Sample ID: JC67110-1
Matrix: AQ - Ground Water
Project: National Grid, Philly Coke, Philadelphia PA

Date Sampled: 05/31/18
Date Received: 05/31/18
Percent Solids: n/a

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	< 200	200	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Antimony	6.0	6.0	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Arsenic	34.6	3.0	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Barium	< 200	200	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Beryllium	< 1.0	1.0	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Cadmium	< 3.0	3.0	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Calcium	155000	5000	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Chromium	< 10	10	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Cobalt	< 50	50	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Copper	< 10	10	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Iron	9500	100	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Lead	12.6	3.0	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [3]	SW846 3010A [4]
Magnesium	126000	5000	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Manganese	676	15	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Mercury	< 0.20	0.20	ug/l	1	06/06/18	06/06/18	DP	SW846 7470A [1]	SW846 7470A [5]
Nickel	< 10	10	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Potassium	17900	10000	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Selenium	< 10	10	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Silver	< 10	10	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Sodium	16400	10000	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Thallium	< 2.0	2.0	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [3]	SW846 3010A [4]
Vanadium	< 50	50	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Zinc	57.1	20	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]

(1) Instrument QC Batch: MA44592
(2) Instrument QC Batch: MA44612
(3) Instrument QC Batch: MA44616
(4) Prep QC Batch: MP7493
(5) Prep QC Batch: MP7513

RL = Reporting Limit

Report of Analysis

Client Sample ID: PCMW-09S
Lab Sample ID: JC67110-2
Matrix: AQ - Ground Water
Project: National Grid, Philly Coke, Philadelphia PA

Date Sampled: 05/31/18
Date Received: 05/31/18
Percent Solids: n/a

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	< 200	200	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Antimony	< 6.0	6.0	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Arsenic	7.4	3.0	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Barium	< 200	200	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Beryllium	< 1.0	1.0	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Cadmium	< 3.0	3.0	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Calcium	169000	5000	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Chromium	< 10	10	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Cobalt	< 50	50	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Copper	< 10	10	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Iron	6170	100	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Lead	5.3	3.0	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [3]	SW846 3010A [4]
Magnesium	100000	5000	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Manganese	488	15	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Mercury	< 0.20	0.20	ug/l	1	06/06/18	06/06/18	DP	SW846 7470A [1]	SW846 7470A [5]
Nickel	11.3	10	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Potassium	11800	10000	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Selenium	< 10	10	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Silver	< 10	10	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Sodium	18300	10000	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Thallium	< 2.0	2.0	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [3]	SW846 3010A [4]
Vanadium	< 50	50	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Zinc	24.6	20	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]

(1) Instrument QC Batch: MA44592
(2) Instrument QC Batch: MA44612
(3) Instrument QC Batch: MA44616
(4) Prep QC Batch: MP7493
(5) Prep QC Batch: MP7513

RL = Reporting Limit

SGS LabLink@1003731 16:46 15-Jun-2018

Report of Analysis

Client Sample ID:	MW-102		
Lab Sample ID:	JC67110-3	**Date Sampled:**	05/31/18
Matrix:	AQ - Ground Water	**Date Received:**	05/31/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L301859.D	1	06/02/18 16:13	DG	n/a	n/a	VL8605
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone [a]	ND	10	5.0	ug/l	
71-43-2	Benzene	ND	0.50	0.17	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.38	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.22	ug/l	
75-25-2	Bromoform	ND	1.0	0.42	ug/l	
74-83-9	Bromomethane [b]	ND	2.0	1.4	ug/l	UJ
78-93-3	2-Butanone (MEK)	ND	10	4.8	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.50	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.34	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.24	ug/l	
75-00-3	Chloroethane	ND	1.0	0.59	ug/l	
67-66-3	Chloroform	ND	1.0	0.29	ug/l	
74-87-3	Chloromethane	ND	1.0	0.53	ug/l	
110-82-7	Cyclohexane	ND	5.0	0.63	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.69	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.16	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.21	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.50	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.50	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.50	ug/l	
75-71-8	Dichlorodifluoromethane [c]	ND	2.0	1.9	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.21	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.20	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.47	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.50	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.40	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.24	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.25	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.22	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.22	ug/l	
76-13-1	Freon 113	ND	5.0	1.2	ug/l	
591-78-6	2-Hexanone	ND	5.0	3.3	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW-102		
Lab Sample ID:	JC67110-3	**Date Sampled:**	05/31/18
Matrix:	AQ - Ground Water	**Date Received:**	05/31/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	1.0	0.25	ug/l	
79-20-9	Methyl Acetate	ND	5.0	3.1	ug/l	
108-87-2	Methylcyclohexane	ND	5.0	1.8	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.25	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	3.0	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.24	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.17	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.50	ug/l	
108-88-3	Toluene	ND	1.0	0.25	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.50	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.24	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.27	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.60	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.62	ug/l	
	m,p-Xylene	ND	1.0	0.43	ug/l	
95-47-6	o-Xylene	ND	1.0	0.22	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.22	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	109%		80-120%
17060-07-0	1,2-Dichloroethane-D4	108%		81-124%
2037-26-5	Toluene-D8	114%		80-120%
460-00-4	4-Bromofluorobenzene	99%		80-120%

(a) This compound does not meet the recommended minimum response factor specified into method 8260c.
(b) Associated CCV outside of control limits low.
(c) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS LabLink@1003731 16:46 15-Jun-2018

Report of Analysis

Client Sample ID:	MW-102		
Lab Sample ID:	JC67110-3	**Date Sampled:**	05/31/18
Matrix:	AQ - Ground Water	**Date Received:**	05/31/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5P50937.D	1	06/05/18 18:55	CC	06/04/18 13:10	OP12498	E5P2426
Run #2							

	Initial Volume	Final Volume
Run #1	850 ml	1.0 ml
Run #2		

ABN TCL List (SOM0 1.1)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	5.9	0.96	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	5.9	1.0	ug/l	
120-83-2	2,4-Dichlorophenol	ND	2.4	1.5	ug/l	
105-67-9	2,4-Dimethylphenol	ND	5.9	2.9	ug/l	
51-28-5	2,4-Dinitrophenol	ND	5.9	1.8	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	5.9	1.5	ug/l	
95-48-7	2-Methylphenol	ND	2.4	1.0	ug/l	
	3&4-Methylphenol	ND	2.4	1.0	ug/l	
88-75-5	2-Nitrophenol	ND	5.9	1.1	ug/l	
100-02-7	4-Nitrophenol [a]	ND	12	1.4	ug/l	
87-86-5	Pentachlorophenol	ND	4.7	1.6	ug/l	
108-95-2	Phenol	ND	2.4	0.46	ug/l	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	5.9	1.7	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	5.9	1.6	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	5.9	1.1	ug/l	
83-32-9	Acenaphthene	ND	1.2	0.22	ug/l	
208-96-8	Acenaphthylene	ND	1.2	0.16	ug/l	
98-86-2	Acetophenone	ND	2.4	0.24	ug/l	
120-12-7	Anthracene	ND	1.2	0.25	ug/l	
1912-24-9	Atrazine [a]	ND	2.4	0.53	ug/l	
100-52-7	Benzaldehyde	ND	5.9	0.34	ug/l	
56-55-3	Benzo(a)anthracene	ND	1.2	0.24	ug/l	
50-32-8	Benzo(a)pyrene	ND	1.2	0.25	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	1.2	0.24	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	1.2	0.40	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	1.2	0.24	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	2.4	0.48	ug/l	
85-68-7	Butyl benzyl phthalate	ND	2.4	0.54	ug/l	
92-52-4	1,1'-Biphenyl	ND	1.2	0.25	ug/l	
91-58-7	2-Chloronaphthalene	ND	2.4	0.28	ug/l	
106-47-8	4-Chloroaniline	ND	5.9	0.40	ug/l	
86-74-8	Carbazole	ND	1.2	0.27	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW-102		
Lab Sample ID:	JC67110-3	**Date Sampled:**	05/31/18
Matrix:	AQ - Ground Water	**Date Received:**	05/31/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

ABN TCL List (SOM0 1.1)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	2.4	0.76	ug/l	
218-01-9	Chrysene	ND	1.2	0.21	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	2.4	0.33	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	2.4	0.29	ug/l	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	2.4	0.47	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	2.4	0.43	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	1.2	0.65	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	1.2	0.56	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	2.4	0.60	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	1.2	0.39	ug/l	
132-64-9	Dibenzofuran	ND	5.9	0.26	ug/l	
84-74-2	Di-n-butyl phthalate	ND	2.4	0.58	ug/l	
117-84-0	Di-n-octyl phthalate	ND	2.4	0.28	ug/l	
84-66-2	Diethyl phthalate	ND	2.4	0.31	ug/l	
131-11-3	Dimethyl phthalate	ND	2.4	0.26	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.4	1.9	ug/l	
206-44-0	Fluoranthene	ND	1.2	0.20	ug/l	
86-73-7	Fluorene	ND	1.2	0.20	ug/l	
118-74-1	Hexachlorobenzene	ND	1.2	0.38	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.2	0.58	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	12	3.3	ug/l	
67-72-1	Hexachloroethane	ND	2.4	0.46	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	1.2	0.39	ug/l	
78-59-1	Isophorone	ND	2.4	0.33	ug/l	
91-57-6	2-Methylnaphthalene	ND	1.2	0.25	ug/l	
88-74-4	2-Nitroaniline [a]	ND	5.9	0.33	ug/l	
99-09-2	3-Nitroaniline	ND	5.9	0.46	ug/l	
100-01-6	4-Nitroaniline	ND	5.9	0.52	ug/l	
91-20-3	Naphthalene	ND	1.2	0.27	ug/l	
98-95-3	Nitrobenzene	ND	2.4	0.76	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	2.4	0.57	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.9	0.26	ug/l	
85-01-8	Phenanthrene	ND	1.2	0.21	ug/l	
129-00-0	Pyrene	ND	1.2	0.26	ug/l	
95-94-3	1,2,4,5-Tetrachlorobenzene [a]	ND	2.4	0.44	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	45%		10-110%
4165-62-2	Phenol-d5	31%		10-110%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW-102		
Lab Sample ID:	JC67110-3	**Date Sampled:**	05/31/18
Matrix:	AQ - Ground Water	**Date Received:**	05/31/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

ABN TCL List (SOM0 1.1)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
118-79-6	2,4,6-Tribromophenol	83%		36-151%
4165-60-0	Nitrobenzene-d5	82%		34-128%
321-60-8	2-Fluorobiphenyl	80%		38-119%
1718-51-0	Terphenyl-d14	67%		26-129%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	MW-102		
Lab Sample ID:	JC67110-3	**Date Sampled:**	05/31/18
Matrix:	AQ - Ground Water	**Date Received:**	05/31/18
Method:	SW846 8081B SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6G56988.D	1	06/06/18 13:11	RK	06/01/18 19:40	OP12449	G6G1701
Run #2							

	Initial Volume	Final Volume
Run #1	300 ml	2.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	0.0067	0.0034	ug/l	
319-84-6	alpha-BHC	ND	0.0067	0.0035	ug/l	
319-85-7	beta-BHC	ND	0.0067	0.0053	ug/l	
319-86-8	delta-BHC	ND	0.0067	0.0044	ug/l	
58-89-9	gamma-BHC (Lindane)	ND	0.0067	0.0040	ug/l	
5103-71-9	alpha-Chlordane	ND	0.0067	0.0033	ug/l	
5103-74-2	gamma-Chlordane	ND	0.0067	0.0028	ug/l	
60-57-1	Dieldrin	ND	0.0067	0.0051	ug/l	
72-54-8	4,4'-DDD	ND	0.0067	0.0038	ug/l	
72-55-9	4,4'-DDE	ND	0.0067	0.0034	ug/l	
50-29-3	4,4'-DDT	ND	0.0067	0.0046	ug/l	
72-20-8	Endrin	ND	0.0067	0.0040	ug/l	
1031-07-8	Endosulfan sulfate	ND	0.0067	0.0036	ug/l	
7421-93-4	Endrin aldehyde	ND	0.0067	0.0045	ug/l	
53494-70-5	Endrin ketone	ND	0.0067	0.0041	ug/l	
959-98-8	Endosulfan-I	ND	0.0067	0.0035	ug/l	
33213-65-9	Endosulfan-II	ND	0.0067	0.0033	ug/l	
76-44-8	Heptachlor	ND	0.0067	0.0030	ug/l	
1024-57-3	Heptachlor epoxide	ND	0.0067	0.0040	ug/l	
72-43-5	Methoxychlor	ND	0.013	0.0045	ug/l	
8001-35-2	Toxaphene	ND	0.17	0.11	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	56%		13-153%
877-09-8	Tetrachloro-m-xylene	65%		13-153%
2051-24-3	Decachlorobiphenyl	36%		10-138%
2051-24-3	Decachlorobiphenyl	41%		10-138%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	MW-102		
Lab Sample ID:	JC67110-3	**Date Sampled:**	05/31/18
Matrix:	AQ - Ground Water	**Date Received:**	05/31/18
Method:	SW846 8082A SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XX229861.D	1	06/03/18 07:32	EAL	06/01/18 19:40	OP12448	GXX6375
Run #2							

	Initial Volume	Final Volume
Run #1	300 ml	2.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	0.33	0.13	ug/l	
11104-28-2	Aroclor 1221	ND	0.33	0.28	ug/l	
11141-16-5	Aroclor 1232	ND	0.33	0.17	ug/l	
53469-21-9	Aroclor 1242	ND	0.33	0.15	ug/l	
12672-29-6	Aroclor 1248	ND	0.33	0.084	ug/l	
11097-69-1	Aroclor 1254	ND	0.33	0.28	ug/l	
11096-82-5	Aroclor 1260	ND	0.33	0.10	ug/l	
11100-14-4	Aroclor 1268	ND	0.33	0.12	ug/l	
37324-23-5	Aroclor 1262	ND	0.33	0.13	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	73%		11-166%
877-09-8	Tetrachloro-m-xylene	79%		11-166%
2051-24-3	Decachlorobiphenyl	48%		10-150%
2051-24-3	Decachlorobiphenyl	49%		10-150%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: MW-102
Lab Sample ID: JC67110-3
Matrix: AQ - Ground Water
Project: National Grid, Philly Coke, Philadelphia PA

Date Sampled: 05/31/18
Date Received: 05/31/18
Percent Solids: n/a

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	661	200	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Antimony	< 6.0	6.0	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Arsenic	6.7	3.0	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Barium	352	200	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Beryllium	< 1.0	1.0	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Cadmium	< 3.0	3.0	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Calcium	103000	5000	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Chromium	< 10	10	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Cobalt	< 50	50	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Copper	< 10	10	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Iron	3560	100	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Lead	4.8	3.0	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [3]	SW846 3010A [4]
Magnesium	74200	5000	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Manganese	383	15	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Mercury	< 0.20	0.20	ug/l	1	06/06/18	06/06/18	DP	SW846 7470A [1]	SW846 7470A [5]
Nickel	< 10	10	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Potassium	14900	10000	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Selenium	< 10	10	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Silver	< 10	10	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Sodium	47600	10000	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Thallium	< 2.0	2.0	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [3]	SW846 3010A [4]
Vanadium	< 50	50	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Zinc	< 20	20	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]

(1) Instrument QC Batch: MA44592
(2) Instrument QC Batch: MA44612
(3) Instrument QC Batch: MA44616
(4) Prep QC Batch: MP7493
(5) Prep QC Batch: MP7513

RL = Reporting Limit

Report of Analysis

Client Sample ID:	MW-102		
Lab Sample ID:	JC67110-3	**Date Sampled:**	05/31/18
Matrix:	AQ - Ground Water	**Date Received:**	05/31/18
		Percent Solids:	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Cyanide	< 0.010 UJ	0.010	mg/l	1	06/07/18 10:35	BM	EPA 335.4/LACHAT

RL = Reporting Limit

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Report of Analysis

Client Sample ID:	MW-103		
Lab Sample ID:	JC67110-4	**Date Sampled:**	05/31/18
Matrix:	AQ - Ground Water	**Date Received:**	05/31/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L301857.D	1	06/02/18 15:19	DG	n/a	n/a	VL8605
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone [a]	ND	10	5.0	ug/l	
71-43-2	Benzene	ND	0.50	0.17	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.38	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.22	ug/l	
75-25-2	Bromoform	ND	1.0	0.42	ug/l	
74-83-9	Bromomethane [b]	ND	2.0	1.4	ug/l	UJ
78-93-3	2-Butanone (MEK)	ND	10	4.8	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.50	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.34	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.24	ug/l	
75-00-3	Chloroethane	ND	1.0	0.59	ug/l	
67-66-3	Chloroform	ND	1.0	0.29	ug/l	
74-87-3	Chloromethane	ND	1.0	0.53	ug/l	
110-82-7	Cyclohexane	ND	5.0	0.63	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.69	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.16	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.21	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.50	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.50	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.50	ug/l	
75-71-8	Dichlorodifluoromethane [c]	ND	2.0	1.9	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.21	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.20	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.47	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.50	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.40	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.24	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.25	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.22	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.22	ug/l	
76-13-1	Freon 113	ND	5.0	1.2	ug/l	
591-78-6	2-Hexanone	ND	5.0	3.3	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW-103		
Lab Sample ID:	JC67110-4	**Date Sampled:**	05/31/18
Matrix:	AQ - Ground Water	**Date Received:**	05/31/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	1.0	0.25	ug/l	
79-20-9	Methyl Acetate	ND	5.0	3.1	ug/l	
108-87-2	Methylcyclohexane	ND	5.0	1.8	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.25	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	3.0	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.24	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.17	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.50	ug/l	
108-88-3	Toluene	ND	1.0	0.25	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.50	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.24	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.27	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.60	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.62	ug/l	
	m,p-Xylene	ND	1.0	0.43	ug/l	
95-47-6	o-Xylene	ND	1.0	0.22	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.22	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	112%		80-120%
17060-07-0	1,2-Dichloroethane-D4	110%		81-124%
2037-26-5	Toluene-D8	113%		80-120%
460-00-4	4-Bromofluorobenzene	101%		80-120%

(a) This compound does not meet the recommended minimum response factor specified into method 8260c.
(b) Associated CCV outside of control limits low.
(c) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
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J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	MW-103		
Lab Sample ID:	JC67110-4	**Date Sampled:**	05/31/18
Matrix:	AQ - Ground Water	**Date Received:**	05/31/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5P50938.D	1	06/05/18 19:21	CC	06/04/18 13:10	OP12498	E5P2426
Run #2							

	Initial Volume	Final Volume
Run #1	850 ml	1.0 ml
Run #2		

ABN TCL List (SOM0 1.1)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	5.9	0.96	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	5.9	1.0	ug/l	
120-83-2	2,4-Dichlorophenol	ND	2.4	1.5	ug/l	
105-67-9	2,4-Dimethylphenol	ND	5.9	2.9	ug/l	
51-28-5	2,4-Dinitrophenol	ND	5.9	1.8	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	5.9	1.5	ug/l	
95-48-7	2-Methylphenol	ND	2.4	1.0	ug/l	
	3&4-Methylphenol	ND	2.4	1.0	ug/l	
88-75-5	2-Nitrophenol	ND	5.9	1.1	ug/l	
100-02-7	4-Nitrophenol [a]	ND	12	1.4	ug/l	
87-86-5	Pentachlorophenol	ND	4.7	1.6	ug/l	
108-95-2	Phenol	ND	2.4	0.46	ug/l	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	5.9	1.7	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	5.9	1.6	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	5.9	1.1	ug/l	
83-32-9	Acenaphthene	ND	1.2	0.22	ug/l	
208-96-8	Acenaphthylene	ND	1.2	0.16	ug/l	
98-86-2	Acetophenone	ND	2.4	0.24	ug/l	
120-12-7	Anthracene	ND	1.2	0.25	ug/l	
1912-24-9	Atrazine [a]	ND	2.4	0.53	ug/l	
100-52-7	Benzaldehyde	ND	5.9	0.34	ug/l	
56-55-3	Benzo(a)anthracene	ND	1.2	0.24	ug/l	
50-32-8	Benzo(a)pyrene	ND	1.2	0.25	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	1.2	0.24	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	1.2	0.40	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	1.2	0.24	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	2.4	0.48	ug/l	
85-68-7	Butyl benzyl phthalate	ND	2.4	0.54	ug/l	
92-52-4	1,1'-Biphenyl	ND	1.2	0.25	ug/l	
91-58-7	2-Chloronaphthalene	ND	2.4	0.28	ug/l	
106-47-8	4-Chloroaniline	ND	5.9	0.40	ug/l	
86-74-8	Carbazole	ND	1.2	0.27	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW-103		
Lab Sample ID:	JC67110-4	**Date Sampled:**	05/31/18
Matrix:	AQ - Ground Water	**Date Received:**	05/31/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

ABN TCL List (SOM0 1.1)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	2.4	0.76	ug/l	
218-01-9	Chrysene	ND	1.2	0.21	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	2.4	0.33	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	2.4	0.29	ug/l	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	2.4	0.47	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	2.4	0.43	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	1.2	0.65	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	1.2	0.56	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	2.4	0.60	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	1.2	0.39	ug/l	
132-64-9	Dibenzofuran	ND	5.9	0.26	ug/l	
84-74-2	Di-n-butyl phthalate	ND	2.4	0.58	ug/l	
117-84-0	Di-n-octyl phthalate	ND	2.4	0.28	ug/l	
84-66-2	Diethyl phthalate	ND	2.4	0.31	ug/l	
131-11-3	Dimethyl phthalate	ND	2.4	0.26	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.4	1.9	ug/l	
206-44-0	Fluoranthene	ND	1.2	0.20	ug/l	
86-73-7	Fluorene	ND	1.2	0.20	ug/l	
118-74-1	Hexachlorobenzene	ND	1.2	0.38	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.2	0.58	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	12	3.3	ug/l	
67-72-1	Hexachloroethane	ND	2.4	0.46	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	1.2	0.39	ug/l	
78-59-1	Isophorone	ND	2.4	0.33	ug/l	
91-57-6	2-Methylnaphthalene	ND	1.2	0.25	ug/l	
88-74-4	2-Nitroaniline [a]	ND	5.9	0.33	ug/l	
99-09-2	3-Nitroaniline	ND	5.9	0.46	ug/l	
100-01-6	4-Nitroaniline	ND	5.9	0.52	ug/l	
91-20-3	Naphthalene	ND	1.2	0.27	ug/l	
98-95-3	Nitrobenzene	ND	2.4	0.76	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	2.4	0.57	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.9	0.26	ug/l	
85-01-8	Phenanthrene	ND	1.2	0.21	ug/l	
129-00-0	Pyrene	ND	1.2	0.26	ug/l	
95-94-3	1,2,4,5-Tetrachlorobenzene [a]	ND	2.4	0.44	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	40%		10-110%
4165-62-2	Phenol-d5	30%		10-110%

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J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW-103		
Lab Sample ID:	JC67110-4	**Date Sampled:**	05/31/18
Matrix:	AQ - Ground Water	**Date Received:**	05/31/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

ABN TCL List (SOM0 1.1)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
118-79-6	2,4,6-Tribromophenol	80%		36-151%
4165-60-0	Nitrobenzene-d5	76%		34-128%
321-60-8	2-Fluorobiphenyl	78%		38-119%
1718-51-0	Terphenyl-d14	58%		26-129%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	MW-103		
Lab Sample ID:	JC67110-4	**Date Sampled:**	05/31/18
Matrix:	AQ - Ground Water	**Date Received:**	05/31/18
Method:	SW846 8081B SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6G56989.D	1	06/06/18 13:28	RK	06/01/18 19:40	OP12449	G6G1701
Run #2							

	Initial Volume	Final Volume
Run #1	300 ml	2.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	0.0067	0.0034	ug/l	
319-84-6	alpha-BHC	ND	0.0067	0.0035	ug/l	
319-85-7	beta-BHC	ND	0.0067	0.0053	ug/l	
319-86-8	delta-BHC	ND	0.0067	0.0044	ug/l	
58-89-9	gamma-BHC (Lindane)	ND	0.0067	0.0040	ug/l	
5103-71-9	alpha-Chlordane	ND	0.0067	0.0033	ug/l	
5103-74-2	gamma-Chlordane	ND	0.0067	0.0028	ug/l	
60-57-1	Dieldrin	ND	0.0067	0.0051	ug/l	
72-54-8	4,4'-DDD	ND	0.0067	0.0038	ug/l	
72-55-9	4,4'-DDE	ND	0.0067	0.0034	ug/l	
50-29-3	4,4'-DDT	ND	0.0067	0.0046	ug/l	
72-20-8	Endrin	ND	0.0067	0.0040	ug/l	
1031-07-8	Endosulfan sulfate	ND	0.0067	0.0036	ug/l	
7421-93-4	Endrin aldehyde	ND	0.0067	0.0045	ug/l	
53494-70-5	Endrin ketone	ND	0.0067	0.0041	ug/l	
959-98-8	Endosulfan-I	ND	0.0067	0.0035	ug/l	
33213-65-9	Endosulfan-II	ND	0.0067	0.0033	ug/l	
76-44-8	Heptachlor	ND	0.0067	0.0030	ug/l	
1024-57-3	Heptachlor epoxide	ND	0.0067	0.0040	ug/l	
72-43-5	Methoxychlor	ND	0.013	0.0045	ug/l	
8001-35-2	Toxaphene	ND	0.17	0.11	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	51%		13-153%
877-09-8	Tetrachloro-m-xylene	56%		13-153%
2051-24-3	Decachlorobiphenyl	39%		10-138%
2051-24-3	Decachlorobiphenyl	43%		10-138%

ND = Not detected MDL = Method Detection Limit
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J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	MW-103		
Lab Sample ID:	JC67110-4	**Date Sampled:**	05/31/18
Matrix:	AQ - Ground Water	**Date Received:**	05/31/18
Method:	SW846 8082A SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XX229842.D	1	06/03/18 02:15	EAL	06/01/18 19:40	OP12448	GXX6375
Run #2							

	Initial Volume	Final Volume
Run #1	300 ml	2.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	0.33	0.13	ug/l	
11104-28-2	Aroclor 1221	ND	0.33	0.28	ug/l	
11141-16-5	Aroclor 1232	ND	0.33	0.17	ug/l	
53469-21-9	Aroclor 1242	ND	0.33	0.15	ug/l	
12672-29-6	Aroclor 1248	ND	0.33	0.084	ug/l	
11097-69-1	Aroclor 1254	ND	0.33	0.28	ug/l	
11096-82-5	Aroclor 1260	ND	0.33	0.10	ug/l	
11100-14-4	Aroclor 1268	ND	0.33	0.12	ug/l	
37324-23-5	Aroclor 1262	ND	0.33	0.13	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	55%		11-166%
877-09-8	Tetrachloro-m-xylene	63%		11-166%
2051-24-3	Decachlorobiphenyl	43%		10-150%
2051-24-3	Decachlorobiphenyl	44%		10-150%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: MW-103
Lab Sample ID: JC67110-4
Matrix: AQ - Ground Water
Project: National Grid, Philly Coke, Philadelphia PA

Date Sampled: 05/31/18
Date Received: 05/31/18
Percent Solids: n/a

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	< 200	200	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Antimony	< 6.0	6.0	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Arsenic	< 3.0	3.0	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Barium	< 200	200	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Beryllium	< 1.0	1.0	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Cadmium	< 3.0	3.0	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Calcium	151000	5000	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Chromium	< 10	10	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Cobalt	< 50	50	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Copper	< 10	10	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Iron	3100	100	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Lead	15.9	3.0	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [3]	SW846 3010A [4]
Magnesium	114000	5000	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Manganese	542	15	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Mercury	< 0.20	0.20	ug/l	1	06/06/18	06/06/18	DP	SW846 7470A [1]	SW846 7470A [5]
Nickel	< 10	10	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Potassium	21500	10000	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Selenium	< 10	10	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Silver	< 10	10	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Sodium	62100	10000	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Thallium	< 2.0	2.0	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [3]	SW846 3010A [4]
Vanadium	< 50	50	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Zinc	< 20	20	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]

(1) Instrument QC Batch: MA44592
(2) Instrument QC Batch: MA44612
(3) Instrument QC Batch: MA44616
(4) Prep QC Batch: MP7493
(5) Prep QC Batch: MP7513

RL = Reporting Limit

Report of Analysis

Client Sample ID:	MW-103		
Lab Sample ID:	JC67110-4	**Date Sampled:**	05/31/18
Matrix:	AQ - Ground Water	**Date Received:**	05/31/18
		Percent Solids:	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Cyanide	< 0.010	0.010	mg/l	1	06/07/18 10:36	BM	EPA 335.4/LACHAT

RL = Reporting Limit

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Report of Analysis

Client Sample ID:	DUP-05312018		
Lab Sample ID:	JC67110-5	**Date Sampled:**	05/31/18
Matrix:	AQ - Ground Water	**Date Received:**	05/31/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L301858.D	1	06/02/18 15:46	DG	n/a	n/a	VL8605
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone [a]	ND	10	5.0	ug/l	
71-43-2	Benzene	ND	0.50	0.17	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.38	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.22	ug/l	
75-25-2	Bromoform	ND	1.0	0.42	ug/l	
74-83-9	Bromomethane [b]	ND	2.0	1.4	ug/l	UJ
78-93-3	2-Butanone (MEK)	ND	10	4.8	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.50	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.34	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.24	ug/l	
75-00-3	Chloroethane	ND	1.0	0.59	ug/l	
67-66-3	Chloroform	ND	1.0	0.29	ug/l	
74-87-3	Chloromethane	ND	1.0	0.53	ug/l	
110-82-7	Cyclohexane	ND	5.0	0.63	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.69	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.16	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.21	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.50	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.50	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.50	ug/l	
75-71-8	Dichlorodifluoromethane [c]	ND	2.0	1.9	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.21	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.20	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.47	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.50	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.40	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.24	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.25	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.22	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.22	ug/l	
76-13-1	Freon 113	ND	5.0	1.2	ug/l	
591-78-6	2-Hexanone	ND	5.0	3.3	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	DUP-05312018		
Lab Sample ID:	JC67110-5	**Date Sampled:**	05/31/18
Matrix:	AQ - Ground Water	**Date Received:**	05/31/18
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	1.0	0.25	ug/l	
79-20-9	Methyl Acetate	ND	5.0	3.1	ug/l	
108-87-2	Methylcyclohexane	ND	5.0	1.8	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.25	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	3.0	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.24	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.17	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.50	ug/l	
108-88-3	Toluene	ND	1.0	0.25	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.50	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.25	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.24	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.27	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.60	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.62	ug/l	
	m,p-Xylene	ND	1.0	0.43	ug/l	
95-47-6	o-Xylene	ND	1.0	0.22	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.22	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	108%		80-120%
17060-07-0	1,2-Dichloroethane-D4	106%		81-124%
2037-26-5	Toluene-D8	114%		80-120%
460-00-4	4-Bromofluorobenzene	100%		80-120%

(a) This compound does not meet the recommended minimum response factor specified into method 8260c.
(b) Associated CCV outside of control limits low.
(c) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
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J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	DUP-05312018		
Lab Sample ID:	JC67110-5	**Date Sampled:**	05/31/18
Matrix:	AQ - Ground Water	**Date Received:**	05/31/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5P50939.D	1	06/05/18 19:47	CC	06/04/18 13:10	OP12498	E5P2426
Run #2							

	Initial Volume	Final Volume
Run #1	800 ml	1.0 ml
Run #2		

ABN TCL List (SOM0 1.1)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	6.3	1.0	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	6.3	1.1	ug/l	
120-83-2	2,4-Dichlorophenol	ND	2.5	1.6	ug/l	
105-67-9	2,4-Dimethylphenol	ND	6.3	3.1	ug/l	
51-28-5	2,4-Dinitrophenol	ND	6.3	1.9	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	6.3	1.6	ug/l	
95-48-7	2-Methylphenol	ND	2.5	1.1	ug/l	
	3&4-Methylphenol	ND	2.5	1.1	ug/l	
88-75-5	2-Nitrophenol	ND	6.3	1.2	ug/l	
100-02-7	4-Nitrophenol [a]	ND	13	1.4	ug/l	
87-86-5	Pentachlorophenol	ND	5.0	1.7	ug/l	
108-95-2	Phenol	ND	2.5	0.49	ug/l	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	6.3	1.8	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	6.3	1.7	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	6.3	1.2	ug/l	
83-32-9	Acenaphthene	ND	1.3	0.24	ug/l	
208-96-8	Acenaphthylene	ND	1.3	0.17	ug/l	
98-86-2	Acetophenone	ND	2.5	0.26	ug/l	
120-12-7	Anthracene	ND	1.3	0.26	ug/l	
1912-24-9	Atrazine [a]	ND	2.5	0.56	ug/l	
100-52-7	Benzaldehyde	ND	6.3	0.36	ug/l	
56-55-3	Benzo(a)anthracene	ND	1.3	0.25	ug/l	
50-32-8	Benzo(a)pyrene	ND	1.3	0.27	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	1.3	0.26	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	1.3	0.43	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	1.3	0.26	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	2.5	0.51	ug/l	
85-68-7	Butyl benzyl phthalate	ND	2.5	0.57	ug/l	
92-52-4	1,1'-Biphenyl	ND	1.3	0.27	ug/l	
91-58-7	2-Chloronaphthalene	ND	2.5	0.30	ug/l	
106-47-8	4-Chloroaniline	ND	6.3	0.43	ug/l	
86-74-8	Carbazole	ND	1.3	0.29	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: DUP-05312018
Lab Sample ID: JC67110-5
Matrix: AQ - Ground Water
Method: SW846 8270D SW846 3510C
Project: National Grid, Philly Coke, Philadelphia PA

Date Sampled: 05/31/18
Date Received: 05/31/18
Percent Solids: n/a

ABN TCL List (SOM0 1.1)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	2.5	0.81	ug/l	
218-01-9	Chrysene	ND	1.3	0.22	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	2.5	0.35	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	2.5	0.31	ug/l	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	2.5	0.50	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	2.5	0.46	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	1.3	0.69	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	1.3	0.60	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	2.5	0.63	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	1.3	0.41	ug/l	
132-64-9	Dibenzofuran	ND	6.3	0.28	ug/l	
84-74-2	Di-n-butyl phthalate	ND	2.5	0.62	ug/l	
117-84-0	Di-n-octyl phthalate	ND	2.5	0.29	ug/l	
84-66-2	Diethyl phthalate	ND	2.5	0.33	ug/l	
131-11-3	Dimethyl phthalate	ND	2.5	0.27	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	11.3	2.5	2.1	ug/l	
206-44-0	Fluoranthene	ND	1.3	0.21	ug/l	
86-73-7	Fluorene	ND	1.3	0.21	ug/l	
118-74-1	Hexachlorobenzene	ND	1.3	0.41	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.3	0.62	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	13	3.5	ug/l	
67-72-1	Hexachloroethane	ND	2.5	0.49	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	1.3	0.42	ug/l	
78-59-1	Isophorone	ND	2.5	0.35	ug/l	
91-57-6	2-Methylnaphthalene	ND	1.3	0.26	ug/l	
88-74-4	2-Nitroaniline [a]	ND	6.3	0.35	ug/l	
99-09-2	3-Nitroaniline	ND	6.3	0.48	ug/l	
100-01-6	4-Nitroaniline	ND	6.3	0.55	ug/l	
91-20-3	Naphthalene	ND	1.3	0.29	ug/l	
98-95-3	Nitrobenzene	ND	2.5	0.80	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	2.5	0.60	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	6.3	0.28	ug/l	
85-01-8	Phenanthrene	ND	1.3	0.22	ug/l	
129-00-0	Pyrene	ND	1.3	0.27	ug/l	
95-94-3	1,2,4,5-Tetrachlorobenzene [a]	ND	2.5	0.46	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	39%		10-110%
4165-62-2	Phenol-d5	28%		10-110%

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J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	DUP-05312018		
Lab Sample ID:	JC67110-5	**Date Sampled:**	05/31/18
Matrix:	AQ - Ground Water	**Date Received:**	05/31/18
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

ABN TCL List (SOM0 1.1)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
118-79-6	2,4,6-Tribromophenol	74%		36-151%
4165-60-0	Nitrobenzene-d5	71%		34-128%
321-60-8	2-Fluorobiphenyl	73%		38-119%
1718-51-0	Terphenyl-d14	51%		26-129%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS LabLink@1003731 16:46 15-Jun-2018

Report of Analysis

Client Sample ID:	DUP-05312018		
Lab Sample ID:	JC67110-5	**Date Sampled:**	05/31/18
Matrix:	AQ - Ground Water	**Date Received:**	05/31/18
Method:	SW846 8081B SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6G56992.D	1	06/06/18 14:22	RK	06/01/18 19:40	OP12449	G6G1701
Run #2							

	Initial Volume	Final Volume
Run #1	300 ml	2.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	0.0067	0.0034	ug/l	
319-84-6	alpha-BHC	ND	0.0067	0.0035	ug/l	
319-85-7	beta-BHC	ND	0.0067	0.0053	ug/l	
319-86-8	delta-BHC	ND	0.0067	0.0044	ug/l	
58-89-9	gamma-BHC (Lindane)	ND	0.0067	0.0040	ug/l	
5103-71-9	alpha-Chlordane	ND	0.0067	0.0033	ug/l	
5103-74-2	gamma-Chlordane	ND	0.0067	0.0028	ug/l	
60-57-1	Dieldrin	ND	0.0067	0.0051	ug/l	
72-54-8	4,4'-DDD	ND	0.0067	0.0038	ug/l	
72-55-9	4,4'-DDE	ND	0.0067	0.0034	ug/l	
50-29-3	4,4'-DDT	ND	0.0067	0.0046	ug/l	
72-20-8	Endrin	ND	0.0067	0.0040	ug/l	
1031-07-8	Endosulfan sulfate	ND	0.0067	0.0036	ug/l	
7421-93-4	Endrin aldehyde	ND	0.0067	0.0045	ug/l	
53494-70-5	Endrin ketone	ND	0.0067	0.0041	ug/l	
959-98-8	Endosulfan-I	ND	0.0067	0.0035	ug/l	
33213-65-9	Endosulfan-II	ND	0.0067	0.0033	ug/l	
76-44-8	Heptachlor	ND	0.0067	0.0030	ug/l	
1024-57-3	Heptachlor epoxide	ND	0.0067	0.0040	ug/l	
72-43-5	Methoxychlor	ND	0.013	0.0045	ug/l	
8001-35-2	Toxaphene	ND	0.17	0.11	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	63%		13-153%
877-09-8	Tetrachloro-m-xylene	72%		13-153%
2051-24-3	Decachlorobiphenyl	40%		10-138%
2051-24-3	Decachlorobiphenyl	43%		10-138%

ND = Not detected MDL = Method Detection Limit
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J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS LabLink@1003731 16:46 15-Jun-2018

Report of Analysis

Client Sample ID:	DUP-05312018		
Lab Sample ID:	JC67110-5	**Date Sampled:**	05/31/18
Matrix:	AQ - Ground Water	**Date Received:**	05/31/18
Method:	SW846 8082A SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XX229862.D	1	06/03/18 07:48	EAL	06/01/18 19:40	OP12448	GXX6375
Run #2							

	Initial Volume	Final Volume
Run #1	300 ml	2.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	0.33	0.13	ug/l	
11104-28-2	Aroclor 1221	ND	0.33	0.28	ug/l	
11141-16-5	Aroclor 1232	ND	0.33	0.17	ug/l	
53469-21-9	Aroclor 1242	ND	0.33	0.15	ug/l	
12672-29-6	Aroclor 1248	ND	0.33	0.084	ug/l	
11097-69-1	Aroclor 1254	ND	0.33	0.28	ug/l	
11096-82-5	Aroclor 1260	ND	0.33	0.10	ug/l	
11100-14-4	Aroclor 1268	ND	0.33	0.12	ug/l	
37324-23-5	Aroclor 1262	ND	0.33	0.13	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	72%		11-166%
877-09-8	Tetrachloro-m-xylene	76%		11-166%
2051-24-3	Decachlorobiphenyl	44%		10-150%
2051-24-3	Decachlorobiphenyl	46%		10-150%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: DUP-05312018
Lab Sample ID: JC67110-5
Matrix: AQ - Ground Water
Project: National Grid, Philly Coke, Philadelphia PA

Date Sampled: 05/31/18
Date Received: 05/31/18
Percent Solids: n/a

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	275	200	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Antimony	< 6.0	6.0	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Arsenic	6.6	3.0	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Barium	350	200	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Beryllium	< 1.0	1.0	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Cadmium	< 3.0	3.0	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Calcium	103000	5000	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Chromium	< 10	10	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Cobalt	< 50	50	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Copper	< 10	10	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Iron	2900	100	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Lead	< 3.0	3.0	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [3]	SW846 3010A [4]
Magnesium	74900	5000	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Manganese	370	15	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Mercury	< 0.20	0.20	ug/l	1	06/06/18	06/06/18	DP	SW846 7470A [1]	SW846 7470A [5]
Nickel	< 10	10	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Potassium	15000	10000	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Selenium	< 10	10	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Silver	< 10	10	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Sodium	47800	10000	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Thallium	< 2.0	2.0	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [3]	SW846 3010A [4]
Vanadium	< 50	50	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]
Zinc	< 20	20	ug/l	1	06/05/18	06/08/18	ND	SW846 6010C [2]	SW846 3010A [4]

(1) Instrument QC Batch: MA44592
(2) Instrument QC Batch: MA44612
(3) Instrument QC Batch: MA44616
(4) Prep QC Batch: MP7493
(5) Prep QC Batch: MP7513

RL = Reporting Limit

Report of Analysis

Client Sample ID:	DUP-05312018		
Lab Sample ID:	JC67110-5	**Date Sampled:**	05/31/18
Matrix:	AQ - Ground Water	**Date Received:**	05/31/18
		Percent Solids:	n/a
Project:	National Grid, Philly Coke, Philadelphia PA		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Cyanide	< 0.010 UJ	0.010	mg/l	1	06/07/18 10:38	BM	EPA 335.4/LACHAT

RL = Reporting Limit

TestAmerica Buffalo
10 Hazelwood Drive

Amherst, NY 14228
Phone: 716.691.2600 Fax: 716.691.7991

Chain of Custody Record

288804

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
TestAmerica Laboratories, Inc.

TAL-8210 (0713)

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

Client Contact	Project Manager:	Site Contact:	Date:	COC No:
Company Name: Arcadis	Tel/Fax:	Lab Contact:	Carrier:	____ of ____ COCs
Address: 824 N. Market St. Suite 820	Analysis Turnaround Time			Sampler:
City/State/Zip: Wilmington DE, 19801	☐ CALENDAR DAYS ☐ WORKING DAYS			For:
Phone: 302-358-9064	TAT if different from Below ____			Wal
Fax:	☐ 2 weeks			Lab
Project Name: Philly coke	☐ 1 week			
Site: Bridesburg, PA	☐ 2 days			Job /
P O #	☐ 1 day			

480-136777 COC

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	Free Cyanide	Sample Specific Notes:
PCMW-16D	5/30/18	0850	G	GW	3	N	Y	X	MS/MSD
DUP-05302018	"	—	G	GW	1	N	N	X	

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other ____ 5

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☐ Disposal by Lab ☐ Archive for ____ Months

Special Instructions/QC Requirements & Comments:

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd: 4.2 Corr'd: ____ | Therm ID No.: #1

Relinquished by	Company	Date/Time	Received by	Company	Date/Time
Adam Winn	Arcadis	5/31/18 1355		TA	5/31/18 1535
	TA	5/31/18		TA	5/31/18 1535
	TA	5/31/18	Received in Laboratory by: Christine Cikolo	TA	06/01/18 1030

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6/14/2018

461-SJSC

Client Sample Results

Client: ARCADIS U.S. Inc
Project/Site: Former Philadelphia Coke Facility

TestAmerica Job ID: 480-136777-1

Client Sample ID: PCMW-16D

Lab Sample ID: 480-136777-1

Date Collected: 05/30/18 08:50
Matrix: Water
Date Received: 06/01/18 10:30

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Free	9.1	F1 J	5.0	1.5	ug/L		06/12/18 04:43	06/12/18 15:30	1

Client Sample ID: DUP-05302018

Lab Sample ID: 480-136777-2

Date Collected: 05/30/18 00:00
Matrix: Water
Date Received: 06/01/18 10:30

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Free	18.0	J	5.0	1.5	ug/L		06/12/18 04:44	06/12/18 15:30	1

ARCADIS Design & Consultancy for natural and built assets

National Grid
Philly Coke

DATA REVIEW

Philadelphia, Pennsylvania

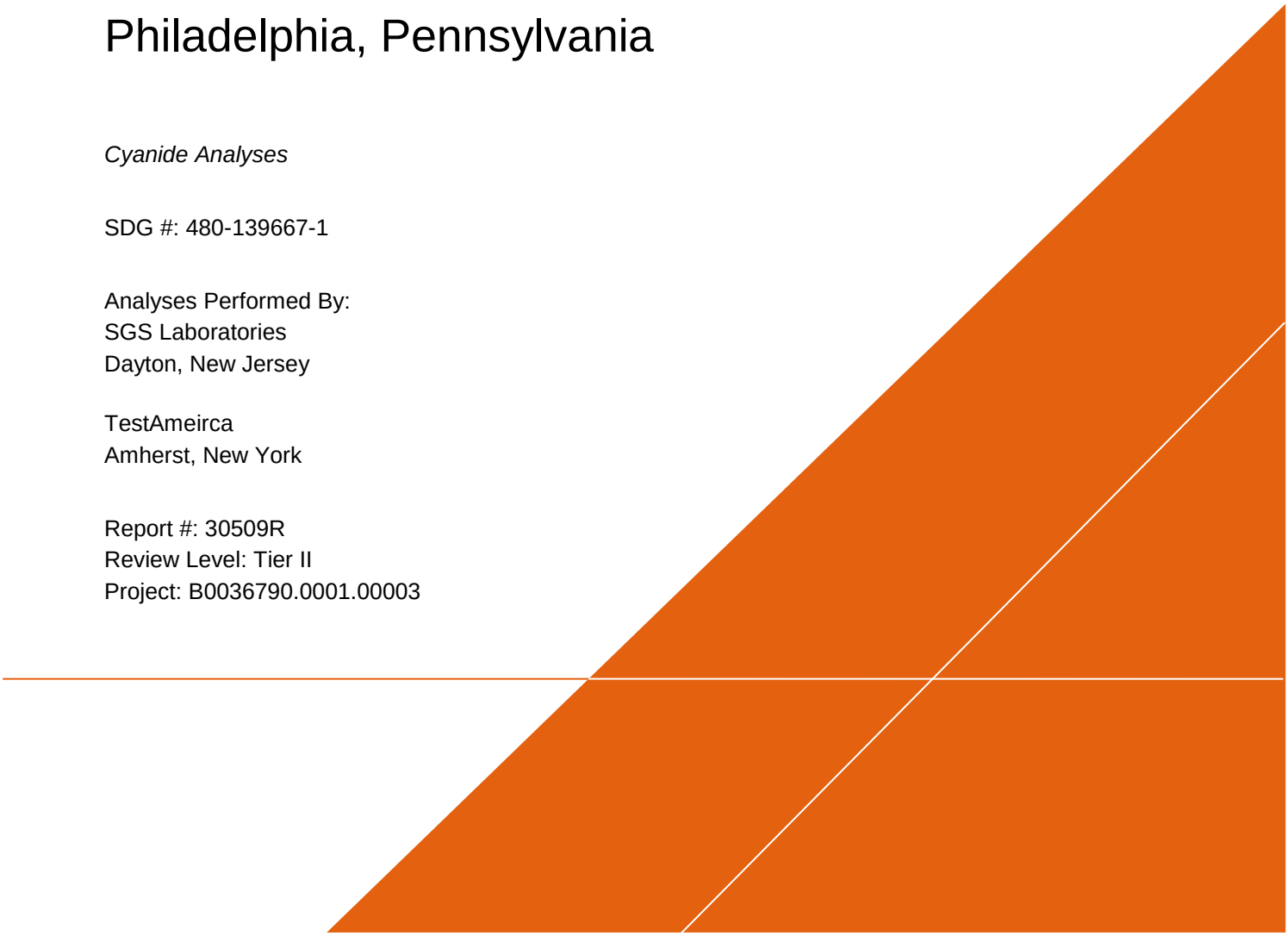
Cyanide Analyses

SDG #: 480-139667-1

Analyses Performed By:
SGS Laboratories
Dayton, New Jersey

TestAmeirca
Amherst, New York

Report #: 30509R
Review Level: Tier II
Project: B0036790.0001.00003



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Groups (SDGs) # 480-139667-1 for samples collected in association with the National Grid Philly Coke site in Philadelphia, Pennsylvania. The review was conducted as a Tier II evaluation and included review of data package completeness. Only analytical data as reported by the laboratory were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets and chain of custody. Analyses were performed for the following samples:

SDG	Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis				
						VOCs	SVOC	Pest./ PCB	Metals	CN-
480-139667-1	PCMW-15S	480-139667-1	Water	7/27/2018						X
	PCMW-10D	480-139667-2	Water	7/27/2018						X
	DUP-07272018	480-139667-3	Water	7/27/2018	PCMW-15S					X

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of quality assurance (QA) or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

INORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) Methods 9016. Data were reviewed in accordance with USEPA National Functional Guidelines of October 2002.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and that it was already subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with the USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but not detected. The associated value is the analyte instrument detection limit.

  J The reported value was obtained from a reading less than the reporting limit (RL), but greater than or equal to the method detection limit (MDL).

- Quantitation (Q) Qualifiers

  E The reported value is estimated due to the presence of interference.

  N Spiked sample recovery is not within control limits.

  * Duplicate analysis is not within control limits.

- Validation Qualifiers

  J The analyte was positively identified; however, the associated numerical value is an estimated concentration only.

  UJ The analyte was not detected above the reporting limit. However, the reported limit is approximate and may or may not represent the actual limit of detection.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

GENERAL CHEMISTRY ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
Cyanide by SW846 9016	Water	14 days from collection to analysis	Cool to <6 °C; preserved to a pH of greater than 12.

All samples were analyzed within the specified holding times.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

The correct number and type of standards were analyzed. The correlation coefficient of the initial calibration was greater than 0.995 and all initial calibration verification standard recoveries were within control limits.

All calibration standard recoveries were within the control limit.

4. Matrix Spike (MS)/Laboratory Duplicate Analysis

MS and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

4.1 MS Analysis

All analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The MS recovery control limits do not apply for MS performed on sample locations where the analyte's concentration detected in the parent sample exceeds the MS concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

All analytes associated with MS/MSD recoveries were within control limits with the exception of the following analyte present in the table below.

Sample Location	Analyte	MS Recovery	MSD Recovery
PCMW-10D	Cyanide, Free	55%	60%

The criteria used to evaluate MS/MSD recoveries are presented in the following table. In the case of an MS/MSD deviation, the sample results are qualified. The qualifications are applied to all sample results associated with this SDG.

Control limit	Sample Result	Qualification
MS/MSD percent recovery 30% to 74%	Non-detect	UJ
	Detect	J
MS/MSD percent recovery <30%	Non-detect	R
	Detect	J
MS/MSD percent recovery >125%	Non-detect	No Action
	Detect	J

4.2 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the RL. A control limit of 20% for water matrices and 35% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of one times the RL is applied for water matrices and two times the RL for soil matrices.

All analytes associated with laboratory duplicate RPD were within the control limit.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
PCMW-15S /DUP-07272018	Cyanide, Free	6.2	9.0	AC

Notes:

AC Acceptable

The calculated RPDs between the parent sample and field duplicate were acceptable.

6. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The analytes associated with the LCS analysis must exhibit a percent recovery between the control limits of 80% and 120%.

The LCS analysis exhibited recoveries within the control limits.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR GENERAL CHEMISTRY

General Chemistry: 9016	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Miscellaneous Instrumentation					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks	X				X
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R	X				X
LCS/LCSD Precision (RPD)	X				X
Matrix Spike (MS) %R		X	X		
Matrix Spike Duplicate(MSD) %R		X	X		
MS/MSD Precision (RPD)		X		X	
Field/Lab Duplicate (RPD)		X		X	
Dilution Factor		X		X	
Moisture Content	X				X

Notes:

%RSD – relative standard deviation
%R - percent recovery
RPD - relative percent difference,

%D – difference

VALIDATION PERFORMED BY: Andrew Korycinski

SIGNATURE:

DATE: August 29, 2018

PEER REVIEW: Jeffrey L. Davin

DATE: August 29, 2018

CHAIN OF CUSTODY AND CORRECTED SAMPLE ANALYSIS DATA SHEETS

TestAmerica Buffalo
10 Hazelwood Drive
Amherst, NY 14228
Phone: 716.691.2600 Fax: 716.691.7991

Chain of Custody Record

285046

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
TestAmerica Laboratories, Inc.
TAL-8210 (0713)

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

Client Contact	Project Manager:	Site Contact:	Date:	COC No:
Company Name: Arcadis	Tel/Fax:	Lab Contact:	Carrier:	____ of ____ COCs
Address: 824 N. Market St. Suite 820	Analysis Turnaround Time			Sampler:
City/State/Zip: Wilmington, DE 19801	☐ CALENDAR DAYS ☒ WORKING DAYS			For Lab Use Only:
Phone: 302 654 1718	TAT if different from Below 5days			Walk-in
Fax:	☐ 2 weeks			Lab Sar
Project Name: Philly Coke	☐ 1 week			Job / SD
Site: Bridesburg, PA	☐ 2 days			
P O #	☐ 1 day			

480-139667 COC

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	Analysis: Dissolved Iron 6010	Sample Specific Notes:
PCMW-15S	7/27/18	1230	G	GW	1	N	N		
PCMW-10D	7/27/18	1340	G	GW	3	N	Y		MS/MSD
DUP-07272018	7/27/18	—	G	GW	1	N	N		
								5	

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☐ Disposal by Lab ☐ Archive for_____ Months

Special Instructions/QC Requirements & Comments:

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd: 3.0 Corr'd:_____ Therm ID No.: #1

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	Arcadis	7/27/18 1345	[signature]	TA	7/27/18 1345
[signature]	TA	7/27/18	[signature]	TA	7/27/18
[signature]	TA	7/27/18	Received in Laboratory by: [signature]	TA	07/28/18 0950

461-SJSC

Client Sample ID: PCMW-15S
Lab Sample ID: 480-139667-1
Date Collected: 07/27/18 12:30
Matrix: Water
Date Received: 07/28/18 09:50

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Free	6.2	J	5.0	1.5	ug/L		08/01/18 13:50	08/01/18 15:30	1

Client Sample ID: PCMW-10D
Lab Sample ID: 480-139667-2
Date Collected: 07/27/18 13:40
Matrix: Water
Date Received: 07/28/18 09:50

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Free	4.1	J F1	5.0	1.5	ug/L		08/01/18 13:50	08/01/18 15:30	1

Client Sample ID: DUP-07272018
Lab Sample ID: 480-139667-3
Date Collected: 07/27/18 00:00
Matrix: Water
Date Received: 07/28/18 09:50

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Free	9.0	J	5.0	1.5	ug/L		08/01/18 13:50	08/01/18 15:30	1

ARCADIS Design & Consultancy for natural and built assets

National Grid
Philly Coke

DATA REVIEW

Philadelphia, Pennsylvania

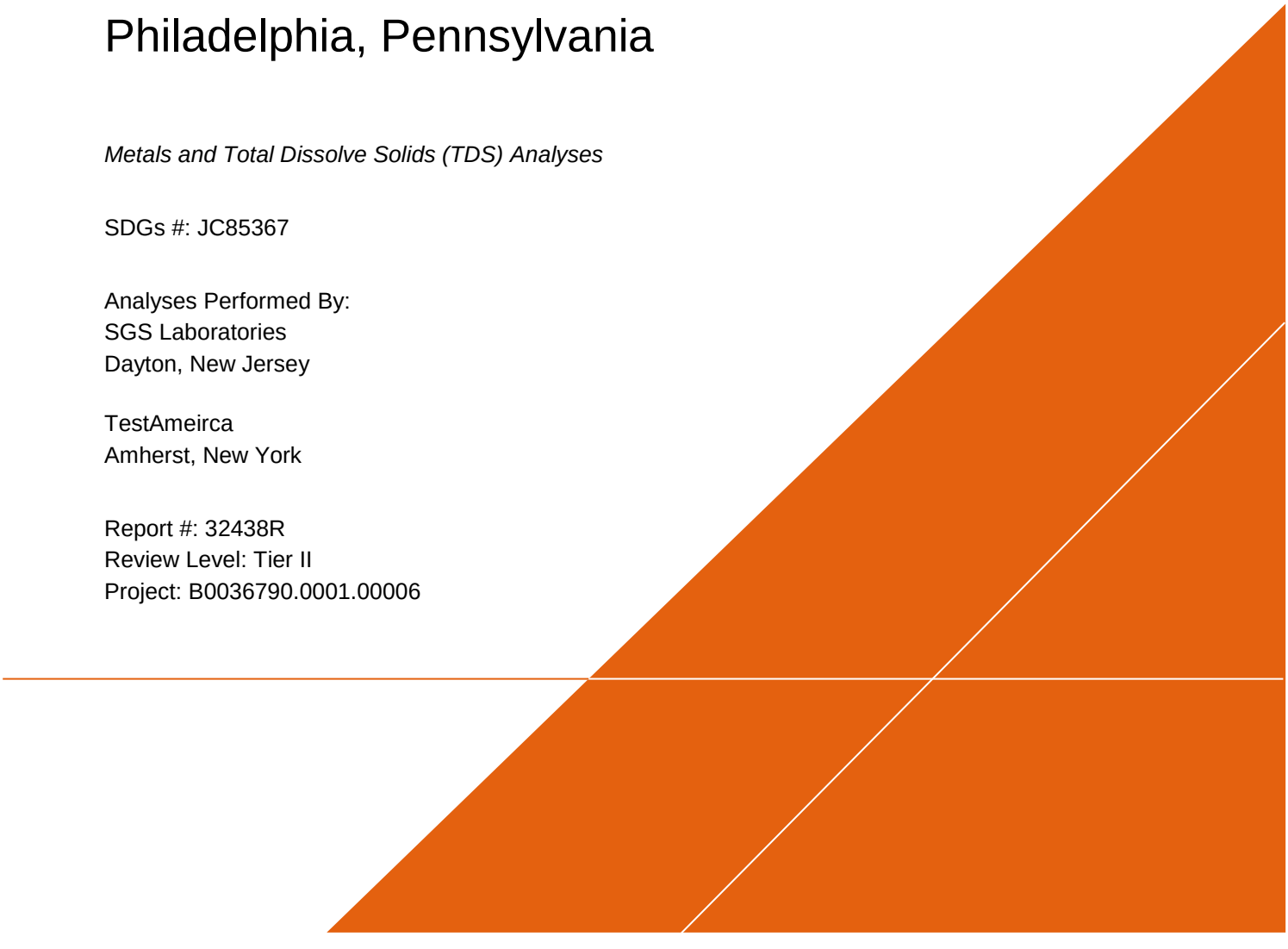
Metals and Total Dissolve Solids (TDS) Analyses

SDGs #: JC85367

Analyses Performed By:
SGS Laboratories
Dayton, New Jersey

TestAmeirca
Amherst, New York

Report #: 32438R
Review Level: Tier II
Project: B0036790.0001.00006



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Groups (SDGs) # JC85367 for samples collected in association with the National Grid Philly Coke site in Philadelphia, Pennsylvania. The review was conducted as a Tier II evaluation and included review of data package completeness. Only analytical data as reported by the laboratory were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets and chain of custody. Analyses were performed for the following samples:

SDG	Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis				
						VOCs	SVOC	Pest./ PCB	Metals	TDS
JC85367	MW-107 (03-28-2019)	JC85367-1	Water	3/28/2019					X	X
	PCMW-05 (03-28-2019)	JC85367-2	Water	3/28/2019					X	X
	GW-DUP-0328 (03-28-2019)	JC85367-3	Water	3/28/2019	PCMW-05 (03-28-2019)				X	X
	PCMW-16D (03-28-2019)	JC85367-4	Water	3/28/2019					X	X

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of quality assurance (QA) or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

INORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) Methods 6010D, 7470A, and Standard Method 2540. Data were reviewed in accordance with USEPA National Functional Guidelines of October 2002.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and that it was already subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with the USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but not detected. The associated value is the analyte instrument detection limit.

  J The reported value was obtained from a reading less than the reporting limit (RL), but greater than or equal to the method detection limit (MDL).

- Quantitation (Q) Qualifiers

  E The reported value is estimated due to the presence of interference.

  N Spiked sample recovery is not within control limits.

  * Duplicate analysis is not within control limits.

- Validation Qualifiers

  J The analyte was positively identified; however, the associated numerical value is an estimated concentration only.

  UJ The analyte was not detected above the reporting limit. However, the reported limit is approximate and may or may not represent the actual limit of detection.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

METALS ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW846 6010D	Water	180 days from collection to analysis	Preserved to a pH of less than 2.
SW-846 7470A	Water	28 days from collection to analysis	Cool to <6 °C; preserved to a pH of less than 2.

All samples were analyzed within the specified holding times.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Analytes were detected in the associated QA blanks; however, the associated sample results were greater than the BAL and/or were non-detect. No other qualification of the sample results was required.

3. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis /Laboratory Duplicate Analysis

MS/MSD and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

3.1 MS/MSD Analysis

All metal analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the analyte's concentration detected in the parent sample exceeds the MS concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

The MS/MSD exhibited acceptable recoveries and RPD between the MS/MSD recoveries.

3.2 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the RL. A control limit of 20% for water matrices and 35% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of one times the RL is applied for water matrices and two times the RL for soil matrices.

MS/MSD analysis was performed in replacement of the laboratory duplicate analysis. The MS/MSD recoveries exhibited acceptable RPD.

4. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Analyte	Sample Result	Duplicate Result	RPD
PCMW-05 (03-28-2019)/ GW-DUP-0328 (03-28-2019)	Barium	365	360	AC
	Calcium	76700	76200	0.7%
	Iron	99.6 J	99.0 J	AC
	Lead	2.9 J	1.9 J	AC
	Magnesium	9710	9830	AC
	Manganese	182	186	2.2%
	Nickel	85.5	80.9	5.5%
	Potassium	2880 J	2890 J	AC
	Sodium	3790 J	3800 J	AC
	Zinc	27.2	28.2	AC

AC = Acceptable

The calculated RPDs between the parent sample and field duplicate were acceptable.

5. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The analytes associated with the LCS analysis must exhibit a percent recovery between the control limits of 80% and 120%.

The LCS analysis exhibited recoveries within the control limits.

6. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR METAL

METALS; 6010C/7470A	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Inductively Coupled Plasma-Atomic Emission Spectrometry (ICP-AES)					
Tier II Validation					
Holding Times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Instrument Blanks		X		X	
B. Method Blanks		X		X	
C. Equipment/Field Blanks		X		X	
Laboratory Control Sample (LCS)		X		X	
Matrix Spike (MS) %R		X		X	
Matrix Spike Duplicate (MSD) %R		X		X	
MS/MSD Precision (RPD)		X		X	
Field/Lab Duplicate (RPD)		X		X	
Total vs. Dissolved	X				X
Reporting Limit Verification		X		X	

Notes:

%R Percent recovery

RPD Relative percent difference

GENERAL CHEMISTRY ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
Total Dissolved Solids (TDS) by SM2540C	Water	7 days from collection to analysis	Cool to <6 °C.

All samples were analyzed within the specified holding times.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

The correct number and type of standards were analyzed. The correlation coefficient of the initial calibration was greater than 0.995 and all initial calibration verification standard recoveries were within control limits.

All calibration standard recoveries were within the control limit.

4. Matrix Spike (MS)/Laboratory Duplicate Analysis

MS and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

4.1 MS Analysis

All analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The MS recovery control limits do not apply for MS performed on sample locations where the analyte's concentration detected in the parent sample exceeds the MS concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

An MS analysis was not performed on a sample within this SDG.

4.2 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the RL. A control limit of 20% for water matrices and 35% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of one times the RL is applied for water matrices and two times the RL for soil matrices.

All analytes associated with laboratory duplicate RPD were within the control limit.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
PCMW-05 (03-28-2019)/ GW-DUP-0328 (03-28-2019)	TDS	600	750	22.2%

The calculated RPDs between the parent sample and field duplicate were acceptable.

6. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The analytes associated with the LCS analysis must exhibit a percent recovery between the control limits of 80% and 120%.

The LCS analysis exhibited recoveries within the control limits.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR GENERAL CHEMISTRY

General Chemistry: SM2540	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Miscellaneous Instrumentation					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks		X		X	
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R		X		X	
LCS/LCSD Precision (RPD)		X		X	
Matrix Spike (MS) %R	X				X
Matrix Spike Duplicate(MSD) %R	X				X
MS/MSD Precision (RPD)	X				X
Field/Lab Duplicate (RPD)		X		X	
Dilution Factor		X		X	
Moisture Content	X				X

Notes:

%RSD – relative standard deviation
%R - percent recovery
RPD - relative percent difference,

%D – difference

VALIDATION PERFORMED BY: Andrew Korycinski

SIGNATURE:

DATE: May 9, 2019

PEER REVIEW: Dennis Capria

DATE: May 20, 2019

CHAIN OF CUSTODY AND CORRECTED SAMPLE ANALYSIS DATA SHEETS

GW

CHAIN OF CUSTODY

Page 1 of 1

F

SGS North America Inc. - Dayton
2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200 FAX: 732-329-3499/3480
www.sgs.com/ehsusa

FED-EX Tracking #:
Bottle Order Control #: AR-03199-43
SGS Quote #:
SGS Job #: JC85367

Client / Reporting Information

Company Name: Arcadis-US
Street Address: 110 W. Fayette St Suite 300
City: Syracuse State: NY Zip: 13202
Project Contact: Cary Healy E-mail: Lawrence.Healy@arcadis-us.com
Phone #: 315-335-9493
Sampler(s) Name(s): Evan Green Phone #: 603-305-2692

Project Information

Project Name: National Gr. J, Philly Coke, Philadelphia PA
Street: 4501 Richmond St
City: Philadelphia State: PA
Project #: 30036790.0005
Client Purchase Order #:
Project Manager: John Bussel
Collection

Billing Information (if different from Report to)

Company Name: Same
Street Address:
City: State: Zip:
Attention:

Requested Analysis

SGS Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Date	Time	Sampled by:	Grab (G) Comp (C)	Matrix	# of bottles	Number of preserved Bottles: HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	MTAL CDSS LFT	TDS	LAB USE ONLY
1F	MW-107		3/28/19	10:00	EG	G	GW	2					2				1	1	
	MW-107 MS		3/28/19	10:00	EG	G	GW	2					2				1	1	C10
	MW-107 MSD		3/28/19	10:00	EG	G	GW	2					2				1	1	G59
2F	PC MW-05		3/28/19	11:45	EG	G	GW	2					2				1	1	
3F	GW-DUP-0328		3/28/19	—	EG	G	GW	2					2				1	1	
4F	PC MW-16D		3/28/19	13:35	EG	G	GW	2					2				1	1	

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
~~SW - Surface Water~~
SO - Soil
SL - Sludge
SED-Sediment
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe
FB - Field Blank
EB-Equipment Blank
RB - Rinse Blank
TB - Trip Blank

Turn Around Time (Business Days)

Approved By (SGS PM); / Date:

- [X] 10 Business Days
- [ ] 5 Business Days
- [ ] 3 Business Days*
- [ ] 2 Business Days*
- [ ] 1 Business Day*
- [ ] Other

All data available via Lablink

* Approval needed for 1-3 Business Day TAT

Deliverable

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] NJ Reduced (Level 3)
- [X] Full Tier I (Level 4)
- [ ] Commercial "C"
- [ ] NJ DKQP
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] MA MCP Criteria_____
- [ ] CT RCP Criteria_____
- [ ] State Forms
- [ ] EDD Format _____
- [ ] DOD-QSM5

Commercial "A" = Results only; Commercial "B" = Results + QC Summary
Commercial "C" = Results + QC Summary + Partial Raw data

Comments / Special Instructions

INITIAL ASESSMENT 3/5 ✓

LABEL VERIFICATION_____

http://www.sgs.com/en/terms-and-conditions

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by:	Date / Time:	Received By:	Relinquished By:	Date / Time:	Received By:
1		3/28/19 1530				
2					3/28/19 1925	
3						
4						
5						

Custody Seal #: ☐ Intact ☐ Not Intact
Preserved where applicable: ☐ Absent
Therm. ID:
On Ice: ☐ 2.4 °C
Cooler Temp. °C

EHSA-QAC-0023-02-FORM-Dayton - Standard COC.xlsx

Report of Analysis

Client Sample ID:	MW-107		
Lab Sample ID:	JC85367-1	**Date Sampled:**	03/28/19
Matrix:	AQ - Ground Water	**Date Received:**	03/28/19
		Percent Solids:	n/a
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Solids, Total Dissolved	560	10	1.8	mg/l	1	03/30/19 11:55	RC	SM2540 C-11

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
B = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: MW-107
Lab Sample ID: JC85367-1F
Matrix: AQ - Groundwater Filtered
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 03/28/19
Date Received: 03/28/19
Percent Solids: n/a

Dissolved Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	46 U	200	46	ug/l	1	04/02/19	04/02/19	ND	SW846 6010D [2]	SW846 3010A [3]
Antimony	4.7 U	6.0	4.7	ug/l	1	04/02/19	04/02/19	ND	SW846 6010D [2]	SW846 3010A [3]
Arsenic	2.8 U	3.0	2.8	ug/l	1	04/02/19	04/02/19	ND	SW846 6010D [2]	SW846 3010A [3]
Barium	159 B	200	13	ug/l	1	04/02/19	04/02/19	ND	SW846 6010D [2]	SW846 3010A [3]
Beryllium	0.50 U	1.0	0.50	ug/l	1	04/02/19	04/02/19	ND	SW846 6010D [2]	SW846 3010A [3]
Cadmium	1.0 U	3.0	1.0	ug/l	1	04/02/19	04/02/19	ND	SW846 6010D [2]	SW846 3010A [3]
Calcium	106000	5000	99	ug/l	1	04/02/19	04/02/19	ND	SW846 6010D [2]	SW846 3010A [3]
Chromium	2.0 U	10	2.0	ug/l	1	04/02/19	04/02/19	ND	SW846 6010D [2]	SW846 3010A [3]
Cobalt	2.6 U	50	2.6	ug/l	1	04/02/19	04/02/19	ND	SW846 6010D [2]	SW846 3010A [3]
Copper	5.9 U	10	5.9	ug/l	1	04/02/19	04/02/19	ND	SW846 6010D [2]	SW846 3010A [3]
Iron	621	100	32	ug/l	1	04/02/19	04/02/19	ND	SW846 6010D [2]	SW846 3010A [3]
Lead	1.8 U	3.0	1.8	ug/l	1	04/02/19	04/02/19	ND	SW846 6010D [2]	SW846 3010A [3]
Magnesium	43200	5000	140	ug/l	1	04/02/19	04/02/19	ND	SW846 6010D [2]	SW846 3010A [3]
Manganese	1190	15	1.4	ug/l	1	04/02/19	04/02/19	ND	SW846 6010D [2]	SW846 3010A [3]
Mercury	0.095 U	0.20	0.095	ug/l	1	04/02/19	04/02/19	EAL	SW846 7470A [1]	SW846 7470A [4]
Nickel	1.7 U	10	1.7	ug/l	1	04/02/19	04/02/19	ND	SW846 6010D [2]	SW846 3010A [3]
Potassium	8700 B	10000	200	ug/l	1	04/02/19	04/02/19	ND	SW846 6010D [2]	SW846 3010A [3]
Selenium	4.9 U	10	4.9	ug/l	1	04/02/19	04/02/19	ND	SW846 6010D [2]	SW846 3010A [3]
Silver	1.9 U	10	1.9	ug/l	1	04/02/19	04/02/19	ND	SW846 6010D [2]	SW846 3010A [3]
Sodium	14300	10000	570	ug/l	1	04/02/19	04/02/19	ND	SW846 6010D [2]	SW846 3010A [3]
Thallium	1.8 U	10	1.8	ug/l	1	04/02/19	04/02/19	ND	SW846 6010D [2]	SW846 3010A [3]
Vanadium	2.0 B	50	1.8	ug/l	1	04/02/19	04/02/19	ND	SW846 6010D [2]	SW846 3010A [3]
Zinc	6.9 U	20	6.9	ug/l	1	04/02/19	04/02/19	ND	SW846 6010D [2]	SW846 3010A [3]

(1) Instrument QC Batch: MA46407
(2) Instrument QC Batch: MA46414
(3) Prep QC Batch: MP13758
(4) Prep QC Batch: MP13777

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
B = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	PCMW-05		
Lab Sample ID:	JC85367-2	**Date Sampled:**	03/28/19
Matrix:	AQ - Ground Water	**Date Received:**	03/28/19
		Percent Solids:	n/a
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Solids, Total Dissolved	600	10	1.8	mg/l	1	03/30/19 11:55	RC	SM2540 C-11

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
B = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: PCMW-05
Lab Sample ID: JC85367-2F
Matrix: AQ - Groundwater Filtered
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 03/28/19
Date Received: 03/28/19
Percent Solids: n/a

Dissolved Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	46 U	200	46	ug/l	1	04/02/19	04/02/19	ND	SW846 6010D [2]	SW846 3010A [3]
Antimony	4.7 U	6.0	4.7	ug/l	1	04/02/19	04/02/19	ND	SW846 6010D [2]	SW846 3010A [3]
Arsenic	2.8 U	3.0	2.8	ug/l	1	04/02/19	04/02/19	ND	SW846 6010D [2]	SW846 3010A [3]
Barium	365	200	13	ug/l	1	04/02/19	04/02/19	ND	SW846 6010D [2]	SW846 3010A [3]
Beryllium	0.50 U	1.0	0.50	ug/l	1	04/02/19	04/02/19	ND	SW846 6010D [2]	SW846 3010A [3]
Cadmium	1.0 U	3.0	1.0	ug/l	1	04/02/19	04/02/19	ND	SW846 6010D [2]	SW846 3010A [3]
Calcium	76700	5000	99	ug/l	1	04/02/19	04/02/19	ND	SW846 6010D [2]	SW846 3010A [3]
Chromium	2.0 U	10	2.0	ug/l	1	04/02/19	04/02/19	ND	SW846 6010D [2]	SW846 3010A [3]
Cobalt	2.6 U	50	2.6	ug/l	1	04/02/19	04/02/19	ND	SW846 6010D [2]	SW846 3010A [3]
Copper	5.9 U	10	5.9	ug/l	1	04/02/19	04/02/19	ND	SW846 6010D [2]	SW846 3010A [3]
Iron	99.6 B	100	32	ug/l	1	04/02/19	04/02/19	ND	SW846 6010D [2]	SW846 3010A [3]
Lead	2.9 B	3.0	1.8	ug/l	1	04/02/19	04/02/19	ND	SW846 6010D [2]	SW846 3010A [3]
Magnesium	9710	5000	140	ug/l	1	04/02/19	04/02/19	ND	SW846 6010D [2]	SW846 3010A [3]
Manganese	182	15	1.4	ug/l	1	04/02/19	04/02/19	ND	SW846 6010D [2]	SW846 3010A [3]
Mercury	0.095 U	0.20	0.095	ug/l	1	04/02/19	04/02/19	EAL	SW846 7470A [1]	SW846 7470A [4]
Nickel	85.5	10	1.7	ug/l	1	04/02/19	04/02/19	ND	SW846 6010D [2]	SW846 3010A [3]
Potassium	2880 B	10000	200	ug/l	1	04/02/19	04/02/19	ND	SW846 6010D [2]	SW846 3010A [3]
Selenium	4.9 U	10	4.9	ug/l	1	04/02/19	04/02/19	ND	SW846 6010D [2]	SW846 3010A [3]
Silver	1.9 U	10	1.9	ug/l	1	04/02/19	04/02/19	ND	SW846 6010D [2]	SW846 3010A [3]
Sodium	3790 B	10000	570	ug/l	1	04/02/19	04/02/19	ND	SW846 6010D [2]	SW846 3010A [3]
Thallium	1.8 U	10	1.8	ug/l	1	04/02/19	04/02/19	ND	SW846 6010D [2]	SW846 3010A [3]
Vanadium	1.8 U	50	1.8	ug/l	1	04/02/19	04/02/19	ND	SW846 6010D [2]	SW846 3010A [3]
Zinc	27.2	20	6.9	ug/l	1	04/02/19	04/02/19	ND	SW846 6010D [2]	SW846 3010A [3]

(1) Instrument QC Batch: MA46407
(2) Instrument QC Batch: MA46414
(3) Prep QC Batch: MP13758
(4) Prep QC Batch: MP13777

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
B = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	GW-DUP-0328		
Lab Sample ID:	JC85367-3	**Date Sampled:**	03/28/19
Matrix:	AQ - Ground Water	**Date Received:**	03/28/19
		Percent Solids:	n/a
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Solids, Total Dissolved	750	10	1.8	mg/l	1	03/30/19 11:55	RC	SM2540 C-11

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
B = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: GW-DUP-0328
Lab Sample ID: JC85367-3F
Matrix: AQ - Groundwater Filtered
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 03/28/19
Date Received: 03/28/19
Percent Solids: n/a

Dissolved Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	46 U	200	46	ug/l	1	04/02/19	04/03/19	ND	SW846 6010D [2]	SW846 3010A [3]
Antimony	4.7 U	6.0	4.7	ug/l	1	04/02/19	04/03/19	ND	SW846 6010D [2]	SW846 3010A [3]
Arsenic	2.8 U	3.0	2.8	ug/l	1	04/02/19	04/03/19	ND	SW846 6010D [2]	SW846 3010A [3]
Barium	360	200	13	ug/l	1	04/02/19	04/03/19	ND	SW846 6010D [2]	SW846 3010A [3]
Beryllium	0.50 U	1.0	0.50	ug/l	1	04/02/19	04/03/19	ND	SW846 6010D [2]	SW846 3010A [3]
Cadmium	1.0 U	3.0	1.0	ug/l	1	04/02/19	04/03/19	ND	SW846 6010D [2]	SW846 3010A [3]
Calcium	76200	5000	99	ug/l	1	04/02/19	04/03/19	ND	SW846 6010D [2]	SW846 3010A [3]
Chromium	2.0 U	10	2.0	ug/l	1	04/02/19	04/03/19	ND	SW846 6010D [2]	SW846 3010A [3]
Cobalt	2.6 U	50	2.6	ug/l	1	04/02/19	04/03/19	ND	SW846 6010D [2]	SW846 3010A [3]
Copper	5.9 U	10	5.9	ug/l	1	04/02/19	04/03/19	ND	SW846 6010D [2]	SW846 3010A [3]
Iron	99.0 B	100	32	ug/l	1	04/02/19	04/03/19	ND	SW846 6010D [2]	SW846 3010A [3]
Lead	1.9 B	3.0	1.8	ug/l	1	04/02/19	04/03/19	ND	SW846 6010D [2]	SW846 3010A [3]
Magnesium	9830	5000	140	ug/l	1	04/02/19	04/03/19	ND	SW846 6010D [2]	SW846 3010A [3]
Manganese	186	15	1.4	ug/l	1	04/02/19	04/03/19	ND	SW846 6010D [2]	SW846 3010A [3]
Mercury	0.095 U	0.20	0.095	ug/l	1	04/02/19	04/02/19	EAL	SW846 7470A [1]	SW846 7470A [4]
Nickel	80.9	10	1.7	ug/l	1	04/02/19	04/03/19	ND	SW846 6010D [2]	SW846 3010A [3]
Potassium	2890 B	10000	200	ug/l	1	04/02/19	04/03/19	ND	SW846 6010D [2]	SW846 3010A [3]
Selenium	4.9 U	10	4.9	ug/l	1	04/02/19	04/03/19	ND	SW846 6010D [2]	SW846 3010A [3]
Silver	1.9 U	10	1.9	ug/l	1	04/02/19	04/03/19	ND	SW846 6010D [2]	SW846 3010A [3]
Sodium	3800 B	10000	570	ug/l	1	04/02/19	04/03/19	ND	SW846 6010D [2]	SW846 3010A [3]
Thallium	1.8 U	10	1.8	ug/l	1	04/02/19	04/03/19	ND	SW846 6010D [2]	SW846 3010A [3]
Vanadium	1.8 U	50	1.8	ug/l	1	04/02/19	04/03/19	ND	SW846 6010D [2]	SW846 3010A [3]
Zinc	28.2	20	6.9	ug/l	1	04/02/19	04/03/19	ND	SW846 6010D [2]	SW846 3010A [3]

(1) Instrument QC Batch: MA46407
(2) Instrument QC Batch: MA46414
(3) Prep QC Batch: MP13758
(4) Prep QC Batch: MP13777

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
B = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	PCMW-16D		
Lab Sample ID:	JC85367-4	**Date Sampled:**	03/28/19
Matrix:	AQ - Ground Water	**Date Received:**	03/28/19
		Percent Solids:	n/a
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Solids, Total Dissolved	440	10	1.8	mg/l	1	03/30/19 11:55	RC	SM2540 C-11

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
B = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: PCMW-16D
Lab Sample ID: JC85367-4F
Matrix: AQ - Groundwater Filtered
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 03/28/19
Date Received: 03/28/19
Percent Solids: n/a

Dissolved Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	46 U	200	46	ug/l	1	04/02/19	04/03/19	ND	SW846 6010D [2]	SW846 3010A [4]
Antimony	4.7 U	6.0	4.7	ug/l	1	04/02/19	04/03/19	ND	SW846 6010D [2]	SW846 3010A [4]
Arsenic	5.8	3.0	2.8	ug/l	1	04/02/19	04/03/19	ND	SW846 6010D [2]	SW846 3010A [4]
Barium	34.6 B	200	13	ug/l	1	04/02/19	04/03/19	ND	SW846 6010D [2]	SW846 3010A [4]
Beryllium	0.50 U	1.0	0.50	ug/l	1	04/02/19	04/03/19	ND	SW846 6010D [2]	SW846 3010A [4]
Cadmium	1.0 U	3.0	1.0	ug/l	1	04/02/19	04/03/19	ND	SW846 6010D [2]	SW846 3010A [4]
Calcium	46700	5000	99	ug/l	1	04/02/19	04/03/19	ND	SW846 6010D [2]	SW846 3010A [4]
Chromium	2.0 U	10	2.0	ug/l	1	04/02/19	04/03/19	ND	SW846 6010D [2]	SW846 3010A [4]
Cobalt	2.8 B	50	2.6	ug/l	1	04/02/19	04/03/19	ND	SW846 6010D [2]	SW846 3010A [4]
Copper	5.9 U	10	5.9	ug/l	1	04/02/19	04/03/19	ND	SW846 6010D [2]	SW846 3010A [4]
Iron	27100	100	32	ug/l	1	04/02/19	04/03/19	ND	SW846 6010D [2]	SW846 3010A [4]
Lead	1.8 U	3.0	1.8	ug/l	1	04/02/19	04/03/19	ND	SW846 6010D [2]	SW846 3010A [4]
Magnesium	24900	5000	140	ug/l	1	04/02/19	04/03/19	ND	SW846 6010D [2]	SW846 3010A [4]
Manganese	3130	15	1.4	ug/l	1	04/02/19	04/03/19	ND	SW846 6010D [3]	SW846 3010A [4]
Mercury	0.095 U	0.20	0.095	ug/l	1	04/02/19	04/02/19	EAL	SW846 7470A [1]	SW846 7470A [5]
Nickel	1.7 U	10	1.7	ug/l	1	04/02/19	04/03/19	ND	SW846 6010D [2]	SW846 3010A [4]
Potassium	2730 B	10000	200	ug/l	1	04/02/19	04/03/19	ND	SW846 6010D [2]	SW846 3010A [4]
Selenium	4.9 U	10	4.9	ug/l	1	04/02/19	04/03/19	ND	SW846 6010D [2]	SW846 3010A [4]
Silver	1.9 U	10	1.9	ug/l	1	04/02/19	04/03/19	ND	SW846 6010D [2]	SW846 3010A [4]
Sodium	56100	10000	570	ug/l	1	04/02/19	04/03/19	ND	SW846 6010D [2]	SW846 3010A [4]
Thallium	1.8 U	10	1.8	ug/l	1	04/02/19	04/03/19	ND	SW846 6010D [2]	SW846 3010A [4]
Vanadium	4.5 B	50	1.8	ug/l	1	04/02/19	04/03/19	ND	SW846 6010D [2]	SW846 3010A [4]
Zinc	6.9 U	20	6.9	ug/l	1	04/02/19	04/03/19	ND	SW846 6010D [2]	SW846 3010A [4]

(1) Instrument QC Batch: MA46407
(2) Instrument QC Batch: MA46414
(3) Instrument QC Batch: MA46419
(4) Prep QC Batch: MP13758
(5) Prep QC Batch: MP13777

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
B = Indicates a result > = MDL but < RL

ARCADIS Design & Consultancy for natural and built assets

National Grid

Philly Coke

DATA REVIEW

Philadelphia, Pennsylvania

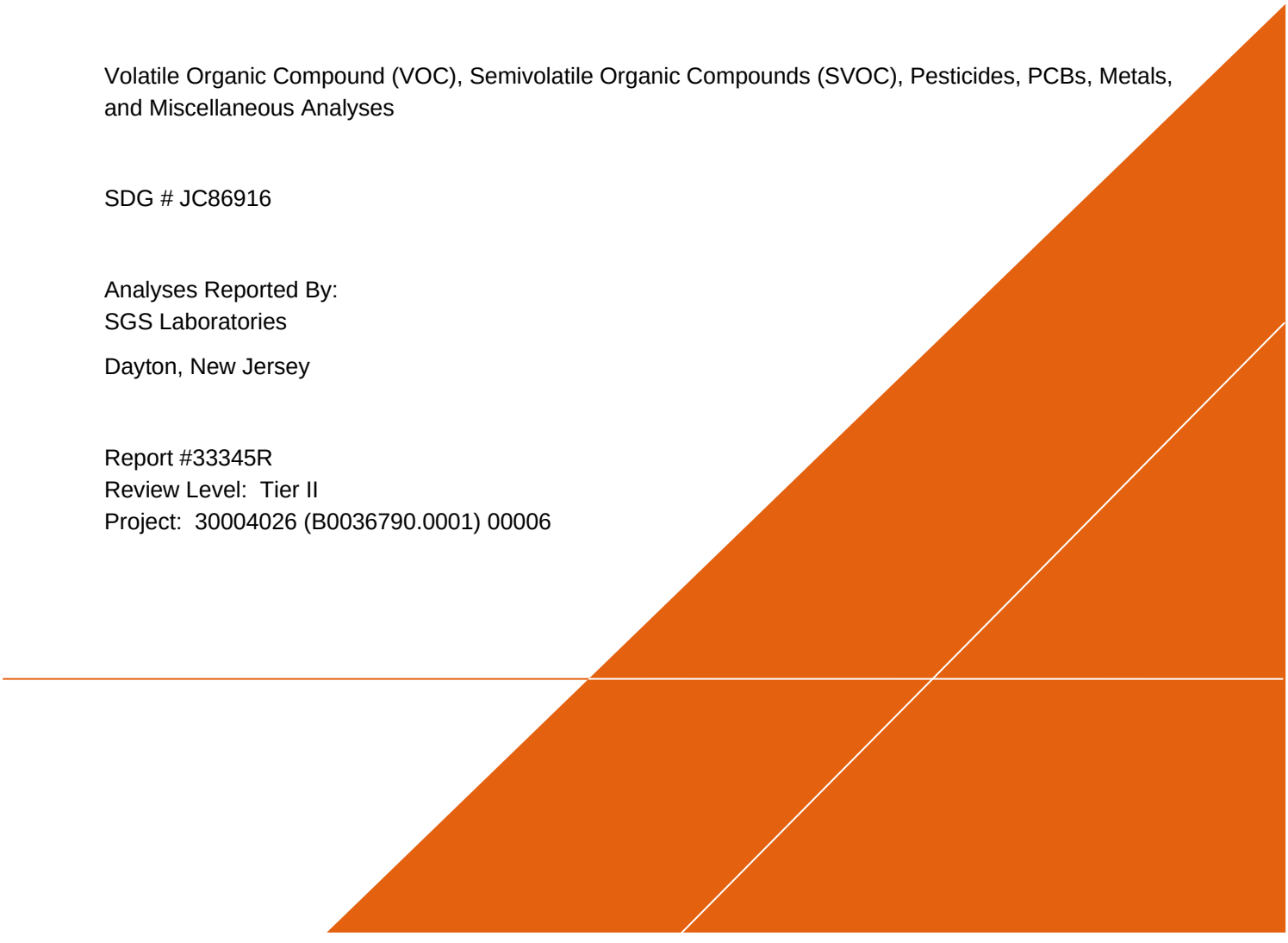
Volatile Organic Compound (VOC), Semivolatile Organic Compounds (SVOC), Pesticides, PCBs, Metals, and Miscellaneous Analyses

SDG # JC86916

Analyses Reported By:
SGS Laboratories

Dayton, New Jersey

Report #33345R
Review Level: Tier II
Project: 30004026 (B0036790.0001) 00006



SUMMARY

This data review report summarizes the review of Sample Delivery Group (SDG) # JC86916 for samples collected in association with the National Grid Philly Coke site in Philadelphia, Pennsylvania. The review was conducted as a Tier II evaluation and included review of laboratory analytical data package completeness. Field documentation was not included in this review. Included with this assessment are the post-validation annotated sample result sheets, and chain of custody (COC). Analyses were performed on the following samples

SDG Number	Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis				
						VOC	SVOC	PEST/ PCB	Metals	MISC
JC86916	PCTP-66R(0-0.5) (04-24-2019)	JC86916-1	Soil	4/24/2019		X	X	X	X	X
	PCTP-66R(0.5-2.0) (04-24-2019)	JC86916-2	Soil	4/24/2019		X	X	X	X	X
	PCTP-66R(8-10) (04-24-2019)	JC86916-3	Soil	4/24/2019		X	X	X	X	X
	SO-DUP-0424 (04-24-2019)	JC86916-4	Soil	4/24/2019	PCTP-66R(0-0.5) (04-24-2019)	X	X	X	X	X
	S-120(0-1) (04-24-2019)	JC86916-5	Soil	4/24/2019		X	X		X	X
	S-113B(1-3) (04-24-2019)	JC86916-6	Soil	4/24/2019		X	X		X	X
	S-113B(10-12) (04-24-2019)	JC86916-7	Soil	4/24/2019		X	X		X	X
	S-113B(13-15) (04-24-2019)	JC86916-8	Soil	4/24/2019		X	X		X	X
	S-113B (15-17 (04-24-2019)	JC86916-9	Soil	4/24/2019		X	X		X	X
	PSSTP-22R(0.5-2) (04-24-2019)	JC86916-10	Soil	4/24/2019		X	X	X	X	X
	PSSTP-22R(4-6) (04-24-2019)	JC86916-11	Soil	4/24/2019		X	X		X	X
	S-144 (15-17) (04-24-2019)	JC86916-12	Soil	4/24/2019		X	X		X	X
	S-144 (22-24) (04-24-2019)	JC86916-13	Soil	4/24/2019		X	X		X	X
	S-113 (0-1) (04-23-2019)	JC86916-14	Soil	4/23/2019		X	X		X	X
	S-107 (4-5.5) (04-23-2019)	JC86916-15	Soil	4/23/2019		X	X		X	X

Notes:

1. PEST/PCB = Pesticides and polychlorinated biphenyls
2. SVOC = Semivolatile Organic Compounds
3. VOC = Volatile Organic Compound
4. MISC = Miscellaneous (total cyanide)

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance (QA) or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260C, 8270D, 8081A, and 8082A. Data were reviewed in accordance with the USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540/R-2017-002, January 2017 and the USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Organic Data Review, EPA540/R-99/008, October 1999 (as applicable).

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The compound was positively identified; however, the associated numerical value is an estimated concentration only.

  UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.

  JN The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.

  UB Compound considered non-detect at the listed value due to associated blank contamination.

  N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is

that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times/Preservation

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260C	Water	14 days from collection to analysis (preserved) 7 days from collection to analysis (non-preserved)	Cool to <6 °C; preserved to a pH of less than 2 s.u.
	Soil	48 hours from collection to extraction and 14 days from extraction to analysis	Cool to <6 °C.

Note:
s.u. Standard units

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore, detected sample results were not associated with blank contamination.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. VOC analysis requires that all surrogates associated with the analysis exhibit recoveries within the laboratory-established acceptance limits.

Sample locations associated with surrogates exhibiting recoveries outside of the control limits presented in the following table.

Sample Locations	Surrogate	Recovery
PCTP-66R(8-10) (04-24-2019) (primary analysis) S-144 (15-17) (04-24-2019)	1,2-Dichloroethane-d4	AC
	4-Bromofluorobenzene	>UL
	Dibromofluoromethane	AC
	Toluene-d8	AC

Notes:

UL	Upper control limit
AC	Acceptable

The criteria used to evaluate the surrogate recoveries are presented in the following table. In the case of a surrogate deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> UL	Non-detect	No Action
	Detect	J
< LL but > 10%	Non-detect	UJ
	Detect	J
< 10%	Non-detect	R
	Detect	J

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

Sample locations associated with MS/MSD recoveries exhibiting an RPD greater than of the control limit presented in the following table.

Sample Locations	Compound
S-120(0-1) (04-24-2019)	1,2-Dichlorobenzene 1,4-Dichlorobenzene

The criteria used to evaluate the RPD between the MS/MSD recoveries are presented in the following table. In the case of an RPD deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> UL	Non-detect	UJ
	Detect	J

5. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) Analysis

The LCS/LCSD analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS/LCSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

The LCS/LCSD exhibited acceptable recoveries and RPD between the MS/MSD recoveries.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of three times the RL is applied for soil matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
PCTP-66R(0-0.5) (04-24-2019)/ SO-DUP-0424 (04-24-2019)	Acetone	20 U	19.9	AC

Notes:
AC Acceptable
NC Not compliant

Benzene associated with sample locations PSSTP-07R (0.5-2) (04-18-2019) and SO-DUP-0418 (04-18-2019) exhibited a field duplicate RPD greater than the control limit. The associated sample results from these sample locations for the listed analyte were qualified as estimated.

7. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

8. System Performance and Overall Assessment

The laboratory narrative indicates continuing calibration deviations. These deviations are normally not evaluated in a tier II data review. Sample results that had continuing calibration recoveries that exceed the control limit high and were non detect did not require qualification. Sample results where the calibration recoveries were high and the compound was detected or calibration recoveries were low were qualified as estimated (J or UJ).

The laboratory narrative indicates internal standard deviations. These deviations are normally not evaluated in a tier II data review. Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

Sample locations associated with internal standards exhibiting responses outside of the control limits are presented in the following table.

Sample Locations	Internal Standard	Response
PCTP-66R(8-10) (04-24-2019)	1,4-Dichlorobenzene-d4	< LL but > 25%

The criteria used to evaluate the internal standard responses are presented in the following table. In the case of an internal standard deviation, the compounds quantitated under the deviant internal standard are qualified as documented in the table below.

Control limit	Sample Result	Qualification
> the upper control limit (UL)	Non-detect	No action
	Detect	J
< the lower control limit (LL) but > 25%	Non-detect	UJ
	Detect	J
< 25%	Non-detect	R
	Detect	J

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: SW-846 8260	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks	X				X
C. Trip blanks	X				X
Laboratory Control Sample (LCS)		X		X	
Laboratory Control Sample Duplicate(LCSD)	X				X
LCS/LCSD Precision (RPD)	X				X
Matrix Spike (MS)		X		X	
Matrix Spike Duplicate(MSD)		X		X	
MS/MSD Precision (RPD)		X	X		
Field/Lab Duplicate (RPD)		X		X	
Surrogate Spike Recoveries		X	X		
Dilution Factor		X		X	
Moisture Content		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

SEMIVOLATILE ORGANIC COMPOUND (SVOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8270D	Water	7 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C
	Soil	14 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore, detected sample results were not associated with blank contamination.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. SVOC analysis requires that two of the three SVOC surrogate compounds within each fraction exhibit recoveries within the laboratory-established acceptance limits.

All surrogate recoveries were within control limits.

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

Sample locations associated with the MS/MSD exhibiting recoveries outside of the control limits are presented in the following table.

Sample Locations	Compound	MS Recovery	MSD Recovery
S-120(0-1) (04-24-2019)	2,6-Dinitrotoluene	<LL but >10%	AC
	3,3'-Dichlorobenzidine	< 10%	< 10%
S-113B(1-3) (04-24-2019)	2,4-Dinitrophenol	AC	< 10%
	4,6-Dinitro-o-cresol	< 10%	< 10%
	Acenaphthene	AC	>UL
	1,1'-Biphenyl	AC	>UL
	Carbazole	>UL	>UL
	Dibenzofuran	>UL	>UL
	Hexachlorocyclopentadiene	< 10%	< 10%
	2-Methylnaphthalene	>UL	>UL
	Naphthalene	>UL	>UL

The criteria used to evaluate the MS/MSD recoveries are presented in the following table. In the case of an MS/MSD deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> the upper control limit (UL)	Non-detect	No Action
	Detect	J
< the lower control limit (LL) but > 10%	Non-detect	UJ
	Detect	J
< 10%	Non-detect	R
	Detect	J

Sample locations associated with MS/MSD recoveries exhibiting an RPD greater than of the control limit presented in the following table.

Sample Locations	Compound
S-120(0-1) (04-24-2019)	Benzo(a)anthracene Benzo(a)pyrene Benzo(g,h,i)perylene Fluoranthene Indeno(1,2,3-cd)pyrene Phenanthrene Pyrene
S-113B(1-3) (04-24-2019)	Acenaphthene 1,1'-Biphenyl 3,3'-Dichlorobenzidine

Sample Locations	Compound
	1,4-Dioxane
	Dibenzofuran
	2-Methylnaphthalene
	Naphthalene

The criteria used to evaluate the RPD between the MS/MSD recoveries are presented in the following table. In the case of an RPD deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> UL	Non-detect	UJ
	Detect	J

5. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) Analysis

The LCS/LCSD analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS/LCSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

The LCS/LCSD exhibited acceptable recoveries and RPD between the MS/MSD recoveries.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of three times the RL is applied for soil matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
PCTP-66R(0-0.5) (04-24-2019)/ SO-DUP-0424 (04-24-2019)	1,1-Biphenyl	226	4330	NC
	2-Methylnaphthalene	486	10500	NC
	3-Methylphenol, 4-Methylphenol	37 J	420 U	AC
	Acenaphthene	244	4390	178.9 %
	Acenaphthylene	2640	45600	178.1 %
	Acetophenone	32.9 J	1000 U	AC
	Anthracene	4160	70900	177.8 %
	Benz(a)anthracene	8880	77600	158.9 %
	Benzaldehyde	29.7 J	1000 U	AC
	Benzo(a)pyrene	9200	67800	152.2 %

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
	Benzo(b)fluoranthene	11700	85600	151.9 %
	Benzo(g,h,i)perylene	5990	38100	145.6 %
	Benzo(k)fluoranthene	2660	27000	164.1 %
	bis(2-Ethylhexyl)phthalate	172	420 U	AC
	Carbazole	1440	19700	172.7 %
	Chrysene	8370	65700	154.7 %
	Dibenz(a,h)anthracene	1450	10100	149.7 %
	Dibenzofuran	1560	39800	184.9 %
	Fluoranthene	19800	200000	163.9 %
	Fluorene	3110	76200	184.3 %
	Indeno(1,2,3-cd)pyrene	6390	42900	148.1 %
	Naphthalene	782	11200	173.8 %
	Phenanthrene	18300	296000	176.7 %
	Phenol	36.4 J	111 J	AC
	Pyrene	15700	147000	161.4 %

Notes:

AC Acceptable

NC Not compliant

Several compounds associated with sample locations PCTP-66R(0-0.5) (04-24-2019) and SO-DUP-0424 (04-24-2019) exhibited a field duplicate RPD greater than the control limit. The associated sample results from these sample locations for the analytes outside criteria were qualified as estimated.

7. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

Several samples were diluted to bring target compounds within linear range of the instrument. Sample results that were reported from a secondary dilution were qualified with a “D”, indicating the result is diluted.

8. System Performance and Overall Assessment

The laboratory narrative indicates continuing calibration deviations. These deviations are normally not evaluated in a tier II data review. Sample results that had continuing calibration recoveries that exceed the control limit high and were non detect did not require qualification. Sample results where the calibration recoveries were high and the compound was detected or calibration recoveries were low were qualified as estimated (J or UJ).

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR SVOCs

SVOCs: SW-846 8270	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks	X				X
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R	X				X
LCS/LCSD Precision (RPD)	X				X
Matrix Spike (MS) %R		X	X		
Matrix Spike Duplicate(MSD) %R		X	X		
MS/MSD Precision (RPD)		X	X		
Field/Lab Duplicate (RPD)		X	X		
Surrogate Spike Recoveries		X	X		
Dilution Factor		X		X	
Moisture Content		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

PESTICIDE ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8081A	Water	7 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C
	Soil	14 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. Herbicide analysis requires that one of the two pesticide surrogate compounds exhibit recoveries within the laboratory-established acceptance limits.

Sample locations associated with surrogates exhibiting recoveries outside of the control limits presented in the following table.

Sample Locations	Surrogate	Recovery
PCTP-66R(8-10)	Tetrachloro-m-xylene	> UL
	Decachlorobiphenyl	AC
PSSTP-22R(0.5-2)	Tetrachloro-m-xylene	AC
	Decachlorobiphenyl	> UL

Notes:
Acceptable (AC)

The criteria used to evaluate the surrogate recoveries are presented in the following table. In the case of a surrogate deviation, the sample results associated with the deviant fraction are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> the upper control limit (UL)	Non-detect	No Action
	Detect	J
< the lower control limit (LL) but > 10%	Non-detect	UJ
	Detect	J
< 10%	Non-detect	R
	Detect	J

3. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

The MS/MSD was not performed on a sample within this SDG.

5. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

All compounds associated with the LCS analysis exhibited recoveries within the control limits.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 40% for water matrices and 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
PCTP-66R(0-0.5) (04-24-2019)/ SO-DUP-0424 (04-24-2019)	4,4-DDE	4.7	4.7	0.0 %
	4,4-DDT	18.4	22.2	18.7 %

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
	Dieldrin	0.75 U	4.3	NC
	Endosulfan sulfate	13.6	0.78 U	NC
	Heptachlor epoxide	0.75 U	1.1	AC

Notes:

AC Acceptable

NC Not compliant

Dieldrin and Endosulfan sulfate associated with sample locations PCTP-66R(0-0.5) (04-24-2019) and SO-DUP-0424 (04-24-2019) exhibited a field duplicate RPD greater than the control limit. The associated sample results from these sample locations for the listed analytes were qualified as estimated.

7. Compound Identification

The retention times of all quantitated peaks must fall within the calculated retention time windows for both the primary and confirmation columns. When dual column analysis is performed the percent difference (%D) of detected sample results must be less than 40%.

Sample locations associated with %D analysis exhibiting recoveries outside of the control limits presented in the following table.

Sample Locations	Compound	%D
PCTP-66R(0-0.5)	4,4'-DDE	62.8%
	4,4'-DDT	40.3%
SO-DUP-0424	4,4'-DDE	59.7%
	Heptachlor epoxide	48.3%
PSSTP-22R(0.5-2)	4,4'-DDD	87.3%

The criteria used to evaluate the %D are presented in the following table. In the case of a %D deviation, the sample results are qualified as documented in the table below.

Control Limit (%D)	Qualification
>40% to 70%	J
>70% to 100%	JN
>100% [1]	R
>100% to 200% (Interference detected)[2]	J or JN
>50% (pesticide) sample results less than the RL)	U

When the pesticide sample results are less than the RL and the %D greater than 50% the sample result are raised to the RL and reported as non-detect.

Notes:

1: If the pattern is confirmed sample results will be qualified as estimated (J). If pattern exhibits interference or if the pesticide cannot be positively determined due to weathering the sample results will be qualified as tentative identification estimate (JN).

2: If interference is detected in either column the sample results will be qualified as tentative identification estimate (JN).

8. System Performance and Overall Assessment

The laboratory narrative indicates continuing calibration deviations. These deviations are normally not evaluated in a tier II data review. Sample results that had continuing calibration recoveries that exceed the control limit high and were non detect did not require qualification. Sample results where the calibration recoveries were high and the compound was detected or calibration recoveries were low were qualified as estimated (J or UJ).

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR PESTICIDES

Pesticides; SW-846 8081	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY (GC/ECD)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks	X				X
Laboratory Control Sample (LCS)		X		X	
Laboratory Control Sample Duplicate(LCSD)	X				X
LCS/LCSD Precision (RPD)	X				X
Matrix Spike (MS)	X				X
Matrix Spike Duplicate(MSD)	X				X
MS/MSD Precision (RPD)	X				X
Field/Lab Duplicate (RPD)		X	X		
Surrogate Spike Recoveries		X	X		
Column %D $\leq$ 40% (If dual column is performed for reporting-not confirmation)		X	X		
Dilution Factor		X		X	
Moisture Content		X		X	

Notes:

%RSD – relative standard deviation
%R - percent recovery
RPD - relative percent difference
%D – difference.

POLYCHLORINATED BIPHENYLS (PCBs) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8082A	Soil	14 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore, detected sample results were not associated with blank contamination.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. PCB analysis requires that one of the two PCB surrogate compounds exhibit recoveries within the laboratory-established acceptance limits.

Sample locations associated with surrogates exhibiting recoveries outside of the control limits presented in the following table.

Sample Locations	Surrogate	Recovery
PCTP-66R(8-10)	Tetrachloro-m-xylene	> UL
	Decachlorobiphenyl	AC

Notes:
Acceptable (AC)

The criteria used to evaluate the surrogate recoveries are presented in the following table. In the case of a surrogate deviation, the sample results associated with the deviant fraction are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> the upper control limit (UL)	Non-detect	No Action
	Detect	J
< the lower control limit (LL) but > 10%	Non-detect	UJ
	Detect	J
< 10%	Non-detect	R
	Detect	J

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

The MS/MSD was not performed on a sample within this SDG.

5. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

All compounds associated with the LCS analysis exhibited recoveries within the control limits.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of three times the RL is applied for soil matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
PCTP-66R(0-0.5) (04-24-2019)/ SO-DUP-0424 (04-24-2019)	Aroclor 1262	249	336	29.7%

Notes:
AC Acceptable

The calculated RPDs between the parent sample and field duplicate were acceptable.

7. Compound Identification

The retention times of all quantitated peaks must fall within the calculated retention time windows for both the primary and confirmation columns. When dual column analysis is performed the relative percent difference (%RPD) of detected sample results must be less than 40%.

All Aroclors exhibited RPD between columns within the control limit.

8. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR PCBs

PCBs; SW-846 8082A	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY (GC/ECD)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks					X
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R					X
LCS/LCSD Precision (RPD)					X
Matrix Spike (MS) %R	X				X
Matrix Spike Duplicate(MSD) %R	X				X
MS/MSD Precision (RPD)	X				X
Field/Lab Duplicate (RPD)		X		X	
Surrogate Spike Recoveries		X	X		
Column (%D) (If dual column is performed-not confirmation purposes only)		X		X	
Dilution Factor		X		X	
Moisture Content		X		X	

%R - percent recovery

RPD - relative percent difference

%D – difference

INORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 6010D, 7471A, and 9012B. Data were reviewed in accordance with the USEPA CLP National Functional Guidelines for Inorganic Superfund Methods Data Review, EPA 540/R-2017-001, January 2017; and the USEPA CLP National Functional Guidelines for Inorganic Data Review, EPA 540-R-01-008, July 2002 (as applicable).

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and that it was already subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with the USEPA National Functional Guidelines:

- Concentration (C) Qualifiers
  - U The analyte was analyzed for but not detected. The associated value is the analyte instrument detection limit.
  - J The reported value was obtained from a reading less than the reporting limit (RL), but greater than or equal to the method detection limit (MDL).
- Quantitation (Q) Qualifiers
  - E The reported value is estimated due to the presence of interference.
  - N Spiked sample recovery is not within control limits.
  - * Duplicate analysis is not within control limits.
- Validation Qualifiers
  - J The analyte was positively identified; however, the associated numerical value is an estimated concentration only.
  - UJ The analyte was not detected above the reporting limit. However, the reported limit is approximate and may or may not represent the actual limit of detection.
  - UB Analyte considered non-detect at the listed value due to associated blank contamination.
  - R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

METALS ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 6010D	Water	180 days from collection to analysis	Preserved to a pH of less than 2.
	Soil	180 days from collection to analysis	Cool to <6 °C.
SW-846 7471A	Soil	28 days from collection to analysis	Cool to <6 °C.
SW-846 7470A	Water	28 days from collection to analysis	Cool to <6 °C; preserved to a pH of less than 2.

All samples were analyzed within the specified holding times.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Analytes were detected in the associated QA blanks; however, the associated sample results were greater than the BAL and/or were non-detect. No qualification of the sample results was required.

3. Matrix Spike (MS)/Matrix Spike Duplicate(MSD)/Laboratory Duplicate Analysis

MS/MSD and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

3.1 MS/MSD Analysis

All metal analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the analyte's concentration detected in the parent sample exceeds the MS concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

All analytes associated with MS/MSD recoveries were within control limits with the exception of the following analyte present in the table below.

Sample Location	Analyte	MS Recovery	MSD Recovery
S-120(0-1) (04-24-2019)	Calcium	65.0%	77.7%
	Zinc	<30%	<30%
	Aluminum	141.3%	164.7%
	Antimony	71.9%	67.3%
	Barium	<30%	<30%
	Mercury	59.9%	49.8%
S-113B(1-3) (04-24-2019)	Aluminum	134.6%	112.4%
	Antimony	70.5%	73.7%
	Magnesium	126.2%	93.3%
	Calcium	114.3%	74.8%

The criteria used to evaluate MS/MSD recoveries are presented in the following table. In the case of an MS/MSD deviation, the sample results are qualified. The qualifications for all metals are applied to all sample results associated with this SDG. The parent samples are only qualified for analytes outside criteria in their corresponding MS/MSD, all other samples are qualified for all analytes outside criteria.

Control limit	Sample Result	Qualification
MS/MSD percent recovery 30% to 74%	Non-detect	UJ
	Detect	J
MS/MSD percent recovery <30%	Non-detect	R
	Detect	J
MS/MSD percent recovery >125%	Non-detect	No Action
	Detect	J

3.2 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the RL. A control limit of 20% for water matrices and 35% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of one times the RL is applied for water matrices and two times the RL for soil matrices.

MS/MSD analysis was performed in replacement of the laboratory duplicate analysis. The MS/MSD analysis exhibited RPDs within the control limits.

4. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of three times the RL is applied for soil matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
PCTP-66R(0-0.5) (04-24-2019)/ SO-DUP-0424 (04-24-2019)	Aluminum	7560	6890	9.2 %
	Antimony	2.8	3.0	6.8 %
	Arsenic	66.6	60.7	9.2 %
	Barium	204	99	69.3 %
	Beryllium	1.1	0.9	20.0 %
	Cadmium	3	2.8	6.8 %
	Calcium	8670	5280	48.6 %
	Chromium	23.2	23.9	2.9 %
	Cobalt	6.0 J	6.4	6.4 %
	Copper	217	217	0.0 %
	Iron	12400	13600	9.2 %
	Lead	392	386	1.5 %
	Magnesium	3560	2390	39.3 %
	Manganese	595	375	45.3 %
	Nickel	32.1	32.3	0.6 %
	Potassium	890 J	1300 U	AC
	Selenium	0.88 J	2.6 U	AC
	Silver	0.22 J	0.64 U	AC
	Sodium	180 J	1300 U	AC
	Vanadium	27.1	28.4	4.6 %
	Zinc	490	501	2.2 %

Notes:
AC Acceptable

Barium associated with samples locations PCTP-66R(0-0.5) (04-24-2019) and SO-DUP-0424 (04-24-2019) exhibited a field duplicate RPD greater than the control limit. The associated sample results from all sample locations for the listed analyte were qualified as estimated.

5. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The analytes associated with the LCS analysis must exhibit a percent recovery between the control limits of 80% and 120%.

The LCS analysis exhibited recoveries within the control limits.

6. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR METAL

METALS; SW846 6010D/7471A	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Inductively Coupled Plasma-Atomic Emission Spectrometry (ICP-AES)					
Tier II Validation					
Holding Times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method Blanks		X		X	
B. Equipment/Field Blanks	X				X
Laboratory Control Sample (LCS)		X		X	
Matrix Spike (MS) %R		X	X		
Matrix Spike Duplicate (MSD) %R		X	X		
MS/MSD Precision (RPD)		X		X	
Field/Lab Duplicate (RPD)		X	X		
Total vs. Dissolved	X				X

Notes:

%R Percent recovery

RPD Relative percent difference

GENERAL CHEMISTRY ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
Cyanide by SW-846 9012	Water	14 days from collection to analysis	Cool to <6 °C; preserved to a pH of greater than 12.
	Soil		Cool to <6 °C.

All samples were analyzed within the specified holding times.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Analytes were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Matrix Spike/Matrix Spike Duplicate (MS/MSD)/Laboratory Duplicate Analysis

MS/MSD and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

3.1 MS/MSD Analysis

All analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the analyte's concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

All analytes associated with MS/MSD recoveries were within control limits with the exception of the following analyte present in the table below.

Sample Location	Analyte	MS Recovery
S-120(0-1) (04-24-2019)	Cyanide	126.9%
S-113B(1-3) (04-24-2019)	Cyanide	1105%

The criteria used to evaluate MS/MSD recoveries are presented in the following table. In the case of an MS/MSD deviation, the sample results are qualified. The qualifications are applied to all sample results associated with this SDG.

Control limit	Sample Result	Qualification
MS/MSD percent recovery 30% to 74%	Non-detect	UJ
	Detect	J
MS/MSD percent recovery <30%	Non-detect	R
	Detect	J
MS/MSD percent recovery >125%	Non-detect	No Action
	Detect	J

3.2 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the RL. A control limit of 20% for water matrices and 35% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of one times the RL is applied for water matrices and two times the RL for soil matrices.

The laboratory duplicate analysis exhibited RPD within control limits.

4. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The analytes associated with the LCS analysis must exhibit a percent recovery between the control limits of 80% and 120%.

The LCS analysis exhibited recoveries within the control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of three times the RL is applied for soil matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
PCTP-66R(0-0.5) (04-24-2019)/ SO-DUP-0424 (04-24-2019)	Cyanide	0.54	1.1	AC

Notes:
AC Acceptable

The calculated RPDs between the parent sample and field duplicate were acceptable.

6. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR GENERAL CHEMISTRY

General Chemistry: EPA 9012	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Miscellaneous Instrumentation					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks					X
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R					X
LCS/LCSD Precision (RPD)					X
Matrix Spike (MS) %R		X	X		
Matrix Spike Duplicate(MSD) %R	X				X
MS/MSD Precision (RPD)	X				X
Field/Lab Duplicate (RPD)		X		X	
Dilution Factor		X		X	
Moisture Content					X

Notes:
%R - percent recovery
RPD - relative percent difference

VALIDATION PERFORMED BY: Andrew Korycinski

SIGNATURE:

DATE: July 20, 2019

PEER REVIEW: Dennis Capria

DATE: July 23, 2019

CHAIN OF CUSTODY
SAMPLE ANALYSIS DATA SHEETS

SLL

CHAIN OF CUSTODY

SGS North America Inc. - Dayton
2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200 FAX: 732-329-3499/3480
www.sgs.com/ehsusa

L

FED-EX Tracking #: | Bottle Order Control #: ICR - 042219-40
SGS Quote #: | SGS Job #: JC86916

Client / Reporting Information	Project Information	Requested Analysis	Matrix Codes
Company Name: Arcadis-US	Project Name: Philadelphia Core		DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL - Sludge SED-Sediment OI - Oil LIQ - Other Liquid AIR - Air SOL - Other Solid WP - Wipe FB - Field Blank EB-Equipment Blank RB - Rinse Blank TB - Trip Blank
Street Address: 10 W Fayette St # 300	Street: 4501 Richmond St	Billing Information (if different from Report to)	
City: Syracuse State: NY Zip: 13202	City: Philadelphia State: PA	Company Name: Same	
Project Contact: Greg Reilly E-mail: Laundromat.Health@arcadis.com	Project #: 30056790.0001	Street Address:	
Phone #: 315-335-9594	Client Purchase Order #: (300 36210.0001)	City: State: Zip:	
Sampler(s) Name(s): Elan Green Phone #: (609) 305-2692	Project Manager: John Brussel	Attention:	

SGS Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Grab (G) Comp (C)	Matrix	# of bottles	Number of preserved Bottles: HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	Methanol Preservation Required (Yes/No)	V8260TCL 20	CN	VOA8270 TCL 20	MTAL	PS05I PESTTCL	PS082 PCB 11	LAB USE ONLY
1	PCTP-6R(0-0.5)		4/24/19	0900	EG	G	SO	6					32				1	X	X	X	X	X	X	
2	PCTP-6R(0.5-2.0)		4/24/19	0910	EG	G	SO	6					32				1	X	X	X	X	X	X	D45
3	PCTP-6R(8-10)		4/24/19	0930	EG	G	SO	6					32				1	X	X	X	X	X	X	D9T4
4	SG-DUP-0424		4/24/19	--:--	EG	G	SO	6					32				1	X	X	X	X	X	X	19N4
	S-120(0-1)		4/24/19	1130	EG	G	SO	5					22				1	X	X	X	X			40116
5	S-120(0-1)MS		4/24/19	1130	EG	G	SO	5					22				1	X	X	X	X			
	S-120(0-1)MSD		4/24/19	1130	EG	G	SO	5					22				1	X	X	X	X			
	S-113(1-3)		4/24/19	1430	GB	G	SO	5					22				1	X	X	X	X			
6	S-113(1-3)MS		4/24/19	1430	GB	G	SO	5					22				1	X	X	X	X			
	S-113(1-3)MSD		4/24/19	1430	GB	G	SO	5					22				1	X	X	X	X			
7	S-113(10-12)		4/24/19	1445	GB	G	SO	5					22				1	X	X	X	X			
8	S-113(13-15)		4/24/19	1450	GB	G	SO	5					22				1	X	X	X	X			

Turn Around Time (Business Days)

Approved By (SGS PM): / Date:

- [X] 10 Business Days
- [ ] 5 Business Days
- [ ] 3 Business Days*
- [ ] 2 Business Days*
- [ ] 1 Business Day*
- [ ] Other

All data available via Lablink

* Approval needed for 1-3 Business Day TAT

Deliverable

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] NJ Reduced (Level 3)
- [X] Full Tier I (Level 4)
- [ ] Commercial "C"
- [ ] NJ DKQP
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] MA MCP Criteria
- [ ] CT RCP Criteria
- [ ] State Forms
- [ ] EDD Format
- [ ] DOD-QSM5

Commercial "A" = Results only; Commercial "B" = Results + QC Summary
Commercial "C" = Results + QC Summary + Partial Raw data

Comments / Special Instructions

INITIAL ASESSMENT 3A (M)

LABEL VERIFICATION

http://www.sgs.com/en/terms-and-conditions

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by:	Date / Time:	Received By:	Relinquished by:	Date / Time:	Received By:
1	4/24/19 1620	1	2	4/24/19 1810	2
Relinquished by: 3	Date / Time:	Received By: 3	Relinquished by: 4	Date / Time:	Received By: 4
Relinquished by: 5	Date / Time:	Received By: 5	Custody Seal #	Intact / Not intact	Preserved where applicable: Absent / Therm. ID:	On Ice: 2.7 2.5	Cooler Temp. °C

EHSA-QAC-0023-02-FORM-Dayton - Standard COC.xlsx

CHAIN OF CUSTODY

SGS North America Inc. - Dayton
2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200 FAX: 732-329-3499/3480
www.sgs.com/ehsusa

FED-EX Tracking # | Bottle Order Control #
SGS Quote # | SGS Job # JC86916

Client / Reporting Information

Company Name: Arcadis-US
Street Address: 110 W Fayette St # 300
City: Syracuse State: NY Zip: 13202
Project Contact: Carey Hanly E-mail: Laurence.Hanly@arcadis-us.com
Phone #: 315-335-9594
Sampler(s) Name(s): Ben Green Phone #: (607) 305-2692

Project Information

Project Name: Philadelphia Coke
Street: 4601 Richmond St.
City: Philadelphia State: PA
Project #: B00356790.0001
Client Purchase Order #: B00356790.0001
Project Manager: John Bicsel

Billing Information (if different from Report to)

Company Name: Same
Street Address:
City: State: Zip:
Attention:

Requested Analysis

SGS Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Grab (G) Comp (C)	Matrix	# of bottles	Number of preserved Bottles: HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	Methanol	VB260TCL20	CN	AB820TCL20	MTAL	PS0061 PESTTCL	PO082 PCB11
9	S-113(15-17)		4/24/19	1505	GB	G	SO	5					2	2			-	X	X	X	X		
10	PSSTP-22R(0.5-2)		4/24/19	830	GB	G	SO	2					3	2			1	X	X	X	X	X	X
11	PSSTP-22R(4-6)		4/24/19	850	GB	G	SO	5					2	2			1	X	X	X	X		
12	S-144(15-17)		4/24/19	1015	GB	G	SO	5					3	2			1	X	X	X	X		
13	S-144(22-24)		4/24/19	1030	GB	G	SO	5					2	2			1	X	X	X	X		
14	S-113(0-1)		4/23/19	1500	EG	G	SO	5					2	2			1	X	X	X	X		
15	S-107(4-5.5)		4/23/19	1345	EG	G	SO	5					2	2			1	X	X	X	X		

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL - Sludge
SED-Sediment
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe
FB - Field Blank
EB-Equipment Blank
RB - Rinse Blank
TB - Trip Blank

LAB USE ONLY

Turn Around Time (Business Days)

Approved By (SGS PM): / Date:

- [X] 10 Business Days
- [ ] 5 Business Days
- [ ] 3 Business Days*
- [ ] 2 Business Days*
- [ ] 1 Business Day*
- [ ] Other

All data available via Lablink

* Approval needed for 1-3 Business Day TAT

Deliverable

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] NJ Reduced (Level 3)
- [ ] Full Tier I (Level 4)
- [ ] Commercial "C"
- [ ] NJ DKQP
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] MA MCP Criteria_____
- [ ] CT RCP Criteria_____
- [ ] State Forms
- [ ] EDD Format _____
- [ ] DOD-QSM5

Commercial "A" = Results only; Commercial "B" = Results + QC Summary
Commercial "C" = Results + QC Summary + Partial Raw data

Comments / Special Instructions

http://www.sgs.com/en/terms-and-conditions

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by:	Date / Time:	Received By:	Relinquished By:	Date / Time:	Received By:
1		4/24/19 1620	1	2	4/24/19	2
3			3	4		4
5			5	Custody Seal #	Intact / Not Intact	Preserved where applicable: Absent / Therm. ID: On Ice: 2.7 2.5

EHSA-QAC-0023-02-FORM-Dayton - Standard COC.xlsx

SGS LabLink@1039014 11:19 10-May-2019

Report of Analysis

Client Sample ID:	PCTP-66R(0-0.5)		
Lab Sample ID:	JC86916-1	**Date Sampled:**	04/24/19
Matrix:	SO - Soil	**Date Received:**	04/24/19
Method:	SW846 8260C	**Percent Solids:**	79.6
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3C151601.D	1	05/01/19 11:34	PS	n/a	n/a	V3C6814
Run #2							

	Initial Weight
Run #1	3.1 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	20	10	ug/kg	
71-43-2	Benzene	ND	1.0	0.76	ug/kg	
74-97-5	Bromochloromethane	ND	10	0.87	ug/kg	
75-27-4	Bromodichloromethane	ND	4.1	0.90	ug/kg	
75-25-2	Bromoform	ND	10	0.82	ug/kg	
74-83-9	Bromomethane	ND	10	2.0	ug/kg	
78-93-3	2-Butanone (MEK)	ND	20	7.6	ug/kg	
75-15-0	Carbon disulfide	ND	4.1	1.9	ug/kg	
56-23-5	Carbon tetrachloride	ND	4.1	1.1	ug/kg	
108-90-7	Chlorobenzene	ND	4.1	0.72	ug/kg	
75-00-3	Chloroethane	ND	10	1.4	ug/kg	
67-66-3	Chloroform	ND	4.1	0.75	ug/kg	
74-87-3	Chloromethane	ND	10	4.0	ug/kg	
110-82-7	Cyclohexane	ND	4.1	0.82	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	4.1	1.7	ug/kg	
124-48-1	Dibromochloromethane	ND	4.1	0.68	ug/kg	
106-93-4	1,2-Dibromoethane	ND	2.0	0.66	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	2.0	0.62	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	2.0	0.73	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	2.0	0.70	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	10	1.3	ug/kg	
75-34-3	1,1-Dichloroethane	ND	2.0	0.78	ug/kg	
107-06-2	1,2-Dichloroethane	ND	2.0	0.95	ug/kg	
75-35-4	1,1-Dichloroethene	ND	2.0	1.3	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	2.0	1.9	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	2.0	1.4	ug/kg	
78-87-5	1,2-Dichloropropane	ND	4.1	0.82	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	4.1	0.71	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	4.1	0.66	ug/kg	
100-41-4	Ethylbenzene	ND	2.0	1.1	ug/kg	
76-13-1	Freon 113	ND	10	1.5	ug/kg	
591-78-6	2-Hexanone	ND	10	2.6	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCTP-66R(0-0.5)		
Lab Sample ID:	JC86916-1	**Date Sampled:**	04/24/19
Matrix:	SO - Soil	**Date Received:**	04/24/19
Method:	SW846 8260C	**Percent Solids:**	79.6
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	4.1	1.4	ug/kg	
79-20-9	Methyl Acetate	ND	10	2.8	ug/kg	
108-87-2	Methylcyclohexane	ND	4.1	1.4	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	2.0	0.71	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK [a]	ND	10	3.2	ug/kg	
75-09-2	Methylene chloride	ND	10	5.1	ug/kg	
100-42-5	Styrene	ND	4.1	1.2	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	4.1	0.79	ug/kg	
127-18-4	Tetrachloroethene	ND	4.1	0.94	ug/kg	
108-88-3	Toluene	ND	2.0	0.76	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	10	2.0	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	10	2.0	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	4.1	0.86	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	4.1	0.69	ug/kg	
79-01-6	Trichloroethene	ND	2.0	1.5	ug/kg	
75-69-4	Trichlorofluoromethane [b]	ND	10	1.4	ug/kg	UJ
75-01-4	Vinyl chloride	ND	4.1	0.95	ug/kg	
	m,p-Xylene	ND	2.0	1.5	ug/kg	
95-47-6	o-Xylene	ND	2.0	1.2	ug/kg	
1330-20-7	Xylene (total)	ND	2.0	1.2	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		75-127%
17060-07-0	1,2-Dichloroethane-D4	101%		75-130%
2037-26-5	Toluene-D8	105%		80-120%
460-00-4	4-Bromofluorobenzene	108%		79-127%

(a) Associated CCV outside of control limits high, sample was ND.
(b) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PCTP-66R(0-0.5)		
Lab Sample ID:	JC86916-1	**Date Sampled:**	04/24/19
Matrix:	SO - Soil	**Date Received:**	04/24/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	79.6
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5P59166.D	1	05/02/19 17:52	CC	04/29/19 06:45	OP20043	E5P2795
Run #2	5P59221.D	10	05/03/19 20:08	CC	04/29/19 06:45	OP20043	E5P2797

	Initial Weight	Final Volume
Run #1	30.2 g	1.0 ml
Run #2	30.2 g	1.0 ml

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	83	21	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	210	26	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	210	35	ug/kg	
105-67-9	2,4-Dimethylphenol [a]	ND	210	74	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	210	160	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	210	45	ug/kg	
95-48-7	2-Methylphenol	ND	83	27	ug/kg	
	3&4-Methylphenol	37.0	83	34	ug/kg	J
88-75-5	2-Nitrophenol	ND	210	27	ug/kg	
100-02-7	4-Nitrophenol [a]	ND	420	110	ug/kg	
87-86-5	Pentachlorophenol	ND	170	39	ug/kg	
108-95-2	Phenol	36.4	83	22	ug/kg	J
58-90-2	2,3,4,6-Tetrachlorophenol	ND	210	28	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	210	31	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	210	25	ug/kg	
83-32-9	Acenaphthene	244	42	14	ug/kg	J
208-96-8	Acenaphthylene	2640	42	21	ug/kg	J
98-86-2	Acetophenone	32.9	210	8.9	ug/kg	J
120-12-7	Anthracene	4160	42	26	ug/kg	J
1912-24-9	Atrazine	ND	83	18	ug/kg	
56-55-3	Benzo(a)anthracene	8880 [b]	420	120	ug/kg	DJ
50-32-8	Benzo(a)pyrene	9200 [b]	420	190	ug/kg	DJ
205-99-2	Benzo(b)fluoranthene	11700 [b]	420	180	ug/kg	DJ
191-24-2	Benzo(g,h,i)perylene	5990 [b]	420	210	ug/kg	DJ
207-08-9	Benzo(k)fluoranthene	2660	42	19	ug/kg	J
101-55-3	4-Bromophenyl phenyl ether	ND	83	16	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	83	10	ug/kg	
92-52-4	1,1'-Biphenyl	226	83	5.7	ug/kg	J
100-52-7	Benzaldehyde	29.7	210	10	ug/kg	J
91-58-7	2-Chloronaphthalene	ND	83	9.9	ug/kg	
106-47-8	4-Chloroaniline	ND	210	15	ug/kg	
86-74-8	Carbazole	1440	83	6.0	ug/kg	J

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PCTP-66R(0-0.5)
Lab Sample ID: JC86916-1
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/24/19
Date Received: 04/24/19
Percent Solids: 79.6

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam [a]	ND	83	16	ug/kg	
218-01-9	Chrysene	8370 [b]	420	130	ug/kg	DJ
111-91-1	bis(2-Chloroethoxy)methane	ND	83	8.9	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	83	18	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane) [a]	ND	83	15	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	83	13	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	42	13	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	42	21	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	83	35	ug/kg	
123-91-1	1,4-Dioxane	ND	42	27	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	1450	42	18	ug/kg	J
132-64-9	Dibenzofuran	1560	83	17	ug/kg	J
84-74-2	Di-n-butyl phthalate	ND	83	6.8	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	83	10	ug/kg	
84-66-2	Diethyl phthalate	ND	83	8.9	ug/kg	
131-11-3	Dimethyl phthalate	ND	83	7.4	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	172	83	9.7	ug/kg	J
206-44-0	Fluoranthene	19800 [b]	420	190	ug/kg	DJ
86-73-7	Fluorene	3110	42	19	ug/kg	
118-74-1	Hexachlorobenzene	ND	83	11	ug/kg	
87-68-3	Hexachlorobutadiene	ND	42	17	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	420	17	ug/kg	
67-72-1	Hexachloroethane	ND	210	21	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	6390 [b]	420	200	ug/kg	DJ
78-59-1	Isophorone [a]	ND	83	8.9	ug/kg	
91-57-6	2-Methylnaphthalene	486	42	9.4	ug/kg	J
88-74-4	2-Nitroaniline [a]	ND	210	9.8	ug/kg	
99-09-2	3-Nitroaniline	ND	210	10	ug/kg	
100-01-6	4-Nitroaniline	ND	210	11	ug/kg	
91-20-3	Naphthalene	782	42	12	ug/kg	J
98-95-3	Nitrobenzene	ND	83	16	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	83	12	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	210	15	ug/kg	
85-01-8	Phenanthrene	18300 [b]	420	140	ug/kg	DJ
129-00-0	Pyrene	15700 [b]	420	130	ug/kg	DJ
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	210	11	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	43%	43%	23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCTP-66R(0-0.5)		
Lab Sample ID:	JC86916-1	**Date Sampled:**	04/24/19
Matrix:	SO - Soil	**Date Received:**	04/24/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	79.6
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	49%	48%	27-114%
118-79-6	2,4,6-Tribromophenol	49%	52%	19-152%
4165-60-0	Nitrobenzene-d5	58%	61%	26-134%
321-60-8	2-Fluorobiphenyl	58%	67%	39-124%
1718-51-0	Terphenyl-d14	55%	61%	36-134%

(a) Associated CCV outside of control limits high, sample was ND.
(b) Result is from Run# 2

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PCTP-66R(0-0.5)		
Lab Sample ID:	JC86916-1	**Date Sampled:**	04/24/19
Matrix:	SO - Soil	**Date Received:**	04/24/19
Method:	SW846 8081B SW846 3546	**Percent Solids:**	79.6
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6G64668.D	1	05/03/19 21:46	MH	05/02/19 10:30	OP20020	G6G2001
Run #2							

	Initial Weight	Final Volume
Run #1	16.8 g	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	0.75	0.62	ug/kg	
319-84-6	alpha-BHC	ND	0.75	0.61	ug/kg	
319-85-7	beta-BHC	ND	0.75	0.68	ug/kg	
319-86-8	delta-BHC	ND	0.75	0.72	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	0.75	0.55	ug/kg	
5103-71-9	alpha-Chlordane	ND	0.75	0.60	ug/kg	
5103-74-2	gamma-Chlordane	ND	0.75	0.34	ug/kg	
60-57-1	Dieldrin	ND	0.75	0.51	ug/kg	UJ
72-54-8	4,4'-DDD	ND	0.75	0.69	ug/kg	
72-55-9	4,4'-DDE [a]	4.7	0.75	0.66	ug/kg	J
50-29-3	4,4'-DDT [a]	18.4	0.75	0.66	ug/kg	J
72-20-8	Endrin	ND	0.75	0.58	ug/kg	
1031-07-8	Endosulfan sulfate	13.6	0.75	0.58	ug/kg	J
7421-93-4	Endrin aldehyde	ND	0.75	0.42	ug/kg	
959-98-8	Endosulfan-I	ND	0.75	0.43	ug/kg	
33213-65-9	Endosulfan-II	ND	0.75	0.47	ug/kg	
76-44-8	Heptachlor	ND	0.75	0.64	ug/kg	
1024-57-3	Heptachlor epoxide	ND	0.75	0.52	ug/kg	
72-43-5	Methoxychlor	ND	1.5	0.59	ug/kg	
53494-70-5	Endrin ketone	ND	0.75	0.54	ug/kg	
8001-35-2	Toxaphene	ND	19	17	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	100%		25-135%
877-09-8	Tetrachloro-m-xylene	79%		25-135%
2051-24-3	Decachlorobiphenyl	79%		10-156%
2051-24-3	Decachlorobiphenyl	184% [b]		10-156%

(a) More than 40 % RPD for detected concentrations between the two GC columns.
(b) Outside control limits due to matrix interference.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PCTP-66R(0-0.5)		
Lab Sample ID:	JC86916-1	**Date Sampled:**	04/24/19
Matrix:	SO - Soil	**Date Received:**	04/24/19
Method:	SW846 8082A SW846 3546	**Percent Solids:**	79.6
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XX2434628.D	1	05/04/19 19:18	TR	05/02/19 10:30	OP20019	GXX6680
Run #2							

	Initial Weight	Final Volume
Run #1	16.8 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	37	17	ug/kg	
11104-28-2	Aroclor 1221	ND	37	19	ug/kg	
11141-16-5	Aroclor 1232	ND	37	29	ug/kg	
53469-21-9	Aroclor 1242	ND	37	15	ug/kg	
12672-29-6	Aroclor 1248	ND	37	33	ug/kg	
11097-69-1	Aroclor 1254	ND	37	20	ug/kg	
11096-82-5	Aroclor 1260	ND	37	16	ug/kg	
11100-14-4	Aroclor 1268	ND	37	16	ug/kg	
37324-23-5	Aroclor 1262	249	37	24	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	88%		31-146%
877-09-8	Tetrachloro-m-xylene	107%		31-146%
2051-24-3	Decachlorobiphenyl	85%		17-164%
2051-24-3	Decachlorobiphenyl	245% [a]		17-164%

(a) Outside control limits due to matrix interference.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
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J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PCTP-66R(0.5-2.0)		
Lab Sample ID:	JC86916-2	**Date Sampled:**	04/24/19
Matrix:	SO - Soil	**Date Received:**	04/24/19
Method:	SW846 8260C	**Percent Solids:**	90.0
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3C151602.D	1	05/01/19 11:57	PS	n/a	n/a	V3C6814
Run #2							

	Initial Weight
Run #1	4.5 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	12	6.2	ug/kg	
71-43-2	Benzene	ND	0.62	0.47	ug/kg	
74-97-5	Bromochloromethane	ND	6.2	0.53	ug/kg	
75-27-4	Bromodichloromethane	ND	2.5	0.55	ug/kg	
75-25-2	Bromoform	ND	6.2	0.50	ug/kg	
74-83-9	Bromomethane	ND	6.2	1.2	ug/kg	
78-93-3	2-Butanone (MEK)	ND	12	4.6	ug/kg	
75-15-0	Carbon disulfide	ND	2.5	1.1	ug/kg	
56-23-5	Carbon tetrachloride	ND	2.5	0.68	ug/kg	
108-90-7	Chlorobenzene	ND	2.5	0.44	ug/kg	
75-00-3	Chloroethane	ND	6.2	0.85	ug/kg	
67-66-3	Chloroform	ND	2.5	0.46	ug/kg	
74-87-3	Chloromethane	ND	6.2	2.4	ug/kg	
110-82-7	Cyclohexane	ND	2.5	0.50	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.5	1.0	ug/kg	
124-48-1	Dibromochloromethane	ND	2.5	0.42	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.2	0.40	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.2	0.38	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.2	0.44	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.2	0.42	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	6.2	0.78	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.2	0.48	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.2	0.58	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.2	0.81	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.2	1.2	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.2	0.82	ug/kg	
78-87-5	1,2-Dichloropropane	ND	2.5	0.50	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	2.5	0.43	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2.5	0.40	ug/kg	
100-41-4	Ethylbenzene	ND	1.2	0.68	ug/kg	
76-13-1	Freon 113	ND	6.2	0.94	ug/kg	
591-78-6	2-Hexanone	ND	6.2	1.6	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCTP-66R(0.5-2.0)		
Lab Sample ID:	JC86916-2	**Date Sampled:**	04/24/19
Matrix:	SO - Soil	**Date Received:**	04/24/19
Method:	SW846 8260C	**Percent Solids:**	90.0
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	2.5	0.86	ug/kg	
79-20-9	Methyl Acetate	ND	6.2	1.7	ug/kg	
108-87-2	Methylcyclohexane	ND	2.5	0.87	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.2	0.43	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK [a]	ND	6.2	1.9	ug/kg	
75-09-2	Methylene chloride	ND	6.2	3.1	ug/kg	
100-42-5	Styrene	ND	2.5	0.71	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.5	0.48	ug/kg	
127-18-4	Tetrachloroethene	ND	2.5	0.57	ug/kg	
108-88-3	Toluene	ND	1.2	0.46	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	6.2	1.2	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	6.2	1.2	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	2.5	0.53	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2.5	0.42	ug/kg	
79-01-6	Trichloroethene	ND	1.2	0.94	ug/kg	
75-69-4	Trichlorofluoromethane [b]	ND	6.2	0.84	ug/kg	UJ
75-01-4	Vinyl chloride	ND	2.5	0.58	ug/kg	
	m,p-Xylene	ND	1.2	0.92	ug/kg	
95-47-6	o-Xylene	ND	1.2	0.72	ug/kg	
1330-20-7	Xylene (total)	ND	1.2	0.72	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		75-127%
17060-07-0	1,2-Dichloroethane-D4	100%		75-130%
2037-26-5	Toluene-D8	102%		80-120%
460-00-4	4-Bromofluorobenzene	102%		79-127%

(a) Associated CCV outside of control limits high, sample was ND.
(b) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PCTP-66R(0.5-2.0)		
Lab Sample ID:	JC86916-2	**Date Sampled:**	04/24/19
Matrix:	SO - Soil	**Date Received:**	04/24/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	90.0
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5P59162.D	1	05/02/19 16:20	CC	04/29/19 06:45	OP20043	E5P2795
Run #2							

	Initial Weight	Final Volume
Run #1	31.9 g	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	70	17	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	170	21	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	170	30	ug/kg	
105-67-9	2,4-Dimethylphenol [a]	ND	170	62	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	170	130	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	170	37	ug/kg	
95-48-7	2-Methylphenol	ND	70	22	ug/kg	
	3&4-Methylphenol	ND	70	29	ug/kg	
88-75-5	2-Nitrophenol	ND	170	23	ug/kg	
100-02-7	4-Nitrophenol [a]	ND	350	93	ug/kg	
87-86-5	Pentachlorophenol	ND	140	33	ug/kg	
108-95-2	Phenol	ND	70	18	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	170	23	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	170	26	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	170	21	ug/kg	
83-32-9	Acenaphthene	78.7	35	12	ug/kg	
208-96-8	Acenaphthylene	116	35	18	ug/kg	
98-86-2	Acetophenone	ND	170	7.5	ug/kg	
120-12-7	Anthracene	143	35	21	ug/kg	
1912-24-9	Atrazine	ND	70	15	ug/kg	
56-55-3	Benzo(a)anthracene	393	35	9.9	ug/kg	
50-32-8	Benzo(a)pyrene	515	35	16	ug/kg	
205-99-2	Benzo(b)fluoranthene	681	35	15	ug/kg	
191-24-2	Benzo(g,h,i)perylene	421	35	17	ug/kg	
207-08-9	Benzo(k)fluoranthene	251	35	16	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	70	13	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	70	8.5	ug/kg	
92-52-4	1,1'-Biphenyl	18.5	70	4.8	ug/kg	J
100-52-7	Benzaldehyde	ND	170	8.6	ug/kg	
91-58-7	2-Chloronaphthalene	ND	70	8.3	ug/kg	
106-47-8	4-Chloroaniline	ND	170	13	ug/kg	
86-74-8	Carbazole	30.0	70	5.1	ug/kg	J

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PCTP-66R(0.5-2.0)
Lab Sample ID: JC86916-2
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/24/19
Date Received: 04/24/19
Percent Solids: 90.0

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam [a]	ND	70	14	ug/kg	
218-01-9	Chrysene	373	35	11	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	70	7.5	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	70	15	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane) [a]	ND	70	13	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	70	11	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	35	11	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	35	17	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	70	29	ug/kg	
123-91-1	1,4-Dioxane	ND	35	23	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	105	35	15	ug/kg	
132-64-9	Dibenzofuran	49.5	70	14	ug/kg	J
84-74-2	Di-n-butyl phthalate	ND	70	5.7	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	70	8.7	ug/kg	
84-66-2	Diethyl phthalate	ND	70	7.4	ug/kg	
131-11-3	Dimethyl phthalate	ND	70	6.2	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	70	8.2	ug/kg	
206-44-0	Fluoranthene	624	35	16	ug/kg	
86-73-7	Fluorene	86.6	35	16	ug/kg	
118-74-1	Hexachlorobenzene	ND	70	8.8	ug/kg	
87-68-3	Hexachlorobutadiene	ND	35	14	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	350	14	ug/kg	
67-72-1	Hexachloroethane	ND	170	17	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	444	35	16	ug/kg	
78-59-1	Isophorone [a]	ND	70	7.5	ug/kg	
91-57-6	2-Methylnaphthalene	106	35	7.9	ug/kg	
88-74-4	2-Nitroaniline [a]	ND	170	8.2	ug/kg	
99-09-2	3-Nitroaniline	ND	170	8.7	ug/kg	
100-01-6	4-Nitroaniline	ND	170	9.0	ug/kg	
91-20-3	Naphthalene	29.4	35	9.8	ug/kg	J
98-95-3	Nitrobenzene	ND	70	13	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	70	10	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	170	13	ug/kg	
85-01-8	Phenanthrene	348	35	12	ug/kg	
129-00-0	Pyrene	523	35	11	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	170	8.8	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	63%		23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCTP-66R(0.5-2.0)		
Lab Sample ID:	JC86916-2	**Date Sampled:**	04/24/19
Matrix:	SO - Soil	**Date Received:**	04/24/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	90.0
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	69%		27-114%
118-79-6	2,4,6-Tribromophenol	64%		19-152%
4165-60-0	Nitrobenzene-d5	76%		26-134%
321-60-8	2-Fluorobiphenyl	70%		39-124%
1718-51-0	Terphenyl-d14	63%		36-134%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PCTP-66R(0.5-2.0)		
Lab Sample ID:	JC86916-2	**Date Sampled:**	04/24/19
Matrix:	SO - Soil	**Date Received:**	04/24/19
Method:	SW846 8081B SW846 3546	**Percent Solids:**	90.0
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6G64669.D	1	05/03/19 22:05	MH	05/02/19 10:30	OP20020	G6G2001
Run #2							

	Initial Weight	Final Volume
Run #1	16.1 g	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	0.69	0.57	ug/kg	
319-84-6	alpha-BHC	ND	0.69	0.56	ug/kg	
319-85-7	beta-BHC	ND	0.69	0.62	ug/kg	
319-86-8	delta-BHC	ND	0.69	0.66	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	0.69	0.51	ug/kg	
5103-71-9	alpha-Chlordane	ND	0.69	0.56	ug/kg	
5103-74-2	gamma-Chlordane	ND	0.69	0.31	ug/kg	
60-57-1	Dieldrin	ND	0.69	0.47	ug/kg	
72-54-8	4,4'-DDD	ND	0.69	0.63	ug/kg	
72-55-9	4,4'-DDE	ND	0.69	0.61	ug/kg	
50-29-3	4,4'-DDT	ND	0.69	0.61	ug/kg	
72-20-8	Endrin	ND	0.69	0.54	ug/kg	
1031-07-8	Endosulfan sulfate	ND	0.69	0.54	ug/kg	
7421-93-4	Endrin aldehyde	ND	0.69	0.39	ug/kg	
959-98-8	Endosulfan-I	ND	0.69	0.40	ug/kg	
33213-65-9	Endosulfan-II	ND	0.69	0.43	ug/kg	
76-44-8	Heptachlor	ND	0.69	0.59	ug/kg	
1024-57-3	Heptachlor epoxide	ND	0.69	0.48	ug/kg	
72-43-5	Methoxychlor	ND	1.4	0.55	ug/kg	
53494-70-5	Endrin ketone	ND	0.69	0.50	ug/kg	
8001-35-2	Toxaphene	ND	17	16	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	88%		25-135%
877-09-8	Tetrachloro-m-xylene	81%		25-135%
2051-24-3	Decachlorobiphenyl	74%		10-156%
2051-24-3	Decachlorobiphenyl	89%		10-156%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PCTP-66R(0.5-2.0)		
Lab Sample ID:	JC86916-2	**Date Sampled:**	04/24/19
Matrix:	SO - Soil	**Date Received:**	04/24/19
Method:	SW846 8082A SW846 3546	**Percent Solids:**	90.0
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XX2434633.D	1	05/04/19 20:50	TR	05/02/19 10:30	OP20019	GXX6680
Run #2							

	Initial Weight	Final Volume
Run #1	16.1 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	35	16	ug/kg	
11104-28-2	Aroclor 1221	ND	35	18	ug/kg	
11141-16-5	Aroclor 1232	ND	35	27	ug/kg	
53469-21-9	Aroclor 1242	ND	35	14	ug/kg	
12672-29-6	Aroclor 1248	ND	35	31	ug/kg	
11097-69-1	Aroclor 1254	ND	35	19	ug/kg	
11096-82-5	Aroclor 1260	ND	35	15	ug/kg	
11100-14-4	Aroclor 1268	ND	35	15	ug/kg	
37324-23-5	Aroclor 1262	ND	35	23	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	96%		31-146%
877-09-8	Tetrachloro-m-xylene	98%		31-146%
2051-24-3	Decachlorobiphenyl	87%		17-164%
2051-24-3	Decachlorobiphenyl	112%		17-164%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PCTP-66R(8-10)		
Lab Sample ID:	JC86916-3	**Date Sampled:**	04/24/19
Matrix:	SO - Soil	**Date Received:**	04/24/19
Method:	SW846 8260C	**Percent Solids:**	58.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3C151603.D	1	05/01/19 12:20	PS	n/a	n/a	V3C6814
Run #2	I225915.D	1	05/02/19 13:14	TDN	n/a	n/a	VI9101

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	4.0 g		
Run #2	4.5 g	10.0 ml	100 ul

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	238	21	11	ug/kg	J
71-43-2	Benzene	9.3	1.1	0.81	ug/kg	J
74-97-5	Bromochloromethane	ND	11	0.92	ug/kg	
75-27-4	Bromodichloromethane	ND	4.3	0.95	ug/kg	
75-25-2	Bromoform	ND	11	0.87	ug/kg	
74-83-9	Bromomethane	ND	11	2.1	ug/kg	
78-93-3	2-Butanone (MEK)	36.8	21	8.0	ug/kg	J
75-15-0	Carbon disulfide	2.1	4.3	2.0	ug/kg	J
56-23-5	Carbon tetrachloride	ND	4.3	1.2	ug/kg	
108-90-7	Chlorobenzene	ND	4.3	0.76	ug/kg	
75-00-3	Chloroethane	ND	11	1.5	ug/kg	
67-66-3	Chloroform	ND	4.3	0.80	ug/kg	
74-87-3	Chloromethane	ND	11	4.2	ug/kg	
110-82-7	Cyclohexane	12.2	4.3	0.87	ug/kg	J
96-12-8	1,2-Dibromo-3-chloropropane	ND	4.3	1.8	ug/kg	UJ
124-48-1	Dibromochloromethane	ND	4.3	0.73	ug/kg	
106-93-4	1,2-Dibromoethane	ND	2.1	0.70	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	2.1	0.66	ug/kg	UJ
541-73-1	1,3-Dichlorobenzene	ND	2.1	0.77	ug/kg	UJ
106-46-7	1,4-Dichlorobenzene	ND	2.1	0.74	ug/kg	UJ
75-71-8	Dichlorodifluoromethane	ND	11	1.4	ug/kg	
75-34-3	1,1-Dichloroethane	ND	2.1	0.83	ug/kg	
107-06-2	1,2-Dichloroethane	ND	2.1	1.0	ug/kg	
75-35-4	1,1-Dichloroethene	ND	2.1	1.4	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	2.1	2.1	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	2.1	1.4	ug/kg	
78-87-5	1,2-Dichloropropane	ND	4.3	0.87	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	4.3	0.76	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	4.3	0.70	ug/kg	
100-41-4	Ethylbenzene	272	2.1	1.2	ug/kg	J
76-13-1	Freon 113	ND	11	1.6	ug/kg	
591-78-6	2-Hexanone	ND	11	2.7	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCTP-66R(8-10)		
Lab Sample ID:	JC86916-3	**Date Sampled:**	04/24/19
Matrix:	SO - Soil	**Date Received:**	04/24/19
Method:	SW846 8260C	**Percent Solids:**	58.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	6370 [a]	450	160	ug/kg	D
79-20-9	Methyl Acetate	ND	11	3.0	ug/kg	
108-87-2	Methylcyclohexane	77.3	4.3	1.5	ug/kg	J
1634-04-4	Methyl Tert Butyl Ether	ND	2.1	0.76	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK [b]	ND	11	3.4	ug/kg	
75-09-2	Methylene chloride	ND	11	5.4	ug/kg	
100-42-5	Styrene	ND	4.3	1.2	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	4.3	0.84	ug/kg	UJ
127-18-4	Tetrachloroethene	ND	4.3	0.99	ug/kg	
108-88-3	Toluene	25.0	2.1	0.81	ug/kg	J
87-61-6	1,2,3-Trichlorobenzene	ND	11	2.1	ug/kg	UJ
120-82-1	1,2,4-Trichlorobenzene	ND	11	2.1	ug/kg	UJ
71-55-6	1,1,1-Trichloroethane	ND	4.3	0.91	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	4.3	0.73	ug/kg	
79-01-6	Trichloroethene	ND	2.1	1.6	ug/kg	
75-69-4	Trichlorofluoromethane [c]	ND	11	1.5	ug/kg	UJ
75-01-4	Vinyl chloride	ND	4.3	1.0	ug/kg	
	m,p-Xylene	49.0	2.1	1.6	ug/kg	J
95-47-6	o-Xylene	160	2.1	1.3	ug/kg	J
1330-20-7	Xylene (total)	209	2.1	1.3	ug/kg	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	114%	107%	75-127%
17060-07-0	1,2-Dichloroethane-D4	107%	116%	75-130%
2037-26-5	Toluene-D8	117%	100%	80-120%
460-00-4	4-Bromofluorobenzene	156% [d]	107%	79-127%

(a) Result is from Run# 2
(b) Associated CCV outside of control limits high, sample was ND.
(c) Associated CCV outside of control limits low.
(d) Outside control limits due to matrix interference.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PCTP-66R(8-10)		
Lab Sample ID:	JC86916-3	**Date Sampled:**	04/24/19
Matrix:	SO - Soil	**Date Received:**	04/24/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	58.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	5P59170.D	2	05/02/19 19:23	CC	04/29/19 06:45	OP20043	E5P2795
Run #2	5P59218.D	20	05/03/19 18:59	CC	04/29/19 06:45	OP20043	E5P2797
Run #3	5P59212.D	200	05/03/19 16:43	CC	04/29/19 06:45	OP20043	E5P2797

	Initial Weight	Final Volume
Run #1	31.0 g	1.0 ml
Run #2	31.0 g	1.0 ml
Run #3	31.0 g	1.0 ml

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	220	55	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	550	68	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	550	95	ug/kg	
105-67-9	2,4-Dimethylphenol [b]	ND	550	200	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	550	420	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	550	120	ug/kg	
95-48-7	2-Methylphenol	ND	220	71	ug/kg	
	3&4-Methylphenol	907	220	91	ug/kg	
88-75-5	2-Nitrophenol	ND	550	73	ug/kg	
100-02-7	4-Nitrophenol [b]	ND	1100	300	ug/kg	
87-86-5	Pentachlorophenol	ND	440	100	ug/kg	
108-95-2	Phenol	150	220	58	ug/kg	J
58-90-2	2,3,4,6-Tetrachlorophenol	ND	550	73	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	550	83	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	550	66	ug/kg	
83-32-9	Acenaphthene	314000 [c]	11000	3800	ug/kg	D
208-96-8	Acenaphthylene	6520	110	56	ug/kg	
98-86-2	Acetophenone	ND	550	24	ug/kg	
120-12-7	Anthracene	203000 [c]	11000	6800	ug/kg	D
1912-24-9	Atrazine	ND	220	47	ug/kg	
56-55-3	Benzo(a)anthracene	54100 [d]	1100	310	ug/kg	D
50-32-8	Benzo(a)pyrene	35500 [d]	1100	500	ug/kg	
205-99-2	Benzo(b)fluoranthene	39300 [d]	1100	490	ug/kg	
191-24-2	Benzo(g,h,i)perylene	14100 [d]	1100	550	ug/kg	
207-08-9	Benzo(k)fluoranthene	15000 [d]	1100	520	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	220	43	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	220	27	ug/kg	
92-52-4	1,1'-Biphenyl	61100 [d]	2200	150	ug/kg	D
100-52-7	Benzaldehyde	ND	550	27	ug/kg	
91-58-7	2-Chloronaphthalene	ND	220	26	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCTP-66R(8-10)		
Lab Sample ID:	JC86916-3	**Date Sampled:**	04/24/19
Matrix:	SO - Soil	**Date Received:**	04/24/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	58.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
106-47-8	4-Chloroaniline	ND	550	40	ug/kg	
86-74-8	Carbazole	31600 [d]	2200	160	ug/kg	D
105-60-2	Caprolactam [b]	ND	220	44	ug/kg	
218-01-9	Chrysene	58000 [d]	1100	350	ug/kg	D
111-91-1	bis(2-Chloroethoxy)methane	ND	220	24	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	220	48	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane) [b]	ND	220	40	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	220	36	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	110	34	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	110	56	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	220	92	ug/kg	
123-91-1	1,4-Dioxane	ND	110	73	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	3590	110	49	ug/kg	
132-64-9	Dibenzofuran	180000 [c]	22000	4500	ug/kg	D
84-74-2	Di-n-butyl phthalate	ND	220	18	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	220	28	ug/kg	
84-66-2	Diethyl phthalate	ND	220	24	ug/kg	
131-11-3	Dimethyl phthalate	ND	220	20	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	220	26	ug/kg	
206-44-0	Fluoranthene	250000 [c]	11000	4900	ug/kg	D
86-73-7	Fluorene	281000 [c]	11000	5100	ug/kg	D
118-74-1	Hexachlorobenzene	ND	220	28	ug/kg	
87-68-3	Hexachlorobutadiene	ND	110	45	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	1100	44	ug/kg	
67-72-1	Hexachloroethane	ND	550	55	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	14400 [d]	1100	520	ug/kg	D
78-59-1	Isophorone [b]	ND	220	24	ug/kg	
91-57-6	2-Methylnaphthalene	420000 [c]	11000	2500	ug/kg	D
88-74-4	2-Nitroaniline [b]	ND	550	26	ug/kg	
99-09-2	3-Nitroaniline	ND	550	28	ug/kg	
100-01-6	4-Nitroaniline	ND	550	29	ug/kg	
91-20-3	Naphthalene	95300 [d]	1100	310	ug/kg	D
98-95-3	Nitrobenzene	ND	220	43	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	220	32	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	550	41	ug/kg	
85-01-8	Phenanthrene	720000 [c]	11000	3700	ug/kg	D
129-00-0	Pyrene	205000 [c]	11000	3500	ug/kg	D
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	550	28	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCTP-66R(8-10)		
Lab Sample ID:	JC86916-3	**Date Sampled:**	04/24/19
Matrix:	SO - Soil	**Date Received:**	04/24/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	58.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Run# 3	Limits
367-12-4	2-Fluorophenol	59%	56%	0% [e]	23-115%
4165-62-2	Phenol-d5	57%	67%	58%	27-114%
118-79-6	2,4,6-Tribromophenol	88%	67%	0% [e]	19-152%
4165-60-0	Nitrobenzene-d5	62%	78%	54%	26-134%
321-60-8	2-Fluorobiphenyl	59%	82%	108%	39-124%
1718-51-0	Terphenyl-d14	62%	90%	98%	36-134%

(a) Dilution required due to viscosity of the extract matrix.
(b) Associated CCV outside of control limits high, sample was ND.
(c) Result is from Run# 3
(d) Result is from Run# 2
(e) Outside control limits due to dilution.

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Report of Analysis

Client Sample ID:	PCTP-66R(8-10)		
Lab Sample ID:	JC86916-3	**Date Sampled:**	04/24/19
Matrix:	SO - Soil	**Date Received:**	04/24/19
Method:	SW846 8081B SW846 3546	**Percent Solids:**	58.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6G64670.D	1	05/03/19 22:23	MH	05/02/19 10:30	OP20020	G6G2001
Run #2							

	Initial Weight	Final Volume
Run #1	16.6 g	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	1.0	0.85	ug/kg	
319-84-6	alpha-BHC	ND	1.0	0.84	ug/kg	
319-85-7	beta-BHC	ND	1.0	0.94	ug/kg	
319-86-8	delta-BHC	ND	1.0	0.99	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	1.0	0.76	ug/kg	
5103-71-9	alpha-Chlordane	ND	1.0	0.84	ug/kg	
5103-74-2	gamma-Chlordane	ND	1.0	0.47	ug/kg	
60-57-1	Dieldrin	ND	1.0	0.71	ug/kg	
72-54-8	4,4'-DDD	ND	1.0	0.95	ug/kg	
72-55-9	4,4'-DDE	ND	1.0	0.91	ug/kg	
50-29-3	4,4'-DDT	ND	1.0	0.92	ug/kg	
72-20-8	Endrin	ND	1.0	0.80	ug/kg	
1031-07-8	Endosulfan sulfate	ND	1.0	0.81	ug/kg	
7421-93-4	Endrin aldehyde	ND	1.0	0.59	ug/kg	
959-98-8	Endosulfan-I	ND	1.0	0.60	ug/kg	
33213-65-9	Endosulfan-II	ND	1.0	0.65	ug/kg	
76-44-8	Heptachlor	ND	1.0	0.89	ug/kg	
1024-57-3	Heptachlor epoxide	ND	1.0	0.73	ug/kg	
72-43-5	Methoxychlor	ND	2.1	0.82	ug/kg	
53494-70-5	Endrin ketone	ND	1.0	0.75	ug/kg	
8001-35-2	Toxaphene	ND	26	24	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	165% [a]		25-135%
877-09-8	Tetrachloro-m-xylene	108%		25-135%
2051-24-3	Decachlorobiphenyl	81%		10-156%
2051-24-3	Decachlorobiphenyl	144%		10-156%

(a) Outside control limits due to matrix interference.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PCTP-66R(8-10)		
Lab Sample ID:	JC86916-3	**Date Sampled:**	04/24/19
Matrix:	SO - Soil	**Date Received:**	04/24/19
Method:	SW846 8082A SW846 3546	**Percent Solids:**	58.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XX2434634.D	1	05/04/19 21:09	TR	05/02/19 10:30	OP20019	GXX6680
Run #2							

	Initial Weight	Final Volume
Run #1	16.6 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	52	24	ug/kg	
11104-28-2	Aroclor 1221	ND	52	26	ug/kg	
11141-16-5	Aroclor 1232	ND	52	40	ug/kg	
53469-21-9	Aroclor 1242	ND	52	21	ug/kg	
12672-29-6	Aroclor 1248	ND	52	46	ug/kg	
11097-69-1	Aroclor 1254	ND	52	28	ug/kg	
11096-82-5	Aroclor 1260	ND	52	22	ug/kg	
11100-14-4	Aroclor 1268	ND	52	22	ug/kg	
37324-23-5	Aroclor 1262	ND	52	34	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	560% [a]		31-146%
877-09-8	Tetrachloro-m-xylene	854% [a]		31-146%
2051-24-3	Decachlorobiphenyl	72%		17-164%
2051-24-3	Decachlorobiphenyl	263% [a]		17-164%

(a) Outside control limits due to matrix interference.

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N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	SO-DUP-0424		
Lab Sample ID:	JC86916-4	**Date Sampled:**	04/24/19
Matrix:	SO - Soil	**Date Received:**	04/24/19
Method:	SW846 8260C	**Percent Solids:**	79.8
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Y185005.D	1	05/07/19 16:11	PS	n/a	n/a	VY8028
Run #2							

	Initial Weight
Run #1	3.3 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	19.9	19	9.5	ug/kg	
71-43-2	Benzene	ND	0.95	0.72	ug/kg	
74-97-5	Bromochloromethane	ND	9.5	0.82	ug/kg	
75-27-4	Bromodichloromethane	ND	3.8	0.84	ug/kg	
75-25-2	Bromoform	ND	9.5	0.77	ug/kg	
74-83-9	Bromomethane	ND	9.5	1.9	ug/kg	
78-93-3	2-Butanone (MEK)	ND	19	7.1	ug/kg	
75-15-0	Carbon disulfide	ND	3.8	1.8	ug/kg	
56-23-5	Carbon tetrachloride	ND	3.8	1.0	ug/kg	
108-90-7	Chlorobenzene	ND	3.8	0.67	ug/kg	
75-00-3	Chloroethane	ND	9.5	1.3	ug/kg	
67-66-3	Chloroform	ND	3.8	0.71	ug/kg	
74-87-3	Chloromethane	ND	9.5	3.7	ug/kg	
110-82-7	Cyclohexane	ND	3.8	0.77	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	3.8	1.6	ug/kg	
124-48-1	Dibromochloromethane	ND	3.8	0.64	ug/kg	
106-93-4	1,2-Dibromoethane [a]	ND	1.9	0.62	ug/kg	UJ
95-50-1	1,2-Dichlorobenzene	ND	1.9	0.58	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.9	0.68	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.9	0.65	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	9.5	1.2	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.9	0.73	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.9	0.89	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.9	1.2	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.9	1.8	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.9	1.3	ug/kg	
78-87-5	1,2-Dichloropropane	ND	3.8	0.77	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	3.8	0.67	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	3.8	0.62	ug/kg	
100-41-4	Ethylbenzene	ND	1.9	1.0	ug/kg	
76-13-1	Freon 113	ND	9.5	1.4	ug/kg	
591-78-6	2-Hexanone	ND	9.5	2.4	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SO-DUP-0424		
Lab Sample ID:	JC86916-4	**Date Sampled:**	04/24/19
Matrix:	SO - Soil	**Date Received:**	04/24/19
Method:	SW846 8260C	**Percent Solids:**	79.8
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	3.8	1.3	ug/kg	
79-20-9	Methyl Acetate	ND	9.5	2.6	ug/kg	
108-87-2	Methylcyclohexane	ND	3.8	1.3	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.9	0.67	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	9.5	3.0	ug/kg	
75-09-2	Methylene chloride	ND	9.5	4.7	ug/kg	
100-42-5	Styrene	ND	3.8	1.1	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	3.8	0.74	ug/kg	
127-18-4	Tetrachloroethene	ND	3.8	0.88	ug/kg	
108-88-3	Toluene	ND	1.9	0.71	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	9.5	1.9	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	9.5	1.9	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	3.8	0.81	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	3.8	0.65	ug/kg	
79-01-6	Trichloroethene	ND	1.9	1.4	ug/kg	
75-69-4	Trichlorofluoromethane	ND	9.5	1.3	ug/kg	
75-01-4	Vinyl chloride	ND	3.8	0.89	ug/kg	
	m,p-Xylene	ND	1.9	1.4	ug/kg	
95-47-6	o-Xylene	ND	1.9	1.1	ug/kg	
1330-20-7	Xylene (total)	ND	1.9	1.1	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	113%		75-127%
17060-07-0	1,2-Dichloroethane-D4	108%		75-130%
2037-26-5	Toluene-D8	97%		80-120%
460-00-4	4-Bromofluorobenzene	94%		79-127%

(a) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
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J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	SO-DUP-0424		
Lab Sample ID:	JC86916-4	**Date Sampled:**	04/24/19
Matrix:	SO - Soil	**Date Received:**	04/24/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	79.8
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	5P59175.D	5	05/02/19 21:17	CC	04/29/19 06:45	OP20043	E5P2795
Run #2	5P59217.D	50	05/03/19 18:37	CC	04/29/19 06:45	OP20043	E5P2797
Run #3	5P59298.D	100	05/06/19 23:37	CC	04/29/19 06:45	OP20043	E5P2800

	Initial Weight	Final Volume
Run #1	30.1 g	1.0 ml
Run #2	30.1 g	1.0 ml
Run #3	30.1 g	1.0 ml

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	420	100	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	1000	130	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	1000	180	ug/kg	
105-67-9	2,4-Dimethylphenol [b]	ND	1000	370	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	1000	780	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	1000	220	ug/kg	
95-48-7	2-Methylphenol	ND	420	130	ug/kg	
	3&4-Methylphenol	ND	420	170	ug/kg	
88-75-5	2-Nitrophenol	ND	1000	140	ug/kg	
100-02-7	4-Nitrophenol [b]	ND	2100	560	ug/kg	
87-86-5	Pentachlorophenol	ND	830	200	ug/kg	
108-95-2	Phenol	111	420	110	ug/kg	J
58-90-2	2,3,4,6-Tetrachlorophenol	ND	1000	140	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	1000	160	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	1000	120	ug/kg	
83-32-9	Acenaphthene	4390	210	72	ug/kg	J
208-96-8	Acenaphthylene	45600 [c]	2100	1100	ug/kg	DJ
98-86-2	Acetophenone	ND	1000	45	ug/kg	
120-12-7	Anthracene	70900 [c]	2100	1300	ug/kg	DJ
1912-24-9	Atrazine	ND	420	89	ug/kg	
56-55-3	Benzo(a)anthracene	77600 [c]	2100	590	ug/kg	DJ
50-32-8	Benzo(a)pyrene	67800 [c]	2100	950	ug/kg	
205-99-2	Benzo(b)fluoranthene	85600 [c]	2100	920	ug/kg	
191-24-2	Benzo(g,h,i)perylene	38100 [c]	2100	1000	ug/kg	
207-08-9	Benzo(k)fluoranthene	27000 [c]	2100	970	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	420	80	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	420	51	ug/kg	
92-52-4	1,1'-Biphenyl	4330	420	29	ug/kg	J
100-52-7	Benzaldehyde	ND	1000	52	ug/kg	
91-58-7	2-Chloronaphthalene	ND	420	50	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SO-DUP-0424		
Lab Sample ID:	JC86916-4	**Date Sampled:**	04/24/19
Matrix:	SO - Soil	**Date Received:**	04/24/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	79.8
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
106-47-8	4-Chloroaniline	ND	1000	75	ug/kg	
86-74-8	Carbazole	19700	420	30	ug/kg	
105-60-2	Caprolactam [b]	ND	420	82	ug/kg	
218-01-9	Chrysene	65700 [c]	2100	660	ug/kg	DJ
111-91-1	bis(2-Chloroethoxy)methane	ND	420	45	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	420	90	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane) [b]	ND	420	75	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	420	67	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	210	65	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	210	100	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	420	170	ug/kg	
123-91-1	1,4-Dioxane	ND	210	140	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	10100	210	92	ug/kg	
132-64-9	Dibenzofuran	39800 [c]	4200	850	ug/kg	DJ
84-74-2	Di-n-butyl phthalate	ND	420	34	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	420	52	ug/kg	
84-66-2	Diethyl phthalate	ND	420	44	ug/kg	
131-11-3	Dimethyl phthalate	ND	420	37	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	420	49	ug/kg	
206-44-0	Fluoranthene	200000 [c]	2100	930	ug/kg	DJ
86-73-7	Fluorene	76200 [c]	2100	960	ug/kg	DJ
118-74-1	Hexachlorobenzene	ND	420	53	ug/kg	
87-68-3	Hexachlorobutadiene	ND	210	84	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	2100	83	ug/kg	
67-72-1	Hexachloroethane	ND	1000	100	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	42900 [c]	2100	980	ug/kg	DJ
78-59-1	Isophorone [b]	ND	420	45	ug/kg	
91-57-6	2-Methylnaphthalene	10500	210	47	ug/kg	J
88-74-4	2-Nitroaniline [b]	ND	1000	49	ug/kg	
99-09-2	3-Nitroaniline	ND	1000	52	ug/kg	
100-01-6	4-Nitroaniline	ND	1000	54	ug/kg	
91-20-3	Naphthalene	11200	210	59	ug/kg	
98-95-3	Nitrobenzene	ND	420	80	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	420	60	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	1000	76	ug/kg	
85-01-8	Phenanthrene	296000 [d]	4200	1400	ug/kg	DJ
129-00-0	Pyrene	147000 [c]	2100	670	ug/kg	DJ
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	1000	53	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: SO-DUP-0424
Lab Sample ID: JC86916-4
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/24/19
Date Received: 04/24/19
Percent Solids: 79.8

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Run# 3	Limits
367-12-4	2-Fluorophenol	39%	38%	40%	23-115%
4165-62-2	Phenol-d5	38%	42%	42%	27-114%
118-79-6	2,4,6-Tribromophenol	48%	0% [e]	36%	19-152%
4165-60-0	Nitrobenzene-d5	49%	60%	72%	26-134%
321-60-8	2-Fluorobiphenyl	57%	67%	61%	39-124%
1718-51-0	Terphenyl-d14	50%	67%	61%	36-134%

(a) Dilution required due to viscosity of the extract matrix.
(b) Associated CCV outside of control limits high, sample was ND.
(c) Result is from Run# 2
(d) Result is from Run# 3
(e) Outside control limits due to dilution.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	SO-DUP-0424		
Lab Sample ID:	JC86916-4	**Date Sampled:**	04/24/19
Matrix:	SO - Soil	**Date Received:**	04/24/19
Method:	SW846 8081B SW846 3546	**Percent Solids:**	79.8
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6G64671.D	1	05/03/19 22:41	MH	05/02/19 10:30	OP20020	G6G2001
Run #2							

	Initial Weight	Final Volume
Run #1	16.1 g	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	0.78	0.64	ug/kg	
319-84-6	alpha-BHC	ND	0.78	0.63	ug/kg	
319-85-7	beta-BHC	ND	0.78	0.70	ug/kg	
319-86-8	delta-BHC	ND	0.78	0.75	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	0.78	0.57	ug/kg	
5103-71-9	alpha-Chlordane	ND	0.78	0.63	ug/kg	
5103-74-2	gamma-Chlordane	ND	0.78	0.35	ug/kg	
60-57-1	Dieldrin	4.3	0.78	0.53	ug/kg	J
72-54-8	4,4'-DDD	ND	0.78	0.71	ug/kg	
72-55-9	4,4'-DDE [a]	4.7	0.78	0.68	ug/kg	J
50-29-3	4,4'-DDT	22.2	0.78	0.69	ug/kg	
72-20-8	Endrin	ND	0.78	0.60	ug/kg	
1031-07-8	Endosulfan sulfate	ND	0.78	0.61	ug/kg	UJ
7421-93-4	Endrin aldehyde	ND	0.78	0.44	ug/kg	
959-98-8	Endosulfan-I	ND	0.78	0.45	ug/kg	
33213-65-9	Endosulfan-II	ND	0.78	0.49	ug/kg	
76-44-8	Heptachlor	ND	0.78	0.67	ug/kg	
1024-57-3	Heptachlor epoxide [a]	1.1	0.78	0.55	ug/kg	J
72-43-5	Methoxychlor	ND	1.6	0.62	ug/kg	
53494-70-5	Endrin ketone	ND	0.78	0.56	ug/kg	
8001-35-2	Toxaphene	ND	19	18	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	88%		25-135%
877-09-8	Tetrachloro-m-xylene	66%		25-135%
2051-24-3	Decachlorobiphenyl	78%		10-156%
2051-24-3	Decachlorobiphenyl	141%		10-156%

(a) More than 40 % RPD for detected concentrations between the two GC columns.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	SO-DUP-0424		
Lab Sample ID:	JC86916-4	**Date Sampled:**	04/24/19
Matrix:	SO - Soil	**Date Received:**	04/24/19
Method:	SW846 8082A SW846 3546	**Percent Solids:**	79.8
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XX2434635.D	1	05/04/19 21:27	TR	05/02/19 10:30	OP20019	GXX6680
Run #2							

	Initial Weight	Final Volume
Run #1	16.1 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	39	18	ug/kg	
11104-28-2	Aroclor 1221	ND	39	20	ug/kg	
11141-16-5	Aroclor 1232	ND	39	30	ug/kg	
53469-21-9	Aroclor 1242	ND	39	16	ug/kg	
12672-29-6	Aroclor 1248	ND	39	35	ug/kg	
11097-69-1	Aroclor 1254	ND	39	21	ug/kg	
11096-82-5	Aroclor 1260	ND	39	17	ug/kg	
11100-14-4	Aroclor 1268	ND	39	16	ug/kg	
37324-23-5	Aroclor 1262	336	39	25	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	92%		31-146%
877-09-8	Tetrachloro-m-xylene	108%		31-146%
2051-24-3	Decachlorobiphenyl	95%		17-164%
2051-24-3	Decachlorobiphenyl	94%		17-164%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	S-120(0-1)		
Lab Sample ID:	JC86916-5	**Date Sampled:**	04/24/19
Matrix:	SO - Soil	**Date Received:**	04/24/19
Method:	SW846 8260C	**Percent Solids:**	86.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3C151600.D	1	05/01/19 11:11	PS	n/a	n/a	V3C6814
Run #2							

	Initial Weight
Run #1	2.1 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	28	14	ug/kg	
71-43-2	Benzene	ND	1.4	1.0	ug/kg	
74-97-5	Bromochloromethane	ND	14	1.2	ug/kg	
75-27-4	Bromodichloromethane	ND	5.5	1.2	ug/kg	
75-25-2	Bromoform	ND	14	1.1	ug/kg	
74-83-9	Bromomethane	ND	14	2.7	ug/kg	
78-93-3	2-Butanone (MEK)	ND	28	10	ug/kg	
75-15-0	Carbon disulfide	ND	5.5	2.6	ug/kg	
56-23-5	Carbon tetrachloride	ND	5.5	1.5	ug/kg	
108-90-7	Chlorobenzene	ND	5.5	0.98	ug/kg	
75-00-3	Chloroethane	ND	14	1.9	ug/kg	
67-66-3	Chloroform	ND	5.5	1.0	ug/kg	
74-87-3	Chloromethane	ND	14	5.4	ug/kg	
110-82-7	Cyclohexane	ND	5.5	1.1	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.5	2.3	ug/kg	
124-48-1	Dibromochloromethane	ND	5.5	0.93	ug/kg	
106-93-4	1,2-Dibromoethane	ND	2.8	0.90	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	2.8	0.84	ug/kg	UJ
541-73-1	1,3-Dichlorobenzene	ND	2.8	0.99	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	2.8	0.95	ug/kg	UJ
75-71-8	Dichlorodifluoromethane	ND	14	1.8	ug/kg	
75-34-3	1,1-Dichloroethane	ND	2.8	1.1	ug/kg	
107-06-2	1,2-Dichloroethane	ND	2.8	1.3	ug/kg	
75-35-4	1,1-Dichloroethene	ND	2.8	1.8	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	2.8	2.6	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	2.8	1.8	ug/kg	
78-87-5	1,2-Dichloropropane	ND	5.5	1.1	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	5.5	0.97	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	5.5	0.90	ug/kg	
100-41-4	Ethylbenzene	ND	2.8	1.5	ug/kg	
76-13-1	Freon 113	ND	14	2.1	ug/kg	
591-78-6	2-Hexanone	ND	14	3.5	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-120(0-1)		
Lab Sample ID:	JC86916-5	**Date Sampled:**	04/24/19
Matrix:	SO - Soil	**Date Received:**	04/24/19
Method:	SW846 8260C	**Percent Solids:**	86.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	5.5	1.9	ug/kg	
79-20-9	Methyl Acetate	ND	14	3.8	ug/kg	
108-87-2	Methylcyclohexane	ND	5.5	2.0	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	2.8	0.97	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK [a]	ND	14	4.3	ug/kg	
75-09-2	Methylene chloride	ND	14	6.9	ug/kg	
100-42-5	Styrene	ND	5.5	1.6	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	5.5	1.1	ug/kg	
127-18-4	Tetrachloroethene	ND	5.5	1.3	ug/kg	
108-88-3	Toluene	ND	2.8	1.0	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	14	2.8	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	14	2.8	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	5.5	1.2	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	5.5	0.94	ug/kg	
79-01-6	Trichloroethene	ND	2.8	2.1	ug/kg	
75-69-4	Trichlorofluoromethane [b]	ND	14	1.9	ug/kg	UJ
75-01-4	Vinyl chloride	ND	5.5	1.3	ug/kg	
	m,p-Xylene	ND	2.8	2.1	ug/kg	
95-47-6	o-Xylene	ND	2.8	1.6	ug/kg	
1330-20-7	Xylene (total)	ND	2.8	1.6	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%		75-127%
17060-07-0	1,2-Dichloroethane-D4	99%		75-130%
2037-26-5	Toluene-D8	103%		80-120%
460-00-4	4-Bromofluorobenzene	106%		79-127%

(a) Associated CCV outside of control limits high, sample was ND.
(b) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	S-120(0-1)		
Lab Sample ID:	JC86916-5	**Date Sampled:**	04/24/19
Matrix:	SO - Soil	**Date Received:**	04/24/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	86.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5P59163.D	1	05/02/19 16:43	CC	04/29/19 06:45	OP20043	E5P2795
Run #2							

	Initial Weight	Final Volume
Run #1	31.2 g	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	74	18	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	190	23	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	190	32	ug/kg	
105-67-9	2,4-Dimethylphenol [a]	ND	190	66	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	190	140	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	190	40	ug/kg	
95-48-7	2-Methylphenol	ND	74	24	ug/kg	
	3&4-Methylphenol	ND	74	31	ug/kg	
88-75-5	2-Nitrophenol	ND	190	25	ug/kg	
100-02-7	4-Nitrophenol [a]	ND	370	99	ug/kg	
87-86-5	Pentachlorophenol	ND	150	35	ug/kg	
108-95-2	Phenol	ND	74	19	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	190	25	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	190	28	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	190	22	ug/kg	
83-32-9	Acenaphthene	22.8	37	13	ug/kg	J
208-96-8	Acenaphthylene	115	37	19	ug/kg	
98-86-2	Acetophenone	ND	190	8.0	ug/kg	
120-12-7	Anthracene	122	37	23	ug/kg	
1912-24-9	Atrazine	ND	74	16	ug/kg	
56-55-3	Benzo(a)anthracene	417	37	11	ug/kg	J
50-32-8	Benzo(a)pyrene	516	37	17	ug/kg	J
205-99-2	Benzo(b)fluoranthene	638	37	16	ug/kg	
191-24-2	Benzo(g,h,i)perylene	407	37	19	ug/kg	J
207-08-9	Benzo(k)fluoranthene	253	37	17	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	74	14	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	74	9.1	ug/kg	
92-52-4	1,1'-Biphenyl	10.9	74	5.1	ug/kg	J
100-52-7	Benzaldehyde	11.1	190	9.2	ug/kg	J
91-58-7	2-Chloronaphthalene	ND	74	8.8	ug/kg	
106-47-8	4-Chloroaniline	ND	190	13	ug/kg	
86-74-8	Carbazole	42.0	74	5.4	ug/kg	J

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-120(0-1)
Lab Sample ID: JC86916-5
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/24/19
Date Received: 04/24/19
Percent Solids: 86.3

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam [a]	ND	74	15	ug/kg	
218-01-9	Chrysene	443	37	12	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	74	7.9	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	74	16	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane) [a]	ND	74	13	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	74	12	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	37	12	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	37	19	ug/kg	UJ
91-94-1	3,3'-Dichlorobenzidine	R ~~ND~~	~~74~~	~~31~~	ug/kg	
123-91-1	1,4-Dioxane	ND	37	25	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	96.4	37	16	ug/kg	
132-64-9	Dibenzofuran	36.4	74	15	ug/kg	J
84-74-2	Di-n-butyl phthalate	ND	74	6.1	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	74	9.2	ug/kg	
84-66-2	Diethyl phthalate	ND	74	7.9	ug/kg	
131-11-3	Dimethyl phthalate	ND	74	6.6	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	39.7	74	8.7	ug/kg	J
206-44-0	Fluoranthene	772	37	17	ug/kg	J
86-73-7	Fluorene	54.4	37	17	ug/kg	
118-74-1	Hexachlorobenzene	ND	74	9.4	ug/kg	
87-68-3	Hexachlorobutadiene	ND	37	15	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	370	15	ug/kg	
67-72-1	Hexachloroethane	ND	190	18	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	406	37	17	ug/kg	J
78-59-1	Isophorone [a]	ND	74	7.9	ug/kg	
91-57-6	2-Methylnaphthalene	36.0	37	8.4	ug/kg	J
88-74-4	2-Nitroaniline [a]	ND	190	8.8	ug/kg	
99-09-2	3-Nitroaniline	ND	190	9.3	ug/kg	
100-01-6	4-Nitroaniline	ND	190	9.6	ug/kg	
91-20-3	Naphthalene	114	37	10	ug/kg	
98-95-3	Nitrobenzene	ND	74	14	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	74	11	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	190	14	ug/kg	
85-01-8	Phenanthrene	574	37	12	ug/kg	J
129-00-0	Pyrene	713	37	12	ug/kg	J
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	190	9.4	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	37%		23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-120(0-1)		
Lab Sample ID:	JC86916-5	**Date Sampled:**	04/24/19
Matrix:	SO - Soil	**Date Received:**	04/24/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	86.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	41%		27-114%
118-79-6	2,4,6-Tribromophenol	39%		19-152%
4165-60-0	Nitrobenzene-d5	50%		26-134%
321-60-8	2-Fluorobiphenyl	45%		39-124%
1718-51-0	Terphenyl-d14	42%		36-134%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID: S-113B(1-3)
Lab Sample ID: JC86916-6
Matrix: SO - Soil
Method: SW846 8260C
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/24/19
Date Received: 04/24/19
Percent Solids: 78.1

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	I225912.D	1	05/02/19 11:46	TDN	n/a	n/a	VI9101
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	2.7 g	10.0 ml	100 ul
Run #2			

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	2500	1300	ug/kg	
71-43-2	Benzene	935	130	95	ug/kg	
74-97-5	Bromochloromethane	ND	1300	110	ug/kg	
75-27-4	Bromodichloromethane	ND	500	110	ug/kg	
75-25-2	Bromoform	ND	1300	100	ug/kg	
74-83-9	Bromomethane	ND	1300	250	ug/kg	
78-93-3	2-Butanone (MEK)	ND	2500	940	ug/kg	
75-15-0	Carbon disulfide	ND	500	230	ug/kg	
56-23-5	Carbon tetrachloride	ND	500	140	ug/kg	
108-90-7	Chlorobenzene	ND	500	89	ug/kg	
75-00-3	Chloroethane	ND	1300	170	ug/kg	
67-66-3	Chloroform	ND	500	93	ug/kg	
74-87-3	Chloromethane	ND	1300	490	ug/kg	
110-82-7	Cyclohexane	ND	500	100	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	500	210	ug/kg	
124-48-1	Dibromochloromethane	ND	500	85	ug/kg	
106-93-4	1,2-Dibromoethane	ND	250	82	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	250	77	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	250	90	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	250	86	ug/kg	
75-71-8	Dichlorodifluoromethane [b]	ND	1300	160	ug/kg	
75-34-3	1,1-Dichloroethane	ND	250	97	ug/kg	
107-06-2	1,2-Dichloroethane	ND	250	120	ug/kg	
75-35-4	1,1-Dichloroethene	ND	250	160	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	250	240	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	250	170	ug/kg	
78-87-5	1,2-Dichloropropane	ND	500	100	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	500	88	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	500	82	ug/kg	
100-41-4	Ethylbenzene	ND	250	140	ug/kg	
76-13-1	Freon 113	ND	1300	190	ug/kg	
591-78-6	2-Hexanone	ND	1300	320	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-113B(1-3)		
Lab Sample ID:	JC86916-6	**Date Sampled:**	04/24/19
Matrix:	SO - Soil	**Date Received:**	04/24/19
Method:	SW846 8260C	**Percent Solids:**	78.1
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	500	180	ug/kg	
79-20-9	Methyl Acetate	ND	1300	350	ug/kg	
108-87-2	Methylcyclohexane	ND	500	180	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	250	88	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	1300	390	ug/kg	
75-09-2	Methylene chloride	ND	1300	630	ug/kg	
100-42-5	Styrene	ND	500	140	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	500	98	ug/kg	
127-18-4	Tetrachloroethene	ND	500	120	ug/kg	
108-88-3	Toluene	546	250	94	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	1300	250	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	1300	250	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	500	110	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	500	86	ug/kg	
79-01-6	Trichloroethene	ND	250	190	ug/kg	
75-69-4	Trichlorofluoromethane	ND	1300	170	ug/kg	
75-01-4	Vinyl chloride	ND	500	120	ug/kg	
	m,p-Xylene	290	250	190	ug/kg	
95-47-6	o-Xylene	ND	250	150	ug/kg	
1330-20-7	Xylene (total)	290	250	150	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	108%		75-127%
17060-07-0	1,2-Dichloroethane-D4	118%		75-130%
2037-26-5	Toluene-D8	101%		80-120%
460-00-4	4-Bromofluorobenzene	106%		79-127%

(a) Diluted due to high concentration of non-target compound.
(b) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	S-113B(1-3)		
Lab Sample ID:	JC86916-6	**Date Sampled:**	04/24/19
Matrix:	SO - Soil	**Date Received:**	04/24/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	78.1
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	5P59172.D	2	05/02/19 20:09	CC	04/29/19 06:45	OP20043	E5P2795
Run #2	5P59220.D	20	05/03/19 19:45	CC	04/29/19 06:45	OP20043	E5P2797
Run #3	5P59214.D	200	05/03/19 17:29	CC	04/29/19 06:45	OP20043	E5P2797

	Initial Weight	Final Volume
Run #1	32.1 g	1.0 ml
Run #2	32.1 g	1.0 ml
Run #3	32.1 g	1.0 ml

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	160	39	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	400	49	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	400	68	ug/kg	
105-67-9	2,4-Dimethylphenol [b]	ND	400	140	ug/kg	
51-28-5	2,4-Dinitrophenol R	~~ND~~	~~400~~	~~300~~	ug/kg	
534-52-1	4,6-Dinitro-o-cresol R	~~ND~~	~~400~~	~~85~~	ug/kg	
95-48-7	2-Methylphenol	ND	160	51	ug/kg	
	3&4-Methylphenol	ND	160	66	ug/kg	
88-75-5	2-Nitrophenol	ND	400	53	ug/kg	
100-02-7	4-Nitrophenol [b]	ND	800	210	ug/kg	
87-86-5	Pentachlorophenol	ND	320	75	ug/kg	
108-95-2	Phenol	ND	160	42	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	400	53	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	400	60	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	400	48	ug/kg	
83-32-9	Acenaphthene	817	80	28	ug/kg	J
208-96-8	Acenaphthylene	16900 [c]	800	410	ug/kg	D
98-86-2	Acetophenone	ND	400	17	ug/kg	
120-12-7	Anthracene	24000 [c]	800	490	ug/kg	D
1912-24-9	Atrazine	ND	160	34	ug/kg	
56-55-3	Benzo(a)anthracene	65900 [c]	800	230	ug/kg	D
50-32-8	Benzo(a)pyrene	55200 [c]	800	360	ug/kg	
205-99-2	Benzo(b)fluoranthene	76600 [c]	800	350	ug/kg	
191-24-2	Benzo(g,h,i)perylene	31100 [c]	800	400	ug/kg	
207-08-9	Benzo(k)fluoranthene	23100 [c]	800	370	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	160	31	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	160	19	ug/kg	
92-52-4	1,1'-Biphenyl	177	160	11	ug/kg	J
100-52-7	Benzaldehyde	ND	400	20	ug/kg	
91-58-7	2-Chloronaphthalene	ND	160	19	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-113B(1-3)
Lab Sample ID: JC86916-6
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/24/19
Date Received: 04/24/19
Percent Solids: 78.1

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
106-47-8	4-Chloroaniline	ND	400	29	ug/kg	
86-74-8	Carbazole	1820	160	12	ug/kg	J
105-60-2	Caprolactam [b]	ND	160	32	ug/kg	
218-01-9	Chrysene	57000 [c]	800	250	ug/kg	D
111-91-1	bis(2-Chloroethoxy)methane	ND	160	17	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	160	34	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane) [b]	ND	160	29	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	160	26	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	80	25	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	80	40	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	160	67	ug/kg	UJ
123-91-1	1,4-Dioxane	ND	80	53	ug/kg	UJ
53-70-3	Dibenzo(a,h)anthracene	9600 [c]	800	350	ug/kg	D
132-64-9	Dibenzofuran	2810	160	32	ug/kg	J
84-74-2	Di-n-butyl phthalate	ND	160	13	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	160	20	ug/kg	
84-66-2	Diethyl phthalate	ND	160	17	ug/kg	
131-11-3	Dimethyl phthalate	ND	160	14	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	160	19	ug/kg	
206-44-0	Fluoranthene	179000 [d]	8000	3600	ug/kg	D
86-73-7	Fluorene	11000 [c]	800	370	ug/kg	D
118-74-1	Hexachlorobenzene	ND	160	20	ug/kg	
87-68-3	Hexachlorobutadiene	ND	80	32	ug/kg	
77-47-4	Hexachlorocyclopentadiene	R ~~ND~~	~~800~~	~~32~~	ug/kg	
67-72-1	Hexachloroethane	ND	400	39	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	36400 [c]	800	370	ug/kg	D
78-59-1	Isophorone [b]	ND	160	17	ug/kg	
91-57-6	2-Methylnaphthalene	522	80	18	ug/kg	J
88-74-4	2-Nitroaniline [b]	ND	400	19	ug/kg	
99-09-2	3-Nitroaniline	ND	400	20	ug/kg	
100-01-6	4-Nitroaniline	ND	400	21	ug/kg	
91-20-3	Naphthalene	1080	80	22	ug/kg	J
98-95-3	Nitrobenzene	ND	160	31	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	160	23	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	400	29	ug/kg	
85-01-8	Phenanthrene	63400 [c]	800	270	ug/kg	D
129-00-0	Pyrene	133000 [d]	8000	2600	ug/kg	D
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	400	20	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-113B(1-3)
Lab Sample ID: JC86916-6
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/24/19
Date Received: 04/24/19
Percent Solids: 78.1

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Run# 3	Limits
367-12-4	2-Fluorophenol	46%	60%	0% [e]	23-115%
4165-62-2	Phenol-d5	53%	72%	119% [e]	27-114%
118-79-6	2,4,6-Tribromophenol	56%	56%	0% [e]	19-152%
4165-60-0	Nitrobenzene-d5	69%	76%	56%	26-134%
321-60-8	2-Fluorobiphenyl	70%	81%	79%	39-124%
1718-51-0	Terphenyl-d14	55%	76%	98%	36-134%

(a) Dilution required due to viscosity of the extract matrix.
(b) Associated CCV outside of control limits high, sample was ND.
(c) Result is from Run# 2
(d) Result is from Run# 3
(e) Outside control limits due to dilution.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	S-113B(10-12)		
Lab Sample ID:	JC86916-7	**Date Sampled:**	04/24/19
Matrix:	SO - Soil	**Date Received:**	04/24/19
Method:	SW846 8260C	**Percent Solids:**	60.6
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3C151755.D	1	05/04/19 16:19	PS	n/a	n/a	V3C6819
Run #2							

	Initial Weight
Run #1	4.6 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	104	18	9.0	ug/kg	
71-43-2	Benzene	17.5	0.90	0.68	ug/kg	
74-97-5	Bromochloromethane	ND	9.0	0.77	ug/kg	
75-27-4	Bromodichloromethane	ND	3.6	0.79	ug/kg	
75-25-2	Bromoform	ND	9.0	0.72	ug/kg	
74-83-9	Bromomethane	ND	9.0	1.8	ug/kg	
78-93-3	2-Butanone (MEK)	18.2	18	6.7	ug/kg	
75-15-0	Carbon disulfide	ND	3.6	1.7	ug/kg	
56-23-5	Carbon tetrachloride	ND	3.6	0.99	ug/kg	
108-90-7	Chlorobenzene	ND	3.6	0.63	ug/kg	
75-00-3	Chloroethane	ND	9.0	1.2	ug/kg	
67-66-3	Chloroform	ND	3.6	0.67	ug/kg	
74-87-3	Chloromethane	ND	9.0	3.5	ug/kg	
110-82-7	Cyclohexane	1.8	3.6	0.73	ug/kg	J
96-12-8	1,2-Dibromo-3-chloropropane	ND	3.6	1.5	ug/kg	
124-48-1	Dibromochloromethane [a]	ND	3.6	0.61	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.8	0.58	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.8	0.55	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.8	0.64	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.8	0.62	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	9.0	1.1	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.8	0.69	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.8	0.84	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.8	1.2	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.8	1.7	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.8	1.2	ug/kg	
78-87-5	1,2-Dichloropropane	ND	3.6	0.73	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	3.6	0.63	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	3.6	0.59	ug/kg	
100-41-4	Ethylbenzene	43.7	1.8	0.99	ug/kg	
76-13-1	Freon 113	ND	9.0	1.4	ug/kg	
591-78-6	2-Hexanone	ND	9.0	2.3	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-113B(10-12)		
Lab Sample ID:	JC86916-7	**Date Sampled:**	04/24/19
Matrix:	SO - Soil	**Date Received:**	04/24/19
Method:	SW846 8260C	**Percent Solids:**	60.6
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	139	3.6	1.3	ug/kg	
79-20-9	Methyl Acetate	ND	9.0	2.5	ug/kg	
108-87-2	Methylcyclohexane	13.1	3.6	1.3	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	0.92	1.8	0.63	ug/kg	J
108-10-1	4-Methyl-2-pentanone(MIBK [a]	ND	9.0	2.8	ug/kg	
75-09-2	Methylene chloride	ND	9.0	4.5	ug/kg	
100-42-5	Styrene	ND	3.6	1.0	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	3.6	0.70	ug/kg	
127-18-4	Tetrachloroethene	ND	3.6	0.83	ug/kg	
108-88-3	Toluene	2.7	1.8	0.67	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	9.0	1.8	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	9.0	1.8	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	3.6	0.76	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	3.6	0.61	ug/kg	
79-01-6	Trichloroethene	ND	1.8	1.4	ug/kg	
75-69-4	Trichlorofluoromethane	ND	9.0	1.2	ug/kg	
75-01-4	Vinyl chloride	ND	3.6	0.84	ug/kg	
	m,p-Xylene	9.6	1.8	1.3	ug/kg	
95-47-6	o-Xylene	34.0	1.8	1.0	ug/kg	
1330-20-7	Xylene (total)	43.6	1.8	1.0	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	106%		75-127%
17060-07-0	1,2-Dichloroethane-D4	112%		75-130%
2037-26-5	Toluene-D8	106%		80-120%
460-00-4	4-Bromofluorobenzene	124%		79-127%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	S-113B(10-12)		
Lab Sample ID:	JC86916-7	**Date Sampled:**	04/24/19
Matrix:	SO - Soil	**Date Received:**	04/24/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	60.6
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5P59167.D	1	05/02/19 18:14	CC	04/29/19 06:45	OP20043	E5P2795
Run #2	5P59222.D	10	05/03/19 20:31	CC	04/29/19 06:45	OP20043	E5P2797
Run #3	5P59215.D	100	05/03/19 17:51	CC	04/29/19 06:45	OP20043	E5P2797

	Initial Weight	Final Volume
Run #1	31.0 g	1.0 ml
Run #2	31.0 g	1.0 ml
Run #3	31.0 g	1.0 ml

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	110	26	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	270	33	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	270	45	ug/kg	
105-67-9	2,4-Dimethylphenol [a]	165	270	95	ug/kg	J
51-28-5	2,4-Dinitrophenol	ND	270	200	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	270	57	ug/kg	
95-48-7	2-Methylphenol	ND	110	34	ug/kg	
	3&4-Methylphenol	1000	110	44	ug/kg	
88-75-5	2-Nitrophenol	ND	270	35	ug/kg	
100-02-7	4-Nitrophenol [b]	ND	530	140	ug/kg	
87-86-5	Pentachlorophenol	ND	210	50	ug/kg	
108-95-2	Phenol	119	110	28	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	270	35	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	270	40	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	270	32	ug/kg	
83-32-9	Acenaphthene	139000 [c]	5300	1800	ug/kg	D
208-96-8	Acenaphthylene	4630	53	27	ug/kg	
98-86-2	Acetophenone	ND	270	11	ug/kg	
120-12-7	Anthracene	89600 [c]	5300	3300	ug/kg	D
1912-24-9	Atrazine	ND	110	23	ug/kg	
56-55-3	Benzo(a)anthracene	29500 [d]	530	150	ug/kg	D
50-32-8	Benzo(a)pyrene	19200 [d]	530	240	ug/kg	D
205-99-2	Benzo(b)fluoranthene	21600 [d]	530	240	ug/kg	D
191-24-2	Benzo(g,h,i)perylene	7970 [d]	530	270	ug/kg	D
207-08-9	Benzo(k)fluoranthene	4290	53	25	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	110	21	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	110	13	ug/kg	
92-52-4	1,1'-Biphenyl	17200 [d]	1100	73	ug/kg	D
100-52-7	Benzaldehyde	ND	270	13	ug/kg	
91-58-7	2-Chloronaphthalene	ND	110	13	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-113B(10-12)		
Lab Sample ID:	JC86916-7	**Date Sampled:**	04/24/19
Matrix:	SO - Soil	**Date Received:**	04/24/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	60.6
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
106-47-8	4-Chloroaniline	ND	270	19	ug/kg	
86-74-8	Carbazole	14800 [d]	1100	77	ug/kg	D
105-60-2	Caprolactam [b]	ND	110	21	ug/kg	
218-01-9	Chrysene	32300 [d]	530	170	ug/kg	D
111-91-1	bis(2-Chloroethoxy)methane	ND	110	11	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	110	23	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane) [b]	ND	110	19	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	110	17	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	53	17	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	53	27	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	110	44	ug/kg	
123-91-1	1,4-Dioxane	ND	53	35	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	2440	53	24	ug/kg	
132-64-9	Dibenzofuran	69900 [c]	11000	2200	ug/kg	D
84-74-2	Di-n-butyl phthalate	ND	110	8.7	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	110	13	ug/kg	
84-66-2	Diethyl phthalate	ND	110	11	ug/kg	
131-11-3	Dimethyl phthalate	ND	110	9.5	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	110	12	ug/kg	
206-44-0	Fluoranthene	126000 [c]	5300	2400	ug/kg	D
86-73-7	Fluorene	118000 [c]	5300	2400	ug/kg	D
118-74-1	Hexachlorobenzene	ND	110	13	ug/kg	
87-68-3	Hexachlorobutadiene	ND	53	21	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	530	21	ug/kg	
67-72-1	Hexachloroethane	ND	270	26	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	7980 [d]	530	250	ug/kg	D
78-59-1	Isophorone [b]	ND	110	11	ug/kg	
91-57-6	2-Methylnaphthalene	153000 [c]	5300	1200	ug/kg	D
88-74-4	2-Nitroaniline [b]	ND	270	13	ug/kg	
99-09-2	3-Nitroaniline	ND	270	13	ug/kg	
100-01-6	4-Nitroaniline	ND	270	14	ug/kg	
91-20-3	Naphthalene	24600 [d]	530	150	ug/kg	D
98-95-3	Nitrobenzene	ND	110	21	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	110	15	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	270	19	ug/kg	
85-01-8	Phenanthrene	322000 [c]	5300	1800	ug/kg	D
129-00-0	Pyrene	108000 [c]	5300	1700	ug/kg	D
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	270	14	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-113B(10-12)
Lab Sample ID: JC86916-7
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/24/19
Date Received: 04/24/19
Percent Solids: 60.6

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Run# 3	Limits
367-12-4	2-Fluorophenol	57%	56%	34%	23-115%
4165-62-2	Phenol-d5	60%	58%	43%	27-114%
118-79-6	2,4,6-Tribromophenol	86%	58%	0% [e]	19-152%
4165-60-0	Nitrobenzene-d5	60%	75%	77%	26-134%
321-60-8	2-Fluorobiphenyl	67%	77%	91%	39-124%
1718-51-0	Terphenyl-d14	64%	72%	82%	36-134%

(a) Associated CCV outside of control limits high.
(b) Associated CCV outside of control limits high, sample was ND.
(c) Result is from Run# 3
(d) Result is from Run# 2
(e) Outside control limits due to dilution.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	S-113B(13-15)		
Lab Sample ID:	JC86916-8	**Date Sampled:**	04/24/19
Matrix:	SO - Soil	**Date Received:**	04/24/19
Method:	SW846 8260C	**Percent Solids:**	65.7
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3C151825.D	1	05/06/19 18:49	PS	n/a	n/a	V3C6821
Run #2							

	Initial Weight
Run #1	4.3 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	74.0	18	8.8	ug/kg	
71-43-2	Benzene	ND	0.88	0.67	ug/kg	
74-97-5	Bromochloromethane	ND	8.8	0.76	ug/kg	
75-27-4	Bromodichloromethane	ND	3.5	0.78	ug/kg	
75-25-2	Bromoform	ND	8.8	0.71	ug/kg	
74-83-9	Bromomethane	ND	8.8	1.8	ug/kg	
78-93-3	2-Butanone (MEK)	13.1	18	6.6	ug/kg	J
75-15-0	Carbon disulfide	ND	3.5	1.6	ug/kg	
56-23-5	Carbon tetrachloride	ND	3.5	0.97	ug/kg	
108-90-7	Chlorobenzene	ND	3.5	0.63	ug/kg	
75-00-3	Chloroethane	ND	8.8	1.2	ug/kg	
67-66-3	Chloroform	ND	3.5	0.66	ug/kg	
74-87-3	Chloromethane [a]	ND	8.8	3.5	ug/kg	UJ
110-82-7	Cyclohexane	3.9	3.5	0.72	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	3.5	1.5	ug/kg	
124-48-1	Dibromochloromethane	ND	3.5	0.60	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.8	0.58	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.8	0.54	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.8	0.64	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.8	0.61	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	8.8	1.1	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.8	0.68	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.8	0.83	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.8	1.2	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.8	1.7	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.8	1.2	ug/kg	
78-87-5	1,2-Dichloropropane	ND	3.5	0.72	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	3.5	0.62	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	3.5	0.58	ug/kg	
100-41-4	Ethylbenzene	ND	1.8	0.98	ug/kg	
76-13-1	Freon 113	ND	8.8	1.3	ug/kg	
591-78-6	2-Hexanone	ND	8.8	2.2	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-113B(13-15)		
Lab Sample ID:	JC86916-8	**Date Sampled:**	04/24/19
Matrix:	SO - Soil	**Date Received:**	04/24/19
Method:	SW846 8260C	**Percent Solids:**	65.7
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	22.5	3.5	1.2	ug/kg	
79-20-9	Methyl Acetate [a]	ND	8.8	2.5	ug/kg	UJ
108-87-2	Methylcyclohexane	47.9	3.5	1.3	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.8	0.62	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	8.8	2.8	ug/kg	
75-09-2	Methylene chloride	ND	8.8	4.4	ug/kg	
100-42-5	Styrene	ND	3.5	1.0	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	3.5	0.69	ug/kg	
127-18-4	Tetrachloroethene	ND	3.5	0.82	ug/kg	
108-88-3	Toluene	1.1	1.8	0.67	ug/kg	J
87-61-6	1,2,3-Trichlorobenzene	ND	8.8	1.8	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	8.8	1.8	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	3.5	0.75	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	3.5	0.61	ug/kg	
79-01-6	Trichloroethene	ND	1.8	1.3	ug/kg	
75-69-4	Trichlorofluoromethane	ND	8.8	1.2	ug/kg	
75-01-4	Vinyl chloride	ND	3.5	0.83	ug/kg	
	m,p-Xylene	ND	1.8	1.3	ug/kg	
95-47-6	o-Xylene	3.3	1.8	1.0	ug/kg	
1330-20-7	Xylene (total)	3.3	1.8	1.0	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%		75-127%
17060-07-0	1,2-Dichloroethane-D4	110%		75-130%
2037-26-5	Toluene-D8	104%		80-120%
460-00-4	4-Bromofluorobenzene	124%		79-127%

(a) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
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J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	S-113B(13-15)		
Lab Sample ID:	JC86916-8	**Date Sampled:**	04/24/19
Matrix:	SO - Soil	**Date Received:**	04/24/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	65.7
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5P59168.D	1	05/02/19 18:37	CC	04/29/19 06:45	OP20043	E5P2795
Run #2	5P59223.D	10	05/03/19 20:53	CC	04/29/19 06:45	OP20043	E5P2797

	Initial Weight	Final Volume
Run #1	30.1 g	1.0 ml
Run #2	30.1 g	1.0 ml

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	100	25	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	250	31	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	250	43	ug/kg	
105-67-9	2,4-Dimethylphenol [a]	ND	250	90	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	250	190	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	250	54	ug/kg	
95-48-7	2-Methylphenol	ND	100	32	ug/kg	
	3&4-Methylphenol	1550	100	42	ug/kg	
88-75-5	2-Nitrophenol	ND	250	33	ug/kg	
100-02-7	4-Nitrophenol [a]	ND	510	140	ug/kg	
87-86-5	Pentachlorophenol	ND	200	47	ug/kg	
108-95-2	Phenol	ND	100	26	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	250	33	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	250	38	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	250	30	ug/kg	
83-32-9	Acenaphthene	8240 [b]	510	170	ug/kg	D
208-96-8	Acenaphthylene	962	51	26	ug/kg	
98-86-2	Acetophenone	ND	250	11	ug/kg	
120-12-7	Anthracene	4010	51	31	ug/kg	
1912-24-9	Atrazine	ND	100	22	ug/kg	
56-55-3	Benzo(a)anthracene	3050	51	14	ug/kg	
50-32-8	Benzo(a)pyrene	2750	51	23	ug/kg	
205-99-2	Benzo(b)fluoranthene	3120	51	22	ug/kg	
191-24-2	Benzo(g,h,i)perylene	1450	51	25	ug/kg	
207-08-9	Benzo(k)fluoranthene	873	51	24	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	100	20	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	100	12	ug/kg	
92-52-4	1,1'-Biphenyl	637	100	6.9	ug/kg	
100-52-7	Benzaldehyde	ND	250	13	ug/kg	
91-58-7	2-Chloronaphthalene	ND	100	12	ug/kg	
106-47-8	4-Chloroaniline	ND	250	18	ug/kg	
86-74-8	Carbazole	185	100	7.3	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-113B(13-15)
Lab Sample ID: JC86916-8
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/24/19
Date Received: 04/24/19
Percent Solids: 65.7

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam [a]	ND	100	20	ug/kg	
218-01-9	Chrysene	3770	51	16	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	100	11	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	100	22	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane) [a]	ND	100	18	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	100	16	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	51	16	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	51	25	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	100	42	ug/kg	
123-91-1	1,4-Dioxane	ND	51	33	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	406	51	22	ug/kg	
132-64-9	Dibenzofuran	1080	100	21	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	100	8.2	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	100	13	ug/kg	
84-66-2	Diethyl phthalate	ND	100	11	ug/kg	
131-11-3	Dimethyl phthalate	ND	100	9.0	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	100	12	ug/kg	
206-44-0	Fluoranthene	8570 [b]	510	230	ug/kg	D
86-73-7	Fluorene	4530	51	23	ug/kg	
118-74-1	Hexachlorobenzene	ND	100	13	ug/kg	
87-68-3	Hexachlorobutadiene	ND	51	20	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	510	20	ug/kg	
67-72-1	Hexachloroethane	ND	250	25	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	1350	51	24	ug/kg	
78-59-1	Isophorone [a]	ND	100	11	ug/kg	
91-57-6	2-Methylnaphthalene	4820	51	11	ug/kg	
88-74-4	2-Nitroaniline [a]	ND	250	12	ug/kg	
99-09-2	3-Nitroaniline	ND	250	13	ug/kg	
100-01-6	4-Nitroaniline	ND	250	13	ug/kg	
91-20-3	Naphthalene	8960 [b]	510	140	ug/kg	D
98-95-3	Nitrobenzene	ND	100	20	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	100	15	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	250	19	ug/kg	
85-01-8	Phenanthrene	17000 [b]	510	170	ug/kg	D
129-00-0	Pyrene	9480 [b]	510	160	ug/kg	D
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	250	13	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	66%	67%	23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-113B(13-15)
Lab Sample ID: JC86916-8
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/24/19
Date Received: 04/24/19
Percent Solids: 65.7

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	69%	66%	27-114%
118-79-6	2,4,6-Tribromophenol	76%	68%	19-152%
4165-60-0	Nitrobenzene-d5	84%	102%	26-134%
321-60-8	2-Fluorobiphenyl	69%	80%	39-124%
1718-51-0	Terphenyl-d14	69%	74%	36-134%

(a) Associated CCV outside of control limits high, sample was ND.
(b) Result is from Run# 2

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Report of Analysis

Client Sample ID:	S-113B (15-17		
Lab Sample ID:	JC86916-9	**Date Sampled:**	04/24/19
Matrix:	SO - Soil	**Date Received:**	04/24/19
Method:	SW846 8260C	**Percent Solids:**	72.1
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3C151829.D	1	05/06/19 20:22	PS	n/a	n/a	V3C6821
Run #2							

	Initial Weight
Run #1	5.3 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	18.8	13	6.5	ug/kg	
71-43-2	Benzene	ND	0.65	0.49	ug/kg	
74-97-5	Bromochloromethane	ND	6.5	0.56	ug/kg	
75-27-4	Bromodichloromethane	ND	2.6	0.58	ug/kg	
75-25-2	Bromoform	ND	6.5	0.53	ug/kg	
74-83-9	Bromomethane	ND	6.5	1.3	ug/kg	
78-93-3	2-Butanone (MEK)	ND	13	4.9	ug/kg	
75-15-0	Carbon disulfide	ND	2.6	1.2	ug/kg	
56-23-5	Carbon tetrachloride	ND	2.6	0.72	ug/kg	
108-90-7	Chlorobenzene	ND	2.6	0.46	ug/kg	
75-00-3	Chloroethane	ND	6.5	0.90	ug/kg	
67-66-3	Chloroform	ND	2.6	0.49	ug/kg	
74-87-3	Chloromethane [a]	ND	6.5	2.6	ug/kg	UJ
110-82-7	Cyclohexane	2.2	2.6	0.53	ug/kg	J
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.6	1.1	ug/kg	
124-48-1	Dibromochloromethane	ND	2.6	0.44	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.3	0.43	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.3	0.40	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.3	0.47	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.3	0.45	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	6.5	0.83	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.3	0.50	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.3	0.61	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.3	0.86	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.3	1.3	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.3	0.87	ug/kg	
78-87-5	1,2-Dichloropropane	ND	2.6	0.53	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	2.6	0.46	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2.6	0.43	ug/kg	
100-41-4	Ethylbenzene	ND	1.3	0.72	ug/kg	
76-13-1	Freon 113	ND	6.5	1.0	ug/kg	
591-78-6	2-Hexanone	ND	6.5	1.7	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-113B (15-17		
Lab Sample ID:	JC86916-9	**Date Sampled:**	04/24/19
Matrix:	SO - Soil	**Date Received:**	04/24/19
Method:	SW846 8260C	**Percent Solids:**	72.1
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	9.7	2.6	0.91	ug/kg	
79-20-9	Methyl Acetate [a]	ND	6.5	1.8	ug/kg	UJ
108-87-2	Methylcyclohexane	10.7	2.6	0.93	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.3	0.46	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	6.5	2.0	ug/kg	
75-09-2	Methylene chloride	ND	6.5	3.3	ug/kg	
100-42-5	Styrene	ND	2.6	0.75	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.6	0.51	ug/kg	
127-18-4	Tetrachloroethene	ND	2.6	0.60	ug/kg	
108-88-3	Toluene	ND	1.3	0.49	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	6.5	1.3	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	6.5	1.3	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	2.6	0.56	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2.6	0.45	ug/kg	
79-01-6	Trichloroethene	ND	1.3	1.0	ug/kg	
75-69-4	Trichlorofluoromethane	ND	6.5	0.89	ug/kg	
75-01-4	Vinyl chloride	ND	2.6	0.61	ug/kg	
	m,p-Xylene	26.4	1.3	0.98	ug/kg	
95-47-6	o-Xylene	1.3	1.3	0.76	ug/kg	
1330-20-7	Xylene (total)	27.7	1.3	0.76	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%		75-127%
17060-07-0	1,2-Dichloroethane-D4	108%		75-130%
2037-26-5	Toluene-D8	106%		80-120%
460-00-4	4-Bromofluorobenzene	118%		79-127%

(a) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS LabLink@1039014 11:19 10-May-2019

Report of Analysis

Client Sample ID:	S-113B (15-17		
Lab Sample ID:	JC86916-9	**Date Sampled:**	04/24/19
Matrix:	SO - Soil	**Date Received:**	04/24/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	72.1
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5P59161.D	1	05/02/19 15:57	CC	04/29/19 06:45	OP20043	E5P2795
Run #2							

	Initial Weight	Final Volume
Run #1	31.4 g	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	88	22	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	220	27	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	220	38	ug/kg	
105-67-9	2,4-Dimethylphenol [a]	ND	220	79	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	220	170	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	220	47	ug/kg	
95-48-7	2-Methylphenol	ND	88	28	ug/kg	
	3&4-Methylphenol	ND	88	36	ug/kg	
88-75-5	2-Nitrophenol	ND	220	29	ug/kg	
100-02-7	4-Nitrophenol [a]	ND	440	120	ug/kg	
87-86-5	Pentachlorophenol	ND	180	41	ug/kg	
108-95-2	Phenol	ND	88	23	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	220	29	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	220	33	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	220	26	ug/kg	
83-32-9	Acenaphthene	ND	44	15	ug/kg	
208-96-8	Acenaphthylene	ND	44	22	ug/kg	
98-86-2	Acetophenone	ND	220	9.5	ug/kg	
120-12-7	Anthracene	ND	44	27	ug/kg	
1912-24-9	Atrazine	ND	88	19	ug/kg	
56-55-3	Benzo(a)anthracene	24.9	44	13	ug/kg	J
50-32-8	Benzo(a)pyrene	20.0	44	20	ug/kg	J
205-99-2	Benzo(b)fluoranthene	25.4	44	20	ug/kg	J
191-24-2	Benzo(g,h,i)perylene	ND	44	22	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	44	21	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	88	17	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	88	11	ug/kg	
92-52-4	1,1'-Biphenyl	ND	88	6.1	ug/kg	
100-52-7	Benzaldehyde	ND	220	11	ug/kg	
91-58-7	2-Chloronaphthalene	ND	88	11	ug/kg	
106-47-8	4-Chloroaniline	ND	220	16	ug/kg	
86-74-8	Carbazole	ND	88	6.4	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-113B (15-17
Lab Sample ID: JC86916-9
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/24/19
Date Received: 04/24/19
Percent Solids: 72.1

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam [a]	ND	88	17	ug/kg	
218-01-9	Chrysene	20.7	44	14	ug/kg	J
111-91-1	bis(2-Chloroethoxy)methane	ND	88	9.5	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	88	19	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane) [a]	ND	88	16	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	88	14	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	44	14	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	44	22	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	88	37	ug/kg	
123-91-1	1,4-Dioxane	ND	44	29	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	44	20	ug/kg	
132-64-9	Dibenzofuran	ND	88	18	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	88	7.2	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	88	11	ug/kg	
84-66-2	Diethyl phthalate	ND	88	9.4	ug/kg	
131-11-3	Dimethyl phthalate	ND	88	7.9	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	88	10	ug/kg	
206-44-0	Fluoranthene	51.7	44	20	ug/kg	
86-73-7	Fluorene	ND	44	20	ug/kg	
118-74-1	Hexachlorobenzene	ND	88	11	ug/kg	
87-68-3	Hexachlorobutadiene	ND	44	18	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	440	18	ug/kg	
67-72-1	Hexachloroethane	ND	220	22	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	44	21	ug/kg	
78-59-1	Isophorone [a]	ND	88	9.5	ug/kg	
91-57-6	2-Methylnaphthalene	ND	44	10	ug/kg	
88-74-4	2-Nitroaniline [a]	ND	220	10	ug/kg	
99-09-2	3-Nitroaniline	ND	220	11	ug/kg	
100-01-6	4-Nitroaniline	ND	220	11	ug/kg	
91-20-3	Naphthalene	93.7	44	12	ug/kg	
98-95-3	Nitrobenzene	ND	88	17	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	88	13	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	220	16	ug/kg	
85-01-8	Phenanthrene	39.1	44	15	ug/kg	J
129-00-0	Pyrene	36.5	44	14	ug/kg	J
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	220	11	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	72%		23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-113B (15-17		
Lab Sample ID:	JC86916-9	**Date Sampled:**	04/24/19
Matrix:	SO - Soil	**Date Received:**	04/24/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	72.1
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	77%		27-114%
118-79-6	2,4,6-Tribromophenol	74%		19-152%
4165-60-0	Nitrobenzene-d5	85%		26-134%
321-60-8	2-Fluorobiphenyl	80%		39-124%
1718-51-0	Terphenyl-d14	73%		36-134%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
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E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS LabLink@1039014 11:19 10-May-2019

Report of Analysis

Client Sample ID:	PSSTP-22R(0.5-2)		
Lab Sample ID:	JC86916-10	**Date Sampled:**	04/24/19
Matrix:	SO - Soil	**Date Received:**	04/24/19
Method:	SW846 8260C	**Percent Solids:**	83.0
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3C151830.D	1	05/06/19 20:45	PS	n/a	n/a	V3C6821
Run #2							

	Initial Weight
Run #1	4.7 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	13	6.4	ug/kg	
71-43-2	Benzene	1.0	0.64	0.48	ug/kg	
74-97-5	Bromochloromethane	ND	6.4	0.55	ug/kg	
75-27-4	Bromodichloromethane	ND	2.6	0.57	ug/kg	
75-25-2	Bromoform	ND	6.4	0.52	ug/kg	
74-83-9	Bromomethane	ND	6.4	1.3	ug/kg	
78-93-3	2-Butanone (MEK)	ND	13	4.8	ug/kg	
75-15-0	Carbon disulfide	1.2	2.6	1.2	ug/kg	J
56-23-5	Carbon tetrachloride	ND	2.6	0.70	ug/kg	
108-90-7	Chlorobenzene	ND	2.6	0.45	ug/kg	
75-00-3	Chloroethane	ND	6.4	0.88	ug/kg	
67-66-3	Chloroform	ND	2.6	0.48	ug/kg	
74-87-3	Chloromethane [a]	ND	6.4	2.5	ug/kg	UJ
110-82-7	Cyclohexane	ND	2.6	0.52	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.6	1.1	ug/kg	
124-48-1	Dibromochloromethane	ND	2.6	0.43	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.3	0.42	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.3	0.39	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.3	0.46	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.3	0.44	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	6.4	0.81	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.3	0.49	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.3	0.60	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.3	0.84	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.3	1.2	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.3	0.85	ug/kg	
78-87-5	1,2-Dichloropropane	ND	2.6	0.52	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	2.6	0.45	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2.6	0.42	ug/kg	
100-41-4	Ethylbenzene	ND	1.3	0.71	ug/kg	
76-13-1	Freon 113	ND	6.4	0.98	ug/kg	
591-78-6	2-Hexanone	ND	6.4	1.6	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PSSTP-22R(0.5-2)		
Lab Sample ID:	JC86916-10	**Date Sampled:**	04/24/19
Matrix:	SO - Soil	**Date Received:**	04/24/19
Method:	SW846 8260C	**Percent Solids:**	83.0
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	2.6	0.89	ug/kg	
79-20-9	Methyl Acetate [a]	ND	6.4	1.8	ug/kg	UJ
108-87-2	Methylcyclohexane	ND	2.6	0.91	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.3	0.45	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	6.4	2.0	ug/kg	
75-09-2	Methylene chloride	ND	6.4	3.2	ug/kg	
100-42-5	Styrene	ND	2.6	0.74	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.6	0.50	ug/kg	
127-18-4	Tetrachloroethene	ND	2.6	0.59	ug/kg	
108-88-3	Toluene	1.6	1.3	0.48	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	6.4	1.3	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	6.4	1.3	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	2.6	0.55	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2.6	0.44	ug/kg	
79-01-6	Trichloroethene	ND	1.3	0.98	ug/kg	
75-69-4	Trichlorofluoromethane	ND	6.4	0.87	ug/kg	
75-01-4	Vinyl chloride	ND	2.6	0.60	ug/kg	
	m,p-Xylene	2.9	1.3	0.96	ug/kg	
95-47-6	o-Xylene	0.85	1.3	0.75	ug/kg	J
1330-20-7	Xylene (total)	3.8	1.3	0.75	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	98%		75-127%
17060-07-0	1,2-Dichloroethane-D4	109%		75-130%
2037-26-5	Toluene-D8	108%		80-120%
460-00-4	4-Bromofluorobenzene	118%		79-127%

(a) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS LabLink@1039014 11:19 10-May-2019

Report of Analysis

Client Sample ID:	PSSTP-22R(0.5-2)		
Lab Sample ID:	JC86916-10	**Date Sampled:**	04/24/19
Matrix:	SO - Soil	**Date Received:**	04/24/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	83.0
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	5P59171.D	2	05/02/19 19:46	CC	04/29/19 06:45	OP20043	E5P2795
Run #2	5P59219.D	20	05/03/19 19:22	CC	04/29/19 06:45	OP20043	E5P2797
Run #3	5P59213.D	200	05/03/19 17:06	CC	04/29/19 06:45	OP20043	E5P2797

	Initial Weight	Final Volume
Run #1	30.3 g	1.0 ml
Run #2	30.3 g	1.0 ml
Run #3	30.3 g	1.0 ml

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	160	39	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	400	49	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	400	68	ug/kg	
105-67-9	2,4-Dimethylphenol [b]	181	400	140	ug/kg	J
51-28-5	2,4-Dinitrophenol	ND	400	300	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	400	85	ug/kg	
95-48-7	2-Methylphenol	79.7	160	51	ug/kg	J
	3&4-Methylphenol	304	160	65	ug/kg	
88-75-5	2-Nitrophenol	ND	400	53	ug/kg	
100-02-7	4-Nitrophenol [c]	ND	800	210	ug/kg	
87-86-5	Pentachlorophenol	ND	320	75	ug/kg	
108-95-2	Phenol	212	160	42	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	400	53	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	400	60	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	400	47	ug/kg	
83-32-9	Acenaphthene	1980	80	27	ug/kg	
208-96-8	Acenaphthylene	17700 [d]	800	400	ug/kg	D
98-86-2	Acetophenone	24.5	400	17	ug/kg	J
120-12-7	Anthracene	31100 [d]	800	490	ug/kg	D
1912-24-9	Atrazine	ND	160	34	ug/kg	
56-55-3	Benzo(a)anthracene	58000 [d]	800	230	ug/kg	D
50-32-8	Benzo(a)pyrene	48600 [d]	800	360	ug/kg	D
205-99-2	Benzo(b)fluoranthene	71400 [d]	800	350	ug/kg	D
191-24-2	Benzo(g,h,i)perylene	31000 [d]	800	400	ug/kg	D
207-08-9	Benzo(k)fluoranthene	6680	80	37	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	160	31	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	160	19	ug/kg	
92-52-4	1,1'-Biphenyl	1990	160	11	ug/kg	
100-52-7	Benzaldehyde	ND	400	20	ug/kg	
91-58-7	2-Chloronaphthalene	ND	160	19	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PSSTP-22R(0.5-2)		
Lab Sample ID:	JC86916-10	**Date Sampled:**	04/24/19
Matrix:	SO - Soil	**Date Received:**	04/24/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	83.0
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
106-47-8	4-Chloroaniline	ND	400	29	ug/kg	
86-74-8	Carbazole	9740 d	1600	120	ug/kg	D
105-60-2	Caprolactam c	ND	160	31	ug/kg	
218-01-9	Chrysene	52300 d	800	250	ug/kg	D
111-91-1	bis(2-Chloroethoxy)methane	ND	160	17	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	160	34	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane) c	ND	160	29	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	160	26	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	80	25	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	80	40	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	160	66	ug/kg	
123-91-1	1,4-Dioxane	ND	80	53	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	6440	80	35	ug/kg	
132-64-9	Dibenzofuran	18100 d	1600	320	ug/kg	D
84-74-2	Di-n-butyl phthalate	ND	160	13	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	160	20	ug/kg	
84-66-2	Diethyl phthalate	ND	160	17	ug/kg	
131-11-3	Dimethyl phthalate	ND	160	14	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	160	19	ug/kg	
206-44-0	Fluoranthene	139000 e	8000	3500	ug/kg	D
86-73-7	Fluorene	18900 d	800	370	ug/kg	D
118-74-1	Hexachlorobenzene	ND	160	20	ug/kg	
87-68-3	Hexachlorobutadiene	ND	80	32	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	800	32	ug/kg	
67-72-1	Hexachloroethane	ND	400	39	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	35300 d	800	370	ug/kg	D
78-59-1	Isophorone c	ND	160	17	ug/kg	
91-57-6	2-Methylnaphthalene	10900 d	800	180	ug/kg	D
88-74-4	2-Nitroaniline c	ND	400	19	ug/kg	
99-09-2	3-Nitroaniline	ND	400	20	ug/kg	
100-01-6	4-Nitroaniline	ND	400	21	ug/kg	
91-20-3	Naphthalene	18500 d	800	220	ug/kg	D
98-95-3	Nitrobenzene	ND	160	31	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	160	23	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	400	29	ug/kg	
85-01-8	Phenanthrene	122000 e	8000	2700	ug/kg	D
129-00-0	Pyrene	107000 e	8000	2500	ug/kg	D
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	400	20	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PSSTP-22R(0.5-2)
Lab Sample ID: JC86916-10
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/24/19
Date Received: 04/24/19
Percent Solids: 83.0

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Run# 3	Limits
367-12-4	2-Fluorophenol	55%	54%	56%	23-115%
4165-62-2	Phenol-d5	59%	63%	58%	27-114%
118-79-6	2,4,6-Tribromophenol	61%	56%	0% [f]	19-152%
4165-60-0	Nitrobenzene-d5	68%	71%	0% [f]	26-134%
321-60-8	2-Fluorobiphenyl	70%	82%	71%	39-124%
1718-51-0	Terphenyl-d14	57%	70%	98%	36-134%

(a) Dilution required due to viscosity of the extract matrix.
(b) Associated CCV outside of control limits high.
(c) Associated CCV outside of control limits high, sample was ND.
(d) Result is from Run# 2
(e) Result is from Run# 3
(f) Outside control limits due to dilution.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PSSTP-22R(0.5-2)		
Lab Sample ID:	JC86916-10	**Date Sampled:**	04/24/19
Matrix:	SO - Soil	**Date Received:**	04/24/19
Method:	SW846 8081B SW846 3546	**Percent Solids:**	83.0
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	8G23066.D	1	05/01/19 14:05	MH	04/30/19 09:30	OP20068	G8G783
Run #2							

	Initial Weight	Final Volume
Run #1	16.1 g	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	0.75	0.62	ug/kg	
319-84-6	alpha-BHC	ND	0.75	0.61	ug/kg	
319-85-7	beta-BHC	ND	0.75	0.68	ug/kg	
319-86-8	delta-BHC	ND	0.75	0.72	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	0.75	0.55	ug/kg	
5103-71-9	alpha-Chlordane	ND	0.75	0.60	ug/kg	
5103-74-2	gamma-Chlordane	ND	0.75	0.34	ug/kg	
60-57-1	Dieldrin	ND	0.75	0.51	ug/kg	
72-54-8	4,4'-DDD [a]	30.6	0.75	0.69	ug/kg	J
72-55-9	4,4'-DDE	ND	0.75	0.66	ug/kg	
50-29-3	4,4'-DDT	ND	0.75	0.66	ug/kg	
72-20-8	Endrin	ND	0.75	0.58	ug/kg	
1031-07-8	Endosulfan sulfate	ND	0.75	0.58	ug/kg	
7421-93-4	Endrin aldehyde	ND	0.75	0.42	ug/kg	
959-98-8	Endosulfan-I	ND	0.75	0.43	ug/kg	
33213-65-9	Endosulfan-II	ND	0.75	0.47	ug/kg	
76-44-8	Heptachlor	ND	0.75	0.65	ug/kg	
1024-57-3	Heptachlor epoxide	ND	0.75	0.52	ug/kg	
72-43-5	Methoxychlor	ND	1.5	0.59	ug/kg	
53494-70-5	Endrin ketone	ND	0.75	0.54	ug/kg	
8001-35-2	Toxaphene	ND	19	17	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	61%		25-135%
877-09-8	Tetrachloro-m-xylene	67%		25-135%
2051-24-3	Decachlorobiphenyl	157% [b]		10-156%
2051-24-3	Decachlorobiphenyl	1756% [b]		10-156%

(a) More than 40 % RPD for detected concentrations between the two GC columns.
(b) Outside control limits due to matrix interference.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PSSTP-22R(0.5-2)		
Lab Sample ID:	JC86916-10	**Date Sampled:**	04/24/19
Matrix:	SO - Soil	**Date Received:**	04/24/19
Method:	SW846 8082A SW846 3546	**Percent Solids:**	83.0
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2G179077.D	1	04/30/19 20:25	TR	04/30/19 09:30	OP20066	G2G4644
Run #2							

	Initial Weight	Final Volume
Run #1	16.1 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	37	17	ug/kg	
11104-28-2	Aroclor 1221	ND	37	19	ug/kg	
11141-16-5	Aroclor 1232	ND	37	29	ug/kg	
53469-21-9	Aroclor 1242	ND	37	15	ug/kg	
12672-29-6	Aroclor 1248	ND	37	33	ug/kg	
11097-69-1	Aroclor 1254	ND	37	20	ug/kg	
11096-82-5	Aroclor 1260	ND	37	16	ug/kg	
11100-14-4	Aroclor 1268	ND	37	16	ug/kg	
37324-23-5	Aroclor 1262	ND	37	24	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	107%		31-146%
877-09-8	Tetrachloro-m-xylene	56%		31-146%
2051-24-3	Decachlorobiphenyl	118%		17-164%
2051-24-3	Decachlorobiphenyl	1241% [a]		17-164%

(a) Outside control limits due to matrix interference.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PSSTP-22R(4-6)		
Lab Sample ID:	JC86916-11	**Date Sampled:**	04/24/19
Matrix:	SO - Soil	**Date Received:**	04/24/19
Method:	SW846 8260C	**Percent Solids:**	77.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	I225914.D	1	05/02/19 12:45	TDN	n/a	n/a	VI9101
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	4.7 g	10.0 ml	100 ul
Run #2			

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	1500	760	ug/kg	
71-43-2	Benzene	482	76	57	ug/kg	
74-97-5	Bromochloromethane	ND	760	65	ug/kg	
75-27-4	Bromodichloromethane	ND	300	67	ug/kg	
75-25-2	Bromoform	ND	760	61	ug/kg	
74-83-9	Bromomethane	ND	760	150	ug/kg	
78-93-3	2-Butanone (MEK)	ND	1500	570	ug/kg	
75-15-0	Carbon disulfide	ND	300	140	ug/kg	
56-23-5	Carbon tetrachloride	ND	300	84	ug/kg	
108-90-7	Chlorobenzene	ND	300	54	ug/kg	
75-00-3	Chloroethane	ND	760	100	ug/kg	
67-66-3	Chloroform	ND	300	57	ug/kg	
74-87-3	Chloromethane	ND	760	300	ug/kg	
110-82-7	Cyclohexane	ND	300	62	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	300	130	ug/kg	
124-48-1	Dibromochloromethane	ND	300	51	ug/kg	
106-93-4	1,2-Dibromoethane	ND	150	49	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	150	46	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	150	55	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	150	52	ug/kg	
75-71-8	Dichlorodifluoromethane [b]	ND	760	97	ug/kg	
75-34-3	1,1-Dichloroethane	ND	150	59	ug/kg	
107-06-2	1,2-Dichloroethane	ND	150	72	ug/kg	
75-35-4	1,1-Dichloroethene	ND	150	100	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	150	150	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	150	100	ug/kg	
78-87-5	1,2-Dichloropropane	ND	300	62	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	300	54	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	300	50	ug/kg	
100-41-4	Ethylbenzene	170	150	84	ug/kg	
76-13-1	Freon 113	ND	760	120	ug/kg	
591-78-6	2-Hexanone	ND	760	190	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PSSTP-22R(4-6)		
Lab Sample ID:	JC86916-11	**Date Sampled:**	04/24/19
Matrix:	SO - Soil	**Date Received:**	04/24/19
Method:	SW846 8260C	**Percent Solids:**	77.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	300	110	ug/kg	
79-20-9	Methyl Acetate	ND	760	210	ug/kg	
108-87-2	Methylcyclohexane	ND	300	110	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	150	54	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	760	240	ug/kg	
75-09-2	Methylene chloride	ND	760	380	ug/kg	
100-42-5	Styrene	ND	300	88	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	300	59	ug/kg	
127-18-4	Tetrachloroethene	ND	300	70	ug/kg	
108-88-3	Toluene	1090	150	57	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	760	150	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	760	150	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	300	65	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	300	52	ug/kg	
79-01-6	Trichloroethene	ND	150	120	ug/kg	
75-69-4	Trichlorofluoromethane	ND	760	100	ug/kg	
75-01-4	Vinyl chloride	ND	300	71	ug/kg	
	m,p-Xylene	3200	150	110	ug/kg	
95-47-6	o-Xylene	1110	150	89	ug/kg	
1330-20-7	Xylene (total)	4310	150	89	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	107%		75-127%
17060-07-0	1,2-Dichloroethane-D4	120%		75-130%
2037-26-5	Toluene-D8	101%		80-120%
460-00-4	4-Bromofluorobenzene	104%		79-127%

(a) Diluted due to high concentration of non-target compound.
(b) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PSSTP-22R(4-6)		
Lab Sample ID:	JC86916-11	**Date Sampled:**	04/24/19
Matrix:	SO - Soil	**Date Received:**	04/24/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	77.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5P59169.D	1	05/02/19 19:00	CC	04/29/19 06:45	OP20043	E5P2795
Run #2	5P59299.D	10	05/07/19 00:00	CC	04/29/19 06:45	OP20043	E5P2800
Run #3	5P59216.D	100	05/03/19 18:14	CC	04/29/19 06:45	OP20043	E5P2797

	Initial Weight	Final Volume
Run #1	31.0 g	1.0 ml
Run #2	31.0 g	1.0 ml
Run #3	31.0 g	1.0 ml

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	83	21	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	210	26	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	210	36	ug/kg	
105-67-9	2,4-Dimethylphenol [a]	437	210	74	ug/kg	J
51-28-5	2,4-Dinitrophenol	ND	210	160	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	210	45	ug/kg	
95-48-7	2-Methylphenol	173	83	27	ug/kg	
	3&4-Methylphenol	304	83	34	ug/kg	
88-75-5	2-Nitrophenol	ND	210	28	ug/kg	
100-02-7	4-Nitrophenol [b]	ND	420	110	ug/kg	
87-86-5	Pentachlorophenol	ND	170	39	ug/kg	
108-95-2	Phenol	115	83	22	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	210	28	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	210	31	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	210	25	ug/kg	
83-32-9	Acenaphthene	3780	42	14	ug/kg	
208-96-8	Acenaphthylene	13400 [c]	420	210	ug/kg	D
98-86-2	Acetophenone	40.7	210	9.0	ug/kg	J
120-12-7	Anthracene	38900 [c]	420	260	ug/kg	D
1912-24-9	Atrazine	ND	83	18	ug/kg	
56-55-3	Benzo(a)anthracene	39800 [c]	420	120	ug/kg	D
50-32-8	Benzo(a)pyrene	34900 [c]	420	190	ug/kg	D
205-99-2	Benzo(b)fluoranthene	49200 [d]	4200	1800	ug/kg	D
191-24-2	Benzo(g,h,i)perylene	18600 [c]	420	210	ug/kg	D
207-08-9	Benzo(k)fluoranthene	15700 [c]	420	190	ug/kg	D
101-55-3	4-Bromophenyl phenyl ether	ND	83	16	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	83	10	ug/kg	
92-52-4	1,1'-Biphenyl	6850 [c]	830	57	ug/kg	D
100-52-7	Benzaldehyde	ND	210	10	ug/kg	
91-58-7	2-Chloronaphthalene	ND	83	9.9	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PSSTP-22R(4-6)
Lab Sample ID: JC86916-11
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/24/19
Date Received: 04/24/19
Percent Solids: 77.3

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
106-47-8	4-Chloroaniline	ND	210	15	ug/kg	
86-74-8	Carbazole	18800 [c]	830	61	ug/kg	D
105-60-2	Caprolactam [b]	ND	83	16	ug/kg	
218-01-9	Chrysene	36500 [c]	420	130	ug/kg	D
111-91-1	bis(2-Chloroethoxy)methane	ND	83	8.9	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	83	18	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane) [b]	ND	83	15	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	83	14	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	42	13	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	42	21	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	83	35	ug/kg	
123-91-1	1,4-Dioxane	ND	42	28	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	5680 [c]	420	180	ug/kg	D
132-64-9	Dibenzofuran	32500 [c]	830	170	ug/kg	D
84-74-2	Di-n-butyl phthalate	ND	83	6.8	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	83	10	ug/kg	
84-66-2	Diethyl phthalate	ND	83	8.9	ug/kg	
131-11-3	Dimethyl phthalate	ND	83	7.4	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	83	9.8	ug/kg	
206-44-0	Fluoranthene	107000 [d]	4200	1900	ug/kg	D
86-73-7	Fluorene	54200 [d]	4200	1900	ug/kg	D
118-74-1	Hexachlorobenzene	ND	83	11	ug/kg	
87-68-3	Hexachlorobutadiene	ND	42	17	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	420	17	ug/kg	
67-72-1	Hexachloroethane	ND	210	21	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	20700 [c]	420	200	ug/kg	D
78-59-1	Isophorone [b]	ND	83	8.9	ug/kg	
91-57-6	2-Methylnaphthalene	31900 [c]	420	94	ug/kg	D
88-74-4	2-Nitroaniline [b]	ND	210	9.8	ug/kg	
99-09-2	3-Nitroaniline	ND	210	10	ug/kg	
100-01-6	4-Nitroaniline	ND	210	11	ug/kg	
91-20-3	Naphthalene	103000 [d]	4200	1200	ug/kg	D
98-95-3	Nitrobenzene	ND	83	16	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	83	12	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	210	15	ug/kg	
85-01-8	Phenanthrene	152000 [d]	4200	1400	ug/kg	D
129-00-0	Pyrene	80200 [d]	4200	1300	ug/kg	D
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	210	11	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PSSTP-22R(4-6)
Lab Sample ID: JC86916-11
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/24/19
Date Received: 04/24/19
Percent Solids: 77.3

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Run# 3	Limits
367-12-4	2-Fluorophenol	49%	40%	44%	23-115%
4165-62-2	Phenol-d5	51%	49%	35%	27-114%
118-79-6	2,4,6-Tribromophenol	62%	43%	0% [e]	19-152%
4165-60-0	Nitrobenzene-d5	70%	72%	42%	26-134%
321-60-8	2-Fluorobiphenyl	58%	60%	67%	39-124%
1718-51-0	Terphenyl-d14	49%	56%	59%	36-134%

(a) Associated CCV outside of control limits high.
(b) Associated CCV outside of control limits high, sample was ND.
(c) Result is from Run# 2
(d) Result is from Run# 3
(e) Outside control limits due to dilution.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	S-144 (15-17)		
Lab Sample ID:	JC86916-12	**Date Sampled:**	04/24/19
Matrix:	SO - Soil	**Date Received:**	04/24/19
Method:	SW846 8260C	**Percent Solids:**	80.4
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3C151706.D	1	05/03/19 17:42	PS	n/a	n/a	V3C6817
Run #2 [a]	3C151769.D	1	05/04/19 21:43	PS	n/a	n/a	V3C6819

	Initial Weight
Run #1	6.0 g
Run #2	6.3 g

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	29.4	10	5.2	ug/kg	J
71-43-2	Benzene	ND	0.52	0.39	ug/kg	
74-97-5	Bromochloromethane	ND	5.2	0.45	ug/kg	
75-27-4	Bromodichloromethane	ND	2.1	0.46	ug/kg	
75-25-2	Bromoform	ND	5.2	0.42	ug/kg	
74-83-9	Bromomethane	ND	5.2	1.0	ug/kg	
78-93-3	2-Butanone (MEK)	ND	10	3.9	ug/kg	
75-15-0	Carbon disulfide	11.9	2.1	0.96	ug/kg	J
56-23-5	Carbon tetrachloride	ND	2.1	0.57	ug/kg	
108-90-7	Chlorobenzene	ND	2.1	0.37	ug/kg	
75-00-3	Chloroethane	ND	5.2	0.71	ug/kg	
67-66-3	Chloroform	ND	2.1	0.39	ug/kg	
74-87-3	Chloromethane	ND	5.2	2.0	ug/kg	
110-82-7	Cyclohexane	ND	2.1	0.42	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.1	0.87	ug/kg	
124-48-1	Dibromochloromethane	ND	2.1	0.35	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.0	0.34	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.32	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.37	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.36	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	5.2	0.66	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.0	0.40	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.0	0.49	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.0	0.68	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.99	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.69	ug/kg	
78-87-5	1,2-Dichloropropane	ND	2.1	0.42	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	2.1	0.36	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2.1	0.34	ug/kg	
100-41-4	Ethylbenzene	ND	1.0	0.57	ug/kg	
76-13-1	Freon 113	ND	5.2	0.79	ug/kg	
591-78-6	2-Hexanone	ND	5.2	1.3	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-144 (15-17)		
Lab Sample ID:	JC86916-12	**Date Sampled:**	04/24/19
Matrix:	SO - Soil	**Date Received:**	04/24/19
Method:	SW846 8260C	**Percent Solids:**	80.4
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	2.1	0.72	ug/kg	
79-20-9	Methyl Acetate	ND	5.2	1.4	ug/kg	
108-87-2	Methylcyclohexane	ND	2.1	0.73	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.36	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.2	1.6	ug/kg	
75-09-2	Methylene chloride	ND	5.2	2.6	ug/kg	
100-42-5	Styrene	ND	2.1	0.60	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.1	0.40	ug/kg	
127-18-4	Tetrachloroethene	ND	2.1	0.48	ug/kg	
108-88-3	Toluene	ND	1.0	0.39	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	5.2	1.0	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	5.2	1.0	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	2.1	0.44	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2.1	0.35	ug/kg	
79-01-6	Trichloroethene	ND	1.0	0.79	ug/kg	
75-69-4	Trichlorofluoromethane	ND	5.2	0.71	ug/kg	
75-01-4	Vinyl chloride	ND	2.1	0.49	ug/kg	
	m,p-Xylene	ND	1.0	0.77	ug/kg	
95-47-6	o-Xylene	ND	1.0	0.60	ug/kg	
1330-20-7	Xylene (total)	ND	1.0	0.60	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	98%	99%	75-127%
17060-07-0	1,2-Dichloroethane-D4	105%	103%	75-130%
2037-26-5	Toluene-D8	111%	105%	80-120%
460-00-4	4-Bromofluorobenzene	191% [b]	157% [c]	79-127%

(a) Confirmation run for surrogate recoveries.
(b) Outside control limits due to matrix interference. Confirmed by reanalysis.
(c) Outside control limits due to matrix interference.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	S-144 (15-17)		
Lab Sample ID:	JC86916-12	**Date Sampled:**	04/24/19
Matrix:	SO - Soil	**Date Received:**	04/24/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	80.4
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5P59155.D	1	05/02/19 13:39	CC	04/29/19 06:45	OP20043	E5P2795
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	83	20	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	210	25	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	210	35	ug/kg	
105-67-9	2,4-Dimethylphenol [a]	ND	210	74	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	210	160	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	210	44	ug/kg	
95-48-7	2-Methylphenol	ND	83	26	ug/kg	
	3&4-Methylphenol	ND	83	34	ug/kg	
88-75-5	2-Nitrophenol	ND	210	27	ug/kg	
100-02-7	4-Nitrophenol [a]	ND	410	110	ug/kg	
87-86-5	Pentachlorophenol	ND	170	39	ug/kg	
108-95-2	Phenol	ND	83	22	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	210	27	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	210	31	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	210	25	ug/kg	
83-32-9	Acenaphthene	ND	41	14	ug/kg	
208-96-8	Acenaphthylene	ND	41	21	ug/kg	
98-86-2	Acetophenone	ND	210	8.9	ug/kg	
120-12-7	Anthracene	ND	41	25	ug/kg	
1912-24-9	Atrazine	ND	83	18	ug/kg	
56-55-3	Benzo(a)anthracene	22.9	41	12	ug/kg	J
50-32-8	Benzo(a)pyrene	23.0	41	19	ug/kg	J
205-99-2	Benzo(b)fluoranthene	29.7	41	18	ug/kg	J
191-24-2	Benzo(g,h,i)perylene	ND	41	21	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	41	19	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	83	16	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	83	10	ug/kg	
92-52-4	1,1'-Biphenyl	ND	83	5.7	ug/kg	
100-52-7	Benzaldehyde	ND	210	10	ug/kg	
91-58-7	2-Chloronaphthalene	ND	83	9.8	ug/kg	
106-47-8	4-Chloroaniline	ND	210	15	ug/kg	
86-74-8	Carbazole	ND	83	6.0	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-144 (15-17)		
Lab Sample ID:	JC86916-12	**Date Sampled:**	04/24/19
Matrix:	SO - Soil	**Date Received:**	04/24/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	80.4
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam [a]	ND	83	16	ug/kg	
218-01-9	Chrysene	17.2	41	13	ug/kg	J
111-91-1	bis(2-Chloroethoxy)methane	ND	83	8.8	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	83	18	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane) [a]	ND	83	15	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	83	13	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	41	13	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	41	21	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	83	34	ug/kg	
123-91-1	1,4-Dioxane	ND	41	27	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	41	18	ug/kg	
132-64-9	Dibenzofuran	ND	83	17	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	83	6.7	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	83	10	ug/kg	
84-66-2	Diethyl phthalate	ND	83	8.8	ug/kg	
131-11-3	Dimethyl phthalate	ND	83	7.4	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	83	9.7	ug/kg	
206-44-0	Fluoranthene	29.4	41	18	ug/kg	J
86-73-7	Fluorene	ND	41	19	ug/kg	
118-74-1	Hexachlorobenzene	ND	83	10	ug/kg	
87-68-3	Hexachlorobutadiene	ND	41	17	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	410	16	ug/kg	
67-72-1	Hexachloroethane	ND	210	20	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	41	19	ug/kg	
78-59-1	Isophorone [a]	ND	83	8.8	ug/kg	
91-57-6	2-Methylnaphthalene	ND	41	9.3	ug/kg	
88-74-4	2-Nitroaniline [a]	ND	210	9.8	ug/kg	
99-09-2	3-Nitroaniline	ND	210	10	ug/kg	
100-01-6	4-Nitroaniline	ND	210	11	ug/kg	
91-20-3	Naphthalene	ND	41	12	ug/kg	
98-95-3	Nitrobenzene	ND	83	16	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	83	12	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	210	15	ug/kg	
85-01-8	Phenanthrene	17.4	41	14	ug/kg	J
129-00-0	Pyrene	26.7	41	13	ug/kg	J
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	210	10	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	56%		23-115%

ND = Not detected MDL = Method Detection Limit
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B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-144 (15-17)		
Lab Sample ID:	JC86916-12	**Date Sampled:**	04/24/19
Matrix:	SO - Soil	**Date Received:**	04/24/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	80.4
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	59%		27-114%
118-79-6	2,4,6-Tribromophenol	59%		19-152%
4165-60-0	Nitrobenzene-d5	64%		26-134%
321-60-8	2-Fluorobiphenyl	61%		39-124%
1718-51-0	Terphenyl-d14	61%		36-134%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
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E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	S-144 (22-24)		
Lab Sample ID:	JC86916-13	**Date Sampled:**	04/24/19
Matrix:	SO - Soil	**Date Received:**	04/24/19
Method:	SW846 8260C	**Percent Solids:**	85.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Y184978.D	1	05/06/19 20:02	PS	n/a	n/a	VY8027
Run #2							

	Initial Weight
Run #1	4.0 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	55.4	15	7.3	ug/kg	
71-43-2	Benzene	ND	0.73	0.55	ug/kg	
74-97-5	Bromochloromethane	ND	7.3	0.63	ug/kg	
75-27-4	Bromodichloromethane	ND	2.9	0.64	ug/kg	
75-25-2	Bromoform	ND	7.3	0.59	ug/kg	
74-83-9	Bromomethane	ND	7.3	1.4	ug/kg	
78-93-3	2-Butanone (MEK)	ND	15	5.4	ug/kg	
75-15-0	Carbon disulfide	ND	2.9	1.4	ug/kg	
56-23-5	Carbon tetrachloride	ND	2.9	0.80	ug/kg	
108-90-7	Chlorobenzene	ND	2.9	0.52	ug/kg	
75-00-3	Chloroethane	ND	7.3	1.0	ug/kg	
67-66-3	Chloroform	ND	2.9	0.54	ug/kg	
74-87-3	Chloromethane	ND	7.3	2.9	ug/kg	
110-82-7	Cyclohexane	ND	2.9	0.59	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.9	1.2	ug/kg	
124-48-1	Dibromochloromethane	ND	2.9	0.49	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.5	0.47	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.5	0.44	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.5	0.52	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.5	0.50	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	7.3	0.92	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.5	0.56	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.5	0.68	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.5	0.95	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.5	1.4	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.5	0.97	ug/kg	
78-87-5	1,2-Dichloropropane	ND	2.9	0.59	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	2.9	0.51	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2.9	0.48	ug/kg	
100-41-4	Ethylbenzene	ND	1.5	0.80	ug/kg	
76-13-1	Freon 113	ND	7.3	1.1	ug/kg	
591-78-6	2-Hexanone	ND	7.3	1.8	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-144 (22-24)		
Lab Sample ID:	JC86916-13	**Date Sampled:**	04/24/19
Matrix:	SO - Soil	**Date Received:**	04/24/19
Method:	SW846 8260C	**Percent Solids:**	85.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	2.9	1.0	ug/kg	
79-20-9	Methyl Acetate	ND	7.3	2.0	ug/kg	
108-87-2	Methylcyclohexane	ND	2.9	1.0	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.5	0.51	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	7.3	2.3	ug/kg	
75-09-2	Methylene chloride	ND	7.3	3.6	ug/kg	
100-42-5	Styrene	ND	2.9	0.84	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.9	0.57	ug/kg	
127-18-4	Tetrachloroethene	ND	2.9	0.67	ug/kg	
108-88-3	Toluene	ND	1.5	0.55	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	7.3	1.5	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	7.3	1.5	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	2.9	0.62	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2.9	0.50	ug/kg	
79-01-6	Trichloroethene	ND	1.5	1.1	ug/kg	
75-69-4	Trichlorofluoromethane	ND	7.3	0.99	ug/kg	
75-01-4	Vinyl chloride	ND	2.9	0.68	ug/kg	
	m,p-Xylene	ND	1.5	1.1	ug/kg	
95-47-6	o-Xylene	ND	1.5	0.85	ug/kg	
1330-20-7	Xylene (total)	ND	1.5	0.85	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	111%		75-127%
17060-07-0	1,2-Dichloroethane-D4	113%		75-130%
2037-26-5	Toluene-D8	101%		80-120%
460-00-4	4-Bromofluorobenzene	94%		79-127%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
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J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	S-144 (22-24)		
Lab Sample ID:	JC86916-13	**Date Sampled:**	04/24/19
Matrix:	SO - Soil	**Date Received:**	04/24/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	85.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5P59156.D	1	05/02/19 14:02	CC	04/29/19 06:45	OP20043	E5P2795
Run #2							

	Initial Weight	Final Volume
Run #1	31.9 g	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	73	18	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	180	22	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	180	31	ug/kg	
105-67-9	2,4-Dimethylphenol [a]	ND	180	65	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	180	140	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	180	39	ug/kg	
95-48-7	2-Methylphenol	ND	73	23	ug/kg	
	3&4-Methylphenol	ND	73	30	ug/kg	
88-75-5	2-Nitrophenol	ND	180	24	ug/kg	
100-02-7	4-Nitrophenol [a]	ND	360	97	ug/kg	
87-86-5	Pentachlorophenol	ND	150	34	ug/kg	
108-95-2	Phenol	ND	73	19	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	180	24	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	180	27	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	180	22	ug/kg	
83-32-9	Acenaphthene	ND	36	13	ug/kg	
208-96-8	Acenaphthylene	ND	36	19	ug/kg	
98-86-2	Acetophenone	ND	180	7.8	ug/kg	
120-12-7	Anthracene	ND	36	22	ug/kg	
1912-24-9	Atrazine	ND	73	16	ug/kg	
56-55-3	Benzo(a)anthracene	ND	36	10	ug/kg	
50-32-8	Benzo(a)pyrene	ND	36	17	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	36	16	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	36	18	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	36	17	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	73	14	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	73	8.9	ug/kg	
92-52-4	1,1'-Biphenyl	ND	73	5.0	ug/kg	
100-52-7	Benzaldehyde	ND	180	9.1	ug/kg	
91-58-7	2-Chloronaphthalene	ND	73	8.7	ug/kg	
106-47-8	4-Chloroaniline	ND	180	13	ug/kg	
86-74-8	Carbazole	ND	73	5.3	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-144 (22-24)		
Lab Sample ID:	JC86916-13	**Date Sampled:**	04/24/19
Matrix:	SO - Soil	**Date Received:**	04/24/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	85.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam [a]	ND	73	14	ug/kg	
218-01-9	Chrysene	ND	36	11	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	73	7.8	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	73	16	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane) [a]	ND	73	13	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	73	12	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	36	11	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	36	18	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	73	30	ug/kg	
123-91-1	1,4-Dioxane	ND	36	24	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	36	16	ug/kg	
132-64-9	Dibenzofuran	ND	73	15	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	73	5.9	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	73	9.1	ug/kg	
84-66-2	Diethyl phthalate	ND	73	7.8	ug/kg	
131-11-3	Dimethyl phthalate	ND	73	6.5	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	73	8.5	ug/kg	
206-44-0	Fluoranthene	ND	36	16	ug/kg	
86-73-7	Fluorene	ND	36	17	ug/kg	
118-74-1	Hexachlorobenzene	ND	73	9.2	ug/kg	
87-68-3	Hexachlorobutadiene	ND	36	15	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	360	15	ug/kg	
67-72-1	Hexachloroethane	ND	180	18	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	36	17	ug/kg	
78-59-1	Isophorone [a]	ND	73	7.8	ug/kg	
91-57-6	2-Methylnaphthalene	ND	36	8.2	ug/kg	
88-74-4	2-Nitroaniline [a]	ND	180	8.6	ug/kg	
99-09-2	3-Nitroaniline	ND	180	9.1	ug/kg	
100-01-6	4-Nitroaniline	ND	180	9.5	ug/kg	
91-20-3	Naphthalene	ND	36	10	ug/kg	
98-95-3	Nitrobenzene	ND	73	14	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	73	11	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	180	13	ug/kg	
85-01-8	Phenanthrene	ND	36	12	ug/kg	
129-00-0	Pyrene	ND	36	12	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	180	9.3	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	53%		23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-144 (22-24)		
Lab Sample ID:	JC86916-13	**Date Sampled:**	04/24/19
Matrix:	SO - Soil	**Date Received:**	04/24/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	85.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	56%		27-114%
118-79-6	2,4,6-Tribromophenol	51%		19-152%
4165-60-0	Nitrobenzene-d5	61%		26-134%
321-60-8	2-Fluorobiphenyl	55%		39-124%
1718-51-0	Terphenyl-d14	55%		36-134%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	S-113 (0-1)		
Lab Sample ID:	JC86916-14	**Date Sampled:**	04/23/19
Matrix:	SO - Soil	**Date Received:**	04/24/19
Method:	SW846 8260C	**Percent Solids:**	80.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Y184979.D	1	05/06/19 20:31	PS	n/a	n/a	VY8027
Run #2							

	Initial Weight
Run #1	3.8 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	16	8.2	ug/kg	
71-43-2	Benzene	ND	0.82	0.62	ug/kg	
74-97-5	Bromochloromethane	ND	8.2	0.71	ug/kg	
75-27-4	Bromodichloromethane	ND	3.3	0.73	ug/kg	
75-25-2	Bromoform	ND	8.2	0.66	ug/kg	
74-83-9	Bromomethane	ND	8.2	1.6	ug/kg	
78-93-3	2-Butanone (MEK)	ND	16	6.1	ug/kg	
75-15-0	Carbon disulfide	ND	3.3	1.5	ug/kg	
56-23-5	Carbon tetrachloride	ND	3.3	0.90	ug/kg	
108-90-7	Chlorobenzene	ND	3.3	0.58	ug/kg	
75-00-3	Chloroethane	ND	8.2	1.1	ug/kg	
67-66-3	Chloroform	ND	3.3	0.61	ug/kg	
74-87-3	Chloromethane	ND	8.2	3.2	ug/kg	
110-82-7	Cyclohexane	ND	3.3	0.67	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	3.3	1.4	ug/kg	
124-48-1	Dibromochloromethane	ND	3.3	0.55	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.6	0.53	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.6	0.50	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.6	0.59	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.6	0.56	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	8.2	1.0	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.6	0.63	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.6	0.77	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.6	1.1	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.6	1.6	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.6	1.1	ug/kg	
78-87-5	1,2-Dichloropropane	ND	3.3	0.67	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	3.3	0.58	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	3.3	0.54	ug/kg	
100-41-4	Ethylbenzene	ND	1.6	0.91	ug/kg	
76-13-1	Freon 113	ND	8.2	1.3	ug/kg	
591-78-6	2-Hexanone	ND	8.2	2.1	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-113 (0-1)		
Lab Sample ID:	JC86916-14	**Date Sampled:**	04/23/19
Matrix:	SO - Soil	**Date Received:**	04/24/19
Method:	SW846 8260C	**Percent Solids:**	80.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	3.3	1.1	ug/kg	
79-20-9	Methyl Acetate	ND	8.2	2.3	ug/kg	
108-87-2	Methylcyclohexane	ND	3.3	1.2	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.6	0.58	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	8.2	2.6	ug/kg	
75-09-2	Methylene chloride	ND	8.2	4.1	ug/kg	
100-42-5	Styrene	ND	3.3	0.94	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	3.3	0.64	ug/kg	
127-18-4	Tetrachloroethene	ND	3.3	0.76	ug/kg	
108-88-3	Toluene	ND	1.6	0.62	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	8.2	1.6	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	8.2	1.6	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	3.3	0.70	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	3.3	0.56	ug/kg	
79-01-6	Trichloroethene	ND	1.6	1.3	ug/kg	
75-69-4	Trichlorofluoromethane	ND	8.2	1.1	ug/kg	
75-01-4	Vinyl chloride	ND	3.3	0.77	ug/kg	
	m,p-Xylene	ND	1.6	1.2	ug/kg	
95-47-6	o-Xylene	ND	1.6	0.96	ug/kg	
1330-20-7	Xylene (total)	ND	1.6	0.96	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	106%		75-127%
17060-07-0	1,2-Dichloroethane-D4	105%		75-130%
2037-26-5	Toluene-D8	101%		80-120%
460-00-4	4-Bromofluorobenzene	96%		79-127%

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N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	S-113 (0-1)		
Lab Sample ID:	JC86916-14	**Date Sampled:**	04/23/19
Matrix:	SO - Soil	**Date Received:**	04/24/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	80.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6P481513.D	2	04/30/19 20:51	AR	04/29/19 06:50	OP20044	E6P2577
Run #2	6P481542.D	20	05/01/19 19:50	AR	04/29/19 06:50	OP20044	E6P2578
Run #3	6P481535.D	100	05/01/19 17:01	AR	04/29/19 06:50	OP20044	E6P2578

	Initial Weight	Final Volume
Run #1	30.5 g	1.0 ml
Run #2	30.5 g	1.0 ml
Run #3	30.5 g	1.0 ml

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	160	40	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	410	50	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	410	70	ug/kg	
105-67-9	2,4-Dimethylphenol [a]	158	410	150	ug/kg	J
51-28-5	2,4-Dinitrophenol [b]	ND	410	310	ug/kg	UJ
534-52-1	4,6-Dinitro-o-cresol	ND	410	87	ug/kg	
95-48-7	2-Methylphenol	195	160	52	ug/kg	
	3&4-Methylphenol	610	160	67	ug/kg	
88-75-5	2-Nitrophenol	ND	410	54	ug/kg	
100-02-7	4-Nitrophenol	ND	820	220	ug/kg	
87-86-5	Pentachlorophenol	ND	330	77	ug/kg	
108-95-2	Phenol	646	160	43	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	410	54	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	410	61	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	410	49	ug/kg	
83-32-9	Acenaphthene	1980	82	28	ug/kg	
208-96-8	Acenaphthylene	32300 [c]	820	420	ug/kg	D
98-86-2	Acetophenone	128	410	18	ug/kg	J
120-12-7	Anthracene	52700 [c]	820	500	ug/kg	D
1912-24-9	Atrazine	ND	160	35	ug/kg	
56-55-3	Benzo(a)anthracene	101000 [d]	4100	1200	ug/kg	D
50-32-8	Benzo(a)pyrene	82900 [d]	4100	1900	ug/kg	
205-99-2	Benzo(b)fluoranthene	107000 [d]	4100	1800	ug/kg	
191-24-2	Benzo(g,h,i)perylene	53100 [c]	820	410	ug/kg	
207-08-9	Benzo(k)fluoranthene	43000 [d]	4100	1900	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	160	32	ug/kg	
85-68-7	Butyl benzyl phthalate [e]	ND	160	20	ug/kg	
92-52-4	1,1'-Biphenyl	1200	160	11	ug/kg	
100-52-7	Benzaldehyde	ND	410	20	ug/kg	
91-58-7	2-Chloronaphthalene	ND	160	19	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-113 (0-1)		
Lab Sample ID:	JC86916-14	**Date Sampled:**	04/23/19
Matrix:	SO - Soil	**Date Received:**	04/24/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	80.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
106-47-8	4-Chloroaniline	ND	410	29	ug/kg	
86-74-8	Carbazole	9790 [c]	1600	120	ug/kg	D
105-60-2	Caprolactam	ND	160	32	ug/kg	
218-01-9	Chrysene	90900 [d]	4100	1300	ug/kg	D
111-91-1	bis(2-Chloroethoxy)methane	ND	160	17	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	160	35	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	160	29	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	160	26	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	82	25	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	82	41	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	160	68	ug/kg	
123-91-1	1,4-Dioxane	ND	82	54	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	17100 [c]	820	360	ug/kg	D
132-64-9	Dibenzofuran	10200 [c]	1600	330	ug/kg	D
84-74-2	Di-n-butyl phthalate	ND	160	13	ug/kg	
117-84-0	Di-n-octyl phthalate [e]	ND	160	20	ug/kg	
84-66-2	Diethyl phthalate	ND	160	17	ug/kg	
131-11-3	Dimethyl phthalate	ND	160	15	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate [e]	ND	160	19	ug/kg	
206-44-0	Fluoranthene	266000 [d]	4100	1800	ug/kg	D
86-73-7	Fluorene	22300 [c]	820	380	ug/kg	D
118-74-1	Hexachlorobenzene	ND	160	21	ug/kg	
87-68-3	Hexachlorobutadiene	ND	82	33	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	820	33	ug/kg	
67-72-1	Hexachloroethane	ND	410	40	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	49600 [c]	820	380	ug/kg	D
78-59-1	Isophorone	ND	160	17	ug/kg	
91-57-6	2-Methylnaphthalene	2990	82	18	ug/kg	
88-74-4	2-Nitroaniline [e]	ND	410	19	ug/kg	
99-09-2	3-Nitroaniline	ND	410	20	ug/kg	
100-01-6	4-Nitroaniline	ND	410	21	ug/kg	
91-20-3	Naphthalene	7760	82	23	ug/kg	
98-95-3	Nitrobenzene	ND	160	32	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	160	24	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	410	30	ug/kg	
85-01-8	Phenanthrene	183000 [d]	4100	1400	ug/kg	D
129-00-0	Pyrene	187000 [d]	4100	1300	ug/kg	D
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	410	21	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-113 (0-1)		
Lab Sample ID:	JC86916-14	**Date Sampled:**	04/23/19
Matrix:	SO - Soil	**Date Received:**	04/24/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	80.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Run# 3	Limits
367-12-4	2-Fluorophenol	57%	51%	0% [f]	23-115%
4165-62-2	Phenol-d5	61%	54%	0% [f]	27-114%
118-79-6	2,4,6-Tribromophenol	55%	56%	0% [f]	19-152%
4165-60-0	Nitrobenzene-d5	65%	58%	0% [f]	26-134%
321-60-8	2-Fluorobiphenyl	54%	58%	0% [f]	39-124%
1718-51-0	Terphenyl-d14	43%	56%	0% [f]	36-134%

(a) Associated CCV outside of control limits high.
(b) Associated CCV outside of control limits low.
(c) Result is from Run# 2
(d) Result is from Run# 3
(e) Associated CCV outside of control limits high, sample was ND.
(f) Outside control limits due to dilution.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	S-107 (4-5.5)		
Lab Sample ID:	JC86916-15	**Date Sampled:**	04/23/19
Matrix:	SO - Soil	**Date Received:**	04/24/19
Method:	SW846 8260C	**Percent Solids:**	82.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Y184980.D	1	05/06/19 20:59	PS	n/a	n/a	VY8027
Run #2							

	Initial Weight
Run #1	5.8 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	5.2	ug/kg	
71-43-2	Benzene	ND	0.52	0.39	ug/kg	
74-97-5	Bromochloromethane	ND	5.2	0.45	ug/kg	
75-27-4	Bromodichloromethane	ND	2.1	0.46	ug/kg	
75-25-2	Bromoform	ND	5.2	0.42	ug/kg	
74-83-9	Bromomethane	ND	5.2	1.0	ug/kg	
78-93-3	2-Butanone (MEK)	ND	10	3.9	ug/kg	
75-15-0	Carbon disulfide	ND	2.1	0.97	ug/kg	
56-23-5	Carbon tetrachloride	ND	2.1	0.58	ug/kg	
108-90-7	Chlorobenzene	ND	2.1	0.37	ug/kg	
75-00-3	Chloroethane	ND	5.2	0.72	ug/kg	
67-66-3	Chloroform	ND	2.1	0.39	ug/kg	
74-87-3	Chloromethane	ND	5.2	2.1	ug/kg	
110-82-7	Cyclohexane	ND	2.1	0.43	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.1	0.88	ug/kg	
124-48-1	Dibromochloromethane	ND	2.1	0.35	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.0	0.34	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.32	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.38	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.36	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	5.2	0.67	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.0	0.40	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.0	0.49	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.0	0.69	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	1.0	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.70	ug/kg	
78-87-5	1,2-Dichloropropane	ND	2.1	0.43	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	2.1	0.37	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2.1	0.34	ug/kg	
100-41-4	Ethylbenzene	ND	1.0	0.58	ug/kg	
76-13-1	Freon 113	ND	5.2	0.80	ug/kg	
591-78-6	2-Hexanone	ND	5.2	1.3	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-107 (4-5.5)		
Lab Sample ID:	JC86916-15	**Date Sampled:**	04/23/19
Matrix:	SO - Soil	**Date Received:**	04/24/19
Method:	SW846 8260C	**Percent Solids:**	82.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	2.1	0.73	ug/kg	
79-20-9	Methyl Acetate	ND	5.2	1.5	ug/kg	
108-87-2	Methylcyclohexane	ND	2.1	0.74	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.37	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.2	1.6	ug/kg	
75-09-2	Methylene chloride	ND	5.2	2.6	ug/kg	
100-42-5	Styrene	ND	2.1	0.60	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.1	0.41	ug/kg	
127-18-4	Tetrachloroethene	ND	2.1	0.48	ug/kg	
108-88-3	Toluene	ND	1.0	0.39	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	5.2	1.0	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	5.2	1.0	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	2.1	0.45	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2.1	0.36	ug/kg	
79-01-6	Trichloroethene	ND	1.0	0.80	ug/kg	
75-69-4	Trichlorofluoromethane	ND	5.2	0.71	ug/kg	
75-01-4	Vinyl chloride	ND	2.1	0.49	ug/kg	
	m,p-Xylene	ND	1.0	0.78	ug/kg	
95-47-6	o-Xylene	ND	1.0	0.61	ug/kg	
1330-20-7	Xylene (total)	ND	1.0	0.61	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	107%		75-127%
17060-07-0	1,2-Dichloroethane-D4	102%		75-130%
2037-26-5	Toluene-D8	102%		80-120%
460-00-4	4-Bromofluorobenzene	94%		79-127%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS LabLink@1039014 11:19 10-May-2019

Report of Analysis

Client Sample ID:	S-107 (4-5.5)		
Lab Sample ID:	JC86916-15	**Date Sampled:**	04/23/19
Matrix:	SO - Soil	**Date Received:**	04/24/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	82.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6P481512.D	1	04/30/19 20:27	AR	04/29/19 06:50	OP20044	E6P2577
Run #2	6P481540.D	5	05/01/19 19:02	AR	04/29/19 06:50	OP20044	E6P2578

	Initial Weight	Final Volume
Run #1	31.3 g	1.0 ml
Run #2	31.3 g	1.0 ml

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	78	19	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	190	24	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	190	33	ug/kg	
105-67-9	2,4-Dimethylphenol [a]	ND	190	69	ug/kg	
51-28-5	2,4-Dinitrophenol [b]	ND	190	150	ug/kg	UJ
534-52-1	4,6-Dinitro-o-cresol	ND	190	42	ug/kg	
95-48-7	2-Methylphenol	36.1	78	25	ug/kg	J
	3&4-Methylphenol	75.6	78	32	ug/kg	J
88-75-5	2-Nitrophenol	ND	190	26	ug/kg	
100-02-7	4-Nitrophenol	ND	390	100	ug/kg	
87-86-5	Pentachlorophenol	ND	160	36	ug/kg	
108-95-2	Phenol	ND	78	20	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	190	26	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	190	29	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	190	23	ug/kg	
83-32-9	Acenaphthene	179	39	13	ug/kg	
208-96-8	Acenaphthylene	390	39	20	ug/kg	
98-86-2	Acetophenone	ND	190	8.3	ug/kg	
120-12-7	Anthracene	1980	39	24	ug/kg	
1912-24-9	Atrazine	ND	78	17	ug/kg	
56-55-3	Benzo(a)anthracene	4320 [c]	190	55	ug/kg	D
50-32-8	Benzo(a)pyrene	4510 [c]	190	88	ug/kg	D
205-99-2	Benzo(b)fluoranthene	4840 [c]	190	86	ug/kg	D
191-24-2	Benzo(g,h,i)perylene	2550	39	19	ug/kg	
207-08-9	Benzo(k)fluoranthene	1730	39	18	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	78	15	ug/kg	
85-68-7	Butyl benzyl phthalate [a]	ND	78	9.5	ug/kg	
92-52-4	1,1'-Biphenyl	35.7	78	5.3	ug/kg	J
100-52-7	Benzaldehyde	ND	190	9.6	ug/kg	
91-58-7	2-Chloronaphthalene	ND	78	9.2	ug/kg	
106-47-8	4-Chloroaniline	ND	190	14	ug/kg	
86-74-8	Carbazole	436	78	5.6	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-107 (4-5.5)
Lab Sample ID: JC86916-15
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/23/19
Date Received: 04/24/19
Percent Solids: 82.3

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	78	15	ug/kg	
218-01-9	Chrysene	4270 [c]	190	61	ug/kg	D
111-91-1	bis(2-Chloroethoxy)methane	ND	78	8.3	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	78	17	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	78	14	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	78	13	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	39	12	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	39	19	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	78	32	ug/kg	
123-91-1	1,4-Dioxane	ND	39	26	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	826	39	17	ug/kg	
132-64-9	Dibenzofuran	200	78	16	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	78	6.3	ug/kg	
117-84-0	Di-n-octyl phthalate [a]	ND	78	9.7	ug/kg	
84-66-2	Diethyl phthalate	ND	78	8.3	ug/kg	
131-11-3	Dimethyl phthalate	ND	78	6.9	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate [a]	ND	78	9.1	ug/kg	
206-44-0	Fluoranthene	6120 [c]	190	87	ug/kg	D
86-73-7	Fluorene	387	39	18	ug/kg	
118-74-1	Hexachlorobenzene	ND	78	9.8	ug/kg	
87-68-3	Hexachlorobutadiene	ND	39	16	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	390	15	ug/kg	
67-72-1	Hexachloroethane	ND	190	19	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	2350	39	18	ug/kg	
78-59-1	Isophorone	ND	78	8.3	ug/kg	
91-57-6	2-Methylnaphthalene	155	39	8.8	ug/kg	
88-74-4	2-Nitroaniline [a]	ND	190	9.2	ug/kg	
99-09-2	3-Nitroaniline	ND	190	9.7	ug/kg	
100-01-6	4-Nitroaniline	ND	190	10	ug/kg	
91-20-3	Naphthalene	430	39	11	ug/kg	
98-95-3	Nitrobenzene	ND	78	15	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	78	11	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	190	14	ug/kg	
85-01-8	Phenanthrene	3300	39	13	ug/kg	
129-00-0	Pyrene	5000 [c]	190	62	ug/kg	D
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	190	9.9	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	62%	59%	23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-107 (4-5.5)		
Lab Sample ID:	JC86916-15	**Date Sampled:**	04/23/19
Matrix:	SO - Soil	**Date Received:**	04/24/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	82.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	64%	59%	27-114%
118-79-6	2,4,6-Tribromophenol	54%	51%	19-152%
4165-60-0	Nitrobenzene-d5	70%	57%	26-134%
321-60-8	2-Fluorobiphenyl	61%	65%	39-124%
1718-51-0	Terphenyl-d14	52%	58%	36-134%

(a) Associated CCV outside of control limits high, sample was ND.
(b) Associated CCV outside of control limits low.
(c) Result is from Run# 2

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PCTP-66R(0-0.5)
Lab Sample ID: JC86916-1
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/24/19
Date Received: 04/24/19
Percent Solids: 79.6

Metals Analysis

Analyte	Result		RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	7560	J	62	10	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Antimony	2.8	J	2.5	0.51	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Arsenic	66.6		2.5	0.35	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Barium	204	J	25	2.4	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Beryllium	1.1		0.25	0.10	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cadmium	3.0		0.62	0.087	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Calcium	8670	J	620	55	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Chromium	23.2		1.2	0.46	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cobalt	6.0 J		6.2	0.35	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Copper	217		3.1	1.0	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Iron	12400		62	24	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Lead	392		2.5	0.51	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Magnesium	3560	J	620	17	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Manganese	595		1.9	0.51	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Mercury	0.20	J	0.039	0.017	mg/kg	1	04/26/19	04/26/19	LL	SW846 7471B [1]	SW846 7471B [3]
Nickel	32.1		5.0	0.44	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Potassium	890 J		1200	40	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Selenium	0.88 J		2.5	0.81	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Silver	0.22 J		0.62	0.21	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Sodium	180 J		1200	97	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Thallium	0.72 U		1.2	0.72	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Vanadium	27.1		6.2	0.24	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Zinc	490	J	6.2	2.9	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA46592
(2) Instrument QC Batch: MA46628
(3) Prep QC Batch: MP14594
(4) Prep QC Batch: MP14636

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: PCTP-66R(0-0.5)
Lab Sample ID: JC86916-1
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/24/19
Date Received: 04/24/19
Percent Solids: 79.6

General Chemistry

Analyte	Result		RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	0.54	J	0.38	0.19	mg/kg	1	05/02/19 16:42	KI	SW846 9012B/LACHAT
Solids, Percent	79.6				%	1	05/01/19 16:00	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: PCTP-66R(0.5-2.0)
Lab Sample ID: JC86916-2
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/24/19
Date Received: 04/24/19
Percent Solids: 90.0

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	8310 J	56	9.0	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Antimony	0.46 U J	2.2	0.46	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Arsenic [a]	6.7	4.4	0.62	mg/kg	2	04/30/19	05/02/19	MET	SW846 6010D [3]	SW846 3050B [5]
Barium	42.9 J	22	2.1	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Beryllium	0.60	0.22	0.089	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Cadmium	0.10 J	0.56	0.078	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Calcium	527 J	560	49	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Chromium	19.2	1.1	0.41	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Cobalt	7.5	5.6	0.31	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Copper [a]	17.2	5.6	1.9	mg/kg	2	04/30/19	05/02/19	MET	SW846 6010D [3]	SW846 3050B [5]
Iron	24400	110	43	mg/kg	2	04/30/19	05/02/19	MET	SW846 6010D [3]	SW846 3050B [5]
Lead	26.8	2.2	0.46	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Magnesium	1430	560	15	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Manganese [a]	209	3.3	0.91	mg/kg	2	04/30/19	05/02/19	MET	SW846 6010D [3]	SW846 3050B [5]
Mercury	0.030 J	0.036	0.016	mg/kg	1	04/26/19	04/26/19	LL	SW846 7471B [1]	SW846 7471B [4]
Nickel	12.1	4.4	0.39	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Potassium	1430	1100	35	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Selenium [a]	1.4 U	4.4	1.4	mg/kg	2	04/30/19	05/02/19	MET	SW846 6010D [3]	SW846 3050B [5]
Silver [a]	0.38 U	1.1	0.38	mg/kg	2	04/30/19	05/02/19	MET	SW846 6010D [3]	SW846 3050B [5]
Sodium	86 U	1100	86	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Thallium [a]	1.3 U	2.2	1.3	mg/kg	2	04/30/19	05/02/19	MET	SW846 6010D [3]	SW846 3050B [5]
Vanadium	22.9	5.6	0.21	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Zinc	60.0 J	5.6	2.6	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA46592
(2) Instrument QC Batch: MA46628
(3) Instrument QC Batch: MA46638
(4) Prep QC Batch: MP14594
(5) Prep QC Batch: MP14636

(a) Elevated detection limit due to dilution required for high interfering element.

RL = Reporting Limit
MDL = Method Detection Limit
U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	PCTP-66R(0.5-2.0)		
Lab Sample ID:	JC86916-2	**Date Sampled:**	04/24/19
Matrix:	SO - Soil	**Date Received:**	04/24/19
		Percent Solids:	90.0
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result		RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	1.2	J	0.29	0.14	mg/kg	1	05/02/19 16:43	KI	SW846 9012B/LACHAT
Solids, Percent	90				%	1	05/01/19 16:00	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: PCTP-66R(8-10)
Lab Sample ID: JC86916-3
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/24/19
Date Received: 04/24/19
Percent Solids: 58.2

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	17500 J	88	14	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Antimony	0.75 J	3.5	0.72	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Arsenic	59.0	3.5	0.49	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Barium	246 J	35	3.3	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Beryllium	1.4	0.35	0.14	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cadmium	2.7	0.88	0.12	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Calcium	31700 J	880	77	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Chromium	172	1.8	0.65	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cobalt	21.5	8.8	0.49	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Copper	157	4.4	1.5	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Iron	30100	88	34	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Lead	323	3.5	0.72	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Magnesium	4230 J	880	24	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Manganese	747	2.6	0.72	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Mercury	1.3 J	0.054	0.024	mg/kg	1	04/26/19	04/26/19	LL	SW846 7471B [1]	SW846 7471B [3]
Nickel	38.7	7.0	0.61	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Potassium	1900	1800	56	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Selenium	2.3 J	3.5	1.1	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Silver	0.98	0.88	0.30	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Sodium	556 J	1800	140	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Thallium	1.0 U	1.8	1.0	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Vanadium	35.9	8.8	0.33	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Zinc	810 J	8.8	4.0	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA46592
(2) Instrument QC Batch: MA46628
(3) Prep QC Batch: MP14594
(4) Prep QC Batch: MP14636

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: PCTP-66R(8-10)
Lab Sample ID: JC86916-3
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/24/19
Date Received: 04/24/19
Percent Solids: 58.2

General Chemistry

Analyte	Result		RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	1.9	J	0.49	0.25	mg/kg	1	05/02/19 16:45	KI	SW846 9012B/LACHAT
Solids, Percent	58.2				%	1	05/01/19 16:00	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: SO-DUP-0424
Lab Sample ID: JC86916-4
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/24/19
Date Received: 04/24/19
Percent Solids: 79.8

Metals Analysis

Analyte	Result		RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	6890	J	64	10	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Antimony	3.0	J	2.6	0.52	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Arsenic	60.7		2.6	0.36	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Barium	99.0	J	26	2.4	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Beryllium	0.90		0.26	0.10	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cadmium	2.8		0.64	0.090	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Calcium	5280	J	640	56	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Chromium	23.9		1.3	0.47	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cobalt	6.4		6.4	0.36	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Copper	217		3.2	1.1	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Iron	13600		64	25	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Lead	386		2.6	0.52	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Magnesium	2390	J	640	17	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Manganese	375		1.9	0.52	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Mercury	0.34	J	0.041	0.018	mg/kg	1	04/26/19	04/26/19	LL	SW846 7471B [1]	SW846 7471B [3]
Nickel	32.3		5.1	0.45	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Potassium	858 J		1300	41	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Selenium	0.83 U		2.6	0.83	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Silver	0.22 J		0.64	0.22	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Sodium	375 J		1300	99	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Thallium	0.74 U		1.3	0.74	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Vanadium	28.4		6.4	0.24	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Zinc	501	J	6.4	2.9	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA46592
(2) Instrument QC Batch: MA46628
(3) Prep QC Batch: MP14594
(4) Prep QC Batch: MP14636

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	SO-DUP-0424		
Lab Sample ID:	JC86916-4	**Date Sampled:**	04/24/19
Matrix:	SO - Soil	**Date Received:**	04/24/19
		Percent Solids:	79.8
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result		RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	1.1	J	0.34	0.17	mg/kg	1	05/02/19 16:46	KI	SW846 9012B/LACHAT
Solids, Percent	79.8				%	1	05/01/19 16:00	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: S-120(0-1)
Lab Sample ID: JC86916-5
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/24/19
Date Received: 04/24/19
Percent Solids: 86.3

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	5780 J	60	9.6	mg/kg	1	04/26/19	05/02/19	ND	SW846 6010D [2]	SW846 3050B [3]
Antimony	2.3 J	2.4	0.49	mg/kg	1	04/26/19	05/02/19	ND	SW846 6010D [2]	SW846 3050B [3]
Arsenic	105	2.4	0.33	mg/kg	1	04/26/19	05/02/19	ND	SW846 6010D [2]	SW846 3050B [3]
Barium	249 J	24	2.3	mg/kg	1	04/26/19	05/02/19	ND	SW846 6010D [2]	SW846 3050B [3]
Beryllium	0.59	0.24	0.096	mg/kg	1	04/26/19	05/02/19	ND	SW846 6010D [2]	SW846 3050B [3]
Cadmium	2.7	0.60	0.084	mg/kg	1	04/26/19	05/02/19	ND	SW846 6010D [2]	SW846 3050B [3]
Calcium	2650 J	600	53	mg/kg	1	04/26/19	05/02/19	ND	SW846 6010D [2]	SW846 3050B [3]
Chromium	15.2	1.2	0.44	mg/kg	1	04/26/19	05/02/19	ND	SW846 6010D [2]	SW846 3050B [3]
Cobalt	5.6 J	6.0	0.33	mg/kg	1	04/26/19	05/02/19	ND	SW846 6010D [2]	SW846 3050B [3]
Copper	134	3.0	1.0	mg/kg	1	04/26/19	05/02/19	ND	SW846 6010D [2]	SW846 3050B [3]
Iron	17200	60	23	mg/kg	1	04/26/19	05/02/19	ND	SW846 6010D [2]	SW846 3050B [3]
Lead	329	2.4	0.49	mg/kg	1	04/26/19	05/02/19	ND	SW846 6010D [2]	SW846 3050B [3]
Magnesium	1100	600	16	mg/kg	1	04/26/19	05/02/19	ND	SW846 6010D [2]	SW846 3050B [3]
Manganese	229	1.8	0.49	mg/kg	1	04/26/19	05/02/19	ND	SW846 6010D [2]	SW846 3050B [3]
Mercury	0.29 J	0.038	0.017	mg/kg	1	04/26/19	04/26/19	LL	SW846 7471B [1]	SW846 7471B [4]
Nickel	18.7	4.8	0.42	mg/kg	1	04/26/19	05/02/19	ND	SW846 6010D [2]	SW846 3050B [3]
Potassium	651 J	1200	38	mg/kg	1	04/26/19	05/02/19	ND	SW846 6010D [2]	SW846 3050B [3]
Selenium	0.78 U	2.4	0.78	mg/kg	1	04/26/19	05/02/19	ND	SW846 6010D [2]	SW846 3050B [3]
Silver	0.20 U	0.60	0.20	mg/kg	1	04/26/19	05/02/19	ND	SW846 6010D [2]	SW846 3050B [3]
Sodium	93 U	1200	93	mg/kg	1	04/26/19	05/02/19	ND	SW846 6010D [2]	SW846 3050B [3]
Thallium	0.69 U	1.2	0.69	mg/kg	1	04/26/19	05/02/19	ND	SW846 6010D [2]	SW846 3050B [3]
Vanadium	19.5	6.0	0.23	mg/kg	1	04/26/19	05/02/19	ND	SW846 6010D [2]	SW846 3050B [3]
Zinc	774 J	6.0	2.7	mg/kg	1	04/26/19	05/02/19	ND	SW846 6010D [2]	SW846 3050B [3]

(1) Instrument QC Batch: MA46592
(2) Instrument QC Batch: MA46628
(3) Prep QC Batch: MP14579
(4) Prep QC Batch: MP14594

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	S-120(0-1)		
Lab Sample ID:	JC86916-5	**Date Sampled:**	04/24/19
Matrix:	SO - Soil	**Date Received:**	04/24/19
		Percent Solids:	86.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result		RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	1.4	J	0.30	0.15	mg/kg	1	05/02/19 16:47	KI	SW846 9012B/LACHAT
Solids, Percent	86.3				%	1	05/01/19 16:00	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: S-113B(1-3)
Lab Sample ID: JC86916-6
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/24/19
Date Received: 04/24/19
Percent Solids: 78.1

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	8490 J	65	10	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Antimony	2.5 J	2.6	0.53	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Arsenic	10.9	2.6	0.36	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Barium	275 J	26	2.5	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Beryllium	0.65	0.26	0.10	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cadmium	0.40 J	0.65	0.091	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Calcium	6740 J	650	57	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Chromium	38.6	1.3	0.48	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cobalt	4.6 J	6.5	0.36	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Copper	183	3.2	1.1	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Iron	21700	65	25	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Lead	445	2.6	0.53	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Magnesium	2050 J	650	18	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Manganese	147	1.9	0.53	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Mercury	0.30 J	0.042	0.018	mg/kg	1	04/26/19	04/26/19	LL	SW846 7471B [1]	SW846 7471B [3]
Nickel	18.8	5.2	0.45	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Potassium	857 J	1300	41	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Selenium	1.8 J	2.6	0.84	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Silver	0.22 U	0.65	0.22	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Sodium	100 U	1300	100	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Thallium	0.75 U	1.3	0.75	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Vanadium	32.6	6.5	0.25	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Zinc	173	6.5	3.0	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA46592
(2) Instrument QC Batch: MA46628
(3) Prep QC Batch: MP14594
(4) Prep QC Batch: MP14636

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: S-113B(1-3)
Lab Sample ID: JC86916-6
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/24/19
Date Received: 04/24/19
Percent Solids: 78.1

General Chemistry

Analyte	Result		RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	9.8	J	0.26	0.13	mg/kg	1	05/02/19 16:49	KI	SW846 9012B/LACHAT
Solids, Percent	78.1				%	1	05/01/19 16:00	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: S-113B(10-12)
Lab Sample ID: JC86916-7
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/24/19
Date Received: 04/24/19
Percent Solids: 60.6

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	16800 J	84	14	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Antimony	0.76 J	3.4	0.69	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Arsenic	57.8	3.4	0.47	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Barium	219 J	34	3.2	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Beryllium	1.3	0.34	0.13	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cadmium	2.1	0.84	0.12	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Calcium	4530 J	840	74	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Chromium	194	1.7	0.62	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cobalt	19.8	8.4	0.47	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Copper	145	4.2	1.4	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Iron	28700	84	32	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Lead	306	3.4	0.69	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Magnesium	4030 J	840	23	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Manganese	687	2.5	0.69	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Mercury	1.3 J	0.052	0.023	mg/kg	1	04/26/19	04/26/19	LL	SW846 7471B [1]	SW846 7471B [3]
Nickel	35.8	6.7	0.59	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Potassium	1840	1700	54	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Selenium	1.6 J	3.4	1.1	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Silver	1.1	0.84	0.29	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Sodium	516 J	1700	130	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Thallium	0.98 U	1.7	0.98	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Vanadium	33.1	8.4	0.32	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Zinc	691 J	8.4	3.9	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA46592
(2) Instrument QC Batch: MA46628
(3) Prep QC Batch: MP14594
(4) Prep QC Batch: MP14636

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	S-113B(10-12)		
Lab Sample ID:	JC86916-7	**Date Sampled:**	04/24/19
Matrix:	SO - Soil	**Date Received:**	04/24/19
		Percent Solids:	60.6
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result		RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	1.7	J	0.41	0.21	mg/kg	1	05/02/19 16:50	KI	SW846 9012B/LACHAT
Solids, Percent	60.6				%	1	05/01/19 16:00	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: S-113B(13-15)
Lab Sample ID: JC86916-8
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/24/19
Date Received: 04/24/19
Percent Solids: 65.7

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	13400 J	73	12	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Antimony	1.3 J	2.9	0.60	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Arsenic	20.2	2.9	0.41	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Barium	189 J	29	2.8	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Beryllium	1.0	0.29	0.12	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Cadmium	1.3	0.73	0.10	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Calcium	3290 J	730	65	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Chromium	67.3	1.5	0.54	mg/kg	1	04/30/19	05/02/19	MET	SW846 6010D [3]	SW846 3050B [5]
Cobalt	16.9	7.3	0.41	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Copper	73.9	3.7	1.2	mg/kg	1	04/30/19	05/02/19	MET	SW846 6010D [3]	SW846 3050B [5]
Iron	22900	73	28	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Lead	169	2.9	0.60	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Magnesium	3690 J	730	20	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Manganese	595	2.2	0.60	mg/kg	1	04/30/19	05/02/19	MET	SW846 6010D [3]	SW846 3050B [5]
Mercury	0.61 J	0.046	0.020	mg/kg	1	04/26/19	04/26/19	LL	SW846 7471B [1]	SW846 7471B [4]
Nickel	30.7	5.9	0.51	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Potassium	1540	1500	47	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Selenium	0.95 U	2.9	0.95	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Silver	0.80	0.73	0.25	mg/kg	1	04/30/19	05/02/19	MET	SW846 6010D [3]	SW846 3050B [5]
Sodium	387 J	1500	110	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Thallium	0.85 U	1.5	0.85	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Vanadium	26.6	7.3	0.28	mg/kg	1	04/30/19	05/02/19	MET	SW846 6010D [3]	SW846 3050B [5]
Zinc	390 J	7.3	3.4	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA46592
(2) Instrument QC Batch: MA46628
(3) Instrument QC Batch: MA46638
(4) Prep QC Batch: MP14594
(5) Prep QC Batch: MP14636

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: S-113B(13-15)
Lab Sample ID: JC86916-8
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/24/19
Date Received: 04/24/19
Percent Solids: 65.7

General Chemistry

Analyte	Result		RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	1.5	J	0.35	0.18	mg/kg	1	05/02/19 16:54	KI	SW846 9012B/LACHAT
Solids, Percent	65.7				%	1	05/01/19 16:00	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: S-113B (15-17
Lab Sample ID: JC86916-9
Matrix: SO - Soil

Date Sampled: 04/24/19
Date Received: 04/24/19
Percent Solids: 72.1

Project: National Grid, Philly Coke, Philadelphia, PA

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	19300 J	71	11	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Antimony	0.58 U J	2.8	0.58	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Arsenic	4.0	2.8	0.40	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Barium	139 J	28	2.7	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Beryllium	0.96	0.28	0.11	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cadmium	0.099 U	0.71	0.099	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Calcium	2160 J	710	62	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Chromium	43.0	1.4	0.52	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cobalt	11.6	7.1	0.40	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Copper	6.4	3.5	1.2	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Iron	26000	71	27	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Lead	13.2	2.8	0.58	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Magnesium	5170 J	710	19	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Manganese	402	2.1	0.58	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Mercury	0.020 U J	0.045	0.020	mg/kg	1	04/26/19	04/26/19	LL	SW846 7471B [1]	SW846 7471B [3]
Nickel	25.6	5.7	0.50	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Potassium	1730	1400	45	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Selenium	0.92 U	2.8	0.92	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Silver	0.24 U	0.71	0.24	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Sodium	328 J	1400	110	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Thallium	0.82 U	1.4	0.82	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Vanadium	38.8	7.1	0.27	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Zinc	64.0 J	7.1	3.3	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA46592
(2) Instrument QC Batch: MA46628
(3) Prep QC Batch: MP14594
(4) Prep QC Batch: MP14636

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	S-113B (15-17		
Lab Sample ID:	JC86916-9	**Date Sampled:**	04/24/19
Matrix:	SO - Soil	**Date Received:**	04/24/19
		Percent Solids:	72.1
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result		RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	1.0	J	0.32	0.16	mg/kg	1	05/02/19 16:56	KI	SW846 9012B/LACHAT
Solids, Percent	72.1				%	1	05/01/19 16:00	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: PSSTP-22R(0.5-2)
Lab Sample ID: JC86916-10
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/24/19
Date Received: 04/24/19
Percent Solids: 83.0

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	12300 J	61	9.8	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Antimony [a]	2.2 J	4.9	1.0	mg/kg	2	04/30/19	05/02/19	MET	SW846 6010D [3]	SW846 3050B [5]
Arsenic [a]	13.5	4.9	0.68	mg/kg	2	04/30/19	05/02/19	MET	SW846 6010D [3]	SW846 3050B [5]
Barium	286 J	24	2.3	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Beryllium	0.91	0.24	0.097	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Cadmium	1.0	0.61	0.085	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Calcium	15800 J	610	54	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Chromium	28.4	1.2	0.45	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Cobalt	10.6	6.1	0.34	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Copper [a]	549	6.1	2.0	mg/kg	2	04/30/19	05/02/19	MET	SW846 6010D [3]	SW846 3050B [5]
Iron	34900	120	47	mg/kg	2	04/30/19	05/02/19	MET	SW846 6010D [3]	SW846 3050B [5]
Lead	1130	4.9	1.0	mg/kg	2	04/30/19	05/02/19	MET	SW846 6010D [3]	SW846 3050B [5]
Magnesium	6530 J	610	17	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Manganese	1050	3.7	1.0	mg/kg	2	04/30/19	05/02/19	MET	SW846 6010D [3]	SW846 3050B [5]
Mercury	0.17 J	0.035	0.015	mg/kg	1	04/26/19	04/26/19	LL	SW846 7471B [1]	SW846 7471B [4]
Nickel	35.2	4.9	0.43	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Potassium	2550	1200	39	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Selenium [a]	1.6 U	4.9	1.6	mg/kg	2	04/30/19	05/02/19	MET	SW846 6010D [3]	SW846 3050B [5]
Silver [a]	0.73 J	1.2	0.41	mg/kg	2	04/30/19	05/02/19	MET	SW846 6010D [3]	SW846 3050B [5]
Sodium	229 J	1200	95	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Thallium [a]	1.4 U	2.4	1.4	mg/kg	2	04/30/19	05/02/19	MET	SW846 6010D [3]	SW846 3050B [5]
Vanadium	38.7	6.1	0.23	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Zinc	438 J	6.1	2.8	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA46592
(2) Instrument QC Batch: MA46628
(3) Instrument QC Batch: MA46638
(4) Prep QC Batch: MP14594
(5) Prep QC Batch: MP14636

(a) Elevated detection limit due to dilution required for high interfering element.

RL = Reporting Limit
MDL = Method Detection Limit
U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	PSSTP-22R(0.5-2)		
Lab Sample ID:	JC86916-10	**Date Sampled:**	04/24/19
Matrix:	SO - Soil	**Date Received:**	04/24/19
		Percent Solids:	83.0
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result		RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	8.1	J	0.33	0.16	mg/kg	1	05/02/19 16:57	KI	SW846 9012B/LACHAT
Solids, Percent	83				%	1	05/01/19 16:00	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: PSSTP-22R(4-6)
Lab Sample ID: JC86916-11
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/24/19
Date Received: 04/24/19
Percent Solids: 77.3

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	9590 J	66	11	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Antimony	1.1 J	2.6	0.54	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Arsenic	12.2	2.6	0.37	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Barium	209 J	26	2.5	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Beryllium	0.73	0.26	0.11	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cadmium	0.84	0.66	0.092	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Calcium	13200 J	660	58	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Chromium	18.8	1.3	0.49	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cobalt	4.4 J	6.6	0.37	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Copper	250	3.3	1.1	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Iron	22700	66	25	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Lead	477	2.6	0.54	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Magnesium	6960 J	660	18	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Manganese	575	2.0	0.54	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Mercury	0.82 J	0.037	0.016	mg/kg	1	04/26/19	04/26/19	LL	SW846 7471B [1]	SW846 7471B [3]
Nickel	21.7	5.3	0.46	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Potassium	1080 J	1300	42	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Selenium	0.94 J	2.6	0.86	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Silver	0.22 U	0.66	0.22	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Sodium	281 J	1300	100	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Thallium	0.77 U	1.3	0.77	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Vanadium	25.8	6.6	0.25	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Zinc	335 J	6.6	3.0	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA46592
(2) Instrument QC Batch: MA46628
(3) Prep QC Batch: MP14594
(4) Prep QC Batch: MP14636

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	PSSTP-22R(4-6)		
Lab Sample ID:	JC86916-11	**Date Sampled:**	04/24/19
Matrix:	SO - Soil	**Date Received:**	04/24/19
		Percent Solids:	77.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result		RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	8.3	J	0.29	0.14	mg/kg	1	05/02/19 16:58	KI	SW846 9012B/LACHAT
Solids, Percent	77.3				%	1	05/01/19 16:00	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: S-144 (15-17)
Lab Sample ID: JC86916-12
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/24/19
Date Received: 04/24/19
Percent Solids: 80.4

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	7290 J	62	9.9	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Antimony	0.50 U J	2.5	0.50	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Arsenic	2.6	2.5	0.34	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Barium	23.6 J	25	2.3	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Beryllium	0.28	0.25	0.099	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cadmium	0.086 U	0.62	0.086	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Calcium	245 J	620	54	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Chromium	9.7	1.2	0.46	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cobalt	7.3	6.2	0.34	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Copper	7.2	3.1	1.0	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Iron	12300	62	24	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Lead	10.3	2.5	0.50	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Magnesium	1820 J	620	17	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Manganese	100	1.8	0.50	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Mercury	0.015 U J	0.034	0.015	mg/kg	1	04/26/19	04/26/19	LL	SW846 7471B [1]	SW846 7471B [3]
Nickel	13.0	4.9	0.43	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Potassium	896 J	1200	39	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Selenium	0.80 U	2.5	0.80	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Silver	0.21 U	0.62	0.21	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Sodium	96 U	1200	96	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Thallium	0.71 U	1.2	0.71	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Vanadium	9.6	6.2	0.23	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Zinc	43.0 J	6.2	2.8	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA46592
(2) Instrument QC Batch: MA46628
(3) Prep QC Batch: MP14594
(4) Prep QC Batch: MP14636

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	S-144 (15-17)		
Lab Sample ID:	JC86916-12	**Date Sampled:**	04/24/19
Matrix:	SO - Soil	**Date Received:**	04/24/19
		Percent Solids:	80.4
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	0.14 U	0.28	0.14	mg/kg	1	05/02/19 17:00	KI	SW846 9012B/LACHAT
Solids, Percent	80.4			%	1	05/01/19 16:00	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: S-144 (22-24)
Lab Sample ID: JC86916-13
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/24/19
Date Received: 04/24/19
Percent Solids: 85.9

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	7490 J	60	9.7	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Antimony	0.49 U J	2.4	0.49	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Arsenic	1.9 J	2.4	0.34	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Barium	29.0 J	24	2.3	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Beryllium	0.31	0.24	0.096	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cadmium	0.084 U	0.60	0.084	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Calcium	218 J	600	53	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Chromium	13.6	1.2	0.44	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cobalt	3.1 J	6.0	0.34	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Copper	3.2	3.0	1.0	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Iron	5270	60	23	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Lead	5.4	2.4	0.49	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Magnesium	1090 J	600	16	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Manganese	32.6	1.8	0.49	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Mercury	0.015 U J	0.034	0.015	mg/kg	1	04/26/19	04/26/19	LL	SW846 7471B [1]	SW846 7471B [3]
Nickel	7.3	4.8	0.42	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Potassium	1100 J	1200	38	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Selenium	0.78 U	2.4	0.78	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Silver	0.20 U	0.60	0.20	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Sodium	93 U	1200	93	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Thallium	0.70 U	1.2	0.70	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Vanadium	8.8	6.0	0.23	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Zinc	26.6 J	6.0	2.8	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA46592
(2) Instrument QC Batch: MA46628
(3) Prep QC Batch: MP14594
(4) Prep QC Batch: MP14636

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: S-144 (22-24)
Lab Sample ID: JC86916-13
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/24/19
Date Received: 04/24/19
Percent Solids: 85.9

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	0.12 U	0.24	0.12	mg/kg	1	05/02/19 17:01	KI	SW846 9012B/LACHAT
Solids, Percent	85.9			%	1	05/01/19 16:00	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: S-113 (0-1)
Lab Sample ID: JC86916-14
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/23/19
Date Received: 04/24/19
Percent Solids: 80.2

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	3340	60	9.7	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [1]	SW846 3050B [3]
Antimony	4.9	2.4	0.49	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [1]	SW846 3050B [3]
Arsenic	10.7	2.4	0.34	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [1]	SW846 3050B [3]
Barium	154	24	2.3	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [1]	SW846 3050B [3]
Beryllium	0.24	0.24	0.096	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [1]	SW846 3050B [3]
Cadmium	0.40 J	0.60	0.084	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [1]	SW846 3050B [3]
Calcium	1620	600	53	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [1]	SW846 3050B [3]
Chromium	27.1	1.2	0.44	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [1]	SW846 3050B [3]
Cobalt	2.9 J	6.0	0.34	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [1]	SW846 3050B [3]
Copper	80.2	3.0	1.0	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [1]	SW846 3050B [3]
Iron	19500	60	23	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [1]	SW846 3050B [3]
Lead	460	2.4	0.49	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [1]	SW846 3050B [3]
Magnesium	602	600	16	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [1]	SW846 3050B [3]
Manganese	112	1.8	0.49	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [1]	SW846 3050B [3]
Mercury	0.50	0.037	0.016	mg/kg	1	05/07/19	05/07/19	LL	SW846 7471B [2]	SW846 7471B [4]
Nickel	8.3	4.8	0.42	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [1]	SW846 3050B [3]
Potassium	1010 J	1200	38	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [1]	SW846 3050B [3]
Selenium	2.1 J	2.4	0.78	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [1]	SW846 3050B [3]
Silver	0.20 U	0.60	0.20	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [1]	SW846 3050B [3]
Sodium	244 J	1200	93	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [1]	SW846 3050B [3]
Thallium	0.70 U	1.2	0.70	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [1]	SW846 3050B [3]
Vanadium	13.7	6.0	0.23	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [1]	SW846 3050B [3]
Zinc	98.4	6.0	2.8	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [1]	SW846 3050B [3]

(1) Instrument QC Batch: MA46628
(2) Instrument QC Batch: MA46664
(3) Prep QC Batch: MP14636
(4) Prep QC Batch: MP14859

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	S-113 (0-1)		
Lab Sample ID:	JC86916-14	**Date Sampled:**	04/23/19
Matrix:	SO - Soil	**Date Received:**	04/24/19
		Percent Solids:	80.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result		RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	125	J	2.6	1.3	mg/kg	10	05/03/19 14:51	KI	SW846 9012B/LACHAT
Solids, Percent	80.2				%	1	05/01/19 16:00	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: S-107 (4-5.5)
Lab Sample ID: JC86916-15
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/23/19
Date Received: 04/24/19
Percent Solids: 82.3

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	8430 J	63	10	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Antimony	0.53 J	2.5	0.52	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Arsenic	20.2	2.5	0.35	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Barium	51.5 J	25	2.4	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Beryllium	0.53	0.25	0.10	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cadmium	0.24 J	0.63	0.089	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Calcium	1100 J	630	56	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Chromium	19.0	1.3	0.47	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cobalt	7.4	6.3	0.35	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Copper	40.0	3.2	1.1	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Iron	24500	63	24	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Lead	115	2.5	0.52	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Magnesium	1910 J	630	17	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Manganese	217	1.9	0.52	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Mercury	0.55 J	0.037	0.016	mg/kg	1	04/26/19	04/26/19	LL	SW846 7471B [1]	SW846 7471B [3]
Nickel	15.8	5.1	0.44	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Potassium	957 J	1300	40	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Selenium	0.82 U	2.5	0.82	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Silver	0.22 U	0.63	0.22	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Sodium	98 U	1300	98	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Thallium	0.73 U	1.3	0.73	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Vanadium	20.6	6.3	0.24	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Zinc	94.4 J	6.3	2.9	mg/kg	1	04/30/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA46592
(2) Instrument QC Batch: MA46628
(3) Prep QC Batch: MP14594
(4) Prep QC Batch: MP14636

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	S-107 (4-5.5)		
Lab Sample ID:	JC86916-15	**Date Sampled:**	04/23/19
Matrix:	SO - Soil	**Date Received:**	04/24/19
		Percent Solids:	82.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result		RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	7.5	J	0.26	0.13	mg/kg	1	05/03/19 13:25	KI	SW846 9012B/LACHAT
Solids, Percent	82.3				%	1	05/01/19 16:00	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

ARCADIS Design & Consultancy for natural and built assets

National Grid

Philly Coke

DATA REVIEW

Philadelphia, Pennsylvania

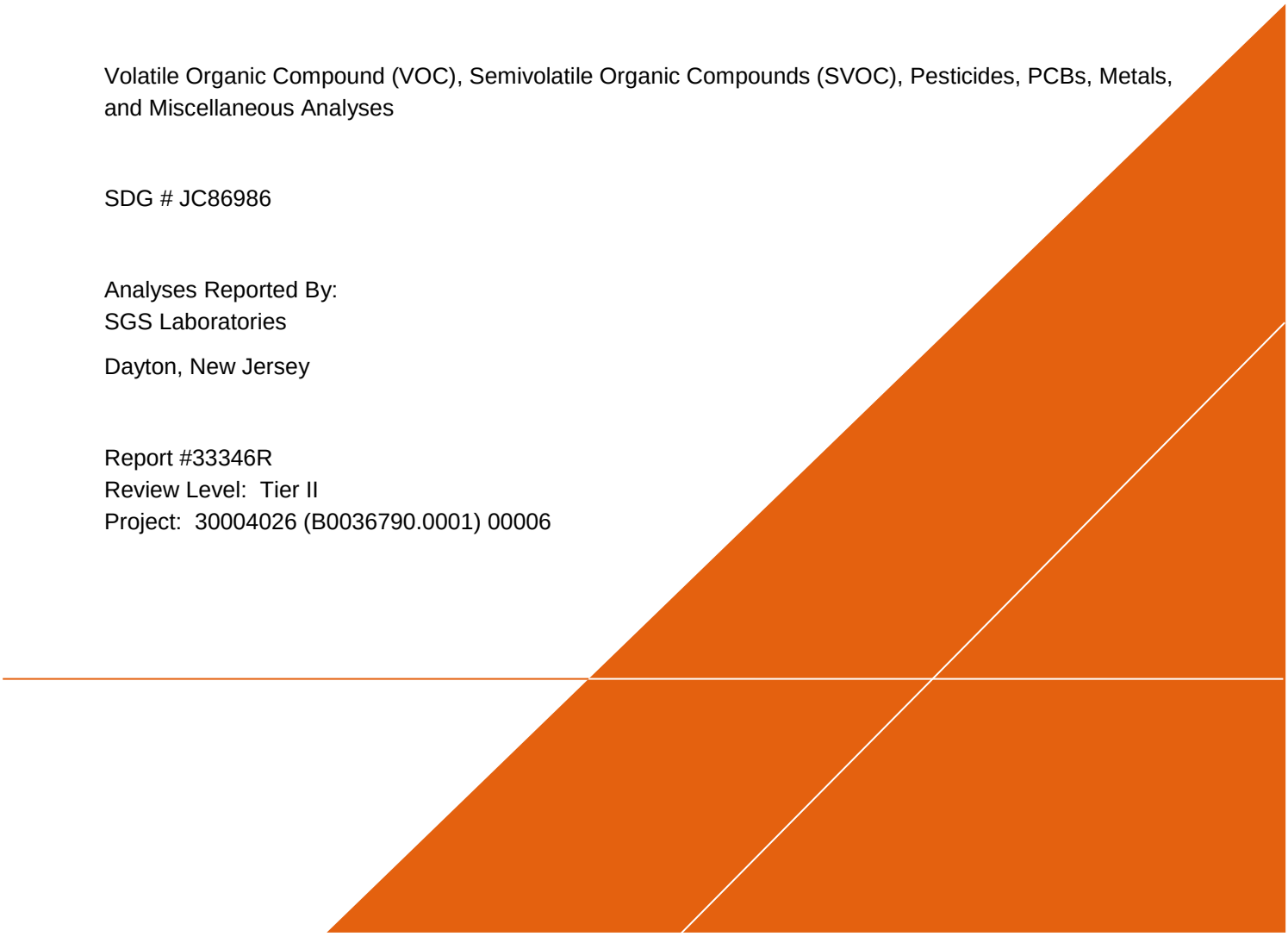
Volatile Organic Compound (VOC), Semivolatile Organic Compounds (SVOC), Pesticides, PCBs, Metals, and Miscellaneous Analyses

SDG # JC86986

Analyses Reported By:
SGS Laboratories

Dayton, New Jersey

Report #33346R
Review Level: Tier II
Project: 30004026 (B0036790.0001) 00006



SUMMARY

This data review report summarizes the review of Sample Delivery Group (SDG) # JC86986 for samples collected in association with the National Grid Philly Coke site in Philadelphia, Pennsylvania. The review was conducted as a Tier II evaluation and included review of laboratory analytical data package completeness. Field documentation was not included in this review. Included with this assessment are the post-validation annotated sample result sheets, and chain of custody (COC). Analyses were performed on the following samples

SDG Number	Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis				
						VOC	SVOC	PEST/ PCB	Metals	MISC
JC86986	S-142(6-6.5) (04-25-2019)	JC86986-1	Soil	4/25/2019						X
	S-142(7-8) (04-25-2019)	JC86986-2	Soil	4/25/2019		X	X		X	X
	S-149(8-10) (04-25-2019)	JC86986-3	Soil	4/25/2019		X	X		X	X
	S-149(18.5-20.5) (04-25-2019)	JC86986-4	Soil	4/25/2019		X	X		X	X
	S-146(14-16) (04-25-2019)	JC86986-5	Soil	4/25/2019		X	X		X	X
	S-146(17-19) (04-25-2019)	JC86986-6	Soil	4/25/2019		X	X		X	X
	S-147(12-14) (04-25-2019)	JC86986-7	Soil	4/25/2019		X	X		X	X
	S-147(18-20) (04-25-2019)	JC86986-8	Soil	4/25/2019		X	X		X	X
	S-148(8-10) (04-25-2019)	JC86986-9	Soil	4/25/2019		X	X		X	X
	S-148(16-18) (04-25-2019)	JC86986-10	Soil	4/25/2019		X	X		X	X
	S-151(0.5-2) (04-25-2019)	JC86986-11	Soil	4/25/2019		X	X		X	X
	S-151(3-5) (04-25-2019)	JC86986-12	Soil	4/25/2019		X	X		X	X
	SO-DUP-0425 (04-25-2019)	JC86986-13	Soil	4/25/2019	S-151(3-5) (04-25-2019)	X	X		X	X

Notes:

1. PEST/PCB = Pesticides and polychlorinated biphenyls
2. SVOC = Semivolatile Organic Compounds
3. VOC = Volatile Organic Compound
4. MISC = Miscellaneous (total cyanide)

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance (QA) or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260C and 8270D. Data were reviewed in accordance with the USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540/R-2017-002, January 2017 and the USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Organic Data Review, EPA540/R-99/008, October 1999 (as applicable).

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers
  - U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
  - B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- Quantitation (Q) Qualifiers
  - E The compound was quantitated above the calibration range.
  - D Concentration is based on a diluted sample analysis.
- Validation Qualifiers
  - J The compound was positively identified; however, the associated numerical value is an estimated concentration only.
  - UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.
  - JN The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.
  - UB Compound considered non-detect at the listed value due to associated blank contamination.
  - N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.
  - R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is

that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times/Preservation

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260C	Water	14 days from collection to analysis (preserved) 7 days from collection to analysis (non-preserved)	Cool to <6 °C; preserved to a pH of less than 2 s.u.
	Soil	48 hours from collection to extraction and 14 days from extraction to analysis	Cool to <6 °C.

Note:
s.u. Standard units

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore, detected sample results were not associated with blank contamination.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. VOC analysis requires that all surrogates associated with the analysis exhibit recoveries within the laboratory-established acceptance limits.

All surrogate recoveries were within control limits.

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

The MS/MSD analysis exhibited recoveries and RPD within control limits.

5. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) Analysis

The LCS/LCSD analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS/LCSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

Sample locations associated with LCS/LCSD analysis exhibiting recoveries outside of the control limits presented in the following table.

Sample Locations	Compound	LCS Recovery	LCSD Recovery
S-149(18.5-20.5) (04-25-2019) S-147(12-14) (04-25-2019) S-147(18-20) (04-25-2019) S-148(16-18) (04-25-2019) S-151(3-5) (04-25-2019) SO-DUP-0425 (04-25-2019)	Dibromochloromethane	>UL	--

Note:
AC = Acceptable

The criteria used to evaluate the LCS/LCSD recoveries are presented in the following table. In the case of an LCS/LCSD deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> the upper control limit (UL)	Non-detect	No Action
	Detect	J
< the lower control limit (LL) but > 10%	Non-detect	UJ
	Detect	J
< 10%	Non-detect	R
	Detect	J

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of three times the RL is applied for soil matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
S-151(3-5) (04-25-2019)/ SO-DUP-0425 (04-25-2019)	Acetone	13.9	27.8	AC

Notes:
AC Acceptable
NC Not compliant

The calculated RPDs between the parent sample and field duplicate were acceptable.

7. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

8. System Performance and Overall Assessment

The laboratory narrative indicates continuing calibration deviations. These deviations are normally not evaluated in a tier II data review. Sample results that had continuing calibration recoveries that exceed the control limit high and were non detect did not require qualification. Sample results where the calibration recoveries were high and the compound was detected or calibration recoveries were low were qualified as estimated (J or UJ).

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: SW-846 8260	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks	X				X
C. Trip blanks	X				X
Laboratory Control Sample (LCS)		X	X		
Laboratory Control Sample Duplicate(LCSD)	X				X
LCS/LCSD Precision (RPD)	X				X
Matrix Spike (MS)		X		X	
Matrix Spike Duplicate(MSD)		X		X	
MS/MSD Precision (RPD)		X		X	
Field/Lab Duplicate (RPD)		X		X	
Surrogate Spike Recoveries		X		X	
Dilution Factor		X		X	
Moisture Content		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

SEMIVOLATILE ORGANIC COMPOUND (SVOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8270D	Water	7 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C
	Soil	14 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore, detected sample results were not associated with blank contamination.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. SVOC analysis requires that two of the three SVOC surrogate compounds within each fraction exhibit recoveries within the laboratory-established acceptance limits.

All surrogate recoveries were within control limits.

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

The MS/MSD analysis exhibited recoveries and RPD within control limits.

5. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) Analysis

The LCS/LCSD analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS/LCSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

The LCS/LCSD exhibited acceptable recoveries and RPD between the MS/MSD recoveries.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of three times the RL is applied for soil matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
S-151(3-5) (04-25-2019)/ SO-DUP-0425 (04-25-2019)	Acenaphthene	18.8 J	40 U	AC
	Anthracene	52.6	40 U	AC
	Benz(a)anthracene	138	18.9 J	AC
	Benzo(a)pyrene	134	40 U	AC
	Benzo(b)fluoranthene	154	18.6 J	NC
	Benzo(g,h,i)perylene	82.7	40 U	AC
	Benzo(k)fluoranthene	54.1	40 U	AC
	Carbazole	24.5 J	80 U	AC
	Chrysene	126	14.9 J	AC
	Fluoranthene	282	27.7 J	NC
	Fluorene	21.1 J	40 U	AC
	Indeno(1,2,3-cd)pyrene	68.7	40 U	AC
	Naphthalene	12.2 J	40 U	AC
	Phenanthrene	202	22.8 J	NC
	Pyrene	248	28.6 J	NC

Notes:
AC Acceptable
NC Not compliant

Several compounds associated with sample locations S-151(3-5) (04-25-2019) and SO-DUP-0425 (04-25-2019) exhibited a field duplicate RPD greater than the control limit. The associated sample results from these sample locations for the analytes outside criteria were qualified as estimated.

7. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

Several samples were diluted to bring target compounds within linear range of the instrument. Sample results that were reported from a secondary dilution were qualified with a “D”, indicating the result is diluted.

8. System Performance and Overall Assessment

The laboratory narrative indicates continuing calibration deviations. These deviations are normally not evaluated in a tier II data review. Sample results that had continuing calibration recoveries that exceed the control limit high and were non detect did not require qualification. Sample results where the calibration recoveries were high and the compound was detected or calibration recoveries were low were qualified as estimated (J or UJ).

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR SVOCs

SVOCs: SW-846 8270	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks	X				X
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R	X				X
LCS/LCSD Precision (RPD)	X				X
Matrix Spike (MS) %R		X		X	
Matrix Spike Duplicate(MSD) %R		X		X	
MS/MSD Precision (RPD)		X		X	
Field/Lab Duplicate (RPD)		X	X		
Surrogate Spike Recoveries		X		X	
Dilution Factor		X		X	
Moisture Content		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

INORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 6010D, 7471A, and 9012B. Data were reviewed in accordance with the USEPA CLP National Functional Guidelines for Inorganic Superfund Methods Data Review, EPA 540/R-2017-001, January 2017; and the USEPA CLP National Functional Guidelines for Inorganic Data Review, EPA 540-R-01-008, July 2002 (as applicable).

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and that it was already subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with the USEPA National Functional Guidelines:

- Concentration (C) Qualifiers
  - U The analyte was analyzed for but not detected. The associated value is the analyte instrument detection limit.
  - J The reported value was obtained from a reading less than the reporting limit (RL), but greater than or equal to the method detection limit (MDL).
- Quantitation (Q) Qualifiers
  - E The reported value is estimated due to the presence of interference.
  - N Spiked sample recovery is not within control limits.
  - * Duplicate analysis is not within control limits.
- Validation Qualifiers
  - J The analyte was positively identified; however, the associated numerical value is an estimated concentration only.
  - UJ The analyte was not detected above the reporting limit. However, the reported limit is approximate and may or may not represent the actual limit of detection.
  - UB Analyte considered non-detect at the listed value due to associated blank contamination.
  - R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

METALS ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 6010D	Water	180 days from collection to analysis	Preserved to a pH of less than 2.
	Soil	180 days from collection to analysis	Cool to <6 °C.
SW-846 7471A	Soil	28 days from collection to analysis	Cool to <6 °C.
SW-846 7470A	Water	28 days from collection to analysis	Cool to <6 °C; preserved to a pH of less than 2.

All samples were analyzed within the specified holding times.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Analytes were detected in the associated QA blanks; however, the associated sample results were greater than the BAL and/or were non-detect. No qualification of the sample results was required.

3. Matrix Spike (MS)/Matrix Spike Duplicate(MSD)/Laboratory Duplicate Analysis

MS/MSD and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

3.1 MS/MSD Analysis

All metal analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the analyte's concentration detected in the parent sample exceeds the MS concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

All analytes associated with MS/MSD recoveries were within control limits with the exception of the following analyte present in the table below.

Sample Location	Analyte	MS Recovery	MSD Recovery
S-142(7-8) (04-25-2019)	Antimony	45.4%	49.5%
	Manganese	83.6%	67.0%
	Mercury	51.7%	70.6%

The criteria used to evaluate MS/MSD recoveries are presented in the following table. In the case of an MS/MSD deviation, the sample results are qualified. The qualifications for all metals are applied to all sample results associated with this SDG.

Control limit	Sample Result	Qualification
MS/MSD percent recovery 30% to 74%	Non-detect	UJ
	Detect	J
MS/MSD percent recovery <30%	Non-detect	R
	Detect	J
MS/MSD percent recovery >125%	Non-detect	No Action
	Detect	J

3.2 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the RL. A control limit of 20% for water matrices and 35% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of one times the RL is applied for water matrices and two times the RL for soil matrices.

MS/MSD analysis was performed in replacement of the laboratory duplicate analysis. The MS/MSD analysis exhibited RPDs within the control limits.

4. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of three times the RL is applied for soil matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
S-151(3-5) (04-25-2019)/ SO-DUP-0425 (04-25-2019)	Aluminum	16100	18500	13.8 %
	Arsenic	2.9	2.4 J	AC
	Barium	151	153	1.3 %

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
	Beryllium	0.84	0.91	AC
	Calcium	7430	1700	125.5 %
	Chromium	33.2	33.7	1.4 %
	Cobalt	12.2	13.2	7.8 %
	Copper	46.5	54.2	15.2 %
	Iron	26300	30400	14.4 %
	Lead	103	36.8	94.7 %
	Magnesium	8400	9700	14.3 %
	Manganese	382	469	20.4 %
	Nickel	25.1	32.4	25.3 %
	Potassium	7750	10300	28.2 %
	Sodium	173 J	190 J	AC
	Vanadium	36.7	42.9	15.5 %
	Zinc	106	124	15.6 %
	Mercury	0.31	0.054	NC

Notes:
AC Acceptable
NC Not compliant

Mercury, calcium and lead associated with samples locations S-151(3-5) (04-25-2019) and SO-DUP-0425 (04-25-2019) exhibited a field duplicate RPD greater than the control limit. The associated sample results from all sample locations for the listed analytes were qualified as estimated.

5. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The analytes associated with the LCS analysis must exhibit a percent recovery between the control limits of 80% and 120%.

The LCS analysis exhibited recoveries within the control limits.

6. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR METAL

METALS; SW846 6010D/7471A	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Inductively Coupled Plasma-Atomic Emission Spectrometry (ICP-AES)					
Tier II Validation					
Holding Times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method Blanks		X		X	
B. Equipment/Field Blanks	X				X
Laboratory Control Sample (LCS)		X		X	
Matrix Spike (MS) %R		X	X		
Matrix Spike Duplicate (MSD) %R		X	X		
MS/MSD Precision (RPD)		X		X	
Field/Lab Duplicate (RPD)		X	X		
Total vs. Dissolved	X				X

Notes:

%R Percent recovery

RPD Relative percent difference

GENERAL CHEMISTRY ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
Cyanide by SW-846 9012	Water	14 days from collection to analysis	Cool to <6 °C; preserved to a pH of greater than 12.
	Soil		Cool to <6 °C.

All samples were analyzed within the specified holding times.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Analytes were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Matrix Spike/Matrix Spike Duplicate (MS/MSD)/Laboratory Duplicate Analysis

MS/MSD and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

3.1 MS/MSD Analysis

All analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the analyte's concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

All analytes associated with MS/MSD recoveries were within control limits with the exception of the following analyte present in the table below.

Sample Location	Analyte	MS Recovery
S-142(7-8) (04-25-2019)	Cyanide	61.7%

The criteria used to evaluate MS/MSD recoveries are presented in the following table. In the case of an MS/MSD deviation, the sample results are qualified. The qualifications are applied to all sample results associated with this SDG.

Control limit	Sample Result	Qualification
MS/MSD percent recovery 30% to 74%	Non-detect	UJ
	Detect	J
MS/MSD percent recovery <30%	Non-detect	R
	Detect	J
MS/MSD percent recovery >125%	Non-detect	No Action
	Detect	J

3.2 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the RL. A control limit of 20% for water matrices and 35% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of one times the RL is applied for water matrices and two times the RL for soil matrices.

The laboratory duplicate analysis exhibited RPD within control limits.

4. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The analytes associated with the LCS analysis must exhibit a percent recovery between the control limits of 80% and 120%.

The LCS analysis exhibited recoveries within the control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of three times the RL is applied for soil matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
S-151(3-5) (04-25-2019)/ SO-DUP-0425 (04-25-2019)	Cyanide	0.30 U	0.20 J	AC

Notes:
AC Acceptable

The calculated RPDs between the parent sample and field duplicate were acceptable.

6. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR GENERAL CHEMISTRY

General Chemistry: EPA 9012	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Miscellaneous Instrumentation					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks					X
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R					X
LCS/LCSD Precision (RPD)					X
Matrix Spike (MS) %R		X	X		
Matrix Spike Duplicate(MSD) %R	X				X
MS/MSD Precision (RPD)	X				X
Field/Lab Duplicate (RPD)		X		X	
Dilution Factor		X		X	
Moisture Content					X

Notes:
%R - percent recovery
RPD - relative percent difference

VALIDATION PERFORMED BY: Andrew Korycinski

SIGNATURE:

DATE: July 21, 2019

PEER REVIEW: Dennis Capria

DATE: July 23, 2019

CHAIN OF CUSTODY
SAMPLE ANALYSIS DATA SHEETS

SO
SLL

CHAIN OF CUSTODY

SGS North America Inc. - Dayton
2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200 FAX: 732-329-3499/3480
www.sgs.com/ehsusa

FED-EX Tracking #:
SGS Quote #:
Bottle Order Control #: VR-042219-41
SGS Job #: JC86986

Client / Reporting Information

Company Name: Arcadis - US
Street Address: 110 W Fayette St #300
City: Syracuse State: NY Zip: 13202
Project Contact: Carey Lawrence E-mail: Carey.Lawrence@arcadis-us.com
Phone #: 315-335-9544
Sampler(s) Name(s): Evan Green Phone #: (603) 305-2647

Project Information

Project Name: Philadelphia Coke
Street:
City: Philadelphia State: PA
Project #: B0036790.0001
Client Purchase Order #: B0036790.0000
Project Manager: John Brussel

Billing Information (if different from Report to)

Company Name: Same
Street Address:
City: State: Zip:
Attention:

Requested Analysis

SGS Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Grab (G) Comp (C)	Matrix	# of bottles	Number of preserved Bottles: HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	Methanol	VOC 8260 TCL 20	CN	ABN 8270 TCL 20	MTAL	LAB USE ONLY
1	S-142 (6-6.5)		4/25/19	1030	EG	G	SO	1					1	1					X			
	S-142 (7-8)			1040	EG			5					2	2			1	X	X	X	X	D46
2	S-142 (7-8) MS			1040	EG			5					2	2			1	X	X	X	X	E8572
	S-142 (7-8) MSD			1040	EG			5					2	2			1	X	X	X	X	14N5
3	S-149 (8-10)			1330	EG			5					2	2			1	X	X	X	X	40120
4	S-149 (18.5-20.5)			1305	EG			5					2	2			1	X	X	X	X	
5	S-146 (14-16)			0845	GB			5					2	2			1	X	X	X	X	
6	S-146 (17-19)			0900	GB			5					2	2			1	X	X	X	X	
7	S-147 (12-14)			1010	GB			5					2	2			1	X	X	X	X	
8	S-147 (18-20)			1030	GB			5					2	2			1	X	X	X	X	
9	S-146 (8-10)			1120	GB			5					2	2			1	X	X	X	X	
10	S-148 (16-18)		↓	1135	GB	↓	↓	5					2	2			1	X	X	X	X	

Turn Around Time (Business Days)

Approved By (SGS PM): / Date:

- [X] 10 Business Days
- [ ] 5 Business Days
- [ ] 3 Business Days*
- [ ] 2 Business Days*
- [ ] 1 Business Day*
- [ ] Other

All data available via Lablink

* Approval needed for 1-3 Business Day TAT

Deliverable

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] NJ Reduced (Level 3)
- [X] Full Tier I (Level 4)
- [ ] Commercial "C"
- [ ] NJ DKQP
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] MA MCP Criteria
- [ ] CT RCP Criteria
- [ ] State Forms
- [ ] EDD Format
- [ ] DOD-QSM5

Commercial "A" = Results only; Commercial "B" = Results + QC Summary
Commercial "C" = Results + QC Summary + Partial Raw data

Comments / Special Instructions

INITIAL ASESSMENT 2A/2P
LABEL VERIFICATION

http://www.sgs.com/en/terms-and-conditions

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by:	Date / Time:	Received By:	Relinquished by:	Date / Time:	Received By:
1	4/25/19 1630	1	2	4/25/19 1910	2
3		3	4		4
5		5	Custody Seal #	Preserved where applicable	On Ice: 2.9 2.0 Cooler Temp. °C

☐ intact ☐ Not intact ☐ Absent ☐ Therm. ID:

EHSA-QAC-0023-02-FORM-Dayton - Standard COC.xlsx

5.1 5

CHAIN OF CUSTODY

SGS North America Inc. - Dayton
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www.sgs.com/ehsusa

Page 2 of 2

FED-EX Tracking #: | Bottle Order Control #:
SGS Quote #: | SGS Job #: JC86986

Client / Reporting Information

Company Name: Arcadis - US
Street Address: 110 W Fayette St #300
City: Syracuse (Rochester) State: NY (PA) Zip: 13202
Project Contact: Greg Hanly E-mail: Greg.Hanly.Lawrence@Arcadis.com
Phone #: (315)335-9594
Sampler(s) Name(s): Evan Gluck Phone #: (603)305-2692

Project Information

Project Name: Philadelphia Coke
Street: 4501 Richmond St
City: Philadelphia State: PA
Project #: B0036740.0001
Client Purchase Order #: B0036740.0001
Project Manager: John Brosky

Billing Information (if different from Report to)

Company Name: Same
Street Address:
City: State: Zip:
Attention:

Requested Analysis

SGS Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Grab (G) Comp (C)	Matrix	# of bottles	Number of preserved Bottles: HCl	NaOH	HNO_3	H_2SO_4	NONE	DI Water	MEOH	ENCORE	Methanol	VS8260 TCL 20	CN	AB8270 TCL 20	MTAL
11	S-151 (0.5-2)		4/25/19	1400	GB	G	SO	5					2	2			1	X	X	X	X
12	S-151 (3-5)			1415	GB			5					2	2			1	X	X	X	X
13	SO-DUP-0425			--	GD			5					2	2			1	X	X	X	X

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL - Sludge; SED-Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB - Field Blank; EB-Equipment Blank; RB - Rinse Blank; TB - Trip Blank

LAB USE ONLY

Turn Around Time (Business Days)

Approved By (SGS PM): / Date:

- [X] 10 Business Days
- [ ] 5 Business Days
- [ ] 3 Business Days*
- [ ] 2 Business Days*
- [ ] 1 Business Day*
- [ ] Other

All data available via Lablink

* Approval needed for 1-3 Business Day TAT

Deliverable

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] NJ Reduced (Level 3)
- [X] Full Tier I (Level 4)
- [ ] Commercial "C"
- [ ] NJ DKQP
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] MA MCP Criteria
- [ ] CT RCP Criteria
- [ ] State Forms
- [ ] EDD Format
- [ ] DOD-QSM5

Commercial "A" = Results only; Commercial "B" = Results + QC Summary
Commercial "C" = Results + QC Summary + Partial Raw data

Comments / Special Instructions

http://www.sgs.com/en/terms-and-conditions

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by:	Date / Time:	Received By:
1		4/25/19 1630	1
2		4/25/19 1910	2
3			3
4			4
5			5

Custody Seal #: ☐ Intact ☐ Not intact | Preserved where applicable: ☐ Absent ☐ Therm. ID: | On Ice ☐ | Cooler Temp. °C: 2.9 2.2

EHSA-QAC-0023-02-FORM-Dayton - Standard COC.xlsx

Report of Analysis

Client Sample ID:	S-142(6-6.5)		
Lab Sample ID:	JC86986-1	**Date Sampled:**	04/25/19
Matrix:	SO - Soil	**Date Received:**	04/25/19
		Percent Solids:	18.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	1.3 J	1.2	0.59	mg/kg	1	05/03/19 13:26	KI	SW846 9012B/LACHAT
Solids, Percent	18.3			%	1	05/01/19 16:00	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

SGS North America Inc.

Report of Analysis

Client Sample ID:	S-142(7-8)		
Lab Sample ID:	JC86986-2	**Date Sampled:**	04/25/19
Matrix:	SO - Soil	**Date Received:**	04/25/19
Method:	SW846 8260C	**Percent Solids:**	53.6
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1C164399.D	1	05/09/19 12:37	PS	n/a	n/a	V1C7215
Run #2							

	Initial Weight
Run #1	4.1 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	129	23	11	ug/kg	
71-43-2	Benzene	ND	1.1	0.86	ug/kg	
74-97-5	Bromochloromethane	ND	11	0.98	ug/kg	
75-27-4	Bromodichloromethane	ND	4.6	1.0	ug/kg	
75-25-2	Bromoform	ND	11	0.92	ug/kg	
74-83-9	Bromomethane	ND	11	2.3	ug/kg	
78-93-3	2-Butanone (MEK)	35.5	23	8.5	ug/kg	
75-15-0	Carbon disulfide	ND	4.6	2.1	ug/kg	
56-23-5	Carbon tetrachloride	ND	4.6	1.3	ug/kg	
108-90-7	Chlorobenzene	ND	4.6	0.81	ug/kg	
75-00-3	Chloroethane	ND	11	1.6	ug/kg	
67-66-3	Chloroform	ND	4.6	0.85	ug/kg	
74-87-3	Chloromethane [a]	ND	11	4.5	ug/kg	UJ
110-82-7	Cyclohexane	ND	4.6	0.92	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	4.6	1.9	ug/kg	
124-48-1	Dibromochloromethane	ND	4.6	0.77	ug/kg	
106-93-4	1,2-Dibromoethane	ND	2.3	0.74	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	2.3	0.69	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	2.3	0.82	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	2.3	0.78	ug/kg	
75-71-8	Dichlorodifluoromethane [a]	ND	11	1.4	ug/kg	UJ
75-34-3	1,1-Dichloroethane	ND	2.3	0.88	ug/kg	
107-06-2	1,2-Dichloroethane	ND	2.3	1.1	ug/kg	
75-35-4	1,1-Dichloroethene	ND	2.3	1.5	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	2.3	2.2	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	2.3	1.5	ug/kg	
78-87-5	1,2-Dichloropropane	ND	4.6	0.93	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	4.6	0.80	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	4.6	0.74	ug/kg	
100-41-4	Ethylbenzene	ND	2.3	1.3	ug/kg	
76-13-1	Freon 113	ND	11	1.7	ug/kg	
591-78-6	2-Hexanone	ND	11	2.9	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-142(7-8)		
Lab Sample ID:	JC86986-2	**Date Sampled:**	04/25/19
Matrix:	SO - Soil	**Date Received:**	04/25/19
Method:	SW846 8260C	**Percent Solids:**	53.6
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	4.6	1.6	ug/kg	
79-20-9	Methyl Acetate	ND	11	3.2	ug/kg	
108-87-2	Methylcyclohexane	ND	4.6	1.6	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	2.3	0.80	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	11	3.5	ug/kg	
75-09-2	Methylene chloride	6.8	11	5.7	ug/kg	J
100-42-5	Styrene	ND	4.6	1.3	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	4.6	0.89	ug/kg	
127-18-4	Tetrachloroethene	ND	4.6	1.1	ug/kg	
108-88-3	Toluene	ND	2.3	0.86	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	11	2.3	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	11	2.3	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	4.6	0.97	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	4.6	0.78	ug/kg	
79-01-6	Trichloroethene	ND	2.3	1.7	ug/kg	
75-69-4	Trichlorofluoromethane	ND	11	1.5	ug/kg	
75-01-4	Vinyl chloride	ND	4.6	1.1	ug/kg	
	m,p-Xylene	ND	2.3	1.7	ug/kg	
95-47-6	o-Xylene	ND	2.3	1.3	ug/kg	
1330-20-7	Xylene (total)	ND	2.3	1.3	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	105%		75-127%
17060-07-0	1,2-Dichloroethane-D4	95%		75-130%
2037-26-5	Toluene-D8	100%		80-120%
460-00-4	4-Bromofluorobenzene	99%		79-127%

(a) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	S-142(7-8)		
Lab Sample ID:	JC86986-2	**Date Sampled:**	04/25/19
Matrix:	SO - Soil	**Date Received:**	04/25/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	53.6
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6P481566.D	1	05/02/19 16:39	AR	05/01/19 10:00	OP20081	E6P2579
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	1.0 ml
Run #2		

ABN TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	120	31	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	310	38	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	310	53	ug/kg	
105-67-9	2,4-Dimethylphenol [a]	ND	310	110	ug/kg	
51-28-5	2,4-Dinitrophenol [b]	ND	310	230	ug/kg	UJ
534-52-1	4,6-Dinitro-o-cresol	ND	310	67	ug/kg	
95-48-7	2-Methylphenol	ND	120	40	ug/kg	
	3&4-Methylphenol	349	120	51	ug/kg	
88-75-5	2-Nitrophenol	ND	310	41	ug/kg	
100-02-7	4-Nitrophenol [a]	ND	620	170	ug/kg	
87-86-5	Pentachlorophenol	ND	250	58	ug/kg	
108-95-2	Phenol	ND	120	32	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	310	47	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	310	37	ug/kg	
83-32-9	Acenaphthene	45.3	62	21	ug/kg	J
208-96-8	Acenaphthylene	63.4	62	32	ug/kg	
120-12-7	Anthracene	70.2	62	38	ug/kg	
56-55-3	Benzo(a)anthracene	170	62	18	ug/kg	
50-32-8	Benzo(a)pyrene	200	62	28	ug/kg	
205-99-2	Benzo(b)fluoranthene	207	62	27	ug/kg	
191-24-2	Benzo(g,h,i)perylene	122	62	31	ug/kg	
207-08-9	Benzo(k)fluoranthene	79.8	62	29	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	120	24	ug/kg	
85-68-7	Butyl benzyl phthalate [a]	ND	120	15	ug/kg	
91-58-7	2-Chloronaphthalene	ND	120	15	ug/kg	
106-47-8	4-Chloroaniline	ND	310	22	ug/kg	
86-74-8	Carbazole	18.4	120	9.0	ug/kg	J
218-01-9	Chrysene	181	62	20	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	120	13	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	120	27	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	120	22	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	120	20	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-142(7-8)		
Lab Sample ID:	JC86986-2	**Date Sampled:**	04/25/19
Matrix:	SO - Soil	**Date Received:**	04/25/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	53.6
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
95-50-1	1,2-Dichlorobenzene	ND	120	18	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	120	13	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	120	15	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	62	19	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	62	31	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	120	52	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	28.1	62	27	ug/kg	J
132-64-9	Dibenzofuran	29.2	120	25	ug/kg	J
84-74-2	Di-n-butyl phthalate	ND	120	10	ug/kg	
117-84-0	Di-n-octyl phthalate [a]	ND	120	15	ug/kg	
84-66-2	Diethyl phthalate	ND	120	13	ug/kg	
131-11-3	Dimethyl phthalate	ND	120	11	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate [a]	ND	120	15	ug/kg	
206-44-0	Fluoranthene	284	62	28	ug/kg	
86-73-7	Fluorene	54.4	62	29	ug/kg	J
118-74-1	Hexachlorobenzene	ND	120	16	ug/kg	
87-68-3	Hexachlorobutadiene	ND	62	25	ug/kg	
77-47-4	Hexachlorocyclopentadiene [b]	ND	620	25	ug/kg	UJ
67-72-1	Hexachloroethane	ND	310	31	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	95.6	62	29	ug/kg	
78-59-1	Isophorone	ND	120	13	ug/kg	
91-57-6	2-Methylnaphthalene	92.5	62	14	ug/kg	
88-74-4	2-Nitroaniline	ND	310	15	ug/kg	
99-09-2	3-Nitroaniline	ND	310	16	ug/kg	
100-01-6	4-Nitroaniline	ND	310	16	ug/kg	
91-20-3	Naphthalene	406	62	18	ug/kg	
98-95-3	Nitrobenzene	ND	120	24	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	120	18	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	310	23	ug/kg	
85-01-8	Phenanthrene	210	62	21	ug/kg	
129-00-0	Pyrene	336	62	20	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	120	16	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	65%		23-115%
4165-62-2	Phenol-d5	70%		27-114%
118-79-6	2,4,6-Tribromophenol	63%		19-152%
4165-60-0	Nitrobenzene-d5	75%		26-134%
321-60-8	2-Fluorobiphenyl	72%		39-124%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-142(7-8)		
Lab Sample ID:	JC86986-2	**Date Sampled:**	04/25/19
Matrix:	SO - Soil	**Date Received:**	04/25/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	53.6
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1718-51-0	Terphenyl-d14	73%		36-134%

(a) Associated CCV outside of control limits high, sample was ND.
(b) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-142(7-8)
Lab Sample ID: JC86986-2
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/25/19
Date Received: 04/25/19
Percent Solids: 53.6

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	20500	97	16	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [3]
Antimony	1.6 J	3.9	0.80	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [3]
Arsenic	48.7	3.9	0.54	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [3]
Barium	203	39	3.7	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [3]
Beryllium	1.5	0.39	0.16	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [3]
Cadmium	2.6	0.97	0.14	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [3]
Calcium	4500 J	970	86	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [3]
Chromium	176	1.9	0.72	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [3]
Cobalt	21.5	9.7	0.54	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [3]
Copper	148	4.9	1.6	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [3]
Iron	33300	97	37	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [3]
Lead	279 J	3.9	0.80	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [3]
Magnesium	5090	970	27	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [3]
Manganese	967 J	2.9	0.80	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [3]
Mercury	1.9 J	0.12	0.051	mg/kg	2	04/30/19	04/30/19	EAL	SW846 7471B [1]	SW846 7471B [4]
Nickel	38.4	7.8	0.68	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [3]
Potassium	2280	1900	62	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [3]
Selenium	1.6 J	3.9	1.3	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [3]
Silver	2.1	0.97	0.33	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [3]
Sodium	189 J	1900	150	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [3]
Thallium	1.1 U	1.9	1.1	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [3]
Vanadium	41.3	9.7	0.37	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [3]
Zinc	751	9.7	4.5	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [3]

(1) Instrument QC Batch: MA46605
(2) Instrument QC Batch: MA46623
(3) Prep QC Batch: MP14617
(4) Prep QC Batch: MP14631

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	S-142(7-8)		
Lab Sample ID:	JC86986-2	**Date Sampled:**	04/25/19
Matrix:	SO - Soil	**Date Received:**	04/25/19
		Percent Solids:	53.6
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result		RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	1.6	J	0.51	0.25	mg/kg	1	05/03/19 13:28	KI	SW846 9012B/LACHAT
Solids, Percent	53.6				%	1	05/01/19 16:00	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

SGS North America Inc.

Report of Analysis

Client Sample ID:	S-149(8-10)		
Lab Sample ID:	JC86986-3	**Date Sampled:**	04/25/19
Matrix:	SO - Soil	**Date Received:**	04/25/19
Method:	SW846 8260C	**Percent Solids:**	77.5
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	D264378.D	1	05/08/19 17:49	TDN	n/a	n/a	VD10654
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	3.4 g	10.0 ml	20.0 ul
Run #2			

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone [b]	ND	10000	5100	ug/kg	
71-43-2	Benzene	2310	510	390	ug/kg	
74-97-5	Bromochloromethane	ND	5100	440	ug/kg	
75-27-4	Bromodichloromethane	ND	2000	450	ug/kg	
75-25-2	Bromoform	ND	5100	410	ug/kg	
74-83-9	Bromomethane	ND	5100	1000	ug/kg	
78-93-3	2-Butanone (MEK)	ND	10000	3800	ug/kg	
75-15-0	Carbon disulfide	5320	2000	950	ug/kg	
56-23-5	Carbon tetrachloride	ND	2000	560	ug/kg	
108-90-7	Chlorobenzene	ND	2000	360	ug/kg	
75-00-3	Chloroethane	ND	5100	700	ug/kg	
67-66-3	Chloroform	ND	2000	380	ug/kg	
74-87-3	Chloromethane	ND	5100	2000	ug/kg	
110-82-7	Cyclohexane	ND	2000	410	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2000	850	ug/kg	
124-48-1	Dibromochloromethane	ND	2000	350	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1000	330	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1000	310	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1000	370	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1000	350	ug/kg	
75-71-8	Dichlorodifluoromethane [c]	ND	5100	650	ug/kg	UJ
75-34-3	1,1-Dichloroethane	ND	1000	390	ug/kg	
107-06-2	1,2-Dichloroethane [c]	ND	1000	480	ug/kg	UJ
75-35-4	1,1-Dichloroethene	ND	1000	670	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1000	980	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1000	680	ug/kg	
78-87-5	1,2-Dichloropropane	ND	2000	420	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	2000	360	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2000	330	ug/kg	
100-41-4	Ethylbenzene	1510	1000	560	ug/kg	
76-13-1	Freon 113	ND	5100	780	ug/kg	
591-78-6	2-Hexanone	ND	5100	1300	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-149(8-10)		
Lab Sample ID:	JC86986-3	**Date Sampled:**	04/25/19
Matrix:	SO - Soil	**Date Received:**	04/25/19
Method:	SW846 8260C	**Percent Solids:**	77.5
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	2000	710	ug/kg	
79-20-9	Methyl Acetate	ND	5100	1400	ug/kg	
108-87-2	Methylcyclohexane	ND	2000	720	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1000	360	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5100	1600	ug/kg	
75-09-2	Methylene chloride	ND	5100	2600	ug/kg	
100-42-5	Styrene	ND	2000	590	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2000	400	ug/kg	
127-18-4	Tetrachloroethene	ND	2000	470	ug/kg	
108-88-3	Toluene	1800	1000	380	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	5100	1000	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	5100	1000	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	2000	440	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2000	350	ug/kg	
79-01-6	Trichloroethene	ND	1000	780	ug/kg	
75-69-4	Trichlorofluoromethane	ND	5100	700	ug/kg	
75-01-4	Vinyl chloride	ND	2000	480	ug/kg	
	m,p-Xylene	2880	1000	760	ug/kg	
95-47-6	o-Xylene	1380	1000	600	ug/kg	
1330-20-7	Xylene (total)	4260	1000	600	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	99%		75-127%
17060-07-0	1,2-Dichloroethane-D4	90%		75-130%
2037-26-5	Toluene-D8	99%		80-120%
460-00-4	4-Bromofluorobenzene	97%		79-127%

(a) Diluted due to high concentration of non-target compound.
(b) Associated CCV outside of control limits high, sample was ND.
(c) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	S-149(8-10)		
Lab Sample ID:	JC86986-3	**Date Sampled:**	04/25/19
Matrix:	SO - Soil	**Date Received:**	04/25/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	77.5
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	6P481575.D	2	05/02/19 20:23	AR	05/01/19 10:00	OP20081	E6P2579
Run #2	6P481621.D	20	05/03/19 17:19	AR	05/01/19 10:00	OP20081	E6P2581
Run #3	6P481617.D	200	05/03/19 15:42	AR	05/01/19 10:00	OP20081	E6P2581

	Initial Weight	Final Volume
Run #1	30.1 g	1.0 ml
Run #2	30.1 g	1.0 ml
Run #3	30.1 g	1.0 ml

ABN TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	170	42	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	430	53	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	430	73	ug/kg	
105-67-9	2,4-Dimethylphenol [b]	814	430	150	ug/kg	J
51-28-5	2,4-Dinitrophenol [c]	ND	430	320	ug/kg	UJ
534-52-1	4,6-Dinitro-o-cresol	ND	430	92	ug/kg	
95-48-7	2-Methylphenol	604	170	55	ug/kg	
	3&4-Methylphenol	1760	170	70	ug/kg	
88-75-5	2-Nitrophenol	ND	430	57	ug/kg	
100-02-7	4-Nitrophenol [d]	ND	860	230	ug/kg	
87-86-5	Pentachlorophenol	ND	340	81	ug/kg	
108-95-2	Phenol	795	170	45	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	430	64	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	430	51	ug/kg	
83-32-9	Acenaphthene	14400 [e]	860	300	ug/kg	D
208-96-8	Acenaphthylene	68500 [e]	860	440	ug/kg	
120-12-7	Anthracene	163000 [f]	8600	5300	ug/kg	
56-55-3	Benzo(a)anthracene	164000 [f]	8600	2400	ug/kg	
50-32-8	Benzo(a)pyrene	140000 [f]	8600	3900	ug/kg	
205-99-2	Benzo(b)fluoranthene	181000 [f]	8600	3800	ug/kg	
191-24-2	Benzo(g,h,i)perylene	79800 [f]	8600	4300	ug/kg	
207-08-9	Benzo(k)fluoranthene	55400 [f]	8600	4000	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	170	33	ug/kg	
85-68-7	Butyl benzyl phthalate [d]	ND	170	21	ug/kg	
91-58-7	2-Chloronaphthalene	ND	170	20	ug/kg	
106-47-8	4-Chloroaniline	ND	430	31	ug/kg	
86-74-8	Carbazole	83500 [e]	1700	120	ug/kg	D
218-01-9	Chrysene	152000 [f]	8600	2700	ug/kg	D
111-91-1	bis(2-Chloroethoxy)methane	ND	170	18	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	170	37	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-149(8-10)
Lab Sample ID: JC86986-3
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/25/19
Date Received: 04/25/19
Percent Solids: 77.5

ABN TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	170	31	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	170	28	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	170	25	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	170	18	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	170	21	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	86	27	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	86	43	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	170	72	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	27900 [e]	860	380	ug/kg	D
132-64-9	Dibenzofuran	101000 [f]	17000	3500	ug/kg	D
84-74-2	Di-n-butyl phthalate	ND	170	14	ug/kg	
117-84-0	Di-n-octyl phthalate [d]	ND	170	21	ug/kg	
84-66-2	Diethyl phthalate	ND	170	18	ug/kg	
131-11-3	Dimethyl phthalate	ND	170	15	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate [d]	ND	170	20	ug/kg	
206-44-0	Fluoranthene	519000 [f]	8600	3800	ug/kg	D
86-73-7	Fluorene	168000 [f]	8600	3900	ug/kg	D
118-74-1	Hexachlorobenzene	ND	170	22	ug/kg	
87-68-3	Hexachlorobutadiene	ND	86	34	ug/kg	
77-47-4	Hexachlorocyclopentadiene [c]	ND	860	34	ug/kg	UJ
67-72-1	Hexachloroethane	ND	430	42	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	68800 [f]	8600	4000	ug/kg	
78-59-1	Isophorone	ND	170	18	ug/kg	
91-57-6	2-Methylnaphthalene	37300 [e]	860	190	ug/kg	D
88-74-4	2-Nitroaniline	ND	430	20	ug/kg	
99-09-2	3-Nitroaniline	ND	430	21	ug/kg	
100-01-6	4-Nitroaniline	ND	430	22	ug/kg	
91-20-3	Naphthalene	228000 [f]	8600	2400	ug/kg	D
98-95-3	Nitrobenzene	ND	170	33	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	170	25	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	430	31	ug/kg	
85-01-8	Phenanthrene	623000 [f]	8600	2900	ug/kg	D
129-00-0	Pyrene	381000 [f]	8600	2700	ug/kg	D
120-82-1	1,2,4-Trichlorobenzene	ND	170	22	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Run# 3	Limits
367-12-4	2-Fluorophenol	60%	63%	55%	23-115%
4165-62-2	Phenol-d5	62%	68%	59%	27-114%
118-79-6	2,4,6-Tribromophenol	80%	53%	0% [g]	19-152%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-149(8-10)		
Lab Sample ID:	JC86986-3	**Date Sampled:**	04/25/19
Matrix:	SO - Soil	**Date Received:**	04/25/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	77.5
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Run# 3	Limits
4165-60-0	Nitrobenzene-d5	65%	77%	60%	26-134%
321-60-8	2-Fluorobiphenyl	50%	67%	54%	39-124%
1718-51-0	Terphenyl-d14	54%	47%	69%	36-134%

(a) Dilution required due to viscosity of the extract matrix.
(b) Associated CCV outside of control limits high.
(c) Associated CCV outside of control limits low.
(d) Associated CCV outside of control limits high, sample was ND.
(e) Result is from Run# 2
(f) Result is from Run# 3
(g) Outside control limits due to dilution.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-149(8-10)
Lab Sample ID: JC86986-3
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/25/19
Date Received: 04/25/19
Percent Solids: 77.5

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	6350	63	10	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [3]
Antimony	1.9 J	2.5	0.52	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [3]
Arsenic	13.8	2.5	0.35	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [3]
Barium	82.6	25	2.4	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [3]
Beryllium	0.91	0.25	0.10	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [3]
Cadmium	1.4	0.63	0.089	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [3]
Calcium	897 J	630	56	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [3]
Chromium	53.3	1.3	0.47	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [3]
Cobalt	5.3 J	6.3	0.35	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [3]
Copper	108	3.2	1.1	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [3]
Iron	12700	63	24	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [3]
Lead	154 J	2.5	0.52	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [3]
Magnesium	1500	630	17	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [3]
Manganese	60.6 J	1.9	0.52	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [3]
Mercury	1.8 J	0.084	0.037	mg/kg	2	04/30/19	04/30/19	EAL	SW846 7471B [1]	SW846 7471B [4]
Nickel	31.6	5.1	0.44	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [3]
Potassium	476 J	1300	40	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [3]
Selenium	2.0 J	2.5	0.82	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [3]
Silver	0.63	0.63	0.22	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [3]
Sodium	98 U	1300	98	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [3]
Thallium	0.73 U	1.3	0.73	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [3]
Vanadium	30.0	6.3	0.24	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [3]
Zinc	475	6.3	2.9	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [3]

(1) Instrument QC Batch: MA46605
(2) Instrument QC Batch: MA46623
(3) Prep QC Batch: MP14617
(4) Prep QC Batch: MP14631

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: S-149(8-10)
Lab Sample ID: JC86986-3
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/25/19
Date Received: 04/25/19
Percent Solids: 77.5

General Chemistry

Analyte	Result		RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	12.6	J	0.39	0.19	mg/kg	1	05/03/19 13:29	KI	SW846 9012B/LACHAT
Solids, Percent	77.5				%	1	05/01/19 16:00	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

SGS North America Inc.

Report of Analysis

Client Sample ID:	S-149(18.5-20.5)		
Lab Sample ID:	JC86986-4	**Date Sampled:**	04/25/19
Matrix:	SO - Soil	**Date Received:**	04/25/19
Method:	SW846 8260C	**Percent Solids:**	63.5
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3C151782.D	1	05/05/19 17:47	MD	n/a	n/a	V3C6820
Run #2							

	Initial Weight
Run #1	5.5 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	134	14	7.2	ug/kg	
71-43-2	Benzene	ND	0.72	0.54	ug/kg	
74-97-5	Bromochloromethane	ND	7.2	0.62	ug/kg	
75-27-4	Bromodichloromethane	ND	2.9	0.63	ug/kg	
75-25-2	Bromoform	ND	7.2	0.58	ug/kg	
74-83-9	Bromomethane	ND	7.2	1.4	ug/kg	
78-93-3	2-Butanone (MEK)	31.7	14	5.4	ug/kg	
75-15-0	Carbon disulfide	ND	2.9	1.3	ug/kg	
56-23-5	Carbon tetrachloride	ND	2.9	0.79	ug/kg	
108-90-7	Chlorobenzene	ND	2.9	0.51	ug/kg	
75-00-3	Chloroethane	ND	7.2	0.98	ug/kg	
67-66-3	Chloroform	ND	2.9	0.53	ug/kg	
74-87-3	Chloromethane [a]	ND	7.2	2.8	ug/kg	UJ
110-82-7	Cyclohexane	ND	2.9	0.58	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.9	1.2	ug/kg	
124-48-1	Dibromochloromethane [b]	ND	2.9	0.48	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.4	0.47	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.4	0.44	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.4	0.51	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.4	0.49	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	7.2	0.91	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.4	0.55	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.4	0.67	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.4	0.94	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.4	1.4	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.4	0.95	ug/kg	
78-87-5	1,2-Dichloropropane	ND	2.9	0.58	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	2.9	0.50	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2.9	0.47	ug/kg	
100-41-4	Ethylbenzene	ND	1.4	0.79	ug/kg	
76-13-1	Freon 113	ND	7.2	1.1	ug/kg	
591-78-6	2-Hexanone	ND	7.2	1.8	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-149(18.5-20.5)		
Lab Sample ID:	JC86986-4	**Date Sampled:**	04/25/19
Matrix:	SO - Soil	**Date Received:**	04/25/19
Method:	SW846 8260C	**Percent Solids:**	63.5
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	2.9	1.0	ug/kg	
79-20-9	Methyl Acetate	ND	7.2	2.0	ug/kg	
108-87-2	Methylcyclohexane	ND	2.9	1.0	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.4	0.50	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK [c]	ND	7.2	2.2	ug/kg	
75-09-2	Methylene chloride	ND	7.2	3.6	ug/kg	
100-42-5	Styrene	ND	2.9	0.82	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.9	0.56	ug/kg	
127-18-4	Tetrachloroethene	ND	2.9	0.66	ug/kg	
108-88-3	Toluene	ND	1.4	0.54	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	7.2	1.4	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	7.2	1.4	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	2.9	0.61	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2.9	0.49	ug/kg	
79-01-6	Trichloroethene	ND	1.4	1.1	ug/kg	
75-69-4	Trichlorofluoromethane	ND	7.2	0.97	ug/kg	
75-01-4	Vinyl chloride	ND	2.9	0.67	ug/kg	
	m,p-Xylene	ND	1.4	1.1	ug/kg	
95-47-6	o-Xylene	ND	1.4	0.83	ug/kg	
1330-20-7	Xylene (total)	ND	1.4	0.83	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%		75-127%
17060-07-0	1,2-Dichloroethane-D4	114%		75-130%
2037-26-5	Toluene-D8	104%		80-120%
460-00-4	4-Bromofluorobenzene	112%		79-127%

(a) Associated CCV outside of control limits low.
(b) Associated CCV and BS outside of control limits high, sample was ND.
(c) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	S-149(18.5-20.5)		
Lab Sample ID:	JC86986-4	**Date Sampled:**	04/25/19
Matrix:	SO - Soil	**Date Received:**	04/25/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	63.5
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6P481562.D	1	05/02/19 14:50	AR	05/01/19 10:00	OP20081	E6P2579
Run #2							

	Initial Weight	Final Volume
Run #1	30.4 g	1.0 ml
Run #2		

ABN TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	100	26	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	260	32	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	260	44	ug/kg	
105-67-9	2,4-Dimethylphenol [a]	ND	260	92	ug/kg	
51-28-5	2,4-Dinitrophenol [b]	ND	260	190	ug/kg	UJ
534-52-1	4,6-Dinitro-o-cresol	ND	260	55	ug/kg	
95-48-7	2-Methylphenol	ND	100	33	ug/kg	
	3&4-Methylphenol	ND	100	43	ug/kg	
88-75-5	2-Nitrophenol	ND	260	34	ug/kg	
100-02-7	4-Nitrophenol [a]	ND	520	140	ug/kg	
87-86-5	Pentachlorophenol	ND	210	49	ug/kg	
108-95-2	Phenol	ND	100	27	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	260	39	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	260	31	ug/kg	
83-32-9	Acenaphthene	ND	52	18	ug/kg	
208-96-8	Acenaphthylene	ND	52	26	ug/kg	
120-12-7	Anthracene	ND	52	32	ug/kg	
56-55-3	Benzo(a)anthracene	ND	52	15	ug/kg	
50-32-8	Benzo(a)pyrene	ND	52	24	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	52	23	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	52	26	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	52	24	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	100	20	ug/kg	
85-68-7	Butyl benzyl phthalate [a]	ND	100	13	ug/kg	
91-58-7	2-Chloronaphthalene	ND	100	12	ug/kg	
106-47-8	4-Chloroaniline	ND	260	19	ug/kg	
86-74-8	Carbazole	ND	100	7.5	ug/kg	
218-01-9	Chrysene	ND	52	16	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	100	11	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	100	22	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	100	19	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	100	17	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-149(18.5-20.5)		
Lab Sample ID:	JC86986-4	**Date Sampled:**	04/25/19
Matrix:	SO - Soil	**Date Received:**	04/25/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	63.5
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
95-50-1	1,2-Dichlorobenzene	ND	100	15	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	100	11	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	100	13	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	52	16	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	52	26	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	100	43	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	52	23	ug/kg	
132-64-9	Dibenzofuran	ND	100	21	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	100	8.4	ug/kg	
117-84-0	Di-n-octyl phthalate [a]	ND	100	13	ug/kg	
84-66-2	Diethyl phthalate	ND	100	11	ug/kg	
131-11-3	Dimethyl phthalate	ND	100	9.2	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate [a]	ND	100	12	ug/kg	
206-44-0	Fluoranthene	23.6	52	23	ug/kg	J
86-73-7	Fluorene	ND	52	24	ug/kg	
118-74-1	Hexachlorobenzene	ND	100	13	ug/kg	
87-68-3	Hexachlorobutadiene	ND	52	21	ug/kg	
77-47-4	Hexachlorocyclopentadiene [b]	ND	520	21	ug/kg	UJ
67-72-1	Hexachloroethane	ND	260	26	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	52	24	ug/kg	
78-59-1	Isophorone	ND	100	11	ug/kg	
91-57-6	2-Methylnaphthalene	ND	52	12	ug/kg	
88-74-4	2-Nitroaniline	ND	260	12	ug/kg	
99-09-2	3-Nitroaniline	ND	260	13	ug/kg	
100-01-6	4-Nitroaniline	ND	260	13	ug/kg	
91-20-3	Naphthalene	29.7	52	15	ug/kg	J
98-95-3	Nitrobenzene	ND	100	20	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	100	15	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	260	19	ug/kg	
85-01-8	Phenanthrene	21.8	52	17	ug/kg	J
129-00-0	Pyrene	20.2	52	17	ug/kg	J
120-82-1	1,2,4-Trichlorobenzene	ND	100	14	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	79%		23-115%
4165-62-2	Phenol-d5	79%		27-114%
118-79-6	2,4,6-Tribromophenol	76%		19-152%
4165-60-0	Nitrobenzene-d5	83%		26-134%
321-60-8	2-Fluorobiphenyl	80%		39-124%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-149(18.5-20.5)		
Lab Sample ID:	JC86986-4	**Date Sampled:**	04/25/19
Matrix:	SO - Soil	**Date Received:**	04/25/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	63.5
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1718-51-0	Terphenyl-d14	81%		36-134%

(a) Associated CCV outside of control limits high, sample was ND.
(b) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-149(18.5-20.5)
Lab Sample ID: JC86986-4
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/25/19
Date Received: 04/25/19
Percent Solids: 63.5

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	19200	80	13	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Antimony	0.65 U J	3.2	0.65	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Arsenic	4.3	3.2	0.45	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Barium	142	32	3.0	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Beryllium	0.87	0.32	0.13	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cadmium	0.14 J	0.80	0.11	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Calcium	3050 J	800	70	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Chromium	39.3	1.6	0.59	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cobalt	10.6	8.0	0.45	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Copper	9.2	4.0	1.3	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Iron	18800	80	31	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Lead	12.3 J	3.2	0.65	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Magnesium	5120	800	22	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Manganese	310 J	2.4	0.65	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Mercury	0.048 J	0.044	0.019	mg/kg	1	04/30/19	04/30/19	EAL	SW846 7471B [1]	SW846 7471B [5]
Nickel	26.0	6.4	0.56	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Potassium	1780	1600	51	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Selenium	1.0 U	3.2	1.0	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Silver	0.52 J	0.80	0.27	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Sodium	332 J	1600	120	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Thallium	0.92 U	1.6	0.92	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Vanadium	39.7	8.0	0.30	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Zinc	63.5	8.0	3.7	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [3]	SW846 3050B [4]

(1) Instrument QC Batch: MA46605
(2) Instrument QC Batch: MA46623
(3) Instrument QC Batch: MA46628
(4) Prep QC Batch: MP14617
(5) Prep QC Batch: MP14631

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: S-149(18.5-20.5)
Lab Sample ID: JC86986-4
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/25/19
Date Received: 04/25/19
Percent Solids: 63.5

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	0.26 J	0.36	0.18	mg/kg	1	05/03/19 13:30	KI	SW846 9012B/LACHAT
Solids, Percent	63.5			%	1	05/01/19 16:00	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

SGS North America Inc.

Report of Analysis

Client Sample ID:	S-146(14-16)		
Lab Sample ID:	JC86986-5	**Date Sampled:**	04/25/19
Matrix:	SO - Soil	**Date Received:**	04/25/19
Method:	SW846 8260C	**Percent Solids:**	85.1
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3C151824.D	1	05/06/19 18:26	PS	n/a	n/a	V3C6821
Run #2							

	Initial Weight
Run #1	7.0 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	25.0	8.4	4.2	ug/kg	
71-43-2	Benzene	ND	0.42	0.32	ug/kg	
74-97-5	Bromochloromethane	ND	4.2	0.36	ug/kg	
75-27-4	Bromodichloromethane	ND	1.7	0.37	ug/kg	
75-25-2	Bromoform	ND	4.2	0.34	ug/kg	
74-83-9	Bromomethane	ND	4.2	0.84	ug/kg	
78-93-3	2-Butanone (MEK)	ND	8.4	3.1	ug/kg	
75-15-0	Carbon disulfide	0.83	1.7	0.78	ug/kg	J
56-23-5	Carbon tetrachloride	ND	1.7	0.46	ug/kg	
108-90-7	Chlorobenzene	ND	1.7	0.30	ug/kg	
75-00-3	Chloroethane	ND	4.2	0.58	ug/kg	
67-66-3	Chloroform	ND	1.7	0.31	ug/kg	
74-87-3	Chloromethane [a]	ND	4.2	1.6	ug/kg	UJ
110-82-7	Cyclohexane	ND	1.7	0.34	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	1.7	0.70	ug/kg	
124-48-1	Dibromochloromethane	ND	1.7	0.28	ug/kg	
106-93-4	1,2-Dibromoethane	ND	0.84	0.27	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	0.84	0.26	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	0.84	0.30	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	0.84	0.29	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	4.2	0.53	ug/kg	
75-34-3	1,1-Dichloroethane	ND	0.84	0.32	ug/kg	
107-06-2	1,2-Dichloroethane	ND	0.84	0.39	ug/kg	
75-35-4	1,1-Dichloroethene	ND	0.84	0.55	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	0.84	0.80	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	0.84	0.56	ug/kg	
78-87-5	1,2-Dichloropropane	ND	1.7	0.34	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	1.7	0.30	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	1.7	0.27	ug/kg	
100-41-4	Ethylbenzene	ND	0.84	0.46	ug/kg	
76-13-1	Freon 113	ND	4.2	0.64	ug/kg	
591-78-6	2-Hexanone	ND	4.2	1.1	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-146(14-16)		
Lab Sample ID:	JC86986-5	**Date Sampled:**	04/25/19
Matrix:	SO - Soil	**Date Received:**	04/25/19
Method:	SW846 8260C	**Percent Solids:**	85.1
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	1.7	0.59	ug/kg	
79-20-9	Methyl Acetate [a]	ND	4.2	1.2	ug/kg	
108-87-2	Methylcyclohexane	ND	1.7	0.59	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.84	0.30	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	4.2	1.3	ug/kg	
75-09-2	Methylene chloride	ND	4.2	2.1	ug/kg	
100-42-5	Styrene	ND	1.7	0.48	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.7	0.33	ug/kg	
127-18-4	Tetrachloroethene	ND	1.7	0.39	ug/kg	
108-88-3	Toluene	0.35	0.84	0.32	ug/kg	J
87-61-6	1,2,3-Trichlorobenzene	ND	4.2	0.84	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	4.2	0.84	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	1.7	0.36	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	1.7	0.29	ug/kg	
79-01-6	Trichloroethene	ND	0.84	0.64	ug/kg	
75-69-4	Trichlorofluoromethane	ND	4.2	0.57	ug/kg	
75-01-4	Vinyl chloride	ND	1.7	0.39	ug/kg	
	m,p-Xylene	ND	0.84	0.63	ug/kg	
95-47-6	o-Xylene	ND	0.84	0.49	ug/kg	
1330-20-7	Xylene (total)	ND	0.84	0.49	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	98%		75-127%
17060-07-0	1,2-Dichloroethane-D4	109%		75-130%
2037-26-5	Toluene-D8	102%		80-120%
460-00-4	4-Bromofluorobenzene	106%		79-127%

(a) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID: S-146(14-16)
Lab Sample ID: JC86986-5
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/25/19
Date Received: 04/25/19
Percent Solids: 85.1

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6P481554.D	1	05/02/19 11:34	AR	05/01/19 10:00	OP20081	E6P2579
Run #2							

	Initial Weight	Final Volume
Run #1	30.3 g	1.0 ml
Run #2		

ABN TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	78	19	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	190	24	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	190	33	ug/kg	
105-67-9	2,4-Dimethylphenol [a]	ND	190	69	ug/kg	
51-28-5	2,4-Dinitrophenol [b]	ND	190	150	ug/kg	UJ
534-52-1	4,6-Dinitro-o-cresol	ND	190	41	ug/kg	
95-48-7	2-Methylphenol	ND	78	25	ug/kg	
	3&4-Methylphenol	ND	78	32	ug/kg	
88-75-5	2-Nitrophenol	ND	190	26	ug/kg	
100-02-7	4-Nitrophenol [a]	ND	390	100	ug/kg	
87-86-5	Pentachlorophenol	ND	160	36	ug/kg	
108-95-2	Phenol	ND	78	20	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	190	29	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	190	23	ug/kg	
83-32-9	Acenaphthene	ND	39	13	ug/kg	
208-96-8	Acenaphthylene	ND	39	20	ug/kg	
120-12-7	Anthracene	ND	39	24	ug/kg	
56-55-3	Benzo(a)anthracene	ND	39	11	ug/kg	
50-32-8	Benzo(a)pyrene	ND	39	18	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	39	17	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	39	19	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	39	18	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	78	15	ug/kg	
85-68-7	Butyl benzyl phthalate [a]	ND	78	9.5	ug/kg	
91-58-7	2-Chloronaphthalene	ND	78	9.2	ug/kg	
106-47-8	4-Chloroaniline	ND	190	14	ug/kg	
86-74-8	Carbazole	ND	78	5.6	ug/kg	
218-01-9	Chrysene	ND	39	12	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	78	8.3	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	78	17	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	78	14	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	78	13	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-146(14-16)
Lab Sample ID: JC86986-5
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/25/19
Date Received: 04/25/19
Percent Solids: 85.1

ABN TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
95-50-1	1,2-Dichlorobenzene	ND	78	11	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	78	8.3	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	78	9.4	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	39	12	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	39	19	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	78	32	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	39	17	ug/kg	
132-64-9	Dibenzofuran	ND	78	16	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	78	6.3	ug/kg	
117-84-0	Di-n-octyl phthalate [a]	ND	78	9.7	ug/kg	
84-66-2	Diethyl phthalate	ND	78	8.3	ug/kg	
131-11-3	Dimethyl phthalate	ND	78	6.9	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate [a]	ND	78	9.1	ug/kg	
206-44-0	Fluoranthene	ND	39	17	ug/kg	
86-73-7	Fluorene	ND	39	18	ug/kg	
118-74-1	Hexachlorobenzene	ND	78	9.8	ug/kg	
87-68-3	Hexachlorobutadiene	ND	39	16	ug/kg	
77-47-4	Hexachlorocyclopentadiene [b]	ND	390	15	ug/kg	UJ
67-72-1	Hexachloroethane	ND	190	19	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	39	18	ug/kg	
78-59-1	Isophorone	ND	78	8.3	ug/kg	
91-57-6	2-Methylnaphthalene	ND	39	8.8	ug/kg	
88-74-4	2-Nitroaniline	ND	190	9.2	ug/kg	
99-09-2	3-Nitroaniline	ND	190	9.7	ug/kg	
100-01-6	4-Nitroaniline	ND	190	10	ug/kg	
91-20-3	Naphthalene	ND	39	11	ug/kg	
98-95-3	Nitrobenzene	ND	78	15	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	78	11	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	190	14	ug/kg	
85-01-8	Phenanthrene	ND	39	13	ug/kg	
129-00-0	Pyrene	ND	39	12	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	78	10	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	78%		23-115%
4165-62-2	Phenol-d5	78%		27-114%
118-79-6	2,4,6-Tribromophenol	73%		19-152%
4165-60-0	Nitrobenzene-d5	78%		26-134%
321-60-8	2-Fluorobiphenyl	75%		39-124%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-146(14-16)		
Lab Sample ID:	JC86986-5	**Date Sampled:**	04/25/19
Matrix:	SO - Soil	**Date Received:**	04/25/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	85.1
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1718-51-0	Terphenyl-d14	83%		36-134%

(a) Associated CCV outside of control limits high, sample was ND.
(b) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-146(14-16)
Lab Sample ID: JC86986-5
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/25/19
Date Received: 04/25/19
Percent Solids: 85.1

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	9990	57	9.2	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [3]	SW846 3050B [4]
Antimony	0.47 U J	2.3	0.47	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Arsenic	2.2 J	2.3	0.32	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Barium	23.3	23	2.2	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [3]	SW846 3050B [4]
Beryllium	0.34	0.23	0.091	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [3]	SW846 3050B [4]
Cadmium	0.080 U	0.57	0.080	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Calcium	211 J	570	50	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [3]	SW846 3050B [4]
Chromium	14.0	1.1	0.42	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cobalt	5.7	5.7	0.32	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Copper	7.3	2.9	0.96	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Iron	14800	57	22	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [3]	SW846 3050B [4]
Lead	7.7 J	2.3	0.47	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Magnesium	2240	570	16	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [3]	SW846 3050B [4]
Manganese	127 J	1.7	0.47	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Mercury	0.015 U J	0.034	0.015	mg/kg	1	04/30/19	04/30/19	EAL	SW846 7471B [1]	SW846 7471B [5]
Nickel	9.3	4.6	0.40	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Potassium	1040 J	1100	36	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [3]	SW846 3050B [4]
Selenium	0.74 U	2.3	0.74	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Silver	0.19 U	0.57	0.19	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [3]	SW846 3050B [4]
Sodium	89 U	1100	89	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [3]	SW846 3050B [4]
Thallium	0.66 U	1.1	0.66	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Vanadium	20.8	5.7	0.22	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Zinc	40.7	5.7	2.6	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA46605
(2) Instrument QC Batch: MA46623
(3) Instrument QC Batch: MA46628
(4) Prep QC Batch: MP14617
(5) Prep QC Batch: MP14631

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: S-146(14-16)
Lab Sample ID: JC86986-5
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/25/19
Date Received: 04/25/19
Percent Solids: 85.1

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	0.14 J	0.27	0.14	mg/kg	1	05/03/19 13:32	KI	SW846 9012B/LACHAT
Solids, Percent	85.1			%	1	05/01/19 16:00	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

SGS North America Inc.

Report of Analysis

Client Sample ID: S-146(17-19)
Lab Sample ID: JC86986-6
Matrix: SO - Soil
Method: SW846 8260C
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/25/19
Date Received: 04/25/19
Percent Solids: 85.9

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1C164400.D	1	05/09/19 13:04	PS	n/a	n/a	V1C7215
Run #2							

	Initial Weight
Run #1	5.6 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	5.3	10	5.2	ug/kg	J
71-43-2	Benzene	ND	0.52	0.39	ug/kg	
74-97-5	Bromochloromethane	ND	5.2	0.45	ug/kg	
75-27-4	Bromodichloromethane	ND	2.1	0.46	ug/kg	
75-25-2	Bromoform	ND	5.2	0.42	ug/kg	
74-83-9	Bromomethane	ND	5.2	1.0	ug/kg	
78-93-3	2-Butanone (MEK)	ND	10	3.9	ug/kg	
75-15-0	Carbon disulfide	ND	2.1	0.97	ug/kg	
56-23-5	Carbon tetrachloride	ND	2.1	0.57	ug/kg	
108-90-7	Chlorobenzene	ND	2.1	0.37	ug/kg	
75-00-3	Chloroethane	ND	5.2	0.71	ug/kg	
67-66-3	Chloroform	ND	2.1	0.39	ug/kg	
74-87-3	Chloromethane [a]	ND	5.2	2.0	ug/kg	UJ
110-82-7	Cyclohexane	ND	2.1	0.42	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.1	0.87	ug/kg	
124-48-1	Dibromochloromethane	ND	2.1	0.35	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.0	0.34	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.32	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.37	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.36	ug/kg	
75-71-8	Dichlorodifluoromethane [a]	ND	5.2	0.66	ug/kg	UJ
75-34-3	1,1-Dichloroethane	ND	1.0	0.40	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.0	0.49	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.0	0.68	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.99	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.69	ug/kg	
78-87-5	1,2-Dichloropropane	ND	2.1	0.42	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	2.1	0.37	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2.1	0.34	ug/kg	
100-41-4	Ethylbenzene	ND	1.0	0.57	ug/kg	
76-13-1	Freon 113	ND	5.2	0.79	ug/kg	
591-78-6	2-Hexanone	ND	5.2	1.3	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-146(17-19)		
Lab Sample ID:	JC86986-6	**Date Sampled:**	04/25/19
Matrix:	SO - Soil	**Date Received:**	04/25/19
Method:	SW846 8260C	**Percent Solids:**	85.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	2.1	0.72	ug/kg	
79-20-9	Methyl Acetate	ND	5.2	1.4	ug/kg	
108-87-2	Methylcyclohexane	ND	2.1	0.73	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.37	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.2	1.6	ug/kg	
75-09-2	Methylene chloride	5.7	5.2	2.6	ug/kg	
100-42-5	Styrene	ND	2.1	0.60	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.1	0.41	ug/kg	
127-18-4	Tetrachloroethene	ND	2.1	0.48	ug/kg	
108-88-3	Toluene	ND	1.0	0.39	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	5.2	1.0	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	5.2	1.0	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	2.1	0.44	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2.1	0.36	ug/kg	
79-01-6	Trichloroethene	ND	1.0	0.79	ug/kg	
75-69-4	Trichlorofluoromethane	ND	5.2	0.71	ug/kg	
75-01-4	Vinyl chloride	ND	2.1	0.49	ug/kg	
	m,p-Xylene	ND	1.0	0.78	ug/kg	
95-47-6	o-Xylene	ND	1.0	0.61	ug/kg	
1330-20-7	Xylene (total)	ND	1.0	0.61	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%		75-127%
17060-07-0	1,2-Dichloroethane-D4	87%		75-130%
2037-26-5	Toluene-D8	99%		80-120%
460-00-4	4-Bromofluorobenzene	92%		79-127%

(a) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	S-146(17-19)		
Lab Sample ID:	JC86986-6	**Date Sampled:**	04/25/19
Matrix:	SO - Soil	**Date Received:**	04/25/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	85.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	P129377.D	1	05/07/19 17:50	CC	05/06/19 17:35	OP20110	EP5856
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	1.0 ml
Run #2		

ABN TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	78	19	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	190	24	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	190	33	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	190	69	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	190	150	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	190	42	ug/kg	
95-48-7	2-Methylphenol	ND	78	25	ug/kg	
	3&4-Methylphenol	ND	78	32	ug/kg	
88-75-5	2-Nitrophenol	ND	190	26	ug/kg	
100-02-7	4-Nitrophenol	ND	390	100	ug/kg	
87-86-5	Pentachlorophenol	ND	160	36	ug/kg	
108-95-2	Phenol	ND	78	20	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	190	29	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	190	23	ug/kg	
83-32-9	Acenaphthene	ND	39	13	ug/kg	
208-96-8	Acenaphthylene	ND	39	20	ug/kg	
120-12-7	Anthracene	ND	39	24	ug/kg	
56-55-3	Benzo(a)anthracene	ND	39	11	ug/kg	
50-32-8	Benzo(a)pyrene	ND	39	18	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	39	17	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	39	19	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	39	18	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	78	15	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	78	9.5	ug/kg	
91-58-7	2-Chloronaphthalene	ND	78	9.2	ug/kg	
106-47-8	4-Chloroaniline	ND	190	14	ug/kg	
86-74-8	Carbazole	ND	78	5.6	ug/kg	
218-01-9	Chrysene	ND	39	12	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	78	8.3	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	78	17	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	78	14	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	78	13	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-146(17-19)
Lab Sample ID: JC86986-6
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/25/19
Date Received: 04/25/19
Percent Solids: 85.9

ABN TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
95-50-1	1,2-Dichlorobenzene	ND	78	11	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	78	8.3	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	78	9.4	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	39	12	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	39	19	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	78	32	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	39	17	ug/kg	
132-64-9	Dibenzofuran	ND	78	16	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	78	6.3	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	78	9.7	ug/kg	
84-66-2	Diethyl phthalate	ND	78	8.3	ug/kg	
131-11-3	Dimethyl phthalate	ND	78	6.9	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	78	9.1	ug/kg	
206-44-0	Fluoranthene	ND	39	17	ug/kg	
86-73-7	Fluorene	ND	39	18	ug/kg	
118-74-1	Hexachlorobenzene	ND	78	9.8	ug/kg	
87-68-3	Hexachlorobutadiene	ND	39	16	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	390	15	ug/kg	
67-72-1	Hexachloroethane	ND	190	19	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	39	18	ug/kg	
78-59-1	Isophorone	ND	78	8.3	ug/kg	
91-57-6	2-Methylnaphthalene	ND	39	8.8	ug/kg	
88-74-4	2-Nitroaniline	ND	190	9.2	ug/kg	
99-09-2	3-Nitroaniline	ND	190	9.7	ug/kg	
100-01-6	4-Nitroaniline	ND	190	10	ug/kg	
91-20-3	Naphthalene	ND	39	11	ug/kg	
98-95-3	Nitrobenzene	ND	78	15	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	78	11	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	190	14	ug/kg	
85-01-8	Phenanthrene	ND	39	13	ug/kg	
129-00-0	Pyrene	ND	39	12	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	78	10	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	60%		23-115%
4165-62-2	Phenol-d5	60%		27-114%
118-79-6	2,4,6-Tribromophenol	56%		19-152%
4165-60-0	Nitrobenzene-d5	68%		26-134%
321-60-8	2-Fluorobiphenyl	71%		39-124%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-146(17-19)		
Lab Sample ID:	JC86986-6	**Date Sampled:**	04/25/19
Matrix:	SO - Soil	**Date Received:**	04/25/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	85.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1718-51-0	Terphenyl-d14	64%		36-134%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-146(17-19)
Lab Sample ID: JC86986-6
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/25/19
Date Received: 04/25/19
Percent Solids: 85.9

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	1080	57	9.2	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [3]
Antimony	0.47 U J	2.3	0.47	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [3]
Arsenic	1.6 J	2.3	0.32	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [3]
Barium	4.1 J	23	2.2	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [3]
Beryllium	0.16 J	0.23	0.091	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [3]
Cadmium	0.080 U	0.57	0.080	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [3]
Calcium	58.7 J	570	50	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [3]
Chromium	5.1	1.1	0.42	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [3]
Cobalt	0.87 J	5.7	0.32	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [3]
Copper	1.1 J	2.9	0.96	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [3]
Iron	2510	57	22	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [3]
Lead	1.0 J	2.3	0.47	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [3]
Magnesium	72.2 J	570	16	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [3]
Manganese	11.6 J	1.7	0.47	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [3]
Mercury	0.015 U J	0.035	0.015	mg/kg	1	04/30/19	04/30/19	EAL	SW846 7471B [1]	SW846 7471B [4]
Nickel	1.3 J	4.6	0.40	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [3]
Potassium	120 J	1100	36	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [3]
Selenium	0.74 U	2.3	0.74	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [3]
Silver	0.19 U	0.57	0.19	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [3]
Sodium	89 U	1100	89	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [3]
Thallium	0.66 U	1.1	0.66	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [3]
Vanadium	3.9 J	5.7	0.22	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [3]
Zinc	5.3 J	5.7	2.6	mg/kg	1	04/29/19	04/30/19	ND	SW846 6010D [2]	SW846 3050B [3]

(1) Instrument QC Batch: MA46605
(2) Instrument QC Batch: MA46623
(3) Prep QC Batch: MP14617
(4) Prep QC Batch: MP14631

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: S-146(17-19)
Lab Sample ID: JC86986-6
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/25/19
Date Received: 04/25/19
Percent Solids: 85.9

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	0.12 U J	0.24	0.12	mg/kg	1	05/03/19 13:33	KI	SW846 9012B/LACHAT
Solids, Percent	85.9			%	1	05/01/19 16:00	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

SGS North America Inc.

Report of Analysis

Client Sample ID: S-147(12-14)
Lab Sample ID: JC86986-7
Matrix: SO - Soil
Method: SW846 8260C
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/25/19
Date Received: 04/25/19
Percent Solids: 73.3

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3C151784.D	1	05/05/19 18:34	MD	n/a	n/a	V3C6820
Run #2							

	Initial Weight
Run #1	3.6 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	92.4	19	9.5	ug/kg	
71-43-2	Benzene	ND	0.95	0.71	ug/kg	
74-97-5	Bromochloromethane	ND	9.5	0.81	ug/kg	
75-27-4	Bromodichloromethane	ND	3.8	0.84	ug/kg	
75-25-2	Bromoform	ND	9.5	0.76	ug/kg	
74-83-9	Bromomethane	ND	9.5	1.9	ug/kg	
78-93-3	2-Butanone (MEK)	ND	19	7.1	ug/kg	
75-15-0	Carbon disulfide	5.3	3.8	1.8	ug/kg	
56-23-5	Carbon tetrachloride	ND	3.8	1.0	ug/kg	
108-90-7	Chlorobenzene	ND	3.8	0.67	ug/kg	
75-00-3	Chloroethane	ND	9.5	1.3	ug/kg	
67-66-3	Chloroform	ND	3.8	0.70	ug/kg	
74-87-3	Chloromethane [a]	ND	9.5	3.7	ug/kg	UJ
110-82-7	Cyclohexane	ND	3.8	0.77	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	3.8	1.6	ug/kg	
124-48-1	Dibromochloromethane [b]	ND	3.8	0.64	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.9	0.62	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.9	0.58	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.9	0.68	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.9	0.65	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	9.5	1.2	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.9	0.73	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.9	0.89	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.9	1.2	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.9	1.8	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.9	1.3	ug/kg	
78-87-5	1,2-Dichloropropane	ND	3.8	0.77	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	3.8	0.67	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	3.8	0.62	ug/kg	
100-41-4	Ethylbenzene	ND	1.9	1.0	ug/kg	
76-13-1	Freon 113	ND	9.5	1.4	ug/kg	
591-78-6	2-Hexanone	ND	9.5	2.4	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-147(12-14)
Lab Sample ID: JC86986-7
Matrix: SO - Soil
Method: SW846 8260C
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/25/19
Date Received: 04/25/19
Percent Solids: 73.3

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	3.8	1.3	ug/kg	
79-20-9	Methyl Acetate	ND	9.5	2.6	ug/kg	
108-87-2	Methylcyclohexane	ND	3.8	1.3	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.9	0.67	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK [c]	ND	9.5	3.0	ug/kg	
75-09-2	Methylene chloride	ND	9.5	4.7	ug/kg	
100-42-5	Styrene	ND	3.8	1.1	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	3.8	0.74	ug/kg	
127-18-4	Tetrachloroethene	ND	3.8	0.88	ug/kg	
108-88-3	Toluene	ND	1.9	0.71	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	9.5	1.9	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	9.5	1.9	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	3.8	0.81	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	3.8	0.65	ug/kg	
79-01-6	Trichloroethene	ND	1.9	1.4	ug/kg	
75-69-4	Trichlorofluoromethane	ND	9.5	1.3	ug/kg	
75-01-4	Vinyl chloride	ND	3.8	0.89	ug/kg	
	m,p-Xylene	ND	1.9	1.4	ug/kg	
95-47-6	o-Xylene	ND	1.9	1.1	ug/kg	
1330-20-7	Xylene (total)	ND	1.9	1.1	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	106%		75-127%
17060-07-0	1,2-Dichloroethane-D4	113%		75-130%
2037-26-5	Toluene-D8	101%		80-120%
460-00-4	4-Bromofluorobenzene	117%		79-127%

(a) Associated CCV outside of control limits low.
(b) Associated CCV and BS outside of control limits high, sample was ND.
(c) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID: S-147(12-14)
Lab Sample ID: JC86986-7
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/25/19
Date Received: 04/25/19
Percent Solids: 73.3

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6P481565.D	1	05/02/19 16:14	AR	05/01/19 10:00	OP20081	E6P2579
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	1.0 ml
Run #2		

ABN TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	91	22	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	230	28	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	230	39	ug/kg	
105-67-9	2,4-Dimethylphenol [a]	ND	230	81	ug/kg	
51-28-5	2,4-Dinitrophenol [b]	ND	230	170	ug/kg	UJ
534-52-1	4,6-Dinitro-o-cresol	ND	230	48	ug/kg	
95-48-7	2-Methylphenol	ND	91	29	ug/kg	
	3&4-Methylphenol	ND	91	37	ug/kg	
88-75-5	2-Nitrophenol	ND	230	30	ug/kg	
100-02-7	4-Nitrophenol [a]	ND	450	120	ug/kg	
87-86-5	Pentachlorophenol	ND	180	43	ug/kg	
108-95-2	Phenol	ND	91	24	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	230	34	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	230	27	ug/kg	
83-32-9	Acenaphthene	127	45	16	ug/kg	
208-96-8	Acenaphthylene	ND	45	23	ug/kg	
120-12-7	Anthracene	284	45	28	ug/kg	
56-55-3	Benzo(a)anthracene	115	45	13	ug/kg	
50-32-8	Benzo(a)pyrene	67.7	45	21	ug/kg	
205-99-2	Benzo(b)fluoranthene	99.7	45	20	ug/kg	
191-24-2	Benzo(g,h,i)perylene	45.0	45	23	ug/kg	
207-08-9	Benzo(k)fluoranthene	33.6	45	21	ug/kg	J
101-55-3	4-Bromophenyl phenyl ether	ND	91	17	ug/kg	
85-68-7	Butyl benzyl phthalate [a]	ND	91	11	ug/kg	
91-58-7	2-Chloronaphthalene	ND	91	11	ug/kg	
106-47-8	4-Chloroaniline	ND	230	16	ug/kg	
86-74-8	Carbazole	644	91	6.6	ug/kg	
218-01-9	Chrysene	110	45	14	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	91	9.7	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	91	20	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	91	16	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	91	15	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-147(12-14)
Lab Sample ID: JC86986-7
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/25/19
Date Received: 04/25/19
Percent Solids: 73.3

ABN TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
95-50-1	1,2-Dichlorobenzene	ND	91	13	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	91	9.7	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	91	11	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	45	14	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	45	23	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	91	38	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	45	20	ug/kg	
132-64-9	Dibenzofuran	224	91	18	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	91	7.4	ug/kg	
117-84-0	Di-n-octyl phthalate [a]	ND	91	11	ug/kg	
84-66-2	Diethyl phthalate	ND	91	9.7	ug/kg	
131-11-3	Dimethyl phthalate	ND	91	8.1	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate [a]	ND	91	11	ug/kg	
206-44-0	Fluoranthene	497	45	20	ug/kg	
86-73-7	Fluorene	356	45	21	ug/kg	
118-74-1	Hexachlorobenzene	ND	91	11	ug/kg	
87-68-3	Hexachlorobutadiene	ND	45	18	ug/kg	
77-47-4	Hexachlorocyclopentadiene [b]	ND	450	18	ug/kg	UJ
67-72-1	Hexachloroethane	ND	230	22	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	31.5	45	21	ug/kg	J
78-59-1	Isophorone	ND	91	9.7	ug/kg	
91-57-6	2-Methylnaphthalene	1400	45	10	ug/kg	
88-74-4	2-Nitroaniline	ND	230	11	ug/kg	
99-09-2	3-Nitroaniline	ND	230	11	ug/kg	
100-01-6	4-Nitroaniline	ND	230	12	ug/kg	
91-20-3	Naphthalene	1780	45	13	ug/kg	
98-95-3	Nitrobenzene	ND	91	17	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	91	13	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	230	17	ug/kg	
85-01-8	Phenanthrene	400	45	15	ug/kg	
129-00-0	Pyrene	538	45	15	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	91	12	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	68%		23-115%
4165-62-2	Phenol-d5	68%		27-114%
118-79-6	2,4,6-Tribromophenol	74%		19-152%
4165-60-0	Nitrobenzene-d5	69%		26-134%
321-60-8	2-Fluorobiphenyl	66%		39-124%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-147(12-14)		
Lab Sample ID:	JC86986-7	**Date Sampled:**	04/25/19
Matrix:	SO - Soil	**Date Received:**	04/25/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	73.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1718-51-0	Terphenyl-d14	69%		36-134%

(a) Associated CCV outside of control limits high, sample was ND.
(b) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-147(12-14)
Lab Sample ID: JC86986-7
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/25/19
Date Received: 04/25/19
Percent Solids: 73.3

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	3240	68	11	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [3]
Antimony	0.88 J	2.7	0.55	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [3]
Arsenic	8.1	2.7	0.38	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [3]
Barium	88.0	27	2.6	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [3]
Beryllium	2.3	0.27	0.11	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [3]
Cadmium	1.4	0.68	0.095	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [3]
Calcium	939 J	680	60	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [3]
Chromium	8.0	1.4	0.50	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [3]
Cobalt	42.2	6.8	0.38	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [3]
Copper	80.5	3.4	1.1	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [3]
Iron	7690	68	26	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [3]
Lead	45.1 J	2.7	0.55	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [3]
Magnesium	179 J	680	18	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [3]
Manganese	28.2 J	2.0	0.55	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [3]
Mercury	0.078 J	0.042	0.019	mg/kg	1	04/30/19	04/30/19	EAL	SW846 7471B [1]	SW846 7471B [4]
Nickel	77.2	5.4	0.47	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [3]
Potassium	228 J	1400	43	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [3]
Selenium	5.5	2.7	0.88	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [3]
Silver	0.23 U	0.68	0.23	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [3]
Sodium	110 U	1400	110	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [3]
Thallium	0.78 U	1.4	0.78	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [3]
Vanadium	7.3	6.8	0.26	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [3]
Zinc	188	6.8	3.1	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [3]

(1) Instrument QC Batch: MA46605
(2) Instrument QC Batch: MA46628
(3) Prep QC Batch: MP14617
(4) Prep QC Batch: MP14631

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: S-147(12-14)
Lab Sample ID: JC86986-7
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/25/19
Date Received: 04/25/19
Percent Solids: 73.3

General Chemistry

Analyte	Result		RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	1.5	J	0.41	0.20	mg/kg	1	05/03/19 13:34	KI	SW846 9012B/LACHAT
Solids, Percent	73.3				%	1	05/01/19 16:00	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

SGS North America Inc.

Report of Analysis

Client Sample ID:	S-147(18-20)		
Lab Sample ID:	JC86986-8	**Date Sampled:**	04/25/19
Matrix:	SO - Soil	**Date Received:**	04/25/19
Method:	SW846 8260C	**Percent Solids:**	64.5
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3C151785.D	1	05/05/19 18:57	MD	n/a	n/a	V3C6820
Run #2							

	Initial Weight
Run #1	4.7 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	240	16	8.2	ug/kg	
71-43-2	Benzene	ND	0.82	0.62	ug/kg	
74-97-5	Bromochloromethane	ND	8.2	0.71	ug/kg	
75-27-4	Bromodichloromethane	ND	3.3	0.73	ug/kg	
75-25-2	Bromoform	ND	8.2	0.66	ug/kg	
74-83-9	Bromomethane	ND	8.2	1.6	ug/kg	
78-93-3	2-Butanone (MEK)	56.1	16	6.2	ug/kg	
75-15-0	Carbon disulfide	ND	3.3	1.5	ug/kg	
56-23-5	Carbon tetrachloride	ND	3.3	0.91	ug/kg	
108-90-7	Chlorobenzene	ND	3.3	0.58	ug/kg	
75-00-3	Chloroethane	ND	8.2	1.1	ug/kg	
67-66-3	Chloroform	ND	3.3	0.61	ug/kg	
74-87-3	Chloromethane [a]	ND	8.2	3.2	ug/kg	UJ
110-82-7	Cyclohexane	ND	3.3	0.67	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	3.3	1.4	ug/kg	
124-48-1	Dibromochloromethane [b]	ND	3.3	0.56	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.6	0.54	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.6	0.50	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.6	0.59	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.6	0.57	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	8.2	1.0	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.6	0.63	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.6	0.78	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.6	1.1	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.6	1.6	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.6	1.1	ug/kg	
78-87-5	1,2-Dichloropropane	ND	3.3	0.67	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	3.3	0.58	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	3.3	0.54	ug/kg	
100-41-4	Ethylbenzene	ND	1.6	0.91	ug/kg	
76-13-1	Freon 113	ND	8.2	1.3	ug/kg	
591-78-6	2-Hexanone	ND	8.2	2.1	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-147(18-20)		
Lab Sample ID:	JC86986-8	**Date Sampled:**	04/25/19
Matrix:	SO - Soil	**Date Received:**	04/25/19
Method:	SW846 8260C	**Percent Solids:**	64.5
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	3.3	1.1	ug/kg	
79-20-9	Methyl Acetate	ND	8.2	2.3	ug/kg	
108-87-2	Methylcyclohexane	ND	3.3	1.2	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.6	0.58	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK [c]	ND	8.2	2.6	ug/kg	
75-09-2	Methylene chloride	ND	8.2	4.1	ug/kg	
100-42-5	Styrene	ND	3.3	0.95	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	3.3	0.64	ug/kg	
127-18-4	Tetrachloroethene	ND	3.3	0.76	ug/kg	
108-88-3	Toluene	ND	1.6	0.62	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	8.2	1.6	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	8.2	1.6	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	3.3	0.70	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	3.3	0.56	ug/kg	
79-01-6	Trichloroethene	ND	1.6	1.3	ug/kg	
75-69-4	Trichlorofluoromethane	ND	8.2	1.1	ug/kg	
75-01-4	Vinyl chloride	ND	3.3	0.77	ug/kg	
	m,p-Xylene	ND	1.6	1.2	ug/kg	
95-47-6	o-Xylene	ND	1.6	0.96	ug/kg	
1330-20-7	Xylene (total)	ND	1.6	0.96	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	105%		75-127%
17060-07-0	1,2-Dichloroethane-D4	116%		75-130%
2037-26-5	Toluene-D8	101%		80-120%
460-00-4	4-Bromofluorobenzene	106%		79-127%

(a) Associated CCV outside of control limits low.
(b) Associated CCV and BS outside of control limits high, sample was ND.
(c) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	S-147(18-20)		
Lab Sample ID:	JC86986-8	**Date Sampled:**	04/25/19
Matrix:	SO - Soil	**Date Received:**	04/25/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	64.5
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6P481561.D	1	05/02/19 14:25	AR	05/01/19 10:00	OP20081	E6P2579
Run #2							

	Initial Weight	Final Volume
Run #1	30.4 g	1.0 ml
Run #2		

ABN TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	100	25	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	250	31	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	250	44	ug/kg	
105-67-9	2,4-Dimethylphenol [a]	ND	250	91	ug/kg	
51-28-5	2,4-Dinitrophenol [b]	ND	250	190	ug/kg	UJ
534-52-1	4,6-Dinitro-o-cresol	ND	250	55	ug/kg	
95-48-7	2-Methylphenol	ND	100	33	ug/kg	
	3&4-Methylphenol	ND	100	42	ug/kg	
88-75-5	2-Nitrophenol	ND	250	34	ug/kg	
100-02-7	4-Nitrophenol [a]	ND	510	140	ug/kg	
87-86-5	Pentachlorophenol	ND	200	48	ug/kg	
108-95-2	Phenol	ND	100	27	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	250	38	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	250	30	ug/kg	
83-32-9	Acenaphthene	ND	51	18	ug/kg	
208-96-8	Acenaphthylene	ND	51	26	ug/kg	
120-12-7	Anthracene	45.7	51	31	ug/kg	J
56-55-3	Benzo(a)anthracene	42.7	51	14	ug/kg	J
50-32-8	Benzo(a)pyrene	27.5	51	23	ug/kg	J
205-99-2	Benzo(b)fluoranthene	33.2	51	23	ug/kg	J
191-24-2	Benzo(g,h,i)perylene	ND	51	25	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	51	24	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	100	20	ug/kg	
85-68-7	Butyl benzyl phthalate [a]	ND	100	12	ug/kg	
91-58-7	2-Chloronaphthalene	ND	100	12	ug/kg	
106-47-8	4-Chloroaniline	ND	250	18	ug/kg	
86-74-8	Carbazole	15.5	100	7.4	ug/kg	J
218-01-9	Chrysene	36.6	51	16	ug/kg	J
111-91-1	bis(2-Chloroethoxy)methane	ND	100	11	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	100	22	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	100	18	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	100	17	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-147(18-20)
Lab Sample ID: JC86986-8
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/25/19
Date Received: 04/25/19
Percent Solids: 64.5

ABN TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
95-50-1	1,2-Dichlorobenzene	ND	100	15	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	100	11	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	100	12	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	51	16	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	51	26	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	100	43	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	51	23	ug/kg	
132-64-9	Dibenzofuran	31.0	100	21	ug/kg	J
84-74-2	Di-n-butyl phthalate	ND	100	8.3	ug/kg	
117-84-0	Di-n-octyl phthalate [a]	ND	100	13	ug/kg	
84-66-2	Diethyl phthalate	ND	100	11	ug/kg	
131-11-3	Dimethyl phthalate	ND	100	9.1	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate [a]	ND	100	12	ug/kg	
206-44-0	Fluoranthene	95.1	51	23	ug/kg	
86-73-7	Fluorene	42.0	51	23	ug/kg	J
118-74-1	Hexachlorobenzene	ND	100	13	ug/kg	
87-68-3	Hexachlorobutadiene	ND	51	21	ug/kg	
77-47-4	Hexachlorocyclopentadiene [b]	ND	510	20	ug/kg	UJ
67-72-1	Hexachloroethane	ND	250	25	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	51	24	ug/kg	
78-59-1	Isophorone	ND	100	11	ug/kg	
91-57-6	2-Methylnaphthalene	19.9	51	12	ug/kg	J
88-74-4	2-Nitroaniline	ND	250	12	ug/kg	
99-09-2	3-Nitroaniline	ND	250	13	ug/kg	
100-01-6	4-Nitroaniline	ND	250	13	ug/kg	
91-20-3	Naphthalene	103	51	14	ug/kg	
98-95-3	Nitrobenzene	ND	100	20	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	100	15	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	250	19	ug/kg	
85-01-8	Phenanthrene	138	51	17	ug/kg	
129-00-0	Pyrene	73.4	51	16	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	100	13	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	74%		23-115%
4165-62-2	Phenol-d5	74%		27-114%
118-79-6	2,4,6-Tribromophenol	70%		19-152%
4165-60-0	Nitrobenzene-d5	80%		26-134%
321-60-8	2-Fluorobiphenyl	69%		39-124%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-147(18-20)		
Lab Sample ID:	JC86986-8	**Date Sampled:**	04/25/19
Matrix:	SO - Soil	**Date Received:**	04/25/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	64.5
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1718-51-0	Terphenyl-d14	81%		36-134%

(a) Associated CCV outside of control limits high, sample was ND.
(b) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-147(18-20)
Lab Sample ID: JC86986-8
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/25/19
Date Received: 04/25/19
Percent Solids: 64.5

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	23600	74	12	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Antimony	0.61 J	3.0	0.61	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Arsenic	5.3	3.0	0.41	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Barium	177	30	2.8	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Beryllium	1.0	0.30	0.12	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cadmium	0.16 J	0.74	0.10	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Calcium	3420 J	740	65	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Chromium	45.3	1.5	0.55	mg/kg	1	04/29/19	05/02/19	MET	SW846 6010D [3]	SW846 3050B [4]
Cobalt	10.6	7.4	0.41	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Copper	11.6	3.7	1.2	mg/kg	1	04/29/19	05/02/19	MET	SW846 6010D [3]	SW846 3050B [4]
Iron	23500	74	28	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Lead	17.2 J	3.0	0.61	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Magnesium	5660	740	20	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Manganese	356 J	2.2	0.61	mg/kg	1	04/29/19	05/02/19	MET	SW846 6010D [3]	SW846 3050B [4]
Mercury	0.047 J	0.049	0.022	mg/kg	1	04/30/19	04/30/19	EAL	SW846 7471B [1]	SW846 7471B [5]
Nickel	28.4	5.9	0.52	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Potassium	2130	1500	47	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Selenium	0.96 U	3.0	0.96	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Silver	0.25 U	0.74	0.25	mg/kg	1	04/29/19	05/02/19	MET	SW846 6010D [3]	SW846 3050B [4]
Sodium	315 J	1500	110	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Thallium	0.86 U	1.5	0.86	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Vanadium	41.7	7.4	0.28	mg/kg	1	04/29/19	05/02/19	MET	SW846 6010D [3]	SW846 3050B [4]
Zinc	68.9	7.4	3.4	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA46605
(2) Instrument QC Batch: MA46628
(3) Instrument QC Batch: MA46638
(4) Prep QC Batch: MP14617
(5) Prep QC Batch: MP14631

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: S-147(18-20)
Lab Sample ID: JC86986-8
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/25/19
Date Received: 04/25/19
Percent Solids: 64.5

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	0.24 J	0.47	0.23	mg/kg	1	05/03/19 13:38	KI	SW846 9012B/LACHAT
Solids, Percent	64.5			%	1	05/01/19 16:00	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

SGS North America Inc.

Report of Analysis

Client Sample ID:	S-148(8-10)		
Lab Sample ID:	JC86986-9	**Date Sampled:**	04/25/19
Matrix:	SO - Soil	**Date Received:**	04/25/19
Method:	SW846 8260C	**Percent Solids:**	78.8
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	D264379.D	1	05/08/19 18:18	TDN	n/a	n/a	VD10654
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	3.7 g	10.0 ml	5.0 ul
Run #2			

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone [b]	ND	37000	18000	ug/kg	
71-43-2	Benzene	4010	1800	1400	ug/kg	
74-97-5	Bromochloromethane	ND	18000	1600	ug/kg	
75-27-4	Bromodichloromethane	ND	7400	1600	ug/kg	
75-25-2	Bromoform	ND	18000	1500	ug/kg	
74-83-9	Bromomethane	ND	18000	3700	ug/kg	
78-93-3	2-Butanone (MEK)	ND	37000	14000	ug/kg	
75-15-0	Carbon disulfide	6430	7400	3400	ug/kg	J
56-23-5	Carbon tetrachloride	ND	7400	2000	ug/kg	
108-90-7	Chlorobenzene	ND	7400	1300	ug/kg	
75-00-3	Chloroethane	ND	18000	2500	ug/kg	
67-66-3	Chloroform	ND	7400	1400	ug/kg	
74-87-3	Chloromethane	ND	18000	7200	ug/kg	
110-82-7	Cyclohexane	ND	7400	1500	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	7400	3100	ug/kg	
124-48-1	Dibromochloromethane	ND	7400	1300	ug/kg	
106-93-4	1,2-Dibromoethane	ND	3700	1200	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	3700	1100	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	3700	1300	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	3700	1300	ug/kg	
75-71-8	Dichlorodifluoromethane [c]	ND	18000	2300	ug/kg	UJ
75-34-3	1,1-Dichloroethane	ND	3700	1400	ug/kg	
107-06-2	1,2-Dichloroethane [c]	ND	3700	1700	ug/kg	UJ
75-35-4	1,1-Dichloroethene	ND	3700	2400	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	3700	3500	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	3700	2500	ug/kg	
78-87-5	1,2-Dichloropropane	ND	7400	1500	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	7400	1300	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	7400	1200	ug/kg	
100-41-4	Ethylbenzene	3520	3700	2000	ug/kg	J
76-13-1	Freon 113	ND	18000	2800	ug/kg	
591-78-6	2-Hexanone	ND	18000	4700	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-148(8-10)		
Lab Sample ID:	JC86986-9	**Date Sampled:**	04/25/19
Matrix:	SO - Soil	**Date Received:**	04/25/19
Method:	SW846 8260C	**Percent Solids:**	78.8
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	7400	2600	ug/kg	
79-20-9	Methyl Acetate	ND	18000	5100	ug/kg	
108-87-2	Methylcyclohexane	ND	7400	2600	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	3700	1300	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	18000	5800	ug/kg	
75-09-2	Methylene chloride	ND	18000	9200	ug/kg	
100-42-5	Styrene	ND	7400	2100	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	7400	1400	ug/kg	
127-18-4	Tetrachloroethene	ND	7400	1700	ug/kg	
108-88-3	Toluene	2310	3700	1400	ug/kg	J
87-61-6	1,2,3-Trichlorobenzene	ND	18000	3700	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	18000	3700	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	7400	1600	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	7400	1300	ug/kg	
79-01-6	Trichloroethene	ND	3700	2800	ug/kg	
75-69-4	Trichlorofluoromethane	ND	18000	2500	ug/kg	
75-01-4	Vinyl chloride	ND	7400	1700	ug/kg	
	m,p-Xylene	9490	3700	2800	ug/kg	
95-47-6	o-Xylene	2980	3700	2200	ug/kg	J
1330-20-7	Xylene (total)	12500	3700	2200	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%		75-127%
17060-07-0	1,2-Dichloroethane-D4	91%		75-130%
2037-26-5	Toluene-D8	100%		80-120%
460-00-4	4-Bromofluorobenzene	95%		79-127%

(a) Diluted due to high concentration of non-target compound.
(b) Associated CCV outside of control limits high, sample was ND.
(c) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	S-148(8-10)		
Lab Sample ID:	JC86986-9	**Date Sampled:**	04/25/19
Matrix:	SO - Soil	**Date Received:**	04/25/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	78.8
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	6P481576.D	5	05/02/19 20:48	AR	05/01/19 10:00	OP20081	E6P2579
Run #2	6P481622.D	50	05/03/19 17:44	AR	05/01/19 10:00	OP20081	E6P2581
Run #3	6P481618.D	500	05/03/19 16:06	AR	05/01/19 10:00	OP20081	E6P2581

	Initial Weight	Final Volume
Run #1	20.0 g	1.0 ml
Run #2	20.0 g	1.0 ml
Run #3	20.0 g	1.0 ml

ABN TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	630	160	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	1600	190	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	1600	270	ug/kg	
105-67-9	2,4-Dimethylphenol [b]	17800	1600	560	ug/kg	J
51-28-5	2,4-Dinitrophenol [c]	ND	1600	1200	ug/kg	UJ
534-52-1	4,6-Dinitro-o-cresol	ND	1600	340	ug/kg	
95-48-7	2-Methylphenol	12000	630	200	ug/kg	
	3&4-Methylphenol	40400 [d]	6300	2600	ug/kg	D
88-75-5	2-Nitrophenol	ND	1600	210	ug/kg	
100-02-7	4-Nitrophenol [e]	ND	3200	850	ug/kg	
87-86-5	Pentachlorophenol	ND	1300	300	ug/kg	
108-95-2	Phenol	37300 [d]	6300	1700	ug/kg	D
95-95-4	2,4,5-Trichlorophenol	ND	1600	240	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	1600	190	ug/kg	
83-32-9	Acenaphthene	65700 [d]	3200	1100	ug/kg	D
208-96-8	Acenaphthylene	575000 [f]	32000	16000	ug/kg	
120-12-7	Anthracene	969000 [f]	32000	19000	ug/kg	
56-55-3	Benzo(a)anthracene	551000 [f]	32000	9000	ug/kg	
50-32-8	Benzo(a)pyrene	438000 [f]	32000	14000	ug/kg	
205-99-2	Benzo(b)fluoranthene	500000 [f]	32000	14000	ug/kg	
191-24-2	Benzo(g,h,i)perylene	245000 [d]	3200	1600	ug/kg	
207-08-9	Benzo(k)fluoranthene	212000 [f]	32000	15000	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	630	120	ug/kg	
85-68-7	Butyl benzyl phthalate [e]	ND	630	77	ug/kg	
91-58-7	2-Chloronaphthalene	ND	630	76	ug/kg	
106-47-8	4-Chloroaniline	ND	1600	110	ug/kg	
86-74-8	Carbazole	491000 [f]	63000	4600	ug/kg	D
218-01-9	Chrysene	502000 [f]	32000	10000	ug/kg	D
111-91-1	bis(2-Chloroethoxy)methane	ND	630	68	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	630	140	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-148(8-10)
Lab Sample ID: JC86986-9
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/25/19
Date Received: 04/25/19
Percent Solids: 78.8

ABN TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	630	110	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	630	100	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	630	92	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	630	68	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	630	77	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	320	98	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	320	160	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	630	260	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	81600 [d]	3200	1400	ug/kg	D
132-64-9	Dibenzofuran	720000 [f]	63000	13000	ug/kg	D
84-74-2	Di-n-butyl phthalate	ND	630	52	ug/kg	
117-84-0	Di-n-octyl phthalate [e]	ND	630	79	ug/kg	
84-66-2	Diethyl phthalate	ND	630	68	ug/kg	
131-11-3	Dimethyl phthalate	ND	630	56	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate [e]	ND	630	74	ug/kg	
206-44-0	Fluoranthene	1840000 [f]	32000	14000	ug/kg	D
86-73-7	Fluorene	1100000 [f]	32000	15000	ug/kg	D
118-74-1	Hexachlorobenzene	ND	630	80	ug/kg	
87-68-3	Hexachlorobutadiene	ND	320	130	ug/kg	
77-47-4	Hexachlorocyclopentadiene [c]	ND	3200	130	ug/kg	UJ
67-72-1	Hexachloroethane	ND	1600	160	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	237000 [d]	3200	1500	ug/kg	D
78-59-1	Isophorone	ND	630	68	ug/kg	
91-57-6	2-Methylnaphthalene	495000 [f]	32000	7200	ug/kg	D
88-74-4	2-Nitroaniline	ND	1600	75	ug/kg	
99-09-2	3-Nitroaniline	ND	1600	79	ug/kg	
100-01-6	4-Nitroaniline	ND	1600	82	ug/kg	
91-20-3	Naphthalene	2640000 [f]	32000	8900	ug/kg	D
98-95-3	Nitrobenzene	ND	630	120	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	630	92	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	1600	120	ug/kg	
85-01-8	Phenanthrene	3120000 [f]	32000	11000	ug/kg	D
129-00-0	Pyrene	1200000 [f]	32000	10000	ug/kg	D
120-82-1	1,2,4-Trichlorobenzene	ND	630	83	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Run# 3	Limits
367-12-4	2-Fluorophenol	57%	58%	0% [g]	23-115%
4165-62-2	Phenol-d5	70%	68%	0% [g]	27-114%
118-79-6	2,4,6-Tribromophenol	91%	63%	0% [g]	19-152%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-148(8-10)		
Lab Sample ID:	JC86986-9	**Date Sampled:**	04/25/19
Matrix:	SO - Soil	**Date Received:**	04/25/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	78.8
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Run# 3	Limits
4165-60-0	Nitrobenzene-d5	120%	74%	0% [g]	26-134%
321-60-8	2-Fluorobiphenyl	50%	60%	0% [g]	39-124%
1718-51-0	Terphenyl-d14	54%	52%	0% [g]	36-134%

(a) Elevated detection limit due to low volume of sample extracted. Dilution required due to the viscosity of the extract matrix.
(b) Associated CCV outside of control limits high.
(c) Associated CCV outside of control limits low.
(d) Result is from Run# 2
(e) Associated CCV outside of control limits high, sample was ND.
(f) Result is from Run# 3
(g) Outside control limits due to dilution.

Report of Analysis

Client Sample ID: S-148(8-10)
Lab Sample ID: JC86986-9
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/25/19
Date Received: 04/25/19
Percent Solids: 78.8

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	3200	61	9.8	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Antimony	1.0 U J	4.9	1.0	mg/kg	2	04/29/19	05/02/19	MET	SW846 6010D [3]	SW846 3050B [4]
Arsenic	13.6	4.9	0.68	mg/kg	2	04/29/19	05/02/19	MET	SW846 6010D [3]	SW846 3050B [4]
Barium	102	24	2.3	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Beryllium	0.35	0.24	0.098	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cadmium	0.71	0.61	0.085	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Calcium	5120 J	610	54	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Chromium	118	1.2	0.45	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cobalt	4.7 J	6.1	0.34	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Copper	104	6.1	2.0	mg/kg	2	04/29/19	05/02/19	MET	SW846 6010D [3]	SW846 3050B [4]
Iron	37400	120	47	mg/kg	2	04/29/19	05/02/19	MET	SW846 6010D [3]	SW846 3050B [4]
Lead	86.0 J	4.9	1.0	mg/kg	2	04/29/19	05/02/19	MET	SW846 6010D [3]	SW846 3050B [4]
Magnesium	899	610	17	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Manganese	191 J	3.7	1.0	mg/kg	2	04/29/19	05/02/19	MET	SW846 6010D [3]	SW846 3050B [4]
Mercury	0.26 J	0.041	0.018	mg/kg	1	04/30/19	04/30/19	EAL	SW846 7471B [1]	SW846 7471B [5]
Nickel	36.1	4.9	0.43	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Potassium	365 J	1200	39	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Selenium	2.8 J	4.9	1.6	mg/kg	2	04/29/19	05/02/19	MET	SW846 6010D [3]	SW846 3050B [4]
Silver	0.41 U	1.2	0.41	mg/kg	2	04/29/19	05/02/19	MET	SW846 6010D [3]	SW846 3050B [4]
Sodium	95 U	1200	95	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Thallium	1.4 U	2.4	1.4	mg/kg	2	04/29/19	05/02/19	MET	SW846 6010D [3]	SW846 3050B [4]
Vanadium	12.7	6.1	0.23	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Zinc	104	6.1	2.8	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA46605
(2) Instrument QC Batch: MA46628
(3) Instrument QC Batch: MA46638
(4) Prep QC Batch: MP14617
(5) Prep QC Batch: MP14631

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	S-148(8-10)		
Lab Sample ID:	JC86986-9	**Date Sampled:**	04/25/19
Matrix:	SO - Soil	**Date Received:**	04/25/19
		Percent Solids:	78.8
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result		RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	8.0	J	0.35	0.17	mg/kg	1	05/03/19 13:40	KI	SW846 9012B/LACHAT
Solids, Percent	78.8				%	1	05/01/19 16:00	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

SGS North America Inc.

Report of Analysis

Client Sample ID:	S-148(16-18)		
Lab Sample ID:	JC86986-10	**Date Sampled:**	04/25/19
Matrix:	SO - Soil	**Date Received:**	04/25/19
Method:	SW846 8260C	**Percent Solids:**	59.8
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3C151786.D	1	05/05/19 19:20	MD	n/a	n/a	V3C6820
Run #2							

	Initial Weight
Run #1	5.6 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	89.0	15	7.5	ug/kg	
71-43-2	Benzene	ND	0.75	0.56	ug/kg	
74-97-5	Bromochloromethane	ND	7.5	0.64	ug/kg	
75-27-4	Bromodichloromethane	ND	3.0	0.66	ug/kg	
75-25-2	Bromoform	ND	7.5	0.60	ug/kg	
74-83-9	Bromomethane	ND	7.5	1.5	ug/kg	
78-93-3	2-Butanone (MEK)	20.9	15	5.6	ug/kg	
75-15-0	Carbon disulfide	ND	3.0	1.4	ug/kg	
56-23-5	Carbon tetrachloride	ND	3.0	0.82	ug/kg	
108-90-7	Chlorobenzene	ND	3.0	0.53	ug/kg	
75-00-3	Chloroethane	ND	7.5	1.0	ug/kg	
67-66-3	Chloroform	ND	3.0	0.56	ug/kg	
74-87-3	Chloromethane [a]	ND	7.5	2.9	ug/kg	UJ
110-82-7	Cyclohexane	ND	3.0	0.61	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	3.0	1.2	ug/kg	
124-48-1	Dibromochloromethane [b]	ND	3.0	0.50	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.5	0.49	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.5	0.46	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.5	0.54	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.5	0.51	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	7.5	0.95	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.5	0.57	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.5	0.70	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.5	0.98	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.5	1.4	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.5	1.0	ug/kg	
78-87-5	1,2-Dichloropropane	ND	3.0	0.61	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	3.0	0.53	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	3.0	0.49	ug/kg	
100-41-4	Ethylbenzene	ND	1.5	0.82	ug/kg	
76-13-1	Freon 113	ND	7.5	1.1	ug/kg	
591-78-6	2-Hexanone	ND	7.5	1.9	ug/kg	

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Report of Analysis

Client Sample ID:	S-148(16-18)		
Lab Sample ID:	JC86986-10	**Date Sampled:**	04/25/19
Matrix:	SO - Soil	**Date Received:**	04/25/19
Method:	SW846 8260C	**Percent Solids:**	59.8
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	3.0	1.0	ug/kg	
79-20-9	Methyl Acetate	ND	7.5	2.1	ug/kg	
108-87-2	Methylcyclohexane	ND	3.0	1.1	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.5	0.53	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK [c]	ND	7.5	2.3	ug/kg	
75-09-2	Methylene chloride	ND	7.5	3.7	ug/kg	
100-42-5	Styrene	ND	3.0	0.86	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	3.0	0.58	ug/kg	
127-18-4	Tetrachloroethene	ND	3.0	0.69	ug/kg	
108-88-3	Toluene	ND	1.5	0.56	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	7.5	1.5	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	7.5	1.5	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	3.0	0.64	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	3.0	0.51	ug/kg	
79-01-6	Trichloroethene	ND	1.5	1.1	ug/kg	
75-69-4	Trichlorofluoromethane	ND	7.5	1.0	ug/kg	
75-01-4	Vinyl chloride	ND	3.0	0.70	ug/kg	
	m,p-Xylene	ND	1.5	1.1	ug/kg	
95-47-6	o-Xylene	ND	1.5	0.87	ug/kg	
1330-20-7	Xylene (total)	ND	1.5	0.87	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		75-127%
17060-07-0	1,2-Dichloroethane-D4	111%		75-130%
2037-26-5	Toluene-D8	106%		80-120%
460-00-4	4-Bromofluorobenzene	117%		79-127%

(a) Associated CCV outside of control limits low.
(b) Associated CCV and BS outside of control limits high, sample was ND.
(c) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	S-148(16-18)		
Lab Sample ID:	JC86986-10	**Date Sampled:**	04/25/19
Matrix:	SO - Soil	**Date Received:**	04/25/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	59.8
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6P481563A.D	1	05/02/19 15:25	AR	05/01/19 10:00	OP20081	E6P2579
Run #2							

	Initial Weight	Final Volume
Run #1	31.1 g	1.0 ml
Run #2		

ABN TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	110	27	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	270	33	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	270	46	ug/kg	
105-67-9	2,4-Dimethylphenol [a]	ND	270	96	ug/kg	
51-28-5	2,4-Dinitrophenol [b]	ND	270	200	ug/kg	UJ
534-52-1	4,6-Dinitro-o-cresol	ND	270	58	ug/kg	
95-48-7	2-Methylphenol	ND	110	34	ug/kg	
	3&4-Methylphenol	ND	110	44	ug/kg	
88-75-5	2-Nitrophenol	ND	270	36	ug/kg	
100-02-7	4-Nitrophenol [a]	ND	540	140	ug/kg	
87-86-5	Pentachlorophenol	ND	220	50	ug/kg	
108-95-2	Phenol	ND	110	28	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	270	40	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	270	32	ug/kg	
83-32-9	Acenaphthene	ND	54	19	ug/kg	
208-96-8	Acenaphthylene	ND	54	27	ug/kg	
120-12-7	Anthracene	ND	54	33	ug/kg	
56-55-3	Benzo(a)anthracene	17.8	54	15	ug/kg	J
50-32-8	Benzo(a)pyrene	ND	54	24	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	54	24	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	54	27	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	54	25	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	110	21	ug/kg	
85-68-7	Butyl benzyl phthalate [a]	ND	110	13	ug/kg	
91-58-7	2-Chloronaphthalene	ND	110	13	ug/kg	
106-47-8	4-Chloroaniline	ND	270	19	ug/kg	
86-74-8	Carbazole	ND	110	7.8	ug/kg	
218-01-9	Chrysene	ND	54	17	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	110	12	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	110	23	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	110	19	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	110	17	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
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Report of Analysis

Client Sample ID: S-148(16-18)
Lab Sample ID: JC86986-10
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/25/19
Date Received: 04/25/19
Percent Solids: 59.8

ABN TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
95-50-1	1,2-Dichlorobenzene	ND	110	16	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	110	11	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	110	13	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	54	17	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	54	27	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	110	45	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	54	24	ug/kg	
132-64-9	Dibenzofuran	ND	110	22	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	110	8.8	ug/kg	
117-84-0	Di-n-octyl phthalate [a]	ND	110	13	ug/kg	
84-66-2	Diethyl phthalate	ND	110	11	ug/kg	
131-11-3	Dimethyl phthalate	ND	110	9.6	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate [a]	ND	110	13	ug/kg	
206-44-0	Fluoranthene	38.0	54	24	ug/kg	J
86-73-7	Fluorene	ND	54	25	ug/kg	
118-74-1	Hexachlorobenzene	ND	110	14	ug/kg	
87-68-3	Hexachlorobutadiene	ND	54	22	ug/kg	
77-47-4	Hexachlorocyclopentadiene [b]	ND	540	21	ug/kg	UJ
67-72-1	Hexachloroethane	ND	270	27	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	54	25	ug/kg	
78-59-1	Isophorone	ND	110	12	ug/kg	
91-57-6	2-Methylnaphthalene	ND	54	12	ug/kg	
88-74-4	2-Nitroaniline	ND	270	13	ug/kg	
99-09-2	3-Nitroaniline	ND	270	13	ug/kg	
100-01-6	4-Nitroaniline	ND	270	14	ug/kg	
91-20-3	Naphthalene	75.4	54	15	ug/kg	
98-95-3	Nitrobenzene	ND	110	21	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	110	16	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	270	20	ug/kg	
85-01-8	Phenanthrene	42.7	54	18	ug/kg	J
129-00-0	Pyrene	29.8	54	17	ug/kg	J
120-82-1	1,2,4-Trichlorobenzene	ND	110	14	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	74%		23-115%
4165-62-2	Phenol-d5	74%		27-114%
118-79-6	2,4,6-Tribromophenol	72%		19-152%
4165-60-0	Nitrobenzene-d5	78%		26-134%
321-60-8	2-Fluorobiphenyl	76%		39-124%

ND = Not detected MDL = Method Detection Limit
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Report of Analysis

Client Sample ID:	S-148(16-18)		
Lab Sample ID:	JC86986-10	**Date Sampled:**	04/25/19
Matrix:	SO - Soil	**Date Received:**	04/25/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	59.8
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1718-51-0	Terphenyl-d14	78%		36-134%

(a) Associated CCV outside of control limits high, sample was ND.
(b) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-148(16-18)
Lab Sample ID: JC86986-10
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/25/19
Date Received: 04/25/19
Percent Solids: 59.8

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	21100	84	13	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [3]
Antimony	0.69 U J	3.3	0.69	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [3]
Arsenic	5.4	3.3	0.47	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [3]
Barium	152	33	3.2	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [3]
Beryllium	1.1	0.33	0.13	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [3]
Cadmium	0.15 J	0.84	0.12	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [3]
Calcium	3160 J	840	74	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [3]
Chromium	46.9	1.7	0.62	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [3]
Cobalt	11.2	8.4	0.47	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [3]
Copper	14.7	4.2	1.4	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [3]
Iron	27600	84	32	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [3]
Lead	42.7 J	3.3	0.69	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [3]
Magnesium	5520	840	23	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [3]
Manganese	447 J	2.5	0.69	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [3]
Mercury	0.040 J	0.049	0.022	mg/kg	1	04/30/19	04/30/19	EAL	SW846 7471B [1]	SW846 7471B [4]
Nickel	29.9	6.7	0.59	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [3]
Potassium	2370	1700	53	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [3]
Selenium	1.1 U	3.3	1.1	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [3]
Silver	0.28 U	0.84	0.28	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [3]
Sodium	257 J	1700	130	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [3]
Thallium	0.97 U	1.7	0.97	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [3]
Vanadium	41.3	8.4	0.32	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [3]
Zinc	82.2	8.4	3.8	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [3]

(1) Instrument QC Batch: MA46605
(2) Instrument QC Batch: MA46628
(3) Prep QC Batch: MP14617
(4) Prep QC Batch: MP14631

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: S-148(16-18)
Lab Sample ID: JC86986-10
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/25/19
Date Received: 04/25/19
Percent Solids: 59.8

General Chemistry

Analyte	Result		RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	0.55	J	0.48	0.24	mg/kg	1	05/03/19 13:41	KI	SW846 9012B/LACHAT
Solids, Percent	59.8				%	1	05/01/19 16:00	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

SGS North America Inc.

Report of Analysis

Client Sample ID:	S-151(0.5-2)		
Lab Sample ID:	JC86986-11	**Date Sampled:**	04/25/19
Matrix:	SO - Soil	**Date Received:**	04/25/19
Method:	SW846 8260C	**Percent Solids:**	89.7
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	D264377.D	1	05/08/19 17:20	TDN	n/a	n/a	VD10654
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	4.1 g	10.0 ml	50.0 ul
Run #2			

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone [b]	ND	2800	1400	ug/kg	
71-43-2	Benzene	ND	140	110	ug/kg	
74-97-5	Bromochloromethane	ND	1400	120	ug/kg	
75-27-4	Bromodichloromethane	ND	570	130	ug/kg	
75-25-2	Bromoform	ND	1400	110	ug/kg	
74-83-9	Bromomethane	ND	1400	280	ug/kg	
78-93-3	2-Butanone (MEK)	ND	2800	1100	ug/kg	
75-15-0	Carbon disulfide	ND	570	260	ug/kg	
56-23-5	Carbon tetrachloride	ND	570	160	ug/kg	
108-90-7	Chlorobenzene	ND	570	100	ug/kg	
75-00-3	Chloroethane	ND	1400	190	ug/kg	
67-66-3	Chloroform	ND	570	110	ug/kg	
74-87-3	Chloromethane	ND	1400	560	ug/kg	
110-82-7	Cyclohexane	ND	570	120	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	570	240	ug/kg	
124-48-1	Dibromochloromethane	ND	570	96	ug/kg	
106-93-4	1,2-Dibromoethane	ND	280	92	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	280	86	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	280	100	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	280	97	ug/kg	
75-71-8	Dichlorodifluoromethane [c]	ND	1400	180	ug/kg	UJ
75-34-3	1,1-Dichloroethane	ND	280	110	ug/kg	
107-06-2	1,2-Dichloroethane [c]	ND	280	130	ug/kg	UJ
75-35-4	1,1-Dichloroethene	ND	280	190	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	280	270	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	280	190	ug/kg	
78-87-5	1,2-Dichloropropane	ND	570	120	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	570	100	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	570	93	ug/kg	
100-41-4	Ethylbenzene	ND	280	160	ug/kg	
76-13-1	Freon 113	ND	1400	220	ug/kg	
591-78-6	2-Hexanone	ND	1400	360	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-151(0.5-2)		
Lab Sample ID:	JC86986-11	**Date Sampled:**	04/25/19
Matrix:	SO - Soil	**Date Received:**	04/25/19
Method:	SW846 8260C	**Percent Solids:**	89.7
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	570	200	ug/kg	
79-20-9	Methyl Acetate	ND	1400	390	ug/kg	
108-87-2	Methylcyclohexane	ND	570	200	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	280	100	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	1400	440	ug/kg	
75-09-2	Methylene chloride	ND	1400	710	ug/kg	
100-42-5	Styrene	ND	570	160	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	570	110	ug/kg	
127-18-4	Tetrachloroethene	ND	570	130	ug/kg	
108-88-3	Toluene	ND	280	110	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	1400	280	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	1400	280	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	570	120	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	570	97	ug/kg	
79-01-6	Trichloroethene	ND	280	220	ug/kg	
75-69-4	Trichlorofluoromethane	ND	1400	190	ug/kg	
75-01-4	Vinyl chloride	ND	570	130	ug/kg	
	m,p-Xylene	ND	280	210	ug/kg	
95-47-6	o-Xylene	ND	280	170	ug/kg	
1330-20-7	Xylene (total)	ND	280	170	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	98%		75-127%
17060-07-0	1,2-Dichloroethane-D4	90%		75-130%
2037-26-5	Toluene-D8	100%		80-120%
460-00-4	4-Bromofluorobenzene	95%		79-127%

(a) Diluted due to high concentration of non-target compound.
(b) Associated CCV outside of control limits high, sample was ND.
(c) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	S-151(0.5-2)		
Lab Sample ID:	JC86986-11	**Date Sampled:**	04/25/19
Matrix:	SO - Soil	**Date Received:**	04/25/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	89.7
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6P481574.D	2	05/02/19 19:59	AR	05/01/19 10:00	OP20081	E6P2579
Run #2	6P481620.D	20	05/03/19 16:55	AR	05/01/19 10:00	OP20081	E6P2581
Run #3	6P481616.D	200	05/03/19 15:18	AR	05/01/19 10:00	OP20081	E6P2581

	Initial Weight	Final Volume
Run #1	30.0 g	1.0 ml
Run #2	30.0 g	1.0 ml
Run #3	30.0 g	1.0 ml

ABN TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	150	37	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	370	46	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	370	63	ug/kg	
105-67-9	2,4-Dimethylphenol [a]	ND	370	130	ug/kg	
51-28-5	2,4-Dinitrophenol [b]	ND	370	280	ug/kg	UJ
534-52-1	4,6-Dinitro-o-cresol	ND	370	80	ug/kg	
95-48-7	2-Methylphenol	ND	150	47	ug/kg	
	3&4-Methylphenol	119	150	61	ug/kg	J
88-75-5	2-Nitrophenol	ND	370	49	ug/kg	
100-02-7	4-Nitrophenol [a]	ND	740	200	ug/kg	
87-86-5	Pentachlorophenol	ND	300	70	ug/kg	
108-95-2	Phenol	92.8	150	39	ug/kg	J
95-95-4	2,4,5-Trichlorophenol	ND	370	56	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	370	44	ug/kg	
83-32-9	Acenaphthene	5080	74	26	ug/kg	
208-96-8	Acenaphthylene	40300 [c]	740	380	ug/kg	D
120-12-7	Anthracene	78800 [d]	7400	4600	ug/kg	
56-55-3	Benzo(a)anthracene	93100 [d]	7400	2100	ug/kg	
50-32-8	Benzo(a)pyrene	86400 [d]	7400	3400	ug/kg	
205-99-2	Benzo(b)fluoranthene	101000 [d]	7400	3300	ug/kg	
191-24-2	Benzo(g,h,i)perylene	64700 [c]	740	370	ug/kg	
207-08-9	Benzo(k)fluoranthene	40300 [d]	7400	3500	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	150	29	ug/kg	
85-68-7	Butyl benzyl phthalate [a]	ND	150	18	ug/kg	
91-58-7	2-Chloronaphthalene	ND	150	18	ug/kg	
106-47-8	4-Chloroaniline	ND	370	27	ug/kg	
86-74-8	Carbazole	29400 [c]	1500	110	ug/kg	D
218-01-9	Chrysene	77000 [d]	7400	2300	ug/kg	D
111-91-1	bis(2-Chloroethoxy)methane	ND	150	16	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	150	32	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-151(0.5-2)
Lab Sample ID: JC86986-11
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/25/19
Date Received: 04/25/19
Percent Solids: 89.7

ABN TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	150	27	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	150	24	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	150	21	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	150	16	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	150	18	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	74	23	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	74	37	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	150	62	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	16400 [c]	740	330	ug/kg	D
132-64-9	Dibenzofuran	52600 [c]	1500	300	ug/kg	D
84-74-2	Di-n-butyl phthalate	ND	150	12	ug/kg	
117-84-0	Di-n-octyl phthalate [a]	ND	150	19	ug/kg	
84-66-2	Diethyl phthalate	ND	150	16	ug/kg	
131-11-3	Dimethyl phthalate	ND	150	13	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate [a]	ND	150	17	ug/kg	
206-44-0	Fluoranthene	305000 [d]	7400	3300	ug/kg	D
86-73-7	Fluorene	91900 [d]	7400	3400	ug/kg	D
118-74-1	Hexachlorobenzene	ND	150	19	ug/kg	
87-68-3	Hexachlorobutadiene	ND	74	30	ug/kg	
77-47-4	Hexachlorocyclopentadiene [b]	ND	740	30	ug/kg	UJ
67-72-1	Hexachloroethane	ND	370	37	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	56900 [c]	740	350	ug/kg	D
78-59-1	Isophorone	ND	150	16	ug/kg	
91-57-6	2-Methylnaphthalene	22100 [c]	740	170	ug/kg	D
88-74-4	2-Nitroaniline	ND	370	18	ug/kg	
99-09-2	3-Nitroaniline	ND	370	19	ug/kg	
100-01-6	4-Nitroaniline	ND	370	19	ug/kg	
91-20-3	Naphthalene	100000 [d]	7400	2100	ug/kg	D
98-95-3	Nitrobenzene	ND	150	29	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	150	21	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	370	27	ug/kg	
85-01-8	Phenanthrene	354000 [d]	7400	2500	ug/kg	D
129-00-0	Pyrene	227000 [d]	7400	2400	ug/kg	D
120-82-1	1,2,4-Trichlorobenzene	ND	150	19	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Run# 3	Limits
367-12-4	2-Fluorophenol	64%	59%	59%	23-115%
4165-62-2	Phenol-d5	65%	67%	66%	27-114%
118-79-6	2,4,6-Tribromophenol	67%	60%	67%	19-152%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-151(0.5-2)		
Lab Sample ID:	JC86986-11	**Date Sampled:**	04/25/19
Matrix:	SO - Soil	**Date Received:**	04/25/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	89.7
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Run# 3	Limits
4165-60-0	Nitrobenzene-d5	73%	71%	59%	26-134%
321-60-8	2-Fluorobiphenyl	63%	69%	69%	39-124%
1718-51-0	Terphenyl-d14	58%	64%	80%	36-134%

(a) Associated CCV outside of control limits high, sample was ND.
(b) Associated CCV outside of control limits low.
(c) Result is from Run# 2
(d) Result is from Run# 3

Report of Analysis

Client Sample ID: S-151(0.5-2)
Lab Sample ID: JC86986-11
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/25/19
Date Received: 04/25/19
Percent Solids: 89.7

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	6750	55	8.9	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [3]
Antimony	0.87 J	2.2	0.45	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [3]
Arsenic	6.9	2.2	0.31	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [3]
Barium	84.3	22	2.1	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [3]
Beryllium	0.75	0.22	0.088	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [3]
Cadmium	0.31 J	0.55	0.077	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [3]
Calcium	17500 J	550	49	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [3]
Chromium	16.7	1.1	0.41	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [3]
Cobalt	3.3 J	5.5	0.31	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [3]
Copper	25.5	2.8	0.93	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [3]
Iron	11600	55	21	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [3]
Lead	102 J	2.2	0.45	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [3]
Magnesium	3890	550	15	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [3]
Manganese	350 J	1.7	0.45	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [3]
Mercury	0.12 J	0.031	0.014	mg/kg	1	04/30/19	04/30/19	EAL	SW846 7471B [1]	SW846 7471B [4]
Nickel	9.4	4.4	0.39	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [3]
Potassium	853 J	1100	35	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [3]
Selenium	0.74 J	2.2	0.72	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [3]
Silver	0.19 U	0.55	0.19	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [3]
Sodium	273 J	1100	86	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [3]
Thallium	0.64 U	1.1	0.64	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [3]
Vanadium	13.7	5.5	0.21	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [3]
Zinc	49.0	5.5	2.5	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [3]

(1) Instrument QC Batch: MA46605
(2) Instrument QC Batch: MA46628
(3) Prep QC Batch: MP14617
(4) Prep QC Batch: MP14631

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	S-151(0.5-2)		
Lab Sample ID:	JC86986-11	**Date Sampled:**	04/25/19
Matrix:	SO - Soil	**Date Received:**	04/25/19
		Percent Solids:	89.7
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result		RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	0.72	J	0.23	0.12	mg/kg	1	05/03/19 13:42	KI	SW846 9012B/LACHAT
Solids, Percent	89.7				%	1	05/01/19 16:00	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

SGS North America Inc.

Report of Analysis

Client Sample ID:	S-151(3-5)		
Lab Sample ID:	JC86986-12	**Date Sampled:**	04/25/19
Matrix:	SO - Soil	**Date Received:**	04/25/19
Method:	SW846 8260C	**Percent Solids:**	78.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3C151787.D	1	05/05/19 19:43	MD	n/a	n/a	V3C6820
Run #2							

	Initial Weight
Run #1	5.0 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	13.9	13	6.4	ug/kg	
71-43-2	Benzene	ND	0.64	0.48	ug/kg	
74-97-5	Bromochloromethane	ND	6.4	0.55	ug/kg	
75-27-4	Bromodichloromethane	ND	2.6	0.57	ug/kg	
75-25-2	Bromoform	ND	6.4	0.52	ug/kg	
74-83-9	Bromomethane	ND	6.4	1.3	ug/kg	
78-93-3	2-Butanone (MEK)	ND	13	4.8	ug/kg	
75-15-0	Carbon disulfide	ND	2.6	1.2	ug/kg	
56-23-5	Carbon tetrachloride	ND	2.6	0.70	ug/kg	
108-90-7	Chlorobenzene	ND	2.6	0.45	ug/kg	
75-00-3	Chloroethane	ND	6.4	0.88	ug/kg	
67-66-3	Chloroform	ND	2.6	0.48	ug/kg	
74-87-3	Chloromethane [a]	ND	6.4	2.5	ug/kg	UJ
110-82-7	Cyclohexane	ND	2.6	0.52	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.6	1.1	ug/kg	
124-48-1	Dibromochloromethane [b]	ND	2.6	0.43	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.3	0.42	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.3	0.39	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.3	0.46	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.3	0.44	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	6.4	0.81	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.3	0.49	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.3	0.60	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.3	0.84	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.3	1.2	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.3	0.85	ug/kg	
78-87-5	1,2-Dichloropropane	ND	2.6	0.52	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	2.6	0.45	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2.6	0.42	ug/kg	
100-41-4	Ethylbenzene	ND	1.3	0.71	ug/kg	
76-13-1	Freon 113	ND	6.4	0.97	ug/kg	
591-78-6	2-Hexanone	ND	6.4	1.6	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-151(3-5)		
Lab Sample ID:	JC86986-12	**Date Sampled:**	04/25/19
Matrix:	SO - Soil	**Date Received:**	04/25/19
Method:	SW846 8260C	**Percent Solids:**	78.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	2.6	0.89	ug/kg	
79-20-9	Methyl Acetate	ND	6.4	1.8	ug/kg	
108-87-2	Methylcyclohexane	ND	2.6	0.90	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.3	0.45	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK [c]	ND	6.4	2.0	ug/kg	
75-09-2	Methylene chloride	ND	6.4	3.2	ug/kg	
100-42-5	Styrene	ND	2.6	0.74	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.6	0.50	ug/kg	
127-18-4	Tetrachloroethene	ND	2.6	0.59	ug/kg	
108-88-3	Toluene	ND	1.3	0.48	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	6.4	1.3	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	6.4	1.3	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	2.6	0.54	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2.6	0.44	ug/kg	
79-01-6	Trichloroethene	ND	1.3	0.97	ug/kg	
75-69-4	Trichlorofluoromethane	ND	6.4	0.87	ug/kg	
75-01-4	Vinyl chloride	ND	2.6	0.60	ug/kg	
	m,p-Xylene	ND	1.3	0.95	ug/kg	
95-47-6	o-Xylene	ND	1.3	0.75	ug/kg	
1330-20-7	Xylene (total)	ND	1.3	0.75	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	99%		75-127%
17060-07-0	1,2-Dichloroethane-D4	103%		75-130%
2037-26-5	Toluene-D8	102%		80-120%
460-00-4	4-Bromofluorobenzene	106%		79-127%

(a) Associated CCV outside of control limits low.
(b) Associated CCV and BS outside of control limits high, sample was ND.
(c) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	S-151(3-5)		
Lab Sample ID:	JC86986-12	**Date Sampled:**	04/25/19
Matrix:	SO - Soil	**Date Received:**	04/25/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	78.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6P481564.D	1	05/02/19 15:50	AR	05/01/19 10:00	OP20081	E6P2579
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	1.0 ml
Run #2		

ABN TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	85	21	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	210	26	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	210	36	ug/kg	
105-67-9	2,4-Dimethylphenol [a]	ND	210	76	ug/kg	
51-28-5	2,4-Dinitrophenol [b]	ND	210	160	ug/kg	UJ
534-52-1	4,6-Dinitro-o-cresol	ND	210	46	ug/kg	
95-48-7	2-Methylphenol	ND	85	27	ug/kg	
	3&4-Methylphenol	ND	85	35	ug/kg	
88-75-5	2-Nitrophenol	ND	210	28	ug/kg	
100-02-7	4-Nitrophenol [a]	ND	430	110	ug/kg	
87-86-5	Pentachlorophenol	ND	170	40	ug/kg	
108-95-2	Phenol	ND	85	22	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	210	32	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	210	25	ug/kg	
83-32-9	Acenaphthene	18.8	43	15	ug/kg	J
208-96-8	Acenaphthylene	ND	43	22	ug/kg	
120-12-7	Anthracene	52.6	43	26	ug/kg	
56-55-3	Benzo(a)anthracene	138	43	12	ug/kg	
50-32-8	Benzo(a)pyrene	134	43	19	ug/kg	
205-99-2	Benzo(b)fluoranthene	154	43	19	ug/kg	J
191-24-2	Benzo(g,h,i)perylene	82.7	43	21	ug/kg	
207-08-9	Benzo(k)fluoranthene	54.1	43	20	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	85	16	ug/kg	
85-68-7	Butyl benzyl phthalate [a]	ND	85	10	ug/kg	
91-58-7	2-Chloronaphthalene	ND	85	10	ug/kg	
106-47-8	4-Chloroaniline	ND	210	15	ug/kg	
86-74-8	Carbazole	24.5	85	6.2	ug/kg	J
218-01-9	Chrysene	126	43	13	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	85	9.1	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	85	18	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	85	15	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	85	14	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-151(3-5)
Lab Sample ID: JC86986-12
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/25/19
Date Received: 04/25/19
Percent Solids: 78.2

ABN TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
95-50-1	1,2-Dichlorobenzene	ND	85	12	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	85	9.1	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	85	10	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	43	13	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	43	21	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	85	36	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	43	19	ug/kg	
132-64-9	Dibenzofuran	ND	85	17	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	85	6.9	ug/kg	
117-84-0	Di-n-octyl phthalate [a]	ND	85	11	ug/kg	
84-66-2	Diethyl phthalate	ND	85	9.1	ug/kg	
131-11-3	Dimethyl phthalate	ND	85	7.6	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate [a]	ND	85	10	ug/kg	
206-44-0	Fluoranthene	282	43	19	ug/kg	J
86-73-7	Fluorene	21.1	43	20	ug/kg	J
118-74-1	Hexachlorobenzene	ND	85	11	ug/kg	
87-68-3	Hexachlorobutadiene	ND	43	17	ug/kg	
77-47-4	Hexachlorocyclopentadiene [b]	ND	430	17	ug/kg	UJ
67-72-1	Hexachloroethane	ND	210	21	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	68.7	43	20	ug/kg	
78-59-1	Isophorone	ND	85	9.1	ug/kg	
91-57-6	2-Methylnaphthalene	ND	43	9.6	ug/kg	
88-74-4	2-Nitroaniline	ND	210	10	ug/kg	
99-09-2	3-Nitroaniline	ND	210	11	ug/kg	
100-01-6	4-Nitroaniline	ND	210	11	ug/kg	
91-20-3	Naphthalene	12.2	43	12	ug/kg	J
98-95-3	Nitrobenzene	ND	85	16	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	85	12	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	210	16	ug/kg	
85-01-8	Phenanthrene	202	43	14	ug/kg	J
129-00-0	Pyrene	248	43	14	ug/kg	J
120-82-1	1,2,4-Trichlorobenzene	ND	85	11	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	83%		23-115%
4165-62-2	Phenol-d5	82%		27-114%
118-79-6	2,4,6-Tribromophenol	77%		19-152%
4165-60-0	Nitrobenzene-d5	86%		26-134%
321-60-8	2-Fluorobiphenyl	82%		39-124%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-151(3-5)		
Lab Sample ID:	JC86986-12	**Date Sampled:**	04/25/19
Matrix:	SO - Soil	**Date Received:**	04/25/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	78.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1718-51-0	Terphenyl-d14	84%		36-134%

(a) Associated CCV outside of control limits high, sample was ND.
(b) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-151(3-5)
Lab Sample ID: JC86986-12
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/25/19
Date Received: 04/25/19
Percent Solids: 78.2

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	16100	67	11	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Antimony	0.55 U J	2.7	0.55	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Arsenic	2.9	2.7	0.37	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Barium	151	27	2.5	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Beryllium [a]	0.84	0.53	0.21	mg/kg	2	04/29/19	05/02/19	MET	SW846 6010D [3]	SW846 3050B [4]
Cadmium	0.093 U	0.67	0.093	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Calcium	7430 J	670	59	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Chromium	33.2	1.3	0.49	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cobalt	12.2	6.7	0.37	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Copper	46.5	3.3	1.1	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Iron	26300	67	26	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Lead	103 J	2.7	0.55	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Magnesium	8400	670	18	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Manganese	382 J	2.0	0.55	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Mercury	0.31 J	0.036	0.016	mg/kg	1	04/30/19	04/30/19	EAL	SW846 7471B [1]	SW846 7471B [5]
Nickel	25.1	5.3	0.47	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Potassium	7750	1300	42	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Selenium	0.87 U	2.7	0.87	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Silver	0.23 U	0.67	0.23	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Sodium	173 J	1300	100	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Thallium [a]	1.5 U	2.7	1.5	mg/kg	2	04/29/19	05/02/19	MET	SW846 6010D [3]	SW846 3050B [4]
Vanadium	36.7	6.7	0.25	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Zinc	106	6.7	3.1	mg/kg	1	04/29/19	05/02/19	MET	SW846 6010D [3]	SW846 3050B [4]

(1) Instrument QC Batch: MA46605
(2) Instrument QC Batch: MA46628
(3) Instrument QC Batch: MA46638
(4) Prep QC Batch: MP14617
(5) Prep QC Batch: MP14631

(a) Elevated detection limit due to dilution required for high interfering element.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	S-151(3-5)		
Lab Sample ID:	JC86986-12	**Date Sampled:**	04/25/19
Matrix:	SO - Soil	**Date Received:**	04/25/19
		Percent Solids:	78.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	0.15 U J	0.30	0.15	mg/kg	1	05/03/19 13:44	KI	SW846 9012B/LACHAT
Solids, Percent	78.2			%	1	05/01/19 16:00	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

SGS North America Inc.

Report of Analysis

Client Sample ID:	SO-DUP-0425		
Lab Sample ID:	JC86986-13	**Date Sampled:**	04/25/19
Matrix:	SO - Soil	**Date Received:**	04/25/19
Method:	SW846 8260C	**Percent Solids:**	82.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3C151788.D	1	05/05/19 20:07	MD	n/a	n/a	V3C6820
Run #2							

	Initial Weight
Run #1	5.9 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	27.8	10	5.1	ug/kg	
71-43-2	Benzene	ND	0.51	0.39	ug/kg	
74-97-5	Bromochloromethane	ND	5.1	0.44	ug/kg	
75-27-4	Bromodichloromethane	ND	2.0	0.45	ug/kg	
75-25-2	Bromoform	ND	5.1	0.41	ug/kg	
74-83-9	Bromomethane	ND	5.1	1.0	ug/kg	
78-93-3	2-Butanone (MEK)	ND	10	3.8	ug/kg	
75-15-0	Carbon disulfide	ND	2.0	0.95	ug/kg	
56-23-5	Carbon tetrachloride	ND	2.0	0.56	ug/kg	
108-90-7	Chlorobenzene	ND	2.0	0.36	ug/kg	
75-00-3	Chloroethane	ND	5.1	0.70	ug/kg	
67-66-3	Chloroform	ND	2.0	0.38	ug/kg	
74-87-3	Chloromethane [a]	ND	5.1	2.0	ug/kg	UJ
110-82-7	Cyclohexane	ND	2.0	0.42	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.85	ug/kg	
124-48-1	Dibromochloromethane [b]	ND	2.0	0.35	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.0	0.33	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.31	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.37	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.35	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	5.1	0.65	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.0	0.39	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.0	0.48	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.0	0.67	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.98	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.68	ug/kg	
78-87-5	1,2-Dichloropropane	ND	2.0	0.42	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	2.0	0.36	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2.0	0.33	ug/kg	
100-41-4	Ethylbenzene	ND	1.0	0.56	ug/kg	
76-13-1	Freon 113	ND	5.1	0.78	ug/kg	
591-78-6	2-Hexanone	ND	5.1	1.3	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SO-DUP-0425		
Lab Sample ID:	JC86986-13	**Date Sampled:**	04/25/19
Matrix:	SO - Soil	**Date Received:**	04/25/19
Method:	SW846 8260C	**Percent Solids:**	82.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	2.0	0.71	ug/kg	
79-20-9	Methyl Acetate	ND	5.1	1.4	ug/kg	
108-87-2	Methylcyclohexane	ND	2.0	0.72	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.36	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK [c]	ND	5.1	1.6	ug/kg	
75-09-2	Methylene chloride	ND	5.1	2.6	ug/kg	
100-42-5	Styrene	ND	2.0	0.59	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.0	0.40	ug/kg	
127-18-4	Tetrachloroethene	ND	2.0	0.47	ug/kg	
108-88-3	Toluene	ND	1.0	0.38	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	5.1	1.0	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	5.1	1.0	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	2.0	0.44	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2.0	0.35	ug/kg	
79-01-6	Trichloroethene	ND	1.0	0.78	ug/kg	
75-69-4	Trichlorofluoromethane	ND	5.1	0.70	ug/kg	
75-01-4	Vinyl chloride	ND	2.0	0.48	ug/kg	
	m,p-Xylene	ND	1.0	0.76	ug/kg	
95-47-6	o-Xylene	ND	1.0	0.60	ug/kg	
1330-20-7	Xylene (total)	ND	1.0	0.60	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		75-127%
17060-07-0	1,2-Dichloroethane-D4	109%		75-130%
2037-26-5	Toluene-D8	101%		80-120%
460-00-4	4-Bromofluorobenzene	107%		79-127%

(a) Associated CCV outside of control limits low.
(b) Associated CCV and BS outside of control limits high, sample was ND.
(c) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	SO-DUP-0425		
Lab Sample ID:	JC86986-13	**Date Sampled:**	04/25/19
Matrix:	SO - Soil	**Date Received:**	04/25/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	82.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6P481559.D	1	05/02/19 13:36	AR	05/01/19 10:00	OP20081	E6P2579
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	1.0 ml
Run #2		

ABN TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	80	20	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	200	25	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	200	34	ug/kg	
105-67-9	2,4-Dimethylphenol [a]	ND	200	72	ug/kg	
51-28-5	2,4-Dinitrophenol [b]	ND	200	150	ug/kg	UJ
534-52-1	4,6-Dinitro-o-cresol	ND	200	43	ug/kg	
95-48-7	2-Methylphenol	ND	80	26	ug/kg	
	3&4-Methylphenol	ND	80	33	ug/kg	
88-75-5	2-Nitrophenol	ND	200	27	ug/kg	
100-02-7	4-Nitrophenol [a]	ND	400	110	ug/kg	
87-86-5	Pentachlorophenol	ND	160	38	ug/kg	
108-95-2	Phenol	ND	80	21	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	200	30	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	200	24	ug/kg	
83-32-9	Acenaphthene	ND	40	14	ug/kg	
208-96-8	Acenaphthylene	ND	40	20	ug/kg	
120-12-7	Anthracene	ND	40	25	ug/kg	
56-55-3	Benzo(a)anthracene	18.9	40	11	ug/kg	J
50-32-8	Benzo(a)pyrene	ND	40	18	ug/kg	
205-99-2	Benzo(b)fluoranthene	18.6	40	18	ug/kg	J
191-24-2	Benzo(g,h,i)perylene	ND	40	20	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	40	19	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	80	16	ug/kg	
85-68-7	Butyl benzyl phthalate [a]	ND	80	9.8	ug/kg	
91-58-7	2-Chloronaphthalene	ND	80	9.6	ug/kg	
106-47-8	4-Chloroaniline	ND	200	14	ug/kg	
86-74-8	Carbazole	ND	80	5.8	ug/kg	
218-01-9	Chrysene	14.9	40	13	ug/kg	J
111-91-1	bis(2-Chloroethoxy)methane	ND	80	8.6	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	80	17	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	80	14	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	80	13	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SO-DUP-0425		
Lab Sample ID:	JC86986-13	**Date Sampled:**	04/25/19
Matrix:	SO - Soil	**Date Received:**	04/25/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	82.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
95-50-1	1,2-Dichlorobenzene	ND	80	12	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	80	8.6	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	80	9.8	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	40	12	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	40	20	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	80	34	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	40	18	ug/kg	
132-64-9	Dibenzofuran	ND	80	16	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	80	6.6	ug/kg	
117-84-0	Di-n-octyl phthalate [a]	ND	80	10	ug/kg	
84-66-2	Diethyl phthalate	ND	80	8.6	ug/kg	
131-11-3	Dimethyl phthalate	ND	80	7.2	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate [a]	ND	80	9.4	ug/kg	
206-44-0	Fluoranthene	27.7	40	18	ug/kg	J
86-73-7	Fluorene	ND	40	18	ug/kg	
118-74-1	Hexachlorobenzene	ND	80	10	ug/kg	
87-68-3	Hexachlorobutadiene	ND	40	16	ug/kg	
77-47-4	Hexachlorocyclopentadiene [b]	ND	400	16	ug/kg	UJ
67-72-1	Hexachloroethane	ND	200	20	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	40	19	ug/kg	
78-59-1	Isophorone	ND	80	8.6	ug/kg	
91-57-6	2-Methylnaphthalene	ND	40	9.1	ug/kg	
88-74-4	2-Nitroaniline	ND	200	9.5	ug/kg	
99-09-2	3-Nitroaniline	ND	200	10	ug/kg	
100-01-6	4-Nitroaniline	ND	200	10	ug/kg	
91-20-3	Naphthalene	ND	40	11	ug/kg	
98-95-3	Nitrobenzene	ND	80	16	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	80	12	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	200	15	ug/kg	
85-01-8	Phenanthrene	22.8	40	14	ug/kg	J
129-00-0	Pyrene	28.6	40	13	ug/kg	J
120-82-1	1,2,4-Trichlorobenzene	ND	80	11	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	76%		23-115%
4165-62-2	Phenol-d5	76%		27-114%
118-79-6	2,4,6-Tribromophenol	69%		19-152%
4165-60-0	Nitrobenzene-d5	79%		26-134%
321-60-8	2-Fluorobiphenyl	68%		39-124%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SO-DUP-0425		
Lab Sample ID:	JC86986-13	**Date Sampled:**	04/25/19
Matrix:	SO - Soil	**Date Received:**	04/25/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	82.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1718-51-0	Terphenyl-d14	78%		36-134%

(a) Associated CCV outside of control limits high, sample was ND.
(b) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: SO-DUP-0425
Lab Sample ID: JC86986-13
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/25/19
Date Received: 04/25/19
Percent Solids: 82.9

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	18500	59	9.4	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Antimony [a]	0.96 U J	4.7	0.96	mg/kg	2	04/29/19	05/02/19	MET	SW846 6010D [3]	SW846 3050B [4]
Arsenic [a]	2.4 J	4.7	0.66	mg/kg	2	04/29/19	05/02/19	MET	SW846 6010D [3]	SW846 3050B [4]
Barium	153	23	2.2	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Beryllium [a]	0.91	0.47	0.19	mg/kg	2	04/29/19	05/02/19	MET	SW846 6010D [3]	SW846 3050B [4]
Cadmium	0.12 J	0.59	0.082	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Calcium	1700 J	590	52	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Chromium	33.7	1.2	0.43	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cobalt [a]	13.2	12	0.66	mg/kg	2	04/29/19	05/02/19	MET	SW846 6010D [3]	SW846 3050B [4]
Copper [a]	54.2	5.9	2.0	mg/kg	2	04/29/19	05/02/19	MET	SW846 6010D [3]	SW846 3050B [4]
Iron	30400	120	45	mg/kg	2	04/29/19	05/02/19	MET	SW846 6010D [3]	SW846 3050B [4]
Lead [a]	36.8 J	4.7	0.96	mg/kg	2	04/29/19	05/02/19	MET	SW846 6010D [3]	SW846 3050B [4]
Magnesium	9700	590	16	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Manganese [a]	469 J	3.5	0.96	mg/kg	2	04/29/19	05/02/19	MET	SW846 6010D [3]	SW846 3050B [4]
Mercury	0.054 J	0.037	0.016	mg/kg	1	04/30/19	04/30/19	EAL	SW846 7471B [1]	SW846 7471B [5]
Nickel	32.4	4.7	0.41	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Potassium	10300	1200	37	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Selenium [a]	1.5 U	4.7	1.5	mg/kg	2	04/29/19	05/02/19	MET	SW846 6010D [3]	SW846 3050B [4]
Silver [a]	0.40 U	1.2	0.40	mg/kg	2	04/29/19	05/02/19	MET	SW846 6010D [3]	SW846 3050B [4]
Sodium	190 J	1200	91	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Thallium [a]	1.4 U	2.3	1.4	mg/kg	2	04/29/19	05/02/19	MET	SW846 6010D [3]	SW846 3050B [4]
Vanadium	42.9	5.9	0.22	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Zinc	124	5.9	2.7	mg/kg	1	04/29/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA46605
(2) Instrument QC Batch: MA46628
(3) Instrument QC Batch: MA46638
(4) Prep QC Batch: MP14617
(5) Prep QC Batch: MP14631

(a) Elevated detection limit due to dilution required for high interfering element.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: SO-DUP-0425
Lab Sample ID: JC86986-13
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/25/19
Date Received: 04/25/19
Percent Solids: 82.9

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	0.20 J	0.28	0.14	mg/kg	1	05/03/19 13:45	KI	SW846 9012B/LACHAT
Solids, Percent	82.9			%	1	05/01/19 16:00	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

ARCADIS Design & Consultancy for natural and built assets

National Grid

Philly Coke

DATA REVIEW

Philadelphia, Pennsylvania

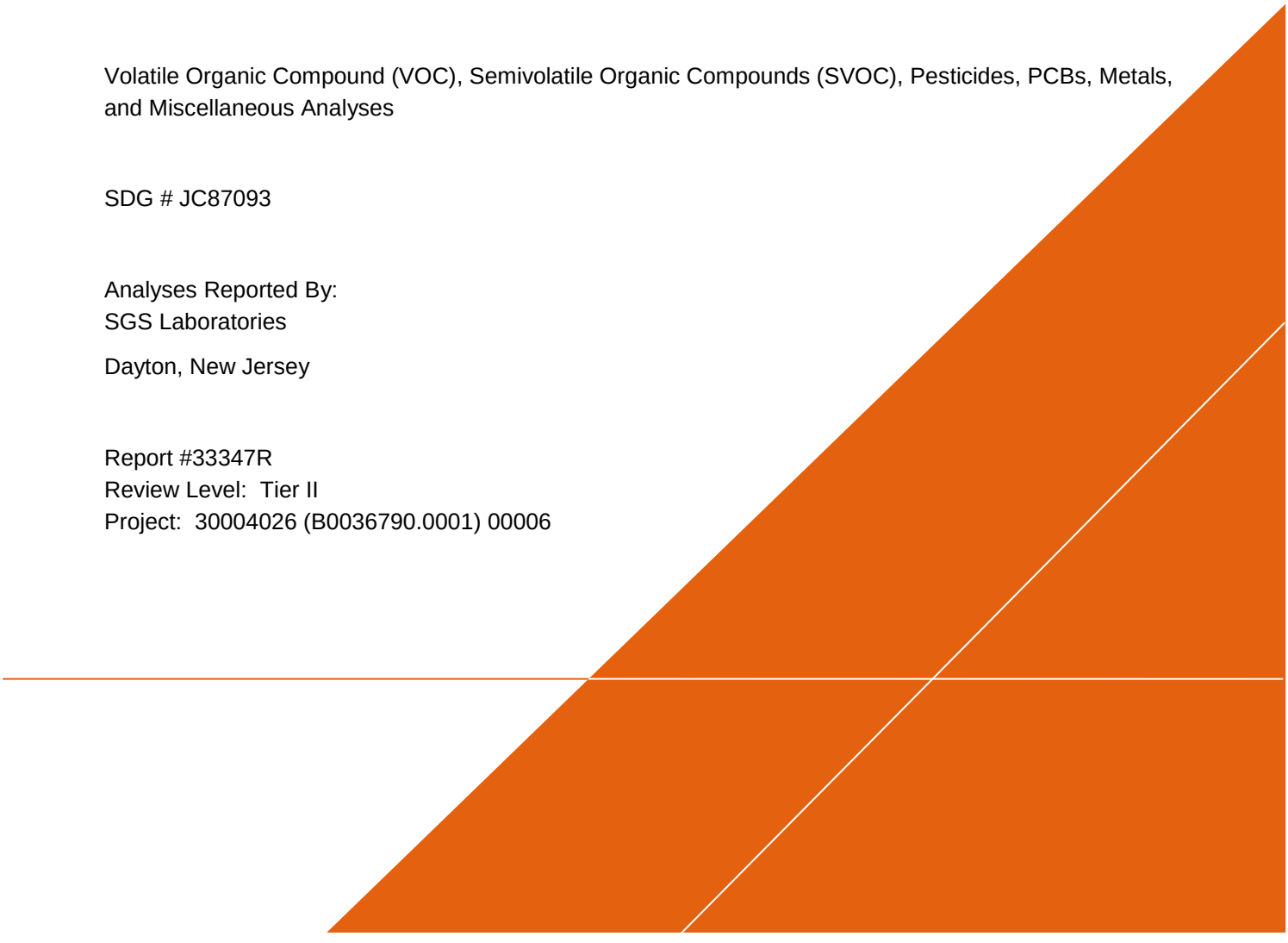
Volatile Organic Compound (VOC), Semivolatile Organic Compounds (SVOC), Pesticides, PCBs, Metals, and Miscellaneous Analyses

SDG # JC87093

Analyses Reported By:
SGS Laboratories

Dayton, New Jersey

Report #33347R
Review Level: Tier II
Project: 30004026 (B0036790.0001) 00006



SUMMARY

This data review report summarizes the review of Sample Delivery Group (SDG) # JC87093 for samples collected in association with the National Grid Philly Coke site in Philadelphia, Pennsylvania. The review was conducted as a Tier II evaluation and included review of laboratory analytical data package completeness. Field documentation was not included in this review. Included with this assessment are the post-validation annotated sample result sheets, and chain of custody (COC). Analyses were performed on the following samples

SDG Number	Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis				
						VOC	SVOC	PEST/ PCB	Metals	MISC
JC86986	S-155 (10-12) (04-26-2019)	JC87093-1	Soil	4/26/2019						X
	S-155 (13-15) (04-26-2019)	JC87093-2	Soil	4/26/2019		X	X		X	X
	S-154 (9-11) (04-26-2019)	JC87093-3	Soil	4/26/2019		X	X		X	X
	S-154 (12-14) (04-26-2019)	JC87093-4	Soil	4/26/2019		X	X		X	X
	SO-DUP-0426-1 (04-26-2019)	JC87093-5	Soil	4/26/2019	S-154 (12-14) (04-26-2019)	X	X		X	X
	S-158 (11-13) (04-26-2019)	JC87093-6	Soil	4/26/2019		X	X		X	X
	S-158 (18-20) (04-26-2019)	JC87093-7	Soil	4/26/2019		X	X		X	X
	S-159 (11-13) (04-26-2019)	JC87093-8	Soil	4/26/2019		X	X		X	X
	S-159 (18-20) (04-26-2019)	JC87093-9	Soil	4/26/2019		X	X		X	X
	S-153 (7-9) (04-26-2019)	JC87093-10	Soil	4/26/2019		X	X		X	X
	S-153 (13.5-15) (04-26-2019)	JC87093-11	Soil	4/26/2019		X	X		X	X
	SO-DUP2-0426 (04-26-2019)	JC87093-12	Soil	4/26/2019	S-153 (13.5-15) (04-26-2019)	X	X		X	X

Notes:

1. PEST/PCB = Pesticides and polychlorinated biphenyls
2. SVOC = Semivolatile Organic Compounds
3. VOC = Volatile Organic Compound
4. MISC = Miscellaneous (total cyanide)

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance (QA) or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260C and 8270D. Data were reviewed in accordance with the USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540/R-2017-002, January 2017 and the USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Organic Data Review, EPA540/R-99/008, October 1999 (as applicable).

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers
  - U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
  - B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- Quantitation (Q) Qualifiers
  - E The compound was quantitated above the calibration range.
  - D Concentration is based on a diluted sample analysis.
- Validation Qualifiers
  - J The compound was positively identified; however, the associated numerical value is an estimated concentration only.
  - UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.
  - JN The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.
  - UB Compound considered non-detect at the listed value due to associated blank contamination.
  - N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.
  - R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is

that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times/Preservation

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260C	Water	14 days from collection to analysis (preserved) 7 days from collection to analysis (non-preserved)	Cool to <6 °C; preserved to a pH of less than 2 s.u.
	Soil	48 hours from collection to extraction and 14 days from extraction to analysis	Cool to <6 °C.

Note:
s.u. Standard units

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore, detected sample results were not associated with blank contamination.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. VOC analysis requires that all surrogates associated with the analysis exhibit recoveries within the laboratory-established acceptance limits.

Sample locations associated with surrogates exhibiting recoveries outside of the control limits presented in the following table.

Sample Locations	Surrogate	Recovery
SO-DUP2-0426	1,2-Dichloroethane-d4	AC
	4-Bromofluorobenzene	> UL
	Dibromofluoromethane	AC
	Toluene-d8	AC

Notes:

UL Upper control limit

AC Acceptable

The criteria used to evaluate the surrogate recoveries are presented in the following table. In the case of a surrogate deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> UL	Non-detect	No Action
	Detect	J
< LL but > 10%	Non-detect	UJ
	Detect	J
< 10%	Non-detect	R
	Detect	J

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

Sample locations associated with the MS/MSD exhibiting recoveries outside of the control limits are presented in the following table.

Sample Locations	Compound	MS Recovery	MSD Recovery
S-158 (18-20) (04-26-2019)	Chlorobenzene	<LL but >10%	--
	1,2-Dibromoethane	<LL but >10%	--
	1,2-Dichlorobenzene	<LL but >10%	--
	1,3-Dichlorobenzene	<LL but >10%	--
	1,4-Dichlorobenzene	<LL but >10%	--
	1,2-Dichloropropane	<LL but >10%	--
	Styrene	<LL but >10%	--

The criteria used to evaluate the MS/MSD recoveries are presented in the following table. In the case of an MS/MSD deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> the upper control limit (UL)	Non-detect	No Action
	Detect	J
< the lower control limit (LL) but > 10%	Non-detect	UJ
	Detect	J
< 10%	Non-detect	R
	Detect	J
Parent sample concentration > four times the MS/MSD spiking solution concentration.	Detect	No Action
	Non-detect	

5. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) Analysis

The LCS/LCSD analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS/LCSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

Sample locations associated with LCS/LCSD analysis exhibiting recoveries outside of the control limits presented in the following table.

Sample Locations	Compound	LCS Recovery	LCSD Recovery
S-155 (13-15) (04-26-2019) S-159 (18-20) (04-26-2019) S-153 (13.5-15) (04-26-2019)	Dibromochloromethane	>UL	--

Note:
AC = Acceptable

The criteria used to evaluate the LCS/LCSD recoveries are presented in the following table. In the case of an LCS/LCSD deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> the upper control limit (UL)	Non-detect	No Action
	Detect	J
< the lower control limit (LL) but > 10%	Non-detect	UJ
	Detect	J
< 10%	Non-detect	R
	Detect	J

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of three times the RL is applied for soil matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
S-154 (12-14) (04-26-2019)/ SO-DUP-0426-1 (04-26-2019)	2-Butanone (MEK)	25.7	11.6 J	AC
	Acetone	208	71.6	NC
	Benzene	2.5	4.2	AC
	Ethylbenzene	1.2 J	2.3 U	AC
	Isopropylbenzene	1.8 J	4.6 U	AC
	o-Xylene	1.4 J	2.3 U	AC
	Toluene	1.3 J	0.87 J	AC
	Total Xylenes	1.4 J	2.3 U	AC
S-153 (13.5-15) (04-26-2019)/ SO-DUP2-0426 (04-26-2019)	Acetone	75.5	72.5	AC
	2-Butanone (MEK)	14.1 J	16.2 J	AC
	Toluene	0.63 J	3.3 J	AC

Notes:
AC Acceptable
NC Not compliant

Acetone associated with sample locations S-154 (12-14) (04-26-2019) and SO-DUP-0426-1 (04-26-2019) exhibited a field duplicate RPD greater than the control limit. The associated sample results from these sample locations for the analytes outside criteria were qualified as estimated.

7. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

8. System Performance and Overall Assessment

The laboratory narrative indicates continuing calibration deviations. These deviations are normally not evaluated in a tier II data review. Sample results that had continuing calibration recoveries that exceed the control limit high and were non detect did not require qualification. Sample results where the calibration recoveries were high and the compound was detected or calibration recoveries were low were qualified as estimated (J or UJ).

The laboratory narrative indicates internal standard deviations. These deviations are normally not evaluated in a tier II data review. Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

Sample locations associated with internal standards exhibiting responses outside of the control limits are presented in the following table.

Sample Locations	Internal Standard	Response
S-158 (18-20) (04-26-2019)	1,4-Dichlorobenzene-d4	< LL but > 25%

The criteria used to evaluate the internal standard responses are presented in the following table. In the case of an internal standard deviation, the compounds quantitated under the deviant internal standard are qualified as documented in the table below.

Control limit	Sample Result	Qualification
> the upper control limit (UL)	Non-detect	No action
	Detect	J
< the lower control limit (LL) but > 25%	Non-detect	UJ
	Detect	J
< 25%	Non-detect	R
	Detect	J

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: SW-846 8260	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks	X				X
C. Trip blanks	X				X
Laboratory Control Sample (LCS)		X	X		
Laboratory Control Sample Duplicate(LCSD)	X				X
LCS/LCSD Precision (RPD)	X				X
Matrix Spike (MS)		X	X		
Matrix Spike Duplicate(MSD)		X		X	
MS/MSD Precision (RPD)		X		X	
Field/Lab Duplicate (RPD)		X	X		
Surrogate Spike Recoveries		X		X	
Dilution Factor		X		X	
Moisture Content		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

SEMIVOLATILE ORGANIC COMPOUND (SVOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8270D	Water	7 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C
	Soil	14 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore, detected sample results were not associated with blank contamination.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. SVOC analysis requires that two of the three SVOC surrogate compounds within each fraction exhibit recoveries within the laboratory-established acceptance limits.

All surrogate recoveries were within control limits.

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

The MS/MSD analysis exhibited recoveries and RPD within control limits.

5. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) Analysis

The LCS/LCSD analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS/LCSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

The LCS/LCSD exhibited acceptable recoveries and RPD between the MS/MSD recoveries.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of three times the RL is applied for soil matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
S-154 (12-14) (04-26-2019)/ SO-DUP-0426-1 (04-26-2019)	1,1-Biphenyl	115	143	AC
	2-Methylnaphthalene	572	638	10.9 %
	3-Methylphenol, 4-Methylphenol	425	681	AC
	Acenaphthene	1890	1620	15.3 %
	Acenaphthylene	308	331	7.1 %
	Acetophenone	21 J	16.8 J	AC
	Anthracene	1080	867	21.8 %
	Benz(a)anthracene	762	741	2.7 %
	Benzo(a)pyrene	916	799	13.6 %
	Benzo(b)fluoranthene	896	807	10.4 %
	Benzo(g,h,i)perylene	551	468	16.2 %
	Benzo(k)fluoranthene	326	257	23.6 %
	Carbazole	204	115 J	AC
	Chrysene	892	868	2.7 %
	Dibenz(a,h)anthracene	146	119	AC
	Dibenzofuran	584	505	14.5 %
	Fluoranthene	1880	1810	3.7 %
	Fluorene	1400	1040	29.5 %
	Indeno(1,2,3-cd)pyrene	499	432	14.3 %
	Naphthalene	1610	1850	13.8 %
	Phenanthrene	4560	3300	32.0 %

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
	Pyrene	2080	2140	2.8 %
S-153 (13.5-15) (04-26-2019)/ SO-DUP2-0426 (04-26-2019)	3&4-Methylphenol	297	181	AC
	Acenaphthene	641	945	38.3%
	Acenaphthylene	194	251	AC
	Acetophenone	11.4 J	240 U	AC
	Anthracene	296	672	77.7%
	Benz(a)anthracene	490	994	67.9%
	Benzo(a)pyrene	657	1060	46.9%
	Benzo(b)fluoranthene	638	1020	46.1%
	Benzo(g,h,i)perylene	438	599	31.1%
	Benzo(k)fluoranthene	259	417	46.7%
	1,1'-Biphenyl	93.5 J	92.4 J	AC
	Carbazole	78.1 J	71.1 J	AC
	Chrysene	564	1070	61.9%
	Dibenzo(a,h)anthracene	112	160	35.3%
	Dibenzofuran	143	147	AC
	Fluoranthene	751	1770	80.8%
	Fluorene	320	598	60.6%
	Indeno(1,2,3-cd)pyrene	413	600	36.9%
	2-Methylnaphthalene	406	473	15.2%
	Naphthalene	1220	1290	5.6%
	Phenanthrene	925	2300	85.3%
	Pyrene	851	2070	83.5%

Notes:

AC Acceptable

NC Not compliant

Several compounds associated with sample locations S-153 (13.5-15) (04-26-2019) and SO-DUP2-0426 (04-26-2019) exhibited a field duplicate RPD greater than the control limit. The associated sample results from these sample locations for the analytes outside criteria were qualified as estimated.

7. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

Several samples were diluted to bring target compounds within linear range of the instrument. Sample results that were reported from a secondary dilution were qualified with a “D”, indicating the result is diluted.

8. System Performance and Overall Assessment

The laboratory narrative indicates continuing calibration deviations. These deviations are normally not evaluated in a tier II data review. Sample results that had continuing calibration recoveries that exceed the control limit high and were non detect did not require qualification. Sample results where the calibration recoveries were high and the compound was detected or calibration recoveries were low were qualified as estimated (J or UJ).

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR SVOCs

SVOCs: SW-846 8270	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks	X				X
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R	X				X
LCS/LCSD Precision (RPD)	X				X
Matrix Spike (MS) %R		X		X	
Matrix Spike Duplicate(MSD) %R		X		X	
MS/MSD Precision (RPD)		X		X	
Field/Lab Duplicate (RPD)		X		X	
Surrogate Spike Recoveries		X		X	
Dilution Factor		X		X	
Moisture Content		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

INORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 6010D, 7471A, and 9012B. Data were reviewed in accordance with the USEPA CLP National Functional Guidelines for Inorganic Superfund Methods Data Review, EPA 540/R-2017-001, January 2017; and the USEPA CLP National Functional Guidelines for Inorganic Data Review, EPA 540-R-01-008, July 2002 (as applicable).

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and that it was already subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with the USEPA National Functional Guidelines:

- Concentration (C) Qualifiers
  - U The analyte was analyzed for but not detected. The associated value is the analyte instrument detection limit.
  - J The reported value was obtained from a reading less than the reporting limit (RL), but greater than or equal to the method detection limit (MDL).
- Quantitation (Q) Qualifiers
  - E The reported value is estimated due to the presence of interference.
  - N Spiked sample recovery is not within control limits.
  - * Duplicate analysis is not within control limits.
- Validation Qualifiers
  - J The analyte was positively identified; however, the associated numerical value is an estimated concentration only.
  - UJ The analyte was not detected above the reporting limit. However, the reported limit is approximate and may or may not represent the actual limit of detection.
  - UB Analyte considered non-detect at the listed value due to associated blank contamination.
  - R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

METALS ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 6010D	Water	180 days from collection to analysis	Preserved to a pH of less than 2.
	Soil	180 days from collection to analysis	Cool to <6 °C.
SW-846 7471A	Soil	28 days from collection to analysis	Cool to <6 °C.
SW-846 7470A	Water	28 days from collection to analysis	Cool to <6 °C; preserved to a pH of less than 2.

All samples were analyzed within the specified holding times.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Analytes were detected in the associated QA blanks; however, the associated sample results were greater than the BAL and/or were non-detect. No qualification of the sample results was required.

3. Matrix Spike (MS)/Matrix Spike Duplicate(MSD)/Laboratory Duplicate Analysis

MS/MSD and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

3.1 MS/MSD Analysis

All metal analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the analyte's concentration detected in the parent sample exceeds the MS concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

All analytes associated with MS/MSD recoveries were within control limits with the exception of the following analyte present in the table below.

Sample Location	Analyte	MS Recovery	MSD Recovery
S-158 (18-20) (04-26-2019)	Aluminum	126.0%	230.8%
	Antimony	63.6%	56.2%
	Iron	65.3%	138.0%

The criteria used to evaluate MS/MSD recoveries are presented in the following table. In the case of an MS/MSD deviation, the sample results are qualified. The qualifications for all metals are applied to all sample results associated with this SDG.

Control limit	Sample Result	Qualification
MS/MSD percent recovery 30% to 74%	Non-detect	UJ
	Detect	J
MS/MSD percent recovery <30%	Non-detect	R
	Detect	J
MS/MSD percent recovery >125%	Non-detect	No Action
	Detect	J

3.2 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the RL. A control limit of 20% for water matrices and 35% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of one times the RL is applied for water matrices and two times the RL for soil matrices.

MS/MSD analysis was performed in replacement of the laboratory duplicate analysis. The MS/MSD analysis exhibited RPDs within the control limits.

4. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of three times the RL is applied for soil matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
S-154 (12-14) (04-26-2019)/ SO-DUP-0426-1 (04-26-2019)	Aluminum	22800	18500	20.8 %
	Antimony	1.2 J	3.7 U	AC
	Arsenic	140	33.9	122.0 %

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
	Barium	276	159	53.7 %
	Beryllium	1.7	1.3	26.6 %
	Cadmium	3.9	1.4	AC
	Calcium	5000	3900	24.7 %
	Chromium	449	156	96.8 %
	Cobalt	26.8	17.9	39.8 %
	Copper	220	98.6	76.2 %
	Iron	42200	32900	24.7 %
	Lead	561	187	100.0 %
	Magnesium	5040	5090	0.9 %
	Manganese	1210	1020	17.0 %
	Nickel	47.2	33.7	33.3 %
	Potassium	2260	2120	6.3 %
	Selenium	2.3 J	1.2 J	AC
	Silver	2.4	0.93 U	AC
	Sodium	335 J	267 J	AC
	Vanadium	44.1	38	14.8 %
	Zinc	1690	540	103.1 %
	Mercury	2.1	2.4	13.3%
S-153 (13.5-15) (04-26-2019)/ SO-DUP2-0426 (04-26-2019)	Aluminum	8140	13800	51.6%
	Arsenic	13.0	27.6	71.9%
	Barium	89.1	148	49.7%
	Beryllium	0.53	1.0	AC
	Cadmium	0.48 J	1.6	AC
	Calcium	2280	2630	14.3%
	Chromium	64.0	135	71.4%
	Cobalt	8.3	13.0	44.1%
	Copper	40.7	87.1	72.6%
	Iron	15800	22000	32.8%
	Lead	107	189	55.4%
	Magnesium	2590	3500	29.9%

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
	Manganese	354	462	26.5%
	Mercury	1.1	0.50	75.0%
	Nickel	15.9	25.7	AC
	Potassium	1040 J	1530	AC
	Selenium	13.1 U	1.2 J	AC
	Silver	0.78 U	0.44 J	AC
	Sodium	135 J	199 J	AC
	Vanadium	15.1	28.4	AC
	Zinc	215	491	78.2%

Notes:
AC Acceptable
NC Not compliant

Several analytes associated with samples locations S-154 (12-14) (04-26-2019) and SO-DUP-0426-1 (04-26-2019), S-153 (13.5-15) (04-26-2019), and SO-DUP2-0426 (04-26-2019) exhibited a field duplicate RPD greater than the control limit. The associated sample results from all sample locations for the listed analytes were qualified as estimated. The parent and duplicate samples were only qualified for the analytes outside of the control limits in their specific field duplicate evaluation.

5. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The analytes associated with the LCS analysis must exhibit a percent recovery between the control limits of 80% and 120%.

The LCS analysis exhibited recoveries within the control limits.

6. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR METAL

METALS; SW846 6010D/7471A	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Inductively Coupled Plasma-Atomic Emission Spectrometry (ICP-AES)					
Tier II Validation					
Holding Times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method Blanks		X		X	
B. Equipment/Field Blanks	X				X
Laboratory Control Sample (LCS)		X		X	
Matrix Spike (MS) %R		X	X		
Matrix Spike Duplicate (MSD) %R		X	X		
MS/MSD Precision (RPD)		X		X	
Field/Lab Duplicate (RPD)		X	X		
Total vs. Dissolved	X				X

Notes:

%R Percent recovery

RPD Relative percent difference

GENERAL CHEMISTRY ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
Cyanide by SW-846 9012	Water	14 days from collection to analysis	Cool to <6 °C; preserved to a pH of greater than 12.
	Soil		Cool to <6 °C.

All samples were analyzed within the specified holding times.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Analytes were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Matrix Spike/Matrix Spike Duplicate (MS/MSD)/Laboratory Duplicate Analysis

MS/MSD and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

3.1 MS/MSD Analysis

All analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the analyte's concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

The MS analysis was not performed on a sample within this SDG.

3.2 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the RL. A control limit of 20% for water matrices and 35% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of one times the RL is applied for water matrices and two times the RL for soil matrices.

The laboratory duplicate analysis exhibited RPD within control limits.

4. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The analytes associated with the LCS analysis must exhibit a percent recovery between the control limits of 80% and 120%.

The LCS analysis exhibited recoveries within the control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of three times the RL is applied for soil matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
S-154 (12-14) (04-26-2019)/ SO-DUP-0426-1 (04-26-2019)	Cyanide	3.2	1.5	NC
S-153 (13.5-15) (04-26-2019)/ SO-DUP2-0426 (04-26-2019)	Cyanide	4.9	5.2	5.9%

Notes:
AC Acceptable

Cyanide associated with samples locations S-154 (12-14) (04-26-2019) and SO-DUP-0426-1 (04-26-2019) exhibited a field duplicate RPD greater than the control limit. The associated sample results from all sample locations except S-153 (13.5-15) (04-26-2019) and SO-DUP2-0426 (04-26-2019) for the listed analytes were qualified as estimated.

6. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR GENERAL CHEMISTRY

General Chemistry: EPA 9012	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Miscellaneous Instrumentation					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks					X
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R					X
LCS/LCSD Precision (RPD)					X
Matrix Spike (MS) %R	X				X
Matrix Spike Duplicate(MSD) %R	X				X
MS/MSD Precision (RPD)	X				X
Field/Lab Duplicate (RPD)		X	X		
Dilution Factor		X		X	
Moisture Content					X

Notes:
%R - percent recovery
RPD - relative percent difference

VALIDATION PERFORMED BY: Andrew Korycinski

SIGNATURE:

DATE: July 21, 2019

PEER REVIEW: Dennis Capria

DATE: July 23, 2019

CHAIN OF CUSTODY
SAMPLE ANALYSIS DATA SHEETS

SGS SCL

CHAIN OF CUSTODY

SGS North America Inc. - Dayton
2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200 FAX: 732-329-3499/3480
www.sgs.com/ehsusa

Page 1 of 2

FED-EX Tracking #: | Bottle Order Control #: KR-042419-63
SGS Quote #: | SGS Job #: JC87093

Client / Reporting Information

Company Name: Arcadis
Street Address: 110 W. Fayette St #300
City: Syracuse State: NY Zip: 13202
Project Contact: Courtney Lemmer E-mail: courtney.lemmer@arcadis.com
Phone #: 315-335-9594
Sampler(s) Name(s): G. Bushyager / B. Green Phone #:

Project Information

Project Name: Philadelphia Celee
Street: 4501 Richmond St
City: Philadelphia State: PA
Project #: 30036796.0001.00001
Client Purchase Order #: 30036796.0001.00001
Project Manager: John Brassi

Billing Information (if different from Report to)

Company Name: Same
Street Address:
City: State: Zip:
Attention:

Requested Analysis

SGS Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled By	Grab (G) Comp (C)	Matrix	# of bottles	Number of preserved Bottles: HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	Preserved	V8260 TCL 20	CN	ATB 8270 TCL 20	MT+L		LAB USE ONLY
1	S-155 (10-12)		4/26/19	915	GB	G	SO	5					22					X	X	X	X		D48
2	S-155 (13-15)			930																			629TI
3	S-154 (9-11)			1010																			1406
4	S-154 (12-14)			1035																			40127
5	~~Dup~~ SO-Dup-042619			—																			
6	S-158 (11-13)			1345																			
	S-158 (19-20)			1400																			
7	S-158 (19-20) MS			1405																			
	S-158 (19-20) MSD			1410																			
8	S-159 (11-13)			1515																			
9	S-159 (18-20)			1535																			
10	S-153 (7-9)			1025	EG																		

INITIAL ASESSMENT 2B (N)
LABEL VERIFICATION

Turn Around Time (Business Days)

Approved By (SGS PM): / Date:

- [X] 10 Business Days
- [ ] 5 Business Days
- [ ] 3 Business Days*
- [ ] 2 Business Days*
- [ ] 1 Business Day*
- [ ] Other

All data available via Lablink
* Approval needed for 1-3 Business Day TAT

Deliverable

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] NJ Reduced (Level 3)
- [X] Full Tier I (Level 4)
- [ ] Commercial "C"
- [ ] NJ DKQP
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] MA MCP Criteria
- [ ] CT RCP Criteria
- [ ] State Forms
- [ ] EDD Format
- [ ] DOD-QSM5

Commercial "A" = Results only; Commercial "B" = Results + QC Summary
Commercial "C" = Results + QC Summary + Partial Raw data

Comments / Special Instructions

http://www.sgs.com/en/terms-and-conditions

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by: 1	Date / Time: 4/26/19 1637	Received By: 1	Relinquished By: 2	Date / Time: 4/26/19 1825	Received By: 2
Relinquished by: 3	Date / Time:	Received By: 3	Relinquished By: 4	Date / Time:	Received By: 4
Relinquished by: 5	Date / Time:	Received By: 5	Custody Seal #	[ ] Intact [ ] Not Intact	Preserved where applicable [ ] Absent	[ ] On Ice [X] Therm. ID: IR Cooler Temp. °C 2.6

EHSA-QAC-0023-02-FORM-Dayton - Standard COC.xlsx

CHAIN OF CUSTODY

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Page 2 of 2

FED-EX Tracking #: | Bottle Order Control #:
SGS Quote #: | SGS Job #: JC87093

Client / Reporting Information

Company Name: Arcadis
Street Address: 110 W. Fayette St #300
City: Syracuse State: NY Zip: 13202
Project Contact: Chris Healy E-mail: Lawrence.Healy@arcadis-us.com
Phone #: 315-335-9594
Sampler(s) Name(s): Gibson/Gray Phone #:

Project Information

Project Name: Philadelphia Navy Cable
Street: 4501 Richmond St
City: Philadelphia State: PA
Project #: B003679.0001
Client Purchase Order #: B003746.0001
Project Manager: John Brosz

Billing Information (if different from Report to)

Company Name: Same
Street Address:
City: State: Zip:
Attention:

Requested Analysis

8260 TCL 20 | CN | 8270 TCL 20 | AB | TOTAL

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL - Sludge
SED-Sediment
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe
FB - Field Blank
EB-Equipment Blank
RB - Rinse Blank
TB - Trip Blank

SGS Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Grab (G) Comp (C)	Matrix	# of bottles	Number of preserved Bottles: HCl	NaOH	HNO_3	H_2SO_4	NONE	Di Water	MEOH	ENCORE	Methanol	8260 TCL 20	CN	8270 TCL 20	AB	TOTAL
11	S153 (13.5-15)		4/4/19	1040	EG	G	SO	5					2	2			1	X	X	X	X	X
12	SO-Dup2-0426		↓	—		↓	↓	↓					↓	↓			↓	X	X	X	X	X

LAB USE ONLY

Turn Around Time (Business Days)

Approved By (SGS PM): / Date:

- [x] 10 Business Days
- [ ] 5 Business Days
- [ ] 3 Business Days*
- [ ] 2 Business Days*
- [ ] 1 Business Day*
- [ ] Other _____

All data available via Labink

* Approval needed for 1-3 Business Day TAT

Deliverable

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] RI Reduced (Level 3)
- [x] Full Tier I (Level 4)
- [ ] Commercial "C"
- [ ] NJ DKQP
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] MA MCP Criteria_____
- [ ] CT RCP Criteria_____
- [ ] State Forms
- [ ] EDD Format _____
- [ ] DOD-QSM5

Commercial "A" = Results only; Commercial "B" = Results + QC Summary
Commercial "C" = Results + QC Summary + Partial Raw data

Comments / Special Instructions

http://www.sgs.com/en/terms-and-conditions

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by:	Date / Time:	Received by:	Relinquished by:	Date / Time:	Received by:
1		4/4/19 1650	1	2	4/12/19 0825	2
3			3	4		4
5			5	Custody Seal #	Intact / Not intact	Preserved where applicable: Absent / Therm. ID:	On Ice: 1, 6	Cooler Temp °C: 2.8

EHSA-QAC-0023-02-FORM-Dayton - Standard COC.xlsx

SGS North America Inc.

Report of Analysis

Client Sample ID:	S-155 (10-12)		
Lab Sample ID:	JC87093-1	**Date Sampled:**	04/26/19
Matrix:	SO - Soil	**Date Received:**	04/26/19
Method:	SW846 8260C	**Percent Solids:**	63.8
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	D264334.D	1	05/07/19 19:56	TDN	n/a	n/a	VD10652
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.4 g	10.0 ml	10.0 ul
Run #2			

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone [b]	ND	17000	8700	ug/kg	
71-43-2	Benzene	247000	870	650	ug/kg	
74-97-5	Bromochloromethane	ND	8700	750	ug/kg	
75-27-4	Bromodichloromethane	ND	3500	770	ug/kg	
75-25-2	Bromoform	ND	8700	700	ug/kg	
74-83-9	Bromomethane	ND	8700	1700	ug/kg	
78-93-3	2-Butanone (MEK)	ND	17000	6500	ug/kg	
75-15-0	Carbon disulfide	ND	3500	1600	ug/kg	
56-23-5	Carbon tetrachloride	ND	3500	950	ug/kg	
108-90-7	Chlorobenzene	40700	3500	610	ug/kg	
75-00-3	Chloroethane	ND	8700	1200	ug/kg	
67-66-3	Chloroform	ND	3500	650	ug/kg	
74-87-3	Chloromethane	ND	8700	3400	ug/kg	
110-82-7	Cyclohexane	ND	3500	700	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	3500	1500	ug/kg	
124-48-1	Dibromochloromethane	ND	3500	590	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1700	560	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1700	530	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1700	620	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1700	600	ug/kg	
75-71-8	Dichlorodifluoromethane [c]	ND	8700	1100	ug/kg	UJ
75-34-3	1,1-Dichloroethane	ND	1700	670	ug/kg	
107-06-2	1,2-Dichloroethane [c]	ND	1700	820	ug/kg	UJ
75-35-4	1,1-Dichloroethene	ND	1700	1100	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1700	1700	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1700	1200	ug/kg	
78-87-5	1,2-Dichloropropane	ND	3500	710	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	3500	610	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	3500	570	ug/kg	
100-41-4	Ethylbenzene	76000	1700	960	ug/kg	
76-13-1	Freon 113	ND	8700	1300	ug/kg	
591-78-6	2-Hexanone	ND	8700	2200	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-155 (10-12)		
Lab Sample ID:	JC87093-1	**Date Sampled:**	04/26/19
Matrix:	SO - Soil	**Date Received:**	04/26/19
Method:	SW846 8260C	**Percent Solids:**	63.8
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	2130	3500	1200	ug/kg	J
79-20-9	Methyl Acetate	ND	8700	2400	ug/kg	
108-87-2	Methylcyclohexane	ND	3500	1200	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1700	610	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	8700	2700	ug/kg	
75-09-2	Methylene chloride	ND	8700	4300	ug/kg	
100-42-5	Styrene	ND	3500	1000	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	3500	680	ug/kg	
127-18-4	Tetrachloroethene	ND	3500	800	ug/kg	
108-88-3	Toluene	84400	1700	650	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	8700	1700	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	8700	1700	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	3500	740	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	3500	590	ug/kg	
79-01-6	Trichloroethene	ND	1700	1300	ug/kg	
75-69-4	Trichlorofluoromethane	ND	8700	1200	ug/kg	
75-01-4	Vinyl chloride	ND	3500	810	ug/kg	
	m,p-Xylene	137000	1700	1300	ug/kg	
95-47-6	o-Xylene	38400	1700	1000	ug/kg	
1330-20-7	Xylene (total)	175000	1700	1000	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%		75-127%
17060-07-0	1,2-Dichloroethane-D4	92%		75-130%
2037-26-5	Toluene-D8	98%		80-120%
460-00-4	4-Bromofluorobenzene	92%		79-127%

(a) Diluted due to high concentration of target and non-target compound.
(b) Associated CCV outside of control limits high, sample was ND.
(c) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	S-155 (10-12)		
Lab Sample ID:	JC87093-1	**Date Sampled:**	04/26/19
Matrix:	SO - Soil	**Date Received:**	04/26/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	63.8
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	P129433.D	5	05/09/19 19:49	AR	05/06/19 17:35	OP20110	EP5858
Run #2	6P481792.D	50	05/10/19 12:50	AR	05/06/19 17:35	OP20110	E6P2588
Run #3	6P481790.D	500	05/10/19 12:01	AR	05/06/19 17:35	OP20110	E6P2588

	Initial Weight	Final Volume
Run #1	30.4 g	1.0 ml
Run #2	30.4 g	1.0 ml
Run #3	30.4 g	1.0 ml

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	520	130	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	1300	160	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	1300	220	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	1300	460	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	1300	970	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	1300	280	ug/kg	
95-48-7	2-Methylphenol	ND	520	160	ug/kg	
	3&4-Methylphenol	382	520	210	ug/kg	J
88-75-5	2-Nitrophenol	ND	1300	170	ug/kg	
100-02-7	4-Nitrophenol	ND	2600	690	ug/kg	
87-86-5	Pentachlorophenol	ND	1000	240	ug/kg	
108-95-2	Phenol	ND	520	130	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	1300	170	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	1300	190	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	1300	150	ug/kg	
83-32-9	Acenaphthene	190000 [b]	2600	890	ug/kg	D
208-96-8	Acenaphthylene	24500	260	130	ug/kg	
98-86-2	Acetophenone	ND	1300	55	ug/kg	
120-12-7	Anthracene	178000 [b]	2600	1600	ug/kg	D
1912-24-9	Atrazine	ND	520	110	ug/kg	
56-55-3	Benzo(a)anthracene	117000 [b]	2600	730	ug/kg	D
50-32-8	Benzo(a)pyrene	101000 [b]	2600	1200	ug/kg	D
205-99-2	Benzo(b)fluoranthene	106000 [b]	2600	1100	ug/kg	D
191-24-2	Benzo(g,h,i)perylene	48900 [b]	2600	1300	ug/kg	D
207-08-9	Benzo(k)fluoranthene	19300	260	120	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	520	100	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	520	63	ug/kg	
92-52-4	1,1'-Biphenyl	23200	520	35	ug/kg	
100-52-7	Benzaldehyde	ND	1300	64	ug/kg	
91-58-7	2-Chloronaphthalene	ND	520	61	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-155 (10-12)
Lab Sample ID: JC87093-1
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/26/19
Date Received: 04/26/19
Percent Solids: 63.8

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
106-47-8	4-Chloroaniline	ND	1300	93	ug/kg	
86-74-8	Carbazole	63000 [b]	5200	370	ug/kg	D
105-60-2	Caprolactam	ND	520	100	ug/kg	
218-01-9	Chrysene	100000 [b]	2600	810	ug/kg	D
111-91-1	bis(2-Chloroethoxy)methane	ND	520	55	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	520	110	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	520	93	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	520	84	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	260	80	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	260	130	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	520	220	ug/kg	
123-91-1	1,4-Dioxane [c]	ND	260	170	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	18100	260	110	ug/kg	
132-64-9	Dibenzofuran	113000 [b]	5200	1000	ug/kg	D
84-74-2	Di-n-butyl phthalate	ND	520	42	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	520	64	ug/kg	
84-66-2	Diethyl phthalate	ND	520	55	ug/kg	
131-11-3	Dimethyl phthalate	ND	520	46	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	520	60	ug/kg	
206-44-0	Fluoranthene	337000 [d]	26000	11000	ug/kg	D
86-73-7	Fluorene	186000 [b]	2600	1200	ug/kg	D
118-74-1	Hexachlorobenzene	ND	520	65	ug/kg	
87-68-3	Hexachlorobutadiene	ND	260	100	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	2600	100	ug/kg	
67-72-1	Hexachloroethane	ND	1300	130	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	43000 [b]	2600	1200	ug/kg	D
78-59-1	Isophorone	ND	520	55	ug/kg	
91-57-6	2-Methylnaphthalene	29900 [b]	2600	580	ug/kg	D
88-74-4	2-Nitroaniline	ND	1300	61	ug/kg	
99-09-2	3-Nitroaniline	ND	1300	64	ug/kg	
100-01-6	4-Nitroaniline	ND	1300	67	ug/kg	
91-20-3	Naphthalene	139000 [b]	2600	730	ug/kg	D
98-95-3	Nitrobenzene [c]	ND	520	100	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	520	75	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	1300	94	ug/kg	
85-01-8	Phenanthrene	519000 [d]	26000	8700	ug/kg	D
129-00-0	Pyrene	232000 [b]	2600	820	ug/kg	D
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	1300	65	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-155 (10-12)		
Lab Sample ID:	JC87093-1	**Date Sampled:**	04/26/19
Matrix:	SO - Soil	**Date Received:**	04/26/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	63.8
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Run# 3	Limits
367-12-4	2-Fluorophenol	71%	59%	0% [e]	23-115%
4165-62-2	Phenol-d5	75%	56%	0% [e]	27-114%
118-79-6	2,4,6-Tribromophenol	76%	60%	0% [e]	19-152%
4165-60-0	Nitrobenzene-d5	79%	77%	0% [e]	26-134%
321-60-8	2-Fluorobiphenyl	88%	80%	77%	39-124%
1718-51-0	Terphenyl-d14	77%	82%	0% [e]	36-134%

(a) Dilution required due to viscosity of the extract matrix.
(b) Result is from Run# 2
(c) Associated CCV outside of control limits high, sample was ND.
(d) Result is from Run# 3
(e) Outside control limits due to dilution.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-155 (10-12)
Lab Sample ID: JC87093-1
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/26/19
Date Received: 04/26/19
Percent Solids: 63.8

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	11600 J	78	13	mg/kg	1	05/01/19	05/02/19	MET	SW846 6010D [2]	SW846 3050B [5]
Antimony	0.64 U J	3.1	0.64	mg/kg	1	05/01/19	05/02/19	MET	SW846 6010D [2]	SW846 3050B [5]
Arsenic [a]	34.5 J	6.3	0.88	mg/kg	2	05/01/19	05/03/19	MET	SW846 6010D [3]	SW846 3050B [5]
Barium	128 J	31	3.0	mg/kg	1	05/01/19	05/02/19	MET	SW846 6010D [2]	SW846 3050B [5]
Beryllium	0.82	0.31	0.13	mg/kg	1	05/01/19	05/02/19	MET	SW846 6010D [2]	SW846 3050B [5]
Cadmium	1.8	0.78	0.11	mg/kg	1	05/01/19	05/02/19	MET	SW846 6010D [2]	SW846 3050B [5]
Calcium	4070	780	69	mg/kg	1	05/01/19	05/02/19	MET	SW846 6010D [2]	SW846 3050B [5]
Chromium	143 J	1.6	0.58	mg/kg	1	05/01/19	05/02/19	MET	SW846 6010D [2]	SW846 3050B [5]
Cobalt	11.5	7.8	0.44	mg/kg	1	05/01/19	05/02/19	MET	SW846 6010D [2]	SW846 3050B [5]
Copper [a]	82.8 J	7.8	2.6	mg/kg	2	05/01/19	05/03/19	MET	SW846 6010D [3]	SW846 3050B [5]
Iron	38700 J	160	60	mg/kg	2	05/01/19	05/03/19	MET	SW846 6010D [3]	SW846 3050B [5]
Lead [a]	175 J	6.3	1.3	mg/kg	2	05/01/19	05/03/19	MET	SW846 6010D [3]	SW846 3050B [5]
Magnesium	3590	780	21	mg/kg	1	05/01/19	05/02/19	MET	SW846 6010D [2]	SW846 3050B [5]
Manganese [a]	698	4.7	1.3	mg/kg	2	05/01/19	05/03/19	MET	SW846 6010D [3]	SW846 3050B [5]
Mercury	1.8 J	0.24	0.10	mg/kg	5	04/30/19	04/30/19	LL	SW846 7471B [1]	SW846 7471B [4]
Nickel	24.5	6.3	0.55	mg/kg	1	05/01/19	05/02/19	MET	SW846 6010D [2]	SW846 3050B [5]
Potassium	1440 J	1600	50	mg/kg	1	05/01/19	05/02/19	MET	SW846 6010D [2]	SW846 3050B [5]
Selenium [a]	2.0 U	6.3	2.0	mg/kg	2	05/01/19	05/03/19	MET	SW846 6010D [3]	SW846 3050B [5]
Silver [a]	0.91 J	1.6	0.53	mg/kg	2	05/01/19	05/03/19	MET	SW846 6010D [3]	SW846 3050B [5]
Sodium	153 J	1600	120	mg/kg	1	05/01/19	05/02/19	MET	SW846 6010D [2]	SW846 3050B [5]
Thallium [a]	1.8 U	3.1	1.8	mg/kg	2	05/01/19	05/03/19	MET	SW846 6010D [3]	SW846 3050B [5]
Vanadium	23.6	7.8	0.30	mg/kg	1	05/01/19	05/02/19	MET	SW846 6010D [2]	SW846 3050B [5]
Zinc	529 J	7.8	3.6	mg/kg	1	05/01/19	05/02/19	MET	SW846 6010D [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA46615
(2) Instrument QC Batch: MA46638
(3) Instrument QC Batch: MA46646
(4) Prep QC Batch: MP14638
(5) Prep QC Batch: MP14721

(a) Elevated detection limit due to dilution required for high interfering element.

RL = Reporting Limit
MDL = Method Detection Limit
U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: S-155 (10-12)
Lab Sample ID: JC87093-1
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/26/19
Date Received: 04/26/19
Percent Solids: 63.8

General Chemistry

Analyte	Result		RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	7.2	J	0.41	0.20	mg/kg	1	05/06/19 14:54	KI	SW846 9012B/LACHAT
Solids, Percent	63.8				%	1	05/03/19 17:00	RC	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

SGS North America Inc.

Report of Analysis

Client Sample ID:	S-155 (13-15)		
Lab Sample ID:	JC87093-2	**Date Sampled:**	04/26/19
Matrix:	SO - Soil	**Date Received:**	04/26/19
Method:	SW846 8260C	**Percent Solids:**	54.4
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3C151778.D	1	05/05/19 16:12	MD	n/a	n/a	V3C6820
Run #2							

	Initial Weight
Run #1	4.8 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	376	19	9.6	ug/kg	
71-43-2	Benzene	2.9	0.96	0.72	ug/kg	
74-97-5	Bromochloromethane	ND	9.6	0.82	ug/kg	
75-27-4	Bromodichloromethane	ND	3.8	0.85	ug/kg	
75-25-2	Bromoform	ND	9.6	0.77	ug/kg	
74-83-9	Bromomethane	ND	9.6	1.9	ug/kg	
78-93-3	2-Butanone (MEK)	57.7	19	7.2	ug/kg	
75-15-0	Carbon disulfide	ND	3.8	1.8	ug/kg	
56-23-5	Carbon tetrachloride	ND	3.8	1.1	ug/kg	
108-90-7	Chlorobenzene	ND	3.8	0.68	ug/kg	
75-00-3	Chloroethane	ND	9.6	1.3	ug/kg	
67-66-3	Chloroform	ND	3.8	0.71	ug/kg	
74-87-3	Chloromethane [a]	ND	9.6	3.8	ug/kg	UJ
110-82-7	Cyclohexane	ND	3.8	0.78	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	3.8	1.6	ug/kg	
124-48-1	Dibromochloromethane [b]	ND	3.8	0.65	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.9	0.62	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.9	0.58	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.9	0.69	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.9	0.66	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	9.6	1.2	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.9	0.74	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.9	0.90	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.9	1.3	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.9	1.8	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.9	1.3	ug/kg	
78-87-5	1,2-Dichloropropane	ND	3.8	0.78	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	3.8	0.67	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	3.8	0.63	ug/kg	
100-41-4	Ethylbenzene	ND	1.9	1.1	ug/kg	
76-13-1	Freon 113	ND	9.6	1.5	ug/kg	
591-78-6	2-Hexanone	ND	9.6	2.4	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-155 (13-15)		
Lab Sample ID:	JC87093-2	**Date Sampled:**	04/26/19
Matrix:	SO - Soil	**Date Received:**	04/26/19
Method:	SW846 8260C	**Percent Solids:**	54.4
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	2.6	3.8	1.3	ug/kg	J
79-20-9	Methyl Acetate	ND	9.6	2.7	ug/kg	
108-87-2	Methylcyclohexane	4.6	3.8	1.4	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.9	0.67	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK [c]	ND	9.6	3.0	ug/kg	
75-09-2	Methylene chloride	ND	9.6	4.8	ug/kg	
100-42-5	Styrene	ND	3.8	1.1	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	3.8	0.75	ug/kg	
127-18-4	Tetrachloroethene	ND	3.8	0.88	ug/kg	
108-88-3	Toluene	1.4	1.9	0.72	ug/kg	J
87-61-6	1,2,3-Trichlorobenzene	ND	9.6	1.9	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	9.6	1.9	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	3.8	0.82	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	3.8	0.65	ug/kg	
79-01-6	Trichloroethene	ND	1.9	1.5	ug/kg	
75-69-4	Trichlorofluoromethane	ND	9.6	1.3	ug/kg	
75-01-4	Vinyl chloride	ND	3.8	0.90	ug/kg	
	m,p-Xylene	2.8	1.9	1.4	ug/kg	
95-47-6	o-Xylene	3.5	1.9	1.1	ug/kg	
1330-20-7	Xylene (total)	6.3	1.9	1.1	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	105%		75-127%
17060-07-0	1,2-Dichloroethane-D4	110%		75-130%
2037-26-5	Toluene-D8	108%		80-120%
460-00-4	4-Bromofluorobenzene	127%		79-127%

(a) Associated CCV outside of control limits low.
(b) Associated CCV and BS outside of control limits high, sample was ND.
(c) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	S-155 (13-15)		
Lab Sample ID:	JC87093-2	**Date Sampled:**	04/26/19
Matrix:	SO - Soil	**Date Received:**	04/26/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	54.4
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	P129381.D	1	05/07/19 19:39	CC	05/06/19 17:35	OP20110	EP5856
Run #2							

	Initial Weight	Final Volume
Run #1	30.9 g	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	120	29	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	300	36	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	300	51	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	300	110	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	300	220	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	300	64	ug/kg	
95-48-7	2-Methylphenol	ND	120	38	ug/kg	
	3&4-Methylphenol	315	120	49	ug/kg	
88-75-5	2-Nitrophenol	ND	300	39	ug/kg	
100-02-7	4-Nitrophenol	ND	590	160	ug/kg	
87-86-5	Pentachlorophenol	ND	240	56	ug/kg	
108-95-2	Phenol	ND	120	31	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	300	39	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	300	45	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	300	35	ug/kg	
83-32-9	Acenaphthene	809	59	21	ug/kg	
208-96-8	Acenaphthylene	252	59	30	ug/kg	
98-86-2	Acetophenone	22.5	300	13	ug/kg	J
120-12-7	Anthracene	359	59	36	ug/kg	
1912-24-9	Atrazine	ND	120	25	ug/kg	
56-55-3	Benzo(a)anthracene	284	59	17	ug/kg	
50-32-8	Benzo(a)pyrene	549	59	27	ug/kg	
205-99-2	Benzo(b)fluoranthene	460	59	26	ug/kg	
191-24-2	Benzo(g,h,i)perylene	434	59	30	ug/kg	
207-08-9	Benzo(k)fluoranthene	170	59	28	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	120	23	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	120	15	ug/kg	
92-52-4	1,1'-Biphenyl	109	120	8.2	ug/kg	J
100-52-7	Benzaldehyde	ND	300	15	ug/kg	
91-58-7	2-Chloronaphthalene	ND	120	14	ug/kg	
106-47-8	4-Chloroaniline	ND	300	21	ug/kg	
86-74-8	Carbazole	81.4	120	8.6	ug/kg	J

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-155 (13-15)
Lab Sample ID: JC87093-2
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/26/19
Date Received: 04/26/19
Percent Solids: 54.4

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam [a]	ND	120	23	ug/kg	
218-01-9	Chrysene	374	59	19	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	120	13	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	120	26	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	120	21	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	120	19	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	59	18	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	59	30	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	120	50	ug/kg	
123-91-1	1,4-Dioxane [a]	ND	59	39	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	98.2	59	26	ug/kg	
132-64-9	Dibenzofuran	248	120	24	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	120	9.7	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	120	15	ug/kg	
84-66-2	Diethyl phthalate	ND	120	13	ug/kg	
131-11-3	Dimethyl phthalate	ND	120	11	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	120	14	ug/kg	
206-44-0	Fluoranthene	537	59	27	ug/kg	
86-73-7	Fluorene	478	59	27	ug/kg	
118-74-1	Hexachlorobenzene	ND	120	15	ug/kg	
87-68-3	Hexachlorobutadiene	ND	59	24	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	590	24	ug/kg	
67-72-1	Hexachloroethane	ND	300	29	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	383	59	28	ug/kg	
78-59-1	Isophorone	ND	120	13	ug/kg	
91-57-6	2-Methylnaphthalene	510	59	13	ug/kg	
88-74-4	2-Nitroaniline	ND	300	14	ug/kg	
99-09-2	3-Nitroaniline	ND	300	15	ug/kg	
100-01-6	4-Nitroaniline	ND	300	15	ug/kg	
91-20-3	Naphthalene	1570	59	17	ug/kg	
98-95-3	Nitrobenzene	ND	120	23	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	120	17	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	300	22	ug/kg	
85-01-8	Phenanthrene	1190	59	20	ug/kg	
129-00-0	Pyrene	632	59	19	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	300	15	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	61%		23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-155 (13-15)		
Lab Sample ID:	JC87093-2	**Date Sampled:**	04/26/19
Matrix:	SO - Soil	**Date Received:**	04/26/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	54.4
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	60%		27-114%
118-79-6	2,4,6-Tribromophenol	66%		19-152%
4165-60-0	Nitrobenzene-d5	67%		26-134%
321-60-8	2-Fluorobiphenyl	80%		39-124%
1718-51-0	Terphenyl-d14	72%		36-134%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-155 (13-15)
Lab Sample ID: JC87093-2
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/26/19
Date Received: 04/26/19
Percent Solids: 54.4

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	22300 J	95	15	mg/kg	1	05/01/19	05/02/19	MET	SW846 6010D [2]	SW846 3050B [5]
Antimony	1.4 J	3.8	0.78	mg/kg	1	05/01/19	05/02/19	MET	SW846 6010D [2]	SW846 3050B [5]
Arsenic [a]	78.4 J	7.6	1.1	mg/kg	2	05/01/19	05/03/19	MET	SW846 6010D [3]	SW846 3050B [5]
Barium	266 J	38	3.6	mg/kg	1	05/01/19	05/02/19	MET	SW846 6010D [2]	SW846 3050B [5]
Beryllium	1.6	0.38	0.15	mg/kg	1	05/01/19	05/02/19	MET	SW846 6010D [2]	SW846 3050B [5]
Cadmium	3.0	0.95	0.13	mg/kg	1	05/01/19	05/02/19	MET	SW846 6010D [2]	SW846 3050B [5]
Calcium	4570	950	84	mg/kg	1	05/01/19	05/02/19	MET	SW846 6010D [2]	SW846 3050B [5]
Chromium	264 J	1.9	0.70	mg/kg	1	05/01/19	05/02/19	MET	SW846 6010D [2]	SW846 3050B [5]
Cobalt	29.1	9.5	0.53	mg/kg	1	05/01/19	05/02/19	MET	SW846 6010D [2]	SW846 3050B [5]
Copper [a]	194 J	9.5	3.2	mg/kg	2	05/01/19	05/03/19	MET	SW846 6010D [3]	SW846 3050B [5]
Iron	50800 J	190	73	mg/kg	2	05/01/19	05/03/19	MET	SW846 6010D [3]	SW846 3050B [5]
Lead [a]	380 J	7.6	1.6	mg/kg	2	05/01/19	05/03/19	MET	SW846 6010D [3]	SW846 3050B [5]
Magnesium	5010	950	26	mg/kg	1	05/01/19	05/02/19	MET	SW846 6010D [2]	SW846 3050B [5]
Manganese	1170	5.7	1.6	mg/kg	2	05/01/19	05/03/19	MET	SW846 6010D [3]	SW846 3050B [5]
Mercury	2.4 J	0.26	0.12	mg/kg	5	04/30/19	04/30/19	LL	SW846 7471B [1]	SW846 7471B [4]
Nickel	47.1	7.6	0.66	mg/kg	1	05/01/19	05/02/19	MET	SW846 6010D [2]	SW846 3050B [5]
Potassium	2290	1900	60	mg/kg	1	05/01/19	05/02/19	MET	SW846 6010D [2]	SW846 3050B [5]
Selenium [a]	2.5 U	7.6	2.5	mg/kg	2	05/01/19	05/03/19	MET	SW846 6010D [3]	SW846 3050B [5]
Silver [a]	2.2	1.9	0.64	mg/kg	2	05/01/19	05/03/19	MET	SW846 6010D [3]	SW846 3050B [5]
Sodium	356 J	1900	150	mg/kg	1	05/01/19	05/02/19	MET	SW846 6010D [2]	SW846 3050B [5]
Thallium [a]	2.2 U	3.8	2.2	mg/kg	2	05/01/19	05/03/19	MET	SW846 6010D [3]	SW846 3050B [5]
Vanadium	42.6	9.5	0.36	mg/kg	1	05/01/19	05/02/19	MET	SW846 6010D [2]	SW846 3050B [5]
Zinc	1010 J	9.5	4.4	mg/kg	1	05/01/19	05/02/19	MET	SW846 6010D [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA46615
(2) Instrument QC Batch: MA46638
(3) Instrument QC Batch: MA46646
(4) Prep QC Batch: MP14638
(5) Prep QC Batch: MP14721

(a) Elevated detection limit due to dilution required for high interfering element.

RL = Reporting Limit
MDL = Method Detection Limit
U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	S-155 (13-15)		
Lab Sample ID:	JC87093-2	**Date Sampled:**	04/26/19
Matrix:	SO - Soil	**Date Received:**	04/26/19
		Percent Solids:	54.4
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result		RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	1.5	J	0.44	0.22	mg/kg	1	05/06/19 14:56	KI	SW846 9012B/LACHAT
Solids, Percent	54.4				%	1	05/03/19 17:00	RC	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

SGS North America Inc.

Report of Analysis

Client Sample ID:	S-154 (9-11)		
Lab Sample ID:	JC87093-3	**Date Sampled:**	04/26/19
Matrix:	SO - Soil	**Date Received:**	04/26/19
Method:	SW846 8260C	**Percent Solids:**	78.6
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	D264411.D	1	05/09/19 10:20	TDN	n/a	n/a	VD10656
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	4.3 g	10.0 ml	100 ul
Run #2			

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone [b]	ND	1600	810	ug/kg	
71-43-2	Benzene	11400	81	61	ug/kg	
74-97-5	Bromochloromethane	ND	810	69	ug/kg	
75-27-4	Bromodichloromethane	ND	320	72	ug/kg	
75-25-2	Bromoform	ND	810	65	ug/kg	
74-83-9	Bromomethane	ND	810	160	ug/kg	
78-93-3	2-Butanone (MEK)	ND	1600	600	ug/kg	
75-15-0	Carbon disulfide	206	320	150	ug/kg	J
56-23-5	Carbon tetrachloride	ND	320	89	ug/kg	
108-90-7	Chlorobenzene	163	320	57	ug/kg	J
75-00-3	Chloroethane	ND	810	110	ug/kg	
67-66-3	Chloroform	ND	320	60	ug/kg	
74-87-3	Chloromethane	ND	810	320	ug/kg	
110-82-7	Cyclohexane	ND	320	66	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	320	140	ug/kg	
124-48-1	Dibromochloromethane	ND	320	55	ug/kg	
106-93-4	1,2-Dibromoethane	ND	160	53	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	160	49	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	160	58	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	160	56	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	810	100	ug/kg	
75-34-3	1,1-Dichloroethane	ND	160	62	ug/kg	
107-06-2	1,2-Dichloroethane	ND	160	76	ug/kg	
75-35-4	1,1-Dichloroethene	ND	160	110	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	160	150	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	160	110	ug/kg	
78-87-5	1,2-Dichloropropane	ND	320	66	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	320	57	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	320	53	ug/kg	
100-41-4	Ethylbenzene	94.9	160	89	ug/kg	J
76-13-1	Freon 113	ND	810	120	ug/kg	
591-78-6	2-Hexanone	ND	810	210	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-154 (9-11)		
Lab Sample ID:	JC87093-3	**Date Sampled:**	04/26/19
Matrix:	SO - Soil	**Date Received:**	04/26/19
Method:	SW846 8260C	**Percent Solids:**	78.6
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	320	110	ug/kg	
79-20-9	Methyl Acetate	431	810	220	ug/kg	J
108-87-2	Methylcyclohexane	ND	320	110	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	160	57	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	810	250	ug/kg	
75-09-2	Methylene chloride	ND	810	400	ug/kg	
100-42-5	Styrene	ND	320	93	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	320	63	ug/kg	
127-18-4	Tetrachloroethene	ND	320	75	ug/kg	
108-88-3	Toluene	594	160	61	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	810	160	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	810	160	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	320	69	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	320	55	ug/kg	
79-01-6	Trichloroethene	ND	160	120	ug/kg	
75-69-4	Trichlorofluoromethane	ND	810	110	ug/kg	
75-01-4	Vinyl chloride	ND	320	76	ug/kg	
	m,p-Xylene	ND	160	120	ug/kg	
95-47-6	o-Xylene	ND	160	94	ug/kg	
1330-20-7	Xylene (total)	ND	160	94	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%		75-127%
17060-07-0	1,2-Dichloroethane-D4	95%		75-130%
2037-26-5	Toluene-D8	100%		80-120%
460-00-4	4-Bromofluorobenzene	98%		79-127%

(a) Diluted due to high concentration of target compound.
(b) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	S-154 (9-11)		
Lab Sample ID:	JC87093-3	**Date Sampled:**	04/26/19
Matrix:	SO - Soil	**Date Received:**	04/26/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	78.6
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	P129415.D	1	05/08/19 20:08	AR	05/06/19 17:35	OP20110	EP5857
Run #2	P129428.D	5	05/09/19 13:27	AR	05/06/19 17:35	OP20110	EP5858

	Initial Weight	Final Volume
Run #1	31.7 g	1.0 ml
Run #2	31.7 g	1.0 ml

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	80	20	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	200	25	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	200	34	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	200	71	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	200	150	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	200	43	ug/kg	
95-48-7	2-Methylphenol	ND	80	26	ug/kg	
	3&4-Methylphenol	36.0	80	33	ug/kg	J
88-75-5	2-Nitrophenol	ND	200	27	ug/kg	
100-02-7	4-Nitrophenol	ND	400	110	ug/kg	
87-86-5	Pentachlorophenol	ND	160	38	ug/kg	
108-95-2	Phenol	ND	80	21	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	200	27	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	200	30	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	200	24	ug/kg	
83-32-9	Acenaphthene	9540 [a]	200	69	ug/kg	D
208-96-8	Acenaphthylene	504	40	20	ug/kg	
98-86-2	Acetophenone	ND	200	8.6	ug/kg	
120-12-7	Anthracene	1610	40	25	ug/kg	
1912-24-9	Atrazine	ND	80	17	ug/kg	
56-55-3	Benzo(a)anthracene	318	40	11	ug/kg	
50-32-8	Benzo(a)pyrene	249	40	18	ug/kg	
205-99-2	Benzo(b)fluoranthene	330	40	18	ug/kg	
191-24-2	Benzo(g,h,i)perylene	160	40	20	ug/kg	
207-08-9	Benzo(k)fluoranthene	105	40	19	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	80	15	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	80	9.8	ug/kg	
92-52-4	1,1'-Biphenyl	222	80	5.5	ug/kg	
100-52-7	Benzaldehyde	ND	200	10	ug/kg	
91-58-7	2-Chloronaphthalene	ND	80	9.6	ug/kg	
106-47-8	4-Chloroaniline	ND	200	14	ug/kg	
86-74-8	Carbazole	2540	80	5.8	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-154 (9-11)
Lab Sample ID: JC87093-3
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/26/19
Date Received: 04/26/19
Percent Solids: 78.6

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam [b]	ND	80	16	ug/kg	
218-01-9	Chrysene	362	40	13	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	80	8.6	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	80	17	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	80	14	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	80	13	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	40	12	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	40	20	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	80	33	ug/kg	
123-91-1	1,4-Dioxane [b]	ND	40	27	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	43.8	40	18	ug/kg	
132-64-9	Dibenzofuran	3620	80	16	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	80	6.5	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	80	10	ug/kg	
84-66-2	Diethyl phthalate	ND	80	8.5	ug/kg	
131-11-3	Dimethyl phthalate	ND	80	7.1	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	80	9.4	ug/kg	
206-44-0	Fluoranthene	1910	40	18	ug/kg	
86-73-7	Fluorene	8690 [a]	200	92	ug/kg	D
118-74-1	Hexachlorobenzene	ND	80	10	ug/kg	
87-68-3	Hexachlorobutadiene	ND	40	16	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	400	16	ug/kg	
67-72-1	Hexachloroethane	ND	200	20	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	158	40	19	ug/kg	
78-59-1	Isophorone	ND	80	8.6	ug/kg	
91-57-6	2-Methylnaphthalene	319	40	9.1	ug/kg	
88-74-4	2-Nitroaniline	ND	200	9.5	ug/kg	
99-09-2	3-Nitroaniline	ND	200	10	ug/kg	
100-01-6	4-Nitroaniline	ND	200	10	ug/kg	
91-20-3	Naphthalene	3230	40	11	ug/kg	
98-95-3	Nitrobenzene	ND	80	15	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	80	12	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	200	15	ug/kg	
85-01-8	Phenanthrene	2900	40	13	ug/kg	
129-00-0	Pyrene	1380	40	13	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	200	10	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	70%	67%	23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-154 (9-11)		
Lab Sample ID:	JC87093-3	**Date Sampled:**	04/26/19
Matrix:	SO - Soil	**Date Received:**	04/26/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	78.6
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	70%	73%	27-114%
118-79-6	2,4,6-Tribromophenol	74%	63%	19-152%
4165-60-0	Nitrobenzene-d5	71%	74%	26-134%
321-60-8	2-Fluorobiphenyl	87%	84%	39-124%
1718-51-0	Terphenyl-d14	74%	75%	36-134%

(a) Result is from Run# 2
(b) Associated CCV outside of control limits high, sample was ND.

Report of Analysis

Client Sample ID: S-154 (9-11)
Lab Sample ID: JC87093-3
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/26/19
Date Received: 04/26/19
Percent Solids: 78.6

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	4510 J	67	11	mg/kg	1	05/01/19	05/02/19	MET	SW846 6010D [2]	SW846 3050B [5]
Antimony	0.55 U J	2.7	0.55	mg/kg	1	05/01/19	05/02/19	MET	SW846 6010D [2]	SW846 3050B [5]
Arsenic	5.2 J	2.7	0.37	mg/kg	1	05/01/19	05/02/19	MET	SW846 6010D [2]	SW846 3050B [5]
Barium	58.2 J	27	2.5	mg/kg	1	05/01/19	05/02/19	MET	SW846 6010D [2]	SW846 3050B [5]
Beryllium	0.43	0.27	0.11	mg/kg	1	05/01/19	05/02/19	MET	SW846 6010D [2]	SW846 3050B [5]
Cadmium	0.19 J	0.67	0.094	mg/kg	1	05/01/19	05/02/19	MET	SW846 6010D [2]	SW846 3050B [5]
Calcium	3160	670	59	mg/kg	1	05/01/19	05/02/19	MET	SW846 6010D [2]	SW846 3050B [5]
Chromium [a]	28.2 J	1.3	0.50	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [3]	SW846 3050B [5]
Cobalt	5.4 J	6.7	0.37	mg/kg	1	05/01/19	05/02/19	MET	SW846 6010D [2]	SW846 3050B [5]
Copper [a]	36.1 J	3.3	1.1	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [3]	SW846 3050B [5]
Iron	17000 J	67	26	mg/kg	1	05/01/19	05/02/19	MET	SW846 6010D [2]	SW846 3050B [5]
Lead	55.8 J	2.7	0.55	mg/kg	1	05/01/19	05/02/19	MET	SW846 6010D [2]	SW846 3050B [5]
Magnesium	1350	670	18	mg/kg	1	05/01/19	05/02/19	MET	SW846 6010D [2]	SW846 3050B [5]
Manganese [a]	407	2.0	0.55	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [3]	SW846 3050B [5]
Mercury	0.29 J	0.033	0.014	mg/kg	1	04/30/19	04/30/19	LL	SW846 7471B [1]	SW846 7471B [4]
Nickel	19.6	5.4	0.47	mg/kg	1	05/01/19	05/02/19	MET	SW846 6010D [2]	SW846 3050B [5]
Potassium	501 J	1300	43	mg/kg	1	05/01/19	05/02/19	MET	SW846 6010D [2]	SW846 3050B [5]
Selenium	0.87 U	2.7	0.87	mg/kg	1	05/01/19	05/02/19	MET	SW846 6010D [2]	SW846 3050B [5]
Silver [a]	0.23 U	0.67	0.23	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [3]	SW846 3050B [5]
Sodium	123 J	1300	100	mg/kg	1	05/01/19	05/02/19	MET	SW846 6010D [2]	SW846 3050B [5]
Thallium	0.78 U	1.3	0.78	mg/kg	1	05/01/19	05/02/19	MET	SW846 6010D [2]	SW846 3050B [5]
Vanadium [a]	14.6	6.7	0.25	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [3]	SW846 3050B [5]
Zinc	100 J	6.7	3.1	mg/kg	1	05/01/19	05/02/19	MET	SW846 6010D [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA46615
(2) Instrument QC Batch: MA46638
(3) Instrument QC Batch: MA46646
(4) Prep QC Batch: MP14638
(5) Prep QC Batch: MP14721

(a) Elevated detection limit due to dilution required for high interfering element.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	S-154 (9-11)		
Lab Sample ID:	JC87093-3	**Date Sampled:**	04/26/19
Matrix:	SO - Soil	**Date Received:**	04/26/19
		Percent Solids:	78.6
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	5.5	0.26	0.13	mg/kg	1	05/06/19 15:00	KI	SW846 9012B/LACHAT
Solids, Percent	78.6			%	1	05/03/19 17:00	RC	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

SGS North America Inc.

Report of Analysis

Client Sample ID:	S-154 (12-14)		
Lab Sample ID:	JC87093-4	**Date Sampled:**	04/26/19
Matrix:	SO - Soil	**Date Received:**	04/26/19
Method:	SW846 8260C	**Percent Solids:**	57.8
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1C164349.D	1	05/07/19 19:23	PS	n/a	n/a	V1C7213
Run #2							

	Initial Weight
Run #1	4.0 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	208	22	11	ug/kg	J
71-43-2	Benzene	2.5	1.1	0.82	ug/kg	
74-97-5	Bromochloromethane	ND	11	0.93	ug/kg	
75-27-4	Bromodichloromethane	ND	4.3	0.96	ug/kg	
75-25-2	Bromoform	ND	11	0.87	ug/kg	
74-83-9	Bromomethane	ND	11	2.2	ug/kg	
78-93-3	2-Butanone (MEK)	25.7	22	8.1	ug/kg	
75-15-0	Carbon disulfide	ND	4.3	2.0	ug/kg	
56-23-5	Carbon tetrachloride	ND	4.3	1.2	ug/kg	
108-90-7	Chlorobenzene	ND	4.3	0.77	ug/kg	
75-00-3	Chloroethane	ND	11	1.5	ug/kg	
67-66-3	Chloroform	ND	4.3	0.80	ug/kg	
74-87-3	Chloromethane	ND	11	4.2	ug/kg	
110-82-7	Cyclohexane	ND	4.3	0.88	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	4.3	1.8	ug/kg	
124-48-1	Dibromochloromethane	ND	4.3	0.73	ug/kg	
106-93-4	1,2-Dibromoethane	ND	2.2	0.70	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	2.2	0.66	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	2.2	0.78	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	2.2	0.74	ug/kg	
75-71-8	Dichlorodifluoromethane [a]	ND	11	1.4	ug/kg	UJ
75-34-3	1,1-Dichloroethane	ND	2.2	0.83	ug/kg	
107-06-2	1,2-Dichloroethane [a]	ND	2.2	1.0	ug/kg	UJ
75-35-4	1,1-Dichloroethene	ND	2.2	1.4	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	2.2	2.1	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	2.2	1.4	ug/kg	
78-87-5	1,2-Dichloropropane	ND	4.3	0.88	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	4.3	0.76	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	4.3	0.71	ug/kg	
100-41-4	Ethylbenzene	1.2	2.2	1.2	ug/kg	J
76-13-1	Freon 113	ND	11	1.6	ug/kg	
591-78-6	2-Hexanone	ND	11	2.7	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-154 (12-14)		
Lab Sample ID:	JC87093-4	**Date Sampled:**	04/26/19
Matrix:	SO - Soil	**Date Received:**	04/26/19
Method:	SW846 8260C	**Percent Solids:**	57.8
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	1.8	4.3	1.5	ug/kg	J
79-20-9	Methyl Acetate	ND	11	3.0	ug/kg	
108-87-2	Methylcyclohexane	ND	4.3	1.5	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	2.2	0.76	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	11	3.4	ug/kg	
75-09-2	Methylene chloride	ND	11	5.4	ug/kg	
100-42-5	Styrene	ND	4.3	1.2	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	4.3	0.84	ug/kg	
127-18-4	Tetrachloroethene	ND	4.3	1.0	ug/kg	
108-88-3	Toluene	1.3	2.2	0.81	ug/kg	J
87-61-6	1,2,3-Trichlorobenzene	ND	11	2.2	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	11	2.2	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	4.3	0.92	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	4.3	0.74	ug/kg	
79-01-6	Trichloroethene	ND	2.2	1.6	ug/kg	
75-69-4	Trichlorofluoromethane	ND	11	1.5	ug/kg	
75-01-4	Vinyl chloride	ND	4.3	1.0	ug/kg	
	m,p-Xylene	ND	2.2	1.6	ug/kg	
95-47-6	o-Xylene	1.4	2.2	1.3	ug/kg	J
1330-20-7	Xylene (total)	1.4	2.2	1.3	ug/kg	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	105%		75-127%
17060-07-0	1,2-Dichloroethane-D4	94%		75-130%
2037-26-5	Toluene-D8	103%		80-120%
460-00-4	4-Bromofluorobenzene	102%		79-127%

(a) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	S-154 (12-14)		
Lab Sample ID:	JC87093-4	**Date Sampled:**	04/26/19
Matrix:	SO - Soil	**Date Received:**	04/26/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	57.8
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	P129416.D	1	05/08/19 20:35	AR	05/06/19 17:35	OP20110	EP5857
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	110	28	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	290	35	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	290	49	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	290	100	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	290	220	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	290	62	ug/kg	
95-48-7	2-Methylphenol	ND	110	37	ug/kg	
	3&4-Methylphenol	425	110	47	ug/kg	
88-75-5	2-Nitrophenol	ND	290	38	ug/kg	
100-02-7	4-Nitrophenol	ND	570	150	ug/kg	
87-86-5	Pentachlorophenol	ND	230	54	ug/kg	
108-95-2	Phenol	ND	110	30	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	290	38	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	290	43	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	290	34	ug/kg	
83-32-9	Acenaphthene	1890	57	20	ug/kg	
208-96-8	Acenaphthylene	308	57	29	ug/kg	
98-86-2	Acetophenone	21.0	290	12	ug/kg	J
120-12-7	Anthracene	1080	57	35	ug/kg	
1912-24-9	Atrazine	ND	110	25	ug/kg	
56-55-3	Benzo(a)anthracene	762	57	16	ug/kg	
50-32-8	Benzo(a)pyrene	916	57	26	ug/kg	
205-99-2	Benzo(b)fluoranthene	896	57	25	ug/kg	
191-24-2	Benzo(g,h,i)perylene	551	57	29	ug/kg	
207-08-9	Benzo(k)fluoranthene	326	57	27	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	110	22	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	110	14	ug/kg	
92-52-4	1,1'-Biphenyl	115	110	7.9	ug/kg	
100-52-7	Benzaldehyde	ND	290	14	ug/kg	
91-58-7	2-Chloronaphthalene	ND	110	14	ug/kg	
106-47-8	4-Chloroaniline	ND	290	21	ug/kg	
86-74-8	Carbazole	204	110	8.3	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-154 (12-14)		
Lab Sample ID:	JC87093-4	**Date Sampled:**	04/26/19
Matrix:	SO - Soil	**Date Received:**	04/26/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	57.8
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam [a]	ND	110	23	ug/kg	
218-01-9	Chrysene	892	57	18	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	110	12	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	110	25	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	110	21	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	110	19	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	57	18	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	57	29	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	110	48	ug/kg	
123-91-1	1,4-Dioxane [a]	ND	57	38	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	146	57	25	ug/kg	
132-64-9	Dibenzofuran	584	110	23	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	110	9.4	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	110	14	ug/kg	
84-66-2	Diethyl phthalate	ND	110	12	ug/kg	
131-11-3	Dimethyl phthalate	ND	110	10	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	110	13	ug/kg	
206-44-0	Fluoranthene	1880	57	26	ug/kg	
86-73-7	Fluorene	1400	57	26	ug/kg	
118-74-1	Hexachlorobenzene	ND	110	15	ug/kg	
87-68-3	Hexachlorobutadiene	ND	57	23	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	570	23	ug/kg	
67-72-1	Hexachloroethane	ND	290	28	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	499	57	27	ug/kg	
78-59-1	Isophorone	ND	110	12	ug/kg	
91-57-6	2-Methylnaphthalene	572	57	13	ug/kg	
88-74-4	2-Nitroaniline	ND	290	14	ug/kg	
99-09-2	3-Nitroaniline	ND	290	14	ug/kg	
100-01-6	4-Nitroaniline	ND	290	15	ug/kg	
91-20-3	Naphthalene	1610	57	16	ug/kg	
98-95-3	Nitrobenzene	ND	110	22	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	110	17	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	290	21	ug/kg	
85-01-8	Phenanthrene	4560	57	19	ug/kg	
129-00-0	Pyrene	2080	57	18	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	290	15	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	65%		23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-154 (12-14)		
Lab Sample ID:	JC87093-4	**Date Sampled:**	04/26/19
Matrix:	SO - Soil	**Date Received:**	04/26/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	57.8
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	63%		27-114%
118-79-6	2,4,6-Tribromophenol	67%		19-152%
4165-60-0	Nitrobenzene-d5	67%		26-134%
321-60-8	2-Fluorobiphenyl	79%		39-124%
1718-51-0	Terphenyl-d14	77%		36-134%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-154 (12-14)
Lab Sample ID: JC87093-4
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/26/19
Date Received: 04/26/19
Percent Solids: 57.8

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	22800 J	87	14	mg/kg	1	05/01/19	05/02/19	MET	SW846 6010D [2]	SW846 3050B [5]
Antimony	1.2 J	3.5	0.71	mg/kg	1	05/01/19	05/02/19	MET	SW846 6010D [2]	SW846 3050B [5]
Arsenic [a]	140 J	6.9	0.97	mg/kg	2	05/01/19	05/03/19	MET	SW846 6010D [3]	SW846 3050B [5]
Barium	276 J	35	3.3	mg/kg	1	05/01/19	05/02/19	MET	SW846 6010D [2]	SW846 3050B [5]
Beryllium	1.7	0.35	0.14	mg/kg	1	05/01/19	05/02/19	MET	SW846 6010D [2]	SW846 3050B [5]
Cadmium	3.9	0.87	0.12	mg/kg	1	05/01/19	05/02/19	MET	SW846 6010D [2]	SW846 3050B [5]
Calcium	5000	870	76	mg/kg	1	05/01/19	05/02/19	MET	SW846 6010D [2]	SW846 3050B [5]
Chromium	449 J	1.7	0.64	mg/kg	1	05/01/19	05/02/19	MET	SW846 6010D [2]	SW846 3050B [5]
Cobalt	26.8	8.7	0.48	mg/kg	1	05/01/19	05/02/19	MET	SW846 6010D [2]	SW846 3050B [5]
Copper [a]	220 J	8.7	2.9	mg/kg	2	05/01/19	05/03/19	MET	SW846 6010D [3]	SW846 3050B [5]
Iron	42200 J	170	66	mg/kg	2	05/01/19	05/03/19	MET	SW846 6010D [3]	SW846 3050B [5]
Lead [a]	561 J	6.9	1.4	mg/kg	2	05/01/19	05/03/19	MET	SW846 6010D [3]	SW846 3050B [5]
Magnesium	5040	870	24	mg/kg	1	05/01/19	05/02/19	MET	SW846 6010D [2]	SW846 3050B [5]
Manganese	1210	5.2	1.4	mg/kg	2	05/01/19	05/03/19	MET	SW846 6010D [3]	SW846 3050B [5]
Mercury	2.1	0.23	0.10	mg/kg	5	04/30/19	04/30/19	LL	SW846 7471B [1]	SW846 7471B [4]
Nickel	47.2	6.9	0.61	mg/kg	1	05/01/19	05/02/19	MET	SW846 6010D [2]	SW846 3050B [5]
Potassium	2260	1700	55	mg/kg	1	05/01/19	05/02/19	MET	SW846 6010D [2]	SW846 3050B [5]
Selenium [a]	2.3 J	6.9	2.2	mg/kg	2	05/01/19	05/03/19	MET	SW846 6010D [3]	SW846 3050B [5]
Silver [a]	2.4	1.7	0.59	mg/kg	2	05/01/19	05/03/19	MET	SW846 6010D [3]	SW846 3050B [5]
Sodium	335 J	1700	130	mg/kg	1	05/01/19	05/02/19	MET	SW846 6010D [2]	SW846 3050B [5]
Thallium [a]	2.0 U	3.5	2.0	mg/kg	2	05/01/19	05/03/19	MET	SW846 6010D [3]	SW846 3050B [5]
Vanadium	44.1	8.7	0.33	mg/kg	1	05/01/19	05/02/19	MET	SW846 6010D [2]	SW846 3050B [5]
Zinc [a]	1690 J	17	8.0	mg/kg	2	05/01/19	05/03/19	MET	SW846 6010D [3]	SW846 3050B [5]

(1) Instrument QC Batch: MA46615
(2) Instrument QC Batch: MA46638
(3) Instrument QC Batch: MA46646
(4) Prep QC Batch: MP14638
(5) Prep QC Batch: MP14721

(a) Elevated detection limit due to dilution required for high interfering element.

RL = Reporting Limit
MDL = Method Detection Limit
U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: S-154 (12-14)
Lab Sample ID: JC87093-4
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/26/19
Date Received: 04/26/19
Percent Solids: 57.8

General Chemistry

Analyte	Result		RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	3.2	J	0.37	0.19	mg/kg	1	05/06/19 15:01	KI	SW846 9012B/LACHAT
Solids, Percent	57.8				%	1	05/03/19 17:00	RC	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

SGS North America Inc.

Report of Analysis

Client Sample ID:	SO-DUP-0426-1		
Lab Sample ID:	JC87093-5	**Date Sampled:**	04/26/19
Matrix:	SO - Soil	**Date Received:**	04/26/19
Method:	SW846 8260C	**Percent Solids:**	54.8
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3C151826.D	1	05/06/19 19:12	PS	n/a	n/a	V3C6821
Run #2							

	Initial Weight
Run #1	4.0 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	71.6	23	11	ug/kg	J
71-43-2	Benzene	4.2	1.1	0.86	ug/kg	
74-97-5	Bromochloromethane	ND	11	0.98	ug/kg	
75-27-4	Bromodichloromethane	ND	4.6	1.0	ug/kg	
75-25-2	Bromoform	ND	11	0.92	ug/kg	
74-83-9	Bromomethane	ND	11	2.3	ug/kg	
78-93-3	2-Butanone (MEK)	11.6	23	8.5	ug/kg	J
75-15-0	Carbon disulfide	ND	4.6	2.1	ug/kg	
56-23-5	Carbon tetrachloride	ND	4.6	1.3	ug/kg	
108-90-7	Chlorobenzene	ND	4.6	0.81	ug/kg	
75-00-3	Chloroethane	ND	11	1.6	ug/kg	
67-66-3	Chloroform	ND	4.6	0.85	ug/kg	
74-87-3	Chloromethane [a]	ND	11	4.5	ug/kg	UJ
110-82-7	Cyclohexane	ND	4.6	0.93	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	4.6	1.9	ug/kg	
124-48-1	Dibromochloromethane	ND	4.6	0.77	ug/kg	
106-93-4	1,2-Dibromoethane	ND	2.3	0.74	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	2.3	0.70	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	2.3	0.82	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	2.3	0.78	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	11	1.4	ug/kg	
75-34-3	1,1-Dichloroethane	ND	2.3	0.88	ug/kg	
107-06-2	1,2-Dichloroethane	ND	2.3	1.1	ug/kg	
75-35-4	1,1-Dichloroethene	ND	2.3	1.5	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	2.3	2.2	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	2.3	1.5	ug/kg	
78-87-5	1,2-Dichloropropane	ND	4.6	0.93	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	4.6	0.80	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	4.6	0.75	ug/kg	
100-41-4	Ethylbenzene	ND	2.3	1.3	ug/kg	
76-13-1	Freon 113	ND	11	1.7	ug/kg	
591-78-6	2-Hexanone	ND	11	2.9	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SO-DUP-0426-1		
Lab Sample ID:	JC87093-5	**Date Sampled:**	04/26/19
Matrix:	SO - Soil	**Date Received:**	04/26/19
Method:	SW846 8260C	**Percent Solids:**	54.8
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	4.6	1.6	ug/kg	
79-20-9	Methyl Acetate [a]	ND	11	3.2	ug/kg	
108-87-2	Methylcyclohexane	ND	4.6	1.6	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	2.3	0.80	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	11	3.6	ug/kg	
75-09-2	Methylene chloride	ND	11	5.7	ug/kg	
100-42-5	Styrene	ND	4.6	1.3	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	4.6	0.89	ug/kg	
127-18-4	Tetrachloroethene	ND	4.6	1.1	ug/kg	
108-88-3	Toluene	0.87	2.3	0.86	ug/kg	J
87-61-6	1,2,3-Trichlorobenzene	ND	11	2.3	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	11	2.3	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	4.6	0.97	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	4.6	0.78	ug/kg	
79-01-6	Trichloroethene	ND	2.3	1.7	ug/kg	
75-69-4	Trichlorofluoromethane	ND	11	1.6	ug/kg	
75-01-4	Vinyl chloride	ND	4.6	1.1	ug/kg	
	m,p-Xylene	ND	2.3	1.7	ug/kg	
95-47-6	o-Xylene	ND	2.3	1.3	ug/kg	
1330-20-7	Xylene (total)	ND	2.3	1.3	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%		75-127%
17060-07-0	1,2-Dichloroethane-D4	111%		75-130%
2037-26-5	Toluene-D8	101%		80-120%
460-00-4	4-Bromofluorobenzene	111%		79-127%

(a) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	SO-DUP-0426-1		
Lab Sample ID:	JC87093-5	**Date Sampled:**	04/26/19
Matrix:	SO - Soil	**Date Received:**	04/26/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	54.8
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	P129431.D	1	05/09/19 18:55	AR	05/06/19 17:35	OP20110	EP5858
Run #2							

	Initial Weight	Final Volume
Run #1	30.4 g	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	120	30	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	300	37	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	300	51	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	300	110	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	300	230	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	300	64	ug/kg	
95-48-7	2-Methylphenol	ND	120	38	ug/kg	
	3&4-Methylphenol	681	120	49	ug/kg	
88-75-5	2-Nitrophenol	ND	300	40	ug/kg	
100-02-7	4-Nitrophenol	ND	600	160	ug/kg	
87-86-5	Pentachlorophenol	ND	240	56	ug/kg	
108-95-2	Phenol	ND	120	31	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	300	40	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	300	45	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	300	36	ug/kg	
83-32-9	Acenaphthene	1620	60	21	ug/kg	
208-96-8	Acenaphthylene	331	60	30	ug/kg	
98-86-2	Acetophenone	16.8	300	13	ug/kg	J
120-12-7	Anthracene	867	60	37	ug/kg	
1912-24-9	Atrazine	ND	120	26	ug/kg	
56-55-3	Benzo(a)anthracene	741	60	17	ug/kg	
50-32-8	Benzo(a)pyrene	799	60	27	ug/kg	
205-99-2	Benzo(b)fluoranthene	807	60	27	ug/kg	
191-24-2	Benzo(g,h,i)perylene	468	60	30	ug/kg	
207-08-9	Benzo(k)fluoranthene	257	60	28	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	120	23	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	120	15	ug/kg	
92-52-4	1,1'-Biphenyl	143	120	8.2	ug/kg	
100-52-7	Benzaldehyde	ND	300	15	ug/kg	
91-58-7	2-Chloronaphthalene	ND	120	14	ug/kg	
106-47-8	4-Chloroaniline	ND	300	22	ug/kg	
86-74-8	Carbazole	115	120	8.7	ug/kg	J

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: SO-DUP-0426-1
Lab Sample ID: JC87093-5
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/26/19
Date Received: 04/26/19
Percent Solids: 54.8

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	120	24	ug/kg	
218-01-9	Chrysene	868	60	19	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	120	13	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	120	26	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	120	22	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	120	19	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	60	19	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	60	30	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	120	50	ug/kg	
123-91-1	1,4-Dioxane [a]	ND	60	40	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	119	60	27	ug/kg	
132-64-9	Dibenzofuran	505	120	24	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	120	9.8	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	120	15	ug/kg	
84-66-2	Diethyl phthalate	ND	120	13	ug/kg	
131-11-3	Dimethyl phthalate	ND	120	11	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	120	14	ug/kg	
206-44-0	Fluoranthene	1810	60	27	ug/kg	
86-73-7	Fluorene	1040	60	28	ug/kg	
118-74-1	Hexachlorobenzene	ND	120	15	ug/kg	
87-68-3	Hexachlorobutadiene	ND	60	24	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	600	24	ug/kg	
67-72-1	Hexachloroethane	ND	300	30	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	432	60	28	ug/kg	
78-59-1	Isophorone	ND	120	13	ug/kg	
91-57-6	2-Methylnaphthalene	638	60	14	ug/kg	
88-74-4	2-Nitroaniline	ND	300	14	ug/kg	
99-09-2	3-Nitroaniline	ND	300	15	ug/kg	
100-01-6	4-Nitroaniline	ND	300	16	ug/kg	
91-20-3	Naphthalene	1850	60	17	ug/kg	
98-95-3	Nitrobenzene [a]	ND	120	23	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	120	17	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	300	22	ug/kg	
85-01-8	Phenanthrene	3300	60	20	ug/kg	
129-00-0	Pyrene	2140	60	19	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	300	15	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	67%		23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SO-DUP-0426-1		
Lab Sample ID:	JC87093-5	**Date Sampled:**	04/26/19
Matrix:	SO - Soil	**Date Received:**	04/26/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	54.8
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	68%		27-114%
118-79-6	2,4,6-Tribromophenol	68%		19-152%
4165-60-0	Nitrobenzene-d5	70%		26-134%
321-60-8	2-Fluorobiphenyl	85%		39-124%
1718-51-0	Terphenyl-d14	77%		36-134%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: SO-DUP-0426-1
Lab Sample ID: JC87093-5
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/26/19
Date Received: 04/26/19
Percent Solids: 54.8

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	18500 J	93	15	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [4]
Antimony	0.76 U J	3.7	0.76	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [4]
Arsenic	33.9 J	3.7	0.52	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [4]
Barium	159 J	37	3.5	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [4]
Beryllium	1.3	0.37	0.15	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [4]
Cadmium	1.4	0.93	0.13	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [4]
Calcium	3900	930	82	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [4]
Chromium	156 J	1.9	0.69	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [4]
Cobalt	17.9	9.3	0.52	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [4]
Copper	98.6 J	4.7	1.6	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [4]
Iron	32900 J	93	36	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [4]
Lead	187 J	3.7	0.76	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [4]
Magnesium	5090	930	25	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [4]
Manganese	1020	2.8	0.76	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [4]
Mercury	2.4	0.26	0.11	mg/kg	5	04/30/19	04/30/19	LL	SW846 7471B [1]	SW846 7471B [3]
Nickel	33.7	7.4	0.65	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [4]
Potassium	2120	1900	59	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [4]
Selenium	1.2 J	3.7	1.2	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [4]
Silver	0.32 U	0.93	0.32	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [4]
Sodium	267 J	1900	140	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [4]
Thallium	1.1 U	1.9	1.1	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [4]
Vanadium	38.0	9.3	0.35	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [4]
Zinc	540 J	9.3	4.3	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA46615
(2) Instrument QC Batch: MA46638
(3) Prep QC Batch: MP14638
(4) Prep QC Batch: MP14721

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	SO-DUP-0426-1		
Lab Sample ID:	JC87093-5	**Date Sampled:**	04/26/19
Matrix:	SO - Soil	**Date Received:**	04/26/19
		Percent Solids:	54.8
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result		RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	1.5	J	0.44	0.22	mg/kg	1	05/06/19 15:02	KI	SW846 9012B/LACHAT
Solids, Percent	54.8				%	1	05/03/19 17:00	RC	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

SGS North America Inc.

Report of Analysis

Client Sample ID:	S-158 (11-13)		
Lab Sample ID:	JC87093-6	**Date Sampled:**	04/26/19
Matrix:	SO - Soil	**Date Received:**	04/26/19
Method:	SW846 8260C	**Percent Solids:**	77.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	D264376.D	1	05/08/19 16:51	TDN	n/a	n/a	VD10654
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	4.9 g	10.0 ml	20.0 ul
Run #2			

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone [b]	ND	7300	3600	ug/kg	
71-43-2	Benzene	ND	360	270	ug/kg	
74-97-5	Bromochloromethane	ND	3600	310	ug/kg	
75-27-4	Bromodichloromethane	ND	1500	320	ug/kg	
75-25-2	Bromoform	ND	3600	290	ug/kg	
74-83-9	Bromomethane	ND	3600	720	ug/kg	
78-93-3	2-Butanone (MEK)	ND	7300	2700	ug/kg	
75-15-0	Carbon disulfide	11200	1500	670	ug/kg	
56-23-5	Carbon tetrachloride	ND	1500	400	ug/kg	
108-90-7	Chlorobenzene	ND	1500	260	ug/kg	
75-00-3	Chloroethane	ND	3600	500	ug/kg	
67-66-3	Chloroform	ND	1500	270	ug/kg	
74-87-3	Chloromethane	ND	3600	1400	ug/kg	
110-82-7	Cyclohexane	ND	1500	290	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	1500	610	ug/kg	
124-48-1	Dibromochloromethane	ND	1500	250	ug/kg	
106-93-4	1,2-Dibromoethane	ND	730	240	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	730	220	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	730	260	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	730	250	ug/kg	
75-71-8	Dichlorodifluoromethane [c]	ND	3600	460	ug/kg	UJ
75-34-3	1,1-Dichloroethane	ND	730	280	ug/kg	
107-06-2	1,2-Dichloroethane [c]	ND	730	340	ug/kg	UJ
75-35-4	1,1-Dichloroethene	ND	730	480	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	730	690	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	730	480	ug/kg	
78-87-5	1,2-Dichloropropane	ND	1500	300	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	1500	260	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	1500	240	ug/kg	
100-41-4	Ethylbenzene	537	730	400	ug/kg	J
76-13-1	Freon 113	ND	3600	550	ug/kg	
591-78-6	2-Hexanone	ND	3600	920	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-158 (11-13)		
Lab Sample ID:	JC87093-6	**Date Sampled:**	04/26/19
Matrix:	SO - Soil	**Date Received:**	04/26/19
Method:	SW846 8260C	**Percent Solids:**	77.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	1500	510	ug/kg	
79-20-9	Methyl Acetate	1050	3600	1000	ug/kg	J
108-87-2	Methylcyclohexane	ND	1500	510	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	730	260	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	3600	1100	ug/kg	
75-09-2	Methylene chloride	ND	3600	1800	ug/kg	
100-42-5	Styrene	ND	1500	420	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1500	280	ug/kg	
127-18-4	Tetrachloroethene	ND	1500	340	ug/kg	
108-88-3	Toluene	ND	730	270	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	3600	730	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	3600	730	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	1500	310	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	1500	250	ug/kg	
79-01-6	Trichloroethene	ND	730	550	ug/kg	
75-69-4	Trichlorofluoromethane	ND	3600	490	ug/kg	
75-01-4	Vinyl chloride	ND	1500	340	ug/kg	
	m,p-Xylene	ND	730	540	ug/kg	
95-47-6	o-Xylene	ND	730	420	ug/kg	
1330-20-7	Xylene (total)	ND	730	420	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	97%		75-127%
17060-07-0	1,2-Dichloroethane-D4	90%		75-130%
2037-26-5	Toluene-D8	99%		80-120%
460-00-4	4-Bromofluorobenzene	97%		79-127%

(a) Diluted due to high concentration of non-target compound.
(b) Associated CCV outside of control limits high, sample was ND.
(c) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	S-158 (11-13)		
Lab Sample ID:	JC87093-6	**Date Sampled:**	04/26/19
Matrix:	SO - Soil	**Date Received:**	04/26/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	77.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	P129432.D	2	05/09/19 19:22	AR	05/06/19 17:35	OP20110	EP5858
Run #2	6P481794.D	10	05/10/19 13:38	AR	05/06/19 17:35	OP20110	E6P2588
Run #3	6P481791.D	100	05/10/19 12:25	AR	05/06/19 17:35	OP20110	E6P2588

	Initial Weight	Final Volume
Run #1	30.3 g	1.0 ml
Run #2	30.3 g	1.0 ml
Run #3	30.3 g	1.0 ml

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	170	42	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	420	52	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	420	72	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	420	150	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	420	320	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	420	91	ug/kg	
95-48-7	2-Methylphenol	ND	170	54	ug/kg	
	3&4-Methylphenol	ND	170	70	ug/kg	
88-75-5	2-Nitrophenol	ND	420	56	ug/kg	
100-02-7	4-Nitrophenol	ND	850	230	ug/kg	
87-86-5	Pentachlorophenol	ND	340	80	ug/kg	
108-95-2	Phenol	ND	170	44	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	420	56	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	420	63	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	420	51	ug/kg	
83-32-9	Acenaphthene	9550 [b]	420	150	ug/kg	D
208-96-8	Acenaphthylene	44400 [c]	4200	2200	ug/kg	D
98-86-2	Acetophenone	927	420	18	ug/kg	
120-12-7	Anthracene	11700 [b]	420	260	ug/kg	D
1912-24-9	Atrazine	ND	170	36	ug/kg	
56-55-3	Benzo(a)anthracene	10700 [b]	420	120	ug/kg	D
50-32-8	Benzo(a)pyrene	8040	85	39	ug/kg	
205-99-2	Benzo(b)fluoranthene	11200 [b]	420	190	ug/kg	D
191-24-2	Benzo(g,h,i)perylene	5250	85	42	ug/kg	
207-08-9	Benzo(k)fluoranthene	3590 [b]	420	200	ug/kg	D
101-55-3	4-Bromophenyl phenyl ether	ND	170	33	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	170	21	ug/kg	
92-52-4	1,1'-Biphenyl	16400 [b]	850	58	ug/kg	D
100-52-7	Benzaldehyde	ND	420	21	ug/kg	
91-58-7	2-Chloronaphthalene	ND	170	20	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-158 (11-13)
Lab Sample ID: JC87093-6
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/26/19
Date Received: 04/26/19
Percent Solids: 77.9

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
106-47-8	4-Chloroaniline	ND	420	31	ug/kg	
86-74-8	Carbazole	2830	170	12	ug/kg	
105-60-2	Caprolactam	ND	170	33	ug/kg	
218-01-9	Chrysene	9020 [b]	420	130	ug/kg	D
111-91-1	bis(2-Chloroethoxy)methane	ND	170	18	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	170	37	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	170	30	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	170	27	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	85	26	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	85	43	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	170	71	ug/kg	
123-91-1	1,4-Dioxane [d]	ND	85	56	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	1140	85	37	ug/kg	
132-64-9	Dibenzofuran	51500 [c]	8500	1700	ug/kg	D
84-74-2	Di-n-butyl phthalate	ND	170	14	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	170	21	ug/kg	
84-66-2	Diethyl phthalate	ND	170	18	ug/kg	
131-11-3	Dimethyl phthalate	ND	170	15	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	170	20	ug/kg	
206-44-0	Fluoranthene	36400 [b]	420	190	ug/kg	D
86-73-7	Fluorene	51100 [c]	4200	1900	ug/kg	D
118-74-1	Hexachlorobenzene	ND	170	21	ug/kg	
87-68-3	Hexachlorobutadiene	ND	85	34	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	850	34	ug/kg	
67-72-1	Hexachloroethane	ND	420	42	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	5740	85	40	ug/kg	
78-59-1	Isophorone	ND	170	18	ug/kg	
91-57-6	2-Methylnaphthalene	46100 [c]	4200	960	ug/kg	D
88-74-4	2-Nitroaniline	ND	420	20	ug/kg	
99-09-2	3-Nitroaniline	ND	420	21	ug/kg	
100-01-6	4-Nitroaniline	ND	420	22	ug/kg	
91-20-3	Naphthalene	423000 [c]	4200	1200	ug/kg	D
98-95-3	Nitrobenzene [d]	ND	170	33	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	170	24	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	420	31	ug/kg	
85-01-8	Phenanthrene	67800 [c]	4200	1400	ug/kg	D
129-00-0	Pyrene	24500 [b]	420	140	ug/kg	D
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	420	22	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-158 (11-13)		
Lab Sample ID:	JC87093-6	**Date Sampled:**	04/26/19
Matrix:	SO - Soil	**Date Received:**	04/26/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	77.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Run# 3	Limits
367-12-4	2-Fluorophenol	85%	80%	82%	23-115%
4165-62-2	Phenol-d5	77%	88%	57%	27-114%
118-79-6	2,4,6-Tribromophenol	71%	62%	64%	19-152%
4165-60-0	Nitrobenzene-d5	105%	85%	94%	26-134%
321-60-8	2-Fluorobiphenyl	81%	77%	87%	39-124%
1718-51-0	Terphenyl-d14	71%	76%	83%	36-134%

(a) Dilution required due to viscosity of the extract matrix.
(b) Result is from Run# 2
(c) Result is from Run# 3
(d) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-158 (11-13)
Lab Sample ID: JC87093-6
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/26/19
Date Received: 04/26/19
Percent Solids: 77.9

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	3230 J	64	10	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [4]
Antimony	0.52 U J	2.5	0.52	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [4]
Arsenic	18.2 J	2.5	0.36	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [4]
Barium	104 J	25	2.4	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [4]
Beryllium	0.29	0.25	0.10	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [4]
Cadmium	0.28 J	0.64	0.089	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [4]
Calcium	10900	640	56	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [4]
Chromium	72.7 J	1.3	0.47	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [4]
Cobalt	3.9 J	6.4	0.36	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [4]
Copper	127 J	3.2	1.1	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [4]
Iron	21600 J	64	24	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [4]
Lead	101 J	2.5	0.52	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [4]
Magnesium	1420	640	17	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [4]
Manganese	262	1.9	0.52	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [4]
Mercury	2.8 J	0.17	0.074	mg/kg	5	04/30/19	04/30/19	LL	SW846 7471B [1]	SW846 7471B [3]
Nickel	17.2	5.1	0.44	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [4]
Potassium	649 J	1300	40	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [4]
Selenium	0.83 U	2.5	0.83	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [4]
Silver	0.22 U	0.64	0.22	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [4]
Sodium	155 J	1300	99	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [4]
Thallium	0.74 U	1.3	0.74	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [4]
Vanadium	12.4	6.4	0.24	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [4]
Zinc	128 J	6.4	2.9	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA46615
(2) Instrument QC Batch: MA46638
(3) Prep QC Batch: MP14638
(4) Prep QC Batch: MP14721

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: S-158 (11-13)
Lab Sample ID: JC87093-6
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/26/19
Date Received: 04/26/19
Percent Solids: 77.9

General Chemistry

Analyte	Result		RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	29.4	J	0.80	0.40	mg/kg	3	05/08/19 15:36	KI	SW846 9012B/LACHAT
Solids, Percent	77.9				%	1	05/03/19 17:00	RC	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

SGS North America Inc.

Report of Analysis

Client Sample ID:	S-158 (18-20)		
Lab Sample ID:	JC87093-7	**Date Sampled:**	04/26/19
Matrix:	SO - Soil	**Date Received:**	04/26/19
Method:	SW846 8260C	**Percent Solids:**	58.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3C151809.D	1	05/06/19 12:39	PS	n/a	n/a	V3C6821
Run #2 [a]	I226025.D	1	05/07/19 12:14	TDN	n/a	n/a	VI9105

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.2 g		
Run #2	5.3 g	10.0 ml	100 ul

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	224	16	8.2	ug/kg	
71-43-2	Benzene	ND	0.82	0.62	ug/kg	
74-97-5	Bromochloromethane	ND	8.2	0.70	ug/kg	
75-27-4	Bromodichloromethane	ND	3.3	0.72	ug/kg	
75-25-2	Bromoform	ND	8.2	0.66	ug/kg	
74-83-9	Bromomethane	ND	8.2	1.6	ug/kg	
78-93-3	2-Butanone (MEK)	51.9	16	6.1	ug/kg	
75-15-0	Carbon disulfide	ND	3.3	1.5	ug/kg	
56-23-5	Carbon tetrachloride	ND	3.3	0.90	ug/kg	
108-90-7	Chlorobenzene	ND	3.3	0.58	ug/kg	UJ
75-00-3	Chloroethane	ND	8.2	1.1	ug/kg	
67-66-3	Chloroform	ND	3.3	0.61	ug/kg	
74-87-3	Chloromethane [b]	ND	8.2	3.2	ug/kg	UJ
110-82-7	Cyclohexane	ND	3.3	0.66	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	3.3	1.4	ug/kg	UJ
124-48-1	Dibromochloromethane	ND	3.3	0.55	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.6	0.53	ug/kg	UJ
95-50-1	1,2-Dichlorobenzene	ND	1.6	0.50	ug/kg	UJ
541-73-1	1,3-Dichlorobenzene	ND	1.6	0.59	ug/kg	UJ
106-46-7	1,4-Dichlorobenzene	ND	1.6	0.56	ug/kg	UJ
75-71-8	Dichlorodifluoromethane	ND	8.2	1.0	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.6	0.63	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.6	0.77	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.6	1.1	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.6	1.6	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.6	1.1	ug/kg	
78-87-5	1,2-Dichloropropane	ND	3.3	0.66	ug/kg	UJ
10061-01-5	cis-1,3-Dichloropropene	ND	3.3	0.57	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	3.3	0.53	ug/kg	
100-41-4	Ethylbenzene	ND	1.6	0.90	ug/kg	
76-13-1	Freon 113	ND	8.2	1.2	ug/kg	
591-78-6	2-Hexanone	ND	8.2	2.1	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-158 (18-20)		
Lab Sample ID:	JC87093-7	**Date Sampled:**	04/26/19
Matrix:	SO - Soil	**Date Received:**	04/26/19
Method:	SW846 8260C	**Percent Solids:**	58.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	3.3	1.1	ug/kg	
79-20-9	Methyl Acetate [b]	ND	8.2	2.3	ug/kg	UJ
108-87-2	Methylcyclohexane	ND	3.3	1.2	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.6	0.57	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	8.2	2.5	ug/kg	
75-09-2	Methylene chloride	ND	8.2	4.1	ug/kg	
100-42-5	Styrene	ND	3.3	0.94	ug/kg	UJ
79-34-5	1,1,2,2-Tetrachloroethane	ND	3.3	0.64	ug/kg	
127-18-4	Tetrachloroethene	ND	3.3	0.75	ug/kg	
108-88-3	Toluene	ND	1.6	0.61	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	8.2	1.6	ug/kg	UJ
120-82-1	1,2,4-Trichlorobenzene	ND	8.2	1.6	ug/kg	UJ
71-55-6	1,1,1-Trichloroethane	ND	3.3	0.70	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	3.3	0.56	ug/kg	
79-01-6	Trichloroethene	ND	1.6	1.2	ug/kg	
75-69-4	Trichlorofluoromethane	ND	8.2	1.1	ug/kg	
75-01-4	Vinyl chloride	ND	3.3	0.77	ug/kg	
	m,p-Xylene	ND	1.6	1.2	ug/kg	
95-47-6	o-Xylene	ND	1.6	0.95	ug/kg	
1330-20-7	Xylene (total)	ND	1.6	0.95	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	105%	104%	75-127%
17060-07-0	1,2-Dichloroethane-D4	113%	116%	75-130%
2037-26-5	Toluene-D8	112%	100%	80-120%
460-00-4	4-Bromofluorobenzene	127%	105%	79-127%

(a) Confirmation run for internal standard areas.
(b) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	S-158 (18-20)		
Lab Sample ID:	JC87093-7	**Date Sampled:**	04/26/19
Matrix:	SO - Soil	**Date Received:**	04/26/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	58.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	P129376.D	1	05/07/19 17:23	CC	05/06/19 17:35	OP20110	EP5856
Run #2							

	Initial Weight	Final Volume
Run #1	30.3 g	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	110	28	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	280	34	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	280	48	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	280	100	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	280	210	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	280	60	ug/kg	
95-48-7	2-Methylphenol	ND	110	36	ug/kg	
	3&4-Methylphenol	ND	110	46	ug/kg	
88-75-5	2-Nitrophenol	ND	280	37	ug/kg	
100-02-7	4-Nitrophenol	ND	560	150	ug/kg	
87-86-5	Pentachlorophenol	ND	220	53	ug/kg	
108-95-2	Phenol	ND	110	29	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	280	37	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	280	42	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	280	33	ug/kg	
83-32-9	Acenaphthene	23.1	56	19	ug/kg	J
208-96-8	Acenaphthylene	ND	56	28	ug/kg	
98-86-2	Acetophenone	ND	280	12	ug/kg	
120-12-7	Anthracene	ND	56	34	ug/kg	
1912-24-9	Atrazine	ND	110	24	ug/kg	
56-55-3	Benzo(a)anthracene	35.1	56	16	ug/kg	J
50-32-8	Benzo(a)pyrene	32.2	56	25	ug/kg	J
205-99-2	Benzo(b)fluoranthene	33.2	56	25	ug/kg	J
191-24-2	Benzo(g,h,i)perylene	ND	56	28	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	56	26	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	110	22	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	110	14	ug/kg	
92-52-4	1,1'-Biphenyl	10.3	110	7.7	ug/kg	J
100-52-7	Benzaldehyde	ND	280	14	ug/kg	
91-58-7	2-Chloronaphthalene	ND	110	13	ug/kg	
106-47-8	4-Chloroaniline	ND	280	20	ug/kg	
86-74-8	Carbazole	8.5	110	8.1	ug/kg	J

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-158 (18-20)
Lab Sample ID: JC87093-7
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/26/19
Date Received: 04/26/19
Percent Solids: 58.9

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam [a]	ND	110	22	ug/kg	
218-01-9	Chrysene	45.5	56	18	ug/kg	J
111-91-1	bis(2-Chloroethoxy)methane	ND	110	12	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	110	24	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	110	20	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	110	18	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	56	17	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	56	28	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	110	47	ug/kg	
123-91-1	1,4-Dioxane [a]	ND	56	37	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	56	25	ug/kg	
132-64-9	Dibenzofuran	ND	110	23	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	110	9.1	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	110	14	ug/kg	
84-66-2	Diethyl phthalate	ND	110	12	ug/kg	
131-11-3	Dimethyl phthalate	ND	110	10	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	110	13	ug/kg	
206-44-0	Fluoranthene	57.7	56	25	ug/kg	
86-73-7	Fluorene	31.5	56	26	ug/kg	J
118-74-1	Hexachlorobenzene	ND	110	14	ug/kg	
87-68-3	Hexachlorobutadiene	ND	56	23	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	560	22	ug/kg	
67-72-1	Hexachloroethane	ND	280	28	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	56	26	ug/kg	
78-59-1	Isophorone	ND	110	12	ug/kg	
91-57-6	2-Methylnaphthalene	30.0	56	13	ug/kg	J
88-74-4	2-Nitroaniline	ND	280	13	ug/kg	
99-09-2	3-Nitroaniline	ND	280	14	ug/kg	
100-01-6	4-Nitroaniline	ND	280	15	ug/kg	
91-20-3	Naphthalene	156	56	16	ug/kg	
98-95-3	Nitrobenzene	ND	110	22	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	110	16	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	280	21	ug/kg	
85-01-8	Phenanthrene	62.5	56	19	ug/kg	
129-00-0	Pyrene	65.4	56	18	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	280	14	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	67%		23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-158 (18-20)		
Lab Sample ID:	JC87093-7	**Date Sampled:**	04/26/19
Matrix:	SO - Soil	**Date Received:**	04/26/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	58.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	67%		27-114%
118-79-6	2,4,6-Tribromophenol	69%		19-152%
4165-60-0	Nitrobenzene-d5	74%		26-134%
321-60-8	2-Fluorobiphenyl	83%		39-124%
1718-51-0	Terphenyl-d14	77%		36-134%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-158 (18-20)
Lab Sample ID: JC87093-7
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/26/19
Date Received: 04/26/19
Percent Solids: 58.9

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	12500 J	82	13	mg/kg	1	05/01/19	05/02/19	MET	SW846 6010D [2]	SW846 3050B [4]
Antimony	0.68 U J	3.3	0.68	mg/kg	1	05/01/19	05/02/19	MET	SW846 6010D [2]	SW846 3050B [4]
Arsenic	4.1 J	3.3	0.46	mg/kg	1	05/01/19	05/02/19	MET	SW846 6010D [2]	SW846 3050B [4]
Barium	116 J	33	3.1	mg/kg	1	05/01/19	05/02/19	MET	SW846 6010D [2]	SW846 3050B [4]
Beryllium	0.69	0.33	0.13	mg/kg	1	05/01/19	05/02/19	MET	SW846 6010D [2]	SW846 3050B [4]
Cadmium	0.12 U	0.82	0.12	mg/kg	1	05/01/19	05/02/19	MET	SW846 6010D [2]	SW846 3050B [4]
Calcium	3380	820	73	mg/kg	1	05/01/19	05/02/19	MET	SW846 6010D [2]	SW846 3050B [4]
Chromium	27.1 J	1.6	0.61	mg/kg	1	05/01/19	05/02/19	MET	SW846 6010D [2]	SW846 3050B [4]
Cobalt	5.6 J	8.2	0.46	mg/kg	1	05/01/19	05/02/19	MET	SW846 6010D [2]	SW846 3050B [4]
Copper	11.9 J	4.1	1.4	mg/kg	1	05/01/19	05/02/19	MET	SW846 6010D [2]	SW846 3050B [4]
Iron	14400 J	82	32	mg/kg	1	05/01/19	05/02/19	MET	SW846 6010D [2]	SW846 3050B [4]
Lead	21.4 J	3.3	0.68	mg/kg	1	05/01/19	05/02/19	MET	SW846 6010D [2]	SW846 3050B [4]
Magnesium	3120	820	23	mg/kg	1	05/01/19	05/02/19	MET	SW846 6010D [2]	SW846 3050B [4]
Manganese	333	2.5	0.68	mg/kg	1	05/01/19	05/02/19	MET	SW846 6010D [2]	SW846 3050B [4]
Mercury	0.060 J	0.052	0.023	mg/kg	1	04/30/19	04/30/19	LL	SW846 7471B [1]	SW846 7471B [3]
Nickel	16.0	6.6	0.58	mg/kg	1	05/01/19	05/02/19	MET	SW846 6010D [2]	SW846 3050B [4]
Potassium	1280 J	1600	52	mg/kg	1	05/01/19	05/02/19	MET	SW846 6010D [2]	SW846 3050B [4]
Selenium	1.1 U	3.3	1.1	mg/kg	1	05/01/19	05/02/19	MET	SW846 6010D [2]	SW846 3050B [4]
Silver	0.28 U	0.82	0.28	mg/kg	1	05/01/19	05/02/19	MET	SW846 6010D [2]	SW846 3050B [4]
Sodium	240 J	1600	130	mg/kg	1	05/01/19	05/02/19	MET	SW846 6010D [2]	SW846 3050B [4]
Thallium	0.96 U	1.6	0.96	mg/kg	1	05/01/19	05/02/19	MET	SW846 6010D [2]	SW846 3050B [4]
Vanadium	25.9	8.2	0.31	mg/kg	1	05/01/19	05/02/19	MET	SW846 6010D [2]	SW846 3050B [4]
Zinc	56.1 J	8.2	3.8	mg/kg	1	05/01/19	05/02/19	MET	SW846 6010D [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA46615
(2) Instrument QC Batch: MA46638
(3) Prep QC Batch: MP14638
(4) Prep QC Batch: MP14721

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	S-158 (18-20)		
Lab Sample ID:	JC87093-7	**Date Sampled:**	04/26/19
Matrix:	SO - Soil	**Date Received:**	04/26/19
		Percent Solids:	58.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	0.34 J	0.41	0.20	mg/kg	1	05/06/19 15:05	KI	SW846 9012B/LACHAT
Solids, Percent	58.9			%	1	05/03/19 17:00	RC	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

SGS North America Inc.

Report of Analysis

Client Sample ID:	S-159 (11-13)		
Lab Sample ID:	JC87093-8	**Date Sampled:**	04/26/19
Matrix:	SO - Soil	**Date Received:**	04/26/19
Method:	SW846 8260C	**Percent Solids:**	80.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	D264375.D	1	05/08/19 16:23	TDN	n/a	n/a	VD10654
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	3.2 g	10.0 ml	100 ul
Run #2			

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone [b]	ND	2000	1000	ug/kg	
71-43-2	Benzene	1130	100	77	ug/kg	
74-97-5	Bromochloromethane	ND	1000	88	ug/kg	
75-27-4	Bromodichloromethane	ND	410	91	ug/kg	
75-25-2	Bromoform	ND	1000	83	ug/kg	
74-83-9	Bromomethane	ND	1000	200	ug/kg	
78-93-3	2-Butanone (MEK)	ND	2000	770	ug/kg	
75-15-0	Carbon disulfide	539	410	190	ug/kg	
56-23-5	Carbon tetrachloride	ND	410	110	ug/kg	
108-90-7	Chlorobenzene	ND	410	73	ug/kg	
75-00-3	Chloroethane	ND	1000	140	ug/kg	
67-66-3	Chloroform	ND	410	76	ug/kg	
74-87-3	Chloromethane	ND	1000	400	ug/kg	
110-82-7	Cyclohexane	ND	410	83	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	410	170	ug/kg	
124-48-1	Dibromochloromethane	ND	410	69	ug/kg	
106-93-4	1,2-Dibromoethane	ND	200	67	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	200	63	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	200	74	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	200	71	ug/kg	
75-71-8	Dichlorodifluoromethane [c]	ND	1000	130	ug/kg	UJ
75-34-3	1,1-Dichloroethane	ND	200	79	ug/kg	
107-06-2	1,2-Dichloroethane [c]	ND	200	96	ug/kg	UJ
75-35-4	1,1-Dichloroethene	ND	200	130	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	200	200	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	200	140	ug/kg	
78-87-5	1,2-Dichloropropane	ND	410	83	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	410	72	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	410	67	ug/kg	
100-41-4	Ethylbenzene	184	200	110	ug/kg	J
76-13-1	Freon 113	ND	1000	160	ug/kg	
591-78-6	2-Hexanone	ND	1000	260	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-159 (11-13)		
Lab Sample ID:	JC87093-8	**Date Sampled:**	04/26/19
Matrix:	SO - Soil	**Date Received:**	04/26/19
Method:	SW846 8260C	**Percent Solids:**	80.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	410	140	ug/kg	
79-20-9	Methyl Acetate	ND	1000	280	ug/kg	
108-87-2	Methylcyclohexane	ND	410	140	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	200	72	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	1000	320	ug/kg	
75-09-2	Methylene chloride	ND	1000	510	ug/kg	
100-42-5	Styrene	ND	410	120	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	410	80	ug/kg	
127-18-4	Tetrachloroethene	ND	410	95	ug/kg	
108-88-3	Toluene	1520	200	77	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	1000	200	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	1000	200	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	410	87	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	410	70	ug/kg	
79-01-6	Trichloroethene	ND	200	160	ug/kg	
75-69-4	Trichlorofluoromethane	ND	1000	140	ug/kg	
75-01-4	Vinyl chloride	ND	410	96	ug/kg	
	m,p-Xylene	1020	200	150	ug/kg	
95-47-6	o-Xylene	282	200	120	ug/kg	
1330-20-7	Xylene (total)	1300	200	120	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	97%		75-127%
17060-07-0	1,2-Dichloroethane-D4	88%		75-130%
2037-26-5	Toluene-D8	99%		80-120%
460-00-4	4-Bromofluorobenzene	93%		79-127%

(a) Diluted due to high concentration of non-target compound.
(b) Associated CCV outside of control limits high, sample was ND.
(c) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	S-159 (11-13)		
Lab Sample ID:	JC87093-8	**Date Sampled:**	04/26/19
Matrix:	SO - Soil	**Date Received:**	04/26/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	80.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	P129380.D	1	05/07/19 19:12	CC	05/06/19 17:35	OP20110	EP5856
Run #2	P129412.D	5	05/08/19 18:47	AR	05/06/19 17:35	OP20110	EP5857
Run #3	P129426.D	25	05/09/19 12:32	AR	05/06/19 17:35	OP20110	EP5858

	Initial Weight	Final Volume
Run #1	31.6 g	1.0 ml
Run #2	31.6 g	1.0 ml
Run #3	31.6 g	1.0 ml

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	78	19	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	200	24	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	200	33	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	200	70	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	200	150	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	200	42	ug/kg	
95-48-7	2-Methylphenol	ND	78	25	ug/kg	
	3&4-Methylphenol	ND	78	32	ug/kg	
88-75-5	2-Nitrophenol	ND	200	26	ug/kg	
100-02-7	4-Nitrophenol	ND	390	100	ug/kg	
87-86-5	Pentachlorophenol	ND	160	37	ug/kg	
108-95-2	Phenol	ND	78	20	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	200	26	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	200	29	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	200	23	ug/kg	
83-32-9	Acenaphthene	360 [a]	200	67	ug/kg	D
208-96-8	Acenaphthylene	ND	39	20	ug/kg	
98-86-2	Acetophenone	66.4	200	8.4	ug/kg	J
120-12-7	Anthracene	ND	39	24	ug/kg	
1912-24-9	Atrazine	ND	78	17	ug/kg	
56-55-3	Benzo(a)anthracene	170	39	11	ug/kg	
50-32-8	Benzo(a)pyrene	124	39	18	ug/kg	
205-99-2	Benzo(b)fluoranthene	163	39	17	ug/kg	
191-24-2	Benzo(g,h,i)perylene	86.3	39	20	ug/kg	
207-08-9	Benzo(k)fluoranthene	60.2	39	18	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	78	15	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	78	9.5	ug/kg	
92-52-4	1,1'-Biphenyl	959 [a]	390	27	ug/kg	D
100-52-7	Benzaldehyde	ND	200	9.7	ug/kg	
91-58-7	2-Chloronaphthalene	ND	78	9.3	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-159 (11-13)		
Lab Sample ID:	JC87093-8	**Date Sampled:**	04/26/19
Matrix:	SO - Soil	**Date Received:**	04/26/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	80.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
106-47-8	4-Chloroaniline	ND	200	14	ug/kg	
86-74-8	Carbazole	ND	78	5.7	ug/kg	
105-60-2	Caprolactam [b]	ND	78	15	ug/kg	
218-01-9	Chrysene	213	39	12	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	78	8.4	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	78	17	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	78	14	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	78	13	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	39	12	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	39	20	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	78	33	ug/kg	
123-91-1	1,4-Dioxane [b]	ND	39	26	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	25.8	39	17	ug/kg	J
132-64-9	Dibenzofuran	560 [a]	390	80	ug/kg	D
84-74-2	Di-n-butyl phthalate	ND	78	6.4	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	78	9.7	ug/kg	
84-66-2	Diethyl phthalate	ND	78	8.3	ug/kg	
131-11-3	Dimethyl phthalate	ND	78	7.0	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	78	9.2	ug/kg	
206-44-0	Fluoranthene	278	39	17	ug/kg	
86-73-7	Fluorene	615 [a]	200	90	ug/kg	D
118-74-1	Hexachlorobenzene	ND	78	9.9	ug/kg	
87-68-3	Hexachlorobutadiene	ND	39	16	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	390	16	ug/kg	
67-72-1	Hexachloroethane	ND	200	19	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	76.4	39	18	ug/kg	
78-59-1	Isophorone	ND	78	8.4	ug/kg	
91-57-6	2-Methylnaphthalene	2550	39	8.8	ug/kg	
88-74-4	2-Nitroaniline	ND	200	9.2	ug/kg	
99-09-2	3-Nitroaniline	ND	200	9.8	ug/kg	
100-01-6	4-Nitroaniline	ND	200	10	ug/kg	
91-20-3	Naphthalene	29300 [c]	980	280	ug/kg	D
98-95-3	Nitrobenzene	ND	78	15	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	78	11	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	200	14	ug/kg	
85-01-8	Phenanthrene	613	39	13	ug/kg	
129-00-0	Pyrene	816	39	13	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	200	9.9	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-159 (11-13)		
Lab Sample ID:	JC87093-8	**Date Sampled:**	04/26/19
Matrix:	SO - Soil	**Date Received:**	04/26/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	80.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Run# 3	Limits
367-12-4	2-Fluorophenol	66%	61%	64%	23-115%
4165-62-2	Phenol-d5	72%	64%	70%	27-114%
118-79-6	2,4,6-Tribromophenol	90%	72%	69%	19-152%
4165-60-0	Nitrobenzene-d5	89%	79%	83%	26-134%
321-60-8	2-Fluorobiphenyl	104%	83%	91%	39-124%
1718-51-0	Terphenyl-d14	76%	68%	76%	36-134%

(a) Result is from Run# 2
(b) Associated CCV outside of control limits high, sample was ND.
(c) Result is from Run# 3

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-159 (11-13)
Lab Sample ID: JC87093-8
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/26/19
Date Received: 04/26/19
Percent Solids: 80.9

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	8420 J	63	10	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [5]
Antimony	0.54 J	2.5	0.52	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [5]
Arsenic [a]	12.0 J	5.0	0.71	mg/kg	2	05/01/19	05/03/19	MET	SW846 6010D [3]	SW846 3050B [5]
Barium	27.0 J	25	2.4	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [5]
Beryllium	1.8	0.25	0.10	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [5]
Cadmium	0.95	0.63	0.088	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [5]
Calcium	2600	630	56	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [5]
Chromium	20.4 J	1.3	0.47	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [5]
Cobalt	8.7	6.3	0.35	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [5]
Copper [a]	293 J	6.3	2.1	mg/kg	2	05/01/19	05/03/19	MET	SW846 6010D [3]	SW846 3050B [5]
Iron	36800 J	130	48	mg/kg	2	05/01/19	05/03/19	MET	SW846 6010D [3]	SW846 3050B [5]
Lead [a]	79.8 J	5.0	1.0	mg/kg	2	05/01/19	05/03/19	MET	SW846 6010D [3]	SW846 3050B [5]
Magnesium	448 J	630	17	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [5]
Manganese [a]	402	3.8	1.0	mg/kg	2	05/01/19	05/03/19	MET	SW846 6010D [3]	SW846 3050B [5]
Mercury	0.061 J	0.035	0.015	mg/kg	1	04/30/19	04/30/19	LL	SW846 7471B [1]	SW846 7471B [4]
Nickel	18.6	5.0	0.44	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [5]
Potassium	559 J	1300	40	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [5]
Selenium [a]	4.3 J	5.0	1.6	mg/kg	2	05/01/19	05/03/19	MET	SW846 6010D [3]	SW846 3050B [5]
Silver [a]	0.43 U	1.3	0.43	mg/kg	2	05/01/19	05/03/19	MET	SW846 6010D [3]	SW846 3050B [5]
Sodium	98 U	1300	98	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [5]
Thallium [a]	1.5 U	2.5	1.5	mg/kg	2	05/01/19	05/03/19	MET	SW846 6010D [3]	SW846 3050B [5]
Vanadium	13.2	6.3	0.24	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [5]
Zinc	117 J	6.3	2.9	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA46615
(2) Instrument QC Batch: MA46638
(3) Instrument QC Batch: MA46646
(4) Prep QC Batch: MP14638
(5) Prep QC Batch: MP14721

(a) Elevated detection limit due to dilution required for high interfering element.

RL = Reporting Limit
MDL = Method Detection Limit
U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: S-159 (11-13)
Lab Sample ID: JC87093-8
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/26/19
Date Received: 04/26/19
Percent Solids: 80.9

General Chemistry

Analyte	Result		RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	0.70	J	0.35	0.18	mg/kg	1	05/06/19 15:07	KI	SW846 9012B/LACHAT
Solids, Percent	80.9				%	1	05/03/19 17:00	RC	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

SGS North America Inc.

Report of Analysis

Client Sample ID:	S-159 (18-20)		
Lab Sample ID:	JC87093-9	**Date Sampled:**	04/26/19
Matrix:	SO - Soil	**Date Received:**	04/26/19
Method:	SW846 8260C	**Percent Solids:**	71.1
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3C151790.D	1	05/05/19 20:53	MD	n/a	n/a	V3C6820
Run #2							

	Initial Weight
Run #1	5.4 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	107	13	6.5	ug/kg	
71-43-2	Benzene	ND	0.65	0.49	ug/kg	
74-97-5	Bromochloromethane	ND	6.5	0.56	ug/kg	
75-27-4	Bromodichloromethane	ND	2.6	0.58	ug/kg	
75-25-2	Bromoform	ND	6.5	0.52	ug/kg	
74-83-9	Bromomethane	ND	6.5	1.3	ug/kg	
78-93-3	2-Butanone (MEK)	22.3	13	4.9	ug/kg	
75-15-0	Carbon disulfide	ND	2.6	1.2	ug/kg	
56-23-5	Carbon tetrachloride	ND	2.6	0.72	ug/kg	
108-90-7	Chlorobenzene	ND	2.6	0.46	ug/kg	
75-00-3	Chloroethane	ND	6.5	0.89	ug/kg	
67-66-3	Chloroform	ND	2.6	0.48	ug/kg	
74-87-3	Chloromethane [a]	ND	6.5	2.6	ug/kg	UJ
110-82-7	Cyclohexane	ND	2.6	0.53	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.6	1.1	ug/kg	
124-48-1	Dibromochloromethane [b]	ND	2.6	0.44	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.3	0.42	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.3	0.40	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.3	0.47	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.3	0.45	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	6.5	0.83	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.3	0.50	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.3	0.61	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.3	0.85	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.3	1.2	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.3	0.87	ug/kg	
78-87-5	1,2-Dichloropropane	ND	2.6	0.53	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	2.6	0.46	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2.6	0.43	ug/kg	
100-41-4	Ethylbenzene	ND	1.3	0.72	ug/kg	
76-13-1	Freon 113	ND	6.5	0.99	ug/kg	
591-78-6	2-Hexanone	ND	6.5	1.7	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-159 (18-20)		
Lab Sample ID:	JC87093-9	**Date Sampled:**	04/26/19
Matrix:	SO - Soil	**Date Received:**	04/26/19
Method:	SW846 8260C	**Percent Solids:**	71.1
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	2.6	0.91	ug/kg	
79-20-9	Methyl Acetate	ND	6.5	1.8	ug/kg	
108-87-2	Methylcyclohexane	ND	2.6	0.92	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.3	0.46	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK [c]	ND	6.5	2.0	ug/kg	
75-09-2	Methylene chloride	ND	6.5	3.3	ug/kg	
100-42-5	Styrene	ND	2.6	0.75	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.6	0.51	ug/kg	
127-18-4	Tetrachloroethene	ND	2.6	0.60	ug/kg	
108-88-3	Toluene	ND	1.3	0.49	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	6.5	1.3	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	6.5	1.3	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	2.6	0.55	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2.6	0.45	ug/kg	
79-01-6	Trichloroethene	ND	1.3	0.99	ug/kg	
75-69-4	Trichlorofluoromethane	ND	6.5	0.89	ug/kg	
75-01-4	Vinyl chloride	ND	2.6	0.61	ug/kg	
	m,p-Xylene	ND	1.3	0.97	ug/kg	
95-47-6	o-Xylene	ND	1.3	0.76	ug/kg	
1330-20-7	Xylene (total)	ND	1.3	0.76	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%		75-127%
17060-07-0	1,2-Dichloroethane-D4	111%		75-130%
2037-26-5	Toluene-D8	105%		80-120%
460-00-4	4-Bromofluorobenzene	119%		79-127%

(a) Associated CCV outside of control limits low.
(b) Associated CCV and BS outside of control limits high, sample was ND.
(c) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	S-159 (18-20)		
Lab Sample ID:	JC87093-9	**Date Sampled:**	04/26/19
Matrix:	SO - Soil	**Date Received:**	04/26/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	71.1
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	P129378.D	1	05/07/19 18:17	CC	05/06/19 17:35	OP20110	EP5856
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	94	23	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	230	29	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	230	40	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	230	83	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	230	180	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	230	50	ug/kg	
95-48-7	2-Methylphenol	ND	94	30	ug/kg	
	3&4-Methylphenol	ND	94	39	ug/kg	
88-75-5	2-Nitrophenol	ND	230	31	ug/kg	
100-02-7	4-Nitrophenol	ND	470	130	ug/kg	
87-86-5	Pentachlorophenol	ND	190	44	ug/kg	
108-95-2	Phenol	ND	94	24	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	230	31	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	230	35	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	230	28	ug/kg	
83-32-9	Acenaphthene	ND	47	16	ug/kg	
208-96-8	Acenaphthylene	ND	47	24	ug/kg	
98-86-2	Acetophenone	ND	230	10	ug/kg	
120-12-7	Anthracene	ND	47	29	ug/kg	
1912-24-9	Atrazine	ND	94	20	ug/kg	
56-55-3	Benzo(a)anthracene	ND	47	13	ug/kg	
50-32-8	Benzo(a)pyrene	ND	47	21	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	47	21	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	47	23	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	47	22	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	94	18	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	94	11	ug/kg	
92-52-4	1,1'-Biphenyl	ND	94	6.4	ug/kg	
100-52-7	Benzaldehyde	ND	230	12	ug/kg	
91-58-7	2-Chloronaphthalene	ND	94	11	ug/kg	
106-47-8	4-Chloroaniline	ND	230	17	ug/kg	
86-74-8	Carbazole	ND	94	6.8	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-159 (18-20)		
Lab Sample ID:	JC87093-9	**Date Sampled:**	04/26/19
Matrix:	SO - Soil	**Date Received:**	04/26/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	71.1
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam [a]	ND	94	19	ug/kg	
218-01-9	Chrysene	ND	47	15	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	94	10	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	94	20	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	94	17	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	94	15	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	47	15	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	47	24	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	94	39	ug/kg	
123-91-1	1,4-Dioxane [a]	ND	47	31	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	47	21	ug/kg	
132-64-9	Dibenzofuran	ND	94	19	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	94	7.6	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	94	12	ug/kg	
84-66-2	Diethyl phthalate	ND	94	10	ug/kg	
131-11-3	Dimethyl phthalate	ND	94	8.3	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	94	11	ug/kg	
206-44-0	Fluoranthene	ND	47	21	ug/kg	
86-73-7	Fluorene	ND	47	22	ug/kg	
118-74-1	Hexachlorobenzene	ND	94	12	ug/kg	
87-68-3	Hexachlorobutadiene	ND	47	19	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	470	19	ug/kg	
67-72-1	Hexachloroethane	ND	230	23	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	47	22	ug/kg	
78-59-1	Isophorone	ND	94	10	ug/kg	
91-57-6	2-Methylnaphthalene	ND	47	11	ug/kg	
88-74-4	2-Nitroaniline	ND	230	11	ug/kg	
99-09-2	3-Nitroaniline	ND	230	12	ug/kg	
100-01-6	4-Nitroaniline	ND	230	12	ug/kg	
91-20-3	Naphthalene	ND	47	13	ug/kg	
98-95-3	Nitrobenzene	ND	94	18	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	94	14	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	230	17	ug/kg	
85-01-8	Phenanthrene	ND	47	16	ug/kg	
129-00-0	Pyrene	ND	47	15	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	230	12	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	73%		23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-159 (18-20)		
Lab Sample ID:	JC87093-9	**Date Sampled:**	04/26/19
Matrix:	SO - Soil	**Date Received:**	04/26/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	71.1
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	73%		27-114%
118-79-6	2,4,6-Tribromophenol	76%		19-152%
4165-60-0	Nitrobenzene-d5	80%		26-134%
321-60-8	2-Fluorobiphenyl	86%		39-124%
1718-51-0	Terphenyl-d14	79%		36-134%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-159 (18-20)
Lab Sample ID: JC87093-9
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/26/19
Date Received: 04/26/19
Percent Solids: 71.1

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	22400 J	69	11	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [4]
Antimony	0.57 U J	2.8	0.57	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [4]
Arsenic	4.3 J	2.8	0.39	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [4]
Barium	172 J	28	2.6	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [4]
Beryllium	1.1	0.28	0.11	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [4]
Cadmium	0.11 J	0.69	0.097	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [4]
Calcium	2770	690	61	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [4]
Chromium	44.6 J	1.4	0.51	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [4]
Cobalt	9.5	6.9	0.39	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [4]
Copper	7.4 J	3.4	1.2	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [4]
Iron	22700 J	69	26	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [4]
Lead	15.5 J	2.8	0.57	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [4]
Magnesium	5160	690	19	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [4]
Manganese	309	2.1	0.57	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [4]
Mercury	0.087 J	0.036	0.016	mg/kg	1	04/30/19	04/30/19	LL	SW846 7471B [1]	SW846 7471B [3]
Nickel	25.4	5.5	0.48	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [4]
Potassium	1840	1400	44	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [4]
Selenium	0.90 U	2.8	0.90	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [4]
Silver	0.23 U	0.69	0.23	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [4]
Sodium	255 J	1400	110	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [4]
Thallium	0.80 U	1.4	0.80	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [4]
Vanadium	43.2	6.9	0.26	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [4]
Zinc	61.2 J	6.9	3.2	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA46615
(2) Instrument QC Batch: MA46638
(3) Prep QC Batch: MP14638
(4) Prep QC Batch: MP14721

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: S-159 (18-20)
Lab Sample ID: JC87093-9
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/26/19
Date Received: 04/26/19
Percent Solids: 71.1

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	0.21 J	0.35	0.18	mg/kg	1	05/06/19 15:08	KI	SW846 9012B/LACHAT
Solids, Percent	71.1			%	1	05/03/19 17:00	RC	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

SGS North America Inc.

Report of Analysis

Client Sample ID:	S-153 (7-9)		
Lab Sample ID:	JC87093-10	**Date Sampled:**	04/26/19
Matrix:	SO - Soil	**Date Received:**	04/26/19
Method:	SW846 8260C	**Percent Solids:**	59.5
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3C151827.D	1	05/06/19 19:35	PS	n/a	n/a	V3C6821
Run #2							

	Initial Weight
Run #1	3.8 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	141	22	11	ug/kg	
71-43-2	Benzene	8.7	1.1	0.83	ug/kg	
74-97-5	Bromochloromethane	ND	11	0.95	ug/kg	
75-27-4	Bromodichloromethane	ND	4.4	0.98	ug/kg	
75-25-2	Bromoform	ND	11	0.89	ug/kg	
74-83-9	Bromomethane	ND	11	2.2	ug/kg	
78-93-3	2-Butanone (MEK)	13.9	22	8.3	ug/kg	J
75-15-0	Carbon disulfide	10.5	4.4	2.1	ug/kg	
56-23-5	Carbon tetrachloride	ND	4.4	1.2	ug/kg	
108-90-7	Chlorobenzene	ND	4.4	0.78	ug/kg	
75-00-3	Chloroethane	ND	11	1.5	ug/kg	
67-66-3	Chloroform	ND	4.4	0.82	ug/kg	
74-87-3	Chloromethane [a]	ND	11	4.3	ug/kg	UJ
110-82-7	Cyclohexane	ND	4.4	0.90	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	4.4	1.8	ug/kg	
124-48-1	Dibromochloromethane	ND	4.4	0.75	ug/kg	
106-93-4	1,2-Dibromoethane	ND	2.2	0.72	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	2.2	0.67	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	2.2	0.79	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	2.2	0.76	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	11	1.4	ug/kg	
75-34-3	1,1-Dichloroethane	ND	2.2	0.85	ug/kg	
107-06-2	1,2-Dichloroethane	ND	2.2	1.0	ug/kg	
75-35-4	1,1-Dichloroethene	ND	2.2	1.5	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	2.2	2.1	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	2.2	1.5	ug/kg	
78-87-5	1,2-Dichloropropane	ND	4.4	0.90	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	4.4	0.78	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	4.4	0.72	ug/kg	
100-41-4	Ethylbenzene	1.8	2.2	1.2	ug/kg	J
76-13-1	Freon 113	ND	11	1.7	ug/kg	
591-78-6	2-Hexanone	ND	11	2.8	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-153 (7-9)		
Lab Sample ID:	JC87093-10	**Date Sampled:**	04/26/19
Matrix:	SO - Soil	**Date Received:**	04/26/19
Method:	SW846 8260C	**Percent Solids:**	59.5
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	4.4	1.5	ug/kg	
79-20-9	Methyl Acetate [a]	ND	11	3.1	ug/kg	UJ
108-87-2	Methylcyclohexane	ND	4.4	1.6	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	2.2	0.78	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	11	3.4	ug/kg	
75-09-2	Methylene chloride	ND	11	5.5	ug/kg	
100-42-5	Styrene	ND	4.4	1.3	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	4.4	0.86	ug/kg	
127-18-4	Tetrachloroethene	ND	4.4	1.0	ug/kg	
108-88-3	Toluene	2.2	2.2	0.83	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	11	2.2	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	11	2.2	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	4.4	0.94	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	4.4	0.76	ug/kg	
79-01-6	Trichloroethene	ND	2.2	1.7	ug/kg	
75-69-4	Trichlorofluoromethane	ND	11	1.5	ug/kg	
75-01-4	Vinyl chloride	ND	4.4	1.0	ug/kg	
	m,p-Xylene	2.3	2.2	1.6	ug/kg	
95-47-6	o-Xylene	2.8	2.2	1.3	ug/kg	
1330-20-7	Xylene (total)	5.1	2.2	1.3	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%		75-127%
17060-07-0	1,2-Dichloroethane-D4	106%		75-130%
2037-26-5	Toluene-D8	101%		80-120%
460-00-4	4-Bromofluorobenzene	125%		79-127%

(a) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	S-153 (7-9)		
Lab Sample ID:	JC87093-10	**Date Sampled:**	04/26/19
Matrix:	SO - Soil	**Date Received:**	04/26/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	59.5
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	P129379.D	1	05/07/19 18:44	CC	05/06/19 17:35	OP20110	EP5856
Run #2	P129411.D	5	05/08/19 17:20	AR	05/06/19 17:35	OP20110	EP5857

	Initial Weight	Final Volume
Run #1	30.7 g	1.0 ml
Run #2	30.7 g	1.0 ml

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	110	27	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	270	34	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	270	47	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	270	97	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	270	210	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	270	59	ug/kg	
95-48-7	2-Methylphenol	93.6	110	35	ug/kg	J
	3&4-Methylphenol	141	110	45	ug/kg	
88-75-5	2-Nitrophenol	ND	270	36	ug/kg	
100-02-7	4-Nitrophenol	ND	550	150	ug/kg	
87-86-5	Pentachlorophenol	ND	220	51	ug/kg	
108-95-2	Phenol	257	110	29	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	270	36	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	270	41	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	270	33	ug/kg	
83-32-9	Acenaphthene	2850	55	19	ug/kg	
208-96-8	Acenaphthylene	703	55	28	ug/kg	
98-86-2	Acetophenone	37.6	270	12	ug/kg	J
120-12-7	Anthracene	ND	55	34	ug/kg	
1912-24-9	Atrazine	ND	110	23	ug/kg	
56-55-3	Benzo(a)anthracene	138	55	15	ug/kg	
50-32-8	Benzo(a)pyrene	107	55	25	ug/kg	
205-99-2	Benzo(b)fluoranthene	134	55	24	ug/kg	
191-24-2	Benzo(g,h,i)perylene	74.3	55	27	ug/kg	
207-08-9	Benzo(k)fluoranthene	55.5	55	26	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	110	21	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	110	13	ug/kg	
92-52-4	1,1'-Biphenyl	282	110	7.5	ug/kg	
100-52-7	Benzaldehyde	ND	270	14	ug/kg	
91-58-7	2-Chloronaphthalene	ND	110	13	ug/kg	
106-47-8	4-Chloroaniline	ND	270	20	ug/kg	
86-74-8	Carbazole	1200	110	7.9	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-153 (7-9)
Lab Sample ID: JC87093-10
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/26/19
Date Received: 04/26/19
Percent Solids: 59.5

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam [a]	ND	110	22	ug/kg	
218-01-9	Chrysene	151	55	17	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	110	12	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	110	24	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	110	20	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	110	18	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	55	17	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	55	27	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	110	46	ug/kg	
123-91-1	1,4-Dioxane [a]	ND	55	36	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	55	24	ug/kg	
132-64-9	Dibenzofuran	821	110	22	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	110	8.9	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	110	14	ug/kg	
84-66-2	Diethyl phthalate	ND	110	12	ug/kg	
131-11-3	Dimethyl phthalate	ND	110	9.7	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	110	13	ug/kg	
206-44-0	Fluoranthene	434	55	24	ug/kg	
86-73-7	Fluorene	2970	55	25	ug/kg	
118-74-1	Hexachlorobenzene	ND	110	14	ug/kg	
87-68-3	Hexachlorobutadiene	ND	55	22	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	550	22	ug/kg	
67-72-1	Hexachloroethane	ND	270	27	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	73.3	55	26	ug/kg	
78-59-1	Isophorone	ND	110	12	ug/kg	
91-57-6	2-Methylnaphthalene	638	55	12	ug/kg	
88-74-4	2-Nitroaniline	ND	270	13	ug/kg	
99-09-2	3-Nitroaniline	ND	270	14	ug/kg	
100-01-6	4-Nitroaniline	ND	270	14	ug/kg	
91-20-3	Naphthalene	8280 [b]	270	77	ug/kg	D
98-95-3	Nitrobenzene	ND	110	21	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	110	16	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	270	20	ug/kg	
85-01-8	Phenanthrene	326	55	18	ug/kg	
129-00-0	Pyrene	495	55	18	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	270	14	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	64%	60%	23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-153 (7-9)		
Lab Sample ID:	JC87093-10	**Date Sampled:**	04/26/19
Matrix:	SO - Soil	**Date Received:**	04/26/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	59.5
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	65%	63%	27-114%
118-79-6	2,4,6-Tribromophenol	74%	71%	19-152%
4165-60-0	Nitrobenzene-d5	69%	69%	26-134%
321-60-8	2-Fluorobiphenyl	83%	82%	39-124%
1718-51-0	Terphenyl-d14	76%	71%	36-134%

(a) Associated CCV outside of control limits high, sample was ND.
(b) Result is from Run# 2

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-153 (7-9)
Lab Sample ID: JC87093-10
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/26/19
Date Received: 04/26/19
Percent Solids: 59.5

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	27800 J	87	14	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [5]
Antimony	0.71 U J	3.5	0.71	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [5]
Arsenic [a]	8.2 J	6.9	0.97	mg/kg	2	05/01/19	05/03/19	MET	SW846 6010D [3]	SW846 3050B [5]
Barium	236 J	35	3.3	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [5]
Beryllium	4.4	0.35	0.14	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [5]
Cadmium	0.12 U	0.87	0.12	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [5]
Calcium	15400	870	77	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [5]
Chromium	75.4 J	1.7	0.64	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [5]
Cobalt	39.5	8.7	0.49	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [5]
Copper [a]	28.1 J	8.7	2.9	mg/kg	2	05/01/19	05/03/19	MET	SW846 6010D [3]	SW846 3050B [5]
Iron	41600 J	170	67	mg/kg	2	05/01/19	05/03/19	MET	SW846 6010D [3]	SW846 3050B [5]
Lead [a]	21.2 J	6.9	1.4	mg/kg	2	05/01/19	05/03/19	MET	SW846 6010D [3]	SW846 3050B [5]
Magnesium	7630	870	24	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [5]
Manganese [a]	523	5.2	1.4	mg/kg	2	05/01/19	05/03/19	MET	SW846 6010D [3]	SW846 3050B [5]
Mercury	0.23 J	0.050	0.022	mg/kg	1	04/30/19	04/30/19	LL	SW846 7471B [1]	SW846 7471B [4]
Nickel	205	6.9	0.61	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [5]
Potassium	1780	1700	55	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [5]
Selenium [a]	2.3 U	6.9	2.3	mg/kg	2	05/01/19	05/03/19	MET	SW846 6010D [3]	SW846 3050B [5]
Silver [a]	0.59 U	1.7	0.59	mg/kg	2	05/01/19	05/03/19	MET	SW846 6010D [3]	SW846 3050B [5]
Sodium	130 U	1700	130	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [5]
Thallium [a]	2.0 U	3.5	2.0	mg/kg	2	05/01/19	05/03/19	MET	SW846 6010D [3]	SW846 3050B [5]
Vanadium	22.0	8.7	0.33	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [5]
Zinc	323 J	8.7	4.0	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA46615
(2) Instrument QC Batch: MA46638
(3) Instrument QC Batch: MA46646
(4) Prep QC Batch: MP14638
(5) Prep QC Batch: MP14721

(a) Elevated detection limit due to dilution required for high interfering element.

RL = Reporting Limit
MDL = Method Detection Limit
U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	S-153 (7-9)		
Lab Sample ID:	JC87093-10	**Date Sampled:**	04/26/19
Matrix:	SO - Soil	**Date Received:**	04/26/19
		Percent Solids:	59.5
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result		RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	2.2	J	0.39	0.19	mg/kg	1	05/06/19 15:09	KI	SW846 9012B/LACHAT
Solids, Percent	59.5				%	1	05/03/19 17:00	RC	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

SGS North America Inc.

Report of Analysis

Client Sample ID:	S-153 (13.5-15)		
Lab Sample ID:	JC87093-11	**Date Sampled:**	04/26/19
Matrix:	SO - Soil	**Date Received:**	04/26/19
Method:	SW846 8260C	**Percent Solids:**	63.4
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3C151792.D	1	05/05/19 21:39	MD	n/a	n/a	V3C6820
Run #2							

	Initial Weight
Run #1	5.0 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	75.5	16	7.9	ug/kg	
71-43-2	Benzene	ND	0.79	0.59	ug/kg	
74-97-5	Bromochloromethane	ND	7.9	0.68	ug/kg	
75-27-4	Bromodichloromethane	ND	3.2	0.70	ug/kg	
75-25-2	Bromoform	ND	7.9	0.64	ug/kg	
74-83-9	Bromomethane	ND	7.9	1.6	ug/kg	
78-93-3	2-Butanone (MEK)	14.1	16	5.9	ug/kg	J
75-15-0	Carbon disulfide	ND	3.2	1.5	ug/kg	
56-23-5	Carbon tetrachloride	ND	3.2	0.87	ug/kg	
108-90-7	Chlorobenzene	ND	3.2	0.56	ug/kg	
75-00-3	Chloroethane	ND	7.9	1.1	ug/kg	
67-66-3	Chloroform	ND	3.2	0.59	ug/kg	
74-87-3	Chloromethane [a]	ND	7.9	3.1	ug/kg	UJ
110-82-7	Cyclohexane	ND	3.2	0.64	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	3.2	1.3	ug/kg	
124-48-1	Dibromochloromethane [b]	ND	3.2	0.53	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.6	0.51	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.6	0.48	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.6	0.57	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.6	0.54	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	7.9	1.0	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.6	0.61	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.6	0.74	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.6	1.0	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.6	1.5	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.6	1.1	ug/kg	
78-87-5	1,2-Dichloropropane	ND	3.2	0.64	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	3.2	0.56	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	3.2	0.52	ug/kg	
100-41-4	Ethylbenzene	ND	1.6	0.87	ug/kg	
76-13-1	Freon 113	ND	7.9	1.2	ug/kg	
591-78-6	2-Hexanone	ND	7.9	2.0	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-153 (13.5-15)		
Lab Sample ID:	JC87093-11	**Date Sampled:**	04/26/19
Matrix:	SO - Soil	**Date Received:**	04/26/19
Method:	SW846 8260C	**Percent Solids:**	63.4
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	3.2	1.1	ug/kg	
79-20-9	Methyl Acetate	ND	7.9	2.2	ug/kg	
108-87-2	Methylcyclohexane	ND	3.2	1.1	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.6	0.56	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK [c]	ND	7.9	2.5	ug/kg	
75-09-2	Methylene chloride	ND	7.9	3.9	ug/kg	
100-42-5	Styrene	ND	3.2	0.91	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	3.2	0.62	ug/kg	
127-18-4	Tetrachloroethene	ND	3.2	0.73	ug/kg	
108-88-3	Toluene	0.63	1.6	0.59	ug/kg	J
87-61-6	1,2,3-Trichlorobenzene	ND	7.9	1.6	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	7.9	1.6	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	3.2	0.67	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	3.2	0.54	ug/kg	
79-01-6	Trichloroethene	ND	1.6	1.2	ug/kg	
75-69-4	Trichlorofluoromethane	ND	7.9	1.1	ug/kg	
75-01-4	Vinyl chloride	ND	3.2	0.74	ug/kg	
	m,p-Xylene	ND	1.6	1.2	ug/kg	
95-47-6	o-Xylene	ND	1.6	0.92	ug/kg	
1330-20-7	Xylene (total)	ND	1.6	0.92	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	108%		75-127%
17060-07-0	1,2-Dichloroethane-D4	113%		75-130%
2037-26-5	Toluene-D8	101%		80-120%
460-00-4	4-Bromofluorobenzene	111%		79-127%

(a) Associated CCV outside of control limits low.
(b) Associated CCV and BS outside of control limits high, sample was ND.
(c) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID: S-153 (13.5-15)
Lab Sample ID: JC87093-11
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/26/19
Date Received: 04/26/19
Percent Solids: 63.4

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	P129382.D	1	05/07/19 20:06	CC	05/06/19 17:35	OP20110	EP5856
Run #2							

	Initial Weight	Final Volume
Run #1	30.7 g	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	100	25	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	260	31	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	260	44	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	260	91	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	260	190	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	260	55	ug/kg	
95-48-7	2-Methylphenol	ND	100	33	ug/kg	
	3&4-Methylphenol	297	100	42	ug/kg	
88-75-5	2-Nitrophenol	ND	260	34	ug/kg	
100-02-7	4-Nitrophenol	ND	510	140	ug/kg	
87-86-5	Pentachlorophenol	ND	210	48	ug/kg	
108-95-2	Phenol	ND	100	27	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	260	34	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	260	38	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	260	31	ug/kg	
83-32-9	Acenaphthene	641	51	18	ug/kg	
208-96-8	Acenaphthylene	194	51	26	ug/kg	
98-86-2	Acetophenone	11.4	260	11	ug/kg	J
120-12-7	Anthracene	296	51	31	ug/kg	J
1912-24-9	Atrazine	ND	100	22	ug/kg	
56-55-3	Benzo(a)anthracene	490	51	15	ug/kg	J
50-32-8	Benzo(a)pyrene	657	51	23	ug/kg	
205-99-2	Benzo(b)fluoranthene	638	51	23	ug/kg	
191-24-2	Benzo(g,h,i)perylene	438	51	26	ug/kg	
207-08-9	Benzo(k)fluoranthene	259	51	24	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	100	20	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	100	13	ug/kg	
92-52-4	1,1'-Biphenyl	93.5	100	7.0	ug/kg	J
100-52-7	Benzaldehyde	ND	260	13	ug/kg	
91-58-7	2-Chloronaphthalene	ND	100	12	ug/kg	
106-47-8	4-Chloroaniline	ND	260	18	ug/kg	
86-74-8	Carbazole	78.1	100	7.4	ug/kg	J

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-153 (13.5-15)
Lab Sample ID: JC87093-11
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/26/19
Date Received: 04/26/19
Percent Solids: 63.4

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam [a]	ND	100	20	ug/kg	
218-01-9	Chrysene	564	51	16	ug/kg	J
111-91-1	bis(2-Chloroethoxy)methane	ND	100	11	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	100	22	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	100	18	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	100	17	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	51	16	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	51	26	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	100	43	ug/kg	
123-91-1	1,4-Dioxane [a]	ND	51	34	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	112	51	23	ug/kg	
132-64-9	Dibenzofuran	143	100	21	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	100	8.4	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	100	13	ug/kg	
84-66-2	Diethyl phthalate	ND	100	11	ug/kg	
131-11-3	Dimethyl phthalate	ND	100	9.1	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	100	12	ug/kg	
206-44-0	Fluoranthene	751	51	23	ug/kg	J
86-73-7	Fluorene	320	51	24	ug/kg	J
118-74-1	Hexachlorobenzene	ND	100	13	ug/kg	
87-68-3	Hexachlorobutadiene	ND	51	21	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	510	20	ug/kg	
67-72-1	Hexachloroethane	ND	260	25	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	413	51	24	ug/kg	
78-59-1	Isophorone	ND	100	11	ug/kg	
91-57-6	2-Methylnaphthalene	406	51	12	ug/kg	
88-74-4	2-Nitroaniline	ND	260	12	ug/kg	
99-09-2	3-Nitroaniline	ND	260	13	ug/kg	
100-01-6	4-Nitroaniline	ND	260	13	ug/kg	
91-20-3	Naphthalene	1220	51	14	ug/kg	
98-95-3	Nitrobenzene	ND	100	20	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	100	15	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	260	19	ug/kg	
85-01-8	Phenanthrene	925	51	17	ug/kg	J
129-00-0	Pyrene	851	51	16	ug/kg	J
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	260	13	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	65%		23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-153 (13.5-15)		
Lab Sample ID:	JC87093-11	**Date Sampled:**	04/26/19
Matrix:	SO - Soil	**Date Received:**	04/26/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	63.4
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	67%		27-114%
118-79-6	2,4,6-Tribromophenol	74%		19-152%
4165-60-0	Nitrobenzene-d5	70%		26-134%
321-60-8	2-Fluorobiphenyl	84%		39-124%
1718-51-0	Terphenyl-d14	81%		36-134%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-153 (13.5-15)
Lab Sample ID: JC87093-11
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/26/19
Date Received: 04/26/19
Percent Solids: 63.4

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	8140 J	78	13	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [5]
Antimony	0.64 U J	3.1	0.64	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [5]
Arsenic	13.0 J	3.1	0.44	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [5]
Barium	89.1	31	3.0	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [5]
Beryllium	0.53	0.31	0.12	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [5]
Cadmium	0.48 J	0.78	0.11	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [5]
Calcium	2280	780	69	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [5]
Chromium	64.0 J	1.6	0.58	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [5]
Cobalt	8.3	7.8	0.44	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [5]
Copper	40.7 J	3.9	1.3	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [5]
Iron	15800 J	78	30	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [5]
Lead	107 J	3.1	0.64	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [5]
Magnesium	2590	780	21	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [5]
Manganese	354	2.3	0.64	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [5]
Mercury	1.1 J	0.086	0.038	mg/kg	2	04/30/19	04/30/19	LL	SW846 7471B [1]	SW846 7471B [4]
Nickel	15.9	6.2	0.55	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [5]
Potassium	1040 J	1600	50	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [5]
Selenium	1.0 U	3.1	1.0	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [5]
Silver	0.27 U	0.78	0.27	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [5]
Sodium	135 J	1600	120	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [5]
Thallium	0.91 U	1.6	0.91	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [5]
Vanadium	15.1	7.8	0.30	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [5]
Zinc [a]	215 J	7.8	3.6	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [3]	SW846 3050B [5]

(1) Instrument QC Batch: MA46615
(2) Instrument QC Batch: MA46638
(3) Instrument QC Batch: MA46646
(4) Prep QC Batch: MP14638
(5) Prep QC Batch: MP14721

(a) Elevated detection limit due to dilution required for high interfering element.

RL = Reporting Limit
MDL = Method Detection Limit
U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	S-153 (13.5-15)		
Lab Sample ID:	JC87093-11	**Date Sampled:**	04/26/19
Matrix:	SO - Soil	**Date Received:**	04/26/19
		Percent Solids:	63.4
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	4.9	0.35	0.18	mg/kg	1	05/06/19 15:12	KI	SW846 9012B/LACHAT
Solids, Percent	63.4			%	1	05/03/19 17:00	RC	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

SGS North America Inc.

Report of Analysis

Client Sample ID:	SO-DUP2-0426		
Lab Sample ID:	JC87093-12	**Date Sampled:**	04/26/19
Matrix:	SO - Soil	**Date Received:**	04/26/19
Method:	SW846 8260C	**Percent Solids:**	69.0
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3C151828.D	1	05/06/19 19:59	PS	n/a	n/a	V3C6821
Run #2 [a]	3C151793.D	1	05/05/19 22:02	MD	n/a	n/a	V3C6820

	Initial Weight
Run #1	4.1 g
Run #2	4.7 g

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	72.5	18	8.8	ug/kg	J
71-43-2	Benzene	ND	0.88	0.67	ug/kg	
74-97-5	Bromochloromethane	ND	8.8	0.76	ug/kg	
75-27-4	Bromodichloromethane	ND	3.5	0.78	ug/kg	
75-25-2	Bromoform	ND	8.8	0.71	ug/kg	
74-83-9	Bromomethane	ND	8.8	1.8	ug/kg	
78-93-3	2-Butanone (MEK)	16.2	18	6.6	ug/kg	J
75-15-0	Carbon disulfide	ND	3.5	1.6	ug/kg	
56-23-5	Carbon tetrachloride	ND	3.5	0.97	ug/kg	
108-90-7	Chlorobenzene	ND	3.5	0.63	ug/kg	
75-00-3	Chloroethane	ND	8.8	1.2	ug/kg	
67-66-3	Chloroform	ND	3.5	0.66	ug/kg	
74-87-3	Chloromethane [b]	ND	8.8	3.5	ug/kg	
110-82-7	Cyclohexane	ND	3.5	0.72	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	3.5	1.5	ug/kg	
124-48-1	Dibromochloromethane	ND	3.5	0.60	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.8	0.57	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.8	0.54	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.8	0.63	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.8	0.61	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	8.8	1.1	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.8	0.68	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.8	0.83	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.8	1.2	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.8	1.7	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.8	1.2	ug/kg	
78-87-5	1,2-Dichloropropane	ND	3.5	0.72	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	3.5	0.62	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	3.5	0.58	ug/kg	
100-41-4	Ethylbenzene	ND	1.8	0.98	ug/kg	
76-13-1	Freon 113	ND	8.8	1.3	ug/kg	
591-78-6	2-Hexanone	ND	8.8	2.2	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SO-DUP2-0426		
Lab Sample ID:	JC87093-12	**Date Sampled:**	04/26/19
Matrix:	SO - Soil	**Date Received:**	04/26/19
Method:	SW846 8260C	**Percent Solids:**	69.0
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	1.6	3.5	1.2	ug/kg	J
79-20-9	Methyl Acetate [b]	ND	8.8	2.5	ug/kg	
108-87-2	Methylcyclohexane	1.5	3.5	1.2	ug/kg	J
1634-04-4	Methyl Tert Butyl Ether	ND	1.8	0.62	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	8.8	2.8	ug/kg	
75-09-2	Methylene chloride	ND	8.8	4.4	ug/kg	
100-42-5	Styrene	ND	3.5	1.0	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	3.5	0.69	ug/kg	
127-18-4	Tetrachloroethene	ND	3.5	0.82	ug/kg	
108-88-3	Toluene	3.3	1.8	0.66	ug/kg	J
87-61-6	1,2,3-Trichlorobenzene	ND	8.8	1.8	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	8.8	1.8	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	3.5	0.75	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	3.5	0.60	ug/kg	
79-01-6	Trichloroethene	ND	1.8	1.3	ug/kg	
75-69-4	Trichlorofluoromethane	ND	8.8	1.2	ug/kg	
75-01-4	Vinyl chloride	ND	3.5	0.83	ug/kg	
	m,p-Xylene	ND	1.8	1.3	ug/kg	
95-47-6	o-Xylene	ND	1.8	1.0	ug/kg	
1330-20-7	Xylene (total)	ND	1.8	1.0	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	106%	125%	75-127%
17060-07-0	1,2-Dichloroethane-D4	101%	107%	75-130%
2037-26-5	Toluene-D8	108%	118%	80-120%
460-00-4	4-Bromofluorobenzene	132% [c]	171% [d]	79-127%

(a) Confirmation run.
(b) Associated CCV outside of control limits low.
(c) Outside control limits due to matrix interference. Confirmed by reanalysis.
(d) Outside control limits due to matrix interference.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	SO-DUP2-0426		
Lab Sample ID:	JC87093-12	**Date Sampled:**	04/26/19
Matrix:	SO - Soil	**Date Received:**	04/26/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	69.0
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	P129383.D	1	05/07/19 20:33	CC	05/06/19 17:35	OP20110	EP5856
Run #2							

	Initial Weight	Final Volume
Run #1	30.7 g	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	94	23	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	240	29	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	240	40	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	240	84	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	240	180	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	240	51	ug/kg	
95-48-7	2-Methylphenol	ND	94	30	ug/kg	
	3&4-Methylphenol	181	94	39	ug/kg	
88-75-5	2-Nitrophenol	ND	240	31	ug/kg	
100-02-7	4-Nitrophenol	ND	470	130	ug/kg	
87-86-5	Pentachlorophenol	ND	190	44	ug/kg	
108-95-2	Phenol	ND	94	25	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	240	31	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	240	35	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	240	28	ug/kg	
83-32-9	Acenaphthene	945	47	16	ug/kg	
208-96-8	Acenaphthylene	251	47	24	ug/kg	
98-86-2	Acetophenone	ND	240	10	ug/kg	
120-12-7	Anthracene	672	47	29	ug/kg	J
1912-24-9	Atrazine	ND	94	20	ug/kg	
56-55-3	Benzo(a)anthracene	994	47	13	ug/kg	J
50-32-8	Benzo(a)pyrene	1060	47	21	ug/kg	
205-99-2	Benzo(b)fluoranthene	1020	47	21	ug/kg	
191-24-2	Benzo(g,h,i)perylene	599	47	24	ug/kg	
207-08-9	Benzo(k)fluoranthene	417	47	22	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	94	18	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	94	12	ug/kg	
92-52-4	1,1'-Biphenyl	92.4	94	6.5	ug/kg	J
100-52-7	Benzaldehyde	ND	240	12	ug/kg	
91-58-7	2-Chloronaphthalene	ND	94	11	ug/kg	
106-47-8	4-Chloroaniline	ND	240	17	ug/kg	
86-74-8	Carbazole	71.1	94	6.8	ug/kg	J

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SO-DUP2-0426		
Lab Sample ID:	JC87093-12	**Date Sampled:**	04/26/19
Matrix:	SO - Soil	**Date Received:**	04/26/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	69.0
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam [a]	ND	94	19	ug/kg	
218-01-9	Chrysene	1070	47	15	ug/kg	J
111-91-1	bis(2-Chloroethoxy)methane	ND	94	10	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	94	20	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	94	17	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	94	15	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	47	15	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	47	24	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	94	39	ug/kg	
123-91-1	1,4-Dioxane [a]	ND	47	31	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	160	47	21	ug/kg	
132-64-9	Dibenzofuran	147	94	19	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	94	7.7	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	94	12	ug/kg	
84-66-2	Diethyl phthalate	ND	94	10	ug/kg	
131-11-3	Dimethyl phthalate	ND	94	8.4	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	94	11	ug/kg	
206-44-0	Fluoranthene	1770	47	21	ug/kg	J
86-73-7	Fluorene	598	47	22	ug/kg	J
118-74-1	Hexachlorobenzene	ND	94	12	ug/kg	
87-68-3	Hexachlorobutadiene	ND	47	19	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	470	19	ug/kg	
67-72-1	Hexachloroethane	ND	240	23	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	600	47	22	ug/kg	
78-59-1	Isophorone	ND	94	10	ug/kg	
91-57-6	2-Methylnaphthalene	473	47	11	ug/kg	
88-74-4	2-Nitroaniline	ND	240	11	ug/kg	
99-09-2	3-Nitroaniline	ND	240	12	ug/kg	
100-01-6	4-Nitroaniline	ND	240	12	ug/kg	
91-20-3	Naphthalene	1290	47	13	ug/kg	
98-95-3	Nitrobenzene	ND	94	18	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	94	14	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	240	17	ug/kg	
85-01-8	Phenanthrene	2300	47	16	ug/kg	J
129-00-0	Pyrene	2070	47	15	ug/kg	J
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	240	12	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	62%		23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SO-DUP2-0426		
Lab Sample ID:	JC87093-12	**Date Sampled:**	04/26/19
Matrix:	SO - Soil	**Date Received:**	04/26/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	69.0
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	62%		27-114%
118-79-6	2,4,6-Tribromophenol	61%		19-152%
4165-60-0	Nitrobenzene-d5	68%		26-134%
321-60-8	2-Fluorobiphenyl	77%		39-124%
1718-51-0	Terphenyl-d14	69%		36-134%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: SO-DUP2-0426
Lab Sample ID: JC87093-12
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/26/19
Date Received: 04/26/19
Percent Solids: 69.0

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	13800 J	73	12	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [4]
Antimony	0.60 U J	2.9	0.60	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [4]
Arsenic	27.6 J	2.9	0.41	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [4]
Barium	148	29	2.8	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [4]
Beryllium	1.0	0.29	0.12	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [4]
Cadmium	1.6	0.73	0.10	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [4]
Calcium	2630	730	65	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [4]
Chromium	135 J	1.5	0.54	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [4]
Cobalt	13.0	7.3	0.41	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [4]
Copper	87.1 J	3.7	1.2	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [4]
Iron	22000 J	73	28	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [4]
Lead	189 J	2.9	0.60	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [4]
Magnesium	3500	730	20	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [4]
Manganese	462	2.2	0.60	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [4]
Mercury	0.50 J	0.041	0.018	mg/kg	1	04/30/19	04/30/19	LL	SW846 7471B [1]	SW846 7471B [3]
Nickel	25.7	5.9	0.51	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [4]
Potassium	1530	1500	47	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [4]
Selenium	1.2 J	2.9	0.95	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [4]
Silver	0.44 J	0.73	0.25	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [4]
Sodium	199 J	1500	110	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [4]
Thallium	0.85 U	1.5	0.85	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [4]
Vanadium	28.4	7.3	0.28	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [4]
Zinc	491 J	7.3	3.4	mg/kg	1	05/01/19	05/03/19	MET	SW846 6010D [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA46615
(2) Instrument QC Batch: MA46638
(3) Prep QC Batch: MP14638
(4) Prep QC Batch: MP14721

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	SO-DUP2-0426		
Lab Sample ID:	JC87093-12	**Date Sampled:**	04/26/19
Matrix:	SO - Soil	**Date Received:**	04/26/19
		Percent Solids:	69.0
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	5.2	0.25	0.12	mg/kg	1	05/07/19 17:58	KI	SW846 9012B/LACHAT
Solids, Percent	69			%	1	05/03/19 17:00	RC	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

ARCADIS Design & Consultancy for natural and built assets

National Grid

Philly Coke

DATA REVIEW

Philadelphia, Pennsylvania

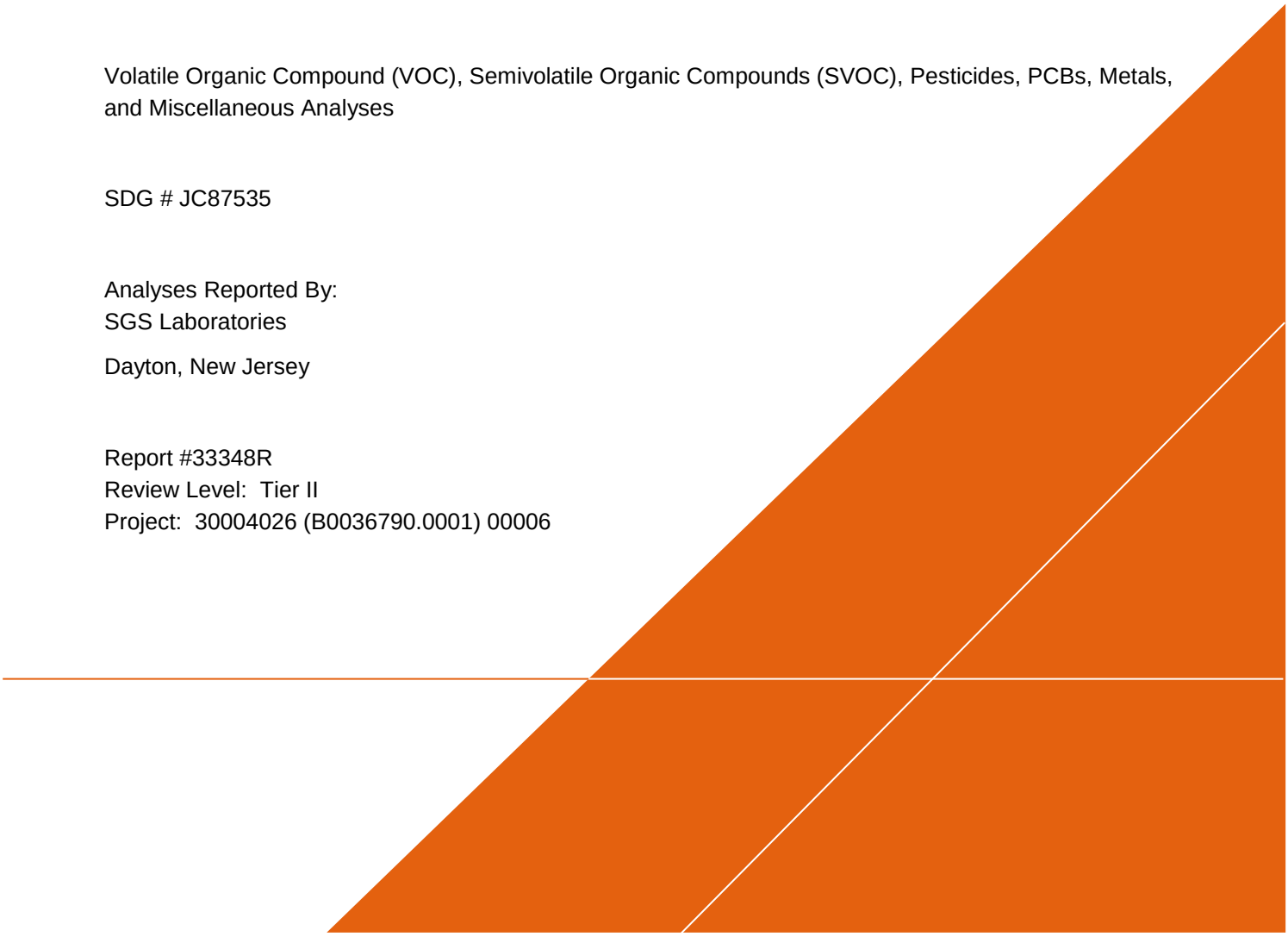
Volatile Organic Compound (VOC), Semivolatile Organic Compounds (SVOC), Pesticides, PCBs, Metals, and Miscellaneous Analyses

SDG # JC87535

Analyses Reported By:
SGS Laboratories

Dayton, New Jersey

Report #33348R
Review Level: Tier II
Project: 30004026 (B0036790.0001) 00006



SUMMARY

This data review report summarizes the review of Sample Delivery Group (SDG) # JC87535 for samples collected in association with the National Grid Philly Coke site in Philadelphia, Pennsylvania. The review was conducted as a Tier II evaluation and included review of laboratory analytical data package completeness. Field documentation was not included in this review. Included with this assessment are the post-validation annotated sample result sheets, and chain of custody (COC). Analyses were performed on the following samples

SDG Number	Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis				
						VOC	SVOC	PEST/ PCB	Metals	MISC
JC87535	S-157(7-9) (05-03-2019)	JC87535-1	Soil	5/3/2019		X	X		X	X
	S-157(23-25) (05-03-2019)	JC87535-2	Soil	5/3/2019		X	X		X	X
	S-156(3-5) (05-03-2019)	JC87535-3	Soil	5/3/2019		X	X		X	X
	S-156(7.5-9.5) (05-03-2019)	JC87535-4	Soil	5/3/2019		X	X		X	X
	S-156(14-16) (05-03-2019)	JC87535-5	Soil	5/3/2019		X	X		X	X
	SO-DUP-0503 (05-03-2019)	JC87535-6	Soil	5/3/2019	S-156(14-16) (05-03-2019)	X	X		X	X
	S-161(5-7) (05-03-2019)	JC87535-7	Soil	5/3/2019		X	X		X	X
	S-161(10-12) (05-03-2019)	JC87535-8	Soil	5/3/2019		X	X		X	X
	S-162(5-7) (05-03-2019)	JC87535-9	Soil	5/3/2019		X	X		X	X
	S-162(15-17) (05-03-2019)	JC87535-10	Soil	5/3/2019		X	X		X	X
	S-160(10-12) (05-03-2019)	JC87535-11	Soil	5/3/2019		X	X		X	X
	S-160(13-15) (05-03-2019)	JC87535-12	Soil	5/3/2019		X	X		X	X

Notes:

1. PEST/PCB = Pesticides and polychlorinated biphenyls
2. SVOC = Semivolatile Organic Compounds
3. VOC = Volatile Organic Compound
4. MISC = Miscellaneous (total cyanide)
5. Samples PCWC-1 (05-03-2019), PCWC-2 (05-03-2019), and PCWC-3 (05-03-2019) are on the chain of custody and were analyzed for TCLP/waste characterization. These samples did not require validation and therefore are not included in this validation report.

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance (QA) or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260C, 8270D, 8081A, and 8082A. Data were reviewed in accordance with the USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540/R-2017-002, January 2017 and the USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Organic Data Review, EPA540/R-99/008, October 1999 (as applicable).

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers
  - U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
  - B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- Quantitation (Q) Qualifiers
  - E The compound was quantitated above the calibration range.
  - D Concentration is based on a diluted sample analysis.
- Validation Qualifiers
  - J The compound was positively identified; however, the associated numerical value is an estimated concentration only.
  - UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.
  - JN The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.
  - UB Compound considered non-detect at the listed value due to associated blank contamination.
  - N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.
  - R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is

that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times/Preservation

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260C	Water	14 days from collection to analysis (preserved) 7 days from collection to analysis (non-preserved)	Cool to <6 °C; preserved to a pH of less than 2 s.u.
	Soil	48 hours from collection to extraction and 14 days from extraction to analysis	Cool to <6 °C.

Note:
s.u. Standard units

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore, detected sample results were not associated with blank contamination.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. VOC analysis requires that all surrogates associated with the analysis exhibit recoveries within the laboratory-established acceptance limits.

All surrogate recoveries were within control limits.

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

The MS/MSD exhibited acceptable recoveries and RPD between the MS/MSD recoveries.

5. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) Analysis

The LCS/LCSD analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS/LCSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

All compounds associated with the LCS/LCSD analysis exhibited recoveries within the control limits.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of three times the RL is applied for soil matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
S-156(14-16) (05-03-2019)/ SO-DUP-0503 (05-03-2019)	Acetone	114	229	67.1%
	2-Butanone	28.7	38.7	AC
	Methylene chloride	1.8 J	9.9 U	AC
	Methyl Acetate	7.9 u	6.2 J	AC

Notes:
AC Acceptable

Acetone associated with sample locations S-156(14-16) (05-03-2019) and SO-DUP-0503 (05-03-2019) exhibited a field duplicate RPD greater than the control limit. The associated sample results from these sample locations for the listed analyte were qualified as estimated.

7. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

8. System Performance and Overall Assessment

The laboratory narrative indicates continuing calibration deviations. These deviations are normally not evaluated in a tier II data review. Sample results that had continuing calibration recoveries that exceed the control limit high and were non detect did not require qualification. Sample results where the calibration recoveries were high and the compound was detected or calibration recoveries were low were qualified as estimated (J or UJ).

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: SW-846 8260	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks	X				X
C. Trip blanks	X				X
Laboratory Control Sample (LCS)		X	X		
Laboratory Control Sample Duplicate(LCSD)	X				X
LCS/LCSD Precision (RPD)	X				X
Matrix Spike (MS)		X		X	
Matrix Spike Duplicate(MSD)		X		X	
MS/MSD Precision (RPD)		X		X	
Field/Lab Duplicate (RPD)		X	X		
Surrogate Spike Recoveries		X		X	
Dilution Factor		X		X	
Moisture Content		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

SEMIVOLATILE ORGANIC COMPOUND (SVOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8270D	Water	7 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C
	Soil	14 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore, detected sample results were not associated with blank contamination.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. SVOC analysis requires that two of the three SVOC surrogate compounds within each fraction exhibit recoveries within the laboratory-established acceptance limits.

Sample locations associated with surrogates exhibiting recoveries outside of the control limits presented in the following table.

Sample Locations	Surrogate	Recovery
S-160(10-12)	Phenol-d6	AC
	2-Fluorophenol	AC
	2,4,6-Tribromophenol	AC
	Nitrobenzene-d5	>UL
	2-Fluorobiphenyl	AC
	Terphenyl-d14	AC

Notes:

AC Acceptable

The criteria used to evaluate the surrogate recoveries are presented in the following table. In the case of a surrogate deviation, the sample results associated with the deviant fraction are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> UL	Non-detect	No Action
	Detect	J
< LL but > 10%	Non-detect	UJ
	Detect	J
< 10%	Non-detect	R
	Detect	J

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

The MS/MSD exhibited acceptable recoveries and RPD between the MS/MSD recoveries.

5. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) Analysis

The LCS/LCSD analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS/LCSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

The LCS/LCSD exhibited acceptable recoveries and RPD between the MS/MSD recoveries.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of three times the RL is applied for soil matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
S-156(14-16) (05-03-2019)/ SO-DUP-0503 (05-03-2019)	Benzo(a)anthracene	26.3 J	15.3 J	AC
	Benzo(a)pyrene	22.5 J	49 U	AC

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
	Benzo(b)fluoranthene	29.6 J	49 U	AC
	1,1'-Biphenyl	7.7 J	98 U	AC
	Benzaldehyde	20.8 J	250 U	AC
	Carbazole	8.3 J	98 U	AC
	Chrysene	25.2 J	49 U	AC
	Fluoranthene	59.7	28.6 J	AC
	Fluorene	21.9 J	49 U	AC
	2-Methylnaphthalene	14.4 J	15.5 J	AC
	Naphthalene	77.8	115	AC
	Phenanthrene	65.2	43.2 J	AC
	Pyrene	43.4 J	22.0 J	AC

Notes:
AC Acceptable

The calculated RPDs between the parent sample and field duplicate were acceptable.

7. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

Several samples were diluted to bring target compounds within linear range of the instrument. Sample results that were reported from a secondary dilution were qualified with a “D”, indicating the result is diluted.

8. System Performance and Overall Assessment

The laboratory narrative indicates continuing calibration deviations. These deviations are normally not evaluated in a tier II data review. Sample results that had continuing calibration recoveries that exceed the control limit high and were non detect did not require qualification. Sample results where the calibration recoveries were high and the compound was detected or calibration recoveries were low were qualified as estimated (J or UJ).

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR SVOCs

SVOCs: SW-846 8270	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks		X		X	
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R	X				X
LCS/LCSD Precision (RPD)	X				X
Matrix Spike (MS) %R		X		X	
Matrix Spike Duplicate(MSD) %R		X		X	
MS/MSD Precision (RPD)		X		X	
Field/Lab Duplicate (RPD)		X		X	
Surrogate Spike Recoveries		X	X		
Dilution Factor		X		X	
Moisture Content		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

INORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 6010D, 7471A, and 9012B. Data were reviewed in accordance with the USEPA CLP National Functional Guidelines for Inorganic Superfund Methods Data Review, EPA 540/R-2017-001, January 2017; and the USEPA CLP National Functional Guidelines for Inorganic Data Review, EPA 540-R-01-008, July 2002 (as applicable).

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and that it was already subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with the USEPA National Functional Guidelines:

- Concentration (C) Qualifiers
  - U The analyte was analyzed for but not detected. The associated value is the analyte instrument detection limit.
  - J The reported value was obtained from a reading less than the reporting limit (RL), but greater than or equal to the method detection limit (MDL).
- Quantitation (Q) Qualifiers
  - E The reported value is estimated due to the presence of interference.
  - N Spiked sample recovery is not within control limits.
  - * Duplicate analysis is not within control limits.
- Validation Qualifiers
  - J The analyte was positively identified; however, the associated numerical value is an estimated concentration only.
  - UJ The analyte was not detected above the reporting limit. However, the reported limit is approximate and may or may not represent the actual limit of detection.
  - UB Analyte considered non-detect at the listed value due to associated blank contamination.
  - R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

METALS ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 6010D	Water	180 days from collection to analysis	Preserved to a pH of less than 2.
	Soil	180 days from collection to analysis	Cool to <6 °C.
SW-846 7471A	Soil	28 days from collection to analysis	Cool to <6 °C.
SW-846 7470A	Water	28 days from collection to analysis	Cool to <6 °C; preserved to a pH of less than 2.

All samples were analyzed within the specified holding times.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Analytes were detected in the associated QA blanks; however, the associated sample results were greater than the BAL and/or were non-detect. No qualification of the sample results was required.

3. Matrix Spike (MS)/Matrix Spike Duplicate(MSD)/Laboratory Duplicate Analysis

MS/MSD and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

3.1 MS/MSD Analysis

All metal analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the analyte's concentration detected in the parent sample exceeds the MS concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

All analytes associated with MS/MSD recoveries were within control limits with the exception of the following analyte present in the table below.

Sample Location	Analyte	MS Recovery	MSD Recovery
S-161(10-12) (05-03-2019)	Aluminum	184.1%	180.5%
	Antimony	67.6%	69.8%

The criteria used to evaluate MS/MSD recoveries are presented in the following table. In the case of an MS/MSD deviation, the sample results are qualified. The qualifications for all metals are applied to all sample results associated with this SDG.

Control limit	Sample Result	Qualification
MS/MSD percent recovery 30% to 74%	Non-detect	UJ
	Detect	J
MS/MSD percent recovery <30%	Non-detect	R
	Detect	J
MS/MSD percent recovery >125%	Non-detect	No Action
	Detect	J

3.2 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the RL. A control limit of 20% for water matrices and 35% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of one times the RL is applied for water matrices and two times the RL for soil matrices.

MS/MSD analysis was performed in replacement of the laboratory duplicate analysis. The MS/MSD analysis exhibited RPDs within the control limits.

4. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of three times the RL is applied for soil matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
PSSTP-07R (0.5-2) (04-18-2019)/ SO-DUP-0418 (04-18-2019)	Aluminum	21800	24700	12.5%
	Arsenic	7.4	4.5	AC
	Barium	183	162	12.2%
	Beryllium	1.1	1.2	AC

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
	Cadmium	0.28 J	0.13 J	AC
	Calcium	2800	2730	2.5%
	Chromium	42.7	47.5	10.6%
	Cobalt	10.9	12.1	AC
	Copper	22.1	10.1	74.5%
	Iron	25700	25400	1.2%
	Lead	80.3	14.8	137.7%
	Magnesium	5160	5840	12.4%
	Manganese	402	325	21.2%
	Mercury	0.11	0.043 U	AC
	Nickel	26.3	29.6	11.8%
	Potassium	1870	2170	14.9%
	Silver	0.52 J	0.49 J	AC
	Sodium	228 J	248 J	AC
	Vanadium	41.9	48.1	13.8%
	Zinc	132	72.1	58.7%

Notes:
AC Acceptable

The analytes lead and zinc associated with sample locations PSSTP-07R (0.5-2) (04-18-2019) and SO-DUP-0418 (04-18-2019) exhibited a field duplicate RPD greater than the control limit. The associated sample results from all sample locations for the listed analytes were qualified as estimated.

5. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The analytes associated with the LCS analysis must exhibit a percent recovery between the control limits of 80% and 120%.

The LCS analysis exhibited recoveries within the control limits.

6. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR METAL

METALS; SW846 6010D/7471A	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Inductively Coupled Plasma-Atomic Emission Spectrometry (ICP-AES)					
Tier II Validation					
Holding Times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method Blanks		X		X	
B. Equipment/Field Blanks	X				X
Laboratory Control Sample (LCS)		X		X	
Matrix Spike (MS) %R		X	X		
Matrix Spike Duplicate (MSD) %R		X	X		
MS/MSD Precision (RPD)		X		X	
Field/Lab Duplicate (RPD)		X	X		
Total vs. Dissolved	X				X

Notes:

%R Percent recovery

RPD Relative percent difference

GENERAL CHEMISTRY ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
Cyanide by SW-846 9012	Water	14 days from collection to analysis	Cool to <6 °C; preserved to a pH of greater than 12.
	Soil		Cool to <6 °C.

All samples were analyzed within the specified holding times.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Analytes were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Matrix Spike/Matrix Spike Duplicate (MS/MSD)/Laboratory Duplicate Analysis

MS/MSD and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

3.1 MS/MSD Analysis

All analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the analyte's concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

All analytes associated with MS/MSD recoveries were within control limits with the exception of the following analyte present in the table below.

Sample Location	Analyte	MS Recovery
S-161(10-12) (05-03-2019)	Cyanide	64.2%

The criteria used to evaluate MS/MSD recoveries are presented in the following table. In the case of an MS/MSD deviation, the sample results are qualified. The qualifications for all metals except mercury are applied to all sample results associated with this SDG.

Control limit	Sample Result	Qualification
MS/MSD percent recovery 30% to 74%	Non-detect	UJ
	Detect	J
MS/MSD percent recovery <30%	Non-detect	R
	Detect	J
MS/MSD percent recovery >125%	Non-detect	No Action
	Detect	J

3.2 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the RL. A control limit of 20% for water matrices and 35% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of one times the RL is applied for water matrices and two times the RL for soil matrices.

The laboratory duplicate analysis exhibited RPD within control limits.

4. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The analytes associated with the LCS analysis must exhibit a percent recovery between the control limits of 80% and 120%.

The LCS analysis exhibited recoveries within the control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of three times the RL is applied for soil matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
PSSTP-07R (0.5-2) (04-18-2019)/ SO-DUP-0418 (04-18-2019)	Cyanide	0.30 U	0.33 U	AC

Notes:
AC Acceptable

The calculated RPDs between the parent sample and field duplicate were acceptable.

6. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR GENERAL CHEMISTRY

General Chemistry: EPA 9012	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Miscellaneous Instrumentation					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks					X
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R					X
LCS/LCSD Precision (RPD)					X
Matrix Spike (MS) %R		X	X		
Matrix Spike Duplicate(MSD) %R	X				X
MS/MSD Precision (RPD)	X				X
Field/Lab Duplicate (RPD)		X		X	
Dilution Factor		X		X	
Moisture Content					X

Notes:
%R - percent recovery
RPD - relative percent difference

VALIDATION PERFORMED BY: Andrew Korycinski

SIGNATURE:

DATE: July 22, 2019

PEER REVIEW: Dennis Capria

DATE: July 23, 2019

CHAIN OF CUSTODY
SAMPLE ANALYSIS DATA SHEETS

SCL
SO

CHAIN OF CUSTODY

SGS North America Inc. - Dayton
2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200 FAX: 732-329-3499/3480
www.sgs.com/ehsusa

Page 1 of 2

FED-EX Tracking #:
Bottle Order Control #: KR-042219-41
SGS Quote #:
SGS Job #: JC87535

Client / Reporting Information

Company Name: Arcadis-US
Street Address: 110 W Fayette St #300
City: Syracuse State: NY Zip: 13202
Project Contact: Christopher Lawrence-Hedgepeth E-mail:
Phone #: 315-335-5544
Sample(s) Name(s): Evan Green Phone #: 803-306-2692

Project Information

Project Name: Philadelphia Corp
Street: 4601 Richmond St
City: Philadelphia State: PA
Project #: B00367900001
Client Purchase Order #: B00367900001
Project Manager: Joan Bussel

Billing Information (if different from Report to)

Company Name: Same
Street Address:
City: State: Zip:
Attention:

Requested Analysis

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL - Sludge; SED-Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB - Field Blank; EB-Equipment Blank; RB - Rinse Blank; TB - Trip Blank

SGS Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Grab (G) Comp (C)	Matrix	# of bottles	Number of preserved Bottles: HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	Preserved where applicable	VB260TCL20	CN	AB8270TCL20	MTAL	8081PCB1I	CORR	TCLP	LAB USE ONLY
1	S-157(7-9)		5/3/19	1030	GB	G	SO	5					2	2		1		X	X	X	X				
2	S-157(23-25)			1045				5					2	2		1		X	X	X	X				D63
3	S-156(3-5)			1000				5					2	2		1		X	X	X	X				D577
4	S-156(7.5-9.5)			1015				5					2	2		1		X	X	X	X				14QS
5	S-156(14-16)			1035				5					2	2		1		X	X	X	X				4907
6	SO-DUP-0503			--:--				5					2	2		1		X	X	X	X				YES
7	S-161(5-7)			1200				5					2	2		1		X	X	X	X				
8	S-161(10-12)			1215				5					2	2		1		X	X	X	X				
	S-161(10-12)MS			1215				5					2	2		1		X	X	X	X				
	S-161(10-12)MSD			1215				5					2	2		1		X	X	X	X				
9	S-162(5-7)			1245				5					2	2		1		X	X	X	X				
10	S-162(15-17)			1300				5					2	2		1		X	X	X	X				

Turn Around Time (Business Days)

Approved By (SGS PM): / Date:

- [X] 10 Business Days
- [ ] 5 Business Days
- [ ] 3 Business Days*
- [ ] 2 Business Days*
- [ ] 1 Business Day*
- [ ] Other

All data available via Labfink

* Approval needed for 1-3 Business Day TAT

Deliverable

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] NJ Reduced (Level 3)
- [X] Full Tier I (Level 4)
- [ ] Commercial "C"
- [ ] NJ DKQP
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] MA MCP Criteria
- [ ] CT RCP Criteria
- [ ] State Forms
- [ ] EDD Format
- [ ] DOD-QSM5

Commercial "A" = Results only; Commercial "B" = Results + QC Summary
Commercial "C" = Results + QC Summary + Partial Raw data

Comments / Special Instructions

http://www.sgs.com/en/terms-and-conditions

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by:	Date / Time:	Received By:
1		5/3/19 1615	1
2		5/3/19 1720	2
3		Date / Time:	3
4		Date / Time:	4
5		Date / Time:	5

Custody Seal #: Intact / Not Intact | Preserved where applicable: Absent | Therm. ID: | On Ice: 0.1 | Cooler Temp °C: 0.1 0.6

EHSA-QAC-0023-02-FORM-Dayton - Standard COC.xlsx

CHAIN OF CUSTODY

SGS North America Inc. - Dayton
2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200 FAX: 732-329-3499/3480
www.sgs.com/ehsusa

FED-EX Tracking #: | Bottle Order Control #:
SGS Quote #: | SGS Job #: JC87535

Client / Reporting Information

Company Name: Aecom's - U.S
Street Address: 110 W Fayette St #300
City: Syracuse State: NY Zip: 13202
Project Contact: Gary Holly E-mail: Gary.Holly@aecom.com
Phone #: 315-335-9495
Sampler(s) Name(s): Phone #: 603-306-2852
Project Manager: John Bussey

Project Information

Project Name: Philadelphia Coke
Street: 4501 Richmond St
City: Philadelphia State: PA
Project #: 60036740.0001
Client Purchase Order #: 60036740.0001
Attention:
Billing Information (If different from Report to)
Company Name: Same
Street Address:
City: State: Zip:

Requested Analysis

SGS Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Grab (G) Comp (C)	Matrix	# of bottles	Number of preserved Bottles: HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	EnCORE	8260TCL 20	CN	ABN270TCL 26	MTAL	PB082PCB11	CORR	TCLP	LAB USE ONLY
11	S-160 (10-12)		5/3/19	1330	GB	G	SO	5					2	2			1	X	X	X	X				
12	S-160 (13-15)			1345		G		5					2	2			1	X	X	X	X				
13	PCWC-1			1410		C		3					3								X	X	X		
14	PCWC-2			1415		C		3					3								X	X	X		
15	PCWC-3			1420		C		3					3								X	X	X		

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL - Sludge
SED-Sediment
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe
FB - Field Blank
EB-Equipment Blank
RB - Rinse Blank
TB - Trip Blank

Turn Around Time (Business Days)

Approved By (SGS PM): / Date:

- [X] 10 Business Days
- [ ] 5 Business Days
- [ ] 3 Business Days*
- [ ] 2 Business Days*
- [ ] 1 Business Day*
- [ ] Other
- All data available via Lablink
- * Approval needed for 1-3 Business Day TAT

Deliverable

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] NJ Reduced (Level 3)
- [X] Full Tier I (Level 4)
- [ ] Commercial "C"
- [ ] NJ DKQP
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] MA MCP Criteria
- [ ] CT RCP Criteria
- [ ] State Forms
- [ ] EDD Format
- [ ] DOD-QSM5

Commercial "A" = Results only; Commercial "B" = Results + QC Summary
Commercial "C" = Results + QC Summary + Partial Raw data

Comments / Special Instructions

http://www.sgs.com/en/terms-and-conditions

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by:	Date / Time:	Received By:	Relinquished by:	Date / Time:	Received By:
1		5/3/19 1615	1	2	5/3/19 1720	2
3			3	4		4
5			5	Custody Seal #	Intact / Not intact	Preserved where applicable / Absent / Therm. ID:

On Ice: ☐ Cooler Temp. °C: 0.9 COR

EHSA-QAC-0023-02-FORM-Dayton - Standard COC.xlsx

SGS North America Inc.

Report of Analysis

Client Sample ID:	S-157(7-9)		
Lab Sample ID:	JC87535-1	**Date Sampled:**	05/03/19
Matrix:	SO - Soil	**Date Received:**	05/03/19
Method:	SW846 8260C	**Percent Solids:**	76.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Y185120.D	1	05/11/19 13:43	PS	n/a	n/a	VY8033
Run #2							

	Initial Weight
Run #1	5.0 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	62.7	13	5.2	ug/kg	
71-43-2	Benzene	0.99	0.65	0.59	ug/kg	
74-97-5	Bromochloromethane	ND	6.5	0.73	ug/kg	
75-27-4	Bromodichloromethane	ND	2.6	0.58	ug/kg	
75-25-2	Bromoform	ND	6.5	0.75	ug/kg	
74-83-9	Bromomethane	ND	6.5	1.3	ug/kg	
78-93-3	2-Butanone (MEK)	10.3	13	4.9	ug/kg	J
75-15-0	Carbon disulfide	1.7	2.6	1.2	ug/kg	J
56-23-5	Carbon tetrachloride	ND	2.6	0.80	ug/kg	
108-90-7	Chlorobenzene	ND	2.6	0.60	ug/kg	
75-00-3	Chloroethane	ND	6.5	0.77	ug/kg	
67-66-3	Chloroform	ND	2.6	0.64	ug/kg	
74-87-3	Chloromethane [a]	ND	6.5	2.5	ug/kg	UJ
110-82-7	Cyclohexane	ND	2.6	0.85	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.6	1.1	ug/kg	
124-48-1	Dibromochloromethane	ND	2.6	0.73	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.3	0.55	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.3	0.71	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.3	0.64	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.3	0.64	ug/kg	
75-71-8	Dichlorodifluoromethane [a]	ND	6.5	0.95	ug/kg	UJ
75-34-3	1,1-Dichloroethane	ND	1.3	0.64	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.3	0.61	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.3	0.85	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.3	1.1	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.3	0.79	ug/kg	
78-87-5	1,2-Dichloropropane	ND	2.6	0.62	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	2.6	0.62	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2.6	0.59	ug/kg	
100-41-4	Ethylbenzene	ND	1.3	0.72	ug/kg	
76-13-1	Freon 113	ND	6.5	1.3	ug/kg	
591-78-6	2-Hexanone	ND	6.5	2.8	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-157(7-9)		
Lab Sample ID:	JC87535-1	**Date Sampled:**	05/03/19
Matrix:	SO - Soil	**Date Received:**	05/03/19
Method:	SW846 8260C	**Percent Solids:**	76.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	2.1	2.6	0.91	ug/kg	J
79-20-9	Methyl Acetate	ND	6.5	1.8	ug/kg	
108-87-2	Methylcyclohexane	ND	2.6	1.1	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.3	0.61	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	6.5	3.0	ug/kg	
75-09-2	Methylene chloride	ND	6.5	1.3	ug/kg	
100-42-5	Styrene	ND	2.6	0.75	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.6	0.78	ug/kg	
127-18-4	Tetrachloroethene	ND	2.6	0.75	ug/kg	
108-88-3	Toluene	ND	1.3	0.68	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	6.5	2.5	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	6.5	2.0	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	2.6	0.63	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2.6	0.72	ug/kg	
79-01-6	Trichloroethene	ND	1.3	0.99	ug/kg	
75-69-4	Trichlorofluoromethane	ND	6.5	0.89	ug/kg	
75-01-4	Vinyl chloride [a]	ND	2.6	0.63	ug/kg	UJ
	m,p-Xylene	ND	1.3	1.2	ug/kg	
95-47-6	o-Xylene	1.6	1.3	0.76	ug/kg	
1330-20-7	Xylene (total)	1.6	1.3	0.76	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		75-127%
17060-07-0	1,2-Dichloroethane-D4	93%		75-130%
2037-26-5	Toluene-D8	103%		80-120%
460-00-4	4-Bromofluorobenzene	117%		79-127%

(a) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	S-157(7-9)		
Lab Sample ID:	JC87535-1	**Date Sampled:**	05/03/19
Matrix:	SO - Soil	**Date Received:**	05/03/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	76.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M154434.D	1	05/16/19 18:57	CC	05/11/19 03:55	OP20268	EM6595
Run #2							

	Initial Weight	Final Volume
Run #1	32.4 g	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	80	20	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	200	25	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	200	34	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	200	71	ug/kg	
51-28-5	2,4-Dinitrophenol [a]	ND	200	150	ug/kg	UJ
534-52-1	4,6-Dinitro-o-cresol	ND	200	43	ug/kg	
95-48-7	2-Methylphenol	ND	80	26	ug/kg	
	3&4-Methylphenol	ND	80	33	ug/kg	
88-75-5	2-Nitrophenol	ND	200	27	ug/kg	
100-02-7	4-Nitrophenol [a]	ND	400	110	ug/kg	UJ
87-86-5	Pentachlorophenol	ND	160	38	ug/kg	
108-95-2	Phenol	ND	80	21	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	200	27	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	200	30	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	200	24	ug/kg	
83-32-9	Acenaphthene	112	40	14	ug/kg	
208-96-8	Acenaphthylene	ND	40	20	ug/kg	
98-86-2	Acetophenone	ND	200	8.6	ug/kg	
120-12-7	Anthracene	69.2	40	25	ug/kg	
1912-24-9	Atrazine	ND	80	17	ug/kg	
56-55-3	Benzo(a)anthracene	54.1	40	11	ug/kg	
50-32-8	Benzo(a)pyrene	51.1	40	18	ug/kg	
205-99-2	Benzo(b)fluoranthene	67.8	40	18	ug/kg	
191-24-2	Benzo(g,h,i)perylene	37.4	40	20	ug/kg	J
207-08-9	Benzo(k)fluoranthene	25.2	40	19	ug/kg	J
101-55-3	4-Bromophenyl phenyl ether	ND	80	15	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	80	9.8	ug/kg	
92-52-4	1,1'-Biphenyl	9.8	80	5.5	ug/kg	J
100-52-7	Benzaldehyde	22.9	200	10	ug/kg	J
91-58-7	2-Chloronaphthalene	ND	80	9.6	ug/kg	
106-47-8	4-Chloroaniline	ND	200	14	ug/kg	
86-74-8	Carbazole	ND	80	5.8	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-157(7-9)
Lab Sample ID: JC87535-1
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 05/03/19
Date Received: 05/03/19
Percent Solids: 76.9

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	80	16	ug/kg	
218-01-9	Chrysene	65.8	40	13	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	80	8.6	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	80	17	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	80	14	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	80	13	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	40	12	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	40	20	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	80	33	ug/kg	
123-91-1	1,4-Dioxane [a]	ND	40	27	ug/kg	UJ
53-70-3	Dibenzo(a,h)anthracene	ND	40	18	ug/kg	
132-64-9	Dibenzofuran	23.9	80	16	ug/kg	J
84-74-2	Di-n-butyl phthalate	ND	80	6.5	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	80	10	ug/kg	
84-66-2	Diethyl phthalate	ND	80	8.5	ug/kg	
131-11-3	Dimethyl phthalate	ND	80	7.1	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	80	9.4	ug/kg	
206-44-0	Fluoranthene	138	40	18	ug/kg	
86-73-7	Fluorene	30.2	40	18	ug/kg	J
118-74-1	Hexachlorobenzene	ND	80	10	ug/kg	
87-68-3	Hexachlorobutadiene [a]	ND	40	16	ug/kg	UJ
77-47-4	Hexachlorocyclopentadiene	ND	400	16	ug/kg	
67-72-1	Hexachloroethane	ND	200	20	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	52.7	40	19	ug/kg	
78-59-1	Isophorone	ND	80	8.6	ug/kg	
91-57-6	2-Methylnaphthalene	25.7	40	9.1	ug/kg	J
88-74-4	2-Nitroaniline	ND	200	9.5	ug/kg	
99-09-2	3-Nitroaniline	ND	200	10	ug/kg	
100-01-6	4-Nitroaniline	ND	200	10	ug/kg	
91-20-3	Naphthalene	41.9	40	11	ug/kg	
98-95-3	Nitrobenzene	ND	80	15	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	80	12	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	200	15	ug/kg	
85-01-8	Phenanthrene	94.6	40	13	ug/kg	
129-00-0	Pyrene	111	40	13	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	200	10	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	57%		23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-157(7-9)		
Lab Sample ID:	JC87535-1	**Date Sampled:**	05/03/19
Matrix:	SO - Soil	**Date Received:**	05/03/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	76.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	61%		27-114%
118-79-6	2,4,6-Tribromophenol	94%		19-152%
4165-60-0	Nitrobenzene-d5	68%		26-134%
321-60-8	2-Fluorobiphenyl	75%		39-124%
1718-51-0	Terphenyl-d14	70%		36-134%

(a) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-157(7-9)
Lab Sample ID: JC87535-1
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 05/03/19
Date Received: 05/03/19
Percent Solids: 76.9

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	10900 J	66	11	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [5]
Antimony [a]	2.1 J	5.3	1.1	mg/kg	2	05/08/19	05/09/19	ND	SW846 6010D [3]	SW846 3050B [5]
Arsenic	12.6	2.6	0.37	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [5]
Barium	52.3	26	2.5	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [5]
Beryllium	0.62	0.26	0.11	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [5]
Cadmium [a]	0.79 J	1.3	0.18	mg/kg	2	05/08/19	05/09/19	ND	SW846 6010D [3]	SW846 3050B [5]
Calcium	2790	660	58	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [5]
Chromium	20.0	1.3	0.49	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [5]
Cobalt	9.9	6.6	0.37	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [5]
Copper [a]	243	9.9	3.3	mg/kg	3	05/08/19	05/10/19	ND	SW846 6010D [3]	SW846 3050B [5]
Iron	54800	200	76	mg/kg	3	05/08/19	05/10/19	ND	SW846 6010D [3]	SW846 3050B [5]
Lead [a]	43.8 J	5.3	1.1	mg/kg	2	05/08/19	05/09/19	ND	SW846 6010D [3]	SW846 3050B [5]
Magnesium	792	660	18	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [5]
Manganese [a]	379	5.9	1.6	mg/kg	3	05/08/19	05/10/19	ND	SW846 6010D [3]	SW846 3050B [5]
Mercury	0.065	0.042	0.019	mg/kg	1	05/07/19	05/07/19	LL	SW846 7471B [1]	SW846 7471B [4]
Nickel	22.3	5.3	0.46	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [5]
Potassium	826 J	1300	42	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [5]
Selenium [a]	2.6 U	7.9	2.6	mg/kg	3	05/08/19	05/10/19	ND	SW846 6010D [3]	SW846 3050B [5]
Silver [a]	0.67 U	2.0	0.67	mg/kg	3	05/08/19	05/10/19	ND	SW846 6010D [3]	SW846 3050B [5]
Sodium	100 U	1300	100	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [5]
Thallium [a]	2.3 U	3.9	2.3	mg/kg	3	05/08/19	05/10/19	ND	SW846 6010D [3]	SW846 3050B [5]
Vanadium	25.9	6.6	0.25	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [5]
Zinc	451 J	6.6	3.0	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA46664
(2) Instrument QC Batch: MA46680
(3) Instrument QC Batch: MA46687
(4) Prep QC Batch: MP14859
(5) Prep QC Batch: MP14865

(a) Elevated detection limit due to dilution required for high interfering element.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	S-157(7-9)		
Lab Sample ID:	JC87535-1	**Date Sampled:**	05/03/19
Matrix:	SO - Soil	**Date Received:**	05/03/19
		Percent Solids:	76.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result		RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	0.70	J	0.30	0.15	mg/kg	1	05/10/19 18:06	KI	SW846 9012B/LACHAT
Solids, Percent	76.9				%	1	05/13/19 15:15	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

SGS North America Inc.

Report of Analysis

Client Sample ID:	S-157(23-25)		
Lab Sample ID:	JC87535-2	**Date Sampled:**	05/03/19
Matrix:	SO - Soil	**Date Received:**	05/03/19
Method:	SW846 8260C	**Percent Solids:**	90.4
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1C164514.D	1	05/13/19 20:14	PS	n/a	n/a	V1C7218
Run #2							

	Initial Weight
Run #1	5.2 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	18.7	11	4.3	ug/kg	
71-43-2	Benzene	ND	0.53	0.48	ug/kg	
74-97-5	Bromochloromethane	ND	5.3	0.60	ug/kg	
75-27-4	Bromodichloromethane	ND	2.1	0.47	ug/kg	
75-25-2	Bromoform	ND	5.3	0.61	ug/kg	
74-83-9	Bromomethane	ND	5.3	1.1	ug/kg	
78-93-3	2-Butanone (MEK)	ND	11	4.0	ug/kg	
75-15-0	Carbon disulfide	ND	2.1	0.99	ug/kg	
56-23-5	Carbon tetrachloride	ND	2.1	0.66	ug/kg	
108-90-7	Chlorobenzene	ND	2.1	0.49	ug/kg	
75-00-3	Chloroethane	ND	5.3	0.63	ug/kg	
67-66-3	Chloroform	ND	2.1	0.52	ug/kg	
74-87-3	Chloromethane	ND	5.3	2.1	ug/kg	
110-82-7	Cyclohexane	ND	2.1	0.70	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.1	0.89	ug/kg	
124-48-1	Dibromochloromethane	ND	2.1	0.60	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.1	0.45	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.1	0.58	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.1	0.53	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.1	0.53	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	5.3	0.77	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.1	0.53	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.1	0.50	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.1	0.70	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.1	0.89	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.1	0.65	ug/kg	
78-87-5	1,2-Dichloropropane	ND	2.1	0.50	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	2.1	0.51	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2.1	0.49	ug/kg	
100-41-4	Ethylbenzene	ND	1.1	0.59	ug/kg	
76-13-1	Freon 113	ND	5.3	1.1	ug/kg	
591-78-6	2-Hexanone	ND	5.3	2.3	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-157(23-25)		
Lab Sample ID:	JC87535-2	**Date Sampled:**	05/03/19
Matrix:	SO - Soil	**Date Received:**	05/03/19
Method:	SW846 8260C	**Percent Solids:**	90.4
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	2.1	0.74	ug/kg	
79-20-9	Methyl Acetate	ND	5.3	1.5	ug/kg	
108-87-2	Methylcyclohexane	ND	2.1	0.93	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.1	0.50	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.3	2.4	ug/kg	
75-09-2	Methylene chloride	ND	5.3	1.1	ug/kg	
100-42-5	Styrene	ND	2.1	0.61	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.1	0.64	ug/kg	
127-18-4	Tetrachloroethene	ND	2.1	0.62	ug/kg	
108-88-3	Toluene	ND	1.1	0.56	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	5.3	2.1	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	5.3	1.6	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	2.1	0.51	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2.1	0.59	ug/kg	
79-01-6	Trichloroethene	ND	1.1	0.81	ug/kg	
75-69-4	Trichlorofluoromethane	ND	5.3	0.73	ug/kg	
75-01-4	Vinyl chloride	ND	2.1	0.51	ug/kg	
	m,p-Xylene	ND	1.1	0.95	ug/kg	
95-47-6	o-Xylene	ND	1.1	0.62	ug/kg	
1330-20-7	Xylene (total)	ND	1.1	0.62	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	104%		75-127%
17060-07-0	1,2-Dichloroethane-D4	88%		75-130%
2037-26-5	Toluene-D8	100%		80-120%
460-00-4	4-Bromofluorobenzene	92%		79-127%

ND = Not detected MDL = Method Detection Limit
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E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	S-157(23-25)		
Lab Sample ID:	JC87535-2	**Date Sampled:**	05/03/19
Matrix:	SO - Soil	**Date Received:**	05/03/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	90.4
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M154430.D	1	05/16/19 17:03	CC	05/11/19 03:55	OP20268	EM6595
Run #2							

	Initial Weight	Final Volume
Run #1	30.5 g	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	73	18	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	180	22	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	180	31	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	180	65	ug/kg	
51-28-5	2,4-Dinitrophenol [a]	ND	180	140	ug/kg	UJ
534-52-1	4,6-Dinitro-o-cresol	ND	180	39	ug/kg	
95-48-7	2-Methylphenol	ND	73	23	ug/kg	
	3&4-Methylphenol	ND	73	30	ug/kg	
88-75-5	2-Nitrophenol	ND	180	24	ug/kg	
100-02-7	4-Nitrophenol [a]	ND	360	97	ug/kg	UJ
87-86-5	Pentachlorophenol	ND	150	34	ug/kg	
108-95-2	Phenol	ND	73	19	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	180	24	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	180	27	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	180	22	ug/kg	
83-32-9	Acenaphthene	ND	36	13	ug/kg	
208-96-8	Acenaphthylene	ND	36	18	ug/kg	
98-86-2	Acetophenone	ND	180	7.8	ug/kg	
120-12-7	Anthracene	ND	36	22	ug/kg	
1912-24-9	Atrazine	ND	73	16	ug/kg	
56-55-3	Benzo(a)anthracene	ND	36	10	ug/kg	
50-32-8	Benzo(a)pyrene	ND	36	17	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	36	16	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	36	18	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	36	17	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	73	14	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	73	8.8	ug/kg	
92-52-4	1,1'-Biphenyl	ND	73	5.0	ug/kg	
100-52-7	Benzaldehyde	ND	180	9.0	ug/kg	
91-58-7	2-Chloronaphthalene	ND	73	8.6	ug/kg	
106-47-8	4-Chloroaniline	ND	180	13	ug/kg	
86-74-8	Carbazole	ND	73	5.3	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-157(23-25)
Lab Sample ID: JC87535-2
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 05/03/19
Date Received: 05/03/19
Percent Solids: 90.4

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	73	14	ug/kg	
218-01-9	Chrysene	ND	36	11	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	73	7.8	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	73	16	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	73	13	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	73	12	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	36	11	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	36	18	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	73	30	ug/kg	
123-91-1	1,4-Dioxane [a]	ND	36	24	ug/kg	UJ
53-70-3	Dibenzo(a,h)anthracene	ND	36	16	ug/kg	
132-64-9	Dibenzofuran	ND	73	15	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	73	5.9	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	73	9.0	ug/kg	
84-66-2	Diethyl phthalate	ND	73	7.7	ug/kg	
131-11-3	Dimethyl phthalate	ND	73	6.5	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	73	8.5	ug/kg	
206-44-0	Fluoranthene	ND	36	16	ug/kg	
86-73-7	Fluorene	ND	36	17	ug/kg	
118-74-1	Hexachlorobenzene	ND	73	9.2	ug/kg	
87-68-3	Hexachlorobutadiene [a]	ND	36	15	ug/kg	UJ
77-47-4	Hexachlorocyclopentadiene	ND	360	14	ug/kg	
67-72-1	Hexachloroethane	ND	180	18	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	36	17	ug/kg	
78-59-1	Isophorone	ND	73	7.8	ug/kg	
91-57-6	2-Methylnaphthalene	ND	36	8.2	ug/kg	
88-74-4	2-Nitroaniline	ND	180	8.6	ug/kg	
99-09-2	3-Nitroaniline	ND	180	9.1	ug/kg	
100-01-6	4-Nitroaniline	ND	180	9.4	ug/kg	
91-20-3	Naphthalene	ND	36	10	ug/kg	
98-95-3	Nitrobenzene	ND	73	14	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	73	10	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	180	13	ug/kg	
85-01-8	Phenanthrene	ND	36	12	ug/kg	
129-00-0	Pyrene	ND	36	12	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	180	9.2	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	63%		23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-157(23-25)		
Lab Sample ID:	JC87535-2	**Date Sampled:**	05/03/19
Matrix:	SO - Soil	**Date Received:**	05/03/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	90.4
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	66%		27-114%
118-79-6	2,4,6-Tribromophenol	86%		19-152%
4165-60-0	Nitrobenzene-d5	74%		26-134%
321-60-8	2-Fluorobiphenyl	77%		39-124%
1718-51-0	Terphenyl-d14	74%		36-134%

(a) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-157(23-25)
Lab Sample ID: JC87535-2
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 05/03/19
Date Received: 05/03/19
Percent Solids: 90.4

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	8590 J	54	8.7	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Antimony	0.44 U J	2.2	0.44	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Arsenic	3.8	2.2	0.30	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Barium	32.3	22	2.1	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Beryllium	0.51	0.22	0.087	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cadmium	0.076 U	0.54	0.076	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Calcium	248 J	540	48	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Chromium	25.7	1.1	0.40	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cobalt	7.6	5.4	0.30	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Copper	9.4	2.7	0.91	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Iron	13400	54	21	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Lead	6.0 J	2.2	0.44	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Magnesium	2070	540	15	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Manganese	111	1.6	0.44	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Mercury	0.014 U	0.032	0.014	mg/kg	1	05/07/19	05/07/19	LL	SW846 7471B [1]	SW846 7471B [3]
Nickel	15.7	4.3	0.38	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Potassium	897 J	1100	34	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Selenium	0.70 U	2.2	0.70	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Silver	0.37 J	0.54	0.18	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Sodium	84 U	1100	84	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Thallium	0.63 U	1.1	0.63	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Vanadium	19.0	5.4	0.21	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Zinc	35.9 J	5.4	2.5	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA46664
(2) Instrument QC Batch: MA46680
(3) Prep QC Batch: MP14859
(4) Prep QC Batch: MP14865

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: S-157(23-25)
Lab Sample ID: JC87535-2
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 05/03/19
Date Received: 05/03/19
Percent Solids: 90.4

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	0.13 U J	0.27	0.13	mg/kg	1	05/10/19 18:07	KI	SW846 9012B/LACHAT
Solids, Percent	90.4			%	1	05/13/19 15:15	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

SGS North America Inc.

Report of Analysis

Client Sample ID:	S-156(3-5)		
Lab Sample ID:	JC87535-3	**Date Sampled:**	05/03/19
Matrix:	SO - Soil	**Date Received:**	05/03/19
Method:	SW846 8260C	**Percent Solids:**	81.7
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	2C167684.D	1	05/16/19 12:10	TDN	n/a	n/a	V2C7521
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	2.3 g	10.0 ml	100 ul
Run #2			

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone [b]	ND	2800	1100	ug/kg	
71-43-2	Benzene	368	140	130	ug/kg	
74-97-5	Bromochloromethane	ND	1400	160	ug/kg	
75-27-4	Bromodichloromethane	ND	550	120	ug/kg	
75-25-2	Bromoform [b]	ND	1400	160	ug/kg	
74-83-9	Bromomethane	ND	1400	280	ug/kg	
78-93-3	2-Butanone (MEK)	ND	2800	1000	ug/kg	
75-15-0	Carbon disulfide	ND	550	260	ug/kg	
56-23-5	Carbon tetrachloride	ND	550	170	ug/kg	
108-90-7	Chlorobenzene	ND	550	130	ug/kg	
75-00-3	Chloroethane	ND	1400	160	ug/kg	
67-66-3	Chloroform	ND	550	140	ug/kg	
74-87-3	Chloromethane [c]	ND	1400	540	ug/kg	UJ
110-82-7	Cyclohexane	ND	550	180	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	550	230	ug/kg	
124-48-1	Dibromochloromethane	ND	550	160	ug/kg	
106-93-4	1,2-Dibromoethane	ND	280	120	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	280	150	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	280	140	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	280	140	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	1400	200	ug/kg	
75-34-3	1,1-Dichloroethane	ND	280	140	ug/kg	
107-06-2	1,2-Dichloroethane	ND	280	130	ug/kg	
75-35-4	1,1-Dichloroethene	ND	280	180	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	280	230	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	280	170	ug/kg	
78-87-5	1,2-Dichloropropane	ND	550	130	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	550	130	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	550	130	ug/kg	
100-41-4	Ethylbenzene	ND	280	150	ug/kg	
76-13-1	Freon 113	ND	1400	280	ug/kg	
591-78-6	2-Hexanone	ND	1400	590	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-156(3-5)		
Lab Sample ID:	JC87535-3	**Date Sampled:**	05/03/19
Matrix:	SO - Soil	**Date Received:**	05/03/19
Method:	SW846 8260C	**Percent Solids:**	81.7
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	550	190	ug/kg	
79-20-9	Methyl Acetate	ND	1400	390	ug/kg	
108-87-2	Methylcyclohexane	ND	550	240	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	280	130	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	1400	630	ug/kg	
75-09-2	Methylene chloride	ND	1400	280	ug/kg	
100-42-5	Styrene	ND	550	160	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	550	170	ug/kg	
127-18-4	Tetrachloroethene	ND	550	160	ug/kg	
108-88-3	Toluene	424	280	150	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	1400	540	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	1400	420	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	550	130	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	550	150	ug/kg	
79-01-6	Trichloroethene	ND	280	210	ug/kg	
75-69-4	Trichlorofluoromethane	ND	1400	190	ug/kg	
75-01-4	Vinyl chloride	ND	550	130	ug/kg	
	m,p-Xylene	568	280	250	ug/kg	
95-47-6	o-Xylene	ND	280	160	ug/kg	
1330-20-7	Xylene (total)	568	280	160	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	97%		75-127%
17060-07-0	1,2-Dichloroethane-D4	97%		75-130%
2037-26-5	Toluene-D8	98%		80-120%
460-00-4	4-Bromofluorobenzene	100%		79-127%

(a) Diluted due to high concentration of non-target compound.
(b) Associated CCV outside of control limits high, sample was ND.
(c) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	S-156(3-5)		
Lab Sample ID:	JC87535-3	**Date Sampled:**	05/03/19
Matrix:	SO - Soil	**Date Received:**	05/03/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	81.7
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	M154437.D	5	05/16/19 20:23	CC	05/11/19 03:55	OP20268	EM6595
Run #2	M154464.D	50	05/17/19 21:12	CC	05/11/19 03:55	OP20268	EM6596
Run #3	M154465.D	500	05/17/19 21:41	CC	05/11/19 03:55	OP20268	EM6596

	Initial Weight	Final Volume
Run #1	30.9 g	1.0 ml
Run #2	30.9 g	1.0 ml
Run #3	30.9 g	1.0 ml

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	400	98	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	990	120	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	990	170	ug/kg	
105-67-9	2,4-Dimethylphenol	5920	990	350	ug/kg	
51-28-5	2,4-Dinitrophenol [b]	ND	990	740	ug/kg	UJ
534-52-1	4,6-Dinitro-o-cresol	ND	990	210	ug/kg	
95-48-7	2-Methylphenol	2680	400	130	ug/kg	
	3&4-Methylphenol	7150	400	160	ug/kg	
88-75-5	2-Nitrophenol	ND	990	130	ug/kg	
100-02-7	4-Nitrophenol [b]	ND	2000	530	ug/kg	UJ
87-86-5	Pentachlorophenol	ND	790	190	ug/kg	
108-95-2	Phenol	2720	400	100	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	990	130	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	990	150	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	990	120	ug/kg	
83-32-9	Acenaphthene	35200 [c]	2000	680	ug/kg	D
208-96-8	Acenaphthylene	125000 [c]	2000	1000	ug/kg	D
98-86-2	Acetophenone	1900	990	43	ug/kg	
120-12-7	Anthracene	373000 [d]	20000	12000	ug/kg	D
1912-24-9	Atrazine	ND	400	85	ug/kg	
56-55-3	Benzo(a)anthracene	302000 [d]	20000	5600	ug/kg	D
50-32-8	Benzo(a)pyrene	219000 [d]	20000	9000	ug/kg	D
205-99-2	Benzo(b)fluoranthene	267000 [d]	20000	8800	ug/kg	D
191-24-2	Benzo(g,h,i)perylene	97300 [c]	2000	990	ug/kg	D
207-08-9	Benzo(k)fluoranthene	108000 [d]	20000	9200	ug/kg	D
101-55-3	4-Bromophenyl phenyl ether	ND	400	76	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	400	48	ug/kg	
92-52-4	1,1'-Biphenyl	72100 [c]	4000	270	ug/kg	D
100-52-7	Benzaldehyde	ND	990	49	ug/kg	
91-58-7	2-Chloronaphthalene	ND	400	47	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-156(3-5)		
Lab Sample ID:	JC87535-3	**Date Sampled:**	05/03/19
Matrix:	SO - Soil	**Date Received:**	05/03/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	81.7
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
106-47-8	4-Chloroaniline	ND	990	71	ug/kg	
86-74-8	Carbazole	167000 [c]	4000	290	ug/kg	D
105-60-2	Caprolactam	ND	400	78	ug/kg	
218-01-9	Chrysene	270000 [d]	20000	6200	ug/kg	D
111-91-1	bis(2-Chloroethoxy)methane	ND	400	42	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	400	85	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	400	71	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	400	64	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	200	61	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	200	99	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	400	170	ug/kg	
123-91-1	1,4-Dioxane [b]	ND	200	130	ug/kg	UJ
53-70-3	Dibenzo(a,h)anthracene	28300 [c]	2000	880	ug/kg	D
132-64-9	Dibenzofuran	364000 [d]	40000	8100	ug/kg	D
84-74-2	Di-n-butyl phthalate	ND	400	32	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	400	49	ug/kg	
84-66-2	Diethyl phthalate	ND	400	42	ug/kg	
131-11-3	Dimethyl phthalate	ND	400	35	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	400	46	ug/kg	
206-44-0	Fluoranthene	908000 [d]	20000	8800	ug/kg	D
86-73-7	Fluorene	563000 [d]	20000	9100	ug/kg	D
118-74-1	Hexachlorobenzene	ND	400	50	ug/kg	
87-68-3	Hexachlorobutadiene [b]	ND	200	80	ug/kg	UJ
77-47-4	Hexachlorocyclopentadiene	ND	2000	79	ug/kg	
67-72-1	Hexachloroethane	ND	990	98	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	110000 [c]	2000	930	ug/kg	D
78-59-1	Isophorone	ND	400	42	ug/kg	
91-57-6	2-Methylnaphthalene	312000 [d]	20000	4500	ug/kg	D
88-74-4	2-Nitroaniline	ND	990	47	ug/kg	
99-09-2	3-Nitroaniline	ND	990	50	ug/kg	
100-01-6	4-Nitroaniline	ND	990	51	ug/kg	
91-20-3	Naphthalene	1830000 [d]	20000	5600	ug/kg	D
98-95-3	Nitrobenzene	ND	400	76	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	400	57	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	990	72	ug/kg	
85-01-8	Phenanthrene	1840000 [d]	20000	6700	ug/kg	D
129-00-0	Pyrene	611000 [d]	20000	6300	ug/kg	D
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	990	50	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-156(3-5)		
Lab Sample ID:	JC87535-3	**Date Sampled:**	05/03/19
Matrix:	SO - Soil	**Date Received:**	05/03/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	81.7
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Run# 3	Limits
367-12-4	2-Fluorophenol	65%	60%	0% [e]	23-115%
4165-62-2	Phenol-d5	67%	57%	0% [e]	27-114%
118-79-6	2,4,6-Tribromophenol	113%	93%	0% [e]	19-152%
4165-60-0	Nitrobenzene-d5	96%	58%	0% [e]	26-134%
321-60-8	2-Fluorobiphenyl	63%	69%	0% [e]	39-124%
1718-51-0	Terphenyl-d14	51%	56%	0% [e]	36-134%

(a) Dilution required due to matrix interference.
(b) Associated CCV outside of control limits low.
(c) Result is from Run# 2
(d) Result is from Run# 3
(e) Outside control limits due to dilution.

Report of Analysis

Client Sample ID: S-156(3-5)
Lab Sample ID: JC87535-3
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 05/03/19
Date Received: 05/03/19
Percent Solids: 81.7

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	3280 J	59	9.6	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [5]
Antimony	2.6 J	2.4	0.49	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [5]
Arsenic	10.2	2.4	0.33	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [5]
Barium	90.6	24	2.3	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [5]
Beryllium	0.34	0.24	0.095	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [5]
Cadmium	0.53 J	0.59	0.083	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [5]
Calcium	5300	590	52	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [5]
Chromium	99.4	1.2	0.44	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [5]
Cobalt	7.3	5.9	0.33	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [5]
Copper [a]	175	5.9	2.0	mg/kg	2	05/08/19	05/09/19	ND	SW846 6010D [3]	SW846 3050B [5]
Iron [a]	26900	120	46	mg/kg	2	05/08/19	05/09/19	ND	SW846 6010D [3]	SW846 3050B [5]
Lead [a]	204 J	4.8	0.97	mg/kg	2	05/08/19	05/09/19	ND	SW846 6010D [3]	SW846 3050B [5]
Magnesium	575 J	590	16	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [5]
Manganese [a]	84.4	3.6	0.97	mg/kg	2	05/08/19	05/09/19	ND	SW846 6010D [3]	SW846 3050B [5]
Mercury	3.1	0.20	0.088	mg/kg	5	05/07/19	05/07/19	LL	SW846 7471B [1]	SW846 7471B [4]
Nickel	46.8	4.8	0.42	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [5]
Potassium	242 J	1200	38	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [5]
Selenium [a]	2.0 J	4.8	1.5	mg/kg	2	05/08/19	05/09/19	ND	SW846 6010D [3]	SW846 3050B [5]
Silver [a]	0.51 J	1.2	0.40	mg/kg	2	05/08/19	05/09/19	ND	SW846 6010D [3]	SW846 3050B [5]
Sodium	92 U	1200	92	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [5]
Thallium [a]	1.4 U	2.4	1.4	mg/kg	2	05/08/19	05/09/19	ND	SW846 6010D [3]	SW846 3050B [5]
Vanadium	17.5	5.9	0.23	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [5]
Zinc	185 J	5.9	2.7	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA46664
(2) Instrument QC Batch: MA46680
(3) Instrument QC Batch: MA46687
(4) Prep QC Batch: MP14859
(5) Prep QC Batch: MP14865

(a) Elevated detection limit due to dilution required for high interfering element.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: S-156(3-5)
Lab Sample ID: JC87535-3
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 05/03/19
Date Received: 05/03/19
Percent Solids: 81.7

General Chemistry

Analyte	Result		RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	16.0	J	0.28	0.14	mg/kg	1	05/10/19 18:08	KI	SW846 9012B/LACHAT
Solids, Percent	81.7				%	1	05/13/19 15:15	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

SGS North America Inc.

Report of Analysis

Client Sample ID:	S-156(7.5-9.5)		
Lab Sample ID:	JC87535-4	**Date Sampled:**	05/03/19
Matrix:	SO - Soil	**Date Received:**	05/03/19
Method:	SW846 8260C	**Percent Solids:**	74.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Y185126.D	1	05/11/19 16:34	PS	n/a	n/a	VY8033
Run #2							

	Initial Weight
Run #1	5.4 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	58.7	12	5.0	ug/kg	
71-43-2	Benzene	1.0	0.62	0.57	ug/kg	
74-97-5	Bromochloromethane	ND	6.2	0.70	ug/kg	
75-27-4	Bromodichloromethane	ND	2.5	0.55	ug/kg	
75-25-2	Bromoform	ND	6.2	0.72	ug/kg	
74-83-9	Bromomethane	ND	6.2	1.2	ug/kg	
78-93-3	2-Butanone (MEK)	8.2	12	4.7	ug/kg	J
75-15-0	Carbon disulfide	ND	2.5	1.2	ug/kg	
56-23-5	Carbon tetrachloride	ND	2.5	0.77	ug/kg	
108-90-7	Chlorobenzene	ND	2.5	0.57	ug/kg	
75-00-3	Chloroethane	ND	6.2	0.74	ug/kg	
67-66-3	Chloroform	ND	2.5	0.61	ug/kg	
74-87-3	Chloromethane [a]	ND	6.2	2.4	ug/kg	UJ
110-82-7	Cyclohexane	ND	2.5	0.82	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.5	1.0	ug/kg	
124-48-1	Dibromochloromethane	ND	2.5	0.70	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.2	0.52	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.2	0.68	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.2	0.62	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.2	0.62	ug/kg	
75-71-8	Dichlorodifluoromethane [a]	ND	6.2	0.91	ug/kg	UJ
75-34-3	1,1-Dichloroethane	ND	1.2	0.62	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.2	0.59	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.2	0.82	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.2	1.0	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.2	0.76	ug/kg	
78-87-5	1,2-Dichloropropane	ND	2.5	0.59	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	2.5	0.59	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2.5	0.57	ug/kg	
100-41-4	Ethylbenzene	ND	1.2	0.69	ug/kg	
76-13-1	Freon 113	ND	6.2	1.3	ug/kg	
591-78-6	2-Hexanone	ND	6.2	2.6	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-156(7.5-9.5)
Lab Sample ID: JC87535-4
Matrix: SO - Soil
Method: SW846 8260C
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 05/03/19
Date Received: 05/03/19
Percent Solids: 74.3

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	2.5	0.87	ug/kg	
79-20-9	Methyl Acetate	ND	6.2	1.7	ug/kg	
108-87-2	Methylcyclohexane	ND	2.5	1.1	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.2	0.58	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	6.2	2.8	ug/kg	
75-09-2	Methylene chloride	ND	6.2	1.2	ug/kg	
100-42-5	Styrene	ND	2.5	0.72	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.5	0.75	ug/kg	
127-18-4	Tetrachloroethene	ND	2.5	0.72	ug/kg	
108-88-3	Toluene	ND	1.2	0.65	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	6.2	2.4	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	6.2	1.9	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	2.5	0.60	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2.5	0.69	ug/kg	
79-01-6	Trichloroethene	ND	1.2	0.95	ug/kg	
75-69-4	Trichlorofluoromethane	ND	6.2	0.85	ug/kg	
75-01-4	Vinyl chloride [a]	ND	2.5	0.60	ug/kg	UJ
	m,p-Xylene	ND	1.2	1.1	ug/kg	
95-47-6	o-Xylene	ND	1.2	0.73	ug/kg	
1330-20-7	Xylene (total)	ND	1.2	0.73	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	97%		75-127%
17060-07-0	1,2-Dichloroethane-D4	87%		75-130%
2037-26-5	Toluene-D8	99%		80-120%
460-00-4	4-Bromofluorobenzene	100%		79-127%

(a) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	S-156(7.5-9.5)		
Lab Sample ID:	JC87535-4	**Date Sampled:**	05/03/19
Matrix:	SO - Soil	**Date Received:**	05/03/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	74.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M154435.D	1	05/16/19 19:26	CC	05/11/19 03:55	OP20268	EM6595
Run #2							

	Initial Weight	Final Volume
Run #1	30.8 g	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	87	22	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	220	27	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	220	37	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	220	78	ug/kg	
51-28-5	2,4-Dinitrophenol [a]	ND	220	160	ug/kg	UJ
534-52-1	4,6-Dinitro-o-cresol	ND	220	47	ug/kg	
95-48-7	2-Methylphenol	ND	87	28	ug/kg	
	3&4-Methylphenol	ND	87	36	ug/kg	
88-75-5	2-Nitrophenol	ND	220	29	ug/kg	
100-02-7	4-Nitrophenol [a]	ND	440	120	ug/kg	UJ
87-86-5	Pentachlorophenol	ND	170	41	ug/kg	
108-95-2	Phenol	ND	87	23	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	220	29	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	220	33	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	220	26	ug/kg	
83-32-9	Acenaphthene	374	44	15	ug/kg	
208-96-8	Acenaphthylene	155	44	22	ug/kg	
98-86-2	Acetophenone	ND	220	9.4	ug/kg	
120-12-7	Anthracene	403	44	27	ug/kg	
1912-24-9	Atrazine	ND	87	19	ug/kg	
56-55-3	Benzo(a)anthracene	957	44	12	ug/kg	
50-32-8	Benzo(a)pyrene	837	44	20	ug/kg	
205-99-2	Benzo(b)fluoranthene	940	44	19	ug/kg	
191-24-2	Benzo(g,h,i)perylene	418	44	22	ug/kg	
207-08-9	Benzo(k)fluoranthene	386	44	20	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	87	17	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	87	11	ug/kg	
92-52-4	1,1'-Biphenyl	32.2	87	6.0	ug/kg	J
100-52-7	Benzaldehyde	ND	220	11	ug/kg	
91-58-7	2-Chloronaphthalene	ND	87	10	ug/kg	
106-47-8	4-Chloroaniline	ND	220	16	ug/kg	
86-74-8	Carbazole	50.9	87	6.3	ug/kg	J

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-156(7.5-9.5)
Lab Sample ID: JC87535-4
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 05/03/19
Date Received: 05/03/19
Percent Solids: 74.3

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	87	17	ug/kg	
218-01-9	Chrysene	860	44	14	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	87	9.4	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	87	19	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	87	16	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	87	14	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	44	14	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	44	22	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	87	36	ug/kg	
123-91-1	1,4-Dioxane [a]	ND	44	29	ug/kg	UJ
53-70-3	Dibenzo(a,h)anthracene	119	44	19	ug/kg	
132-64-9	Dibenzofuran	55.5	87	18	ug/kg	J
84-74-2	Di-n-butyl phthalate	ND	87	7.1	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	87	11	ug/kg	
84-66-2	Diethyl phthalate	ND	87	9.3	ug/kg	
131-11-3	Dimethyl phthalate	ND	87	7.8	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	87	10	ug/kg	
206-44-0	Fluoranthene	1970	44	19	ug/kg	
86-73-7	Fluorene	130	44	20	ug/kg	
118-74-1	Hexachlorobenzene	ND	87	11	ug/kg	
87-68-3	Hexachlorobutadiene [a]	ND	44	18	ug/kg	UJ
77-47-4	Hexachlorocyclopentadiene	ND	440	17	ug/kg	
67-72-1	Hexachloroethane	ND	220	22	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	489	44	20	ug/kg	
78-59-1	Isophorone	ND	87	9.4	ug/kg	
91-57-6	2-Methylnaphthalene	93.5	44	9.9	ug/kg	
88-74-4	2-Nitroaniline	ND	220	10	ug/kg	
99-09-2	3-Nitroaniline	ND	220	11	ug/kg	
100-01-6	4-Nitroaniline	ND	220	11	ug/kg	
91-20-3	Naphthalene	1070	44	12	ug/kg	
98-95-3	Nitrobenzene	ND	87	17	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	87	13	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	220	16	ug/kg	
85-01-8	Phenanthrene	872	44	15	ug/kg	
129-00-0	Pyrene	1390	44	14	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	220	11	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	67%		23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-156(7.5-9.5)		
Lab Sample ID:	JC87535-4	**Date Sampled:**	05/03/19
Matrix:	SO - Soil	**Date Received:**	05/03/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	74.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	72%		27-114%
118-79-6	2,4,6-Tribromophenol	100%		19-152%
4165-60-0	Nitrobenzene-d5	82%		26-134%
321-60-8	2-Fluorobiphenyl	82%		39-124%
1718-51-0	Terphenyl-d14	69%		36-134%

(a) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-156(7.5-9.5)
Lab Sample ID: JC87535-4
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 05/03/19
Date Received: 05/03/19
Percent Solids: 74.3

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	8660 J	68	11	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [5]
Antimony [a]	2.2 J	5.4	1.1	mg/kg	2	05/08/19	05/09/19	ND	SW846 6010D [3]	SW846 3050B [5]
Arsenic	15.9	2.7	0.38	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [5]
Barium	93.0	27	2.6	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [5]
Beryllium	1.4	0.27	0.11	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [5]
Cadmium	0.11 J	0.68	0.095	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [5]
Calcium	2170	680	60	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [5]
Chromium	25.1	1.4	0.50	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [5]
Cobalt	8.3	6.8	0.38	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [5]
Copper [a]	97.6	6.8	2.3	mg/kg	2	05/08/19	05/09/19	ND	SW846 6010D [3]	SW846 3050B [5]
Iron [a]	50400	140	52	mg/kg	2	05/08/19	05/09/19	ND	SW846 6010D [3]	SW846 3050B [5]
Lead [a]	150 J	5.4	1.1	mg/kg	2	05/08/19	05/09/19	ND	SW846 6010D [3]	SW846 3050B [5]
Magnesium	1660	680	19	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [5]
Manganese [a]	265	4.1	1.1	mg/kg	2	05/08/19	05/09/19	ND	SW846 6010D [3]	SW846 3050B [5]
Mercury	0.83	0.041	0.018	mg/kg	1	05/07/19	05/07/19	LL	SW846 7471B [1]	SW846 7471B [4]
Nickel	17.8	5.4	0.48	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [5]
Potassium	895 J	1400	43	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [5]
Selenium [a]	4.1 J	5.4	1.8	mg/kg	2	05/08/19	05/09/19	ND	SW846 6010D [3]	SW846 3050B [5]
Silver [a]	0.60 J	1.4	0.46	mg/kg	2	05/08/19	05/09/19	ND	SW846 6010D [3]	SW846 3050B [5]
Sodium	126 J	1400	110	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [5]
Thallium [a]	1.6 U	2.7	1.6	mg/kg	2	05/08/19	05/09/19	ND	SW846 6010D [3]	SW846 3050B [5]
Vanadium	72.7	6.8	0.26	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [5]
Zinc	124 J	6.8	3.1	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA46664
(2) Instrument QC Batch: MA46680
(3) Instrument QC Batch: MA46687
(4) Prep QC Batch: MP14859
(5) Prep QC Batch: MP14865

(a) Elevated detection limit due to dilution required for high interfering element.

RL = Reporting Limit
MDL = Method Detection Limit
U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	S-156(7.5-9.5)		
Lab Sample ID:	JC87535-4	**Date Sampled:**	05/03/19
Matrix:	SO - Soil	**Date Received:**	05/03/19
		Percent Solids:	74.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	0.16 U J	0.31	0.16	mg/kg	1	05/10/19 18:10	KI	SW846 9012B/LACHAT
Solids, Percent	74.3			%	1	05/13/19 15:15	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

SGS North America Inc.

Report of Analysis

Client Sample ID: S-156(14-16)
Lab Sample ID: JC87535-5
Matrix: SO - Soil
Method: SW846 8260C
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 05/03/19
Date Received: 05/03/19
Percent Solids: 70.4

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1C164513.D	1	05/13/19 19:48	PS	n/a	n/a	V1C7218
Run #2							

	Initial Weight
Run #1	4.5 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	114	16	6.3	ug/kg	J
71-43-2	Benzene	ND	0.79	0.72	ug/kg	
74-97-5	Bromochloromethane	ND	7.9	0.88	ug/kg	
75-27-4	Bromodichloromethane	ND	3.2	0.70	ug/kg	
75-25-2	Bromoform	ND	7.9	0.91	ug/kg	
74-83-9	Bromomethane	ND	7.9	1.6	ug/kg	
78-93-3	2-Butanone (MEK)	28.7	16	5.9	ug/kg	
75-15-0	Carbon disulfide	ND	3.2	1.5	ug/kg	
56-23-5	Carbon tetrachloride	ND	3.2	0.98	ug/kg	
108-90-7	Chlorobenzene	ND	3.2	0.72	ug/kg	
75-00-3	Chloroethane	ND	7.9	0.93	ug/kg	
67-66-3	Chloroform	ND	3.2	0.77	ug/kg	
74-87-3	Chloromethane	ND	7.9	3.1	ug/kg	
110-82-7	Cyclohexane	ND	3.2	1.0	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	3.2	1.3	ug/kg	
124-48-1	Dibromochloromethane	ND	3.2	0.88	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.6	0.66	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.6	0.86	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.6	0.78	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.6	0.78	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	7.9	1.1	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.6	0.78	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.6	0.74	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.6	1.0	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.6	1.3	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.6	0.96	ug/kg	
78-87-5	1,2-Dichloropropane	ND	3.2	0.75	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	3.2	0.75	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	3.2	0.72	ug/kg	
100-41-4	Ethylbenzene	ND	1.6	0.87	ug/kg	
76-13-1	Freon 113	ND	7.9	1.6	ug/kg	
591-78-6	2-Hexanone	ND	7.9	3.3	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-156(14-16)
Lab Sample ID: JC87535-5
Matrix: SO - Soil
Method: SW846 8260C
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 05/03/19
Date Received: 05/03/19
Percent Solids: 70.4

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	3.2	1.1	ug/kg	
79-20-9	Methyl Acetate	ND	7.9	2.2	ug/kg	
108-87-2	Methylcyclohexane	ND	3.2	1.4	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.6	0.74	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	7.9	3.6	ug/kg	
75-09-2	Methylene chloride	1.8	7.9	1.6	ug/kg	J
100-42-5	Styrene	ND	3.2	0.91	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	3.2	0.95	ug/kg	
127-18-4	Tetrachloroethene	ND	3.2	0.92	ug/kg	
108-88-3	Toluene	ND	1.6	0.83	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	7.9	3.0	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	7.9	2.4	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	3.2	0.76	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	3.2	0.87	ug/kg	
79-01-6	Trichloroethene	ND	1.6	1.2	ug/kg	
75-69-4	Trichlorofluoromethane	ND	7.9	1.1	ug/kg	
75-01-4	Vinyl chloride	ND	3.2	0.76	ug/kg	
	m,p-Xylene	ND	1.6	1.4	ug/kg	
95-47-6	o-Xylene	ND	1.6	0.92	ug/kg	
1330-20-7	Xylene (total)	ND	1.6	0.92	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	110%		75-127%
17060-07-0	1,2-Dichloroethane-D4	94%		75-130%
2037-26-5	Toluene-D8	98%		80-120%
460-00-4	4-Bromofluorobenzene	94%		79-127%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID: S-156(14-16)
Lab Sample ID: JC87535-5
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 05/03/19
Date Received: 05/03/19
Percent Solids: 70.4

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5P59694.D	1	05/16/19 16:51	CC	05/12/19 14:30	OP20269	E5P2816
Run #2							

	Initial Weight	Final Volume
Run #1	30.4 g	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	93	23	ug/kg	
59-50-7	4-Chloro-3-methyl phenol [a]	ND	230	29	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	230	40	ug/kg	
105-67-9	2,4-Dimethylphenol [a]	ND	230	83	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	230	180	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	230	50	ug/kg	
95-48-7	2-Methylphenol	ND	93	30	ug/kg	
	3&4-Methylphenol	ND	93	38	ug/kg	
88-75-5	2-Nitrophenol	ND	230	31	ug/kg	
100-02-7	4-Nitrophenol [a]	ND	470	120	ug/kg	
87-86-5	Pentachlorophenol	ND	190	44	ug/kg	
108-95-2	Phenol	ND	93	24	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	230	31	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	230	35	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	230	28	ug/kg	
83-32-9	Acenaphthene	ND	47	16	ug/kg	
208-96-8	Acenaphthylene	ND	47	24	ug/kg	
98-86-2	Acetophenone	ND	230	10	ug/kg	
120-12-7	Anthracene	ND	47	29	ug/kg	
1912-24-9	Atrazine	ND	93	20	ug/kg	
56-55-3	Benzo(a)anthracene	26.3	47	13	ug/kg	J
50-32-8	Benzo(a)pyrene	22.5	47	21	ug/kg	J
205-99-2	Benzo(b)fluoranthene	29.6	47	21	ug/kg	J
191-24-2	Benzo(g,h,i)perylene	ND	47	23	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	47	22	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	93	18	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	93	11	ug/kg	
92-52-4	1,1'-Biphenyl	7.7	93	6.4	ug/kg	J
100-52-7	Benzaldehyde	20.8	230	12	ug/kg	J
91-58-7	2-Chloronaphthalene	ND	93	11	ug/kg	
106-47-8	4-Chloroaniline	ND	230	17	ug/kg	
86-74-8	Carbazole	8.3	93	6.8	ug/kg	J

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-156(14-16)
Lab Sample ID: JC87535-5
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 05/03/19
Date Received: 05/03/19
Percent Solids: 70.4

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam [a]	ND	93	18	ug/kg	
218-01-9	Chrysene	25.2	47	15	ug/kg	J
111-91-1	bis(2-Chloroethoxy)methane	ND	93	10	ug/kg	
111-44-4	bis(2-Chloroethyl)ether [a]	ND	93	20	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane) [a]	ND	93	17	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	93	15	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	47	14	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	47	23	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	93	39	ug/kg	
123-91-1	1,4-Dioxane	ND	47	31	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	47	21	ug/kg	
132-64-9	Dibenzofuran	ND	93	19	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	93	7.6	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	93	12	ug/kg	
84-66-2	Diethyl phthalate	ND	93	10	ug/kg	
131-11-3	Dimethyl phthalate	ND	93	8.3	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	93	11	ug/kg	
206-44-0	Fluoranthene	59.7	47	21	ug/kg	
86-73-7	Fluorene	21.9	47	21	ug/kg	J
118-74-1	Hexachlorobenzene	ND	93	12	ug/kg	
87-68-3	Hexachlorobutadiene	ND	47	19	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	470	19	ug/kg	
67-72-1	Hexachloroethane	ND	230	23	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	47	22	ug/kg	
78-59-1	Isophorone [a]	ND	93	10	ug/kg	
91-57-6	2-Methylnaphthalene	14.4	47	11	ug/kg	J
88-74-4	2-Nitroaniline	ND	230	11	ug/kg	
99-09-2	3-Nitroaniline	ND	230	12	ug/kg	
100-01-6	4-Nitroaniline	ND	230	12	ug/kg	
91-20-3	Naphthalene	77.8	47	13	ug/kg	
98-95-3	Nitrobenzene [a]	ND	93	18	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine [a]	ND	93	14	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	230	17	ug/kg	
85-01-8	Phenanthrene	65.2	47	16	ug/kg	
129-00-0	Pyrene	43.4	47	15	ug/kg	J
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	230	12	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	71%		23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-156(14-16)		
Lab Sample ID:	JC87535-5	**Date Sampled:**	05/03/19
Matrix:	SO - Soil	**Date Received:**	05/03/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	70.4
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	78%		27-114%
118-79-6	2,4,6-Tribromophenol	73%		19-152%
4165-60-0	Nitrobenzene-d5	95%		26-134%
321-60-8	2-Fluorobiphenyl	81%		39-124%
1718-51-0	Terphenyl-d14	77%		36-134%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-156(14-16)
Lab Sample ID: JC87535-5
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 05/03/19
Date Received: 05/03/19
Percent Solids: 70.4

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	21800 J	72	12	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Antimony	0.59 U J	2.9	0.59	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Arsenic	7.4	2.9	0.41	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Barium	183	29	2.8	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Beryllium	1.1	0.29	0.12	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cadmium	0.28 J	0.72	0.10	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Calcium	2800	720	64	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Chromium	42.7	1.4	0.54	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cobalt	10.9	7.2	0.41	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Copper	22.1	3.6	1.2	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Iron	25700	72	28	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Lead	80.3 J	2.9	0.59	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Magnesium	5160	720	20	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Manganese	402	2.2	0.59	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Mercury	0.11	0.045	0.020	mg/kg	1	05/07/19	05/07/19	LL	SW846 7471B [1]	SW846 7471B [3]
Nickel	26.3	5.8	0.51	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Potassium	1870	1400	46	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Selenium	0.94 U	2.9	0.94	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Silver	0.52 J	0.72	0.25	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Sodium	228 J	1400	110	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Thallium	0.84 U	1.4	0.84	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Vanadium	41.9	7.2	0.28	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Zinc	132 J	7.2	3.3	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA46664
(2) Instrument QC Batch: MA46680
(3) Prep QC Batch: MP14859
(4) Prep QC Batch: MP14865

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: S-156(14-16)
Lab Sample ID: JC87535-5
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 05/03/19
Date Received: 05/03/19
Percent Solids: 70.4

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	0.15 U J	0.30	0.15	mg/kg	1	05/10/19 18:19	KI	SW846 9012B/LACHAT
Solids, Percent	70.4			%	1	05/13/19 15:15	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

SGS North America Inc.

Report of Analysis

Client Sample ID:	SO-DUP-0503		
Lab Sample ID:	JC87535-6	**Date Sampled:**	05/03/19
Matrix:	SO - Soil	**Date Received:**	05/03/19
Method:	SW846 8260C	**Percent Solids:**	66.4
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Y185123.D	1	05/11/19 15:08	PS	n/a	n/a	VY8033
Run #2							

	Initial Weight
Run #1	3.8 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	229	20	7.9	ug/kg	J
71-43-2	Benzene	ND	0.99	0.90	ug/kg	
74-97-5	Bromochloromethane	ND	9.9	1.1	ug/kg	
75-27-4	Bromodichloromethane	ND	4.0	0.88	ug/kg	
75-25-2	Bromoform	ND	9.9	1.1	ug/kg	
74-83-9	Bromomethane	ND	9.9	2.0	ug/kg	
78-93-3	2-Butanone (MEK)	38.7	20	7.4	ug/kg	
75-15-0	Carbon disulfide	ND	4.0	1.8	ug/kg	
56-23-5	Carbon tetrachloride	ND	4.0	1.2	ug/kg	
108-90-7	Chlorobenzene	ND	4.0	0.91	ug/kg	
75-00-3	Chloroethane	ND	9.9	1.2	ug/kg	
67-66-3	Chloroform	ND	4.0	0.97	ug/kg	
74-87-3	Chloromethane [a]	ND	9.9	3.9	ug/kg	UJ
110-82-7	Cyclohexane	ND	4.0	1.3	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	4.0	1.7	ug/kg	
124-48-1	Dibromochloromethane	ND	4.0	1.1	ug/kg	
106-93-4	1,2-Dibromoethane	ND	2.0	0.83	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	2.0	1.1	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	2.0	0.98	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	2.0	0.98	ug/kg	
75-71-8	Dichlorodifluoromethane [a]	ND	9.9	1.4	ug/kg	UJ
75-34-3	1,1-Dichloroethane	ND	2.0	0.98	ug/kg	
107-06-2	1,2-Dichloroethane	ND	2.0	0.93	ug/kg	
75-35-4	1,1-Dichloroethene	ND	2.0	1.3	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	2.0	1.7	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	2.0	1.2	ug/kg	
78-87-5	1,2-Dichloropropane	ND	4.0	0.94	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	4.0	0.94	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	4.0	0.91	ug/kg	
100-41-4	Ethylbenzene	ND	2.0	1.1	ug/kg	
76-13-1	Freon 113	ND	9.9	2.0	ug/kg	
591-78-6	2-Hexanone	ND	9.9	4.2	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SO-DUP-0503		
Lab Sample ID:	JC87535-6	**Date Sampled:**	05/03/19
Matrix:	SO - Soil	**Date Received:**	05/03/19
Method:	SW846 8260C	**Percent Solids:**	66.4
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	4.0	1.4	ug/kg	
79-20-9	Methyl Acetate	6.2	9.9	2.8	ug/kg	J
108-87-2	Methylcyclohexane	ND	4.0	1.7	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	2.0	0.93	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	9.9	4.5	ug/kg	
75-09-2	Methylene chloride	ND	9.9	2.0	ug/kg	
100-42-5	Styrene	ND	4.0	1.1	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	4.0	1.2	ug/kg	
127-18-4	Tetrachloroethene	ND	4.0	1.1	ug/kg	
108-88-3	Toluene	ND	2.0	1.0	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	9.9	3.8	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	9.9	3.0	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	4.0	0.96	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	4.0	1.1	ug/kg	
79-01-6	Trichloroethene	ND	2.0	1.5	ug/kg	
75-69-4	Trichlorofluoromethane	ND	9.9	1.4	ug/kg	
75-01-4	Vinyl chloride [a]	ND	4.0	0.95	ug/kg	UJ
	m,p-Xylene	ND	2.0	1.8	ug/kg	
95-47-6	o-Xylene	ND	2.0	1.2	ug/kg	
1330-20-7	Xylene (total)	ND	2.0	1.2	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%		75-127%
17060-07-0	1,2-Dichloroethane-D4	91%		75-130%
2037-26-5	Toluene-D8	98%		80-120%
460-00-4	4-Bromofluorobenzene	96%		79-127%

(a) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	SO-DUP-0503		
Lab Sample ID:	JC87535-6	**Date Sampled:**	05/03/19
Matrix:	SO - Soil	**Date Received:**	05/03/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	66.4
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5P59690.D	1	05/16/19 15:21	CC	05/12/19 14:30	OP20269	E5P2816
Run #2							

	Initial Weight	Final Volume
Run #1	30.6 g	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	98	24	ug/kg	
59-50-7	4-Chloro-3-methyl phenol [a]	ND	250	30	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	250	42	ug/kg	
105-67-9	2,4-Dimethylphenol [a]	ND	250	88	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	250	190	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	250	53	ug/kg	
95-48-7	2-Methylphenol	ND	98	31	ug/kg	
	3&4-Methylphenol	ND	98	40	ug/kg	
88-75-5	2-Nitrophenol	ND	250	33	ug/kg	
100-02-7	4-Nitrophenol [a]	ND	490	130	ug/kg	
87-86-5	Pentachlorophenol	ND	200	46	ug/kg	
108-95-2	Phenol	ND	98	26	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	250	33	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	250	37	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	250	29	ug/kg	
83-32-9	Acenaphthene	ND	49	17	ug/kg	
208-96-8	Acenaphthylene	ND	49	25	ug/kg	
98-86-2	Acetophenone	ND	250	11	ug/kg	
120-12-7	Anthracene	ND	49	30	ug/kg	
1912-24-9	Atrazine	ND	98	21	ug/kg	
56-55-3	Benzo(a)anthracene	15.3	49	14	ug/kg	J
50-32-8	Benzo(a)pyrene	ND	49	22	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	49	22	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	49	25	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	49	23	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	98	19	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	98	12	ug/kg	
92-52-4	1,1'-Biphenyl	ND	98	6.7	ug/kg	
100-52-7	Benzaldehyde	ND	250	12	ug/kg	
91-58-7	2-Chloronaphthalene	ND	98	12	ug/kg	
106-47-8	4-Chloroaniline	ND	250	18	ug/kg	
86-74-8	Carbazole	ND	98	7.1	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: SO-DUP-0503
Lab Sample ID: JC87535-6
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 05/03/19
Date Received: 05/03/19
Percent Solids: 66.4

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam [a]	ND	98	19	ug/kg	
218-01-9	Chrysene	ND	49	16	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	98	11	ug/kg	
111-44-4	bis(2-Chloroethyl)ether [a]	ND	98	21	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane) [a]	ND	98	18	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	98	16	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	49	15	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	49	25	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	98	41	ug/kg	
123-91-1	1,4-Dioxane	ND	49	33	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	49	22	ug/kg	
132-64-9	Dibenzofuran	ND	98	20	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	98	8.0	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	98	12	ug/kg	
84-66-2	Diethyl phthalate	ND	98	10	ug/kg	
131-11-3	Dimethyl phthalate	ND	98	8.8	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	98	12	ug/kg	
206-44-0	Fluoranthene	28.6	49	22	ug/kg	J
86-73-7	Fluorene	ND	49	23	ug/kg	
118-74-1	Hexachlorobenzene	ND	98	12	ug/kg	
87-68-3	Hexachlorobutadiene	ND	49	20	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	490	20	ug/kg	
67-72-1	Hexachloroethane	ND	250	24	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	49	23	ug/kg	
78-59-1	Isophorone [a]	ND	98	11	ug/kg	
91-57-6	2-Methylnaphthalene	15.5	49	11	ug/kg	J
88-74-4	2-Nitroaniline	ND	250	12	ug/kg	
99-09-2	3-Nitroaniline	ND	250	12	ug/kg	
100-01-6	4-Nitroaniline	ND	250	13	ug/kg	
91-20-3	Naphthalene	115	49	14	ug/kg	
98-95-3	Nitrobenzene [a]	ND	98	19	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine [a]	ND	98	14	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	250	18	ug/kg	
85-01-8	Phenanthrene	43.2	49	17	ug/kg	J
129-00-0	Pyrene	22.0	49	16	ug/kg	J
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	250	13	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	77%		23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SO-DUP-0503		
Lab Sample ID:	JC87535-6	**Date Sampled:**	05/03/19
Matrix:	SO - Soil	**Date Received:**	05/03/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	66.4
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	85%		27-114%
118-79-6	2,4,6-Tribromophenol	76%		19-152%
4165-60-0	Nitrobenzene-d5	105%		26-134%
321-60-8	2-Fluorobiphenyl	87%		39-124%
1718-51-0	Terphenyl-d14	80%		36-134%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: SO-DUP-0503
Lab Sample ID: JC87535-6
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 05/03/19
Date Received: 05/03/19
Percent Solids: 66.4

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	24700 J	74	12	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Antimony	0.61 U J	3.0	0.61	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Arsenic	4.5	3.0	0.41	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Barium	162	30	2.8	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Beryllium	1.2	0.30	0.12	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cadmium	0.13 J	0.74	0.10	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Calcium	2730	740	65	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Chromium	47.5	1.5	0.55	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cobalt	12.1	7.4	0.41	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Copper	10.1	3.7	1.2	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Iron	25400	74	28	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Lead	14.8 J	3.0	0.61	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Magnesium	5840	740	20	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Manganese	325	2.2	0.61	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Mercury	0.019 U	0.043	0.019	mg/kg	1	05/07/19	05/07/19	LL	SW846 7471B [1]	SW846 7471B [3]
Nickel	29.6	5.9	0.52	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Potassium	2170	1500	47	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Selenium	0.96 U	3.0	0.96	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Silver	0.49 J	0.74	0.25	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Sodium	248 J	1500	110	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Thallium	0.86 U	1.5	0.86	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Vanadium	48.1	7.4	0.28	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Zinc	72.1 J	7.4	3.4	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA46664
(2) Instrument QC Batch: MA46680
(3) Prep QC Batch: MP14859
(4) Prep QC Batch: MP14865

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: SO-DUP-0503
Lab Sample ID: JC87535-6
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 05/03/19
Date Received: 05/03/19
Percent Solids: 66.4

General Chemistry

Analyte	Result		RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	0.17 U	J	0.33	0.17	mg/kg	1	05/10/19 18:12	KI	SW846 9012B/LACHAT
Solids, Percent	66.4				%	1	05/13/19 15:15	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

SGS North America Inc.

Report of Analysis

Client Sample ID:	S-161(5-7)		
Lab Sample ID:	JC87535-7	**Date Sampled:**	05/03/19
Matrix:	SO - Soil	**Date Received:**	05/03/19
Method:	SW846 8260C	**Percent Solids:**	90.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	2C167664.D	1	05/15/19 18:16	TDN	n/a	n/a	V2C7520
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.7 g	10.0 ml	1.0 ul
Run #2			

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	100000	41000	ug/kg	
71-43-2	Benzene	103000	5100	4700	ug/kg	
74-97-5	Bromochloromethane	ND	51000	5800	ug/kg	
75-27-4	Bromodichloromethane	ND	21000	4500	ug/kg	
75-25-2	Bromoform	ND	51000	5900	ug/kg	
74-83-9	Bromomethane [b]	ND	51000	10000	ug/kg	UJ
78-93-3	2-Butanone (MEK)	ND	100000	38000	ug/kg	
75-15-0	Carbon disulfide	ND	21000	9500	ug/kg	
56-23-5	Carbon tetrachloride	ND	21000	6300	ug/kg	
108-90-7	Chlorobenzene	ND	21000	4700	ug/kg	
75-00-3	Chloroethane	ND	51000	6100	ug/kg	
67-66-3	Chloroform	ND	21000	5000	ug/kg	
74-87-3	Chloromethane [b]	ND	51000	20000	ug/kg	UJ
110-82-7	Cyclohexane	ND	21000	6700	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	21000	8600	ug/kg	
124-48-1	Dibromochloromethane	ND	21000	5800	ug/kg	
106-93-4	1,2-Dibromoethane	ND	10000	4300	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	10000	5600	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	10000	5100	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	10000	5100	ug/kg	
75-71-8	Dichlorodifluoromethane [b]	ND	51000	7500	ug/kg	UJ
75-34-3	1,1-Dichloroethane	ND	10000	5100	ug/kg	
107-06-2	1,2-Dichloroethane	ND	10000	4800	ug/kg	
75-35-4	1,1-Dichloroethene	ND	10000	6700	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	10000	8600	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	10000	6300	ug/kg	
78-87-5	1,2-Dichloropropane	ND	21000	4900	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	21000	4900	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	21000	4700	ug/kg	
100-41-4	Ethylbenzene	6520	10000	5700	ug/kg	J
76-13-1	Freon 113	ND	51000	10000	ug/kg	
591-78-6	2-Hexanone	ND	51000	22000	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-161(5-7)		
Lab Sample ID:	JC87535-7	**Date Sampled:**	05/03/19
Matrix:	SO - Soil	**Date Received:**	05/03/19
Method:	SW846 8260C	**Percent Solids:**	90.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	21000	7200	ug/kg	
79-20-9	Methyl Acetate	ND	51000	14000	ug/kg	
108-87-2	Methylcyclohexane	ND	21000	9000	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	10000	4800	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	51000	23000	ug/kg	
75-09-2	Methylene chloride	ND	51000	10000	ug/kg	
100-42-5	Styrene	11000	21000	5900	ug/kg	J
79-34-5	1,1,2,2-Tetrachloroethane	ND	21000	6200	ug/kg	
127-18-4	Tetrachloroethene	ND	21000	6000	ug/kg	
108-88-3	Toluene	40800	10000	5400	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	51000	20000	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	51000	16000	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	21000	5000	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	21000	5700	ug/kg	
79-01-6	Trichloroethene	ND	10000	7800	ug/kg	
75-69-4	Trichlorofluoromethane	ND	51000	7000	ug/kg	
75-01-4	Vinyl chloride	ND	21000	4900	ug/kg	
	m,p-Xylene	59900	10000	9200	ug/kg	
95-47-6	o-Xylene	19800	10000	6000	ug/kg	
1330-20-7	Xylene (total)	79700	10000	6000	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	97%		75-127%
17060-07-0	1,2-Dichloroethane-D4	99%		75-130%
2037-26-5	Toluene-D8	100%		80-120%
460-00-4	4-Bromofluorobenzene	100%		79-127%

(a) Diluted due to high concentration of non-target compound.
(b) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	S-161(5-7)		
Lab Sample ID:	JC87535-7	**Date Sampled:**	05/03/19
Matrix:	SO - Soil	**Date Received:**	05/03/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	90.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	5P59885.D	5	05/21/19 12:07	CS	05/12/19 14:30	OP20269	E5P2823
Run #2	5P59749.D	50	05/17/19 19:00	CC	05/12/19 14:30	OP20269	E5P2818
Run #3	5P59747.D	500	05/17/19 18:15	CC	05/12/19 14:30	OP20269	E5P2818

	Initial Weight	Final Volume
Run #1	30.6 g	1.0 ml
Run #2	30.6 g	1.0 ml
Run #3	30.6 g	1.0 ml

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	360	89	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	910	110	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	910	150	ug/kg	
105-67-9	2,4-Dimethylphenol [b]	4430	910	320	ug/kg	J
51-28-5	2,4-Dinitrophenol	ND	910	680	ug/kg	
534-52-1	4,6-Dinitro-o-cresol [c]	ND	910	190	ug/kg	UJ
95-48-7	2-Methylphenol	1480	360	120	ug/kg	
	3&4-Methylphenol	1330	360	150	ug/kg	
88-75-5	2-Nitrophenol [c]	ND	910	120	ug/kg	UJ
100-02-7	4-Nitrophenol	ND	1800	480	ug/kg	
87-86-5	Pentachlorophenol	ND	720	170	ug/kg	
108-95-2	Phenol	455	360	95	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	910	120	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	910	140	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	910	110	ug/kg	
83-32-9	Acenaphthene	48200 [d]	1800	620	ug/kg	D
208-96-8	Acenaphthylene	286000 [e]	18000	9200	ug/kg	D
98-86-2	Acetophenone	ND	910	39	ug/kg	
120-12-7	Anthracene	178000 [d]	1800	1100	ug/kg	D
1912-24-9	Atrazine	ND	360	78	ug/kg	
56-55-3	Benzo(a)anthracene	168000 [d]	1800	510	ug/kg	D
50-32-8	Benzo(a)pyrene	148000 [d]	1800	820	ug/kg	
205-99-2	Benzo(b)fluoranthene	171000 [d]	1800	800	ug/kg	
191-24-2	Benzo(g,h,i)perylene	83600 [d]	1800	910	ug/kg	
207-08-9	Benzo(k)fluoranthene	59900 [d]	1800	850	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	360	70	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	360	44	ug/kg	
92-52-4	1,1'-Biphenyl	51900 [d]	3600	250	ug/kg	D
100-52-7	Benzaldehyde	ND	910	45	ug/kg	
91-58-7	2-Chloronaphthalene [c]	ND	360	43	ug/kg	UJ

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-161(5-7)
Lab Sample ID: JC87535-7
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 05/03/19
Date Received: 05/03/19
Percent Solids: 90.2

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
106-47-8	4-Chloroaniline	ND	910	65	ug/kg	
86-74-8	Carbazole	111000 [d]	3600	260	ug/kg	D
105-60-2	Caprolactam	ND	360	72	ug/kg	
218-01-9	Chrysene	133000 [d]	1800	570	ug/kg	D
111-91-1	bis(2-Chloroethoxy)methane	ND	360	39	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	360	78	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane) [f]	ND	360	65	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	360	59	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	180	56	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	180	91	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	360	150	ug/kg	
123-91-1	1,4-Dioxane	ND	180	120	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	24700 [d]	1800	800	ug/kg	D
132-64-9	Dibenzofuran	218000 [e]	36000	7400	ug/kg	D
84-74-2	Di-n-butyl phthalate	ND	360	30	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	360	45	ug/kg	
84-66-2	Diethyl phthalate	ND	360	39	ug/kg	
131-11-3	Dimethyl phthalate	ND	360	32	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	360	42	ug/kg	
206-44-0	Fluoranthene	544000 [e]	18000	8100	ug/kg	D
86-73-7	Fluorene	334000 [e]	18000	8300	ug/kg	D
118-74-1	Hexachlorobenzene	ND	360	46	ug/kg	
87-68-3	Hexachlorobutadiene	ND	180	73	ug/kg	
77-47-4	Hexachlorocyclopentadiene [c]	ND	1800	72	ug/kg	UJ
67-72-1	Hexachloroethane	ND	910	90	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene [b]	87900 [d]	1800	850	ug/kg	DJ
78-59-1	Isophorone	ND	360	39	ug/kg	
91-57-6	2-Methylnaphthalene	155000 [d]	1800	410	ug/kg	D
88-74-4	2-Nitroaniline	ND	910	43	ug/kg	
99-09-2	3-Nitroaniline	ND	910	45	ug/kg	
100-01-6	4-Nitroaniline	ND	910	47	ug/kg	
91-20-3	Naphthalene	854000 [e]	18000	5100	ug/kg	D
98-95-3	Nitrobenzene	ND	360	70	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	360	52	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	910	66	ug/kg	
85-01-8	Phenanthrene	860000 [e]	18000	6100	ug/kg	D
129-00-0	Pyrene	348000 [e]	18000	5800	ug/kg	D
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	910	46	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-161(5-7)		
Lab Sample ID:	JC87535-7	**Date Sampled:**	05/03/19
Matrix:	SO - Soil	**Date Received:**	05/03/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	90.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Run# 3	Limits
367-12-4	2-Fluorophenol	73%	66%	0% g	23-115%
4165-62-2	Phenol-d5	85%	66%	0% g	27-114%
118-79-6	2,4,6-Tribromophenol	90%	68%	0% g	19-152%
4165-60-0	Nitrobenzene-d5	132%	120%	0% g	26-134%
321-60-8	2-Fluorobiphenyl	83%	108%	0% g	39-124%
1718-51-0	Terphenyl-d14	72%	99%	0% g	36-134%

(a) Dilution required due to matrix interference.
(b) Associated CCV outside of control limits high.
(c) Associated CCV outside of control limits low.
(d) Result is from Run# 2
(e) Result is from Run# 3
(f) Associated CCV outside of control limits high, sample was ND.
(g) Outside control limits due to dilution.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-161(5-7)
Lab Sample ID: JC87535-7
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 05/03/19
Date Received: 05/03/19
Percent Solids: 90.2

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	9750 J	55	8.8	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Antimony	0.45 U J	2.2	0.45	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Arsenic	5.8	2.2	0.31	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Barium	37.3	22	2.1	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Beryllium	0.56	0.22	0.088	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cadmium	0.11 J	0.55	0.077	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Calcium	917	550	48	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Chromium	21.3	1.1	0.41	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cobalt	7.0	5.5	0.31	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Copper	26.6	2.7	0.92	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Iron	20200	55	21	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Lead	38.0 J	2.2	0.45	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Magnesium	2170	550	15	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Manganese	138	1.6	0.45	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Mercury	0.032 J	0.035	0.016	mg/kg	1	05/07/19	05/07/19	LL	SW846 7471B [1]	SW846 7471B [3]
Nickel	16.4	4.4	0.38	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Potassium	1180	1100	35	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Selenium	0.71 U	2.2	0.71	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Silver	0.32 J	0.55	0.19	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Sodium	95.1 J	1100	85	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Thallium	0.64 U	1.1	0.64	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Vanadium	16.0	5.5	0.21	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Zinc	77.4 J	5.5	2.5	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA46664
(2) Instrument QC Batch: MA46680
(3) Prep QC Batch: MP14859
(4) Prep QC Batch: MP14865

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	S-161(5-7)		
Lab Sample ID:	JC87535-7	**Date Sampled:**	05/03/19
Matrix:	SO - Soil	**Date Received:**	05/03/19
		Percent Solids:	90.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	5.1 J	0.24	0.12	mg/kg	1	05/10/19 18:14	KI	SW846 9012B/LACHAT
Solids, Percent	90.2			%	1	05/09/19 08:36	RC	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

SGS North America Inc.

Report of Analysis

Client Sample ID:	S-161(10-12)		
Lab Sample ID:	JC87535-8	**Date Sampled:**	05/03/19
Matrix:	SO - Soil	**Date Received:**	05/03/19
Method:	SW846 8260C	**Percent Solids:**	78.6
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Y185119.D	1	05/11/19 13:14	PS	n/a	n/a	VY8033
Run #2							

	Initial Weight
Run #1	5.4 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	57.0	12	4.7	ug/kg	
71-43-2	Benzene	10.2	0.59	0.54	ug/kg	
74-97-5	Bromochloromethane	ND	5.9	0.66	ug/kg	
75-27-4	Bromodichloromethane	ND	2.4	0.52	ug/kg	
75-25-2	Bromoform	ND	5.9	0.68	ug/kg	
74-83-9	Bromomethane	ND	5.9	1.2	ug/kg	
78-93-3	2-Butanone (MEK)	ND	12	4.4	ug/kg	
75-15-0	Carbon disulfide	2.3	2.4	1.1	ug/kg	J
56-23-5	Carbon tetrachloride	ND	2.4	0.73	ug/kg	
108-90-7	Chlorobenzene	ND	2.4	0.54	ug/kg	
75-00-3	Chloroethane	ND	5.9	0.70	ug/kg	
67-66-3	Chloroform	ND	2.4	0.58	ug/kg	
74-87-3	Chloromethane [a]	ND	5.9	2.3	ug/kg	UJ
110-82-7	Cyclohexane	ND	2.4	0.77	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.4	0.98	ug/kg	
124-48-1	Dibromochloromethane	ND	2.4	0.66	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.2	0.50	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.2	0.64	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.2	0.58	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.2	0.58	ug/kg	
75-71-8	Dichlorodifluoromethane [a]	ND	5.9	0.86	ug/kg	UJ
75-34-3	1,1-Dichloroethane	ND	1.2	0.58	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.2	0.55	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.2	0.77	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.2	0.99	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.2	0.72	ug/kg	
78-87-5	1,2-Dichloropropane	ND	2.4	0.56	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	2.4	0.56	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2.4	0.54	ug/kg	
100-41-4	Ethylbenzene	ND	1.2	0.65	ug/kg	
76-13-1	Freon 113	ND	5.9	1.2	ug/kg	
591-78-6	2-Hexanone	ND	5.9	2.5	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-161(10-12)		
Lab Sample ID:	JC87535-8	**Date Sampled:**	05/03/19
Matrix:	SO - Soil	**Date Received:**	05/03/19
Method:	SW846 8260C	**Percent Solids:**	78.6
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	2.4	0.82	ug/kg	
79-20-9	Methyl Acetate	ND	5.9	1.6	ug/kg	
108-87-2	Methylcyclohexane	ND	2.4	1.0	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.2	0.55	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.9	2.7	ug/kg	
75-09-2	Methylene chloride	ND	5.9	1.2	ug/kg	
100-42-5	Styrene	ND	2.4	0.68	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.4	0.71	ug/kg	
127-18-4	Tetrachloroethene	ND	2.4	0.68	ug/kg	
108-88-3	Toluene	0.68	1.2	0.62	ug/kg	J
87-61-6	1,2,3-Trichlorobenzene	ND	5.9	2.3	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	5.9	1.8	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	2.4	0.57	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2.4	0.65	ug/kg	
79-01-6	Trichloroethene	ND	1.2	0.90	ug/kg	
75-69-4	Trichlorofluoromethane	ND	5.9	0.81	ug/kg	
75-01-4	Vinyl chloride [a]	ND	2.4	0.57	ug/kg	UJ
	m,p-Xylene	ND	1.2	1.1	ug/kg	
95-47-6	o-Xylene	ND	1.2	0.69	ug/kg	
1330-20-7	Xylene (total)	ND	1.2	0.69	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	104%		75-127%
17060-07-0	1,2-Dichloroethane-D4	96%		75-130%
2037-26-5	Toluene-D8	97%		80-120%
460-00-4	4-Bromofluorobenzene	97%		79-127%

(a) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID: S-161(10-12)
Lab Sample ID: JC87535-8
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 05/03/19
Date Received: 05/03/19
Percent Solids: 78.6

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2M112002.D	1	05/18/19 11:00	CS	05/12/19 14:30	OP20269	E2M4980
Run #2	2M112031.D	5	05/19/19 06:01	CS	05/12/19 14:30	OP20269	E2M4981

	Initial Weight	Final Volume
Run #1	30.3 g	1.0 ml
Run #2	30.3 g	1.0 ml

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	84	21	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	210	26	ug/kg	
120-83-2	2,4-Dichlorophenol [a]	ND	210	36	ug/kg	
105-67-9	2,4-Dimethylphenol [a]	ND	210	75	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	210	160	ug/kg	
534-52-1	4,6-Dinitro-o-cresol [a]	ND	210	45	ug/kg	
95-48-7	2-Methylphenol	ND	84	27	ug/kg	
	3&4-Methylphenol	ND	84	35	ug/kg	
88-75-5	2-Nitrophenol [a]	ND	210	28	ug/kg	
100-02-7	4-Nitrophenol	ND	420	110	ug/kg	
87-86-5	Pentachlorophenol	ND	170	39	ug/kg	
108-95-2	Phenol	ND	84	22	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol [a]	ND	210	28	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	210	31	ug/kg	
88-06-2	2,4,6-Trichlorophenol [a]	ND	210	25	ug/kg	
83-32-9	Acenaphthene	1650	42	14	ug/kg	
208-96-8	Acenaphthylene	117	42	21	ug/kg	
98-86-2	Acetophenone	ND	210	9.0	ug/kg	
120-12-7	Anthracene	2970	42	26	ug/kg	
1912-24-9	Atrazine	ND	84	18	ug/kg	
56-55-3	Benzo(a)anthracene	981	42	12	ug/kg	
50-32-8	Benzo(a)pyrene	645	42	19	ug/kg	
205-99-2	Benzo(b)fluoranthene	801	42	19	ug/kg	
191-24-2	Benzo(g,h,i)perylene	271	42	21	ug/kg	
207-08-9	Benzo(k)fluoranthene	273	42	20	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	84	16	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	84	10	ug/kg	
92-52-4	1,1'-Biphenyl	47.4	84	5.8	ug/kg	J
100-52-7	Benzaldehyde	ND	210	10	ug/kg	
91-58-7	2-Chloronaphthalene	ND	84	10	ug/kg	
106-47-8	4-Chloroaniline	ND	210	15	ug/kg	
86-74-8	Carbazole	761	84	6.1	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-161(10-12)
Lab Sample ID: JC87535-8
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 05/03/19
Date Received: 05/03/19
Percent Solids: 78.6

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	84	17	ug/kg	
218-01-9	Chrysene	1220	42	13	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	84	9.0	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	84	18	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	84	15	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	84	14	ug/kg	
121-14-2	2,4-Dinitrotoluene [a]	ND	42	13	ug/kg	
606-20-2	2,6-Dinitrotoluene [a]	ND	42	21	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	84	35	ug/kg	
123-91-1	1,4-Dioxane	ND	42	28	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	90.4	42	19	ug/kg	
132-64-9	Dibenzofuran	536	84	17	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	84	6.8	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	84	10	ug/kg	
84-66-2	Diethyl phthalate	ND	84	8.9	ug/kg	
131-11-3	Dimethyl phthalate	ND	84	7.5	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	84	9.8	ug/kg	
206-44-0	Fluoranthene	2880	42	19	ug/kg	
86-73-7	Fluorene	1560	42	19	ug/kg	
118-74-1	Hexachlorobenzene	ND	84	11	ug/kg	
87-68-3	Hexachlorobutadiene	ND	42	17	ug/kg	
77-47-4	Hexachlorocyclopentadiene [a]	ND	420	17	ug/kg	
67-72-1	Hexachloroethane	ND	210	21	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	288	42	20	ug/kg	
78-59-1	Isophorone	ND	84	9.0	ug/kg	
91-57-6	2-Methylnaphthalene	265	42	9.5	ug/kg	
88-74-4	2-Nitroaniline [a]	ND	210	9.9	ug/kg	
99-09-2	3-Nitroaniline [a]	ND	210	10	ug/kg	
100-01-6	4-Nitroaniline	ND	210	11	ug/kg	
91-20-3	Naphthalene	587	42	12	ug/kg	
98-95-3	Nitrobenzene	ND	84	16	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	84	12	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	210	15	ug/kg	
85-01-8	Phenanthrene	5480 [b]	210	71	ug/kg	D
129-00-0	Pyrene	2430	42	13	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	210	11	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	73%	70%	23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-161(10-12)		
Lab Sample ID:	JC87535-8	**Date Sampled:**	05/03/19
Matrix:	SO - Soil	**Date Received:**	05/03/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	78.6
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	73%	71%	27-114%
118-79-6	2,4,6-Tribromophenol	82%	66%	19-152%
4165-60-0	Nitrobenzene-d5	88%	80%	26-134%
321-60-8	2-Fluorobiphenyl	78%	79%	39-124%
1718-51-0	Terphenyl-d14	78%	75%	36-134%

(a) Associated CCV outside of control limits high, sample was ND.
(b) Result is from Run# 2

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-161(10-12)
Lab Sample ID: JC87535-8
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 05/03/19
Date Received: 05/03/19
Percent Solids: 78.6

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	6860 J	65	10	mg/kg	1	05/10/19	05/10/19	ND	SW846 6010D [1]	SW846 3050B [3]
Antimony	0.53 U J	2.6	0.53	mg/kg	1	05/10/19	05/10/19	ND	SW846 6010D [1]	SW846 3050B [3]
Arsenic	11.8	2.6	0.36	mg/kg	1	05/10/19	05/10/19	ND	SW846 6010D [1]	SW846 3050B [3]
Barium	63.0	26	2.5	mg/kg	1	05/10/19	05/10/19	ND	SW846 6010D [1]	SW846 3050B [3]
Beryllium	0.42	0.26	0.10	mg/kg	1	05/10/19	05/10/19	ND	SW846 6010D [1]	SW846 3050B [3]
Cadmium	0.40 J	0.65	0.091	mg/kg	1	05/10/19	05/10/19	ND	SW846 6010D [1]	SW846 3050B [3]
Calcium	1680	650	57	mg/kg	1	05/10/19	05/10/19	ND	SW846 6010D [1]	SW846 3050B [3]
Chromium	40.7	1.3	0.48	mg/kg	1	05/10/19	05/10/19	ND	SW846 6010D [1]	SW846 3050B [3]
Cobalt	7.5	6.5	0.36	mg/kg	1	05/10/19	05/10/19	ND	SW846 6010D [1]	SW846 3050B [3]
Copper	31.3	3.2	1.1	mg/kg	1	05/10/19	05/10/19	ND	SW846 6010D [1]	SW846 3050B [3]
Iron	15600	65	25	mg/kg	1	05/10/19	05/10/19	ND	SW846 6010D [1]	SW846 3050B [3]
Lead	69.3 J	2.6	0.53	mg/kg	1	05/10/19	05/10/19	ND	SW846 6010D [1]	SW846 3050B [3]
Magnesium	2360	650	18	mg/kg	1	05/10/19	05/10/19	ND	SW846 6010D [1]	SW846 3050B [3]
Manganese	379	1.9	0.53	mg/kg	1	05/10/19	05/10/19	ND	SW846 6010D [1]	SW846 3050B [3]
Mercury	0.37	0.037	0.016	mg/kg	1	05/13/19	05/13/19	LL	SW846 7471B [2]	SW846 7471B [4]
Nickel	14.0	5.2	0.45	mg/kg	1	05/10/19	05/10/19	ND	SW846 6010D [1]	SW846 3050B [3]
Potassium	931 J	1300	41	mg/kg	1	05/10/19	05/10/19	ND	SW846 6010D [1]	SW846 3050B [3]
Selenium	0.84 U	2.6	0.84	mg/kg	1	05/10/19	05/10/19	ND	SW846 6010D [1]	SW846 3050B [3]
Silver	0.22 U	0.65	0.22	mg/kg	1	05/10/19	05/10/19	ND	SW846 6010D [1]	SW846 3050B [3]
Sodium	100 U	1300	100	mg/kg	1	05/10/19	05/10/19	ND	SW846 6010D [1]	SW846 3050B [3]
Thallium	0.75 U	1.3	0.75	mg/kg	1	05/10/19	05/10/19	ND	SW846 6010D [1]	SW846 3050B [3]
Vanadium	13.6	6.5	0.25	mg/kg	1	05/10/19	05/10/19	ND	SW846 6010D [1]	SW846 3050B [3]
Zinc	156 J	6.5	3.0	mg/kg	1	05/10/19	05/10/19	ND	SW846 6010D [1]	SW846 3050B [3]

(1) Instrument QC Batch: MA46695
(2) Instrument QC Batch: MA46698
(3) Prep QC Batch: MP14918
(4) Prep QC Batch: MP14998

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: S-161(10-12)
Lab Sample ID: JC87535-8
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 05/03/19
Date Received: 05/03/19
Percent Solids: 78.6

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	0.23 J	0.28	0.14	mg/kg	1	05/10/19 17:56	KI	SW846 9012B/LACHAT
Solids, Percent	78.6			%	1	05/13/19 11:07	RC	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

SGS North America Inc.

Report of Analysis

Client Sample ID:	S-162(5-7)		
Lab Sample ID:	JC87535-9	**Date Sampled:**	05/03/19
Matrix:	SO - Soil	**Date Received:**	05/03/19
Method:	SW846 8260C	**Percent Solids:**	79.1
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Y185125.D	1	05/11/19 16:05	PS	n/a	n/a	VY8033
Run #2							

	Initial Weight
Run #1	5.7 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	16.7	11	4.4	ug/kg	
71-43-2	Benzene	6.2	0.55	0.50	ug/kg	
74-97-5	Bromochloromethane	ND	5.5	0.62	ug/kg	
75-27-4	Bromodichloromethane	ND	2.2	0.49	ug/kg	
75-25-2	Bromoform	ND	5.5	0.64	ug/kg	
74-83-9	Bromomethane	ND	5.5	1.1	ug/kg	
78-93-3	2-Butanone (MEK)	ND	11	4.1	ug/kg	
75-15-0	Carbon disulfide	1.3	2.2	1.0	ug/kg	J
56-23-5	Carbon tetrachloride	ND	2.2	0.69	ug/kg	
108-90-7	Chlorobenzene	ND	2.2	0.51	ug/kg	
75-00-3	Chloroethane	ND	5.5	0.66	ug/kg	
67-66-3	Chloroform	ND	2.2	0.54	ug/kg	
74-87-3	Chloromethane [a]	ND	5.5	2.2	ug/kg	UJ
110-82-7	Cyclohexane	ND	2.2	0.73	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.2	0.93	ug/kg	
124-48-1	Dibromochloromethane	ND	2.2	0.62	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.1	0.47	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.1	0.61	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.1	0.55	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.1	0.55	ug/kg	
75-71-8	Dichlorodifluoromethane [a]	ND	5.5	0.81	ug/kg	UJ
75-34-3	1,1-Dichloroethane	ND	1.1	0.55	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.1	0.52	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.1	0.73	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.1	0.93	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.1	0.68	ug/kg	
78-87-5	1,2-Dichloropropane	ND	2.2	0.52	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	2.2	0.53	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2.2	0.51	ug/kg	
100-41-4	Ethylbenzene	0.83	1.1	0.61	ug/kg	J
76-13-1	Freon 113	ND	5.5	1.1	ug/kg	
591-78-6	2-Hexanone	ND	5.5	2.4	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-162(5-7)
Lab Sample ID: JC87535-9
Matrix: SO - Soil
Method: SW846 8260C
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 05/03/19
Date Received: 05/03/19
Percent Solids: 79.1

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	2.2	0.77	ug/kg	
79-20-9	Methyl Acetate	ND	5.5	1.5	ug/kg	
108-87-2	Methylcyclohexane	ND	2.2	0.97	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.1	0.52	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.5	2.5	ug/kg	
75-09-2	Methylene chloride	ND	5.5	1.1	ug/kg	
100-42-5	Styrene	ND	2.2	0.64	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.2	0.66	ug/kg	
127-18-4	Tetrachloroethene	ND	2.2	0.64	ug/kg	
108-88-3	Toluene	1.7	1.1	0.58	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	5.5	2.1	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	5.5	1.7	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	2.2	0.54	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2.2	0.61	ug/kg	
79-01-6	Trichloroethene	ND	1.1	0.85	ug/kg	
75-69-4	Trichlorofluoromethane	ND	5.5	0.76	ug/kg	
75-01-4	Vinyl chloride [a]	ND	2.2	0.53	ug/kg	UJ
	m,p-Xylene	2.3	1.1	0.99	ug/kg	
95-47-6	o-Xylene	2.3	1.1	0.65	ug/kg	
1330-20-7	Xylene (total)	4.6	1.1	0.65	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	99%		75-127%
17060-07-0	1,2-Dichloroethane-D4	89%		75-130%
2037-26-5	Toluene-D8	98%		80-120%
460-00-4	4-Bromofluorobenzene	95%		79-127%

(a) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	S-162(5-7)		
Lab Sample ID:	JC87535-9	**Date Sampled:**	05/03/19
Matrix:	SO - Soil	**Date Received:**	05/03/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	79.1
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5P59691.D	1	05/16/19 15:43	CC	05/12/19 14:30	OP20269	E5P2816
Run #2	5P59745.D	10	05/17/19 17:29	CC	05/12/19 14:30	OP20269	E5P2818
Run #3	2M112045.D	20	05/19/19 16:07	CB	05/12/19 14:30	OP20269	E2M4982

	Initial Weight	Final Volume
Run #1	32.8 g	1.0 ml
Run #2	32.8 g	1.0 ml
Run #3	32.8 g	1.0 ml

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	77	19	ug/kg	
59-50-7	4-Chloro-3-methyl phenol [a]	ND	190	24	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	190	33	ug/kg	
105-67-9	2,4-Dimethylphenol [a]	ND	190	69	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	190	140	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	190	41	ug/kg	
95-48-7	2-Methylphenol	ND	77	25	ug/kg	
	3&4-Methylphenol	ND	77	32	ug/kg	
88-75-5	2-Nitrophenol	ND	190	25	ug/kg	
100-02-7	4-Nitrophenol [a]	ND	390	100	ug/kg	
87-86-5	Pentachlorophenol	ND	150	36	ug/kg	
108-95-2	Phenol	ND	77	20	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	190	26	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	190	29	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	190	23	ug/kg	
83-32-9	Acenaphthene	1440	39	13	ug/kg	
208-96-8	Acenaphthylene	ND	39	20	ug/kg	
98-86-2	Acetophenone	ND	190	8.3	ug/kg	
120-12-7	Anthracene	3190	39	24	ug/kg	
1912-24-9	Atrazine	ND	77	16	ug/kg	
56-55-3	Benzo(a)anthracene	716	39	11	ug/kg	
50-32-8	Benzo(a)pyrene	446	39	18	ug/kg	
205-99-2	Benzo(b)fluoranthene	601	39	17	ug/kg	
191-24-2	Benzo(g,h,i)perylene	177	39	19	ug/kg	
207-08-9	Benzo(k)fluoranthene	246	39	18	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	77	15	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	77	9.4	ug/kg	
92-52-4	1,1'-Biphenyl	4090 [b]	770	53	ug/kg	D
100-52-7	Benzaldehyde	ND	190	9.6	ug/kg	
91-58-7	2-Chloronaphthalene	ND	77	9.2	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-162(5-7)		
Lab Sample ID:	JC87535-9	**Date Sampled:**	05/03/19
Matrix:	SO - Soil	**Date Received:**	05/03/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	79.1
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
106-47-8	4-Chloroaniline	ND	190	14	ug/kg	
86-74-8	Carbazole	ND	77	5.6	ug/kg	
105-60-2	Caprolactam [a]	ND	77	15	ug/kg	
218-01-9	Chrysene	560	39	12	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	77	8.2	ug/kg	
111-44-4	bis(2-Chloroethyl)ether [a]	ND	77	17	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane) [a]	ND	77	14	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	77	12	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	39	12	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	39	19	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	77	32	ug/kg	
123-91-1	1,4-Dioxane	ND	39	25	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	50.2	39	17	ug/kg	
132-64-9	Dibenzofuran	1850	77	16	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	77	6.3	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	77	9.6	ug/kg	
84-66-2	Diethyl phthalate	ND	77	8.2	ug/kg	
131-11-3	Dimethyl phthalate	ND	77	6.9	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	51.3	77	9.0	ug/kg	J
206-44-0	Fluoranthene	3250 [b]	390	170	ug/kg	D
86-73-7	Fluorene	2300	39	18	ug/kg	
118-74-1	Hexachlorobenzene	ND	77	9.8	ug/kg	
87-68-3	Hexachlorobutadiene	ND [b]	390	150	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	390	15	ug/kg	
67-72-1	Hexachloroethane	ND	190	19	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	210	39	18	ug/kg	
78-59-1	Isophorone [a]	ND	77	8.2	ug/kg	
91-57-6	2-Methylnaphthalene	65200 [c]	770	170	ug/kg	D
88-74-4	2-Nitroaniline	ND	190	9.1	ug/kg	
99-09-2	3-Nitroaniline	ND	190	9.6	ug/kg	
100-01-6	4-Nitroaniline	ND	190	10	ug/kg	
91-20-3	Naphthalene	13500 [b]	390	110	ug/kg	D
98-95-3	Nitrobenzene [a]	ND	77	15	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine [a]	ND	77	11	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	190	14	ug/kg	
85-01-8	Phenanthrene	11400 [b]	390	130	ug/kg	D
129-00-0	Pyrene	2320	39	12	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	190	9.8	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-162(5-7)		
Lab Sample ID:	JC87535-9	**Date Sampled:**	05/03/19
Matrix:	SO - Soil	**Date Received:**	05/03/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	79.1
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Run# 3	Limits
367-12-4	2-Fluorophenol	87%	68%	71%	23-115%
4165-62-2	Phenol-d5	83%	72%	72%	27-114%
118-79-6	2,4,6-Tribromophenol	142%	73%	65%	19-152%
4165-60-0	Nitrobenzene-d5	110%	104%	127%	26-134%
321-60-8	2-Fluorobiphenyl	74%	81%	104%	39-124%
1718-51-0	Terphenyl-d14	82%	70%	82%	36-134%

(a) Associated CCV outside of control limits high, sample was ND.
(b) Result is from Run# 2
(c) Result is from Run# 3

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-162(5-7)
Lab Sample ID: JC87535-9
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 05/03/19
Date Received: 05/03/19
Percent Solids: 79.1

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	12400 J	63	10	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [5]
Antimony	2.1 J	2.5	0.52	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [5]
Arsenic	7.2	2.5	0.35	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [5]
Barium	106	25	2.4	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [5]
Beryllium	0.63	0.25	0.10	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [5]
Cadmium	0.64	0.63	0.088	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [5]
Calcium	52000	1900	170	mg/kg	3	05/08/19	05/09/19	ND	SW846 6010D [3]	SW846 3050B [5]
Chromium	26.2	1.3	0.47	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [5]
Cobalt	6.9	6.3	0.35	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [5]
Copper	57.5	3.2	1.1	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [5]
Iron	17800	63	24	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [5]
Lead	296 J	2.5	0.52	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [5]
Magnesium	17300	630	17	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [5]
Manganese	330	1.9	0.52	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [5]
Mercury	0.36	0.039	0.017	mg/kg	1	05/07/19	05/07/19	LL	SW846 7471B [1]	SW846 7471B [4]
Nickel	17.0	5.1	0.44	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [5]
Potassium	2250	1300	40	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [5]
Selenium	0.82 U	2.5	0.82	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [5]
Silver	0.49 J	0.63	0.21	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [5]
Sodium	247 J	1300	98	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [5]
Thallium	0.73 U	1.3	0.73	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [5]
Vanadium	28.8	6.3	0.24	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [5]
Zinc	491 J	6.3	2.9	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA46664
(2) Instrument QC Batch: MA46680
(3) Instrument QC Batch: MA46687
(4) Prep QC Batch: MP14859
(5) Prep QC Batch: MP14865

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: S-162(5-7)
Lab Sample ID: JC87535-9
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 05/03/19
Date Received: 05/03/19
Percent Solids: 79.1

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	1.0 J	0.28	0.14	mg/kg	1	05/10/19 17:57	KI	SW846 9012B/LACHAT
Solids, Percent	79.1			%	1	05/13/19 15:15	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

SGS North America Inc.

Report of Analysis

Client Sample ID:	S-162(15-17)		
Lab Sample ID:	JC87535-10	**Date Sampled:**	05/03/19
Matrix:	SO - Soil	**Date Received:**	05/03/19
Method:	SW846 8260C	**Percent Solids:**	54.8
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Y185124.D	1	05/11/19 15:37	PS	n/a	n/a	VY8033
Run #2							

	Initial Weight
Run #1	4.9 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	71.3	19	7.5	ug/kg	
71-43-2	Benzene	17.4	0.93	0.85	ug/kg	
74-97-5	Bromochloromethane	ND	9.3	1.0	ug/kg	
75-27-4	Bromodichloromethane	ND	3.7	0.82	ug/kg	
75-25-2	Bromoform	ND	9.3	1.1	ug/kg	
74-83-9	Bromomethane	ND	9.3	1.9	ug/kg	
78-93-3	2-Butanone (MEK)	17.3	19	7.0	ug/kg	J
75-15-0	Carbon disulfide	ND	3.7	1.7	ug/kg	
56-23-5	Carbon tetrachloride	ND	3.7	1.2	ug/kg	
108-90-7	Chlorobenzene	ND	3.7	0.85	ug/kg	
75-00-3	Chloroethane	ND	9.3	1.1	ug/kg	
67-66-3	Chloroform	ND	3.7	0.91	ug/kg	
74-87-3	Chloromethane [a]	ND	9.3	3.6	ug/kg	UJ
110-82-7	Cyclohexane	ND	3.7	1.2	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	3.7	1.6	ug/kg	
124-48-1	Dibromochloromethane	ND	3.7	1.0	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.9	0.78	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.9	1.0	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.9	0.92	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.9	0.92	ug/kg	
75-71-8	Dichlorodifluoromethane [a]	ND	9.3	1.4	ug/kg	UJ
75-34-3	1,1-Dichloroethane	ND	1.9	0.92	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.9	0.88	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.9	1.2	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.9	1.6	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.9	1.1	ug/kg	
78-87-5	1,2-Dichloropropane	ND	3.7	0.88	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	3.7	0.88	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	3.7	0.85	ug/kg	
100-41-4	Ethylbenzene	ND	1.9	1.0	ug/kg	
76-13-1	Freon 113	ND	9.3	1.9	ug/kg	
591-78-6	2-Hexanone	ND	9.3	3.9	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-162(15-17)		
Lab Sample ID:	JC87535-10	**Date Sampled:**	05/03/19
Matrix:	SO - Soil	**Date Received:**	05/03/19
Method:	SW846 8260C	**Percent Solids:**	54.8
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	3.7	1.3	ug/kg	
79-20-9	Methyl Acetate	ND	9.3	2.6	ug/kg	
108-87-2	Methylcyclohexane	ND	3.7	1.6	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.9	0.87	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	9.3	4.2	ug/kg	
75-09-2	Methylene chloride	ND	9.3	1.9	ug/kg	
100-42-5	Styrene	ND	3.7	1.1	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	3.7	1.1	ug/kg	
127-18-4	Tetrachloroethene	ND	3.7	1.1	ug/kg	
108-88-3	Toluene	1.7	1.9	0.98	ug/kg	J
87-61-6	1,2,3-Trichlorobenzene	ND	9.3	3.6	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	9.3	2.8	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	3.7	0.90	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	3.7	1.0	ug/kg	
79-01-6	Trichloroethene	ND	1.9	1.4	ug/kg	
75-69-4	Trichlorofluoromethane	ND	9.3	1.3	ug/kg	
75-01-4	Vinyl chloride [a]	ND	3.7	0.90	ug/kg	UJ
	m,p-Xylene	ND	1.9	1.7	ug/kg	
95-47-6	o-Xylene	ND	1.9	1.1	ug/kg	
1330-20-7	Xylene (total)	ND	1.9	1.1	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%		75-127%
17060-07-0	1,2-Dichloroethane-D4	91%		75-130%
2037-26-5	Toluene-D8	99%		80-120%
460-00-4	4-Bromofluorobenzene	96%		79-127%

(a) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	S-162(15-17)		
Lab Sample ID:	JC87535-10	**Date Sampled:**	05/03/19
Matrix:	SO - Soil	**Date Received:**	05/03/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	54.8
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5P59692.D	1	05/16/19 16:06	CC	05/12/19 14:30	OP20269	E5P2816
Run #2							

	Initial Weight	Final Volume
Run #1	30.2 g	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	120	30	ug/kg	
59-50-7	4-Chloro-3-methyl phenol [a]	ND	300	37	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	300	52	ug/kg	
105-67-9	2,4-Dimethylphenol [a]	ND	300	110	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	300	230	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	300	65	ug/kg	
95-48-7	2-Methylphenol	ND	120	39	ug/kg	
	3&4-Methylphenol	57.1	120	50	ug/kg	J
88-75-5	2-Nitrophenol	ND	300	40	ug/kg	
100-02-7	4-Nitrophenol [a]	ND	600	160	ug/kg	
87-86-5	Pentachlorophenol	ND	240	57	ug/kg	
108-95-2	Phenol	ND	120	32	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	300	40	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	300	45	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	300	36	ug/kg	
83-32-9	Acenaphthene	957	60	21	ug/kg	
208-96-8	Acenaphthylene	233	60	31	ug/kg	
98-86-2	Acetophenone	ND	300	13	ug/kg	
120-12-7	Anthracene	919	60	37	ug/kg	
1912-24-9	Atrazine	ND	120	26	ug/kg	
56-55-3	Benzo(a)anthracene	500	60	17	ug/kg	
50-32-8	Benzo(a)pyrene	458	60	27	ug/kg	
205-99-2	Benzo(b)fluoranthene	509	60	27	ug/kg	
191-24-2	Benzo(g,h,i)perylene	253	60	30	ug/kg	
207-08-9	Benzo(k)fluoranthene	215	60	28	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	120	23	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	120	15	ug/kg	
92-52-4	1,1'-Biphenyl	84.2	120	8.3	ug/kg	J
100-52-7	Benzaldehyde	ND	300	15	ug/kg	
91-58-7	2-Chloronaphthalene	ND	120	14	ug/kg	
106-47-8	4-Chloroaniline	ND	300	22	ug/kg	
86-74-8	Carbazole	463	120	8.8	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-162(15-17)
Lab Sample ID: JC87535-10
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 05/03/19
Date Received: 05/03/19
Percent Solids: 54.8

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam [a]	ND	120	24	ug/kg	
218-01-9	Chrysene	494	60	19	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	120	13	ug/kg	
111-44-4	bis(2-Chloroethyl)ether [a]	ND	120	26	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane) [a]	ND	120	22	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	120	20	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	60	19	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	60	30	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	120	50	ug/kg	
123-91-1	1,4-Dioxane	ND	60	40	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	66.6	60	27	ug/kg	
132-64-9	Dibenzofuran	423	120	25	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	120	9.8	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	120	15	ug/kg	
84-66-2	Diethyl phthalate	ND	120	13	ug/kg	
131-11-3	Dimethyl phthalate	ND	120	11	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	120	14	ug/kg	
206-44-0	Fluoranthene	1380	60	27	ug/kg	
86-73-7	Fluorene	914	60	28	ug/kg	
118-74-1	Hexachlorobenzene	ND	120	15	ug/kg	
87-68-3	Hexachlorobutadiene	ND	60	24	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	600	24	ug/kg	
67-72-1	Hexachloroethane	ND	300	30	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	258	60	28	ug/kg	
78-59-1	Isophorone [a]	ND	120	13	ug/kg	
91-57-6	2-Methylnaphthalene	311	60	14	ug/kg	
88-74-4	2-Nitroaniline	ND	300	14	ug/kg	
99-09-2	3-Nitroaniline	ND	300	15	ug/kg	
100-01-6	4-Nitroaniline	ND	300	16	ug/kg	
91-20-3	Naphthalene	1260	60	17	ug/kg	
98-95-3	Nitrobenzene [a]	ND	120	23	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine [a]	ND	120	17	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	300	22	ug/kg	
85-01-8	Phenanthrene	2450	60	20	ug/kg	
129-00-0	Pyrene	1010	60	19	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	300	15	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	78%		23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-162(15-17)		
Lab Sample ID:	JC87535-10	**Date Sampled:**	05/03/19
Matrix:	SO - Soil	**Date Received:**	05/03/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	54.8
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	84%		27-114%
118-79-6	2,4,6-Tribromophenol	76%		19-152%
4165-60-0	Nitrobenzene-d5	92%		26-134%
321-60-8	2-Fluorobiphenyl	81%		39-124%
1718-51-0	Terphenyl-d14	71%		36-134%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-162(15-17)
Lab Sample ID: JC87535-10
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 05/03/19
Date Received: 05/03/19
Percent Solids: 54.8

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	19900 J	94	15	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Antimony	1.8 J	3.8	0.77	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Arsenic	41.7	3.8	0.53	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Barium	208	38	3.6	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Beryllium	1.3	0.38	0.15	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cadmium	2.3	0.94	0.13	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Calcium	20300	940	83	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Chromium	191	1.9	0.70	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cobalt	17.5	9.4	0.53	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Copper	135	4.7	1.6	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Iron	33000	94	36	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Lead	277 J	3.8	0.77	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Magnesium	5190	940	26	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Manganese	1010	2.8	0.77	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Mercury	1.9	0.11	0.047	mg/kg	2	05/07/19	05/07/19	LL	SW846 7471B [1]	SW846 7471B [3]
Nickel	34.8	7.5	0.66	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Potassium	2200	1900	60	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Selenium	1.4 J	3.8	1.2	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Silver	1.8	0.94	0.32	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Sodium	450 J	1900	150	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Thallium	1.1 U	1.9	1.1	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Vanadium	38.1	9.4	0.36	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Zinc	690 J	9.4	4.3	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA46664
(2) Instrument QC Batch: MA46680
(3) Prep QC Batch: MP14859
(4) Prep QC Batch: MP14865

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: S-162(15-17)
Lab Sample ID: JC87535-10
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 05/03/19
Date Received: 05/03/19
Percent Solids: 54.8

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	0.21 U J	0.42	0.21	mg/kg	1	05/10/19 17:59	KI	SW846 9012B/LACHAT
Solids, Percent	54.8			%	1	05/13/19 15:15	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

SGS North America Inc.

Report of Analysis

Client Sample ID:	S-160(10-12)		
Lab Sample ID:	JC87535-11	**Date Sampled:**	05/03/19
Matrix:	SO - Soil	**Date Received:**	05/03/19
Method:	SW846 8260C	**Percent Solids:**	77.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	2C167663.D	1	05/15/19 17:48	TDN	n/a	n/a	V2C7520
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.2 g	10.0 ml	1.0 ul
Run #2			

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	140000	56000	ug/kg	
71-43-2	Benzene	46600	7000	6300	ug/kg	
74-97-5	Bromochloromethane	ND	70000	7800	ug/kg	
75-27-4	Bromodichloromethane	ND	28000	6200	ug/kg	
75-25-2	Bromoform	ND	70000	8000	ug/kg	
74-83-9	Bromomethane [b]	ND	70000	14000	ug/kg	UJ
78-93-3	2-Butanone (MEK)	ND	140000	52000	ug/kg	
75-15-0	Carbon disulfide	ND	28000	13000	ug/kg	
56-23-5	Carbon tetrachloride	ND	28000	8600	ug/kg	
108-90-7	Chlorobenzene	ND	28000	6400	ug/kg	
75-00-3	Chloroethane	ND	70000	8200	ug/kg	
67-66-3	Chloroform	ND	28000	6800	ug/kg	
74-87-3	Chloromethane [b]	ND	70000	27000	ug/kg	UJ
110-82-7	Cyclohexane	ND	28000	9100	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	28000	12000	ug/kg	
124-48-1	Dibromochloromethane	ND	28000	7800	ug/kg	
106-93-4	1,2-Dibromoethane	ND	14000	5900	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	14000	7600	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	14000	6900	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	14000	6900	ug/kg	
75-71-8	Dichlorodifluoromethane [b]	ND	70000	10000	ug/kg	UJ
75-34-3	1,1-Dichloroethane	ND	14000	6900	ug/kg	
107-06-2	1,2-Dichloroethane	ND	14000	6500	ug/kg	
75-35-4	1,1-Dichloroethene	ND	14000	9100	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	14000	12000	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	14000	8500	ug/kg	
78-87-5	1,2-Dichloropropane	ND	28000	6600	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	28000	6600	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	28000	6400	ug/kg	
100-41-4	Ethylbenzene	19100	14000	7700	ug/kg	
76-13-1	Freon 113	ND	70000	14000	ug/kg	
591-78-6	2-Hexanone	ND	70000	29000	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-160(10-12)		
Lab Sample ID:	JC87535-11	**Date Sampled:**	05/03/19
Matrix:	SO - Soil	**Date Received:**	05/03/19
Method:	SW846 8260C	**Percent Solids:**	77.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	28000	9700	ug/kg	
79-20-9	Methyl Acetate	ND	70000	19000	ug/kg	
108-87-2	Methylcyclohexane	ND	28000	12000	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	14000	6500	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	70000	32000	ug/kg	
75-09-2	Methylene chloride	ND	70000	14000	ug/kg	
100-42-5	Styrene	15500	28000	8000	ug/kg	J
79-34-5	1,1,2,2-Tetrachloroethane	ND	28000	8300	ug/kg	
127-18-4	Tetrachloroethene	ND	28000	8100	ug/kg	
108-88-3	Toluene	47800	14000	7300	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	70000	27000	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	70000	21000	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	28000	6700	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	28000	7700	ug/kg	
79-01-6	Trichloroethene	ND	14000	11000	ug/kg	
75-69-4	Trichlorofluoromethane	ND	70000	9500	ug/kg	
75-01-4	Vinyl chloride	ND	28000	6700	ug/kg	
	m,p-Xylene	81300	14000	12000	ug/kg	
95-47-6	o-Xylene	27200	14000	8100	ug/kg	
1330-20-7	Xylene (total)	109000	14000	8100	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	97%		75-127%
17060-07-0	1,2-Dichloroethane-D4	100%		75-130%
2037-26-5	Toluene-D8	98%		80-120%
460-00-4	4-Bromofluorobenzene	102%		79-127%

(a) Diluted due to high concentration of non-target compound.
(b) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	S-160(10-12)		
Lab Sample ID:	JC87535-11	**Date Sampled:**	05/03/19
Matrix:	SO - Soil	**Date Received:**	05/03/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	77.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	5P59704.D	2	05/16/19 20:37	CC	05/12/19 14:30	OP20269	E5P2816
Run #2	2M112048.D	20	05/19/19 17:27	CB	05/12/19 14:30	OP20269	E2M4982
Run #3	2M112049.D	200	05/19/19 18:47	CB	05/12/19 14:30	OP20269	E2M4982

	Initial Weight	Final Volume
Run #1	15.5 g	5.0 ml
Run #2	15.5 g	5.0 ml
Run #3	15.5 g	5.0 ml

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	1700	410	ug/kg	
59-50-7	4-Chloro-3-methyl phenol [b]	ND	4200	510	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	4200	710	ug/kg	
105-67-9	2,4-Dimethylphenol	152000 [c]	42000	15000	ug/kg	D
51-28-5	2,4-Dinitrophenol	ND	4200	3100	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	4200	890	ug/kg	
95-48-7	2-Methylphenol	73600	1700	530	ug/kg	
	3&4-Methylphenol [d]	221000 [c]	17000	6900	ug/kg	D
88-75-5	2-Nitrophenol	ND	4200	550	ug/kg	
100-02-7	4-Nitrophenol [b]	ND	8300	2200	ug/kg	
87-86-5	Pentachlorophenol	ND	3300	780	ug/kg	
108-95-2	Phenol	75900	1700	440	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	4200	550	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	4200	630	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	4200	500	ug/kg	
83-32-9	Acenaphthene	344000 [c]	8300	2900	ug/kg	D
208-96-8	Acenaphthylene	1800000 [e]	83000	42000	ug/kg	D
98-86-2	Acetophenone	ND	4200	180	ug/kg	
120-12-7	Anthracene	1950000 [e]	83000	51000	ug/kg	D
1912-24-9	Atrazine	ND	1700	360	ug/kg	
56-55-3	Benzo(a)anthracene	1100000 [e]	83000	24000	ug/kg	D
50-32-8	Benzo(a)pyrene	762000 [c]	8300	3800	ug/kg	
205-99-2	Benzo(b)fluoranthene	1050000 [e]	83000	37000	ug/kg	
191-24-2	Benzo(g,h,i)perylene	429000 [c]	8300	4200	ug/kg	
207-08-9	Benzo(k)fluoranthene	396000 [e]	83000	39000	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	1700	320	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	1700	200	ug/kg	
92-52-4	1,1'-Biphenyl	300000 [c]	17000	1100	ug/kg	D
100-52-7	Benzaldehyde	ND	4200	210	ug/kg	
91-58-7	2-Chloronaphthalene	ND	1700	200	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-160(10-12)
Lab Sample ID: JC87535-11
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 05/03/19
Date Received: 05/03/19
Percent Solids: 77.3

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
106-47-8	4-Chloroaniline	ND	4200	300	ug/kg	
86-74-8	Carbazole	828000 [c]	17000	1200	ug/kg	D
105-60-2	Caprolactam [b]	ND	1700	330	ug/kg	
218-01-9	Chrysene	784000 [c]	8300	2600	ug/kg	D
111-91-1	bis(2-Chloroethoxy)methane	ND	1700	180	ug/kg	
111-44-4	bis(2-Chloroethyl)ether [b]	ND	1700	360	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane) [b]	ND	1700	300	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	1700	270	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	830	260	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	830	420	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	1700	700	ug/kg	
123-91-1	1,4-Dioxane	ND	830	550	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	39000	830	370	ug/kg	
132-64-9	Dibenzofuran	1420000 [e]	170000	34000	ug/kg	D
84-74-2	Di-n-butyl phthalate	ND	1700	140	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	1700	210	ug/kg	
84-66-2	Diethyl phthalate	ND	1700	180	ug/kg	
131-11-3	Dimethyl phthalate	ND	1700	150	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	1700	200	ug/kg	
206-44-0	Fluoranthene	3400000 [e]	83000	37000	ug/kg	D
86-73-7	Fluorene	2130000 [e]	83000	38000	ug/kg	D
118-74-1	Hexachlorobenzene	ND	1700	210	ug/kg	
87-68-3	Hexachlorobutadiene	ND	830	340	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	8300	330	ug/kg	
67-72-1	Hexachloroethane	ND	4200	410	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	481000 [c]	8300	3900	ug/kg	D
78-59-1	Isophorone [b]	ND	1700	180	ug/kg	
91-57-6	2-Methylnaphthalene	1490000 [e]	83000	19000	ug/kg	D
88-74-4	2-Nitroaniline	ND	4200	200	ug/kg	
99-09-2	3-Nitroaniline	ND	4200	210	ug/kg	
100-01-6	4-Nitroaniline	ND	4200	220	ug/kg	
91-20-3	Naphthalene	6610000 [e]	83000	24000	ug/kg	D
98-95-3	Nitrobenzene [b]	ND	1700	320	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine [b]	ND	1700	240	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	4200	310	ug/kg	
85-01-8	Phenanthrene	4840000 [e]	83000	28000	ug/kg	D
129-00-0	Pyrene	1920000 [e]	83000	27000	ug/kg	D
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	4200	210	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-160(10-12)		
Lab Sample ID:	JC87535-11	**Date Sampled:**	05/03/19
Matrix:	SO - Soil	**Date Received:**	05/03/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	77.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Run# 3	Limits
367-12-4	2-Fluorophenol	83%	81%	0% [f]	23-115%
4165-62-2	Phenol-d5	93%	80%	0% [f]	27-114%
118-79-6	2,4,6-Tribromophenol	119%	56%	0% [f]	19-152%
4165-60-0	Nitrobenzene-d5	172% [g]	97%	0% [f]	26-134%
321-60-8	2-Fluorobiphenyl	87%	94%	97%	39-124%
1718-51-0	Terphenyl-d14	83%	105%	102%	36-134%

(a) Dilution required due to viscosity of the extract matrix.
(b) Associated CCV outside of control limits high, sample was ND.
(c) Result is from Run# 2
(d) Associated CCV outside of control limits high.
(e) Result is from Run# 3
(f) Outside control limits due to dilution.
(g) Outside control limits due to matrix interference.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-160(10-12)
Lab Sample ID: JC87535-11
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 05/03/19
Date Received: 05/03/19
Percent Solids: 77.3

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	6170 J	67	11	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [5]
Antimony	0.55 U J	2.7	0.55	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [5]
Arsenic	12.7	2.7	0.37	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [5]
Barium	48.4	27	2.5	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [5]
Beryllium	0.40	0.27	0.11	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [5]
Cadmium	1.1	0.67	0.093	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [5]
Calcium	2290	670	59	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [5]
Chromium	32.9	1.3	0.49	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [5]
Cobalt	4.4 J	6.7	0.37	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [5]
Copper	31.5	3.3	1.1	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [5]
Iron	12000	67	26	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [5]
Lead	108 J	2.7	0.55	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [5]
Magnesium	1520	670	18	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [5]
Manganese	238	2.0	0.55	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [5]
Mercury	0.39	0.037	0.016	mg/kg	1	05/07/19	05/07/19	LL	SW846 7471B [1]	SW846 7471B [4]
Nickel	10.0	5.3	0.47	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [5]
Potassium	823 J	1300	42	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [5]
Selenium	3.1	2.7	0.87	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [5]
Silver	0.55 J	0.67	0.23	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [5]
Sodium	109 J	1300	100	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [5]
Thallium [a]	2.0	1.3	0.77	mg/kg	1	05/08/19	05/09/19	ND	SW846 6010D [3]	SW846 3050B [5]
Vanadium	12.0	6.7	0.25	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [5]
Zinc	164 J	6.7	3.1	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA46664
(2) Instrument QC Batch: MA46680
(3) Instrument QC Batch: MA46687
(4) Prep QC Batch: MP14859
(5) Prep QC Batch: MP14865

(a) Elevated detection limit due to dilution required for high interfering element.

RL = Reporting Limit
MDL = Method Detection Limit
U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: S-160(10-12)
Lab Sample ID: JC87535-11
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 05/03/19
Date Received: 05/03/19
Percent Solids: 77.3

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	6.6 J	0.28	0.14	mg/kg	1	05/10/19 18:03	KI	SW846 9012B/LACHAT
Solids, Percent	77.3			%	1	05/13/19 15:15	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

SGS North America Inc.

Report of Analysis

Client Sample ID:	S-160(13-15)		
Lab Sample ID:	JC87535-12	**Date Sampled:**	05/03/19
Matrix:	SO - Soil	**Date Received:**	05/03/19
Method:	SW846 8260C	**Percent Solids:**	56.0
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Y185127.D	1	05/11/19 17:02	PS	n/a	n/a	VY8033
Run #2							

	Initial Weight
Run #1	4.8 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	68.3	19	7.5	ug/kg	
71-43-2	Benzene	ND	0.93	0.85	ug/kg	
74-97-5	Bromochloromethane	ND	9.3	1.0	ug/kg	
75-27-4	Bromodichloromethane	ND	3.7	0.82	ug/kg	
75-25-2	Bromoform	ND	9.3	1.1	ug/kg	
74-83-9	Bromomethane	ND	9.3	1.9	ug/kg	
78-93-3	2-Butanone (MEK)	16.2	19	7.0	ug/kg	J
75-15-0	Carbon disulfide	ND	3.7	1.7	ug/kg	
56-23-5	Carbon tetrachloride	ND	3.7	1.1	ug/kg	
108-90-7	Chlorobenzene	ND	3.7	0.85	ug/kg	
75-00-3	Chloroethane	ND	9.3	1.1	ug/kg	
67-66-3	Chloroform	ND	3.7	0.91	ug/kg	
74-87-3	Chloromethane [a]	ND	9.3	3.6	ug/kg	UJ
110-82-7	Cyclohexane	ND	3.7	1.2	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	3.7	1.6	ug/kg	
124-48-1	Dibromochloromethane	ND	3.7	1.0	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.9	0.78	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.9	1.0	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.9	0.92	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.9	0.92	ug/kg	
75-71-8	Dichlorodifluoromethane [a]	ND	9.3	1.4	ug/kg	UJ
75-34-3	1,1-Dichloroethane	ND	1.9	0.92	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.9	0.87	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.9	1.2	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.9	1.6	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.9	1.1	ug/kg	
78-87-5	1,2-Dichloropropane	ND	3.7	0.88	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	3.7	0.88	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	3.7	0.85	ug/kg	
100-41-4	Ethylbenzene	ND	1.9	1.0	ug/kg	
76-13-1	Freon 113	ND	9.3	1.9	ug/kg	
591-78-6	2-Hexanone	ND	9.3	3.9	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-160(13-15)		
Lab Sample ID:	JC87535-12	**Date Sampled:**	05/03/19
Matrix:	SO - Soil	**Date Received:**	05/03/19
Method:	SW846 8260C	**Percent Solids:**	56.0
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	3.7	1.3	ug/kg	
79-20-9	Methyl Acetate	ND	9.3	2.6	ug/kg	
108-87-2	Methylcyclohexane	ND	3.7	1.6	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.9	0.87	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	9.3	4.2	ug/kg	
75-09-2	Methylene chloride	ND	9.3	1.8	ug/kg	
100-42-5	Styrene	ND	3.7	1.1	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	3.7	1.1	ug/kg	
127-18-4	Tetrachloroethene	ND	3.7	1.1	ug/kg	
108-88-3	Toluene	ND	1.9	0.98	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	9.3	3.6	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	9.3	2.8	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	3.7	0.90	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	3.7	1.0	ug/kg	
79-01-6	Trichloroethene	ND	1.9	1.4	ug/kg	
75-69-4	Trichlorofluoromethane	ND	9.3	1.3	ug/kg	
75-01-4	Vinyl chloride [a]	ND	3.7	0.89	ug/kg	UJ
	m,p-Xylene	ND	1.9	1.7	ug/kg	
95-47-6	o-Xylene	ND	1.9	1.1	ug/kg	
1330-20-7	Xylene (total)	ND	1.9	1.1	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	99%		75-127%
17060-07-0	1,2-Dichloroethane-D4	91%		75-130%
2037-26-5	Toluene-D8	97%		80-120%
460-00-4	4-Bromofluorobenzene	99%		79-127%

(a) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	S-160(13-15)		
Lab Sample ID:	JC87535-12	**Date Sampled:**	05/03/19
Matrix:	SO - Soil	**Date Received:**	05/03/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	56.0
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5P59693.D	1	05/16/19 16:29	CC	05/12/19 14:30	OP20269	E5P2816
Run #2							

	Initial Weight	Final Volume
Run #1	30.6 g	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	120	29	ug/kg	
59-50-7	4-Chloro-3-methyl phenol [a]	ND	290	36	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	290	50	ug/kg	
105-67-9	2,4-Dimethylphenol [a]	ND	290	100	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	290	220	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	290	62	ug/kg	
95-48-7	2-Methylphenol	ND	120	37	ug/kg	
	3&4-Methylphenol	ND	120	48	ug/kg	
88-75-5	2-Nitrophenol	ND	290	39	ug/kg	
100-02-7	4-Nitrophenol [a]	ND	580	160	ug/kg	
87-86-5	Pentachlorophenol	ND	230	55	ug/kg	
108-95-2	Phenol	ND	120	30	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	290	39	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	290	44	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	290	35	ug/kg	
83-32-9	Acenaphthene	53.9	58	20	ug/kg	J
208-96-8	Acenaphthylene	63.4	58	30	ug/kg	
98-86-2	Acetophenone	ND	290	13	ug/kg	
120-12-7	Anthracene	84.4	58	36	ug/kg	
1912-24-9	Atrazine	ND	120	25	ug/kg	
56-55-3	Benzo(a)anthracene	145	58	17	ug/kg	
50-32-8	Benzo(a)pyrene	174	58	27	ug/kg	
205-99-2	Benzo(b)fluoranthene	181	58	26	ug/kg	
191-24-2	Benzo(g,h,i)perylene	103	58	29	ug/kg	
207-08-9	Benzo(k)fluoranthene	72.4	58	27	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	120	23	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	120	14	ug/kg	
92-52-4	1,1'-Biphenyl	15.0	120	8.0	ug/kg	J
100-52-7	Benzaldehyde	ND	290	14	ug/kg	
91-58-7	2-Chloronaphthalene	ND	120	14	ug/kg	
106-47-8	4-Chloroaniline	ND	290	21	ug/kg	
86-74-8	Carbazole	26.5	120	8.5	ug/kg	J

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-160(13-15)
Lab Sample ID: JC87535-12
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 05/03/19
Date Received: 05/03/19
Percent Solids: 56.0

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam [a]	ND	120	23	ug/kg	
218-01-9	Chrysene	152	58	18	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	120	12	ug/kg	
111-44-4	bis(2-Chloroethyl)ether [a]	ND	120	25	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane) [a]	ND	120	21	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	120	19	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	58	18	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	58	29	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	120	49	ug/kg	
123-91-1	1,4-Dioxane	ND	58	39	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	31.5	58	26	ug/kg	J
132-64-9	Dibenzofuran	25.6	120	24	ug/kg	J
84-74-2	Di-n-butyl phthalate	ND	120	9.5	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	120	15	ug/kg	
84-66-2	Diethyl phthalate	ND	120	12	ug/kg	
131-11-3	Dimethyl phthalate	ND	120	10	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	120	14	ug/kg	
206-44-0	Fluoranthene	281	58	26	ug/kg	
86-73-7	Fluorene	60.0	58	27	ug/kg	
118-74-1	Hexachlorobenzene	ND	120	15	ug/kg	
87-68-3	Hexachlorobutadiene	ND	58	23	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	580	23	ug/kg	
67-72-1	Hexachloroethane	ND	290	29	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	102	58	27	ug/kg	
78-59-1	Isophorone [a]	ND	120	12	ug/kg	
91-57-6	2-Methylnaphthalene	55.0	58	13	ug/kg	J
88-74-4	2-Nitroaniline	ND	290	14	ug/kg	
99-09-2	3-Nitroaniline	ND	290	15	ug/kg	
100-01-6	4-Nitroaniline	ND	290	15	ug/kg	
91-20-3	Naphthalene	199	58	16	ug/kg	
98-95-3	Nitrobenzene [a]	ND	120	23	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine [a]	ND	120	17	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	290	21	ug/kg	
85-01-8	Phenanthrene	209	58	20	ug/kg	
129-00-0	Pyrene	282	58	19	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	290	15	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	78%		23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-160(13-15)		
Lab Sample ID:	JC87535-12	**Date Sampled:**	05/03/19
Matrix:	SO - Soil	**Date Received:**	05/03/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	56.0
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	81%		27-114%
118-79-6	2,4,6-Tribromophenol	81%		19-152%
4165-60-0	Nitrobenzene-d5	93%		26-134%
321-60-8	2-Fluorobiphenyl	80%		39-124%
1718-51-0	Terphenyl-d14	74%		36-134%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-160(13-15)
Lab Sample ID: JC87535-12
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 05/03/19
Date Received: 05/03/19
Percent Solids: 56.0

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	21900 J	92	15	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Antimony	1.2 J	3.7	0.75	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Arsenic	32.8	3.7	0.52	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Barium	145	37	3.5	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Beryllium	1.3	0.37	0.15	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cadmium	1.4	0.92	0.13	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Calcium	4280	920	81	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Chromium	128	1.8	0.68	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cobalt	17.3	9.2	0.52	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Copper	81.2	4.6	1.5	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Iron	35200	92	35	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Lead	151 J	3.7	0.75	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Magnesium	6010	920	25	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Manganese	1230	2.8	0.75	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Mercury	0.86	0.053	0.023	mg/kg	1	05/07/19	05/07/19	LL	SW846 7471B [1]	SW846 7471B [3]
Nickel	35.9	7.4	0.64	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Potassium	2660	1800	59	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Selenium	1.2 U	3.7	1.2	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Silver	1.2	0.92	0.31	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Sodium	346 J	1800	140	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Thallium	1.1 U	1.8	1.1	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Vanadium	46.4	9.2	0.35	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]
Zinc	458 J	9.2	4.2	mg/kg	1	05/08/19	05/08/19	ND	SW846 6010D [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA46664
(2) Instrument QC Batch: MA46680
(3) Prep QC Batch: MP14859
(4) Prep QC Batch: MP14865

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: S-160(13-15)
Lab Sample ID: JC87535-12
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 05/03/19
Date Received: 05/03/19
Percent Solids: 56.0

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	1.8 J	0.41	0.21	mg/kg	1	05/10/19 18:04	KI	SW846 9012B/LACHAT
Solids, Percent	56			%	1	05/13/19 15:15	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

ARCADIS Design & Consultancy for natural and built assets

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DATA REVIEW

Philadelphia, Pennsylvania

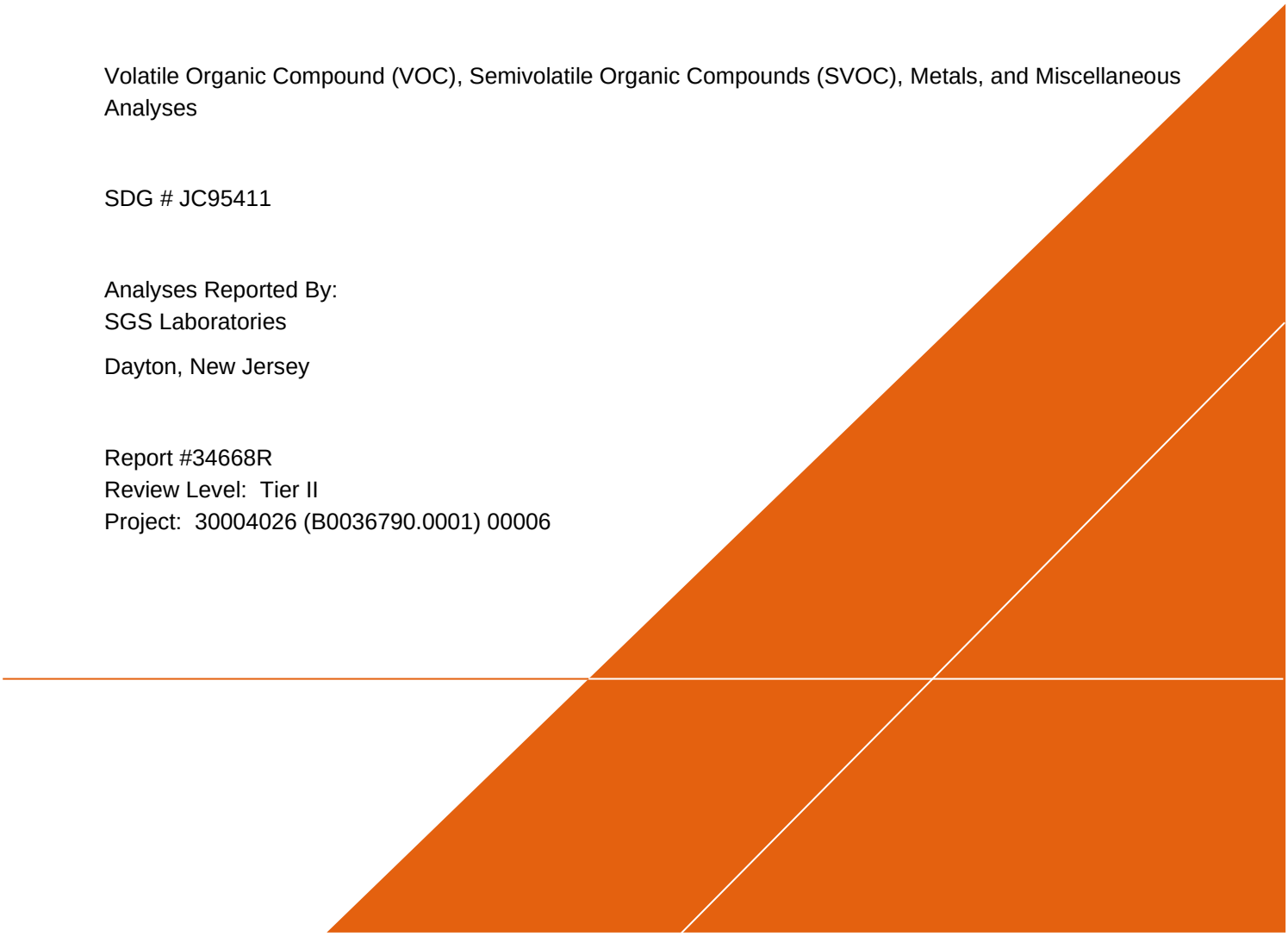
Volatile Organic Compound (VOC), Semivolatile Organic Compounds (SVOC), Metals, and Miscellaneous Analyses

SDG # JC95411

Analyses Reported By:
SGS Laboratories

Dayton, New Jersey

Report #34668R
Review Level: Tier II
Project: 30004026 (B0036790.0001) 00006



SUMMARY

This data review report summarizes the review of Sample Delivery Group (SDG) # JC95411 for samples collected in association with the National Grid Philly Coke site in Philadelphia, Pennsylvania. The review was conducted as a Tier II evaluation and included review of laboratory analytical data package completeness. Field documentation was not included in this review. Included with this assessment are the post-validation annotated sample result sheets, and chain of custody (COC). Analyses were performed on the following samples

SDG Number	Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis				
						VOC	SVOC	PEST/ PCB	Metals	MISC
JC95411	S-164(4-6)	JC95411-1	Soil	9/19/2019		X	X		X	X
	S-173(5-7)	JC95411-2	Soil	9/19/2019		X	X		X	X
	S-172(5-7)	JC95411-3	Soil	9/19/2019		X	X		X	X
	S-171(5-7)	JC95411-4	Soil	9/19/2019		X	X		X	X
	S-168(6-8)	JC95411-5	Soil	9/19/2019		X	X		X	X
	S-163(0.5-2)	JC95411-6	Soil	9/19/2019		X	X		X	X
	S-163(2-4)	JC95411-7	Soil	9/19/2019		X	X		X	X
	S-167(7-9)	JC95411-8	Soil	9/19/2019		X	X		X	X
	PCTP-07R(10-12)	JC95411-9	Soil	9/19/2019		X	X		X	X
	TRIP BLANK	JC95411-10	Water	9/19/2019		X				

Notes:

1. PEST/PCB = Pesticides and polychlorinated biphenyls
2. SVOC = Semivolatile Organic Compounds
3. VOC = Volatile Organic Compound
4. MISC = Miscellaneous (total cyanide)

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance (QA) or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260C and 8270D. Data were reviewed in accordance with the USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540/R-2017-002, January 2017 and the USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Organic Data Review, EPA540/R-99/008, October 1999 (as applicable).

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers
  - U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
  - B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- Quantitation (Q) Qualifiers
  - E The compound was quantitated above the calibration range.
  - D Concentration is based on a diluted sample analysis.
- Validation Qualifiers
  - J The compound was positively identified; however, the associated numerical value is an estimated concentration only.
  - UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.
  - JN The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.
  - UB Compound considered non-detect at the listed value due to associated blank contamination.
  - N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.
  - R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is

that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times/Preservation

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260C	Water	14 days from collection to analysis (preserved) 7 days from collection to analysis (non-preserved)	Cool to <6 °C; preserved to a pH of less than 2 s.u.
	Soil	48 hours from collection to extraction and 14 days from extraction to analysis (Samples stored in deionized water must be frozen or analyzed within 48 hours)	Cool to <6 °C.

Note:
s.u. Standard units

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore, detected sample results were not associated with blank contamination.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. VOC analysis requires that all surrogates associated with the analysis exhibit recoveries within the laboratory-established acceptance limits.

All surrogate recoveries were within control limits.

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

The MS/MSD exhibited acceptable recoveries and RPD between the MS/MSD recoveries.

5. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) Analysis

The LCS/LCSD analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS/LCSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

Sample locations associated with LCS/LCSD analysis exhibiting recoveries outside of the control limits presented in the following table.

Sample Locations	Compound	LCS Recovery	LCSD Recovery
TRIP BLANK	Bromoform	>UL	--
	Dibromochloromethane	>UL	--
	trans-1,3-Dichloropropene	>UL	--

Note:
AC = Acceptable

The criteria used to evaluate the LCS/LCSD recoveries are presented in the following table. In the case of an LCS/LCSD deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> the upper control limit (UL)	Non-detect	No Action
	Detect	J
< the lower control limit (LL) but > 10%	Non-detect	UJ
	Detect	J
< 10%	Non-detect	R
	Detect	J

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of three times the RL is applied for soil matrices.

A field duplicate was not performed on a sample within this SDG.

7. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

8. System Performance and Overall Assessment

The laboratory narrative indicates continuing calibration deviations. These deviations are normally not evaluated in a tier II data review. Sample results that had continuing calibration recoveries that exceed the control limit high and were non detect did not require qualification. Sample results where the calibration recoveries were high and the compound was detected or calibration recoveries were low were qualified as estimated (J or UJ).

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: SW-846 8260	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks	X				X
C. Trip blanks		X		X	
Laboratory Control Sample (LCS)		X	X		
Laboratory Control Sample Duplicate(LCSD)	X				X
LCS/LCSD Precision (RPD)	X				X
Matrix Spike (MS)		X		X	
Matrix Spike Duplicate(MSD)		X		X	
MS/MSD Precision (RPD)		X		X	
Field/Lab Duplicate (RPD)	X				X
Surrogate Spike Recoveries		X		X	
Dilution Factor		X		X	
Moisture Content		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

SEMIVOLATILE ORGANIC COMPOUND (SVOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8270D	Water	7 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C
	Soil	14 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. SVOC analysis requires that two of the three SVOC surrogate compounds within each fraction exhibit recoveries within the laboratory-established acceptance limits.

All surrogate recoveries were within control limits.

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

The MS/MSD analysis was not performed on a sample within this SDG.

5. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) Analysis

The LCS/LCSD analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS/LCSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

The LCS/LCSD exhibited acceptable recoveries and RPD between the MS/MSD recoveries.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of three times the RL is applied for soil matrices.

A field duplicate was not performed on a sample within this SDG.

7. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

Several samples were diluted to bring target compounds within linear range of the instrument. Sample results that were reported from a secondary dilution were qualified with a “D”, indicating the result is diluted.

8. System Performance and Overall Assessment

The laboratory narrative indicates continuing calibration deviations. These deviations are normally not evaluated in a tier II data review. Sample results that had continuing calibration recoveries that exceed the control limit high and were non detect did not require qualification. Sample results where the calibration recoveries were high and the compound was detected or calibration recoveries were low were qualified as estimated (J or UJ).

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR SVOCs

SVOCs: SW-846 8270	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks	X				X
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R	X				X
LCS/LCSD Precision (RPD)	X				X
Matrix Spike (MS) %R	X				X
Matrix Spike Duplicate(MSD) %R	X				X
MS/MSD Precision (RPD)	X				X
Field/Lab Duplicate (RPD)	X				X
Surrogate Spike Recoveries		X		X	
Dilution Factor		X		X	
Moisture Content		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

INORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 6010D, 7471A, and 9012B. Data were reviewed in accordance with the USEPA CLP National Functional Guidelines for Inorganic Superfund Methods Data Review, EPA 540/R-2017-001, January 2017; and the USEPA CLP National Functional Guidelines for Inorganic Data Review, EPA 540-R-01-008, July 2002 (as applicable).

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and that it was already subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with the USEPA National Functional Guidelines:

- Concentration (C) Qualifiers
  - U The analyte was analyzed for but not detected. The associated value is the analyte instrument detection limit.
  - J The reported value was obtained from a reading less than the reporting limit (RL), but greater than or equal to the method detection limit (MDL).
- Quantitation (Q) Qualifiers
  - E The reported value is estimated due to the presence of interference.
  - N Spiked sample recovery is not within control limits.
  - * Duplicate analysis is not within control limits.
- Validation Qualifiers
  - J The analyte was positively identified; however, the associated numerical value is an estimated concentration only.
  - UJ The analyte was not detected above the reporting limit. However, the reported limit is approximate and may or may not represent the actual limit of detection.
  - UB Analyte considered non-detect at the listed value due to associated blank contamination.
  - R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

METALS ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 6010D	Water	180 days from collection to analysis	Preserved to a pH of less than 2.
	Soil	180 days from collection to analysis	Cool to <6 °C.
SW-846 7471A	Soil	28 days from collection to analysis	Cool to <6 °C.
SW-846 7470A	Water	28 days from collection to analysis	Cool to <6 °C; preserved to a pH of less than 2.

All samples were analyzed within the specified holding times.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Analytes were detected in the associated QA blanks; however, the associated sample results were greater than the BAL and/or were non-detect. No qualification of the sample results was required.

3. Matrix Spike (MS)/Matrix Spike Duplicate(MSD)/Laboratory Duplicate Analysis

MS/MSD and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

3.1 MS/MSD Analysis

All metal analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the analyte's concentration detected in the parent sample exceeds the MS concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

The MS/MSD analysis was not performed on a sample within this SDG.

3.2 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the RL. A control limit of 20% for water matrices and 35% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of one times the RL is applied for water matrices and two times the RL for soil matrices.

MS/MSD analysis was performed in replacement of the laboratory duplicate analysis. The MS/MSD analysis was not performed on a sample within this SDG.

4. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of three times the RL is applied for soil matrices.

A field duplicate was not performed on a sample within this SDG.

5. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The analytes associated with the LCS analysis must exhibit a percent recovery between the control limits of 80% and 120%.

The LCS analysis exhibited recoveries within the control limits.

6. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR METAL

METALS; SW846 6010D/7471A	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Inductively Coupled Plasma-Atomic Emission Spectrometry (ICP-AES)					
Tier II Validation					
Holding Times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method Blanks		X		X	
B. Equipment/Field Blanks	X				X
Laboratory Control Sample (LCS)		X		X	
Matrix Spike (MS) %R	X				X
Matrix Spike Duplicate (MSD) %R	X				X
MS/MSD Precision (RPD)	X				X
Field/Lab Duplicate (RPD)	X				X
Total vs. Dissolved	X				X

Notes:

%R Percent recovery

RPD Relative percent difference

GENERAL CHEMISTRY ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
Cyanide by SW-846 9012	Water	14 days from collection to analysis	Cool to <6 °C; preserved to a pH of greater than 12.
	Soil		Cool to <6 °C.

All samples were analyzed within the specified holding times.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Analytes were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Matrix Spike/Matrix Spike Duplicate (MS/MSD)/Laboratory Duplicate Analysis

MS/MSD and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

3.1 MS/MSD Analysis

All analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the analyte's concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

The MS analysis was not performed on a sample within this SDG.

3.2 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the RL. A control limit of 20% for water matrices and 35% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of one times the RL is applied for water matrices and two times the RL for soil matrices.

The laboratory duplicate analysis was not performed on a sample within this SDG.

4. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The analytes associated with the LCS analysis must exhibit a percent recovery between the control limits of 80% and 120%.

The LCS analysis is not required for this analysis.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of three times the RL is applied for soil matrices.

A field duplicate was not performed on a sample within this SDG.

6. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR GENERAL CHEMISTRY

General Chemistry: EPA 9012	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Miscellaneous Instrumentation					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks					X
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R					X
LCS/LCSD Precision (RPD)					X
Matrix Spike (MS) %R	X				X
Matrix Spike Duplicate(MSD) %R	X				X
MS/MSD Precision (RPD)	X				X
Field/Lab Duplicate (RPD)	X			X	
Dilution Factor		X		X	
Moisture Content		X		X	

Notes:
%R - percent recovery
RPD - relative percent difference

VALIDATION PERFORMED BY: Andrew Korycinski

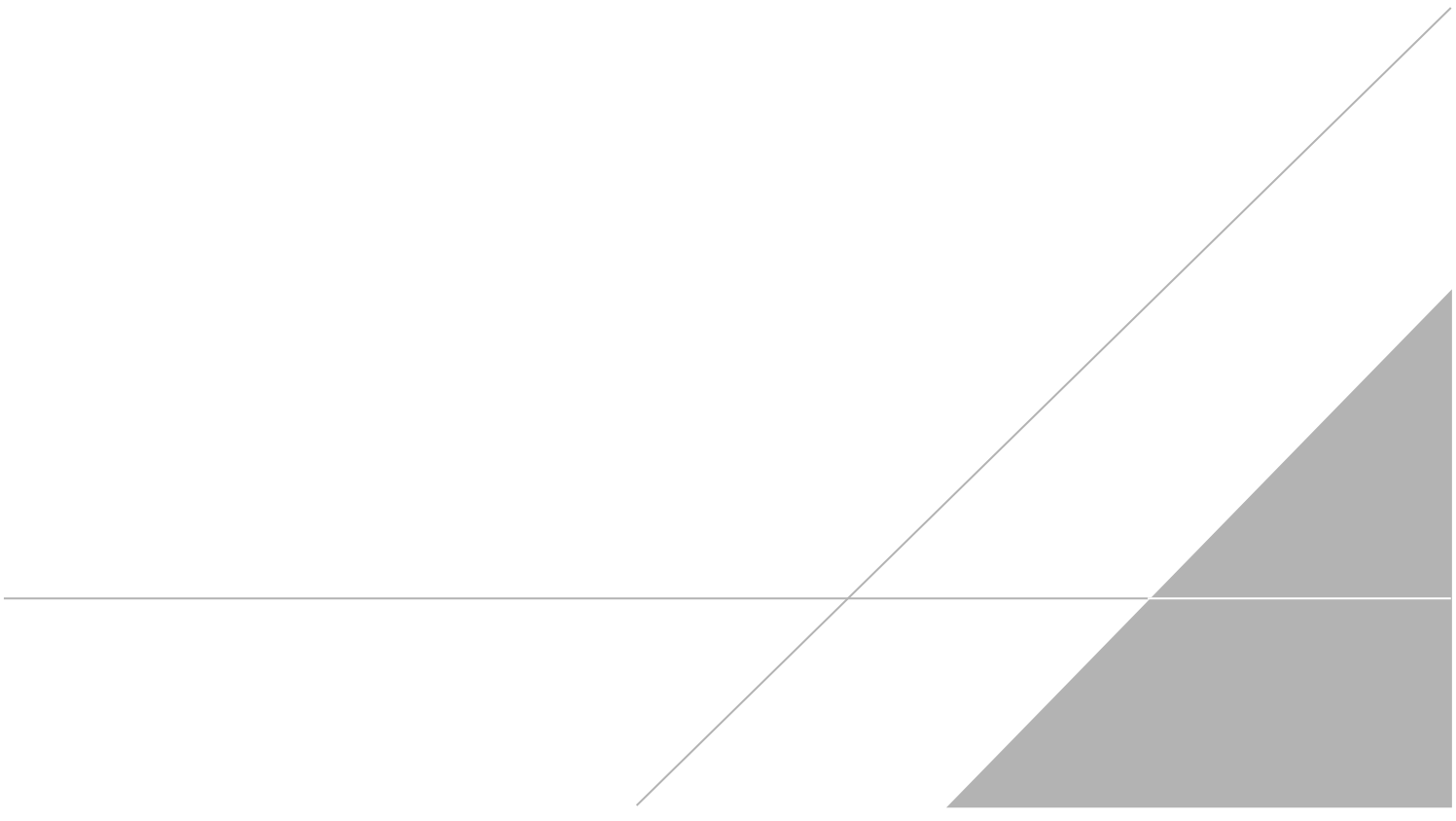
SIGNATURE:

DATE: November 6, 2019

PEER REVIEW: Dennis Capria

DATE: November 11, 2019

CHAIN OF CUSTODY
SAMPLE ANALYSIS DATA SHEETS



SGS

SLC
STB

CHAIN OF CUSTODY

SGS North America Inc. - Dayton
2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200 FAX: 732-329-3499/3480
www.sgs.com/ehsusa

Page 1 of 1

FED-EX Tracking #

Bottle Order Control # JC95411

SGS Quote # IR-09619-173

SGS Job #

Client / Reporting Information

Company Name: ARCADIS
Street Address: 1 LINCOLN CENTER
City State Zip: SYRACUSE NY 13202
Project Contact E-mail: CAREY.HEALEY@
Phone #: 315-671-9338
Sampler(s) Name(s) Phone #: CHRIS CRTOLANO

Project Information

Project Name: PHILLY COKE - NATIONAL GRID
Street: RICHMOND ST
City State: PHILA PA
Project #:
Client Purchase Order #:
Project Manager:

Billing Information (if different from Report to)

Company Name:
Street Address:
City State Zip:
Attention:

Requested Analysis

SGS Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Grab (G) Comp (C)	Matrix	# of bottles	Number of preserved Bottles: HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	TCL VOC	TCL SVOC	TAL INORGANICS	LAB USE ONLY
1	S-164 (4-6)		9/19/19	1110	CO	G	SO	5					2	2	1		X	X	X	CB
2	S-173 (5-7)			1015				5					2	2	1		X	X	X	PSO
3	S-172 (5-7)			0945				5					2	2	1		X	X	X	14R3
4	S-171 (5-7)			0900				5					2	2	1		X	X	X	40106
5	S-168 (6-8)			0880				5					2	2	1		X	X	X	V1043
6	S-163 (0.5-2)			1230				5					2	2	1		X	X	X	
7	S-163 (2-4)			1240				5					2	2	1		X	X	X	
8	S-167 (7-9)		9/20/19	0745				5					2	2	1		X	X	X	
9	DCTP-07R (10-12)			0845				5					2	2	1		X	X	X	
10	TRIP BLANK		—	—	—	—	H2O	2	2								X			

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL - Sludge; SED-Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB - Field Blank; EB-Equipment Blank; RB - Rinse Blank; TB - Trip Blank

Turn Around Time (Business Days)

Approved By (SGS PM): / Date:

- [X] 10 Business Days
- [ ] 5 Business Days
- [ ] 3 Business Days
- [ ] 2 Business Days
- [ ] 1 Business Day
- [ ] Other

All data available via Labline

Approval needed for 1-3 Business Day TAT

Deliverable

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] NJ Reduced (Level 3)
- [X] Full Tier I (Level 4)
- [ ] Commercial "C"
- [ ] NJ DKQP
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] MA MCP Criteria
- [ ] CT RCP Criteria
- [ ] State Forms
- [ ] EDD Format
- [ ] DOD-QSM5

Commercial "A" = Results only; Commercial "B" = Results + QC Summary
Commercial "C" = Results + QC Summary + Partial Raw data

Comments / Special Instructions

INITIAL ASESSMENT 4A

LABEL VERIFICATION

http://www.sgs.com/en/terms-and-conditions

Sample custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by:	Date / Time:	Received By:	Relinquished By:	Date / Time:	Received By:
1		9/24/19 1100	1		9/24/19 1530	2
2						
3						
4						
5						

Custody Seal # Intact / Not intact

Preserved where applicable: Absent

Therm. ID:

On Ice

Cooler Temp. °C: 3.9

EHSA-QAC-0023-02-FORM-Dayton - Standard COC.xlsx

5.1 5

SGS LabLink@1054774 16:29 15-Oct-2019

Report of Analysis

Client Sample ID:	S-164(4-6)		
Lab Sample ID:	JC95411-1	**Date Sampled:**	09/19/19
Matrix:	SO - Soil	**Date Received:**	09/20/19
Method:	SW846 8260C	**Percent Solids:**	83.5
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	2C170453.D	1	10/01/19 13:25	ED	n/a	n/a	V2C7665
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	6.0 g	10.0 ml	100 ul
Run #2			

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	1100	440	ug/kg	
71-43-2	Benzene	ND	55	50	ug/kg	
74-97-5	Bromochloromethane	ND	550	61	ug/kg	
75-27-4	Bromodichloromethane	ND	220	49	ug/kg	
75-25-2	Bromoform	ND	550	63	ug/kg	
74-83-9	Bromomethane	ND	550	110	ug/kg	
78-93-3	2-Butanone (MEK) [b]	ND	1100	410	ug/kg	
75-15-0	Carbon disulfide	ND	220	100	ug/kg	
56-23-5	Carbon tetrachloride	ND	220	68	ug/kg	
108-90-7	Chlorobenzene	ND	220	50	ug/kg	
75-00-3	Chloroethane	ND	550	65	ug/kg	
67-66-3	Chloroform	ND	220	54	ug/kg	
74-87-3	Chloromethane	ND	550	210	ug/kg	
110-82-7	Cyclohexane	ND	220	72	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	220	92	ug/kg	
124-48-1	Dibromochloromethane	ND	220	61	ug/kg	
106-93-4	1,2-Dibromoethane	ND	110	46	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	110	60	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	110	54	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	110	54	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	550	80	ug/kg	
75-34-3	1,1-Dichloroethane	ND	110	54	ug/kg	
107-06-2	1,2-Dichloroethane	ND	110	52	ug/kg	
75-35-4	1,1-Dichloroethene	ND	110	72	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	110	92	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	110	67	ug/kg	
78-87-5	1,2-Dichloropropane	ND	220	52	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	220	52	ug/kg	
10061-02-6	trans-1,3-Dichloropropene [b]	ND	220	50	ug/kg	
100-41-4	Ethylbenzene	74.8	110	61	ug/kg	J
76-13-1	Freon 113	ND	550	110	ug/kg	
591-78-6	2-Hexanone	ND	550	230	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-164(4-6)		
Lab Sample ID:	JC95411-1	**Date Sampled:**	09/19/19
Matrix:	SO - Soil	**Date Received:**	09/20/19
Method:	SW846 8260C	**Percent Solids:**	83.5
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	220	76	ug/kg	
79-20-9	Methyl Acetate	211	550	150	ug/kg	J
108-87-2	Methylcyclohexane	ND	220	96	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	110	51	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	550	250	ug/kg	
75-09-2	Methylene chloride	ND	550	110	ug/kg	
100-42-5	Styrene	ND	220	63	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	220	66	ug/kg	
127-18-4	Tetrachloroethene	ND	220	64	ug/kg	
108-88-3	Toluene	74.6	110	58	ug/kg	J
87-61-6	1,2,3-Trichlorobenzene	ND	550	210	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	550	170	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	220	53	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	220	61	ug/kg	
79-01-6	Trichloroethene	ND	110	84	ug/kg	
75-69-4	Trichlorofluoromethane	ND	550	75	ug/kg	
75-01-4	Vinyl chloride	ND	220	53	ug/kg	
	m,p-Xylene	102	110	98	ug/kg	J
95-47-6	o-Xylene	ND	110	64	ug/kg	
1330-20-7	Xylene (total)	102	110	64	ug/kg	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%		75-127%
17060-07-0	1,2-Dichloroethane-D4	102%		75-130%
2037-26-5	Toluene-D8	103%		80-120%
460-00-4	4-Bromofluorobenzene	102%		79-127%

(a) Diluted due to high concentration of non-target compound.
(b) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS LabLink@1054774 16:29 15-Oct-2019

Report of Analysis

Client Sample ID:	S-164(4-6)		
Lab Sample ID:	JC95411-1	**Date Sampled:**	09/19/19
Matrix:	SO - Soil	**Date Received:**	09/20/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	83.5
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2P89927.D	1	09/26/19 21:13	JC	09/26/19 05:15	OP22953	E2P3979
Run #2							

	Initial Weight	Final Volume
Run #1	31.6 g	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	76	19	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	190	23	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	190	32	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	190	67	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	190	140	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	190	41	ug/kg	
95-48-7	2-Methylphenol	ND	76	24	ug/kg	
	3&4-Methylphenol	ND	76	31	ug/kg	
88-75-5	2-Nitrophenol	ND	190	25	ug/kg	
100-02-7	4-Nitrophenol	ND	380	100	ug/kg	
87-86-5	Pentachlorophenol	ND	150	36	ug/kg	
108-95-2	Phenol	ND	76	20	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	190	25	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	190	28	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	190	23	ug/kg	
83-32-9	Acenaphthene	ND	38	13	ug/kg	
208-96-8	Acenaphthylene	68.7	38	19	ug/kg	
98-86-2	Acetophenone	ND	190	8.1	ug/kg	
120-12-7	Anthracene	175	38	23	ug/kg	
1912-24-9	Atrazine [a]	ND	76	16	ug/kg	
56-55-3	Benzo(a)anthracene	274	38	11	ug/kg	
50-32-8	Benzo(a)pyrene	242	38	17	ug/kg	
205-99-2	Benzo(b)fluoranthene	318	38	17	ug/kg	
191-24-2	Benzo(g,h,i)perylene	179	38	19	ug/kg	
207-08-9	Benzo(k)fluoranthene	122	38	18	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	76	15	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	76	9.2	ug/kg	
92-52-4	1,1'-Biphenyl	5.7	76	5.2	ug/kg	J
100-52-7	Benzaldehyde	ND	190	9.4	ug/kg	
91-58-7	2-Chloronaphthalene	ND	76	9.0	ug/kg	
106-47-8	4-Chloroaniline	ND	190	14	ug/kg	
86-74-8	Carbazole	43.7	76	5.5	ug/kg	J

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-164(4-6)		
Lab Sample ID:	JC95411-1	**Date Sampled:**	09/19/19
Matrix:	SO - Soil	**Date Received:**	09/20/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	83.5
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	76	15	ug/kg	
218-01-9	Chrysene	294	38	12	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	76	8.1	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	76	16	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	76	14	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	76	12	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	38	12	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	38	19	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	76	32	ug/kg	
123-91-1	1,4-Dioxane	ND	38	25	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	39.1	38	17	ug/kg	
132-64-9	Dibenzofuran	43.2	76	15	ug/kg	J
84-74-2	Di-n-butyl phthalate	ND	76	6.2	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	76	9.4	ug/kg	
84-66-2	Diethyl phthalate	ND	76	8.1	ug/kg	
131-11-3	Dimethyl phthalate	ND	76	6.7	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	76	8.9	ug/kg	
206-44-0	Fluoranthene	644	38	17	ug/kg	
86-73-7	Fluorene	68.1	38	17	ug/kg	
118-74-1	Hexachlorobenzene	ND	76	9.6	ug/kg	
87-68-3	Hexachlorobutadiene	ND	38	15	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	380	15	ug/kg	
67-72-1	Hexachloroethane	ND	190	19	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	204	38	18	ug/kg	
78-59-1	Isophorone	ND	76	8.1	ug/kg	
91-57-6	2-Methylnaphthalene	18.6	38	8.6	ug/kg	J
88-74-4	2-Nitroaniline	ND	190	8.9	ug/kg	
99-09-2	3-Nitroaniline	ND	190	9.5	ug/kg	
100-01-6	4-Nitroaniline	ND	190	9.8	ug/kg	
91-20-3	Naphthalene	38.2	38	11	ug/kg	
98-95-3	Nitrobenzene	ND	76	15	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	76	11	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	190	14	ug/kg	
85-01-8	Phenanthrene	450	38	13	ug/kg	
129-00-0	Pyrene	558	38	12	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	190	9.6	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	64%		23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-164(4-6)		
Lab Sample ID:	JC95411-1	**Date Sampled:**	09/19/19
Matrix:	SO - Soil	**Date Received:**	09/20/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	83.5
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	70%		27-114%
118-79-6	2,4,6-Tribromophenol	76%		19-152%
4165-60-0	Nitrobenzene-d5	78%		26-134%
321-60-8	2-Fluorobiphenyl	64%		39-124%
1718-51-0	Terphenyl-d14	95%		36-134%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-164(4-6)
Lab Sample ID: JC95411-1
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 09/19/19
Date Received: 09/20/19
Percent Solids: 83.5

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	12400	61	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]
Antimony	< 2.4	2.4	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]
Arsenic	< 2.4	2.4	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]
Barium	125	24	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]
Beryllium [a]	1.3	0.49	mg/kg	2	09/29/19	10/01/19	RP	SW846 6010D [3]	SW846 3050B [5]
Cadmium	< 0.61	0.61	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]
Calcium	2510	610	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]
Chromium	23.7	1.2	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]
Cobalt	13.3	6.1	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]
Copper	36.1	3.1	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]
Iron	21100	61	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]
Lead	13.7	2.4	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]
Magnesium	7440	610	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]
Manganese	878	1.8	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]
Mercury	0.22	0.039	mg/kg	1	09/27/19	09/27/19	CH	SW846 7471B [1]	SW846 7471B [4]
Nickel	24.1	4.9	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]
Potassium	8000	1200	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]
Selenium	< 2.4	2.4	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]
Silver [a]	< 1.2	1.2	mg/kg	2	09/29/19	10/01/19	RP	SW846 6010D [3]	SW846 3050B [5]
Sodium	< 1200	1200	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]
Thallium [a]	< 2.4	2.4	mg/kg	2	09/29/19	10/01/19	RP	SW846 6010D [3]	SW846 3050B [5]
Vanadium	47.5	6.1	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]
Zinc	103	6.1	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA47516
(2) Instrument QC Batch: MA47539
(3) Instrument QC Batch: MA47552
(4) Prep QC Batch: MP17545
(5) Prep QC Batch: MP17592

(a) Elevated detection limit due to dilution required for high interfering element.

RL = Reporting Limit

Report of Analysis

Client Sample ID:	S-164(4-6)		
Lab Sample ID:	JC95411-1	**Date Sampled:**	09/19/19
Matrix:	SO - Soil	**Date Received:**	09/20/19
		Percent Solids:	83.5
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Cyanide	0.33	0.30	mg/kg	1	10/02/19 13:03	KI	SW846 9012B/LACHAT
Solids, Percent	83.5		%	1	09/30/19 17:00	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit

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Report of Analysis

Client Sample ID:	S-173(5-7)		
Lab Sample ID:	JC95411-2	**Date Sampled:**	09/19/19
Matrix:	SO - Soil	**Date Received:**	09/20/19
Method:	SW846 8260C	**Percent Solids:**	86.7
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1C167548.D	1	10/03/19 13:11	PS	n/a	n/a	V1C7330
Run #2							

	Initial Weight
Run #1	4.7 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	217	12	4.9	ug/kg	
71-43-2	Benzene	ND	0.61	0.56	ug/kg	
74-97-5	Bromochloromethane	ND	6.1	0.69	ug/kg	
75-27-4	Bromodichloromethane	ND	2.5	0.54	ug/kg	
75-25-2	Bromoform	ND	6.1	0.71	ug/kg	
74-83-9	Bromomethane [a]	ND	6.1	1.2	ug/kg	
78-93-3	2-Butanone (MEK)	19.1	12	4.6	ug/kg	
75-15-0	Carbon disulfide	2.0	2.5	1.1	ug/kg	J
56-23-5	Carbon tetrachloride	ND	2.5	0.76	ug/kg	
108-90-7	Chlorobenzene	ND	2.5	0.56	ug/kg	
75-00-3	Chloroethane	ND	6.1	0.73	ug/kg	
67-66-3	Chloroform	ND	2.5	0.60	ug/kg	
74-87-3	Chloromethane	ND	6.1	2.4	ug/kg	
110-82-7	Cyclohexane	ND	2.5	0.81	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.5	1.0	ug/kg	
124-48-1	Dibromochloromethane	ND	2.5	0.69	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.2	0.52	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.2	0.67	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.2	0.61	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.2	0.61	ug/kg	
75-71-8	Dichlorodifluoromethane [b]	ND	6.1	0.89	ug/kg	UJ
75-34-3	1,1-Dichloroethane	ND	1.2	0.61	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.2	0.58	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.2	0.80	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.2	1.0	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.2	0.75	ug/kg	
78-87-5	1,2-Dichloropropane	ND	2.5	0.58	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	2.5	0.58	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2.5	0.56	ug/kg	
100-41-4	Ethylbenzene	0.79	1.2	0.68	ug/kg	J
76-13-1	Freon 113	ND	6.1	1.2	ug/kg	
591-78-6	2-Hexanone	ND	6.1	2.6	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-173(5-7)		
Lab Sample ID:	JC95411-2	**Date Sampled:**	09/19/19
Matrix:	SO - Soil	**Date Received:**	09/20/19
Method:	SW846 8260C	**Percent Solids:**	86.7
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	2.5	0.86	ug/kg	
79-20-9	Methyl Acetate	ND	6.1	1.7	ug/kg	
108-87-2	Methylcyclohexane	ND	2.5	1.1	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.2	0.58	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	6.1	2.8	ug/kg	
75-09-2	Methylene chloride	ND	6.1	1.2	ug/kg	
100-42-5	Styrene	ND	2.5	0.71	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.5	0.73	ug/kg	
127-18-4	Tetrachloroethene	ND	2.5	0.71	ug/kg	
108-88-3	Toluene	ND	1.2	0.64	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	6.1	2.4	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	6.1	1.9	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	2.5	0.59	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2.5	0.68	ug/kg	
79-01-6	Trichloroethene	ND	1.2	0.93	ug/kg	
75-69-4	Trichlorofluoromethane [b]	ND	6.1	0.84	ug/kg	UJ
75-01-4	Vinyl chloride	ND	2.5	0.59	ug/kg	
	m,p-Xylene	1.5	1.2	1.1	ug/kg	
95-47-6	o-Xylene	0.95	1.2	0.72	ug/kg	J
1330-20-7	Xylene (total)	2.5	1.2	0.72	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	105%		75-127%
17060-07-0	1,2-Dichloroethane-D4	107%		75-130%
2037-26-5	Toluene-D8	105%		80-120%
460-00-4	4-Bromofluorobenzene	105%		79-127%

(a) Associated CCV outside of control limits high, sample was ND.
(b) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	S-173(5-7)		
Lab Sample ID:	JC95411-2	**Date Sampled:**	09/19/19
Matrix:	SO - Soil	**Date Received:**	09/20/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	86.7
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2P89929.D	1	09/26/19 22:03	JC	09/26/19 05:15	OP22953	E2P3979
Run #2	2P89965.D	5	09/27/19 19:33	AR	09/26/19 05:15	OP22953	E2P3981

	Initial Weight	Final Volume
Run #1	31.3 g	1.0 ml
Run #2	31.3 g	1.0 ml

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	74	18	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	180	23	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	180	31	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	180	66	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	180	140	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	180	39	ug/kg	
95-48-7	2-Methylphenol	ND	74	24	ug/kg	
	3&4-Methylphenol	ND	74	30	ug/kg	
88-75-5	2-Nitrophenol	ND	180	24	ug/kg	
100-02-7	4-Nitrophenol	ND	370	98	ug/kg	
87-86-5	Pentachlorophenol	ND	150	35	ug/kg	
108-95-2	Phenol	ND	74	19	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	180	24	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	180	28	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	180	22	ug/kg	
83-32-9	Acenaphthene	960	37	13	ug/kg	
208-96-8	Acenaphthylene	114	37	19	ug/kg	
98-86-2	Acetophenone	ND	180	7.9	ug/kg	
120-12-7	Anthracene	2510	37	23	ug/kg	
1912-24-9	Atrazine [a]	ND	74	16	ug/kg	
56-55-3	Benzo(a)anthracene	4910 [b]	180	52	ug/kg	D
50-32-8	Benzo(a)pyrene	4320 [b]	180	84	ug/kg	D
205-99-2	Benzo(b)fluoranthene	5160 [b]	180	81	ug/kg	D
191-24-2	Benzo(g,h,i)perylene	2680	37	18	ug/kg	
207-08-9	Benzo(k)fluoranthene	1720	37	17	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	74	14	ug/kg	
85-68-7	Butyl benzyl phthalate	1120	74	9.0	ug/kg	
92-52-4	1,1'-Biphenyl	58.8	74	5.0	ug/kg	J
100-52-7	Benzaldehyde	ND	180	9.1	ug/kg	
91-58-7	2-Chloronaphthalene	ND	74	8.8	ug/kg	
106-47-8	4-Chloroaniline	ND	180	13	ug/kg	
86-74-8	Carbazole	1280	74	5.3	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-173(5-7)		
Lab Sample ID:	JC95411-2	**Date Sampled:**	09/19/19
Matrix:	SO - Soil	**Date Received:**	09/20/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	86.7
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	74	15	ug/kg	
218-01-9	Chrysene	4410 [b]	180	58	ug/kg	D
111-91-1	bis(2-Chloroethoxy)methane	ND	74	7.9	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	74	16	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	74	13	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	74	12	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	37	11	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	37	18	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	74	31	ug/kg	
123-91-1	1,4-Dioxane	ND	37	24	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	671	37	16	ug/kg	
132-64-9	Dibenzofuran	617	74	15	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	74	6.0	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	74	9.2	ug/kg	
84-66-2	Diethyl phthalate	ND	74	7.8	ug/kg	
131-11-3	Dimethyl phthalate	ND	74	6.6	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	222	74	8.6	ug/kg	
206-44-0	Fluoranthene	13000 [b]	180	82	ug/kg	D
86-73-7	Fluorene	1130	37	17	ug/kg	
118-74-1	Hexachlorobenzene	ND	74	9.3	ug/kg	
87-68-3	Hexachlorobutadiene	ND	37	15	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	370	15	ug/kg	
67-72-1	Hexachloroethane	ND	180	18	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	2500	37	17	ug/kg	
78-59-1	Isophorone	ND	74	7.9	ug/kg	
91-57-6	2-Methylnaphthalene	190	37	8.3	ug/kg	
88-74-4	2-Nitroaniline	ND	180	8.7	ug/kg	
99-09-2	3-Nitroaniline	ND	180	9.2	ug/kg	
100-01-6	4-Nitroaniline	ND	180	9.5	ug/kg	
91-20-3	Naphthalene	453	37	10	ug/kg	
98-95-3	Nitrobenzene	ND	74	14	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	74	11	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	180	13	ug/kg	
85-01-8	Phenanthrene	10200 [b]	180	62	ug/kg	D
129-00-0	Pyrene	10500 [b]	180	59	ug/kg	D
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	180	9.4	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	63%	66%	23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-173(5-7)		
Lab Sample ID:	JC95411-2	**Date Sampled:**	09/19/19
Matrix:	SO - Soil	**Date Received:**	09/20/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	86.7
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	68%	72%	27-114%
118-79-6	2,4,6-Tribromophenol	71%	65%	19-152%
4165-60-0	Nitrobenzene-d5	69%	76%	26-134%
321-60-8	2-Fluorobiphenyl	62%	65%	39-124%
1718-51-0	Terphenyl-d14	84%	87%	36-134%

(a) Associated CCV outside of control limits high, sample was ND.
(b) Result is from Run# 2

Report of Analysis

Client Sample ID: S-173(5-7)
Lab Sample ID: JC95411-2
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 09/19/19
Date Received: 09/20/19
Percent Solids: 86.7

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	14500	59	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Antimony	7.0	2.4	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Arsenic	7.6	2.4	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Barium	67.3	24	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Beryllium	0.65	0.24	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cadmium	< 0.59	0.59	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Calcium	6640	590	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Chromium	23.7	1.2	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cobalt	6.9	5.9	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Copper	18.1	3.0	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Iron	22200	59	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Lead	117	2.4	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Magnesium	2910	590	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Manganese	262	1.8	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Mercury	1.4	0.17	mg/kg	5	09/27/19	09/27/19	CH	SW846 7471B [1]	SW846 7471B [3]
Nickel	12.8	4.8	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Potassium	1530	1200	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Selenium	< 2.4	2.4	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Silver	< 0.59	0.59	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Sodium	< 1200	1200	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Thallium	< 1.2	1.2	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Vanadium	30.1	5.9	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Zinc	79.5	5.9	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA47516
(2) Instrument QC Batch: MA47539
(3) Prep QC Batch: MP17545
(4) Prep QC Batch: MP17592

RL = Reporting Limit

Report of Analysis

Client Sample ID:	S-173(5-7)		
Lab Sample ID:	JC95411-2	**Date Sampled:**	09/19/19
Matrix:	SO - Soil	**Date Received:**	09/20/19
		Percent Solids:	86.7
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Cyanide	< 0.28	0.28	mg/kg	1	10/02/19 12:22	KI	SW846 9012B/LACHAT
Solids, Percent	86.7		%	1	09/30/19 17:00	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit

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Report of Analysis

Client Sample ID:	S-172(5-7)		
Lab Sample ID:	JC95411-3	**Date Sampled:**	09/19/19
Matrix:	SO - Soil	**Date Received:**	09/20/19
Method:	SW846 8260C	**Percent Solids:**	86.1
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	D266648.D	1	10/02/19 11:42	TDN	n/a	n/a	VD10746
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.6 g	10.0 ml	100 ul
Run #2			

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	1100	450	ug/kg	
71-43-2	Benzene	ND	56	51	ug/kg	
74-97-5	Bromochloromethane	ND	560	63	ug/kg	
75-27-4	Bromodichloromethane	ND	220	50	ug/kg	
75-25-2	Bromoform	ND	560	64	ug/kg	
74-83-9	Bromomethane	ND	560	110	ug/kg	
78-93-3	2-Butanone (MEK)	ND	1100	420	ug/kg	
75-15-0	Carbon disulfide	ND	220	100	ug/kg	
56-23-5	Carbon tetrachloride	ND	220	69	ug/kg	
108-90-7	Chlorobenzene	ND	220	51	ug/kg	
75-00-3	Chloroethane	ND	560	66	ug/kg	
67-66-3	Chloroform	ND	220	55	ug/kg	
74-87-3	Chloromethane	ND	560	220	ug/kg	
110-82-7	Cyclohexane	ND	220	73	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	220	93	ug/kg	
124-48-1	Dibromochloromethane	ND	220	63	ug/kg	
106-93-4	1,2-Dibromoethane	ND	110	47	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	110	61	ug/kg	
541-73-1	1,3-Dichlorobenzene	120	110	55	ug/kg	
106-46-7	1,4-Dichlorobenzene	407	110	55	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	560	81	ug/kg	
75-34-3	1,1-Dichloroethane	ND	110	55	ug/kg	
107-06-2	1,2-Dichloroethane	ND	110	53	ug/kg	
75-35-4	1,1-Dichloroethene	ND	110	73	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	110	94	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	110	68	ug/kg	
78-87-5	1,2-Dichloropropane	ND	220	53	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	220	53	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	220	51	ug/kg	
100-41-4	Ethylbenzene	ND	110	62	ug/kg	
76-13-1	Freon 113	ND	560	110	ug/kg	
591-78-6	2-Hexanone	ND	560	240	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-172(5-7)		
Lab Sample ID:	JC95411-3	**Date Sampled:**	09/19/19
Matrix:	SO - Soil	**Date Received:**	09/20/19
Method:	SW846 8260C	**Percent Solids:**	86.1
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	220	78	ug/kg	
79-20-9	Methyl Acetate	ND	560	160	ug/kg	
108-87-2	Methylcyclohexane	ND	220	98	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	110	52	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	560	250	ug/kg	
75-09-2	Methylene chloride	ND	560	110	ug/kg	
100-42-5	Styrene	ND	220	64	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	220	67	ug/kg	
127-18-4	Tetrachloroethene	ND	220	65	ug/kg	
108-88-3	Toluene	ND	110	59	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	560	220	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	606	560	170	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	220	54	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	220	62	ug/kg	
79-01-6	Trichloroethene	ND	110	85	ug/kg	
75-69-4	Trichlorofluoromethane	ND	560	76	ug/kg	
75-01-4	Vinyl chloride	ND	220	54	ug/kg	
	m,p-Xylene	ND	110	100	ug/kg	
95-47-6	o-Xylene	ND	110	65	ug/kg	
1330-20-7	Xylene (total)	ND	110	65	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	98%		75-127%
17060-07-0	1,2-Dichloroethane-D4	101%		75-130%
2037-26-5	Toluene-D8	94%		80-120%
460-00-4	4-Bromofluorobenzene	89%		79-127%

(a) Diluted due to high concentration of non-target compound.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	S-172(5-7)		
Lab Sample ID:	JC95411-3	**Date Sampled:**	09/19/19
Matrix:	SO - Soil	**Date Received:**	09/20/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	86.1
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2P89977.D	1	09/28/19 00:27	AR	09/26/19 05:15	OP22953	E2P3981
Run #2	2P90020.D	5	09/30/19 22:57	JC	09/26/19 05:15	OP22953	E2P3983

	Initial Weight	Final Volume
Run #1	30.9 g	1.0 ml
Run #2	30.9 g	1.0 ml

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	75	19	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	190	23	ug/kg	
120-83-2	2,4-Dichlorophenol	64.2	190	32	ug/kg	J
105-67-9	2,4-Dimethylphenol	ND	190	67	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	190	140	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	190	40	ug/kg	
95-48-7	2-Methylphenol	ND	75	24	ug/kg	
	3&4-Methylphenol	ND	75	31	ug/kg	
88-75-5	2-Nitrophenol [a]	ND	190	25	ug/kg	
100-02-7	4-Nitrophenol	ND	380	100	ug/kg	
87-86-5	Pentachlorophenol	ND	150	35	ug/kg	
108-95-2	Phenol	ND	75	20	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	190	25	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	190	28	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	190	22	ug/kg	
83-32-9	Acenaphthene	410	38	13	ug/kg	
208-96-8	Acenaphthylene	147	38	19	ug/kg	
98-86-2	Acetophenone	10.5	190	8.1	ug/kg	J
120-12-7	Anthracene	1180	38	23	ug/kg	
1912-24-9	Atrazine	ND	75	16	ug/kg	
56-55-3	Benzo(a)anthracene	4270 [b]	190	53	ug/kg	D
50-32-8	Benzo(a)pyrene	4550 [b]	190	86	ug/kg	D
205-99-2	Benzo(b)fluoranthene	5330 [b]	190	83	ug/kg	D
191-24-2	Benzo(g,h,i)perylene	2630	38	19	ug/kg	
207-08-9	Benzo(k)fluoranthene	1390	38	18	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	75	15	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	75	9.2	ug/kg	
92-52-4	1,1'-Biphenyl	32.8	75	5.1	ug/kg	J
100-52-7	Benzaldehyde	23.5	190	9.3	ug/kg	J
91-58-7	2-Chloronaphthalene	ND	75	8.9	ug/kg	
106-47-8	4-Chloroaniline	ND	190	14	ug/kg	
86-74-8	Carbazole	490	75	5.5	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-172(5-7)		
Lab Sample ID:	JC95411-3	**Date Sampled:**	09/19/19
Matrix:	SO - Soil	**Date Received:**	09/20/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	86.1
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	75	15	ug/kg	
218-01-9	Chrysene	3960 [b]	190	59	ug/kg	D
111-91-1	bis(2-Chloroethoxy)methane	ND	75	8.0	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	75	16	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	75	13	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	75	12	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	38	12	ug/kg	
606-20-2	2,6-Dinitrotoluene [a]	ND	38	19	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	75	31	ug/kg	
123-91-1	1,4-Dioxane	ND	38	25	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	928	38	17	ug/kg	
132-64-9	Dibenzofuran	220	75	15	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	75	6.1	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	75	9.4	ug/kg	
84-66-2	Diethyl phthalate	ND	75	8.0	ug/kg	
131-11-3	Dimethyl phthalate	ND	75	6.7	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	345	75	8.8	ug/kg	
206-44-0	Fluoranthene	7760 [b]	190	84	ug/kg	D
86-73-7	Fluorene	389	38	17	ug/kg	
118-74-1	Hexachlorobenzene	ND	75	9.5	ug/kg	
87-68-3	Hexachlorobutadiene	ND	38	15	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	380	15	ug/kg	
67-72-1	Hexachloroethane	ND	190	19	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	2550	38	18	ug/kg	
78-59-1	Isophorone	ND	75	8.0	ug/kg	
91-57-6	2-Methylnaphthalene	94.3	38	8.5	ug/kg	
88-74-4	2-Nitroaniline	ND	190	8.9	ug/kg	
99-09-2	3-Nitroaniline	ND	190	9.4	ug/kg	
100-01-6	4-Nitroaniline	ND	190	9.7	ug/kg	
91-20-3	Naphthalene	605	38	11	ug/kg	
98-95-3	Nitrobenzene	ND	75	15	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	75	11	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	190	14	ug/kg	
85-01-8	Phenanthrene	4210 [b]	190	63	ug/kg	D
129-00-0	Pyrene	7080 [b]	190	60	ug/kg	D
95-94-3	1,2,4,5-Tetrachlorobenzene	18.5	190	9.5	ug/kg	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	62%	65%	23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-172(5-7)		
Lab Sample ID:	JC95411-3	**Date Sampled:**	09/19/19
Matrix:	SO - Soil	**Date Received:**	09/20/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	86.1
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	66%	68%	27-114%
118-79-6	2,4,6-Tribromophenol	66%	60%	19-152%
4165-60-0	Nitrobenzene-d5	73%	77%	26-134%
321-60-8	2-Fluorobiphenyl	60%	61%	39-124%
1718-51-0	Terphenyl-d14	78%	81%	36-134%

(a) Associated CCV outside of control limits high, sample was ND.
(b) Result is from Run# 2

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-172(5-7)
Lab Sample ID: JC95411-3
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 09/19/19
Date Received: 09/20/19
Percent Solids: 86.1

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	15800	59	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]
Antimony	< 2.3	2.3	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]
Arsenic [a]	14.7	4.7	mg/kg	2	09/29/19	10/01/19	RP	SW846 6010D [3]	SW846 3050B [5]
Barium	109	23	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]
Beryllium	0.65	0.23	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]
Cadmium [a]	< 1.2	1.2	mg/kg	2	09/29/19	10/01/19	RP	SW846 6010D [3]	SW846 3050B [5]
Calcium	13500	590	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]
Chromium	42.8	1.2	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]
Cobalt	7.6	5.9	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]
Copper [a]	252	5.9	mg/kg	2	09/29/19	10/01/19	RP	SW846 6010D [3]	SW846 3050B [5]
Iron	32200	120	mg/kg	2	09/29/19	10/01/19	RP	SW846 6010D [3]	SW846 3050B [5]
Lead [a]	210	4.7	mg/kg	2	09/29/19	10/01/19	RP	SW846 6010D [3]	SW846 3050B [5]
Magnesium	3770	590	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]
Manganese [a]	307	3.5	mg/kg	2	09/29/19	10/01/19	RP	SW846 6010D [3]	SW846 3050B [5]
Mercury	0.75	0.037	mg/kg	1	09/27/19	09/27/19	CH	SW846 7471B [1]	SW846 7471B [4]
Nickel	26.3	4.7	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]
Potassium	1760	1200	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]
Selenium [a]	< 4.7	4.7	mg/kg	2	09/29/19	10/01/19	RP	SW846 6010D [3]	SW846 3050B [5]
Silver [a]	< 1.2	1.2	mg/kg	2	09/29/19	10/01/19	RP	SW846 6010D [3]	SW846 3050B [5]
Sodium	< 1200	1200	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]
Thallium [a]	< 2.3	2.3	mg/kg	2	09/29/19	10/01/19	RP	SW846 6010D [3]	SW846 3050B [5]
Vanadium	30.9	5.9	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]
Zinc	787	5.9	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA47516
(2) Instrument QC Batch: MA47539
(3) Instrument QC Batch: MA47552
(4) Prep QC Batch: MP17545
(5) Prep QC Batch: MP17592

(a) Elevated detection limit due to dilution required for high interfering element.

RL = Reporting Limit

Report of Analysis

Client Sample ID:	S-172(5-7)		
Lab Sample ID:	JC95411-3	**Date Sampled:**	09/19/19
Matrix:	SO - Soil	**Date Received:**	09/20/19
		Percent Solids:	86.1
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Cyanide	< 0.27	0.27	mg/kg	1	10/02/19 12:23	KI	SW846 9012B/LACHAT
Solids, Percent	86.1		%	1	09/30/19 17:00	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit

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Report of Analysis

Client Sample ID:	S-171(5-7)		
Lab Sample ID:	JC95411-4	**Date Sampled:**	09/19/19
Matrix:	SO - Soil	**Date Received:**	09/20/19
Method:	SW846 8260C	**Percent Solids:**	88.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1C167549.D	1	10/03/19 13:37	PS	n/a	n/a	V1C7330
Run #2							

	Initial Weight
Run #1	5.7 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	24.2	9.9	4.0	ug/kg	
71-43-2	Benzene	ND	0.50	0.45	ug/kg	
74-97-5	Bromochloromethane	ND	5.0	0.56	ug/kg	
75-27-4	Bromodichloromethane	ND	2.0	0.44	ug/kg	
75-25-2	Bromoform	ND	5.0	0.57	ug/kg	
74-83-9	Bromomethane [a]	ND	5.0	0.99	ug/kg	
78-93-3	2-Butanone (MEK)	ND	9.9	3.7	ug/kg	
75-15-0	Carbon disulfide	ND	2.0	0.92	ug/kg	
56-23-5	Carbon tetrachloride	ND	2.0	0.61	ug/kg	
108-90-7	Chlorobenzene	ND	2.0	0.46	ug/kg	
75-00-3	Chloroethane	ND	5.0	0.59	ug/kg	
67-66-3	Chloroform	ND	2.0	0.49	ug/kg	
74-87-3	Chloromethane	ND	5.0	1.9	ug/kg	
110-82-7	Cyclohexane	ND	2.0	0.65	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.83	ug/kg	
124-48-1	Dibromochloromethane	ND	2.0	0.56	ug/kg	
106-93-4	1,2-Dibromoethane	ND	0.99	0.42	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	0.99	0.54	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	0.99	0.49	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	0.99	0.49	ug/kg	
75-71-8	Dichlorodifluoromethane [b]	ND	5.0	0.72	ug/kg	UJ
75-34-3	1,1-Dichloroethane	ND	0.99	0.49	ug/kg	
107-06-2	1,2-Dichloroethane	ND	0.99	0.47	ug/kg	
75-35-4	1,1-Dichloroethene	ND	0.99	0.65	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	0.99	0.83	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	0.99	0.61	ug/kg	
78-87-5	1,2-Dichloropropane	ND	2.0	0.47	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	2.0	0.47	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2.0	0.45	ug/kg	
100-41-4	Ethylbenzene	ND	0.99	0.55	ug/kg	
76-13-1	Freon 113	ND	5.0	1.0	ug/kg	
591-78-6	2-Hexanone	ND	5.0	2.1	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-171(5-7)		
Lab Sample ID:	JC95411-4	**Date Sampled:**	09/19/19
Matrix:	SO - Soil	**Date Received:**	09/20/19
Method:	SW846 8260C	**Percent Solids:**	88.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	2.0	0.69	ug/kg	
79-20-9	Methyl Acetate	2.2	5.0	1.4	ug/kg	J
108-87-2	Methylcyclohexane	ND	2.0	0.87	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.99	0.47	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	2.3	ug/kg	
75-09-2	Methylene chloride	ND	5.0	0.99	ug/kg	
100-42-5	Styrene	ND	2.0	0.57	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.0	0.60	ug/kg	
127-18-4	Tetrachloroethene	ND	2.0	0.58	ug/kg	
108-88-3	Toluene	ND	0.99	0.52	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	1.9	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	1.5	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	2.0	0.48	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2.0	0.55	ug/kg	
79-01-6	Trichloroethene	ND	0.99	0.76	ug/kg	
75-69-4	Trichlorofluoromethane [b]	ND	5.0	0.68	ug/kg	UJ
75-01-4	Vinyl chloride	ND	2.0	0.48	ug/kg	
	m,p-Xylene	ND	0.99	0.89	ug/kg	
95-47-6	o-Xylene	ND	0.99	0.58	ug/kg	
1330-20-7	Xylene (total)	ND	0.99	0.58	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%		75-127%
17060-07-0	1,2-Dichloroethane-D4	104%		75-130%
2037-26-5	Toluene-D8	102%		80-120%
460-00-4	4-Bromofluorobenzene	93%		79-127%

(a) Associated CCV outside of control limits high, sample was ND.
(b) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	S-171(5-7)		
Lab Sample ID:	JC95411-4	**Date Sampled:**	09/19/19
Matrix:	SO - Soil	**Date Received:**	09/20/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	88.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2P89925.D	1	09/26/19 20:23	JC	09/26/19 05:15	OP22953	E2P3979
Run #2	2P89960.D	2	09/27/19 17:29	AR	09/26/19 05:15	OP22953	E2P3981

	Initial Weight	Final Volume
Run #1	31.0 g	1.0 ml
Run #2	31.0 g	1.0 ml

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	73	18	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	180	22	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	180	31	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	180	65	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	180	140	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	180	39	ug/kg	
95-48-7	2-Methylphenol	ND	73	23	ug/kg	
	3&4-Methylphenol	ND	73	30	ug/kg	
88-75-5	2-Nitrophenol	ND	180	24	ug/kg	
100-02-7	4-Nitrophenol	ND	370	98	ug/kg	
87-86-5	Pentachlorophenol	ND	150	34	ug/kg	
108-95-2	Phenol	ND	73	19	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	180	24	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	180	27	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	180	22	ug/kg	
83-32-9	Acenaphthene	361	37	13	ug/kg	
208-96-8	Acenaphthylene	137	37	19	ug/kg	
98-86-2	Acetophenone	ND	180	7.9	ug/kg	
120-12-7	Anthracene	910	37	22	ug/kg	
1912-24-9	Atrazine [a]	ND	73	16	ug/kg	
56-55-3	Benzo(a)anthracene	1730	37	10	ug/kg	
50-32-8	Benzo(a)pyrene	1360	37	17	ug/kg	
205-99-2	Benzo(b)fluoranthene	1690	37	16	ug/kg	
191-24-2	Benzo(g,h,i)perylene	796	37	18	ug/kg	
207-08-9	Benzo(k)fluoranthene	592	37	17	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	73	14	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	73	8.9	ug/kg	
92-52-4	1,1'-Biphenyl	44.5	73	5.0	ug/kg	J
100-52-7	Benzaldehyde	ND	180	9.1	ug/kg	
91-58-7	2-Chloronaphthalene	ND	73	8.7	ug/kg	
106-47-8	4-Chloroaniline	ND	180	13	ug/kg	
86-74-8	Carbazole	373	73	5.3	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-171(5-7)		
Lab Sample ID:	JC95411-4	**Date Sampled:**	09/19/19
Matrix:	SO - Soil	**Date Received:**	09/20/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	88.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	73	14	ug/kg	
218-01-9	Chrysene	1630	37	12	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	73	7.8	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	73	16	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	73	13	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	73	12	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	37	11	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	37	18	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	73	30	ug/kg	
123-91-1	1,4-Dioxane	ND	37	24	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	218	37	16	ug/kg	
132-64-9	Dibenzofuran	347	73	15	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	73	6.0	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	73	9.1	ug/kg	
84-66-2	Diethyl phthalate	ND	73	7.8	ug/kg	
131-11-3	Dimethyl phthalate	ND	73	6.5	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	69.2	73	8.5	ug/kg	J
206-44-0	Fluoranthene	3840 [b]	73	33	ug/kg	D
86-73-7	Fluorene	483	37	17	ug/kg	
118-74-1	Hexachlorobenzene	ND	73	9.2	ug/kg	
87-68-3	Hexachlorobutadiene	ND	37	15	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	370	15	ug/kg	
67-72-1	Hexachloroethane	ND	180	18	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	865	37	17	ug/kg	
78-59-1	Isophorone	ND	73	7.8	ug/kg	
91-57-6	2-Methylnaphthalene	173	37	8.3	ug/kg	
88-74-4	2-Nitroaniline	ND	180	8.6	ug/kg	
99-09-2	3-Nitroaniline	ND	180	9.1	ug/kg	
100-01-6	4-Nitroaniline	ND	180	9.5	ug/kg	
91-20-3	Naphthalene	406	37	10	ug/kg	
98-95-3	Nitrobenzene	ND	73	14	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	73	11	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	180	13	ug/kg	
85-01-8	Phenanthrene	3690 [b]	73	25	ug/kg	D
129-00-0	Pyrene	3550	37	12	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	180	9.3	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	63%	57%	23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-171(5-7)		
Lab Sample ID:	JC95411-4	**Date Sampled:**	09/19/19
Matrix:	SO - Soil	**Date Received:**	09/20/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	88.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	66%	62%	27-114%
118-79-6	2,4,6-Tribromophenol	72%	60%	19-152%
4165-60-0	Nitrobenzene-d5	74%	69%	26-134%
321-60-8	2-Fluorobiphenyl	62%	58%	39-124%
1718-51-0	Terphenyl-d14	85%	78%	36-134%

(a) Associated CCV outside of control limits high, sample was ND.
(b) Result is from Run# 2

Report of Analysis

Client Sample ID: S-171(5-7)
Lab Sample ID: JC95411-4
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 09/19/19
Date Received: 09/20/19
Percent Solids: 88.3

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	13100	58	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Antimony	< 2.3	2.3	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Arsenic	6.0	2.3	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Barium	66.8	23	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Beryllium	0.68	0.23	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cadmium	< 0.58	0.58	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Calcium	19800	580	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Chromium	25.7	1.2	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cobalt	6.0	5.8	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Copper	27.1	2.9	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Iron	18900	58	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Lead	127	2.3	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Magnesium	7030	580	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Manganese	189	1.7	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Mercury	0.61	0.035	mg/kg	1	09/27/19	09/27/19	CH	SW846 7471B [1]	SW846 7471B [3]
Nickel	13.0	4.6	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Potassium	1510	1200	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Selenium	< 2.3	2.3	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Silver	< 0.58	0.58	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Sodium	< 1200	1200	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Thallium	< 1.2	1.2	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Vanadium	28.6	5.8	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Zinc	137	5.8	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA47516
(2) Instrument QC Batch: MA47539
(3) Prep QC Batch: MP17545
(4) Prep QC Batch: MP17592

RL = Reporting Limit

Report of Analysis

Client Sample ID:	S-171(5-7)		
Lab Sample ID:	JC95411-4	**Date Sampled:**	09/19/19
Matrix:	SO - Soil	**Date Received:**	09/20/19
		Percent Solids:	88.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Cyanide	0.30	0.23	mg/kg	1	10/02/19 12:25	KI	SW846 9012B/LACHAT
Solids, Percent	88.3		%	1	09/30/19 17:00	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit

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Report of Analysis

Client Sample ID:	S-168(6-8)		
Lab Sample ID:	JC95411-5	**Date Sampled:**	09/19/19
Matrix:	SO - Soil	**Date Received:**	09/20/19
Method:	SW846 8260C	**Percent Solids:**	82.5
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	2C170455.D	1	10/01/19 14:22	ED	n/a	n/a	V2C7665
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	4.2 g	10.0 ml	100 ul
Run #2			

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	1960	1500	620	ug/kg	
71-43-2	Benzene	1840	77	70	ug/kg	
74-97-5	Bromochloromethane	ND	770	87	ug/kg	
75-27-4	Bromodichloromethane	ND	310	69	ug/kg	
75-25-2	Bromoform	ND	770	89	ug/kg	
74-83-9	Bromomethane	ND	770	150	ug/kg	
78-93-3	2-Butanone (MEK) [b]	ND	1500	580	ug/kg	
75-15-0	Carbon disulfide	185	310	140	ug/kg	J
56-23-5	Carbon tetrachloride	ND	310	96	ug/kg	
108-90-7	Chlorobenzene	ND	310	71	ug/kg	
75-00-3	Chloroethane	ND	770	92	ug/kg	
67-66-3	Chloroform	ND	310	76	ug/kg	
74-87-3	Chloromethane	ND	770	300	ug/kg	
110-82-7	Cyclohexane	ND	310	100	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	310	130	ug/kg	
124-48-1	Dibromochloromethane	ND	310	87	ug/kg	
106-93-4	1,2-Dibromoethane	ND	150	65	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	150	85	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	150	77	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	150	77	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	770	110	ug/kg	
75-34-3	1,1-Dichloroethane	ND	150	77	ug/kg	
107-06-2	1,2-Dichloroethane	ND	150	73	ug/kg	
75-35-4	1,1-Dichloroethene	ND	150	100	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	150	130	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	150	95	ug/kg	
78-87-5	1,2-Dichloropropane	ND	310	73	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	310	74	ug/kg	
10061-02-6	trans-1,3-Dichloropropene [b]	ND	310	71	ug/kg	
100-41-4	Ethylbenzene	216	150	86	ug/kg	
76-13-1	Freon 113	ND	770	160	ug/kg	
591-78-6	2-Hexanone	ND	770	330	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-168(6-8)		
Lab Sample ID:	JC95411-5	**Date Sampled:**	09/19/19
Matrix:	SO - Soil	**Date Received:**	09/20/19
Method:	SW846 8260C	**Percent Solids:**	82.5
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	310	110	ug/kg	
79-20-9	Methyl Acetate	4740	770	220	ug/kg	
108-87-2	Methylcyclohexane	ND	310	140	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	150	73	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	770	350	ug/kg	
75-09-2	Methylene chloride	ND	770	150	ug/kg	
100-42-5	Styrene	ND	310	89	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	310	93	ug/kg	
127-18-4	Tetrachloroethene	ND	310	90	ug/kg	
108-88-3	Toluene	465	150	81	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	770	300	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	770	240	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	310	75	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	310	86	ug/kg	
79-01-6	Trichloroethene	ND	150	120	ug/kg	
75-69-4	Trichlorofluoromethane	ND	770	110	ug/kg	
75-01-4	Vinyl chloride	ND	310	75	ug/kg	
	m,p-Xylene	315	150	140	ug/kg	
95-47-6	o-Xylene	ND	150	90	ug/kg	
1330-20-7	Xylene (total)	315	150	90	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	98%		75-127%
17060-07-0	1,2-Dichloroethane-D4	98%		75-130%
2037-26-5	Toluene-D8	106%		80-120%
460-00-4	4-Bromofluorobenzene	99%		79-127%

(a) Diluted due to high concentration of target and non-target compound.
(b) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	S-168(6-8)		
Lab Sample ID:	JC95411-5	**Date Sampled:**	09/19/19
Matrix:	SO - Soil	**Date Received:**	09/20/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	82.5
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2P89924.D	1	09/26/19 19:59	JC	09/26/19 05:15	OP22953	E2P3979
Run #2	2P89963.D	2	09/27/19 18:43	AR	09/26/19 05:15	OP22953	E2P3981

	Initial Weight	Final Volume
Run #1	31.1 g	1.0 ml
Run #2	31.1 g	1.0 ml

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	78	19	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	190	24	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	190	33	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	190	69	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	190	150	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	190	42	ug/kg	
95-48-7	2-Methylphenol	ND	78	25	ug/kg	
	3&4-Methylphenol	ND	78	32	ug/kg	
88-75-5	2-Nitrophenol	ND	190	26	ug/kg	
100-02-7	4-Nitrophenol	ND	390	100	ug/kg	
87-86-5	Pentachlorophenol	ND	160	37	ug/kg	
108-95-2	Phenol	ND	78	20	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	190	26	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	190	29	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	190	23	ug/kg	
83-32-9	Acenaphthene	802	39	13	ug/kg	
208-96-8	Acenaphthylene	609	39	20	ug/kg	
98-86-2	Acetophenone	16.8	190	8.4	ug/kg	J
120-12-7	Anthracene	743	39	24	ug/kg	
1912-24-9	Atrazine [a]	ND	78	17	ug/kg	
56-55-3	Benzo(a)anthracene	2500	39	11	ug/kg	
50-32-8	Benzo(a)pyrene	2390	39	18	ug/kg	
205-99-2	Benzo(b)fluoranthene	3130 [b]	78	34	ug/kg	D
191-24-2	Benzo(g,h,i)perylene	1580	39	19	ug/kg	
207-08-9	Benzo(k)fluoranthene	942	39	18	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	78	15	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	78	9.5	ug/kg	
92-52-4	1,1'-Biphenyl	60.2	78	5.3	ug/kg	J
100-52-7	Benzaldehyde	ND	190	9.7	ug/kg	
91-58-7	2-Chloronaphthalene	ND	78	9.3	ug/kg	
106-47-8	4-Chloroaniline	ND	190	14	ug/kg	
86-74-8	Carbazole	175	78	5.7	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-168(6-8)		
Lab Sample ID:	JC95411-5	**Date Sampled:**	09/19/19
Matrix:	SO - Soil	**Date Received:**	09/20/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	82.5
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	78	15	ug/kg	
218-01-9	Chrysene	2560	39	12	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	78	8.3	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	78	17	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	78	14	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	78	13	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	39	12	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	39	20	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	78	33	ug/kg	
123-91-1	1,4-Dioxane	ND	39	26	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	443	39	17	ug/kg	
132-64-9	Dibenzofuran	400	78	16	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	78	6.4	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	78	9.7	ug/kg	
84-66-2	Diethyl phthalate	ND	78	8.3	ug/kg	
131-11-3	Dimethyl phthalate	ND	78	6.9	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	105	78	9.1	ug/kg	
206-44-0	Fluoranthene	4710 [b]	78	35	ug/kg	D
86-73-7	Fluorene	962	39	18	ug/kg	
118-74-1	Hexachlorobenzene	ND	78	9.9	ug/kg	
87-68-3	Hexachlorobutadiene	ND	39	16	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	390	16	ug/kg	
67-72-1	Hexachloroethane	ND	190	19	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	1600	39	18	ug/kg	
78-59-1	Isophorone	ND	78	8.3	ug/kg	
91-57-6	2-Methylnaphthalene	163	39	8.8	ug/kg	
88-74-4	2-Nitroaniline	ND	190	9.2	ug/kg	
99-09-2	3-Nitroaniline	ND	190	9.7	ug/kg	
100-01-6	4-Nitroaniline	ND	190	10	ug/kg	
91-20-3	Naphthalene	347	39	11	ug/kg	
98-95-3	Nitrobenzene	ND	78	15	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	78	11	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	190	14	ug/kg	
85-01-8	Phenanthrene	1820	39	13	ug/kg	
129-00-0	Pyrene	4010 [b]	78	25	ug/kg	D
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	190	9.9	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	55%	52%	23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-168(6-8)		
Lab Sample ID:	JC95411-5	**Date Sampled:**	09/19/19
Matrix:	SO - Soil	**Date Received:**	09/20/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	82.5
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	59%	56%	27-114%
118-79-6	2,4,6-Tribromophenol	62%	55%	19-152%
4165-60-0	Nitrobenzene-d5	61%	61%	26-134%
321-60-8	2-Fluorobiphenyl	53%	50%	39-124%
1718-51-0	Terphenyl-d14	74%	67%	36-134%

(a) Associated CCV outside of control limits high, sample was ND.
(b) Result is from Run# 2

Report of Analysis

Client Sample ID: S-168(6-8)
Lab Sample ID: JC95411-5
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 09/19/19
Date Received: 09/20/19
Percent Solids: 82.5

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	10000	59	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]
Antimony [a]	< 4.7	4.7	mg/kg	2	09/29/19	10/01/19	RP	SW846 6010D [3]	SW846 3050B [5]
Arsenic [a]	138	4.7	mg/kg	2	09/29/19	10/01/19	RP	SW846 6010D [3]	SW846 3050B [5]
Barium	73.4	24	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]
Beryllium	0.75	0.24	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]
Cadmium [a]	< 1.2	1.2	mg/kg	2	09/29/19	10/01/19	RP	SW846 6010D [3]	SW846 3050B [5]
Calcium	6940	590	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]
Chromium	19.8	1.2	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]
Cobalt	6.8	5.9	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]
Copper [a]	66.8	5.9	mg/kg	2	09/29/19	10/01/19	RP	SW846 6010D [3]	SW846 3050B [5]
Iron	41800	120	mg/kg	2	09/29/19	10/01/19	RP	SW846 6010D [3]	SW846 3050B [5]
Lead [a]	91.1	4.7	mg/kg	2	09/29/19	10/01/19	RP	SW846 6010D [3]	SW846 3050B [5]
Magnesium	2760	590	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]
Manganese [a]	311	3.5	mg/kg	2	09/29/19	10/01/19	RP	SW846 6010D [3]	SW846 3050B [5]
Mercury	0.40	0.040	mg/kg	1	09/27/19	09/27/19	CH	SW846 7471B [1]	SW846 7471B [4]
Nickel	15.6	4.7	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]
Potassium	< 1200	1200	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]
Selenium [a]	< 4.7	4.7	mg/kg	2	09/29/19	10/01/19	RP	SW846 6010D [3]	SW846 3050B [5]
Silver [a]	< 1.2	1.2	mg/kg	2	09/29/19	10/01/19	RP	SW846 6010D [3]	SW846 3050B [5]
Sodium	< 1200	1200	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]
Thallium [a]	< 2.4	2.4	mg/kg	2	09/29/19	10/01/19	RP	SW846 6010D [3]	SW846 3050B [5]
Vanadium	27.6	5.9	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]
Zinc	137	5.9	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA47516
(2) Instrument QC Batch: MA47539
(3) Instrument QC Batch: MA47552
(4) Prep QC Batch: MP17545
(5) Prep QC Batch: MP17592

(a) Elevated detection limit due to dilution required for high interfering element.

RL = Reporting Limit

Report of Analysis

Client Sample ID:	S-168(6-8)		
Lab Sample ID:	JC95411-5	**Date Sampled:**	09/19/19
Matrix:	SO - Soil	**Date Received:**	09/20/19
		Percent Solids:	82.5
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Cyanide	0.82	0.26	mg/kg	1	10/02/19 12:26	KI	SW846 9012B/LACHAT
Solids, Percent	82.5		%	1	09/30/19 17:00	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit

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Report of Analysis

Client Sample ID:	S-163(0.5-2)		
Lab Sample ID:	JC95411-6	**Date Sampled:**	09/19/19
Matrix:	SO - Soil	**Date Received:**	09/20/19
Method:	SW846 8260C	**Percent Solids:**	87.8
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	2C170460.D	1	10/01/19 16:45	ED	n/a	n/a	V2C7665
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	3.4 g	10.0 ml	100 ul
Run #2			

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	1700	700	ug/kg	
71-43-2	Benzene	ND	87	79	ug/kg	
74-97-5	Bromochloromethane	ND	870	98	ug/kg	
75-27-4	Bromodichloromethane	ND	350	77	ug/kg	
75-25-2	Bromoform	ND	870	100	ug/kg	
74-83-9	Bromomethane	ND	870	170	ug/kg	
78-93-3	2-Butanone (MEK) [b]	ND	1700	650	ug/kg	
75-15-0	Carbon disulfide	ND	350	160	ug/kg	
56-23-5	Carbon tetrachloride	ND	350	110	ug/kg	
108-90-7	Chlorobenzene	ND	350	80	ug/kg	
75-00-3	Chloroethane	ND	870	100	ug/kg	
67-66-3	Chloroform	ND	350	85	ug/kg	
74-87-3	Chloromethane	ND	870	340	ug/kg	
110-82-7	Cyclohexane	158	350	110	ug/kg	J
96-12-8	1,2-Dibromo-3-chloropropane	ND	350	150	ug/kg	
124-48-1	Dibromochloromethane	ND	350	98	ug/kg	
106-93-4	1,2-Dibromoethane	ND	170	73	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	170	95	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	170	87	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	170	86	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	870	130	ug/kg	
75-34-3	1,1-Dichloroethane	ND	170	86	ug/kg	
107-06-2	1,2-Dichloroethane	ND	170	82	ug/kg	
75-35-4	1,1-Dichloroethene	ND	170	110	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	170	150	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	170	110	ug/kg	
78-87-5	1,2-Dichloropropane	ND	350	83	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	350	83	ug/kg	
10061-02-6	trans-1,3-Dichloropropene [b]	ND	350	80	ug/kg	
100-41-4	Ethylbenzene	ND	170	96	ug/kg	
76-13-1	Freon 113	ND	870	180	ug/kg	
591-78-6	2-Hexanone	ND	870	370	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-163(0.5-2)		
Lab Sample ID:	JC95411-6	**Date Sampled:**	09/19/19
Matrix:	SO - Soil	**Date Received:**	09/20/19
Method:	SW846 8260C	**Percent Solids:**	87.8
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	350	120	ug/kg	
79-20-9	Methyl Acetate	ND	870	240	ug/kg	
108-87-2	Methylcyclohexane	409	350	150	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	170	82	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	870	400	ug/kg	
75-09-2	Methylene chloride	ND	870	170	ug/kg	
100-42-5	Styrene	ND	350	100	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	350	100	ug/kg	
127-18-4	Tetrachloroethene	ND	350	100	ug/kg	
108-88-3	Toluene	311	170	92	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	870	340	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	870	270	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	350	84	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	350	97	ug/kg	
79-01-6	Trichloroethene	ND	170	130	ug/kg	
75-69-4	Trichlorofluoromethane	ND	870	120	ug/kg	
75-01-4	Vinyl chloride	ND	350	84	ug/kg	
	m,p-Xylene	286	170	160	ug/kg	
95-47-6	o-Xylene	161	170	100	ug/kg	J
1330-20-7	Xylene (total)	447	170	100	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	94%		75-127%
17060-07-0	1,2-Dichloroethane-D4	95%		75-130%
2037-26-5	Toluene-D8	105%		80-120%
460-00-4	4-Bromofluorobenzene	100%		79-127%

(a) Diluted due to high concentration of non-target compound.
(b) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	S-163(0.5-2)		
Lab Sample ID:	JC95411-6	**Date Sampled:**	09/19/19
Matrix:	SO - Soil	**Date Received:**	09/20/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	87.8
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	2P89973.D	5	09/27/19 22:49	AR	09/26/19 05:15	OP22953	E2P3981
Run #2	2P90050.D	200	10/01/19 12:10	CS	09/26/19 05:15	OP22953	E2P3984

	Initial Weight	Final Volume
Run #1	30.4 g	1.0 ml
Run #2	30.4 g	1.0 ml

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	370	93	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	940	110	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	940	160	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	940	330	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	940	700	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	940	200	ug/kg	
95-48-7	2-Methylphenol	131	370	120	ug/kg	J
	3&4-Methylphenol	485	370	150	ug/kg	
88-75-5	2-Nitrophenol [b]	ND	940	120	ug/kg	
100-02-7	4-Nitrophenol	ND	1900	500	ug/kg	
87-86-5	Pentachlorophenol	ND	750	180	ug/kg	
108-95-2	Phenol	404	370	98	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	940	120	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	940	140	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	940	110	ug/kg	
83-32-9	Acenaphthene	2960	190	65	ug/kg	
208-96-8	Acenaphthylene	36000 [c]	7500	3800	ug/kg	D
98-86-2	Acetophenone	ND	940	40	ug/kg	
120-12-7	Anthracene	85400 [c]	7500	4600	ug/kg	D
1912-24-9	Atrazine	ND	370	80	ug/kg	
56-55-3	Benzo(a)anthracene	201000 [c]	7500	2100	ug/kg	D
50-32-8	Benzo(a)pyrene	156000 [c]	7500	3400	ug/kg	D
205-99-2	Benzo(b)fluoranthene	218000 [c]	7500	3300	ug/kg	D
191-24-2	Benzo(g,h,i)perylene	79600 [c]	7500	3700	ug/kg	D
207-08-9	Benzo(k)fluoranthene	66100 [c]	7500	3500	ug/kg	D
101-55-3	4-Bromophenyl phenyl ether	ND	370	72	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	370	46	ug/kg	
92-52-4	1,1'-Biphenyl	3190	370	26	ug/kg	
100-52-7	Benzaldehyde	ND	940	46	ug/kg	
91-58-7	2-Chloronaphthalene	ND	370	45	ug/kg	
106-47-8	4-Chloroaniline	ND	940	67	ug/kg	
86-74-8	Carbazole	10200	370	27	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-163(0.5-2)		
Lab Sample ID:	JC95411-6	**Date Sampled:**	09/19/19
Matrix:	SO - Soil	**Date Received:**	09/20/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	87.8
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	370	74	ug/kg	
218-01-9	Chrysene	174000 [c]	7500	2400	ug/kg	D
111-91-1	bis(2-Chloroethoxy)methane	ND	370	40	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	370	81	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	370	67	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	370	61	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	190	58	ug/kg	
606-20-2	2,6-Dinitrotoluene [b]	ND	190	94	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	370	160	ug/kg	
123-91-1	1,4-Dioxane	ND	190	120	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	23800 [c]	7500	3300	ug/kg	D
132-64-9	Dibenzofuran	42000 [c]	15000	3000	ug/kg	D
84-74-2	Di-n-butyl phthalate	ND	370	31	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	370	47	ug/kg	
84-66-2	Diethyl phthalate	ND	370	40	ug/kg	
131-11-3	Dimethyl phthalate	ND	370	33	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	370	44	ug/kg	
206-44-0	Fluoranthene	477000 [c]	7500	3300	ug/kg	D
86-73-7	Fluorene	69300 [c]	7500	3400	ug/kg	D
118-74-1	Hexachlorobenzene	ND	370	47	ug/kg	
87-68-3	Hexachlorobutadiene	ND	190	75	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	1900	75	ug/kg	
67-72-1	Hexachloroethane	ND	940	93	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	95100 [c]	7500	3500	ug/kg	D
78-59-1	Isophorone	ND	370	40	ug/kg	
91-57-6	2-Methylnaphthalene	15300	190	42	ug/kg	
88-74-4	2-Nitroaniline	ND	940	44	ug/kg	
99-09-2	3-Nitroaniline	ND	940	47	ug/kg	
100-01-6	4-Nitroaniline	ND	940	49	ug/kg	
91-20-3	Naphthalene	37200 [c]	7500	2100	ug/kg	D
98-95-3	Nitrobenzene	ND	370	72	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	370	54	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	940	69	ug/kg	
85-01-8	Phenanthrene	324000 [c]	7500	2500	ug/kg	D
129-00-0	Pyrene	353000 [c]	7500	2400	ug/kg	D
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	940	48	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	55%	77%	23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-163(0.5-2)		
Lab Sample ID:	JC95411-6	**Date Sampled:**	09/19/19
Matrix:	SO - Soil	**Date Received:**	09/20/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	87.8
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	60%	92%	27-114%
118-79-6	2,4,6-Tribromophenol	65%	66%	19-152%
4165-60-0	Nitrobenzene-d5	66%	103%	26-134%
321-60-8	2-Fluorobiphenyl	53%	82%	39-124%
1718-51-0	Terphenyl-d14	60%	104%	36-134%

(a) Dilution required due to viscosity of the extract matrix.
(b) Associated CCV outside of control limits high, sample was ND.
(c) Result is from Run# 2

Report of Analysis

Client Sample ID: S-163(0.5-2)
Lab Sample ID: JC95411-6
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 09/19/19
Date Received: 09/20/19
Percent Solids: 87.8

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	11400	54	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]
Antimony	< 2.2	2.2	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]
Arsenic	7.6	2.2	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]
Barium	217	22	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]
Beryllium	1.2	0.22	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]
Cadmium	< 0.54	0.54	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]
Calcium	41400	1600	mg/kg	3	09/29/19	10/01/19	RP	SW846 6010D [3]	SW846 3050B [5]
Chromium	17.4	1.1	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]
Cobalt	< 5.4	5.4	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]
Copper	20.7	2.7	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]
Iron	10300	54	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]
Lead	34.5	2.2	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]
Magnesium	15400	540	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]
Manganese	1710	4.9	mg/kg	3	09/29/19	10/01/19	RP	SW846 6010D [3]	SW846 3050B [5]
Mercury	< 0.035	0.035	mg/kg	1	09/27/19	09/27/19	CH	SW846 7471B [1]	SW846 7471B [4]
Nickel	8.6	4.3	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]
Potassium	1980	1100	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]
Selenium	< 2.2	2.2	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]
Silver	< 0.54	0.54	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]
Sodium	< 1100	1100	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]
Thallium [a]	< 3.3	3.3	mg/kg	3	09/29/19	10/01/19	RP	SW846 6010D [3]	SW846 3050B [5]
Vanadium [a]	41.3	16	mg/kg	3	09/29/19	10/01/19	RP	SW846 6010D [3]	SW846 3050B [5]
Zinc	25.2	5.4	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA47516
(2) Instrument QC Batch: MA47539
(3) Instrument QC Batch: MA47552
(4) Prep QC Batch: MP17545
(5) Prep QC Batch: MP17592

(a) Elevated detection limit due to dilution required for high interfering element.

RL = Reporting Limit

Report of Analysis

Client Sample ID:	S-163(0.5-2)		
Lab Sample ID:	JC95411-6	**Date Sampled:**	09/19/19
Matrix:	SO - Soil	**Date Received:**	09/20/19
		Percent Solids:	87.8
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Cyanide	0.96	0.27	mg/kg	1	10/02/19 12:30	KI	SW846 9012B/LACHAT
Solids, Percent	87.8		%	1	09/30/19 17:00	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit

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Report of Analysis

Client Sample ID:	S-163(2-4)		
Lab Sample ID:	JC95411-7	**Date Sampled:**	09/19/19
Matrix:	SO - Soil	**Date Received:**	09/20/19
Method:	SW846 8260C	**Percent Solids:**	88.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1C167546.D	1	10/03/19 12:17	PS	n/a	n/a	V1C7330
Run #2							

	Initial Weight
Run #1	6.6 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	19.3	8.6	3.4	ug/kg	
71-43-2	Benzene	ND	0.43	0.39	ug/kg	
74-97-5	Bromochloromethane	ND	4.3	0.48	ug/kg	
75-27-4	Bromodichloromethane	ND	1.7	0.38	ug/kg	
75-25-2	Bromoform	ND	4.3	0.50	ug/kg	
74-83-9	Bromomethane [a]	ND	4.3	0.85	ug/kg	
78-93-3	2-Butanone (MEK)	ND	8.6	3.2	ug/kg	
75-15-0	Carbon disulfide	0.89	1.7	0.80	ug/kg	J
56-23-5	Carbon tetrachloride	ND	1.7	0.53	ug/kg	
108-90-7	Chlorobenzene	ND	1.7	0.39	ug/kg	
75-00-3	Chloroethane	ND	4.3	0.51	ug/kg	
67-66-3	Chloroform	ND	1.7	0.42	ug/kg	
74-87-3	Chloromethane	ND	4.3	1.7	ug/kg	
110-82-7	Cyclohexane	ND	1.7	0.56	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	1.7	0.72	ug/kg	
124-48-1	Dibromochloromethane	ND	1.7	0.48	ug/kg	
106-93-4	1,2-Dibromoethane	ND	0.86	0.36	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	0.86	0.47	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	0.86	0.43	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	0.86	0.42	ug/kg	
75-71-8	Dichlorodifluoromethane [b]	ND	4.3	0.62	ug/kg	UJ
75-34-3	1,1-Dichloroethane	ND	0.86	0.42	ug/kg	
107-06-2	1,2-Dichloroethane	ND	0.86	0.40	ug/kg	
75-35-4	1,1-Dichloroethene	ND	0.86	0.56	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	0.86	0.72	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	0.86	0.52	ug/kg	
78-87-5	1,2-Dichloropropane	ND	1.7	0.41	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	1.7	0.41	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	1.7	0.39	ug/kg	
100-41-4	Ethylbenzene	ND	0.86	0.47	ug/kg	
76-13-1	Freon 113	ND	4.3	0.87	ug/kg	
591-78-6	2-Hexanone	ND	4.3	1.8	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-163(2-4)		
Lab Sample ID:	JC95411-7	**Date Sampled:**	09/19/19
Matrix:	SO - Soil	**Date Received:**	09/20/19
Method:	SW846 8260C	**Percent Solids:**	88.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	1.7	0.60	ug/kg	
79-20-9	Methyl Acetate	ND	4.3	1.2	ug/kg	
108-87-2	Methylcyclohexane	ND	1.7	0.75	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.86	0.40	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	4.3	1.9	ug/kg	
75-09-2	Methylene chloride	ND	4.3	0.85	ug/kg	
100-42-5	Styrene	ND	1.7	0.49	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.7	0.51	ug/kg	
127-18-4	Tetrachloroethene	ND	1.7	0.50	ug/kg	
108-88-3	Toluene	ND	0.86	0.45	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	4.3	1.7	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	4.3	1.3	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	1.7	0.41	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	1.7	0.48	ug/kg	
79-01-6	Trichloroethene	ND	0.86	0.65	ug/kg	
75-69-4	Trichlorofluoromethane [b]	ND	4.3	0.59	ug/kg	UJ
75-01-4	Vinyl chloride	ND	1.7	0.41	ug/kg	
	m,p-Xylene	ND	0.86	0.77	ug/kg	
95-47-6	o-Xylene	ND	0.86	0.50	ug/kg	
1330-20-7	Xylene (total)	ND	0.86	0.50	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%		75-127%
17060-07-0	1,2-Dichloroethane-D4	103%		75-130%
2037-26-5	Toluene-D8	103%		80-120%
460-00-4	4-Bromofluorobenzene	98%		79-127%

(a) Associated CCV outside of control limits high, sample was ND.
(b) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	S-163(2-4)		
Lab Sample ID:	JC95411-7	**Date Sampled:**	09/19/19
Matrix:	SO - Soil	**Date Received:**	09/20/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	88.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2P89926.D	1	09/26/19 20:48	JC	09/26/19 05:15	OP22953	E2P3979
Run #2	2P89961.D	5	09/27/19 17:54	AR	09/26/19 05:15	OP22953	E2P3981

	Initial Weight	Final Volume
Run #1	31.6 g	1.0 ml
Run #2	31.6 g	1.0 ml

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	72	18	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	180	22	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	180	31	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	180	64	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	180	130	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	180	38	ug/kg	
95-48-7	2-Methylphenol	ND	72	23	ug/kg	
	3&4-Methylphenol	ND	72	29	ug/kg	
88-75-5	2-Nitrophenol	ND	180	24	ug/kg	
100-02-7	4-Nitrophenol	ND	360	96	ug/kg	
87-86-5	Pentachlorophenol	ND	140	34	ug/kg	
108-95-2	Phenol	ND	72	19	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	180	24	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	180	27	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	180	21	ug/kg	
83-32-9	Acenaphthene	477	36	12	ug/kg	
208-96-8	Acenaphthylene	329	36	18	ug/kg	
98-86-2	Acetophenone	80.0	180	7.7	ug/kg	J
120-12-7	Anthracene	818	36	22	ug/kg	
1912-24-9	Atrazine [a]	ND	72	15	ug/kg	
56-55-3	Benzo(a)anthracene	1960	36	10	ug/kg	
50-32-8	Benzo(a)pyrene	1790	36	16	ug/kg	
205-99-2	Benzo(b)fluoranthene	1730	36	16	ug/kg	
191-24-2	Benzo(g,h,i)perylene	1000	36	18	ug/kg	
207-08-9	Benzo(k)fluoranthene	437	36	17	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	72	14	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	72	8.7	ug/kg	
92-52-4	1,1'-Biphenyl	31.5	72	4.9	ug/kg	J
100-52-7	Benzaldehyde	ND	180	8.9	ug/kg	
91-58-7	2-Chloronaphthalene	ND	72	8.5	ug/kg	
106-47-8	4-Chloroaniline	ND	180	13	ug/kg	
86-74-8	Carbazole	189	72	5.2	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-163(2-4)		
Lab Sample ID:	JC95411-7	**Date Sampled:**	09/19/19
Matrix:	SO - Soil	**Date Received:**	09/20/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	88.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	72	14	ug/kg	
218-01-9	Chrysene	2090	36	11	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	72	7.7	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	72	15	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	72	13	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	72	12	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	36	11	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	36	18	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	72	30	ug/kg	
123-91-1	1,4-Dioxane	ND	36	24	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	283	36	16	ug/kg	
132-64-9	Dibenzofuran	83.4	72	15	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	72	5.8	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	72	8.9	ug/kg	
84-66-2	Diethyl phthalate	ND	72	7.6	ug/kg	
131-11-3	Dimethyl phthalate	ND	72	6.4	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	72	8.4	ug/kg	
206-44-0	Fluoranthene	3050	36	16	ug/kg	
86-73-7	Fluorene	431	36	16	ug/kg	
118-74-1	Hexachlorobenzene	ND	72	9.1	ug/kg	
87-68-3	Hexachlorobutadiene	ND	36	14	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	360	14	ug/kg	
67-72-1	Hexachloroethane	ND	180	18	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	894	36	17	ug/kg	
78-59-1	Isophorone	ND	72	7.7	ug/kg	
91-57-6	2-Methylnaphthalene	164	36	8.1	ug/kg	
88-74-4	2-Nitroaniline	ND	180	8.5	ug/kg	
99-09-2	3-Nitroaniline	ND	180	9.0	ug/kg	
100-01-6	4-Nitroaniline	ND	180	9.3	ug/kg	
91-20-3	Naphthalene	164	36	10	ug/kg	
98-95-3	Nitrobenzene	ND	72	14	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	72	10	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	180	13	ug/kg	
85-01-8	Phenanthrene	3470	36	12	ug/kg	
129-00-0	Pyrene	4510 [b]	180	57	ug/kg	D
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	180	9.1	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	51%	49%	23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-163(2-4)		
Lab Sample ID:	JC95411-7	**Date Sampled:**	09/19/19
Matrix:	SO - Soil	**Date Received:**	09/20/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	88.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	51%	48%	27-114%
118-79-6	2,4,6-Tribromophenol	51%	42%	19-152%
4165-60-0	Nitrobenzene-d5	57%	54%	26-134%
321-60-8	2-Fluorobiphenyl	44%	41%	39-124%
1718-51-0	Terphenyl-d14	59%	54%	36-134%

(a) Associated CCV outside of control limits high, sample was ND.
(b) Result is from Run# 2

Report of Analysis

Client Sample ID: S-163(2-4)
Lab Sample ID: JC95411-7
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 09/19/19
Date Received: 09/20/19
Percent Solids: 88.3

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	6900	58	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Antimony	< 2.3	2.3	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Arsenic	7.5	2.3	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Barium	74.5	23	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Beryllium	0.74	0.23	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cadmium	< 0.58	0.58	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Calcium	3580	580	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Chromium	12.7	1.2	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cobalt	8.1	5.8	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Copper	94.7	2.9	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Iron	21000	58	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Lead	219	2.3	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Magnesium	2020	580	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Manganese	244	1.8	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Mercury	1.6	0.17	mg/kg	5	09/27/19	09/27/19	CH	SW846 7471B [1]	SW846 7471B [3]
Nickel	16.5	4.7	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Potassium	< 1200	1200	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Selenium	< 2.3	2.3	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Silver	< 0.58	0.58	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Sodium	< 1200	1200	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Thallium	< 1.2	1.2	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Vanadium	18.6	5.8	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Zinc	174	5.8	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA47516
(2) Instrument QC Batch: MA47539
(3) Prep QC Batch: MP17545
(4) Prep QC Batch: MP17592

RL = Reporting Limit

Report of Analysis

Client Sample ID:	S-163(2-4)		
Lab Sample ID:	JC95411-7	**Date Sampled:**	09/19/19
Matrix:	SO - Soil	**Date Received:**	09/20/19
		Percent Solids:	88.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Cyanide	2.5	0.23	mg/kg	1	10/02/19 12:31	KI	SW846 9012B/LACHAT
Solids, Percent	88.3		%	1	09/30/19 17:00	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit

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Report of Analysis

Client Sample ID:	S-167(7-9)		
Lab Sample ID:	JC95411-8	**Date Sampled:**	09/20/19
Matrix:	SO - Soil	**Date Received:**	09/20/19
Method:	SW846 8260C	**Percent Solids:**	82.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1C167552.D	1	10/03/19 14:56	PS	n/a	n/a	V1C7330
Run #2							

	Initial Weight
Run #1	6.8 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	44.6	8.9	3.6	ug/kg	
71-43-2	Benzene	ND	0.45	0.41	ug/kg	
74-97-5	Bromochloromethane	ND	4.5	0.50	ug/kg	
75-27-4	Bromodichloromethane	ND	1.8	0.40	ug/kg	
75-25-2	Bromoform	ND	4.5	0.52	ug/kg	
74-83-9	Bromomethane [a]	ND	4.5	0.89	ug/kg	
78-93-3	2-Butanone (MEK)	6.0	8.9	3.3	ug/kg	J
75-15-0	Carbon disulfide	ND	1.8	0.83	ug/kg	
56-23-5	Carbon tetrachloride	ND	1.8	0.55	ug/kg	
108-90-7	Chlorobenzene	ND	1.8	0.41	ug/kg	
75-00-3	Chloroethane	ND	4.5	0.53	ug/kg	
67-66-3	Chloroform	ND	1.8	0.44	ug/kg	
74-87-3	Chloromethane	ND	4.5	1.8	ug/kg	
110-82-7	Cyclohexane	ND	1.8	0.59	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	1.8	0.75	ug/kg	
124-48-1	Dibromochloromethane	ND	1.8	0.50	ug/kg	
106-93-4	1,2-Dibromoethane	ND	0.89	0.38	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	0.89	0.49	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	0.89	0.44	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	0.89	0.44	ug/kg	
75-71-8	Dichlorodifluoromethane [b]	ND	4.5	0.65	ug/kg	UJ
75-34-3	1,1-Dichloroethane	ND	0.89	0.44	ug/kg	
107-06-2	1,2-Dichloroethane	ND	0.89	0.42	ug/kg	
75-35-4	1,1-Dichloroethene	ND	0.89	0.59	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	0.89	0.75	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	0.89	0.55	ug/kg	
78-87-5	1,2-Dichloropropane	ND	1.8	0.42	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	1.8	0.42	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	1.8	0.41	ug/kg	
100-41-4	Ethylbenzene	ND	0.89	0.49	ug/kg	
76-13-1	Freon 113	ND	4.5	0.90	ug/kg	
591-78-6	2-Hexanone	ND	4.5	1.9	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-167(7-9)		
Lab Sample ID:	JC95411-8	**Date Sampled:**	09/20/19
Matrix:	SO - Soil	**Date Received:**	09/20/19
Method:	SW846 8260C	**Percent Solids:**	82.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	1.8	0.62	ug/kg	
79-20-9	Methyl Acetate	ND	4.5	1.2	ug/kg	
108-87-2	Methylcyclohexane	ND	1.8	0.78	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.89	0.42	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	4.5	2.0	ug/kg	
75-09-2	Methylene chloride	1.1	4.5	0.89	ug/kg	J
100-42-5	Styrene	ND	1.8	0.51	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.8	0.54	ug/kg	
127-18-4	Tetrachloroethene	ND	1.8	0.52	ug/kg	
108-88-3	Toluene	ND	0.89	0.47	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	4.5	1.7	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	4.5	1.4	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	1.8	0.43	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	1.8	0.49	ug/kg	
79-01-6	Trichloroethene	ND	0.89	0.68	ug/kg	
75-69-4	Trichlorofluoromethane [b]	ND	4.5	0.61	ug/kg	UJ
75-01-4	Vinyl chloride	ND	1.8	0.43	ug/kg	
	m,p-Xylene	ND	0.89	0.80	ug/kg	
95-47-6	o-Xylene	ND	0.89	0.52	ug/kg	
1330-20-7	Xylene (total)	ND	0.89	0.52	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	109%		75-127%
17060-07-0	1,2-Dichloroethane-D4	107%		75-130%
2037-26-5	Toluene-D8	108%		80-120%
460-00-4	4-Bromofluorobenzene	104%		79-127%

(a) Associated CCV outside of control limits high, sample was ND.
(b) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	S-167(7-9)		
Lab Sample ID:	JC95411-8	**Date Sampled:**	09/20/19
Matrix:	SO - Soil	**Date Received:**	09/20/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	82.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2P89928.D	1	09/26/19 21:38	JC	09/26/19 05:15	OP22953	E2P3979
Run #2	2P89962.D	5	09/27/19 18:19	AR	09/26/19 05:15	OP22953	E2P3981

	Initial Weight	Final Volume
Run #1	31.7 g	1.0 ml
Run #2	31.7 g	1.0 ml

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	77	19	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	190	23	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	190	33	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	190	68	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	190	140	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	190	41	ug/kg	
95-48-7	2-Methylphenol	ND	77	24	ug/kg	
	3&4-Methylphenol	ND	77	32	ug/kg	
88-75-5	2-Nitrophenol	ND	190	25	ug/kg	
100-02-7	4-Nitrophenol	ND	380	100	ug/kg	
87-86-5	Pentachlorophenol	ND	150	36	ug/kg	
108-95-2	Phenol	ND	77	20	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	190	25	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	190	29	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	190	23	ug/kg	
83-32-9	Acenaphthene	296	38	13	ug/kg	
208-96-8	Acenaphthylene	787	38	19	ug/kg	
98-86-2	Acetophenone	ND	190	8.2	ug/kg	
120-12-7	Anthracene	1820	38	23	ug/kg	
1912-24-9	Atrazine [a]	ND	77	16	ug/kg	
56-55-3	Benzo(a)anthracene	7670 [b]	190	54	ug/kg	D
50-32-8	Benzo(a)pyrene	6780 [b]	190	87	ug/kg	D
205-99-2	Benzo(b)fluoranthene	7970 [b]	190	85	ug/kg	D
191-24-2	Benzo(g,h,i)perylene	3760 [b]	190	96	ug/kg	D
207-08-9	Benzo(k)fluoranthene	2680	38	18	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	77	15	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	77	9.4	ug/kg	
92-52-4	1,1'-Biphenyl	54.3	77	5.3	ug/kg	J
100-52-7	Benzaldehyde	ND	190	9.5	ug/kg	
91-58-7	2-Chloronaphthalene	ND	77	9.1	ug/kg	
106-47-8	4-Chloroaniline	ND	190	14	ug/kg	
86-74-8	Carbazole	783	77	5.6	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-167(7-9)		
Lab Sample ID:	JC95411-8	**Date Sampled:**	09/20/19
Matrix:	SO - Soil	**Date Received:**	09/20/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	82.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	77	15	ug/kg	
218-01-9	Chrysene	7430 b	190	60	ug/kg	D
111-91-1	bis(2-Chloroethoxy)methane	ND	77	8.2	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	77	17	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	77	14	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	77	12	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	38	12	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	38	19	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	77	32	ug/kg	
123-91-1	1,4-Dioxane	ND	38	25	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	1140	38	17	ug/kg	
132-64-9	Dibenzofuran	204	77	16	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	77	6.2	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	77	9.5	ug/kg	
84-66-2	Diethyl phthalate	ND	77	8.2	ug/kg	
131-11-3	Dimethyl phthalate	ND	77	6.8	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	77	9.0	ug/kg	
206-44-0	Fluoranthene	16600 b	190	85	ug/kg	D
86-73-7	Fluorene	504	38	18	ug/kg	
118-74-1	Hexachlorobenzene	ND	77	9.7	ug/kg	
87-68-3	Hexachlorobutadiene	ND	38	15	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	380	15	ug/kg	
67-72-1	Hexachloroethane	ND	190	19	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	3820	38	18	ug/kg	
78-59-1	Isophorone	ND	77	8.2	ug/kg	
91-57-6	2-Methylnaphthalene	199	38	8.7	ug/kg	
88-74-4	2-Nitroaniline	ND	190	9.0	ug/kg	
99-09-2	3-Nitroaniline	ND	190	9.6	ug/kg	
100-01-6	4-Nitroaniline	ND	190	9.9	ug/kg	
91-20-3	Naphthalene	513	38	11	ug/kg	
98-95-3	Nitrobenzene	ND	77	15	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	77	11	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	190	14	ug/kg	
85-01-8	Phenanthrene	5300 b	190	64	ug/kg	D
129-00-0	Pyrene	14600 b	190	61	ug/kg	D
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	190	9.7	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	52%	53%	23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-167(7-9)		
Lab Sample ID:	JC95411-8	**Date Sampled:**	09/20/19
Matrix:	SO - Soil	**Date Received:**	09/20/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	82.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	57%	56%	27-114%
118-79-6	2,4,6-Tribromophenol	65%	55%	19-152%
4165-60-0	Nitrobenzene-d5	60%	62%	26-134%
321-60-8	2-Fluorobiphenyl	52%	51%	39-124%
1718-51-0	Terphenyl-d14	65%	63%	36-134%

(a) Associated CCV outside of control limits high, sample was ND.
(b) Result is from Run# 2

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-167(7-9)
Lab Sample ID: JC95411-8
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 09/20/19
Date Received: 09/20/19
Percent Solids: 82.3

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	17500	62	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]
Antimony [a]	< 7.4	7.4	mg/kg	3	09/29/19	10/01/19	RP	SW846 6010D [3]	SW846 3050B [5]
Arsenic [a]	10.1	7.4	mg/kg	3	09/29/19	10/01/19	RP	SW846 6010D [3]	SW846 3050B [5]
Barium	37.7	25	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]
Beryllium	6.2	0.25	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]
Cadmium [a]	< 1.9	1.9	mg/kg	3	09/29/19	10/01/19	RP	SW846 6010D [3]	SW846 3050B [5]
Calcium	4280	620	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]
Chromium	30.3	1.2	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]
Cobalt	21.3	6.2	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]
Copper [a]	306	9.3	mg/kg	3	09/29/19	10/01/19	RP	SW846 6010D [3]	SW846 3050B [5]
Iron	59100	190	mg/kg	3	09/29/19	10/01/19	RP	SW846 6010D [3]	SW846 3050B [5]
Lead [a]	105	7.4	mg/kg	3	09/29/19	10/01/19	RP	SW846 6010D [3]	SW846 3050B [5]
Magnesium	7340	620	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]
Manganese [a]	720	5.6	mg/kg	3	09/29/19	10/01/19	RP	SW846 6010D [3]	SW846 3050B [5]
Mercury	0.21	0.037	mg/kg	1	09/27/19	09/27/19	CH	SW846 7471B [1]	SW846 7471B [4]
Nickel	49.5	5.0	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]
Potassium	1230	1200	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]
Selenium [a]	< 7.4	7.4	mg/kg	3	09/29/19	10/01/19	RP	SW846 6010D [3]	SW846 3050B [5]
Silver [a]	< 1.9	1.9	mg/kg	3	09/29/19	10/01/19	RP	SW846 6010D [3]	SW846 3050B [5]
Sodium	< 1200	1200	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]
Thallium [a]	< 3.7	3.7	mg/kg	3	09/29/19	10/01/19	RP	SW846 6010D [3]	SW846 3050B [5]
Vanadium	35.0	6.2	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]
Zinc	297	6.2	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA47516
(2) Instrument QC Batch: MA47539
(3) Instrument QC Batch: MA47552
(4) Prep QC Batch: MP17545
(5) Prep QC Batch: MP17592

(a) Elevated detection limit due to dilution required for high interfering element.

RL = Reporting Limit

Report of Analysis

Client Sample ID:	S-167(7-9)		
Lab Sample ID:	JC95411-8	**Date Sampled:**	09/20/19
Matrix:	SO - Soil	**Date Received:**	09/20/19
		Percent Solids:	82.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Cyanide	< 0.24	0.24	mg/kg	1	10/02/19 12:33	KI	SW846 9012B/LACHAT
Solids, Percent	82.3		%	1	09/30/19 17:00	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit

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Report of Analysis

Client Sample ID:	PCTP-07R(10-12)		
Lab Sample ID:	JC95411-9	**Date Sampled:**	09/20/19
Matrix:	SO - Soil	**Date Received:**	09/20/19
Method:	SW846 8260C	**Percent Solids:**	72.7
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	2C170459.D	1	10/01/19 16:16	ED	n/a	n/a	V2C7665
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	4.2 g	10.0 ml	100 ul
Run #2			

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	1800	730	ug/kg	
71-43-2	Benzene	ND	91	83	ug/kg	
74-97-5	Bromochloromethane	ND	910	100	ug/kg	
75-27-4	Bromodichloromethane	ND	370	81	ug/kg	
75-25-2	Bromoform	ND	910	110	ug/kg	
74-83-9	Bromomethane	ND	910	180	ug/kg	
78-93-3	2-Butanone (MEK) [b]	ND	1800	680	ug/kg	
75-15-0	Carbon disulfide	ND	370	170	ug/kg	
56-23-5	Carbon tetrachloride	ND	370	110	ug/kg	
108-90-7	Chlorobenzene	ND	370	84	ug/kg	
75-00-3	Chloroethane	ND	910	110	ug/kg	
67-66-3	Chloroform	ND	370	89	ug/kg	
74-87-3	Chloromethane	ND	910	360	ug/kg	
110-82-7	Cyclohexane	ND	370	120	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	370	150	ug/kg	
124-48-1	Dibromochloromethane	ND	370	100	ug/kg	
106-93-4	1,2-Dibromoethane	ND	180	77	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	180	100	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	180	91	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	180	90	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	910	130	ug/kg	
75-34-3	1,1-Dichloroethane	ND	180	90	ug/kg	
107-06-2	1,2-Dichloroethane	ND	180	86	ug/kg	
75-35-4	1,1-Dichloroethene	ND	180	120	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	180	150	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	180	110	ug/kg	
78-87-5	1,2-Dichloropropane	ND	370	86	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	370	87	ug/kg	
10061-02-6	trans-1,3-Dichloropropene [b]	ND	370	83	ug/kg	
100-41-4	Ethylbenzene	ND	180	100	ug/kg	
76-13-1	Freon 113	ND	910	180	ug/kg	
591-78-6	2-Hexanone	ND	910	390	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PCTP-07R(10-12)
Lab Sample ID: JC95411-9
Matrix: SO - Soil
Method: SW846 8260C
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 09/20/19
Date Received: 09/20/19
Percent Solids: 72.7

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	370	130	ug/kg	
79-20-9	Methyl Acetate	ND	910	250	ug/kg	
108-87-2	Methylcyclohexane	ND	370	160	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	180	86	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	910	410	ug/kg	
75-09-2	Methylene chloride	ND	910	180	ug/kg	
100-42-5	Styrene	ND	370	100	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	370	110	ug/kg	
127-18-4	Tetrachloroethene	ND	370	110	ug/kg	
108-88-3	Toluene	ND	180	96	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	910	350	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	910	280	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	370	88	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	370	100	ug/kg	
79-01-6	Trichloroethene	ND	180	140	ug/kg	
75-69-4	Trichlorofluoromethane	ND	910	120	ug/kg	
75-01-4	Vinyl chloride	ND	370	88	ug/kg	
	m,p-Xylene	ND	180	160	ug/kg	
95-47-6	o-Xylene	ND	180	110	ug/kg	
1330-20-7	Xylene (total)	ND	180	110	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	96%		75-127%
17060-07-0	1,2-Dichloroethane-D4	96%		75-130%
2037-26-5	Toluene-D8	104%		80-120%
460-00-4	4-Bromofluorobenzene	99%		79-127%

(a) Diluted due to high concentration of non-target compound.
(b) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PCTP-07R(10-12)		
Lab Sample ID:	JC95411-9	**Date Sampled:**	09/20/19
Matrix:	SO - Soil	**Date Received:**	09/20/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	72.7
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	2P90157.D	5	10/04/19 15:47	JC	09/26/19 05:15	OP22953	E2P3990
Run #2							

	Initial Weight	Final Volume
Run #1	30.9 g	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	450	110	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	1100	140	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	1100	190	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	1100	400	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	1100	840	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	1100	240	ug/kg	
95-48-7	2-Methylphenol	ND	450	140	ug/kg	
	3&4-Methylphenol	ND	450	180	ug/kg	
88-75-5	2-Nitrophenol	ND	1100	150	ug/kg	
100-02-7	4-Nitrophenol	ND	2200	590	ug/kg	
87-86-5	Pentachlorophenol [b]	ND	890	210	ug/kg	UJ
108-95-2	Phenol	ND	450	120	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	1100	150	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	1100	170	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	1100	130	ug/kg	
83-32-9	Acenaphthene	1650	220	77	ug/kg	
208-96-8	Acenaphthylene	ND	220	110	ug/kg	
98-86-2	Acetophenone	ND	1100	48	ug/kg	
120-12-7	Anthracene	615	220	140	ug/kg	
1912-24-9	Atrazine	ND	450	95	ug/kg	
56-55-3	Benzo(a)anthracene	467	220	63	ug/kg	
50-32-8	Benzo(a)pyrene	305	220	100	ug/kg	
205-99-2	Benzo(b)fluoranthene	440	220	98	ug/kg	
191-24-2	Benzo(g,h,i)perylene	188	220	110	ug/kg	J
207-08-9	Benzo(k)fluoranthene	127	220	100	ug/kg	J
101-55-3	4-Bromophenyl phenyl ether	ND	450	86	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	450	54	ug/kg	
92-52-4	1,1'-Biphenyl	ND	450	30	ug/kg	
100-52-7	Benzaldehyde	ND	1100	55	ug/kg	
91-58-7	2-Chloronaphthalene	ND	450	53	ug/kg	
106-47-8	4-Chloroaniline	ND	1100	80	ug/kg	
86-74-8	Carbazole [b]	ND	450	32	ug/kg	

ND = Not detected MDL = Method Detection Limit
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E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCTP-07R(10-12)		
Lab Sample ID:	JC95411-9	**Date Sampled:**	09/20/19
Matrix:	SO - Soil	**Date Received:**	09/20/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	72.7
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	450	88	ug/kg	
218-01-9	Chrysene	445	220	70	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	450	48	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	450	96	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	450	80	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	450	72	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	220	69	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	220	110	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	450	190	ug/kg	
123-91-1	1,4-Dioxane	ND	220	150	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	220	98	ug/kg	
132-64-9	Dibenzofuran	444	450	91	ug/kg	J
84-74-2	Di-n-butyl phthalate	ND	450	36	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	450	55	ug/kg	
84-66-2	Diethyl phthalate	ND	450	47	ug/kg	
131-11-3	Dimethyl phthalate	ND	450	40	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	450	52	ug/kg	
206-44-0	Fluoranthene	1200	220	99	ug/kg	
86-73-7	Fluorene	ND	220	100	ug/kg	
118-74-1	Hexachlorobenzene	ND	450	56	ug/kg	
87-68-3	Hexachlorobutadiene	ND	220	89	ug/kg	
77-47-4	Hexachlorocyclopentadiene [b]	ND	2200	89	ug/kg	UJ
67-72-1	Hexachloroethane	ND	1100	110	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	317	220	100	ug/kg	
78-59-1	Isophorone	ND	450	48	ug/kg	
91-57-6	2-Methylnaphthalene	ND	220	50	ug/kg	
88-74-4	2-Nitroaniline	ND	1100	53	ug/kg	
99-09-2	3-Nitroaniline	ND	1100	56	ug/kg	
100-01-6	4-Nitroaniline	ND	1100	58	ug/kg	
91-20-3	Naphthalene	204	220	63	ug/kg	J
98-95-3	Nitrobenzene	ND	450	86	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	450	64	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	1100	81	ug/kg	
85-01-8	Phenanthrene	542	220	75	ug/kg	
129-00-0	Pyrene	1500	220	71	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	1100	57	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	52%		23-115%

ND = Not detected MDL = Method Detection Limit
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J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCTP-07R(10-12)		
Lab Sample ID:	JC95411-9	**Date Sampled:**	09/20/19
Matrix:	SO - Soil	**Date Received:**	09/20/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	72.7
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	59%		27-114%
118-79-6	2,4,6-Tribromophenol	58%		19-152%
4165-60-0	Nitrobenzene-d5	67%		26-134%
321-60-8	2-Fluorobiphenyl	56%		39-124%
1718-51-0	Terphenyl-d14	73%		36-134%

(a) Dilution required due to matrix interference. Sample extracted outside the holding time due to scheduling error.
(b) Associated CCV outside of control limits low.Low-level verification was analyzed to demonstrate system suitability to detect affected analytes.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PCTP-07R(10-12)
Lab Sample ID: JC95411-9
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 09/20/19
Date Received: 09/20/19
Percent Solids: 72.7

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	1740	70	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Antimony	< 2.8	2.8	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Arsenic	12.2	2.8	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Barium	53.7	28	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Beryllium	0.46	0.28	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cadmium	< 0.70	0.70	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Calcium	1770	700	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Chromium	4.7	1.4	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cobalt	< 7.0	7.0	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Copper	20.4	3.5	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Iron	23900	70	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Lead	19.7	2.8	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Magnesium	< 700	700	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Manganese	387	2.1	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Mercury	2.5	0.20	mg/kg	5	09/27/19	09/27/19	CH	SW846 7471B [1]	SW846 7471B [3]
Nickel	8.4	5.6	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Potassium	< 1400	1400	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Selenium	< 2.8	2.8	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Silver	< 0.70	0.70	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Sodium	< 1400	1400	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Thallium	< 1.4	1.4	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Vanadium	8.9	7.0	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Zinc	82.2	7.0	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA47516
(2) Instrument QC Batch: MA47539
(3) Prep QC Batch: MP17545
(4) Prep QC Batch: MP17592

RL = Reporting Limit

Report of Analysis

Client Sample ID:	PCTP-07R(10-12)		
Lab Sample ID:	JC95411-9	**Date Sampled:**	09/20/19
Matrix:	SO - Soil	**Date Received:**	09/20/19
		Percent Solids:	72.7
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Cyanide	< 0.36	0.36	mg/kg	1	10/02/19 12:34	KI	SW846 9012B/LACHAT
Solids, Percent	72.7		%	1	09/30/19 17:00	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit

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Report of Analysis

Client Sample ID:	TRIP BLANK		
Lab Sample ID:	JC95411-10	**Date Sampled:**	09/20/19
Matrix:	AQ - Trip Blank Soil	**Date Received:**	09/20/19
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2C170438.D	1	09/30/19 20:22	ED	n/a	n/a	V2C7664
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	6.0	ug/l	
71-43-2	Benzene	ND	0.50	0.43	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.48	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.58	ug/l	
75-25-2	Bromoform [a]	ND	1.0	0.63	ug/l	
74-83-9	Bromomethane	ND	2.0	1.6	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	6.9	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.95	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.55	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.56	ug/l	
75-00-3	Chloroethane	ND	1.0	0.73	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
74-87-3	Chloromethane	ND	1.0	0.76	ug/l	
110-82-7	Cyclohexane	ND	5.0	0.78	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	1.2	ug/l	
124-48-1	Dibromochloromethane [a]	ND	1.0	0.56	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.48	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.53	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.54	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.51	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.4	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.57	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.59	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.51	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.54	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.51	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.47	ug/l	
10061-02-6	trans-1,3-Dichloropropene [b]	ND	1.0	0.43	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
76-13-1	Freon 113	ND	5.0	1.9	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.0	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TRIP BLANK		
Lab Sample ID:	JC95411-10	**Date Sampled:**	09/20/19
Matrix:	AQ - Trip Blank Soil	**Date Received:**	09/20/19
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	1.0	0.65	ug/l	
79-20-9	Methyl Acetate	ND	5.0	0.80	ug/l	
108-87-2	Methylcyclohexane [c]	ND	5.0	0.60	ug/l	UJ
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	1.9	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.70	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.65	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.90	ug/l	
108-88-3	Toluene	ND	1.0	0.53	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.50	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.54	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.53	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.53	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.84	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.79	ug/l	
	m,p-Xylene	ND	1.0	0.78	ug/l	
95-47-6	o-Xylene	ND	1.0	0.59	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	114%		80-120%
17060-07-0	1,2-Dichloroethane-D4	108%		81-124%
2037-26-5	Toluene-D8	104%		80-120%
460-00-4	4-Bromofluorobenzene	92%		80-120%

(a) This compound in BS is outside in house QC limits bias high.
(b) Associated CCV outside of control limits high, sample was ND. This compound in BS is outside in house QC limits bias high.
(c) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

ARCADIS Design & Consultancy for natural and built assets

National Grid

Philly Coke

DATA REVIEW

Philadelphia, Pennsylvania

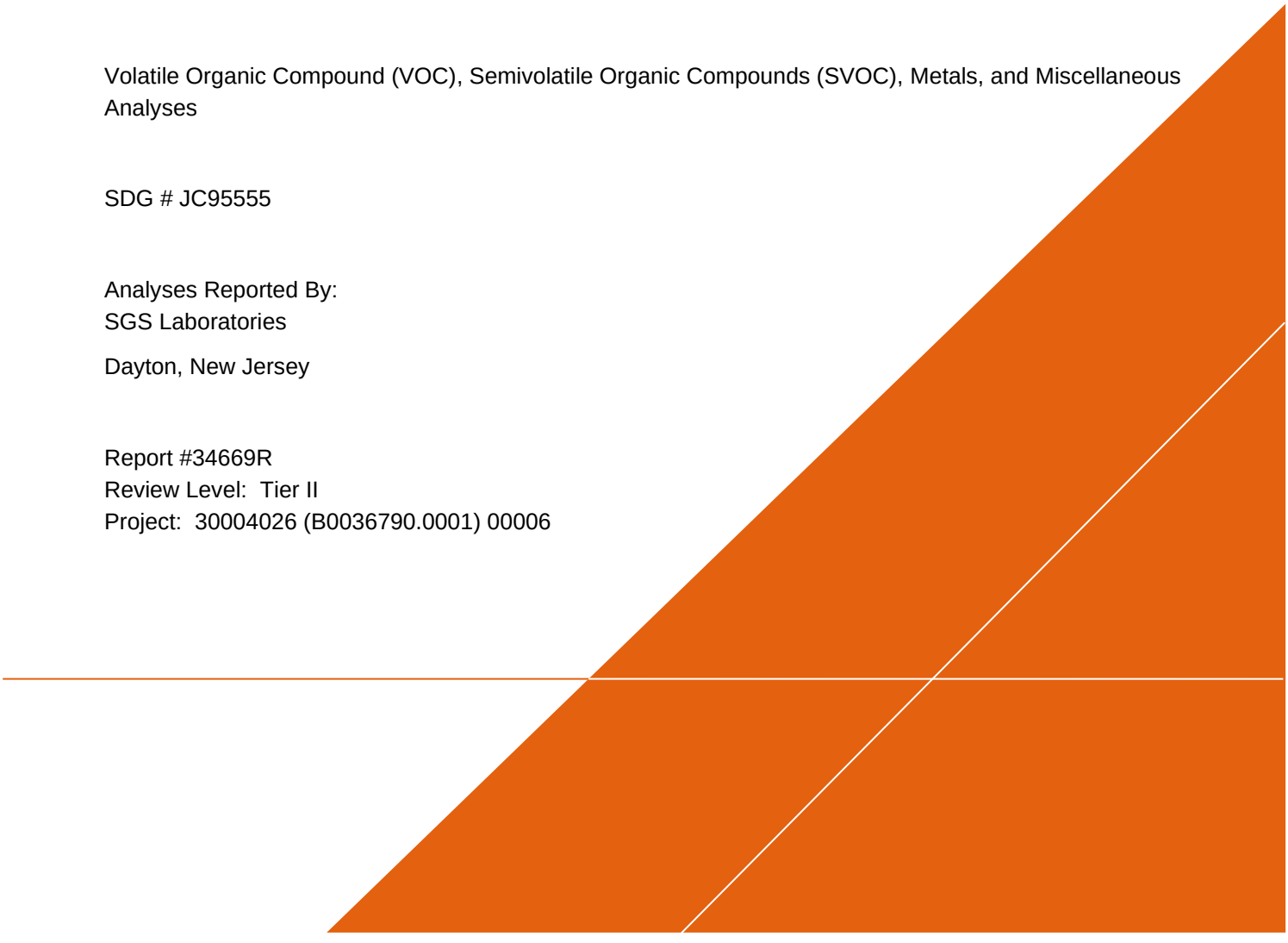
Volatile Organic Compound (VOC), Semivolatile Organic Compounds (SVOC), Metals, and Miscellaneous Analyses

SDG # JC95555

Analyses Reported By:
SGS Laboratories

Dayton, New Jersey

Report #34669R
Review Level: Tier II
Project: 30004026 (B0036790.0001) 00006



SUMMARY

This data review report summarizes the review of Sample Delivery Group (SDG) # JC95555 for samples collected in association with the National Grid Philly Coke site in Philadelphia, Pennsylvania. The review was conducted as a Tier II evaluation and included review of laboratory analytical data package completeness. Field documentation was not included in this review. Included with this assessment are the post-validation annotated sample result sheets, and chain of custody (COC). Analyses were performed on the following samples

SDG Number	Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis				
						VOC	SVOC	PEST/ PCB	Metals	MISC
JC95555	MW-111(11-13)	JC95555-1	Soil	9/19/2019		X	X		X	X
	MW-111(13-15)	JC95555-2	Soil	9/19/2019		X	X		X	X
	MW-108(5-7)	JC95555-3	Soil	9/19/2019		X	X		X	X
	MW-108(10-12)	JC95555-4	Soil	9/19/2019		X	X		X	X
	TRIP BLANK	JC95555-5	Water	9/19/2019		X				

Notes:

1. PEST/PCB = Pesticides and polychlorinated biphenyls
2. SVOC = Semivolatile Organic Compounds
3. VOC = Volatile Organic Compound
4. MISC = Miscellaneous (total cyanide)

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance (QA) or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260C and 8270D. Data were reviewed in accordance with the USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540/R-2017-002, January 2017 and the USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Organic Data Review, EPA540/R-99/008, October 1999 (as applicable).

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers
  - U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
  - B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- Quantitation (Q) Qualifiers
  - E The compound was quantitated above the calibration range.
  - D Concentration is based on a diluted sample analysis.
- Validation Qualifiers
  - J The compound was positively identified; however, the associated numerical value is an estimated concentration only.
  - UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.
  - JN The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.
  - UB Compound considered non-detect at the listed value due to associated blank contamination.
  - N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.
  - R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is

that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times/Preservation

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260C	Water	14 days from collection to analysis (preserved) 7 days from collection to analysis (non-preserved)	Cool to <6 °C; preserved to a pH of less than 2 s.u.
	Soil	48 hours from collection to extraction and 14 days from extraction to analysis (Samples stored in deionized water must be frozen or analyzed within 48 hours)	Cool to <6 °C.

Note:
s.u. Standard units

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore, detected sample results were not associated with blank contamination.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. VOC analysis requires that all surrogates associated with the analysis exhibit recoveries within the laboratory-established acceptance limits.

Sample locations associated with surrogates exhibiting recoveries outside of the control limits presented in the following table.

Sample Locations	Surrogate	Recovery
MW-108(10-12)	1,2-Dichloroethane-d4	AC
	4-Bromofluorobenzene	> UL

Sample Locations	Surrogate	Recovery
	Dibromofluoromethane	AC
	Toluene-d8	> UL

Notes:
UL Upper control limit
AC Acceptable

The criteria used to evaluate the surrogate recoveries are presented in the following table. In the case of a surrogate deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> UL	Non-detect	No Action
	Detect	J
< LL but > 10%	Non-detect	UJ
	Detect	J
< 10%	Non-detect	R
	Detect	J

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

The MS/MSD exhibited acceptable recoveries and RPD between the MS/MSD recoveries.

5. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) Analysis

The LCS/LCSD analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS/LCSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

All compounds associated with the LCS analysis exhibited recoveries within the control limits.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of three times the RL is applied for soil matrices.

A field duplicate was not performed on a sample within this SDG.

7. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

8. System Performance and Overall Assessment

The laboratory narrative indicates continuing calibration deviations. These deviations are normally not evaluated in a tier II data review. Sample results that had continuing calibration recoveries that exceed the control limit high and were non detect did not require qualification. Sample results where the calibration recoveries were high and the compound was detected or calibration recoveries were low were qualified as estimated (J or UJ).

The laboratory narrative indicates internal standard deviations. These deviations are normally not evaluated in a tier II data review. Sample locations associated with internal standards exhibiting responses outside of the control limits are presented in the following table.

Sample Locations	Internal Standard	Response
MW-108(10-12)	Chlorobenzene-D5	< LL but > 25%
	1,4-Dichlorobenzene-d4	< 25%

Note:

AC Acceptable

The criteria used to evaluate the internal standard responses are presented in the following table. In the case of an internal standard deviation, the compounds quantitated under the deviant internal standard are qualified as documented in the table below.

Control limit	Sample Result	Qualification
> the upper control limit (UL)	Non-detect	No action
	Detect	J
< the lower control limit (LL) but > 25%	Non-detect	UJ
	Detect	J
< 25%	Non-detect	R
	Detect	J

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: SW-846 8260	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks	X				X
C. Trip blanks		X		X	
Laboratory Control Sample (LCS)		X		X	
Laboratory Control Sample Duplicate(LCSD)	X				X
LCS/LCSD Precision (RPD)	X				X
Matrix Spike (MS)		X		X	
Matrix Spike Duplicate(MSD)		X		X	
MS/MSD Precision (RPD)		X		X	
Field/Lab Duplicate (RPD)	X				X
Surrogate Spike Recoveries		X	X		
Dilution Factor		X		X	
Moisture Content		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

SEMIVOLATILE ORGANIC COMPOUND (SVOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8270D	Water	7 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C
	Soil	14 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. SVOC analysis requires that two of the three SVOC surrogate compounds within each fraction exhibit recoveries within the laboratory-established acceptance limits.

Sample locations associated with surrogates exhibiting recoveries outside of the control limits presented in the following table.

Sample Locations	Surrogate	Recovery
MW-111(11-13) MW-108(5-7)	Phenol-d5	AC
	2-Fluorophenol	AC
	2,4,6-Tribromophenol	AC
	Nitrobenzene-d5	<LL but > 10%
	2-Fluorobiphenyl	AC
	Terphenyl-d14	AC

Notes:

LL	Lower control limit
AC	Acceptable

The criteria used to evaluate the surrogate recoveries are presented in the following table. In the case of a surrogate deviation, the sample results associated with the deviant fraction are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> UL	Non-detect	No Action
	Detect	J
< LL but > 10%	Non-detect	UJ
	Detect	J
< 10%	Non-detect	R
	Detect	J
Surrogates diluted below the calibration curve due to the high concentration of a target compounds	Non-detect	J[1]
	Detect	

Note:

[1] A more concentrated analysis was not performed with surrogate compounds within the calibration range; therefore, no determination of extraction efficiency could be made.

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

The MS/MSD analysis was not performed on a sample within this SDG.

5. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) Analysis

The LCS/LCSD analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS/LCSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

The LCS/LCSD exhibited acceptable recoveries and RPD between the MS/MSD recoveries.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of three times the RL is applied for soil matrices.

A field duplicate was not performed on a sample within this SDG.

7. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

Several samples were diluted to bring target compounds within linear range of the instrument. Sample results that were reported from a secondary dilution were qualified with a “D”, indicating the result is diluted.

8. System Performance and Overall Assessment

The laboratory narrative indicates continuing calibration deviations. These deviations are normally not evaluated in a tier II data review. Sample results that had continuing calibration recoveries that exceed the control limit high and were non detect did not require qualification. Sample results where the calibration recoveries were high and the compound was detected or calibration recoveries were low were qualified as estimated (J or UJ).

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR SVOCs

SVOCs: SW-846 8270	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks	X				X
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R	X				X
LCS/LCSD Precision (RPD)	X				X
Matrix Spike (MS) %R	X				X
Matrix Spike Duplicate(MSD) %R	X				X
MS/MSD Precision (RPD)	X				X
Field/Lab Duplicate (RPD)	X				X
Surrogate Spike Recoveries		X	X		
Dilution Factor		X		X	
Moisture Content		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

INORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 6010D, 7471A, and 9012B. Data were reviewed in accordance with the USEPA CLP National Functional Guidelines for Inorganic Superfund Methods Data Review, EPA 540/R-2017-001, January 2017; and the USEPA CLP National Functional Guidelines for Inorganic Data Review, EPA 540-R-01-008, July 2002 (as applicable).

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and that it was already subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with the USEPA National Functional Guidelines:

- Concentration (C) Qualifiers
  - U The analyte was analyzed for but not detected. The associated value is the analyte instrument detection limit.
  - J The reported value was obtained from a reading less than the reporting limit (RL), but greater than or equal to the method detection limit (MDL).
- Quantitation (Q) Qualifiers
  - E The reported value is estimated due to the presence of interference.
  - N Spiked sample recovery is not within control limits.
  - * Duplicate analysis is not within control limits.
- Validation Qualifiers
  - J The analyte was positively identified; however, the associated numerical value is an estimated concentration only.
  - UJ The analyte was not detected above the reporting limit. However, the reported limit is approximate and may or may not represent the actual limit of detection.
  - UB Analyte considered non-detect at the listed value due to associated blank contamination.
  - R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

METALS ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 6010D	Water	180 days from collection to analysis	Preserved to a pH of less than 2.
	Soil	180 days from collection to analysis	Cool to <6 °C.
SW-846 7471A	Soil	28 days from collection to analysis	Cool to <6 °C.
SW-846 7470A	Water	28 days from collection to analysis	Cool to <6 °C; preserved to a pH of less than 2.

All samples were analyzed within the specified holding times.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Analytes were detected in the associated QA blanks; however, the associated sample results were greater than the BAL and/or were non-detect. No qualification of the sample results was required.

3. Matrix Spike (MS)/Matrix Spike Duplicate(MSD)/Laboratory Duplicate Analysis

MS/MSD and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

3.1 MS/MSD Analysis

All metal analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the analyte's concentration detected in the parent sample exceeds the MS concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

The MS/MSD analysis was not performed on a sample within this SDG.

3.2 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the RL. A control limit of 20% for water matrices and 35% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of one times the RL is applied for water matrices and two times the RL for soil matrices.

MS/MSD analysis was performed in replacement of the laboratory duplicate analysis. The MS/MSD analysis was not performed on a sample within this SDG.

4. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of three times the RL is applied for soil matrices.

A field duplicate was not performed on a sample within this SDG.

5. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The analytes associated with the LCS analysis must exhibit a percent recovery between the control limits of 80% and 120%.

The LCS analysis exhibited recoveries within the control limits.

6. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR METAL

METALS; SW846 6010D/7471A	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Inductively Coupled Plasma-Atomic Emission Spectrometry (ICP-AES)					
Tier II Validation					
Holding Times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method Blanks		X		X	
B. Equipment/Field Blanks	X				X
Laboratory Control Sample (LCS)		X		X	
Matrix Spike (MS) %R	X				X
Matrix Spike Duplicate (MSD) %R	X				X
MS/MSD Precision (RPD)	X				X
Field/Lab Duplicate (RPD)	X				X
Total vs. Dissolved	X				X

Notes:

%R Percent recovery

RPD Relative percent difference

GENERAL CHEMISTRY ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
Cyanide by SW-846 9012	Water	14 days from collection to analysis	Cool to <6 °C; preserved to a pH of greater than 12.
	Soil		Cool to <6 °C.

All samples were analyzed within the specified holding times.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Analytes were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Matrix Spike/Matrix Spike Duplicate (MS/MSD)/Laboratory Duplicate Analysis

MS/MSD and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

3.1 MS/MSD Analysis

All analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the analyte's concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

The MS analysis was not performed on a sample within this SDG.

3.2 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the RL. A control limit of 20% for water matrices and 35% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of one times the RL is applied for water matrices and two times the RL for soil matrices.

The laboratory duplicate analysis was not performed on a sample within this SDG.

4. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The analytes associated with the LCS analysis must exhibit a percent recovery between the control limits of 80% and 120%.

The LCS analysis is not required for this analysis.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of three times the RL is applied for soil matrices.

A field duplicate was not performed on a sample within this SDG.

6. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR GENERAL CHEMISTRY

General Chemistry: EPA 9012	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Miscellaneous Instrumentation					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks					X
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R					X
LCS/LCSD Precision (RPD)					X
Matrix Spike (MS) %R	X				X
Matrix Spike Duplicate(MSD) %R	X				X
MS/MSD Precision (RPD)	X				X
Field/Lab Duplicate (RPD)	X			X	
Dilution Factor		X		X	
Moisture Content		X		X	

Notes:
%R - percent recovery
RPD - relative percent difference

VALIDATION PERFORMED BY: Andrew Korycinski

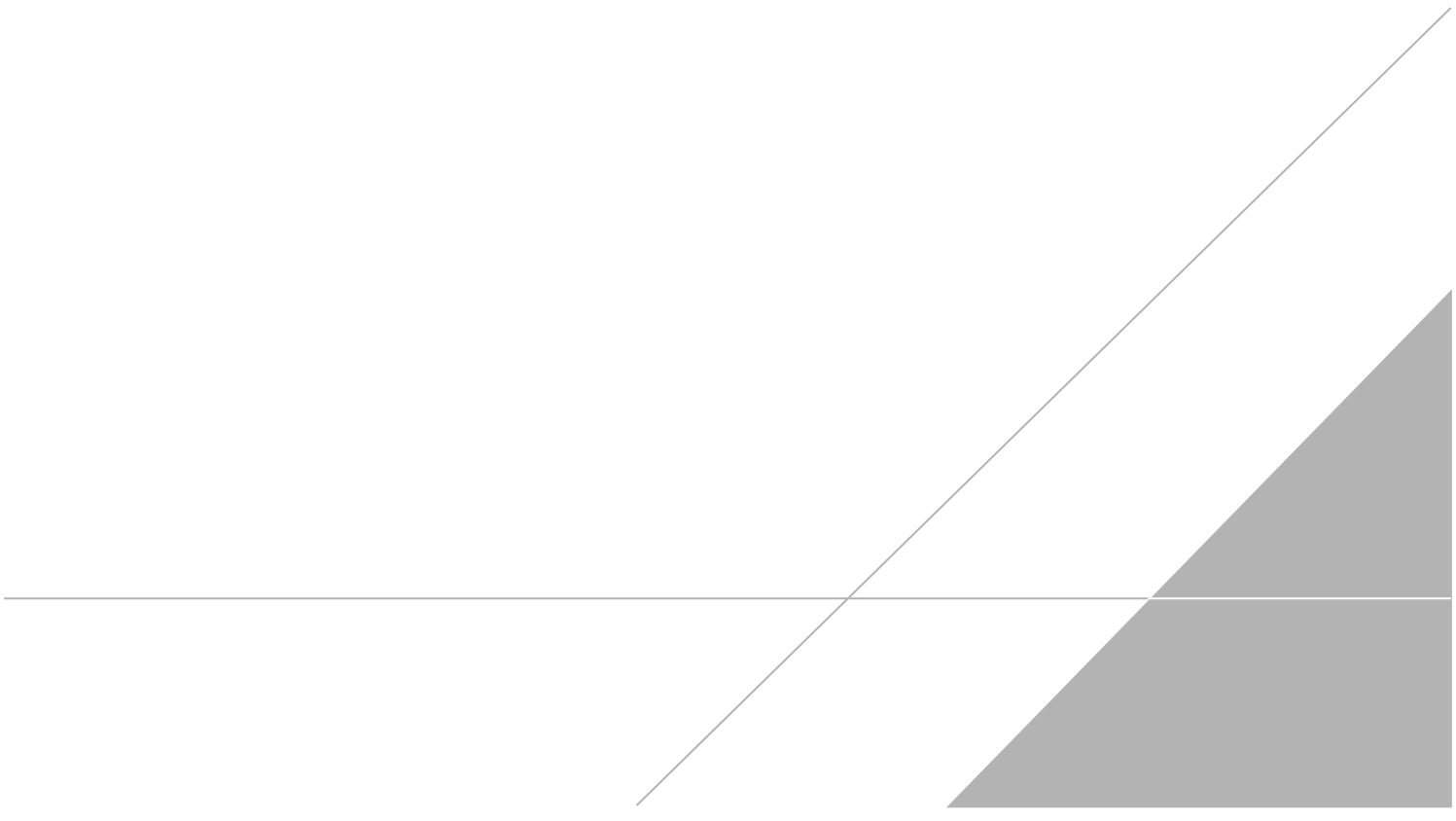
SIGNATURE:

DATE: November 6, 2019

PEER REVIEW: Dennis Capria

DATE: November 11, 2019

CHAIN OF CUSTODY
SAMPLE ANALYSIS DATA SHEETS



SLL
STB

CHAIN OF CUSTODY

SGS North America Inc. - Dayton
2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200 FAX: 732-329-3499/3480
www.sgs.com/ehsusa

Page 1 of 1

FED-EX Tracking #: | Bottle Order Control #: KR-09619-173
SGS Quote #: | SGS Job #: JC95555

Client / Reporting Information

Company Name: ARCADIS
Street Address: 1 LINCOLN CORNER
City: SYRACUSE State: NY Zip: 13202
Project Contact: CAREY HEALY Email:
Phone #: 315-671-9338
Sampler(s) Name(s): CHRIS ORTOLANO Phone #:

Project Information

Project Name: PHILLY COKE - NATIONAL GRID
Street: RICHMOND ST
City: PHILA State: PA
Project #:
Client Purchase Order #:
Project Manager:

Billing Information (if different from Report to)

Company Name:
Street Address:
City: State: Zip:
Attention:

Requested Analysis

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL - Sludge; SED-Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB - Field Blank; EB-Equipment Blank; RB - Rinse Blank; TB - Trip Blank

SGS Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Grab (G) Comp (C)	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	TCL VOCs	TCL SVOCs	TAL Inorganics	LAB USE ONLY
1	MW-111 (11-13)		9/23/19	0845	CO	G	SO	5					2	2	1		X	X	X	C13
2	MW-111 (13-15)		9/23/19	0855	CO	G	SO	5					2	2	1		X	X	X	P5D
3	MW-108 (5-7)		9/24/19	1115	CO	G	SO	5					2	2	1		X	X	X	L4R5
4	MW-108 (10-12)		9/24/19	1130	CO	G	SO	5					2	2	1		X	X	X	40109
5	TRIP BLANK		-	-	-			2	2								X			U1076

Turn Around Time (Business Days)

Approved By (SGS PM): / Date:

- [X] 10 Business Days
- [ ] 5 Business Days
- [ ] 3 Business Days*
- [ ] 2 Business Days*
- [ ] 1 Business Day*
- [ ] Other

All data available via Labink

* Approval needed for 1-3 Business Day TAT

Deliverable

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] NJ Reduced (Level 3)
- [X] Full Tier I (Level 4)
- [ ] Commercial "C"
- [ ] NJ DKQP
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] MA MCP Criteria
- [ ] CT RCP Criteria
- [ ] State Forms
- [ ] EDD Format
- [ ] DOD-QSM5

Commercial "A" = Results only; Commercial "B" = Results + QC Summary
Commercial "C" = Results + QC Summary + Partial Raw data

Comments / Special Instructions

http://www.sgs.com/en/terms-and-conditions

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by:	Date / Time:	Received By:	Relinquished By:	Date / Time:	Received By:
1	[signature]	9/24/19 1300	1 Robin Temp 9-24-19 13:00	2 Robin Temp	9-24-19 1620	2
3	Relinquished by:	Date / Time:	3 Received By:	4 Relinquished By:	Date / Time:	4 Received By:
5	Relinquished by:	Date / Time:	5 Received By:	Custody Seal #	Intact / Not intact	Preserved where applicable / Absent

On Ice: [X] Cooler Temp. °C: 2.6C IR Therm. ID:

INITIAL ASESSMENT 2 AM

LABEL VERIFICATION

EHSA-QAC-0023-02-FORM-Dayton - Standard COC.xlsx

SGS LabLink@1054774 16:29 15-Oct-2019

Report of Analysis

Client Sample ID:	MW-111(11-13)		
Lab Sample ID:	JC95555-1	**Date Sampled:**	09/23/19
Matrix:	SO - Soil	**Date Received:**	09/24/19
Method:	SW846 8260C	**Percent Solids:**	87.7
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	D266689.D	1	10/03/19 17:39	TDN	n/a	n/a	VD10747
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	4.9 g	10.0 ml	2.0 ul
Run #2			

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	62000	25000	ug/kg	
71-43-2	Benzene	131000	3100	2800	ug/kg	
74-97-5	Bromochloromethane	ND	31000	3500	ug/kg	
75-27-4	Bromodichloromethane	ND	12000	2700	ug/kg	
75-25-2	Bromoform	ND	31000	3600	ug/kg	
74-83-9	Bromomethane	ND	31000	6100	ug/kg	
78-93-3	2-Butanone (MEK)	ND	62000	23000	ug/kg	
75-15-0	Carbon disulfide	ND	12000	5700	ug/kg	
56-23-5	Carbon tetrachloride	ND	12000	3800	ug/kg	
108-90-7	Chlorobenzene	ND	12000	2800	ug/kg	
75-00-3	Chloroethane	ND	31000	3600	ug/kg	
67-66-3	Chloroform	ND	12000	3000	ug/kg	
74-87-3	Chloromethane	ND	31000	12000	ug/kg	
110-82-7	Cyclohexane	ND	12000	4100	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	12000	5200	ug/kg	
124-48-1	Dibromochloromethane	ND	12000	3500	ug/kg	
106-93-4	1,2-Dibromoethane	ND	6200	2600	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	6200	3400	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	6200	3100	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	6200	3000	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	31000	4500	ug/kg	
75-34-3	1,1-Dichloroethane	ND	6200	3100	ug/kg	
107-06-2	1,2-Dichloroethane	ND	6200	2900	ug/kg	
75-35-4	1,1-Dichloroethene	ND	6200	4000	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	6200	5200	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	6200	3800	ug/kg	
78-87-5	1,2-Dichloropropane	ND	12000	2900	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	12000	2900	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	12000	2800	ug/kg	
100-41-4	Ethylbenzene	21300	6200	3400	ug/kg	
76-13-1	Freon 113	ND	31000	6200	ug/kg	
591-78-6	2-Hexanone	ND	31000	13000	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW-111(11-13)		
Lab Sample ID:	JC95555-1	**Date Sampled:**	09/23/19
Matrix:	SO - Soil	**Date Received:**	09/24/19
Method:	SW846 8260C	**Percent Solids:**	87.7
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	12000	4300	ug/kg	
79-20-9	Methyl Acetate	ND	31000	8600	ug/kg	
108-87-2	Methylcyclohexane	ND	12000	5400	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	6200	2900	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	31000	14000	ug/kg	
75-09-2	Methylene chloride	ND	31000	6100	ug/kg	
100-42-5	Styrene	29500	12000	3500	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	12000	3700	ug/kg	
127-18-4	Tetrachloroethene	ND	12000	3600	ug/kg	
108-88-3	Toluene	99200	6200	3200	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	31000	12000	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	31000	9400	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	12000	3000	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	12000	3400	ug/kg	
79-01-6	Trichloroethene	ND	6200	4700	ug/kg	
75-69-4	Trichlorofluoromethane	ND	31000	4200	ug/kg	
75-01-4	Vinyl chloride	ND	12000	3000	ug/kg	
	m,p-Xylene	127000	6200	5500	ug/kg	
95-47-6	o-Xylene	42600	6200	3600	ug/kg	
1330-20-7	Xylene (total)	170000	6200	3600	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	97%		75-127%
17060-07-0	1,2-Dichloroethane-D4	98%		75-130%
2037-26-5	Toluene-D8	95%		80-120%
460-00-4	4-Bromofluorobenzene	88%		79-127%

(a) Diluted due to high concentration of non-target compound.

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SGS LabLink@1054774 16:29 15-Oct-2019

Report of Analysis

Client Sample ID:	MW-111(11-13)		
Lab Sample ID:	JC95555-1	**Date Sampled:**	09/23/19
Matrix:	SO - Soil	**Date Received:**	09/24/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	87.7
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	5P63459.D	5	10/01/19 11:01	CS	09/28/19 22:45	OP23015	E5P2977
Run #2	5P63492.D	200	10/02/19 00:21	HSS	09/28/19 22:45	OP23015	E5P2978

	Initial Weight	Final Volume
Run #1	31.5 g	5.0 ml
Run #2	31.5 g	5.0 ml

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	1800	450	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	4500	550	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	4500	770	ug/kg	
105-67-9	2,4-Dimethylphenol	64600	4500	1600	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	4500	3400	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	4500	970	ug/kg	
95-48-7	2-Methylphenol	27700	1800	580	ug/kg	
	3&4-Methylphenol	79300	1800	740	ug/kg	
88-75-5	2-Nitrophenol	ND	4500	600	ug/kg	
100-02-7	4-Nitrophenol	ND	9000	2400	ug/kg	
87-86-5	Pentachlorophenol	ND	3600	850	ug/kg	
108-95-2	Phenol	31300	1800	470	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	4500	600	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	4500	680	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	4500	540	ug/kg	
83-32-9	Acenaphthene	274000 [b]	36000	12000	ug/kg	D
208-96-8	Acenaphthylene	770000 [b]	36000	18000	ug/kg	D
98-86-2	Acetophenone	374	4500	190	ug/kg	J
120-12-7	Anthracene	421000 [b]	36000	22000	ug/kg	D
1912-24-9	Atrazine	ND	1800	390	ug/kg	
56-55-3	Benzo(a)anthracene	592000 [b]	36000	10000	ug/kg	D
50-32-8	Benzo(a)pyrene	469000 [b]	36000	16000	ug/kg	D
205-99-2	Benzo(b)fluoranthene	581000 [b]	36000	16000	ug/kg	D
191-24-2	Benzo(g,h,i)perylene	242000 [b]	36000	18000	ug/kg	D
207-08-9	Benzo(k)fluoranthene	194000 [b]	36000	17000	ug/kg	D
101-55-3	4-Bromophenyl phenyl ether	ND	1800	350	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	1800	220	ug/kg	
92-52-4	1,1'-Biphenyl	158000 [b]	72000	5000	ug/kg	D
100-52-7	Benzaldehyde	ND	4500	220	ug/kg	
91-58-7	2-Chloronaphthalene	ND	1800	220	ug/kg	
106-47-8	4-Chloroaniline	ND	4500	330	ug/kg	
86-74-8	Carbazole	296000 [b]	72000	5200	ug/kg	D

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Report of Analysis

Client Sample ID:	MW-111(11-13)		
Lab Sample ID:	JC95555-1	**Date Sampled:**	09/23/19
Matrix:	SO - Soil	**Date Received:**	09/24/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	87.7
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	1800	360	ug/kg	
218-01-9	Chrysene	437000 b	36000	11000	ug/kg	D
111-91-1	bis(2-Chloroethoxy)methane	ND	1800	190	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	1800	390	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	1800	320	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	1800	290	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	900	280	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	900	450	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	1800	750	ug/kg	
123-91-1	1,4-Dioxane	ND	900	600	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	65400	900	400	ug/kg	
132-64-9	Dibenzofuran	663000 b	72000	15000	ug/kg	D
84-74-2	Di-n-butyl phthalate	ND	1800	150	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	1800	230	ug/kg	
84-66-2	Diethyl phthalate	ND	1800	190	ug/kg	
131-11-3	Dimethyl phthalate	ND	1800	160	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	1800	210	ug/kg	
206-44-0	Fluoranthene	1600000 b	36000	16000	ug/kg	D
86-73-7	Fluorene	983000 b	36000	17000	ug/kg	D
118-74-1	Hexachlorobenzene	ND	1800	230	ug/kg	
87-68-3	Hexachlorobutadiene	ND	900	360	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	9000	360	ug/kg	
67-72-1	Hexachloroethane	ND	4500	450	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	261000 b	36000	17000	ug/kg	D
78-59-1	Isophorone	ND	1800	190	ug/kg	
91-57-6	2-Methylnaphthalene	761000 b	36000	8200	ug/kg	D
88-74-4	2-Nitroaniline	ND	4500	210	ug/kg	
99-09-2	3-Nitroaniline	ND	4500	230	ug/kg	
100-01-6	4-Nitroaniline	ND	4500	230	ug/kg	
91-20-3	Naphthalene	3190000 b	36000	10000	ug/kg	D
98-95-3	Nitrobenzene	ND	1800	350	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	1800	260	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	4500	330	ug/kg	
85-01-8	Phenanthrene	2380000 b	36000	12000	ug/kg	D
129-00-0	Pyrene	1080000 b	36000	12000	ug/kg	D
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	4500	230	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	73%	0% c	23-115%

ND = Not detected MDL = Method Detection Limit
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E = Indicates value exceeds calibration range
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B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW-111(11-13)		
Lab Sample ID:	JC95555-1	**Date Sampled:**	09/23/19
Matrix:	SO - Soil	**Date Received:**	09/24/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	87.7
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	85%	0% [c]	27-114%
118-79-6	2,4,6-Tribromophenol	79%	0% [c]	19-152%
4165-60-0	Nitrobenzene-d5	146% [d]	0% [c]	26-134%
321-60-8	2-Fluorobiphenyl	98%	0% [c]	39-124%
1718-51-0	Terphenyl-d14	88%	0% [c]	36-134%

(a) Dilution required due to viscosity of the extract matrix. Elevated detection limit due to high final volume of viscous extract.
(b) Result is from Run# 2
(c) Outside control limits due to dilution.
(d) Outside control limits due to matrix interference.

Report of Analysis

Client Sample ID: MW-111(11-13)
Lab Sample ID: JC95555-1
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 09/23/19
Date Received: 09/24/19
Percent Solids: 87.7

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	4410	55	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Antimony	< 2.2	2.2	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Arsenic	6.2	2.2	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Barium	32.8	22	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Beryllium	0.30	0.22	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cadmium	< 0.55	0.55	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Calcium	893	550	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Chromium	12.5	1.1	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cobalt	< 5.5	5.5	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Copper	25.0	2.8	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Iron	11100	55	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Lead	55.4	2.2	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Magnesium	1460	550	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Manganese	168	1.7	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Mercury	0.15	0.037	mg/kg	1	09/27/19	09/27/19	CH	SW846 7471B [1]	SW846 7471B [3]
Nickel	9.5	4.4	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Potassium	< 1100	1100	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Selenium	< 2.2	2.2	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Silver	< 0.55	0.55	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Sodium	< 1100	1100	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Thallium	< 1.1	1.1	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Vanadium	8.7	5.5	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Zinc	74.0	5.5	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA47516
(2) Instrument QC Batch: MA47539
(3) Prep QC Batch: MP17543
(4) Prep QC Batch: MP17592

RL = Reporting Limit

Report of Analysis

Client Sample ID:	MW-111(11-13)		
Lab Sample ID:	JC95555-1	**Date Sampled:**	09/23/19
Matrix:	SO - Soil	**Date Received:**	09/24/19
		Percent Solids:	87.7
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Cyanide	< 0.29	0.29	mg/kg	1	10/03/19 16:25	KI	SW846 9012B/LACHAT
Solids, Percent	87.7		%	1	10/02/19 17:05	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit

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Report of Analysis

Client Sample ID:	MW-111(13-15)		
Lab Sample ID:	JC95555-2	**Date Sampled:**	09/23/19
Matrix:	SO - Soil	**Date Received:**	09/24/19
Method:	SW846 8260C	**Percent Solids:**	63.4
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	D266676.D	1	10/03/19 11:28	TDN	n/a	n/a	VD10747
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	4.3 g	10.0 ml	100 ul
Run #2			

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	2100	850	ug/kg	
71-43-2	Benzene	13200	110	97	ug/kg	
74-97-5	Bromochloromethane	ND	1100	120	ug/kg	
75-27-4	Bromodichloromethane	ND	420	94	ug/kg	
75-25-2	Bromoform	ND	1100	120	ug/kg	
74-83-9	Bromomethane	ND	1100	210	ug/kg	
78-93-3	2-Butanone (MEK)	ND	2100	790	ug/kg	
75-15-0	Carbon disulfide	400	420	200	ug/kg	J
56-23-5	Carbon tetrachloride	ND	420	130	ug/kg	
108-90-7	Chlorobenzene	ND	420	97	ug/kg	
75-00-3	Chloroethane	ND	1100	130	ug/kg	
67-66-3	Chloroform	ND	420	100	ug/kg	
74-87-3	Chloromethane	ND	1100	420	ug/kg	
110-82-7	Cyclohexane	ND	420	140	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	420	180	ug/kg	
124-48-1	Dibromochloromethane	ND	420	120	ug/kg	
106-93-4	1,2-Dibromoethane	ND	210	89	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	210	120	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	210	110	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	210	100	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	1100	150	ug/kg	
75-34-3	1,1-Dichloroethane	ND	210	110	ug/kg	
107-06-2	1,2-Dichloroethane	ND	210	100	ug/kg	
75-35-4	1,1-Dichloroethene	ND	210	140	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	210	180	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	210	130	ug/kg	
78-87-5	1,2-Dichloropropane	ND	420	100	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	420	100	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	420	97	ug/kg	
100-41-4	Ethylbenzene	190	210	120	ug/kg	J
76-13-1	Freon 113	ND	1100	210	ug/kg	
591-78-6	2-Hexanone	ND	1100	450	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: MW-111(13-15)
Lab Sample ID: JC95555-2
Matrix: SO - Soil
Method: SW846 8260C
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 09/23/19
Date Received: 09/24/19
Percent Solids: 63.4

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	192	420	150	ug/kg	J
79-20-9	Methyl Acetate	ND	1100	300	ug/kg	
108-87-2	Methylcyclohexane	ND	420	190	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	210	100	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	1100	480	ug/kg	
75-09-2	Methylene chloride	ND	1100	210	ug/kg	
100-42-5	Styrene	ND	420	120	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	420	130	ug/kg	
127-18-4	Tetrachloroethene	ND	420	120	ug/kg	
108-88-3	Toluene	1500	210	110	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	1100	410	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	1100	320	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	420	100	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	420	120	ug/kg	
79-01-6	Trichloroethene	ND	210	160	ug/kg	
75-69-4	Trichlorofluoromethane	ND	1100	150	ug/kg	
75-01-4	Vinyl chloride	ND	420	100	ug/kg	
	m,p-Xylene	346	210	190	ug/kg	
95-47-6	o-Xylene	368	210	120	ug/kg	
1330-20-7	Xylene (total)	714	210	120	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%		75-127%
17060-07-0	1,2-Dichloroethane-D4	97%		75-130%
2037-26-5	Toluene-D8	96%		80-120%
460-00-4	4-Bromofluorobenzene	90%		79-127%

(a) Diluted due to high concentration of non-target compound.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	MW-111(13-15)		
Lab Sample ID:	JC95555-2	**Date Sampled:**	09/23/19
Matrix:	SO - Soil	**Date Received:**	09/24/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	63.4
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5P63452.D	1	10/01/19 08:10	CS	09/28/19 22:45	OP23015	E5P2977
Run #2	5P63493.D	2	10/02/19 00:45	HSS	09/28/19 22:45	OP23015	E5P2978

	Initial Weight	Final Volume
Run #1	30.0 g	1.0 ml
Run #2	30.0 g	1.0 ml

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	110	26	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	260	32	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	260	45	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	260	94	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	260	200	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	260	56	ug/kg	
95-48-7	2-Methylphenol	ND	110	34	ug/kg	
	3&4-Methylphenol	ND	110	43	ug/kg	
88-75-5	2-Nitrophenol	ND	260	35	ug/kg	
100-02-7	4-Nitrophenol	ND	530	140	ug/kg	
87-86-5	Pentachlorophenol	ND	210	49	ug/kg	
108-95-2	Phenol	ND	110	27	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	260	35	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	260	39	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	260	31	ug/kg	
83-32-9	Acenaphthene	2630	53	18	ug/kg	
208-96-8	Acenaphthylene	411	53	27	ug/kg	
98-86-2	Acetophenone	ND	260	11	ug/kg	
120-12-7	Anthracene	1170	53	32	ug/kg	
1912-24-9	Atrazine	ND	110	23	ug/kg	
56-55-3	Benzo(a)anthracene	2090	53	15	ug/kg	
50-32-8	Benzo(a)pyrene	1710	53	24	ug/kg	
205-99-2	Benzo(b)fluoranthene	1910	53	23	ug/kg	
191-24-2	Benzo(g,h,i)perylene	975	53	26	ug/kg	
207-08-9	Benzo(k)fluoranthene	803	53	25	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	110	20	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	110	13	ug/kg	
92-52-4	1,1'-Biphenyl	357	110	7.2	ug/kg	
100-52-7	Benzaldehyde	ND	260	13	ug/kg	
91-58-7	2-Chloronaphthalene	ND	110	13	ug/kg	
106-47-8	4-Chloroaniline	ND	260	19	ug/kg	
86-74-8	Carbazole	820	110	7.6	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW-111(13-15)		
Lab Sample ID:	JC95555-2	**Date Sampled:**	09/23/19
Matrix:	SO - Soil	**Date Received:**	09/24/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	63.4
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	110	21	ug/kg	
218-01-9	Chrysene	1580	53	17	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	110	11	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	110	23	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	110	19	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	110	17	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	53	16	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	53	26	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	110	44	ug/kg	
123-91-1	1,4-Dioxane	ND	53	35	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	333	53	23	ug/kg	
132-64-9	Dibenzofuran	1660	110	21	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	110	8.6	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	110	13	ug/kg	
84-66-2	Diethyl phthalate	ND	110	11	ug/kg	
131-11-3	Dimethyl phthalate	ND	110	9.4	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	110	12	ug/kg	
206-44-0	Fluoranthene	4220	53	23	ug/kg	
86-73-7	Fluorene	2490	53	24	ug/kg	
118-74-1	Hexachlorobenzene	ND	110	13	ug/kg	
87-68-3	Hexachlorobutadiene	ND	53	21	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	530	21	ug/kg	
67-72-1	Hexachloroethane	ND	260	26	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	1040	53	25	ug/kg	
78-59-1	Isophorone	ND	110	11	ug/kg	
91-57-6	2-Methylnaphthalene	1270	53	12	ug/kg	
88-74-4	2-Nitroaniline	ND	260	12	ug/kg	
99-09-2	3-Nitroaniline	ND	260	13	ug/kg	
100-01-6	4-Nitroaniline	ND	260	14	ug/kg	
91-20-3	Naphthalene	4500	53	15	ug/kg	
98-95-3	Nitrobenzene	ND	110	20	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	110	15	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	260	19	ug/kg	
85-01-8	Phenanthrene	7070 [a]	110	35	ug/kg	D
129-00-0	Pyrene	3720	53	17	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	260	13	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	57%	54%	23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW-111(13-15)		
Lab Sample ID:	JC95555-2	**Date Sampled:**	09/23/19
Matrix:	SO - Soil	**Date Received:**	09/24/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	63.4
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	61%	59%	27-114%
118-79-6	2,4,6-Tribromophenol	62%	63%	19-152%
4165-60-0	Nitrobenzene-d5	66%	66%	26-134%
321-60-8	2-Fluorobiphenyl	61%	61%	39-124%
1718-51-0	Terphenyl-d14	77%	73%	36-134%

(a) Result is from Run# 2

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: MW-111(13-15)
Lab Sample ID: JC95555-2
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 09/23/19
Date Received: 09/24/19
Percent Solids: 63.4

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	17500	76	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Antimony	< 3.0	3.0	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Arsenic	34.7	3.0	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Barium	170	30	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Beryllium	1.2	0.30	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cadmium	1.5	0.76	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Calcium	3580	760	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Chromium	162	1.5	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cobalt	15.1	7.6	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Copper	88.8	3.8	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Iron	28200	76	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Lead	185	3.0	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Magnesium	4760	760	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Manganese	860	2.3	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Mercury	1.4	0.094	mg/kg	2	09/27/19	09/27/19	CH	SW846 7471B [1]	SW846 7471B [3]
Nickel	30.6	6.1	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Potassium	1950	1500	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Selenium	< 3.0	3.0	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Silver	1.2	0.76	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Sodium	< 1500	1500	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Thallium	< 1.5	1.5	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Vanadium	32.6	7.6	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]
Zinc	504	7.6	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA47516
(2) Instrument QC Batch: MA47539
(3) Prep QC Batch: MP17543
(4) Prep QC Batch: MP17592

RL = Reporting Limit

Report of Analysis

Client Sample ID:	MW-111(13-15)		
Lab Sample ID:	JC95555-2	**Date Sampled:**	09/23/19
Matrix:	SO - Soil	**Date Received:**	09/24/19
		Percent Solids:	63.4
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Cyanide	0.87	0.36	mg/kg	1	10/03/19 16:26	KI	SW846 9012B/LACHAT
Solids, Percent	63.4		%	1	10/02/19 17:05	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit

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Report of Analysis

Client Sample ID:	MW-108(5-7)		
Lab Sample ID:	JC95555-3	**Date Sampled:**	09/24/19
Matrix:	SO - Soil	**Date Received:**	09/24/19
Method:	SW846 8260C	**Percent Solids:**	79.4
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	D266690.D	1	10/03/19 18:08	TDN	n/a	n/a	VD10747
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	4.0 g	10.0 ml	2.0 ul
Run #2			

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	85000	34000	ug/kg	
71-43-2	Benzene	9980	4300	3900	ug/kg	
74-97-5	Bromochloromethane	ND	43000	4800	ug/kg	
75-27-4	Bromodichloromethane	ND	17000	3800	ug/kg	
75-25-2	Bromoform	ND	43000	4900	ug/kg	
74-83-9	Bromomethane	ND	43000	8500	ug/kg	
78-93-3	2-Butanone (MEK)	ND	85000	32000	ug/kg	
75-15-0	Carbon disulfide	8420	17000	7900	ug/kg	J
56-23-5	Carbon tetrachloride	ND	17000	5300	ug/kg	
108-90-7	Chlorobenzene	ND	17000	3900	ug/kg	
75-00-3	Chloroethane	ND	43000	5000	ug/kg	
67-66-3	Chloroform	ND	17000	4200	ug/kg	
74-87-3	Chloromethane	ND	43000	17000	ug/kg	
110-82-7	Cyclohexane	ND	17000	5600	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	17000	7100	ug/kg	
124-48-1	Dibromochloromethane	ND	17000	4800	ug/kg	
106-93-4	1,2-Dibromoethane	ND	8500	3600	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	8500	4700	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	8500	4200	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	8500	4200	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	43000	6200	ug/kg	
75-34-3	1,1-Dichloroethane	ND	8500	4200	ug/kg	
107-06-2	1,2-Dichloroethane	ND	8500	4000	ug/kg	
75-35-4	1,1-Dichloroethene	ND	8500	5600	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	8500	7200	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	8500	5200	ug/kg	
78-87-5	1,2-Dichloropropane	ND	17000	4000	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	17000	4000	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	17000	3900	ug/kg	
100-41-4	Ethylbenzene	ND	8500	4700	ug/kg	
76-13-1	Freon 113	ND	43000	8600	ug/kg	
591-78-6	2-Hexanone	ND	43000	18000	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: MW-108(5-7)
Lab Sample ID: JC95555-3
Matrix: SO - Soil
Method: SW846 8260C
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 09/24/19
Date Received: 09/24/19
Percent Solids: 79.4

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	17000	5900	ug/kg	
79-20-9	Methyl Acetate	ND	43000	12000	ug/kg	
108-87-2	Methylcyclohexane	ND	17000	7500	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	8500	4000	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	43000	19000	ug/kg	
75-09-2	Methylene chloride	ND	43000	8500	ug/kg	
100-42-5	Styrene	ND	17000	4900	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	17000	5100	ug/kg	
127-18-4	Tetrachloroethene	ND	17000	4900	ug/kg	
108-88-3	Toluene	12500	8500	4500	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	43000	16000	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	43000	13000	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	17000	4100	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	17000	4700	ug/kg	
79-01-6	Trichloroethene	ND	8500	6500	ug/kg	
75-69-4	Trichlorofluoromethane	ND	43000	5800	ug/kg	
75-01-4	Vinyl chloride	ND	17000	4100	ug/kg	
	m,p-Xylene	36900	8500	7600	ug/kg	
95-47-6	o-Xylene	14400	8500	5000	ug/kg	
1330-20-7	Xylene (total)	51300	8500	5000	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		75-127%
17060-07-0	1,2-Dichloroethane-D4	101%		75-130%
2037-26-5	Toluene-D8	97%		80-120%
460-00-4	4-Bromofluorobenzene	91%		79-127%

(a) Diluted due to high concentration of non-target compound.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	MW-108(5-7)		
Lab Sample ID:	JC95555-3	**Date Sampled:**	09/24/19
Matrix:	SO - Soil	**Date Received:**	09/24/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	79.4
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5P63460.D	5	10/01/19 11:25	CS	09/28/19 22:45	OP23015	E5P2977
Run #2	5P63494.D	200	10/02/19 01:10	HSS	09/28/19 22:45	OP23015	E5P2978
Run #3	5P63684.D	2000	10/07/19 12:29	HSS	09/28/19 22:45	OP23015	E5P2987

	Initial Weight	Final Volume
Run #1	30.5 g	5.0 ml
Run #2	30.5 g	5.0 ml
Run #3	30.5 g	5.0 ml

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	2100	510	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	5200	630	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	5200	880	ug/kg	
105-67-9	2,4-Dimethylphenol [a]	94900	5200	1800	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	5200	3900	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	5200	1100	ug/kg	
95-48-7	2-Methylphenol	37300	2100	660	ug/kg	
	3&4-Methylphenol	75800	2100	850	ug/kg	
88-75-5	2-Nitrophenol	ND	5200	680	ug/kg	
100-02-7	4-Nitrophenol	ND	10000	2800	ug/kg	
87-86-5	Pentachlorophenol	ND	4100	970	ug/kg	
108-95-2	Phenol	24800	2100	540	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	5200	680	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	5200	770	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	5200	620	ug/kg	
83-32-9	Acenaphthene	160000 [b]	41000	14000	ug/kg	D
208-96-8	Acenaphthylene	305000 [b]	41000	21000	ug/kg	D
98-86-2	Acetophenone	6880	5200	220	ug/kg	
120-12-7	Anthracene	1010000 [b]	41000	25000	ug/kg	D
1912-24-9	Atrazine	ND	2100	440	ug/kg	
56-55-3	Benzo(a)anthracene	1050000 [b]	41000	12000	ug/kg	D
50-32-8	Benzo(a)pyrene	681000 [b]	41000	19000	ug/kg	D
205-99-2	Benzo(b)fluoranthene	903000 [b]	41000	18000	ug/kg	D
191-24-2	Benzo(g,h,i)perylene	321000 [b]	41000	21000	ug/kg	D
207-08-9	Benzo(k)fluoranthene	320000 [b]	41000	19000	ug/kg	D
101-55-3	4-Bromophenyl phenyl ether	ND	2100	400	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	2100	250	ug/kg	
92-52-4	1,1'-Biphenyl	310000 [b]	83000	5700	ug/kg	D
100-52-7	Benzaldehyde	ND	5200	260	ug/kg	
91-58-7	2-Chloronaphthalene	ND	2100	250	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: MW-108(5-7)
Lab Sample ID: JC95555-3
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 09/24/19
Date Received: 09/24/19
Percent Solids: 79.4

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
106-47-8	4-Chloroaniline	ND	5200	370	ug/kg	
86-74-8	Carbazole	594000 b	83000	6000	ug/kg	D
105-60-2	Caprolactam	ND	2100	410	ug/kg	
218-01-9	Chrysene	927000 b	41000	13000	ug/kg	D
111-91-1	bis(2-Chloroethoxy)methane	ND	2100	220	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	2100	440	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	2100	370	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	2100	330	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	1000	320	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	1000	520	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	2100	860	ug/kg	
123-91-1	1,4-Dioxane	ND	1000	680	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	119000 b	41000	18000	ug/kg	D
132-64-9	Dibenzofuran	1270000 b	83000	17000	ug/kg	D
84-74-2	Di-n-butyl phthalate	ND	2100	170	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	2100	260	ug/kg	
84-66-2	Diethyl phthalate	ND	2100	220	ug/kg	
131-11-3	Dimethyl phthalate	ND	2100	180	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2100	240	ug/kg	
206-44-0	Fluoranthene	2470000 b	41000	18000	ug/kg	D
86-73-7	Fluorene	1940000 b	41000	19000	ug/kg	D
118-74-1	Hexachlorobenzene	ND	2100	260	ug/kg	
87-68-3	Hexachlorobutadiene	ND	1000	410	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	10000	410	ug/kg	
67-72-1	Hexachloroethane	ND	5200	510	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	377000 b	41000	19000	ug/kg	D
78-59-1	Isophorone	ND	2100	220	ug/kg	
91-57-6	2-Methylnaphthalene	1610000 b	41000	9300	ug/kg	D
88-74-4	2-Nitroaniline	ND	5200	240	ug/kg	
99-09-2	3-Nitroaniline	ND	5200	260	ug/kg	
100-01-6	4-Nitroaniline	ND	5200	270	ug/kg	
91-20-3	Naphthalene	8500000 c	410000	120000	ug/kg	D
98-95-3	Nitrobenzene	ND	2100	400	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	2100	300	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	5200	380	ug/kg	
85-01-8	Phenanthrene	5220000 c	410000	140000	ug/kg	D
129-00-0	Pyrene	1760000 b	41000	13000	ug/kg	D
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	5200	260	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: MW-108(5-7)
Lab Sample ID: JC95555-3
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 09/24/19
Date Received: 09/24/19
Percent Solids: 79.4

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Run# 3	Limits
367-12-4	2-Fluorophenol	79%	0% [d]	0% [d]	23-115%
4165-62-2	Phenol-d5	86%	0% [d]	0% [d]	27-114%
118-79-6	2,4,6-Tribromophenol	97%	0% [d]	0% [d]	19-152%
4165-60-0	Nitrobenzene-d5	145% [e]	0% [d]	0% [d]	26-134%
321-60-8	2-Fluorobiphenyl	72%	0% [d]	0% [d]	39-124%
1718-51-0	Terphenyl-d14	71%	0% [d]	0% [d]	36-134%

(a) Estimated value, due to corresponding internal standard failing low.
(b) Result is from Run# 2
(c) Result is from Run# 3
(d) Outside control limits due to dilution.
(e) Outside control limits due to matrix interference.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: MW-108(5-7)
Lab Sample ID: JC95555-3
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 09/24/19
Date Received: 09/24/19
Percent Solids: 79.4

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	1100	63	mg/kg	1	09/29/19	10/01/19	RP	SW846 6010D [3]	SW846 3050B [5]
Antimony	2.6	2.5	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]
Arsenic [a]	16.0	5.0	mg/kg	2	09/29/19	10/01/19	RP	SW846 6010D [3]	SW846 3050B [5]
Barium	194	25	mg/kg	1	09/29/19	10/01/19	RP	SW846 6010D [3]	SW846 3050B [5]
Beryllium	< 0.25	0.25	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]
Cadmium [a]	< 1.3	1.3	mg/kg	2	09/29/19	10/01/19	RP	SW846 6010D [3]	SW846 3050B [5]
Calcium	2190	630	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]
Chromium	185	1.3	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]
Cobalt	< 6.3	6.3	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]
Copper [a]	92.4	6.3	mg/kg	2	09/29/19	10/01/19	RP	SW846 6010D [3]	SW846 3050B [5]
Iron	28400	130	mg/kg	2	09/29/19	10/01/19	RP	SW846 6010D [3]	SW846 3050B [5]
Lead [a]	145	5.0	mg/kg	2	09/29/19	10/01/19	RP	SW846 6010D [3]	SW846 3050B [5]
Magnesium	< 630	630	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]
Manganese [a]	116	3.8	mg/kg	2	09/29/19	10/01/19	RP	SW846 6010D [3]	SW846 3050B [5]
Mercury	3.5	0.40	mg/kg	10	09/27/19	09/27/19	CH	SW846 7471B [1]	SW846 7471B [4]
Nickel	32.6	5.0	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]
Potassium	< 1300	1300	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]
Selenium [a]	< 5.0	5.0	mg/kg	2	09/29/19	10/01/19	RP	SW846 6010D [3]	SW846 3050B [5]
Silver [a]	< 1.3	1.3	mg/kg	2	09/29/19	10/01/19	RP	SW846 6010D [3]	SW846 3050B [5]
Sodium	< 1300	1300	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]
Thallium [a]	< 2.5	2.5	mg/kg	2	09/29/19	10/01/19	RP	SW846 6010D [3]	SW846 3050B [5]
Vanadium	8.7	6.3	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]
Zinc	94.0	6.3	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA47516
(2) Instrument QC Batch: MA47539
(3) Instrument QC Batch: MA47552
(4) Prep QC Batch: MP17543
(5) Prep QC Batch: MP17592

(a) Elevated detection limit due to dilution required for high interfering element.

RL = Reporting Limit

Report of Analysis

Client Sample ID: MW-108(5-7)
Lab Sample ID: JC95555-3
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 09/24/19
Date Received: 09/24/19
Percent Solids: 79.4

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Cyanide	12.8	0.30	mg/kg	1	10/03/19 16:30	KI	SW846 9012B/LACHAT
Solids, Percent	79.4		%	1	10/02/19 17:05	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit

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Report of Analysis

Client Sample ID:	MW-108(10-12)		
Lab Sample ID:	JC95555-4	**Date Sampled:**	09/24/19
Matrix:	SO - Soil	**Date Received:**	09/24/19
Method:	SW846 8260C	**Percent Solids:**	72.6
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1C167581.D	1	10/04/19 14:13	PS	n/a	n/a	V1C7331
Run #2 [a]	D266675.D	1	10/03/19 10:59	TDN	n/a	n/a	VD10747
Run #3 [a]	1C167585.D	1	10/04/19 15:59	PS	n/a	n/a	V1C7331

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	2.9 g		
Run #2	3.8 g	10.0 ml	100 ul
Run #3	2.8 g		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	16.3	24	9.5	ug/kg	J
71-43-2	Benzene	ND	1.2	1.1	ug/kg	
74-97-5	Bromochloromethane	ND	12	1.3	ug/kg	
75-27-4	Bromodichloromethane	ND	4.7	1.1	ug/kg	
75-25-2	Bromoform	ND	12	1.4	ug/kg	UJ
74-83-9	Bromomethane [b]	ND	12	2.4	ug/kg	
78-93-3	2-Butanone (MEK)	ND	24	8.9	ug/kg	
75-15-0	Carbon disulfide	ND	4.7	2.2	ug/kg	
56-23-5	Carbon tetrachloride	ND	4.7	1.5	ug/kg	
108-90-7	Chlorobenzene	ND	4.7	1.1	ug/kg	UJ
75-00-3	Chloroethane	ND	12	1.4	ug/kg	
67-66-3	Chloroform	ND	4.7	1.2	ug/kg	
74-87-3	Chloromethane	ND	12	4.7	ug/kg	
110-82-7	Cyclohexane	5.4	4.7	1.6	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	~~ND~~	~~4.7~~	~~2.0~~	~~ug/kg~~	R
124-48-1	Dibromochloromethane	ND	4.7	1.3	ug/kg	UJ
106-93-4	1,2-Dibromoethane	ND	2.4	1.0	ug/kg	UJ
95-50-1	1,2-Dichlorobenzene	~~ND~~	~~2.4~~	~~1.3~~	~~ug/kg~~	R
541-73-1	1,3-Dichlorobenzene	~~ND~~	~~2.4~~	~~1.2~~	~~ug/kg~~	R
106-46-7	1,4-Dichlorobenzene	~~ND~~	~~2.4~~	~~1.2~~	~~ug/kg~~	R
75-71-8	Dichlorodifluoromethane	ND	12	1.7	ug/kg	
75-34-3	1,1-Dichloroethane	ND	2.4	1.2	ug/kg	
107-06-2	1,2-Dichloroethane	ND	2.4	1.1	ug/kg	
75-35-4	1,1-Dichloroethene	ND	2.4	1.6	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	2.4	2.0	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	2.4	1.5	ug/kg	
78-87-5	1,2-Dichloropropane	ND	4.7	1.1	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	4.7	1.1	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	4.7	1.1	ug/kg	
100-41-4	Ethylbenzene	ND	2.4	1.3	ug/kg	UJ

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: MW-108(10-12)
Lab Sample ID: JC95555-4
Matrix: SO - Soil
Method: SW846 8260C
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 09/24/19
Date Received: 09/24/19
Percent Solids: 72.6

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
76-13-1	Freon 113	ND	12	2.4	ug/kg	
591-78-6	2-Hexanone	ND	12	5.0	ug/kg	UJ
98-82-8	Isopropylbenzene	ND	4.7	1.7	ug/kg	
79-20-9	Methyl Acetate	ND	12	3.3	ug/kg	
108-87-2	Methylcyclohexane	14.8	4.7	2.1	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	2.4	1.1	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	12	5.4	ug/kg	
75-09-2	Methylene chloride	ND	12	2.4	ug/kg	
100-42-5	Styrene	ND	4.7	1.4	ug/kg	UJ
79-34-5	1,1,2,2-Tetrachloroethane	ND	4.7	1.4	ug/kg	R
127-18-4	Tetrachloroethene	ND	4.7	1.4	ug/kg	UJ
108-88-3	Toluene	ND	2.4	1.2	ug/kg	UJ
87-61-6	1,2,3-Trichlorobenzene	ND	12	4.6	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	12	3.6	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	4.7	1.1	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	4.7	1.3	ug/kg	
79-01-6	Trichloroethene	ND	2.4	1.8	ug/kg	
75-69-4	Trichlorofluoromethane	ND	12	1.6	ug/kg	
75-01-4	Vinyl chloride	ND	4.7	1.1	ug/kg	
	m,p-Xylene	2.4	2.4	2.1	ug/kg	UJ
95-47-6	o-Xylene	1.6	2.4	1.4	ug/kg	J
1330-20-7	Xylene (total)	4.0	2.4	1.4	ug/kg	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Run# 3	Limits
1868-53-7	Dibromofluoromethane	97%	102%	94%	75-127%
17060-07-0	1,2-Dichloroethane-D4	103%	102%	98%	75-130%
2037-26-5	Toluene-D8	167% c	97%	143% c	80-120%
460-00-4	4-Bromofluorobenzene	138% c	88%	140% c	79-127%

(a) Confirmation run.
(b) Associated CCV outside of control limits high, sample was ND.
(c) Outside control limits due to matrix interference.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID: MW-108(10-12)
Lab Sample ID: JC95555-4
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 09/24/19
Date Received: 09/24/19
Percent Solids: 72.6

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5P63449.D	1	10/01/19 06:58	CS	09/28/19 22:45	OP23015	E5P2977
Run #2							

	Initial Weight	Final Volume
Run #1	30.6 g	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	90	22	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	230	28	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	230	38	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	230	80	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	230	170	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	230	48	ug/kg	
95-48-7	2-Methylphenol	ND	90	29	ug/kg	
	3&4-Methylphenol	ND	90	37	ug/kg	
88-75-5	2-Nitrophenol	ND	230	30	ug/kg	
100-02-7	4-Nitrophenol	ND	450	120	ug/kg	
87-86-5	Pentachlorophenol	ND	180	42	ug/kg	
108-95-2	Phenol	ND	90	23	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	230	30	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	230	34	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	230	27	ug/kg	
83-32-9	Acenaphthene	48.5	45	16	ug/kg	
208-96-8	Acenaphthylene	36.3	45	23	ug/kg	J
98-86-2	Acetophenone	ND	230	9.7	ug/kg	
120-12-7	Anthracene	76.6	45	28	ug/kg	
1912-24-9	Atrazine	ND	90	19	ug/kg	
56-55-3	Benzo(a)anthracene	118	45	13	ug/kg	
50-32-8	Benzo(a)pyrene	108	45	20	ug/kg	
205-99-2	Benzo(b)fluoranthene	140	45	20	ug/kg	
191-24-2	Benzo(g,h,i)perylene	79.8	45	23	ug/kg	
207-08-9	Benzo(k)fluoranthene	53.6	45	21	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	90	17	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	90	11	ug/kg	
92-52-4	1,1'-Biphenyl	43.9	90	6.2	ug/kg	J
100-52-7	Benzaldehyde	ND	230	11	ug/kg	
91-58-7	2-Chloronaphthalene	ND	90	11	ug/kg	
106-47-8	4-Chloroaniline	ND	230	16	ug/kg	
86-74-8	Carbazole	43.6	90	6.5	ug/kg	J

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: MW-108(10-12)
Lab Sample ID: JC95555-4
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 09/24/19
Date Received: 09/24/19
Percent Solids: 72.6

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	90	18	ug/kg	
218-01-9	Chrysene	148	45	14	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	90	9.6	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	90	19	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	90	16	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	90	15	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	45	14	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	45	23	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	90	38	ug/kg	
123-91-1	1,4-Dioxane	ND	45	30	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	45	20	ug/kg	
132-64-9	Dibenzofuran	103	90	18	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	90	7.3	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	90	11	ug/kg	
84-66-2	Diethyl phthalate	ND	90	9.6	ug/kg	
131-11-3	Dimethyl phthalate	ND	90	8.0	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	90	11	ug/kg	
206-44-0	Fluoranthene	241	45	20	ug/kg	
86-73-7	Fluorene	127	45	21	ug/kg	
118-74-1	Hexachlorobenzene	ND	90	11	ug/kg	
87-68-3	Hexachlorobutadiene	ND	45	18	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	450	18	ug/kg	
67-72-1	Hexachloroethane	ND	230	22	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	71.8	45	21	ug/kg	
78-59-1	Isophorone	ND	90	9.6	ug/kg	
91-57-6	2-Methylnaphthalene	270	45	10	ug/kg	
88-74-4	2-Nitroaniline	ND	230	11	ug/kg	
99-09-2	3-Nitroaniline	ND	230	11	ug/kg	
100-01-6	4-Nitroaniline	ND	230	12	ug/kg	
91-20-3	Naphthalene	1060	45	13	ug/kg	
98-95-3	Nitrobenzene	ND	90	17	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	90	13	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	230	16	ug/kg	
85-01-8	Phenanthrene	363	45	15	ug/kg	
129-00-0	Pyrene	254	45	14	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	230	11	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	56%		23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: MW-108(10-12)
Lab Sample ID: JC95555-4
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 09/24/19
Date Received: 09/24/19
Percent Solids: 72.6

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	61%		27-114%
118-79-6	2,4,6-Tribromophenol	60%		19-152%
4165-60-0	Nitrobenzene-d5	67%		26-134%
321-60-8	2-Fluorobiphenyl	62%		39-124%
1718-51-0	Terphenyl-d14	66%		36-134%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: MW-108(10-12)
Lab Sample ID: JC95555-4
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 09/24/19
Date Received: 09/24/19
Percent Solids: 72.6

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	20600	67	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]
Antimony	< 2.7	2.7	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]
Arsenic [a]	18.4	5.3	mg/kg	2	09/29/19	10/01/19	RP	SW846 6010D [3]	SW846 3050B [5]
Barium	189	27	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]
Beryllium	1.2	0.27	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]
Cadmium [a]	< 1.3	1.3	mg/kg	2	09/29/19	10/01/19	RP	SW846 6010D [3]	SW846 3050B [5]
Calcium	3280	670	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]
Chromium	107	1.3	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]
Cobalt	13.2	6.7	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]
Copper [a]	80.9	6.7	mg/kg	2	09/29/19	10/01/19	RP	SW846 6010D [3]	SW846 3050B [5]
Iron	42200	130	mg/kg	2	09/29/19	10/01/19	RP	SW846 6010D [3]	SW846 3050B [5]
Lead [a]	150	5.3	mg/kg	2	09/29/19	10/01/19	RP	SW846 6010D [3]	SW846 3050B [5]
Magnesium	5470	670	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]
Manganese [a]	640	4.0	mg/kg	2	09/29/19	10/01/19	RP	SW846 6010D [3]	SW846 3050B [5]
Mercury	0.50	0.042	mg/kg	1	09/27/19	09/27/19	CH	SW846 7471B [1]	SW846 7471B [4]
Nickel	33.2	5.3	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]
Potassium	2770	1300	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]
Selenium [a]	< 5.3	5.3	mg/kg	2	09/29/19	10/01/19	RP	SW846 6010D [3]	SW846 3050B [5]
Silver [a]	1.4	1.3	mg/kg	2	09/29/19	10/01/19	RP	SW846 6010D [3]	SW846 3050B [5]
Sodium	< 1300	1300	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]
Thallium [a]	< 2.7	2.7	mg/kg	2	09/29/19	10/01/19	RP	SW846 6010D [3]	SW846 3050B [5]
Vanadium	37.9	6.7	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]
Zinc	445	6.7	mg/kg	1	09/29/19	09/30/19	ND	SW846 6010D [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA47516
(2) Instrument QC Batch: MA47539
(3) Instrument QC Batch: MA47552
(4) Prep QC Batch: MP17543
(5) Prep QC Batch: MP17592

(a) Elevated detection limit due to dilution required for high interfering element.

RL = Reporting Limit

Report of Analysis

Client Sample ID:	MW-108(10-12)		
Lab Sample ID:	JC95555-4	**Date Sampled:**	09/24/19
Matrix:	SO - Soil	**Date Received:**	09/24/19
		Percent Solids:	72.6
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Cyanide	0.40	0.39	mg/kg	1	10/03/19 16:31	KI	SW846 9012B/LACHAT
Solids, Percent	72.6		%	1	10/02/19 17:05	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit

SGS LabLink@1054774 16:29 15-Oct-2019

Report of Analysis

Client Sample ID:	TRIP BLANK		
Lab Sample ID:	JC95555-5	**Date Sampled:**	09/24/19
Matrix:	AQ - Trip Blank Soil	**Date Received:**	09/24/19
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	A253704.D	1	10/04/19 09:48	KC	n/a	n/a	VA9835
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	6.0	ug/l	
71-43-2	Benzene	ND	0.50	0.43	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.48	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.58	ug/l	
75-25-2	Bromoform [a]	ND	1.0	0.63	ug/l	
74-83-9	Bromomethane [a]	ND	2.0	1.6	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	6.9	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.95	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.55	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.56	ug/l	
75-00-3	Chloroethane	ND	1.0	0.73	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
74-87-3	Chloromethane	ND	1.0	0.76	ug/l	
110-82-7	Cyclohexane	ND	5.0	0.78	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	1.2	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.56	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.48	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.53	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.54	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.51	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.4	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.57	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.59	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.51	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.54	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.51	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.47	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.43	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
76-13-1	Freon 113 [a]	ND	5.0	1.9	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.0	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TRIP BLANK		
Lab Sample ID:	JC95555-5	**Date Sampled:**	09/24/19
Matrix:	AQ - Trip Blank Soil	**Date Received:**	09/24/19
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	1.0	0.65	ug/l	
79-20-9	Methyl Acetate	ND	5.0	0.80	ug/l	
108-87-2	Methylcyclohexane	ND	5.0	0.60	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	1.9	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.70	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.65	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.90	ug/l	
108-88-3	Toluene	ND	1.0	0.53	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.50	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.54	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.53	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.53	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.84	ug/l	
75-01-4	Vinyl chloride [a]	ND	1.0	0.79	ug/l	
	m,p-Xylene	ND	1.0	0.78	ug/l	
95-47-6	o-Xylene	ND	1.0	0.59	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	94%		80-120%
17060-07-0	1,2-Dichloroethane-D4	93%		81-124%
2037-26-5	Toluene-D8	85%		80-120%
460-00-4	4-Bromofluorobenzene	83%		80-120%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

ARCADIS Design & Consultancy for natural and built assets

National Grid

Philly Coke

DATA REVIEW

Philadelphia, Pennsylvania

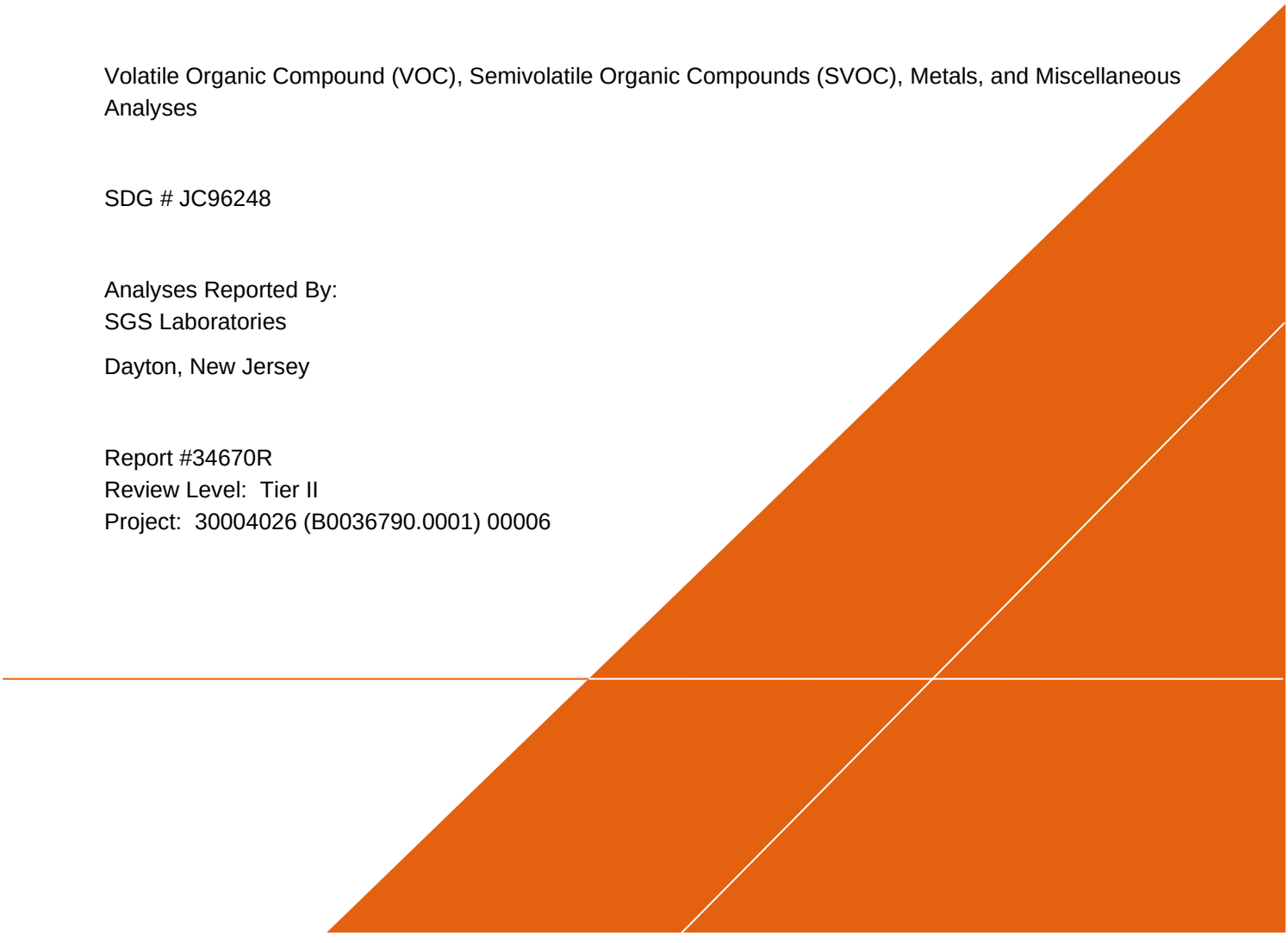
Volatile Organic Compound (VOC), Semivolatile Organic Compounds (SVOC), Metals, and Miscellaneous Analyses

SDG # JC96248

Analyses Reported By:
SGS Laboratories

Dayton, New Jersey

Report #34670R
Review Level: Tier II
Project: 30004026 (B0036790.0001) 00006



SUMMARY

This data review report summarizes the review of Sample Delivery Group (SDG) # JC96248 for samples collected in association with the National Grid Philly Coke site in Philadelphia, Pennsylvania. The review was conducted as a Tier II evaluation and included review of laboratory analytical data package completeness. Field documentation was not included in this review. Included with this assessment are the post-validation annotated sample result sheets, and chain of custody (COC). Analyses were performed on the following samples

SDG Number	Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis				
						VOC	SVOC	PEST/ PCB	Metals	MISC
JC96248	MW-108 (10-04-2019)	JC96248-1	Water	10/4/2019		X	X		X	X
	MW-109 (10-04-2019)	JC96248-2	Water	10/4/2019		X	X		X	X
	MW-110 (10-04-2019)	JC96248-3	Water	10/4/2019		X	X		X	X
	MW-111 (10-04-2019)	JC96248-4	Water	10/4/2019		X	X		X	X
	MW-112 (10-04-2019)	JC96248-5	Water	10/4/2019		X	X		X	X
	MW-113 (10-04-2019)	JC96248-6	Water	10/4/2019		X	X		X	X
	DUP-100419	JC96248-7	Water	10/4/2019	MW-108 (10-04-2019)	X	X		X	X
	FB-100419	JC96248-8	Water	10/4/2019		X	X		X	X
	TRIP BLANK (10-04-2019)	JC96248-9	Water	10/4/2019		X				

Notes:

1. PEST/PCB = Pesticides and polychlorinated biphenyls
2. SVOC = Semivolatile Organic Compounds
3. VOC = Volatile Organic Compound
4. MISC = Miscellaneous (total cyanide)

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance (QA) or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260C and 8270D. Data were reviewed in accordance with the USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540/R-2017-002, January 2017 and the USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Organic Data Review, EPA540/R-99/008, October 1999 (as applicable).

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers
  - U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
  - B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- Quantitation (Q) Qualifiers
  - E The compound was quantitated above the calibration range.
  - D Concentration is based on a diluted sample analysis.
- Validation Qualifiers
  - J The compound was positively identified; however, the associated numerical value is an estimated concentration only.
  - UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.
  - JN The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.
  - UB Compound considered non-detect at the listed value due to associated blank contamination.
  - N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.
  - R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is

that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times/Preservation

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260C	Water	14 days from collection to analysis (preserved) 7 days from collection to analysis (non-preserved)	Cool to <6 °C; preserved to a pH of less than 2 s.u.
	Soil	48 hours from collection to extraction and 14 days from extraction to analysis (Samples stored in deionized water must be frozen or analyzed within 48 hours)	Cool to <6 °C.

Note:
s.u. Standard units

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore, detected sample results were not associated with blank contamination.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. VOC analysis requires that all surrogates associated with the analysis exhibit recoveries within the laboratory-established acceptance limits.

All surrogate recoveries were within control limits.

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

Sample locations associated with the MS/MSD exhibiting recoveries outside of the control limits are presented in the following table.

Sample Locations	Compound	MS Recovery	MSD Recovery
MW-111 (10-04-2019)	cis-1,3-Dichloropropene	>UL	AC
	Toluene	>UL	AC

Note:

AC Acceptable

The criteria used to evaluate the MS/MSD recoveries are presented in the following table. In the case of an MS/MSD deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> the upper control limit (UL)	Non-detect	No Action
	Detect	J
< the lower control limit (LL) but > 10%	Non-detect	UJ
	Detect	J
< 10%	Non-detect	R
	Detect	J
Parent sample concentration > four times the MS/MSD spiking solution concentration.	Detect	No Action
	Non-detect	

5. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) Analysis

The LCS/LCSD analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS/LCSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

All compounds associated with the LCS analysis exhibited recoveries within the control limits.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
MW-108 (10-04-2019)/ DUP-100419	All compounds	U	U	AC

Notes:

AC Acceptable

The calculated RPDs between the parent sample and field duplicate were acceptable.

7. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

Several samples were diluted to bring target compounds within linear range of the instrument. Sample results that were reported from a secondary dilution were qualified with a “D”, indicating the result is diluted.

8. System Performance and Overall Assessment

The laboratory narrative indicates continuing calibration deviations. These deviations are normally not evaluated in a tier II data review. Sample results that had continuing calibration recoveries that exceed the control limit high and were non detect did not require qualification. Sample results where the calibration recoveries were high and the compound was detected or calibration recoveries were low were qualified as estimated (J or UJ).

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: SW-846 8260	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks	X				X
C. Trip blanks		X		X	
Laboratory Control Sample (LCS)		X		X	
Laboratory Control Sample Duplicate(LCSD)	X				X
LCS/LCSD Precision (RPD)	X				X
Matrix Spike (MS)		X	X		
Matrix Spike Duplicate(MSD)		X		X	
MS/MSD Precision (RPD)		X		X	
Field/Lab Duplicate (RPD)		X		X	
Surrogate Spike Recoveries		X		X	
Dilution Factor		X		X	
Moisture Content	X				X

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

SEMIVOLATILE ORGANIC COMPOUND (SVOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8270D	Water	7 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C
	Soil	14 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

All compounds associated with the QA blanks exhibited a concentration less than the MDL, with the exception of the compounds listed in the following table. Sample results associated with QA blank contamination that were greater than the BAL resulted in the removal of the laboratory qualifier (B) from the data. Sample results less than the BAL associated with the following sample locations were qualified as listed in the following table.

Sample Locations	Analytes	Sample Result	Qualification
MW-113	Naphthalene	Detected sample results <RL and <BAL	"UB" at the RL

Note:

RL Reporting limit

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. SVOC analysis requires that two of the three SVOC surrogate compounds within each fraction exhibit recoveries within the laboratory-established acceptance limits.

All surrogate recoveries were within control limits.

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

Sample locations associated with the MS/MSD exhibiting recoveries outside of the control limits are presented in the following table.

Sample Locations	Compound	MS Recovery	MSD Recovery
MW-111 (10-04-2019)	2-Methylphenol	AC	>UL
	Phenol	AC	>UL
	4-Nitrophenol	<10%	<10%
	Benzo(a)anthracene	>UL	AC
	Carbazole	<10%	AC
	Chrysene	>UL	AC
	2,2'-Oxybis(1-chloropropane)	>UL	AC
	4-Chlorophenyl phenyl ether	AC	<LL but >10%
	3,3'-Dichlorobenzidine	<10%	<10%
	Fluoranthene	>UL	AC
	2-Methylnaphthalene	<LL but >10%	AC
	N-Nitroso-di-n-propylamine	AC	<10%
	Phenanthrene	>UL	AC
	Pyrene	>UL	AC

Note:

AC Acceptable

The criteria used to evaluate the MS/MSD recoveries are presented in the following table. In the case of an MS/MSD deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> the upper control limit (UL)	Non-detect	No Action
	Detect	J
< the lower control limit (LL) but > 10%	Non-detect	UJ

Control Limit	Sample Result	Qualification
	Detect	J
< 10%	Non-detect	R
	Detect	J
Parent sample concentration > four times the MS/MSD spiking solution concentration.	Detect	No Action
	Non-detect	

Sample locations associated with MS/MSD recoveries exhibiting an RPD greater than of the control limit presented in the following table.

Sample Locations	Compound
MW-111 (10-04-2019)	2-Methylphenol
	Phenol
	Atrazine
	Benzo(a)anthracene
	Benzo(b)fluoranthene
	Chrysene
	Fluoranthene
	2-Methylnaphthalene
	Pyrene

The criteria used to evaluate the RPD between the MS/MSD recoveries are presented in the following table. In the case of an RPD deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> UL	Non-detect	UJ
	Detect	J

5. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) Analysis

The LCS/LCSD analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS/LCSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

Sample locations associated with LCS/LCSD recoveries exhibiting an RPD greater than of the control limit presented in the following table.

Sample Locations	Compound
MW-108 (10-04-2019) MW-109 (10-04-2019) MW-110 (10-04-2019)	Hexachlorocyclopentadiene

The criteria used to evaluate the RPD between the LCS/LCSD recoveries are presented in the following table. In the case of an RPD deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> UL	Non-detect	UJ
	Detect	J

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
MW-108 (10-04-2019)/ DUP-100419	2-Methylnaphthalene	0.77 J	0.67 J	AC
	Anthracene	0.37 J	0.43 J	AC
	Carbazole	0.85 J	0.91 J	AC
	Dibenzofuran	0.48 J	0.4 J	AC
	Fluoranthene	0.36 J	0.26 J	AC
	Fluorene	0.99 J	0.9 J	AC
	Naphthalene	7.2	5.8	21.5 %
	Phenanthrene	1.3	1.1	AC
	Pyrene	0.22 J	1.0 U	AC

Notes:

AC Acceptable

The calculated RPDs between the parent sample and field duplicate were acceptable.

7. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

Several samples were diluted to bring target compounds within linear range of the instrument. Sample results that were reported from a secondary dilution were qualified with a “D”, indicating the result is diluted.

8. System Performance and Overall Assessment

The laboratory narrative indicates continuing calibration deviations. These deviations are normally not evaluated in a tier II data review. Sample results that had continuing calibration recoveries that exceed the control limit high and were non detect did not require qualification. Sample results where the

calibration recoveries were high and the compound was detected or calibration recoveries were low were qualified as estimated (J or UJ).

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR SVOCs

SVOCs: SW-846 8270	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X	X		
B. Equipment blanks	X				X
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R		X		X	
LCS/LCSD Precision (RPD)		X	X		
Matrix Spike (MS) %R		X	X		
Matrix Spike Duplicate(MSD) %R		X	X		
MS/MSD Precision (RPD)		X	X		
Field/Lab Duplicate (RPD)		X			X
Surrogate Spike Recoveries		X		X	
Dilution Factor		X		X	
Moisture Content	X				X

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

INORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 6010D, 7471A, and 9012B. Data were reviewed in accordance with the USEPA CLP National Functional Guidelines for Inorganic Superfund Methods Data Review, EPA 540/R-2017-001, January 2017; and the USEPA CLP National Functional Guidelines for Inorganic Data Review, EPA 540-R-01-008, July 2002 (as applicable).

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and that it was already subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with the USEPA National Functional Guidelines:

- Concentration (C) Qualifiers
  - U The analyte was analyzed for but not detected. The associated value is the analyte instrument detection limit.
  - J The reported value was obtained from a reading less than the reporting limit (RL), but greater than or equal to the method detection limit (MDL).
- Quantitation (Q) Qualifiers
  - E The reported value is estimated due to the presence of interference.
  - N Spiked sample recovery is not within control limits.
  - * Duplicate analysis is not within control limits.
- Validation Qualifiers
  - J The analyte was positively identified; however, the associated numerical value is an estimated concentration only.
  - UJ The analyte was not detected above the reporting limit. However, the reported limit is approximate and may or may not represent the actual limit of detection.
  - UB Analyte considered non-detect at the listed value due to associated blank contamination.
  - R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

METALS ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 6010D	Water	180 days from collection to analysis	Preserved to a pH of less than 2.
	Soil	180 days from collection to analysis	Cool to <6 °C.
SW-846 7471A	Soil	28 days from collection to analysis	Cool to <6 °C.
SW-846 7470A	Water	28 days from collection to analysis	Cool to <6 °C; preserved to a pH of less than 2.

All samples were analyzed within the specified holding times.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Analytes were detected in the associated QA blanks; however, the associated sample results were greater than the BAL and/or were non-detect. No qualification of the sample results was required.

3. Matrix Spike (MS)/Matrix Spike Duplicate(MSD)/Laboratory Duplicate Analysis

MS/MSD and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

3.1 MS/MSD Analysis

All metal analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the analyte's concentration detected in the parent sample exceeds the MS concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

The MS/MSD exhibited acceptable recoveries and RPD between the MS/MSD recoveries.

3.2 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the RL. A control limit of 20% for water matrices and 35% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of one times the RL is applied for water matrices and two times the RL for soil matrices.

MS/MSD analysis was performed in replacement of the laboratory duplicate analysis. The MS/MSD exhibited acceptable recoveries and RPD between the MS/MSD recoveries.

4. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
MW-108 (10-04-2019)/ DUP-100419 (total)	Calcium	186000	178000	4.3 %
	Iron	12500	12200	2.4 %
	Lead	81.7	82.7	1.2 %
	Magnesium	80900	79100	2.2 %
	Manganese	719	699	2.8 %
	Potassium	17000	16600	2.3 %
	Sodium	20500	20000	2.4 %
MW-108 (10-04-2019)/ DUP-100419 (dissolved)	Calcium	191000	189000	1.0 %
	Iron	224	197	12.8 %
	Magnesium	83000	82100	1.0 %
	Manganese	710	701	1.2 %
	Potassium	18500	18100	2.1 %
	Sodium	22000	21700	1.3 %

Notes:

AC Acceptable

The calculated RPDs between the parent sample and field duplicate were acceptable.

5. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The analytes associated with the LCS analysis must exhibit a percent recovery between the control limits of 80% and 120%.

The LCS analysis exhibited recoveries within the control limits.

6. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR METAL

METALS; SW846 6010D/7471A	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Inductively Coupled Plasma-Atomic Emission Spectrometry (ICP-AES)					
Tier II Validation					
Holding Times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method Blanks		X		X	
B. Equipment/Field Blanks	X				X
Laboratory Control Sample (LCS)		X		X	
Matrix Spike (MS) %R		X		X	
Matrix Spike Duplicate (MSD) %R		X		X	
MS/MSD Precision (RPD)		X		X	
Field/Lab Duplicate (RPD)		X		X	
Total vs. Dissolved		X		X	

Notes:

%R Percent recovery

RPD Relative percent difference

GENERAL CHEMISTRY ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
Cyanide by SW-846 9012	Water	14 days from collection to analysis	Cool to <6 °C; preserved to a pH of greater than 12.
	Soil		Cool to <6 °C.
Total Dissolved Solids (TDS) by SM2540C	water	7 days from collection to analysis	Cool to <6 °C.

All samples were analyzed within the specified holding times.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Analytes were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Matrix Spike/Matrix Spike Duplicate (MS/MSD)/Laboratory Duplicate Analysis

MS/MSD and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

3.1 MS/MSD Analysis

All analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the analyte's concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

All analytes associated with MS recoveries were within control limits with the exception of the following analytes present in the table below.

Sample Location	Analytes	MS Recovery
MW-111 (10-04-2019)	Cyanide (total)	72.0%

The criteria used to evaluate MS recoveries are presented in the following table. In the case of an MS deviation, the sample results are qualified. The qualifications are applied to all sample results associated with this SDG.

Control limit	Sample Result	Qualification
MS percent recovery 30% to 74%	Non-detect	UJ
	Detect	J
MS percent recovery <30%	Non-detect	R
	Detect	J
MS percent recovery >125%	Non-detect	No Action
	Detect	J

3.2 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the RL. A control limit of 20% for water matrices and 35% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of one times the RL is applied for water matrices and two times the RL for soil matrices.

The laboratory duplicate sample results exhibited RPD within the control limit.

4. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The analytes associated with the LCS analysis must exhibit a percent recovery between the control limits of 80% and 120%.

The LCS analysis is not required for this analysis.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
MW-108 (10-04-2019)/ DUP-100419	Cyanide	0.031	0.034	AC
	Total Dissolved Solids	908	916	0.8%
	Cyanide (dissolved)	0.039	0.037	AC

Notes:

AC Acceptable

The calculated RPDs between the parent sample and field duplicate were acceptable.

6. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR GENERAL CHEMISTRY

General Chemistry: EPA 9012	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Miscellaneous Instrumentation					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks					X
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R					X
LCS/LCSD Precision (RPD)					X
Matrix Spike (MS) %R		X		X	
Matrix Spike Duplicate(MSD) %R	X				X
MS/MSD Precision (RPD)	X				X
Field/Lab Duplicate (RPD)		X		X	
Dilution Factor		X		X	
Moisture Content	X				X

Notes:
%R - percent recovery
RPD - relative percent difference

VALIDATION PERFORMED BY: Andrew Korycinski

SIGNATURE:

DATE: November 7, 2019

PEER REVIEW: Dennis Capria

DATE: November 11, 2019

CHAIN OF CUSTODY
SAMPLE ANALYSIS DATA SHEETS

GW
FB
WIB

CHAIN OF CUSTODY

SGS North America Inc. - Dayton
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TEL. 732-329-0200 FAX: 732-329-3499/3480
www.sgs.com/ehsusa

Page 1 of 1

FED-EX Tracking #: | Bottle Order Control #:
SGS Quote #: | SGS Job #: JC96248

Client / Reporting Information

Company Name: Arcadis
Street Address: 10 W Fayette St #300
City: Syracuse State: NY Zip: 13202
Project Contact: Laurence.Healy@Arcadis.com E-mail:
Phone #: 315-335-9493
Sampler(s) Name(s): G. Bushey / James Macle Phone #:

Project Information

Project Name: Philly Coke
Street: 4501 Richmond St
City: Philadelphia State: PA
Project #: 30004826
Client Purchase Order #:
Project Manager: John Brussel

Billing Information (if different from Report to)

Company Name: Same
Street Address:
City: State: Zip:
Attention:

Requested Analysis

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL - Sludge; SED-Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB - Field Blank; EB-Equipment Blank; RB - Rinse Blank; TB - Trip Blank

SGS Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Grab (G) Comp (C)	Matrix	# of bottles	Preserved Bottles: HCl	NaOH	HNO_3	H_2SO_4	NONE	DI Water	MEOH	ENCORE	Field Filtered	8260 TCL 20	AB 8270 TCL 20	CN	CN (Oss LD)	MTAL	MTAL (Oss LP)	TDS	LAB USE ONLY
1F	MW-108		6/4/19	0950		G	GW	10	X	X	X							X	X	X	X	X	X	X	
2F	MW-109			1005				9										X	X	X	X	X	X		E9
3F	MW-110			0845				9										X	X	X	X	X	X		A30
	MW-111			1135				10										X	X	X	X	X	X	X	C27
4F	MW-111 MS	*		1135				10										X	X	X	X	X	X	X	B24
	MW-111 MSD			1135				9										X	X	X	X	X	X		G6272
5F	MW-112			1120				9										X	X	X	X	X	X		U1173
6F	MW-113			1245				9										X	X	X	X	X	X		
7F	Dup-100419			—	—			10										X	X	X	X	X	X	X	
8F	FB-100419			1230				9										X	X	X	X	X	X		
9	Trip Blank			—	—	—	—	2										X							

Turn Around Time (Business Days)

Approved By (SGS PM): / Date:

- [x] 10 Business Days
- [ ] 5 Business Days
- [ ] 3 Business Days
- [ ] 2 Business Days
- [ ] 1 Business Day
- [ ] Other

All data available via Labink — Approval needed for 1-3 Business Day TAT

Deliverable

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] NJ Reduced (Level 3)
- [x] Full Tier I (Level 4)
- [ ] Commercial "C"
- [ ] NJ DKQP
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] MA MCP Criteria
- [ ] CT RCP Criteria
- [ ] State Forms
- [ ] EDD Format
- [ ] DOD-QSM5

Commercial "A" = Results only; Commercial "B" = Results + QC Summary
Commercial "C" = Results + QC Summary + Partial Raw data

Comments / Special Instructions

*VOA QC

http://www.sgs.com/en/terms-and-conditions

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by:	Date / Time:	Received By:	Relinquished By:	Date / Time:	Received By:
1	10/4/19 1515	1 Robin Templo 10-4-19 15:15	2	10-4-19 1710	2
3		3	4		4
5		5	Custody Seal #	Intact / Not Intact	Preserved where applicable / Absent	On Ice	Cooler Temp. °C
			1, 2 3 4		Therm. ID:		

INITIAL ASESSMENT 4/Adk

LABEL VERIFICATION

4.0C 3.7C 4.4C
IP IP IP
3.9C 3.1C
IP IP

EHSA-QAC-0023-02-FORM-Dayton - Standard COC.xlsx

SGS North America Inc.

Report of Analysis

Client Sample ID:	MW-108		
Lab Sample ID:	JC96248-1	**Date Sampled:**	10/04/19
Matrix:	AQ - Ground Water	**Date Received:**	10/04/19
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2D185874.D	1	10/11/19 23:32	ED	n/a	n/a	V2D7993
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	6.0	ug/l	
71-43-2	Benzene	ND	0.50	0.43	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.48	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.58	ug/l	
75-25-2	Bromoform	ND	1.0	0.63	ug/l	
74-83-9	Bromomethane	ND	2.0	1.6	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	6.9	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.95	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.55	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.56	ug/l	
75-00-3	Chloroethane	ND	1.0	0.73	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
74-87-3	Chloromethane	ND	1.0	0.76	ug/l	
110-82-7	Cyclohexane	ND	5.0	0.78	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	1.2	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.56	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.48	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.53	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.54	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.51	ug/l	
75-71-8	Dichlorodifluoromethane [a]	ND	2.0	1.4	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.57	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.59	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.51	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.54	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.51	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.47	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.43	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
76-13-1	Freon 113	ND	5.0	1.9	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.0	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW-108		
Lab Sample ID:	JC96248-1	**Date Sampled:**	10/04/19
Matrix:	AQ - Ground Water	**Date Received:**	10/04/19
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	1.0	0.65	ug/l	
79-20-9	Methyl Acetate	ND	5.0	0.80	ug/l	
108-87-2	Methylcyclohexane	ND	5.0	0.60	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	1.9	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.70	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.65	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.90	ug/l	
108-88-3	Toluene	ND	1.0	0.53	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.50	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.54	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.53	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.53	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.84	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.79	ug/l	
	m,p-Xylene	ND	1.0	0.78	ug/l	
95-47-6	o-Xylene	ND	1.0	0.59	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	93%		80-120%
17060-07-0	1,2-Dichloroethane-D4	90%		81-124%
2037-26-5	Toluene-D8	96%		80-120%
460-00-4	4-Bromofluorobenzene	98%		80-120%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	MW-108		
Lab Sample ID:	JC96248-1	**Date Sampled:**	10/04/19
Matrix:	AQ - Ground Water	**Date Received:**	10/04/19
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M160297.D	1	10/13/19 13:43	HSS	10/10/19 21:00	OP23204	EM6783
Run #2							

	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	5.0	0.82	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	5.0	0.89	ug/l	
120-83-2	2,4-Dichlorophenol	ND	2.0	1.3	ug/l	
105-67-9	2,4-Dimethylphenol	ND	5.0	2.4	ug/l	
51-28-5	2,4-Dinitrophenol	ND	5.0	1.6	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	5.0	1.3	ug/l	
95-48-7	2-Methylphenol	ND	2.0	0.89	ug/l	
	3&4-Methylphenol	ND	2.0	0.88	ug/l	
88-75-5	2-Nitrophenol	ND	5.0	0.96	ug/l	
100-02-7	4-Nitrophenol	ND	10	1.2	ug/l	
87-86-5	Pentachlorophenol	ND	4.0	1.4	ug/l	
108-95-2	Phenol	ND	2.0	0.39	ug/l	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	5.0	1.5	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	5.0	1.3	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	5.0	0.92	ug/l	
83-32-9	Acenaphthene	ND	1.0	0.19	ug/l	
208-96-8	Acenaphthylene	ND	1.0	0.14	ug/l	
98-86-2	Acetophenone	ND	2.0	0.21	ug/l	
120-12-7	Anthracene	0.37	1.0	0.21	ug/l	J
1912-24-9	Atrazine	ND	2.0	0.45	ug/l	
100-52-7	Benzaldehyde	ND	5.0	0.29	ug/l	
56-55-3	Benzo(a)anthracene	ND	1.0	0.20	ug/l	
50-32-8	Benzo(a)pyrene	ND	1.0	0.21	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	1.0	0.21	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	1.0	0.34	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	1.0	0.21	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	2.0	0.40	ug/l	
85-68-7	Butyl benzyl phthalate	ND	2.0	0.46	ug/l	
92-52-4	1,1'-Biphenyl	ND	1.0	0.21	ug/l	
91-58-7	2-Chloronaphthalene	ND	2.0	0.24	ug/l	
106-47-8	4-Chloroaniline	ND	5.0	0.34	ug/l	
86-74-8	Carbazole	0.85	1.0	0.23	ug/l	J

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B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW-108		
Lab Sample ID:	JC96248-1	**Date Sampled:**	10/04/19
Matrix:	AQ - Ground Water	**Date Received:**	10/04/19
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	2.0	0.65	ug/l	
218-01-9	Chrysene	ND	1.0	0.18	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	2.0	0.28	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	2.0	0.25	ug/l	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	2.0	0.40	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	2.0	0.37	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	1.0	0.55	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	1.0	0.48	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	2.0	0.51	ug/l	
123-91-1	1,4-Dioxane	ND	1.0	0.66	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	1.0	0.33	ug/l	
132-64-9	Dibenzofuran	0.48	5.0	0.22	ug/l	J
84-74-2	Di-n-butyl phthalate	ND	2.0	0.50	ug/l	
117-84-0	Di-n-octyl phthalate	ND	2.0	0.23	ug/l	
84-66-2	Diethyl phthalate	ND	2.0	0.26	ug/l	
131-11-3	Dimethyl phthalate	ND	2.0	0.22	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.0	1.7	ug/l	
206-44-0	Fluoranthene	0.36	1.0	0.17	ug/l	J
86-73-7	Fluorene	0.99	1.0	0.17	ug/l	J
118-74-1	Hexachlorobenzene	ND	1.0	0.33	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.49	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	10	2.8	ug/l	UJ
67-72-1	Hexachloroethane	ND	2.0	0.39	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	1.0	0.33	ug/l	
78-59-1	Isophorone	ND	2.0	0.28	ug/l	
91-57-6	2-Methylnaphthalene	0.77	1.0	0.21	ug/l	J
88-74-4	2-Nitroaniline	ND	5.0	0.28	ug/l	
99-09-2	3-Nitroaniline	ND	5.0	0.39	ug/l	
100-01-6	4-Nitroaniline	ND	5.0	0.44	ug/l	
91-20-3	Naphthalene	7.2	1.0	0.23	ug/l	
98-95-3	Nitrobenzene	ND	2.0	0.64	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	2.0	0.48	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.0	0.22	ug/l	
85-01-8	Phenanthrene	1.3	1.0	0.18	ug/l	
129-00-0	Pyrene	0.22	1.0	0.22	ug/l	J
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	2.0	0.37	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	24%		10-110%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW-108		
Lab Sample ID:	JC96248-1	**Date Sampled:**	10/04/19
Matrix:	AQ - Ground Water	**Date Received:**	10/04/19
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	17%		10-110%
118-79-6	2,4,6-Tribromophenol	81%		36-151%
4165-60-0	Nitrobenzene-d5	71%		34-128%
321-60-8	2-Fluorobiphenyl	77%		38-119%
1718-51-0	Terphenyl-d14	55%		26-129%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW-108		
Lab Sample ID:	JC96248-1	**Date Sampled:**	10/04/19
Matrix:	AQ - Ground Water	**Date Received:**	10/04/19
		Percent Solids:	n/a
Project:	National Grid, Philly Coke, Philadelphia, PA		

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	< 200	200	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Antimony	< 6.0	6.0	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Arsenic	< 3.0	3.0	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Barium	< 200	200	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Beryllium	< 1.0	1.0	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Cadmium	< 3.0	3.0	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Calcium	186000	5000	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Chromium	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Cobalt	< 50	50	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Copper	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Iron	12500	100	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Lead	81.7	3.0	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Magnesium	80900	5000	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Manganese	719	15	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Mercury	< 0.20	0.20	ug/l	1	10/08/19	10/08/19	LL	SW846 7470A [1]	SW846 7470A [4]
Nickel	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Potassium	17000	10000	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Selenium	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Silver	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Sodium	20500	10000	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Thallium	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Vanadium	< 50	50	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Zinc	< 20	20	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]

(1) Instrument QC Batch: MA47587
(2) Instrument QC Batch: MA47598
(3) Prep QC Batch: MP17762
(4) Prep QC Batch: MP17766

RL = Reporting Limit

Report of Analysis

Client Sample ID:	MW-108		
Lab Sample ID:	JC96248-1	**Date Sampled:**	10/04/19
Matrix:	AQ - Ground Water	**Date Received:**	10/04/19
		Percent Solids:	n/a
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result		RL	Units	DF	Analyzed	By	Method
Cyanide	0.031	J	0.010	mg/l	1	10/15/19 15:37	KI	EPA 335.4/LACHAT
Solids, Total Dissolved	908		10	mg/l	1	10/10/19 16:33	RC	SM2540 C-11

RL = Reporting Limit

Report of Analysis

Client Sample ID:	MW-108		
Lab Sample ID:	JC96248-1F	**Date Sampled:**	10/04/19
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/04/19
		Percent Solids:	n/a
Project:	National Grid, Philly Coke, Philadelphia, PA		

Dissolved Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	< 200	200	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [4]
Antimony	< 6.0	6.0	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [4]
Arsenic	< 3.0	3.0	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [4]
Barium	< 200	200	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [4]
Beryllium	< 1.0	1.0	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [4]
Cadmium	< 3.0	3.0	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [4]
Calcium	191000	5000	ug/l	1	10/08/19	10/10/19	ND	SW846 6010D [3]	SW846 3010A [4]
Chromium	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [4]
Cobalt	< 50	50	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [4]
Copper	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [4]
Iron	224	100	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [4]
Lead	< 3.0	3.0	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [4]
Magnesium	83000	5000	ug/l	1	10/08/19	10/10/19	ND	SW846 6010D [3]	SW846 3010A [4]
Manganese	710	15	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [4]
Mercury	< 0.20	0.20	ug/l	1	10/08/19	10/08/19	LL	SW846 7470A [1]	SW846 7470A [5]
Nickel	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [4]
Potassium	18500	10000	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [4]
Selenium	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [4]
Silver	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [4]
Sodium	22000	10000	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [4]
Thallium	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [4]
Vanadium	< 50	50	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [4]
Zinc	< 20	20	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [4]

(1) Instrument QC Batch: MA47587
(2) Instrument QC Batch: MA47601
(3) Instrument QC Batch: MA47607
(4) Prep QC Batch: MP17762
(5) Prep QC Batch: MP17766

RL = Reporting Limit

Report of Analysis

Client Sample ID:	MW-108		
Lab Sample ID:	JC96248-1F	**Date Sampled:**	10/04/19
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/04/19
		Percent Solids:	n/a
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Cyanide	0.039	0.010	mg/l	1	10/15/19 15:51	KI	EPA 335.4/LACHAT

RL = Reporting Limit

SGS North America Inc.

Report of Analysis

Client Sample ID:	MW-109		
Lab Sample ID:	JC96248-2	**Date Sampled:**	10/04/19
Matrix:	AQ - Ground Water	**Date Received:**	10/04/19
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2D185875.D	1	10/12/19 00:01	ED	n/a	n/a	V2D7993
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	6.0	ug/l	
71-43-2	Benzene	ND	0.50	0.43	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.48	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.58	ug/l	
75-25-2	Bromoform	ND	1.0	0.63	ug/l	
74-83-9	Bromomethane	ND	2.0	1.6	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	6.9	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.95	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.55	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.56	ug/l	
75-00-3	Chloroethane	ND	1.0	0.73	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
74-87-3	Chloromethane	ND	1.0	0.76	ug/l	
110-82-7	Cyclohexane	ND	5.0	0.78	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	1.2	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.56	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.48	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.53	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.54	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.51	ug/l	
75-71-8	Dichlorodifluoromethane [a]	ND	2.0	1.4	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.57	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.59	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.51	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.54	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.51	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.47	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.43	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
76-13-1	Freon 113	ND	5.0	1.9	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.0	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW-109		
Lab Sample ID:	JC96248-2	**Date Sampled:**	10/04/19
Matrix:	AQ - Ground Water	**Date Received:**	10/04/19
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	1.0	0.65	ug/l	
79-20-9	Methyl Acetate	ND	5.0	0.80	ug/l	
108-87-2	Methylcyclohexane	ND	5.0	0.60	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	1.9	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.70	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.65	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.90	ug/l	
108-88-3	Toluene	ND	1.0	0.53	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.50	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.54	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.53	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.53	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.84	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.79	ug/l	
	m,p-Xylene	ND	1.0	0.78	ug/l	
95-47-6	o-Xylene	ND	1.0	0.59	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	94%		80-120%
17060-07-0	1,2-Dichloroethane-D4	90%		81-124%
2037-26-5	Toluene-D8	96%		80-120%
460-00-4	4-Bromofluorobenzene	98%		80-120%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	MW-109		
Lab Sample ID:	JC96248-2	**Date Sampled:**	10/04/19
Matrix:	AQ - Ground Water	**Date Received:**	10/04/19
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M160298.D	1	10/13/19 14:11	HSS	10/10/19 21:00	OP23204	EM6783
Run #2							

	Initial Volume	Final Volume
Run #1	1040 ml	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	4.8	0.79	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	4.8	0.86	ug/l	
120-83-2	2,4-Dichlorophenol	ND	1.9	1.2	ug/l	
105-67-9	2,4-Dimethylphenol	ND	4.8	2.3	ug/l	
51-28-5	2,4-Dinitrophenol	ND	4.8	1.5	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	4.8	1.2	ug/l	
95-48-7	2-Methylphenol	ND	1.9	0.85	ug/l	
	3&4-Methylphenol	ND	1.9	0.85	ug/l	
88-75-5	2-Nitrophenol	ND	4.8	0.92	ug/l	
100-02-7	4-Nitrophenol	ND	9.6	1.1	ug/l	
87-86-5	Pentachlorophenol	ND	3.8	1.3	ug/l	
108-95-2	Phenol	ND	1.9	0.38	ug/l	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	4.8	1.4	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	4.8	1.3	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	4.8	0.89	ug/l	
83-32-9	Acenaphthene	1.2	0.96	0.18	ug/l	
208-96-8	Acenaphthylene	1.2	0.96	0.13	ug/l	
98-86-2	Acetophenone	0.25	1.9	0.20	ug/l	J
120-12-7	Anthracene	1.1	0.96	0.20	ug/l	
1912-24-9	Atrazine	ND	1.9	0.43	ug/l	
100-52-7	Benzaldehyde	ND	4.8	0.28	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.96	0.20	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.96	0.20	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.96	0.20	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.96	0.33	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.96	0.20	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	1.9	0.39	ug/l	
85-68-7	Butyl benzyl phthalate	ND	1.9	0.44	ug/l	
92-52-4	1,1'-Biphenyl	0.39	0.96	0.20	ug/l	J
91-58-7	2-Chloronaphthalene	ND	1.9	0.23	ug/l	
106-47-8	4-Chloroaniline	ND	4.8	0.33	ug/l	
86-74-8	Carbazole	2.2	0.96	0.22	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW-109		
Lab Sample ID:	JC96248-2	**Date Sampled:**	10/04/19
Matrix:	AQ - Ground Water	**Date Received:**	10/04/19
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	1.9	0.62	ug/l	
218-01-9	Chrysene	ND	0.96	0.17	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	1.9	0.27	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	1.9	0.24	ug/l	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	1.9	0.39	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	1.9	0.35	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	0.96	0.53	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	0.96	0.46	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	1.9	0.49	ug/l	
123-91-1	1,4-Dioxane	ND	0.96	0.63	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.96	0.32	ug/l	
132-64-9	Dibenzofuran	2.0	4.8	0.21	ug/l	J
84-74-2	Di-n-butyl phthalate	ND	1.9	0.48	ug/l	
117-84-0	Di-n-octyl phthalate	ND	1.9	0.22	ug/l	
84-66-2	Diethyl phthalate	ND	1.9	0.25	ug/l	
131-11-3	Dimethyl phthalate	ND	1.9	0.21	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	1.9	1.6	ug/l	
206-44-0	Fluoranthene	1.2	0.96	0.16	ug/l	
86-73-7	Fluorene	4.2	0.96	0.16	ug/l	
118-74-1	Hexachlorobenzene	ND	0.96	0.31	ug/l	
87-68-3	Hexachlorobutadiene	ND	0.96	0.47	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	9.6	2.7	ug/l	UJ
67-72-1	Hexachloroethane	ND	1.9	0.37	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.96	0.32	ug/l	
78-59-1	Isophorone	ND	1.9	0.27	ug/l	
91-57-6	2-Methylnaphthalene	1.5	0.96	0.20	ug/l	
88-74-4	2-Nitroaniline	ND	4.8	0.27	ug/l	
99-09-2	3-Nitroaniline	ND	4.8	0.37	ug/l	
100-01-6	4-Nitroaniline	ND	4.8	0.42	ug/l	
91-20-3	Naphthalene	8.8	0.96	0.22	ug/l	
98-95-3	Nitrobenzene	ND	1.9	0.62	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	1.9	0.46	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	4.8	0.21	ug/l	
85-01-8	Phenanthrene	7.7	0.96	0.17	ug/l	
129-00-0	Pyrene	0.71	0.96	0.21	ug/l	J
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	1.9	0.36	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	26%		10-110%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW-109		
Lab Sample ID:	JC96248-2	**Date Sampled:**	10/04/19
Matrix:	AQ - Ground Water	**Date Received:**	10/04/19
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	18%		10-110%
118-79-6	2,4,6-Tribromophenol	79%		36-151%
4165-60-0	Nitrobenzene-d5	73%		34-128%
321-60-8	2-Fluorobiphenyl	75%		38-119%
1718-51-0	Terphenyl-d14	47%		26-129%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW-109		
Lab Sample ID:	JC96248-2	**Date Sampled:**	10/04/19
Matrix:	AQ - Ground Water	**Date Received:**	10/04/19
		Percent Solids:	n/a
Project:	National Grid, Philly Coke, Philadelphia, PA		

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	< 200	200	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Antimony	< 6.0	6.0	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Arsenic	< 3.0	3.0	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Barium	< 200	200	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Beryllium	< 1.0	1.0	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Cadmium	< 3.0	3.0	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Calcium	149000	5000	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Chromium	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Cobalt	< 50	50	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Copper	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Iron	28000	100	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Lead	< 3.0	3.0	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Magnesium	83300	5000	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Manganese	1660	15	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Mercury	< 0.20	0.20	ug/l	1	10/08/19	10/08/19	LL	SW846 7470A [1]	SW846 7470A [4]
Nickel	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Potassium	17700	10000	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Selenium	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Silver	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Sodium	37900	10000	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Thallium	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Vanadium	< 50	50	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Zinc	< 20	20	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]

(1) Instrument QC Batch: MA47587
(2) Instrument QC Batch: MA47598
(3) Prep QC Batch: MP17762
(4) Prep QC Batch: MP17766

RL = Reporting Limit

Report of Analysis

Client Sample ID:	MW-109		
Lab Sample ID:	JC96248-2	**Date Sampled:**	10/04/19
Matrix:	AQ - Ground Water	**Date Received:**	10/04/19
		Percent Solids:	n/a
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result		RL	Units	DF	Analyzed	By	Method
Cyanide	0.011	J	0.010	mg/l	1	10/15/19 15:38	KI	EPA 335.4/LACHAT

RL = Reporting Limit

Report of Analysis

Client Sample ID:	MW-109		
Lab Sample ID:	JC96248-2F	**Date Sampled:**	10/04/19
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/04/19
		Percent Solids:	n/a
Project:	National Grid, Philly Coke, Philadelphia, PA		

Dissolved Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	< 200	200	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Antimony	< 6.0	6.0	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Arsenic	< 3.0	3.0	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Barium	< 200	200	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Beryllium	< 1.0	1.0	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Cadmium	< 3.0	3.0	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Calcium	144000	5000	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Chromium	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Cobalt	< 50	50	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Copper	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Iron	1860	100	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Lead	< 3.0	3.0	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Magnesium	83700	5000	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Manganese	1520	15	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Mercury	< 0.20	0.20	ug/l	1	10/08/19	10/08/19	LL	SW846 7470A [1]	SW846 7470A [4]
Nickel	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Potassium	17900	10000	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Selenium	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Silver	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Sodium	38100	10000	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Thallium	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Vanadium	< 50	50	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Zinc	< 20	20	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]

(1) Instrument QC Batch: MA47587
(2) Instrument QC Batch: MA47601
(3) Prep QC Batch: MP17762
(4) Prep QC Batch: MP17766

RL = Reporting Limit

Report of Analysis

Client Sample ID:	MW-109		
Lab Sample ID:	JC96248-2F	**Date Sampled:**	10/04/19
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/04/19
		Percent Solids:	n/a
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Cyanide	0.019	0.010	mg/l	1	10/15/19 15:52	KI	EPA 335.4/LACHAT

RL = Reporting Limit

SGS North America Inc.

Report of Analysis

Client Sample ID:	MW-110		
Lab Sample ID:	JC96248-3	**Date Sampled:**	10/04/19
Matrix:	AQ - Ground Water	**Date Received:**	10/04/19
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2D185876.D	1	10/12/19 00:31	ED	n/a	n/a	V2D7993
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	6.0	ug/l	
71-43-2	Benzene	ND	0.50	0.43	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.48	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.58	ug/l	
75-25-2	Bromoform	ND	1.0	0.63	ug/l	
74-83-9	Bromomethane	ND	2.0	1.6	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	6.9	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.95	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.55	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.56	ug/l	
75-00-3	Chloroethane	ND	1.0	0.73	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
74-87-3	Chloromethane	ND	1.0	0.76	ug/l	
110-82-7	Cyclohexane	ND	5.0	0.78	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	1.2	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.56	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.48	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.53	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.54	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.51	ug/l	
75-71-8	Dichlorodifluoromethane [a]	ND	2.0	1.4	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.57	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.59	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.51	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.54	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.51	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.47	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.43	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
76-13-1	Freon 113	ND	5.0	1.9	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.0	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW-110		
Lab Sample ID:	JC96248-3	**Date Sampled:**	10/04/19
Matrix:	AQ - Ground Water	**Date Received:**	10/04/19
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	1.0	0.65	ug/l	
79-20-9	Methyl Acetate	ND	5.0	0.80	ug/l	
108-87-2	Methylcyclohexane	ND	5.0	0.60	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	1.9	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.70	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.65	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.90	ug/l	
108-88-3	Toluene	ND	1.0	0.53	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.50	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.54	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.53	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.53	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.84	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.79	ug/l	
	m,p-Xylene	ND	1.0	0.78	ug/l	
95-47-6	o-Xylene	ND	1.0	0.59	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	94%		80-120%
17060-07-0	1,2-Dichloroethane-D4	90%		81-124%
2037-26-5	Toluene-D8	97%		80-120%
460-00-4	4-Bromofluorobenzene	97%		80-120%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	MW-110		
Lab Sample ID:	JC96248-3	**Date Sampled:**	10/04/19
Matrix:	AQ - Ground Water	**Date Received:**	10/04/19
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M160299.D	1	10/13/19 14:39	HSS	10/10/19 21:00	OP23204	EM6783
Run #2							

	Initial Volume	Final Volume
Run #1	1050 ml	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	4.8	0.78	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	4.8	0.85	ug/l	
120-83-2	2,4-Dichlorophenol	ND	1.9	1.2	ug/l	
105-67-9	2,4-Dimethylphenol	ND	4.8	2.3	ug/l	
51-28-5	2,4-Dinitrophenol	ND	4.8	1.5	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	4.8	1.2	ug/l	
95-48-7	2-Methylphenol	ND	1.9	0.85	ug/l	
	3&4-Methylphenol	ND	1.9	0.84	ug/l	
88-75-5	2-Nitrophenol	ND	4.8	0.91	ug/l	
100-02-7	4-Nitrophenol	ND	9.5	1.1	ug/l	
87-86-5	Pentachlorophenol	ND	3.8	1.3	ug/l	
108-95-2	Phenol	ND	1.9	0.37	ug/l	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	4.8	1.4	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	4.8	1.3	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	4.8	0.88	ug/l	
83-32-9	Acenaphthene	0.19	0.95	0.18	ug/l	J
208-96-8	Acenaphthylene	0.72	0.95	0.13	ug/l	J
98-86-2	Acetophenone	ND	1.9	0.20	ug/l	
120-12-7	Anthracene	0.26	0.95	0.20	ug/l	J
1912-24-9	Atrazine	ND	1.9	0.43	ug/l	
100-52-7	Benzaldehyde	ND	4.8	0.28	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.95	0.19	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.95	0.20	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.95	0.20	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.95	0.32	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.95	0.20	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	1.9	0.38	ug/l	
85-68-7	Butyl benzyl phthalate	ND	1.9	0.44	ug/l	
92-52-4	1,1'-Biphenyl	0.35	0.95	0.20	ug/l	J
91-58-7	2-Chloronaphthalene	ND	1.9	0.22	ug/l	
106-47-8	4-Chloroaniline	ND	4.8	0.32	ug/l	
86-74-8	Carbazole	1.6	0.95	0.22	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: MW-110
Lab Sample ID: JC96248-3
Matrix: AQ - Ground Water
Method: SW846 8270D SW846 3510C
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 10/04/19
Date Received: 10/04/19
Percent Solids: n/a

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	1.9	0.62	ug/l	
218-01-9	Chrysene	ND	0.95	0.17	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	1.9	0.26	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	1.9	0.24	ug/l	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	1.9	0.38	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	1.9	0.35	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	0.95	0.53	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	0.95	0.45	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	1.9	0.48	ug/l	
123-91-1	1,4-Dioxane	ND	0.95	0.63	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.95	0.32	ug/l	
132-64-9	Dibenzofuran	0.85	4.8	0.21	ug/l	J
84-74-2	Di-n-butyl phthalate	ND	1.9	0.47	ug/l	
117-84-0	Di-n-octyl phthalate	ND	1.9	0.22	ug/l	
84-66-2	Diethyl phthalate	ND	1.9	0.25	ug/l	
131-11-3	Dimethyl phthalate	ND	1.9	0.21	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	1.9	1.6	ug/l	
206-44-0	Fluoranthene	0.25	0.95	0.16	ug/l	J
86-73-7	Fluorene	0.96	0.95	0.16	ug/l	
118-74-1	Hexachlorobenzene	ND	0.95	0.31	ug/l	
87-68-3	Hexachlorobutadiene	ND	0.95	0.47	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	9.5	2.6	ug/l	UJ
67-72-1	Hexachloroethane	ND	1.9	0.37	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.95	0.32	ug/l	
78-59-1	Isophorone	ND	1.9	0.26	ug/l	
91-57-6	2-Methylnaphthalene	1.2	0.95	0.20	ug/l	
88-74-4	2-Nitroaniline	ND	4.8	0.26	ug/l	
99-09-2	3-Nitroaniline	ND	4.8	0.37	ug/l	
100-01-6	4-Nitroaniline	ND	4.8	0.42	ug/l	
91-20-3	Naphthalene	15.5	0.95	0.22	ug/l	
98-95-3	Nitrobenzene	ND	1.9	0.61	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	1.9	0.46	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	4.8	0.21	ug/l	
85-01-8	Phenanthrene	ND	0.95	0.17	ug/l	
129-00-0	Pyrene	ND	0.95	0.21	ug/l	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	1.9	0.35	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	22%		10-110%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: MW-110
Lab Sample ID: JC96248-3
Matrix: AQ - Ground Water
Method: SW846 8270D SW846 3510C
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 10/04/19
Date Received: 10/04/19
Percent Solids: n/a

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	15%		10-110%
118-79-6	2,4,6-Tribromophenol	76%		36-151%
4165-60-0	Nitrobenzene-d5	73%		34-128%
321-60-8	2-Fluorobiphenyl	80%		38-119%
1718-51-0	Terphenyl-d14	50%		26-129%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: MW-110
Lab Sample ID: JC96248-3
Matrix: AQ - Ground Water
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 10/04/19
Date Received: 10/04/19
Percent Solids: n/a

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	< 200	200	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Antimony	< 6.0	6.0	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Arsenic	5.0	3.0	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Barium	< 200	200	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Beryllium	< 1.0	1.0	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Cadmium	< 3.0	3.0	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Calcium	178000	5000	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Chromium	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Cobalt	< 50	50	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Copper	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Iron	18900	100	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Lead	< 3.0	3.0	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Magnesium	82100	5000	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Manganese	1430	15	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Mercury	< 0.20	0.20	ug/l	1	10/08/19	10/08/19	LL	SW846 7470A [1]	SW846 7470A [4]
Nickel	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Potassium	16500	10000	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Selenium	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Silver	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Sodium	32800	10000	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Thallium	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Vanadium	< 50	50	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Zinc	< 20	20	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]

(1) Instrument QC Batch: MA47587
(2) Instrument QC Batch: MA47598
(3) Prep QC Batch: MP17762
(4) Prep QC Batch: MP17766

RL = Reporting Limit

Report of Analysis

Client Sample ID:	MW-110		
Lab Sample ID:	JC96248-3	**Date Sampled:**	10/04/19
Matrix:	AQ - Ground Water	**Date Received:**	10/04/19
		Percent Solids:	n/a
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Cyanide	0.014 J	0.010	mg/l	1	10/15/19 15:40	KI	EPA 335.4/LACHAT

RL = Reporting Limit

Report of Analysis

Client Sample ID: MW-110
Lab Sample ID: JC96248-3F
Matrix: AQ - Groundwater Filtered
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 10/04/19
Date Received: 10/04/19
Percent Solids: n/a

Dissolved Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	< 200	200	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Antimony	< 6.0	6.0	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Arsenic	< 3.0	3.0	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Barium	< 200	200	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Beryllium	< 1.0	1.0	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Cadmium	< 3.0	3.0	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Calcium	179000	5000	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Chromium	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Cobalt	< 50	50	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Copper	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Iron	2680	100	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Lead	< 3.0	3.0	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Magnesium	83700	5000	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Manganese	1390	15	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Mercury	< 0.20	0.20	ug/l	1	10/08/19	10/08/19	LL	SW846 7470A [1]	SW846 7470A [4]
Nickel	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Potassium	16900	10000	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Selenium	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Silver	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Sodium	33300	10000	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Thallium	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Vanadium	< 50	50	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Zinc	< 20	20	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]

(1) Instrument QC Batch: MA47587
(2) Instrument QC Batch: MA47601
(3) Prep QC Batch: MP17762
(4) Prep QC Batch: MP17766

RL = Reporting Limit

Report of Analysis

Client Sample ID:	MW-110		
Lab Sample ID:	JC96248-3F	**Date Sampled:**	10/04/19
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/04/19
		Percent Solids:	n/a
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Cyanide	0.017	0.010	mg/l	1	10/15/19 15:53	KI	EPA 335.4/LACHAT

RL = Reporting Limit

SGS North America Inc.

Report of Analysis

Client Sample ID:	MW-111		
Lab Sample ID:	JC96248-4	**Date Sampled:**	10/04/19
Matrix:	AQ - Ground Water	**Date Received:**	10/04/19
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2D185862.D	1	10/11/19 17:40	ED	n/a	n/a	V2D7993
Run #2	2D185865.D	10	10/11/19 19:07	ED	n/a	n/a	V2D7993

	Purge Volume
Run #1	5.0 ml
Run #2	5.0 ml

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	8.6	10	6.0	ug/l	J
71-43-2	Benzene	686 [a]	5.0	4.3	ug/l	D
74-97-5	Bromochloromethane	ND	1.0	0.48	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.58	ug/l	
75-25-2	Bromoform	ND	1.0	0.63	ug/l	
74-83-9	Bromomethane	ND	2.0	1.6	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	6.9	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.95	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.55	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.56	ug/l	
75-00-3	Chloroethane	ND	1.0	0.73	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
74-87-3	Chloromethane	ND	1.0	0.76	ug/l	
110-82-7	Cyclohexane	ND	5.0	0.78	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	1.2	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.56	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.48	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.53	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.54	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.51	ug/l	
75-71-8	Dichlorodifluoromethane [b]	ND	2.0	1.4	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.57	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.59	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.51	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.54	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.51	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.47	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.43	ug/l	
100-41-4	Ethylbenzene	24.3	1.0	0.60	ug/l	
76-13-1	Freon 113	ND	5.0	1.9	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.0	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: MW-111
Lab Sample ID: JC96248-4
Matrix: AQ - Ground Water
Method: SW846 8260C
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 10/04/19
Date Received: 10/04/19
Percent Solids: n/a

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	1.2	1.0	0.65	ug/l	
79-20-9	Methyl Acetate	ND	5.0	0.80	ug/l	
108-87-2	Methylcyclohexane	ND	5.0	0.60	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	1.9	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	9.4	1.0	0.70	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.65	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.90	ug/l	
108-88-3	Toluene	90.4	1.0	0.53	ug/l	J
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.50	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.54	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.53	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.53	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.84	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.79	ug/l	
	m,p-Xylene	72.9	1.0	0.78	ug/l	
95-47-6	o-Xylene	36.5	1.0	0.59	ug/l	
1330-20-7	Xylene (total)	109	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	95%	88%	80-120%
17060-07-0	1,2-Dichloroethane-D4	96%	87%	81-124%
2037-26-5	Toluene-D8	93%	95%	80-120%
460-00-4	4-Bromofluorobenzene	92%	94%	80-120%

(a) Result is from Run# 2
(b) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	MW-111		
Lab Sample ID:	JC96248-4	**Date Sampled:**	10/04/19
Matrix:	AQ - Ground Water	**Date Received:**	10/04/19
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M160249.D	1	10/11/19 19:47	HSS	10/09/19 22:00	OP23230	EM6781
Run #2	M160281.D	10	10/13/19 02:02	JC	10/09/19 22:00	OP23230	EM6782

	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2	1000 ml	1.0 ml

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	5.0	0.82	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	5.0	0.89	ug/l	
120-83-2	2,4-Dichlorophenol	ND	2.0	1.3	ug/l	
105-67-9	2,4-Dimethylphenol	241 [a]	50	24	ug/l	D
51-28-5	2,4-Dinitrophenol	ND	5.0	1.6	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	5.0	1.3	ug/l	
95-48-7	2-Methylphenol	177 [a]	20	8.9	ug/l	DJ
	3&4-Methylphenol	212 [a]	20	8.8	ug/l	D
88-75-5	2-Nitrophenol	ND	5.0	0.96	ug/l	
100-02-7	4-Nitrophenol	~~ND~~	~~10~~	~~1.2~~	~~ug/l~~	R
87-86-5	Pentachlorophenol	ND	4.0	1.4	ug/l	
108-95-2	Phenol	80.2	2.0	0.39	ug/l	J
58-90-2	2,3,4,6-Tetrachlorophenol	ND	5.0	1.5	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	5.0	1.3	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	5.0	0.92	ug/l	
83-32-9	Acenaphthene	87.7	1.0	0.19	ug/l	
208-96-8	Acenaphthylene	80.2	1.0	0.14	ug/l	
98-86-2	Acetophenone	2.1	2.0	0.21	ug/l	
120-12-7	Anthracene	16.1	1.0	0.21	ug/l	
1912-24-9	Atrazine	ND	2.0	0.45	ug/l	UJ
100-52-7	Benzaldehyde	ND	5.0	0.29	ug/l	
56-55-3	Benzo(a)anthracene	3.6	1.0	0.20	ug/l	J
50-32-8	Benzo(a)pyrene	2.6	1.0	0.21	ug/l	
205-99-2	Benzo(b)fluoranthene	2.9	1.0	0.21	ug/l	J
191-24-2	Benzo(g,h,i)perylene	1.4	1.0	0.34	ug/l	
207-08-9	Benzo(k)fluoranthene	1.3	1.0	0.21	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	2.0	0.40	ug/l	
85-68-7	Butyl benzyl phthalate	ND	2.0	0.46	ug/l	
92-52-4	1,1'-Biphenyl	20.7	1.0	0.21	ug/l	
91-58-7	2-Chloronaphthalene	ND	2.0	0.24	ug/l	
106-47-8	4-Chloroaniline	ND	5.0	0.34	ug/l	
86-74-8	Carbazole	189 [a]	10	2.3	ug/l	DJ

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: MW-111
Lab Sample ID: JC96248-4
Matrix: AQ - Ground Water
Method: SW846 8270D SW846 3510C
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 10/04/19
Date Received: 10/04/19
Percent Solids: n/a

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	2.0	0.65	ug/l	
218-01-9	Chrysene	3.2	1.0	0.18	ug/l	J
111-91-1	bis(2-Chloroethoxy)methane	ND	2.0	0.28	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	2.0	0.25	ug/l	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	2.0	0.40	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	2.0	0.37	ug/l	UJ
121-14-2	2,4-Dinitrotoluene	ND	1.0	0.55	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	1.0	0.48	ug/l	
91-94-1	3,3'-Dichlorobenzidine	~~ND~~	~~2.0~~	~~0.51~~	~~ug/l~~	R
123-91-1	1,4-Dioxane	ND	1.0	0.66	ug/l	
53-70-3	Dibenzo(a,h)anthracene	0.42	1.0	0.33	ug/l	J
132-64-9	Dibenzofuran	64.2	5.0	0.22	ug/l	
84-74-2	Di-n-butyl phthalate	ND	2.0	0.50	ug/l	
117-84-0	Di-n-octyl phthalate	ND	2.0	0.23	ug/l	
84-66-2	Diethyl phthalate	ND	2.0	0.26	ug/l	
131-11-3	Dimethyl phthalate	ND	2.0	0.22	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.0	1.7	ug/l	
206-44-0	Fluoranthene	22.9	1.0	0.17	ug/l	J
86-73-7	Fluorene	75.2	1.0	0.17	ug/l	
118-74-1	Hexachlorobenzene	ND	1.0	0.33	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.49	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	10	2.8	ug/l	
67-72-1	Hexachloroethane	ND	2.0	0.39	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	1.4	1.0	0.33	ug/l	
78-59-1	Isophorone	ND	2.0	0.28	ug/l	
91-57-6	2-Methylnaphthalene	97.8	1.0	0.21	ug/l	J
88-74-4	2-Nitroaniline	ND	5.0	0.28	ug/l	
99-09-2	3-Nitroaniline	ND	5.0	0.39	ug/l	
100-01-6	4-Nitroaniline	ND	5.0	0.44	ug/l	
91-20-3	Naphthalene	973 [a]	10	2.3	ug/l	D ~~B~~
98-95-3	Nitrobenzene	ND	2.0	0.64	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	~~ND~~	~~2.0~~	~~0.48~~	~~ug/l~~	R
86-30-6	N-Nitrosodiphenylamine	ND	5.0	0.22	ug/l	
85-01-8	Phenanthrene	136 [a]	10	1.8	ug/l	DJ
129-00-0	Pyrene	15.5	1.0	0.22	ug/l	J
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	2.0	0.37	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	23%	24%	10-110%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW-111		
Lab Sample ID:	JC96248-4	**Date Sampled:**	10/04/19
Matrix:	AQ - Ground Water	**Date Received:**	10/04/19
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	17%	19%	10-110%
118-79-6	2,4,6-Tribromophenol	68%	77%	36-151%
4165-60-0	Nitrobenzene-d5	69%	71%	34-128%
321-60-8	2-Fluorobiphenyl	64%	73%	38-119%
1718-51-0	Terphenyl-d14	38%	42%	26-129%

(a) Result is from Run# 2

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: MW-111
Lab Sample ID: JC96248-4
Matrix: AQ - Ground Water
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 10/04/19
Date Received: 10/04/19
Percent Solids: n/a

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	6890	200	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Antimony	< 6.0	6.0	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Arsenic	26.8	3.0	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Barium	250	200	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Beryllium	< 1.0	1.0	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Cadmium	< 3.0	3.0	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Calcium	72500	5000	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Chromium	46.8	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Cobalt	< 50	50	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Copper	38.5	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Iron	19200	100	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Lead	87.9	3.0	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Magnesium	38600	5000	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Manganese	958	15	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Mercury	0.42	0.20	ug/l	1	10/08/19	10/08/19	LL	SW846 7470A [1]	SW846 7470A [4]
Nickel	11.5	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Potassium	20900	10000	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Selenium	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Silver	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Sodium	110000	10000	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Thallium	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Vanadium	< 50	50	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Zinc	173	20	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]

(1) Instrument QC Batch: MA47587
(2) Instrument QC Batch: MA47598
(3) Prep QC Batch: MP17762
(4) Prep QC Batch: MP17766

RL = Reporting Limit

Report of Analysis

Client Sample ID:	MW-111		
Lab Sample ID:	JC96248-4	**Date Sampled:**	10/04/19
Matrix:	AQ - Ground Water	**Date Received:**	10/04/19
		Percent Solids:	n/a
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result		RL	Units	DF	Analyzed	By	Method
Cyanide	0.14	J	0.010	mg/l	1	10/15/19 15:41	KI	EPA 335.4/LACHAT
Solids, Total Dissolved	710		10	mg/l	1	10/10/19 16:33	RC	SM2540 C-11

RL = Reporting Limit

Report of Analysis

Client Sample ID: MW-111
Lab Sample ID: JC96248-4F
Matrix: AQ - Groundwater Filtered
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 10/04/19
Date Received: 10/04/19
Percent Solids: n/a

Dissolved Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	< 200	200	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Antimony	< 6.0	6.0	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Arsenic	8.7	3.0	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Barium	< 200	200	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Beryllium	< 1.0	1.0	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Cadmium	< 3.0	3.0	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Calcium	69100	5000	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Chromium	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Cobalt	< 50	50	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Copper	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Iron	208	100	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Lead	< 3.0	3.0	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Magnesium	37300	5000	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Manganese	730	15	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Mercury	< 0.20	0.20	ug/l	1	10/08/19	10/08/19	LL	SW846 7470A [1]	SW846 7470A [4]
Nickel	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Potassium	20400	10000	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Selenium	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Silver	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Sodium	110000	10000	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Thallium	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Vanadium	< 50	50	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Zinc	< 20	20	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]

(1) Instrument QC Batch: MA47587
(2) Instrument QC Batch: MA47598
(3) Prep QC Batch: MP17762
(4) Prep QC Batch: MP17766

RL = Reporting Limit

Report of Analysis

Client Sample ID:	MW-111		
Lab Sample ID:	JC96248-4F	**Date Sampled:**	10/04/19
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/04/19
		Percent Solids:	n/a
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Cyanide	0.19	0.010	mg/l	1	10/15/19 15:55	KI	EPA 335.4/LACHAT

RL = Reporting Limit

SGS North America Inc.

Report of Analysis

Client Sample ID:	MW-112		
Lab Sample ID:	JC96248-5	**Date Sampled:**	10/04/19
Matrix:	AQ - Ground Water	**Date Received:**	10/04/19
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2D185877.D	1	10/12/19 01:00	ED	n/a	n/a	V2D7993
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	6.0	ug/l	
71-43-2	Benzene	ND	0.50	0.43	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.48	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.58	ug/l	
75-25-2	Bromoform	ND	1.0	0.63	ug/l	
74-83-9	Bromomethane	ND	2.0	1.6	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	6.9	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.95	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.55	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.56	ug/l	
75-00-3	Chloroethane	ND	1.0	0.73	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
74-87-3	Chloromethane	ND	1.0	0.76	ug/l	
110-82-7	Cyclohexane	ND	5.0	0.78	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	1.2	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.56	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.48	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.53	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.54	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.51	ug/l	
75-71-8	Dichlorodifluoromethane [a]	ND	2.0	1.4	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.57	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.59	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.51	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.54	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.51	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.47	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.43	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
76-13-1	Freon 113	ND	5.0	1.9	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.0	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW-112		
Lab Sample ID:	JC96248-5	**Date Sampled:**	10/04/19
Matrix:	AQ - Ground Water	**Date Received:**	10/04/19
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	1.0	0.65	ug/l	
79-20-9	Methyl Acetate	ND	5.0	0.80	ug/l	
108-87-2	Methylcyclohexane	ND	5.0	0.60	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	1.9	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.70	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.65	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.90	ug/l	
108-88-3	Toluene	ND	1.0	0.53	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.50	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.54	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.53	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.53	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.84	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.79	ug/l	
	m,p-Xylene	ND	1.0	0.78	ug/l	
95-47-6	o-Xylene	ND	1.0	0.59	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	94%		80-120%
17060-07-0	1,2-Dichloroethane-D4	90%		81-124%
2037-26-5	Toluene-D8	97%		80-120%
460-00-4	4-Bromofluorobenzene	98%		80-120%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	MW-112		
Lab Sample ID:	JC96248-5	**Date Sampled:**	10/04/19
Matrix:	AQ - Ground Water	**Date Received:**	10/04/19
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M160245.D	1	10/11/19 17:55	HSS	10/09/19 22:00	OP23230	EM6781
Run #2							

	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	5.0	0.82	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	5.0	0.89	ug/l	
120-83-2	2,4-Dichlorophenol	ND	2.0	1.3	ug/l	
105-67-9	2,4-Dimethylphenol [a]	ND	5.0	2.4	ug/l	
51-28-5	2,4-Dinitrophenol	ND	5.0	1.6	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	5.0	1.3	ug/l	
95-48-7	2-Methylphenol	ND	2.0	0.89	ug/l	
	3&4-Methylphenol	ND	2.0	0.88	ug/l	
88-75-5	2-Nitrophenol	ND	5.0	0.96	ug/l	
100-02-7	4-Nitrophenol	ND	10	1.2	ug/l	
87-86-5	Pentachlorophenol	ND	4.0	1.4	ug/l	
108-95-2	Phenol	ND	2.0	0.39	ug/l	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	5.0	1.5	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	5.0	1.3	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	5.0	0.92	ug/l	
83-32-9	Acenaphthene	1.4	1.0	0.19	ug/l	
208-96-8	Acenaphthylene	ND	1.0	0.14	ug/l	
98-86-2	Acetophenone	0.27	2.0	0.21	ug/l	J
120-12-7	Anthracene	0.22	1.0	0.21	ug/l	J
1912-24-9	Atrazine	ND	2.0	0.45	ug/l	
100-52-7	Benzaldehyde	ND	5.0	0.29	ug/l	
56-55-3	Benzo(a)anthracene	ND	1.0	0.20	ug/l	
50-32-8	Benzo(a)pyrene	ND	1.0	0.21	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	1.0	0.21	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	1.0	0.34	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	1.0	0.21	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	2.0	0.40	ug/l	
85-68-7	Butyl benzyl phthalate	1.7	2.0	0.46	ug/l	J
92-52-4	1,1'-Biphenyl	ND	1.0	0.21	ug/l	
91-58-7	2-Chloronaphthalene	ND	2.0	0.24	ug/l	
106-47-8	4-Chloroaniline	ND	5.0	0.34	ug/l	
86-74-8	Carbazole	ND	1.0	0.23	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: MW-112
Lab Sample ID: JC96248-5
Matrix: AQ - Ground Water
Method: SW846 8270D SW846 3510C
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 10/04/19
Date Received: 10/04/19
Percent Solids: n/a

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	2.0	0.65	ug/l	
218-01-9	Chrysene	ND	1.0	0.18	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	2.0	0.28	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	2.0	0.25	ug/l	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	2.0	0.40	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	2.0	0.37	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	1.0	0.55	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	1.0	0.48	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	2.0	0.51	ug/l	
123-91-1	1,4-Dioxane	ND	1.0	0.66	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	1.0	0.33	ug/l	
132-64-9	Dibenzofuran	ND	5.0	0.22	ug/l	
84-74-2	Di-n-butyl phthalate	ND	2.0	0.50	ug/l	
117-84-0	Di-n-octyl phthalate	ND	2.0	0.23	ug/l	
84-66-2	Diethyl phthalate	ND	2.0	0.26	ug/l	
131-11-3	Dimethyl phthalate	ND	2.0	0.22	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.0	1.7	ug/l	
206-44-0	Fluoranthene	ND	1.0	0.17	ug/l	
86-73-7	Fluorene	0.28	1.0	0.17	ug/l	J
118-74-1	Hexachlorobenzene	ND	1.0	0.33	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.49	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	10	2.8	ug/l	
67-72-1	Hexachloroethane	ND	2.0	0.39	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	1.0	0.33	ug/l	
78-59-1	Isophorone	ND	2.0	0.28	ug/l	
91-57-6	2-Methylnaphthalene	ND	1.0	0.21	ug/l	
88-74-4	2-Nitroaniline	ND	5.0	0.28	ug/l	
99-09-2	3-Nitroaniline	ND	5.0	0.39	ug/l	
100-01-6	4-Nitroaniline	ND	5.0	0.44	ug/l	
91-20-3	Naphthalene	ND	1.0	0.23	ug/l	
98-95-3	Nitrobenzene	ND	2.0	0.64	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	2.0	0.48	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.0	0.22	ug/l	
85-01-8	Phenanthrene	ND	1.0	0.18	ug/l	
129-00-0	Pyrene	ND	1.0	0.22	ug/l	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	2.0	0.37	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	24%		10-110%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW-112		
Lab Sample ID:	JC96248-5	**Date Sampled:**	10/04/19
Matrix:	AQ - Ground Water	**Date Received:**	10/04/19
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	17%		10-110%
118-79-6	2,4,6-Tribromophenol	77%		36-151%
4165-60-0	Nitrobenzene-d5	64%		34-128%
321-60-8	2-Fluorobiphenyl	65%		38-119%
1718-51-0	Terphenyl-d14	46%		26-129%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: MW-112
Lab Sample ID: JC96248-5
Matrix: AQ - Ground Water
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 10/04/19
Date Received: 10/04/19
Percent Solids: n/a

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	< 200	200	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Antimony	< 6.0	6.0	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Arsenic	5.2	3.0	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Barium	< 200	200	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Beryllium	< 1.0	1.0	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Cadmium	< 3.0	3.0	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Calcium	123000	5000	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Chromium	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Cobalt	< 50	50	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Copper	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Iron	3630	100	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Lead	< 3.0	3.0	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Magnesium	73300	5000	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Manganese	5840	15	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Mercury	< 0.20	0.20	ug/l	1	10/08/19	10/08/19	LL	SW846 7470A [1]	SW846 7470A [4]
Nickel	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Potassium	< 10000	10000	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Selenium	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Silver	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Sodium	33600	10000	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Thallium	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Vanadium	< 50	50	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Zinc	< 20	20	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]

(1) Instrument QC Batch: MA47587
(2) Instrument QC Batch: MA47598
(3) Prep QC Batch: MP17762
(4) Prep QC Batch: MP17766

RL = Reporting Limit

Report of Analysis

Client Sample ID:	MW-112		
Lab Sample ID:	JC96248-5	**Date Sampled:**	10/04/19
Matrix:	AQ - Ground Water	**Date Received:**	10/04/19
		Percent Solids:	n/a
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result		RL	Units	DF	Analyzed	By	Method
Cyanide	0.18	J	0.010	mg/l	1	10/15/19 15:42	KI	EPA 335.4/LACHAT

RL = Reporting Limit

Report of Analysis

Client Sample ID: MW-112
Lab Sample ID: JC96248-5F
Matrix: AQ - Groundwater Filtered
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 10/04/19
Date Received: 10/04/19
Percent Solids: n/a

Dissolved Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	< 200	200	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [4]
Antimony	< 6.0	6.0	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [4]
Arsenic	4.3	3.0	ug/l	1	10/08/19	10/10/19	ND	SW846 6010D [3]	SW846 3010A [4]
Barium	< 200	200	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [4]
Beryllium	< 1.0	1.0	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [4]
Cadmium	< 3.0	3.0	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [4]
Calcium	122000	5000	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [4]
Chromium	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [4]
Cobalt	< 50	50	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [4]
Copper	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [4]
Iron	240	100	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [4]
Lead	< 3.0	3.0	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [4]
Magnesium	72800	5000	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [4]
Manganese	5570	15	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [4]
Mercury	< 0.20	0.20	ug/l	1	10/08/19	10/08/19	LL	SW846 7470A [1]	SW846 7470A [5]
Nickel	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [4]
Potassium	< 10000	10000	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [4]
Selenium	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [4]
Silver	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [4]
Sodium	33300	10000	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [4]
Thallium	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [4]
Vanadium	< 50	50	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [4]
Zinc	< 20	20	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [4]

(1) Instrument QC Batch: MA47587
(2) Instrument QC Batch: MA47601
(3) Instrument QC Batch: MA47607
(4) Prep QC Batch: MP17762
(5) Prep QC Batch: MP17766

RL = Reporting Limit

Report of Analysis

Client Sample ID:	MW-112		
Lab Sample ID:	JC96248-5F	**Date Sampled:**	10/04/19
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/04/19
		Percent Solids:	n/a
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Cyanide	0.14	0.010	mg/l	1	10/15/19 15:56	KI	EPA 335.4/LACHAT

RL = Reporting Limit

SGS North America Inc.

Report of Analysis

Client Sample ID:	MW-113		
Lab Sample ID:	JC96248-6	**Date Sampled:**	10/04/19
Matrix:	AQ - Ground Water	**Date Received:**	10/04/19
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2D185878.D	1	10/12/19 01:30	ED	n/a	n/a	V2D7993
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	6.0	ug/l	
71-43-2	Benzene	ND	0.50	0.43	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.48	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.58	ug/l	
75-25-2	Bromoform	ND	1.0	0.63	ug/l	
74-83-9	Bromomethane	ND	2.0	1.6	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	6.9	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.95	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.55	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.56	ug/l	
75-00-3	Chloroethane	ND	1.0	0.73	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
74-87-3	Chloromethane	ND	1.0	0.76	ug/l	
110-82-7	Cyclohexane	ND	5.0	0.78	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	1.2	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.56	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.48	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.53	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.54	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.51	ug/l	
75-71-8	Dichlorodifluoromethane [a]	ND	2.0	1.4	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.57	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.59	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.51	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.54	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.51	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.47	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.43	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
76-13-1	Freon 113	ND	5.0	1.9	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.0	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW-113		
Lab Sample ID:	JC96248-6	**Date Sampled:**	10/04/19
Matrix:	AQ - Ground Water	**Date Received:**	10/04/19
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	1.0	0.65	ug/l	
79-20-9	Methyl Acetate	ND	5.0	0.80	ug/l	
108-87-2	Methylcyclohexane	ND	5.0	0.60	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	1.9	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.70	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.65	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.90	ug/l	
108-88-3	Toluene	ND	1.0	0.53	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.50	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.54	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.53	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.53	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.84	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.79	ug/l	
	m,p-Xylene	ND	1.0	0.78	ug/l	
95-47-6	o-Xylene	ND	1.0	0.59	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	94%		80-120%
17060-07-0	1,2-Dichloroethane-D4	91%		81-124%
2037-26-5	Toluene-D8	96%		80-120%
460-00-4	4-Bromofluorobenzene	98%		80-120%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	MW-113		
Lab Sample ID:	JC96248-6	**Date Sampled:**	10/04/19
Matrix:	AQ - Ground Water	**Date Received:**	10/04/19
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M160246.D	1	10/11/19 18:23	HSS	10/09/19 22:00	OP23230	EM6781
Run #2 [a]	F187974.D	1	10/19/19 08:00	CS	10/18/19 08:00	OP23404	EF8099

	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2	1000 ml	1.0 ml

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	5.0	0.82	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	5.0	0.89	ug/l	
120-83-2	2,4-Dichlorophenol	ND	2.0	1.3	ug/l	
105-67-9	2,4-Dimethylphenol [b]	ND	5.0	2.4	ug/l	
51-28-5	2,4-Dinitrophenol	ND	5.0	1.6	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	5.0	1.3	ug/l	
95-48-7	2-Methylphenol	ND	2.0	0.89	ug/l	
	3&4-Methylphenol	ND	2.0	0.88	ug/l	
88-75-5	2-Nitrophenol	ND	5.0	0.96	ug/l	
100-02-7	4-Nitrophenol	ND	10	1.2	ug/l	
87-86-5	Pentachlorophenol	ND	4.0	1.4	ug/l	
108-95-2	Phenol	ND	2.0	0.39	ug/l	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	5.0	1.5	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	5.0	1.3	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	5.0	0.92	ug/l	
83-32-9	Acenaphthene	ND	1.0	0.19	ug/l	
208-96-8	Acenaphthylene	ND	1.0	0.14	ug/l	
98-86-2	Acetophenone	ND	2.0	0.21	ug/l	
120-12-7	Anthracene	0.33	1.0	0.21	ug/l	J
1912-24-9	Atrazine	ND	2.0	0.45	ug/l	
100-52-7	Benzaldehyde	ND	5.0	0.29	ug/l	
56-55-3	Benzo(a)anthracene	ND	1.0	0.20	ug/l	
50-32-8	Benzo(a)pyrene	ND	1.0	0.21	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	1.0	0.21	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	1.0	0.34	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	1.0	0.21	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	2.0	0.40	ug/l	
85-68-7	Butyl benzyl phthalate	ND	2.0	0.46	ug/l	
92-52-4	1,1'-Biphenyl	ND	1.0	0.21	ug/l	
91-58-7	2-Chloronaphthalene	ND	2.0	0.24	ug/l	
106-47-8	4-Chloroaniline	ND	5.0	0.34	ug/l	
86-74-8	Carbazole	ND	1.0	0.23	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: MW-113
Lab Sample ID: JC96248-6
Matrix: AQ - Ground Water
Method: SW846 8270D SW846 3510C
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 10/04/19
Date Received: 10/04/19
Percent Solids: n/a

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	2.0	0.65	ug/l	
218-01-9	Chrysene	ND	1.0	0.18	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	2.0	0.28	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	2.0	0.25	ug/l	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	2.0	0.40	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	2.0	0.37	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	1.0	0.55	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	1.0	0.48	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	2.0	0.51	ug/l	
123-91-1	1,4-Dioxane	ND	1.0	0.66	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	1.0	0.33	ug/l	
132-64-9	Dibenzofuran	ND	5.0	0.22	ug/l	
84-74-2	Di-n-butyl phthalate	ND	2.0	0.50	ug/l	
117-84-0	Di-n-octyl phthalate	ND	2.0	0.23	ug/l	
84-66-2	Diethyl phthalate	ND	2.0	0.26	ug/l	
131-11-3	Dimethyl phthalate	ND	2.0	0.22	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.0	1.7	ug/l	
206-44-0	Fluoranthene	ND	1.0	0.17	ug/l	
86-73-7	Fluorene	ND	1.0	0.17	ug/l	
118-74-1	Hexachlorobenzene	ND	1.0	0.33	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.49	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	10	2.8	ug/l	
67-72-1	Hexachloroethane	ND	2.0	0.39	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	1.0	0.33	ug/l	
78-59-1	Isophorone	ND	2.0	0.28	ug/l	
91-57-6	2-Methylnaphthalene	ND	1.0	0.21	ug/l	
88-74-4	2-Nitroaniline	ND	5.0	0.28	ug/l	
99-09-2	3-Nitroaniline	ND	5.0	0.39	ug/l	
100-01-6	4-Nitroaniline	ND	5.0	0.44	ug/l	
91-20-3	Naphthalene 1.0	~~0.31~~	1.0	0.23	ug/l	~~JB~~ UB
98-95-3	Nitrobenzene	ND	2.0	0.64	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	2.0	0.48	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.0	0.22	ug/l	
85-01-8	Phenanthrene	0.20	1.0	0.18	ug/l	J
129-00-0	Pyrene	ND	1.0	0.22	ug/l	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	2.0	0.37	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	26%	35%	10-110%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW-113		
Lab Sample ID:	JC96248-6	**Date Sampled:**	10/04/19
Matrix:	AQ - Ground Water	**Date Received:**	10/04/19
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	19%	27%	10-110%
118-79-6	2,4,6-Tribromophenol	80%	98%	36-151%
4165-60-0	Nitrobenzene-d5	68%	91%	34-128%
321-60-8	2-Fluorobiphenyl	70%	74%	38-119%
1718-51-0	Terphenyl-d14	47%	85%	26-129%

(a) Sample extracted outside the holding time. Confirmation run.
(b) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: MW-113
Lab Sample ID: JC96248-6
Matrix: AQ - Ground Water
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 10/04/19
Date Received: 10/04/19
Percent Solids: n/a

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	< 200	200	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Antimony	< 6.0	6.0	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Arsenic	< 3.0	3.0	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Barium	< 200	200	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Beryllium	< 1.0	1.0	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Cadmium	< 3.0	3.0	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Calcium	105000	5000	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Chromium	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Cobalt	< 50	50	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Copper	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Iron	25600	100	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Lead	< 3.0	3.0	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Magnesium	29900	5000	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Manganese	1060	15	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Mercury	< 0.20	0.20	ug/l	1	10/08/19	10/08/19	LL	SW846 7470A [1]	SW846 7470A [4]
Nickel	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Potassium	< 10000	10000	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Selenium	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Silver	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Sodium	13200	10000	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Thallium	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Vanadium	< 50	50	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Zinc	< 20	20	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]

(1) Instrument QC Batch: MA47587
(2) Instrument QC Batch: MA47598
(3) Prep QC Batch: MP17762
(4) Prep QC Batch: MP17766

RL = Reporting Limit

Report of Analysis

Client Sample ID:	MW-113		
Lab Sample ID:	JC96248-6	**Date Sampled:**	10/04/19
Matrix:	AQ - Ground Water	**Date Received:**	10/04/19
		Percent Solids:	n/a
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result		RL	Units	DF	Analyzed	By	Method
Cyanide	0.38	J	0.010	mg/l	1	10/15/19 15:44	KI	EPA 335.4/LACHAT

RL = Reporting Limit

Report of Analysis

Client Sample ID:	MW-113		
Lab Sample ID:	JC96248-6F	**Date Sampled:**	10/04/19
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/04/19
		Percent Solids:	n/a
Project:	National Grid, Philly Coke, Philadelphia, PA		

Dissolved Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	< 200	200	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Antimony	< 6.0	6.0	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Arsenic	< 3.0	3.0	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Barium	< 200	200	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Beryllium	< 1.0	1.0	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Cadmium	< 3.0	3.0	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Calcium	104000	5000	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Chromium	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Cobalt	< 50	50	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Copper	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Iron	7660	100	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Lead	< 3.0	3.0	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Magnesium	29700	5000	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Manganese	1010	15	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Mercury	< 0.20	0.20	ug/l	1	10/08/19	10/08/19	LL	SW846 7470A [1]	SW846 7470A [4]
Nickel	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Potassium	< 10000	10000	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Selenium	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Silver	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Sodium	13100	10000	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Thallium	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Vanadium	< 50	50	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Zinc	< 20	20	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]

(1) Instrument QC Batch: MA47587
(2) Instrument QC Batch: MA47601
(3) Prep QC Batch: MP17762
(4) Prep QC Batch: MP17766

RL = Reporting Limit

Report of Analysis

Client Sample ID:	MW-113		
Lab Sample ID:	JC96248-6F	**Date Sampled:**	10/04/19
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/04/19
		Percent Solids:	n/a
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Cyanide	0.41	0.010	mg/l	1	10/15/19 15:57	KI	EPA 335.4/LACHAT

RL = Reporting Limit

SGS North America Inc.

Report of Analysis

Client Sample ID:	DUP-100419		
Lab Sample ID:	JC96248-7	**Date Sampled:**	10/04/19
Matrix:	AQ - Ground Water	**Date Received:**	10/04/19
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2D185879.D	1	10/12/19 01:59	ED	n/a	n/a	V2D7993
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	6.0	ug/l	
71-43-2	Benzene	ND	0.50	0.43	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.48	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.58	ug/l	
75-25-2	Bromoform	ND	1.0	0.63	ug/l	
74-83-9	Bromomethane	ND	2.0	1.6	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	6.9	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.95	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.55	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.56	ug/l	
75-00-3	Chloroethane	ND	1.0	0.73	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
74-87-3	Chloromethane	ND	1.0	0.76	ug/l	
110-82-7	Cyclohexane	ND	5.0	0.78	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	1.2	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.56	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.48	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.53	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.54	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.51	ug/l	
75-71-8	Dichlorodifluoromethane [a]	ND	2.0	1.4	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.57	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.59	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.51	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.54	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.51	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.47	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.43	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
76-13-1	Freon 113	ND	5.0	1.9	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.0	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	DUP-100419		
Lab Sample ID:	JC96248-7	**Date Sampled:**	10/04/19
Matrix:	AQ - Ground Water	**Date Received:**	10/04/19
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	1.0	0.65	ug/l	
79-20-9	Methyl Acetate	ND	5.0	0.80	ug/l	
108-87-2	Methylcyclohexane	ND	5.0	0.60	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	1.9	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.70	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.65	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.90	ug/l	
108-88-3	Toluene	ND	1.0	0.53	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.50	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.54	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.53	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.53	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.84	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.79	ug/l	
	m,p-Xylene	ND	1.0	0.78	ug/l	
95-47-6	o-Xylene	ND	1.0	0.59	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	94%		80-120%
17060-07-0	1,2-Dichloroethane-D4	91%		81-124%
2037-26-5	Toluene-D8	97%		80-120%
460-00-4	4-Bromofluorobenzene	97%		80-120%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	DUP-100419		
Lab Sample ID:	JC96248-7	**Date Sampled:**	10/04/19
Matrix:	AQ - Ground Water	**Date Received:**	10/04/19
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M160247.D	1	10/11/19 18:51	HSS	10/09/19 22:00	OP23230	EM6781
Run #2 [a]	F187975.D	1	10/19/19 08:29	CS	10/18/19 08:00	OP23404	EF8099

	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2	1000 ml	1.0 ml

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	5.0	0.82	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	5.0	0.89	ug/l	
120-83-2	2,4-Dichlorophenol	ND	2.0	1.3	ug/l	
105-67-9	2,4-Dimethylphenol [b]	ND	5.0	2.4	ug/l	
51-28-5	2,4-Dinitrophenol	ND	5.0	1.6	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	5.0	1.3	ug/l	
95-48-7	2-Methylphenol	ND	2.0	0.89	ug/l	
	3&4-Methylphenol	ND	2.0	0.88	ug/l	
88-75-5	2-Nitrophenol	ND	5.0	0.96	ug/l	
100-02-7	4-Nitrophenol	ND	10	1.2	ug/l	
87-86-5	Pentachlorophenol	ND	4.0	1.4	ug/l	
108-95-2	Phenol	ND	2.0	0.39	ug/l	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	5.0	1.5	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	5.0	1.3	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	5.0	0.92	ug/l	
83-32-9	Acenaphthene	ND	1.0	0.19	ug/l	
208-96-8	Acenaphthylene	ND	1.0	0.14	ug/l	
98-86-2	Acetophenone	ND	2.0	0.21	ug/l	
120-12-7	Anthracene	0.43	1.0	0.21	ug/l	J
1912-24-9	Atrazine	ND	2.0	0.45	ug/l	
100-52-7	Benzaldehyde	ND	5.0	0.29	ug/l	
56-55-3	Benzo(a)anthracene	ND	1.0	0.20	ug/l	
50-32-8	Benzo(a)pyrene	ND	1.0	0.21	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	1.0	0.21	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	1.0	0.34	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	1.0	0.21	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	2.0	0.40	ug/l	
85-68-7	Butyl benzyl phthalate	ND	2.0	0.46	ug/l	
92-52-4	1,1'-Biphenyl	ND	1.0	0.21	ug/l	
91-58-7	2-Chloronaphthalene	ND	2.0	0.24	ug/l	
106-47-8	4-Chloroaniline	ND	5.0	0.34	ug/l	
86-74-8	Carbazole	0.91	1.0	0.23	ug/l	J

ND = Not detected MDL = Method Detection Limit
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J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	DUP-100419		
Lab Sample ID:	JC96248-7	**Date Sampled:**	10/04/19
Matrix:	AQ - Ground Water	**Date Received:**	10/04/19
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	2.0	0.65	ug/l	
218-01-9	Chrysene	ND	1.0	0.18	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	2.0	0.28	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	2.0	0.25	ug/l	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	2.0	0.40	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	2.0	0.37	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	1.0	0.55	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	1.0	0.48	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	2.0	0.51	ug/l	
123-91-1	1,4-Dioxane	ND	1.0	0.66	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	1.0	0.33	ug/l	
132-64-9	Dibenzofuran	0.40	5.0	0.22	ug/l	J
84-74-2	Di-n-butyl phthalate	ND	2.0	0.50	ug/l	
117-84-0	Di-n-octyl phthalate	ND	2.0	0.23	ug/l	
84-66-2	Diethyl phthalate	ND	2.0	0.26	ug/l	
131-11-3	Dimethyl phthalate	ND	2.0	0.22	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.0	1.7	ug/l	
206-44-0	Fluoranthene	0.26	1.0	0.17	ug/l	J
86-73-7	Fluorene	0.90	1.0	0.17	ug/l	J
118-74-1	Hexachlorobenzene	ND	1.0	0.33	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.49	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	10	2.8	ug/l	
67-72-1	Hexachloroethane	ND	2.0	0.39	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	1.0	0.33	ug/l	
78-59-1	Isophorone	ND	2.0	0.28	ug/l	
91-57-6	2-Methylnaphthalene	0.67	1.0	0.21	ug/l	J
88-74-4	2-Nitroaniline	ND	5.0	0.28	ug/l	
99-09-2	3-Nitroaniline	ND	5.0	0.39	ug/l	
100-01-6	4-Nitroaniline	ND	5.0	0.44	ug/l	
91-20-3	Naphthalene	5.8	1.0	0.23	ug/l	B
98-95-3	Nitrobenzene	ND	2.0	0.64	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	2.0	0.48	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.0	0.22	ug/l	
85-01-8	Phenanthrene	1.1	1.0	0.18	ug/l	
129-00-0	Pyrene	ND	1.0	0.22	ug/l	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	2.0	0.37	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	24%	35%	10-110%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	DUP-100419		
Lab Sample ID:	JC96248-7	**Date Sampled:**	10/04/19
Matrix:	AQ - Ground Water	**Date Received:**	10/04/19
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	17%	27%	10-110%
118-79-6	2,4,6-Tribromophenol	81%	89%	36-151%
4165-60-0	Nitrobenzene-d5	63%	80%	34-128%
321-60-8	2-Fluorobiphenyl	64%	68%	38-119%
1718-51-0	Terphenyl-d14	52%	80%	26-129%

(a) Sample extracted outside the holding time. Confirmation run.
(b) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: DUP-100419
Lab Sample ID: JC96248-7
Matrix: AQ - Ground Water
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 10/04/19
Date Received: 10/04/19
Percent Solids: n/a

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	< 200	200	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Antimony	< 6.0	6.0	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Arsenic	< 3.0	3.0	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Barium	< 200	200	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Beryllium	< 1.0	1.0	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Cadmium	< 3.0	3.0	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Calcium	178000	5000	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Chromium	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Cobalt	< 50	50	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Copper	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Iron	12200	100	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Lead	82.7	3.0	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Magnesium	79100	5000	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Manganese	699	15	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Mercury	< 0.20	0.20	ug/l	1	10/08/19	10/08/19	LL	SW846 7470A [1]	SW846 7470A [4]
Nickel	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Potassium	16600	10000	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Selenium	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Silver	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Sodium	20000	10000	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Thallium	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Vanadium	< 50	50	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Zinc	< 20	20	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]

(1) Instrument QC Batch: MA47587
(2) Instrument QC Batch: MA47598
(3) Prep QC Batch: MP17762
(4) Prep QC Batch: MP17766

RL = Reporting Limit

Report of Analysis

Client Sample ID:	DUP-100419		
Lab Sample ID:	JC96248-7	**Date Sampled:**	10/04/19
Matrix:	AQ - Ground Water	**Date Received:**	10/04/19
		Percent Solids:	n/a
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result		RL	Units	DF	Analyzed	By	Method
Cyanide	0.034	J	0.010	mg/l	1	10/15/19 15:45	KI	EPA 335.4/LACHAT
Solids, Total Dissolved	916		10	mg/l	1	10/10/19 16:33	RC	SM2540 C-11

RL = Reporting Limit

Report of Analysis

Client Sample ID: DUP-100419
Lab Sample ID: JC96248-7F
Matrix: AQ - Groundwater Filtered
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 10/04/19
Date Received: 10/04/19
Percent Solids: n/a

Dissolved Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	< 200	200	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [4]
Antimony	< 6.0	6.0	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [4]
Arsenic	< 3.0	3.0	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [4]
Barium	< 200	200	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [4]
Beryllium	< 1.0	1.0	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [4]
Cadmium	< 3.0	3.0	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [4]
Calcium	189000	5000	ug/l	1	10/08/19	10/10/19	ND	SW846 6010D [3]	SW846 3010A [4]
Chromium	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [4]
Cobalt	< 50	50	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [4]
Copper	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [4]
Iron	197	100	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [4]
Lead	< 3.0	3.0	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [4]
Magnesium	82100	5000	ug/l	1	10/08/19	10/10/19	ND	SW846 6010D [3]	SW846 3010A [4]
Manganese	701	15	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [4]
Mercury	< 0.20	0.20	ug/l	1	10/08/19	10/08/19	LL	SW846 7470A [1]	SW846 7470A [5]
Nickel	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [4]
Potassium	18100	10000	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [4]
Selenium	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [4]
Silver	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [4]
Sodium	21700	10000	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [4]
Thallium	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [4]
Vanadium	< 50	50	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [4]
Zinc	< 20	20	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [4]

(1) Instrument QC Batch: MA47587
(2) Instrument QC Batch: MA47601
(3) Instrument QC Batch: MA47607
(4) Prep QC Batch: MP17762
(5) Prep QC Batch: MP17766

RL = Reporting Limit

Report of Analysis

Client Sample ID:	DUP-100419		
Lab Sample ID:	JC96248-7F	**Date Sampled:**	10/04/19
Matrix:	AQ - Groundwater Filtered	**Date Received:**	10/04/19
		Percent Solids:	n/a
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Cyanide	0.037	0.010	mg/l	1	10/15/19 15:59	KI	EPA 335.4/LACHAT

RL = Reporting Limit

SGS North America Inc.

Report of Analysis

Client Sample ID:	FB-100419		
Lab Sample ID:	JC96248-8	**Date Sampled:**	10/04/19
Matrix:	AQ - Field Blank Water	**Date Received:**	10/04/19
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2D186009.D	1	10/17/19 10:34	KC	n/a	n/a	V2D8000
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	6.0	ug/l	
71-43-2	Benzene	ND	0.50	0.43	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.48	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.58	ug/l	
75-25-2	Bromoform	ND	1.0	0.63	ug/l	
74-83-9	Bromomethane	ND	2.0	1.6	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	6.9	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.95	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.55	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.56	ug/l	
75-00-3	Chloroethane	ND	1.0	0.73	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
74-87-3	Chloromethane	ND	1.0	0.76	ug/l	
110-82-7	Cyclohexane	ND	5.0	0.78	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	1.2	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.56	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.48	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.53	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.54	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.51	ug/l	
75-71-8	Dichlorodifluoromethane [a]	ND	2.0	1.4	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.57	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.59	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.51	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.54	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.51	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.47	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.43	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
76-13-1	Freon 113	ND	5.0	1.9	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.0	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FB-100419		
Lab Sample ID:	JC96248-8	**Date Sampled:**	10/04/19
Matrix:	AQ - Field Blank Water	**Date Received:**	10/04/19
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	1.0	0.65	ug/l	
79-20-9	Methyl Acetate	ND	5.0	0.80	ug/l	
108-87-2	Methylcyclohexane	ND	5.0	0.60	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	1.9	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.70	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.65	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.90	ug/l	
108-88-3	Toluene	ND	1.0	0.53	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.50	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.54	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.53	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.53	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.84	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.79	ug/l	
	m,p-Xylene	ND	1.0	0.78	ug/l	
95-47-6	o-Xylene	ND	1.0	0.59	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	93%		80-120%
17060-07-0	1,2-Dichloroethane-D4	91%		81-124%
2037-26-5	Toluene-D8	95%		80-120%
460-00-4	4-Bromofluorobenzene	99%		80-120%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	FB-100419		
Lab Sample ID:	JC96248-8	**Date Sampled:**	10/04/19
Matrix:	AQ - Field Blank Water	**Date Received:**	10/04/19
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M160248.D	1	10/11/19 19:19	HSS	10/09/19 22:00	OP23230	EM6781
Run #2							

	Initial Volume	Final Volume
Run #1	990 ml	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	5.1	0.83	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	5.1	0.90	ug/l	
120-83-2	2,4-Dichlorophenol	ND	2.0	1.3	ug/l	
105-67-9	2,4-Dimethylphenol [a]	ND	5.1	2.5	ug/l	
51-28-5	2,4-Dinitrophenol	ND	5.1	1.6	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	5.1	1.3	ug/l	
95-48-7	2-Methylphenol	ND	2.0	0.90	ug/l	
	3&4-Methylphenol	ND	2.0	0.89	ug/l	
88-75-5	2-Nitrophenol	ND	5.1	0.97	ug/l	
100-02-7	4-Nitrophenol	ND	10	1.2	ug/l	
87-86-5	Pentachlorophenol	ND	4.0	1.4	ug/l	
108-95-2	Phenol	ND	2.0	0.40	ug/l	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	5.1	1.5	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	5.1	1.3	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	5.1	0.93	ug/l	
83-32-9	Acenaphthene	ND	1.0	0.19	ug/l	
208-96-8	Acenaphthylene	ND	1.0	0.14	ug/l	
98-86-2	Acetophenone	ND	2.0	0.21	ug/l	
120-12-7	Anthracene	ND	1.0	0.21	ug/l	
1912-24-9	Atrazine	ND	2.0	0.45	ug/l	
100-52-7	Benzaldehyde	ND	5.1	0.29	ug/l	
56-55-3	Benzo(a)anthracene	ND	1.0	0.21	ug/l	
50-32-8	Benzo(a)pyrene	ND	1.0	0.22	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	1.0	0.21	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	1.0	0.34	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	1.0	0.21	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	2.0	0.41	ug/l	
85-68-7	Butyl benzyl phthalate	ND	2.0	0.46	ug/l	
92-52-4	1,1'-Biphenyl	ND	1.0	0.21	ug/l	
91-58-7	2-Chloronaphthalene	ND	2.0	0.24	ug/l	
106-47-8	4-Chloroaniline	ND	5.1	0.34	ug/l	
86-74-8	Carbazole	ND	1.0	0.23	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: FB-100419
Lab Sample ID: JC96248-8
Matrix: AQ - Field Blank Water
Method: SW846 8270D SW846 3510C
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 10/04/19
Date Received: 10/04/19
Percent Solids: n/a

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	2.0	0.66	ug/l	
218-01-9	Chrysene	ND	1.0	0.18	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	2.0	0.28	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	2.0	0.25	ug/l	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	2.0	0.41	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	2.0	0.37	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	1.0	0.56	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	1.0	0.48	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	2.0	0.51	ug/l	
123-91-1	1,4-Dioxane	ND	1.0	0.66	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	1.0	0.33	ug/l	
132-64-9	Dibenzofuran	ND	5.1	0.22	ug/l	
84-74-2	Di-n-butyl phthalate	ND	2.0	0.50	ug/l	
117-84-0	Di-n-octyl phthalate	ND	2.0	0.24	ug/l	
84-66-2	Diethyl phthalate	ND	2.0	0.26	ug/l	
131-11-3	Dimethyl phthalate	ND	2.0	0.22	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.0	1.7	ug/l	
206-44-0	Fluoranthene	ND	1.0	0.17	ug/l	
86-73-7	Fluorene	ND	1.0	0.17	ug/l	
118-74-1	Hexachlorobenzene	ND	1.0	0.33	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.50	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	10	2.8	ug/l	
67-72-1	Hexachloroethane	ND	2.0	0.39	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	1.0	0.34	ug/l	
78-59-1	Isophorone	ND	2.0	0.28	ug/l	
91-57-6	2-Methylnaphthalene	ND	1.0	0.21	ug/l	
88-74-4	2-Nitroaniline	ND	5.1	0.28	ug/l	
99-09-2	3-Nitroaniline	ND	5.1	0.39	ug/l	
100-01-6	4-Nitroaniline	ND	5.1	0.44	ug/l	
91-20-3	Naphthalene	ND	1.0	0.23	ug/l	
98-95-3	Nitrobenzene	ND	2.0	0.65	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	2.0	0.49	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.1	0.22	ug/l	
85-01-8	Phenanthrene	ND	1.0	0.18	ug/l	
129-00-0	Pyrene	ND	1.0	0.22	ug/l	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	2.0	0.37	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	25%		10-110%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	FB-100419		
Lab Sample ID:	JC96248-8	**Date Sampled:**	10/04/19
Matrix:	AQ - Field Blank Water	**Date Received:**	10/04/19
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	17%		10-110%
118-79-6	2,4,6-Tribromophenol	78%		36-151%
4165-60-0	Nitrobenzene-d5	66%		34-128%
321-60-8	2-Fluorobiphenyl	61%		38-119%
1718-51-0	Terphenyl-d14	63%		26-129%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: FB-100419
Lab Sample ID: JC96248-8
Matrix: AQ - Field Blank Water
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 10/04/19
Date Received: 10/04/19
Percent Solids: n/a

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	< 200	200	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Antimony	< 6.0	6.0	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Arsenic	< 3.0	3.0	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Barium	< 200	200	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Beryllium	< 1.0	1.0	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Cadmium	< 3.0	3.0	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Calcium	< 5000	5000	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Chromium	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Cobalt	< 50	50	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Copper	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Iron	< 100	100	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Lead	< 3.0	3.0	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Magnesium	< 5000	5000	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Manganese	< 15	15	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Mercury	< 0.20	0.20	ug/l	1	10/08/19	10/08/19	LL	SW846 7470A [1]	SW846 7470A [4]
Nickel	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Potassium	< 10000	10000	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Selenium	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Silver	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Sodium	< 10000	10000	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Thallium	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Vanadium	< 50	50	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]
Zinc	< 20	20	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [3]

(1) Instrument QC Batch: MA47587
(2) Instrument QC Batch: MA47601
(3) Prep QC Batch: MP17762
(4) Prep QC Batch: MP17766

RL = Reporting Limit

Report of Analysis

Client Sample ID:	FB-100419		
Lab Sample ID:	JC96248-8	**Date Sampled:**	10/04/19
Matrix:	AQ - Field Blank Water	**Date Received:**	10/04/19
		Percent Solids:	n/a
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Cyanide	< 0.010	0.010	mg/l	1	10/15/19 15:49	KI	EPA 335.4/LACHAT

RL = Reporting Limit

Report of Analysis

Client Sample ID: FB-100419
Lab Sample ID: JC96248-8F
Matrix: AQ - Field Blank Filtered
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 10/04/19
Date Received: 10/04/19
Percent Solids: n/a

Dissolved Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	< 200	200	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [4]
Antimony	< 6.0	6.0	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [4]
Arsenic	< 3.0	3.0	ug/l	1	10/08/19	10/10/19	ND	SW846 6010D [3]	SW846 3010A [4]
Barium	< 200	200	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [4]
Beryllium	< 1.0	1.0	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [4]
Cadmium	< 3.0	3.0	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [4]
Calcium	< 5000	5000	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [4]
Chromium	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [4]
Cobalt	< 50	50	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [4]
Copper	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [4]
Iron	< 100	100	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [4]
Lead	< 3.0	3.0	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [4]
Magnesium	< 5000	5000	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [4]
Manganese	< 15	15	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [4]
Mercury	< 0.20	0.20	ug/l	1	10/08/19	10/08/19	LL	SW846 7470A [1]	SW846 7470A [5]
Nickel	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [4]
Potassium	< 10000	10000	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [4]
Selenium	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [4]
Silver	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [4]
Sodium	< 10000	10000	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [4]
Thallium	< 10	10	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [4]
Vanadium	< 50	50	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [4]
Zinc	< 20	20	ug/l	1	10/08/19	10/09/19	EAL	SW846 6010D [2]	SW846 3010A [4]

(1) Instrument QC Batch: MA47587
(2) Instrument QC Batch: MA47601
(3) Instrument QC Batch: MA47607
(4) Prep QC Batch: MP17762
(5) Prep QC Batch: MP17766

RL = Reporting Limit

Report of Analysis

Client Sample ID:	FB-100419		
Lab Sample ID:	JC96248-8F	**Date Sampled:**	10/04/19
Matrix:	AQ - Field Blank Filtered	**Date Received:**	10/04/19
		Percent Solids:	n/a
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Cyanide	< 0.010	0.010	mg/l	1	10/15/19 16:00	KI	EPA 335.4/LACHAT

RL = Reporting Limit

SGS North America Inc.

Report of Analysis

Client Sample ID:	TRIP BLANK		
Lab Sample ID:	JC96248-9	**Date Sampled:**	10/04/19
Matrix:	AQ - Trip Blank Water	**Date Received:**	10/04/19
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2D186010.D	1	10/17/19 11:03	KC	n/a	n/a	V2D8000
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	6.0	ug/l	
71-43-2	Benzene	ND	0.50	0.43	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.48	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.58	ug/l	
75-25-2	Bromoform	ND	1.0	0.63	ug/l	
74-83-9	Bromomethane	ND	2.0	1.6	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	6.9	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.95	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.55	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.56	ug/l	
75-00-3	Chloroethane	ND	1.0	0.73	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
74-87-3	Chloromethane	ND	1.0	0.76	ug/l	
110-82-7	Cyclohexane	ND	5.0	0.78	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	1.2	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.56	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.48	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.53	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.54	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.51	ug/l	
75-71-8	Dichlorodifluoromethane [a]	ND	2.0	1.4	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.57	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.59	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.51	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.54	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.51	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.47	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.43	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
76-13-1	Freon 113	ND	5.0	1.9	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.0	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TRIP BLANK		
Lab Sample ID:	JC96248-9	**Date Sampled:**	10/04/19
Matrix:	AQ - Trip Blank Water	**Date Received:**	10/04/19
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	1.0	0.65	ug/l	
79-20-9	Methyl Acetate	ND	5.0	0.80	ug/l	
108-87-2	Methylcyclohexane	ND	5.0	0.60	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	1.9	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
100-42-5	Styrene	ND	1.0	0.70	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.65	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.90	ug/l	
108-88-3	Toluene	ND	1.0	0.53	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.50	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.54	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.53	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.53	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.84	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.79	ug/l	
	m,p-Xylene	ND	1.0	0.78	ug/l	
95-47-6	o-Xylene	ND	1.0	0.59	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	93%		80-120%
17060-07-0	1,2-Dichloroethane-D4	90%		81-124%
2037-26-5	Toluene-D8	96%		80-120%
460-00-4	4-Bromofluorobenzene	99%		80-120%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

ARCADIS Design & Consultancy for natural and built assets

National Grid
Philly Coke

DATA REVIEW

Philadelphia, Pennsylvania

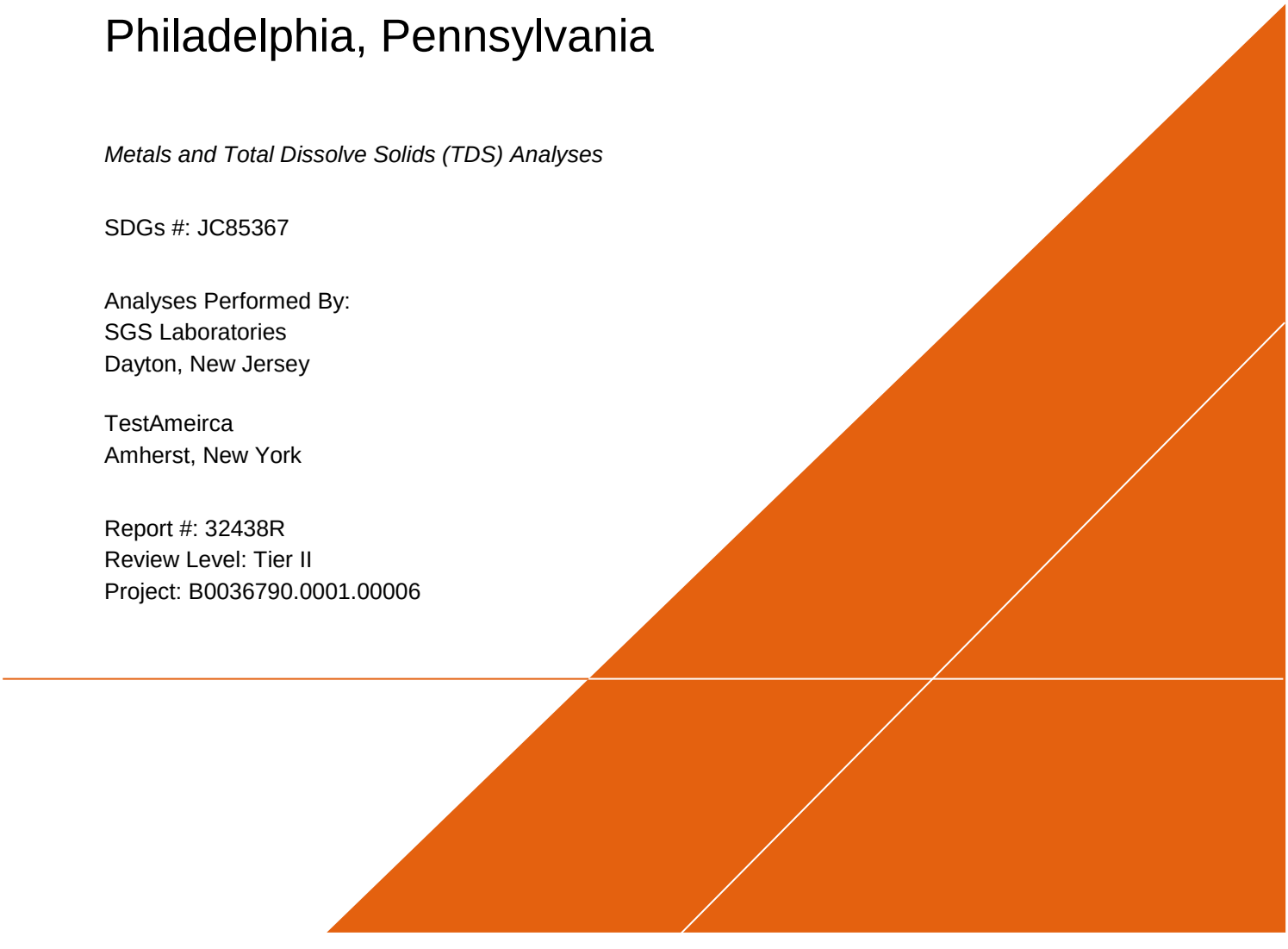
Metals and Total Dissolve Solids (TDS) Analyses

SDGs #: JC85367

Analyses Performed By:
SGS Laboratories
Dayton, New Jersey

TestAmeirca
Amherst, New York

Report #: 32438R
Review Level: Tier II
Project: B0036790.0001.00006



SUMMARY

This data quality assessment summarizes the review of Sample Delivery Groups (SDGs) # JC85367 for samples collected in association with the National Grid Philly Coke site in Philadelphia, Pennsylvania. The review was conducted as a Tier II evaluation and included review of data package completeness. Only analytical data as reported by the laboratory were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets and chain of custody. Analyses were performed for the following samples:

SDG	Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis				
						VOCs	SVOC	Pest./ PCB	Metals	TDS
JC85367	MW-107 (03-28-2019)	JC85367-1	Water	3/28/2019					X	X
	PCMW-05 (03-28-2019)	JC85367-2	Water	3/28/2019					X	X
	GW-DUP-0328 (03-28-2019)	JC85367-3	Water	3/28/2019	PCMW-05 (03-28-2019)				X	X
	PCMW-16D (03-28-2019)	JC85367-4	Water	3/28/2019					X	X

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of quality assurance (QA) or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

INORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) Methods 6010D, 7470A, and Standard Method 2540. Data were reviewed in accordance with USEPA National Functional Guidelines of October 2002.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and that it was already subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with the USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The analyte was analyzed for but not detected. The associated value is the analyte instrument detection limit.

  J The reported value was obtained from a reading less than the reporting limit (RL), but greater than or equal to the method detection limit (MDL).

- Quantitation (Q) Qualifiers

  E The reported value is estimated due to the presence of interference.

  N Spiked sample recovery is not within control limits.

  * Duplicate analysis is not within control limits.

- Validation Qualifiers

  J The analyte was positively identified; however, the associated numerical value is an estimated concentration only.

  UJ The analyte was not detected above the reporting limit. However, the reported limit is approximate and may or may not represent the actual limit of detection.

  UB Analyte considered non-detect at the listed value due to associated blank contamination.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

METALS ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW846 6010D	Water	180 days from collection to analysis	Preserved to a pH of less than 2.
SW-846 7470A	Water	28 days from collection to analysis	Cool to <6 °C; preserved to a pH of less than 2.

All samples were analyzed within the specified holding times.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Analytes were detected in the associated QA blanks; however, the associated sample results were greater than the BAL and/or were non-detect. No other qualification of the sample results was required.

3. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis /Laboratory Duplicate Analysis

MS/MSD and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

3.1 MS/MSD Analysis

All metal analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the analyte's concentration detected in the parent sample exceeds the MS concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

The MS/MSD exhibited acceptable recoveries and RPD between the MS/MSD recoveries.

3.2 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the RL. A control limit of 20% for water matrices and 35% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of one times the RL is applied for water matrices and two times the RL for soil matrices.

MS/MSD analysis was performed in replacement of the laboratory duplicate analysis. The MS/MSD recoveries exhibited acceptable RPD.

4. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Analyte	Sample Result	Duplicate Result	RPD
PCMW-05 (03-28-2019)/ GW-DUP-0328 (03-28-2019)	Barium	365	360	AC
	Calcium	76700	76200	0.7%
	Iron	99.6 J	99.0 J	AC
	Lead	2.9 J	1.9 J	AC
	Magnesium	9710	9830	AC
	Manganese	182	186	2.2%
	Nickel	85.5	80.9	5.5%
	Potassium	2880 J	2890 J	AC
	Sodium	3790 J	3800 J	AC
	Zinc	27.2	28.2	AC

AC = Acceptable

The calculated RPDs between the parent sample and field duplicate were acceptable.

5. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The analytes associated with the LCS analysis must exhibit a percent recovery between the control limits of 80% and 120%.

The LCS analysis exhibited recoveries within the control limits.

6. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR METAL

METALS; 6010C/7470A	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Inductively Coupled Plasma-Atomic Emission Spectrometry (ICP-AES)					
Tier II Validation					
Holding Times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Instrument Blanks		X		X	
B. Method Blanks		X		X	
C. Equipment/Field Blanks		X		X	
Laboratory Control Sample (LCS)		X		X	
Matrix Spike (MS) %R		X		X	
Matrix Spike Duplicate (MSD) %R		X		X	
MS/MSD Precision (RPD)		X		X	
Field/Lab Duplicate (RPD)		X		X	
Total vs. Dissolved	X				X
Reporting Limit Verification		X		X	

Notes:

%R Percent recovery

RPD Relative percent difference

GENERAL CHEMISTRY ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
Total Dissolved Solids (TDS) by SM2540C	Water	7 days from collection to analysis	Cool to <6 °C.

All samples were analyzed within the specified holding times.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

The correct number and type of standards were analyzed. The correlation coefficient of the initial calibration was greater than 0.995 and all initial calibration verification standard recoveries were within control limits.

All calibration standard recoveries were within the control limit.

4. Matrix Spike (MS)/Laboratory Duplicate Analysis

MS and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

4.1 MS Analysis

All analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The MS recovery control limits do not apply for MS performed on sample locations where the analyte's concentration detected in the parent sample exceeds the MS concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

An MS analysis was not performed on a sample within this SDG.

4.2 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the RL. A control limit of 20% for water matrices and 35% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of one times the RL is applied for water matrices and two times the RL for soil matrices.

All analytes associated with laboratory duplicate RPD were within the control limit.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
PCMW-05 (03-28-2019)/ GW-DUP-0328 (03-28-2019)	TDS	600	750	22.2%

The calculated RPDs between the parent sample and field duplicate were acceptable.

6. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The analytes associated with the LCS analysis must exhibit a percent recovery between the control limits of 80% and 120%.

The LCS analysis exhibited recoveries within the control limits.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR GENERAL CHEMISTRY

General Chemistry: SM2540	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Miscellaneous Instrumentation					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks		X		X	
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R		X		X	
LCS/LCSD Precision (RPD)		X		X	
Matrix Spike (MS) %R	X				X
Matrix Spike Duplicate(MSD) %R	X				X
MS/MSD Precision (RPD)	X				X
Field/Lab Duplicate (RPD)		X		X	
Dilution Factor		X		X	
Moisture Content	X				X

Notes:

%RSD – relative standard deviation
%R - percent recovery
RPD - relative percent difference,

%D – difference

VALIDATION PERFORMED BY: Andrew Korycinski

SIGNATURE:

DATE: May 9, 2019

PEER REVIEW: Dennis Capria

DATE: May 20, 2019

CHAIN OF CUSTODY AND CORRECTED SAMPLE ANALYSIS DATA SHEETS

GW

CHAIN OF CUSTODY

Page 1 of 1

F

SGS North America Inc. - Dayton
2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200 FAX: 732-329-3499/3480
www.sgs.com/ehsusa

FED-EX Tracking #:
Bottle Order Control #: AR-03199-43
SGS Quote #:
SGS Job #: JC85367

Client / Reporting Information

Company Name: Arcadis-US
Street Address: 110 W. Fayette St Suite 300
City: Syracuse State: NY Zip: 13202
Project Contact: Cary Healy E-mail: Lawrence.Healy@arcadis-us.com
Phone #: 315-335-9493
Sampler(s) Name(s): Evan Green Phone #: 603-305-2692

Project Information

Project Name: National Gr. J, Philly Coke, Philadelphia PA
Street: 4501 Richmond St
City: Philadelphia State: PA
Project #: 30036790.0005
Client Purchase Order #:
Project Manager: John Bussel
Collection

Billing Information (if different from Report to)

Company Name: Same
Street Address:
City: State: Zip:
Attention:

Requested Analysis

SGS Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Date	Time	Sampled by:	Grab (G) Comp (C)	Matrix	# of bottles	Number of preserved Bottles: HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	MTAL CDSS LFT	TDS	LAB USE ONLY
1F	MW-107		3/28/19	10:00	EG	G	GW	2					2				1	1	
	MW-107 MS		3/28/19	10:00	EG	G	GW	2					2				1	1	C10
	MW-107 MSD		3/28/19	10:00	EG	G	GW	2					2				1	1	G59
2F	PC MW-05		3/28/19	11:45	EG	G	GW	2					2				1	1	
3F	GW-DUP-0328		3/28/19	—	EG	G	GW	2					2				1	1	
4F	PC MW-16D		3/28/19	13:35	EG	G	GW	2					2				1	1	

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
~~SW - Surface Water~~
SO - Soil
SL - Sludge
SED-Sediment
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe
FB - Field Blank
EB-Equipment Blank
RB - Rinse Blank
TB - Trip Blank

Turn Around Time (Business Days)

Approved By (SGS PM); / Date:

- [X] 10 Business Days
- [ ] 5 Business Days
- [ ] 3 Business Days*
- [ ] 2 Business Days*
- [ ] 1 Business Day*
- [ ] Other

All data available via Lablink

* Approval needed for 1-3 Business Day TAT

Deliverable

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] NJ Reduced (Level 3)
- [X] Full Tier I (Level 4)
- [ ] Commercial "C"
- [ ] NJ DKQP
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] MA MCP Criteria_____
- [ ] CT RCP Criteria_____
- [ ] State Forms
- [ ] EDD Format _____
- [ ] DOD-QSM5

Commercial "A" = Results only; Commercial "B" = Results + QC Summary
Commercial "C" = Results + QC Summary + Partial Raw data

Comments / Special Instructions

INITIAL ASESSMENT 3/5 ✓

LABEL VERIFICATION_____

http://www.sgs.com/en/terms-and-conditions

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by:	Date / Time:	Received By:	Relinquished By:	Date / Time:	Received By:
1		3/28/19 1530				
2					3/28/19 1925	
3						
4						
5						

Custody Seal #: ☐ Intact ☐ Not Intact
Preserved where applicable: ☐ Absent
Therm. ID:
On Ice: ☐ 2.4 °C
Cooler Temp. °C

EHSA-QAC-0023-02-FORM-Dayton - Standard COC.xlsx

Report of Analysis

Client Sample ID:	MW-107		
Lab Sample ID:	JC85367-1	**Date Sampled:**	03/28/19
Matrix:	AQ - Ground Water	**Date Received:**	03/28/19
		Percent Solids:	n/a
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Solids, Total Dissolved	560	10	1.8	mg/l	1	03/30/19 11:55	RC	SM2540 C-11

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
B = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: MW-107
Lab Sample ID: JC85367-1F
Matrix: AQ - Groundwater Filtered
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 03/28/19
Date Received: 03/28/19
Percent Solids: n/a

Dissolved Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	46 U	200	46	ug/l	1	04/02/19	04/02/19	ND	SW846 6010D [2]	SW846 3010A [3]
Antimony	4.7 U	6.0	4.7	ug/l	1	04/02/19	04/02/19	ND	SW846 6010D [2]	SW846 3010A [3]
Arsenic	2.8 U	3.0	2.8	ug/l	1	04/02/19	04/02/19	ND	SW846 6010D [2]	SW846 3010A [3]
Barium	159 B	200	13	ug/l	1	04/02/19	04/02/19	ND	SW846 6010D [2]	SW846 3010A [3]
Beryllium	0.50 U	1.0	0.50	ug/l	1	04/02/19	04/02/19	ND	SW846 6010D [2]	SW846 3010A [3]
Cadmium	1.0 U	3.0	1.0	ug/l	1	04/02/19	04/02/19	ND	SW846 6010D [2]	SW846 3010A [3]
Calcium	106000	5000	99	ug/l	1	04/02/19	04/02/19	ND	SW846 6010D [2]	SW846 3010A [3]
Chromium	2.0 U	10	2.0	ug/l	1	04/02/19	04/02/19	ND	SW846 6010D [2]	SW846 3010A [3]
Cobalt	2.6 U	50	2.6	ug/l	1	04/02/19	04/02/19	ND	SW846 6010D [2]	SW846 3010A [3]
Copper	5.9 U	10	5.9	ug/l	1	04/02/19	04/02/19	ND	SW846 6010D [2]	SW846 3010A [3]
Iron	621	100	32	ug/l	1	04/02/19	04/02/19	ND	SW846 6010D [2]	SW846 3010A [3]
Lead	1.8 U	3.0	1.8	ug/l	1	04/02/19	04/02/19	ND	SW846 6010D [2]	SW846 3010A [3]
Magnesium	43200	5000	140	ug/l	1	04/02/19	04/02/19	ND	SW846 6010D [2]	SW846 3010A [3]
Manganese	1190	15	1.4	ug/l	1	04/02/19	04/02/19	ND	SW846 6010D [2]	SW846 3010A [3]
Mercury	0.095 U	0.20	0.095	ug/l	1	04/02/19	04/02/19	EAL	SW846 7470A [1]	SW846 7470A [4]
Nickel	1.7 U	10	1.7	ug/l	1	04/02/19	04/02/19	ND	SW846 6010D [2]	SW846 3010A [3]
Potassium	8700 B	10000	200	ug/l	1	04/02/19	04/02/19	ND	SW846 6010D [2]	SW846 3010A [3]
Selenium	4.9 U	10	4.9	ug/l	1	04/02/19	04/02/19	ND	SW846 6010D [2]	SW846 3010A [3]
Silver	1.9 U	10	1.9	ug/l	1	04/02/19	04/02/19	ND	SW846 6010D [2]	SW846 3010A [3]
Sodium	14300	10000	570	ug/l	1	04/02/19	04/02/19	ND	SW846 6010D [2]	SW846 3010A [3]
Thallium	1.8 U	10	1.8	ug/l	1	04/02/19	04/02/19	ND	SW846 6010D [2]	SW846 3010A [3]
Vanadium	2.0 B	50	1.8	ug/l	1	04/02/19	04/02/19	ND	SW846 6010D [2]	SW846 3010A [3]
Zinc	6.9 U	20	6.9	ug/l	1	04/02/19	04/02/19	ND	SW846 6010D [2]	SW846 3010A [3]

(1) Instrument QC Batch: MA46407
(2) Instrument QC Batch: MA46414
(3) Prep QC Batch: MP13758
(4) Prep QC Batch: MP13777

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
B = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	PCMW-05		
Lab Sample ID:	JC85367-2	**Date Sampled:**	03/28/19
Matrix:	AQ - Ground Water	**Date Received:**	03/28/19
		Percent Solids:	n/a
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Solids, Total Dissolved	600	10	1.8	mg/l	1	03/30/19 11:55	RC	SM2540 C-11

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
B = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: PCMW-05
Lab Sample ID: JC85367-2F
Matrix: AQ - Groundwater Filtered
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 03/28/19
Date Received: 03/28/19
Percent Solids: n/a

Dissolved Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	46 U	200	46	ug/l	1	04/02/19	04/02/19	ND	SW846 6010D [2]	SW846 3010A [3]
Antimony	4.7 U	6.0	4.7	ug/l	1	04/02/19	04/02/19	ND	SW846 6010D [2]	SW846 3010A [3]
Arsenic	2.8 U	3.0	2.8	ug/l	1	04/02/19	04/02/19	ND	SW846 6010D [2]	SW846 3010A [3]
Barium	365	200	13	ug/l	1	04/02/19	04/02/19	ND	SW846 6010D [2]	SW846 3010A [3]
Beryllium	0.50 U	1.0	0.50	ug/l	1	04/02/19	04/02/19	ND	SW846 6010D [2]	SW846 3010A [3]
Cadmium	1.0 U	3.0	1.0	ug/l	1	04/02/19	04/02/19	ND	SW846 6010D [2]	SW846 3010A [3]
Calcium	76700	5000	99	ug/l	1	04/02/19	04/02/19	ND	SW846 6010D [2]	SW846 3010A [3]
Chromium	2.0 U	10	2.0	ug/l	1	04/02/19	04/02/19	ND	SW846 6010D [2]	SW846 3010A [3]
Cobalt	2.6 U	50	2.6	ug/l	1	04/02/19	04/02/19	ND	SW846 6010D [2]	SW846 3010A [3]
Copper	5.9 U	10	5.9	ug/l	1	04/02/19	04/02/19	ND	SW846 6010D [2]	SW846 3010A [3]
Iron	99.6 B	100	32	ug/l	1	04/02/19	04/02/19	ND	SW846 6010D [2]	SW846 3010A [3]
Lead	2.9 B	3.0	1.8	ug/l	1	04/02/19	04/02/19	ND	SW846 6010D [2]	SW846 3010A [3]
Magnesium	9710	5000	140	ug/l	1	04/02/19	04/02/19	ND	SW846 6010D [2]	SW846 3010A [3]
Manganese	182	15	1.4	ug/l	1	04/02/19	04/02/19	ND	SW846 6010D [2]	SW846 3010A [3]
Mercury	0.095 U	0.20	0.095	ug/l	1	04/02/19	04/02/19	EAL	SW846 7470A [1]	SW846 7470A [4]
Nickel	85.5	10	1.7	ug/l	1	04/02/19	04/02/19	ND	SW846 6010D [2]	SW846 3010A [3]
Potassium	2880 B	10000	200	ug/l	1	04/02/19	04/02/19	ND	SW846 6010D [2]	SW846 3010A [3]
Selenium	4.9 U	10	4.9	ug/l	1	04/02/19	04/02/19	ND	SW846 6010D [2]	SW846 3010A [3]
Silver	1.9 U	10	1.9	ug/l	1	04/02/19	04/02/19	ND	SW846 6010D [2]	SW846 3010A [3]
Sodium	3790 B	10000	570	ug/l	1	04/02/19	04/02/19	ND	SW846 6010D [2]	SW846 3010A [3]
Thallium	1.8 U	10	1.8	ug/l	1	04/02/19	04/02/19	ND	SW846 6010D [2]	SW846 3010A [3]
Vanadium	1.8 U	50	1.8	ug/l	1	04/02/19	04/02/19	ND	SW846 6010D [2]	SW846 3010A [3]
Zinc	27.2	20	6.9	ug/l	1	04/02/19	04/02/19	ND	SW846 6010D [2]	SW846 3010A [3]

(1) Instrument QC Batch: MA46407
(2) Instrument QC Batch: MA46414
(3) Prep QC Batch: MP13758
(4) Prep QC Batch: MP13777

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
B = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	GW-DUP-0328		
Lab Sample ID:	JC85367-3	**Date Sampled:**	03/28/19
Matrix:	AQ - Ground Water	**Date Received:**	03/28/19
		Percent Solids:	n/a
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Solids, Total Dissolved	750	10	1.8	mg/l	1	03/30/19 11:55	RC	SM2540 C-11

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
B = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: GW-DUP-0328
Lab Sample ID: JC85367-3F
Matrix: AQ - Groundwater Filtered
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 03/28/19
Date Received: 03/28/19
Percent Solids: n/a

Dissolved Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	46 U	200	46	ug/l	1	04/02/19	04/03/19	ND	SW846 6010D [2]	SW846 3010A [3]
Antimony	4.7 U	6.0	4.7	ug/l	1	04/02/19	04/03/19	ND	SW846 6010D [2]	SW846 3010A [3]
Arsenic	2.8 U	3.0	2.8	ug/l	1	04/02/19	04/03/19	ND	SW846 6010D [2]	SW846 3010A [3]
Barium	360	200	13	ug/l	1	04/02/19	04/03/19	ND	SW846 6010D [2]	SW846 3010A [3]
Beryllium	0.50 U	1.0	0.50	ug/l	1	04/02/19	04/03/19	ND	SW846 6010D [2]	SW846 3010A [3]
Cadmium	1.0 U	3.0	1.0	ug/l	1	04/02/19	04/03/19	ND	SW846 6010D [2]	SW846 3010A [3]
Calcium	76200	5000	99	ug/l	1	04/02/19	04/03/19	ND	SW846 6010D [2]	SW846 3010A [3]
Chromium	2.0 U	10	2.0	ug/l	1	04/02/19	04/03/19	ND	SW846 6010D [2]	SW846 3010A [3]
Cobalt	2.6 U	50	2.6	ug/l	1	04/02/19	04/03/19	ND	SW846 6010D [2]	SW846 3010A [3]
Copper	5.9 U	10	5.9	ug/l	1	04/02/19	04/03/19	ND	SW846 6010D [2]	SW846 3010A [3]
Iron	99.0 B	100	32	ug/l	1	04/02/19	04/03/19	ND	SW846 6010D [2]	SW846 3010A [3]
Lead	1.9 B	3.0	1.8	ug/l	1	04/02/19	04/03/19	ND	SW846 6010D [2]	SW846 3010A [3]
Magnesium	9830	5000	140	ug/l	1	04/02/19	04/03/19	ND	SW846 6010D [2]	SW846 3010A [3]
Manganese	186	15	1.4	ug/l	1	04/02/19	04/03/19	ND	SW846 6010D [2]	SW846 3010A [3]
Mercury	0.095 U	0.20	0.095	ug/l	1	04/02/19	04/02/19	EAL	SW846 7470A [1]	SW846 7470A [4]
Nickel	80.9	10	1.7	ug/l	1	04/02/19	04/03/19	ND	SW846 6010D [2]	SW846 3010A [3]
Potassium	2890 B	10000	200	ug/l	1	04/02/19	04/03/19	ND	SW846 6010D [2]	SW846 3010A [3]
Selenium	4.9 U	10	4.9	ug/l	1	04/02/19	04/03/19	ND	SW846 6010D [2]	SW846 3010A [3]
Silver	1.9 U	10	1.9	ug/l	1	04/02/19	04/03/19	ND	SW846 6010D [2]	SW846 3010A [3]
Sodium	3800 B	10000	570	ug/l	1	04/02/19	04/03/19	ND	SW846 6010D [2]	SW846 3010A [3]
Thallium	1.8 U	10	1.8	ug/l	1	04/02/19	04/03/19	ND	SW846 6010D [2]	SW846 3010A [3]
Vanadium	1.8 U	50	1.8	ug/l	1	04/02/19	04/03/19	ND	SW846 6010D [2]	SW846 3010A [3]
Zinc	28.2	20	6.9	ug/l	1	04/02/19	04/03/19	ND	SW846 6010D [2]	SW846 3010A [3]

(1) Instrument QC Batch: MA46407
(2) Instrument QC Batch: MA46414
(3) Prep QC Batch: MP13758
(4) Prep QC Batch: MP13777

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
B = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	PCMW-16D		
Lab Sample ID:	JC85367-4	**Date Sampled:**	03/28/19
Matrix:	AQ - Ground Water	**Date Received:**	03/28/19
		Percent Solids:	n/a
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Solids, Total Dissolved	440	10	1.8	mg/l	1	03/30/19 11:55	RC	SM2540 C-11

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
B = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: PCMW-16D
Lab Sample ID: JC85367-4F
Matrix: AQ - Groundwater Filtered
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 03/28/19
Date Received: 03/28/19
Percent Solids: n/a

Dissolved Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	46 U	200	46	ug/l	1	04/02/19	04/03/19	ND	SW846 6010D [2]	SW846 3010A [4]
Antimony	4.7 U	6.0	4.7	ug/l	1	04/02/19	04/03/19	ND	SW846 6010D [2]	SW846 3010A [4]
Arsenic	5.8	3.0	2.8	ug/l	1	04/02/19	04/03/19	ND	SW846 6010D [2]	SW846 3010A [4]
Barium	34.6 B	200	13	ug/l	1	04/02/19	04/03/19	ND	SW846 6010D [2]	SW846 3010A [4]
Beryllium	0.50 U	1.0	0.50	ug/l	1	04/02/19	04/03/19	ND	SW846 6010D [2]	SW846 3010A [4]
Cadmium	1.0 U	3.0	1.0	ug/l	1	04/02/19	04/03/19	ND	SW846 6010D [2]	SW846 3010A [4]
Calcium	46700	5000	99	ug/l	1	04/02/19	04/03/19	ND	SW846 6010D [2]	SW846 3010A [4]
Chromium	2.0 U	10	2.0	ug/l	1	04/02/19	04/03/19	ND	SW846 6010D [2]	SW846 3010A [4]
Cobalt	2.8 B	50	2.6	ug/l	1	04/02/19	04/03/19	ND	SW846 6010D [2]	SW846 3010A [4]
Copper	5.9 U	10	5.9	ug/l	1	04/02/19	04/03/19	ND	SW846 6010D [2]	SW846 3010A [4]
Iron	27100	100	32	ug/l	1	04/02/19	04/03/19	ND	SW846 6010D [2]	SW846 3010A [4]
Lead	1.8 U	3.0	1.8	ug/l	1	04/02/19	04/03/19	ND	SW846 6010D [2]	SW846 3010A [4]
Magnesium	24900	5000	140	ug/l	1	04/02/19	04/03/19	ND	SW846 6010D [2]	SW846 3010A [4]
Manganese	3130	15	1.4	ug/l	1	04/02/19	04/03/19	ND	SW846 6010D [3]	SW846 3010A [4]
Mercury	0.095 U	0.20	0.095	ug/l	1	04/02/19	04/02/19	EAL	SW846 7470A [1]	SW846 7470A [5]
Nickel	1.7 U	10	1.7	ug/l	1	04/02/19	04/03/19	ND	SW846 6010D [2]	SW846 3010A [4]
Potassium	2730 B	10000	200	ug/l	1	04/02/19	04/03/19	ND	SW846 6010D [2]	SW846 3010A [4]
Selenium	4.9 U	10	4.9	ug/l	1	04/02/19	04/03/19	ND	SW846 6010D [2]	SW846 3010A [4]
Silver	1.9 U	10	1.9	ug/l	1	04/02/19	04/03/19	ND	SW846 6010D [2]	SW846 3010A [4]
Sodium	56100	10000	570	ug/l	1	04/02/19	04/03/19	ND	SW846 6010D [2]	SW846 3010A [4]
Thallium	1.8 U	10	1.8	ug/l	1	04/02/19	04/03/19	ND	SW846 6010D [2]	SW846 3010A [4]
Vanadium	4.5 B	50	1.8	ug/l	1	04/02/19	04/03/19	ND	SW846 6010D [2]	SW846 3010A [4]
Zinc	6.9 U	20	6.9	ug/l	1	04/02/19	04/03/19	ND	SW846 6010D [2]	SW846 3010A [4]

(1) Instrument QC Batch: MA46407
(2) Instrument QC Batch: MA46414
(3) Instrument QC Batch: MA46419
(4) Prep QC Batch: MP13758
(5) Prep QC Batch: MP13777

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
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ARCADIS Design & Consultancy for natural and built assets

National Grid

Philly Coke

DATA REVIEW

Philadelphia, Pennsylvania

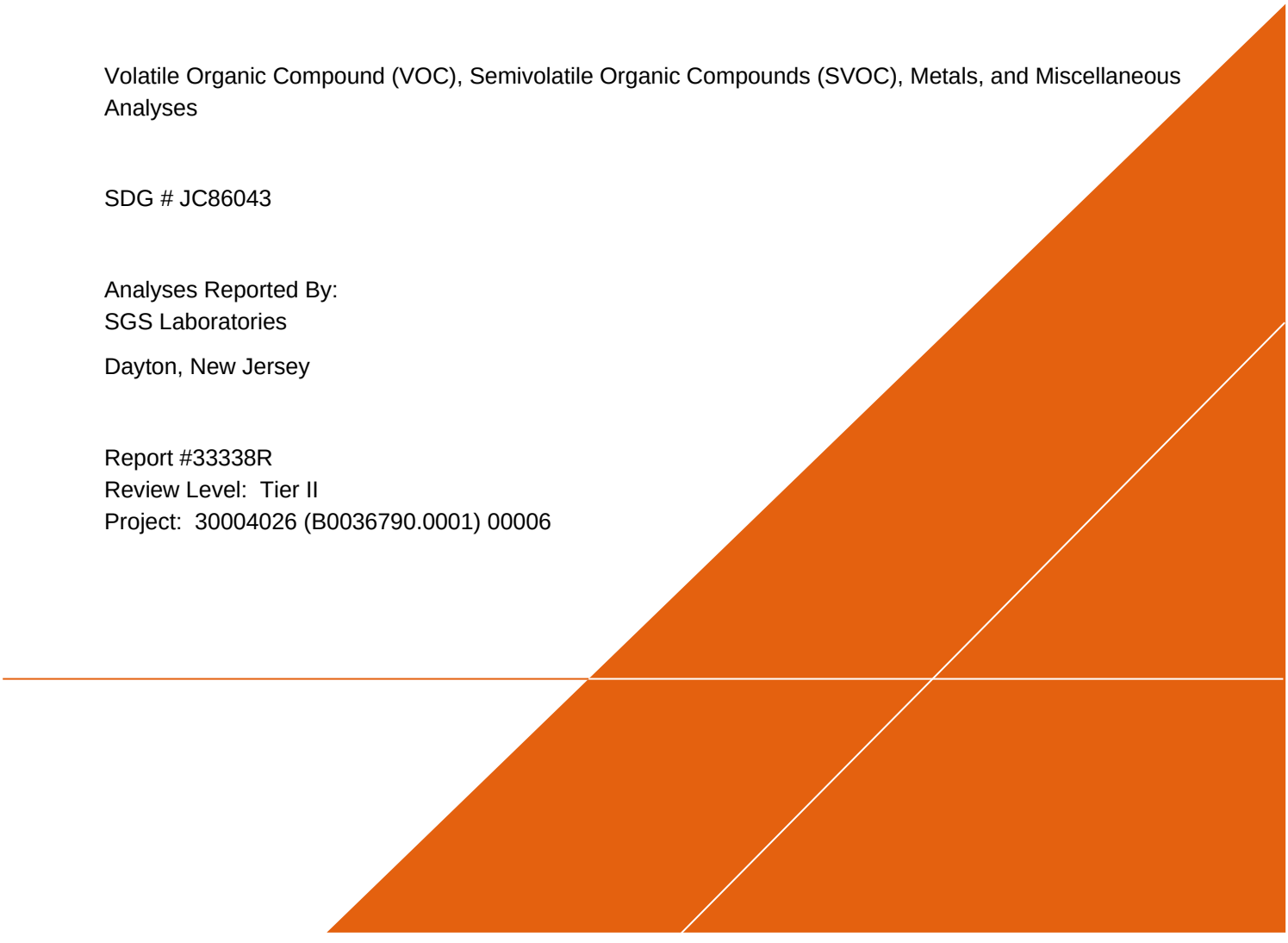
Volatile Organic Compound (VOC), Semivolatile Organic Compounds (SVOC), Metals, and Miscellaneous Analyses

SDG # JC86043

Analyses Reported By:
SGS Laboratories

Dayton, New Jersey

Report #33338R
Review Level: Tier II
Project: 30004026 (B0036790.0001) 00006



SUMMARY

This data review report summarizes the review of Sample Delivery Group (SDG) #JC86043 for samples collected in association with the National Grid Philly Coke site in Philadelphia, Pennsylvania. The review was conducted as a Tier II evaluation and included review of laboratory analytical data package completeness. Field documentation was not included in this review. Included with this assessment are the post-validation annotated sample result sheets, and chain of custody (COC). Analyses were performed on the following samples

SDG Number	Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis				
						VOC	SVOC	PEST/ PCB	Metals	MISC
JC86043	PCTP-08R (10-12) (04-09-2019)	JC86043-1	Soil	4/9/2019		X	X		X	X
	PCTP-10R (7-9) (04-09-2019)	JC86043-2	Soil	4/9/2019		X	X		X	X
	PCTP-47R (5-7) (04-09-2019)	JC86043-3	Soil	4/9/2019		X	X		X	X
	PCTP-32R (6-8) (04-09-2019)	JC86043-4	Soil	4/9/2019		X	X		X	X
	S-122 (10-12) (04-09-2019)	JC86043-5	Soil	4/9/2019		X	X		X	X

Notes:

1. PEST/PCB = Pesticides and polychlorinated biphenyls
2. SVOC = Semivolatile Organic Compounds
3. VOC = Volatile Organic Compound
4. MISC = Miscellaneous (total cyanide)

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance (QA) or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260C and 8270D. Data were reviewed in accordance with the USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540/R-2017-002, January 2017 and the USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Organic Data Review, EPA540/R-99/008, October 1999 (as applicable).

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers
  - U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
  - B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- Quantitation (Q) Qualifiers
  - E The compound was quantitated above the calibration range.
  - D Concentration is based on a diluted sample analysis.
- Validation Qualifiers
  - J The compound was positively identified; however, the associated numerical value is an estimated concentration only.
  - UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.
  - JN The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.
  - UB Compound considered non-detect at the listed value due to associated blank contamination.
  - N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.
  - R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is

that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times/Preservation

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260C	Water	14 days from collection to analysis (preserved) 7 days from collection to analysis (non-preserved)	Cool to <6 °C; preserved to a pH of less than 2 s.u.
	Soil	48 hours from collection to extraction and 14 days from extraction to analysis	Cool to <6 °C.

Note:
s.u. Standard units

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore, detected sample results were not associated with blank contamination.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. VOC analysis requires that all surrogates associated with the analysis exhibit recoveries within the laboratory-established acceptance limits.

All surrogate recoveries were within control limits.

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

The MS/MSD was not performed on a sample within this SDG.

5. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) Analysis

The LCS/LCSD analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS/LCSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

Sample locations associated with LCS/LCSD analysis exhibiting recoveries outside of the control limits presented in the following table.

Sample Locations	Compound	LCS Recovery	LCSD Recovery
S-122 (10-12)	1,2-Dibromoethane	AC	>UL

The criteria used to evaluate the LCS/LCSD recoveries are presented in the following table. In the case of an LCS/LCSD deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> the upper control limit (UL)	Non-detect	No Action
	Detect	J
< the lower control limit (LL) but > 10%	Non-detect	UJ
	Detect	J
< 10%	Non-detect	R
	Detect	J

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of three times the RL is applied for soil matrices.

A field duplicate was not performed on a sample within this SDG.

7. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

8. System Performance and Overall Assessment

The laboratory narrative indicates continuing calibration deviations. These deviations are normally not evaluated in a tier II data review. Sample results that had continuing calibration recoveries that exceed the control limit high and were non detect did not require qualification. Sample results where the calibration recoveries were high and the compound was detected or calibration recoveries were low were qualified as estimated (J or UJ).

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: SW-846 8260	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks	X				X
C. Trip blanks	X				X
Laboratory Control Sample (LCS)		X		X	
Laboratory Control Sample Duplicate(LCSD)		X	X		
LCS/LCSD Precision (RPD)		X		X	
Matrix Spike (MS)	X				X
Matrix Spike Duplicate(MSD)	X				X
MS/MSD Precision (RPD)	X				X
Field/Lab Duplicate (RPD)	X				X
Surrogate Spike Recoveries		X		X	
Dilution Factor		X		X	
Moisture Content		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

SEMIVOLATILE ORGANIC COMPOUND (SVOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8270D	Water	7 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C
	Soil	14 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. SVOC analysis requires that two of the three SVOC surrogate compounds within each fraction exhibit recoveries within the laboratory-established acceptance limits.

All surrogate recoveries were within control limits.

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

Sample locations associated with the MS/MSD exhibiting recoveries outside of the control limits are presented in the following table.

Sample Locations	Compound	MS Recovery	MSD Recovery
PCTP-47R (5-7) (04-09-2019)	Benzaldehyde	AC	>UL
	bis(2-Ethylhexyl)phthalate	AC	>UL

Note:

AC Acceptable

The criteria used to evaluate the MS/MSD recoveries are presented in the following table. In the case of an MS/MSD deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> the upper control limit (UL)	Non-detect	No Action
	Detect	J
< the lower control limit (LL) but > 10%	Non-detect	UJ
	Detect	J
< 10%	Non-detect	R
	Detect	J

Sample locations associated with MS/MSD recoveries exhibiting an RPD greater than of the control limit presented in the following table.

Sample Locations	Compound
PCTP-47R (5-7) (04-09-2019)	Benzaldehyde 2,4-Dinitrotoluene bis(2-Ethylhexyl)phthalate

The criteria used to evaluate the RPD between the MS/MSD recoveries are presented in the following table. In the case of an RPD deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> UL	Non-detect	UJ
	Detect	J

5. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) Analysis

The LCS/LCSD analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS/LCSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

Sample locations associated with LCS/LCSD recoveries exhibiting an RPD greater than of the control limit presented in the following table.

Sample Locations	Compound
PCTP-47R (5-7) (04-09-2019)	4-Chloroaniline
PCTP-32R (6-8) (04-09-2019)	3,3'-Dichlorobenzidine
S-122 (10-12) (04-09-2019)	3-Nitroaniline

The criteria used to evaluate the RPD between the LCS/LCSD recoveries are presented in the following table. In the case of an RPD deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> UL	Non-detect	UJ
	Detect	J

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of three times the RL is applied for soil matrices.

A field duplicate was not performed on a sample within this SDG.

7. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

Sample results associated with compound that exhibited a concentration greater than the linear range of the instrument calibration are summarized in the following table.

Sample ID	Compound	Original Analysis	Diluted Analysis	Reported Analysis
S-122 (10-12) (04-09-2019)	Acenaphthene	--	55300	55300 D
	Anthracene	--	30400	30400 D
	Dibenzofuran	--	28000	28000 D
	Fluoranthene	--	42400	42400 D
	Fluorene	--	43200	43200 D
	2-Methylnaphthalene	--	37600	37600 D
	Phenanthrene	--	129000	129000 D
	Pyrene	--	39300	39300 D

Note: In the instance where both the original analysis and the diluted analysis sample results exhibited a concentration greater than and/or less than the calibration linear range of the instrument; the sample result exhibiting the greatest concentration will be reported as the final result.

Sample results associated with compounds exhibiting concentrations greater than the linear range are qualified as documented in the table below when reported as the final reported sample result.

Reported Sample Results	Qualification
Diluted sample result within calibration range	D
Diluted sample result less than the calibration range	DJ
Diluted sample result greater than the calibration range	EDJ
Original sample result greater than the calibration range	EJ

8. System Performance and Overall Assessment

The laboratory narrative indicates continuing calibration deviations. These deviations are normally not evaluated in a tier II data review. Sample results that had continuing calibration recoveries that exceed the control limit high and were non detect did not require qualification. Sample results where the calibration recoveries were high and the compound was detected or calibration recoveries were low were qualified as estimated (J or UJ).

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR SVOCs

SVOCs: SW-846 8270	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks		X		X	
Laboratory Control Sample (LCS) %R		X	X		
Laboratory Control Sample Duplicate(LCSD) %R	X				X
LCS/LCSD Precision (RPD)	X				X
Matrix Spike (MS) %R		X	X		
Matrix Spike Duplicate(MSD) %R		X	X		
MS/MSD Precision (RPD)		X		X	
Field/Lab Duplicate (RPD)	X				X
Surrogate Spike Recoveries		X		X	
Dilution Factor		X		X	
Moisture Content		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

INORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 6010D, 7471A, and 9012B. Data were reviewed in accordance with the USEPA CLP National Functional Guidelines for Inorganic Superfund Methods Data Review, EPA 540/R-2017-001, January 2017; and the USEPA CLP National Functional Guidelines for Inorganic Data Review, EPA 540-R-01-008, July 2002 (as applicable).

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and that it was already subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with the USEPA National Functional Guidelines:

- Concentration (C) Qualifiers
  - U The analyte was analyzed for but not detected. The associated value is the analyte instrument detection limit.
  - J The reported value was obtained from a reading less than the reporting limit (RL), but greater than or equal to the method detection limit (MDL).
- Quantitation (Q) Qualifiers
  - E The reported value is estimated due to the presence of interference.
  - N Spiked sample recovery is not within control limits.
  - * Duplicate analysis is not within control limits.
- Validation Qualifiers
  - J The analyte was positively identified; however, the associated numerical value is an estimated concentration only.
  - UJ The analyte was not detected above the reporting limit. However, the reported limit is approximate and may or may not represent the actual limit of detection.
  - UB Analyte considered non-detect at the listed value due to associated blank contamination.
  - R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

METALS ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 6010D	Water	180 days from collection to analysis	Preserved to a pH of less than 2.
	Soil	180 days from collection to analysis	Cool to <6 °C.
SW-846 7471A	Soil	28 days from collection to analysis	Cool to <6 °C.
SW-846 7470A	Water	28 days from collection to analysis	Cool to <6 °C; preserved to a pH of less than 2.

All samples were analyzed within the specified holding times.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Analytes were detected in the associated QA blanks; however, the associated sample results were greater than the BAL and/or were non-detect. No qualification of the sample results was required.

3. Matrix Spike (MS)/Matrix Spike Duplicate(MSD)/Laboratory Duplicate Analysis

MS/MSD and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

3.1 MS/MSD Analysis

All metal analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the analyte's concentration detected in the parent sample exceeds the MS concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

All analytes associated with MS/MSD recoveries were within control limits with the exception of the following analyte present in the table below.

Sample Location	Analyte	MS Recovery	MSD Recovery
PCTP-32R (6-8) (04-09-2019)	Aluminum	204.7%	195.0%
	Antimony	74.2%	72.5%
	Iron	184.8%	177.8%
	Manganese	125.1%	120.9%

The criteria used to evaluate MS/MSD recoveries are presented in the following table. In the case of an MS/MSD deviation, the sample results are qualified. The qualifications are applied to all sample results associated with this SDG.

Control limit	Sample Result	Qualification
MS/MSD percent recovery 30% to 74%	Non-detect	UJ
	Detect	J
MS/MSD percent recovery <30%	Non-detect	R
	Detect	J
MS/MSD percent recovery >125%	Non-detect	No Action
	Detect	J

3.2 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the RL. A control limit of 20% for water matrices and 35% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of one times the RL is applied for water matrices and two times the RL for soil matrices.

MS/MSD analysis was performed in replacement of the laboratory duplicate analysis. The MS/MSD analysis exhibited RPDs within the control limits.

4. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of three times the RL is applied for soil matrices.

A field duplicate was not performed on a sample within this SDG.

5. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The analytes associated with the LCS analysis must exhibit a percent recovery between the control limits of 80% and 120%.

The LCS analysis exhibited recoveries within the control limits.

6. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR METAL

METALS; SW846 6010D/7471A	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Inductively Coupled Plasma-Atomic Emission Spectrometry (ICP-AES)					
Tier II Validation					
Holding Times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method Blanks		X		X	
B. Equipment/Field Blanks	X				X
Laboratory Control Sample (LCS)		X		X	
Matrix Spike (MS) %R		X	X		
Matrix Spike Duplicate (MSD) %R		X	X		
MS/MSD Precision (RPD)		X		X	
Field/Lab Duplicate (RPD)	X				X
Total vs. Dissolved	X				X

Notes:

%R Percent recovery

RPD Relative percent difference

GENERAL CHEMISTRY ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
Cyanide by SW-846 9012	Water	14 days from collection to analysis	Cool to <6 °C; preserved to a pH of greater than 12.
	Soil		Cool to <6 °C.

All samples were analyzed within the specified holding times.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Analytes were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Matrix Spike/Matrix Spike Duplicate (MS/MSD)/Laboratory Duplicate Analysis

MS/MSD and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

3.1 MS/MSD Analysis

All analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the analyte's concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

The MS/MSD analysis was not performed on a sample within this SDG.

3.2 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the RL. A control limit of 20% for water matrices and 35% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of one times the RL is applied for water matrices and two times the RL for soil matrices.

The laboratory duplicate analysis was not performed on a sample within this SDG.

4. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The analytes associated with the LCS analysis must exhibit a percent recovery between the control limits of 80% and 120%.

The LCS analysis is not required for this analysis.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of three times the RL is applied for soil matrices.

A field duplicate was not performed on a sample within this SDG.

6. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR GENERAL CHEMISTRY

General Chemistry: EPA 9012	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Miscellaneous Instrumentation					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks					X
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R					X
LCS/LCSD Precision (RPD)					X
Matrix Spike (MS) %R	X				X
Matrix Spike Duplicate(MSD) %R	X				X
MS/MSD Precision (RPD)	X				X
Field/Lab Duplicate (RPD)		X		X	
Dilution Factor		X		X	
Moisture Content					X

Notes:
%R - percent recovery
RPD - relative percent difference

VALIDATION PERFORMED BY: Andrew Korycinski

SIGNATURE:

DATE: July 5, 2019

PEER REVIEW: Dennis Capria

DATE: July 22, 2019

CHAIN OF CUSTODY
SAMPLE ANALYSIS DATA SHEETS

SCC

CHAIN OF CUSTODY

SGS North America Inc. - Dayton
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TEL. 732-329-0200 FAX: 732-329-3499/3480
www.sgs.com/ehsusa

FED-EX Tracking #
Bottle Order Control: AR-03919-43
SGS Quote #
SGS Job #: JC86043

Client / Reporting Information

Company Name: Arcadis - US
Street Address: 110 W Fayette St #300
City: Syracuse State: NY Zip: 13202
Project Contact: Cindy Hoyle E-mail: Laurence.Hoyle@Arcadis
Phone #: (315) 346-9443
Sampler(s) Name(s): Phone #: Evan Rea (603) 305-2692

Project Information

Project Name: Philadelphia Coke
Street: 9501 Richmond St
City: Philadelphia State: PA
Project #: B0036790.0001
Client Purchase Order #: B0036790.0001
Project Manager: John Bussel

Billing Information (If different from Report to)
Company Name: SAMC
Street Address:
City State Zip
Attention:

Requested Analysis

SGS Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Grab (G) Comp (C)	Matrix	# of bottles	Number of preserved Bottles: HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	Methanol	VB260TCL20	CN	AB820TCL20	MTAL	Matrix Codes / LAB USE ONLY
1	PCTP-08R (10-12)		4/9/19	0820	EG	G	Soil	5					2	2			1	X	X	X	X	
2	PCTP-10R (7-9)		4/9/19	0910	EG	G	Soil	5					2	2			1	X	X	X	X	
3	PCTP-47R (5-7)		4/9/19	1110	EG	G	Soil	5					2	2			1	X	X	X	X	D50
4	PCTP-32R (6-8)		4/9/19	1310	EG	G	Soil	5					2	2			1	X	X	X	X	P14
5	S-122 (10-12)		4/9/19	1500	EG	G	Soil	5					2	2			1	X	X	X	X	~~MTAL~~ 14I1 4063

Turn Around Time (Business Days)

Approved By (SGS PM): / Date:

- [X] 10 Business Days
- [ ] 5 Business Days
- [ ] 3 Business Days*
- [ ] 2 Business Days*
- [ ] 1 Business Day*
- [ ] Other

All data available via Lablink * Approval needed for 1-3 Business Day TAT

Deliverable

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] NJ Reduced (Level 3)
- [X] Full Tier I (Level 4)
- [ ] Commercial "C"
- [ ] NJ DKQP
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] MA MCP Criteria
- [ ] CT RCP Criteria
- [ ] State Forms
- [ ] EDD Format
- [ ] DOD-QSM5

Commercial "A" = Results only; Commercial "B" = Results + QC Summary
Commercial "C" = Results + QC Summary + Partial Raw data

Comments / Special Instructions

INITIAL ASESSMENT 38 (1)
LABEL VERIFICATION

http://www.sgs.com/en/terms-and-conditions

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by:	Date / Time:	Received By:	Relinquished By:	Date / Time:	Received By:
1		4/9/19 1345	1	2	4/9/19 1805	2
3			3	4		4
5			5	Custody Seal #	Intact / Not Intact	Preserved where applicable / Absent / Therm. ID: / On Ice / Cooler Temp °C

EHSA-QAC-0023-02-FORM-Dayton - Standard COC.xlsx

SGS LabLink@1039014 11:11 10-May-2019

Report of Analysis

Client Sample ID:	PCTP-08R (10-12)		
Lab Sample ID:	JC86043-1	**Date Sampled:**	04/09/19
Matrix:	SO - Soil	**Date Received:**	04/09/19
Method:	SW846 8260C	**Percent Solids:**	72.7
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3C151019.D	1	04/12/19 16:04	PS	n/a	n/a	V3C6794
Run #2							

	Initial Weight
Run #1	4.7 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	98.7	15	7.3	ug/kg	
71-43-2	Benzene	ND	0.73	0.55	ug/kg	
74-97-5	Bromochloromethane	ND	7.3	0.63	ug/kg	
75-27-4	Bromodichloromethane	ND	2.9	0.65	ug/kg	
75-25-2	Bromoform	ND	7.3	0.59	ug/kg	
74-83-9	Bromomethane	ND	7.3	1.5	ug/kg	
78-93-3	2-Butanone (MEK)	ND	15	5.5	ug/kg	
75-15-0	Carbon disulfide	1.4	2.9	1.4	ug/kg	J
56-23-5	Carbon tetrachloride	ND	2.9	0.80	ug/kg	
108-90-7	Chlorobenzene	ND	2.9	0.52	ug/kg	
75-00-3	Chloroethane	ND	7.3	1.0	ug/kg	
67-66-3	Chloroform	ND	2.9	0.54	ug/kg	
74-87-3	Chloromethane	ND	7.3	2.9	ug/kg	
110-82-7	Cyclohexane	ND	2.9	0.59	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.9	1.2	ug/kg	
124-48-1	Dibromochloromethane	ND	2.9	0.49	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.5	0.48	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.5	0.45	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.5	0.53	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.5	0.50	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	7.3	0.93	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.5	0.56	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.5	0.69	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.5	0.96	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.5	1.4	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.5	0.98	ug/kg	
78-87-5	1,2-Dichloropropane	ND	2.9	0.60	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	2.9	0.52	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2.9	0.48	ug/kg	
100-41-4	Ethylbenzene	ND	1.5	0.81	ug/kg	
76-13-1	Freon 113	ND	7.3	1.1	ug/kg	
591-78-6	2-Hexanone	ND	7.3	1.9	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PCTP-08R (10-12)
Lab Sample ID: JC86043-1
Matrix: SO - Soil
Method: SW846 8260C
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/09/19
Date Received: 04/09/19
Percent Solids: 72.7

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	2.9	1.0	ug/kg	
79-20-9	Methyl Acetate	ND	7.3	2.0	ug/kg	
108-87-2	Methylcyclohexane	ND	2.9	1.0	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.5	0.52	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	7.3	2.3	ug/kg	
75-09-2	Methylene chloride	ND	7.3	3.7	ug/kg	
100-42-5	Styrene	ND	2.9	0.84	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.9	0.57	ug/kg	
127-18-4	Tetrachloroethene	ND	2.9	0.68	ug/kg	
108-88-3	Toluene	ND	1.5	0.55	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	7.3	1.5	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	7.3	1.5	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	2.9	0.62	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2.9	0.50	ug/kg	
79-01-6	Trichloroethene	ND	1.5	1.1	ug/kg	
75-69-4	Trichlorofluoromethane	ND	7.3	1.0	ug/kg	
75-01-4	Vinyl chloride	ND	2.9	0.69	ug/kg	
	m,p-Xylene	ND	1.5	1.1	ug/kg	
95-47-6	o-Xylene	ND	1.5	0.85	ug/kg	
1330-20-7	Xylene (total)	ND	1.5	0.85	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	105%		75-127%
17060-07-0	1,2-Dichloroethane-D4	102%		75-130%
2037-26-5	Toluene-D8	100%		80-120%
460-00-4	4-Bromofluorobenzene	101%		79-127%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PCTP-08R (10-12)		
Lab Sample ID:	JC86043-1	**Date Sampled:**	04/09/19
Matrix:	SO - Soil	**Date Received:**	04/09/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	72.7
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2P86515.D	1	04/12/19 19:51	AR	04/10/19 19:00	OP19672	E2P3823
Run #2							

	Initial Weight	Final Volume
Run #1	31.5 g	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	87	22	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	220	27	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	220	37	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	220	78	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	220	160	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	220	47	ug/kg	
95-48-7	2-Methylphenol	ND	87	28	ug/kg	
	3&4-Methylphenol	ND	87	36	ug/kg	
88-75-5	2-Nitrophenol	ND	220	29	ug/kg	
100-02-7	4-Nitrophenol	ND	440	120	ug/kg	
87-86-5	Pentachlorophenol	ND	170	41	ug/kg	
108-95-2	Phenol	ND	87	23	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	220	29	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	220	33	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	220	26	ug/kg	
83-32-9	Acenaphthene	24.8	44	15	ug/kg	J
208-96-8	Acenaphthylene	ND	44	22	ug/kg	
98-86-2	Acetophenone	ND	220	9.4	ug/kg	
120-12-7	Anthracene	ND	44	27	ug/kg	
1912-24-9	Atrazine	ND	87	19	ug/kg	
56-55-3	Benzo(a)anthracene	65.4	44	12	ug/kg	
50-32-8	Benzo(a)pyrene	63.3	44	20	ug/kg	
205-99-2	Benzo(b)fluoranthene	73.1	44	19	ug/kg	
191-24-2	Benzo(g,h,i)perylene	39.5	44	22	ug/kg	J
207-08-9	Benzo(k)fluoranthene	31.3	44	20	ug/kg	J
101-55-3	4-Bromophenyl phenyl ether	ND	87	17	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	87	11	ug/kg	
92-52-4	1,1'-Biphenyl	ND	87	6.0	ug/kg	
100-52-7	Benzaldehyde	ND	220	11	ug/kg	
91-58-7	2-Chloronaphthalene	ND	87	10	ug/kg	
106-47-8	4-Chloroaniline	ND	220	16	ug/kg	
86-74-8	Carbazole	10.3	87	6.3	ug/kg	J

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PCTP-08R (10-12)
Lab Sample ID: JC86043-1
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/09/19
Date Received: 04/09/19
Percent Solids: 72.7

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	87	17	ug/kg	
218-01-9	Chrysene	83.9	44	14	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	87	9.3	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	87	19	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	87	16	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	87	14	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	44	14	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	44	22	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	87	36	ug/kg	
123-91-1	1,4-Dioxane	ND	44	29	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	44	19	ug/kg	
132-64-9	Dibenzofuran	ND	87	18	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	87	7.1	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	87	11	ug/kg	
84-66-2	Diethyl phthalate	ND	87	9.3	ug/kg	
131-11-3	Dimethyl phthalate	ND	87	7.8	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	87	10	ug/kg	
206-44-0	Fluoranthene	85.3	44	19	ug/kg	
86-73-7	Fluorene	ND	44	20	ug/kg	
118-74-1	Hexachlorobenzene	ND	87	11	ug/kg	
87-68-3	Hexachlorobutadiene	ND	44	18	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	440	17	ug/kg	
67-72-1	Hexachloroethane	ND	220	22	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	31.2	44	20	ug/kg	J
78-59-1	Isophorone	ND	87	9.3	ug/kg	
91-57-6	2-Methylnaphthalene	19.5	44	9.9	ug/kg	J
88-74-4	2-Nitroaniline [a]	ND	220	10	ug/kg	
99-09-2	3-Nitroaniline	ND	220	11	ug/kg	
100-01-6	4-Nitroaniline	ND	220	11	ug/kg	
91-20-3	Naphthalene	28.0	44	12	ug/kg	J
98-95-3	Nitrobenzene	ND	87	17	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	87	13	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	220	16	ug/kg	
85-01-8	Phenanthrene	93.4	44	15	ug/kg	
129-00-0	Pyrene	132	44	14	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	220	11	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	54%		23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCTP-08R (10-12)		
Lab Sample ID:	JC86043-1	**Date Sampled:**	04/09/19
Matrix:	SO - Soil	**Date Received:**	04/09/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	72.7
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	65%		27-114%
118-79-6	2,4,6-Tribromophenol	78%		19-152%
4165-60-0	Nitrobenzene-d5	78%		26-134%
321-60-8	2-Fluorobiphenyl	87%		39-124%
1718-51-0	Terphenyl-d14	87%		36-134%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PCTP-10R (7-9)		
Lab Sample ID:	JC86043-2	**Date Sampled:**	04/09/19
Matrix:	SO - Soil	**Date Received:**	04/09/19
Method:	SW846 8260C	**Percent Solids:**	81.7
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3C151020.D	1	04/12/19 16:27	PS	n/a	n/a	V3C6794
Run #2							

	Initial Weight
Run #1	4.0 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	64.7	15	7.6	ug/kg	
71-43-2	Benzene	ND	0.76	0.58	ug/kg	
74-97-5	Bromochloromethane	ND	7.6	0.66	ug/kg	
75-27-4	Bromodichloromethane	ND	3.1	0.68	ug/kg	
75-25-2	Bromoform	ND	7.6	0.62	ug/kg	
74-83-9	Bromomethane	ND	7.6	1.5	ug/kg	
78-93-3	2-Butanone (MEK)	ND	15	5.7	ug/kg	
75-15-0	Carbon disulfide	ND	3.1	1.4	ug/kg	
56-23-5	Carbon tetrachloride	ND	3.1	0.84	ug/kg	
108-90-7	Chlorobenzene	ND	3.1	0.54	ug/kg	
75-00-3	Chloroethane	ND	7.6	1.1	ug/kg	
67-66-3	Chloroform	ND	3.1	0.57	ug/kg	
74-87-3	Chloromethane	ND	7.6	3.0	ug/kg	
110-82-7	Cyclohexane	ND	3.1	0.62	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	3.1	1.3	ug/kg	
124-48-1	Dibromochloromethane	ND	3.1	0.52	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.5	0.50	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.5	0.47	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.5	0.55	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.5	0.53	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	7.6	0.97	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.5	0.59	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.5	0.72	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.5	1.0	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.5	1.5	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.5	1.0	ug/kg	
78-87-5	1,2-Dichloropropane	ND	3.1	0.62	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	3.1	0.54	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	3.1	0.50	ug/kg	
100-41-4	Ethylbenzene	ND	1.5	0.84	ug/kg	
76-13-1	Freon 113	ND	7.6	1.2	ug/kg	
591-78-6	2-Hexanone	ND	7.6	1.9	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PCTP-10R (7-9)
Lab Sample ID: JC86043-2
Matrix: SO - Soil
Method: SW846 8260C
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/09/19
Date Received: 04/09/19
Percent Solids: 81.7

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	3.1	1.1	ug/kg	
79-20-9	Methyl Acetate	ND	7.6	2.1	ug/kg	
108-87-2	Methylcyclohexane	ND	3.1	1.1	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.5	0.54	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	7.6	2.4	ug/kg	
75-09-2	Methylene chloride	ND	7.6	3.8	ug/kg	
100-42-5	Styrene	ND	3.1	0.88	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	3.1	0.60	ug/kg	
127-18-4	Tetrachloroethene	ND	3.1	0.71	ug/kg	
108-88-3	Toluene	ND	1.5	0.58	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	7.6	1.5	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	7.6	1.5	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	3.1	0.65	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	3.1	0.52	ug/kg	
79-01-6	Trichloroethene	ND	1.5	1.2	ug/kg	
75-69-4	Trichlorofluoromethane	ND	7.6	1.0	ug/kg	
75-01-4	Vinyl chloride	ND	3.1	0.72	ug/kg	
	m,p-Xylene	ND	1.5	1.1	ug/kg	
95-47-6	o-Xylene	ND	1.5	0.89	ug/kg	
1330-20-7	Xylene (total)	ND	1.5	0.89	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	106%		75-127%
17060-07-0	1,2-Dichloroethane-D4	104%		75-130%
2037-26-5	Toluene-D8	100%		80-120%
460-00-4	4-Bromofluorobenzene	102%		79-127%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PCTP-10R (7-9)		
Lab Sample ID:	JC86043-2	**Date Sampled:**	04/09/19
Matrix:	SO - Soil	**Date Received:**	04/09/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	81.7
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2P86516.D	1	04/12/19 20:13	AR	04/10/19 19:00	OP19672	E2P3823
Run #2							

	Initial Weight	Final Volume
Run #1	30.3 g	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	81	20	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	200	25	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	200	34	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	200	72	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	200	150	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	200	43	ug/kg	
95-48-7	2-Methylphenol	ND	81	26	ug/kg	
	3&4-Methylphenol	ND	81	33	ug/kg	
88-75-5	2-Nitrophenol	ND	200	27	ug/kg	
100-02-7	4-Nitrophenol	ND	400	110	ug/kg	
87-86-5	Pentachlorophenol	ND	160	38	ug/kg	
108-95-2	Phenol	ND	81	21	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	200	27	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	200	30	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	200	24	ug/kg	
83-32-9	Acenaphthene	234	40	14	ug/kg	
208-96-8	Acenaphthylene	32.0	40	21	ug/kg	J
98-86-2	Acetophenone	ND	200	8.7	ug/kg	
120-12-7	Anthracene	507	40	25	ug/kg	
1912-24-9	Atrazine	ND	81	17	ug/kg	
56-55-3	Benzo(a)anthracene	915	40	11	ug/kg	
50-32-8	Benzo(a)pyrene	836	40	18	ug/kg	
205-99-2	Benzo(b)fluoranthene	934	40	18	ug/kg	
191-24-2	Benzo(g,h,i)perylene	324	40	20	ug/kg	
207-08-9	Benzo(k)fluoranthene	396	40	19	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	81	16	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	81	9.9	ug/kg	
92-52-4	1,1'-Biphenyl	16.0	81	5.5	ug/kg	J
100-52-7	Benzaldehyde	23.0	200	10	ug/kg	J
91-58-7	2-Chloronaphthalene	ND	81	9.6	ug/kg	
106-47-8	4-Chloroaniline	ND	200	15	ug/kg	
86-74-8	Carbazole	155	81	5.9	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PCTP-10R (7-9)
Lab Sample ID: JC86043-2
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/09/19
Date Received: 04/09/19
Percent Solids: 81.7

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	81	16	ug/kg	
218-01-9	Chrysene	1060	40	13	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	81	8.6	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	81	17	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	81	15	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	81	13	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	40	13	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	40	20	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	81	34	ug/kg	
123-91-1	1,4-Dioxane	ND	40	27	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	122	40	18	ug/kg	
132-64-9	Dibenzofuran	94.7	81	16	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	81	6.6	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	81	10	ug/kg	
84-66-2	Diethyl phthalate	ND	81	8.6	ug/kg	
131-11-3	Dimethyl phthalate	ND	81	7.2	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	81	9.5	ug/kg	
206-44-0	Fluoranthene	1690	40	18	ug/kg	
86-73-7	Fluorene	187	40	19	ug/kg	
118-74-1	Hexachlorobenzene	ND	81	10	ug/kg	
87-68-3	Hexachlorobutadiene	ND	40	16	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	400	16	ug/kg	
67-72-1	Hexachloroethane	ND	200	20	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	325	40	19	ug/kg	
78-59-1	Isophorone	ND	81	8.6	ug/kg	
91-57-6	2-Methylnaphthalene	48.0	40	9.1	ug/kg	
88-74-4	2-Nitroaniline [a]	ND	200	9.5	ug/kg	
99-09-2	3-Nitroaniline	ND	200	10	ug/kg	
100-01-6	4-Nitroaniline	ND	200	10	ug/kg	
91-20-3	Naphthalene	78.2	40	11	ug/kg	
98-95-3	Nitrobenzene	ND	81	16	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	81	12	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	200	15	ug/kg	
85-01-8	Phenanthrene	1970	40	14	ug/kg	
129-00-0	Pyrene	1810	40	13	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	200	10	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	47%		23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCTP-10R (7-9)		
Lab Sample ID:	JC86043-2	**Date Sampled:**	04/09/19
Matrix:	SO - Soil	**Date Received:**	04/09/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	81.7
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	57%		27-114%
118-79-6	2,4,6-Tribromophenol	63%		19-152%
4165-60-0	Nitrobenzene-d5	66%		26-134%
321-60-8	2-Fluorobiphenyl	76%		39-124%
1718-51-0	Terphenyl-d14	68%		36-134%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PCTP-47R (5-7)		
Lab Sample ID:	JC86043-3	**Date Sampled:**	04/09/19
Matrix:	SO - Soil	**Date Received:**	04/09/19
Method:	SW846 8260C	**Percent Solids:**	87.5
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3C151022.D	1	04/12/19 17:13	PS	n/a	n/a	V3C6794
Run #2							

	Initial Weight
Run #1	4.9 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	25.9	12	5.8	ug/kg	
71-43-2	Benzene	ND	0.58	0.44	ug/kg	
74-97-5	Bromochloromethane	ND	5.8	0.50	ug/kg	
75-27-4	Bromodichloromethane	ND	2.3	0.52	ug/kg	
75-25-2	Bromoform	ND	5.8	0.47	ug/kg	
74-83-9	Bromomethane	ND	5.8	1.2	ug/kg	
78-93-3	2-Butanone (MEK)	ND	12	4.4	ug/kg	
75-15-0	Carbon disulfide	1.2	2.3	1.1	ug/kg	J
56-23-5	Carbon tetrachloride	ND	2.3	0.64	ug/kg	
108-90-7	Chlorobenzene	ND	2.3	0.41	ug/kg	
75-00-3	Chloroethane	ND	5.8	0.80	ug/kg	
67-66-3	Chloroform	ND	2.3	0.43	ug/kg	
74-87-3	Chloromethane	ND	5.8	2.3	ug/kg	
110-82-7	Cyclohexane	ND	2.3	0.47	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.3	0.97	ug/kg	
124-48-1	Dibromochloromethane	ND	2.3	0.39	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.2	0.38	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.2	0.36	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.2	0.42	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.2	0.40	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	5.8	0.74	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.2	0.45	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.2	0.55	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.2	0.77	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.2	1.1	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.2	0.78	ug/kg	
78-87-5	1,2-Dichloropropane	ND	2.3	0.47	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	2.3	0.41	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2.3	0.38	ug/kg	
100-41-4	Ethylbenzene	ND	1.2	0.64	ug/kg	
76-13-1	Freon 113	ND	5.8	0.89	ug/kg	
591-78-6	2-Hexanone	ND	5.8	1.5	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PCTP-47R (5-7)
Lab Sample ID: JC86043-3
Matrix: SO - Soil
Method: SW846 8260C
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/09/19
Date Received: 04/09/19
Percent Solids: 87.5

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	2.3	0.81	ug/kg	
79-20-9	Methyl Acetate	ND	5.8	1.6	ug/kg	
108-87-2	Methylcyclohexane	ND	2.3	0.82	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.2	0.41	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.8	1.8	ug/kg	
75-09-2	Methylene chloride	ND	5.8	2.9	ug/kg	
100-42-5	Styrene	ND	2.3	0.67	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.3	0.45	ug/kg	
127-18-4	Tetrachloroethene	ND	2.3	0.54	ug/kg	
108-88-3	Toluene	ND	1.2	0.44	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	5.8	1.2	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	5.8	1.2	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	2.3	0.50	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2.3	0.40	ug/kg	
79-01-6	Trichloroethene	ND	1.2	0.89	ug/kg	
75-69-4	Trichlorofluoromethane	ND	5.8	0.79	ug/kg	
75-01-4	Vinyl chloride	ND	2.3	0.55	ug/kg	
	m,p-Xylene	ND	1.2	0.87	ug/kg	
95-47-6	o-Xylene	ND	1.2	0.68	ug/kg	
1330-20-7	Xylene (total)	ND	1.2	0.68	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	104%		75-127%
17060-07-0	1,2-Dichloroethane-D4	102%		75-130%
2037-26-5	Toluene-D8	100%		80-120%
460-00-4	4-Bromofluorobenzene	103%		79-127%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS LabLink@1039014 11:11 10-May-2019

Report of Analysis

Client Sample ID: PCTP-47R (5-7)
Lab Sample ID: JC86043-3
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/09/19
Date Received: 04/09/19
Percent Solids: 87.5

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	P129017.D	1	04/15/19 01:01	CB	04/10/19 19:00	OP19673	EP5838
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	76	19	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	190	23	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	190	32	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	190	68	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	190	140	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	190	41	ug/kg	
95-48-7	2-Methylphenol	ND	76	24	ug/kg	
	3&4-Methylphenol	ND	76	31	ug/kg	
88-75-5	2-Nitrophenol	ND	190	25	ug/kg	
100-02-7	4-Nitrophenol [a]	ND	380	100	ug/kg	
87-86-5	Pentachlorophenol	ND	150	36	ug/kg	
108-95-2	Phenol	ND	76	20	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol [a]	ND	190	25	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	190	28	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	190	23	ug/kg	
83-32-9	Acenaphthene	111	38	13	ug/kg	
208-96-8	Acenaphthylene	110	38	19	ug/kg	
98-86-2	Acetophenone	ND	190	8.2	ug/kg	
120-12-7	Anthracene	364	38	23	ug/kg	
1912-24-9	Atrazine	ND	76	16	ug/kg	
56-55-3	Benzo(a)anthracene	1640	38	11	ug/kg	
50-32-8	Benzo(a)pyrene	1430	38	17	ug/kg	
205-99-2	Benzo(b)fluoranthene	1670	38	17	ug/kg	
191-24-2	Benzo(g,h,i)perylene	908	38	19	ug/kg	
207-08-9	Benzo(k)fluoranthene	721	38	18	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	76	15	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	76	9.3	ug/kg	
92-52-4	1,1'-Biphenyl	13.8	76	5.2	ug/kg	J
100-52-7	Benzaldehyde	ND	190	9.4	ug/kg	UJ
91-58-7	2-Chloronaphthalene	ND	76	9.0	ug/kg	
106-47-8	4-Chloroaniline	ND	190	14	ug/kg	UJ
86-74-8	Carbazole	159	76	5.5	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PCTP-47R (5-7)
Lab Sample ID: JC86043-3
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/09/19
Date Received: 04/09/19
Percent Solids: 87.5

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	76	15	ug/kg	
218-01-9	Chrysene	1720	38	12	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	76	8.1	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	76	16	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	76	14	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	76	12	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	38	12	ug/kg	UJ
606-20-2	2,6-Dinitrotoluene	ND	38	19	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	76	32	ug/kg	UJ
123-91-1	1,4-Dioxane	ND	38	25	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	247	38	17	ug/kg	
132-64-9	Dibenzofuran	65.1	76	15	ug/kg	J
84-74-2	Di-n-butyl phthalate	ND	76	6.2	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	76	9.5	ug/kg	
84-66-2	Diethyl phthalate	ND	76	8.1	ug/kg	
131-11-3	Dimethyl phthalate	ND	76	6.8	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	142	76	8.9	ug/kg	J
206-44-0	Fluoranthene	2600	38	17	ug/kg	
86-73-7	Fluorene	110	38	17	ug/kg	
118-74-1	Hexachlorobenzene	ND	76	9.6	ug/kg	
87-68-3	Hexachlorobutadiene	ND	38	15	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	380	15	ug/kg	
67-72-1	Hexachloroethane	ND	190	19	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	912	38	18	ug/kg	
78-59-1	Isophorone	ND	76	8.1	ug/kg	
91-57-6	2-Methylnaphthalene	41.7	38	8.6	ug/kg	
88-74-4	2-Nitroaniline	ND	190	9.0	ug/kg	
99-09-2	3-Nitroaniline	ND	190	9.5	ug/kg	UJ
100-01-6	4-Nitroaniline	ND	190	9.8	ug/kg	
91-20-3	Naphthalene	70.7	38	11	ug/kg	
98-95-3	Nitrobenzene	ND	76	15	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	76	11	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	190	14	ug/kg	
85-01-8	Phenanthrene	1360	38	13	ug/kg	
129-00-0	Pyrene	2540	38	12	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	190	9.6	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	73%		23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCTP-47R (5-7)		
Lab Sample ID:	JC86043-3	**Date Sampled:**	04/09/19
Matrix:	SO - Soil	**Date Received:**	04/09/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	87.5
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	79%		27-114%
118-79-6	2,4,6-Tribromophenol	59%		19-152%
4165-60-0	Nitrobenzene-d5	90%		26-134%
321-60-8	2-Fluorobiphenyl	87%		39-124%
1718-51-0	Terphenyl-d14	94%		36-134%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PCTP-32R (6-8)		
Lab Sample ID:	JC86043-4	**Date Sampled:**	04/09/19
Matrix:	SO - Soil	**Date Received:**	04/09/19
Method:	SW846 8260C	**Percent Solids:**	75.5
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3C151021.D	1	04/12/19 16:50	PS	n/a	n/a	V3C6794
Run #2							

	Initial Weight
Run #1	5.5 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	204	12	6.0	ug/kg	
71-43-2	Benzene	5.2	0.60	0.45	ug/kg	
74-97-5	Bromochloromethane	ND	6.0	0.52	ug/kg	
75-27-4	Bromodichloromethane	ND	2.4	0.53	ug/kg	
75-25-2	Bromoform	ND	6.0	0.49	ug/kg	
74-83-9	Bromomethane	ND	6.0	1.2	ug/kg	
78-93-3	2-Butanone (MEK)	17.2	12	4.5	ug/kg	
75-15-0	Carbon disulfide	1.8	2.4	1.1	ug/kg	J
56-23-5	Carbon tetrachloride	ND	2.4	0.66	ug/kg	
108-90-7	Chlorobenzene	ND	2.4	0.43	ug/kg	
75-00-3	Chloroethane	ND	6.0	0.83	ug/kg	
67-66-3	Chloroform	ND	2.4	0.45	ug/kg	
74-87-3	Chloromethane	ND	6.0	2.4	ug/kg	
110-82-7	Cyclohexane	ND	2.4	0.49	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.4	1.0	ug/kg	
124-48-1	Dibromochloromethane	ND	2.4	0.41	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.2	0.39	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.2	0.37	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.2	0.43	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.2	0.41	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	6.0	0.76	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.2	0.46	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.2	0.57	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.2	0.79	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.2	1.2	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.2	0.80	ug/kg	
78-87-5	1,2-Dichloropropane	ND	2.4	0.49	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	2.4	0.42	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2.4	0.39	ug/kg	
100-41-4	Ethylbenzene	ND	1.2	0.66	ug/kg	
76-13-1	Freon 113	ND	6.0	0.92	ug/kg	
591-78-6	2-Hexanone	ND	6.0	1.5	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PCTP-32R (6-8)
Lab Sample ID: JC86043-4
Matrix: SO - Soil
Method: SW846 8260C
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/09/19
Date Received: 04/09/19
Percent Solids: 75.5

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	2.4	0.84	ug/kg	
79-20-9	Methyl Acetate	ND	6.0	1.7	ug/kg	
108-87-2	Methylcyclohexane	ND	2.4	0.85	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.2	0.42	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	6.0	1.9	ug/kg	
75-09-2	Methylene chloride	ND	6.0	3.0	ug/kg	
100-42-5	Styrene	ND	2.4	0.69	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.4	0.47	ug/kg	
127-18-4	Tetrachloroethene	ND	2.4	0.56	ug/kg	
108-88-3	Toluene	1.9	1.2	0.45	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	6.0	1.2	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	6.0	1.2	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	2.4	0.51	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2.4	0.41	ug/kg	
79-01-6	Trichloroethene	ND	1.2	0.92	ug/kg	
75-69-4	Trichlorofluoromethane	ND	6.0	0.82	ug/kg	
75-01-4	Vinyl chloride	ND	2.4	0.56	ug/kg	
	m,p-Xylene	1.1	1.2	0.90	ug/kg	J
95-47-6	o-Xylene	ND	1.2	0.70	ug/kg	
1330-20-7	Xylene (total)	1.1	1.2	0.70	ug/kg	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	105%		75-127%
17060-07-0	1,2-Dichloroethane-D4	102%		75-130%
2037-26-5	Toluene-D8	100%		80-120%
460-00-4	4-Bromofluorobenzene	105%		79-127%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS LabLink@1039014 11:11 10-May-2019

Report of Analysis

Client Sample ID: PCTP-32R (6-8)
Lab Sample ID: JC86043-4
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/09/19
Date Received: 04/09/19
Percent Solids: 75.5

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	P129046.D	2	04/15/19 21:19	YC	04/10/19 19:00	OP19673	EP5839
Run #2							

	Initial Weight	Final Volume
Run #1	31.1 g	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	170	42	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	430	52	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	430	73	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	430	150	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	430	320	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	430	91	ug/kg	
95-48-7	2-Methylphenol	218	170	54	ug/kg	
	3&4-Methylphenol	280	170	70	ug/kg	
88-75-5	2-Nitrophenol	ND	430	56	ug/kg	
100-02-7	4-Nitrophenol	ND	850	230	ug/kg	
87-86-5	Pentachlorophenol	ND	340	80	ug/kg	
108-95-2	Phenol	ND	170	44	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	430	56	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	430	64	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	430	51	ug/kg	
83-32-9	Acenaphthene	127	85	29	ug/kg	
208-96-8	Acenaphthylene	74.5	85	43	ug/kg	J
98-86-2	Acetophenone	41.4	430	18	ug/kg	J
120-12-7	Anthracene	132	85	52	ug/kg	
1912-24-9	Atrazine	ND	170	36	ug/kg	
56-55-3	Benzo(a)anthracene	213	85	24	ug/kg	
50-32-8	Benzo(a)pyrene	239	85	39	ug/kg	
205-99-2	Benzo(b)fluoranthene	238	85	38	ug/kg	
191-24-2	Benzo(g,h,i)perylene	184	85	43	ug/kg	
207-08-9	Benzo(k)fluoranthene	103	85	40	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	170	33	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	170	21	ug/kg	
92-52-4	1,1'-Biphenyl	71.8	170	12	ug/kg	J
100-52-7	Benzaldehyde	ND	430	21	ug/kg	
91-58-7	2-Chloronaphthalene	ND	170	20	ug/kg	
106-47-8	4-Chloroaniline	ND	430	31	ug/kg	UJ
86-74-8	Carbazole	39.6	170	12	ug/kg	J

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PCTP-32R (6-8)
Lab Sample ID: JC86043-4
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/09/19
Date Received: 04/09/19
Percent Solids: 75.5

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	170	34	ug/kg	
218-01-9	Chrysene	246	85	27	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	170	18	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	170	37	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	170	31	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	170	28	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	85	26	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	85	43	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	170	71	ug/kg	UJ
123-91-1	1,4-Dioxane	ND	85	56	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	85	38	ug/kg	
132-64-9	Dibenzofuran	96.3	170	35	ug/kg	J
84-74-2	Di-n-butyl phthalate	ND	170	14	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	170	21	ug/kg	
84-66-2	Diethyl phthalate	ND	170	18	ug/kg	
131-11-3	Dimethyl phthalate	ND	170	15	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	170	20	ug/kg	
206-44-0	Fluoranthene	341	85	38	ug/kg	
86-73-7	Fluorene	132	85	39	ug/kg	
118-74-1	Hexachlorobenzene	ND	170	22	ug/kg	
87-68-3	Hexachlorobutadiene	ND	85	34	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	850	34	ug/kg	
67-72-1	Hexachloroethane	ND	430	42	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	161	85	40	ug/kg	
78-59-1	Isophorone	ND	170	18	ug/kg	
91-57-6	2-Methylnaphthalene	492	85	19	ug/kg	
88-74-4	2-Nitroaniline	ND	430	20	ug/kg	
99-09-2	3-Nitroaniline	ND	430	21	ug/kg	UJ
100-01-6	4-Nitroaniline	ND	430	22	ug/kg	
91-20-3	Naphthalene	4880	85	24	ug/kg	
98-95-3	Nitrobenzene	ND	170	33	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	170	25	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	430	31	ug/kg	
85-01-8	Phenanthrene	344	85	29	ug/kg	
129-00-0	Pyrene	401	85	27	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	430	22	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	74%		23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCTP-32R (6-8)		
Lab Sample ID:	JC86043-4	**Date Sampled:**	04/09/19
Matrix:	SO - Soil	**Date Received:**	04/09/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	75.5
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	76%		27-114%
118-79-6	2,4,6-Tribromophenol	76%		19-152%
4165-60-0	Nitrobenzene-d5	94%		26-134%
321-60-8	2-Fluorobiphenyl	83%		39-124%
1718-51-0	Terphenyl-d14	81%		36-134%

(a) Dilution required due to viscosity of the extract matrix.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID: S-122 (10-12)
Lab Sample ID: JC86043-5
Matrix: SO - Soil
Method: SW846 8260C
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/09/19
Date Received: 04/09/19
Percent Solids: 58.5

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	I225322.D	1	04/11/19 15:04	TDN	n/a	n/a	VI9080
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	4.5 g	10.0 ml	100 ul
Run #2			

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	2300	1100	ug/kg	
71-43-2	Benzene	ND	110	85	ug/kg	
74-97-5	Bromochloromethane	ND	1100	97	ug/kg	
75-27-4	Bromodichloromethane	ND	450	100	ug/kg	
75-25-2	Bromoform	ND	1100	91	ug/kg	
74-83-9	Bromomethane	ND	1100	220	ug/kg	
78-93-3	2-Butanone (MEK)	ND	2300	840	ug/kg	
75-15-0	Carbon disulfide	ND	450	210	ug/kg	
56-23-5	Carbon tetrachloride	ND	450	120	ug/kg	
108-90-7	Chlorobenzene	ND	450	80	ug/kg	
75-00-3	Chloroethane	ND	1100	150	ug/kg	
67-66-3	Chloroform	ND	450	84	ug/kg	
74-87-3	Chloromethane	ND	1100	440	ug/kg	
110-82-7	Cyclohexane	ND	450	92	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	450	190	ug/kg	
124-48-1	Dibromochloromethane	ND	450	76	ug/kg	
106-93-4	1,2-Dibromoethane [b]	ND	230	73	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	230	69	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	230	81	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	230	78	ug/kg	
75-71-8	Dichlorodifluoromethane [c]	ND	1100	140	ug/kg	
75-34-3	1,1-Dichloroethane	ND	230	87	ug/kg	
107-06-2	1,2-Dichloroethane	ND	230	110	ug/kg	
75-35-4	1,1-Dichloroethene	ND	230	150	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	230	220	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	230	150	ug/kg	
78-87-5	1,2-Dichloropropane	ND	450	92	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	450	79	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	450	74	ug/kg	
100-41-4	Ethylbenzene	1020	230	120	ug/kg	
76-13-1	Freon 113	ND	1100	170	ug/kg	
591-78-6	2-Hexanone	ND	1100	290	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-122 (10-12)		
Lab Sample ID:	JC86043-5	**Date Sampled:**	04/09/19
Matrix:	SO - Soil	**Date Received:**	04/09/19
Method:	SW846 8260C	**Percent Solids:**	58.5
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	1780	450	160	ug/kg	
79-20-9	Methyl Acetate	ND	1100	310	ug/kg	
108-87-2	Methylcyclohexane	339	450	160	ug/kg	J
1634-04-4	Methyl Tert Butyl Ether	ND	230	79	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	1100	350	ug/kg	
75-09-2	Methylene chloride	829	1100	560	ug/kg	J
100-42-5	Styrene	ND	450	130	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	450	88	ug/kg	
127-18-4	Tetrachloroethene	ND	450	100	ug/kg	
108-88-3	Toluene	212	230	85	ug/kg	J
87-61-6	1,2,3-Trichlorobenzene	ND	1100	230	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	1100	230	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	450	96	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	450	77	ug/kg	
79-01-6	Trichloroethene	ND	230	170	ug/kg	
75-69-4	Trichlorofluoromethane	ND	1100	150	ug/kg	
75-01-4	Vinyl chloride	ND	450	110	ug/kg	
	m,p-Xylene	475	230	170	ug/kg	
95-47-6	o-Xylene	315	230	130	ug/kg	
1330-20-7	Xylene (total)	790	230	130	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	105%		75-127%
17060-07-0	1,2-Dichloroethane-D4	103%		75-130%
2037-26-5	Toluene-D8	102%		80-120%
460-00-4	4-Bromofluorobenzene	113%		79-127%

(a) Diluted due to high concentration of non-target compound.
(b) This compound in BSD is outside in house QC limits bias high.
(c) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	S-122 (10-12)		
Lab Sample ID:	JC86043-5	**Date Sampled:**	04/09/19
Matrix:	SO - Soil	**Date Received:**	04/09/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	58.5
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	P128947.D	5	04/11/19 10:27	CS	04/10/19 19:00	OP19673	EP5835
Run #2	P128965.D	50	04/11/19 21:56	CC	04/10/19 19:00	OP19673	EP5836

	Initial Weight	Final Volume
Run #1	32.0 g	1.0 ml
Run #2	32.0 g	1.0 ml

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	530	130	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	1300	160	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	1300	230	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	1300	480	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	1300	1000	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	1300	290	ug/kg	
95-48-7	2-Methylphenol	ND	530	170	ug/kg	
	3&4-Methylphenol	975	530	220	ug/kg	
88-75-5	2-Nitrophenol	ND	1300	180	ug/kg	
100-02-7	4-Nitrophenol [b]	ND	2700	710	ug/kg	
87-86-5	Pentachlorophenol	ND	1100	250	ug/kg	
108-95-2	Phenol	ND	530	140	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	1300	180	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	1300	200	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	1300	160	ug/kg	
83-32-9	Acenaphthene	55300 [c]	2700	920	ug/kg	D
208-96-8	Acenaphthylene	2040	270	140	ug/kg	
98-86-2	Acetophenone	ND	1300	57	ug/kg	
120-12-7	Anthracene	30400 [c]	2700	1600	ug/kg	D
1912-24-9	Atrazine	ND	530	110	ug/kg	
56-55-3	Benzo(a)anthracene	11200	270	76	ug/kg	
50-32-8	Benzo(a)pyrene	7070	270	120	ug/kg	
205-99-2	Benzo(b)fluoranthene	7330	270	120	ug/kg	
191-24-2	Benzo(g,h,i)perylene	3420	270	130	ug/kg	
207-08-9	Benzo(k)fluoranthene	2730	270	120	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	530	100	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	530	65	ug/kg	
92-52-4	1,1'-Biphenyl	1910	530	37	ug/kg	
100-52-7	Benzaldehyde	ND	1300	66	ug/kg	
91-58-7	2-Chloronaphthalene	ND	530	64	ug/kg	
106-47-8	4-Chloroaniline	ND	1300	96	ug/kg	UJ
86-74-8	Carbazole	7790	530	39	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-122 (10-12)
Lab Sample ID: JC86043-5
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/09/19
Date Received: 04/09/19
Percent Solids: 58.5

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	530	110	ug/kg	
218-01-9	Chrysene	12600	270	84	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	530	57	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	530	120	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	530	96	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	530	87	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	270	83	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	270	130	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	530	220	ug/kg	UJ
123-91-1	1,4-Dioxane	ND	270	180	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	884	270	120	ug/kg	
132-64-9	Dibenzofuran	28000 c	5300	1100	ug/kg	D
84-74-2	Di-n-butyl phthalate	ND	530	44	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	530	67	ug/kg	
84-66-2	Diethyl phthalate	ND	530	57	ug/kg	
131-11-3	Dimethyl phthalate	ND	530	48	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	530	62	ug/kg	
206-44-0	Fluoranthene	42400 c	2700	1200	ug/kg	D
86-73-7	Fluorene	43200 c	2700	1200	ug/kg	D
118-74-1	Hexachlorobenzene	ND	530	68	ug/kg	
87-68-3	Hexachlorobutadiene	ND	270	110	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	2700	110	ug/kg	
67-72-1	Hexachloroethane	ND	1300	130	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	3260	270	130	ug/kg	
78-59-1	Isophorone	ND	530	57	ug/kg	
91-57-6	2-Methylnaphthalene	37600 c	2700	600	ug/kg	D
88-74-4	2-Nitroaniline	ND	1300	63	ug/kg	
99-09-2	3-Nitroaniline	ND	1300	67	ug/kg	UJ
100-01-6	4-Nitroaniline	ND	1300	69	ug/kg	
91-20-3	Naphthalene	26400	270	75	ug/kg	
98-95-3	Nitrobenzene	ND	530	100	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	530	77	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	1300	98	ug/kg	
85-01-8	Phenanthrene	129000 c	2700	900	ug/kg	D
129-00-0	Pyrene	39300 c	2700	850	ug/kg	D
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	1300	68	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	62%	49%	23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-122 (10-12)		
Lab Sample ID:	JC86043-5	**Date Sampled:**	04/09/19
Matrix:	SO - Soil	**Date Received:**	04/09/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	58.5
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	65%	49%	27-114%
118-79-6	2,4,6-Tribromophenol	74%	60%	19-152%
4165-60-0	Nitrobenzene-d5	82%	82%	26-134%
321-60-8	2-Fluorobiphenyl	81%	90%	39-124%
1718-51-0	Terphenyl-d14	91%	92%	36-134%

(a) Dilution required due to viscosity of the extract matrix.
(b) Associated CCV outside of control limits high, sample was ND.
(c) Result is from Run# 2

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PCTP-08R (10-12)
Lab Sample ID: JC86043-1
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/09/19
Date Received: 04/09/19
Percent Solids: 72.7

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	7790 J	66	11	mg/kg	1	04/11/19	04/12/19	ND	SW846 6010D [2]	SW846 3050B [4]
Antimony	0.89 J	2.6	0.54	mg/kg	1	04/11/19	04/12/19	ND	SW846 6010D [2]	SW846 3050B [4]
Arsenic	7.7	2.6	0.37	mg/kg	1	04/11/19	04/12/19	ND	SW846 6010D [2]	SW846 3050B [4]
Barium	114	26	2.5	mg/kg	1	04/11/19	04/12/19	ND	SW846 6010D [2]	SW846 3050B [4]
Beryllium	0.65	0.26	0.11	mg/kg	1	04/11/19	04/12/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cadmium	0.74	0.66	0.093	mg/kg	1	04/11/19	04/12/19	ND	SW846 6010D [2]	SW846 3050B [4]
Calcium	8290	660	58	mg/kg	1	04/11/19	04/12/19	ND	SW846 6010D [2]	SW846 3050B [4]
Chromium	14.9	1.3	0.49	mg/kg	1	04/11/19	04/12/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cobalt	5.5 J	6.6	0.37	mg/kg	1	04/11/19	04/12/19	ND	SW846 6010D [2]	SW846 3050B [4]
Copper	78.3	3.3	1.1	mg/kg	1	04/11/19	04/12/19	ND	SW846 6010D [2]	SW846 3050B [4]
Iron	20700 J	66	25	mg/kg	1	04/11/19	04/12/19	ND	SW846 6010D [2]	SW846 3050B [4]
Lead	193	2.6	0.54	mg/kg	1	04/11/19	04/12/19	ND	SW846 6010D [2]	SW846 3050B [4]
Magnesium	2950	660	18	mg/kg	1	04/11/19	04/12/19	ND	SW846 6010D [2]	SW846 3050B [4]
Manganese	118 J	2.0	0.54	mg/kg	1	04/11/19	04/12/19	ND	SW846 6010D [2]	SW846 3050B [4]
Mercury	0.23	0.037	0.016	mg/kg	1	04/11/19	04/11/19	EAL	SW846 7471B [1]	SW846 7471B [3]
Nickel	14.3	5.3	0.46	mg/kg	1	04/11/19	04/12/19	ND	SW846 6010D [2]	SW846 3050B [4]
Potassium	886 J	1300	42	mg/kg	1	04/11/19	04/12/19	ND	SW846 6010D [2]	SW846 3050B [4]
Selenium	0.95 J	2.6	0.86	mg/kg	1	04/11/19	04/12/19	ND	SW846 6010D [2]	SW846 3050B [4]
Silver	0.34 J	0.66	0.22	mg/kg	1	04/11/19	04/12/19	ND	SW846 6010D [2]	SW846 3050B [4]
Sodium	108 J	1300	100	mg/kg	1	04/11/19	04/12/19	ND	SW846 6010D [2]	SW846 3050B [4]
Thallium	0.77 U	1.3	0.77	mg/kg	1	04/11/19	04/12/19	ND	SW846 6010D [2]	SW846 3050B [4]
Vanadium	21.2	6.6	0.25	mg/kg	1	04/11/19	04/12/19	ND	SW846 6010D [2]	SW846 3050B [4]
Zinc	312	6.6	3.0	mg/kg	1	04/11/19	04/12/19	ND	SW846 6010D [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA46477
(2) Instrument QC Batch: MA46484
(3) Prep QC Batch: MP14056
(4) Prep QC Batch: MP14093

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	PCTP-08R (10-12)		
Lab Sample ID:	JC86043-1	**Date Sampled:**	04/09/19
Matrix:	SO - Soil	**Date Received:**	04/09/19
		Percent Solids:	72.7
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	0.22 J	0.32	0.16	mg/kg	1	04/17/19 16:02	KI	SW846 9012B/LACHAT
Solids, Percent	72.7			%	1	04/10/19 16:05	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: PCTP-10R (7-9)
Lab Sample ID: JC86043-2
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/09/19
Date Received: 04/09/19
Percent Solids: 81.7

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	6490 J	59	9.5	mg/kg	1	04/11/19	04/12/19	ND	SW846 6010D [2]	SW846 3050B [5]
Antimony	1.6 J	2.4	0.48	mg/kg	1	04/11/19	04/12/19	ND	SW846 6010D [2]	SW846 3050B [5]
Arsenic	9.0	2.4	0.33	mg/kg	1	04/11/19	04/12/19	ND	SW846 6010D [2]	SW846 3050B [5]
Barium	489	24	2.2	mg/kg	1	04/11/19	04/12/19	ND	SW846 6010D [2]	SW846 3050B [5]
Beryllium	0.46	0.24	0.094	mg/kg	1	04/11/19	04/12/19	ND	SW846 6010D [2]	SW846 3050B [5]
Cadmium	5.9	0.59	0.082	mg/kg	1	04/11/19	04/12/19	ND	SW846 6010D [2]	SW846 3050B [5]
Calcium	9700	590	52	mg/kg	1	04/11/19	04/12/19	ND	SW846 6010D [2]	SW846 3050B [5]
Chromium	21.0	1.2	0.44	mg/kg	1	04/11/19	04/12/19	ND	SW846 6010D [2]	SW846 3050B [5]
Cobalt	5.8 J	5.9	0.33	mg/kg	1	04/11/19	04/12/19	ND	SW846 6010D [2]	SW846 3050B [5]
Copper	82.5	2.9	0.99	mg/kg	1	04/11/19	04/12/19	ND	SW846 6010D [2]	SW846 3050B [5]
Iron	20300 J	59	23	mg/kg	1	04/11/19	04/12/19	ND	SW846 6010D [2]	SW846 3050B [5]
Lead	2530	12	2.4	mg/kg	5	04/11/19	04/12/19	ND	SW846 6010D [3]	SW846 3050B [5]
Magnesium	6720	590	16	mg/kg	1	04/11/19	04/12/19	ND	SW846 6010D [2]	SW846 3050B [5]
Manganese	181 J	1.8	0.48	mg/kg	1	04/11/19	04/12/19	ND	SW846 6010D [2]	SW846 3050B [5]
Mercury	0.18	0.039	0.017	mg/kg	1	04/11/19	04/11/19	EAL	SW846 7471B [1]	SW846 7471B [4]
Nickel	12.9	4.7	0.41	mg/kg	1	04/11/19	04/12/19	ND	SW846 6010D [2]	SW846 3050B [5]
Potassium	715 J	1200	37	mg/kg	1	04/11/19	04/12/19	ND	SW846 6010D [2]	SW846 3050B [5]
Selenium	0.89 J	2.4	0.76	mg/kg	1	04/11/19	04/12/19	ND	SW846 6010D [2]	SW846 3050B [5]
Silver	0.44 J	0.59	0.20	mg/kg	1	04/11/19	04/12/19	ND	SW846 6010D [2]	SW846 3050B [5]
Sodium	92 U	1200	92	mg/kg	1	04/11/19	04/12/19	ND	SW846 6010D [2]	SW846 3050B [5]
Thallium	0.68 U	1.2	0.68	mg/kg	1	04/11/19	04/12/19	ND	SW846 6010D [2]	SW846 3050B [5]
Vanadium	15.4	5.9	0.22	mg/kg	1	04/11/19	04/12/19	ND	SW846 6010D [2]	SW846 3050B [5]
Zinc	487	5.9	2.7	mg/kg	1	04/11/19	04/12/19	ND	SW846 6010D [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA46477
(2) Instrument QC Batch: MA46484
(3) Instrument QC Batch: MA46494
(4) Prep QC Batch: MP14056
(5) Prep QC Batch: MP14093

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: PCTP-10R (7-9)
Lab Sample ID: JC86043-2
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/09/19
Date Received: 04/09/19
Percent Solids: 81.7

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	0.14 U	0.28	0.14	mg/kg	1	04/17/19 16:03	KI	SW846 9012B/LACHAT
Solids, Percent	81.7			%	1	04/10/19 16:05	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: PCTP-47R (5-7)
Lab Sample ID: JC86043-3
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/09/19
Date Received: 04/09/19
Percent Solids: 87.5

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	11000 J	59	9.5	mg/kg	1	04/11/19	04/12/19	ND	SW846 6010D [2]	SW846 3050B [5]
Antimony	2.2 J	2.4	0.48	mg/kg	1	04/11/19	04/12/19	ND	SW846 6010D [2]	SW846 3050B [5]
Arsenic	7.5	2.4	0.33	mg/kg	1	04/11/19	04/12/19	ND	SW846 6010D [2]	SW846 3050B [5]
Barium	97.9	24	2.2	mg/kg	1	04/11/19	04/12/19	ND	SW846 6010D [2]	SW846 3050B [5]
Beryllium	0.59	0.24	0.094	mg/kg	1	04/11/19	04/12/19	ND	SW846 6010D [2]	SW846 3050B [5]
Cadmium	0.39 J	0.59	0.082	mg/kg	1	04/11/19	04/12/19	ND	SW846 6010D [2]	SW846 3050B [5]
Calcium	37500	1200	100	mg/kg	2	04/11/19	04/12/19	ND	SW846 6010D [3]	SW846 3050B [5]
Chromium	20.6	1.2	0.44	mg/kg	1	04/11/19	04/12/19	ND	SW846 6010D [2]	SW846 3050B [5]
Cobalt	6.0	5.9	0.33	mg/kg	1	04/11/19	04/12/19	ND	SW846 6010D [2]	SW846 3050B [5]
Copper	265	2.9	0.99	mg/kg	1	04/11/19	04/12/19	ND	SW846 6010D [2]	SW846 3050B [5]
Iron	19000 J	59	23	mg/kg	1	04/11/19	04/12/19	ND	SW846 6010D [2]	SW846 3050B [5]
Lead	359	2.4	0.48	mg/kg	1	04/11/19	04/12/19	ND	SW846 6010D [2]	SW846 3050B [5]
Magnesium	12500	590	16	mg/kg	1	04/11/19	04/12/19	ND	SW846 6010D [2]	SW846 3050B [5]
Manganese	299 J	1.8	0.48	mg/kg	1	04/11/19	04/12/19	ND	SW846 6010D [2]	SW846 3050B [5]
Mercury	0.53	0.038	0.017	mg/kg	1	04/11/19	04/11/19	EAL	SW846 7471B [1]	SW846 7471B [4]
Nickel	12.8	4.7	0.41	mg/kg	1	04/11/19	04/12/19	ND	SW846 6010D [2]	SW846 3050B [5]
Potassium	1460	1200	37	mg/kg	1	04/11/19	04/12/19	ND	SW846 6010D [2]	SW846 3050B [5]
Selenium	0.77 U	2.4	0.77	mg/kg	1	04/11/19	04/12/19	ND	SW846 6010D [2]	SW846 3050B [5]
Silver	0.48 J	0.59	0.20	mg/kg	1	04/11/19	04/12/19	ND	SW846 6010D [2]	SW846 3050B [5]
Sodium	135 J	1200	92	mg/kg	1	04/11/19	04/12/19	ND	SW846 6010D [2]	SW846 3050B [5]
Thallium	0.68 U	1.2	0.68	mg/kg	1	04/11/19	04/12/19	ND	SW846 6010D [2]	SW846 3050B [5]
Vanadium	27.0	5.9	0.22	mg/kg	1	04/11/19	04/12/19	ND	SW846 6010D [2]	SW846 3050B [5]
Zinc	244	5.9	2.7	mg/kg	1	04/11/19	04/12/19	ND	SW846 6010D [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA46477
(2) Instrument QC Batch: MA46484
(3) Instrument QC Batch: MA46494
(4) Prep QC Batch: MP14056
(5) Prep QC Batch: MP14093

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: PCTP-47R (5-7)
Lab Sample ID: JC86043-3
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/09/19
Date Received: 04/09/19
Percent Solids: 87.5

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	0.20 J	0.26	0.13	mg/kg	1	04/17/19 16:04	KI	SW846 9012B/LACHAT
Solids, Percent	87.5			%	1	04/10/19 16:05	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: PCTP-32R (6-8)
Lab Sample ID: JC86043-4
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/09/19
Date Received: 04/09/19
Percent Solids: 75.5

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	4290 J	65	10	mg/kg	1	04/11/19	04/11/19	ND	SW846 6010D [2]	SW846 3050B [5]
Antimony	0.53 U J	2.6	0.53	mg/kg	1	04/11/19	04/11/19	ND	SW846 6010D [2]	SW846 3050B [5]
Arsenic	3.9	2.6	0.36	mg/kg	1	04/11/19	04/11/19	ND	SW846 6010D [2]	SW846 3050B [5]
Barium	30.3	26	2.5	mg/kg	1	04/11/19	04/11/19	ND	SW846 6010D [2]	SW846 3050B [5]
Beryllium	0.22 J	0.26	0.10	mg/kg	1	04/11/19	04/11/19	ND	SW846 6010D [2]	SW846 3050B [5]
Cadmium	0.13 J	0.65	0.091	mg/kg	1	04/11/19	04/11/19	ND	SW846 6010D [2]	SW846 3050B [5]
Calcium	65200	3200	290	mg/kg	5	04/11/19	04/12/19	ND	SW846 6010D [3]	SW846 3050B [5]
Chromium	14.6	1.3	0.48	mg/kg	1	04/11/19	04/11/19	ND	SW846 6010D [2]	SW846 3050B [5]
Cobalt	4.2 J	6.5	0.36	mg/kg	1	04/11/19	04/11/19	ND	SW846 6010D [2]	SW846 3050B [5]
Copper	13.8	3.2	1.1	mg/kg	1	04/11/19	04/11/19	ND	SW846 6010D [2]	SW846 3050B [5]
Iron	9540 J	65	25	mg/kg	1	04/11/19	04/11/19	ND	SW846 6010D [2]	SW846 3050B [5]
Lead	21.3	2.6	0.53	mg/kg	1	04/11/19	04/11/19	ND	SW846 6010D [2]	SW846 3050B [5]
Magnesium	37200	650	18	mg/kg	1	04/11/19	04/11/19	ND	SW846 6010D [2]	SW846 3050B [5]
Manganese	196 J	1.9	0.53	mg/kg	1	04/11/19	04/11/19	ND	SW846 6010D [2]	SW846 3050B [5]
Mercury	0.21	0.038	0.016	mg/kg	1	04/11/19	04/11/19	EAL	SW846 7471B [1]	SW846 7471B [4]
Nickel	8.6	5.2	0.45	mg/kg	1	04/11/19	04/11/19	ND	SW846 6010D [2]	SW846 3050B [5]
Potassium	679 J	1300	41	mg/kg	1	04/11/19	04/11/19	ND	SW846 6010D [2]	SW846 3050B [5]
Selenium	0.84 U	2.6	0.84	mg/kg	1	04/11/19	04/11/19	ND	SW846 6010D [2]	SW846 3050B [5]
Silver	0.22 U	0.65	0.22	mg/kg	1	04/11/19	04/11/19	ND	SW846 6010D [2]	SW846 3050B [5]
Sodium	100 U	1300	100	mg/kg	1	04/11/19	04/11/19	ND	SW846 6010D [2]	SW846 3050B [5]
Thallium	0.75 U	1.3	0.75	mg/kg	1	04/11/19	04/11/19	ND	SW846 6010D [2]	SW846 3050B [5]
Vanadium	10.6	6.5	0.25	mg/kg	1	04/11/19	04/11/19	ND	SW846 6010D [2]	SW846 3050B [5]
Zinc	66.5	6.5	3.0	mg/kg	1	04/11/19	04/11/19	ND	SW846 6010D [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA46477
(2) Instrument QC Batch: MA46484
(3) Instrument QC Batch: MA46494
(4) Prep QC Batch: MP14056
(5) Prep QC Batch: MP14093

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: PCTP-32R (6-8)
Lab Sample ID: JC86043-4
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/09/19
Date Received: 04/09/19
Percent Solids: 75.5

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	0.45	0.31	0.15	mg/kg	1	04/17/19 16:06	KI	SW846 9012B/LACHAT
Solids, Percent	75.5			%	1	04/10/19 16:05	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: S-122 (10-12)
Lab Sample ID: JC86043-5
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/09/19
Date Received: 04/09/19
Percent Solids: 58.5

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	18200 J	85	14	mg/kg	1	04/11/19	04/12/19	ND	SW846 6010D [2]	SW846 3050B [4]
Antimony	1.5 J	3.4	0.70	mg/kg	1	04/11/19	04/12/19	ND	SW846 6010D [2]	SW846 3050B [4]
Arsenic	49.4	3.4	0.48	mg/kg	1	04/11/19	04/12/19	ND	SW846 6010D [2]	SW846 3050B [4]
Barium	187	34	3.2	mg/kg	1	04/11/19	04/12/19	ND	SW846 6010D [2]	SW846 3050B [4]
Beryllium	1.2	0.34	0.14	mg/kg	1	04/11/19	04/12/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cadmium	2.2	0.85	0.12	mg/kg	1	04/11/19	04/12/19	ND	SW846 6010D [2]	SW846 3050B [4]
Calcium	4120	850	75	mg/kg	1	04/11/19	04/12/19	ND	SW846 6010D [2]	SW846 3050B [4]
Chromium	200	1.7	0.63	mg/kg	1	04/11/19	04/12/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cobalt	17.5	8.5	0.48	mg/kg	1	04/11/19	04/12/19	ND	SW846 6010D [2]	SW846 3050B [4]
Copper	127	4.3	1.4	mg/kg	1	04/11/19	04/12/19	ND	SW846 6010D [2]	SW846 3050B [4]
Iron	31600 J	85	33	mg/kg	1	04/11/19	04/12/19	ND	SW846 6010D [2]	SW846 3050B [4]
Lead	251	3.4	0.70	mg/kg	1	04/11/19	04/12/19	ND	SW846 6010D [2]	SW846 3050B [4]
Magnesium	4630	850	23	mg/kg	1	04/11/19	04/12/19	ND	SW846 6010D [2]	SW846 3050B [4]
Manganese	751 J	2.6	0.70	mg/kg	1	04/11/19	04/12/19	ND	SW846 6010D [2]	SW846 3050B [4]
Mercury	1.1	0.047	0.021	mg/kg	1	04/11/19	04/11/19	EAL	SW846 7471B [1]	SW846 7471B [3]
Nickel	31.2	6.8	0.60	mg/kg	1	04/11/19	04/12/19	ND	SW846 6010D [2]	SW846 3050B [4]
Potassium	2130	1700	54	mg/kg	1	04/11/19	04/12/19	ND	SW846 6010D [2]	SW846 3050B [4]
Selenium	1.5 J	3.4	1.1	mg/kg	1	04/11/19	04/12/19	ND	SW846 6010D [2]	SW846 3050B [4]
Silver	1.1	0.85	0.29	mg/kg	1	04/11/19	04/12/19	ND	SW846 6010D [2]	SW846 3050B [4]
Sodium	202 J	1700	130	mg/kg	1	04/11/19	04/12/19	ND	SW846 6010D [2]	SW846 3050B [4]
Thallium	0.99 U	1.7	0.99	mg/kg	1	04/11/19	04/12/19	ND	SW846 6010D [2]	SW846 3050B [4]
Vanadium	36.9	8.5	0.32	mg/kg	1	04/11/19	04/12/19	ND	SW846 6010D [2]	SW846 3050B [4]
Zinc	684	8.5	3.9	mg/kg	1	04/11/19	04/12/19	ND	SW846 6010D [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA46477
(2) Instrument QC Batch: MA46484
(3) Prep QC Batch: MP14056
(4) Prep QC Batch: MP14093

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	S-122 (10-12)		
Lab Sample ID:	JC86043-5	**Date Sampled:**	04/09/19
Matrix:	SO - Soil	**Date Received:**	04/09/19
		Percent Solids:	58.5
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	0.20 U	0.39	0.20	mg/kg	1	04/17/19 16:10	KI	SW846 9012B/LACHAT
Solids, Percent	58.5			%	1	04/10/19 16:05	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

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Philly Coke

DATA REVIEW

Philadelphia, Pennsylvania

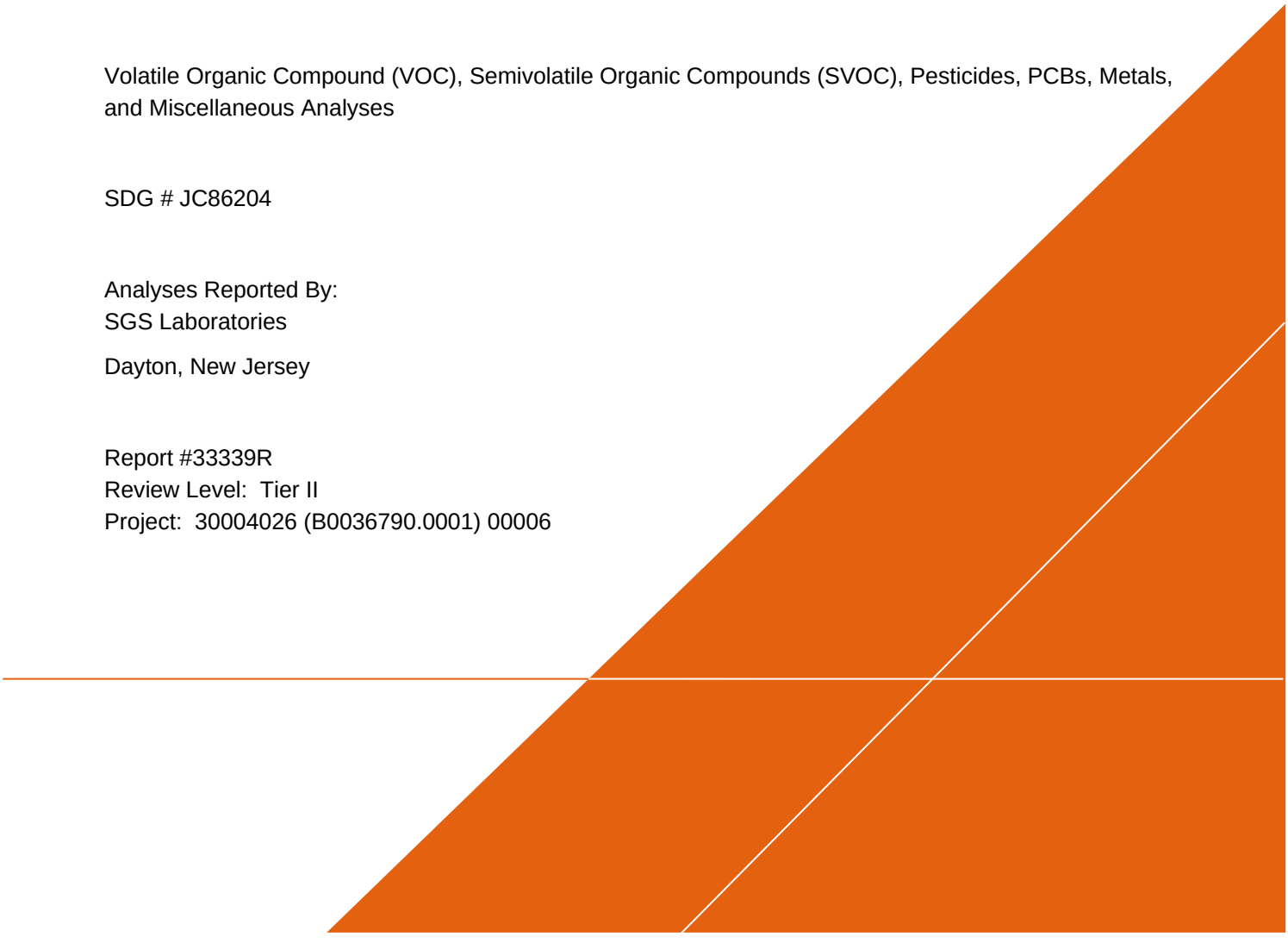
Volatile Organic Compound (VOC), Semivolatile Organic Compounds (SVOC), Pesticides, PCBs, Metals, and Miscellaneous Analyses

SDG # JC86204

Analyses Reported By:
SGS Laboratories

Dayton, New Jersey

Report #33339R
Review Level: Tier II
Project: 30004026 (B0036790.0001) 00006



SUMMARY

This data review report summarizes the review of Sample Delivery Group (SDG) #JC86204 for samples collected in association with the National Grid Philly Coke site in Philadelphia, Pennsylvania. The review was conducted as a Tier II evaluation and included review of laboratory analytical data package completeness. Field documentation was not included in this review. Included with this assessment are the post-validation annotated sample result sheets, and chain of custody (COC). Analyses were performed on the following samples

SDG Number	Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis				
						VOC	SVOC	PEST/ PCB	Metals	MISC
JC86204	PSSTP-01R(5-6) (04-10-2019)	JC86204-1	Soil	4/10/2019		X	X	X	X	X
	S-139(0.0-0.5) (04-10-2019)	JC86204-2	Soil	4/10/2019				PCB		
	S-139(0.5-2.0) (04-10-2019)	JC86204-3	Soil	4/10/2019				PCB		
	PCTP-73R(0.0-0.5) (04-10-2019)	JC86204-4	Soil	4/10/2019		X	X	X	X	X
	S-140(0.0-0.5) (04-10-2019)	JC86204-5	Soil	4/10/2019				PCB		
	S-140(0.5-2.0) (04-10-2019)	JC86204-6	Soil	4/10/2019				PCB		
	S-104(10-12) (04-10-2019)	JC86204-7	Soil	4/10/2019		X	X			
	S-104(15.5-17.5) (04-10-2019)	JC86204-8	Soil	4/10/2019		X	X			
	S-101(10-12) (04-10-2019)	JC86204-9	Soil	4/10/2019		X	X			
	S-101(14.5-16.5) (04-10-2019)	JC86204-10	Soil	4/10/2019		X	X			
	S-102(10-12) (04-10-2019)	JC86204-11	Soil	4/10/2019		X	X			
	S-102(13.5-15.5) (04-10-2019)	JC86204-12	Soil	4/10/2019		X	X			
	PCTP-75R(10-12) (04-11-2019)	JC86204-13	Soil	4/11/2019		X	X		X	X
	PCTP-75R(14-16) (04-11-2019)	JC86204-14	Soil	4/11/2019		X	X		X	X
	S-103(10-12) (04-11-2019)	JC86204-15	Soil	4/11/2019		X	X			
	S-103(13-15) (04-11-2019)	JC86204-16	Soil	4/11/2019		X	X			
	PSSTP-04R(1-2) (04-11-2019)	JC86204-17	Soil	4/11/2019		X	X	X	X	X
	PSSTP-04R(7-8) (04-11-2019)	JC86204-18	Soil	4/11/2019		X	X	X	X	X
	PSSTP-04R(8-9) (04-11-2019)	JC86204-19	Soil	4/11/2019		X	X	X	X	X
	PSSTP-04R(16-17) (04-11-2019)	JC86204-20	Soil	4/11/2019		X	X	X	X	X
	PCTP-28R(6-8) (04-11-2019)	JC86204-21	Soil	4/11/2019		X	X		X	X
	PCTP-28R(11-12) (04-11-2019)	JC86204-22	Soil	4/11/2019		X	X		X	X

Notes:

1. PEST/PCB = Pesticides and polychlorinated biphenyls
2. SVOC = Semivolatile Organic Compounds
3. VOC = Volatile Organic Compound

4. MISC = Miscellaneous (total cyanide)

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance (QA) or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260C and 8270D. Data were reviewed in accordance with the USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540/R-2017-002, January 2017 and the USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Organic Data Review, EPA540/R-99/008, October 1999 (as applicable).

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers
  - U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
  - B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- Quantitation (Q) Qualifiers
  - E The compound was quantitated above the calibration range.
  - D Concentration is based on a diluted sample analysis.
- Validation Qualifiers
  - J The compound was positively identified; however, the associated numerical value is an estimated concentration only.
  - UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.
  - JN The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.
  - UB Compound considered non-detect at the listed value due to associated blank contamination.
  - N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.
  - R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is

that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times/Preservation

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260C	Water	14 days from collection to analysis (preserved) 7 days from collection to analysis (non-preserved)	Cool to <6 °C; preserved to a pH of less than 2 s.u.
	Soil	48 hours from collection to extraction and 14 days from extraction to analysis	Cool to <6 °C.

Note:
s.u. Standard units

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore, detected sample results were not associated with blank contamination.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. VOC analysis requires that all surrogates associated with the analysis exhibit recoveries within the laboratory-established acceptance limits.

All surrogate recoveries were within control limits.

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

Sample locations associated with the MS/MSD exhibiting recoveries outside of the control limits are presented in the following table.

Sample Locations	Compound	MS Recovery	MSD Recovery
PSSTP-01R(5-6) (04-10-2019)	Methyl Acetate	<LL but >10%	--
	1,1,2,2-Tetrachloroethane	<10%	--
	Trichloroethene	>UL	--

The criteria used to evaluate the MS/MSD recoveries are presented in the following table. In the case of an MS/MSD deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> the upper control limit (UL)	Non-detect	No Action
	Detect	J
< the lower control limit (LL) but > 10%	Non-detect	UJ
	Detect	J
< 10%	Non-detect	R
	Detect	J
Parent sample concentration > four times the MS/MSD spiking solution concentration.	Detect	No Action
	Non-detect	

5. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) Analysis

The LCS/LCSD analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS/LCSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

Sample locations associated with LCS/LCSD analysis exhibiting recoveries outside of the control limits presented in the following table.

Sample Locations	Compound	LCS Recovery	LCSD Recovery
PSSTP-04R(7-8) (04-11-2019) PSSTP-04R(8-9) (04-11-2019)	1,2-Dibromoethane	>UL	AC

Note:
AC = Acceptable

The criteria used to evaluate the LCS/LCSD recoveries are presented in the following table. In the case of an LCS/LCSD deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> the upper control limit (UL)	Non-detect	No Action
	Detect	J
< the lower control limit (LL) but > 10%	Non-detect	UJ
	Detect	J
< 10%	Non-detect	R
	Detect	J

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of three times the RL is applied for soil matrices.

A field duplicate was not performed on a sample within this SDG.

7. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

8. System Performance and Overall Assessment

The laboratory narrative indicates continuing calibration deviations. These deviations are normally not evaluated in a tier II data review. Sample results that had continuing calibration recoveries that exceed the control limit high and were non detect did not require qualification. Sample results where the calibration recoveries were high and the compound was detected or calibration recoveries were low were qualified as estimated (J or UJ). No volatile results required qualification due to calibration exceedances.

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: SW-846 8260	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks	X				X
C. Trip blanks	X				X
Laboratory Control Sample (LCS)		X		X	
Laboratory Control Sample Duplicate(LCSD)		X		X	
LCS/LCSD Precision (RPD)		X		X	
Matrix Spike (MS)		X	X		
Matrix Spike Duplicate(MSD)	X				X
MS/MSD Precision (RPD)	X				X
Field/Lab Duplicate (RPD)	X				X
Surrogate Spike Recoveries		X		X	
Dilution Factor		X		X	
Moisture Content		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

SEMIVOLATILE ORGANIC COMPOUND (SVOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8270D	Water	7 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C
	Soil	14 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. SVOC analysis requires that two of the three SVOC surrogate compounds within each fraction exhibit recoveries within the laboratory-established acceptance limits.

Sample locations associated with surrogates exhibiting recoveries outside of the control limits presented in the following table.

Sample Locations	Surrogate	Recovery
PSSTP-01R(5-6) (04-10-2019)	Phenol-d6	AC
	2-Fluorophenol	AC
	2,4,6-Tribromophenol	< 10%
	Nitrobenzene-d5	AC
	2-Fluorobiphenyl	AC
	Terphenyl-d14	AC

Notes:

AC Acceptable

The criteria used to evaluate the surrogate recoveries are presented in the following table. In the case of a surrogate deviation, the sample results associated with the deviant fraction are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> UL	Non-detect	No Action
	Detect	J
< LL but > 10%	Non-detect	UJ
	Detect	J
< 10%	Non-detect	R
	Detect	J

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

The MS/MSD exhibited acceptable recoveries and RPD between the MS/MSD recoveries.

5. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) Analysis

The LCS/LCSD analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS/LCSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

The LCS/LCSD exhibited acceptable recoveries and RPD between the MS/MSD recoveries.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of three times the RL is applied for soil matrices.

A field duplicate was not performed on a sample within this SDG.

7. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

Several samples were diluted to bring target compounds within linear range of the instrument. Sample results that were reported from a secondary dilution were qualified with a “D”, indicating the result is diluted.

8. System Performance and Overall Assessment

The laboratory narrative indicates continuing calibration deviations. These deviations are normally not evaluated in a tier II data review. Sample results that had continuing calibration recoveries that exceed the control limit high and were non detect did not require qualification. Sample results where the calibration recoveries were high and the compound was detected or calibration recoveries were low were qualified as estimated (J or UJ).

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR SVOCs

SVOCs: SW-846 8270	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks		X		X	
Laboratory Control Sample (LCS) %R		X	X		
Laboratory Control Sample Duplicate(LCSD) %R	X				X
LCS/LCSD Precision (RPD)	X				X
Matrix Spike (MS) %R		X	X		
Matrix Spike Duplicate(MSD) %R		X	X		
MS/MSD Precision (RPD)		X		X	
Field/Lab Duplicate (RPD)	X				X
Surrogate Spike Recoveries		X		X	
Dilution Factor		X		X	
Moisture Content		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

PESTICIDE ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8081A	Water	7 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C
	Soil	14 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. Herbicide analysis requires that one of the two pesticide surrogate compounds exhibit recoveries within the laboratory-established acceptance limits.

Sample locations associated with surrogates exhibiting recoveries outside of the control limits presented in the following table.

Sample Locations	Surrogate	Recovery
PSSTP-01R(5-6)	Tetrachloro-m-xylene	AC
PSSTP-04R(1-2)	Decachlorobiphenyl	> UL
PSSTP-04R(7-8)	Tetrachloro-m-xylene	<LL but >10%
	Decachlorobiphenyl	AC

Notes:
Upper control limit (UL)
Lower control limit (LL)
Acceptable (AC)

The criteria used to evaluate the surrogate recoveries are presented in the following table. In the case of a surrogate deviation, the sample results associated with the deviant fraction are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> the upper control limit (UL)	Non-detect	No Action
	Detect	J
< the lower control limit (LL) but > 10%	Non-detect	UJ
	Detect	J
< 10%	Non-detect	R
	Detect	J
One surrogate exhibiting recovery outside the control limits but > 10%	Non-detect	No Action
	Detect	

3. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

Sample locations associated with the MS/MSD exhibiting recoveries outside of the control limits are presented in the following table.

Sample Locations	Compound	MS Recovery	MSD Recovery
PSSTP-01R(5-6) (04-10-2019)	Aldrin	<10%	<10%
	gamma-Chlordane	>UL	AC
	4,4'-DDD	>UL	AC
	4,4'-DDE	<10%	<10%
	4,4'-DDT	>UL	AC
	Endrin aldehyde	>UL	>UL
	Endosulfan-II	>UL	AC
	Heptachlor	<10%	<10%
	Heptachlor epoxide	<10%	<10%
	Methoxychlor	>UL	>UL
	Endrin ketone	>UL	>UL

Note:

AC Acceptable

The criteria used to evaluate the MS/MSD recoveries are presented in the following table. In the case of an MS/MSD deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> the upper control limit (UL)	Non-detect	No Action
	Detect	J
< the lower control limit (LL) but > 10%	Non-detect	UJ
	Detect	J
< 10%	Non-detect	R
	Detect	J
Parent sample concentration > four times the MS/MSD spiking solution concentration.	Detect	No Action
	Non-detect	

Sample locations associated with MS/MSD recoveries exhibiting an RPD greater than of the control limit presented in the following table.

Sample Locations	Compound
PSSTP-01R(5-6) (04-10-2019)	alpha-BHC
	delta-BHC
	gamma-BHC (Lindane)
	gamma-Chlordane
	4,4'-DDD
	4,4'-DDT
	Endrin
	Methoxychlor

The criteria used to evaluate the RPD between the MS/MSD recoveries are presented in the following table. In the case of an RPD deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> UL	Non-detect	UJ
	Detect	J

5. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

All compounds associated with the LCS analysis exhibited recoveries within the control limits.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 40% for water matrices and 70% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

A field duplicate was not performed on a sample within this SDG.

7. Compound Identification

The retention times of all quantitated peaks must fall within the calculated retention time windows for both the primary and confirmation columns. When dual column analysis is performed the percent difference (%D) of detected sample results must be less than 40%.

Sample locations associated with %D analysis exhibiting recoveries outside of the control limits presented in the following table.

Sample Locations	Compound	%D
PSSTP-01R(5-6)	Aldrin	96.1%
	Dieldrin	102%
	4,4'-DDE	45.2%
	4,4'-DDT	90.8%
	Endosulfan-I	132.9%
	Endrin ketone	80.8%
PCTP-73R(0.0-0.5)	4,4'-DDE	59.6%
	4,4'-DDT	103.4%
	Heptachlor epoxide	100.7%
PSSTP-04R(1-2)	Aldrin	105.1%
	4,4'-DDT	54.6%
	Endrin aldehyde	86.3%
	Heptachlor epoxide	137.3%
PSSTP-04R(7-8)	4,4'-DDE	91.9%
	4,4'-DDT	133.7%
PSSTP-04R(8-9)	Endosulfan-I	70.2%
PSSTP-04R(16-17)	gamma-BHC (Lindane)	147.5%

The criteria used to evaluate the %D are presented in the following table. In the case of a %D deviation, the sample results are qualified as documented in the table below.

Control Limit (%D)	Qualification
>40% to 70%	J
>70% to 100%	JN
>100% [1]	R
>100% to 200% (Interference detected)[2]	J or JN
>50% (pesticide) sample results less than the RL)	U

When the pesticide sample results are less than the RL and the %D greater than 50% the sample result are raised to the RL and reported as non-detect.

Notes:

1: If the pattern is confirmed sample results will be qualified as estimated (J). If pattern exhibits interference or if the pesticide cannot be positively determined due to weathering the sample results will be qualified as tentative identification estimate (JN).

2: If interference is detected in either column the sample results will be qualified as tentative identification estimate (JN).

8. System Performance and Overall Assessment

The laboratory narrative indicates continuing calibration deviations. These deviations are normally not evaluated in a tier II data review. Sample results that had continuing calibration recoveries that exceed the control limit high and were non detect did not require qualification. Sample results where the calibration recoveries were high and the compound was detected or calibration recoveries were low were qualified as estimated (J or UJ).

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR PESTICIDES

Pesticides; SW-846 8081	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY (GC/ECD)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks	X				X
Laboratory Control Sample (LCS)		X		X	
Laboratory Control Sample Duplicate(LCSD)	X				X
LCS/LCSD Precision (RPD)	X				X
Matrix Spike (MS)		X	X		
Matrix Spike Duplicate(MSD)		X	X		
MS/MSD Precision (RPD)		X	X		
Field/Lab Duplicate (RPD)	X				X
Surrogate Spike Recoveries		X	X		
Column %D $\leq$ 40% (If dual column is performed for reporting-not confirmation)		X	X		
Dilution Factor		X		X	
Moisture Content		X		X	

Notes:

%RSD – relative standard deviation
%R - percent recovery
RPD - relative percent difference
%D – difference.

POLYCHLORINATED BIPHENYLS (PCBs) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8082A	Soil	14 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore, detected sample results were not associated with blank contamination.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. PCB analysis requires that one of the two PCB surrogate compounds exhibit recoveries within the laboratory-established acceptance limits.

Sample locations associated with surrogates exhibiting recoveries outside of the control limits presented in the following table.

Sample Locations	Surrogate	Recovery
PSSTP-04R(7-8) (04-11-2019)	Tetrachloro-m-xylene	> UL
PSSTP-04R(8-9) (04-11-2019)	Decachlorobiphenyl	> UL
PSSTP-04R(16-17) (04-11-2019)	Tetrachloro-m-xylene	AC
	Decachlorobiphenyl	> UL

Notes:
Upper control limit (UL)
Lower control limit (LL)
Acceptable (AC)

The criteria used to evaluate the surrogate recoveries are presented in the following table. In the case of a surrogate deviation, the sample results associated with the deviant fraction are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> the upper control limit (UL)	Non-detect	No Action
	Detect	J
< the lower control limit (LL) but > 10%	Non-detect	UJ
	Detect	J
< 10%	Non-detect	R
	Detect	J
One surrogate exhibiting recovery outside the control limits but > 10%	Non-detect	No Action
	Detect	

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

The MS/MSD was not performed on a sample within this SDG.

5. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

All compounds associated with the LCS analysis exhibited recoveries within the control limits.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of three times the RL is applied for soil matrices.

A field duplicate was not performed on a sample within this SDG.

7. Compound Identification

The retention times of all quantitated peaks must fall within the calculated retention time windows for both the primary and confirmation columns. When dual column analysis is performed the relative percent difference (%RPD) of detected sample results must be less than 40%.

Sample locations associated with %D analysis exhibiting recoveries outside of the control limits presented in the following table.

Sample Locations	Compound	%D
PSSTP-04R(1-2)	Aroclor 1254	46.1%

The criteria used to evaluate the %D are presented in the following table. In the case of a %D deviation, the sample results are qualified as documented in the table below.

Control Limit (%D)	Qualification
>40% to 70%	J
>70% to 100%	JN
>100% [1]	R
>100% to 200% (Interference detected)[2]	J or JN
>50% (pesticide) sample results less than the RL)	U

When the pesticide sample results are less than the RL and the %D greater than 50% the sample result are raised to the RL and reported as non-detect.

Notes:

1: If the pattern is confirmed sample results will be qualified as estimated (J). If pattern exhibits interference or if the pesticide cannot be positively determined due to weathering the sample results will be qualified as tentative identification estimate (JN).

2: If interference is detected in either column the sample results will be qualified as tentative identification estimate (JN).

8. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR PCBs

PCBs; SW-846 8082A	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY (GC/ECD)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks					X
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R					X
LCS/LCSD Precision (RPD)					X
Matrix Spike (MS) %R	X				X
Matrix Spike Duplicate(MSD) %R	X				X
MS/MSD Precision (RPD)	X				X
Field/Lab Duplicate (RPD)	X				X
Surrogate Spike Recoveries		X	X		
Column (%D) (If dual column is performed-not confirmation purposes only)		X	X		
Dilution Factor		X		X	
Moisture Content		X		X	

%R - percent recovery

RPD - relative percent difference

%D – difference

INORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 6010D, 7471A, and 9012B. Data were reviewed in accordance with the USEPA CLP National Functional Guidelines for Inorganic Superfund Methods Data Review, EPA 540/R-2017-001, January 2017; and the USEPA CLP National Functional Guidelines for Inorganic Data Review, EPA 540-R-01-008, July 2002 (as applicable).

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and that it was already subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with the USEPA National Functional Guidelines:

- Concentration (C) Qualifiers
  - U The analyte was analyzed for but not detected. The associated value is the analyte instrument detection limit.
  - J The reported value was obtained from a reading less than the reporting limit (RL), but greater than or equal to the method detection limit (MDL).
- Quantitation (Q) Qualifiers
  - E The reported value is estimated due to the presence of interference.
  - N Spiked sample recovery is not within control limits.
  - * Duplicate analysis is not within control limits.
- Validation Qualifiers
  - J The analyte was positively identified; however, the associated numerical value is an estimated concentration only.
  - UJ The analyte was not detected above the reporting limit. However, the reported limit is approximate and may or may not represent the actual limit of detection.
  - UB Analyte considered non-detect at the listed value due to associated blank contamination.
  - R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

METALS ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 6010D	Water	180 days from collection to analysis	Preserved to a pH of less than 2.
	Soil	180 days from collection to analysis	Cool to <6 °C.
SW-846 7471A	Soil	28 days from collection to analysis	Cool to <6 °C.
SW-846 7470A	Water	28 days from collection to analysis	Cool to <6 °C; preserved to a pH of less than 2.

All samples were analyzed within the specified holding times.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Analytes were detected in the associated QA blanks; however, the associated sample results were greater than the BAL and/or were non-detect. No qualification of the sample results was required.

3. Matrix Spike (MS)/Matrix Spike Duplicate(MSD)/Laboratory Duplicate Analysis

MS/MSD and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

3.1 MS/MSD Analysis

All metal analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the analyte's concentration detected in the parent sample exceeds the MS concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

All analytes associated with MS/MSD recoveries were within control limits.

3.2 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the RL. A control limit of 20% for water matrices and 35% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of one times the RL is applied for water matrices and two times the RL for soil matrices.

MS/MSD analysis was performed in replacement of the laboratory duplicate analysis. The MS/MSD analysis exhibited RPDs within the control limits.

4. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of three times the RL is applied for soil matrices.

A field duplicate was not performed on a sample within this SDG.

5. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The analytes associated with the LCS analysis must exhibit a percent recovery between the control limits of 80% and 120%.

The LCS analysis exhibited recoveries within the control limits.

6. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR METAL

METALS; SW846 6010D/7471A	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Inductively Coupled Plasma-Atomic Emission Spectrometry (ICP-AES)					
Tier II Validation					
Holding Times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method Blanks		X		X	
B. Equipment/Field Blanks	X				X
Laboratory Control Sample (LCS)		X		X	
Matrix Spike (MS) %R		X	X		
Matrix Spike Duplicate (MSD) %R		X	X		
MS/MSD Precision (RPD)		X		X	
Field/Lab Duplicate (RPD)	X				X
Total vs. Dissolved	X				X

Notes:

%R Percent recovery

RPD Relative percent difference

GENERAL CHEMISTRY ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
Cyanide by SW-846 9012	Water	14 days from collection to analysis	Cool to <6 °C; preserved to a pH of greater than 12.
	Soil		Cool to <6 °C.

All samples were analyzed within the specified holding times.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Analytes were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Matrix Spike/Matrix Spike Duplicate (MS/MSD)/Laboratory Duplicate Analysis

MS/MSD and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

3.1 MS/MSD Analysis

All analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the analyte's concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

The MS analysis exhibited recovery within control limits.

3.2 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the RL. A control limit of 20% for water matrices and 35% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of one times the RL is applied for water matrices and two times the RL for soil matrices.

The laboratory duplicate analysis exhibited RPD within control limits.

4. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The analytes associated with the LCS analysis must exhibit a percent recovery between the control limits of 80% and 120%.

The LCS analysis is not required for this analysis.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of three times the RL is applied for soil matrices.

A field duplicate was not performed on a sample within this SDG.

6. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR GENERAL CHEMISTRY

General Chemistry: EPA 9012	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Miscellaneous Instrumentation					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks					X
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R					X
LCS/LCSD Precision (RPD)					X
Matrix Spike (MS) %R		X		X	
Matrix Spike Duplicate(MSD) %R	X				X
MS/MSD Precision (RPD)	X				X
Field/Lab Duplicate (RPD)		X		X	
Dilution Factor		X		X	
Moisture Content					X

Notes:
%R - percent recovery
RPD - relative percent difference

VALIDATION PERFORMED BY: Andrew Korycinski

SIGNATURE:

DATE: July 5, 2019

PEER REVIEW: Dennis Capria

DATE: July 22, 2019

CHAIN OF CUSTODY
SAMPLE ANALYSIS DATA SHEETS

SGS

SO
SLC

CHAIN OF CUSTODY

SGS North America Inc. - Dayton
2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200 FAX: 732-329-3499/3480
www.sgs.com/ehsusa

Page 1 of 2

FED-EX Tracking #:
SGS Quote #:
Order Control #: KR-04819-126
SGS Job #: JC86204

Client / Reporting Information	Project Information	Requested Analysis	Matrix Codes
Company Name: Arcadis - US	Project Name: Philadelphia Cafe		DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL - Sludge SED-Sediment OI - Oil LIQ - Other Liquid AIR - Air SOL - Other Solid WP - Wipe FB - Field Blank EB-Equipment Blank RB - Rinse Blank TB - Trip Blank
Street Address: 110 W Fayette St #300	Street: 4501 Richmond St	Billing Information (if different from Report to)	
City: Syracuse State: NY Zip: 13202	City: Philadelphia State: PA	Company Name: Same	
Project Contact: Carol Kelly E-mail: Lawrence.Holly@Arcadis-us.com	Project #: B00367900.0001	Street Address:	
Phone #: (315) 335-9453	Client Purchase Order #: B00367900.0001	City: State: Zip:	
Sampler(s) Name(s): Evan Gregg Phone #: (631)305-2647	Project Manager: John Bossert	Attention:	

Requested Analysis columns: VB260 TCL 20; CN; AB8270 TCL 20; MTAL; PBBs/PESTICL; PB052 RCB11

SGS Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Grab (G) Comp (C)	Matrix	# of bottles	Number of preserved Bottles: HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	Method	VB260 TCL 20	CN	AB8270 TCL 20	MTAL	PBBs/PESTICL	PB052 RCB11					LAB USE ONLY
1	PSSTP-01R (5-6)		4/10/19	1020	EG	G	SO	6					3	2			1	X	X	X	X	X	X					D52
2	S-139 (0.0-0.5)		4/10/19	1105	EG	G	SO	1					1										X					P27
3	S-139 (0.5-2.0)		4/10/19	1105	EG	G	SO	1					1										X					1433
4	PSTP-73R (0.0-0.5)		4/10/19	1200	EG	G	SO	6					3	2			1	X	X	X	X	X	X					4076
5	S-140 (0.0-0.5)		4/10/19	1310	EG	G	SO	1					1										X					
6	S-140 (0.5-2.0)		4/10/19	1315	EG	G	SO	1					1										X					
7	S-104 (10-12)		4/10/19	1405	EG	G	SO	5					2	2			1	X		X								
8	S-104 (15.5-17.5)		4/10/19	1415	EG	G	SO	5					2	2			1	X		X								
9	S-101 (10-12)		4/10/19	1515	EG	G	SO	5					2	2			1	X		X								
10	S-101 (14.5-16.5)		4/10/19	1520	EG	G	SO	5					2	2			1	X		X								
11	S-102 (10-12)		4/10/19	1605	EG	G	SO	5					2	2			1	X		X								
12	S-102 (13.5-15.5)		4/10/19	1615	EG	G	SO	5					2	2			1	X		X								

Turn Around Time (Business Days)

Approved By (SGS PM): / Date:

- [X] 10 Business Days
- [ ] 5 Business Days
- [ ] 3 Business Days*
- [ ] 2 Business Days*
- [ ] 1 Business Day*
- [ ] Other

All data available via Labink

* Approval needed for 1-3 Business Day TAT

Deliverable

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] NJ Reduced (Level 3)
- [X] Full Tier I (Level 4)
- [ ] Commercial "C"
- [ ] NJ DKQP
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] MA MCP Criteria
- [ ] CT RCP Criteria
- [ ] State Forms
- [ ] EDD Format
- [ ] DOD-QSM5

Commercial "A" = Results only; Commercial "B" = Results + QC Summary
Commercial "C" = Results + QC Summary + Partial Raw data

Comments / Special Instructions

http://www.sgs.com/en/terms-and-conditions

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by 1	Date / Time: 4/11/19 1630	Received By: 1	Relinquished By: 2	Date / Time:	Received By: 2
Relinquished by: 3	Date / Time:	Received By: 3	Relinquished By: 4	Date / Time:	Received By: 4
Relinquished by: 5	Date / Time:	Received By: 5	Custody Seal #	☐ Intact ☐ Not intact	Preserved where applicable ☐ Absent Therm. ID:	On Ice ✓	Cooler Temp. °C: 2.7C IP 3.0°C IP

INITIAL ASESSMENT JJK

LABEL VERIFICATION _____

EHSA-QAC-0023-02-FORM-Dayton - Standard COC.xlsx

CHAIN OF CUSTODY

Page 2 of 2

SGS North America Inc. - Dayton
2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200 FAX: 732-329-3499/3480
www.sgs.com/ehsusa

FED-EX Tracking #: | Bottle Order Control #:
SGS Quote #: | SGS Job #: JC86204

Client / Reporting Information

Company Name: Arcadis - US
Street Address: 110 W Fayette St #300
City: Syracuse State: NY Zip: 13202
Project Contact: Craig Haller E-mail: Craig.Haller@arcadis-us.com
Phone #: (315) 335-9453
Sampler(s) Name(s): Evan Gram Phone #: (603) 305-2692

Project Information

Project Name: Philadelphia Celtic
Street: 4501 Richmond St
City: Philadelphia State: PA
Project #: B00367.10.0001
Client Purchase Order #: B00367.00.1
Project Manager: John Bussel

Billing Information (if different from Report to)

Company Name: Same
Street Address:
City: State: Zip:
Attention:

Requested Analysis

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL- Sludge; SED-Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB - Field Blank; EB-Equipment Blank; RB - Rinse Blank; TB - Trip Blank

SGS Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Grab (G) Comp (C)	Matrix	# of bottles	Number of preserved Bottles: HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	Methanol	VX260 TCL 20	CN	ABS270 TCL 20	MTAL	PS08 PESTICL	PS082 PCB 14	LAB USE ONLY
13	PCTP-75R(10-12)		4/11/19	0905	EG	G	SO	5					2	2			1	X	X	X	X			
14	PCTP-75R(14-16)		4/11/19	0915	EG	G	SO	5					2	2			1	X	X	X	X			
15	S-103(10-12)		4/11/19	0950	EG	G	SO	5					2	2			1	X	[redacted]	X				
16	S-103(13-15)		4/11/19	1000	EG	G	SO	5					2	2			1	X		X				
17	PSSTP-04R(1-2)		4/11/19	1030	EG	G	SO	6					3	2			1	X	X	X	X	X	X	
18	PSSTP-04R(7-8)		4/11/19	1115	EG	G	SO	6					3	2			1	X	X	X	X	X	X	
19	PSSTP-04R(8-9)		4/11/19	1130	EG	G	SO	6					3	2			1	X	X	X	X	X	X	
20	PSSTP-04R(16-17)		4/11/19	1145	EG	G	SO	6					3	2			1	X	X	X	X	X	X	
21	PCTP-28D(6-8)		4/11/19	1300	EG	G	SO	5					2	2			1	X	X	X	X			
22	PCTP-28R(11-12)		4/11/19	1320	EG	G	SO	5					2	2			1	X	X	X	X			

Turn Around Time (Business Days)

Approved By (SGS PM): / Date:

- [X] 10 Business Days
- [ ] 5 Business Days
- [ ] 3 Business Days*
- [ ] 2 Business Days*
- [ ] 1 Business Day*
- [ ] Other

All data available via Lablink * Approval needed for 1-3 Business Day TAT

Deliverable

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] NJ Reduced (Level 3)
- [X] Full Tier I (Level 4)
- [ ] Commercial "C"
- [ ] NJ DKQP
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] MA MCP Criteria
- [ ] CT RCP Criteria
- [ ] State Forms
- [ ] EDD Format
- [ ] DOD-QSM5

Commercial "A" = Results only; Commercial "B" = Results + QC Summary
Commercial "C" = Results + QC Summary + Partial Raw data

Comments / Special Instructions

http://www.sgs.com/en/terms-and-conditions

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by:	Date / Time:	Received By:
1	[signature]	4/11/19/1620	1 [signature]
2	Relinquished By:	Date / Time:	Received By: 2
3	Relinquished by:	Date / Time:	Received By: 3
4	Relinquished By:	Date / Time:	Received By: 4
5	Relinquished by:	Date / Time:	Received By: 5

Custody Seal # | [ ] Intact [ ] Not intact | Preserved where applicable [ ] Absent | On Ice [ ] | Cooler Temp. °C | Therm. ID:

EHSA-QAC-0023-02-FORM-Dayton - Standard COC.xlsx

SGS LabLink@1039014 11:12 10-May-2019

Report of Analysis

Client Sample ID:	PSSTP-01R(5-6)		
Lab Sample ID:	JC86204-1	**Date Sampled:**	04/10/19
Matrix:	SO - Soil	**Date Received:**	04/11/19
Method:	SW846 8260C	**Percent Solids:**	81.8
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Y184637.D	1	04/20/19 13:46	PS	n/a	n/a	VY8010
Run #2							

	Initial Weight
Run #1	3.7 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	66.8	17	8.3	ug/kg	
71-43-2	Benzene	ND	0.83	0.62	ug/kg	
74-97-5	Bromochloromethane	ND	8.3	0.71	ug/kg	
75-27-4	Bromodichloromethane	ND	3.3	0.73	ug/kg	
75-25-2	Bromoform	ND	8.3	0.67	ug/kg	
74-83-9	Bromomethane	ND	8.3	1.6	ug/kg	
78-93-3	2-Butanone (MEK)	ND	17	6.2	ug/kg	
75-15-0	Carbon disulfide	4.8	3.3	1.5	ug/kg	
56-23-5	Carbon tetrachloride [a]	ND	3.3	0.91	ug/kg	
108-90-7	Chlorobenzene	ND	3.3	0.58	ug/kg	
75-00-3	Chloroethane	ND	8.3	1.1	ug/kg	
67-66-3	Chloroform	ND	3.3	0.61	ug/kg	
74-87-3	Chloromethane [a]	ND	8.3	3.2	ug/kg	
110-82-7	Cyclohexane [a]	ND	3.3	0.67	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	3.3	1.4	ug/kg	
124-48-1	Dibromochloromethane	ND	3.3	0.56	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.7	0.54	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.7	0.50	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.7	0.59	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.7	0.57	ug/kg	
75-71-8	Dichlorodifluoromethane [a]	ND	8.3	1.0	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.7	0.64	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.7	0.78	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.7	1.1	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.7	1.6	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.7	1.1	ug/kg	
78-87-5	1,2-Dichloropropane	ND	3.3	0.67	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	3.3	0.58	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	3.3	0.54	ug/kg	
100-41-4	Ethylbenzene	ND	1.7	0.91	ug/kg	
76-13-1	Freon 113 [a]	ND	8.3	1.3	ug/kg	
591-78-6	2-Hexanone	ND	8.3	2.1	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PSSTP-01R(5-6)
Lab Sample ID: JC86204-1
Matrix: SO - Soil
Method: SW846 8260C
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/10/19
Date Received: 04/11/19
Percent Solids: 81.8

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	3.3	1.2	ug/kg	
79-20-9	Methyl Acetate	ND	8.3	2.3	ug/kg	UJ
108-87-2	Methylcyclohexane	ND	3.3	1.2	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.7	0.58	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	8.3	2.6	ug/kg	
75-09-2	Methylene chloride	ND	8.3	4.1	ug/kg	
100-42-5	Styrene	ND	3.3	0.95	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	3.3	0.64	ug/kg	R
127-18-4	Tetrachloroethene	ND	3.3	0.76	ug/kg	
108-88-3	Toluene	ND	1.7	0.62	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	1.9	8.3	1.7	ug/kg	J
120-82-1	1,2,4-Trichlorobenzene	ND	8.3	1.7	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	3.3	0.70	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	3.3	0.56	ug/kg	
79-01-6	Trichloroethene	ND	1.7	1.3	ug/kg	
75-69-4	Trichlorofluoromethane [a]	ND	8.3	1.1	ug/kg	
75-01-4	Vinyl chloride [a]	ND	3.3	0.77	ug/kg	
	m,p-Xylene	ND	1.7	1.2	ug/kg	
95-47-6	o-Xylene	ND	1.7	0.96	ug/kg	
1330-20-7	Xylene (total)	ND	1.7	0.96	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	90%		75-127%
17060-07-0	1,2-Dichloroethane-D4	109%		75-130%
2037-26-5	Toluene-D8	97%		80-120%
460-00-4	4-Bromofluorobenzene	93%		79-127%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PSSTP-01R(5-6)		
Lab Sample ID:	JC86204-1	**Date Sampled:**	04/10/19
Matrix:	SO - Soil	**Date Received:**	04/11/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	81.8
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	M153498.D	2	04/16/19 21:05	CC	04/14/19 12:30	OP19732	EM6560
Run #2	M153555.D	20	04/18/19 02:07	YC	04/14/19 12:30	OP19732	EM6562

	Initial Weight	Final Volume
Run #1	30.0 g	1.0 ml
Run #2	30.0 g	1.0 ml

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	160	40	ug/kg	R
59-50-7	4-Chloro-3-methyl phenol	ND	410	50	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	410	70	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	410	150	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	410	310	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	410	87	ug/kg	
95-48-7	2-Methylphenol	ND	160	52	ug/kg	
	3&4-Methylphenol	ND	160	67	ug/kg	
88-75-5	2-Nitrophenol	ND	410	54	ug/kg	
100-02-7	4-Nitrophenol	ND	810	220	ug/kg	
87-86-5	Pentachlorophenol	ND	330	77	ug/kg	
108-95-2	Phenol	183	160	43	ug/kg	J
58-90-2	2,3,4,6-Tetrachlorophenol	ND	410	54	ug/kg	R
95-95-4	2,4,5-Trichlorophenol	ND	410	61	ug/kg	R
88-06-2	2,4,6-Trichlorophenol	ND	410	49	ug/kg	R
83-32-9	Acenaphthene	2130	81	28	ug/kg	
208-96-8	Acenaphthylene	54.4	81	41	ug/kg	J
98-86-2	Acetophenone	ND	410	18	ug/kg	
120-12-7	Anthracene	6150	81	50	ug/kg	
1912-24-9	Atrazine [b]	ND	160	35	ug/kg	
56-55-3	Benzo(a)anthracene	10400 [c]	810	230	ug/kg	D
50-32-8	Benzo(a)pyrene	7670	81	37	ug/kg	
205-99-2	Benzo(b)fluoranthene	11200 [c]	810	360	ug/kg	D
191-24-2	Benzo(g,h,i)perylene	5000	81	41	ug/kg	
207-08-9	Benzo(k)fluoranthene	4290 [c]	810	380	ug/kg	D
101-55-3	4-Bromophenyl phenyl ether	ND	160	31	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	160	20	ug/kg	
92-52-4	1,1'-Biphenyl	262	160	11	ug/kg	
100-52-7	Benzaldehyde	27.0	410	20	ug/kg	J
91-58-7	2-Chloronaphthalene	ND	160	19	ug/kg	
106-47-8	4-Chloroaniline	ND	410	29	ug/kg	
86-74-8	Carbazole	2550	160	12	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PSSTP-01R(5-6)
Lab Sample ID: JC86204-1
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/10/19
Date Received: 04/11/19
Percent Solids: 81.8

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	160	32	ug/kg	
218-01-9	Chrysene	9780 [c]	810	260	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	160	17	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	160	35	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	160	29	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	160	26	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	81	25	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	81	41	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	160	68	ug/kg	
123-91-1	1,4-Dioxane	ND	81	54	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	1280	81	36	ug/kg	
132-64-9	Dibenzofuran	1820	160	33	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	160	13	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	160	20	ug/kg	
84-66-2	Diethyl phthalate	ND	160	17	ug/kg	
131-11-3	Dimethyl phthalate	ND	160	15	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	3300	160	19	ug/kg	
206-44-0	Fluoranthene	25200 [c]	810	360	ug/kg	D
86-73-7	Fluorene	2920	81	37	ug/kg	
118-74-1	Hexachlorobenzene	ND	160	21	ug/kg	
87-68-3	Hexachlorobutadiene	ND	81	33	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	810	32	ug/kg	
67-72-1	Hexachloroethane	ND	410	40	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	4970	81	38	ug/kg	
78-59-1	Isophorone	ND	160	17	ug/kg	
91-57-6	2-Methylnaphthalene	861	81	18	ug/kg	
88-74-4	2-Nitroaniline [b]	ND	410	19	ug/kg	
99-09-2	3-Nitroaniline	ND	410	20	ug/kg	
100-01-6	4-Nitroaniline	ND	410	21	ug/kg	
91-20-3	Naphthalene	577	81	23	ug/kg	
98-95-3	Nitrobenzene	ND	160	31	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	160	24	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	410	30	ug/kg	
85-01-8	Phenanthrene	29000 [c]	810	270	ug/kg	D
129-00-0	Pyrene	19500 [c]	810	260	ug/kg	D
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	410	21	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	37%	37%	23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PSSTP-01R(5-6)		
Lab Sample ID:	JC86204-1	**Date Sampled:**	04/10/19
Matrix:	SO - Soil	**Date Received:**	04/11/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	81.8
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	59%	58%	27-114%
118-79-6	2,4,6-Tribromophenol	2% [d]	0% [d]	19-152%
4165-60-0	Nitrobenzene-d5	64%	70%	26-134%
321-60-8	2-Fluorobiphenyl	71%	89%	39-124%
1718-51-0	Terphenyl-d14	95%	86%	36-134%

(a) Dilution required due to viscosity of the extract matrix.
(b) Associated CCV outside of control limits high, sample was ND.
(c) Result is from Run# 2
(d) Outside control limits due to matrix interference.

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Report of Analysis

Client Sample ID:	PSSTP-01R(5-6)		
Lab Sample ID:	JC86204-1	**Date Sampled:**	04/10/19
Matrix:	SO - Soil	**Date Received:**	04/11/19
Method:	SW846 8081B SW846 3546	**Percent Solids:**	81.8
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1G152561.D	1	04/19/19 17:51	MH	04/19/19 09:50	OP19830	G1G4913
Run #2 [a]	6G64377.D	5	04/23/19 01:34	TL	04/19/19 09:50	OP19830	G6G1987

	Initial Weight	Final Volume
Run #1	15.7 g	10.0 ml
Run #2	15.7 g	10.0 ml

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin [b]	15.9	0.78	0.64	ug/kg	JN
319-84-6	alpha-BHC	ND	0.78	0.63	ug/kg	
319-85-7	beta-BHC	ND	0.78	0.70	ug/kg	
319-86-8	delta-BHC	ND	0.78	0.75	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	0.78	0.57	ug/kg	
5103-71-9	alpha-Chlordane	ND	0.78	0.63	ug/kg	
5103-74-2	gamma-Chlordane	12.0	0.78	0.35	ug/kg	
60-57-1	Dieldrin [b]	19.8	0.78	0.53	ug/kg	JN
72-54-8	4,4'-DDD	ND	0.78	0.71	ug/kg	
72-55-9	4,4'-DDE [b]	46.6	0.78	0.68	ug/kg	J
50-29-3	4,4'-DDT [b]	36.0	0.78	0.69	ug/kg	JN
72-20-8	Endrin	28.2	0.78	0.61	ug/kg	
1031-07-8	Endosulfan sulfate	ND	0.78	0.61	ug/kg	
7421-93-4	Endrin aldehyde	ND	0.78	0.44	ug/kg	
959-98-8	Endosulfan-I [b]	12.1	0.78	0.45	ug/kg	JN
33213-65-9	Endosulfan-II	ND	0.78	0.49	ug/kg	
76-44-8	Heptachlor	15.8	0.78	0.67	ug/kg	
1024-57-3	Heptachlor epoxide	37.7	0.78	0.55	ug/kg	
72-43-5	Methoxychlor	ND	1.6	0.62	ug/kg	
53494-70-5	Endrin ketone [b]	25.5	0.78	0.56	ug/kg	JN
8001-35-2	Toxaphene	ND	19	18	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	85%	109%	25-135%
877-09-8	Tetrachloro-m-xylene	55%	86%	25-135%
2051-24-3	Decachlorobiphenyl	188% [c]	119%	10-156%
2051-24-3	Decachlorobiphenyl	602% [c]	588% [c]	10-156%

(a) Confirmation run.
(b) More than 40 % RPD for detected concentrations between the two GC columns.
(c) Outside control limits due to matrix interference.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PSSTP-01R(5-6)		
Lab Sample ID:	JC86204-1	**Date Sampled:**	04/10/19
Matrix:	SO - Soil	**Date Received:**	04/11/19
Method:	SW846 8082A SW846 3546	**Percent Solids:**	81.8
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EF189220.D	1	04/22/19 10:43	TR	04/19/19 09:50	OP19829	GEF6427
Run #2							

	Initial Weight	Final Volume
Run #1	15.7 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016 [a]	ND	39	18	ug/kg	
11104-28-2	Aroclor 1221	ND	39	20	ug/kg	
11141-16-5	Aroclor 1232	ND	39	30	ug/kg	
53469-21-9	Aroclor 1242	ND	39	16	ug/kg	
12672-29-6	Aroclor 1248	ND	39	35	ug/kg	
11097-69-1	Aroclor 1254	1510	39	21	ug/kg	
11096-82-5	Aroclor 1260	ND	39	17	ug/kg	
11100-14-4	Aroclor 1268	ND	39	16	ug/kg	
37324-23-5	Aroclor 1262	ND	39	25	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	78%		31-146%
877-09-8	Tetrachloro-m-xylene	78%		31-146%
2051-24-3	Decachlorobiphenyl	524% [b]		17-164%
2051-24-3	Decachlorobiphenyl	622% [b]		17-164%

(a) Associated CCV outside of control limits high, sample was ND.
(b) Outside control limits due to matrix interference.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	S-139(0.0-0.5)		
Lab Sample ID:	JC86204-2	**Date Sampled:**	04/10/19
Matrix:	SO - Soil	**Date Received:**	04/11/19
Method:	SW846 8082A SW846 3540C	**Percent Solids:**	87.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5G87715.D	1	04/18/19 17:36	SK	04/17/19 05:00	OP19811	G5G2110
Run #2							

	Initial Weight	Final Volume
Run #1	15.6 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	36	17	ug/kg	
11104-28-2	Aroclor 1221	ND	36	19	ug/kg	
11141-16-5	Aroclor 1232	ND	36	28	ug/kg	
53469-21-9	Aroclor 1242	ND	36	15	ug/kg	
12672-29-6	Aroclor 1248	ND	36	33	ug/kg	
11097-69-1	Aroclor 1254	406	36	20	ug/kg	
11096-82-5	Aroclor 1260	ND	36	16	ug/kg	
11100-14-4	Aroclor 1268	ND	36	15	ug/kg	
37324-23-5	Aroclor 1262	ND	36	24	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	73%		31-146%
877-09-8	Tetrachloro-m-xylene	78%		31-146%
2051-24-3	Decachlorobiphenyl	93%		17-164%
2051-24-3	Decachlorobiphenyl	74%		17-164%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	S-139(0.5-2.0)		
Lab Sample ID:	JC86204-3	**Date Sampled:**	04/10/19
Matrix:	SO - Soil	**Date Received:**	04/11/19
Method:	SW846 8082A SW846 3540C	**Percent Solids:**	90.5
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5G87716.D	1	04/18/19 18:09	SK	04/17/19 05:00	OP19811	G5G2110
Run #2							

	Initial Weight	Final Volume
Run #1	15.8 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	35	16	ug/kg	
11104-28-2	Aroclor 1221	ND	35	18	ug/kg	
11141-16-5	Aroclor 1232	ND	35	27	ug/kg	
53469-21-9	Aroclor 1242	ND	35	14	ug/kg	
12672-29-6	Aroclor 1248	ND	35	31	ug/kg	
11097-69-1	Aroclor 1254	171	35	19	ug/kg	
11096-82-5	Aroclor 1260	ND	35	15	ug/kg	
11100-14-4	Aroclor 1268	ND	35	15	ug/kg	
37324-23-5	Aroclor 1262	ND	35	23	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	76%		31-146%
877-09-8	Tetrachloro-m-xylene	84%		31-146%
2051-24-3	Decachlorobiphenyl	99%		17-164%
2051-24-3	Decachlorobiphenyl	82%		17-164%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID: PCTP-73R(0.0-0.5)
Lab Sample ID: JC86204-4
Matrix: SO - Soil
Method: SW846 8260C
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/10/19
Date Received: 04/11/19
Percent Solids: 78.3

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Y184638.D	1	04/20/19 14:15	PS	n/a	n/a	VY8010
Run #2							

	Initial Weight
Run #1	5.2 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	12	6.1	ug/kg	
71-43-2	Benzene	ND	0.61	0.46	ug/kg	
74-97-5	Bromochloromethane	ND	6.1	0.53	ug/kg	
75-27-4	Bromodichloromethane	ND	2.5	0.54	ug/kg	
75-25-2	Bromoform	ND	6.1	0.49	ug/kg	
74-83-9	Bromomethane	ND	6.1	1.2	ug/kg	
78-93-3	2-Butanone (MEK)	ND	12	4.6	ug/kg	
75-15-0	Carbon disulfide	ND	2.5	1.1	ug/kg	
56-23-5	Carbon tetrachloride [a]	ND	2.5	0.68	ug/kg	
108-90-7	Chlorobenzene	ND	2.5	0.43	ug/kg	
75-00-3	Chloroethane	ND	6.1	0.84	ug/kg	
67-66-3	Chloroform	ND	2.5	0.46	ug/kg	
74-87-3	Chloromethane [a]	ND	6.1	2.4	ug/kg	
110-82-7	Cyclohexane [a]	ND	2.5	0.50	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.5	1.0	ug/kg	
124-48-1	Dibromochloromethane	ND	2.5	0.42	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.2	0.40	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.2	0.37	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.2	0.44	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.2	0.42	ug/kg	
75-71-8	Dichlorodifluoromethane [a]	ND	6.1	0.78	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.2	0.47	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.2	0.58	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.2	0.81	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.2	1.2	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.2	0.82	ug/kg	
78-87-5	1,2-Dichloropropane	ND	2.5	0.50	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	2.5	0.43	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2.5	0.40	ug/kg	
100-41-4	Ethylbenzene	ND	1.2	0.68	ug/kg	
76-13-1	Freon 113 [a]	ND	6.1	0.94	ug/kg	
591-78-6	2-Hexanone	ND	6.1	1.6	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCTP-73R(0.0-0.5)		
Lab Sample ID:	JC86204-4	**Date Sampled:**	04/10/19
Matrix:	SO - Soil	**Date Received:**	04/11/19
Method:	SW846 8260C	**Percent Solids:**	78.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	2.5	0.86	ug/kg	
79-20-9	Methyl Acetate	ND	6.1	1.7	ug/kg	
108-87-2	Methylcyclohexane	ND	2.5	0.87	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.2	0.43	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	6.1	1.9	ug/kg	
75-09-2	Methylene chloride	ND	6.1	3.1	ug/kg	
100-42-5	Styrene	ND	2.5	0.71	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.5	0.48	ug/kg	
127-18-4	Tetrachloroethene	ND	2.5	0.57	ug/kg	
108-88-3	Toluene	ND	1.2	0.46	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	6.1	1.2	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	6.1	1.2	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	2.5	0.52	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2.5	0.42	ug/kg	
79-01-6	Trichloroethene	ND	1.2	0.94	ug/kg	
75-69-4	Trichlorofluoromethane [a]	ND	6.1	0.84	ug/kg	
75-01-4	Vinyl chloride [a]	ND	2.5	0.58	ug/kg	
	m,p-Xylene	ND	1.2	0.92	ug/kg	
95-47-6	o-Xylene	ND	1.2	0.72	ug/kg	
1330-20-7	Xylene (total)	ND	1.2	0.72	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	109%		75-127%
17060-07-0	1,2-Dichloroethane-D4	109%		75-130%
2037-26-5	Toluene-D8	96%		80-120%
460-00-4	4-Bromofluorobenzene	96%		79-127%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS LabLink@1039014 11:12 10-May-2019

Report of Analysis

Client Sample ID: PCTP-73R(0.0-0.5)
Lab Sample ID: JC86204-4
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/10/19
Date Received: 04/11/19
Percent Solids: 78.3

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M153741.D	1	04/23/19 23:10	CC	04/14/19 12:30	OP19732	EM6569
Run #2							

	Initial Weight	Final Volume
Run #1	30.2 g	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	85	21	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	210	26	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	210	36	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	210	75	ug/kg	
51-28-5	2,4-Dinitrophenol [a]	ND	210	160	ug/kg	
534-52-1	4,6-Dinitro-o-cresol [a]	ND	210	45	ug/kg	
95-48-7	2-Methylphenol	ND	85	27	ug/kg	
	3&4-Methylphenol	ND	85	35	ug/kg	
88-75-5	2-Nitrophenol	ND	210	28	ug/kg	
100-02-7	4-Nitrophenol	ND	420	110	ug/kg	
87-86-5	Pentachlorophenol [a]	ND	170	40	ug/kg	
108-95-2	Phenol	ND	85	22	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	210	28	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	210	32	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	210	25	ug/kg	
83-32-9	Acenaphthene	44.5	42	15	ug/kg	
208-96-8	Acenaphthylene	137	42	21	ug/kg	
98-86-2	Acetophenone	ND	210	9.1	ug/kg	
120-12-7	Anthracene	226	42	26	ug/kg	
1912-24-9	Atrazine	ND	85	18	ug/kg	
56-55-3	Benzo(a)anthracene	742	42	12	ug/kg	
50-32-8	Benzo(a)pyrene	742	42	19	ug/kg	
205-99-2	Benzo(b)fluoranthene	981	42	19	ug/kg	
191-24-2	Benzo(g,h,i)perylene	507	42	21	ug/kg	
207-08-9	Benzo(k)fluoranthene	341	42	20	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	85	16	ug/kg	
85-68-7	Butyl benzyl phthalate	84.6	85	10	ug/kg	J
92-52-4	1,1'-Biphenyl	13.1	85	5.8	ug/kg	J
100-52-7	Benzaldehyde	48.9	210	10	ug/kg	J
91-58-7	2-Chloronaphthalene	ND	85	10	ug/kg	
106-47-8	4-Chloroaniline	ND	210	15	ug/kg	
86-74-8	Carbazole	76.8	85	6.1	ug/kg	J

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PCTP-73R(0.0-0.5)
Lab Sample ID: JC86204-4
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/10/19
Date Received: 04/11/19
Percent Solids: 78.3

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	85	17	ug/kg	
218-01-9	Chrysene	741	42	13	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	85	9.0	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	85	18	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	85	15	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	85	14	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	42	13	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	42	21	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	85	35	ug/kg	
123-91-1	1,4-Dioxane [b]	ND	42	28	ug/kg	UJ
53-70-3	Dibenzo(a,h)anthracene	137	42	19	ug/kg	
132-64-9	Dibenzofuran	40.3	85	17	ug/kg	J
84-74-2	Di-n-butyl phthalate	ND	85	6.9	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	85	11	ug/kg	
84-66-2	Diethyl phthalate	ND	85	9.0	ug/kg	
131-11-3	Dimethyl phthalate	ND	85	7.5	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	182	85	9.9	ug/kg	
206-44-0	Fluoranthene	1340	42	19	ug/kg	
86-73-7	Fluorene	57.7	42	19	ug/kg	
118-74-1	Hexachlorobenzene	ND	85	11	ug/kg	
87-68-3	Hexachlorobutadiene	ND	42	17	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	420	17	ug/kg	
67-72-1	Hexachloroethane	ND	210	21	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	525	42	20	ug/kg	
78-59-1	Isophorone	ND	85	9.0	ug/kg	
91-57-6	2-Methylnaphthalene	40.4	42	9.6	ug/kg	J
88-74-4	2-Nitroaniline	ND	210	10	ug/kg	
99-09-2	3-Nitroaniline	ND	210	11	ug/kg	
100-01-6	4-Nitroaniline	ND	210	11	ug/kg	
91-20-3	Naphthalene	55.2	42	12	ug/kg	
98-95-3	Nitrobenzene	ND	85	16	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	85	12	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	210	15	ug/kg	
85-01-8	Phenanthrene	732	42	14	ug/kg	
129-00-0	Pyrene	1260	42	14	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	210	11	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	46%		23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCTP-73R(0.0-0.5)		
Lab Sample ID:	JC86204-4	**Date Sampled:**	04/10/19
Matrix:	SO - Soil	**Date Received:**	04/11/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	78.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	50%		27-114%
118-79-6	2,4,6-Tribromophenol	92%		19-152%
4165-60-0	Nitrobenzene-d5	55%		26-134%
321-60-8	2-Fluorobiphenyl	67%		39-124%
1718-51-0	Terphenyl-d14	74%		36-134%

(a) Associated CCV outside of control limits high, sample was ND.
(b) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PCTP-73R(0.0-0.5)		
Lab Sample ID:	JC86204-4	**Date Sampled:**	04/10/19
Matrix:	SO - Soil	**Date Received:**	04/11/19
Method:	SW846 8081B SW846 3546	**Percent Solids:**	78.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1G152551.D	1	04/19/19 15:08	MH	04/19/19 09:50	OP19830	G1G4913
Run #2 [a]	6G64375.D	5	04/23/19 00:58	TL	04/19/19 09:50	OP19830	G6G1987

	Initial Weight	Final Volume
Run #1	16.7 g	10.0 ml
Run #2	16.7 g	10.0 ml

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	0.76	0.63	ug/kg	
319-84-6	alpha-BHC	ND	0.76	0.62	ug/kg	
319-85-7	beta-BHC	ND	0.76	0.69	ug/kg	
319-86-8	delta-BHC	ND	0.76	0.73	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	0.76	0.56	ug/kg	
5103-71-9	alpha-Chlordane	ND	0.76	0.62	ug/kg	
5103-74-2	gamma-Chlordane	ND	0.76	0.35	ug/kg	
60-57-1	Dieldrin	ND	0.76	0.53	ug/kg	
72-54-8	4,4'-DDD	ND	0.76	0.70	ug/kg	
72-55-9	4,4'-DDE [b]	16.5	0.76	0.67	ug/kg	J
50-29-3	4,4'-DDT [b]	34.7	0.76	0.68	ug/kg	JN
72-20-8	Endrin	ND	0.76	0.59	ug/kg	
1031-07-8	Endosulfan sulfate	ND	0.76	0.60	ug/kg	
7421-93-4	Endrin aldehyde	38.8	0.76	0.43	ug/kg	
959-98-8	Endosulfan-I	ND	0.76	0.44	ug/kg	
33213-65-9	Endosulfan-II	ND	0.76	0.48	ug/kg	
76-44-8	Heptachlor	ND	0.76	0.66	ug/kg	
1024-57-3	Heptachlor epoxide [b]	6.9	0.76	0.54	ug/kg	JN
72-43-5	Methoxychlor	ND	1.5	0.61	ug/kg	
53494-70-5	Endrin ketone	9.1	0.76	0.55	ug/kg	
8001-35-2	Toxaphene	ND	19	18	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	61%	73%	25-135%
877-09-8	Tetrachloro-m-xylene	68%	80%	25-135%
2051-24-3	Decachlorobiphenyl	52%	78%	10-156%
2051-24-3	Decachlorobiphenyl	113%	188% [c]	10-156%

(a) Confirmation run.
(b) More than 40 % RPD for detected concentrations between the two GC columns.
(c) Outside control limits due to matrix interference.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PCTP-73R(0.0-0.5)		
Lab Sample ID:	JC86204-4	**Date Sampled:**	04/10/19
Matrix:	SO - Soil	**Date Received:**	04/11/19
Method:	SW846 8082A SW846 3546	**Percent Solids:**	78.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EF189197.D	1	04/19/19 11:46	TR	04/19/19 09:50	OP19829	GEF6426
Run #2							

	Initial Weight	Final Volume
Run #1	16.7 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	38	18	ug/kg	
11104-28-2	Aroclor 1221	ND	38	20	ug/kg	
11141-16-5	Aroclor 1232	ND	38	29	ug/kg	
53469-21-9	Aroclor 1242	ND	38	16	ug/kg	
12672-29-6	Aroclor 1248	ND	38	34	ug/kg	
11097-69-1	Aroclor 1254	932	38	21	ug/kg	
11096-82-5	Aroclor 1260	ND	38	16	ug/kg	
11100-14-4	Aroclor 1268	ND	38	16	ug/kg	
37324-23-5	Aroclor 1262	ND	38	25	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	71%		31-146%
877-09-8	Tetrachloro-m-xylene	67%		31-146%
2051-24-3	Decachlorobiphenyl	92%		17-164%
2051-24-3	Decachlorobiphenyl	284% [a]		17-164%

(a) Outside control limits due to matrix interference.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	S-140(0.0-0.5)		
Lab Sample ID:	JC86204-5	**Date Sampled:**	04/10/19
Matrix:	SO - Soil	**Date Received:**	04/11/19
Method:	SW846 8082A SW846 3540C	**Percent Solids:**	79.5
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5G87717.D	1	04/18/19 18:41	SK	04/17/19 05:00	OP19811	G5G2110
Run #2							

	Initial Weight	Final Volume
Run #1	15.3 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	41	19	ug/kg	
11104-28-2	Aroclor 1221	ND	41	21	ug/kg	
11141-16-5	Aroclor 1232	ND	41	32	ug/kg	
53469-21-9	Aroclor 1242	ND	41	17	ug/kg	
12672-29-6	Aroclor 1248	ND	41	37	ug/kg	
11097-69-1	Aroclor 1254	25.6	41	22	ug/kg	J
11096-82-5	Aroclor 1260	ND	41	18	ug/kg	
11100-14-4	Aroclor 1268	ND	41	17	ug/kg	
37324-23-5	Aroclor 1262	ND	41	27	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	71%		31-146%
877-09-8	Tetrachloro-m-xylene	77%		31-146%
2051-24-3	Decachlorobiphenyl	73%		17-164%
2051-24-3	Decachlorobiphenyl	72%		17-164%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	S-140(0.5-2.0)		
Lab Sample ID:	JC86204-6	**Date Sampled:**	04/10/19
Matrix:	SO - Soil	**Date Received:**	04/11/19
Method:	SW846 8082A SW846 3540C	**Percent Solids:**	84.8
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5G87718.D	1	04/18/19 19:13	SK	04/17/19 05:00	OP19811	G5G2110
Run #2							

	Initial Weight	Final Volume
Run #1	15.5 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	38	18	ug/kg	
11104-28-2	Aroclor 1221	ND	38	19	ug/kg	
11141-16-5	Aroclor 1232	ND	38	29	ug/kg	
53469-21-9	Aroclor 1242	ND	38	16	ug/kg	
12672-29-6	Aroclor 1248	ND	38	34	ug/kg	
11097-69-1	Aroclor 1254	ND	38	20	ug/kg	
11096-82-5	Aroclor 1260	ND	38	16	ug/kg	
11100-14-4	Aroclor 1268	ND	38	16	ug/kg	
37324-23-5	Aroclor 1262	ND	38	25	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	63%		31-146%
877-09-8	Tetrachloro-m-xylene	68%		31-146%
2051-24-3	Decachlorobiphenyl	100%		17-164%
2051-24-3	Decachlorobiphenyl	70%		17-164%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	S-104(10-12)		
Lab Sample ID:	JC86204-7	**Date Sampled:**	04/10/19
Matrix:	SO - Soil	**Date Received:**	04/11/19
Method:	SW846 8260C	**Percent Solids:**	77.6
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Y184639.D	1	04/20/19 14:43	PS	n/a	n/a	VY8010
Run #2							

	Initial Weight
Run #1	5.8 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	61.5	11	5.6	ug/kg	
71-43-2	Benzene	ND	0.56	0.42	ug/kg	
74-97-5	Bromochloromethane	ND	5.6	0.48	ug/kg	
75-27-4	Bromodichloromethane	ND	2.2	0.49	ug/kg	
75-25-2	Bromoform	ND	5.6	0.45	ug/kg	
74-83-9	Bromomethane	ND	5.6	1.1	ug/kg	
78-93-3	2-Butanone (MEK)	ND	11	4.2	ug/kg	
75-15-0	Carbon disulfide	ND	2.2	1.0	ug/kg	
56-23-5	Carbon tetrachloride [a]	ND	2.2	0.61	ug/kg	
108-90-7	Chlorobenzene	ND	2.2	0.39	ug/kg	
75-00-3	Chloroethane	ND	5.6	0.76	ug/kg	
67-66-3	Chloroform	ND	2.2	0.41	ug/kg	
74-87-3	Chloromethane [a]	ND	5.6	2.2	ug/kg	
110-82-7	Cyclohexane [a]	ND	2.2	0.45	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.2	0.93	ug/kg	
124-48-1	Dibromochloromethane	ND	2.2	0.38	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.1	0.36	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.1	0.34	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.1	0.40	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.1	0.38	ug/kg	
75-71-8	Dichlorodifluoromethane [a]	ND	5.6	0.71	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.1	0.43	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.1	0.52	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.1	0.73	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.1	1.1	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.1	0.74	ug/kg	
78-87-5	1,2-Dichloropropane	ND	2.2	0.45	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	2.2	0.39	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2.2	0.36	ug/kg	
100-41-4	Ethylbenzene	ND	1.1	0.61	ug/kg	
76-13-1	Freon 113 [a]	ND	5.6	0.85	ug/kg	
591-78-6	2-Hexanone	ND	5.6	1.4	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-104(10-12)		
Lab Sample ID:	JC86204-7	**Date Sampled:**	04/10/19
Matrix:	SO - Soil	**Date Received:**	04/11/19
Method:	SW846 8260C	**Percent Solids:**	77.6
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	2.2	0.77	ug/kg	
79-20-9	Methyl Acetate	ND	5.6	1.5	ug/kg	
108-87-2	Methylcyclohexane	ND	2.2	0.79	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.1	0.39	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.6	1.7	ug/kg	
75-09-2	Methylene chloride	ND	5.6	2.8	ug/kg	
100-42-5	Styrene	ND	2.2	0.64	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.2	0.43	ug/kg	
127-18-4	Tetrachloroethene	ND	2.2	0.51	ug/kg	
108-88-3	Toluene	ND	1.1	0.42	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	5.6	1.1	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	5.6	1.1	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	2.2	0.47	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2.2	0.38	ug/kg	
79-01-6	Trichloroethene	ND	1.1	0.85	ug/kg	
75-69-4	Trichlorofluoromethane [a]	ND	5.6	0.76	ug/kg	
75-01-4	Vinyl chloride [a]	ND	2.2	0.52	ug/kg	
	m,p-Xylene	ND	1.1	0.83	ug/kg	
95-47-6	o-Xylene	ND	1.1	0.65	ug/kg	
1330-20-7	Xylene (total)	ND	1.1	0.65	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	106%		75-127%
17060-07-0	1,2-Dichloroethane-D4	104%		75-130%
2037-26-5	Toluene-D8	96%		80-120%
460-00-4	4-Bromofluorobenzene	98%		79-127%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS LabLink@1039014 11:12 10-May-2019

Report of Analysis

Client Sample ID: S-104(10-12)
Lab Sample ID: JC86204-7
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/10/19
Date Received: 04/11/19
Percent Solids: 77.6

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M153460.D	1	04/15/19 21:38	CC	04/14/19 12:30	OP19732	EM6559
Run #2							

	Initial Weight	Final Volume
Run #1	30.7 g	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	84	21	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	210	26	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	210	36	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	210	75	ug/kg	
51-28-5	2,4-Dinitrophenol [a]	ND	210	160	ug/kg	UJ
534-52-1	4,6-Dinitro-o-cresol	ND	210	45	ug/kg	
95-48-7	2-Methylphenol	30.5	84	27	ug/kg	J
	3&4-Methylphenol	138	84	35	ug/kg	
88-75-5	2-Nitrophenol	ND	210	28	ug/kg	
100-02-7	4-Nitrophenol	ND	420	110	ug/kg	
87-86-5	Pentachlorophenol	ND	170	39	ug/kg	
108-95-2	Phenol	80.8	84	22	ug/kg	J
58-90-2	2,3,4,6-Tetrachlorophenol	ND	210	28	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	210	31	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	210	25	ug/kg	
83-32-9	Acenaphthene	133	42	14	ug/kg	
208-96-8	Acenaphthylene	46.3	42	21	ug/kg	
98-86-2	Acetophenone	ND	210	9.0	ug/kg	
120-12-7	Anthracene	312	42	26	ug/kg	
1912-24-9	Atrazine	ND	84	18	ug/kg	
56-55-3	Benzo(a)anthracene	553	42	12	ug/kg	
50-32-8	Benzo(a)pyrene	518	42	19	ug/kg	
205-99-2	Benzo(b)fluoranthene	603	42	19	ug/kg	
191-24-2	Benzo(g,h,i)perylene	311	42	21	ug/kg	
207-08-9	Benzo(k)fluoranthene	246	42	20	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	84	16	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	84	10	ug/kg	
92-52-4	1,1'-Biphenyl	42.5	84	5.8	ug/kg	J
100-52-7	Benzaldehyde	ND	210	10	ug/kg	
91-58-7	2-Chloronaphthalene	ND	84	10	ug/kg	
106-47-8	4-Chloroaniline	ND	210	15	ug/kg	
86-74-8	Carbazole	139	84	6.1	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-104(10-12)
Lab Sample ID: JC86204-7
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/10/19
Date Received: 04/11/19
Percent Solids: 77.6

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	84	17	ug/kg	
218-01-9	Chrysene	570	42	13	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	84	9.0	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	84	18	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	84	15	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	84	14	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	42	13	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	42	21	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	84	35	ug/kg	
123-91-1	1,4-Dioxane	ND	42	28	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	84.8	42	19	ug/kg	
132-64-9	Dibenzofuran	125	84	17	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	84	6.8	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	84	10	ug/kg	
84-66-2	Diethyl phthalate	ND	84	8.9	ug/kg	
131-11-3	Dimethyl phthalate	ND	84	7.5	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	47.5	84	9.8	ug/kg	J
206-44-0	Fluoranthene	1070	42	19	ug/kg	
86-73-7	Fluorene	174	42	19	ug/kg	
118-74-1	Hexachlorobenzene	ND	84	11	ug/kg	
87-68-3	Hexachlorobutadiene	ND	42	17	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	420	17	ug/kg	
67-72-1	Hexachloroethane	ND	210	21	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	335	42	20	ug/kg	
78-59-1	Isophorone	ND	84	9.0	ug/kg	
91-57-6	2-Methylnaphthalene	195	42	9.5	ug/kg	
88-74-4	2-Nitroaniline	ND	210	9.9	ug/kg	
99-09-2	3-Nitroaniline	ND	210	10	ug/kg	
100-01-6	4-Nitroaniline	ND	210	11	ug/kg	
91-20-3	Naphthalene	1190	42	12	ug/kg	
98-95-3	Nitrobenzene	ND	84	16	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	84	12	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	210	15	ug/kg	
85-01-8	Phenanthrene	1200	42	14	ug/kg	
129-00-0	Pyrene	1070	42	13	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	210	11	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	56%		23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-104(10-12)		
Lab Sample ID:	JC86204-7	**Date Sampled:**	04/10/19
Matrix:	SO - Soil	**Date Received:**	04/11/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	77.6
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	60%		27-114%
118-79-6	2,4,6-Tribromophenol	78%		19-152%
4165-60-0	Nitrobenzene-d5	63%		26-134%
321-60-8	2-Fluorobiphenyl	69%		39-124%
1718-51-0	Terphenyl-d14	79%		36-134%

(a) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS LabLink@1039014 11:12 10-May-2019

Report of Analysis

Client Sample ID:	S-104(15.5-17.5)		
Lab Sample ID:	JC86204-8	**Date Sampled:**	04/10/19
Matrix:	SO - Soil	**Date Received:**	04/11/19
Method:	SW846 8260C	**Percent Solids:**	85.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Y184640.D	1	04/20/19 15:13	PS	n/a	n/a	VY8010
Run #2							

	Initial Weight
Run #1	5.8 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	28.6	10	5.1	ug/kg	
71-43-2	Benzene	ND	0.51	0.38	ug/kg	
74-97-5	Bromochloromethane	ND	5.1	0.44	ug/kg	
75-27-4	Bromodichloromethane	ND	2.0	0.45	ug/kg	
75-25-2	Bromoform	ND	5.1	0.41	ug/kg	
74-83-9	Bromomethane	ND	5.1	1.0	ug/kg	
78-93-3	2-Butanone (MEK)	ND	10	3.8	ug/kg	
75-15-0	Carbon disulfide	ND	2.0	0.94	ug/kg	
56-23-5	Carbon tetrachloride [a]	ND	2.0	0.56	ug/kg	
108-90-7	Chlorobenzene	ND	2.0	0.36	ug/kg	
75-00-3	Chloroethane	ND	5.1	0.70	ug/kg	
67-66-3	Chloroform	ND	2.0	0.38	ug/kg	
74-87-3	Chloromethane [a]	ND	5.1	2.0	ug/kg	
110-82-7	Cyclohexane [a]	ND	2.0	0.41	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.85	ug/kg	
124-48-1	Dibromochloromethane	ND	2.0	0.34	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.0	0.33	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.31	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.36	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.35	ug/kg	
75-71-8	Dichlorodifluoromethane [a]	ND	5.1	0.64	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.0	0.39	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.0	0.48	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.0	0.66	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.97	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.67	ug/kg	
78-87-5	1,2-Dichloropropane	ND	2.0	0.41	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	2.0	0.36	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2.0	0.33	ug/kg	
100-41-4	Ethylbenzene	ND	1.0	0.56	ug/kg	
76-13-1	Freon 113 [a]	ND	5.1	0.77	ug/kg	
591-78-6	2-Hexanone	ND	5.1	1.3	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-104(15.5-17.5)		
Lab Sample ID:	JC86204-8	**Date Sampled:**	04/10/19
Matrix:	SO - Soil	**Date Received:**	04/11/19
Method:	SW846 8260C	**Percent Solids:**	85.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	2.0	0.71	ug/kg	
79-20-9	Methyl Acetate	ND	5.1	1.4	ug/kg	
108-87-2	Methylcyclohexane	ND	2.0	0.72	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.36	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.1	1.6	ug/kg	
75-09-2	Methylene chloride	ND	5.1	2.5	ug/kg	
100-42-5	Styrene	ND	2.0	0.58	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.0	0.39	ug/kg	
127-18-4	Tetrachloroethene	ND	2.0	0.47	ug/kg	
108-88-3	Toluene	ND	1.0	0.38	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	5.1	1.0	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	5.1	1.0	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	2.0	0.43	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2.0	0.35	ug/kg	
79-01-6	Trichloroethene	ND	1.0	0.77	ug/kg	
75-69-4	Trichlorofluoromethane [a]	ND	5.1	0.69	ug/kg	
75-01-4	Vinyl chloride [a]	ND	2.0	0.47	ug/kg	
	m,p-Xylene	ND	1.0	0.75	ug/kg	
95-47-6	o-Xylene	ND	1.0	0.59	ug/kg	
1330-20-7	Xylene (total)	ND	1.0	0.59	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	107%		75-127%
17060-07-0	1,2-Dichloroethane-D4	103%		75-130%
2037-26-5	Toluene-D8	98%		80-120%
460-00-4	4-Bromofluorobenzene	98%		79-127%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS LabLink@1039014 11:12 10-May-2019

Report of Analysis

Client Sample ID:	S-104(15.5-17.5)		
Lab Sample ID:	JC86204-8	**Date Sampled:**	04/10/19
Matrix:	SO - Soil	**Date Received:**	04/11/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	85.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M153463.D	1	04/15/19 23:02	CC	04/14/19 12:30	OP19732	EM6559
Run #2							

	Initial Weight	Final Volume
Run #1	30.9 g	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	76	19	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	190	23	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	190	32	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	190	68	ug/kg	
51-28-5	2,4-Dinitrophenol [a]	ND	190	140	ug/kg	UJ
534-52-1	4,6-Dinitro-o-cresol	ND	190	41	ug/kg	
95-48-7	2-Methylphenol	ND	76	24	ug/kg	
	3&4-Methylphenol	ND	76	31	ug/kg	
88-75-5	2-Nitrophenol	ND	190	25	ug/kg	
100-02-7	4-Nitrophenol	ND	380	100	ug/kg	
87-86-5	Pentachlorophenol	ND	150	36	ug/kg	
108-95-2	Phenol	ND	76	20	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	190	25	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	190	28	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	190	23	ug/kg	
83-32-9	Acenaphthene	ND	38	13	ug/kg	
208-96-8	Acenaphthylene	ND	38	19	ug/kg	
98-86-2	Acetophenone	ND	190	8.2	ug/kg	
120-12-7	Anthracene	ND	38	23	ug/kg	
1912-24-9	Atrazine	ND	76	16	ug/kg	
56-55-3	Benzo(a)anthracene	26.8	38	11	ug/kg	J
50-32-8	Benzo(a)pyrene	22.1	38	17	ug/kg	J
205-99-2	Benzo(b)fluoranthene	27.1	38	17	ug/kg	J
191-24-2	Benzo(g,h,i)perylene	20.8	38	19	ug/kg	J
207-08-9	Benzo(k)fluoranthene	ND	38	18	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	76	15	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	76	9.3	ug/kg	
92-52-4	1,1'-Biphenyl	10.4	76	5.2	ug/kg	J
100-52-7	Benzaldehyde	ND	190	9.4	ug/kg	
91-58-7	2-Chloronaphthalene	ND	76	9.0	ug/kg	
106-47-8	4-Chloroaniline	ND	190	14	ug/kg	
86-74-8	Carbazole	6.7	76	5.5	ug/kg	J

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-104(15.5-17.5)
Lab Sample ID: JC86204-8
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/10/19
Date Received: 04/11/19
Percent Solids: 85.2

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	76	15	ug/kg	
218-01-9	Chrysene	34.1	38	12	ug/kg	J
111-91-1	bis(2-Chloroethoxy)methane	ND	76	8.1	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	76	16	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	76	14	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	76	12	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	38	12	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	38	19	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	76	32	ug/kg	
123-91-1	1,4-Dioxane	ND	38	25	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	38	17	ug/kg	
132-64-9	Dibenzofuran	ND	76	15	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	76	6.2	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	76	9.5	ug/kg	
84-66-2	Diethyl phthalate	ND	76	8.1	ug/kg	
131-11-3	Dimethyl phthalate	ND	76	6.8	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	36.5	76	8.9	ug/kg	J
206-44-0	Fluoranthene	24.8	38	17	ug/kg	J
86-73-7	Fluorene	ND	38	17	ug/kg	
118-74-1	Hexachlorobenzene	ND	76	9.6	ug/kg	
87-68-3	Hexachlorobutadiene	ND	38	15	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	380	15	ug/kg	
67-72-1	Hexachloroethane	ND	190	19	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	34.8	38	18	ug/kg	J
78-59-1	Isophorone	ND	76	8.1	ug/kg	
91-57-6	2-Methylnaphthalene	24.4	38	8.6	ug/kg	J
88-74-4	2-Nitroaniline	ND	190	9.0	ug/kg	
99-09-2	3-Nitroaniline	ND	190	9.5	ug/kg	
100-01-6	4-Nitroaniline	ND	190	9.8	ug/kg	
91-20-3	Naphthalene	33.6	38	11	ug/kg	J
98-95-3	Nitrobenzene	ND	76	15	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	76	11	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	190	14	ug/kg	
85-01-8	Phenanthrene	49.3	38	13	ug/kg	
129-00-0	Pyrene	36.3	38	12	ug/kg	J
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	190	9.6	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	58%		23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-104(15.5-17.5)		
Lab Sample ID:	JC86204-8	**Date Sampled:**	04/10/19
Matrix:	SO - Soil	**Date Received:**	04/11/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	85.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	62%		27-114%
118-79-6	2,4,6-Tribromophenol	83%		19-152%
4165-60-0	Nitrobenzene-d5	65%		26-134%
321-60-8	2-Fluorobiphenyl	67%		39-124%
1718-51-0	Terphenyl-d14	77%		36-134%

(a) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	S-101(10-12)		
Lab Sample ID:	JC86204-9	**Date Sampled:**	04/10/19
Matrix:	SO - Soil	**Date Received:**	04/11/19
Method:	SW846 8260C	**Percent Solids:**	80.5
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Y184641.D	1	04/20/19 15:41	PS	n/a	n/a	VY8010
Run #2							

	Initial Weight
Run #1	3.3 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	45.1	19	9.4	ug/kg	
71-43-2	Benzene	ND	0.94	0.71	ug/kg	
74-97-5	Bromochloromethane	ND	9.4	0.81	ug/kg	
75-27-4	Bromodichloromethane	ND	3.8	0.83	ug/kg	
75-25-2	Bromoform	ND	9.4	0.76	ug/kg	
74-83-9	Bromomethane	ND	9.4	1.9	ug/kg	
78-93-3	2-Butanone (MEK)	ND	19	7.0	ug/kg	
75-15-0	Carbon disulfide	ND	3.8	1.7	ug/kg	
56-23-5	Carbon tetrachloride [a]	ND	3.8	1.0	ug/kg	
108-90-7	Chlorobenzene	ND	3.8	0.67	ug/kg	
75-00-3	Chloroethane	ND	9.4	1.3	ug/kg	
67-66-3	Chloroform	ND	3.8	0.70	ug/kg	
74-87-3	Chloromethane [a]	ND	9.4	3.7	ug/kg	
110-82-7	Cyclohexane [a]	ND	3.8	0.76	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	3.8	1.6	ug/kg	
124-48-1	Dibromochloromethane	ND	3.8	0.64	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.9	0.61	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.9	0.57	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.9	0.68	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.9	0.65	ug/kg	
75-71-8	Dichlorodifluoromethane [a]	ND	9.4	1.2	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.9	0.72	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.9	0.88	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.9	1.2	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.9	1.8	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.9	1.3	ug/kg	
78-87-5	1,2-Dichloropropane	ND	3.8	0.77	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	3.8	0.66	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	3.8	0.62	ug/kg	
100-41-4	Ethylbenzene	ND	1.9	1.0	ug/kg	
76-13-1	Freon 113 [a]	ND	9.4	1.4	ug/kg	
591-78-6	2-Hexanone	ND	9.4	2.4	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-101(10-12)		
Lab Sample ID:	JC86204-9	**Date Sampled:**	04/10/19
Matrix:	SO - Soil	**Date Received:**	04/11/19
Method:	SW846 8260C	**Percent Solids:**	80.5
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	3.8	1.3	ug/kg	
79-20-9	Methyl Acetate	ND	9.4	2.6	ug/kg	
108-87-2	Methylcyclohexane	ND	3.8	1.3	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.9	0.66	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	9.4	2.9	ug/kg	
75-09-2	Methylene chloride	ND	9.4	4.7	ug/kg	
100-42-5	Styrene	ND	3.8	1.1	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	3.8	0.73	ug/kg	
127-18-4	Tetrachloroethene	ND	3.8	0.87	ug/kg	
108-88-3	Toluene	ND	1.9	0.71	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	9.4	1.9	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	9.4	1.9	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	3.8	0.80	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	3.8	0.64	ug/kg	
79-01-6	Trichloroethene	ND	1.9	1.4	ug/kg	
75-69-4	Trichlorofluoromethane [a]	ND	9.4	1.3	ug/kg	
75-01-4	Vinyl chloride [a]	ND	3.8	0.88	ug/kg	
	m,p-Xylene	ND	1.9	1.4	ug/kg	
95-47-6	o-Xylene	ND	1.9	1.1	ug/kg	
1330-20-7	Xylene (total)	ND	1.9	1.1	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	104%		75-127%
17060-07-0	1,2-Dichloroethane-D4	103%		75-130%
2037-26-5	Toluene-D8	99%		80-120%
460-00-4	4-Bromofluorobenzene	101%		79-127%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID: S-101(10-12)
Lab Sample ID: JC86204-9
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/10/19
Date Received: 04/11/19
Percent Solids: 80.5

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M153466.D	1	04/16/19 00:26	CC	04/14/19 12:30	OP19732	EM6559
Run #2							

	Initial Weight	Final Volume
Run #1	30.2 g	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	82	20	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	210	25	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	210	35	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	210	73	ug/kg	
51-28-5	2,4-Dinitrophenol [a]	ND	210	150	ug/kg	UJ
534-52-1	4,6-Dinitro-o-cresol	ND	210	44	ug/kg	
95-48-7	2-Methylphenol	ND	82	26	ug/kg	
	3&4-Methylphenol	ND	82	34	ug/kg	
88-75-5	2-Nitrophenol	ND	210	27	ug/kg	
100-02-7	4-Nitrophenol	ND	410	110	ug/kg	
87-86-5	Pentachlorophenol	ND	160	39	ug/kg	
108-95-2	Phenol	ND	82	21	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	210	27	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	210	31	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	210	25	ug/kg	
83-32-9	Acenaphthene	90.9	41	14	ug/kg	
208-96-8	Acenaphthylene	28.9	41	21	ug/kg	J
98-86-2	Acetophenone	ND	210	8.8	ug/kg	
120-12-7	Anthracene	106	41	25	ug/kg	
1912-24-9	Atrazine	ND	82	18	ug/kg	
56-55-3	Benzo(a)anthracene	151	41	12	ug/kg	
50-32-8	Benzo(a)pyrene	139	41	19	ug/kg	
205-99-2	Benzo(b)fluoranthene	172	41	18	ug/kg	
191-24-2	Benzo(g,h,i)perylene	93.6	41	21	ug/kg	
207-08-9	Benzo(k)fluoranthene	63.8	41	19	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	82	16	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	82	10	ug/kg	
92-52-4	1,1'-Biphenyl	84.2	82	5.6	ug/kg	
100-52-7	Benzaldehyde	ND	210	10	ug/kg	
91-58-7	2-Chloronaphthalene	ND	82	9.8	ug/kg	
106-47-8	4-Chloroaniline	ND	210	15	ug/kg	
86-74-8	Carbazole	36.6	82	6.0	ug/kg	J

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-101(10-12)
Lab Sample ID: JC86204-9
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/10/19
Date Received: 04/11/19
Percent Solids: 80.5

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	82	16	ug/kg	
218-01-9	Chrysene	203	41	13	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	82	8.8	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	82	18	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	82	15	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	82	13	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	41	13	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	41	21	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	82	34	ug/kg	
123-91-1	1,4-Dioxane	ND	41	27	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	29.1	41	18	ug/kg	J
132-64-9	Dibenzofuran	72.7	82	17	ug/kg	J
84-74-2	Di-n-butyl phthalate	ND	82	6.7	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	82	10	ug/kg	
84-66-2	Diethyl phthalate	ND	82	8.8	ug/kg	
131-11-3	Dimethyl phthalate	ND	82	7.3	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	84.7	82	9.6	ug/kg	
206-44-0	Fluoranthene	276	41	18	ug/kg	
86-73-7	Fluorene	107	41	19	ug/kg	
118-74-1	Hexachlorobenzene	ND	82	10	ug/kg	
87-68-3	Hexachlorobutadiene	ND	41	17	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	410	16	ug/kg	
67-72-1	Hexachloroethane	ND	210	20	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	96.9	41	19	ug/kg	
78-59-1	Isophorone	ND	82	8.8	ug/kg	
91-57-6	2-Methylnaphthalene	378	41	9.3	ug/kg	
88-74-4	2-Nitroaniline	ND	210	9.7	ug/kg	
99-09-2	3-Nitroaniline	ND	210	10	ug/kg	
100-01-6	4-Nitroaniline	ND	210	11	ug/kg	
91-20-3	Naphthalene	2110	41	12	ug/kg	
98-95-3	Nitrobenzene	ND	82	16	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	82	12	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	210	15	ug/kg	
85-01-8	Phenanthrene	430	41	14	ug/kg	
129-00-0	Pyrene	283	41	13	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	210	10	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	56%		23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-101(10-12)		
Lab Sample ID:	JC86204-9	**Date Sampled:**	04/10/19
Matrix:	SO - Soil	**Date Received:**	04/11/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	80.5
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	60%		27-114%
118-79-6	2,4,6-Tribromophenol	75%		19-152%
4165-60-0	Nitrobenzene-d5	67%		26-134%
321-60-8	2-Fluorobiphenyl	71%		39-124%
1718-51-0	Terphenyl-d14	75%		36-134%

(a) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	S-101(14.5-16.5)		
Lab Sample ID:	JC86204-10	**Date Sampled:**	04/10/19
Matrix:	SO - Soil	**Date Received:**	04/11/19
Method:	SW846 8260C	**Percent Solids:**	82.7
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Y184642.D	1	04/20/19 16:10	PS	n/a	n/a	VY8010
Run #2							

	Initial Weight
Run #1	4.2 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	52.9	14	7.2	ug/kg	
71-43-2	Benzene	ND	0.72	0.54	ug/kg	
74-97-5	Bromochloromethane	ND	7.2	0.62	ug/kg	
75-27-4	Bromodichloromethane	ND	2.9	0.64	ug/kg	
75-25-2	Bromoform	ND	7.2	0.58	ug/kg	
74-83-9	Bromomethane	ND	7.2	1.4	ug/kg	
78-93-3	2-Butanone (MEK)	ND	14	5.4	ug/kg	
75-15-0	Carbon disulfide	1.9	2.9	1.3	ug/kg	J
56-23-5	Carbon tetrachloride [a]	ND	2.9	0.79	ug/kg	
108-90-7	Chlorobenzene	ND	2.9	0.51	ug/kg	
75-00-3	Chloroethane	ND	7.2	0.99	ug/kg	
67-66-3	Chloroform	ND	2.9	0.54	ug/kg	
74-87-3	Chloromethane [a]	ND	7.2	2.8	ug/kg	
110-82-7	Cyclohexane [a]	ND	2.9	0.58	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.9	1.2	ug/kg	
124-48-1	Dibromochloromethane	ND	2.9	0.49	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.4	0.47	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.4	0.44	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.4	0.52	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.4	0.50	ug/kg	
75-71-8	Dichlorodifluoromethane [a]	ND	7.2	0.91	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.4	0.55	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.4	0.68	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.4	0.94	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.4	1.4	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.4	0.96	ug/kg	
78-87-5	1,2-Dichloropropane	ND	2.9	0.59	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	2.9	0.51	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2.9	0.47	ug/kg	
100-41-4	Ethylbenzene	ND	1.4	0.79	ug/kg	
76-13-1	Freon 113 [a]	ND	7.2	1.1	ug/kg	
591-78-6	2-Hexanone	ND	7.2	1.8	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-101(14.5-16.5)		
Lab Sample ID:	JC86204-10	**Date Sampled:**	04/10/19
Matrix:	SO - Soil	**Date Received:**	04/11/19
Method:	SW846 8260C	**Percent Solids:**	82.7
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	2.9	1.0	ug/kg	
79-20-9	Methyl Acetate	ND	7.2	2.0	ug/kg	
108-87-2	Methylcyclohexane	ND	2.9	1.0	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.4	0.51	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	7.2	2.2	ug/kg	
75-09-2	Methylene chloride	ND	7.2	3.6	ug/kg	
100-42-5	Styrene	ND	2.9	0.83	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.9	0.56	ug/kg	
127-18-4	Tetrachloroethene	ND	2.9	0.67	ug/kg	
108-88-3	Toluene	ND	1.4	0.54	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	7.2	1.4	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	7.2	1.4	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	2.9	0.61	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2.9	0.49	ug/kg	
79-01-6	Trichloroethene	ND	1.4	1.1	ug/kg	
75-69-4	Trichlorofluoromethane [a]	ND	7.2	0.98	ug/kg	
75-01-4	Vinyl chloride [a]	ND	2.9	0.68	ug/kg	
	m,p-Xylene	ND	1.4	1.1	ug/kg	
95-47-6	o-Xylene	ND	1.4	0.84	ug/kg	
1330-20-7	Xylene (total)	ND	1.4	0.84	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%		75-127%
17060-07-0	1,2-Dichloroethane-D4	106%		75-130%
2037-26-5	Toluene-D8	97%		80-120%
460-00-4	4-Bromofluorobenzene	98%		79-127%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	S-101(14.5-16.5)		
Lab Sample ID:	JC86204-10	**Date Sampled:**	04/10/19
Matrix:	SO - Soil	**Date Received:**	04/11/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	82.7
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M153465.D	1	04/15/19 23:58	CC	04/14/19 12:30	OP19732	EM6559
Run #2							

	Initial Weight	Final Volume
Run #1	30.7 g	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	79	19	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	200	24	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	200	34	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	200	70	ug/kg	
51-28-5	2,4-Dinitrophenol [a]	ND	200	150	ug/kg	UJ
534-52-1	4,6-Dinitro-o-cresol	ND	200	42	ug/kg	
95-48-7	2-Methylphenol	ND	79	25	ug/kg	
	3&4-Methylphenol	ND	79	32	ug/kg	
88-75-5	2-Nitrophenol	ND	200	26	ug/kg	
100-02-7	4-Nitrophenol	ND	390	110	ug/kg	
87-86-5	Pentachlorophenol	ND	160	37	ug/kg	
108-95-2	Phenol	ND	79	21	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	200	26	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	200	30	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	200	23	ug/kg	
83-32-9	Acenaphthene	33.1	39	14	ug/kg	J
208-96-8	Acenaphthylene	23.6	39	20	ug/kg	J
98-86-2	Acetophenone	ND	200	8.5	ug/kg	
120-12-7	Anthracene	61.3	39	24	ug/kg	
1912-24-9	Atrazine	ND	79	17	ug/kg	
56-55-3	Benzo(a)anthracene	130	39	11	ug/kg	
50-32-8	Benzo(a)pyrene	118	39	18	ug/kg	
205-99-2	Benzo(b)fluoranthene	129	39	17	ug/kg	
191-24-2	Benzo(g,h,i)perylene	68.6	39	20	ug/kg	
207-08-9	Benzo(k)fluoranthene	48.9	39	18	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	79	15	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	79	9.6	ug/kg	
92-52-4	1,1'-Biphenyl	14.2	79	5.4	ug/kg	J
100-52-7	Benzaldehyde	ND	200	9.8	ug/kg	
91-58-7	2-Chloronaphthalene	ND	79	9.4	ug/kg	
106-47-8	4-Chloroaniline	ND	200	14	ug/kg	
86-74-8	Carbazole	21.8	79	5.7	ug/kg	J

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-101(14.5-16.5)
Lab Sample ID: JC86204-10
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/10/19
Date Received: 04/11/19
Percent Solids: 82.7

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	79	16	ug/kg	
218-01-9	Chrysene	150	39	12	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	79	8.4	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	79	17	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	79	14	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	79	13	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	39	12	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	39	20	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	79	33	ug/kg	
123-91-1	1,4-Dioxane	ND	39	26	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	22.0	39	17	ug/kg	J
132-64-9	Dibenzofuran	26.1	79	16	ug/kg	J
84-74-2	Di-n-butyl phthalate	ND	79	6.4	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	79	9.8	ug/kg	
84-66-2	Diethyl phthalate	ND	79	8.4	ug/kg	
131-11-3	Dimethyl phthalate	ND	79	7.0	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	40.4	79	9.2	ug/kg	J
206-44-0	Fluoranthene	187	39	18	ug/kg	
86-73-7	Fluorene	39.2	39	18	ug/kg	
118-74-1	Hexachlorobenzene	ND	79	10	ug/kg	
87-68-3	Hexachlorobutadiene	ND	39	16	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	390	16	ug/kg	
67-72-1	Hexachloroethane	ND	200	19	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	80.1	39	18	ug/kg	
78-59-1	Isophorone	ND	79	8.4	ug/kg	
91-57-6	2-Methylnaphthalene	59.5	39	8.9	ug/kg	
88-74-4	2-Nitroaniline	ND	200	9.3	ug/kg	
99-09-2	3-Nitroaniline	ND	200	9.8	ug/kg	
100-01-6	4-Nitroaniline	ND	200	10	ug/kg	
91-20-3	Naphthalene	255	39	11	ug/kg	
98-95-3	Nitrobenzene	ND	79	15	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	79	11	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	200	14	ug/kg	
85-01-8	Phenanthrene	225	39	13	ug/kg	
129-00-0	Pyrene	292	39	13	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	200	10	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	50%		23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-101(14.5-16.5)		
Lab Sample ID:	JC86204-10	**Date Sampled:**	04/10/19
Matrix:	SO - Soil	**Date Received:**	04/11/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	82.7
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	56%		27-114%
118-79-6	2,4,6-Tribromophenol	60%		19-152%
4165-60-0	Nitrobenzene-d5	59%		26-134%
321-60-8	2-Fluorobiphenyl	62%		39-124%
1718-51-0	Terphenyl-d14	74%		36-134%

(a) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS LabLink@1039014 11:12 10-May-2019

Report of Analysis

Client Sample ID: S-102(10-12)
Lab Sample ID: JC86204-11
Matrix: SO - Soil
Method: SW846 8260C
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/10/19
Date Received: 04/11/19
Percent Solids: 76.5

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Y184643.D	1	04/20/19 16:38	PS	n/a	n/a	VY8010
Run #2							

	Initial Weight
Run #1	5.3 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	74.0	12	6.2	ug/kg	
71-43-2	Benzene	ND	0.62	0.46	ug/kg	
74-97-5	Bromochloromethane	ND	6.2	0.53	ug/kg	
75-27-4	Bromodichloromethane	ND	2.5	0.55	ug/kg	
75-25-2	Bromoform	ND	6.2	0.50	ug/kg	
74-83-9	Bromomethane	ND	6.2	1.2	ug/kg	
78-93-3	2-Butanone (MEK)	11.1	12	4.6	ug/kg	J
75-15-0	Carbon disulfide	ND	2.5	1.1	ug/kg	
56-23-5	Carbon tetrachloride [a]	ND	2.5	0.68	ug/kg	
108-90-7	Chlorobenzene	ND	2.5	0.44	ug/kg	
75-00-3	Chloroethane	ND	6.2	0.85	ug/kg	
67-66-3	Chloroform	ND	2.5	0.46	ug/kg	
74-87-3	Chloromethane [a]	ND	6.2	2.4	ug/kg	
110-82-7	Cyclohexane [a]	ND	2.5	0.50	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.5	1.0	ug/kg	
124-48-1	Dibromochloromethane	ND	2.5	0.42	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.2	0.40	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.2	0.38	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.2	0.44	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.2	0.42	ug/kg	
75-71-8	Dichlorodifluoromethane [a]	ND	6.2	0.78	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.2	0.47	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.2	0.58	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.2	0.81	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.2	1.2	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.2	0.82	ug/kg	
78-87-5	1,2-Dichloropropane	ND	2.5	0.50	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	2.5	0.43	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2.5	0.40	ug/kg	
100-41-4	Ethylbenzene	ND	1.2	0.68	ug/kg	
76-13-1	Freon 113 [a]	ND	6.2	0.94	ug/kg	
591-78-6	2-Hexanone	ND	6.2	1.6	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-102(10-12)		
Lab Sample ID:	JC86204-11	**Date Sampled:**	04/10/19
Matrix:	SO - Soil	**Date Received:**	04/11/19
Method:	SW846 8260C	**Percent Solids:**	76.5
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	2.5	0.86	ug/kg	
79-20-9	Methyl Acetate	ND	6.2	1.7	ug/kg	
108-87-2	Methylcyclohexane	ND	2.5	0.87	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.2	0.43	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	6.2	1.9	ug/kg	
75-09-2	Methylene chloride	ND	6.2	3.1	ug/kg	
100-42-5	Styrene	ND	2.5	0.71	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.5	0.48	ug/kg	
127-18-4	Tetrachloroethene	ND	2.5	0.57	ug/kg	
108-88-3	Toluene	ND	1.2	0.46	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	6.2	1.2	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	6.2	1.2	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	2.5	0.53	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2.5	0.42	ug/kg	
79-01-6	Trichloroethene	ND	1.2	0.94	ug/kg	
75-69-4	Trichlorofluoromethane [a]	ND	6.2	0.84	ug/kg	
75-01-4	Vinyl chloride [a]	ND	2.5	0.58	ug/kg	
	m,p-Xylene	ND	1.2	0.92	ug/kg	
95-47-6	o-Xylene	ND	1.2	0.72	ug/kg	
1330-20-7	Xylene (total)	ND	1.2	0.72	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	105%		75-127%
17060-07-0	1,2-Dichloroethane-D4	104%		75-130%
2037-26-5	Toluene-D8	97%		80-120%
460-00-4	4-Bromofluorobenzene	100%		79-127%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-102(10-12)		
Lab Sample ID:	JC86204-11	**Date Sampled:**	04/10/19
Matrix:	SO - Soil	**Date Received:**	04/11/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	76.5
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	M153560.D	2	04/18/19 04:27	YC	04/14/19 12:30	OP19732	EM6562
Run #2	M153582.D	10	04/18/19 20:14	CC	04/14/19 12:30	OP19732	EM6563

	Initial Weight	Final Volume
Run #1	30.5 g	1.0 ml
Run #2	30.5 g	1.0 ml

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	170	42	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	430	53	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	430	73	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	430	150	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	430	320	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	430	92	ug/kg	
95-48-7	2-Methylphenol	ND	170	55	ug/kg	
	3&4-Methylphenol	ND	170	70	ug/kg	
88-75-5	2-Nitrophenol	ND	430	57	ug/kg	
100-02-7	4-Nitrophenol	ND	860	230	ug/kg	
87-86-5	Pentachlorophenol [b]	ND	340	80	ug/kg	
108-95-2	Phenol	ND	170	45	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	430	57	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	430	64	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	430	51	ug/kg	
83-32-9	Acenaphthene	540	86	30	ug/kg	
208-96-8	Acenaphthylene	589	86	44	ug/kg	
98-86-2	Acetophenone	ND	430	18	ug/kg	
120-12-7	Anthracene	2300	86	53	ug/kg	
1912-24-9	Atrazine [b]	ND	170	37	ug/kg	
56-55-3	Benzo(a)anthracene	4530	86	24	ug/kg	
50-32-8	Benzo(a)pyrene	3750	86	39	ug/kg	
205-99-2	Benzo(b)fluoranthene	4220	86	38	ug/kg	
191-24-2	Benzo(g,h,i)perylene	1690	86	43	ug/kg	
207-08-9	Benzo(k)fluoranthene	1410	86	40	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	170	33	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	170	21	ug/kg	
92-52-4	1,1'-Biphenyl	19.1	170	12	ug/kg	J
100-52-7	Benzaldehyde	ND	430	21	ug/kg	
91-58-7	2-Chloronaphthalene	ND	170	20	ug/kg	
106-47-8	4-Chloroaniline	ND	430	31	ug/kg	
86-74-8	Carbazole	288	170	12	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-102(10-12)		
Lab Sample ID:	JC86204-11	**Date Sampled:**	04/10/19
Matrix:	SO - Soil	**Date Received:**	04/11/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	76.5
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	170	34	ug/kg	
218-01-9	Chrysene	4490	86	27	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	170	18	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	170	37	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	170	31	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	170	28	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	86	27	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	86	43	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	170	71	ug/kg	
123-91-1	1,4-Dioxane [c]	ND	86	57	ug/kg	UJ
53-70-3	Dibenzo(a,h)anthracene	512	86	38	ug/kg	
132-64-9	Dibenzofuran	115	170	35	ug/kg	J
84-74-2	Di-n-butyl phthalate	ND	170	14	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	170	21	ug/kg	
84-66-2	Diethyl phthalate	ND	170	18	ug/kg	
131-11-3	Dimethyl phthalate	ND	170	15	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	170	20	ug/kg	
206-44-0	Fluoranthene	10700 [d]	430	190	ug/kg	D
86-73-7	Fluorene	824	86	39	ug/kg	
118-74-1	Hexachlorobenzene	ND	170	22	ug/kg	
87-68-3	Hexachlorobutadiene	ND	86	34	ug/kg	
77-47-4	Hexachlorocyclopentadiene [b]	ND	860	34	ug/kg	
67-72-1	Hexachloroethane	ND	430	42	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	1890	86	40	ug/kg	
78-59-1	Isophorone	ND	170	18	ug/kg	
91-57-6	2-Methylnaphthalene	63.6	86	19	ug/kg	J
88-74-4	2-Nitroaniline	ND	430	20	ug/kg	
99-09-2	3-Nitroaniline	ND	430	21	ug/kg	
100-01-6	4-Nitroaniline	ND	430	22	ug/kg	
91-20-3	Naphthalene	28.5	86	24	ug/kg	J
98-95-3	Nitrobenzene	ND	170	33	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	170	25	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	430	31	ug/kg	
85-01-8	Phenanthrene	8180	86	29	ug/kg	
129-00-0	Pyrene	9920 [d]	430	140	ug/kg	D
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	430	22	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	42%	51%	23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-102(10-12)
Lab Sample ID: JC86204-11
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/10/19
Date Received: 04/11/19
Percent Solids: 76.5

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	42%	51%	27-114%
118-79-6	2,4,6-Tribromophenol	69%	75%	19-152%
4165-60-0	Nitrobenzene-d5	49%	59%	26-134%
321-60-8	2-Fluorobiphenyl	53%	66%	39-124%
1718-51-0	Terphenyl-d14	59%	65%	36-134%

(a) Dilution required due to viscosity of the extract matrix.
(b) Associated CCV outside of control limits high, sample was ND.
(c) Associated CCV outside of control limits low.
(d) Result is from Run# 2

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	S-102(13.5-15.5)		
Lab Sample ID:	JC86204-12	**Date Sampled:**	04/10/19
Matrix:	SO - Soil	**Date Received:**	04/11/19
Method:	SW846 8260C	**Percent Solids:**	78.6
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Y184644.D	1	04/20/19 17:07	PS	n/a	n/a	VY8010
Run #2							

	Initial Weight
Run #1	5.9 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	52.1	11	5.4	ug/kg	
71-43-2	Benzene	ND	0.54	0.41	ug/kg	
74-97-5	Bromochloromethane	ND	5.4	0.46	ug/kg	
75-27-4	Bromodichloromethane	ND	2.2	0.48	ug/kg	
75-25-2	Bromoform	ND	5.4	0.43	ug/kg	
74-83-9	Bromomethane	ND	5.4	1.1	ug/kg	
78-93-3	2-Butanone (MEK)	4.2	11	4.0	ug/kg	J
75-15-0	Carbon disulfide	ND	2.2	1.0	ug/kg	
56-23-5	Carbon tetrachloride [a]	ND	2.2	0.59	ug/kg	
108-90-7	Chlorobenzene	ND	2.2	0.38	ug/kg	
75-00-3	Chloroethane	ND	5.4	0.74	ug/kg	
67-66-3	Chloroform	ND	2.2	0.40	ug/kg	
74-87-3	Chloromethane [a]	ND	5.4	2.1	ug/kg	
110-82-7	Cyclohexane [a]	ND	2.2	0.44	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.2	0.90	ug/kg	
124-48-1	Dibromochloromethane	ND	2.2	0.36	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.1	0.35	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.1	0.33	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.1	0.39	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.1	0.37	ug/kg	
75-71-8	Dichlorodifluoromethane [a]	ND	5.4	0.68	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.1	0.42	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.1	0.51	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.1	0.71	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.1	1.0	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.1	0.72	ug/kg	
78-87-5	1,2-Dichloropropane	ND	2.2	0.44	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	2.2	0.38	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2.2	0.35	ug/kg	
100-41-4	Ethylbenzene	ND	1.1	0.60	ug/kg	
76-13-1	Freon 113 [a]	ND	5.4	0.82	ug/kg	
591-78-6	2-Hexanone	ND	5.4	1.4	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-102(13.5-15.5)		
Lab Sample ID:	JC86204-12	**Date Sampled:**	04/10/19
Matrix:	SO - Soil	**Date Received:**	04/11/19
Method:	SW846 8260C	**Percent Solids:**	78.6
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	2.2	0.75	ug/kg	
79-20-9	Methyl Acetate	ND	5.4	1.5	ug/kg	
108-87-2	Methylcyclohexane	ND	2.2	0.76	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.1	0.38	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.4	1.7	ug/kg	
75-09-2	Methylene chloride	ND	5.4	2.7	ug/kg	
100-42-5	Styrene	ND	2.2	0.62	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.2	0.42	ug/kg	
127-18-4	Tetrachloroethene	ND	2.2	0.50	ug/kg	
108-88-3	Toluene	ND	1.1	0.41	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	5.4	1.1	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	5.4	1.1	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	2.2	0.46	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2.2	0.37	ug/kg	
79-01-6	Trichloroethene	ND	1.1	0.82	ug/kg	
75-69-4	Trichlorofluoromethane [a]	ND	5.4	0.73	ug/kg	
75-01-4	Vinyl chloride [a]	ND	2.2	0.51	ug/kg	
	m,p-Xylene	ND	1.1	0.80	ug/kg	
95-47-6	o-Xylene	ND	1.1	0.63	ug/kg	
1330-20-7	Xylene (total)	ND	1.1	0.63	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	105%		75-127%
17060-07-0	1,2-Dichloroethane-D4	105%		75-130%
2037-26-5	Toluene-D8	98%		80-120%
460-00-4	4-Bromofluorobenzene	99%		79-127%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	S-102(13.5-15.5)		
Lab Sample ID:	JC86204-12	**Date Sampled:**	04/10/19
Matrix:	SO - Soil	**Date Received:**	04/11/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	78.6
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M153468.D	1	04/16/19 01:22	CC	04/14/19 12:30	OP19732	EM6559
Run #2	M153497.D	5	04/16/19 20:37	CC	04/14/19 12:30	OP19732	EM6560

	Initial Weight	Final Volume
Run #1	31.0 g	1.0 ml
Run #2	31.0 g	1.0 ml

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	82	20	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	210	25	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	210	35	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	210	73	ug/kg	
51-28-5	2,4-Dinitrophenol [a]	ND	210	150	ug/kg	UJ
534-52-1	4,6-Dinitro-o-cresol	ND	210	44	ug/kg	
95-48-7	2-Methylphenol	ND	82	26	ug/kg	
	3&4-Methylphenol	ND	82	34	ug/kg	
88-75-5	2-Nitrophenol	ND	210	27	ug/kg	
100-02-7	4-Nitrophenol	ND	410	110	ug/kg	
87-86-5	Pentachlorophenol	ND	160	39	ug/kg	
108-95-2	Phenol	ND	82	21	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	210	27	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	210	31	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	210	24	ug/kg	
83-32-9	Acenaphthene	977	41	14	ug/kg	
208-96-8	Acenaphthylene	262	41	21	ug/kg	
98-86-2	Acetophenone	ND	210	8.8	ug/kg	
120-12-7	Anthracene	2380	41	25	ug/kg	
1912-24-9	Atrazine	ND	82	18	ug/kg	
56-55-3	Benzo(a)anthracene	3440	41	12	ug/kg	
50-32-8	Benzo(a)pyrene	2740	41	19	ug/kg	
205-99-2	Benzo(b)fluoranthene	3290	41	18	ug/kg	
191-24-2	Benzo(g,h,i)perylene	1580	41	21	ug/kg	
207-08-9	Benzo(k)fluoranthene	1120	41	19	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	82	16	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	82	10	ug/kg	
92-52-4	1,1'-Biphenyl	122	82	5.6	ug/kg	
100-52-7	Benzaldehyde	43.7	210	10	ug/kg	J
91-58-7	2-Chloronaphthalene	ND	82	9.8	ug/kg	
106-47-8	4-Chloroaniline	ND	210	15	ug/kg	
86-74-8	Carbazole	555	82	6.0	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-102(13.5-15.5)		
Lab Sample ID:	JC86204-12	**Date Sampled:**	04/10/19
Matrix:	SO - Soil	**Date Received:**	04/11/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	78.6
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	82	16	ug/kg	
218-01-9	Chrysene	3570	41	13	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	82	8.8	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	82	18	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	82	15	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	82	13	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	41	13	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	41	21	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	82	34	ug/kg	
123-91-1	1,4-Dioxane	ND	41	27	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	523	41	18	ug/kg	
132-64-9	Dibenzofuran	802	82	17	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	82	6.7	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	82	10	ug/kg	
84-66-2	Diethyl phthalate	ND	82	8.7	ug/kg	
131-11-3	Dimethyl phthalate	ND	82	7.3	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	82	9.6	ug/kg	
206-44-0	Fluoranthene	5750 [b]	210	92	ug/kg	D
86-73-7	Fluorene	1390	41	19	ug/kg	
118-74-1	Hexachlorobenzene	ND	82	10	ug/kg	
87-68-3	Hexachlorobutadiene	ND	41	16	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	410	16	ug/kg	
67-72-1	Hexachloroethane	ND	210	20	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	1680	41	19	ug/kg	
78-59-1	Isophorone	ND	82	8.8	ug/kg	
91-57-6	2-Methylnaphthalene	305	41	9.3	ug/kg	
88-74-4	2-Nitroaniline	ND	210	9.7	ug/kg	
99-09-2	3-Nitroaniline	ND	210	10	ug/kg	
100-01-6	4-Nitroaniline	ND	210	11	ug/kg	
91-20-3	Naphthalene	243	41	12	ug/kg	
98-95-3	Nitrobenzene	ND	82	16	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	82	12	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	210	15	ug/kg	
85-01-8	Phenanthrene	7620 [b]	210	69	ug/kg	D
129-00-0	Pyrene	6430 [b]	210	66	ug/kg	D
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	210	10	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	53%	52%	23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-102(13.5-15.5)		
Lab Sample ID:	JC86204-12	**Date Sampled:**	04/10/19
Matrix:	SO - Soil	**Date Received:**	04/11/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	78.6
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	53%	50%	27-114%
118-79-6	2,4,6-Tribromophenol	69%	64%	19-152%
4165-60-0	Nitrobenzene-d5	61%	55%	26-134%
321-60-8	2-Fluorobiphenyl	60%	62%	39-124%
1718-51-0	Terphenyl-d14	77%	73%	36-134%

(a) Associated CCV outside of control limits low.
(b) Result is from Run# 2

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PCTP-75R(10-12)		
Lab Sample ID:	JC86204-13	**Date Sampled:**	04/11/19
Matrix:	SO - Soil	**Date Received:**	04/11/19
Method:	SW846 8260C	**Percent Solids:**	71.8
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Y184650.D	1	04/20/19 19:57	PS	n/a	n/a	VY8010
Run #2							

	Initial Weight
Run #1	3.3 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	52.3	21	11	ug/kg	
71-43-2	Benzene	ND	1.1	0.80	ug/kg	
74-97-5	Bromochloromethane	ND	11	0.91	ug/kg	
75-27-4	Bromodichloromethane	ND	4.2	0.93	ug/kg	
75-25-2	Bromoform	ND	11	0.85	ug/kg	
74-83-9	Bromomethane	ND	11	2.1	ug/kg	
78-93-3	2-Butanone (MEK)	ND	21	7.9	ug/kg	
75-15-0	Carbon disulfide	ND	4.2	2.0	ug/kg	
56-23-5	Carbon tetrachloride [a]	ND	4.2	1.2	ug/kg	
108-90-7	Chlorobenzene	ND	4.2	0.75	ug/kg	
75-00-3	Chloroethane	ND	11	1.4	ug/kg	
67-66-3	Chloroform	ND	4.2	0.79	ug/kg	
74-87-3	Chloromethane [a]	ND	11	4.1	ug/kg	
110-82-7	Cyclohexane [a]	ND	4.2	0.86	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	4.2	1.8	ug/kg	
124-48-1	Dibromochloromethane	ND	4.2	0.71	ug/kg	
106-93-4	1,2-Dibromoethane	ND	2.1	0.69	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	2.1	0.64	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	2.1	0.76	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	2.1	0.73	ug/kg	
75-71-8	Dichlorodifluoromethane [a]	ND	11	1.3	ug/kg	
75-34-3	1,1-Dichloroethane	ND	2.1	0.81	ug/kg	
107-06-2	1,2-Dichloroethane	ND	2.1	0.99	ug/kg	
75-35-4	1,1-Dichloroethene	ND	2.1	1.4	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	2.1	2.0	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	2.1	1.4	ug/kg	
78-87-5	1,2-Dichloropropane	ND	4.2	0.86	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	4.2	0.74	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	4.2	0.69	ug/kg	
100-41-4	Ethylbenzene	ND	2.1	1.2	ug/kg	
76-13-1	Freon 113 [a]	ND	11	1.6	ug/kg	
591-78-6	2-Hexanone	ND	11	2.7	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCTP-75R(10-12)		
Lab Sample ID:	JC86204-13	**Date Sampled:**	04/11/19
Matrix:	SO - Soil	**Date Received:**	04/11/19
Method:	SW846 8260C	**Percent Solids:**	71.8
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	4.2	1.5	ug/kg	
79-20-9	Methyl Acetate	ND	11	2.9	ug/kg	
108-87-2	Methylcyclohexane	ND	4.2	1.5	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	2.1	0.74	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	11	3.3	ug/kg	
75-09-2	Methylene chloride	ND	11	5.3	ug/kg	
100-42-5	Styrene	ND	4.2	1.2	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	4.2	0.82	ug/kg	
127-18-4	Tetrachloroethene	ND	4.2	0.97	ug/kg	
108-88-3	Toluene	ND	2.1	0.79	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	11	2.1	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	11	2.1	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	4.2	0.90	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	4.2	0.72	ug/kg	
79-01-6	Trichloroethene	ND	2.1	1.6	ug/kg	
75-69-4	Trichlorofluoromethane [a]	ND	11	1.4	ug/kg	
75-01-4	Vinyl chloride [a]	ND	4.2	0.99	ug/kg	
	m,p-Xylene	ND	2.1	1.6	ug/kg	
95-47-6	o-Xylene	ND	2.1	1.2	ug/kg	
1330-20-7	Xylene (total)	ND	2.1	1.2	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	105%		75-127%
17060-07-0	1,2-Dichloroethane-D4	102%		75-130%
2037-26-5	Toluene-D8	98%		80-120%
460-00-4	4-Bromofluorobenzene	101%		79-127%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PCTP-75R(10-12)		
Lab Sample ID:	JC86204-13	**Date Sampled:**	04/11/19
Matrix:	SO - Soil	**Date Received:**	04/11/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	71.8
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M153467.D	1	04/16/19 00:54	CC	04/14/19 12:30	OP19732	EM6559
Run #2							

	Initial Weight	Final Volume
Run #1	30.5 g	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	91	23	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	230	28	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	230	39	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	230	81	ug/kg	
51-28-5	2,4-Dinitrophenol [a]	ND	230	170	ug/kg	UJ
534-52-1	4,6-Dinitro-o-cresol	ND	230	49	ug/kg	
95-48-7	2-Methylphenol	ND	91	29	ug/kg	
	3&4-Methylphenol	ND	91	38	ug/kg	
88-75-5	2-Nitrophenol	ND	230	30	ug/kg	
100-02-7	4-Nitrophenol	ND	460	120	ug/kg	
87-86-5	Pentachlorophenol	ND	180	43	ug/kg	
108-95-2	Phenol	ND	91	24	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	230	30	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	230	34	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	230	27	ug/kg	
83-32-9	Acenaphthene	86.7	46	16	ug/kg	
208-96-8	Acenaphthylene	45.3	46	23	ug/kg	J
98-86-2	Acetophenone	ND	230	9.8	ug/kg	
120-12-7	Anthracene	254	46	28	ug/kg	
1912-24-9	Atrazine	ND	91	20	ug/kg	
56-55-3	Benzo(a)anthracene	437	46	13	ug/kg	
50-32-8	Benzo(a)pyrene	417	46	21	ug/kg	
205-99-2	Benzo(b)fluoranthene	482	46	20	ug/kg	
191-24-2	Benzo(g,h,i)perylene	277	46	23	ug/kg	
207-08-9	Benzo(k)fluoranthene	185	46	21	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	91	18	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	91	11	ug/kg	
92-52-4	1,1'-Biphenyl	25.5	91	6.3	ug/kg	J
100-52-7	Benzaldehyde	ND	230	11	ug/kg	
91-58-7	2-Chloronaphthalene	ND	91	11	ug/kg	
106-47-8	4-Chloroaniline	ND	230	16	ug/kg	
86-74-8	Carbazole	120	91	6.6	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PCTP-75R(10-12)
Lab Sample ID: JC86204-13
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/11/19
Date Received: 04/11/19
Percent Solids: 71.8

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	91	18	ug/kg	
218-01-9	Chrysene	524	46	14	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	91	9.8	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	91	20	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	91	16	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	91	15	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	46	14	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	46	23	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	91	38	ug/kg	
123-91-1	1,4-Dioxane	ND	46	30	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	82.5	46	20	ug/kg	
132-64-9	Dibenzofuran	83.1	91	19	ug/kg	J
84-74-2	Di-n-butyl phthalate	ND	91	7.4	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	91	11	ug/kg	
84-66-2	Diethyl phthalate	ND	91	9.7	ug/kg	
131-11-3	Dimethyl phthalate	ND	91	8.1	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	53.3	91	11	ug/kg	J
206-44-0	Fluoranthene	764	46	20	ug/kg	
86-73-7	Fluorene	115	46	21	ug/kg	
118-74-1	Hexachlorobenzene	ND	91	12	ug/kg	
87-68-3	Hexachlorobutadiene	ND	46	18	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	460	18	ug/kg	
67-72-1	Hexachloroethane	ND	230	23	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	258	46	21	ug/kg	
78-59-1	Isophorone	ND	91	9.8	ug/kg	
91-57-6	2-Methylnaphthalene	86.6	46	10	ug/kg	
88-74-4	2-Nitroaniline	ND	230	11	ug/kg	
99-09-2	3-Nitroaniline	ND	230	11	ug/kg	
100-01-6	4-Nitroaniline	ND	230	12	ug/kg	
91-20-3	Naphthalene	184	46	13	ug/kg	
98-95-3	Nitrobenzene	ND	91	18	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	91	13	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	230	17	ug/kg	
85-01-8	Phenanthrene	1110	46	15	ug/kg	
129-00-0	Pyrene	739	46	15	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	230	12	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	55%		23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCTP-75R(10-12)		
Lab Sample ID:	JC86204-13	**Date Sampled:**	04/11/19
Matrix:	SO - Soil	**Date Received:**	04/11/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	71.8
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	57%		27-114%
118-79-6	2,4,6-Tribromophenol	85%		19-152%
4165-60-0	Nitrobenzene-d5	62%		26-134%
321-60-8	2-Fluorobiphenyl	66%		39-124%
1718-51-0	Terphenyl-d14	67%		36-134%

(a) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PCTP-75R(14-16)		
Lab Sample ID:	JC86204-14	**Date Sampled:**	04/11/19
Matrix:	SO - Soil	**Date Received:**	04/11/19
Method:	SW846 8260C	**Percent Solids:**	79.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Y184651.D	1	04/20/19 20:25	PS	n/a	n/a	VY8010
Run #2							

	Initial Weight
Run #1	3.6 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	31.3	18	8.8	ug/kg	
71-43-2	Benzene	ND	0.88	0.66	ug/kg	
74-97-5	Bromochloromethane	ND	8.8	0.75	ug/kg	
75-27-4	Bromodichloromethane	ND	3.5	0.78	ug/kg	
75-25-2	Bromoform	ND	8.8	0.71	ug/kg	
74-83-9	Bromomethane	ND	8.8	1.7	ug/kg	
78-93-3	2-Butanone (MEK)	ND	18	6.6	ug/kg	
75-15-0	Carbon disulfide	ND	3.5	1.6	ug/kg	
56-23-5	Carbon tetrachloride [a]	ND	3.5	0.96	ug/kg	
108-90-7	Chlorobenzene	ND	3.5	0.62	ug/kg	
75-00-3	Chloroethane	ND	8.8	1.2	ug/kg	
67-66-3	Chloroform	ND	3.5	0.65	ug/kg	
74-87-3	Chloromethane [a]	ND	8.8	3.4	ug/kg	
110-82-7	Cyclohexane [a]	ND	3.5	0.71	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	3.5	1.5	ug/kg	
124-48-1	Dibromochloromethane	ND	3.5	0.59	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.8	0.57	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.8	0.53	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.8	0.63	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.8	0.60	ug/kg	
75-71-8	Dichlorodifluoromethane [a]	ND	8.8	1.1	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.8	0.68	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.8	0.82	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.8	1.2	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.8	1.7	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.8	1.2	ug/kg	
78-87-5	1,2-Dichloropropane	ND	3.5	0.71	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	3.5	0.62	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	3.5	0.57	ug/kg	
100-41-4	Ethylbenzene	ND	1.8	0.97	ug/kg	
76-13-1	Freon 113 [a]	ND	8.8	1.3	ug/kg	
591-78-6	2-Hexanone	ND	8.8	2.2	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCTP-75R(14-16)		
Lab Sample ID:	JC86204-14	**Date Sampled:**	04/11/19
Matrix:	SO - Soil	**Date Received:**	04/11/19
Method:	SW846 8260C	**Percent Solids:**	79.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	3.5	1.2	ug/kg	
79-20-9	Methyl Acetate	ND	8.8	2.4	ug/kg	
108-87-2	Methylcyclohexane	ND	3.5	1.2	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.8	0.62	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	8.8	2.7	ug/kg	
75-09-2	Methylene chloride	ND	8.8	4.4	ug/kg	
100-42-5	Styrene	ND	3.5	1.0	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	3.5	0.68	ug/kg	
127-18-4	Tetrachloroethene	ND	3.5	0.81	ug/kg	
108-88-3	Toluene	ND	1.8	0.66	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	8.8	1.8	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	8.8	1.8	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	3.5	0.75	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	3.5	0.60	ug/kg	
79-01-6	Trichloroethene	ND	1.8	1.3	ug/kg	
75-69-4	Trichlorofluoromethane [a]	ND	8.8	1.2	ug/kg	
75-01-4	Vinyl chloride [a]	ND	3.5	0.82	ug/kg	
	m,p-Xylene	ND	1.8	1.3	ug/kg	
95-47-6	o-Xylene	ND	1.8	1.0	ug/kg	
1330-20-7	Xylene (total)	ND	1.8	1.0	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%		75-127%
17060-07-0	1,2-Dichloroethane-D4	101%		75-130%
2037-26-5	Toluene-D8	100%		80-120%
460-00-4	4-Bromofluorobenzene	100%		79-127%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PCTP-75R(14-16)		
Lab Sample ID:	JC86204-14	**Date Sampled:**	04/11/19
Matrix:	SO - Soil	**Date Received:**	04/11/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	79.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M153464.D	1	04/15/19 23:30	CC	04/14/19 12:30	OP19732	EM6559
Run #2							

	Initial Weight	Final Volume
Run #1	31.3 g	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	81	20	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	200	25	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	200	34	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	200	72	ug/kg	
51-28-5	2,4-Dinitrophenol [a]	ND	200	150	ug/kg	UJ
534-52-1	4,6-Dinitro-o-cresol	ND	200	43	ug/kg	
95-48-7	2-Methylphenol	ND	81	26	ug/kg	
	3&4-Methylphenol	ND	81	33	ug/kg	
88-75-5	2-Nitrophenol	ND	200	27	ug/kg	
100-02-7	4-Nitrophenol	ND	400	110	ug/kg	
87-86-5	Pentachlorophenol	ND	160	38	ug/kg	
108-95-2	Phenol	ND	81	21	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	200	27	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	200	30	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	200	24	ug/kg	
83-32-9	Acenaphthene	ND	40	14	ug/kg	
208-96-8	Acenaphthylene	ND	40	20	ug/kg	
98-86-2	Acetophenone	ND	200	8.7	ug/kg	
120-12-7	Anthracene	39.5	40	25	ug/kg	J
1912-24-9	Atrazine	ND	81	17	ug/kg	
56-55-3	Benzo(a)anthracene	71.7	40	11	ug/kg	
50-32-8	Benzo(a)pyrene	59.9	40	18	ug/kg	
205-99-2	Benzo(b)fluoranthene	77.4	40	18	ug/kg	
191-24-2	Benzo(g,h,i)perylene	41.7	40	20	ug/kg	
207-08-9	Benzo(k)fluoranthene	25.4	40	19	ug/kg	J
101-55-3	4-Bromophenyl phenyl ether	ND	81	16	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	81	9.8	ug/kg	
92-52-4	1,1'-Biphenyl	10.3	81	5.5	ug/kg	J
100-52-7	Benzaldehyde	ND	200	10	ug/kg	
91-58-7	2-Chloronaphthalene	ND	81	9.6	ug/kg	
106-47-8	4-Chloroaniline	ND	200	15	ug/kg	
86-74-8	Carbazole	16.6	81	5.8	ug/kg	J

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PCTP-75R(14-16)
Lab Sample ID: JC86204-14
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/11/19
Date Received: 04/11/19
Percent Solids: 79.2

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	81	16	ug/kg	
218-01-9	Chrysene	104	40	13	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	81	8.6	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	81	17	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	81	14	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	81	13	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	40	13	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	40	20	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	81	34	ug/kg	
123-91-1	1,4-Dioxane	ND	40	27	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	40	18	ug/kg	
132-64-9	Dibenzofuran	ND	81	16	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	81	6.6	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	81	10	ug/kg	
84-66-2	Diethyl phthalate	ND	81	8.6	ug/kg	
131-11-3	Dimethyl phthalate	ND	81	7.2	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	81	9.4	ug/kg	
206-44-0	Fluoranthene	108	40	18	ug/kg	
86-73-7	Fluorene	ND	40	19	ug/kg	
118-74-1	Hexachlorobenzene	ND	81	10	ug/kg	
87-68-3	Hexachlorobutadiene	ND	40	16	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	400	16	ug/kg	
67-72-1	Hexachloroethane	ND	200	20	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	52.8	40	19	ug/kg	
78-59-1	Isophorone	ND	81	8.6	ug/kg	
91-57-6	2-Methylnaphthalene	22.6	40	9.1	ug/kg	J
88-74-4	2-Nitroaniline	ND	200	9.5	ug/kg	
99-09-2	3-Nitroaniline	ND	200	10	ug/kg	
100-01-6	4-Nitroaniline	ND	200	10	ug/kg	
91-20-3	Naphthalene	29.7	40	11	ug/kg	J
98-95-3	Nitrobenzene	ND	81	16	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	81	12	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	200	15	ug/kg	
85-01-8	Phenanthrene	167	40	14	ug/kg	
129-00-0	Pyrene	118	40	13	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	200	10	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	63%		23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCTP-75R(14-16)		
Lab Sample ID:	JC86204-14	**Date Sampled:**	04/11/19
Matrix:	SO - Soil	**Date Received:**	04/11/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	79.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	66%		27-114%
118-79-6	2,4,6-Tribromophenol	90%		19-152%
4165-60-0	Nitrobenzene-d5	71%		26-134%
321-60-8	2-Fluorobiphenyl	72%		39-124%
1718-51-0	Terphenyl-d14	75%		36-134%

(a) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	S-103(10-12)		
Lab Sample ID:	JC86204-15	**Date Sampled:**	04/11/19
Matrix:	SO - Soil	**Date Received:**	04/11/19
Method:	SW846 8260C	**Percent Solids:**	77.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Y184652.D	1	04/20/19 20:54	PS	n/a	n/a	VY8010
Run #2							

	Initial Weight
Run #1	3.4 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	27.0	19	9.5	ug/kg	
71-43-2	Benzene	ND	0.95	0.72	ug/kg	
74-97-5	Bromochloromethane	ND	9.5	0.82	ug/kg	
75-27-4	Bromodichloromethane	ND	3.8	0.84	ug/kg	
75-25-2	Bromoform	ND	9.5	0.77	ug/kg	
74-83-9	Bromomethane	ND	9.5	1.9	ug/kg	
78-93-3	2-Butanone (MEK)	ND	19	7.1	ug/kg	
75-15-0	Carbon disulfide	ND	3.8	1.8	ug/kg	
56-23-5	Carbon tetrachloride [a]	ND	3.8	1.0	ug/kg	
108-90-7	Chlorobenzene	ND	3.8	0.67	ug/kg	
75-00-3	Chloroethane	ND	9.5	1.3	ug/kg	
67-66-3	Chloroform	ND	3.8	0.71	ug/kg	
74-87-3	Chloromethane [a]	ND	9.5	3.7	ug/kg	
110-82-7	Cyclohexane [a]	ND	3.8	0.77	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	3.8	1.6	ug/kg	
124-48-1	Dibromochloromethane	ND	3.8	0.64	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.9	0.62	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.9	0.58	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.9	0.68	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.9	0.65	ug/kg	
75-71-8	Dichlorodifluoromethane [a]	ND	9.5	1.2	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.9	0.73	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.9	0.89	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.9	1.2	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.9	1.8	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.9	1.3	ug/kg	
78-87-5	1,2-Dichloropropane	ND	3.8	0.77	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	3.8	0.67	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	3.8	0.62	ug/kg	
100-41-4	Ethylbenzene	ND	1.9	1.1	ug/kg	
76-13-1	Freon 113 [a]	ND	9.5	1.4	ug/kg	
591-78-6	2-Hexanone	ND	9.5	2.4	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-103(10-12)		
Lab Sample ID:	JC86204-15	**Date Sampled:**	04/11/19
Matrix:	SO - Soil	**Date Received:**	04/11/19
Method:	SW846 8260C	**Percent Solids:**	77.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	3.8	1.3	ug/kg	
79-20-9	Methyl Acetate	ND	9.5	2.6	ug/kg	
108-87-2	Methylcyclohexane	ND	3.8	1.3	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.9	0.67	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	9.5	3.0	ug/kg	
75-09-2	Methylene chloride	ND	9.5	4.8	ug/kg	
100-42-5	Styrene	ND	3.8	1.1	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	3.8	0.74	ug/kg	
127-18-4	Tetrachloroethene	ND	3.8	0.88	ug/kg	
108-88-3	Toluene	ND	1.9	0.72	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	9.5	1.9	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	9.5	1.9	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	3.8	0.81	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	3.8	0.65	ug/kg	
79-01-6	Trichloroethene	ND	1.9	1.4	ug/kg	
75-69-4	Trichlorofluoromethane [a]	ND	9.5	1.3	ug/kg	
75-01-4	Vinyl chloride [a]	ND	3.8	0.89	ug/kg	
	m,p-Xylene	ND	1.9	1.4	ug/kg	
95-47-6	o-Xylene	ND	1.9	1.1	ug/kg	
1330-20-7	Xylene (total)	ND	1.9	1.1	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%		75-127%
17060-07-0	1,2-Dichloroethane-D4	94%		75-130%
2037-26-5	Toluene-D8	105%		80-120%
460-00-4	4-Bromofluorobenzene	114%		79-127%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS LabLink@1039014 11:12 10-May-2019

Report of Analysis

Client Sample ID: S-103(10-12)
Lab Sample ID: JC86204-15
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/11/19
Date Received: 04/11/19
Percent Solids: 77.3

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z136989.D	1	04/17/19 00:20	AR	04/14/19 14:00	OP19741	EZ6751
Run #2							

	Initial Weight	Final Volume
Run #1	31.0 g	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	83	21	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	210	26	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	210	36	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	210	74	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	210	160	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	210	45	ug/kg	
95-48-7	2-Methylphenol	ND	83	27	ug/kg	
	3&4-Methylphenol	ND	83	34	ug/kg	
88-75-5	2-Nitrophenol	ND	210	28	ug/kg	
100-02-7	4-Nitrophenol [a]	ND	420	110	ug/kg	
87-86-5	Pentachlorophenol	ND	170	39	ug/kg	
108-95-2	Phenol	ND	83	22	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	210	28	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	210	31	ug/kg	
88-06-2	2,4,6-Trichlorophenol [a]	ND	210	25	ug/kg	
83-32-9	Acenaphthene	25.8	42	14	ug/kg	J
208-96-8	Acenaphthylene	46.5	42	21	ug/kg	
98-86-2	Acetophenone	ND	210	9.0	ug/kg	
120-12-7	Anthracene	65.6	42	26	ug/kg	
1912-24-9	Atrazine [a]	ND	83	18	ug/kg	
56-55-3	Benzo(a)anthracene	258	42	12	ug/kg	
50-32-8	Benzo(a)pyrene	240	42	19	ug/kg	
205-99-2	Benzo(b)fluoranthene	339	42	18	ug/kg	
191-24-2	Benzo(g,h,i)perylene [b]	183	42	21	ug/kg	J
207-08-9	Benzo(k)fluoranthene	90.6	42	19	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	83	16	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	83	10	ug/kg	
92-52-4	1,1'-Biphenyl	13.8	83	5.7	ug/kg	J
100-52-7	Benzaldehyde	ND	210	10	ug/kg	
91-58-7	2-Chloronaphthalene	ND	83	9.9	ug/kg	
106-47-8	4-Chloroaniline	ND	210	15	ug/kg	
86-74-8	Carbazole	23.5	83	6.1	ug/kg	J

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

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Date Sampled: 04/11/19
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Percent Solids: 77.3

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam [a]	ND	83	16	ug/kg	
218-01-9	Chrysene	310	42	13	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	83	8.9	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	83	18	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	83	15	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	83	14	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	42	13	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	42	21	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	83	35	ug/kg	
123-91-1	1,4-Dioxane	ND	42	28	ug/kg	
53-70-3	Dibenzo(a,h)anthracene [b]	62.4	42	18	ug/kg	J
132-64-9	Dibenzofuran	ND	83	17	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	83	6.8	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	83	10	ug/kg	
84-66-2	Diethyl phthalate	ND	83	8.9	ug/kg	
131-11-3	Dimethyl phthalate	ND	83	7.4	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	114	83	9.8	ug/kg	
206-44-0	Fluoranthene [b]	434	42	19	ug/kg	
86-73-7	Fluorene	42.2	42	19	ug/kg	
118-74-1	Hexachlorobenzene [a]	ND	83	11	ug/kg	
87-68-3	Hexachlorobutadiene	ND	42	17	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	420	17	ug/kg	
67-72-1	Hexachloroethane	ND	210	21	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene [b]	152	42	20	ug/kg	J
78-59-1	Isophorone	ND	83	8.9	ug/kg	
91-57-6	2-Methylnaphthalene	52.7	42	9.4	ug/kg	
88-74-4	2-Nitroaniline [a]	ND	210	9.8	ug/kg	
99-09-2	3-Nitroaniline	ND	210	10	ug/kg	
100-01-6	4-Nitroaniline	ND	210	11	ug/kg	
91-20-3	Naphthalene	353	42	12	ug/kg	
98-95-3	Nitrobenzene	ND	83	16	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	83	12	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	210	15	ug/kg	
85-01-8	Phenanthrene	281	42	14	ug/kg	
129-00-0	Pyrene	458	42	13	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	210	11	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	47%		23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
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J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-103(10-12)		
Lab Sample ID:	JC86204-15	**Date Sampled:**	04/11/19
Matrix:	SO - Soil	**Date Received:**	04/11/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	77.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	50%		27-114%
118-79-6	2,4,6-Tribromophenol	54%		19-152%
4165-60-0	Nitrobenzene-d5	63%		26-134%
321-60-8	2-Fluorobiphenyl	61%		39-124%
1718-51-0	Terphenyl-d14	75%		36-134%

(a) Associated CCV outside of control limits high, sample was ND.
(b) Associated CCV outside of control limits high.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
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J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS LabLink@1039014 11:12 10-May-2019

Report of Analysis

Client Sample ID:	S-103(13-15)		
Lab Sample ID:	JC86204-16	**Date Sampled:**	04/11/19
Matrix:	SO - Soil	**Date Received:**	04/11/19
Method:	SW846 8260C	**Percent Solids:**	71.4
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Y184653.D	1	04/20/19 21:22	PS	n/a	n/a	VY8010
Run #2							

	Initial Weight
Run #1	3.7 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	25.5	19	9.5	ug/kg	
71-43-2	Benzene	ND	0.95	0.71	ug/kg	
74-97-5	Bromochloromethane	ND	9.5	0.81	ug/kg	
75-27-4	Bromodichloromethane	ND	3.8	0.84	ug/kg	
75-25-2	Bromoform	ND	9.5	0.76	ug/kg	
74-83-9	Bromomethane	ND	9.5	1.9	ug/kg	
78-93-3	2-Butanone (MEK)	ND	19	7.1	ug/kg	
75-15-0	Carbon disulfide	2.1	3.8	1.8	ug/kg	J
56-23-5	Carbon tetrachloride [a]	ND	3.8	1.0	ug/kg	
108-90-7	Chlorobenzene	ND	3.8	0.67	ug/kg	
75-00-3	Chloroethane	ND	9.5	1.3	ug/kg	
67-66-3	Chloroform	ND	3.8	0.70	ug/kg	
74-87-3	Chloromethane [a]	ND	9.5	3.7	ug/kg	
110-82-7	Cyclohexane [a]	ND	3.8	0.77	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	3.8	1.6	ug/kg	
124-48-1	Dibromochloromethane	ND	3.8	0.64	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.9	0.62	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.9	0.58	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.9	0.68	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.9	0.65	ug/kg	
75-71-8	Dichlorodifluoromethane [a]	ND	9.5	1.2	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.9	0.73	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.9	0.89	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.9	1.2	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.9	1.8	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.9	1.3	ug/kg	
78-87-5	1,2-Dichloropropane	ND	3.8	0.77	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	3.8	0.67	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	3.8	0.62	ug/kg	
100-41-4	Ethylbenzene	ND	1.9	1.0	ug/kg	
76-13-1	Freon 113 [a]	ND	9.5	1.4	ug/kg	
591-78-6	2-Hexanone	ND	9.5	2.4	ug/kg	

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B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-103(13-15)		
Lab Sample ID:	JC86204-16	**Date Sampled:**	04/11/19
Matrix:	SO - Soil	**Date Received:**	04/11/19
Method:	SW846 8260C	**Percent Solids:**	71.4
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	3.8	1.3	ug/kg	
79-20-9	Methyl Acetate	ND	9.5	2.6	ug/kg	
108-87-2	Methylcyclohexane	ND	3.8	1.3	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.9	0.67	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	9.5	3.0	ug/kg	
75-09-2	Methylene chloride	ND	9.5	4.7	ug/kg	
100-42-5	Styrene	ND	3.8	1.1	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	3.8	0.74	ug/kg	
127-18-4	Tetrachloroethene	ND	3.8	0.87	ug/kg	
108-88-3	Toluene	ND	1.9	0.71	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	9.5	1.9	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	9.5	1.9	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	3.8	0.81	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	3.8	0.65	ug/kg	
79-01-6	Trichloroethene	ND	1.9	1.4	ug/kg	
75-69-4	Trichlorofluoromethane [a]	ND	9.5	1.3	ug/kg	
75-01-4	Vinyl chloride [a]	ND	3.8	0.89	ug/kg	
	m,p-Xylene	ND	1.9	1.4	ug/kg	
95-47-6	o-Xylene	ND	1.9	1.1	ug/kg	
1330-20-7	Xylene (total)	ND	1.9	1.1	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	105%		75-127%
17060-07-0	1,2-Dichloroethane-D4	104%		75-130%
2037-26-5	Toluene-D8	96%		80-120%
460-00-4	4-Bromofluorobenzene	99%		79-127%

(a) Associated CCV outside of control limits high, sample was ND.

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N = Indicates presumptive evidence of a compound

SGS LabLink@1039014 11:12 10-May-2019

Report of Analysis

Client Sample ID:	S-103(13-15)		
Lab Sample ID:	JC86204-16	**Date Sampled:**	04/11/19
Matrix:	SO - Soil	**Date Received:**	04/11/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	71.4
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z136990.D	1	04/17/19 00:48	AR	04/14/19 14:00	OP19741	EZ6751
Run #2							

	Initial Weight	Final Volume
Run #1	30.6 g	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	92	23	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	230	28	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	230	39	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	230	81	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	230	170	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	230	49	ug/kg	
95-48-7	2-Methylphenol	ND	92	29	ug/kg	
	3&4-Methylphenol	ND	92	38	ug/kg	
88-75-5	2-Nitrophenol	ND	230	30	ug/kg	
100-02-7	4-Nitrophenol [a]	ND	460	120	ug/kg	
87-86-5	Pentachlorophenol	ND	180	43	ug/kg	
108-95-2	Phenol	ND	92	24	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	230	30	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	230	34	ug/kg	
88-06-2	2,4,6-Trichlorophenol [a]	ND	230	27	ug/kg	
83-32-9	Acenaphthene	ND	46	16	ug/kg	
208-96-8	Acenaphthylene	ND	46	23	ug/kg	
98-86-2	Acetophenone	ND	230	9.8	ug/kg	
120-12-7	Anthracene	ND	46	28	ug/kg	
1912-24-9	Atrazine [a]	ND	92	20	ug/kg	
56-55-3	Benzo(a)anthracene	68.7	46	13	ug/kg	
50-32-8	Benzo(a)pyrene	67.9	46	21	ug/kg	
205-99-2	Benzo(b)fluoranthene	91.7	46	20	ug/kg	
191-24-2	Benzo(g,h,i)perylene [b]	70.9	46	23	ug/kg	J
207-08-9	Benzo(k)fluoranthene	28.8	46	21	ug/kg	J
101-55-3	4-Bromophenyl phenyl ether	ND	92	18	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	92	11	ug/kg	
92-52-4	1,1'-Biphenyl	ND	92	6.3	ug/kg	
100-52-7	Benzaldehyde	ND	230	11	ug/kg	
91-58-7	2-Chloronaphthalene	ND	92	11	ug/kg	
106-47-8	4-Chloroaniline	ND	230	16	ug/kg	
86-74-8	Carbazole	10.6	92	6.6	ug/kg	J

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
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N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-103(13-15)		
Lab Sample ID:	JC86204-16	**Date Sampled:**	04/11/19
Matrix:	SO - Soil	**Date Received:**	04/11/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	71.4
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam [a]	ND	92	18	ug/kg	
218-01-9	Chrysene	74.6	46	14	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	92	9.8	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	92	20	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	92	16	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	92	15	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	46	14	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	46	23	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	92	38	ug/kg	
123-91-1	1,4-Dioxane	ND	46	30	ug/kg	
53-70-3	Dibenzo(a,h)anthracene [b]	20.2	46	20	ug/kg	J
132-64-9	Dibenzofuran	ND	92	19	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	92	7.5	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	92	11	ug/kg	
84-66-2	Diethyl phthalate	ND	92	9.7	ug/kg	
131-11-3	Dimethyl phthalate	ND	92	8.1	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	92	11	ug/kg	
206-44-0	Fluoranthene [b]	100	46	20	ug/kg	J
86-73-7	Fluorene	ND	46	21	ug/kg	
118-74-1	Hexachlorobenzene [a]	ND	92	12	ug/kg	
87-68-3	Hexachlorobutadiene	ND	46	18	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	460	18	ug/kg	
67-72-1	Hexachloroethane	ND	230	23	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene [b]	50.8	46	21	ug/kg	J
78-59-1	Isophorone	ND	92	9.8	ug/kg	
91-57-6	2-Methylnaphthalene	ND	46	10	ug/kg	
88-74-4	2-Nitroaniline [a]	ND	230	11	ug/kg	
99-09-2	3-Nitroaniline	ND	230	11	ug/kg	
100-01-6	4-Nitroaniline	ND	230	12	ug/kg	
91-20-3	Naphthalene	26.7	46	13	ug/kg	J
98-95-3	Nitrobenzene	ND	92	18	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	92	13	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	230	17	ug/kg	
85-01-8	Phenanthrene	89.7	46	15	ug/kg	
129-00-0	Pyrene	118	46	15	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	230	12	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	61%		23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-103(13-15)
Lab Sample ID: JC86204-16
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/11/19
Date Received: 04/11/19
Percent Solids: 71.4

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	66%		27-114%
118-79-6	2,4,6-Tribromophenol	81%		19-152%
4165-60-0	Nitrobenzene-d5	81%		26-134%
321-60-8	2-Fluorobiphenyl	78%		39-124%
1718-51-0	Terphenyl-d14	95%		36-134%

(a) Associated CCV outside of control limits high, sample was ND.
(b) Associated CCV outside of control limits high.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS LabLink@1039014 11:12 10-May-2019

Report of Analysis

Client Sample ID:	PSSTP-04R(1-2)		
Lab Sample ID:	JC86204-17	**Date Sampled:**	04/11/19
Matrix:	SO - Soil	**Date Received:**	04/11/19
Method:	SW846 8260C	**Percent Solids:**	86.1
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Y184654.D	1	04/20/19 21:50	PS	n/a	n/a	VY8010
Run #2							

	Initial Weight
Run #1	5.6 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	23.2	10	5.2	ug/kg	
71-43-2	Benzene	ND	0.52	0.39	ug/kg	
74-97-5	Bromochloromethane	ND	5.2	0.45	ug/kg	
75-27-4	Bromodichloromethane	ND	2.1	0.46	ug/kg	
75-25-2	Bromoform	ND	5.2	0.42	ug/kg	
74-83-9	Bromomethane	ND	5.2	1.0	ug/kg	
78-93-3	2-Butanone (MEK)	ND	10	3.9	ug/kg	
75-15-0	Carbon disulfide	ND	2.1	0.96	ug/kg	
56-23-5	Carbon tetrachloride [a]	ND	2.1	0.57	ug/kg	
108-90-7	Chlorobenzene	ND	2.1	0.37	ug/kg	
75-00-3	Chloroethane	ND	5.2	0.71	ug/kg	
67-66-3	Chloroform	ND	2.1	0.39	ug/kg	
74-87-3	Chloromethane [a]	ND	5.2	2.0	ug/kg	
110-82-7	Cyclohexane [a]	ND	2.1	0.42	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.1	0.87	ug/kg	
124-48-1	Dibromochloromethane	ND	2.1	0.35	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.0	0.34	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.32	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.37	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.36	ug/kg	
75-71-8	Dichlorodifluoromethane [a]	ND	5.2	0.66	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.0	0.40	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.0	0.49	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.0	0.68	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.99	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.69	ug/kg	
78-87-5	1,2-Dichloropropane	ND	2.1	0.42	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	2.1	0.37	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2.1	0.34	ug/kg	
100-41-4	Ethylbenzene	ND	1.0	0.57	ug/kg	
76-13-1	Freon 113 [a]	ND	5.2	0.79	ug/kg	
591-78-6	2-Hexanone	ND	5.2	1.3	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PSSTP-04R(1-2)		
Lab Sample ID:	JC86204-17	**Date Sampled:**	04/11/19
Matrix:	SO - Soil	**Date Received:**	04/11/19
Method:	SW846 8260C	**Percent Solids:**	86.1
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	2.1	0.72	ug/kg	
79-20-9	Methyl Acetate	ND	5.2	1.4	ug/kg	
108-87-2	Methylcyclohexane	ND	2.1	0.73	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.37	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.2	1.6	ug/kg	
75-09-2	Methylene chloride	ND	5.2	2.6	ug/kg	
100-42-5	Styrene	ND	2.1	0.60	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.1	0.40	ug/kg	
127-18-4	Tetrachloroethene	ND	2.1	0.48	ug/kg	
108-88-3	Toluene	ND	1.0	0.39	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	5.2	1.0	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	5.2	1.0	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	2.1	0.44	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2.1	0.35	ug/kg	
79-01-6	Trichloroethene	ND	1.0	0.79	ug/kg	
75-69-4	Trichlorofluoromethane [a]	ND	5.2	0.71	ug/kg	
75-01-4	Vinyl chloride [a]	ND	2.1	0.49	ug/kg	
	m,p-Xylene	ND	1.0	0.77	ug/kg	
95-47-6	o-Xylene	ND	1.0	0.60	ug/kg	
1330-20-7	Xylene (total)	ND	1.0	0.60	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	106%		75-127%
17060-07-0	1,2-Dichloroethane-D4	105%		75-130%
2037-26-5	Toluene-D8	96%		80-120%
460-00-4	4-Bromofluorobenzene	99%		79-127%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
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J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PSSTP-04R(1-2)		
Lab Sample ID:	JC86204-17	**Date Sampled:**	04/11/19
Matrix:	SO - Soil	**Date Received:**	04/11/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	86.1
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z136994.D	1	04/17/19 02:39	AR	04/14/19 14:00	OP19741	EZ6751
Run #2	Z137127.D	5	04/19/19 21:15	AR	04/14/19 14:00	OP19741	EZ6755

	Initial Weight	Final Volume
Run #1	31.0 g	1.0 ml
Run #2	31.0 g	1.0 ml

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	75	19	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	190	23	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	190	32	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	190	67	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	190	140	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	190	40	ug/kg	
95-48-7	2-Methylphenol	ND	75	24	ug/kg	
	3&4-Methylphenol	ND	75	31	ug/kg	
88-75-5	2-Nitrophenol	ND	190	25	ug/kg	
100-02-7	4-Nitrophenol [a]	ND	370	100	ug/kg	
87-86-5	Pentachlorophenol	ND	150	35	ug/kg	
108-95-2	Phenol	ND	75	20	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	190	25	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	190	28	ug/kg	
88-06-2	2,4,6-Trichlorophenol [a]	ND	190	22	ug/kg	
83-32-9	Acenaphthene	348	37	13	ug/kg	
208-96-8	Acenaphthylene	229	37	19	ug/kg	
98-86-2	Acetophenone	ND	190	8.1	ug/kg	
120-12-7	Anthracene	871	37	23	ug/kg	
1912-24-9	Atrazine [a]	ND	75	16	ug/kg	
56-55-3	Benzo(a)anthracene	2790	37	11	ug/kg	
50-32-8	Benzo(a)pyrene	2370	37	17	ug/kg	
205-99-2	Benzo(b)fluoranthene	2850	37	17	ug/kg	
191-24-2	Benzo(g,h,i)perylene [b]	1350	37	19	ug/kg	J
207-08-9	Benzo(k)fluoranthene	1010	37	17	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	75	14	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	75	9.1	ug/kg	
92-52-4	1,1'-Biphenyl	46.2	75	5.1	ug/kg	J
100-52-7	Benzaldehyde	ND	190	9.3	ug/kg	
91-58-7	2-Chloronaphthalene	ND	75	8.9	ug/kg	
106-47-8	4-Chloroaniline	ND	190	13	ug/kg	
86-74-8	Carbazole	344	75	5.4	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PSSTP-04R(1-2)
Lab Sample ID: JC86204-17
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/11/19
Date Received: 04/11/19
Percent Solids: 86.1

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam [a]	ND	75	15	ug/kg	
218-01-9	Chrysene	2590	37	12	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	75	8.0	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	75	16	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	75	13	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	75	12	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	37	12	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	37	19	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	75	31	ug/kg	
123-91-1	1,4-Dioxane	ND	37	25	ug/kg	
53-70-3	Dibenzo(a,h)anthracene [b]	421	37	17	ug/kg	
132-64-9	Dibenzofuran	316	75	15	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	75	6.1	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	75	9.3	ug/kg	
84-66-2	Diethyl phthalate	ND	75	8.0	ug/kg	
131-11-3	Dimethyl phthalate	ND	75	6.7	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	75	8.8	ug/kg	
206-44-0	Fluoranthene	5450 [c]	190	84	ug/kg	D
86-73-7	Fluorene	472	37	17	ug/kg	
118-74-1	Hexachlorobenzene [a]	ND	75	9.5	ug/kg	
87-68-3	Hexachlorobutadiene	ND	37	15	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	370	15	ug/kg	
67-72-1	Hexachloroethane	ND	190	19	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene [b]	1270	37	18	ug/kg	J
78-59-1	Isophorone	ND	75	8.0	ug/kg	
91-57-6	2-Methylnaphthalene	95.1	37	8.5	ug/kg	
88-74-4	2-Nitroaniline [a]	ND	190	8.8	ug/kg	
99-09-2	3-Nitroaniline	ND	190	9.4	ug/kg	
100-01-6	4-Nitroaniline	ND	190	9.7	ug/kg	
91-20-3	Naphthalene	160	37	11	ug/kg	
98-95-3	Nitrobenzene	ND	75	14	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	75	11	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	190	14	ug/kg	
85-01-8	Phenanthrene	4190 [c]	190	63	ug/kg	D
129-00-0	Pyrene	4330 [c]	190	60	ug/kg	D
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	190	9.5	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	57%	47%	23-115%

ND = Not detected MDL = Method Detection Limit
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J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PSSTP-04R(1-2)		
Lab Sample ID:	JC86204-17	**Date Sampled:**	04/11/19
Matrix:	SO - Soil	**Date Received:**	04/11/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	86.1
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	61%	50%	27-114%
118-79-6	2,4,6-Tribromophenol	69%	53%	19-152%
4165-60-0	Nitrobenzene-d5	77%	70%	26-134%
321-60-8	2-Fluorobiphenyl	72%	71%	39-124%
1718-51-0	Terphenyl-d14	81%	64%	36-134%

(a) Associated CCV outside of control limits high, sample was ND.
(b) Associated CCV outside of control limits high.
(c) Result is from Run# 2

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PSSTP-04R(1-2)		
Lab Sample ID:	JC86204-17	**Date Sampled:**	04/11/19
Matrix:	SO - Soil	**Date Received:**	04/11/19
Method:	SW846 8081B SW846 3546	**Percent Solids:**	86.1
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1G152552.D	1	04/19/19 15:26	MH	04/19/19 09:50	OP19830	G1G4913
Run #2 [a]	6G64376.D	5	04/23/19 01:16	TL	04/19/19 09:50	OP19830	G6G1987

	Initial Weight	Final Volume
Run #1	15.8 g	10.0 ml
Run #2	15.8 g	10.0 ml

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin [b]	15.2	0.74	0.61	ug/kg	JN
319-84-6	alpha-BHC	ND	0.74	0.60	ug/kg	
319-85-7	beta-BHC	ND	0.74	0.66	ug/kg	
319-86-8	delta-BHC	ND	0.74	0.71	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	0.74	0.54	ug/kg	
5103-71-9	alpha-Chlordane	ND	0.74	0.59	ug/kg	
5103-74-2	gamma-Chlordane	ND	0.74	0.33	ug/kg	
60-57-1	Dieldrin	17.6	0.74	0.51	ug/kg	
72-54-8	4,4'-DDD	ND	0.74	0.67	ug/kg	
72-55-9	4,4'-DDE	ND	0.74	0.64	ug/kg	
50-29-3	4,4'-DDT [b]	41.4	0.74	0.65	ug/kg	J
72-20-8	Endrin	ND	0.74	0.57	ug/kg	
1031-07-8	Endosulfan sulfate	ND	0.74	0.57	ug/kg	
7421-93-4	Endrin aldehyde [b]	17.9	0.74	0.42	ug/kg	JN
959-98-8	Endosulfan-I	ND	0.74	0.42	ug/kg	
33213-65-9	Endosulfan-II	ND	0.74	0.46	ug/kg	
76-44-8	Heptachlor	ND	0.74	0.63	ug/kg	
1024-57-3	Heptachlor epoxide [b]	11.1	0.74	0.52	ug/kg	JN
72-43-5	Methoxychlor	ND	1.5	0.58	ug/kg	
53494-70-5	Endrin ketone	ND	0.74	0.53	ug/kg	
8001-35-2	Toxaphene	ND	18	17	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	85%	82%	25-135%
877-09-8	Tetrachloro-m-xylene	82%	70%	25-135%
2051-24-3	Decachlorobiphenyl	124%	59%	10-156%
2051-24-3	Decachlorobiphenyl	538% [c]	411% [c]	10-156%

(a) Confirmation run.
(b) More than 40 % RPD for detected concentrations between the two GC columns.
(c) Outside control limits due to matrix interference.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PSSTP-04R(1-2)		
Lab Sample ID:	JC86204-17	**Date Sampled:**	04/11/19
Matrix:	SO - Soil	**Date Received:**	04/11/19
Method:	SW846 8082A SW846 3546	**Percent Solids:**	86.1
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EF189198.D	1	04/19/19 12:11	TR	04/19/19 09:50	OP19829	GEF6426
Run #2							

	Initial Weight	Final Volume
Run #1	15.8 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	37	17	ug/kg	
11104-28-2	Aroclor 1221	ND	37	19	ug/kg	
11141-16-5	Aroclor 1232	ND	37	28	ug/kg	
53469-21-9	Aroclor 1242	ND	37	15	ug/kg	
12672-29-6	Aroclor 1248	ND	37	33	ug/kg	
11097-69-1	Aroclor 1254	1270	37	20	ug/kg	J
11096-82-5	Aroclor 1260	ND	37	16	ug/kg	
11100-14-4	Aroclor 1268	ND	37	16	ug/kg	
37324-23-5	Aroclor 1262	ND	37	24	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	117%		31-146%
877-09-8	Tetrachloro-m-xylene	102%		31-146%
2051-24-3	Decachlorobiphenyl	617% [a]		17-164%
2051-24-3	Decachlorobiphenyl	705% [a]		17-164%

(a) Outside control limits due to matrix interference.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PSSTP-04R(7-8)		
Lab Sample ID:	JC86204-18	**Date Sampled:**	04/11/19
Matrix:	SO - Soil	**Date Received:**	04/11/19
Method:	SW846 8260C	**Percent Solids:**	80.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	I225637.D	1	04/23/19 13:25	TDN	n/a	n/a	VI9090
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	3.5 g	10.0 ml	1.0 ul
Run #2			

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	190000	94000	ug/kg	
71-43-2	Benzene	16900	9400	7100	ug/kg	
74-97-5	Bromochloromethane	ND	94000	8100	ug/kg	
75-27-4	Bromodichloromethane	ND	38000	8300	ug/kg	
75-25-2	Bromoform	ND	94000	7600	ug/kg	
74-83-9	Bromomethane	ND	94000	19000	ug/kg	
78-93-3	2-Butanone (MEK)	ND	190000	70000	ug/kg	
75-15-0	Carbon disulfide	ND	38000	18000	ug/kg	
56-23-5	Carbon tetrachloride	ND	38000	10000	ug/kg	
108-90-7	Chlorobenzene	ND	38000	6700	ug/kg	
75-00-3	Chloroethane	ND	94000	13000	ug/kg	
67-66-3	Chloroform	ND	38000	7000	ug/kg	
74-87-3	Chloromethane	ND	94000	37000	ug/kg	
110-82-7	Cyclohexane	ND	38000	7600	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	38000	16000	ug/kg	
124-48-1	Dibromochloromethane	ND	38000	6400	ug/kg	
106-93-4	1,2-Dibromoethane [b]	ND	19000	6100	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	19000	5700	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	19000	6800	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	19000	6500	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	94000	12000	ug/kg	
75-34-3	1,1-Dichloroethane	ND	19000	7300	ug/kg	
107-06-2	1,2-Dichloroethane	ND	19000	8900	ug/kg	
75-35-4	1,1-Dichloroethene	ND	19000	12000	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	19000	18000	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	19000	13000	ug/kg	
78-87-5	1,2-Dichloropropane	ND	38000	7700	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	38000	6600	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	38000	6200	ug/kg	
100-41-4	Ethylbenzene	ND	19000	10000	ug/kg	
76-13-1	Freon 113	ND	94000	14000	ug/kg	
591-78-6	2-Hexanone	ND	94000	24000	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PSSTP-04R(7-8)		
Lab Sample ID:	JC86204-18	**Date Sampled:**	04/11/19
Matrix:	SO - Soil	**Date Received:**	04/11/19
Method:	SW846 8260C	**Percent Solids:**	80.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	38000	13000	ug/kg	
79-20-9	Methyl Acetate	ND	94000	26000	ug/kg	
108-87-2	Methylcyclohexane	ND	38000	13000	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	19000	6600	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	94000	29000	ug/kg	
75-09-2	Methylene chloride	ND	94000	47000	ug/kg	
100-42-5	Styrene	ND	38000	11000	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	38000	7300	ug/kg	
127-18-4	Tetrachloroethene	ND	38000	8700	ug/kg	
108-88-3	Toluene	34500	19000	7100	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	94000	19000	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	94000	19000	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	38000	8000	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	38000	6400	ug/kg	
79-01-6	Trichloroethene	ND	19000	14000	ug/kg	
75-69-4	Trichlorofluoromethane	ND	94000	13000	ug/kg	
75-01-4	Vinyl chloride	ND	38000	8800	ug/kg	
	m,p-Xylene	73500	19000	14000	ug/kg	
95-47-6	o-Xylene	26500	19000	11000	ug/kg	
1330-20-7	Xylene (total)	100000	19000	11000	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%		75-127%
17060-07-0	1,2-Dichloroethane-D4	97%		75-130%
2037-26-5	Toluene-D8	99%		80-120%
460-00-4	4-Bromofluorobenzene	105%		79-127%

(a) Diluted due to high concentration of non-target compound.
(b) This compound in BS is outside in house QC limits bias high.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PSSTP-04R(7-8)		
Lab Sample ID:	JC86204-18	**Date Sampled:**	04/11/19
Matrix:	SO - Soil	**Date Received:**	04/11/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	80.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	Z136996.D	5	04/17/19 03:35	AR	04/14/19 14:00	OP19741	EZ6751
Run #2	Z137128.D	50	04/19/19 21:43	AR	04/14/19 14:00	OP19741	EZ6755
Run #3	Z137112.D	1000	04/19/19 14:09	AR	04/14/19 14:00	OP19741	EZ6755

	Initial Weight	Final Volume
Run #1	10.4 g	1.0 ml
Run #2	10.4 g	1.0 ml
Run #3	10.4 g	1.0 ml

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	1200	290	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	3000	360	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	3000	510	ug/kg	
105-67-9	2,4-Dimethylphenol	58300	3000	1100	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	3000	2200	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	3000	640	ug/kg	
95-48-7	2-Methylphenol	52500 [b]	12000	3800	ug/kg	D
	3&4-Methylphenol	136000 [b]	12000	4900	ug/kg	D
88-75-5	2-Nitrophenol	ND	3000	390	ug/kg	
100-02-7	4-Nitrophenol [c]	ND	5900	1600	ug/kg	
87-86-5	Pentachlorophenol	ND	2400	560	ug/kg	
108-95-2	Phenol	69000 [b]	12000	3100	ug/kg	D
58-90-2	2,3,4,6-Tetrachlorophenol	ND	3000	390	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	3000	450	ug/kg	
88-06-2	2,4,6-Trichlorophenol [c]	ND	3000	350	ug/kg	
83-32-9	Acenaphthene	142000 [b]	5900	2100	ug/kg	D
208-96-8	Acenaphthylene	354000 [b]	5900	3000	ug/kg	D
98-86-2	Acetophenone	13300	3000	130	ug/kg	
120-12-7	Anthracene	883000 [d]	120000	73000	ug/kg	D
1912-24-9	Atrazine [c]	ND	1200	250	ug/kg	
56-55-3	Benzo(a)anthracene	819000 [d]	120000	34000	ug/kg	D
50-32-8	Benzo(a)pyrene	566000 [d]	120000	54000	ug/kg	D
205-99-2	Benzo(b)fluoranthene	723000 [d]	120000	53000	ug/kg	D
191-24-2	Benzo(g,h,i)perylene [e]	267000 [b]	5900	3000	ug/kg	DJ
207-08-9	Benzo(k)fluoranthene	261000 [d]	120000	56000	ug/kg	D
101-55-3	4-Bromophenyl phenyl ether	ND	1200	230	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	1200	150	ug/kg	
92-52-4	1,1'-Biphenyl	301000 [b]	12000	810	ug/kg	D
100-52-7	Benzaldehyde	ND	3000	150	ug/kg	
91-58-7	2-Chloronaphthalene	ND	1200	140	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PSSTP-04R(7-8)		
Lab Sample ID:	JC86204-18	**Date Sampled:**	04/11/19
Matrix:	SO - Soil	**Date Received:**	04/11/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	80.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
106-47-8	4-Chloroaniline	ND	3000	210	ug/kg	
86-74-8	Carbazole	573000 [b]	12000	860	ug/kg	D
105-60-2	Caprolactam [c]	ND	1200	230	ug/kg	
218-01-9	Chrysene	701000 [d]	120000	37000	ug/kg	D
111-91-1	bis(2-Chloroethoxy)methane	ND	1200	130	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	1200	260	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	1200	210	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	1200	190	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	590	180	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	590	300	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	1200	500	ug/kg	
123-91-1	1,4-Dioxane	ND	590	390	ug/kg	
53-70-3	Dibenzo(a,h)anthracene [e]	106000 [b]	5900	2600	ug/kg	DJ
132-64-9	Dibenzofuran	1220000 [d]	240000	48000	ug/kg	D
84-74-2	Di-n-butyl phthalate	ND	1200	97	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	1200	150	ug/kg	
84-66-2	Diethyl phthalate	ND	1200	130	ug/kg	
131-11-3	Dimethyl phthalate	ND	1200	110	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	1200	140	ug/kg	
206-44-0	Fluoranthene	2710000 [d]	120000	53000	ug/kg	D
86-73-7	Fluorene	2020000 [d]	120000	55000	ug/kg	D
118-74-1	Hexachlorobenzene [c]	ND	1200	150	ug/kg	
87-68-3	Hexachlorobutadiene	ND	590	240	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	5900	240	ug/kg	
67-72-1	Hexachloroethane	ND	3000	290	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene [e]	274000 [b]	5900	2800	ug/kg	DJ
78-59-1	Isophorone	ND	1200	130	ug/kg	
91-57-6	2-Methylnaphthalene	1780000 [d]	120000	27000	ug/kg	D
88-74-4	2-Nitroaniline [c]	ND	3000	140	ug/kg	
99-09-2	3-Nitroaniline	ND	3000	150	ug/kg	
100-01-6	4-Nitroaniline	ND	3000	150	ug/kg	
91-20-3	Naphthalene	9350000 [d]	120000	34000	ug/kg	D
98-95-3	Nitrobenzene	ND	1200	230	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	1200	170	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	3000	220	ug/kg	
85-01-8	Phenanthrene	4730000 [d]	120000	40000	ug/kg	D
129-00-0	Pyrene	1490000 [d]	120000	38000	ug/kg	D
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	3000	150	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PSSTP-04R(7-8)		
Lab Sample ID:	JC86204-18	**Date Sampled:**	04/11/19
Matrix:	SO - Soil	**Date Received:**	04/11/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	80.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Run# 3	Limits
367-12-4	2-Fluorophenol	64%	45%	0% [f]	23-115%
4165-62-2	Phenol-d5	87%	56%	0% [f]	27-114%
118-79-6	2,4,6-Tribromophenol	68%	40%	0% [f]	19-152%
4165-60-0	Nitrobenzene-d5	111%	78%	0% [f]	26-134%
321-60-8	2-Fluorobiphenyl	52%	69%	0% [f]	39-124%
1718-51-0	Terphenyl-d14	65%	81%	0% [f]	36-134%

(a) Dilution required due to matrix interference. Elevated detection limit due to low volume of sample extracted.
(b) Result is from Run# 2
(c) Associated CCV outside of control limits high, sample was ND.
(d) Result is from Run# 3
(e) Associated CCV outside of control limits high.
(f) Outside control limits due to dilution.

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Report of Analysis

Client Sample ID:	PSSTP-04R(7-8)		
Lab Sample ID:	JC86204-18	**Date Sampled:**	04/11/19
Matrix:	SO - Soil	**Date Received:**	04/11/19
Method:	SW846 8081B SW846 3546	**Percent Solids:**	80.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6G64384.D	1	04/23/19 04:12	TL	04/19/19 09:50	OP19830	G6G1987
Run #2 [a]	6G64386.D	5	04/23/19 05:18	TL	04/19/19 09:50	OP19830	G6G1987

	Initial Weight	Final Volume
Run #1	5.0 g	10.0 ml
Run #2	5.0 g	10.0 ml

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	2.5	2.0	ug/kg	
319-84-6	alpha-BHC	ND	2.5	2.0	ug/kg	
319-85-7	beta-BHC	ND	2.5	2.2	ug/kg	
319-86-8	delta-BHC	ND	2.5	2.4	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	2.5	1.8	ug/kg	
5103-71-9	alpha-Chlordane	ND	2.5	2.0	ug/kg	
5103-74-2	gamma-Chlordane	ND	2.5	1.1	ug/kg	
60-57-1	Dieldrin	ND	2.5	1.7	ug/kg	
72-54-8	4,4'-DDD	ND	2.5	2.3	ug/kg	
72-55-9	4,4'-DDE [b]	12.7	2.5	2.2	ug/kg	JN
50-29-3	4,4'-DDT [b]	6.8	2.5	2.2	ug/kg	JN
72-20-8	Endrin	ND	2.5	1.9	ug/kg	
1031-07-8	Endosulfan sulfate	ND	2.5	1.9	ug/kg	
7421-93-4	Endrin aldehyde [c]	ND	2.5	1.4	ug/kg	UJ
959-98-8	Endosulfan-I	ND	2.5	1.4	ug/kg	
33213-65-9	Endosulfan-II	ND	2.5	1.5	ug/kg	
76-44-8	Heptachlor	ND	2.5	2.1	ug/kg	
1024-57-3	Heptachlor epoxide [c]	ND	2.5	1.7	ug/kg	UJ
72-43-5	Methoxychlor	ND	4.9	2.0	ug/kg	
53494-70-5	Endrin ketone	ND	2.5	1.8	ug/kg	
8001-35-2	Toxaphene	ND	62	58	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	20% [d]	309% [e]	25-135%
877-09-8	Tetrachloro-m-xylene	26%	417% [e]	25-135%
2051-24-3	Decachlorobiphenyl	10%	78%	10-156%
2051-24-3	Decachlorobiphenyl	218% [e]	319% [e]	10-156%

(a) Confirmation run.
(b) More than 40 % RPD for detected concentrations between the two GC columns.
(c) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PSSTP-04R(7-8)		
Lab Sample ID:	JC86204-18	**Date Sampled:**	04/11/19
Matrix:	SO - Soil	**Date Received:**	04/11/19
Method:	SW846 8081B SW846 3546	**Percent Solids:**	80.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q

(d) Outside control limits due to matrix interference with the internal standard.
(e) Outside control limits due to matrix interference.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PSSTP-04R(7-8)		
Lab Sample ID:	JC86204-18	**Date Sampled:**	04/11/19
Matrix:	SO - Soil	**Date Received:**	04/11/19
Method:	SW846 8082A SW846 3546	**Percent Solids:**	80.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EF189221.D	1	04/22/19 11:08	TR	04/19/19 09:50	OP19829	GEF6427
Run #2							

	Initial Weight	Final Volume
Run #1	5.0 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016 [a]	ND	120	58	ug/kg	
11104-28-2	Aroclor 1221	ND	120	63	ug/kg	
11141-16-5	Aroclor 1232	ND	120	95	ug/kg	
53469-21-9	Aroclor 1242	ND	120	51	ug/kg	
12672-29-6	Aroclor 1248	ND	120	110	ug/kg	
11097-69-1	Aroclor 1254	ND	120	67	ug/kg	
11096-82-5	Aroclor 1260	ND	120	53	ug/kg	
11100-14-4	Aroclor 1268	ND	120	52	ug/kg	
37324-23-5	Aroclor 1262	ND	120	81	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	8971% [b]		31-146%
877-09-8	Tetrachloro-m-xylene	3956% [b]		31-146%
2051-24-3	Decachlorobiphenyl	675% [b]		17-164%
2051-24-3	Decachlorobiphenyl	3365% [b]		17-164%

(a) Associated CCV outside of control limits high, sample was ND.
(b) Outside control limits due to matrix interference.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PSSTP-04R(8-9)		
Lab Sample ID:	JC86204-19	**Date Sampled:**	04/11/19
Matrix:	SO - Soil	**Date Received:**	04/11/19
Method:	SW846 8260C	**Percent Solids:**	76.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	I225636.D	1	04/23/19 12:56	TDN	n/a	n/a	VI9090
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	4.5 g	10.0 ml	1.0 ul
Run #2			

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	160000	81000	ug/kg	
71-43-2	Benzene	ND	8100	6100	ug/kg	
74-97-5	Bromochloromethane	ND	81000	6900	ug/kg	
75-27-4	Bromodichloromethane	ND	32000	7200	ug/kg	
75-25-2	Bromoform	ND	81000	6500	ug/kg	
74-83-9	Bromomethane	ND	81000	16000	ug/kg	
78-93-3	2-Butanone (MEK)	ND	160000	60000	ug/kg	
75-15-0	Carbon disulfide	ND	32000	15000	ug/kg	
56-23-5	Carbon tetrachloride	ND	32000	8900	ug/kg	
108-90-7	Chlorobenzene	ND	32000	5700	ug/kg	
75-00-3	Chloroethane	ND	81000	11000	ug/kg	
67-66-3	Chloroform	ND	32000	6000	ug/kg	
74-87-3	Chloromethane	ND	81000	32000	ug/kg	
110-82-7	Cyclohexane	ND	32000	6600	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	32000	13000	ug/kg	
124-48-1	Dibromochloromethane	ND	32000	5500	ug/kg	
106-93-4	1,2-Dibromoethane [b]	ND	16000	5200	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	16000	4900	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	16000	5800	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	16000	5600	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	81000	10000	ug/kg	
75-34-3	1,1-Dichloroethane	ND	16000	6200	ug/kg	
107-06-2	1,2-Dichloroethane	ND	16000	7600	ug/kg	
75-35-4	1,1-Dichloroethene	ND	16000	11000	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	16000	15000	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	16000	11000	ug/kg	
78-87-5	1,2-Dichloropropane	ND	32000	6600	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	32000	5700	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	32000	5300	ug/kg	
100-41-4	Ethylbenzene	ND	16000	8900	ug/kg	
76-13-1	Freon 113	ND	81000	12000	ug/kg	
591-78-6	2-Hexanone	ND	81000	21000	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PSSTP-04R(8-9)
Lab Sample ID: JC86204-19
Matrix: SO - Soil
Method: SW846 8260C
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/11/19
Date Received: 04/11/19
Percent Solids: 76.2

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	32000	11000	ug/kg	
79-20-9	Methyl Acetate	ND	81000	22000	ug/kg	
108-87-2	Methylcyclohexane	ND	32000	11000	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	16000	5700	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	81000	25000	ug/kg	
75-09-2	Methylene chloride	ND	81000	40000	ug/kg	
100-42-5	Styrene	ND	32000	9300	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	32000	6300	ug/kg	
127-18-4	Tetrachloroethene	ND	32000	7500	ug/kg	
108-88-3	Toluene	ND	16000	6100	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	81000	16000	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	81000	16000	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	32000	6900	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	32000	5500	ug/kg	
79-01-6	Trichloroethene	ND	16000	12000	ug/kg	
75-69-4	Trichlorofluoromethane	ND	81000	11000	ug/kg	
75-01-4	Vinyl chloride	ND	32000	7600	ug/kg	
	m,p-Xylene	14300	16000	12000	ug/kg	J
95-47-6	o-Xylene	ND	16000	9400	ug/kg	
1330-20-7	Xylene (total)	14300	16000	9400	ug/kg	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%		75-127%
17060-07-0	1,2-Dichloroethane-D4	96%		75-130%
2037-26-5	Toluene-D8	98%		80-120%
460-00-4	4-Bromofluorobenzene	107%		79-127%

(a) Diluted due to high concentration of non-target compound.
(b) This compound in BS is outside in house QC limits bias high.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PSSTP-04R(8-9)		
Lab Sample ID:	JC86204-19	**Date Sampled:**	04/11/19
Matrix:	SO - Soil	**Date Received:**	04/11/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	76.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z136995.D	5	04/17/19 03:07	AR	04/14/19 14:00	OP19741	EZ6751
Run #2	Z137125.D	100	04/19/19 20:18	AR	04/14/19 14:00	OP19741	EZ6755
Run #3	Z137097.D	1000	04/19/19 02:54	AR	04/14/19 14:00	OP19741	EZ6754

	Initial Weight	Final Volume
Run #1	31.0 g	1.0 ml
Run #2	31.0 g	1.0 ml
Run #3	31.0 g	1.0 ml

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	420	100	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	1100	130	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	1100	180	ug/kg	
105-67-9	2,4-Dimethylphenol	2950	1100	380	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	1100	800	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	1100	230	ug/kg	
95-48-7	2-Methylphenol	3420	420	140	ug/kg	
	3&4-Methylphenol	2110	420	170	ug/kg	
88-75-5	2-Nitrophenol	ND	1100	140	ug/kg	
100-02-7	4-Nitrophenol [a]	ND	2100	570	ug/kg	
87-86-5	Pentachlorophenol	ND	850	200	ug/kg	
108-95-2	Phenol	ND	420	110	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	1100	140	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	1100	160	ug/kg	
88-06-2	2,4,6-Trichlorophenol [a]	ND	1100	130	ug/kg	
83-32-9	Acenaphthene	23200 [b]	4200	1500	ug/kg	D
208-96-8	Acenaphthylene	95800 [b]	4200	2200	ug/kg	D
98-86-2	Acetophenone	677	1100	46	ug/kg	J
120-12-7	Anthracene	181000 [b]	4200	2600	ug/kg	D
1912-24-9	Atrazine [a]	ND	420	91	ug/kg	
56-55-3	Benzo(a)anthracene	168000 [b]	4200	1200	ug/kg	D
50-32-8	Benzo(a)pyrene	126000 [b]	4200	1900	ug/kg	D
205-99-2	Benzo(b)fluoranthene	165000 [b]	4200	1900	ug/kg	D
191-24-2	Benzo(g,h,i)perylene [c]	74900 [b]	4200	2100	ug/kg	DJ
207-08-9	Benzo(k)fluoranthene	60300 [b]	4200	2000	ug/kg	D
101-55-3	4-Bromophenyl phenyl ether	ND	420	82	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	420	52	ug/kg	
92-52-4	1,1'-Biphenyl	40100 [b]	8500	580	ug/kg	D
100-52-7	Benzaldehyde	ND	1100	52	ug/kg	
91-58-7	2-Chloronaphthalene	ND	420	50	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PSSTP-04R(8-9)		
Lab Sample ID:	JC86204-19	**Date Sampled:**	04/11/19
Matrix:	SO - Soil	**Date Received:**	04/11/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	76.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
106-47-8	4-Chloroaniline	ND	1100	76	ug/kg	
86-74-8	Carbazole	82500 [b]	8500	610	ug/kg	D
105-60-2	Caprolactam [a]	ND	420	84	ug/kg	
218-01-9	Chrysene	137000 [b]	4200	1300	ug/kg	D
111-91-1	bis(2-Chloroethoxy)methane	ND	420	45	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	420	91	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	420	76	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	420	69	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	210	66	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	210	110	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	420	180	ug/kg	
123-91-1	1,4-Dioxane	ND	210	140	ug/kg	
53-70-3	Dibenzo(a,h)anthracene [c]	19200 [b]	4200	1900	ug/kg	DJ
132-64-9	Dibenzofuran	196000 [b]	8500	1700	ug/kg	D
84-74-2	Di-n-butyl phthalate	ND	420	35	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	420	53	ug/kg	
84-66-2	Diethyl phthalate	ND	420	45	ug/kg	
131-11-3	Dimethyl phthalate	ND	420	38	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	420	50	ug/kg	
206-44-0	Fluoranthene [c]	587000 [d]	42000	19000	ug/kg	D
86-73-7	Fluorene	329000 [b]	4200	1900	ug/kg	D
118-74-1	Hexachlorobenzene [a]	ND	420	54	ug/kg	
87-68-3	Hexachlorobutadiene	ND	210	85	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	2100	84	ug/kg	
67-72-1	Hexachloroethane	ND	1100	100	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene [c]	67300 [b]	4200	2000	ug/kg	DJ
78-59-1	Isophorone	ND	420	45	ug/kg	
91-57-6	2-Methylnaphthalene	194000 [b]	4200	960	ug/kg	D
88-74-4	2-Nitroaniline [a]	ND	1100	50	ug/kg	
99-09-2	3-Nitroaniline	ND	1100	53	ug/kg	
100-01-6	4-Nitroaniline	ND	1100	55	ug/kg	
91-20-3	Naphthalene	869000 [d]	42000	12000	ug/kg	D
98-95-3	Nitrobenzene	ND	420	82	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	420	61	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	1100	77	ug/kg	
85-01-8	Phenanthrene	824000 [d]	42000	14000	ug/kg	D
129-00-0	Pyrene	369000 [b]	4200	1400	ug/kg	D
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	1100	54	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PSSTP-04R(8-9)		
Lab Sample ID:	JC86204-19	**Date Sampled:**	04/11/19
Matrix:	SO - Soil	**Date Received:**	04/11/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	76.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Run# 3	Limits
367-12-4	2-Fluorophenol	64%	0% e	0% e	23-115%
4165-62-2	Phenol-d5	73%	0% e	0% e	27-114%
118-79-6	2,4,6-Tribromophenol	57%	0% e	0% e	19-152%
4165-60-0	Nitrobenzene-d5	81%	0% e	0% e	26-134%
321-60-8	2-Fluorobiphenyl	55%	0% e	0% e	39-124%
1718-51-0	Terphenyl-d14	60%	0% e	0% e	36-134%

(a) Associated CCV outside of control limits high, sample was ND.
(b) Result is from Run# 2
(c) Associated CCV outside of control limits high.
(d) Result is from Run# 3
(e) Outside control limits due to dilution.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PSSTP-04R(8-9)		
Lab Sample ID:	JC86204-19	**Date Sampled:**	04/11/19
Matrix:	SO - Soil	**Date Received:**	04/11/19
Method:	SW846 8081B SW846 3546	**Percent Solids:**	76.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6G64388.D	1	04/23/19 06:25	TL	04/19/19 09:50	OP19830	G6G1987
Run #2 [a]	6G64390.D	5	04/23/19 07:32	TL	04/19/19 09:50	OP19830	G6G1987

	Initial Weight	Final Volume
Run #1	15.2 g	10.0 ml
Run #2	15.2 g	10.0 ml

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	0.86	0.71	ug/kg	
319-84-6	alpha-BHC	ND	0.86	0.70	ug/kg	
319-85-7	beta-BHC	ND	0.86	0.78	ug/kg	
319-86-8	delta-BHC	ND	0.86	0.83	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	0.86	0.64	ug/kg	
5103-71-9	alpha-Chlordane	ND	0.86	0.70	ug/kg	
5103-74-2	gamma-Chlordane	ND	0.86	0.39	ug/kg	
60-57-1	Dieldrin	ND	0.86	0.59	ug/kg	
72-54-8	4,4'-DDD	ND	0.86	0.79	ug/kg	
72-55-9	4,4'-DDE	ND	0.86	0.76	ug/kg	
50-29-3	4,4'-DDT	0.97	0.86	0.76	ug/kg	
72-20-8	Endrin	ND	0.86	0.67	ug/kg	
1031-07-8	Endosulfan sulfate	ND	0.86	0.67	ug/kg	
7421-93-4	Endrin aldehyde [b]	ND	0.86	0.49	ug/kg	UJ
959-98-8	Endosulfan-I [c]	3.7	0.86	0.50	ug/kg	JN
33213-65-9	Endosulfan-II	ND	0.86	0.54	ug/kg	
76-44-8	Heptachlor	ND	0.86	0.74	ug/kg	
1024-57-3	Heptachlor epoxide [b]	ND	0.86	0.61	ug/kg	UJ
72-43-5	Methoxychlor	ND	1.7	0.69	ug/kg	
53494-70-5	Endrin ketone	ND	0.86	0.62	ug/kg	
8001-35-2	Toxaphene	ND	22	20	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	12% [d]	73%	25-135%
877-09-8	Tetrachloro-m-xylene	36%	300% [e]	25-135%
2051-24-3	Decachlorobiphenyl	7% [d]	27%	10-156%
2051-24-3	Decachlorobiphenyl	33%	199% [e]	10-156%

(a) Confirmation run.
(b) Associated CCV outside of control limits low.
(c) More than 40 % RPD for detected concentrations between the two GC columns.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PSSTP-04R(8-9)		
Lab Sample ID:	JC86204-19	**Date Sampled:**	04/11/19
Matrix:	SO - Soil	**Date Received:**	04/11/19
Method:	SW846 8081B SW846 3546	**Percent Solids:**	76.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q

(d) Outside control limits due to matrix interference with the internal standard.
(e) Outside control limits due to matrix interference.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PSSTP-04R(8-9)		
Lab Sample ID:	JC86204-19	**Date Sampled:**	04/11/19
Matrix:	SO - Soil	**Date Received:**	04/11/19
Method:	SW846 8082A SW846 3546	**Percent Solids:**	76.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EF189222.D	1	04/22/19 11:33	TR	04/19/19 09:50	OP19829	GEF6427
Run #2							

	Initial Weight	Final Volume
Run #1	15.2 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016 [a]	ND	43	20	ug/kg	
11104-28-2	Aroclor 1221	ND	43	22	ug/kg	
11141-16-5	Aroclor 1232	ND	43	33	ug/kg	
53469-21-9	Aroclor 1242	ND	43	18	ug/kg	
12672-29-6	Aroclor 1248	ND	43	39	ug/kg	
11097-69-1	Aroclor 1254	ND	43	23	ug/kg	
11096-82-5	Aroclor 1260	ND	43	18	ug/kg	
11100-14-4	Aroclor 1268	ND	43	18	ug/kg	
37324-23-5	Aroclor 1262	ND	43	28	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	9750% [b]		31-146%
877-09-8	Tetrachloro-m-xylene	4880% [b]		31-146%
2051-24-3	Decachlorobiphenyl	1956% [b]		17-164%
2051-24-3	Decachlorobiphenyl	6362% [b]		17-164%

(a) Associated CCV outside of control limits high, sample was ND.
(b) Outside control limits due to matrix interference.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PSSTP-04R(16-17)		
Lab Sample ID:	JC86204-20	**Date Sampled:**	04/11/19
Matrix:	SO - Soil	**Date Received:**	04/11/19
Method:	SW846 8260C	**Percent Solids:**	81.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Y184677.D	1	04/22/19 17:40	PS	n/a	n/a	VY8011
Run #2							

	Initial Weight
Run #1	4.6 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	51.0	13	6.7	ug/kg	
71-43-2	Benzene	ND	0.67	0.50	ug/kg	
74-97-5	Bromochloromethane	ND	6.7	0.57	ug/kg	
75-27-4	Bromodichloromethane	ND	2.7	0.59	ug/kg	
75-25-2	Bromoform	ND	6.7	0.54	ug/kg	
74-83-9	Bromomethane	ND	6.7	1.3	ug/kg	
78-93-3	2-Butanone (MEK)	5.9	13	5.0	ug/kg	J
75-15-0	Carbon disulfide	2.5	2.7	1.2	ug/kg	J
56-23-5	Carbon tetrachloride	ND	2.7	0.74	ug/kg	
108-90-7	Chlorobenzene	ND	2.7	0.47	ug/kg	
75-00-3	Chloroethane	ND	6.7	0.92	ug/kg	
67-66-3	Chloroform	ND	2.7	0.50	ug/kg	
74-87-3	Chloromethane	ND	6.7	2.6	ug/kg	
110-82-7	Cyclohexane	ND	2.7	0.54	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.7	1.1	ug/kg	
124-48-1	Dibromochloromethane	ND	2.7	0.45	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.3	0.43	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.3	0.41	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.3	0.48	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.3	0.46	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	6.7	0.85	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.3	0.51	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.3	0.63	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.3	0.88	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.3	1.3	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.3	0.89	ug/kg	
78-87-5	1,2-Dichloropropane	ND	2.7	0.54	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	2.7	0.47	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2.7	0.44	ug/kg	
100-41-4	Ethylbenzene	ND	1.3	0.74	ug/kg	
76-13-1	Freon 113	ND	6.7	1.0	ug/kg	
591-78-6	2-Hexanone	ND	6.7	1.7	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PSSTP-04R(16-17)
Lab Sample ID: JC86204-20
Matrix: SO - Soil
Method: SW846 8260C
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/11/19
Date Received: 04/11/19
Percent Solids: 81.3

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	2.7	0.93	ug/kg	
79-20-9	Methyl Acetate	ND	6.7	1.9	ug/kg	
108-87-2	Methylcyclohexane	ND	2.7	0.95	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.3	0.47	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	6.7	2.1	ug/kg	
75-09-2	Methylene chloride	ND	6.7	3.3	ug/kg	
100-42-5	Styrene	ND	2.7	0.77	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.7	0.52	ug/kg	
127-18-4	Tetrachloroethene	ND	2.7	0.62	ug/kg	
108-88-3	Toluene	ND	1.3	0.50	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	6.7	1.3	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	6.7	1.3	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	2.7	0.57	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2.7	0.46	ug/kg	
79-01-6	Trichloroethene	ND	1.3	1.0	ug/kg	
75-69-4	Trichlorofluoromethane	ND	6.7	0.91	ug/kg	
75-01-4	Vinyl chloride	ND	2.7	0.63	ug/kg	
	m,p-Xylene	ND	1.3	1.0	ug/kg	
95-47-6	o-Xylene	ND	1.3	0.78	ug/kg	
1330-20-7	Xylene (total)	ND	1.3	0.78	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	113%		75-127%
17060-07-0	1,2-Dichloroethane-D4	99%		75-130%
2037-26-5	Toluene-D8	89%		80-120%
460-00-4	4-Bromofluorobenzene	96%		79-127%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID: PSSTP-04R(16-17)
Lab Sample ID: JC86204-20
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/11/19
Date Received: 04/11/19
Percent Solids: 81.3

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z136991.D	1	04/17/19 01:16	AR	04/14/19 14:00	OP19741	EZ6751
Run #2							

	Initial Weight	Final Volume
Run #1	30.2 g	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	81	20	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	200	25	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	200	35	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	200	72	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	200	150	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	200	44	ug/kg	
95-48-7	2-Methylphenol	ND	81	26	ug/kg	
	3&4-Methylphenol	ND	81	33	ug/kg	
88-75-5	2-Nitrophenol	ND	200	27	ug/kg	
100-02-7	4-Nitrophenol [a]	ND	410	110	ug/kg	
87-86-5	Pentachlorophenol	ND	160	38	ug/kg	
108-95-2	Phenol	ND	81	21	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	200	27	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	200	31	ug/kg	
88-06-2	2,4,6-Trichlorophenol [a]	ND	200	24	ug/kg	
83-32-9	Acenaphthene	67.9	41	14	ug/kg	
208-96-8	Acenaphthylene	35.9	41	21	ug/kg	J
98-86-2	Acetophenone	ND	200	8.8	ug/kg	
120-12-7	Anthracene	184	41	25	ug/kg	
1912-24-9	Atrazine [a]	ND	81	17	ug/kg	
56-55-3	Benzo(a)anthracene	489	41	12	ug/kg	
50-32-8	Benzo(a)pyrene	400	41	19	ug/kg	
205-99-2	Benzo(b)fluoranthene	450	41	18	ug/kg	
191-24-2	Benzo(g,h,i)perylene [b]	250	41	20	ug/kg	J
207-08-9	Benzo(k)fluoranthene	163	41	19	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	81	16	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	81	9.9	ug/kg	
92-52-4	1,1'-Biphenyl	14.0	81	5.6	ug/kg	J
100-52-7	Benzaldehyde	ND	200	10	ug/kg	
91-58-7	2-Chloronaphthalene	ND	81	9.7	ug/kg	
106-47-8	4-Chloroaniline	ND	200	15	ug/kg	
86-74-8	Carbazole	77.0	81	5.9	ug/kg	J

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PSSTP-04R(16-17)
Lab Sample ID: JC86204-20
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/11/19
Date Received: 04/11/19
Percent Solids: 81.3

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam [a]	ND	81	16	ug/kg	
218-01-9	Chrysene	462	41	13	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	81	8.7	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	81	18	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	81	15	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	81	13	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	41	13	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	41	20	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	81	34	ug/kg	
123-91-1	1,4-Dioxane	ND	41	27	ug/kg	
53-70-3	Dibenzo(a,h)anthracene [b]	68.5	41	18	ug/kg	J
132-64-9	Dibenzofuran	67.1	81	17	ug/kg	J
84-74-2	Di-n-butyl phthalate	ND	81	6.6	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	81	10	ug/kg	
84-66-2	Diethyl phthalate	ND	81	8.7	ug/kg	
131-11-3	Dimethyl phthalate	ND	81	7.2	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	81	9.5	ug/kg	
206-44-0	Fluoranthene [b]	695	41	18	ug/kg	
86-73-7	Fluorene	112	41	19	ug/kg	
118-74-1	Hexachlorobenzene [a]	ND	81	10	ug/kg	
87-68-3	Hexachlorobutadiene	ND	41	16	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	410	16	ug/kg	
67-72-1	Hexachloroethane	ND	200	20	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene [b]	219	41	19	ug/kg	J
78-59-1	Isophorone	ND	81	8.7	ug/kg	
91-57-6	2-Methylnaphthalene	55.7	41	9.2	ug/kg	
88-74-4	2-Nitroaniline [a]	ND	200	9.6	ug/kg	
99-09-2	3-Nitroaniline	ND	200	10	ug/kg	
100-01-6	4-Nitroaniline	ND	200	11	ug/kg	
91-20-3	Naphthalene	79.2	41	11	ug/kg	
98-95-3	Nitrobenzene	ND	81	16	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	81	12	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	200	15	ug/kg	
85-01-8	Phenanthrene	655	41	14	ug/kg	
129-00-0	Pyrene	781	41	13	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	200	10	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	57%		23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PSSTP-04R(16-17)		
Lab Sample ID:	JC86204-20	**Date Sampled:**	04/11/19
Matrix:	SO - Soil	**Date Received:**	04/11/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	81.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	61%		27-114%
118-79-6	2,4,6-Tribromophenol	71%		19-152%
4165-60-0	Nitrobenzene-d5	77%		26-134%
321-60-8	2-Fluorobiphenyl	69%		39-124%
1718-51-0	Terphenyl-d14	82%		36-134%

(a) Associated CCV outside of control limits high, sample was ND.
(b) Associated CCV outside of control limits high.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PSSTP-04R(16-17)		
Lab Sample ID:	JC86204-20	**Date Sampled:**	04/11/19
Matrix:	SO - Soil	**Date Received:**	04/11/19
Method:	SW846 8081B SW846 3546	**Percent Solids:**	81.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6G64381.D	1	04/23/19 02:47	TL	04/19/19 09:50	OP19830	G6G1987
Run #2							

	Initial Weight	Final Volume
Run #1	16.7 g	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	0.74	0.61	ug/kg	
319-84-6	alpha-BHC	ND	0.74	0.60	ug/kg	
319-85-7	beta-BHC	ND	0.74	0.67	ug/kg	
319-86-8	delta-BHC	ND	0.74	0.71	ug/kg	
58-89-9	gamma-BHC (Lindane) [a]	~~0.71~~ ND	0.74	0.54	ug/kg	~~J~~ U
5103-71-9	alpha-Chlordane	ND	0.74	0.59	ug/kg	
5103-74-2	gamma-Chlordane	ND	0.74	0.33	ug/kg	
60-57-1	Dieldrin	ND	0.74	0.51	ug/kg	
72-54-8	4,4'-DDD	ND	0.74	0.68	ug/kg	
72-55-9	4,4'-DDE	ND	0.74	0.65	ug/kg	
50-29-3	4,4'-DDT	ND	0.74	0.65	ug/kg	
72-20-8	Endrin	ND	0.74	0.57	ug/kg	
1031-07-8	Endosulfan sulfate	ND	0.74	0.58	ug/kg	
7421-93-4	Endrin aldehyde	ND	0.74	0.42	ug/kg	
959-98-8	Endosulfan-I	ND	0.74	0.42	ug/kg	
33213-65-9	Endosulfan-II	ND	0.74	0.46	ug/kg	
76-44-8	Heptachlor	ND	0.74	0.63	ug/kg	
1024-57-3	Heptachlor epoxide	ND	0.74	0.52	ug/kg	
72-43-5	Methoxychlor	ND	1.5	0.59	ug/kg	
53494-70-5	Endrin ketone	ND	0.74	0.53	ug/kg	
8001-35-2	Toxaphene	ND	18	17	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	64%		25-135%
877-09-8	Tetrachloro-m-xylene	56%		25-135%
2051-24-3	Decachlorobiphenyl	69%		10-156%
2051-24-3	Decachlorobiphenyl	111%		10-156%

(a) More than 40 % RPD for detected concentrations between the two GC columns.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PSSTP-04R(16-17)		
Lab Sample ID:	JC86204-20	**Date Sampled:**	04/11/19
Matrix:	SO - Soil	**Date Received:**	04/11/19
Method:	SW846 8082A SW846 3546	**Percent Solids:**	81.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EF189223.D	1	04/22/19 11:58	TR	04/19/19 09:50	OP19829	GEF6427
Run #2							

	Initial Weight	Final Volume
Run #1	16.2 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016 [a]	ND	38	18	ug/kg	
11104-28-2	Aroclor 1221	ND	38	19	ug/kg	
11141-16-5	Aroclor 1232	ND	38	29	ug/kg	
53469-21-9	Aroclor 1242	ND	38	16	ug/kg	
12672-29-6	Aroclor 1248	ND	38	34	ug/kg	
11097-69-1	Aroclor 1254	ND	38	20	ug/kg	
11096-82-5	Aroclor 1260	ND	38	16	ug/kg	
11100-14-4	Aroclor 1268	ND	38	16	ug/kg	
37324-23-5	Aroclor 1262	ND	38	25	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	66%		31-146%
877-09-8	Tetrachloro-m-xylene	82%		31-146%
2051-24-3	Decachlorobiphenyl	265% [b]		17-164%
2051-24-3	Decachlorobiphenyl	780% [b]		17-164%

(a) Associated CCV outside of control limits high, sample was ND.
(b) Outside control limits due to matrix interference.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PCTP-28R(6-8)		
Lab Sample ID:	JC86204-21	**Date Sampled:**	04/11/19
Matrix:	SO - Soil	**Date Received:**	04/11/19
Method:	SW846 8260C	**Percent Solids:**	87.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Y184656.D	1	04/20/19 22:47	PS	n/a	n/a	VY8010
Run #2							

	Initial Weight
Run #1	4.9 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	38.1	12	5.8	ug/kg	
71-43-2	Benzene	ND	0.58	0.44	ug/kg	
74-97-5	Bromochloromethane	ND	5.8	0.50	ug/kg	
75-27-4	Bromodichloromethane	ND	2.3	0.52	ug/kg	
75-25-2	Bromoform	ND	5.8	0.47	ug/kg	
74-83-9	Bromomethane	ND	5.8	1.2	ug/kg	
78-93-3	2-Butanone (MEK)	4.5	12	4.4	ug/kg	J
75-15-0	Carbon disulfide	6.8	2.3	1.1	ug/kg	
56-23-5	Carbon tetrachloride [a]	ND	2.3	0.64	ug/kg	
108-90-7	Chlorobenzene	ND	2.3	0.41	ug/kg	
75-00-3	Chloroethane	ND	5.8	0.80	ug/kg	
67-66-3	Chloroform	ND	2.3	0.43	ug/kg	
74-87-3	Chloromethane [a]	ND	5.8	2.3	ug/kg	
110-82-7	Cyclohexane [a]	ND	2.3	0.47	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.3	0.98	ug/kg	
124-48-1	Dibromochloromethane	ND	2.3	0.40	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.2	0.38	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.2	0.36	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.2	0.42	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.2	0.40	ug/kg	
75-71-8	Dichlorodifluoromethane [a]	ND	5.8	0.74	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.2	0.45	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.2	0.55	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.2	0.77	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.2	1.1	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.2	0.78	ug/kg	
78-87-5	1,2-Dichloropropane	ND	2.3	0.48	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	2.3	0.41	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2.3	0.38	ug/kg	
100-41-4	Ethylbenzene	ND	1.2	0.65	ug/kg	
76-13-1	Freon 113 [a]	ND	5.8	0.89	ug/kg	
591-78-6	2-Hexanone	ND	5.8	1.5	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCTP-28R(6-8)		
Lab Sample ID:	JC86204-21	**Date Sampled:**	04/11/19
Matrix:	SO - Soil	**Date Received:**	04/11/19
Method:	SW846 8260C	**Percent Solids:**	87.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	2.3	0.81	ug/kg	
79-20-9	Methyl Acetate	ND	5.8	1.6	ug/kg	
108-87-2	Methylcyclohexane	ND	2.3	0.83	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.2	0.41	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.8	1.8	ug/kg	
75-09-2	Methylene chloride	ND	5.8	2.9	ug/kg	
100-42-5	Styrene	ND	2.3	0.67	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.3	0.46	ug/kg	
127-18-4	Tetrachloroethene	ND	2.3	0.54	ug/kg	
108-88-3	Toluene	ND	1.2	0.44	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	5.8	1.2	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	5.8	1.2	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	2.3	0.50	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2.3	0.40	ug/kg	
79-01-6	Trichloroethene	ND	1.2	0.89	ug/kg	
75-69-4	Trichlorofluoromethane [a]	ND	5.8	0.80	ug/kg	
75-01-4	Vinyl chloride [a]	ND	2.3	0.55	ug/kg	
	m,p-Xylene	ND	1.2	0.87	ug/kg	
95-47-6	o-Xylene	ND	1.2	0.68	ug/kg	
1330-20-7	Xylene (total)	ND	1.2	0.68	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	108%		75-127%
17060-07-0	1,2-Dichloroethane-D4	108%		75-130%
2037-26-5	Toluene-D8	94%		80-120%
460-00-4	4-Bromofluorobenzene	98%		79-127%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PCTP-28R(6-8)		
Lab Sample ID:	JC86204-21	**Date Sampled:**	04/11/19
Matrix:	SO - Soil	**Date Received:**	04/11/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	87.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z136993.D	1	04/17/19 02:12	AR	04/14/19 14:00	OP19741	EZ6751
Run #2	Z137126.D	20	04/19/19 20:46	AR	04/14/19 14:00	OP19741	EZ6755

	Initial Weight	Final Volume
Run #1	31.8 g	1.0 ml
Run #2	31.8 g	1.0 ml

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	72	18	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	180	22	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	180	31	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	180	64	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	180	140	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	180	39	ug/kg	
95-48-7	2-Methylphenol	ND	72	23	ug/kg	
	3&4-Methylphenol	ND	72	30	ug/kg	
88-75-5	2-Nitrophenol	ND	180	24	ug/kg	
100-02-7	4-Nitrophenol [a]	ND	360	96	ug/kg	
87-86-5	Pentachlorophenol	ND	140	34	ug/kg	
108-95-2	Phenol	ND	72	19	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	180	24	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	180	27	ug/kg	
88-06-2	2,4,6-Trichlorophenol [a]	ND	180	21	ug/kg	
83-32-9	Acenaphthene	700	36	12	ug/kg	
208-96-8	Acenaphthylene	1120	36	18	ug/kg	
98-86-2	Acetophenone	ND	180	7.7	ug/kg	
120-12-7	Anthracene	3550	36	22	ug/kg	
1912-24-9	Atrazine [a]	ND	72	15	ug/kg	
56-55-3	Benzo(a)anthracene	8110 [b]	720	200	ug/kg	D
50-32-8	Benzo(a)pyrene	6420 [b]	720	330	ug/kg	D
205-99-2	Benzo(b)fluoranthene	8610 [b]	720	320	ug/kg	D
191-24-2	Benzo(g,h,i)perylene [c]	3480 [b]	720	360	ug/kg	DJ
207-08-9	Benzo(k)fluoranthene	3310	36	17	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	72	14	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	72	8.8	ug/kg	
92-52-4	1,1'-Biphenyl	51.8	72	4.9	ug/kg	J
100-52-7	Benzaldehyde	ND	180	8.9	ug/kg	
91-58-7	2-Chloronaphthalene	ND	72	8.6	ug/kg	
106-47-8	4-Chloroaniline	ND	180	13	ug/kg	
86-74-8	Carbazole	1190	72	5.2	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PCTP-28R(6-8)
Lab Sample ID: JC86204-21
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/11/19
Date Received: 04/11/19
Percent Solids: 87.3

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam [a]	ND	72	14	ug/kg	
218-01-9	Chrysene	7190 [b]	720	230	ug/kg	D
111-91-1	bis(2-Chloroethoxy)methane	ND	72	7.7	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	72	16	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	72	13	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	72	12	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	36	11	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	36	18	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	72	30	ug/kg	
123-91-1	1,4-Dioxane	ND	36	24	ug/kg	
53-70-3	Dibenzo(a,h)anthracene [c]	1680	36	16	ug/kg	J
132-64-9	Dibenzofuran	774	72	15	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	72	5.9	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	72	9.0	ug/kg	
84-66-2	Diethyl phthalate	ND	72	7.7	ug/kg	
131-11-3	Dimethyl phthalate	ND	72	6.4	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	116	72	8.4	ug/kg	
206-44-0	Fluoranthene	22900 [b]	720	320	ug/kg	D
86-73-7	Fluorene	1940	36	17	ug/kg	
118-74-1	Hexachlorobenzene [a]	ND	72	9.1	ug/kg	
87-68-3	Hexachlorobutadiene	ND	36	14	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	360	14	ug/kg	
67-72-1	Hexachloroethane	ND	180	18	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene [c]	3380 [b]	720	340	ug/kg	DJ
78-59-1	Isophorone	ND	72	7.7	ug/kg	
91-57-6	2-Methylnaphthalene	122	36	8.1	ug/kg	
88-74-4	2-Nitroaniline [a]	ND	180	8.5	ug/kg	
99-09-2	3-Nitroaniline	ND	180	9.0	ug/kg	
100-01-6	4-Nitroaniline	ND	180	9.3	ug/kg	
91-20-3	Naphthalene	259	36	10	ug/kg	
98-95-3	Nitrobenzene	ND	72	14	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	72	10	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	180	13	ug/kg	
85-01-8	Phenanthrene	9390 [b]	720	240	ug/kg	D
129-00-0	Pyrene	14400 [b]	720	230	ug/kg	D
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	180	9.1	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	53%	39%	23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCTP-28R(6-8)		
Lab Sample ID:	JC86204-21	**Date Sampled:**	04/11/19
Matrix:	SO - Soil	**Date Received:**	04/11/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	87.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	57%	43%	27-114%
118-79-6	2,4,6-Tribromophenol	58%	39%	19-152%
4165-60-0	Nitrobenzene-d5	70%	66%	26-134%
321-60-8	2-Fluorobiphenyl	67%	60%	39-124%
1718-51-0	Terphenyl-d14	75%	63%	36-134%

(a) Associated CCV outside of control limits high, sample was ND.
(b) Result is from Run# 2
(c) Associated CCV outside of control limits high.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS LabLink@1039014 11:12 10-May-2019

Report of Analysis

Client Sample ID:	PCTP-28R(11-12)		
Lab Sample ID:	JC86204-22	**Date Sampled:**	04/11/19
Matrix:	SO - Soil	**Date Received:**	04/11/19
Method:	SW846 8260C	**Percent Solids:**	73.4
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Y184657.D	1	04/20/19 23:16	PS	n/a	n/a	VY8010
Run #2							

	Initial Weight
Run #1	2.8 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	43.5	24	12	ug/kg	
71-43-2	Benzene	ND	1.2	0.92	ug/kg	
74-97-5	Bromochloromethane	ND	12	1.0	ug/kg	
75-27-4	Bromodichloromethane	ND	4.9	1.1	ug/kg	
75-25-2	Bromoform	ND	12	0.98	ug/kg	
74-83-9	Bromomethane	ND	12	2.4	ug/kg	
78-93-3	2-Butanone (MEK)	ND	24	9.1	ug/kg	
75-15-0	Carbon disulfide	3.5	4.9	2.3	ug/kg	J
56-23-5	Carbon tetrachloride [a]	ND	4.9	1.3	ug/kg	
108-90-7	Chlorobenzene	ND	4.9	0.86	ug/kg	
75-00-3	Chloroethane	ND	12	1.7	ug/kg	
67-66-3	Chloroform	ND	4.9	0.91	ug/kg	
74-87-3	Chloromethane [a]	ND	12	4.8	ug/kg	
110-82-7	Cyclohexane [a]	ND	4.9	0.99	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	4.9	2.0	ug/kg	
124-48-1	Dibromochloromethane	ND	4.9	0.82	ug/kg	
106-93-4	1,2-Dibromoethane	ND	2.4	0.79	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	2.4	0.74	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	2.4	0.87	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	2.4	0.84	ug/kg	
75-71-8	Dichlorodifluoromethane [a]	ND	12	1.5	ug/kg	
75-34-3	1,1-Dichloroethane	ND	2.4	0.94	ug/kg	
107-06-2	1,2-Dichloroethane	ND	2.4	1.1	ug/kg	
75-35-4	1,1-Dichloroethene	ND	2.4	1.6	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	2.4	2.3	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	2.4	1.6	ug/kg	
78-87-5	1,2-Dichloropropane	ND	4.9	0.99	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	4.9	0.86	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	4.9	0.80	ug/kg	
100-41-4	Ethylbenzene	ND	2.4	1.3	ug/kg	
76-13-1	Freon 113 [a]	ND	12	1.9	ug/kg	
591-78-6	2-Hexanone	ND	12	3.1	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PCTP-28R(11-12)
Lab Sample ID: JC86204-22
Matrix: SO - Soil
Method: SW846 8260C
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/11/19
Date Received: 04/11/19
Percent Solids: 73.4

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	4.9	1.7	ug/kg	
79-20-9	Methyl Acetate	ND	12	3.4	ug/kg	
108-87-2	Methylcyclohexane	ND	4.9	1.7	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	2.4	0.86	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	12	3.8	ug/kg	
75-09-2	Methylene chloride	ND	12	6.1	ug/kg	
100-42-5	Styrene	ND	4.9	1.4	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	4.9	0.95	ug/kg	
127-18-4	Tetrachloroethene	ND	4.9	1.1	ug/kg	
108-88-3	Toluene	ND	2.4	0.91	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	12	2.4	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	12	2.4	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	4.9	1.0	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	4.9	0.83	ug/kg	
79-01-6	Trichloroethene	ND	2.4	1.9	ug/kg	
75-69-4	Trichlorofluoromethane [a]	ND	12	1.7	ug/kg	
75-01-4	Vinyl chloride [a]	ND	4.9	1.1	ug/kg	
	m,p-Xylene	ND	2.4	1.8	ug/kg	
95-47-6	o-Xylene	ND	2.4	1.4	ug/kg	
1330-20-7	Xylene (total)	ND	2.4	1.4	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	107%		75-127%
17060-07-0	1,2-Dichloroethane-D4	105%		75-130%
2037-26-5	Toluene-D8	97%		80-120%
460-00-4	4-Bromofluorobenzene	90%		79-127%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS LabLink@1039014 11:12 10-May-2019

Report of Analysis

Client Sample ID: PCTP-28R(11-12)
Lab Sample ID: JC86204-22
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/11/19
Date Received: 04/11/19
Percent Solids: 73.4

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z136992.D	1	04/17/19 01:44	AR	04/14/19 14:00	OP19741	EZ6751
Run #2							

	Initial Weight	Final Volume
Run #1	30.8 g	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	88	22	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	220	27	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	220	38	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	220	79	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	220	170	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	220	47	ug/kg	
95-48-7	2-Methylphenol	ND	88	28	ug/kg	
	3&4-Methylphenol	ND	88	36	ug/kg	
88-75-5	2-Nitrophenol	ND	220	29	ug/kg	
100-02-7	4-Nitrophenol [a]	ND	440	120	ug/kg	
87-86-5	Pentachlorophenol	ND	180	42	ug/kg	
108-95-2	Phenol	ND	88	23	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	220	29	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	220	33	ug/kg	
88-06-2	2,4,6-Trichlorophenol [a]	ND	220	26	ug/kg	
83-32-9	Acenaphthene	373	44	15	ug/kg	
208-96-8	Acenaphthylene	ND	44	22	ug/kg	
98-86-2	Acetophenone	ND	220	9.5	ug/kg	
120-12-7	Anthracene	ND	44	27	ug/kg	
1912-24-9	Atrazine [a]	ND	88	19	ug/kg	
56-55-3	Benzo(a)anthracene	36.2	44	13	ug/kg	J
50-32-8	Benzo(a)pyrene	ND	44	20	ug/kg	
205-99-2	Benzo(b)fluoranthene	25.0	44	20	ug/kg	J
191-24-2	Benzo(g,h,i)perylene [a]	ND	44	22	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	44	21	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	88	17	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	88	11	ug/kg	
92-52-4	1,1'-Biphenyl	152	88	6.1	ug/kg	
100-52-7	Benzaldehyde	ND	220	11	ug/kg	
91-58-7	2-Chloronaphthalene	ND	88	11	ug/kg	
106-47-8	4-Chloroaniline	ND	220	16	ug/kg	
86-74-8	Carbazole	ND	88	6.4	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PCTP-28R(11-12)
Lab Sample ID: JC86204-22
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/11/19
Date Received: 04/11/19
Percent Solids: 73.4

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam [a]	ND	88	17	ug/kg	
218-01-9	Chrysene	51.5	44	14	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	88	9.5	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	88	19	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	88	16	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	88	14	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	44	14	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	44	22	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	88	37	ug/kg	
123-91-1	1,4-Dioxane	ND	44	29	ug/kg	
53-70-3	Dibenzo(a,h)anthracene [a]	ND	44	20	ug/kg	
132-64-9	Dibenzofuran	ND	88	18	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	88	7.2	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	88	11	ug/kg	
84-66-2	Diethyl phthalate	ND	88	9.4	ug/kg	
131-11-3	Dimethyl phthalate	ND	88	7.9	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	88	10	ug/kg	
206-44-0	Fluoranthene [b]	60.7	44	20	ug/kg	J
86-73-7	Fluorene	ND	44	20	ug/kg	
118-74-1	Hexachlorobenzene [a]	ND	88	11	ug/kg	
87-68-3	Hexachlorobutadiene	ND	44	18	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	440	18	ug/kg	
67-72-1	Hexachloroethane	ND	220	22	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene [a]	ND	44	21	ug/kg	
78-59-1	Isophorone	ND	88	9.5	ug/kg	
91-57-6	2-Methylnaphthalene	318	44	10	ug/kg	
88-74-4	2-Nitroaniline [a]	ND	220	10	ug/kg	
99-09-2	3-Nitroaniline	ND	220	11	ug/kg	
100-01-6	4-Nitroaniline	ND	220	11	ug/kg	
91-20-3	Naphthalene	415	44	12	ug/kg	
98-95-3	Nitrobenzene	ND	88	17	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	88	13	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	220	16	ug/kg	
85-01-8	Phenanthrene	ND	44	15	ug/kg	
129-00-0	Pyrene	125	44	14	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	220	11	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	52%		23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCTP-28R(11-12)		
Lab Sample ID:	JC86204-22	**Date Sampled:**	04/11/19
Matrix:	SO - Soil	**Date Received:**	04/11/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	73.4
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	56%		27-114%
118-79-6	2,4,6-Tribromophenol	61%		19-152%
4165-60-0	Nitrobenzene-d5	83%		26-134%
321-60-8	2-Fluorobiphenyl	61%		39-124%
1718-51-0	Terphenyl-d14	73%		36-134%

(a) Associated CCV outside of control limits high, sample was ND.
(b) Associated CCV outside of control limits high.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PSSTP-01R(5-6)
Lab Sample ID: JC86204-1
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/10/19
Date Received: 04/11/19
Percent Solids: 81.8

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	10900	59	9.6	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]
Antimony	3.6	2.4	0.49	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]
Arsenic	4.1	2.4	0.33	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]
Barium	77.9	24	2.3	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]
Beryllium	0.56	0.24	0.095	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]
Cadmium	0.33 J	0.59	0.083	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]
Calcium	86800	3000	260	mg/kg	5	04/15/19	04/17/19	ND	SW846 6010D [3]	SW846 3050B [4]
Chromium	28.4	1.2	0.44	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]
Cobalt	5.5 J	5.9	0.33	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]
Copper	33.3	3.0	1.0	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]
Iron	13900	59	23	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]
Lead	300	2.4	0.49	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]
Magnesium	5480	590	16	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]
Manganese	235	1.8	0.49	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]
Mercury	0.14	0.039	0.017	mg/kg	1	04/17/19	04/17/19	LL	SW846 7471B [2]	SW846 7471B [5]
Nickel	13.7	4.8	0.42	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]
Potassium	1700	1200	38	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]
Selenium	0.77 U	2.4	0.77	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]
Silver	0.20 U	0.59	0.20	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]
Sodium	217 J	1200	92	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]
Thallium	0.69 U	1.2	0.69	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]
Vanadium	20.0	5.9	0.23	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]
Zinc	179	5.9	2.7	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]

(1) Instrument QC Batch: MA46518
(2) Instrument QC Batch: MA46520
(3) Instrument QC Batch: MA46527
(4) Prep QC Batch: MP14202
(5) Prep QC Batch: MP14296

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: PSSTP-01R(5-6)
Lab Sample ID: JC86204-1
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/10/19
Date Received: 04/11/19
Percent Solids: 81.8

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	0.58	0.26	0.13	mg/kg	1	04/23/19 15:16	KI	SW846 9012B/LACHAT
Solids, Percent	81.8			%	1	04/16/19 16:30	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: PCTP-73R(0.0-0.5)
Lab Sample ID: JC86204-4
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/10/19
Date Received: 04/11/19
Percent Solids: 78.3

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	8940	62	9.9	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]
Antimony	1.4 J	2.5	0.51	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]
Arsenic	5.3	2.5	0.35	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]
Barium	83.1	25	2.3	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]
Beryllium	0.42	0.25	0.099	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]
Cadmium	1.2	0.62	0.086	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]
Calcium	26700	1200	110	mg/kg	2	04/15/19	04/17/19	ND	SW846 6010D [3]	SW846 3050B [4]
Chromium	19.8	1.2	0.46	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]
Cobalt	5.4 J	6.2	0.35	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]
Copper	75.1	3.1	1.0	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]
Iron	14400	62	24	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]
Lead	248	2.5	0.51	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]
Magnesium	7550	620	17	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]
Manganese	200	1.8	0.51	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]
Mercury	0.48	0.042	0.018	mg/kg	1	04/17/19	04/17/19	LL	SW846 7471B [2]	SW846 7471B [5]
Nickel	19.7	4.9	0.43	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]
Potassium	1230	1200	39	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]
Selenium	0.80 U	2.5	0.80	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]
Silver	0.21 U	0.62	0.21	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]
Sodium	187 J	1200	96	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]
Thallium	0.72 U	1.2	0.72	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]
Vanadium	37.0	6.2	0.23	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]
Zinc	234	6.2	2.8	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]

(1) Instrument QC Batch: MA46518
(2) Instrument QC Batch: MA46520
(3) Instrument QC Batch: MA46527
(4) Prep QC Batch: MP14202
(5) Prep QC Batch: MP14296

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: PCTP-73R(0.0-0.5)
Lab Sample ID: JC86204-4
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/10/19
Date Received: 04/11/19
Percent Solids: 78.3

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	0.45	0.26	0.13	mg/kg	1	04/23/19 15:20	KI	SW846 9012B/LACHAT
Solids, Percent	78.3			%	1	04/16/19 16:30	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: PCTP-75R(10-12)
Lab Sample ID: JC86204-13
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/11/19
Date Received: 04/11/19
Percent Solids: 71.8

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	1770	70	11	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [3]
Antimony	0.58 U	2.8	0.58	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [3]
Arsenic	7.7	2.8	0.39	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [3]
Barium	34.0	28	2.7	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [3]
Beryllium	0.37	0.28	0.11	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [3]
Cadmium	0.18 J	0.70	0.098	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [3]
Calcium	1510	700	62	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [3]
Chromium	4.1	1.4	0.52	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [3]
Cobalt	5.7 J	7.0	0.39	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [3]
Copper	16.0	3.5	1.2	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [3]
Iron	6180	70	27	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [3]
Lead	31.9	2.8	0.58	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [3]
Magnesium	307 J	700	19	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [3]
Manganese	23.9	2.1	0.58	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [3]
Mercury	0.043	0.034	0.015	mg/kg	1	04/17/19	04/17/19	LL	SW846 7471B [2]	SW846 7471B [4]
Nickel	11.8	5.6	0.49	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [3]
Potassium	152 J	1400	45	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [3]
Selenium	1.5 J	2.8	0.91	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [3]
Silver	0.24 U	0.70	0.24	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [3]
Sodium	110 U	1400	110	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [3]
Thallium	0.82 U	1.4	0.82	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [3]
Vanadium	6.8 J	7.0	0.27	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [3]
Zinc	61.0	7.0	3.2	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [3]

(1) Instrument QC Batch: MA46518
(2) Instrument QC Batch: MA46520
(3) Prep QC Batch: MP14202
(4) Prep QC Batch: MP14296

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: PCTP-75R(10-12)
Lab Sample ID: JC86204-13
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/11/19
Date Received: 04/11/19
Percent Solids: 71.8

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	0.41	0.32	0.16	mg/kg	1	04/23/19 15:21	KI	SW846 9012B/LACHAT
Solids, Percent	71.8			%	1	04/16/19 16:30	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: PCTP-75R(14-16)
Lab Sample ID: JC86204-14
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/11/19
Date Received: 04/11/19
Percent Solids: 79.2

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	4450	61	9.8	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [5]
Antimony	0.50 U	2.4	0.50	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [5]
Arsenic [a]	11.5	4.9	0.68	mg/kg	2	04/15/19	04/17/19	ND	SW846 6010D [3]	SW846 3050B [5]
Barium	119	24	2.3	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [5]
Beryllium	0.46	0.24	0.098	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [5]
Cadmium	0.085 J	0.61	0.085	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [5]
Calcium	2560	610	54	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [5]
Chromium	10.0	1.2	0.45	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [5]
Cobalt	9.9	6.1	0.34	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [5]
Copper [a]	27.7	6.1	2.0	mg/kg	2	04/15/19	04/17/19	ND	SW846 6010D [3]	SW846 3050B [5]
Iron	32400	120	47	mg/kg	2	04/15/19	04/17/19	ND	SW846 6010D [3]	SW846 3050B [5]
Lead	28.2	2.4	0.50	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [5]
Magnesium	363 J	610	17	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [5]
Manganese [a]	151	3.7	1.0	mg/kg	2	04/15/19	04/17/19	ND	SW846 6010D [3]	SW846 3050B [5]
Mercury	0.020 J	0.036	0.016	mg/kg	1	04/17/19	04/17/19	LL	SW846 7471B [2]	SW846 7471B [6]
Nickel	23.2	4.9	0.43	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [5]
Potassium	466 J	1200	39	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [5]
Selenium [a]	1.6 U	4.9	1.6	mg/kg	2	04/15/19	04/17/19	ND	SW846 6010D [3]	SW846 3050B [5]
Silver [a]	0.44 J	1.2	0.41	mg/kg	2	04/15/19	04/18/19	GT	SW846 6010D [4]	SW846 3050B [5]
Sodium	193 J	1200	95	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [5]
Thallium [a]	1.4 U	2.4	1.4	mg/kg	2	04/15/19	04/17/19	ND	SW846 6010D [3]	SW846 3050B [5]
Vanadium	14.8	6.1	0.23	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [5]
Zinc	51.3	6.1	2.8	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [5]

(1) Instrument QC Batch: MA46518
(2) Instrument QC Batch: MA46520
(3) Instrument QC Batch: MA46527
(4) Instrument QC Batch: MA46534
(5) Prep QC Batch: MP14202
(6) Prep QC Batch: MP14296

(a) Elevated detection limit due to dilution required for high interfering element.

RL = Reporting Limit
MDL = Method Detection Limit
U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	PCTP-75R(14-16)		
Lab Sample ID:	JC86204-14	**Date Sampled:**	04/11/19
Matrix:	SO - Soil	**Date Received:**	04/11/19
		Percent Solids:	79.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	0.32	0.26	0.13	mg/kg	1	04/23/19 15:23	KI	SW846 9012B/LACHAT
Solids, Percent	79.2			%	1	04/16/19 16:30	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: PSSTP-04R(1-2)
Lab Sample ID: JC86204-17
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/11/19
Date Received: 04/11/19
Percent Solids: 86.1

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	13500	57	9.2	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [3]
Antimony	0.47 U	2.3	0.47	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [3]
Arsenic	5.8	2.3	0.32	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [3]
Barium	80.1	23	2.2	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [3]
Beryllium	0.64	0.23	0.091	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [3]
Cadmium	0.38 J	0.57	0.080	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [3]
Calcium	21200	570	50	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [3]
Chromium	23.8	1.1	0.42	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [3]
Cobalt	7.2	5.7	0.32	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [3]
Copper	49.3	2.8	0.95	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [3]
Iron	19700	57	22	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [3]
Lead	523	2.3	0.47	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [3]
Magnesium	9490	570	16	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [3]
Manganese	286	1.7	0.47	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [3]
Mercury	0.71	0.037	0.016	mg/kg	1	04/17/19	04/17/19	LL	SW846 7471B [2]	SW846 7471B [4]
Nickel	14.9	4.5	0.40	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [3]
Potassium	1560	1100	36	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [3]
Selenium	0.74 U	2.3	0.74	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [3]
Silver	0.19 U	0.57	0.19	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [3]
Sodium	121 J	1100	88	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [3]
Thallium	0.66 U	1.1	0.66	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [3]
Vanadium	32.9	5.7	0.22	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [3]
Zinc	126	5.7	2.6	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [3]

(1) Instrument QC Batch: MA46518
(2) Instrument QC Batch: MA46520
(3) Prep QC Batch: MP14202
(4) Prep QC Batch: MP14296

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	PSSTP-04R(1-2)		
Lab Sample ID:	JC86204-17	**Date Sampled:**	04/11/19
Matrix:	SO - Soil	**Date Received:**	04/11/19
		Percent Solids:	86.1
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	0.23 J	0.25	0.12	mg/kg	1	04/23/19 15:24	KI	SW846 9012B/LACHAT
Solids, Percent	86.1			%	1	04/16/19 16:30	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: PSSTP-04R(7-8)
Lab Sample ID: JC86204-18
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/11/19
Date Received: 04/11/19
Percent Solids: 80.9

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	1090	62	10	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [5]
Antimony	20.6	2.5	0.51	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [5]
Arsenic [a]	10.2 J	12	1.7	mg/kg	5	04/15/19	04/17/19	ND	SW846 6010D [3]	SW846 3050B [5]
Barium	74.4	25	2.4	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [5]
Beryllium	0.099 U	0.25	0.099	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [5]
Cadmium	0.68	0.62	0.087	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [5]
Calcium	3650	620	55	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [5]
Chromium	791	1.2	0.46	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [5]
Cobalt	12.5	6.2	0.35	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [5]
Copper [a]	452	16	5.2	mg/kg	5	04/15/19	04/17/19	ND	SW846 6010D [3]	SW846 3050B [5]
Iron	71400	310	120	mg/kg	5	04/15/19	04/17/19	ND	SW846 6010D [3]	SW846 3050B [5]
Lead [a]	78.6	12	2.5	mg/kg	5	04/15/19	04/18/19	GT	SW846 6010D [4]	SW846 3050B [5]
Magnesium	218 J	620	17	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [5]
Manganese [a]	351	9.3	2.5	mg/kg	5	04/15/19	04/17/19	ND	SW846 6010D [3]	SW846 3050B [5]
Mercury	0.79	0.036	0.016	mg/kg	1	04/17/19	04/17/19	LL	SW846 7471B [2]	SW846 7471B [6]
Nickel	164	5.0	0.43	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [5]
Potassium	44.4 J	1200	39	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [5]
Selenium [a]	4.0 U	12	4.0	mg/kg	5	04/15/19	04/17/19	ND	SW846 6010D [3]	SW846 3050B [5]
Silver [a]	1.1 U	3.1	1.1	mg/kg	5	04/15/19	04/17/19	ND	SW846 6010D [3]	SW846 3050B [5]
Sodium	97 U	1200	97	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [5]
Thallium [a]	3.6 U	6.2	3.6	mg/kg	5	04/15/19	04/17/19	ND	SW846 6010D [3]	SW846 3050B [5]
Vanadium	17.9	6.2	0.24	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [5]
Zinc	178	6.2	2.9	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [5]

(1) Instrument QC Batch: MA46518
(2) Instrument QC Batch: MA46520
(3) Instrument QC Batch: MA46527
(4) Instrument QC Batch: MA46534
(5) Prep QC Batch: MP14202
(6) Prep QC Batch: MP14296

(a) Elevated detection limit due to dilution required for high interfering element.

RL = Reporting Limit
MDL = Method Detection Limit
U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	PSSTP-04R(7-8)		
Lab Sample ID:	JC86204-18	**Date Sampled:**	04/11/19
Matrix:	SO - Soil	**Date Received:**	04/11/19
		Percent Solids:	80.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	2.7	0.27	0.14	mg/kg	1	04/23/19 15:25	KI	SW846 9012B/LACHAT
Solids, Percent	80.9			%	1	04/16/19 16:30	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: PSSTP-04R(8-9)
Lab Sample ID: JC86204-19
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/11/19
Date Received: 04/11/19
Percent Solids: 76.2

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	3230	68	11	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]
Antimony	1.4 J	2.7	0.55	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]
Arsenic [a]	19.7	5.4	0.76	mg/kg	2	04/15/19	04/17/19	ND	SW846 6010D [3]	SW846 3050B [4]
Barium	134	27	2.6	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]
Beryllium	0.45	0.27	0.11	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]
Cadmium	0.54 J	0.68	0.095	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]
Calcium	4040	680	60	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]
Chromium	157	1.4	0.50	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]
Cobalt	5.3 J	6.8	0.38	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]
Copper [a]	129	6.8	2.3	mg/kg	2	04/15/19	04/17/19	ND	SW846 6010D [3]	SW846 3050B [4]
Iron	28700	140	52	mg/kg	2	04/15/19	04/17/19	ND	SW846 6010D [3]	SW846 3050B [4]
Lead	127	2.7	0.55	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]
Magnesium	645 J	680	18	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]
Manganese [a]	152	4.1	1.1	mg/kg	2	04/15/19	04/17/19	ND	SW846 6010D [3]	SW846 3050B [4]
Mercury	1.9	0.21	0.092	mg/kg	5	04/17/19	04/17/19	LL	SW846 7471B [2]	SW846 7471B [5]
Nickel	33.0	5.4	0.47	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]
Potassium	456 J	1400	43	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]
Selenium [a]	1.9 J	5.4	1.8	mg/kg	2	04/15/19	04/17/19	ND	SW846 6010D [3]	SW846 3050B [4]
Silver [a]	0.46 U	1.4	0.46	mg/kg	2	04/15/19	04/17/19	ND	SW846 6010D [3]	SW846 3050B [4]
Sodium	111 J	1400	110	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]
Thallium [a]	1.6 U	2.7	1.6	mg/kg	2	04/15/19	04/17/19	ND	SW846 6010D [3]	SW846 3050B [4]
Vanadium	22.4	6.8	0.26	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]
Zinc	108	6.8	3.1	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]

(1) Instrument QC Batch: MA46518
(2) Instrument QC Batch: MA46520
(3) Instrument QC Batch: MA46527
(4) Prep QC Batch: MP14202
(5) Prep QC Batch: MP14296

(a) Elevated detection limit due to dilution required for high interfering element.

RL = Reporting Limit
MDL = Method Detection Limit
U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	PSSTP-04R(8-9)		
Lab Sample ID:	JC86204-19	**Date Sampled:**	04/11/19
Matrix:	SO - Soil	**Date Received:**	04/11/19
		Percent Solids:	76.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	14.7	0.28	0.14	mg/kg	1	04/23/19 15:27	KI	SW846 9012B/LACHAT
Solids, Percent	76.2			%	1	04/16/19 16:30	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: PSSTP-04R(16-17)
Lab Sample ID: JC86204-20
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/11/19
Date Received: 04/11/19
Percent Solids: 81.3

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	12600	64	10	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [5]
Antimony	3.5	2.6	0.52	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [5]
Arsenic [a]	29.7	13	1.8	mg/kg	5	04/15/19	04/17/19	ND	SW846 6010D [3]	SW846 3050B [5]
Barium	70.8	26	2.4	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [5]
Beryllium	9.5	0.26	0.10	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [5]
Cadmium [a]	0.45 U	3.2	0.45	mg/kg	5	04/15/19	04/17/19	ND	SW846 6010D [3]	SW846 3050B [5]
Calcium	2310	640	57	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [5]
Chromium	283	1.3	0.47	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [5]
Cobalt	65.2	6.4	0.36	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [5]
Copper [a]	219	16	5.4	mg/kg	5	04/15/19	04/18/19	GT	SW846 6010D [4]	SW846 3050B [5]
Iron	124000	320	120	mg/kg	5	04/15/19	04/18/19	GT	SW846 6010D [4]	SW846 3050B [5]
Lead [a]	457	13	2.6	mg/kg	5	04/15/19	04/17/19	ND	SW846 6010D [3]	SW846 3050B [5]
Magnesium	741	640	17	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [5]
Manganese [a]	1120	9.6	2.6	mg/kg	5	04/15/19	04/17/19	ND	SW846 6010D [3]	SW846 3050B [5]
Mercury	0.052	0.038	0.017	mg/kg	1	04/17/19	04/17/19	LL	SW846 7471B [2]	SW846 7471B [6]
Nickel [a]	2480	26	2.2	mg/kg	5	04/15/19	04/17/19	ND	SW846 6010D [3]	SW846 3050B [5]
Potassium	390 J	1300	41	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [5]
Selenium [a]	4.2 U	13	4.2	mg/kg	5	04/15/19	04/17/19	ND	SW846 6010D [3]	SW846 3050B [5]
Silver [a]	1.1 U	3.2	1.1	mg/kg	5	04/15/19	04/18/19	GT	SW846 6010D [4]	SW846 3050B [5]
Sodium	150 J	1300	100	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [5]
Thallium [a]	3.7 U	6.4	3.7	mg/kg	5	04/15/19	04/17/19	ND	SW846 6010D [3]	SW846 3050B [5]
Vanadium	40.4	6.4	0.24	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [5]
Zinc	228	6.4	2.9	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [5]

(1) Instrument QC Batch: MA46518
(2) Instrument QC Batch: MA46520
(3) Instrument QC Batch: MA46527
(4) Instrument QC Batch: MA46534
(5) Prep QC Batch: MP14202
(6) Prep QC Batch: MP14296

(a) Elevated detection limit due to dilution required for high interfering element.

RL = Reporting Limit
MDL = Method Detection Limit
U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	PSSTP-04R(16-17)		
Lab Sample ID:	JC86204-20	**Date Sampled:**	04/11/19
Matrix:	SO - Soil	**Date Received:**	04/11/19
		Percent Solids:	81.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	0.59	0.28	0.14	mg/kg	1	04/23/19 15:28	KI	SW846 9012B/LACHAT
Solids, Percent	81.3			%	1	04/16/19 16:30	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: PCTP-28R(6-8)
Lab Sample ID: JC86204-21
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/11/19
Date Received: 04/11/19
Percent Solids: 87.3

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	12900	56	9.1	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]
Antimony	0.46 U	2.3	0.46	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]
Arsenic	5.7	2.3	0.32	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]
Barium	190	23	2.1	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]
Beryllium	1.2	0.23	0.090	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]
Cadmium	0.84	0.56	0.079	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]
Calcium	61000	2800	250	mg/kg	5	04/15/19	04/17/19	ND	SW846 6010D [3]	SW846 3050B [4]
Chromium	38.4	1.1	0.42	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]
Cobalt	6.9	5.6	0.32	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]
Copper	66.1	2.8	0.95	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]
Iron	14800	56	22	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]
Lead	233	2.3	0.46	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]
Magnesium	10400	560	15	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]
Manganese	804	1.7	0.46	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]
Mercury	0.016 U	0.037	0.016	mg/kg	1	04/17/19	04/17/19	LL	SW846 7471B [2]	SW846 7471B [5]
Nickel	14.0	4.5	0.39	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]
Potassium	1330	1100	36	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]
Selenium	0.79 J	2.3	0.73	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]
Silver	0.19 U	0.56	0.19	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]
Sodium	265 J	1100	88	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]
Thallium	0.65 U	1.1	0.65	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]
Vanadium	22.2	5.6	0.21	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]
Zinc	239	5.6	2.6	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]

(1) Instrument QC Batch: MA46518
(2) Instrument QC Batch: MA46520
(3) Instrument QC Batch: MA46527
(4) Prep QC Batch: MP14202
(5) Prep QC Batch: MP14296

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: PCTP-28R(6-8)
Lab Sample ID: JC86204-21
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/11/19
Date Received: 04/11/19
Percent Solids: 87.3

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	2.4	0.24	0.12	mg/kg	1	04/23/19 15:29	KI	SW846 9012B/LACHAT
Solids, Percent	87.3			%	1	04/16/19 16:30	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: PCTP-28R(11-12)
Lab Sample ID: JC86204-22
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/11/19
Date Received: 04/11/19
Percent Solids: 73.4

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	3590	66	11	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]
Antimony	1.3 J	2.6	0.54	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]
Arsenic [a]	31.6	5.3	0.74	mg/kg	2	04/15/19	04/17/19	ND	SW846 6010D [3]	SW846 3050B [4]
Barium	61.0	26	2.5	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]
Beryllium	0.37	0.26	0.11	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]
Cadmium	0.49 J	0.66	0.093	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]
Calcium	3440	660	58	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]
Chromium	6.5	1.3	0.49	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]
Cobalt	7.2	6.6	0.37	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]
Copper [a]	46.9	6.6	2.2	mg/kg	2	04/15/19	04/17/19	ND	SW846 6010D [3]	SW846 3050B [4]
Iron	35800	130	51	mg/kg	2	04/15/19	04/17/19	ND	SW846 6010D [3]	SW846 3050B [4]
Lead	92.0	2.6	0.54	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]
Magnesium	650 J	660	18	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]
Manganese [a]	157	4.0	1.1	mg/kg	2	04/15/19	04/17/19	ND	SW846 6010D [3]	SW846 3050B [4]
Mercury	0.074	0.043	0.019	mg/kg	1	04/17/19	04/17/19	LL	SW846 7471B [2]	SW846 7471B [5]
Nickel	24.6	5.3	0.46	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]
Potassium	356 J	1300	42	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]
Selenium [a]	1.7 U	5.3	1.7	mg/kg	2	04/15/19	04/17/19	ND	SW846 6010D [3]	SW846 3050B [4]
Silver [a]	0.45 U	1.3	0.45	mg/kg	2	04/15/19	04/17/19	ND	SW846 6010D [3]	SW846 3050B [4]
Sodium	140 J	1300	100	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]
Thallium [a]	1.5 U	2.6	1.5	mg/kg	2	04/15/19	04/17/19	ND	SW846 6010D [3]	SW846 3050B [4]
Vanadium	13.1	6.6	0.25	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]
Zinc	154	6.6	3.0	mg/kg	1	04/15/19	04/16/19	ND	SW846 6010D [1]	SW846 3050B [4]

(1) Instrument QC Batch: MA46518
(2) Instrument QC Batch: MA46520
(3) Instrument QC Batch: MA46527
(4) Prep QC Batch: MP14202
(5) Prep QC Batch: MP14296

(a) Elevated detection limit due to dilution required for high interfering element.

RL = Reporting Limit
MDL = Method Detection Limit
U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	PCTP-28R(11-12)		
Lab Sample ID:	JC86204-22	**Date Sampled:**	04/11/19
Matrix:	SO - Soil	**Date Received:**	04/11/19
		Percent Solids:	73.4
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	0.30	0.30	0.15	mg/kg	1	04/23/19 15:31	KI	SW846 9012B/LACHAT
Solids, Percent	73.4			%	1	04/16/19 16:30	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

ARCADIS Design & Consultancy for natural and built assets

National Grid

Philly Coke

DATA REVIEW

Philadelphia, Pennsylvania

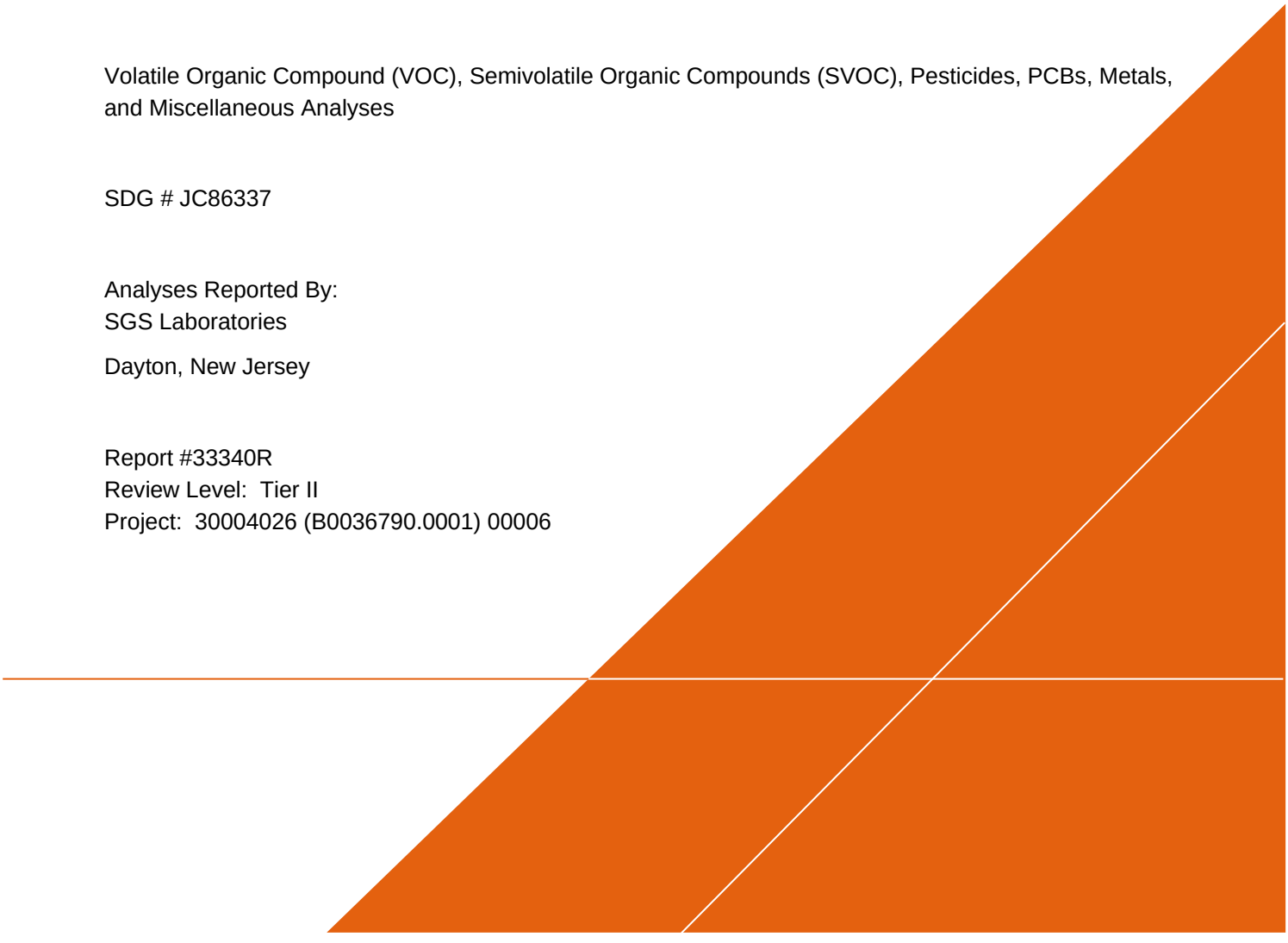
Volatile Organic Compound (VOC), Semivolatile Organic Compounds (SVOC), Pesticides, PCBs, Metals, and Miscellaneous Analyses

SDG # JC86337

Analyses Reported By:
SGS Laboratories

Dayton, New Jersey

Report #33340R
Review Level: Tier II
Project: 30004026 (B0036790.0001) 00006



SUMMARY

This data review report summarizes the review of Sample Delivery Group (SDG) #JC86337 for samples collected in association with the National Grid Philly Coke site in Philadelphia, Pennsylvania. The review was conducted as a Tier II evaluation and included review of laboratory analytical data package completeness. Field documentation was not included in this review. Included with this assessment are the post-validation annotated sample result sheets, and chain of custody (COC). Analyses were performed on the following samples

SDG Number	Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis				
						VOC	SVOC	PEST/ PCB	Metals	MISC
JC86337	PCTP-66R-HC (0-2) (04-04-2019)	JC86337-1	Soil	4/4/2019		X	X	X	X	X
	PCTP-66R-HC (2-4) (04-04-2019)	JC86337-2	Soil	4/4/2019		X	X	X	X	X
	PCTP-02R(4-6) (04-05-2019)	JC86337-3	Soil	4/5/2019		X	X		X	X
	PCTP-01R(5-7) (04-05-2019)	JC86337-4	Soil	4/5/2019		X	X		X	X
	PCSB-01R (14-16) (04-05-2019)	JC86337-5	Soil	4/5/2019		X	X		X	X
	PCSB-01R (18-20) (04-05-2019)	JC86337-6	Soil	4/5/2019		X	X		X	X
	S-138 (0.0-0.5) (04-05-2019)	JC86337-7	Soil	4/5/2019				PCB		
	S-138 (0.5-2.0) (04-05-2019)	JC86337-8	Soil	4/5/2019				PCB		

Notes:

1. PEST/PCB = Pesticides and polychlorinated biphenyls
2. SVOC = Semivolatile Organic Compounds
3. VOC = Volatile Organic Compound
4. MISC = Miscellaneous (total cyanide)

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance (QA) or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260C, 8270D, 8081A and 8082A. Data were reviewed in accordance with the USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540/R-2017-002, January 2017 and the USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Organic Data Review, EPA540/R-99/008, October 1999 (as applicable).

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The compound was positively identified; however, the associated numerical value is an estimated concentration only.

  UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.

  JN The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.

  UB Compound considered non-detect at the listed value due to associated blank contamination.

  N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is

that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times/Preservation

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260C	Water	14 days from collection to analysis (preserved) 7 days from collection to analysis (non-preserved)	Cool to <6 °C; preserved to a pH of less than 2 s.u.
	Soil	48 hours from collection to extraction and 14 days from extraction to analysis (Samples stored in deionized water must be frozen or analyzed within 48 hours)	Cool to <6 °C.

Note:
s.u. Standard units

The samples were received eight days from collection. The samples collected and analyzed from the deionized water fraction were not received frozen.

The analyses that exceeded the holding are presented in the following table.

Sample Locations	Holding Time	Criteria
PCTP-66R-HC (0-2) (04-04-2019) PCTP-66R-HC (2-4) (04-04-2019) PCTP-02R(4-6) (04-05-2019) PCTP-01R(5-7) (04-05-2019) PCSB-01R (18-20) (04-05-2019)	8 days to freezing at laboratory (unpreserved deionized water fraction)	<48 hours

Sample results associated with sample locations analyzed by analytical method SW-846 8260 were qualified, as specified in the table below. All other holding times were met.

Criteria	Qualification	
	Detected Analytes	Non-detect Analytes
Analysis completed greater than two times holding time	J	R

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks

containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore, detected sample results were not associated with blank contamination.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. VOC analysis requires that all surrogates associated with the analysis exhibit recoveries within the laboratory-established acceptance limits.

Sample locations associated with surrogates exhibiting recoveries outside of the control limits presented in the following table.

Sample Locations	Surrogate	Recovery
PCSB-01R (14-16)	1,2-Dichloroethane-d4	AC
	4-Bromofluorobenzene	> UL
	Dibromofluoromethane	AC
	Toluene-d8	AC

Notes:
UCL Upper control limit
AC Acceptable

The criteria used to evaluate the surrogate recoveries are presented in the following table. In the case of a surrogate deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> UL	Non-detect	No Action
	Detect	J
< LL but > 10%	Non-detect	UJ
	Detect	J
< 10%	Non-detect	R
	Detect	J

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

A laboratory duplicate was performed in replacement of an MS/MSD for sample PCTP-02R(4-6).

All analytes associated with laboratory duplicate RPD were within the control limit, with the exception of the analytes presented in the following table.

Sample Location	Analytes	Laboratory RPD
PCTP-02R(4-6) (04-05-2019)	Acetone	116%

The criteria used to evaluate laboratory duplicate RPD are presented in the following table. In the case of a laboratory duplicate RPD deviation, the sample results are qualified. The qualifications are applied to the all sample results associated with this SDG.

Sample Concentration	Control Limit	Sample Result	Qualification
Parent sample and laboratory sample concentration >5 times detection limit	Soil 35%	Non-detect	UJ
		Detect	J
Parent sample and/or laboratory duplicate sample result ≤ five times the RL and difference between samples >RL	Soil two times RL	Non-detect	UJ
		Detect	J

5. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) Analysis

The LCS/LCSD analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS/LCSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

Sample locations associated with LCS/LCSD analysis exhibiting recoveries outside of the control limits presented in the following table.

Sample Locations	Compound	LCS Recovery	LCSD Recovery
PCTP-66R-HC (2-4) (04-04-2019) PCSB-01R (14-16) (04-05-2019)	1,2-Dibromoethane	>UL	--

Note:
AC = Acceptable

The criteria used to evaluate the LCS/LCSD recoveries are presented in the following table. In the case of an LCS/LCSD deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> the upper control limit (UL)	Non-detect	No Action
	Detect	J
< the lower control limit (LL) but > 10%	Non-detect	UJ
	Detect	J
< 10%	Non-detect	R
	Detect	J

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of three times the RL is applied for soil matrices.

A field duplicate was not performed on a sample within this SDG.

7. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

8. System Performance and Overall Assessment

The laboratory narrative indicates continuing calibration deviations. These deviations are normally not evaluated in a tier II data review. Sample results that had continuing calibration recoveries that exceed the control limit high and were non detect did not require qualification. Sample results where the calibration recoveries were high and the compound was detected or calibration recoveries were low were qualified as estimated (J or UJ). No volatile results required qualification due to calibration exceedances.

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: SW-846 8260	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times		X	X		
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks	X				X
C. Trip blanks	X				X
Laboratory Control Sample (LCS)		X	X		
Laboratory Control Sample Duplicate(LCSD)	X				X
LCS/LCSD Precision (RPD)	X				X
Matrix Spike (MS)		X		X	
Matrix Spike Duplicate(MSD)	X				X
MS/MSD Precision (RPD)	X				X
Field/Lab Duplicate (RPD)		X	X		
Surrogate Spike Recoveries		X	X		
Dilution Factor		X		X	
Moisture Content		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

SEMIVOLATILE ORGANIC COMPOUND (SVOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8270D	Water	7 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C
	Soil	14 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. SVOC analysis requires that two of the three SVOC surrogate compounds within each fraction exhibit recoveries within the laboratory-established acceptance limits.

All surrogate recoveries were within control limits.

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

Sample locations associated with the MS/MSD exhibiting recoveries outside of the control limits are presented in the following table.

Sample Locations	Compound	MS Recovery	MSD Recovery
PCTP-66R-HC (0-2) (04-04-2019)	Anthracene	<10%	<10%
	Benzo(g,h,i)perylene	AC	<10%
	Fluorene	AC	<10%
	Indeno(1,2,3-cd)pyrene	AC	<10%

Note:

AC Acceptable

The criteria used to evaluate the MS/MSD recoveries are presented in the following table. In the case of an MS/MSD deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> the upper control limit (UL)	Non-detect	No Action
	Detect	J
< the lower control limit (LL) but > 10%	Non-detect	UJ
	Detect	J
< 10%	Non-detect	R
	Detect	J
Parent sample concentration > four times the MS/MSD spiking solution concentration.	Detect	No Action
	Non-detect	

5. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) Analysis

The LCS/LCSD analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS/LCSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

The LCS/LCSD exhibited acceptable recoveries and RPD between the MS/MSD recoveries.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of three times the RL is applied for soil matrices.

A field duplicate was not performed on a sample within this SDG.

7. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

Several samples were diluted to bring target compounds within linear range of the instrument. Sample results that were reported from a secondary dilution were qualified with a “D”, indicating the result is diluted.

8. System Performance and Overall Assessment

The laboratory narrative indicates continuing calibration deviations. These deviations are normally not evaluated in a tier II data review. Sample results that had continuing calibration recoveries that exceed the control limit high and were non detect did not require qualification. Sample results where the calibration recoveries were high and the compound was detected or calibration recoveries were low were qualified as estimated (J or UJ).

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR SVOCs

SVOCs: SW-846 8270	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks		X		X	
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R	X				X
LCS/LCSD Precision (RPD)	X				X
Matrix Spike (MS) %R		X	X		
Matrix Spike Duplicate(MSD) %R		X	X		
MS/MSD Precision (RPD)		X		X	
Field/Lab Duplicate (RPD)	X				X
Surrogate Spike Recoveries		X		X	
Dilution Factor		X		X	
Moisture Content		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

PESTICIDE ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8081A	Water	7 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C
	Soil	14 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. Herbicide analysis requires that one of the two pesticide surrogate compounds exhibit recoveries within the laboratory-established acceptance limits.

Sample locations associated with surrogates exhibiting recoveries outside of the control limits presented in the following table.

Sample Locations	Surrogate	Recovery
PCTP-66R-HC (0-2)	Tetrachloro-m-xylene	AC
PCTP-66R-HC (2-4)	Decachlorobiphenyl	> UL

Notes:
Upper control limit (UL)
Acceptable (AC)

The criteria used to evaluate the surrogate recoveries are presented in the following table. In the case of a surrogate deviation, the sample results associated with the deviant fraction are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> the upper control limit (UL)	Non-detect	No Action
	Detect	J
< the lower control limit (LL) but > 10%	Non-detect	UJ
	Detect	J
< 10%	Non-detect	R
	Detect	J
One surrogate exhibiting recovery outside the control limits but > 10%	Non-detect	No Action
	Detect	

3. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

The MS/MSD analysis was not performed on a sample within this SDG.

5. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

All compounds associated with the LCS analysis exhibited recoveries within the control limits.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 40% for water matrices and 70% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

A field duplicate was not performed on a sample within this SDG.

7. Compound Identification

The retention times of all quantitated peaks must fall within the calculated retention time windows for both the primary and confirmation columns. When dual column analysis is performed the percent difference (%D) of detected sample results must be less than 40%.

All detected compounds exhibited %D between the two columns within control limits.

8. System Performance and Overall Assessment

The laboratory narrative indicates continuing calibration deviations. These deviations are normally not evaluated in a tier II data review. Sample results that had continuing calibration recoveries that exceed the control limit high and were non detect did not require qualification. Sample results where the calibration recoveries were high and the compound was detected or calibration recoveries were low were qualified as estimated (J or UJ).

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR PESTICIDES

Pesticides; SW-846 8081	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY (GC/ECD)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks	X				X
Laboratory Control Sample (LCS)		X		X	
Laboratory Control Sample Duplicate(LCSD)	X				X
LCS/LCSD Precision (RPD)	X				X
Matrix Spike (MS)	X				X
Matrix Spike Duplicate(MSD)	X				X
MS/MSD Precision (RPD)	X				X
Field/Lab Duplicate (RPD)	X				X
Surrogate Spike Recoveries		X	X		
Column %D $\leq$ 40% (If dual column is performed for reporting-not confirmation)		X		X	
Dilution Factor		X		X	
Moisture Content		X		X	

Notes:

%RSD – relative standard deviation
%R - percent recovery
RPD - relative percent difference
%D – difference.

POLYCHLORINATED BIPHENYLS (PCBs) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8082A	Soil	14 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore, detected sample results were not associated with blank contamination.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. PCB analysis requires that one of the two PCB surrogate compounds exhibit recoveries within the laboratory-established acceptance limits.

Sample locations associated with surrogates exhibiting recoveries outside of the control limits presented in the following table.

Sample Locations	Surrogate	Recovery
PCTP-66R-HC (0-2) (04-04-2019) PCTP-66R-HC (2-4) (04-04-2019)	Tetrachloro-m-xylene	AC
S-138 (0.0-0.5) (04-05-2019) S-138 (0.5-2.0) (04-05-2019)	Decachlorobiphenyl	> UL

Notes:
Upper control limit (UL)
Lower control limit (LL)
Acceptable (AC)

The criteria used to evaluate the surrogate recoveries are presented in the following table. In the case of a surrogate deviation, the sample results associated with the deviant fraction are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> the upper control limit (UL)	Non-detect	No Action
	Detect	J
< the lower control limit (LL) but > 10%	Non-detect	UJ
	Detect	J
< 10%	Non-detect	R
	Detect	J
One surrogate exhibiting recovery outside the control limits but > 10%	Non-detect	No Action
	Detect	

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

The MS/MSD was not performed on a sample within this SDG.

5. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

All compounds associated with the LCS analysis exhibited recoveries within the control limits.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of three times the RL is applied for soil matrices.

A field duplicate was not performed on a sample within this SDG.

7. Compound Identification

The retention times of all quantitated peaks must fall within the calculated retention time windows for both the primary and confirmation columns. When dual column analysis is performed the relative percent difference (%RPD) of detected sample results must be less than 40%.

All detected compounds exhibited %D between the two columns within control limits.

8. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR PCBs

PCBs; SW-846 8082A	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY (GC/ECD)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks					X
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R					X
LCS/LCSD Precision (RPD)					X
Matrix Spike (MS) %R	X				X
Matrix Spike Duplicate(MSD) %R	X				X
MS/MSD Precision (RPD)	X				X
Field/Lab Duplicate (RPD)	X				X
Surrogate Spike Recoveries		X	X		
Column (%D) (If dual column is performed-not confirmation purposes only)		X	X		
Dilution Factor		X		X	
Moisture Content		X		X	

%R - percent recovery

RPD - relative percent difference

%D – difference

INORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 6010D, 7471A, and 9012B. Data were reviewed in accordance with the USEPA CLP National Functional Guidelines for Inorganic Superfund Methods Data Review, EPA 540/R-2017-001, January 2017; and the USEPA CLP National Functional Guidelines for Inorganic Data Review, EPA 540-R-01-008, July 2002 (as applicable).

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and that it was already subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with the USEPA National Functional Guidelines:

- Concentration (C) Qualifiers
  - U The analyte was analyzed for but not detected. The associated value is the analyte instrument detection limit.
  - J The reported value was obtained from a reading less than the reporting limit (RL), but greater than or equal to the method detection limit (MDL).
- Quantitation (Q) Qualifiers
  - E The reported value is estimated due to the presence of interference.
  - N Spiked sample recovery is not within control limits.
  - * Duplicate analysis is not within control limits.
- Validation Qualifiers
  - J The analyte was positively identified; however, the associated numerical value is an estimated concentration only.
  - UJ The analyte was not detected above the reporting limit. However, the reported limit is approximate and may or may not represent the actual limit of detection.
  - UB Analyte considered non-detect at the listed value due to associated blank contamination.
  - R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

METALS ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 6010D	Water	180 days from collection to analysis	Preserved to a pH of less than 2.
	Soil	180 days from collection to analysis	Cool to <6 °C.
SW-846 7471A	Soil	28 days from collection to analysis	Cool to <6 °C.
SW-846 7470A	Water	28 days from collection to analysis	Cool to <6 °C; preserved to a pH of less than 2.

All samples were analyzed within the specified holding times.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Analytes were detected in the associated QA blanks; however, the associated sample results were greater than the BAL and/or were non-detect. No qualification of the sample results was required.

3. Matrix Spike (MS)/Matrix Spike Duplicate(MSD)/Laboratory Duplicate Analysis

MS/MSD and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

3.1 MS/MSD Analysis

All metal analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the analyte's concentration detected in the parent sample exceeds the MS concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

All analytes associated with MS/MSD recoveries were within control limits.

3.2 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the RL. A control limit of 20% for water matrices and 35% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of one times the RL is applied for water matrices and two times the RL for soil matrices.

MS/MSD analysis was performed in replacement of the laboratory duplicate analysis. The MS/MSD analysis exhibited RPDs within the control limits.

4. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of three times the RL is applied for soil matrices.

A field duplicate was not performed on a sample within this SDG.

5. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The analytes associated with the LCS analysis must exhibit a percent recovery between the control limits of 80% and 120%.

The LCS analysis exhibited recoveries within the control limits.

6. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR METAL

METALS; SW846 6010D/7471A	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Inductively Coupled Plasma-Atomic Emission Spectrometry (ICP-AES)					
Tier II Validation					
Holding Times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method Blanks		X		X	
B. Equipment/Field Blanks	X				X
Laboratory Control Sample (LCS)		X		X	
Matrix Spike (MS) %R		X	X		
Matrix Spike Duplicate (MSD) %R		X	X		
MS/MSD Precision (RPD)		X		X	
Field/Lab Duplicate (RPD)	X				X
Total vs. Dissolved	X				X

Notes:

%R Percent recovery

RPD Relative percent difference

GENERAL CHEMISTRY ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
Cyanide by SW-846 9012	Water	14 days from collection to analysis	Cool to <6 °C; preserved to a pH of greater than 12.
	Soil		Cool to <6 °C.

All samples were analyzed within the specified holding times.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Analytes were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Matrix Spike/Matrix Spike Duplicate (MS/MSD)/Laboratory Duplicate Analysis

MS/MSD and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

3.1 MS/MSD Analysis

All analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the analyte's concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

The MS analysis exhibited recovery within control limits.

3.2 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the RL. A control limit of 20% for water matrices and 35% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of one times the RL is applied for water matrices and two times the RL for soil matrices.

The laboratory duplicate analysis exhibited RPD within control limits.

4. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The analytes associated with the LCS analysis must exhibit a percent recovery between the control limits of 80% and 120%.

The LCS analysis is not required for this analysis.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of three times the RL is applied for soil matrices.

A field duplicate was not performed on a sample within this SDG.

6. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR GENERAL CHEMISTRY

General Chemistry: EPA 9012	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Miscellaneous Instrumentation					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks					X
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R					X
LCS/LCSD Precision (RPD)					X
Matrix Spike (MS) %R		X		X	
Matrix Spike Duplicate(MSD) %R	X				X
MS/MSD Precision (RPD)	X				X
Field/Lab Duplicate (RPD)		X		X	
Dilution Factor		X		X	
Moisture Content					X

Notes:
%R - percent recovery
RPD - relative percent difference

VALIDATION PERFORMED BY: Andrew Korycinski

SIGNATURE:

DATE: July 5, 2019

PEER REVIEW: Dennis Capria

DATE: July 22, 2019

CHAIN OF CUSTODY
SAMPLE ANALYSIS DATA SHEETS

SCL SO

CHAIN OF CUSTODY

SGS North America Inc. - Dayton
2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200 FAX: 732-329-3499/3480
www.sgs.com/ehsusa

Page 1 of 1

PN

FED-EX Tracking #:
Bottle Order Control #: AK-031919-43
SGS Quote #:
SGS Job #: JC86337

Client / Reporting Information

Company Name: Arcadis-US
Street Address: 100 Fillmore St #300
City: Syracuse State: NY Zip: 13202
Project Contact: Carey Healy E-mail: Lawrence.Healy@arcadis-us.com
Phone #: (315) 335-9443
Sampler(s) Name(s): Evan Green Phone #: (413) 335-2452

Project Information

Project Name: Philadelphia Coke
Street: 9501 Richmond St.
City: Philadelphia State: PA
Project #:
Client Purchase Order #: B60X290 0001 800-36790 0001
Project Manager: John Brussel

Billing Information (if different from Report to)

Company Name: Same
Street Address:
City: State: Zip:
Attention:

Requested Analysis

SGS Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Grab (G) Comp (C)	Matrix	# of bottles	Number of preserved Bottles: HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	Methanol	V8260TCL 20	CN	4E8270TCL20	MTAL	P8081 PESTICL	P8082 PCB 11	LAB USE ONLY
1	RTP-66R-HC(0-2)		4/4/19	1015	EG	G	Soil	6					3	2			1	X	X	X	X	X	X	D56
2	RTP-66R-HC(2-4)		4/4/19	1035	EG	G	Soil	6					3	2			1	X	X	X	X	X	X	P30
3	RTP-02R (4-6)		4/5/19	0845	EG	G	Soil	5					2	2			1	X	X	X	X			14K1
4	RTP-01R (5-7)		4/5/19	1005	EG	G	Soil	5					2	2			1	X	X	X	X			4084
5	PCSB-01R (14-16)		4/5/19	1120	EG	G	Soil	5					2	2			1	X	X	X	X			
6	PCSB-01R (18-20)		4/5/19	1130	EG	G	Soil	5					2	2			1	X	X	X	X			
7	S-138(0.0-0.5)		4/5/19	1300	EG	G	Soil	1					1										X	
8	S-138(0.5-2.0)		4/5/19	1310	EG	G	Soil	1					1										X	

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL - Sludge; SED-Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB - Field Blank; EB-Equipment Blank; RB - Rinse Blank; TB - Trip Blank

Turn Around Time (Business Days)

Approved By (SGS PM): / Date:

- [X] 10 Business Days
- [ ] 5 Business Days
- [ ] 3 Business Days*
- [ ] 2 Business Days*
- [ ] 1 Business Day*
- [ ] Other

All data available via Lablink

* Approval needed for 1-3 Business Day TAT

Deliverable

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] NJ Reduced (Level 3)
- [X] Full Tier I (Level 4)
- [ ] Commercial "C"
- [ ] NJ DKQP
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] MA MCP Criteria
- [ ] CT RCP Criteria
- [ ] State Forms
- [ ] EDD Format
- [ ] DOD-QSM5

Commercial "A" = Results only; Commercial "B" = Results + QC Summary
Commercial "C" = Results + QC Summary + Partial Raw data

Comments / Special Instructions

INITIAL ASESSMENT 3A Dm
LABEL VERIFICATION

http://www.sgs.com/en/terms-and-conditions

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by:	Date / Time:	Received By:	Relinquished By:	Date / Time:	Received By:
1		4/5/19 1500				1600 4-12-19
2						
3		4-12-19				
4						
5						

Custody Seal #: Intact / Not intact; Preserved where applicable: Absent; Therm. ID:; On Ice; Cooler Temp. °C

4.1

EHSA-QAC-0023-02-FORM-Dayton - Standard COC.xlsx

SGS LabLink@1039014 11:10 10-May-2019

Report of Analysis

Client Sample ID:	PCTP-66R-HC (0-2)		
Lab Sample ID:	JC86337-1	**Date Sampled:**	04/04/19
Matrix:	SO - Soil	**Date Received:**	04/12/19
Method:	SW846 8260C	**Percent Solids:**	83.7
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	Y184543.D	1	04/17/19 11:30	PS	n/a	n/a	VY8006
Run #2							

	Initial Weight
Run #1	3.1 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	19	9.6	ug/kg	R
71-43-2	Benzene	ND	0.96	0.73	ug/kg	
74-97-5	Bromochloromethane	ND	9.6	0.83	ug/kg	
75-27-4	Bromodichloromethane	ND	3.9	0.85	ug/kg	
75-25-2	Bromoform	ND	9.6	0.78	ug/kg	
74-83-9	Bromomethane	ND	9.6	1.9	ug/kg	
78-93-3	2-Butanone (MEK)	ND	19	7.2	ug/kg	
75-15-0	Carbon disulfide	ND	3.9	1.8	ug/kg	
56-23-5	Carbon tetrachloride	ND	3.9	1.1	ug/kg	
108-90-7	Chlorobenzene	ND	3.9	0.68	ug/kg	
75-00-3	Chloroethane	ND	9.6	1.3	ug/kg	
67-66-3	Chloroform	ND	3.9	0.72	ug/kg	
74-87-3	Chloromethane	ND	9.6	3.8	ug/kg	
110-82-7	Cyclohexane	ND	3.9	0.78	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	3.9	1.6	ug/kg	
124-48-1	Dibromochloromethane	ND	3.9	0.65	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.9	0.63	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.9	0.59	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.9	0.69	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.9	0.66	ug/kg	
75-71-8	Dichlorodifluoromethane [b]	ND	9.6	1.2	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.9	0.74	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.9	0.91	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.9	1.3	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.9	1.8	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.9	1.3	ug/kg	
78-87-5	1,2-Dichloropropane	ND	3.9	0.78	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	3.9	0.68	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	3.9	0.63	ug/kg	
100-41-4	Ethylbenzene	ND	1.9	1.1	ug/kg	
76-13-1	Freon 113	ND	9.6	1.5	ug/kg	
591-78-6	2-Hexanone	ND	9.6	2.4	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCTP-66R-HC (0-2)		
Lab Sample ID:	JC86337-1	**Date Sampled:**	04/04/19
Matrix:	SO - Soil	**Date Received:**	04/12/19
Method:	SW846 8260C	**Percent Solids:**	83.7
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	3.9	1.3	ug/kg	R
79-20-9	Methyl Acetate	ND	9.6	2.7	ug/kg	
108-87-2	Methylcyclohexane	ND	3.9	1.4	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.9	0.68	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	9.6	3.0	ug/kg	
75-09-2	Methylene chloride	ND	9.6	4.8	ug/kg	
100-42-5	Styrene	ND	3.9	1.1	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	3.9	0.75	ug/kg	
127-18-4	Tetrachloroethene	ND	3.9	0.89	ug/kg	
108-88-3	Toluene	ND	1.9	0.72	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	9.6	1.9	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	9.6	1.9	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	3.9	0.82	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	3.9	0.66	ug/kg	
79-01-6	Trichloroethene	ND	1.9	1.5	ug/kg	
75-69-4	Trichlorofluoromethane	ND	9.6	1.3	ug/kg	
75-01-4	Vinyl chloride	ND	3.9	0.90	ug/kg	
	m,p-Xylene	ND	1.9	1.4	ug/kg	
95-47-6	o-Xylene	ND	1.9	1.1	ug/kg	
1330-20-7	Xylene (total)	ND	1.9	1.1	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	105%		75-127%
17060-07-0	1,2-Dichloroethane-D4	104%		75-130%
2037-26-5	Toluene-D8	94%		80-120%
460-00-4	4-Bromofluorobenzene	102%		79-127%

(a) DI vials received unfrozen and out of hold time.
(b) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS LabLink@1039014 11:10 10-May-2019

Report of Analysis

Client Sample ID:	PCTP-66R-HC (0-2)		
Lab Sample ID:	JC86337-1	**Date Sampled:**	04/04/19
Matrix:	SO - Soil	**Date Received:**	04/12/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	83.7
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5P58616.D	1	04/18/19 16:08	CC	04/16/19 18:25	OP19786	E5P2776
Run #2	5P58655.D	10	04/19/19 09:52	CB	04/16/19 18:25	OP19786	E5P2777

	Initial Weight	Final Volume
Run #1	30.1 g	1.0 ml
Run #2	30.1 g	1.0 ml

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	79	20	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	200	24	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	200	34	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	200	71	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	200	150	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	200	42	ug/kg	
95-48-7	2-Methylphenol	ND	79	25	ug/kg	
	3&4-Methylphenol	ND	79	33	ug/kg	
88-75-5	2-Nitrophenol	ND	200	26	ug/kg	
100-02-7	4-Nitrophenol	ND	400	110	ug/kg	
87-86-5	Pentachlorophenol	ND	160	37	ug/kg	
108-95-2	Phenol	ND	79	21	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	200	26	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	200	30	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	200	24	ug/kg	
83-32-9	Acenaphthene	234	40	14	ug/kg	
208-96-8	Acenaphthylene	2900	40	20	ug/kg	
98-86-2	Acetophenone	ND	200	8.5	ug/kg	
120-12-7	Anthracene	5810 [a]	400	240	ug/kg	DJ
1912-24-9	Atrazine	ND	79	17	ug/kg	
56-55-3	Benzo(a)anthracene	8240 [a]	400	110	ug/kg	D
50-32-8	Benzo(a)pyrene	8360 [a]	400	180	ug/kg	D
205-99-2	Benzo(b)fluoranthene	10400 [a]	400	180	ug/kg	D
191-24-2	Benzo(g,h,i)perylene	5360 [a]	400	200	ug/kg	DJ
207-08-9	Benzo(k)fluoranthene	4160 [a]	400	190	ug/kg	D
101-55-3	4-Bromophenyl phenyl ether	ND	79	15	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	79	9.7	ug/kg	
92-52-4	1,1'-Biphenyl	211	79	5.4	ug/kg	
100-52-7	Benzaldehyde	ND	200	9.8	ug/kg	
91-58-7	2-Chloronaphthalene	ND	79	9.4	ug/kg	
106-47-8	4-Chloroaniline	ND	200	14	ug/kg	
86-74-8	Carbazole	1590	79	5.8	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PCTP-66R-HC (0-2)
Lab Sample ID: JC86337-1
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/04/19
Date Received: 04/12/19
Percent Solids: 83.7

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	79	16	ug/kg	
218-01-9	Chrysene	8310 [a]	400	130	ug/kg	D
111-91-1	bis(2-Chloroethoxy)methane	ND	79	8.5	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	79	17	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	79	14	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	79	13	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	40	12	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	40	20	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	79	33	ug/kg	
123-91-1	1,4-Dioxane	ND	40	26	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	1660	40	18	ug/kg	
132-64-9	Dibenzofuran	1390	79	16	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	79	6.5	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	79	9.9	ug/kg	
84-66-2	Diethyl phthalate	ND	79	8.5	ug/kg	
131-11-3	Dimethyl phthalate	ND	79	7.1	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	149	79	9.3	ug/kg	
206-44-0	Fluoranthene	17300 [a]	400	180	ug/kg	D
86-73-7	Fluorene	2790	40	18	ug/kg	J
118-74-1	Hexachlorobenzene	ND	79	10	ug/kg	
87-68-3	Hexachlorobutadiene	ND	40	16	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	400	16	ug/kg	
67-72-1	Hexachloroethane	ND	200	20	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	5970 [a]	400	190	ug/kg	DJ
78-59-1	Isophorone	ND	79	8.5	ug/kg	
91-57-6	2-Methylnaphthalene	502	40	9.0	ug/kg	
88-74-4	2-Nitroaniline	ND	200	9.4	ug/kg	
99-09-2	3-Nitroaniline	ND	200	9.9	ug/kg	
100-01-6	4-Nitroaniline	ND	200	10	ug/kg	
91-20-3	Naphthalene	643	40	11	ug/kg	
98-95-3	Nitrobenzene	ND	79	15	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	79	11	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	200	15	ug/kg	
85-01-8	Phenanthrene	15000 [a]	400	130	ug/kg	D
129-00-0	Pyrene	14600 [a]	400	130	ug/kg	D
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	200	10	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	44%	46%	23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCTP-66R-HC (0-2)		
Lab Sample ID:	JC86337-1	**Date Sampled:**	04/04/19
Matrix:	SO - Soil	**Date Received:**	04/12/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	83.7
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	49%	48%	27-114%
118-79-6	2,4,6-Tribromophenol	55%	61%	19-152%
4165-60-0	Nitrobenzene-d5	53%	55%	26-134%
321-60-8	2-Fluorobiphenyl	61%	66%	39-124%
1718-51-0	Terphenyl-d14	61%	65%	36-134%

(a) Result is from Run# 2

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS LabLink@1039014 11:10 10-May-2019

Report of Analysis

Client Sample ID:	PCTP-66R-HC (0-2)		
Lab Sample ID:	JC86337-1	**Date Sampled:**	04/04/19
Matrix:	SO - Soil	**Date Received:**	04/12/19
Method:	SW846 8081B SW846 3546	**Percent Solids:**	83.7
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6G64317.D	1	04/18/19 14:23	TL	04/17/19 03:00	OP19789	G6G1984
Run #2							

	Initial Weight	Final Volume
Run #1	15.3 g	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	0.78	0.64	ug/kg	
319-84-6	alpha-BHC	ND	0.78	0.63	ug/kg	
319-85-7	beta-BHC	ND	0.78	0.71	ug/kg	
319-86-8	delta-BHC	ND	0.78	0.75	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	0.78	0.58	ug/kg	
5103-71-9	alpha-Chlordane	ND	0.78	0.63	ug/kg	
5103-74-2	gamma-Chlordane	ND	0.78	0.35	ug/kg	
60-57-1	Dieldrin	ND	0.78	0.54	ug/kg	
72-54-8	4,4'-DDD	ND	0.78	0.72	ug/kg	
72-55-9	4,4'-DDE	3.0	0.78	0.68	ug/kg	
50-29-3	4,4'-DDT	11.3	0.78	0.69	ug/kg	
72-20-8	Endrin	ND	0.78	0.61	ug/kg	
1031-07-8	Endosulfan sulfate	ND	0.78	0.61	ug/kg	
7421-93-4	Endrin aldehyde	ND	0.78	0.44	ug/kg	
959-98-8	Endosulfan-I	ND	0.78	0.45	ug/kg	
33213-65-9	Endosulfan-II	ND	0.78	0.49	ug/kg	
76-44-8	Heptachlor	ND	0.78	0.67	ug/kg	
1024-57-3	Heptachlor epoxide	ND	0.78	0.55	ug/kg	
72-43-5	Methoxychlor	ND	1.6	0.62	ug/kg	
53494-70-5	Endrin ketone	ND	0.78	0.56	ug/kg	
8001-35-2	Toxaphene	ND	20	18	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	49%		25-135%
877-09-8	Tetrachloro-m-xylene	39%		25-135%
2051-24-3	Decachlorobiphenyl	33%		10-156%
2051-24-3	Decachlorobiphenyl	173% [a]		10-156%

(a) Outside control limits due to matrix interference.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS LabLink@1039014 11:10 10-May-2019

Report of Analysis

Client Sample ID:	PCTP-66R-HC (0-2)		
Lab Sample ID:	JC86337-1	**Date Sampled:**	04/04/19
Matrix:	SO - Soil	**Date Received:**	04/12/19
Method:	SW846 8082A SW846 3546	**Percent Solids:**	83.7
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	XX2433923.D	5	04/18/19 13:15	SK	04/17/19 03:00	OP19788	GXX6659
Run #2							

	Initial Weight	Final Volume
Run #1	15.3 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	200	91	ug/kg	
11104-28-2	Aroclor 1221	ND	200	100	ug/kg	
11141-16-5	Aroclor 1232	ND	200	150	ug/kg	
53469-21-9	Aroclor 1242	ND	200	80	ug/kg	
12672-29-6	Aroclor 1248	ND	200	170	ug/kg	
11097-69-1	Aroclor 1254	ND	200	110	ug/kg	
11096-82-5	Aroclor 1260	369	200	83	ug/kg	
11100-14-4	Aroclor 1268	ND	200	82	ug/kg	
37324-23-5	Aroclor 1262	ND	200	130	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	51%		31-146%
877-09-8	Tetrachloro-m-xylene	60%		31-146%
2051-24-3	Decachlorobiphenyl	103%		17-164%
2051-24-3	Decachlorobiphenyl	254% [b]		17-164%

(a) Dilution required due to matrix interference.
(b) Outside control limits due to matrix interference.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS LabLink@1039014 11:10 10-May-2019

Report of Analysis

Client Sample ID:	PCTP-66R-HC (2-4)		
Lab Sample ID:	JC86337-2	**Date Sampled:**	04/04/19
Matrix:	SO - Soil	**Date Received:**	04/12/19
Method:	SW846 8260C	**Percent Solids:**	95.0
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	I225496.D	1	04/17/19 18:33	TDN	n/a	n/a	VI9085
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	4.6 g	10.0 ml	100 ul
Run #2			

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	1200	590	ug/kg	R
71-43-2	Benzene	ND	59	44	ug/kg	
74-97-5	Bromochloromethane	ND	590	50	ug/kg	
75-27-4	Bromodichloromethane	ND	230	52	ug/kg	
75-25-2	Bromoform	ND	590	47	ug/kg	
74-83-9	Bromomethane	ND	590	120	ug/kg	
78-93-3	2-Butanone (MEK)	ND	1200	440	ug/kg	
75-15-0	Carbon disulfide	ND	230	110	ug/kg	
56-23-5	Carbon tetrachloride	ND	230	64	ug/kg	
108-90-7	Chlorobenzene	ND	230	41	ug/kg	
75-00-3	Chloroethane	ND	590	80	ug/kg	
67-66-3	Chloroform	ND	230	44	ug/kg	
74-87-3	Chloromethane	ND	590	230	ug/kg	
110-82-7	Cyclohexane	ND	230	48	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	230	98	ug/kg	
124-48-1	Dibromochloromethane	ND	230	40	ug/kg	
106-93-4	1,2-Dibromoethane [b]	ND	120	38	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	120	36	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	120	42	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	120	40	ug/kg	
75-71-8	Dichlorodifluoromethane [c]	ND	590	74	ug/kg	
75-34-3	1,1-Dichloroethane	ND	120	45	ug/kg	
107-06-2	1,2-Dichloroethane	ND	120	55	ug/kg	
75-35-4	1,1-Dichloroethene	ND	120	77	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	120	110	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	120	78	ug/kg	
78-87-5	1,2-Dichloropropane	ND	230	48	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	230	41	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	230	38	ug/kg	
100-41-4	Ethylbenzene	ND	120	65	ug/kg	
76-13-1	Freon 113	ND	590	89	ug/kg	
591-78-6	2-Hexanone	ND	590	150	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PCTP-66R-HC (2-4)
Lab Sample ID: JC86337-2
Matrix: SO - Soil
Method: SW846 8260C
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/04/19
Date Received: 04/12/19
Percent Solids: 95.0

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	230	82	ug/kg	R
79-20-9	Methyl Acetate	ND	590	160	ug/kg	
108-87-2	Methylcyclohexane	ND	230	83	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	120	41	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	590	180	ug/kg	
75-09-2	Methylene chloride	ND	590	290	ug/kg	
100-42-5	Styrene	ND	230	67	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	230	46	ug/kg	
127-18-4	Tetrachloroethene	ND	230	54	ug/kg	
108-88-3	Toluene	68.7	120	44	ug/kg	J
87-61-6	1,2,3-Trichlorobenzene	ND	590	120	ug/kg	R
120-82-1	1,2,4-Trichlorobenzene	ND	590	120	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	230	50	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	230	40	ug/kg	
79-01-6	Trichloroethene	ND	120	89	ug/kg	
75-69-4	Trichlorofluoromethane [c]	ND	590	80	ug/kg	
75-01-4	Vinyl chloride [c]	ND	230	55	ug/kg	
	m,p-Xylene	ND	120	87	ug/kg	
95-47-6	o-Xylene	ND	120	68	ug/kg	
1330-20-7	Xylene (total)	ND	120	68	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	104%		75-127%
17060-07-0	1,2-Dichloroethane-D4	102%		75-130%
2037-26-5	Toluene-D8	100%		80-120%
460-00-4	4-Bromofluorobenzene	109%		79-127%

(a) Diluted due to high concentration of non-target compound.
(b) Associated CCV and BS outside of control limits high, sample was ND.
(c) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID: PCTP-66R-HC (2-4)
Lab Sample ID: JC86337-2
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/04/19
Date Received: 04/12/19
Percent Solids: 95.0

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5P58617.D	1	04/18/19 16:33	CC	04/16/19 18:25	OP19786	E5P2776
Run #2	5P58656.D	10	04/19/19 10:17	CB	04/16/19 18:25	OP19786	E5P2777

	Initial Weight	Final Volume
Run #1	30.6 g	1.0 ml
Run #2	30.6 g	1.0 ml

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	69	17	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	170	21	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	170	29	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	170	61	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	170	130	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	170	37	ug/kg	
95-48-7	2-Methylphenol	ND	69	22	ug/kg	
	3&4-Methylphenol	ND	69	28	ug/kg	
88-75-5	2-Nitrophenol	ND	170	23	ug/kg	
100-02-7	4-Nitrophenol	ND	340	92	ug/kg	
87-86-5	Pentachlorophenol	ND	140	32	ug/kg	
108-95-2	Phenol	ND	69	18	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	170	23	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	170	26	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	170	21	ug/kg	
83-32-9	Acenaphthene	616	34	12	ug/kg	
208-96-8	Acenaphthylene	7040 [a]	340	170	ug/kg	D
98-86-2	Acetophenone	ND	170	7.4	ug/kg	
120-12-7	Anthracene	8170 [a]	340	210	ug/kg	D
1912-24-9	Atrazine	ND	69	15	ug/kg	
56-55-3	Benzo(a)anthracene	13000 [a]	340	97	ug/kg	D
50-32-8	Benzo(a)pyrene	12500 [a]	340	160	ug/kg	D
205-99-2	Benzo(b)fluoranthene	15300 [a]	340	150	ug/kg	D
191-24-2	Benzo(g,h,i)perylene	8240 [a]	340	170	ug/kg	D
207-08-9	Benzo(k)fluoranthene	6320 [a]	340	160	ug/kg	D
101-55-3	4-Bromophenyl phenyl ether	ND	69	13	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	69	8.4	ug/kg	
92-52-4	1,1'-Biphenyl	677	69	4.7	ug/kg	
100-52-7	Benzaldehyde	ND	170	8.5	ug/kg	
91-58-7	2-Chloronaphthalene	ND	69	8.2	ug/kg	
106-47-8	4-Chloroaniline	ND	170	12	ug/kg	
86-74-8	Carbazole	2410	69	5.0	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PCTP-66R-HC (2-4)
Lab Sample ID: JC86337-2
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/04/19
Date Received: 04/12/19
Percent Solids: 95.0

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	69	14	ug/kg	
218-01-9	Chrysene	11300 [a]	340	110	ug/kg	D
111-91-1	bis(2-Chloroethoxy)methane	ND	69	7.4	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	69	15	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	69	12	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	69	11	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	34	11	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	34	17	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	69	29	ug/kg	
123-91-1	1,4-Dioxane	ND	34	23	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	2240	34	15	ug/kg	
132-64-9	Dibenzofuran	5280 [a]	690	140	ug/kg	D
84-74-2	Di-n-butyl phthalate	ND	69	5.6	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	69	8.6	ug/kg	
84-66-2	Diethyl phthalate	ND	69	7.3	ug/kg	
131-11-3	Dimethyl phthalate	ND	69	6.1	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	69	8.0	ug/kg	
206-44-0	Fluoranthene	28900 [a]	340	150	ug/kg	D
86-73-7	Fluorene	9190 [a]	340	160	ug/kg	D
118-74-1	Hexachlorobenzene	ND	69	8.7	ug/kg	
87-68-3	Hexachlorobutadiene	ND	34	14	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	340	14	ug/kg	
67-72-1	Hexachloroethane	ND	170	17	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	8580 [a]	340	160	ug/kg	D
78-59-1	Isophorone	ND	69	7.4	ug/kg	
91-57-6	2-Methylnaphthalene	1960	34	7.8	ug/kg	
88-74-4	2-Nitroaniline	ND	170	8.1	ug/kg	
99-09-2	3-Nitroaniline	ND	170	8.6	ug/kg	
100-01-6	4-Nitroaniline	ND	170	8.9	ug/kg	
91-20-3	Naphthalene	1760	34	9.7	ug/kg	
98-95-3	Nitrobenzene	ND	69	13	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	69	9.9	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	170	13	ug/kg	
85-01-8	Phenanthrene	29700 [a]	340	120	ug/kg	D
129-00-0	Pyrene	22500 [a]	340	110	ug/kg	D
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	170	8.7	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	63%	60%	23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCTP-66R-HC (2-4)		
Lab Sample ID:	JC86337-2	**Date Sampled:**	04/04/19
Matrix:	SO - Soil	**Date Received:**	04/12/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	95.0
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	65%	56%	27-114%
118-79-6	2,4,6-Tribromophenol	71%	72%	19-152%
4165-60-0	Nitrobenzene-d5	65%	63%	26-134%
321-60-8	2-Fluorobiphenyl	74%	77%	39-124%
1718-51-0	Terphenyl-d14	73%	72%	36-134%

(a) Result is from Run# 2

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PCTP-66R-HC (2-4)		
Lab Sample ID:	JC86337-2	**Date Sampled:**	04/04/19
Matrix:	SO - Soil	**Date Received:**	04/12/19
Method:	SW846 8081B SW846 3546	**Percent Solids:**	95.0
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6G64318.D	1	04/18/19 14:41	TL	04/17/19 03:00	OP19789	G6G1984
Run #2							

	Initial Weight	Final Volume
Run #1	16.8 g	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	0.63	0.52	ug/kg	
319-84-6	alpha-BHC	ND	0.63	0.51	ug/kg	
319-85-7	beta-BHC	ND	0.63	0.57	ug/kg	
319-86-8	delta-BHC	ND	0.63	0.60	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	0.63	0.46	ug/kg	
5103-71-9	alpha-Chlordane	ND	0.63	0.51	ug/kg	
5103-74-2	gamma-Chlordane	ND	0.63	0.28	ug/kg	
60-57-1	Dieldrin	ND	0.63	0.43	ug/kg	
72-54-8	4,4'-DDD	ND	0.63	0.58	ug/kg	
72-55-9	4,4'-DDE	ND	0.63	0.55	ug/kg	
50-29-3	4,4'-DDT	ND	0.63	0.56	ug/kg	
72-20-8	Endrin	ND	0.63	0.49	ug/kg	
1031-07-8	Endosulfan sulfate	ND	0.63	0.49	ug/kg	
7421-93-4	Endrin aldehyde	ND	0.63	0.36	ug/kg	
959-98-8	Endosulfan-I	ND	0.63	0.36	ug/kg	
33213-65-9	Endosulfan-II	ND	0.63	0.39	ug/kg	
76-44-8	Heptachlor	ND	0.63	0.54	ug/kg	
1024-57-3	Heptachlor epoxide	ND	0.63	0.44	ug/kg	
72-43-5	Methoxychlor	ND	1.3	0.50	ug/kg	
53494-70-5	Endrin ketone	ND	0.63	0.45	ug/kg	
8001-35-2	Toxaphene	ND	16	15	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	51%		25-135%
877-09-8	Tetrachloro-m-xylene	37%		25-135%
2051-24-3	Decachlorobiphenyl	36%		10-156%
2051-24-3	Decachlorobiphenyl	293% [a]		10-156%

(a) Outside control limits due to matrix interference.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PCTP-66R-HC (2-4)		
Lab Sample ID:	JC86337-2	**Date Sampled:**	04/04/19
Matrix:	SO - Soil	**Date Received:**	04/12/19
Method:	SW846 8082A SW846 3546	**Percent Solids:**	95.0
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	XX2433924.D	5	04/18/19 13:34	SK	04/17/19 03:00	OP19788	GXX6659
Run #2							

	Initial Weight	Final Volume
Run #1	16.8 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	160	73	ug/kg	
11104-28-2	Aroclor 1221	ND	160	80	ug/kg	
11141-16-5	Aroclor 1232	ND	160	120	ug/kg	
53469-21-9	Aroclor 1242	ND	160	64	ug/kg	
12672-29-6	Aroclor 1248	ND	160	140	ug/kg	
11097-69-1	Aroclor 1254	ND	160	84	ug/kg	
11096-82-5	Aroclor 1260	ND	160	67	ug/kg	
11100-14-4	Aroclor 1268	ND	160	66	ug/kg	
37324-23-5	Aroclor 1262	ND	160	100	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	49%		31-146%
877-09-8	Tetrachloro-m-xylene	79%		31-146%
2051-24-3	Decachlorobiphenyl	467% [b]		17-164%
2051-24-3	Decachlorobiphenyl	384% [b]		17-164%

(a) Dilution required due to matrix interference.
(b) Outside control limits due to matrix interference.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PCTP-02R(4-6)		
Lab Sample ID:	JC86337-3	**Date Sampled:**	04/05/19
Matrix:	SO - Soil	**Date Received:**	04/12/19
Method:	SW846 8260C	**Percent Solids:**	89.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	Y184544.D	1	04/17/19 11:59	PS	n/a	n/a	VY8006
Run #2							

	Initial Weight
Run #1	5.6 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	11.0	9.9	5.0	ug/kg	J
71-43-2	Benzene	ND	0.50	0.37	ug/kg	R
74-97-5	Bromochloromethane	ND	5.0	0.43	ug/kg	
75-27-4	Bromodichloromethane	ND	2.0	0.44	ug/kg	
75-25-2	Bromoform	ND	5.0	0.40	ug/kg	
74-83-9	Bromomethane	ND	5.0	0.99	ug/kg	
78-93-3	2-Butanone (MEK)	ND	9.9	3.7	ug/kg	
75-15-0	Carbon disulfide	ND	2.0	0.92	ug/kg	
56-23-5	Carbon tetrachloride	ND	2.0	0.55	ug/kg	
108-90-7	Chlorobenzene	ND	2.0	0.35	ug/kg	
75-00-3	Chloroethane	ND	5.0	0.68	ug/kg	
67-66-3	Chloroform	ND	2.0	0.37	ug/kg	
74-87-3	Chloromethane	ND	5.0	1.9	ug/kg	
110-82-7	Cyclohexane	ND	2.0	0.40	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.83	ug/kg	
124-48-1	Dibromochloromethane	ND	2.0	0.34	ug/kg	
106-93-4	1,2-Dibromoethane	ND	0.99	0.32	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	0.99	0.30	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	0.99	0.36	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	0.99	0.34	ug/kg	
75-71-8	Dichlorodifluoromethane [b]	ND	5.0	0.63	ug/kg	
75-34-3	1,1-Dichloroethane	ND	0.99	0.38	ug/kg	
107-06-2	1,2-Dichloroethane	ND	0.99	0.47	ug/kg	
75-35-4	1,1-Dichloroethene	ND	0.99	0.65	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	0.99	0.95	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	0.99	0.66	ug/kg	
78-87-5	1,2-Dichloropropane	ND	2.0	0.40	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	2.0	0.35	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2.0	0.32	ug/kg	
100-41-4	Ethylbenzene	ND	0.99	0.55	ug/kg	
76-13-1	Freon 113	ND	5.0	0.76	ug/kg	
591-78-6	2-Hexanone	ND	5.0	1.3	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PCTP-02R(4-6)
Lab Sample ID: JC86337-3
Matrix: SO - Soil
Method: SW846 8260C
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/05/19
Date Received: 04/12/19
Percent Solids: 89.9

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	2.0	0.69	ug/kg	R
79-20-9	Methyl Acetate	ND	5.0	1.4	ug/kg	
108-87-2	Methylcyclohexane	ND	2.0	0.70	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.99	0.35	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	1.5	ug/kg	
75-09-2	Methylene chloride	ND	5.0	2.5	ug/kg	
100-42-5	Styrene	ND	2.0	0.57	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.0	0.39	ug/kg	
127-18-4	Tetrachloroethene	ND	2.0	0.46	ug/kg	
108-88-3	Toluene	ND	0.99	0.37	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	0.99	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	0.99	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	2.0	0.42	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2.0	0.34	ug/kg	
79-01-6	Trichloroethene	ND	0.99	0.76	ug/kg	
75-69-4	Trichlorofluoromethane	ND	5.0	0.68	ug/kg	
75-01-4	Vinyl chloride	ND	2.0	0.47	ug/kg	
	m,p-Xylene	ND	0.99	0.74	ug/kg	
95-47-6	o-Xylene	ND	0.99	0.58	ug/kg	
1330-20-7	Xylene (total)	ND	0.99	0.58	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%		75-127%
17060-07-0	1,2-Dichloroethane-D4	103%		75-130%
2037-26-5	Toluene-D8	94%		80-120%
460-00-4	4-Bromofluorobenzene	99%		79-127%

(a) DI vials received unfrozen and out of hold time.
(b) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS LabLink@1039014 11:10 10-May-2019

Report of Analysis

Client Sample ID: PCTP-02R(4-6)
Lab Sample ID: JC86337-3
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/05/19
Date Received: 04/12/19
Percent Solids: 89.9

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5P58580.D	1	04/18/19 00:21	CS	04/16/19 18:25	OP19786	E5P2775
Run #2							

	Initial Weight	Final Volume
Run #1	30.5 g	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	73	18	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	180	22	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	180	31	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	180	65	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	180	140	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	180	39	ug/kg	
95-48-7	2-Methylphenol	ND	73	23	ug/kg	
	3&4-Methylphenol	ND	73	30	ug/kg	
88-75-5	2-Nitrophenol	ND	180	24	ug/kg	
100-02-7	4-Nitrophenol	ND	360	97	ug/kg	
87-86-5	Pentachlorophenol	ND	150	34	ug/kg	
108-95-2	Phenol	ND	73	19	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	180	24	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	180	27	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	180	22	ug/kg	
83-32-9	Acenaphthene	ND	36	13	ug/kg	
208-96-8	Acenaphthylene	ND	36	19	ug/kg	
98-86-2	Acetophenone	ND	180	7.8	ug/kg	
120-12-7	Anthracene	ND	36	22	ug/kg	
1912-24-9	Atrazine	ND	73	16	ug/kg	
56-55-3	Benzo(a)anthracene	ND	36	10	ug/kg	
50-32-8	Benzo(a)pyrene	ND	36	17	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	36	16	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	36	18	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	36	17	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	73	14	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	73	8.9	ug/kg	
92-52-4	1,1'-Biphenyl	ND	73	5.0	ug/kg	
100-52-7	Benzaldehyde	ND	180	9.0	ug/kg	
91-58-7	2-Chloronaphthalene	ND	73	8.7	ug/kg	
106-47-8	4-Chloroaniline	ND	180	13	ug/kg	
86-74-8	Carbazole	ND	73	5.3	ug/kg	

ND = Not detected MDL = Method Detection Limit
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E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PCTP-02R(4-6)
Lab Sample ID: JC86337-3
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/05/19
Date Received: 04/12/19
Percent Solids: 89.9

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	73	14	ug/kg	
218-01-9	Chrysene	ND	36	11	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	73	7.8	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	73	16	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	73	13	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	73	12	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	36	11	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	36	18	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	73	30	ug/kg	
123-91-1	1,4-Dioxane	ND	36	24	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	36	16	ug/kg	
132-64-9	Dibenzofuran	ND	73	15	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	73	5.9	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	73	9.1	ug/kg	
84-66-2	Diethyl phthalate	ND	73	7.8	ug/kg	
131-11-3	Dimethyl phthalate	ND	73	6.5	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	73	8.5	ug/kg	
206-44-0	Fluoranthene	ND	36	16	ug/kg	
86-73-7	Fluorene	ND	36	17	ug/kg	
118-74-1	Hexachlorobenzene	ND	73	9.2	ug/kg	
87-68-3	Hexachlorobutadiene	ND	36	15	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	360	15	ug/kg	
67-72-1	Hexachloroethane	ND	180	18	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	36	17	ug/kg	
78-59-1	Isophorone	ND	73	7.8	ug/kg	
91-57-6	2-Methylnaphthalene	ND	36	8.2	ug/kg	
88-74-4	2-Nitroaniline	ND	180	8.6	ug/kg	
99-09-2	3-Nitroaniline	ND	180	9.1	ug/kg	
100-01-6	4-Nitroaniline	ND	180	9.4	ug/kg	
91-20-3	Naphthalene	ND	36	10	ug/kg	
98-95-3	Nitrobenzene	ND	73	14	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	73	11	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	180	13	ug/kg	
85-01-8	Phenanthrene	ND	36	12	ug/kg	
129-00-0	Pyrene	ND	36	12	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	180	9.3	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	63%		23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCTP-02R(4-6)		
Lab Sample ID:	JC86337-3	**Date Sampled:**	04/05/19
Matrix:	SO - Soil	**Date Received:**	04/12/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	89.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	66%		27-114%
118-79-6	2,4,6-Tribromophenol	65%		19-152%
4165-60-0	Nitrobenzene-d5	70%		26-134%
321-60-8	2-Fluorobiphenyl	72%		39-124%
1718-51-0	Terphenyl-d14	65%		36-134%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS LabLink@1039014 11:10 10-May-2019

Report of Analysis

Client Sample ID:	PCTP-01R(5-7)		
Lab Sample ID:	JC86337-4	**Date Sampled:**	04/05/19
Matrix:	SO - Soil	**Date Received:**	04/12/19
Method:	SW846 8260C	**Percent Solids:**	85.0
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	Y184545.D	1	04/17/19 12:27	PS	n/a	n/a	VY8006
Run #2							

	Initial Weight
Run #1	3.7 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	142	16	7.9	ug/kg	J
71-43-2	Benzene	ND	0.79	0.60	ug/kg	R
74-97-5	Bromochloromethane	ND	7.9	0.68	ug/kg	
75-27-4	Bromodichloromethane	ND	3.2	0.70	ug/kg	
75-25-2	Bromoform	ND	7.9	0.64	ug/kg	
74-83-9	Bromomethane	ND	7.9	1.6	ug/kg	
78-93-3	2-Butanone (MEK)	17.9	16	5.9	ug/kg	J
75-15-0	Carbon disulfide	5.3	3.2	1.5	ug/kg	J
56-23-5	Carbon tetrachloride	ND	3.2	0.87	ug/kg	R
108-90-7	Chlorobenzene	ND	3.2	0.56	ug/kg	
75-00-3	Chloroethane	ND	7.9	1.1	ug/kg	
67-66-3	Chloroform	ND	3.2	0.59	ug/kg	
74-87-3	Chloromethane	ND	7.9	3.1	ug/kg	
110-82-7	Cyclohexane	ND	3.2	0.65	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	3.2	1.3	ug/kg	
124-48-1	Dibromochloromethane	ND	3.2	0.54	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.6	0.52	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.6	0.48	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.6	0.57	ug/kg	
106-46-7	1,4-Dichlorobenzene	2.0	1.6	0.55	ug/kg	J
75-71-8	Dichlorodifluoromethane [b]	ND	7.9	1.0	ug/kg	R
75-34-3	1,1-Dichloroethane	ND	1.6	0.61	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.6	0.75	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.6	1.0	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.6	1.5	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.6	1.1	ug/kg	
78-87-5	1,2-Dichloropropane	ND	3.2	0.65	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	3.2	0.56	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	3.2	0.52	ug/kg	
100-41-4	Ethylbenzene	ND	1.6	0.88	ug/kg	
76-13-1	Freon 113	ND	7.9	1.2	ug/kg	
591-78-6	2-Hexanone	ND	7.9	2.0	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PCTP-01R(5-7)
Lab Sample ID: JC86337-4
Matrix: SO - Soil
Method: SW846 8260C
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/05/19
Date Received: 04/12/19
Percent Solids: 85.0

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	3.2	1.1	ug/kg	R
79-20-9	Methyl Acetate	ND	7.9	2.2	ug/kg	
108-87-2	Methylcyclohexane	ND	3.2	1.1	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.6	0.56	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	7.9	2.5	ug/kg	
75-09-2	Methylene chloride	ND	7.9	4.0	ug/kg	
100-42-5	Styrene	ND	3.2	0.91	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	3.2	0.62	ug/kg	
127-18-4	Tetrachloroethene	ND	3.2	0.73	ug/kg	
108-88-3	Toluene	0.72	1.6	0.60	ug/kg	J
87-61-6	1,2,3-Trichlorobenzene	ND	7.9	1.6	ug/kg	R
120-82-1	1,2,4-Trichlorobenzene	ND	7.9	1.6	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	3.2	0.68	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	3.2	0.54	ug/kg	
79-01-6	Trichloroethene	ND	1.6	1.2	ug/kg	
75-69-4	Trichlorofluoromethane	ND	7.9	1.1	ug/kg	
75-01-4	Vinyl chloride	ND	3.2	0.75	ug/kg	
	m,p-Xylene	ND	1.6	1.2	ug/kg	
95-47-6	o-Xylene	ND	1.6	0.93	ug/kg	
1330-20-7	Xylene (total)	ND	1.6	0.93	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%		75-127%
17060-07-0	1,2-Dichloroethane-D4	103%		75-130%
2037-26-5	Toluene-D8	94%		80-120%
460-00-4	4-Bromofluorobenzene	99%		79-127%

(a) DI vials received unfrozen and out of hold time.
(b) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS LabLink@1039014 11:10 10-May-2019

Report of Analysis

Client Sample ID:	PCTP-01R(5-7)		
Lab Sample ID:	JC86337-4	**Date Sampled:**	04/05/19
Matrix:	SO - Soil	**Date Received:**	04/12/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	85.0
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5P58618.D	1	04/18/19 16:58	CC	04/16/19 18:25	OP19786	E5P2776
Run #2	5P58657.D	5	04/19/19 10:42	CB	04/16/19 18:25	OP19786	E5P2777

	Initial Weight	Final Volume
Run #1	30.1 g	1.0 ml
Run #2	30.1 g	1.0 ml

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	78	19	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	200	24	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	200	33	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	200	70	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	200	150	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	200	42	ug/kg	
95-48-7	2-Methylphenol	ND	78	25	ug/kg	
	3&4-Methylphenol	ND	78	32	ug/kg	
88-75-5	2-Nitrophenol	ND	200	26	ug/kg	
100-02-7	4-Nitrophenol	ND	390	100	ug/kg	
87-86-5	Pentachlorophenol	ND	160	37	ug/kg	
108-95-2	Phenol	ND	78	20	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	200	26	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	200	29	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	200	23	ug/kg	
83-32-9	Acenaphthene	1640	39	13	ug/kg	
208-96-8	Acenaphthylene	87.3	39	20	ug/kg	
98-86-2	Acetophenone	ND	200	8.4	ug/kg	
120-12-7	Anthracene	1730	39	24	ug/kg	
1912-24-9	Atrazine	ND	78	17	ug/kg	
56-55-3	Benzo(a)anthracene	4390 [a]	200	55	ug/kg	D
50-32-8	Benzo(a)pyrene	4610 [a]	200	89	ug/kg	D
205-99-2	Benzo(b)fluoranthene	5590 [a]	200	86	ug/kg	D
191-24-2	Benzo(g,h,i)perylene	2660	39	20	ug/kg	
207-08-9	Benzo(k)fluoranthene	2140 [a]	200	91	ug/kg	D
101-55-3	4-Bromophenyl phenyl ether	ND	78	15	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	78	9.5	ug/kg	
92-52-4	1,1'-Biphenyl	52.6	78	5.4	ug/kg	J
100-52-7	Benzaldehyde	40.6	200	9.7	ug/kg	J
91-58-7	2-Chloronaphthalene	ND	78	9.3	ug/kg	
106-47-8	4-Chloroaniline	ND	200	14	ug/kg	
86-74-8	Carbazole	962	78	5.7	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PCTP-01R(5-7)
Lab Sample ID: JC86337-4
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/05/19
Date Received: 04/12/19
Percent Solids: 85.0

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	125	78	15	ug/kg	
218-01-9	Chrysene	4270 [a]	200	62	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	78	8.4	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	78	17	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	78	14	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	78	13	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	39	12	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	39	20	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	78	33	ug/kg	
123-91-1	1,4-Dioxane	ND	39	26	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	780	39	17	ug/kg	
132-64-9	Dibenzofuran	489	78	16	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	78	6.4	ug/kg	
117-84-0	Di-n-octyl phthalate	330	78	9.7	ug/kg	
84-66-2	Diethyl phthalate	ND	78	8.3	ug/kg	
131-11-3	Dimethyl phthalate	20.6	78	7.0	ug/kg	J
117-81-7	bis(2-Ethylhexyl)phthalate	185	78	9.1	ug/kg	
206-44-0	Fluoranthene	8810 [a]	200	87	ug/kg	D
86-73-7	Fluorene	1020	39	18	ug/kg	
118-74-1	Hexachlorobenzene	ND	78	9.9	ug/kg	
87-68-3	Hexachlorobutadiene	ND	39	16	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	390	16	ug/kg	
67-72-1	Hexachloroethane	ND	200	19	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	2970	39	18	ug/kg	
78-59-1	Isophorone	ND	78	8.4	ug/kg	
91-57-6	2-Methylnaphthalene	142	39	8.8	ug/kg	
88-74-4	2-Nitroaniline	ND	200	9.2	ug/kg	
99-09-2	3-Nitroaniline	ND	200	9.8	ug/kg	
100-01-6	4-Nitroaniline	ND	200	10	ug/kg	
91-20-3	Naphthalene	266	39	11	ug/kg	
98-95-3	Nitrobenzene	ND	78	15	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	78	11	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	200	14	ug/kg	
85-01-8	Phenanthrene	6490 [a]	200	66	ug/kg	D
129-00-0	Pyrene	7250 [a]	200	63	ug/kg	D
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	200	9.9	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	68%	64%	23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCTP-01R(5-7)		
Lab Sample ID:	JC86337-4	**Date Sampled:**	04/05/19
Matrix:	SO - Soil	**Date Received:**	04/12/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	85.0
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	74%	67%	27-114%
118-79-6	2,4,6-Tribromophenol	50%	49%	19-152%
4165-60-0	Nitrobenzene-d5	73%	74%	26-134%
321-60-8	2-Fluorobiphenyl	77%	84%	39-124%
1718-51-0	Terphenyl-d14	69%	74%	36-134%

(a) Result is from Run# 2

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PCSB-01R (14-16)		
Lab Sample ID:	JC86337-5	**Date Sampled:**	04/05/19
Matrix:	SO - Soil	**Date Received:**	04/12/19
Method:	SW846 8260C	**Percent Solids:**	84.1
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	I225497.D	1	04/17/19 19:02	TDN	n/a	n/a	VI9085
Run #2 [b]	I225511.D	1	04/18/19 11:08	TDN	n/a	n/a	VI9086

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.8 g	10.0 ml	100 ul
Run #2	5.8 g	10.0 ml	50.0 ul

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	1100	560	ug/kg	
71-43-2	Benzene	ND	56	42	ug/kg	
74-97-5	Bromochloromethane	ND	560	48	ug/kg	
75-27-4	Bromodichloromethane	ND	220	50	ug/kg	
75-25-2	Bromoform	ND	560	45	ug/kg	
74-83-9	Bromomethane	ND	560	110	ug/kg	
78-93-3	2-Butanone (MEK)	ND	1100	420	ug/kg	
75-15-0	Carbon disulfide	ND	220	100	ug/kg	
56-23-5	Carbon tetrachloride	ND	220	62	ug/kg	
108-90-7	Chlorobenzene	ND	220	40	ug/kg	
75-00-3	Chloroethane	ND	560	77	ug/kg	
67-66-3	Chloroform	ND	220	42	ug/kg	
74-87-3	Chloromethane	ND	560	220	ug/kg	
110-82-7	Cyclohexane	ND	220	45	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	220	94	ug/kg	
124-48-1	Dibromochloromethane	ND	220	38	ug/kg	
106-93-4	1,2-Dibromoethane [c]	ND	110	36	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	110	34	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	110	40	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	110	39	ug/kg	
75-71-8	Dichlorodifluoromethane [d]	ND	560	71	ug/kg	
75-34-3	1,1-Dichloroethane	ND	110	43	ug/kg	
107-06-2	1,2-Dichloroethane	ND	110	53	ug/kg	
75-35-4	1,1-Dichloroethene	ND	110	73	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	110	110	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	110	75	ug/kg	
78-87-5	1,2-Dichloropropane	ND	220	46	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	220	39	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	220	37	ug/kg	
100-41-4	Ethylbenzene	ND	110	62	ug/kg	
76-13-1	Freon 113	ND	560	85	ug/kg	
591-78-6	2-Hexanone	ND	560	140	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCSB-01R (14-16)		
Lab Sample ID:	JC86337-5	**Date Sampled:**	04/05/19
Matrix:	SO - Soil	**Date Received:**	04/12/19
Method:	SW846 8260C	**Percent Solids:**	84.1
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	220	78	ug/kg	
79-20-9	Methyl Acetate	ND	560	160	ug/kg	
108-87-2	Methylcyclohexane	ND	220	79	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	110	39	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	560	170	ug/kg	
75-09-2	Methylene chloride	ND	560	280	ug/kg	
100-42-5	Styrene	ND	220	64	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	220	44	ug/kg	
127-18-4	Tetrachloroethene	ND	220	52	ug/kg	
108-88-3	Toluene	ND	110	42	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	560	110	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	560	110	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	220	48	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	220	38	ug/kg	
79-01-6	Trichloroethene	ND	110	85	ug/kg	
75-69-4	Trichlorofluoromethane [d]	ND	560	76	ug/kg	
75-01-4	Vinyl chloride [d]	ND	220	53	ug/kg	
	m,p-Xylene	ND	110	84	ug/kg	
95-47-6	o-Xylene	ND	110	65	ug/kg	
1330-20-7	Xylene (total)	ND	110	65	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	97%	101%	75-127%
17060-07-0	1,2-Dichloroethane-D4	99%	109%	75-130%
2037-26-5	Toluene-D8	112%	100%	80-120%
460-00-4	4-Bromofluorobenzene	174% [e]	142% [e]	79-127%

(a) Diluted due to high concentration of non-target compound.
(b) Confirmation run.
(c) This compound in BS is outside in house QC limits bias high. Associated CCV outside of control limits high, sample was ND.
(d) Associated CCV outside of control limits high, sample was ND.
(e) Outside control limits due to matrix interference.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID: PCSB-01R (14-16)
Lab Sample ID: JC86337-5
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/05/19
Date Received: 04/12/19
Percent Solids: 84.1

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5P58581.D	1	04/18/19 00:45	CS	04/16/19 18:25	OP19786	E5P2775
Run #2							

	Initial Weight	Final Volume
Run #1	31.4 g	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	76	19	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	190	23	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	190	32	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	190	67	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	190	140	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	190	41	ug/kg	
95-48-7	2-Methylphenol	ND	76	24	ug/kg	
	3&4-Methylphenol	ND	76	31	ug/kg	
88-75-5	2-Nitrophenol	ND	190	25	ug/kg	
100-02-7	4-Nitrophenol	ND	380	100	ug/kg	
87-86-5	Pentachlorophenol	ND	150	36	ug/kg	
108-95-2	Phenol	ND	76	20	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	190	25	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	190	28	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	190	23	ug/kg	
83-32-9	Acenaphthene	ND	38	13	ug/kg	
208-96-8	Acenaphthylene	ND	38	19	ug/kg	
98-86-2	Acetophenone	ND	190	8.1	ug/kg	
120-12-7	Anthracene	41.4	38	23	ug/kg	
1912-24-9	Atrazine	ND	76	16	ug/kg	
56-55-3	Benzo(a)anthracene	60.4	38	11	ug/kg	
50-32-8	Benzo(a)pyrene	49.8	38	17	ug/kg	
205-99-2	Benzo(b)fluoranthene	71.1	38	17	ug/kg	
191-24-2	Benzo(g,h,i)perylene	30.6	38	19	ug/kg	J
207-08-9	Benzo(k)fluoranthene	26.3	38	18	ug/kg	J
101-55-3	4-Bromophenyl phenyl ether	ND	76	15	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	76	9.2	ug/kg	
92-52-4	1,1'-Biphenyl	ND	76	5.2	ug/kg	
100-52-7	Benzaldehyde	ND	190	9.4	ug/kg	
91-58-7	2-Chloronaphthalene	ND	76	9.0	ug/kg	
106-47-8	4-Chloroaniline	ND	190	14	ug/kg	
86-74-8	Carbazole	16.2	76	5.5	ug/kg	J

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PCSB-01R (14-16)
Lab Sample ID: JC86337-5
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/05/19
Date Received: 04/12/19
Percent Solids: 84.1

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	76	15	ug/kg	
218-01-9	Chrysene	59.2	38	12	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	76	8.1	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	76	16	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	76	14	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	76	12	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	38	12	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	38	19	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	76	32	ug/kg	
123-91-1	1,4-Dioxane	ND	38	25	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	38	17	ug/kg	
132-64-9	Dibenzofuran	24.1	76	15	ug/kg	J
84-74-2	Di-n-butyl phthalate	ND	76	6.2	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	76	9.4	ug/kg	
84-66-2	Diethyl phthalate	ND	76	8.1	ug/kg	
131-11-3	Dimethyl phthalate	ND	76	6.7	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	76	8.9	ug/kg	
206-44-0	Fluoranthene	156	38	17	ug/kg	
86-73-7	Fluorene	21.6	38	17	ug/kg	J
118-74-1	Hexachlorobenzene	ND	76	9.6	ug/kg	
87-68-3	Hexachlorobutadiene	ND	38	15	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	380	15	ug/kg	
67-72-1	Hexachloroethane	ND	190	19	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	31.0	38	18	ug/kg	J
78-59-1	Isophorone	ND	76	8.1	ug/kg	
91-57-6	2-Methylnaphthalene	ND	38	8.6	ug/kg	
88-74-4	2-Nitroaniline	ND	190	8.9	ug/kg	
99-09-2	3-Nitroaniline	ND	190	9.5	ug/kg	
100-01-6	4-Nitroaniline	ND	190	9.8	ug/kg	
91-20-3	Naphthalene	ND	38	11	ug/kg	
98-95-3	Nitrobenzene	ND	76	15	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	76	11	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	190	14	ug/kg	
85-01-8	Phenanthrene	210	38	13	ug/kg	
129-00-0	Pyrene	130	38	12	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	190	9.6	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	67%		23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCSB-01R (14-16)		
Lab Sample ID:	JC86337-5	**Date Sampled:**	04/05/19
Matrix:	SO - Soil	**Date Received:**	04/12/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	84.1
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	64%		27-114%
118-79-6	2,4,6-Tribromophenol	63%		19-152%
4165-60-0	Nitrobenzene-d5	75%		26-134%
321-60-8	2-Fluorobiphenyl	72%		39-124%
1718-51-0	Terphenyl-d14	67%		36-134%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PCSB-01R (18-20)		
Lab Sample ID:	JC86337-6	**Date Sampled:**	04/05/19
Matrix:	SO - Soil	**Date Received:**	04/12/19
Method:	SW846 8260C	**Percent Solids:**	89.1
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	Y184546.D	1	04/17/19 12:56	PS	n/a	n/a	VY8006
Run #2							

	Initial Weight
Run #1	5.3 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	16.4	11	5.3	ug/kg	J
71-43-2	Benzene	ND	0.53	0.40	ug/kg	R
74-97-5	Bromochloromethane	ND	5.3	0.46	ug/kg	
75-27-4	Bromodichloromethane	ND	2.1	0.47	ug/kg	
75-25-2	Bromoform	ND	5.3	0.43	ug/kg	
74-83-9	Bromomethane	ND	5.3	1.1	ug/kg	
78-93-3	2-Butanone (MEK)	ND	11	4.0	ug/kg	
75-15-0	Carbon disulfide	ND	2.1	0.98	ug/kg	
56-23-5	Carbon tetrachloride	ND	2.1	0.58	ug/kg	
108-90-7	Chlorobenzene	ND	2.1	0.37	ug/kg	
75-00-3	Chloroethane	ND	5.3	0.73	ug/kg	
67-66-3	Chloroform	ND	2.1	0.39	ug/kg	
74-87-3	Chloromethane	ND	5.3	2.1	ug/kg	
110-82-7	Cyclohexane	ND	2.1	0.43	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.1	0.89	ug/kg	
124-48-1	Dibromochloromethane	ND	2.1	0.36	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.1	0.34	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.1	0.32	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.1	0.38	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.1	0.36	ug/kg	
75-71-8	Dichlorodifluoromethane [b]	ND	5.3	0.67	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.1	0.41	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.1	0.50	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.1	0.69	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.1	1.0	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.1	0.71	ug/kg	
78-87-5	1,2-Dichloropropane	ND	2.1	0.43	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	2.1	0.37	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2.1	0.35	ug/kg	
100-41-4	Ethylbenzene	ND	1.1	0.58	ug/kg	
76-13-1	Freon 113	ND	5.3	0.81	ug/kg	
591-78-6	2-Hexanone	ND	5.3	1.3	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCSB-01R (18-20)		
Lab Sample ID:	JC86337-6	**Date Sampled:**	04/05/19
Matrix:	SO - Soil	**Date Received:**	04/12/19
Method:	SW846 8260C	**Percent Solids:**	89.1
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	2.1	0.74	ug/kg	R
79-20-9	Methyl Acetate	ND	5.3	1.5	ug/kg	
108-87-2	Methylcyclohexane	ND	2.1	0.75	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.1	0.37	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.3	1.7	ug/kg	
75-09-2	Methylene chloride	ND	5.3	2.6	ug/kg	
100-42-5	Styrene	ND	2.1	0.61	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.1	0.41	ug/kg	
127-18-4	Tetrachloroethene	ND	2.1	0.49	ug/kg	
108-88-3	Toluene	ND	1.1	0.40	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	5.3	1.1	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	5.3	1.1	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	2.1	0.45	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2.1	0.36	ug/kg	
79-01-6	Trichloroethene	ND	1.1	0.81	ug/kg	
75-69-4	Trichlorofluoromethane	ND	5.3	0.72	ug/kg	
75-01-4	Vinyl chloride	ND	2.1	0.50	ug/kg	
	m,p-Xylene	ND	1.1	0.79	ug/kg	
95-47-6	o-Xylene	ND	1.1	0.62	ug/kg	
1330-20-7	Xylene (total)	ND	1.1	0.62	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	104%		75-127%
17060-07-0	1,2-Dichloroethane-D4	103%		75-130%
2037-26-5	Toluene-D8	93%		80-120%
460-00-4	4-Bromofluorobenzene	103%		79-127%

(a) DI vials received unfrozen and out of hold time.
(b) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS LabLink@1039014 11:10 10-May-2019

Report of Analysis

Client Sample ID: PCSB-01R (18-20)
Lab Sample ID: JC86337-6
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/05/19
Date Received: 04/12/19
Percent Solids: 89.1

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5P58582.D	1	04/18/19 01:10	CS	04/16/19 18:25	OP19786	E5P2775
Run #2							

	Initial Weight	Final Volume
Run #1	30.6 g	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	73	18	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	180	22	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	180	31	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	180	65	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	180	140	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	180	39	ug/kg	
95-48-7	2-Methylphenol	ND	73	23	ug/kg	
	3&4-Methylphenol	ND	73	30	ug/kg	
88-75-5	2-Nitrophenol	ND	180	24	ug/kg	
100-02-7	4-Nitrophenol	ND	370	98	ug/kg	
87-86-5	Pentachlorophenol	ND	150	34	ug/kg	
108-95-2	Phenol	ND	73	19	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	180	24	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	180	27	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	180	22	ug/kg	
83-32-9	Acenaphthene	ND	37	13	ug/kg	
208-96-8	Acenaphthylene	ND	37	19	ug/kg	
98-86-2	Acetophenone	ND	180	7.9	ug/kg	
120-12-7	Anthracene	ND	37	22	ug/kg	
1912-24-9	Atrazine	ND	73	16	ug/kg	
56-55-3	Benzo(a)anthracene	ND	37	10	ug/kg	
50-32-8	Benzo(a)pyrene	ND	37	17	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	37	16	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	37	18	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	37	17	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	73	14	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	73	8.9	ug/kg	
92-52-4	1,1'-Biphenyl	ND	73	5.0	ug/kg	
100-52-7	Benzaldehyde	ND	180	9.1	ug/kg	
91-58-7	2-Chloronaphthalene	ND	73	8.7	ug/kg	
106-47-8	4-Chloroaniline	ND	180	13	ug/kg	
86-74-8	Carbazole	ND	73	5.3	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PCSB-01R (18-20)
Lab Sample ID: JC86337-6
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/05/19
Date Received: 04/12/19
Percent Solids: 89.1

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	73	14	ug/kg	
218-01-9	Chrysene	ND	37	12	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	73	7.8	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	73	16	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	73	13	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	73	12	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	37	11	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	37	18	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	73	31	ug/kg	
123-91-1	1,4-Dioxane	ND	37	24	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	37	16	ug/kg	
132-64-9	Dibenzofuran	ND	73	15	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	73	6.0	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	73	9.1	ug/kg	
84-66-2	Diethyl phthalate	ND	73	7.8	ug/kg	
131-11-3	Dimethyl phthalate	ND	73	6.5	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	73	8.6	ug/kg	
206-44-0	Fluoranthene	ND	37	16	ug/kg	
86-73-7	Fluorene	ND	37	17	ug/kg	
118-74-1	Hexachlorobenzene	ND	73	9.3	ug/kg	
87-68-3	Hexachlorobutadiene	ND	37	15	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	370	15	ug/kg	
67-72-1	Hexachloroethane	ND	180	18	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	37	17	ug/kg	
78-59-1	Isophorone	ND	73	7.8	ug/kg	
91-57-6	2-Methylnaphthalene	ND	37	8.3	ug/kg	
88-74-4	2-Nitroaniline	ND	180	8.7	ug/kg	
99-09-2	3-Nitroaniline	ND	180	9.2	ug/kg	
100-01-6	4-Nitroaniline	ND	180	9.5	ug/kg	
91-20-3	Naphthalene	ND	37	10	ug/kg	
98-95-3	Nitrobenzene	ND	73	14	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	73	11	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	180	13	ug/kg	
85-01-8	Phenanthrene	ND	37	12	ug/kg	
129-00-0	Pyrene	ND	37	12	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	180	9.3	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	78%		23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCSB-01R (18-20)		
Lab Sample ID:	JC86337-6	**Date Sampled:**	04/05/19
Matrix:	SO - Soil	**Date Received:**	04/12/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	89.1
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	69%		27-114%
118-79-6	2,4,6-Tribromophenol	70%		19-152%
4165-60-0	Nitrobenzene-d5	73%		26-134%
321-60-8	2-Fluorobiphenyl	73%		39-124%
1718-51-0	Terphenyl-d14	70%		36-134%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	S-138 (0.0-0.5)		
Lab Sample ID:	JC86337-7	**Date Sampled:**	04/05/19
Matrix:	SO - Soil	**Date Received:**	04/12/19
Method:	SW846 8082A SW846 3546	**Percent Solids:**	84.8
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EF189209.D	1	04/19/19 18:13	TR	04/19/19 09:50	OP19829	GEF6426
Run #2							

	Initial Weight	Final Volume
Run #1	16.4 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	36	17	ug/kg	
11104-28-2	Aroclor 1221	ND	36	18	ug/kg	
11141-16-5	Aroclor 1232	ND	36	28	ug/kg	
53469-21-9	Aroclor 1242	ND	36	15	ug/kg	
12672-29-6	Aroclor 1248	ND	36	32	ug/kg	
11097-69-1	Aroclor 1254	159	36	19	ug/kg	
11096-82-5	Aroclor 1260	ND	36	15	ug/kg	
11100-14-4	Aroclor 1268	ND	36	15	ug/kg	
37324-23-5	Aroclor 1262	ND	36	24	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	75%		31-146%
877-09-8	Tetrachloro-m-xylene	69%		31-146%
2051-24-3	Decachlorobiphenyl	83%		17-164%
2051-24-3	Decachlorobiphenyl	165% [a]		17-164%

(a) Outside control limits due to matrix interference.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS LabLink@1039014 11:10 10-May-2019

Report of Analysis

Client Sample ID:	S-138 (0.5-2.0)		
Lab Sample ID:	JC86337-8	**Date Sampled:**	04/05/19
Matrix:	SO - Soil	**Date Received:**	04/12/19
Method:	SW846 8082A SW846 3546	**Percent Solids:**	87.6
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EF189210.D	1	04/19/19 18:38	TR	04/19/19 09:50	OP19829	GEF6426
Run #2							

	Initial Weight	Final Volume
Run #1	16.7 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	34	16	ug/kg	
11104-28-2	Aroclor 1221	ND	34	17	ug/kg	
11141-16-5	Aroclor 1232	ND	34	26	ug/kg	
53469-21-9	Aroclor 1242	ND	34	14	ug/kg	
12672-29-6	Aroclor 1248	ND	34	30	ug/kg	
11097-69-1	Aroclor 1254	426	34	18	ug/kg	
11096-82-5	Aroclor 1260	ND	34	15	ug/kg	
11100-14-4	Aroclor 1268	ND	34	14	ug/kg	
37324-23-5	Aroclor 1262	ND	34	22	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	93%		31-146%
877-09-8	Tetrachloro-m-xylene	87%		31-146%
2051-24-3	Decachlorobiphenyl	124%		17-164%
2051-24-3	Decachlorobiphenyl	250% [a]		17-164%

(a) Outside control limits due to matrix interference.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PCTP-66R-HC (0-2)
Lab Sample ID: JC86337-1
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/04/19
Date Received: 04/12/19
Percent Solids: 83.7

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	6260	58	9.3	mg/kg	1	04/16/19	04/17/19	ND	SW846 6010D [2]	SW846 3050B [3]
Antimony	2.6	2.3	0.47	mg/kg	1	04/16/19	04/17/19	ND	SW846 6010D [2]	SW846 3050B [3]
Arsenic	35.7	2.3	0.32	mg/kg	1	04/16/19	04/17/19	ND	SW846 6010D [2]	SW846 3050B [3]
Barium	79.4	23	2.2	mg/kg	1	04/16/19	04/17/19	ND	SW846 6010D [2]	SW846 3050B [3]
Beryllium	0.68	0.23	0.092	mg/kg	1	04/16/19	04/17/19	ND	SW846 6010D [2]	SW846 3050B [3]
Cadmium	1.9	0.58	0.081	mg/kg	1	04/16/19	04/17/19	ND	SW846 6010D [2]	SW846 3050B [3]
Calcium	3170	580	51	mg/kg	1	04/16/19	04/17/19	ND	SW846 6010D [2]	SW846 3050B [3]
Chromium	19.8	1.2	0.43	mg/kg	1	04/16/19	04/17/19	ND	SW846 6010D [2]	SW846 3050B [3]
Cobalt	5.8	5.8	0.32	mg/kg	1	04/16/19	04/17/19	ND	SW846 6010D [2]	SW846 3050B [3]
Copper	127	2.9	0.97	mg/kg	1	04/16/19	04/17/19	ND	SW846 6010D [2]	SW846 3050B [3]
Iron	18900	58	22	mg/kg	1	04/16/19	04/17/19	ND	SW846 6010D [2]	SW846 3050B [3]
Lead	323	2.3	0.47	mg/kg	1	04/16/19	04/17/19	ND	SW846 6010D [2]	SW846 3050B [3]
Magnesium	1640	580	16	mg/kg	1	04/16/19	04/17/19	ND	SW846 6010D [2]	SW846 3050B [3]
Manganese	279	1.7	0.47	mg/kg	1	04/16/19	04/17/19	ND	SW846 6010D [2]	SW846 3050B [3]
Mercury	0.23	0.038	0.017	mg/kg	1	04/16/19	04/16/19	EAL	SW846 7471B [1]	SW846 7471B [4]
Nickel	23.8	4.6	0.40	mg/kg	1	04/16/19	04/17/19	ND	SW846 6010D [2]	SW846 3050B [3]
Potassium	740 J	1200	37	mg/kg	1	04/16/19	04/17/19	ND	SW846 6010D [2]	SW846 3050B [3]
Selenium	0.75 U	2.3	0.75	mg/kg	1	04/16/19	04/17/19	ND	SW846 6010D [2]	SW846 3050B [3]
Silver	0.33 J	0.58	0.20	mg/kg	1	04/16/19	04/17/19	ND	SW846 6010D [2]	SW846 3050B [3]
Sodium	130 J	1200	90	mg/kg	1	04/16/19	04/17/19	ND	SW846 6010D [2]	SW846 3050B [3]
Thallium	0.67 U	1.2	0.67	mg/kg	1	04/16/19	04/17/19	ND	SW846 6010D [2]	SW846 3050B [3]
Vanadium	20.5	5.8	0.22	mg/kg	1	04/16/19	04/17/19	ND	SW846 6010D [2]	SW846 3050B [3]
Zinc	339	5.8	2.6	mg/kg	1	04/16/19	04/17/19	ND	SW846 6010D [2]	SW846 3050B [3]

(1) Instrument QC Batch: MA46516
(2) Instrument QC Batch: MA46525
(3) Prep QC Batch: MP14249
(4) Prep QC Batch: MP14256

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	PCTP-66R-HC (0-2)		
Lab Sample ID:	JC86337-1	**Date Sampled:**	04/04/19
Matrix:	SO - Soil	**Date Received:**	04/12/19
		Percent Solids:	83.7
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	0.14 J	0.28	0.14	mg/kg	1	04/17/19 15:44	KI	SW846 9012B/LACHAT
Solids, Percent	83.7			%	1	04/16/19 16:30	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: PCTP-66R-HC (2-4)
Lab Sample ID: JC86337-2
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/04/19
Date Received: 04/12/19
Percent Solids: 95.0

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	4950	53	8.5	mg/kg	1	04/16/19	04/17/19	ND	SW846 6010D [2]	SW846 3050B [3]
Antimony	0.43 U	2.1	0.43	mg/kg	1	04/16/19	04/17/19	ND	SW846 6010D [2]	SW846 3050B [3]
Arsenic	4.2	2.1	0.30	mg/kg	1	04/16/19	04/17/19	ND	SW846 6010D [2]	SW846 3050B [3]
Barium	28.1	21	2.0	mg/kg	1	04/16/19	04/17/19	ND	SW846 6010D [2]	SW846 3050B [3]
Beryllium	0.44	0.21	0.084	mg/kg	1	04/16/19	04/17/19	ND	SW846 6010D [2]	SW846 3050B [3]
Cadmium	0.11 J	0.53	0.074	mg/kg	1	04/16/19	04/17/19	ND	SW846 6010D [2]	SW846 3050B [3]
Calcium	364 J	530	47	mg/kg	1	04/16/19	04/17/19	ND	SW846 6010D [2]	SW846 3050B [3]
Chromium	12.8	1.1	0.39	mg/kg	1	04/16/19	04/17/19	ND	SW846 6010D [2]	SW846 3050B [3]
Cobalt	6.0	5.3	0.30	mg/kg	1	04/16/19	04/17/19	ND	SW846 6010D [2]	SW846 3050B [3]
Copper	8.5	2.6	0.89	mg/kg	1	04/16/19	04/17/19	ND	SW846 6010D [2]	SW846 3050B [3]
Iron	13100	53	20	mg/kg	1	04/16/19	04/17/19	ND	SW846 6010D [2]	SW846 3050B [3]
Lead	25.8	2.1	0.43	mg/kg	1	04/16/19	04/17/19	ND	SW846 6010D [2]	SW846 3050B [3]
Magnesium	1140	530	14	mg/kg	1	04/16/19	04/17/19	ND	SW846 6010D [2]	SW846 3050B [3]
Manganese	203	1.6	0.43	mg/kg	1	04/16/19	04/17/19	ND	SW846 6010D [2]	SW846 3050B [3]
Mercury	0.046	0.032	0.014	mg/kg	1	04/16/19	04/16/19	EAL	SW846 7471B [1]	SW846 7471B [4]
Nickel	8.4	4.2	0.37	mg/kg	1	04/16/19	04/17/19	ND	SW846 6010D [2]	SW846 3050B [3]
Potassium	982 J	1100	33	mg/kg	1	04/16/19	04/17/19	ND	SW846 6010D [2]	SW846 3050B [3]
Selenium	0.68 U	2.1	0.68	mg/kg	1	04/16/19	04/17/19	ND	SW846 6010D [2]	SW846 3050B [3]
Silver	0.18 U	0.53	0.18	mg/kg	1	04/16/19	04/17/19	ND	SW846 6010D [2]	SW846 3050B [3]
Sodium	82 U	1100	82	mg/kg	1	04/16/19	04/17/19	ND	SW846 6010D [2]	SW846 3050B [3]
Thallium	0.61 U	1.1	0.61	mg/kg	1	04/16/19	04/17/19	ND	SW846 6010D [2]	SW846 3050B [3]
Vanadium	13.4	5.3	0.20	mg/kg	1	04/16/19	04/17/19	ND	SW846 6010D [2]	SW846 3050B [3]
Zinc	47.3	5.3	2.4	mg/kg	1	04/16/19	04/17/19	ND	SW846 6010D [2]	SW846 3050B [3]

(1) Instrument QC Batch: MA46516
(2) Instrument QC Batch: MA46525
(3) Prep QC Batch: MP14249
(4) Prep QC Batch: MP14256

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	PCTP-66R-HC (2-4)		
Lab Sample ID:	JC86337-2	**Date Sampled:**	04/04/19
Matrix:	SO - Soil	**Date Received:**	04/12/19
		Percent Solids:	95.0
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	0.13 J	0.23	0.12	mg/kg	1	04/17/19 15:45	KI	SW846 9012B/LACHAT
Solids, Percent	95			%	1	04/16/19 16:30	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: PCTP-02R(4-6)
Lab Sample ID: JC86337-3
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/05/19
Date Received: 04/12/19
Percent Solids: 89.9

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	9610	55	8.9	mg/kg	1	04/16/19	04/17/19	ND	SW846 6010D [2]	SW846 3050B [3]
Antimony	0.45 U	2.2	0.45	mg/kg	1	04/16/19	04/17/19	ND	SW846 6010D [2]	SW846 3050B [3]
Arsenic	2.7	2.2	0.31	mg/kg	1	04/16/19	04/17/19	ND	SW846 6010D [2]	SW846 3050B [3]
Barium	28.6	22	2.1	mg/kg	1	04/16/19	04/17/19	ND	SW846 6010D [2]	SW846 3050B [3]
Beryllium	0.31	0.22	0.089	mg/kg	1	04/16/19	04/17/19	ND	SW846 6010D [2]	SW846 3050B [3]
Cadmium	0.077 U	0.55	0.077	mg/kg	1	04/16/19	04/17/19	ND	SW846 6010D [2]	SW846 3050B [3]
Calcium	475 J	550	49	mg/kg	1	04/16/19	04/17/19	ND	SW846 6010D [2]	SW846 3050B [3]
Chromium	9.7	1.1	0.41	mg/kg	1	04/16/19	04/17/19	ND	SW846 6010D [2]	SW846 3050B [3]
Cobalt	3.6 J	5.5	0.31	mg/kg	1	04/16/19	04/17/19	ND	SW846 6010D [2]	SW846 3050B [3]
Copper	4.9	2.8	0.93	mg/kg	1	04/16/19	04/17/19	ND	SW846 6010D [2]	SW846 3050B [3]
Iron	9460	55	21	mg/kg	1	04/16/19	04/17/19	ND	SW846 6010D [2]	SW846 3050B [3]
Lead	6.3	2.2	0.45	mg/kg	1	04/16/19	04/17/19	ND	SW846 6010D [2]	SW846 3050B [3]
Magnesium	1230	550	15	mg/kg	1	04/16/19	04/17/19	ND	SW846 6010D [2]	SW846 3050B [3]
Manganese	112	1.7	0.45	mg/kg	1	04/16/19	04/17/19	ND	SW846 6010D [2]	SW846 3050B [3]
Mercury	0.16	0.031	0.014	mg/kg	1	04/16/19	04/16/19	EAL	SW846 7471B [1]	SW846 7471B [4]
Nickel	9.2	4.4	0.39	mg/kg	1	04/16/19	04/17/19	ND	SW846 6010D [2]	SW846 3050B [3]
Potassium	798 J	1100	35	mg/kg	1	04/16/19	04/17/19	ND	SW846 6010D [2]	SW846 3050B [3]
Selenium	0.72 U	2.2	0.72	mg/kg	1	04/16/19	04/17/19	ND	SW846 6010D [2]	SW846 3050B [3]
Silver	0.19 U	0.55	0.19	mg/kg	1	04/16/19	04/17/19	ND	SW846 6010D [2]	SW846 3050B [3]
Sodium	86 U	1100	86	mg/kg	1	04/16/19	04/17/19	ND	SW846 6010D [2]	SW846 3050B [3]
Thallium	0.64 U	1.1	0.64	mg/kg	1	04/16/19	04/17/19	ND	SW846 6010D [2]	SW846 3050B [3]
Vanadium	10.2	5.5	0.21	mg/kg	1	04/16/19	04/17/19	ND	SW846 6010D [2]	SW846 3050B [3]
Zinc	28.9	5.5	2.5	mg/kg	1	04/16/19	04/17/19	ND	SW846 6010D [2]	SW846 3050B [3]

(1) Instrument QC Batch: MA46516
(2) Instrument QC Batch: MA46525
(3) Prep QC Batch: MP14249
(4) Prep QC Batch: MP14256

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	PCTP-02R(4-6)		
Lab Sample ID:	JC86337-3	**Date Sampled:**	04/05/19
Matrix:	SO - Soil	**Date Received:**	04/12/19
		Percent Solids:	89.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	0.13 U	0.27	0.13	mg/kg	1	04/17/19 15:47	KI	SW846 9012B/LACHAT
Solids, Percent	89.9			%	1	04/16/19 16:30	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: PCTP-01R(5-7)
Lab Sample ID: JC86337-4
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/05/19
Date Received: 04/12/19
Percent Solids: 85.0

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	6460	60	9.6	mg/kg	1	04/16/19	04/17/19	ND	SW846 6010D [2]	SW846 3050B [4]
Antimony	1.3 J	2.4	0.49	mg/kg	1	04/16/19	04/17/19	ND	SW846 6010D [2]	SW846 3050B [4]
Arsenic	4.7	2.4	0.33	mg/kg	1	04/16/19	04/17/19	ND	SW846 6010D [2]	SW846 3050B [4]
Barium	125	24	2.3	mg/kg	1	04/16/19	04/17/19	ND	SW846 6010D [2]	SW846 3050B [4]
Beryllium	0.32	0.24	0.096	mg/kg	1	04/16/19	04/17/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cadmium	0.84	0.60	0.084	mg/kg	1	04/16/19	04/17/19	ND	SW846 6010D [2]	SW846 3050B [4]
Calcium	47500	3000	260	mg/kg	5	04/16/19	04/18/19	ND	SW846 6010D [3]	SW846 3050B [4]
Chromium	15.1	1.2	0.44	mg/kg	1	04/16/19	04/17/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cobalt	4.0 J	6.0	0.33	mg/kg	1	04/16/19	04/17/19	ND	SW846 6010D [2]	SW846 3050B [4]
Copper	19.9	3.0	1.0	mg/kg	1	04/16/19	04/17/19	ND	SW846 6010D [2]	SW846 3050B [4]
Iron	19000	60	23	mg/kg	1	04/16/19	04/17/19	ND	SW846 6010D [2]	SW846 3050B [4]
Lead	111	2.4	0.49	mg/kg	1	04/16/19	04/17/19	ND	SW846 6010D [2]	SW846 3050B [4]
Magnesium	3730	600	16	mg/kg	1	04/16/19	04/17/19	ND	SW846 6010D [2]	SW846 3050B [4]
Manganese	187	1.8	0.49	mg/kg	1	04/16/19	04/17/19	ND	SW846 6010D [2]	SW846 3050B [4]
Mercury	0.014 U	0.031	0.014	mg/kg	1	04/16/19	04/16/19	EAL	SW846 7471B [1]	SW846 7471B [5]
Nickel	13.7	4.8	0.42	mg/kg	1	04/16/19	04/17/19	ND	SW846 6010D [2]	SW846 3050B [4]
Potassium	1370	1200	38	mg/kg	1	04/16/19	04/17/19	ND	SW846 6010D [2]	SW846 3050B [4]
Selenium	0.78 U	2.4	0.78	mg/kg	1	04/16/19	04/17/19	ND	SW846 6010D [2]	SW846 3050B [4]
Silver	0.25 J	0.60	0.20	mg/kg	1	04/16/19	04/17/19	ND	SW846 6010D [2]	SW846 3050B [4]
Sodium	158 J	1200	93	mg/kg	1	04/16/19	04/17/19	ND	SW846 6010D [2]	SW846 3050B [4]
Thallium	0.69 U	1.2	0.69	mg/kg	1	04/16/19	04/17/19	ND	SW846 6010D [2]	SW846 3050B [4]
Vanadium	14.1	6.0	0.23	mg/kg	1	04/16/19	04/17/19	ND	SW846 6010D [2]	SW846 3050B [4]
Zinc	115	6.0	2.7	mg/kg	1	04/16/19	04/17/19	ND	SW846 6010D [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA46516
(2) Instrument QC Batch: MA46525
(3) Instrument QC Batch: MA46535
(4) Prep QC Batch: MP14249
(5) Prep QC Batch: MP14256

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: PCTP-01R(5-7)
Lab Sample ID: JC86337-4
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/05/19
Date Received: 04/12/19
Percent Solids: 85.0

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	0.14 U	0.27	0.14	mg/kg	1	04/17/19 15:48	KI	SW846 9012B/LACHAT
Solids, Percent	85			%	1	04/16/19 16:30	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: PCSB-01R (14-16)
Lab Sample ID: JC86337-5
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/05/19
Date Received: 04/12/19
Percent Solids: 84.1

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	7220	61	9.9	mg/kg	1	04/16/19	04/18/19	ND	SW846 6010D [2]	SW846 3050B [3]
Antimony	0.50 U	2.5	0.50	mg/kg	1	04/16/19	04/18/19	ND	SW846 6010D [2]	SW846 3050B [3]
Arsenic	5.8	2.5	0.34	mg/kg	1	04/16/19	04/18/19	ND	SW846 6010D [2]	SW846 3050B [3]
Barium	22.5 J	25	2.3	mg/kg	1	04/16/19	04/18/19	ND	SW846 6010D [2]	SW846 3050B [3]
Beryllium	0.50	0.25	0.098	mg/kg	1	04/16/19	04/18/19	ND	SW846 6010D [2]	SW846 3050B [3]
Cadmium	0.086 U	0.61	0.086	mg/kg	1	04/16/19	04/18/19	ND	SW846 6010D [2]	SW846 3050B [3]
Calcium	238 J	610	54	mg/kg	1	04/16/19	04/18/19	ND	SW846 6010D [2]	SW846 3050B [3]
Chromium	15.5	1.2	0.45	mg/kg	1	04/16/19	04/18/19	ND	SW846 6010D [2]	SW846 3050B [3]
Cobalt	5.2 J	6.1	0.34	mg/kg	1	04/16/19	04/18/19	ND	SW846 6010D [2]	SW846 3050B [3]
Copper	7.6	3.1	1.0	mg/kg	1	04/16/19	04/18/19	ND	SW846 6010D [2]	SW846 3050B [3]
Iron	17200	61	24	mg/kg	1	04/16/19	04/18/19	ND	SW846 6010D [2]	SW846 3050B [3]
Lead	10.5	2.5	0.50	mg/kg	1	04/16/19	04/18/19	ND	SW846 6010D [2]	SW846 3050B [3]
Magnesium	1120	610	17	mg/kg	1	04/16/19	04/18/19	ND	SW846 6010D [2]	SW846 3050B [3]
Manganese	217	1.8	0.50	mg/kg	1	04/16/19	04/18/19	ND	SW846 6010D [2]	SW846 3050B [3]
Mercury	0.015 U	0.035	0.015	mg/kg	1	04/16/19	04/16/19	EAL	SW846 7471B [1]	SW846 7471B [4]
Nickel	8.3	4.9	0.43	mg/kg	1	04/16/19	04/18/19	ND	SW846 6010D [2]	SW846 3050B [3]
Potassium	832 J	1200	39	mg/kg	1	04/16/19	04/18/19	ND	SW846 6010D [2]	SW846 3050B [3]
Selenium	0.80 U	2.5	0.80	mg/kg	1	04/16/19	04/18/19	ND	SW846 6010D [2]	SW846 3050B [3]
Silver	0.21 U	0.61	0.21	mg/kg	1	04/16/19	04/18/19	ND	SW846 6010D [2]	SW846 3050B [3]
Sodium	96 U	1200	96	mg/kg	1	04/16/19	04/18/19	ND	SW846 6010D [2]	SW846 3050B [3]
Thallium	0.71 U	1.2	0.71	mg/kg	1	04/16/19	04/18/19	ND	SW846 6010D [2]	SW846 3050B [3]
Vanadium	19.1	6.1	0.23	mg/kg	1	04/16/19	04/18/19	ND	SW846 6010D [2]	SW846 3050B [3]
Zinc	32.5	6.1	2.8	mg/kg	1	04/16/19	04/18/19	ND	SW846 6010D [2]	SW846 3050B [3]

(1) Instrument QC Batch: MA46516
(2) Instrument QC Batch: MA46525
(3) Prep QC Batch: MP14249
(4) Prep QC Batch: MP14256

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	PCSB-01R (14-16)		
Lab Sample ID:	JC86337-5	**Date Sampled:**	04/05/19
Matrix:	SO - Soil	**Date Received:**	04/12/19
		Percent Solids:	84.1
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	0.14 U	0.29	0.14	mg/kg	1	04/17/19 15:49	KI	SW846 9012B/LACHAT
Solids, Percent	84.1			%	1	04/16/19 16:30	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: PCSB-01R (18-20)
Lab Sample ID: JC86337-6
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/05/19
Date Received: 04/12/19
Percent Solids: 89.1

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	864	59	9.4	mg/kg	1	04/16/19	04/18/19	ND	SW846 6010D [2]	SW846 3050B [3]
Antimony	0.48 U	2.3	0.48	mg/kg	1	04/16/19	04/18/19	ND	SW846 6010D [2]	SW846 3050B [3]
Arsenic	1.7 J	2.3	0.33	mg/kg	1	04/16/19	04/18/19	ND	SW846 6010D [2]	SW846 3050B [3]
Barium	4.8 J	23	2.2	mg/kg	1	04/16/19	04/18/19	ND	SW846 6010D [2]	SW846 3050B [3]
Beryllium	0.094 U	0.23	0.094	mg/kg	1	04/16/19	04/18/19	ND	SW846 6010D [2]	SW846 3050B [3]
Cadmium	0.082 U	0.59	0.082	mg/kg	1	04/16/19	04/18/19	ND	SW846 6010D [2]	SW846 3050B [3]
Calcium	52 U	590	52	mg/kg	1	04/16/19	04/18/19	ND	SW846 6010D [2]	SW846 3050B [3]
Chromium	3.7	1.2	0.43	mg/kg	1	04/16/19	04/18/19	ND	SW846 6010D [2]	SW846 3050B [3]
Cobalt	0.56 J	5.9	0.33	mg/kg	1	04/16/19	04/18/19	ND	SW846 6010D [2]	SW846 3050B [3]
Copper	0.98 U	2.9	0.98	mg/kg	1	04/16/19	04/18/19	ND	SW846 6010D [2]	SW846 3050B [3]
Iron	1650	59	22	mg/kg	1	04/16/19	04/18/19	ND	SW846 6010D [2]	SW846 3050B [3]
Lead	2.1 J	2.3	0.48	mg/kg	1	04/16/19	04/18/19	ND	SW846 6010D [2]	SW846 3050B [3]
Magnesium	77.5 J	590	16	mg/kg	1	04/16/19	04/18/19	ND	SW846 6010D [2]	SW846 3050B [3]
Manganese	8.7	1.8	0.48	mg/kg	1	04/16/19	04/18/19	ND	SW846 6010D [2]	SW846 3050B [3]
Mercury	0.014 U	0.032	0.014	mg/kg	1	04/16/19	04/16/19	EAL	SW846 7471B [1]	SW846 7471B [4]
Nickel	0.76 J	4.7	0.41	mg/kg	1	04/16/19	04/18/19	ND	SW846 6010D [2]	SW846 3050B [3]
Potassium	113 J	1200	37	mg/kg	1	04/16/19	04/18/19	ND	SW846 6010D [2]	SW846 3050B [3]
Selenium	0.76 U	2.3	0.76	mg/kg	1	04/16/19	04/18/19	ND	SW846 6010D [2]	SW846 3050B [3]
Silver	0.20 U	0.59	0.20	mg/kg	1	04/16/19	04/18/19	ND	SW846 6010D [2]	SW846 3050B [3]
Sodium	91 U	1200	91	mg/kg	1	04/16/19	04/18/19	ND	SW846 6010D [2]	SW846 3050B [3]
Thallium	0.68 U	1.2	0.68	mg/kg	1	04/16/19	04/18/19	ND	SW846 6010D [2]	SW846 3050B [3]
Vanadium	3.8 J	5.9	0.22	mg/kg	1	04/16/19	04/18/19	ND	SW846 6010D [2]	SW846 3050B [3]
Zinc	3.9 J	5.9	2.7	mg/kg	1	04/16/19	04/18/19	ND	SW846 6010D [2]	SW846 3050B [3]

(1) Instrument QC Batch: MA46516
(2) Instrument QC Batch: MA46525
(3) Prep QC Batch: MP14249
(4) Prep QC Batch: MP14256

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	PCSB-01R (18-20)		
Lab Sample ID:	JC86337-6	**Date Sampled:**	04/05/19
Matrix:	SO - Soil	**Date Received:**	04/12/19
		Percent Solids:	89.1
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	0.13 U	0.27	0.13	mg/kg	1	04/17/19 15:54	KI	SW846 9012B/LACHAT
Solids, Percent	89.1			%	1	04/16/19 16:30	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

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Philly Coke

DATA REVIEW

Philadelphia, Pennsylvania

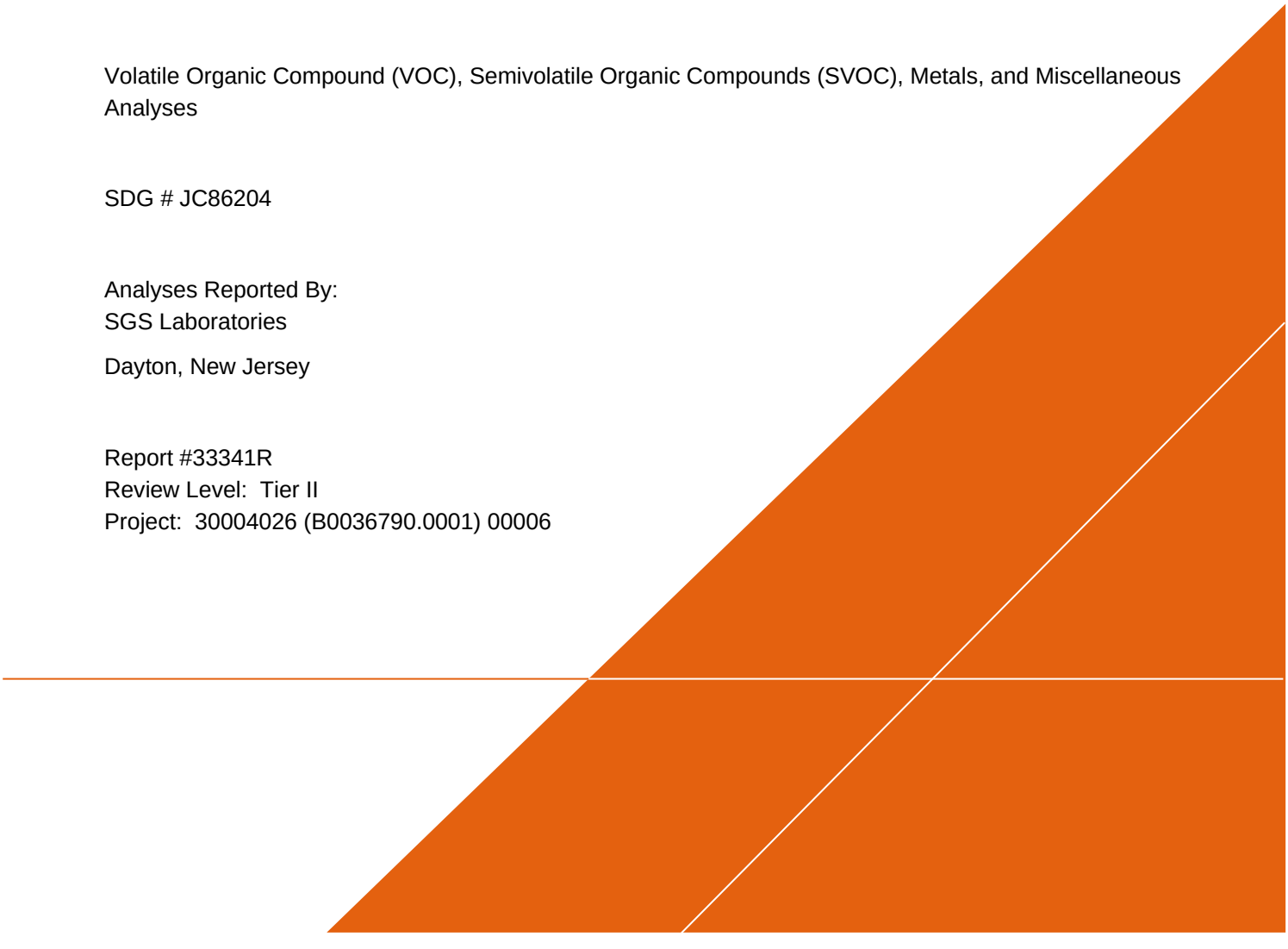
Volatile Organic Compound (VOC), Semivolatile Organic Compounds (SVOC), Metals, and Miscellaneous Analyses

SDG # JC86204

Analyses Reported By:
SGS Laboratories

Dayton, New Jersey

Report #33341R
Review Level: Tier II
Project: 30004026 (B0036790.0001) 00006



SUMMARY

This data review report summarizes the review of Sample Delivery Group (SDG) # JC86204 for samples collected in association with the National Grid Philly Coke site in Philadelphia, Pennsylvania. The review was conducted as a Tier II evaluation and included review of laboratory analytical data package completeness. Field documentation was not included in this review. Included with this assessment are the post-validation annotated sample result sheets, and chain of custody (COC). Analyses were performed on the following samples

SDG Number	Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis				
						VOC	SVOC	PEST/ PCB	Metals	MISC
JC86204	S-108(2-4) (04-15-2019)	JC86406-1	Soil	4/15/2019		X	X		X	X
	S-108(8-10) (04-15-2019)	JC86406-2	Soil	4/15/2019		X	X		X	X
	S-108(15-17) (04-15-2019)	JC86406-3	Soil	4/15/2019		X	X		X	X
	SO-DUP-0415 (04-15-2019)	JC86406-4	Soil	4/15/2019	S-108(2-4) (04-15-2019)	X	X		X	X
	PCTP-17R(5-6) (04-15-2019)	JC86406-5	Soil	4/15/2019		X	X		X	X
	PCTP-17R(7-9) (04-15-2019)	JC86406-6	Soil	4/15/2019		X	X		X	X
	PCTP-17R(9-11) (04-15-2019)	JC86406-7	Soil	4/15/2019		X	X		X	X
	PCTP-17R(18-20) (04-15-2019)	JC86406-8	Soil	4/15/2019		X	X		X	X
	PCTP-17R(24-25) (04-15-2019)	JC86406-9	Soil	4/15/2019		X	X		X	X
	S-114(2-4) (04-15-2019)	JC86406-10	Soil	4/15/2019		X	X		X	X
	S-114(8-10) (04-15-2019)	JC86406-11	Soil	4/15/2019		X	X		X	X
	S-114(14-15) (04-15-2019)	JC86406-12	Soil	4/15/2019		X	X		X	X
	S-114(23-25) (04-15-2019)	JC86406-13	Soil	4/15/2019		X	X		X	X
	S-109(2-4) (04-15-2019)	JC86406-14	Soil	4/15/2019		X	X		X	X
	S-109(8-10) (04-15-2019)	JC86406-15	Soil	4/15/2019		X	X		X	X

Notes:

1. PEST/PCB = Pesticides and polychlorinated biphenyls
2. SVOC = Semivolatile Organic Compounds
3. VOC = Volatile Organic Compound
4. MISC = Miscellaneous (total cyanide)

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance (QA) or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260C and 8270D. Data were reviewed in accordance with the USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540/R-2017-002, January 2017 and the USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Organic Data Review, EPA540/R-99/008, October 1999 (as applicable).

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers
  - U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
  - B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- Quantitation (Q) Qualifiers
  - E The compound was quantitated above the calibration range.
  - D Concentration is based on a diluted sample analysis.
- Validation Qualifiers
  - J The compound was positively identified; however, the associated numerical value is an estimated concentration only.
  - UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.
  - JN The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.
  - UB Compound considered non-detect at the listed value due to associated blank contamination.
  - N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.
  - R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is

that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times/Preservation

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260C	Water	14 days from collection to analysis (preserved) 7 days from collection to analysis (non-preserved)	Cool to <6 °C; preserved to a pH of less than 2 s.u.
	Soil	48 hours from collection to extraction and 14 days from extraction to analysis	Cool to <6 °C.

Note:
s.u. Standard units

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore, detected sample results were not associated with blank contamination.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. VOC analysis requires that all surrogates associated with the analysis exhibit recoveries within the laboratory-established acceptance limits.

Sample locations associated with surrogates exhibiting recoveries outside of the control limits presented in the following table.

Sample Locations	Surrogate	Recovery
S-108(2-4) (04-15-2019)	1,2-Dichloroethane-d4	AC
	4-Bromofluorobenzene	> UL
	Dibromofluoromethane	AC
	Toluene-d8	AC

Notes:

UL Upper control limit

AC Acceptable

The criteria used to evaluate the surrogate recoveries are presented in the following table. In the case of a surrogate deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> UL	Non-detect	No Action
	Detect	J
< LL but > 10%	Non-detect	UJ
	Detect	J
< 10%	Non-detect	R
	Detect	J

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

The MS/MSD exhibited acceptable recoveries and RPD between the MS/MSD recoveries.

5. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) Analysis

The LCS/LCSD analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS/LCSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

Sample locations associated with LCS/LCSD analysis exhibiting recoveries outside of the control limits presented in the following table.

Sample Locations	Compound	LCS Recovery	LCSD Recovery
S-108(2-4) (04-15-2019) SO-DUP-0415 (04-15-2019) S-109(2-4) (04-15-2019) S-108(15-17) (04-15-2019) PCTP-17R(5-6) (04-15-2019) S-114(14-15) (04-15-2019)	1,2-Dibromoethane	>UL	--

Note:
AC = Acceptable

The criteria used to evaluate the LCS/LCSD recoveries are presented in the following table. In the case of an LCS/LCSD deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> the upper control limit (UL)	Non-detect	No Action
	Detect	J
< the lower control limit (LL) but > 10%	Non-detect	UJ
	Detect	J
< 10%	Non-detect	R
	Detect	J

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of three times the RL is applied for soil matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
S-108(2-4) (04-15-2019)/ SO-DUP-0415 (04-15-2019)	Acetone	127	12.5 J	NC
	Benzene	1.7	2.0	AC
	Carbon disulfide	6.3	5.2	AC
	Methylcyclohexane	1.3 J	1.9 J	AC

Notes:
AC Acceptable
NC Not compliant

Acetone associated with sample locations S-108(2-4) (04-15-2019) and SO-DUP-0415 (04-15-2019) exhibited a field duplicate RPD greater than the control limit. The associated sample results from sample locations for the listed analyte were qualified as estimated.

7. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

8. System Performance and Overall Assessment

The laboratory narrative indicates continuing calibration deviations. These deviations are normally not evaluated in a tier II data review. Sample results that had continuing calibration recoveries that exceed the control limit high and were non detect did not require qualification. Sample results where the calibration recoveries were high and the compound was detected or calibration recoveries were low were qualified as estimated (J or UJ). No volatile results required qualification due to calibration exceedances.

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: SW-846 8260	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks	X				X
C. Trip blanks	X				X
Laboratory Control Sample (LCS)		X		X	
Laboratory Control Sample Duplicate(LCSD)	X				X
LCS/LCSD Precision (RPD)	X				X
Matrix Spike (MS)		X		X	
Matrix Spike Duplicate(MSD)		X		X	
MS/MSD Precision (RPD)		X		X	
Field/Lab Duplicate (RPD)		X	X		
Surrogate Spike Recoveries		X	X		
Dilution Factor		X		X	
Moisture Content		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

SEMIVOLATILE ORGANIC COMPOUND (SVOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8270D	Water	7 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C
	Soil	14 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

All compounds associated with the QA blanks exhibited a concentration less than the MDL, with the exception of the compounds listed in the following table. Sample results associated with QA blank contamination that were greater than the BAL resulted in the removal of the laboratory qualifier (B) from the data. Sample results less than the BAL associated with the following sample locations were qualified as listed in the following table.

Sample Locations	Analytes	Sample Result	Qualification
S-114(2-4)	1,1'-Biphenyl Carbazole	Detected sample results <RL and <BAL	"UB" at the RL

Note:

RL Reporting limit

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. SVOC analysis requires that two of the three SVOC surrogate compounds within each fraction exhibit recoveries within the laboratory-established acceptance limits.

Sample locations associated with surrogates exhibiting recoveries outside of the control limits presented in the following table.

Sample Locations	Surrogate	Recovery
S-114(14-15)	Phenol-d6	AC
	2-Fluorophenol	AC
	2,4,6-Tribromophenol	AC
	Nitrobenzene-d5	>UL
	2-Fluorobiphenyl	AC
	Terphenyl-d14	AC

Notes:

AC Acceptable

The criteria used to evaluate the surrogate recoveries are presented in the following table. In the case of a surrogate deviation, the sample results associated with the deviant fraction are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> UL	Non-detect	No Action
	Detect	J
< LL but > 10%	Non-detect	UJ
	Detect	J
< 10%	Non-detect	R
	Detect	J

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

Sample locations associated with the MS/MSD exhibiting recoveries outside of the control limits are presented in the following table.

Sample Locations	Compound	MS Recovery	MSD Recovery
S-108(2-4)	2,4-Dinitrophenol	AC	<10%
	4,6-Dinitro-o-cresol	<10%	<10%
	Benzo(a)anthracene	AC	<10%

Sample Locations	Compound	MS Recovery	MSD Recovery
	Benzo(a)pyrene	AC	<10%
	Benzo(b)fluoranthene	AC	<10%
	Chrysene	AC	<10%
	Pyrene	AC	<10%

Note:

AC Acceptable

The criteria used to evaluate the MS/MSD recoveries are presented in the following table. In the case of an MS/MSD deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> the upper control limit (UL)	Non-detect	No Action
	Detect	J
< the lower control limit (LL) but > 10%	Non-detect	UJ
	Detect	J
< 10%	Non-detect	R
	Detect	J
Parent sample concentration > four times the MS/MSD spiking solution concentration.	Detect	No Action
	Non-detect	

5. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) Analysis

The LCS/LCSD analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS/LCSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

The LCS/LCSD exhibited acceptable recoveries and RPD between the MS/MSD recoveries.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of three times the RL is applied for soil matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
S-108(2-4) (04-15-2019)/ SO-DUP-0415 (04-15-2019)	1,1-Biphenyl	70.1 J	71.1 J	AC
	2-Methylnaphthalene	236	246	AC

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
	3-Methylphenol, 4-Methylphenol	102	117	AC
	Acenaphthene	129	106	AC
	Acenaphthylene	1730	1430	19.0%
	Acetophenone	22.8 J	190 U	AC
	Anthracene	1400	1200	15.4%
	Benz(a)anthracene	6470	5670	13.2%
	Benzo(a)pyrene	6750	6020	11.4%
	Benzo(b)fluoranthene	9740	8590	12.5%
	Benzo(g,h,i)perylene	2490	2110	16.5%
	Benzo(k)fluoranthene	3390	1910	55.8%
	Carbazole	358	271	27.7%
	Chrysene	7770	6710	14.6%
	Dibenz(a,h)anthracene	1230	1060	14.8%
	Dibenzofuran	267	242	AC
	Fluoranthene	8090	6690	18.9%
	Fluorene	243	192	AC
	Indeno(1,2,3-cd)pyrene	2730	2300	17.1%
	Naphthalene	968	1230	23.8%
	Phenanthrene	3410	2620	26.2%
	Phenol	92.2	122	27.8%
	Pyrene	7990	6700	17.6%

Notes:
AC Acceptable
NC Not compliant

Benzo(k)fluoranthene associated with sample locations S-108(2-4) (04-15-2019) and SO-DUP-0415 (04-15-2019) exhibited a field duplicate RPD greater than the control limit. The associated sample results from sample locations for the listed analyte were qualified as estimated.

7. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

Several samples were diluted to bring target compounds within linear range of the instrument. Sample results that were reported from a secondary dilution were qualified with a “D”, indicating the result is diluted.

8. System Performance and Overall Assessment

The laboratory narrative indicates continuing calibration deviations. These deviations are normally not evaluated in a tier II data review. Sample results that had continuing calibration recoveries that exceed the control limit high and were non detect did not require qualification. Sample results where the calibration recoveries were high and the compound was detected or calibration recoveries were low were qualified as estimated (J or UJ).

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR SVOCs

SVOCs: SW-846 8270	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X	X		
B. Equipment blanks	X				X
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R	X				X
LCS/LCSD Precision (RPD)	X				X
Matrix Spike (MS) %R		X	X		
Matrix Spike Duplicate(MSD) %R		X	X		
MS/MSD Precision (RPD)		X		X	
Field/Lab Duplicate (RPD)	X				X
Surrogate Spike Recoveries		X	X		
Dilution Factor		X		X	
Moisture Content		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

INORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 6010D, 7471A, and 9012B. Data were reviewed in accordance with the USEPA CLP National Functional Guidelines for Inorganic Superfund Methods Data Review, EPA 540/R-2017-001, January 2017; and the USEPA CLP National Functional Guidelines for Inorganic Data Review, EPA 540-R-01-008, July 2002 (as applicable).

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and that it was already subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with the USEPA National Functional Guidelines:

- Concentration (C) Qualifiers
  - U The analyte was analyzed for but not detected. The associated value is the analyte instrument detection limit.
  - J The reported value was obtained from a reading less than the reporting limit (RL), but greater than or equal to the method detection limit (MDL).
- Quantitation (Q) Qualifiers
  - E The reported value is estimated due to the presence of interference.
  - N Spiked sample recovery is not within control limits.
  - * Duplicate analysis is not within control limits.
- Validation Qualifiers
  - J The analyte was positively identified; however, the associated numerical value is an estimated concentration only.
  - UJ The analyte was not detected above the reporting limit. However, the reported limit is approximate and may or may not represent the actual limit of detection.
  - UB Analyte considered non-detect at the listed value due to associated blank contamination.
  - R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

METALS ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 6010D	Water	180 days from collection to analysis	Preserved to a pH of less than 2.
	Soil	180 days from collection to analysis	Cool to <6 °C.
SW-846 7471A	Soil	28 days from collection to analysis	Cool to <6 °C.
SW-846 7470A	Water	28 days from collection to analysis	Cool to <6 °C; preserved to a pH of less than 2.

All samples were analyzed within the specified holding times.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Analytes were detected in the associated QA blanks; however, the associated sample results were greater than the BAL and/or were non-detect. No qualification of the sample results was required.

3. Matrix Spike (MS)/Matrix Spike Duplicate(MSD)/Laboratory Duplicate Analysis

MS/MSD and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

3.1 MS/MSD Analysis

All metal analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the analyte's concentration detected in the parent sample exceeds the MS concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

All analytes associated with MS/MSD recoveries were within control limits with the exception of the following analyte present in the table below.

Sample Location	Analyte	MS Recovery	MSD Recovery
S-109(2-4) (04-15-2019)	Mercury	18.8%	15.9%

The criteria used to evaluate MS/MSD recoveries are presented in the following table. In the case of an MS/MSD deviation, the sample results are qualified. The qualifications are applied to all sample results associated with this SDG.

Control limit	Sample Result	Qualification
MS/MSD percent recovery 30% to 74%	Non-detect	UJ
	Detect	J
MS/MSD percent recovery <30%	Non-detect	R
	Detect	J
MS/MSD percent recovery >125%	Non-detect	No Action
	Detect	J

3.2 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the RL. A control limit of 20% for water matrices and 35% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of one times the RL is applied for water matrices and two times the RL for soil matrices.

MS/MSD analysis was performed in replacement of the laboratory duplicate analysis. The MS/MSD analysis exhibited RPDs within the control limits.

4. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of three times the RL is applied for soil matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
S-108(2-4) (04-15-2019)/ SO-DUP-0415 (04-15-2019)	Aluminum	35000	9710	113.1%
	Arsenic	11.9	6.5	AC
	Barium	65.7	43.9	39.8%
	Beryllium	0.72	0.51	AC
	Cadmium	1.2 U	1.2	AC
	Calcium	2080	644	NC

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
	Chromium	51.6	14.6	111.8%
	Cobalt	5.8 U	7.4	AC
	Copper	13.5	13.2	2.2%
	Iron	38100	16600	78.6%
	Lead	13.9	32.1	NC
	Magnesium	1420	1950	31.5%
	Manganese	83.7	261	102.9%
	Nickel	13.4	11.9	11.9%
	Vanadium	66.6	20.1	107.3%
	Zinc	44.0	51.0	14.7%
	Mercury	0.037 U	0.31	NC

Notes:
AC Acceptable
NC Not compliant

Several analytes associated with sample locations S-108(2-4) (04-15-2019) and SO-DUP-0415 (04-15-2019) exhibited a field duplicate RPD greater than the control limit. The associated sample results from all sample locations for the analytes outside the control limits were qualified as estimated.

5. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The analytes associated with the LCS analysis must exhibit a percent recovery between the control limits of 80% and 120%.

The LCS analysis exhibited recoveries within the control limits.

6. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR METAL

METALS; SW846 6010D/7471A	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Inductively Coupled Plasma-Atomic Emission Spectrometry (ICP-AES)					
Tier II Validation					
Holding Times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method Blanks		X		X	
B. Equipment/Field Blanks	X				X
Laboratory Control Sample (LCS)		X		X	
Matrix Spike (MS) %R		X	X		
Matrix Spike Duplicate (MSD) %R		X	X		
MS/MSD Precision (RPD)		X		X	
Field/Lab Duplicate (RPD)		X	X		
Total vs. Dissolved	X				X

Notes:

%R Percent recovery

RPD Relative percent difference

GENERAL CHEMISTRY ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
Cyanide by SW-846 9012	Water	14 days from collection to analysis	Cool to <6 °C; preserved to a pH of greater than 12.
	Soil		Cool to <6 °C.

All samples were analyzed within the specified holding times.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Analytes were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Matrix Spike/Matrix Spike Duplicate (MS/MSD)/Laboratory Duplicate Analysis

MS/MSD and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

3.1 MS/MSD Analysis

All analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the analyte's concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

All analytes associated with MS/MSD recoveries were within control limits with the exception of the following analyte present in the table below.

Sample Location	Analyte	MS Recovery	MSD Recovery
S-114(8-10) (04-15-2019)	Cyanide	35.4%	--

The criteria used to evaluate MS/MSD recoveries are presented in the following table. In the case of an MS/MSD deviation, the sample results are qualified. The qualifications are applied to all sample results associated with this SDG except those that were associated with a passing MS recovery.

Control limit	Sample Result	Qualification
MS/MSD percent recovery 30% to 74%	Non-detect	UJ
	Detect	J
MS/MSD percent recovery <30%	Non-detect	R
	Detect	J
MS/MSD percent recovery >125%	Non-detect	No Action
	Detect	J

3.2 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the RL. A control limit of 20% for water matrices and 35% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of one times the RL is applied for water matrices and two times the RL for soil matrices.

The laboratory duplicate analysis exhibited RPD within control limits.

4. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The analytes associated with the LCS analysis must exhibit a percent recovery between the control limits of 80% and 120%.

The LCS analysis is not required for this analysis.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of three times the RL is applied for soil matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
S-108(2-4) (04-15-2019)/ SO-DUP-0415 (04-15-2019)	Cyanide	10.8	12.7	16.2%

Notes:
AC Acceptable

The calculated RPDs between the parent sample and field duplicate were acceptable.

6. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR GENERAL CHEMISTRY

General Chemistry: EPA 9012	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Miscellaneous Instrumentation					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks					X
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R					X
LCS/LCSD Precision (RPD)					X
Matrix Spike (MS) %R		X		X	
Matrix Spike Duplicate(MSD) %R	X				X
MS/MSD Precision (RPD)	X				X
Field/Lab Duplicate (RPD)		X		X	
Dilution Factor		X		X	
Moisture Content					X

Notes:
%R - percent recovery
RPD - relative percent difference

VALIDATION PERFORMED BY: Andrew Korycinski

SIGNATURE:

DATE: July 5, 2019

PEER REVIEW: Dennis Capria

DATE: July 22, 2019

CHAIN OF CUSTODY
SAMPLE ANALYSIS DATA SHEETS

SO
SLL

SGS CHAIN OF CUSTODY

SGS North America Inc. - Dayton
2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200 FAX: 732-329-3499/3480
www.sgs.com/ehsusa

Page 1 of 2

FED-EX Tracking #:
SGS Quote #:
Bottle Order Control #: AK-241119-130
SGS Job #: JC 26406

Client / Reporting Information

Company Name: Arcadis - US
Street Address: 110 W Fayette St #300
City: Syracuse State: NY Zip: 13202
Project Contact: Craig Healy E-mail: Craig.Healy@arcadis.com
Phone #: (315) 335-1453
Sampler(s) Name(s): Evan Green Phone #: (603) 365-2692

Project Information

Project Name: Philadelphia Corp
Street: 4501 Richmond St
City: Philadelphia State: PA
Project #: B00336M0.0001
Client Purchase Order #: B00336M0.0001
Project Manager: John Bousel

Billing Information (if different from Report to)

Company Name: Same
Street Address:
City: State: Zip:
Attention:

Requested Analysis

SGS Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Grab (G) Comp (C)	Matrix	# of bottles	Number of preserved Bottles: HCl	NaOH	HNO_3	H_2SO_4	NONE	DI Water	MEOH	ENCORE	Metals	VB2&0 TCL 20	C.N	ABS2 70 TCL 20	MTAL	LAB USE ONLY
1	S-108 (2-4)		4/15/19	1055	EG	G	SO	5					2	2			1	X	X	X	X	
2	S-108 (8-10)		4/15/19	1105	EG	G	SO	5					2	2			1	X	X	X	X	
3	S-108 (15-17)		4/15/19	1120	EG	G	SO	5					2	2			1	X	X	X	X	
4	SO-DUP-0-15		4/15/19	--:--	EG	G	SO	5					2	2			1	X	X	X	X	
5	PCTP-17R (5-6)		4/15/19	1215	EG	G	SO	5					2	2			1	X	X	X	X	
6	PCTP-17R (7-9)		4/15/19	1220	EG	G	SO	5					2	2			1	X	X	X	X	
7	PCTP-17R (9-11)		4/15/19	1230	EG	G	SO	5					2	2			1	X	X	X	X	
8	PCTP-17R (18-20)		4/15/19	1245	EG	G	SO	5					2	2			1	X	X	X	X	
9	PCTP-17R (24-25)		4/15/19	1305	EG	G	SO	5					2	2			1	X	X	X	X	
10	S-114 (2-4)		4/15/19	1345	EG	G	SO	5					2	2			1	X	X	X	X	
	S-114 (2-4) MS		4/15/19	1345	EG	G	SO	5					2	2			1	X	X	X	X	
	S-114 (2-4) MSD		4/15/19	1345	EG	G	SO	5					2	2			1	X	X	X	X	

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL - Sludge; SED-Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB - Field Blank; EB-Equipment Blank; RB - Rinse Blank; TB - Trip Blank

Turn Around Time (Business Days)

Approved By (SGS PM): / Date:

- [X] 10 Business Days
- [ ] 5 Business Days
- [ ] 3 Business Days*
- [ ] 2 Business Days*
- [ ] 1 Business Day*
- [ ] Other

All data available via Lablink

* Approval needed for 1-3 Business Day TAT

Deliverable

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] NJ Reduced (Level 3)
- [X] Full Tier I (Level 4)
- [ ] Commercial "C"
- [ ] NJ DKQP
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] MA MCP Criteria
- [ ] CT RCP Criteria
- [ ] State Forms
- [ ] EDD Format
- [ ] DOD-QSM5

Commercial "A" = Results only; Commercial "B" = Results + QC Summary
Commercial "C" = Results + QC Summary + Partial Raw data

Comments / Special Instructions

INITIAL ASESSMENT 38.5

LABEL VERIFICATION

http://www.sgs.com/en/terms-and-conditions

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by:	Date / Time:	Received By:	Relinquished By:	Date / Time:	Received By:
1		4/15/19/1630	1	2	4/15/19 17:33	2
2	Relinquished by:	Date / Time:	Received By:	Relinquished By:	Date / Time:	Received By:
			3	4		4
3	Relinquished by:	Date / Time:	Received By:	Custody Seal #	Preserved where applicable	On Ice / Cooler Temp. °C
			5	Intact / Not intact	Absent / Therm. ID:	2.4C Ep

EHSA-QAC-0023-02-FORM-Dayton - Standard COC.xlsx

D37
P32
14163
4036

5.1.5

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www.sgs.com/ehsusa

Page 2 of 3

FED-EX Tracking #: | Bottle Order Control #:
SGS Quote #: | SGS Job #: JC86406

Client / Reporting Information

Company Name: Arcadis - US
Street Address: 110 W Fayette St. #300
City: Syracuse State: NY Zip: 13202
Project Contact: Courtney Healy E-mail: Courtney.Healy@arcadis-us.com
Phone #: (315) 335-9453
Sampler(s) Name(s): Evan Green Phone #: (607) 335-2692

Project Information

Project Name: Philadelphia Coke
Street: 4501 Richmond St.
City: Philadelphia State: PA
Project #: B0036700.0001
Client Purchase Order #: B0036700.0001
Project Manager: John Bissell

Billing Information (if different from Report to)

Company Name: Same
Street Address:
City: State: Zip:
Attention:

Requested Analysis

SGS Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Grab (G) Comp (C)	Matrix	# of bottles	Preserved Bottles: HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	5035 Kit/Bottle	Requested Analysis: US3260TCL20	CN	AB32UTCL20	MTAL	Matrix Codes / LAB USE ONLY
11	S-114 (8-10)		4/15/19	1355	EG	G	SO	5					2	2			1	X	X	X	X	
12	S-114 (14-15)		4/15/19	1400	EG	G	SO	5					2	2			1	X	X	X	X	
13	S-114 (23-25)		4/15/19	1410	EG	G	SO	5					2	2			1	X	X	X	X	
14	S-109 (2-4)		4/15/19	1520	EG	G	SO	5					2	2			1	X	X	X	X	
15	S-109 (8-10)		4/15/19	1530	EG	G	SO	5					2	2			1	X	X	X	X	

Turn Around Time (Business Days)

Approved By (SGS PM): / Date:

- [X] 10 Business Days
- [ ] 5 Business Days
- [ ] 3 Business Days*
- [ ] 2 Business Days*
- [ ] 1 Business Day*
- [ ] Other

All data available via Labilink

* Approval needed for 1-2 Business Day TAT

Deliverable

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] NJ Reduced (Level 3)
- [X] Full Tier I (Level 4)
- [ ] Commercial "C"
- [ ] NJ DKQP
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] MA MCP Criteria_____
- [ ] CT RCP Criteria_____
- [ ] State Forms
- [ ] EDD Format _____
- [ ] DOD-QSM5

Commercial "A" = Results only; Commercial "B" = Results + QC Summary
Commercial "C" = Results + QC Summary + Partial Raw data

Comments / Special Instructions

http://www.sgs.com/en/terms-and-conditions

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by:	Date / Time:	Received By:	Relinquished By:	Date / Time:	Received By:
1		4/15/19/1630			4/15/19 17:23	
2						
3						
4						
5						

Custody Seal #: Intact / Not Intact | Preserved where applicable: Absent | Therm. ID: | On Ice | Cooler Temp. °C: 2.4 CTp

EHSA-QAC-0023-02-FORM-Dayton - Standard COC.xlsx

SGS LabLink@1039014 11:13 10-May-2019

Report of Analysis

Client Sample ID:	S-108(2-4)		
Lab Sample ID:	JC86406-1	**Date Sampled:**	04/15/19
Matrix:	SO - Soil	**Date Received:**	04/16/19
Method:	SW846 8260C	**Percent Solids:**	87.0
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	I225721.D	1	04/25/19 18:39	TDN	n/a	n/a	VI9093
Run #2 [a]	3V44289.D	1	04/24/19 14:38	RS	n/a	n/a	V3V1778
Run #3 [a]	D264071.D	1	04/26/19 11:20	JTP	n/a	n/a	VD10644

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	3.6 g		
Run #2	3.8 g		
Run #3	3.6 g	10.0 ml	100 ul

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	127	16	8.0	ug/kg	J
71-43-2	Benzene	1.7	0.80	0.60	ug/kg	J
74-97-5	Bromochloromethane	ND	8.0	0.69	ug/kg	
75-27-4	Bromodichloromethane	ND	3.2	0.71	ug/kg	
75-25-2	Bromoform	ND	8.0	0.64	ug/kg	
74-83-9	Bromomethane	ND	8.0	1.6	ug/kg	
78-93-3	2-Butanone (MEK)	ND	16	6.0	ug/kg	
75-15-0	Carbon disulfide	6.3	3.2	1.5	ug/kg	J
56-23-5	Carbon tetrachloride	ND	3.2	0.88	ug/kg	
108-90-7	Chlorobenzene	ND	3.2	0.57	ug/kg	
75-00-3	Chloroethane	ND	8.0	1.1	ug/kg	
67-66-3	Chloroform	ND	3.2	0.59	ug/kg	
74-87-3	Chloromethane	ND	8.0	3.1	ug/kg	
110-82-7	Cyclohexane	ND	3.2	0.65	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	3.2	1.3	ug/kg	
124-48-1	Dibromochloromethane	ND	3.2	0.54	ug/kg	
106-93-4	1,2-Dibromoethane [b]	ND	1.6	0.52	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.6	0.49	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.6	0.57	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.6	0.55	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	8.0	1.0	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.6	0.61	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.6	0.75	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.6	1.0	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.6	1.5	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.6	1.1	ug/kg	
78-87-5	1,2-Dichloropropane	ND	3.2	0.65	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	3.2	0.56	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	3.2	0.52	ug/kg	
100-41-4	Ethylbenzene	ND	1.6	0.88	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-108(2-4)		
Lab Sample ID:	JC86406-1	**Date Sampled:**	04/15/19
Matrix:	SO - Soil	**Date Received:**	04/16/19
Method:	SW846 8260C	**Percent Solids:**	87.0
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
76-13-1	Freon 113	ND	8.0	1.2	ug/kg	
591-78-6	2-Hexanone	ND	8.0	2.0	ug/kg	
98-82-8	Isopropylbenzene	ND	3.2	1.1	ug/kg	
79-20-9	Methyl Acetate	ND	8.0	2.2	ug/kg	
108-87-2	Methylcyclohexane	1.3	3.2	1.1	ug/kg	J
1634-04-4	Methyl Tert Butyl Ether	ND	1.6	0.56	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	8.0	2.5	ug/kg	
75-09-2	Methylene chloride	ND	8.0	4.0	ug/kg	
100-42-5	Styrene	ND	3.2	0.92	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	3.2	0.62	ug/kg	
127-18-4	Tetrachloroethene	ND	3.2	0.74	ug/kg	
108-88-3	Toluene	ND	1.6	0.60	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	8.0	1.6	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	8.0	1.6	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	3.2	0.68	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	3.2	0.55	ug/kg	
79-01-6	Trichloroethene	ND	1.6	1.2	ug/kg	
75-69-4	Trichlorofluoromethane	ND	8.0	1.1	ug/kg	
75-01-4	Vinyl chloride	ND	3.2	0.75	ug/kg	
	m,p-Xylene	ND	1.6	1.2	ug/kg	
95-47-6	o-Xylene	ND	1.6	0.93	ug/kg	
1330-20-7	Xylene (total)	ND	1.6	0.93	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Run# 3	Limits
1868-53-7	Dibromofluoromethane	108%	107%	99%	75-127%
17060-07-0	1,2-Dichloroethane-D4	119%	114%	91%	75-130%
2037-26-5	Toluene-D8	112%	135% [c]	99%	80-120%
460-00-4	4-Bromofluorobenzene	133% [c]	145% [c]	94%	79-127%

(a) Confirmation run.
(b) This compound in BS is outside in house QC limits bias high.
(c) Outside control limits due to matrix interference.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS LabLink@1039014 11:13 10-May-2019

Report of Analysis

Client Sample ID:	S-108(2-4)		
Lab Sample ID:	JC86406-1	**Date Sampled:**	04/15/19
Matrix:	SO - Soil	**Date Received:**	04/16/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	87.0
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2P86743.D	1	04/19/19 04:05	CB	04/17/19 18:45	OP19810	E2P3831
Run #2	2P86767.D	5	04/22/19 18:07	YC	04/17/19 18:45	OP19810	E2P3832

	Initial Weight	Final Volume
Run #1	30.0 g	1.0 ml
Run #2	30.0 g	1.0 ml

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	77	19	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	190	23	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	190	33	ug/kg	
105-67-9	2,4-Dimethylphenol [a]	ND	190	68	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	190	140	ug/kg	R
534-52-1	4,6-Dinitro-o-cresol	ND	190	41	ug/kg	R
95-48-7	2-Methylphenol	ND	77	24	ug/kg	
	3&4-Methylphenol	102	77	31	ug/kg	
88-75-5	2-Nitrophenol	ND	190	25	ug/kg	
100-02-7	4-Nitrophenol	ND	380	100	ug/kg	
87-86-5	Pentachlorophenol	ND	150	36	ug/kg	
108-95-2	Phenol	92.2	77	20	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	190	25	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	190	29	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	190	23	ug/kg	
83-32-9	Acenaphthene	129	38	13	ug/kg	
208-96-8	Acenaphthylene	1730	38	19	ug/kg	
98-86-2	Acetophenone	22.8	190	8.2	ug/kg	J
120-12-7	Anthracene	1400	38	23	ug/kg	
1912-24-9	Atrazine	ND	77	16	ug/kg	
56-55-3	Benzo(a)anthracene	6470 [b]	190	54	ug/kg	DJ
50-32-8	Benzo(a)pyrene	6750 [b]	190	87	ug/kg	DJ
205-99-2	Benzo(b)fluoranthene	9740 [b]	190	85	ug/kg	DJ
191-24-2	Benzo(g,h,i)perylene	2490	38	19	ug/kg	
207-08-9	Benzo(k)fluoranthene	3390 [b]	190	89	ug/kg	DJ
101-55-3	4-Bromophenyl phenyl ether	ND	77	15	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	77	9.3	ug/kg	
92-52-4	1,1'-Biphenyl	70.1	77	5.2	ug/kg	J
100-52-7	Benzaldehyde	ND	190	9.5	ug/kg	
91-58-7	2-Chloronaphthalene	ND	77	9.1	ug/kg	
106-47-8	4-Chloroaniline	ND	190	14	ug/kg	
86-74-8	Carbazole	358	77	5.6	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-108(2-4)		
Lab Sample ID:	JC86406-1	**Date Sampled:**	04/15/19
Matrix:	SO - Soil	**Date Received:**	04/16/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	87.0
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	77	15	ug/kg	
218-01-9	Chrysene	7770 b	190	60	ug/kg	DJ
111-91-1	bis(2-Chloroethoxy)methane	ND	77	8.2	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	77	17	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	77	14	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	77	12	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	38	12	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	38	19	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	77	32	ug/kg	
123-91-1	1,4-Dioxane	ND	38	25	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	1230	38	17	ug/kg	
132-64-9	Dibenzofuran	267	77	16	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	77	6.2	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	77	9.5	ug/kg	
84-66-2	Diethyl phthalate	ND	77	8.2	ug/kg	
131-11-3	Dimethyl phthalate	ND	77	6.8	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	77	9.0	ug/kg	
206-44-0	Fluoranthene	8090 b	190	85	ug/kg	D
86-73-7	Fluorene	243	38	18	ug/kg	
118-74-1	Hexachlorobenzene	ND	77	9.7	ug/kg	
87-68-3	Hexachlorobutadiene	ND	38	15	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	380	15	ug/kg	
67-72-1	Hexachloroethane	ND	190	19	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	2730	38	18	ug/kg	
78-59-1	Isophorone	ND	77	8.2	ug/kg	
91-57-6	2-Methylnaphthalene	236	38	8.7	ug/kg	
88-74-4	2-Nitroaniline	ND	190	9.0	ug/kg	
99-09-2	3-Nitroaniline	ND	190	9.6	ug/kg	
100-01-6	4-Nitroaniline	ND	190	9.9	ug/kg	
91-20-3	Naphthalene	968	38	11	ug/kg	
98-95-3	Nitrobenzene	ND	77	15	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	77	11	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	190	14	ug/kg	
85-01-8	Phenanthrene	3410	38	13	ug/kg	
129-00-0	Pyrene	7990 b	190	61	ug/kg	DJ
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	190	9.7	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	48%	58%	23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-108(2-4)		
Lab Sample ID:	JC86406-1	**Date Sampled:**	04/15/19
Matrix:	SO - Soil	**Date Received:**	04/16/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	87.0
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	56%	75%	27-114%
118-79-6	2,4,6-Tribromophenol	65%	48%	19-152%
4165-60-0	Nitrobenzene-d5	59%	77%	26-134%
321-60-8	2-Fluorobiphenyl	79%	86%	39-124%
1718-51-0	Terphenyl-d14	60%	70%	36-134%

(a) Associated CCV outside of control limits high, sample was ND.
(b) Result is from Run# 2

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	S-108(8-10)		
Lab Sample ID:	JC86406-2	**Date Sampled:**	04/15/19
Matrix:	SO - Soil	**Date Received:**	04/16/19
Method:	SW846 8260C	**Percent Solids:**	80.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3V44290.D	1	04/24/19 15:04	RS	n/a	n/a	V3V1778
Run #2							

	Initial Weight
Run #1	8.9 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	32.4	7.0	3.5	ug/kg	
71-43-2	Benzene	3.4	0.35	0.26	ug/kg	
74-97-5	Bromochloromethane	ND	3.5	0.30	ug/kg	
75-27-4	Bromodichloromethane	ND	1.4	0.31	ug/kg	
75-25-2	Bromoform	ND	3.5	0.28	ug/kg	
74-83-9	Bromomethane	ND	3.5	0.70	ug/kg	
78-93-3	2-Butanone (MEK)	ND	7.0	2.6	ug/kg	
75-15-0	Carbon disulfide	1.4	1.4	0.65	ug/kg	
56-23-5	Carbon tetrachloride	ND	1.4	0.38	ug/kg	
108-90-7	Chlorobenzene	ND	1.4	0.25	ug/kg	
75-00-3	Chloroethane	ND	3.5	0.48	ug/kg	
67-66-3	Chloroform	ND	1.4	0.26	ug/kg	
74-87-3	Chloromethane	ND	3.5	1.4	ug/kg	
110-82-7	Cyclohexane [a]	ND	1.4	0.28	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	1.4	0.58	ug/kg	
124-48-1	Dibromochloromethane	ND	1.4	0.24	ug/kg	
106-93-4	1,2-Dibromoethane	ND	0.70	0.23	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	0.70	0.21	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	0.70	0.25	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	0.70	0.24	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	3.5	0.44	ug/kg	
75-34-3	1,1-Dichloroethane	ND	0.70	0.27	ug/kg	
107-06-2	1,2-Dichloroethane	ND	0.70	0.33	ug/kg	
75-35-4	1,1-Dichloroethene	ND	0.70	0.46	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	0.70	0.67	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	0.70	0.47	ug/kg	
78-87-5	1,2-Dichloropropane	ND	1.4	0.28	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	1.4	0.25	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	1.4	0.23	ug/kg	
100-41-4	Ethylbenzene	ND	0.70	0.39	ug/kg	
76-13-1	Freon 113	ND	3.5	0.53	ug/kg	
591-78-6	2-Hexanone	ND	3.5	0.89	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-108(8-10)		
Lab Sample ID:	JC86406-2	**Date Sampled:**	04/15/19
Matrix:	SO - Soil	**Date Received:**	04/16/19
Method:	SW846 8260C	**Percent Solids:**	80.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	1.4	0.49	ug/kg	
79-20-9	Methyl Acetate	ND	3.5	0.97	ug/kg	
108-87-2	Methylcyclohexane [a]	ND	1.4	0.49	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.70	0.25	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	3.5	1.1	ug/kg	
75-09-2	Methylene chloride	ND	3.5	1.7	ug/kg	
100-42-5	Styrene	ND	1.4	0.40	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.4	0.27	ug/kg	
127-18-4	Tetrachloroethene	ND	1.4	0.32	ug/kg	
108-88-3	Toluene	0.32	0.70	0.26	ug/kg	J
87-61-6	1,2,3-Trichlorobenzene	ND	3.5	0.70	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	3.5	0.70	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	1.4	0.30	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	1.4	0.24	ug/kg	
79-01-6	Trichloroethene	ND	0.70	0.53	ug/kg	
75-69-4	Trichlorofluoromethane	ND	3.5	0.48	ug/kg	
75-01-4	Vinyl chloride	ND	1.4	0.33	ug/kg	
	m,p-Xylene	ND	0.70	0.52	ug/kg	
95-47-6	o-Xylene	ND	0.70	0.41	ug/kg	
1330-20-7	Xylene (total)	ND	0.70	0.41	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	106%		75-127%
17060-07-0	1,2-Dichloroethane-D4	105%		75-130%
2037-26-5	Toluene-D8	99%		80-120%
460-00-4	4-Bromofluorobenzene	99%		79-127%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	S-108(8-10)		
Lab Sample ID:	JC86406-2	**Date Sampled:**	04/15/19
Matrix:	SO - Soil	**Date Received:**	04/16/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	80.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2P86739.D	1	04/19/19 02:38	CB	04/17/19 18:45	OP19810	E2P3831
Run #2							

	Initial Weight	Final Volume
Run #1	31.4 g	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	79	20	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	200	24	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	200	34	ug/kg	
105-67-9	2,4-Dimethylphenol [a]	121	200	71	ug/kg	J
51-28-5	2,4-Dinitrophenol	ND	200	150	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	200	42	ug/kg	
95-48-7	2-Methylphenol	194	79	25	ug/kg	
	3&4-Methylphenol	945	79	33	ug/kg	
88-75-5	2-Nitrophenol	ND	200	26	ug/kg	
100-02-7	4-Nitrophenol	ND	400	110	ug/kg	
87-86-5	Pentachlorophenol	ND	160	37	ug/kg	
108-95-2	Phenol	1370	79	21	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	200	26	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	200	30	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	200	24	ug/kg	
83-32-9	Acenaphthene	1040	40	14	ug/kg	
208-96-8	Acenaphthylene	185	40	20	ug/kg	
98-86-2	Acetophenone	ND	200	8.5	ug/kg	
120-12-7	Anthracene	573	40	24	ug/kg	
1912-24-9	Atrazine	ND	79	17	ug/kg	
56-55-3	Benzo(a)anthracene	168	40	11	ug/kg	
50-32-8	Benzo(a)pyrene	151	40	18	ug/kg	
205-99-2	Benzo(b)fluoranthene	192	40	18	ug/kg	
191-24-2	Benzo(g,h,i)perylene	105	40	20	ug/kg	
207-08-9	Benzo(k)fluoranthene	63.2	40	19	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	79	15	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	79	9.7	ug/kg	
92-52-4	1,1'-Biphenyl	93.9	79	5.4	ug/kg	
100-52-7	Benzaldehyde	ND	200	9.8	ug/kg	
91-58-7	2-Chloronaphthalene	ND	79	9.4	ug/kg	
106-47-8	4-Chloroaniline	ND	200	14	ug/kg	
86-74-8	Carbazole	671	79	5.8	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-108(8-10)
Lab Sample ID: JC86406-2
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/15/19
Date Received: 04/16/19
Percent Solids: 80.3

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	79	16	ug/kg	
218-01-9	Chrysene	199	40	12	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	79	8.5	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	79	17	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	79	14	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	79	13	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	40	12	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	40	20	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	79	33	ug/kg	
123-91-1	1,4-Dioxane	ND	40	26	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	25.5	40	18	ug/kg	J
132-64-9	Dibenzofuran	357	79	16	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	79	6.5	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	79	9.9	ug/kg	
84-66-2	Diethyl phthalate	ND	79	8.4	ug/kg	
131-11-3	Dimethyl phthalate	ND	79	7.1	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	79	9.3	ug/kg	
206-44-0	Fluoranthene	414	40	18	ug/kg	
86-73-7	Fluorene	589	40	18	ug/kg	
118-74-1	Hexachlorobenzene	ND	79	10	ug/kg	
87-68-3	Hexachlorobutadiene	ND	40	16	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	400	16	ug/kg	
67-72-1	Hexachloroethane	ND	200	20	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	84.0	40	19	ug/kg	
78-59-1	Isophorone	ND	79	8.5	ug/kg	
91-57-6	2-Methylnaphthalene	295	40	9.0	ug/kg	
88-74-4	2-Nitroaniline	ND	200	9.4	ug/kg	
99-09-2	3-Nitroaniline	ND	200	9.9	ug/kg	
100-01-6	4-Nitroaniline	ND	200	10	ug/kg	
91-20-3	Naphthalene	3820	40	11	ug/kg	
98-95-3	Nitrobenzene	ND	79	15	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	79	11	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	200	15	ug/kg	
85-01-8	Phenanthrene	576	40	13	ug/kg	
129-00-0	Pyrene	447	40	13	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	200	10	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	51%		23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-108(8-10)		
Lab Sample ID:	JC86406-2	**Date Sampled:**	04/15/19
Matrix:	SO - Soil	**Date Received:**	04/16/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	80.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	64%		27-114%
118-79-6	2,4,6-Tribromophenol	60%		19-152%
4165-60-0	Nitrobenzene-d5	65%		26-134%
321-60-8	2-Fluorobiphenyl	74%		39-124%
1718-51-0	Terphenyl-d14	65%		36-134%

(a) Associated CCV outside of control limits high.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	S-108(15-17)		
Lab Sample ID:	JC86406-3	**Date Sampled:**	04/15/19
Matrix:	SO - Soil	**Date Received:**	04/16/19
Method:	SW846 8260C	**Percent Solids:**	56.8
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	D264076.D	1	04/26/19 14:03	JTP	n/a	n/a	VD10644
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	3.8 g	10.0 ml	100 ul
Run #2			

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	2700	1300	ug/kg	
71-43-2	Benzene	196	130	100	ug/kg	
74-97-5	Bromochloromethane	ND	1300	120	ug/kg	
75-27-4	Bromodichloromethane	ND	540	120	ug/kg	
75-25-2	Bromoform	ND	1300	110	ug/kg	
74-83-9	Bromomethane	ND	1300	270	ug/kg	
78-93-3	2-Butanone (MEK)	ND	2700	1000	ug/kg	
75-15-0	Carbon disulfide	51000	540	250	ug/kg	
56-23-5	Carbon tetrachloride	ND	540	150	ug/kg	
108-90-7	Chlorobenzene	ND	540	95	ug/kg	
75-00-3	Chloroethane	ND	1300	190	ug/kg	
67-66-3	Chloroform	ND	540	100	ug/kg	
74-87-3	Chloromethane	ND	1300	530	ug/kg	
110-82-7	Cyclohexane	ND	540	110	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	540	230	ug/kg	
124-48-1	Dibromochloromethane	ND	540	91	ug/kg	
106-93-4	1,2-Dibromoethane	ND	270	88	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	270	82	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	270	97	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	270	93	ug/kg	
75-71-8	Dichlorodifluoromethane [b]	ND	1300	170	ug/kg	UJ
75-34-3	1,1-Dichloroethane	ND	270	100	ug/kg	
107-06-2	1,2-Dichloroethane [b]	ND	270	130	ug/kg	UJ
75-35-4	1,1-Dichloroethene	ND	270	180	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	270	260	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	270	180	ug/kg	
78-87-5	1,2-Dichloropropane	ND	540	110	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	540	95	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	540	88	ug/kg	
100-41-4	Ethylbenzene	3100	270	150	ug/kg	
76-13-1	Freon 113	ND	1300	210	ug/kg	
591-78-6	2-Hexanone	ND	1300	340	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-108(15-17)		
Lab Sample ID:	JC86406-3	**Date Sampled:**	04/15/19
Matrix:	SO - Soil	**Date Received:**	04/16/19
Method:	SW846 8260C	**Percent Solids:**	56.8
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	2410	540	190	ug/kg	
79-20-9	Methyl Acetate	3140	1300	370	ug/kg	
108-87-2	Methylcyclohexane	466	540	190	ug/kg	J
1634-04-4	Methyl Tert Butyl Ether	ND	270	95	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	1300	420	ug/kg	
75-09-2	Methylene chloride	ND	1300	670	ug/kg	
100-42-5	Styrene	ND	540	160	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	540	110	ug/kg	
127-18-4	Tetrachloroethene	ND	540	120	ug/kg	
108-88-3	Toluene	1250	270	100	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	1300	270	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	1300	270	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	540	110	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	540	92	ug/kg	
79-01-6	Trichloroethene	ND	270	210	ug/kg	
75-69-4	Trichlorofluoromethane	ND	1300	180	ug/kg	
75-01-4	Vinyl chloride	ND	540	130	ug/kg	
	m,p-Xylene	2990	270	200	ug/kg	
95-47-6	o-Xylene	3880	270	160	ug/kg	
1330-20-7	Xylene (total)	6870	270	160	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	99%		75-127%
17060-07-0	1,2-Dichloroethane-D4	90%		75-130%
2037-26-5	Toluene-D8	97%		80-120%
460-00-4	4-Bromofluorobenzene	94%		79-127%

(a) Diluted due to high concentration of non-target compound.
(b) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	S-108(15-17)		
Lab Sample ID:	JC86406-3	**Date Sampled:**	04/15/19
Matrix:	SO - Soil	**Date Received:**	04/16/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	56.8
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2P86746.D	1	04/19/19 05:11	CB	04/17/19 18:45	OP19810	E2P3831
Run #2	Z137269.D	100	04/25/19 22:03	AR	04/17/19 18:45	OP19810	EZ6762

	Initial Weight	Final Volume
Run #1	30.8 g	1.0 ml
Run #2	30.8 g	1.0 ml

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	110	28	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	290	35	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	290	49	ug/kg	
105-67-9	2,4-Dimethylphenol [a]	ND	290	100	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	290	210	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	290	61	ug/kg	
95-48-7	2-Methylphenol	37.3	110	37	ug/kg	J
	3&4-Methylphenol	339	110	47	ug/kg	
88-75-5	2-Nitrophenol	ND	290	38	ug/kg	
100-02-7	4-Nitrophenol	ND	570	150	ug/kg	
87-86-5	Pentachlorophenol	ND	230	54	ug/kg	
108-95-2	Phenol	132	110	30	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	290	38	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	290	43	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	290	34	ug/kg	
83-32-9	Acenaphthene	93500 [b]	5700	2000	ug/kg	D
208-96-8	Acenaphthylene	1930	57	29	ug/kg	
98-86-2	Acetophenone	ND	290	12	ug/kg	
120-12-7	Anthracene	49600 [b]	5700	3500	ug/kg	D
1912-24-9	Atrazine	ND	110	24	ug/kg	
56-55-3	Benzo(a)anthracene	18400 [b]	5700	1600	ug/kg	D
50-32-8	Benzo(a)pyrene	10800 [b]	5700	2600	ug/kg	D
205-99-2	Benzo(b)fluoranthene	10800 [b]	5700	2500	ug/kg	D
191-24-2	Benzo(g,h,i)perylene	1530	57	29	ug/kg	
207-08-9	Benzo(k)fluoranthene	1700	57	27	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	110	22	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	110	14	ug/kg	
92-52-4	1,1'-Biphenyl	19100 [b]	11000	780	ug/kg	D
100-52-7	Benzaldehyde	ND	290	14	ug/kg	
91-58-7	2-Chloronaphthalene	ND	110	14	ug/kg	
106-47-8	4-Chloroaniline	ND	290	21	ug/kg	
86-74-8	Carbazole	12100 [b]	11000	830	ug/kg	D

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-108(15-17)
Lab Sample ID: JC86406-3
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/15/19
Date Received: 04/16/19
Percent Solids: 56.8

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	110	23	ug/kg	
218-01-9	Chrysene	19400 b	5700	1800	ug/kg	D
111-91-1	bis(2-Chloroethoxy)methane	ND	110	12	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	110	25	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	110	21	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	110	19	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	57	18	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	57	29	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	110	48	ug/kg	
123-91-1	1,4-Dioxane	ND	57	38	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	552	57	25	ug/kg	
132-64-9	Dibenzofuran	53000 b	11000	2300	ug/kg	D
84-74-2	Di-n-butyl phthalate	ND	110	9.3	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	110	14	ug/kg	
84-66-2	Diethyl phthalate	ND	110	12	ug/kg	
131-11-3	Dimethyl phthalate	ND	110	10	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	110	13	ug/kg	
206-44-0	Fluoranthene	77200 b	5700	2500	ug/kg	D
86-73-7	Fluorene	81200 b	5700	2600	ug/kg	D
118-74-1	Hexachlorobenzene	ND	110	14	ug/kg	
87-68-3	Hexachlorobutadiene	ND	57	23	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	570	23	ug/kg	
67-72-1	Hexachloroethane	ND	290	28	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	1420	57	27	ug/kg	
78-59-1	Isophorone	ND	110	12	ug/kg	
91-57-6	2-Methylnaphthalene	140000 b	5700	1300	ug/kg	D
88-74-4	2-Nitroaniline	ND	290	13	ug/kg	
99-09-2	3-Nitroaniline	ND	290	14	ug/kg	
100-01-6	4-Nitroaniline	ND	290	15	ug/kg	
91-20-3	Naphthalene	325000 b	5700	1600	ug/kg	D
98-95-3	Nitrobenzene	ND	110	22	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	110	17	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	290	21	ug/kg	
85-01-8	Phenanthrene	223000 b	5700	1900	ug/kg	D
129-00-0	Pyrene	61100 b	5700	1800	ug/kg	D
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	290	15	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	50%	0% c	23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-108(15-17)
Lab Sample ID: JC86406-3
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/15/19
Date Received: 04/16/19
Percent Solids: 56.8

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	48%	0% [c]	27-114%
118-79-6	2,4,6-Tribromophenol	85%	0% [c]	19-152%
4165-60-0	Nitrobenzene-d5	104%	0% [c]	26-134%
321-60-8	2-Fluorobiphenyl	69%	0% [c]	39-124%
1718-51-0	Terphenyl-d14	59%	0% [c]	36-134%

(a) Associated CCV outside of control limits high, sample was ND.
(b) Result is from Run# 2
(c) Outside control limits due to dilution.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	SO-DUP-0415		
Lab Sample ID:	JC86406-4	**Date Sampled:**	04/15/19
Matrix:	SO - Soil	**Date Received:**	04/16/19
Method:	SW846 8260C	**Percent Solids:**	87.6
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	I225722.D	1	04/25/19 19:08	TDN	n/a	n/a	VI9093
Run #2							

	Initial Weight
Run #1	3.7 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	12.5	15	7.7	ug/kg	J
71-43-2	Benzene	2.0	0.77	0.58	ug/kg	
74-97-5	Bromochloromethane	ND	7.7	0.66	ug/kg	
75-27-4	Bromodichloromethane	ND	3.1	0.68	ug/kg	
75-25-2	Bromoform	ND	7.7	0.62	ug/kg	
74-83-9	Bromomethane	ND	7.7	1.5	ug/kg	
78-93-3	2-Butanone (MEK)	ND	15	5.8	ug/kg	
75-15-0	Carbon disulfide	5.2	3.1	1.4	ug/kg	
56-23-5	Carbon tetrachloride	ND	3.1	0.85	ug/kg	
108-90-7	Chlorobenzene	ND	3.1	0.55	ug/kg	
75-00-3	Chloroethane	ND	7.7	1.1	ug/kg	
67-66-3	Chloroform	ND	3.1	0.57	ug/kg	
74-87-3	Chloromethane	ND	7.7	3.0	ug/kg	
110-82-7	Cyclohexane	ND	3.1	0.63	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	3.1	1.3	ug/kg	
124-48-1	Dibromochloromethane	ND	3.1	0.52	ug/kg	
106-93-4	1,2-Dibromoethane [a]	ND	1.5	0.50	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.5	0.47	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.5	0.55	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.5	0.53	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	7.7	0.98	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.5	0.59	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.5	0.73	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.5	1.0	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.5	1.5	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.5	1.0	ug/kg	
78-87-5	1,2-Dichloropropane	ND	3.1	0.63	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	3.1	0.54	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	3.1	0.50	ug/kg	
100-41-4	Ethylbenzene	ND	1.5	0.85	ug/kg	
76-13-1	Freon 113	ND	7.7	1.2	ug/kg	
591-78-6	2-Hexanone	ND	7.7	2.0	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SO-DUP-0415		
Lab Sample ID:	JC86406-4	**Date Sampled:**	04/15/19
Matrix:	SO - Soil	**Date Received:**	04/16/19
Method:	SW846 8260C	**Percent Solids:**	87.6
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	3.1	1.1	ug/kg	
79-20-9	Methyl Acetate	ND	7.7	2.1	ug/kg	
108-87-2	Methylcyclohexane	1.9	3.1	1.1	ug/kg	J
1634-04-4	Methyl Tert Butyl Ether	ND	1.5	0.54	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	7.7	2.4	ug/kg	
75-09-2	Methylene chloride	ND	7.7	3.9	ug/kg	
100-42-5	Styrene	ND	3.1	0.89	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	3.1	0.60	ug/kg	
127-18-4	Tetrachloroethene	ND	3.1	0.71	ug/kg	
108-88-3	Toluene	ND	1.5	0.58	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	7.7	1.5	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	7.7	1.5	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	3.1	0.66	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	3.1	0.53	ug/kg	
79-01-6	Trichloroethene	ND	1.5	1.2	ug/kg	
75-69-4	Trichlorofluoromethane	ND	7.7	1.1	ug/kg	
75-01-4	Vinyl chloride	ND	3.1	0.72	ug/kg	
	m,p-Xylene	ND	1.5	1.2	ug/kg	
95-47-6	o-Xylene	ND	1.5	0.90	ug/kg	
1330-20-7	Xylene (total)	ND	1.5	0.90	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	108%		75-127%
17060-07-0	1,2-Dichloroethane-D4	116%		75-130%
2037-26-5	Toluene-D8	105%		80-120%
460-00-4	4-Bromofluorobenzene	123%		79-127%

(a) This compound in BS is outside in house QC limits bias high.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	SO-DUP-0415		
Lab Sample ID:	JC86406-4	**Date Sampled:**	04/15/19
Matrix:	SO - Soil	**Date Received:**	04/16/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	87.6
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2P86747.D	1	04/19/19 05:33	CB	04/17/19 18:45	OP19810	E2P3831
Run #2	2P86768.D	5	04/22/19 18:29	YC	04/17/19 18:45	OP19810	E2P3832

	Initial Weight	Final Volume
Run #1	30.8 g	1.0 ml
Run #2	30.8 g	1.0 ml

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	74	18	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	190	23	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	190	32	ug/kg	
105-67-9	2,4-Dimethylphenol [a]	ND	190	66	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	190	140	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	190	40	ug/kg	
95-48-7	2-Methylphenol	ND	74	24	ug/kg	
	3&4-Methylphenol	117	74	30	ug/kg	
88-75-5	2-Nitrophenol	ND	190	24	ug/kg	
100-02-7	4-Nitrophenol	ND	370	99	ug/kg	
87-86-5	Pentachlorophenol	ND	150	35	ug/kg	
108-95-2	Phenol	122	74	19	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	190	25	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	190	28	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	190	22	ug/kg	
83-32-9	Acenaphthene	106	37	13	ug/kg	
208-96-8	Acenaphthylene	1430	37	19	ug/kg	
98-86-2	Acetophenone	ND	190	8.0	ug/kg	
120-12-7	Anthracene	1200	37	23	ug/kg	
1912-24-9	Atrazine	ND	74	16	ug/kg	
56-55-3	Benzo(a)anthracene	5670 [b]	190	52	ug/kg	D
50-32-8	Benzo(a)pyrene	6020 [b]	190	84	ug/kg	D
205-99-2	Benzo(b)fluoranthene	8590 [b]	190	82	ug/kg	D
191-24-2	Benzo(g,h,i)perylene	2110	37	19	ug/kg	
207-08-9	Benzo(k)fluoranthene	1910	37	17	ug/kg	J
101-55-3	4-Bromophenyl phenyl ether	ND	74	14	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	74	9.0	ug/kg	
92-52-4	1,1'-Biphenyl	71.1	74	5.1	ug/kg	J
100-52-7	Benzaldehyde	ND	190	9.2	ug/kg	
91-58-7	2-Chloronaphthalene	ND	74	8.8	ug/kg	
106-47-8	4-Chloroaniline	ND	190	13	ug/kg	
86-74-8	Carbazole	271	74	5.4	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: SO-DUP-0415
Lab Sample ID: JC86406-4
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/15/19
Date Received: 04/16/19
Percent Solids: 87.6

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	74	15	ug/kg	
218-01-9	Chrysene	6710 b	190	58	ug/kg	D
111-91-1	bis(2-Chloroethoxy)methane	ND	74	7.9	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	74	16	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	74	13	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	74	12	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	37	11	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	37	19	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	74	31	ug/kg	
123-91-1	1,4-Dioxane	ND	37	24	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	1060	37	16	ug/kg	
132-64-9	Dibenzofuran	242	74	15	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	74	6.0	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	74	9.2	ug/kg	
84-66-2	Diethyl phthalate	ND	74	7.9	ug/kg	
131-11-3	Dimethyl phthalate	ND	74	6.6	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	74	8.7	ug/kg	
206-44-0	Fluoranthene	6690 b	190	83	ug/kg	D
86-73-7	Fluorene	192	37	17	ug/kg	
118-74-1	Hexachlorobenzene	ND	74	9.4	ug/kg	
87-68-3	Hexachlorobutadiene	ND	37	15	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	370	15	ug/kg	
67-72-1	Hexachloroethane	ND	190	18	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	2300	37	17	ug/kg	
78-59-1	Isophorone	ND	74	7.9	ug/kg	
91-57-6	2-Methylnaphthalene	246	37	8.4	ug/kg	
88-74-4	2-Nitroaniline	ND	190	8.7	ug/kg	
99-09-2	3-Nitroaniline	ND	190	9.3	ug/kg	
100-01-6	4-Nitroaniline	ND	190	9.6	ug/kg	
91-20-3	Naphthalene	1230	37	10	ug/kg	
98-95-3	Nitrobenzene	ND	74	14	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	74	11	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	190	14	ug/kg	
85-01-8	Phenanthrene	2620	37	12	ug/kg	
129-00-0	Pyrene	6700 b	190	59	ug/kg	D
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	190	9.4	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	43%	54%	23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SO-DUP-0415		
Lab Sample ID:	JC86406-4	**Date Sampled:**	04/15/19
Matrix:	SO - Soil	**Date Received:**	04/16/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	87.6
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	50%	66%	27-114%
118-79-6	2,4,6-Tribromophenol	55%	45%	19-152%
4165-60-0	Nitrobenzene-d5	56%	72%	26-134%
321-60-8	2-Fluorobiphenyl	72%	76%	39-124%
1718-51-0	Terphenyl-d14	51%	63%	36-134%

(a) Associated CCV outside of control limits high, sample was ND.
(b) Result is from Run# 2

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PCTP-17R(5-6)		
Lab Sample ID:	JC86406-5	**Date Sampled:**	04/15/19
Matrix:	SO - Soil	**Date Received:**	04/16/19
Method:	SW846 8260C	**Percent Solids:**	87.7
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	D264077.D	1	04/26/19 14:32	JTP	n/a	n/a	VD10644
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	3.8 g	10.0 ml	20.0 ul
Run #2			

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	7900	3900	ug/kg	
71-43-2	Benzene	1230	390	300	ug/kg	
74-97-5	Bromochloromethane	ND	3900	340	ug/kg	
75-27-4	Bromodichloromethane	ND	1600	350	ug/kg	
75-25-2	Bromoform	ND	3900	320	ug/kg	
74-83-9	Bromomethane	ND	3900	780	ug/kg	
78-93-3	2-Butanone (MEK)	ND	7900	2900	ug/kg	
75-15-0	Carbon disulfide	ND	1600	730	ug/kg	
56-23-5	Carbon tetrachloride	ND	1600	430	ug/kg	
108-90-7	Chlorobenzene	ND	1600	280	ug/kg	
75-00-3	Chloroethane	ND	3900	540	ug/kg	
67-66-3	Chloroform	ND	1600	290	ug/kg	
74-87-3	Chloromethane	ND	3900	1500	ug/kg	
110-82-7	Cyclohexane	ND	1600	320	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	1600	660	ug/kg	
124-48-1	Dibromochloromethane	ND	1600	270	ug/kg	
106-93-4	1,2-Dibromoethane [b]	ND	790	260	ug/kg	UJ
95-50-1	1,2-Dichlorobenzene	ND	790	240	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	790	280	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	790	270	ug/kg	
75-71-8	Dichlorodifluoromethane [c]	ND	3900	500	ug/kg	
75-34-3	1,1-Dichloroethane	ND	790	300	ug/kg	
107-06-2	1,2-Dichloroethane [c]	ND	790	370	ug/kg	
75-35-4	1,1-Dichloroethene	ND	790	520	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	790	750	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	790	520	ug/kg	
78-87-5	1,2-Dichloropropane	ND	1600	320	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	1600	280	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	1600	260	ug/kg	
100-41-4	Ethylbenzene	ND	790	430	ug/kg	
76-13-1	Freon 113	ND	3900	600	ug/kg	
591-78-6	2-Hexanone	ND	3900	1000	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCTP-17R(5-6)		
Lab Sample ID:	JC86406-5	**Date Sampled:**	04/15/19
Matrix:	SO - Soil	**Date Received:**	04/16/19
Method:	SW846 8260C	**Percent Solids:**	87.7
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	1600	550	ug/kg	
79-20-9	Methyl Acetate	ND	3900	1100	ug/kg	
108-87-2	Methylcyclohexane	ND	1600	560	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	790	280	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	3900	1200	ug/kg	
75-09-2	Methylene chloride	ND	3900	2000	ug/kg	
100-42-5	Styrene	ND	1600	450	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1600	310	ug/kg	
127-18-4	Tetrachloroethene	ND	1600	360	ug/kg	
108-88-3	Toluene	1650	790	300	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	3900	790	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	3900	790	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	1600	330	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	1600	270	ug/kg	
79-01-6	Trichloroethene	ND	790	600	ug/kg	
75-69-4	Trichlorofluoromethane	ND	3900	530	ug/kg	
75-01-4	Vinyl chloride	ND	1600	370	ug/kg	
	m,p-Xylene	3880	790	590	ug/kg	
95-47-6	o-Xylene	1740	790	460	ug/kg	
1330-20-7	Xylene (total)	5620	790	460	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	96%		75-127%
17060-07-0	1,2-Dichloroethane-D4	87%		75-130%
2037-26-5	Toluene-D8	101%		80-120%
460-00-4	4-Bromofluorobenzene	93%		79-127%

(a) Diluted due to high concentration of non-target compound.
(b) This compound in BS is outside in house QC limits bias high.
(c) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PCTP-17R(5-6)		
Lab Sample ID:	JC86406-5	**Date Sampled:**	04/15/19
Matrix:	SO - Soil	**Date Received:**	04/16/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	87.7
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2P86748.D	1	04/19/19 05:54	CB	04/17/19 18:45	OP19810	E2P3831
Run #2	Z137310.D	5	04/26/19 21:07	AR	04/17/19 18:45	OP19810	EZ6764
Run #3	Z137270.D	100	04/25/19 22:31	AR	04/17/19 18:45	OP19810	EZ6762

	Initial Weight	Final Volume
Run #1	31.4 g	1.0 ml
Run #2	31.4 g	1.0 ml
Run #3	31.4 g	1.0 ml

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	73	18	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	180	22	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	180	31	ug/kg	
105-67-9	2,4-Dimethylphenol	2270 [a]	910	320	ug/kg	D
51-28-5	2,4-Dinitrophenol	ND	180	140	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	180	39	ug/kg	
95-48-7	2-Methylphenol	1650	73	23	ug/kg	
	3&4-Methylphenol	4700 [a]	360	150	ug/kg	D
88-75-5	2-Nitrophenol	ND	180	24	ug/kg	
100-02-7	4-Nitrophenol	ND	360	97	ug/kg	
87-86-5	Pentachlorophenol	ND	150	34	ug/kg	
108-95-2	Phenol	2790	73	19	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	180	24	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	180	27	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	180	22	ug/kg	
83-32-9	Acenaphthene	4550 [a]	180	63	ug/kg	D
208-96-8	Acenaphthylene	29600 [b]	3600	1800	ug/kg	D
98-86-2	Acetophenone	ND	180	7.8	ug/kg	
120-12-7	Anthracene	67800 [b]	3600	2200	ug/kg	D
1912-24-9	Atrazine	ND	73	16	ug/kg	
56-55-3	Benzo(a)anthracene	57200 [b]	3600	1000	ug/kg	D
50-32-8	Benzo(a)pyrene	41100 [b]	3600	1700	ug/kg	D
205-99-2	Benzo(b)fluoranthene	49000 [b]	3600	1600	ug/kg	D
191-24-2	Benzo(g,h,i)perylene [c]	20500 [b]	3600	1800	ug/kg	D
207-08-9	Benzo(k)fluoranthene	18900 [b]	3600	1700	ug/kg	D
101-55-3	4-Bromophenyl phenyl ether	ND	73	14	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	73	8.9	ug/kg	
92-52-4	1,1'-Biphenyl	8640 [a]	360	25	ug/kg	D
100-52-7	Benzaldehyde	ND	180	9.0	ug/kg	
91-58-7	2-Chloronaphthalene	ND	73	8.6	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PCTP-17R(5-6)
Lab Sample ID: JC86406-5
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/15/19
Date Received: 04/16/19
Percent Solids: 87.7

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
106-47-8	4-Chloroaniline	ND	180	13	ug/kg	
86-74-8	Carbazole	28800 [b]	7300	530	ug/kg	D
105-60-2	Caprolactam	ND	73	14	ug/kg	
218-01-9	Chrysene	48000 [b]	3600	1100	ug/kg	D
111-91-1	bis(2-Chloroethoxy)methane	ND	73	7.8	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	73	16	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	73	13	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	73	12	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	36	11	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	36	18	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	73	30	ug/kg	
123-91-1	1,4-Dioxane	ND	36	24	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	6990 [a]	180	80	ug/kg	D
132-64-9	Dibenzofuran	49900 [b]	7300	1500	ug/kg	D
84-74-2	Di-n-butyl phthalate	ND	73	5.9	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	73	9.0	ug/kg	
84-66-2	Diethyl phthalate	ND	73	7.7	ug/kg	
131-11-3	Dimethyl phthalate	ND	73	6.5	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	73	8.5	ug/kg	
206-44-0	Fluoranthene	138000 [b]	3600	1600	ug/kg	D
86-73-7	Fluorene	77200 [b]	3600	1700	ug/kg	D
118-74-1	Hexachlorobenzene	ND	73	9.2	ug/kg	
87-68-3	Hexachlorobutadiene	ND	36	15	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	360	14	ug/kg	
67-72-1	Hexachloroethane	ND	180	18	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene [c]	22000 [b]	3600	1700	ug/kg	D
78-59-1	Isophorone	ND	73	7.8	ug/kg	
91-57-6	2-Methylnaphthalene	56200 [b]	3600	820	ug/kg	D
88-74-4	2-Nitroaniline	ND	180	8.6	ug/kg	
99-09-2	3-Nitroaniline	ND	180	9.1	ug/kg	
100-01-6	4-Nitroaniline	ND	180	9.4	ug/kg	
91-20-3	Naphthalene	146000 [b]	3600	1000	ug/kg	D
98-95-3	Nitrobenzene	ND	73	14	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	73	10	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	180	13	ug/kg	
85-01-8	Phenanthrene	219000 [b]	3600	1200	ug/kg	D
129-00-0	Pyrene	95600 [b]	3600	1200	ug/kg	D
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	180	9.2	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PCTP-17R(5-6)
Lab Sample ID: JC86406-5
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/15/19
Date Received: 04/16/19
Percent Solids: 87.7

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Run# 3	Limits
367-12-4	2-Fluorophenol	47%	53%	0% [d]	23-115%
4165-62-2	Phenol-d5	53%	49%	0% [d]	27-114%
118-79-6	2,4,6-Tribromophenol	68%	45%	0% [d]	19-152%
4165-60-0	Nitrobenzene-d5	89%	53%	0% [d]	26-134%
321-60-8	2-Fluorobiphenyl	51%	53%	0% [d]	39-124%
1718-51-0	Terphenyl-d14	61%	56%	0% [d]	36-134%

(a) Result is from Run# 2
(b) Result is from Run# 3
(c) Associated CCV outside of control limits high.
(d) Outside control limits due to dilution.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PCTP-17R(7-9)		
Lab Sample ID:	JC86406-6	**Date Sampled:**	04/15/19
Matrix:	SO - Soil	**Date Received:**	04/16/19
Method:	SW846 8260C	**Percent Solids:**	89.1
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3V44292.D	1	04/24/19 15:56	RS	n/a	n/a	V3V1778
Run #2							

	Initial Weight
Run #1	6.6 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	40.7	8.5	4.3	ug/kg	
71-43-2	Benzene	ND	0.43	0.32	ug/kg	
74-97-5	Bromochloromethane	ND	4.3	0.37	ug/kg	
75-27-4	Bromodichloromethane	ND	1.7	0.38	ug/kg	
75-25-2	Bromoform	ND	4.3	0.34	ug/kg	
74-83-9	Bromomethane	ND	4.3	0.85	ug/kg	
78-93-3	2-Butanone (MEK)	3.3	8.5	3.2	ug/kg	J
75-15-0	Carbon disulfide	ND	1.7	0.79	ug/kg	
56-23-5	Carbon tetrachloride	ND	1.7	0.47	ug/kg	
108-90-7	Chlorobenzene	ND	1.7	0.30	ug/kg	
75-00-3	Chloroethane	ND	4.3	0.58	ug/kg	
67-66-3	Chloroform	ND	1.7	0.32	ug/kg	
74-87-3	Chloromethane	ND	4.3	1.7	ug/kg	
110-82-7	Cyclohexane [a]	ND	1.7	0.35	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	1.7	0.71	ug/kg	
124-48-1	Dibromochloromethane	ND	1.7	0.29	ug/kg	
106-93-4	1,2-Dibromoethane	ND	0.85	0.28	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	0.85	0.26	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	0.85	0.31	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	0.85	0.29	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	4.3	0.54	ug/kg	
75-34-3	1,1-Dichloroethane	ND	0.85	0.33	ug/kg	
107-06-2	1,2-Dichloroethane	ND	0.85	0.40	ug/kg	
75-35-4	1,1-Dichloroethene	ND	0.85	0.56	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	0.85	0.81	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	0.85	0.57	ug/kg	
78-87-5	1,2-Dichloropropane	ND	1.7	0.35	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	1.7	0.30	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	1.7	0.28	ug/kg	
100-41-4	Ethylbenzene	ND	0.85	0.47	ug/kg	
76-13-1	Freon 113	ND	4.3	0.65	ug/kg	
591-78-6	2-Hexanone	ND	4.3	1.1	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCTP-17R(7-9)		
Lab Sample ID:	JC86406-6	**Date Sampled:**	04/15/19
Matrix:	SO - Soil	**Date Received:**	04/16/19
Method:	SW846 8260C	**Percent Solids:**	89.1
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	1.7	0.59	ug/kg	
79-20-9	Methyl Acetate	ND	4.3	1.2	ug/kg	
108-87-2	Methylcyclohexane [a]	ND	1.7	0.60	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.85	0.30	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	4.3	1.3	ug/kg	
75-09-2	Methylene chloride	ND	4.3	2.1	ug/kg	
100-42-5	Styrene	ND	1.7	0.49	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.7	0.33	ug/kg	
127-18-4	Tetrachloroethene	ND	1.7	0.39	ug/kg	
108-88-3	Toluene	ND	0.85	0.32	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	4.3	0.85	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	4.3	0.85	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	1.7	0.36	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	1.7	0.29	ug/kg	
79-01-6	Trichloroethene	ND	0.85	0.65	ug/kg	
75-69-4	Trichlorofluoromethane	ND	4.3	0.58	ug/kg	
75-01-4	Vinyl chloride	ND	1.7	0.40	ug/kg	
	m,p-Xylene	ND	0.85	0.63	ug/kg	
95-47-6	o-Xylene	ND	0.85	0.50	ug/kg	
1330-20-7	Xylene (total)	ND	0.85	0.50	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%		75-127%
17060-07-0	1,2-Dichloroethane-D4	104%		75-130%
2037-26-5	Toluene-D8	102%		80-120%
460-00-4	4-Bromofluorobenzene	102%		79-127%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PCTP-17R(7-9)		
Lab Sample ID:	JC86406-6	**Date Sampled:**	04/15/19
Matrix:	SO - Soil	**Date Received:**	04/16/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	89.1
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2P86733.D	1	04/19/19 00:27	CB	04/17/19 18:45	OP19810	E2P3831
Run #2							

	Initial Weight	Final Volume
Run #1	31.2 g	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	72	18	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	180	22	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	180	31	ug/kg	
105-67-9	2,4-Dimethylphenol [a]	ND	180	64	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	180	140	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	180	38	ug/kg	
95-48-7	2-Methylphenol	ND	72	23	ug/kg	
	3&4-Methylphenol	ND	72	30	ug/kg	
88-75-5	2-Nitrophenol	ND	180	24	ug/kg	
100-02-7	4-Nitrophenol	ND	360	96	ug/kg	
87-86-5	Pentachlorophenol	ND	140	34	ug/kg	
108-95-2	Phenol	ND	72	19	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	180	24	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	180	27	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	180	21	ug/kg	
83-32-9	Acenaphthene	ND	36	12	ug/kg	
208-96-8	Acenaphthylene	ND	36	18	ug/kg	
98-86-2	Acetophenone	ND	180	7.7	ug/kg	
120-12-7	Anthracene	ND	36	22	ug/kg	
1912-24-9	Atrazine	ND	72	15	ug/kg	
56-55-3	Benzo(a)anthracene	26.4	36	10	ug/kg	J
50-32-8	Benzo(a)pyrene	28.0	36	16	ug/kg	J
205-99-2	Benzo(b)fluoranthene	34.1	36	16	ug/kg	J
191-24-2	Benzo(g,h,i)perylene	20.3	36	18	ug/kg	J
207-08-9	Benzo(k)fluoranthene	ND	36	17	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	72	14	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	72	8.8	ug/kg	
92-52-4	1,1'-Biphenyl	5.4	72	4.9	ug/kg	J
100-52-7	Benzaldehyde	ND	180	8.9	ug/kg	
91-58-7	2-Chloronaphthalene	ND	72	8.6	ug/kg	
106-47-8	4-Chloroaniline	ND	180	13	ug/kg	
86-74-8	Carbazole	7.9	72	5.2	ug/kg	J

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PCTP-17R(7-9)
Lab Sample ID: JC86406-6
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/15/19
Date Received: 04/16/19
Percent Solids: 89.1

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	72	14	ug/kg	
218-01-9	Chrysene	27.6	36	11	ug/kg	J
111-91-1	bis(2-Chloroethoxy)methane	ND	72	7.7	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	72	16	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	72	13	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	72	12	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	36	11	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	36	18	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	72	30	ug/kg	
123-91-1	1,4-Dioxane	ND	36	24	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	36	16	ug/kg	
132-64-9	Dibenzofuran	ND	72	15	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	72	5.9	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	72	9.0	ug/kg	
84-66-2	Diethyl phthalate	ND	72	7.7	ug/kg	
131-11-3	Dimethyl phthalate	ND	72	6.4	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	72	8.4	ug/kg	
206-44-0	Fluoranthene	36.2	36	16	ug/kg	
86-73-7	Fluorene	ND	36	17	ug/kg	
118-74-1	Hexachlorobenzene	ND	72	9.1	ug/kg	
87-68-3	Hexachlorobutadiene	ND	36	14	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	360	14	ug/kg	
67-72-1	Hexachloroethane	ND	180	18	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	36	17	ug/kg	
78-59-1	Isophorone	ND	72	7.7	ug/kg	
91-57-6	2-Methylnaphthalene	14.5	36	8.1	ug/kg	J
88-74-4	2-Nitroaniline	ND	180	8.5	ug/kg	
99-09-2	3-Nitroaniline	ND	180	9.0	ug/kg	
100-01-6	4-Nitroaniline	ND	180	9.3	ug/kg	
91-20-3	Naphthalene	38.0	36	10	ug/kg	
98-95-3	Nitrobenzene	ND	72	14	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	72	10	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	180	13	ug/kg	
85-01-8	Phenanthrene	63.0	36	12	ug/kg	
129-00-0	Pyrene	30.2	36	12	ug/kg	J
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	180	9.1	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	58%		23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PCTP-17R(7-9)
Lab Sample ID: JC86406-6
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/15/19
Date Received: 04/16/19
Percent Solids: 89.1

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	67%		27-114%
118-79-6	2,4,6-Tribromophenol	62%		19-152%
4165-60-0	Nitrobenzene-d5	75%		26-134%
321-60-8	2-Fluorobiphenyl	76%		39-124%
1718-51-0	Terphenyl-d14	63%		36-134%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PCTP-17R(9-11)		
Lab Sample ID:	JC86406-7	**Date Sampled:**	04/15/19
Matrix:	SO - Soil	**Date Received:**	04/16/19
Method:	SW846 8260C	**Percent Solids:**	58.5
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Y184763.D	1	04/26/19 12:22	EH	n/a	n/a	VY8016
Run #2							

	Initial Weight
Run #1	4.5 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	119	19	9.5	ug/kg	
71-43-2	Benzene	1.9	0.95	0.72	ug/kg	
74-97-5	Bromochloromethane	ND	9.5	0.82	ug/kg	
75-27-4	Bromodichloromethane	ND	3.8	0.84	ug/kg	
75-25-2	Bromoform	ND	9.5	0.77	ug/kg	
74-83-9	Bromomethane	ND	9.5	1.9	ug/kg	
78-93-3	2-Butanone (MEK)	15.7	19	7.1	ug/kg	J
75-15-0	Carbon disulfide	4.8	3.8	1.8	ug/kg	
56-23-5	Carbon tetrachloride	ND	3.8	1.0	ug/kg	
108-90-7	Chlorobenzene	ND	3.8	0.67	ug/kg	
75-00-3	Chloroethane	ND	9.5	1.3	ug/kg	
67-66-3	Chloroform	ND	3.8	0.71	ug/kg	
74-87-3	Chloromethane	ND	9.5	3.7	ug/kg	
110-82-7	Cyclohexane	ND	3.8	0.77	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	3.8	1.6	ug/kg	
124-48-1	Dibromochloromethane	ND	3.8	0.64	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.9	0.62	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.9	0.58	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.9	0.68	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.9	0.65	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	9.5	1.2	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.9	0.73	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.9	0.89	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.9	1.2	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.9	1.8	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.9	1.3	ug/kg	
78-87-5	1,2-Dichloropropane	ND	3.8	0.77	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	3.8	0.67	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	3.8	0.62	ug/kg	
100-41-4	Ethylbenzene	ND	1.9	1.0	ug/kg	
76-13-1	Freon 113 [a]	ND	9.5	1.4	ug/kg	
591-78-6	2-Hexanone	ND	9.5	2.4	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCTP-17R(9-11)		
Lab Sample ID:	JC86406-7	**Date Sampled:**	04/15/19
Matrix:	SO - Soil	**Date Received:**	04/16/19
Method:	SW846 8260C	**Percent Solids:**	58.5
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	3.8	1.3	ug/kg	
79-20-9	Methyl Acetate	ND	9.5	2.6	ug/kg	
108-87-2	Methylcyclohexane	1.3	3.8	1.3	ug/kg	J
1634-04-4	Methyl Tert Butyl Ether	ND	1.9	0.67	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	9.5	3.0	ug/kg	
75-09-2	Methylene chloride	ND	9.5	4.7	ug/kg	
100-42-5	Styrene	ND	3.8	1.1	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane [b]	ND	3.8	0.74	ug/kg	UJ
127-18-4	Tetrachloroethene	ND	3.8	0.88	ug/kg	
108-88-3	Toluene	ND	1.9	0.71	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	9.5	1.9	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	9.5	1.9	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	3.8	0.81	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	3.8	0.65	ug/kg	
79-01-6	Trichloroethene	ND	1.9	1.4	ug/kg	
75-69-4	Trichlorofluoromethane	ND	9.5	1.3	ug/kg	
75-01-4	Vinyl chloride	ND	3.8	0.89	ug/kg	
	m,p-Xylene	ND	1.9	1.4	ug/kg	
95-47-6	o-Xylene	ND	1.9	1.1	ug/kg	
1330-20-7	Xylene (total)	ND	1.9	1.1	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	115%		75-127%
17060-07-0	1,2-Dichloroethane-D4	101%		75-130%
2037-26-5	Toluene-D8	87%		80-120%
460-00-4	4-Bromofluorobenzene	98%		79-127%

(a) Associated CCV outside of control limits high, sample was ND.
(b) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID: PCTP-17R(9-11)
Lab Sample ID: JC86406-7
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/15/19
Date Received: 04/16/19
Percent Solids: 58.5

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2P86740.D	1	04/19/19 03:00	CB	04/17/19 18:45	OP19810	E2P3831
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	110	28	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	280	35	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	280	49	ug/kg	
105-67-9	2,4-Dimethylphenol [a]	145	280	100	ug/kg	J
51-28-5	2,4-Dinitrophenol	ND	280	210	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	280	61	ug/kg	
95-48-7	2-Methylphenol	215	110	36	ug/kg	
	3&4-Methylphenol	664	110	47	ug/kg	
88-75-5	2-Nitrophenol	ND	280	38	ug/kg	
100-02-7	4-Nitrophenol	ND	570	150	ug/kg	
87-86-5	Pentachlorophenol	ND	230	54	ug/kg	
108-95-2	Phenol	540	110	30	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	280	38	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	280	43	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	280	34	ug/kg	
83-32-9	Acenaphthene	239	57	20	ug/kg	
208-96-8	Acenaphthylene	102	57	29	ug/kg	
98-86-2	Acetophenone	ND	280	12	ug/kg	
120-12-7	Anthracene	721	57	35	ug/kg	
1912-24-9	Atrazine	ND	110	24	ug/kg	
56-55-3	Benzo(a)anthracene	409	57	16	ug/kg	
50-32-8	Benzo(a)pyrene	449	57	26	ug/kg	
205-99-2	Benzo(b)fluoranthene	505	57	25	ug/kg	
191-24-2	Benzo(g,h,i)perylene	289	57	28	ug/kg	
207-08-9	Benzo(k)fluoranthene	206	57	27	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	110	22	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	110	14	ug/kg	
92-52-4	1,1'-Biphenyl	61.7	110	7.8	ug/kg	J
100-52-7	Benzaldehyde	55.6	280	14	ug/kg	J
91-58-7	2-Chloronaphthalene	ND	110	14	ug/kg	
106-47-8	4-Chloroaniline	ND	280	21	ug/kg	
86-74-8	Carbazole	113	110	8.3	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PCTP-17R(9-11)
Lab Sample ID: JC86406-7
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/15/19
Date Received: 04/16/19
Percent Solids: 58.5

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	110	23	ug/kg	
218-01-9	Chrysene	527	57	18	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	110	12	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	110	25	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	110	20	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	110	18	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	57	18	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	57	29	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	110	48	ug/kg	
123-91-1	1,4-Dioxane	ND	57	38	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	67.7	57	25	ug/kg	
132-64-9	Dibenzofuran	158	110	23	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	110	9.3	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	110	14	ug/kg	
84-66-2	Diethyl phthalate	ND	110	12	ug/kg	
131-11-3	Dimethyl phthalate	ND	110	10	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	110	13	ug/kg	
206-44-0	Fluoranthene	767	57	25	ug/kg	
86-73-7	Fluorene	190	57	26	ug/kg	
118-74-1	Hexachlorobenzene	ND	110	14	ug/kg	
87-68-3	Hexachlorobutadiene	ND	57	23	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	570	23	ug/kg	
67-72-1	Hexachloroethane	ND	280	28	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	247	57	27	ug/kg	
78-59-1	Isophorone	ND	110	12	ug/kg	
91-57-6	2-Methylnaphthalene	205	57	13	ug/kg	
88-74-4	2-Nitroaniline	ND	280	13	ug/kg	
99-09-2	3-Nitroaniline	ND	280	14	ug/kg	
100-01-6	4-Nitroaniline	ND	280	15	ug/kg	
91-20-3	Naphthalene	652	57	16	ug/kg	
98-95-3	Nitrobenzene	ND	110	22	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	110	16	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	280	21	ug/kg	
85-01-8	Phenanthrene	1010	57	19	ug/kg	
129-00-0	Pyrene	807	57	18	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	280	14	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	46%		23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PCTP-17R(9-11)
Lab Sample ID: JC86406-7
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/15/19
Date Received: 04/16/19
Percent Solids: 58.5

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	56%		27-114%
118-79-6	2,4,6-Tribromophenol	57%		19-152%
4165-60-0	Nitrobenzene-d5	64%		26-134%
321-60-8	2-Fluorobiphenyl	72%		39-124%
1718-51-0	Terphenyl-d14	62%		36-134%

(a) Associated CCV outside of control limits high.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PCTP-17R(18-20)		
Lab Sample ID:	JC86406-8	**Date Sampled:**	04/15/19
Matrix:	SO - Soil	**Date Received:**	04/16/19
Method:	SW846 8260C	**Percent Solids:**	52.1
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	D264060.D	1	04/25/19 18:55	TDN	n/a	n/a	VD10643
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	4.2 g	10.0 ml	100 ul
Run #2			

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone [b]	ND	2700	1400	ug/kg	
71-43-2	Benzene	ND	140	100	ug/kg	
74-97-5	Bromochloromethane	ND	1400	120	ug/kg	
75-27-4	Bromodichloromethane	ND	550	120	ug/kg	
75-25-2	Bromoform	ND	1400	110	ug/kg	
74-83-9	Bromomethane	ND	1400	270	ug/kg	
78-93-3	2-Butanone (MEK)	ND	2700	1000	ug/kg	
75-15-0	Carbon disulfide	7250	550	250	ug/kg	
56-23-5	Carbon tetrachloride	ND	550	150	ug/kg	
108-90-7	Chlorobenzene	ND	550	97	ug/kg	
75-00-3	Chloroethane	ND	1400	190	ug/kg	
67-66-3	Chloroform	ND	550	100	ug/kg	
74-87-3	Chloromethane	ND	1400	540	ug/kg	
110-82-7	Cyclohexane	ND	550	110	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	550	230	ug/kg	
124-48-1	Dibromochloromethane	ND	550	93	ug/kg	
106-93-4	1,2-Dibromoethane	ND	270	89	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	270	84	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	270	99	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	270	94	ug/kg	
75-71-8	Dichlorodifluoromethane [c]	ND	1400	170	ug/kg	UJ
75-34-3	1,1-Dichloroethane	ND	270	110	ug/kg	
107-06-2	1,2-Dichloroethane [c]	ND	270	130	ug/kg	UJ
75-35-4	1,1-Dichloroethene	ND	270	180	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	270	260	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	270	180	ug/kg	
78-87-5	1,2-Dichloropropane	ND	550	110	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	550	97	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	550	90	ug/kg	
100-41-4	Ethylbenzene	ND	270	150	ug/kg	
76-13-1	Freon 113	ND	1400	210	ug/kg	
591-78-6	2-Hexanone	ND	1400	350	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PCTP-17R(18-20)
Lab Sample ID: JC86406-8
Matrix: SO - Soil
Method: SW846 8260C
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/15/19
Date Received: 04/16/19
Percent Solids: 52.1

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	353	550	190	ug/kg	J
79-20-9	Methyl Acetate	2900	1400	380	ug/kg	
108-87-2	Methylcyclohexane	1210	550	190	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	270	97	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	1400	430	ug/kg	
75-09-2	Methylene chloride	ND	1400	690	ug/kg	
100-42-5	Styrene	ND	550	160	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	550	110	ug/kg	
127-18-4	Tetrachloroethene	ND	550	130	ug/kg	
108-88-3	Toluene	1070	270	100	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	1400	270	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	1400	270	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	550	120	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	550	94	ug/kg	
79-01-6	Trichloroethene	ND	270	210	ug/kg	
75-69-4	Trichlorofluoromethane	ND	1400	190	ug/kg	
75-01-4	Vinyl chloride	ND	550	130	ug/kg	
	m,p-Xylene	248	270	200	ug/kg	J
95-47-6	o-Xylene	173	270	160	ug/kg	J
1330-20-7	Xylene (total)	421	270	160	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	97%		75-127%
17060-07-0	1,2-Dichloroethane-D4	90%		75-130%
2037-26-5	Toluene-D8	101%		80-120%
460-00-4	4-Bromofluorobenzene	101%		79-127%

(a) Diluted due to high concentration of non-target compound.
(b) Associated CCV outside of control limits high, sample was ND.
(c) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS LabLink@1039014 11:13 10-May-2019

Report of Analysis

Client Sample ID: PCTP-17R(18-20)
Lab Sample ID: JC86406-8
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/15/19
Date Received: 04/16/19
Percent Solids: 52.1

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2P86741.D	1	04/19/19 03:22	CB	04/17/19 18:45	OP19810	E2P3831
Run #2							

	Initial Weight	Final Volume
Run #1	31.8 g	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	120	30	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	300	37	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	300	51	ug/kg	
105-67-9	2,4-Dimethylphenol [a]	ND	300	110	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	300	230	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	300	65	ug/kg	
95-48-7	2-Methylphenol	ND	120	39	ug/kg	
	3&4-Methylphenol	319	120	50	ug/kg	
88-75-5	2-Nitrophenol	ND	300	40	ug/kg	
100-02-7	4-Nitrophenol	ND	600	160	ug/kg	
87-86-5	Pentachlorophenol	ND	240	57	ug/kg	
108-95-2	Phenol	ND	120	32	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	300	40	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	300	45	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	300	36	ug/kg	
83-32-9	Acenaphthene	1760	60	21	ug/kg	
208-96-8	Acenaphthylene	237	60	31	ug/kg	
98-86-2	Acetophenone	ND	300	13	ug/kg	
120-12-7	Anthracene	919	60	37	ug/kg	
1912-24-9	Atrazine	ND	120	26	ug/kg	
56-55-3	Benzo(a)anthracene	884	60	17	ug/kg	
50-32-8	Benzo(a)pyrene	799	60	27	ug/kg	
205-99-2	Benzo(b)fluoranthene	809	60	27	ug/kg	
191-24-2	Benzo(g,h,i)perylene	354	60	30	ug/kg	
207-08-9	Benzo(k)fluoranthene	259	60	28	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	120	23	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	120	15	ug/kg	
92-52-4	1,1'-Biphenyl	79.3	120	8.3	ug/kg	J
100-52-7	Benzaldehyde	ND	300	15	ug/kg	
91-58-7	2-Chloronaphthalene	ND	120	14	ug/kg	
106-47-8	4-Chloroaniline	ND	300	22	ug/kg	
86-74-8	Carbazole	42.0	120	8.8	ug/kg	J

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PCTP-17R(18-20)
Lab Sample ID: JC86406-8
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/15/19
Date Received: 04/16/19
Percent Solids: 52.1

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	120	24	ug/kg	
218-01-9	Chrysene	1250	60	19	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	120	13	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	120	26	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	120	22	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	120	20	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	60	19	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	60	30	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	120	50	ug/kg	
123-91-1	1,4-Dioxane	ND	60	40	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	97.6	60	27	ug/kg	
132-64-9	Dibenzofuran	197	120	25	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	120	9.8	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	120	15	ug/kg	
84-66-2	Diethyl phthalate	ND	120	13	ug/kg	
131-11-3	Dimethyl phthalate	ND	120	11	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	120	14	ug/kg	
206-44-0	Fluoranthene	2190	60	27	ug/kg	
86-73-7	Fluorene	ND	60	28	ug/kg	
118-74-1	Hexachlorobenzene	ND	120	15	ug/kg	
87-68-3	Hexachlorobutadiene	ND	60	24	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	600	24	ug/kg	
67-72-1	Hexachloroethane	ND	300	30	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	269	60	28	ug/kg	
78-59-1	Isophorone	ND	120	13	ug/kg	
91-57-6	2-Methylnaphthalene	467	60	14	ug/kg	
88-74-4	2-Nitroaniline	ND	300	14	ug/kg	
99-09-2	3-Nitroaniline	ND	300	15	ug/kg	
100-01-6	4-Nitroaniline	ND	300	16	ug/kg	
91-20-3	Naphthalene	991	60	17	ug/kg	
98-95-3	Nitrobenzene	ND	120	23	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	120	17	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	300	22	ug/kg	
85-01-8	Phenanthrene	4230	60	20	ug/kg	
129-00-0	Pyrene	2390	60	19	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	300	15	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	56%		23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCTP-17R(18-20)		
Lab Sample ID:	JC86406-8	**Date Sampled:**	04/15/19
Matrix:	SO - Soil	**Date Received:**	04/16/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	52.1
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	64%		27-114%
118-79-6	2,4,6-Tribromophenol	68%		19-152%
4165-60-0	Nitrobenzene-d5	79%		26-134%
321-60-8	2-Fluorobiphenyl	81%		39-124%
1718-51-0	Terphenyl-d14	72%		36-134%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PCTP-17R(24-25)		
Lab Sample ID:	JC86406-9	**Date Sampled:**	04/15/19
Matrix:	SO - Soil	**Date Received:**	04/16/19
Method:	SW846 8260C	**Percent Solids:**	52.7
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Y184762.D	1	04/26/19 11:53	EH	n/a	n/a	VY8016
Run #2							

	Initial Weight
Run #1	3.2 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	495	30	15	ug/kg	
71-43-2	Benzene	ND	1.5	1.1	ug/kg	
74-97-5	Bromochloromethane	ND	15	1.3	ug/kg	
75-27-4	Bromodichloromethane	ND	5.9	1.3	ug/kg	
75-25-2	Bromoform	ND	15	1.2	ug/kg	
74-83-9	Bromomethane	ND	15	3.0	ug/kg	
78-93-3	2-Butanone (MEK)	117	30	11	ug/kg	
75-15-0	Carbon disulfide	5.0	5.9	2.8	ug/kg	J
56-23-5	Carbon tetrachloride	ND	5.9	1.6	ug/kg	
108-90-7	Chlorobenzene	ND	5.9	1.0	ug/kg	
75-00-3	Chloroethane	ND	15	2.0	ug/kg	
67-66-3	Chloroform	ND	5.9	1.1	ug/kg	
74-87-3	Chloromethane	ND	15	5.8	ug/kg	
110-82-7	Cyclohexane	ND	5.9	1.2	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.9	2.5	ug/kg	
124-48-1	Dibromochloromethane	ND	5.9	1.0	ug/kg	
106-93-4	1,2-Dibromoethane	ND	3.0	0.96	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	3.0	0.90	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	3.0	1.1	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	3.0	1.0	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	15	1.9	ug/kg	
75-34-3	1,1-Dichloroethane	ND	3.0	1.1	ug/kg	
107-06-2	1,2-Dichloroethane	ND	3.0	1.4	ug/kg	
75-35-4	1,1-Dichloroethene	ND	3.0	1.9	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	3.0	2.8	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	3.0	2.0	ug/kg	
78-87-5	1,2-Dichloropropane	ND	5.9	1.2	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	5.9	1.0	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	5.9	0.97	ug/kg	
100-41-4	Ethylbenzene	ND	3.0	1.6	ug/kg	
76-13-1	Freon 113 [a]	ND	15	2.3	ug/kg	
591-78-6	2-Hexanone	ND	15	3.8	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCTP-17R(24-25)		
Lab Sample ID:	JC86406-9	**Date Sampled:**	04/15/19
Matrix:	SO - Soil	**Date Received:**	04/16/19
Method:	SW846 8260C	**Percent Solids:**	52.7
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	5.9	2.1	ug/kg	
79-20-9	Methyl Acetate	ND	15	4.1	ug/kg	
108-87-2	Methylcyclohexane	5.3	5.9	2.1	ug/kg	J
1634-04-4	Methyl Tert Butyl Ether	ND	3.0	1.0	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	15	4.6	ug/kg	
75-09-2	Methylene chloride	ND	15	7.4	ug/kg	
100-42-5	Styrene	ND	5.9	1.7	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane [b]	ND	5.9	1.2	ug/kg	UJ
127-18-4	Tetrachloroethene	ND	5.9	1.4	ug/kg	
108-88-3	Toluene	ND	3.0	1.1	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	15	3.0	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	15	3.0	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	5.9	1.3	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	5.9	1.0	ug/kg	
79-01-6	Trichloroethene	ND	3.0	2.3	ug/kg	
75-69-4	Trichlorofluoromethane	ND	15	2.0	ug/kg	
75-01-4	Vinyl chloride	ND	5.9	1.4	ug/kg	
	m,p-Xylene	ND	3.0	2.2	ug/kg	
95-47-6	o-Xylene	ND	3.0	1.7	ug/kg	
1330-20-7	Xylene (total)	ND	3.0	1.7	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	115%		75-127%
17060-07-0	1,2-Dichloroethane-D4	102%		75-130%
2037-26-5	Toluene-D8	87%		80-120%
460-00-4	4-Bromofluorobenzene	98%		79-127%

(a) Associated CCV outside of control limits high, sample was ND.
(b) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PCTP-17R(24-25)		
Lab Sample ID:	JC86406-9	**Date Sampled:**	04/15/19
Matrix:	SO - Soil	**Date Received:**	04/16/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	52.7
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2P86734.D	1	04/19/19 00:48	CB	04/17/19 18:45	OP19810	E2P3831
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	130	31	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	320	39	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	320	54	ug/kg	
105-67-9	2,4-Dimethylphenol [a]	ND	320	110	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	320	240	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	320	68	ug/kg	
95-48-7	2-Methylphenol	ND	130	40	ug/kg	
	3&4-Methylphenol	ND	130	52	ug/kg	
88-75-5	2-Nitrophenol	ND	320	42	ug/kg	
100-02-7	4-Nitrophenol	ND	630	170	ug/kg	
87-86-5	Pentachlorophenol	ND	250	59	ug/kg	
108-95-2	Phenol	ND	130	33	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	320	42	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	320	47	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	320	38	ug/kg	
83-32-9	Acenaphthene	105	63	22	ug/kg	
208-96-8	Acenaphthylene	ND	63	32	ug/kg	
98-86-2	Acetophenone	ND	320	14	ug/kg	
120-12-7	Anthracene	55.9	63	39	ug/kg	J
1912-24-9	Atrazine	ND	130	27	ug/kg	
56-55-3	Benzo(a)anthracene	31.4	63	18	ug/kg	J
50-32-8	Benzo(a)pyrene	ND	63	29	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	63	28	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	63	32	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	63	30	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	130	24	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	130	15	ug/kg	
92-52-4	1,1'-Biphenyl	17.0	130	8.7	ug/kg	J
100-52-7	Benzaldehyde	ND	320	16	ug/kg	
91-58-7	2-Chloronaphthalene	ND	130	15	ug/kg	
106-47-8	4-Chloroaniline	ND	320	23	ug/kg	
86-74-8	Carbazole	21.8	130	9.2	ug/kg	J

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PCTP-17R(24-25)
Lab Sample ID: JC86406-9
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/15/19
Date Received: 04/16/19
Percent Solids: 52.7

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	130	25	ug/kg	
218-01-9	Chrysene	31.4	63	20	ug/kg	J
111-91-1	bis(2-Chloroethoxy)methane	ND	130	14	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	130	27	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	130	23	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	130	20	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	63	20	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	63	32	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	130	53	ug/kg	
123-91-1	1,4-Dioxane	ND	63	42	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	63	28	ug/kg	
132-64-9	Dibenzofuran	41.7	130	26	ug/kg	J
84-74-2	Di-n-butyl phthalate	ND	130	10	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	130	16	ug/kg	
84-66-2	Diethyl phthalate	ND	130	13	ug/kg	
131-11-3	Dimethyl phthalate	ND	130	11	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	130	15	ug/kg	
206-44-0	Fluoranthene	67.1	63	28	ug/kg	
86-73-7	Fluorene	76.2	63	29	ug/kg	
118-74-1	Hexachlorobenzene	ND	130	16	ug/kg	
87-68-3	Hexachlorobutadiene	ND	63	25	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	630	25	ug/kg	
67-72-1	Hexachloroethane	ND	320	31	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	63	30	ug/kg	
78-59-1	Isophorone	ND	130	14	ug/kg	
91-57-6	2-Methylnaphthalene	74.2	63	14	ug/kg	
88-74-4	2-Nitroaniline	ND	320	15	ug/kg	
99-09-2	3-Nitroaniline	ND	320	16	ug/kg	
100-01-6	4-Nitroaniline	ND	320	16	ug/kg	
91-20-3	Naphthalene	149	63	18	ug/kg	
98-95-3	Nitrobenzene	ND	130	24	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	130	18	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	320	23	ug/kg	
85-01-8	Phenanthrene	232	63	21	ug/kg	
129-00-0	Pyrene	68.0	63	20	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	320	16	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	60%		23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCTP-17R(24-25)		
Lab Sample ID:	JC86406-9	**Date Sampled:**	04/15/19
Matrix:	SO - Soil	**Date Received:**	04/16/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	52.7
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	69%		27-114%
118-79-6	2,4,6-Tribromophenol	55%		19-152%
4165-60-0	Nitrobenzene-d5	80%		26-134%
321-60-8	2-Fluorobiphenyl	80%		39-124%
1718-51-0	Terphenyl-d14	71%		36-134%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	S-114(2-4)		
Lab Sample ID:	JC86406-10	**Date Sampled:**	04/15/19
Matrix:	SO - Soil	**Date Received:**	04/16/19
Method:	SW846 8260C	**Percent Solids:**	83.0
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3V44288.D	1	04/24/19 14:12	RS	n/a	n/a	V3V1778
Run #2							

	Initial Weight
Run #1	5.1 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	28.1	12	5.9	ug/kg	
71-43-2	Benzene	ND	0.59	0.45	ug/kg	
74-97-5	Bromochloromethane	ND	5.9	0.51	ug/kg	
75-27-4	Bromodichloromethane	ND	2.4	0.52	ug/kg	
75-25-2	Bromoform	ND	5.9	0.48	ug/kg	
74-83-9	Bromomethane	ND	5.9	1.2	ug/kg	
78-93-3	2-Butanone (MEK)	ND	12	4.4	ug/kg	
75-15-0	Carbon disulfide	ND	2.4	1.1	ug/kg	
56-23-5	Carbon tetrachloride	ND	2.4	0.65	ug/kg	
108-90-7	Chlorobenzene	ND	2.4	0.42	ug/kg	
75-00-3	Chloroethane	ND	5.9	0.81	ug/kg	
67-66-3	Chloroform	ND	2.4	0.44	ug/kg	
74-87-3	Chloromethane	ND	5.9	2.3	ug/kg	
110-82-7	Cyclohexane [a]	ND	2.4	0.48	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.4	0.99	ug/kg	
124-48-1	Dibromochloromethane	ND	2.4	0.40	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.2	0.38	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.2	0.36	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.2	0.42	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.2	0.41	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	5.9	0.75	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.2	0.45	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.2	0.56	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.2	0.77	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.2	1.1	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.2	0.79	ug/kg	
78-87-5	1,2-Dichloropropane	ND	2.4	0.48	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	2.4	0.42	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2.4	0.39	ug/kg	
100-41-4	Ethylbenzene	ND	1.2	0.65	ug/kg	
76-13-1	Freon 113	ND	5.9	0.90	ug/kg	
591-78-6	2-Hexanone	ND	5.9	1.5	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-114(2-4)		
Lab Sample ID:	JC86406-10	**Date Sampled:**	04/15/19
Matrix:	SO - Soil	**Date Received:**	04/16/19
Method:	SW846 8260C	**Percent Solids:**	83.0
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	2.4	0.82	ug/kg	
79-20-9	Methyl Acetate	ND	5.9	1.6	ug/kg	
108-87-2	Methylcyclohexane [a]	ND	2.4	0.84	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.2	0.42	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.9	1.8	ug/kg	
75-09-2	Methylene chloride	ND	5.9	3.0	ug/kg	
100-42-5	Styrene	ND	2.4	0.68	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.4	0.46	ug/kg	
127-18-4	Tetrachloroethene	ND	2.4	0.55	ug/kg	
108-88-3	Toluene	ND	1.2	0.44	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	5.9	1.2	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	5.9	1.2	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	2.4	0.50	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2.4	0.40	ug/kg	
79-01-6	Trichloroethene	ND	1.2	0.90	ug/kg	
75-69-4	Trichlorofluoromethane	ND	5.9	0.80	ug/kg	
75-01-4	Vinyl chloride	ND	2.4	0.55	ug/kg	
	m,p-Xylene	ND	1.2	0.88	ug/kg	
95-47-6	o-Xylene	ND	1.2	0.69	ug/kg	
1330-20-7	Xylene (total)	ND	1.2	0.69	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		75-127%
17060-07-0	1,2-Dichloroethane-D4	104%		75-130%
2037-26-5	Toluene-D8	101%		80-120%
460-00-4	4-Bromofluorobenzene	105%		79-127%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
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N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	S-114(2-4)		
Lab Sample ID:	JC86406-10	**Date Sampled:**	04/15/19
Matrix:	SO - Soil	**Date Received:**	04/16/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	83.0
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M153649.D	1	04/21/19 08:16	CB	04/19/19 07:45	OP19854	EM6566
Run #2							

	Initial Weight	Final Volume
Run #1	31.8 g	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	76	19	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	190	23	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	190	32	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	190	67	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	190	140	ug/kg	
534-52-1	4,6-Dinitro-o-cresol [a]	ND	190	41	ug/kg	
95-48-7	2-Methylphenol	ND	76	24	ug/kg	
	3&4-Methylphenol	ND	76	31	ug/kg	
88-75-5	2-Nitrophenol	ND	190	25	ug/kg	
100-02-7	4-Nitrophenol	ND	380	100	ug/kg	
87-86-5	Pentachlorophenol [a]	ND	150	36	ug/kg	
108-95-2	Phenol	ND	76	20	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	190	25	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	190	28	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	190	23	ug/kg	
83-32-9	Acenaphthene	52.7	38	13	ug/kg	
208-96-8	Acenaphthylene	46.6	38	19	ug/kg	
98-86-2	Acetophenone	ND	190	8.1	ug/kg	
120-12-7	Anthracene	205	38	23	ug/kg	
1912-24-9	Atrazine	ND	76	16	ug/kg	
56-55-3	Benzo(a)anthracene	549	38	11	ug/kg	
50-32-8	Benzo(a)pyrene	565	38	17	ug/kg	
205-99-2	Benzo(b)fluoranthene	664	38	17	ug/kg	
191-24-2	Benzo(g,h,i)perylene	351	38	19	ug/kg	
207-08-9	Benzo(k)fluoranthene	228	38	18	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	76	15	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	76	9.2	ug/kg	
92-52-4	1,1'-Biphenyl 76	~~6.0~~	76	5.2	ug/kg	~~JB~~ UB
100-52-7	Benzaldehyde	ND	190	9.4	ug/kg	
91-58-7	2-Chloronaphthalene	ND	76	9.0	ug/kg	
106-47-8	4-Chloroaniline	ND	190	14	ug/kg	
86-74-8	Carbazole 76	~~45.4~~	76	5.5	ug/kg	~~JB~~ UB

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Report of Analysis

Client Sample ID:	S-114(2-4)		
Lab Sample ID:	JC86406-10	**Date Sampled:**	04/15/19
Matrix:	SO - Soil	**Date Received:**	04/16/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	83.0
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	76	15	ug/kg	
218-01-9	Chrysene	544	38	12	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	76	8.1	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	76	16	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	76	14	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	76	12	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	38	12	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	38	19	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	76	32	ug/kg	
123-91-1	1,4-Dioxane [b]	ND	38	25	ug/kg	UJ
53-70-3	Dibenzo(a,h)anthracene	78.6	38	17	ug/kg	
132-64-9	Dibenzofuran	25.8	76	15	ug/kg	J
84-74-2	Di-n-butyl phthalate	ND	76	6.2	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	76	9.4	ug/kg	
84-66-2	Diethyl phthalate	ND	76	8.1	ug/kg	
131-11-3	Dimethyl phthalate	ND	76	6.7	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	76	8.9	ug/kg	
206-44-0	Fluoranthene	1190	38	17	ug/kg	
86-73-7	Fluorene	58.0	38	17	ug/kg	
118-74-1	Hexachlorobenzene	ND	76	9.6	ug/kg	
87-68-3	Hexachlorobutadiene	ND	38	15	ug/kg	
77-47-4	Hexachlorocyclopentadiene [a]	ND	380	15	ug/kg	
67-72-1	Hexachloroethane	ND	190	19	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	341	38	18	ug/kg	
78-59-1	Isophorone	ND	76	8.1	ug/kg	
91-57-6	2-Methylnaphthalene	10.9	38	8.6	ug/kg	J
88-74-4	2-Nitroaniline	ND	190	8.9	ug/kg	
99-09-2	3-Nitroaniline	ND	190	9.5	ug/kg	
100-01-6	4-Nitroaniline	ND	190	9.8	ug/kg	
91-20-3	Naphthalene	19.7	38	11	ug/kg	J
98-95-3	Nitrobenzene	ND	76	15	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	76	11	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	190	14	ug/kg	
85-01-8	Phenanthrene	827	38	13	ug/kg	
129-00-0	Pyrene	1080	38	12	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	190	9.6	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	38%		23-115%

ND = Not detected MDL = Method Detection Limit
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N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-114(2-4)		
Lab Sample ID:	JC86406-10	**Date Sampled:**	04/15/19
Matrix:	SO - Soil	**Date Received:**	04/16/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	83.0
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	37%		27-114%
118-79-6	2,4,6-Tribromophenol	65%		19-152%
4165-60-0	Nitrobenzene-d5	45%		26-134%
321-60-8	2-Fluorobiphenyl	51%		39-124%
1718-51-0	Terphenyl-d14	50%		36-134%

(a) Associated CCV outside of control limits high, sample was ND.
(b) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	S-114(8-10)		
Lab Sample ID:	JC86406-11	**Date Sampled:**	04/15/19
Matrix:	SO - Soil	**Date Received:**	04/16/19
Method:	SW846 8260C	**Percent Solids:**	67.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3V44295.D	1	04/24/19 17:13	RS	n/a	n/a	V3V1778
Run #2							

	Initial Weight
Run #1	5.2 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	70.3	14	7.1	ug/kg	
71-43-2	Benzene	ND	0.71	0.54	ug/kg	
74-97-5	Bromochloromethane	ND	7.1	0.61	ug/kg	
75-27-4	Bromodichloromethane	ND	2.9	0.63	ug/kg	
75-25-2	Bromoform	ND	7.1	0.58	ug/kg	
74-83-9	Bromomethane	ND	7.1	1.4	ug/kg	
78-93-3	2-Butanone (MEK)	13.7	14	5.3	ug/kg	J
75-15-0	Carbon disulfide	ND	2.9	1.3	ug/kg	
56-23-5	Carbon tetrachloride	ND	2.9	0.79	ug/kg	
108-90-7	Chlorobenzene	ND	2.9	0.51	ug/kg	
75-00-3	Chloroethane	ND	7.1	0.98	ug/kg	
67-66-3	Chloroform	ND	2.9	0.53	ug/kg	
74-87-3	Chloromethane	ND	7.1	2.8	ug/kg	
110-82-7	Cyclohexane [a]	ND	2.9	0.58	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.9	1.2	ug/kg	
124-48-1	Dibromochloromethane	ND	2.9	0.48	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.4	0.46	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.4	0.44	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.4	0.51	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.4	0.49	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	7.1	0.91	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.4	0.55	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.4	0.67	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.4	0.94	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.4	1.4	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.4	0.95	ug/kg	
78-87-5	1,2-Dichloropropane	ND	2.9	0.58	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	2.9	0.50	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2.9	0.47	ug/kg	
100-41-4	Ethylbenzene	ND	1.4	0.79	ug/kg	
76-13-1	Freon 113	ND	7.1	1.1	ug/kg	
591-78-6	2-Hexanone	ND	7.1	1.8	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-114(8-10)		
Lab Sample ID:	JC86406-11	**Date Sampled:**	04/15/19
Matrix:	SO - Soil	**Date Received:**	04/16/19
Method:	SW846 8260C	**Percent Solids:**	67.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	2.9	1.0	ug/kg	
79-20-9	Methyl Acetate	ND	7.1	2.0	ug/kg	
108-87-2	Methylcyclohexane [a]	ND	2.9	1.0	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.4	0.50	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	7.1	2.2	ug/kg	
75-09-2	Methylene chloride	ND	7.1	3.6	ug/kg	
100-42-5	Styrene	ND	2.9	0.82	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.9	0.56	ug/kg	
127-18-4	Tetrachloroethene	ND	2.9	0.66	ug/kg	
108-88-3	Toluene	ND	1.4	0.54	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	7.1	1.4	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	7.1	1.4	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	2.9	0.61	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2.9	0.49	ug/kg	
79-01-6	Trichloroethene	ND	1.4	1.1	ug/kg	
75-69-4	Trichlorofluoromethane	ND	7.1	0.97	ug/kg	
75-01-4	Vinyl chloride	ND	2.9	0.67	ug/kg	
	m,p-Xylene	ND	1.4	1.1	ug/kg	
95-47-6	o-Xylene	ND	1.4	0.83	ug/kg	
1330-20-7	Xylene (total)	ND	1.4	0.83	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	109%		75-127%
17060-07-0	1,2-Dichloroethane-D4	105%		75-130%
2037-26-5	Toluene-D8	97%		80-120%
460-00-4	4-Bromofluorobenzene	99%		79-127%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	S-114(8-10)		
Lab Sample ID:	JC86406-11	**Date Sampled:**	04/15/19
Matrix:	SO - Soil	**Date Received:**	04/16/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	67.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2P86749.D	1	04/19/19 06:16	CB	04/17/19 18:45	OP19810	E2P3831
Run #2	Z137309.D	20	04/26/19 20:39	AR	04/17/19 18:45	OP19810	EZ6764

	Initial Weight	Final Volume
Run #1	30.7 g	1.0 ml
Run #2	30.7 g	1.0 ml

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	97	24	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	240	30	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	240	41	ug/kg	
105-67-9	2,4-Dimethylphenol [a]	ND	240	86	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	240	180	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	240	52	ug/kg	
95-48-7	2-Methylphenol	ND	97	31	ug/kg	
	3&4-Methylphenol	152	97	40	ug/kg	
88-75-5	2-Nitrophenol	ND	240	32	ug/kg	
100-02-7	4-Nitrophenol	ND	480	130	ug/kg	
87-86-5	Pentachlorophenol	ND	190	45	ug/kg	
108-95-2	Phenol	ND	97	25	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	240	32	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	240	36	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	240	29	ug/kg	
83-32-9	Acenaphthene	17200 [b]	970	330	ug/kg	D
208-96-8	Acenaphthylene	10500 [b]	970	490	ug/kg	D
98-86-2	Acetophenone	ND	240	10	ug/kg	
120-12-7	Anthracene	23200 [b]	970	590	ug/kg	D
1912-24-9	Atrazine	ND	97	21	ug/kg	
56-55-3	Benzo(a)anthracene	25900 [b]	970	270	ug/kg	D
50-32-8	Benzo(a)pyrene	23700 [b]	970	440	ug/kg	D
205-99-2	Benzo(b)fluoranthene	24900 [b]	970	430	ug/kg	D
191-24-2	Benzo(g,h,i)perylene	13600 [b]	970	480	ug/kg	D
207-08-9	Benzo(k)fluoranthene	9920 [b]	970	450	ug/kg	D
101-55-3	4-Bromophenyl phenyl ether	ND	97	19	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	97	12	ug/kg	
92-52-4	1,1'-Biphenyl	525	97	6.6	ug/kg	
100-52-7	Benzaldehyde	ND	240	12	ug/kg	
91-58-7	2-Chloronaphthalene	ND	97	12	ug/kg	
106-47-8	4-Chloroaniline	ND	240	17	ug/kg	
86-74-8	Carbazole	6910 [b]	1900	140	ug/kg	D

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N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-114(8-10)		
Lab Sample ID:	JC86406-11	**Date Sampled:**	04/15/19
Matrix:	SO - Soil	**Date Received:**	04/16/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	67.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	97	19	ug/kg	
218-01-9	Chrysene	22500 b	970	300	ug/kg	D
111-91-1	bis(2-Chloroethoxy)methane	ND	97	10	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	97	21	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	97	17	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	97	16	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	48	15	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	48	24	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	97	40	ug/kg	
123-91-1	1,4-Dioxane	ND	48	32	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	2280	48	21	ug/kg	
132-64-9	Dibenzofuran	13600 b	1900	390	ug/kg	D
84-74-2	Di-n-butyl phthalate	ND	97	7.9	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	97	12	ug/kg	
84-66-2	Diethyl phthalate	ND	97	10	ug/kg	
131-11-3	Dimethyl phthalate	ND	97	8.6	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	97	11	ug/kg	
206-44-0	Fluoranthene	72700 b	970	430	ug/kg	D
86-73-7	Fluorene	24700 b	970	440	ug/kg	D
118-74-1	Hexachlorobenzene	ND	97	12	ug/kg	
87-68-3	Hexachlorobutadiene	ND	48	19	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	480	19	ug/kg	
67-72-1	Hexachloroethane	ND	240	24	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	14800 b	970	450	ug/kg	D
78-59-1	Isophorone	ND	97	10	ug/kg	
91-57-6	2-Methylnaphthalene	327	48	11	ug/kg	
88-74-4	2-Nitroaniline	ND	240	11	ug/kg	
99-09-2	3-Nitroaniline	ND	240	12	ug/kg	
100-01-6	4-Nitroaniline	ND	240	13	ug/kg	
91-20-3	Naphthalene	1180	48	14	ug/kg	
98-95-3	Nitrobenzene	ND	97	19	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	97	14	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	240	18	ug/kg	
85-01-8	Phenanthrene	39700 b	970	330	ug/kg	D
129-00-0	Pyrene	56400 b	970	310	ug/kg	D
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	240	12	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	49%	44%	23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-114(8-10)		
Lab Sample ID:	JC86406-11	**Date Sampled:**	04/15/19
Matrix:	SO - Soil	**Date Received:**	04/16/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	67.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	51%	53%	27-114%
118-79-6	2,4,6-Tribromophenol	72%	0% [c]	19-152%
4165-60-0	Nitrobenzene-d5	62%	58%	26-134%
321-60-8	2-Fluorobiphenyl	71%	71%	39-124%
1718-51-0	Terphenyl-d14	56%	79%	36-134%

(a) Associated CCV outside of control limits high, sample was ND.
(b) Result is from Run# 2
(c) Outside control limits due to dilution.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID: S-114(14-15)
Lab Sample ID: JC86406-12
Matrix: SO - Soil
Method: SW846 8260C
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/15/19
Date Received: 04/16/19
Percent Solids: 72.1

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	D264078.D	1	04/26/19 15:01	JTP	n/a	n/a	VD10644
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	3.2 g	10.0 ml	10.0 ul
Run #2			

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	24000	12000	ug/kg	
71-43-2	Benzene	20800	1200	890	ug/kg	
74-97-5	Bromochloromethane	ND	12000	1000	ug/kg	
75-27-4	Bromodichloromethane	ND	4700	1000	ug/kg	
75-25-2	Bromoform	ND	12000	950	ug/kg	
74-83-9	Bromomethane	ND	12000	2400	ug/kg	
78-93-3	2-Butanone (MEK)	ND	24000	8800	ug/kg	
75-15-0	Carbon disulfide	5260	4700	2200	ug/kg	
56-23-5	Carbon tetrachloride	ND	4700	1300	ug/kg	
108-90-7	Chlorobenzene	ND	4700	840	ug/kg	
75-00-3	Chloroethane	ND	12000	1600	ug/kg	
67-66-3	Chloroform	ND	4700	880	ug/kg	
74-87-3	Chloromethane	ND	12000	4600	ug/kg	
110-82-7	Cyclohexane	ND	4700	960	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	4700	2000	ug/kg	
124-48-1	Dibromochloromethane	ND	4700	800	ug/kg	
106-93-4	1,2-Dibromoethane [b]	ND	2400	770	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	2400	720	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	2400	850	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	2400	810	ug/kg	
75-71-8	Dichlorodifluoromethane [c]	ND	12000	1500	ug/kg	UJ
75-34-3	1,1-Dichloroethane	ND	2400	910	ug/kg	
107-06-2	1,2-Dichloroethane [c]	ND	2400	1100	ug/kg	UJ
75-35-4	1,1-Dichloroethene	ND	2400	1500	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	2400	2300	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	2400	1600	ug/kg	
78-87-5	1,2-Dichloropropane	ND	4700	960	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	4700	830	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	4700	770	ug/kg	
100-41-4	Ethylbenzene	1950	2400	1300	ug/kg	J
76-13-1	Freon 113	ND	12000	1800	ug/kg	
591-78-6	2-Hexanone	ND	12000	3000	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-114(14-15)		
Lab Sample ID:	JC86406-12	**Date Sampled:**	04/15/19
Matrix:	SO - Soil	**Date Received:**	04/16/19
Method:	SW846 8260C	**Percent Solids:**	72.1
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	4700	1600	ug/kg	
79-20-9	Methyl Acetate	ND	12000	3300	ug/kg	
108-87-2	Methylcyclohexane	ND	4700	1700	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	2400	830	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	12000	3700	ug/kg	
75-09-2	Methylene chloride	ND	12000	5900	ug/kg	
100-42-5	Styrene	5570	4700	1400	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	4700	920	ug/kg	
127-18-4	Tetrachloroethene	ND	4700	1100	ug/kg	
108-88-3	Toluene	26600	2400	890	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	12000	2400	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	12000	2400	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	4700	1000	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	4700	810	ug/kg	
79-01-6	Trichloroethene	ND	2400	1800	ug/kg	
75-69-4	Trichlorofluoromethane	ND	12000	1600	ug/kg	
75-01-4	Vinyl chloride	ND	4700	1100	ug/kg	
	m,p-Xylene	37000	2400	1800	ug/kg	
95-47-6	o-Xylene	12400	2400	1400	ug/kg	
1330-20-7	Xylene (total)	49400	2400	1400	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	97%		75-127%
17060-07-0	1,2-Dichloroethane-D4	90%		75-130%
2037-26-5	Toluene-D8	97%		80-120%
460-00-4	4-Bromofluorobenzene	92%		79-127%

(a) Diluted due to high concentration of non-target compound.
(b) This compound in BS is outside in house QC limits bias high.
(c) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	S-114(14-15)		
Lab Sample ID:	JC86406-12	**Date Sampled:**	04/15/19
Matrix:	SO - Soil	**Date Received:**	04/16/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	72.1
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	2P86776.D	10	04/22/19 21:22	YC	04/17/19 18:45	OP19810	E2P3832
Run #2	2P86919.D	100	04/27/19 08:16	CS	04/17/19 18:45	OP19810	E2P3839
Run #3	2P86913.D	1000	04/27/19 06:09	CS	04/17/19 18:45	OP19810	E2P3839

	Initial Weight	Final Volume
Run #1	32.0 g	1.0 ml
Run #2	32.0 g	1.0 ml
Run #3	32.0 g	1.0 ml

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	870	210	ug/kg	
59-50-7	4-Chloro-3-methyl phenol [b]	ND	2200	270	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	2200	370	ug/kg	
105-67-9	2,4-Dimethylphenol [c]	10700	2200	770	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	2200	1600	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	2200	460	ug/kg	
95-48-7	2-Methylphenol	818	870	280	ug/kg	J
	3&4-Methylphenol	1750	870	360	ug/kg	
88-75-5	2-Nitrophenol	ND	2200	290	ug/kg	
100-02-7	4-Nitrophenol	ND	4300	1200	ug/kg	
87-86-5	Pentachlorophenol	ND	1700	410	ug/kg	
108-95-2	Phenol	771	870	230	ug/kg	J
58-90-2	2,3,4,6-Tetrachlorophenol	ND	2200	290	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	2200	320	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	2200	260	ug/kg	
83-32-9	Acenaphthene	253000 [d]	4300	1500	ug/kg	D
208-96-8	Acenaphthylene	425000 [d]	4300	2200	ug/kg	D
98-86-2	Acetophenone	ND	2200	93	ug/kg	
120-12-7	Anthracene	580000 [e]	43000	27000	ug/kg	D
1912-24-9	Atrazine	ND	870	190	ug/kg	
56-55-3	Benzo(a)anthracene	428000 [e]	43000	12000	ug/kg	D
50-32-8	Benzo(a)pyrene	396000 [d]	4300	2000	ug/kg	D
205-99-2	Benzo(b)fluoranthene	430000 [e]	43000	19000	ug/kg	D
191-24-2	Benzo(g,h,i)perylene	188000 [d]	4300	2200	ug/kg	D
207-08-9	Benzo(k)fluoranthene	172000 [e]	43000	20000	ug/kg	D
101-55-3	4-Bromophenyl phenyl ether	ND	870	170	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	870	110	ug/kg	
92-52-4	1,1'-Biphenyl	132000 [d]	8700	590	ug/kg	D
100-52-7	Benzaldehyde	ND	2200	110	ug/kg	
91-58-7	2-Chloronaphthalene	ND	870	100	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-114(14-15)		
Lab Sample ID:	JC86406-12	**Date Sampled:**	04/15/19
Matrix:	SO - Soil	**Date Received:**	04/16/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	72.1
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
106-47-8	4-Chloroaniline	ND	2200	160	ug/kg	
86-74-8	Carbazole	277000 [d]	8700	630	ug/kg	D
105-60-2	Caprolactam	ND	870	170	ug/kg	
218-01-9	Chrysene	435000 [e]	43000	14000	ug/kg	D
111-91-1	bis(2-Chloroethoxy)methane	ND	870	93	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	870	190	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	870	160	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	870	140	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	430	130	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	430	220	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	870	360	ug/kg	
123-91-1	1,4-Dioxane	ND	430	290	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	61300 [d]	4300	1900	ug/kg	D
132-64-9	Dibenzofuran	546000 [e]	87000	18000	ug/kg	D
84-74-2	Di-n-butyl phthalate	ND	870	71	ug/kg	
117-84-0	Di-n-octyl phthalate [b]	ND	870	110	ug/kg	
84-66-2	Diethyl phthalate	ND	870	92	ug/kg	
131-11-3	Dimethyl phthalate	ND	870	77	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate [b]	ND	870	100	ug/kg	
206-44-0	Fluoranthene	1210000 [e]	43000	19000	ug/kg	D
86-73-7	Fluorene	821000 [e]	43000	20000	ug/kg	D
118-74-1	Hexachlorobenzene	ND	870	110	ug/kg	
87-68-3	Hexachlorobutadiene	ND	430	170	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	4300	170	ug/kg	
67-72-1	Hexachloroethane	ND	2200	210	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	180000 [d]	4300	2000	ug/kg	D
78-59-1	Isophorone	ND	870	93	ug/kg	
91-57-6	2-Methylnaphthalene	499000 [e]	43000	9800	ug/kg	D
88-74-4	2-Nitroaniline	ND	2200	100	ug/kg	
99-09-2	3-Nitroaniline	ND	2200	110	ug/kg	
100-01-6	4-Nitroaniline	ND	2200	110	ug/kg	
91-20-3	Naphthalene	3010000 [e]	43000	12000	ug/kg	D
98-95-3	Nitrobenzene	ND	870	170	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	870	130	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	2200	160	ug/kg	
85-01-8	Phenanthrene	2340000 [e]	43000	15000	ug/kg	D
129-00-0	Pyrene	859000 [e]	43000	14000	ug/kg	D
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	2200	110	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-114(14-15)		
Lab Sample ID:	JC86406-12	**Date Sampled:**	04/15/19
Matrix:	SO - Soil	**Date Received:**	04/16/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	72.1
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Run# 3	Limits
367-12-4	2-Fluorophenol	51%	27%	0% f	23-115%
4165-62-2	Phenol-d5	66%	35%	0% f	27-114%
118-79-6	2,4,6-Tribromophenol	112%	42%	0% f	19-152%
4165-60-0	Nitrobenzene-d5	198% g	61%	0% f	26-134%
321-60-8	2-Fluorobiphenyl	62%	70%	0% f	39-124%
1718-51-0	Terphenyl-d14	70%	61%	0% f	36-134%

(a) Dilution required due to viscosity of the extract matrix.
(b) Associated CCV outside of control limits high, sample was ND.
(c) Associated CCV outside of control limits high. Estimated value, due to corresponding internal standard failing low.
(d) Result is from Run# 2
(e) Result is from Run# 3
(f) Outside control limits due to dilution.
(g) Outside control limits due to matrix interference.

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Report of Analysis

Client Sample ID:	S-114(23-25)		
Lab Sample ID:	JC86406-13	**Date Sampled:**	04/15/19
Matrix:	SO - Soil	**Date Received:**	04/16/19
Method:	SW846 8260C	**Percent Solids:**	59.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Y184769.D	1	04/26/19 15:13	EH	n/a	n/a	VY8016
Run #2							

	Initial Weight
Run #1	4.9 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	213	17	8.6	ug/kg	
71-43-2	Benzene	0.84	0.86	0.65	ug/kg	J
74-97-5	Bromochloromethane	ND	8.6	0.74	ug/kg	
75-27-4	Bromodichloromethane	ND	3.4	0.76	ug/kg	
75-25-2	Bromoform	ND	8.6	0.69	ug/kg	
74-83-9	Bromomethane	ND	8.6	1.7	ug/kg	
78-93-3	2-Butanone (MEK)	62.6	17	6.4	ug/kg	
75-15-0	Carbon disulfide	5.6	3.4	1.6	ug/kg	
56-23-5	Carbon tetrachloride	ND	3.4	0.95	ug/kg	
108-90-7	Chlorobenzene	ND	3.4	0.61	ug/kg	
75-00-3	Chloroethane	ND	8.6	1.2	ug/kg	
67-66-3	Chloroform	ND	3.4	0.64	ug/kg	
74-87-3	Chloromethane	ND	8.6	3.4	ug/kg	
110-82-7	Cyclohexane	ND	3.4	0.70	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	3.4	1.4	ug/kg	
124-48-1	Dibromochloromethane	ND	3.4	0.58	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.7	0.56	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.7	0.53	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.7	0.62	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.7	0.59	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	8.6	1.1	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.7	0.66	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.7	0.81	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.7	1.1	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.7	1.6	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.7	1.1	ug/kg	
78-87-5	1,2-Dichloropropane	ND	3.4	0.70	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	3.4	0.61	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	3.4	0.56	ug/kg	
100-41-4	Ethylbenzene	ND	1.7	0.95	ug/kg	
76-13-1	Freon 113 [a]	ND	8.6	1.3	ug/kg	
591-78-6	2-Hexanone	ND	8.6	2.2	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-114(23-25)		
Lab Sample ID:	JC86406-13	**Date Sampled:**	04/15/19
Matrix:	SO - Soil	**Date Received:**	04/16/19
Method:	SW846 8260C	**Percent Solids:**	59.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	2.5	3.4	1.2	ug/kg	J
79-20-9	Methyl Acetate	ND	8.6	2.4	ug/kg	
108-87-2	Methylcyclohexane	2.3	3.4	1.2	ug/kg	J
1634-04-4	Methyl Tert Butyl Ether	ND	1.7	0.61	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	8.6	2.7	ug/kg	
75-09-2	Methylene chloride	ND	8.6	4.3	ug/kg	
100-42-5	Styrene	ND	3.4	0.99	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane [b]	ND	3.4	0.67	ug/kg	UJ
127-18-4	Tetrachloroethene	ND	3.4	0.80	ug/kg	
108-88-3	Toluene	1.5	1.7	0.65	ug/kg	J
87-61-6	1,2,3-Trichlorobenzene	ND	8.6	1.7	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	8.6	1.7	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	3.4	0.73	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	3.4	0.59	ug/kg	
79-01-6	Trichloroethene	ND	1.7	1.3	ug/kg	
75-69-4	Trichlorofluoromethane	ND	8.6	1.2	ug/kg	
75-01-4	Vinyl chloride	ND	3.4	0.81	ug/kg	
	m,p-Xylene	ND	1.7	1.3	ug/kg	
95-47-6	o-Xylene	1.3	1.7	1.0	ug/kg	J
1330-20-7	Xylene (total)	1.3	1.7	1.0	ug/kg	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	120%		75-127%
17060-07-0	1,2-Dichloroethane-D4	100%		75-130%
2037-26-5	Toluene-D8	87%		80-120%
460-00-4	4-Bromofluorobenzene	97%		79-127%

(a) Associated CCV outside of control limits high, sample was ND.
(b) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS LabLink@1039014 11:13 10-May-2019

Report of Analysis

Client Sample ID:	S-114(23-25)		
Lab Sample ID:	JC86406-13	**Date Sampled:**	04/15/19
Matrix:	SO - Soil	**Date Received:**	04/16/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	59.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2P86735.D	1	04/19/19 01:10	CB	04/17/19 18:45	OP19810	E2P3831
Run #2							

	Initial Weight	Final Volume
Run #1	31.4 g	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	110	27	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	270	33	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	270	46	ug/kg	
105-67-9	2,4-Dimethylphenol [a]	ND	270	96	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	270	200	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	270	58	ug/kg	
95-48-7	2-Methylphenol	ND	110	34	ug/kg	
	3&4-Methylphenol	909	110	44	ug/kg	
88-75-5	2-Nitrophenol	ND	270	36	ug/kg	
100-02-7	4-Nitrophenol	ND	540	140	ug/kg	
87-86-5	Pentachlorophenol	ND	220	51	ug/kg	
108-95-2	Phenol	223	110	28	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	270	36	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	270	40	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	270	32	ug/kg	
83-32-9	Acenaphthene	ND	54	19	ug/kg	
208-96-8	Acenaphthylene	ND	54	27	ug/kg	
98-86-2	Acetophenone	ND	270	12	ug/kg	
120-12-7	Anthracene	ND	54	33	ug/kg	
1912-24-9	Atrazine	ND	110	23	ug/kg	
56-55-3	Benzo(a)anthracene	15.9	54	15	ug/kg	J
50-32-8	Benzo(a)pyrene	ND	54	24	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	54	24	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	54	27	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	54	25	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	110	21	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	110	13	ug/kg	
92-52-4	1,1'-Biphenyl	ND	110	7.4	ug/kg	
100-52-7	Benzaldehyde	103	270	13	ug/kg	J
91-58-7	2-Chloronaphthalene	ND	110	13	ug/kg	
106-47-8	4-Chloroaniline	ND	270	19	ug/kg	
86-74-8	Carbazole	ND	110	7.8	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-114(23-25)
Lab Sample ID: JC86406-13
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/15/19
Date Received: 04/16/19
Percent Solids: 59.2

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	110	21	ug/kg	
218-01-9	Chrysene	ND	54	17	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	110	12	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	110	23	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	110	19	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	110	17	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	54	17	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	54	27	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	110	45	ug/kg	
123-91-1	1,4-Dioxane	ND	54	36	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	54	24	ug/kg	
132-64-9	Dibenzofuran	ND	110	22	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	110	8.8	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	110	13	ug/kg	
84-66-2	Diethyl phthalate	ND	110	11	ug/kg	
131-11-3	Dimethyl phthalate	ND	110	9.6	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	110	13	ug/kg	
206-44-0	Fluoranthene	27.2	54	24	ug/kg	J
86-73-7	Fluorene	32.5	54	25	ug/kg	J
118-74-1	Hexachlorobenzene	ND	110	14	ug/kg	
87-68-3	Hexachlorobutadiene	ND	54	22	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	540	21	ug/kg	
67-72-1	Hexachloroethane	ND	270	27	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	54	25	ug/kg	
78-59-1	Isophorone	ND	110	12	ug/kg	
91-57-6	2-Methylnaphthalene	23.4	54	12	ug/kg	J
88-74-4	2-Nitroaniline	ND	270	13	ug/kg	
99-09-2	3-Nitroaniline	ND	270	13	ug/kg	
100-01-6	4-Nitroaniline	ND	270	14	ug/kg	
91-20-3	Naphthalene	136	54	15	ug/kg	
98-95-3	Nitrobenzene	ND	110	21	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	110	16	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	270	20	ug/kg	
85-01-8	Phenanthrene	65.8	54	18	ug/kg	
129-00-0	Pyrene	22.8	54	17	ug/kg	J
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	270	14	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	65%		23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-114(23-25)		
Lab Sample ID:	JC86406-13	**Date Sampled:**	04/15/19
Matrix:	SO - Soil	**Date Received:**	04/16/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	59.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	76%		27-114%
118-79-6	2,4,6-Tribromophenol	62%		19-152%
4165-60-0	Nitrobenzene-d5	90%		26-134%
321-60-8	2-Fluorobiphenyl	93%		39-124%
1718-51-0	Terphenyl-d14	89%		36-134%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	S-109(2-4)		
Lab Sample ID:	JC86406-14	**Date Sampled:**	04/15/19
Matrix:	SO - Soil	**Date Received:**	04/16/19
Method:	SW846 8260C	**Percent Solids:**	88.1
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	I225723.D	1	04/25/19 19:37	TDN	n/a	n/a	VI9093
Run #2 [a]	3V44294.D	1	04/24/19 16:47	RS	n/a	n/a	V3V1778
Run #3 [a]	D264075.D	1	04/26/19 13:34	JTP	n/a	n/a	VD10644

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	3.0 g		
Run #2	2.9 g		
Run #3	3.6 g	10.0 ml	100 ul

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	37.9	19	9.5	ug/kg	
71-43-2	Benzene	0.86	0.95	0.71	ug/kg	J
74-97-5	Bromochloromethane	ND	9.5	0.81	ug/kg	
75-27-4	Bromodichloromethane	ND	3.8	0.84	ug/kg	
75-25-2	Bromoform	ND	9.5	0.76	ug/kg	
74-83-9	Bromomethane	ND	9.5	1.9	ug/kg	
78-93-3	2-Butanone (MEK)	ND	19	7.1	ug/kg	
75-15-0	Carbon disulfide	4.9	3.8	1.8	ug/kg	
56-23-5	Carbon tetrachloride	ND	3.8	1.0	ug/kg	
108-90-7	Chlorobenzene	ND	3.8	0.67	ug/kg	
75-00-3	Chloroethane	ND	9.5	1.3	ug/kg	
67-66-3	Chloroform	ND	3.8	0.70	ug/kg	
74-87-3	Chloromethane	ND	9.5	3.7	ug/kg	
110-82-7	Cyclohexane	ND	3.8	0.77	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	3.8	1.6	ug/kg	
124-48-1	Dibromochloromethane	ND	3.8	0.64	ug/kg	
106-93-4	1,2-Dibromoethane [b]	ND	1.9	0.61	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.9	0.58	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.9	0.68	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.9	0.65	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	9.5	1.2	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.9	0.73	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.9	0.89	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.9	1.2	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.9	1.8	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.9	1.3	ug/kg	
78-87-5	1,2-Dichloropropane	ND	3.8	0.77	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	3.8	0.67	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	3.8	0.62	ug/kg	
100-41-4	Ethylbenzene	ND	1.9	1.0	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-109(2-4)		
Lab Sample ID:	JC86406-14	**Date Sampled:**	04/15/19
Matrix:	SO - Soil	**Date Received:**	04/16/19
Method:	SW846 8260C	**Percent Solids:**	88.1
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
76-13-1	Freon 113	ND	9.5	1.4	ug/kg	
591-78-6	2-Hexanone	ND	9.5	2.4	ug/kg	
98-82-8	Isopropylbenzene	ND	3.8	1.3	ug/kg	
79-20-9	Methyl Acetate	ND	9.5	2.6	ug/kg	
108-87-2	Methylcyclohexane	1.6	3.8	1.3	ug/kg	J
1634-04-4	Methyl Tert Butyl Ether	ND	1.9	0.67	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	9.5	3.0	ug/kg	
75-09-2	Methylene chloride	ND	9.5	4.7	ug/kg	
100-42-5	Styrene	ND	3.8	1.1	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	3.8	0.74	ug/kg	
127-18-4	Tetrachloroethene	ND	3.8	0.87	ug/kg	
108-88-3	Toluene	ND	1.9	0.71	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	9.5	1.9	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	9.5	1.9	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	3.8	0.81	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	3.8	0.65	ug/kg	
79-01-6	Trichloroethene	ND	1.9	1.4	ug/kg	
75-69-4	Trichlorofluoromethane	ND	9.5	1.3	ug/kg	
75-01-4	Vinyl chloride	ND	3.8	0.89	ug/kg	
	m,p-Xylene	ND	1.9	1.4	ug/kg	
95-47-6	o-Xylene	ND	1.9	1.1	ug/kg	
1330-20-7	Xylene (total)	ND	1.9	1.1	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Run# 3	Limits
1868-53-7	Dibromofluoromethane	109%	104%	98%	75-127%
17060-07-0	1,2-Dichloroethane-D4	119%	108%	89%	75-130%
2037-26-5	Toluene-D8	109%	126% [c]	98%	80-120%
460-00-4	4-Bromofluorobenzene	126%	132% [c]	89%	79-127%

(a) Confirmation run.
(b) This compound in BS is outside in house QC limits bias high.
(c) Outside control limits due to matrix interference.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS LabLink@1039014 11:13 10-May-2019

Report of Analysis

Client Sample ID:	S-109(2-4)		
Lab Sample ID:	JC86406-14	**Date Sampled:**	04/15/19
Matrix:	SO - Soil	**Date Received:**	04/16/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	88.1
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2P86750.D	1	04/19/19 06:37	CB	04/17/19 18:45	OP19810	E2P3831
Run #2	Z137272.D	20	04/25/19 23:27	AR	04/17/19 18:45	OP19810	EZ6762
Run #3	Z137308.D	50	04/26/19 20:10	AR	04/17/19 18:45	OP19810	EZ6764

	Initial Weight	Final Volume
Run #1	30.3 g	1.0 ml
Run #2	30.3 g	1.0 ml
Run #3	30.3 g	1.0 ml

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	75	19	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	190	23	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	190	32	ug/kg	
105-67-9	2,4-Dimethylphenol [a]	77.2	190	67	ug/kg	J
51-28-5	2,4-Dinitrophenol	ND	190	140	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	190	40	ug/kg	
95-48-7	2-Methylphenol	133	75	24	ug/kg	
	3&4-Methylphenol	538	75	31	ug/kg	
88-75-5	2-Nitrophenol	ND	190	25	ug/kg	
100-02-7	4-Nitrophenol	ND	370	100	ug/kg	
87-86-5	Pentachlorophenol	ND	150	35	ug/kg	
108-95-2	Phenol	635	75	20	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	190	25	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	190	28	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	190	22	ug/kg	
83-32-9	Acenaphthene	427	37	13	ug/kg	
208-96-8	Acenaphthylene	10900 [b]	750	380	ug/kg	D
98-86-2	Acetophenone	ND	190	8.1	ug/kg	
120-12-7	Anthracene	13400 [b]	750	460	ug/kg	D
1912-24-9	Atrazine	ND	75	16	ug/kg	
56-55-3	Benzo(a)anthracene	40500 [b]	750	210	ug/kg	D
50-32-8	Benzo(a)pyrene	36300 [b]	750	340	ug/kg	D
205-99-2	Benzo(b)fluoranthene	49000 [b]	750	330	ug/kg	D
191-24-2	Benzo(g,h,i)perylene [a]	22000 [b]	750	370	ug/kg	D
207-08-9	Benzo(k)fluoranthene	21100 [b]	750	350	ug/kg	D
101-55-3	4-Bromophenyl phenyl ether	ND	75	14	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	75	9.1	ug/kg	
92-52-4	1,1'-Biphenyl	438	75	5.1	ug/kg	
100-52-7	Benzaldehyde	ND	190	9.3	ug/kg	
91-58-7	2-Chloronaphthalene	ND	75	8.9	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-109(2-4)		
Lab Sample ID:	JC86406-14	**Date Sampled:**	04/15/19
Matrix:	SO - Soil	**Date Received:**	04/16/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	88.1
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
106-47-8	4-Chloroaniline	ND	190	13	ug/kg	
86-74-8	Carbazole	3160	75	5.4	ug/kg	
105-60-2	Caprolactam	ND	75	15	ug/kg	
218-01-9	Chrysene	39700 [b]	750	240	ug/kg	D
111-91-1	bis(2-Chloroethoxy)methane	ND	75	8.0	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	75	16	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	75	13	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	75	12	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	37	12	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	37	19	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	75	31	ug/kg	
123-91-1	1,4-Dioxane	ND	37	25	ug/kg	
53-70-3	Dibenzo(a,h)anthracene [a]	5350 [b]	750	330	ug/kg	D
132-64-9	Dibenzofuran	4190 [b]	1500	300	ug/kg	D
84-74-2	Di-n-butyl phthalate	ND	75	6.1	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	75	9.3	ug/kg	
84-66-2	Diethyl phthalate	ND	75	8.0	ug/kg	
131-11-3	Dimethyl phthalate	ND	75	6.7	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	75	8.8	ug/kg	
206-44-0	Fluoranthene	73200 [c]	1900	840	ug/kg	D
86-73-7	Fluorene	6440 [b]	750	340	ug/kg	D
118-74-1	Hexachlorobenzene	ND	75	9.5	ug/kg	
87-68-3	Hexachlorobutadiene	ND	37	15	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	370	15	ug/kg	
67-72-1	Hexachloroethane	ND	190	19	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene [a]	23400 [b]	750	350	ug/kg	D
78-59-1	Isophorone	ND	75	8.0	ug/kg	
91-57-6	2-Methylnaphthalene	1200	37	8.5	ug/kg	
88-74-4	2-Nitroaniline	ND	190	8.8	ug/kg	
99-09-2	3-Nitroaniline	ND	190	9.4	ug/kg	
100-01-6	4-Nitroaniline	ND	190	9.7	ug/kg	
91-20-3	Naphthalene	1910	37	11	ug/kg	
98-95-3	Nitrobenzene	ND	75	14	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	75	11	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	190	14	ug/kg	
85-01-8	Phenanthrene	46500 [b]	750	250	ug/kg	D
129-00-0	Pyrene	69000 [b]	750	240	ug/kg	D
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	190	9.5	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-109(2-4)		
Lab Sample ID:	JC86406-14	**Date Sampled:**	04/15/19
Matrix:	SO - Soil	**Date Received:**	04/16/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	88.1
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Run# 3	Limits
367-12-4	2-Fluorophenol	48%	52%	0% [d]	23-115%
4165-62-2	Phenol-d5	57%	59%	0% [d]	27-114%
118-79-6	2,4,6-Tribromophenol	73%	53%	0% [d]	19-152%
4165-60-0	Nitrobenzene-d5	61%	62%	0% [d]	26-134%
321-60-8	2-Fluorobiphenyl	80%	78%	60%	39-124%
1718-51-0	Terphenyl-d14	72%	86%	72%	36-134%

(a) Associated CCV outside of control limits high.
(b) Result is from Run# 2
(c) Result is from Run# 3
(d) Outside control limits due to dilution.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	S-109(8-10)		
Lab Sample ID:	JC86406-15	**Date Sampled:**	04/15/19
Matrix:	SO - Soil	**Date Received:**	04/16/19
Method:	SW846 8260C	**Percent Solids:**	81.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Y184768.D	1	04/26/19 14:45	EH	n/a	n/a	VY8016
Run #2							

	Initial Weight
Run #1	3.8 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	138	16	8.1	ug/kg	
71-43-2	Benzene	3.5	0.81	0.61	ug/kg	
74-97-5	Bromochloromethane	ND	8.1	0.70	ug/kg	
75-27-4	Bromodichloromethane	ND	3.2	0.72	ug/kg	
75-25-2	Bromoform	ND	8.1	0.65	ug/kg	
74-83-9	Bromomethane	ND	8.1	1.6	ug/kg	
78-93-3	2-Butanone (MEK)	ND	16	6.1	ug/kg	
75-15-0	Carbon disulfide	4.1	3.2	1.5	ug/kg	
56-23-5	Carbon tetrachloride	ND	3.2	0.89	ug/kg	
108-90-7	Chlorobenzene	ND	3.2	0.57	ug/kg	
75-00-3	Chloroethane	ND	8.1	1.1	ug/kg	
67-66-3	Chloroform	ND	3.2	0.60	ug/kg	
74-87-3	Chloromethane	ND	8.1	3.2	ug/kg	
110-82-7	Cyclohexane	ND	3.2	0.66	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	3.2	1.4	ug/kg	
124-48-1	Dibromochloromethane	ND	3.2	0.55	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.6	0.53	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.6	0.49	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.6	0.58	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.6	0.56	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	8.1	1.0	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.6	0.62	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.6	0.76	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.6	1.1	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.6	1.6	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.6	1.1	ug/kg	
78-87-5	1,2-Dichloropropane	ND	3.2	0.66	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	3.2	0.57	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	3.2	0.53	ug/kg	
100-41-4	Ethylbenzene	ND	1.6	0.89	ug/kg	
76-13-1	Freon 113 [a]	ND	8.1	1.2	ug/kg	
591-78-6	2-Hexanone	ND	8.1	2.1	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-109(8-10)		
Lab Sample ID:	JC86406-15	**Date Sampled:**	04/15/19
Matrix:	SO - Soil	**Date Received:**	04/16/19
Method:	SW846 8260C	**Percent Solids:**	81.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	3.2	1.1	ug/kg	
79-20-9	Methyl Acetate	ND	8.1	2.3	ug/kg	
108-87-2	Methylcyclohexane	ND	3.2	1.1	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.6	0.57	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	8.1	2.5	ug/kg	
75-09-2	Methylene chloride	ND	8.1	4.1	ug/kg	
100-42-5	Styrene	ND	3.2	0.93	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane [b]	ND	3.2	0.63	ug/kg	UJ
127-18-4	Tetrachloroethene	ND	3.2	0.75	ug/kg	
108-88-3	Toluene	ND	1.6	0.61	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	8.1	1.6	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	8.1	1.6	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	3.2	0.69	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	3.2	0.55	ug/kg	
79-01-6	Trichloroethene	ND	1.6	1.2	ug/kg	
75-69-4	Trichlorofluoromethane	ND	8.1	1.1	ug/kg	
75-01-4	Vinyl chloride	ND	3.2	0.76	ug/kg	
	m,p-Xylene	ND	1.6	1.2	ug/kg	
95-47-6	o-Xylene	ND	1.6	0.94	ug/kg	
1330-20-7	Xylene (total)	ND	1.6	0.94	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	106%		75-127%
17060-07-0	1,2-Dichloroethane-D4	92%		75-130%
2037-26-5	Toluene-D8	90%		80-120%
460-00-4	4-Bromofluorobenzene	94%		79-127%

(a) Associated CCV outside of control limits high, sample was ND.
(b) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	S-109(8-10)		
Lab Sample ID:	JC86406-15	**Date Sampled:**	04/15/19
Matrix:	SO - Soil	**Date Received:**	04/16/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	81.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2P86773.D	1	04/22/19 20:17	YC	04/17/19 18:45	OP19810	E2P3832
Run #2							

	Initial Weight	Final Volume
Run #1	31.9 g	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	77	19	ug/kg	
59-50-7	4-Chloro-3-methyl phenol [a]	ND	190	24	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	190	33	ug/kg	
105-67-9	2,4-Dimethylphenol [b]	71.3	190	69	ug/kg	J
51-28-5	2,4-Dinitrophenol	ND	190	150	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	190	41	ug/kg	
95-48-7	2-Methylphenol	122	77	25	ug/kg	
	3&4-Methylphenol	378	77	32	ug/kg	
88-75-5	2-Nitrophenol	ND	190	26	ug/kg	
100-02-7	4-Nitrophenol	ND	390	100	ug/kg	
87-86-5	Pentachlorophenol	ND	150	36	ug/kg	
108-95-2	Phenol	299	77	20	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	190	26	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	190	29	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	190	23	ug/kg	
83-32-9	Acenaphthene	324	39	13	ug/kg	
208-96-8	Acenaphthylene	488	39	20	ug/kg	
98-86-2	Acetophenone	11.1	190	8.3	ug/kg	J
120-12-7	Anthracene	636	39	24	ug/kg	
1912-24-9	Atrazine	ND	77	17	ug/kg	
56-55-3	Benzo(a)anthracene	1600	39	11	ug/kg	
50-32-8	Benzo(a)pyrene	1720	39	18	ug/kg	
205-99-2	Benzo(b)fluoranthene	2270	39	17	ug/kg	
191-24-2	Benzo(g,h,i)perylene	1260	39	19	ug/kg	
207-08-9	Benzo(k)fluoranthene	772	39	18	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	77	15	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	77	9.4	ug/kg	
92-52-4	1,1'-Biphenyl	75.9	77	5.3	ug/kg	J
100-52-7	Benzaldehyde	ND	190	9.6	ug/kg	
91-58-7	2-Chloronaphthalene	ND	77	9.2	ug/kg	
106-47-8	4-Chloroaniline	ND	190	14	ug/kg	
86-74-8	Carbazole	163	77	5.6	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-109(8-10)		
Lab Sample ID:	JC86406-15	**Date Sampled:**	04/15/19
Matrix:	SO - Soil	**Date Received:**	04/16/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	81.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	77	15	ug/kg	
218-01-9	Chrysene	1830	39	12	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	77	8.3	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	77	17	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	77	14	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	77	13	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	39	12	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	39	19	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	77	32	ug/kg	
123-91-1	1,4-Dioxane	ND	39	26	ug/kg	
53-70-3	Dibenzo(a,h)anthracene [b]	415	39	17	ug/kg	J
132-64-9	Dibenzofuran	371	77	16	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	77	6.3	ug/kg	
117-84-0	Di-n-octyl phthalate [a]	ND	77	9.6	ug/kg	
84-66-2	Diethyl phthalate	ND	77	8.2	ug/kg	
131-11-3	Dimethyl phthalate	ND	77	6.9	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate [a]	ND	77	9.0	ug/kg	
206-44-0	Fluoranthene	3040	39	17	ug/kg	
86-73-7	Fluorene	314	39	18	ug/kg	
118-74-1	Hexachlorobenzene	ND	77	9.8	ug/kg	
87-68-3	Hexachlorobutadiene	ND	39	16	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	390	15	ug/kg	
67-72-1	Hexachloroethane	ND	190	19	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene [b]	1110	39	18	ug/kg	J
78-59-1	Isophorone	ND	77	8.3	ug/kg	
91-57-6	2-Methylnaphthalene	194	39	8.7	ug/kg	
88-74-4	2-Nitroaniline	ND	190	9.1	ug/kg	
99-09-2	3-Nitroaniline	ND	190	9.7	ug/kg	
100-01-6	4-Nitroaniline	ND	190	10	ug/kg	
91-20-3	Naphthalene	1060	39	11	ug/kg	
98-95-3	Nitrobenzene	ND	77	15	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	77	11	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	190	14	ug/kg	
85-01-8	Phenanthrene	1820	39	13	ug/kg	
129-00-0	Pyrene	2320	39	12	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	190	9.8	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	57%		23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-109(8-10)		
Lab Sample ID:	JC86406-15	**Date Sampled:**	04/15/19
Matrix:	SO - Soil	**Date Received:**	04/16/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	81.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	70%		27-114%
118-79-6	2,4,6-Tribromophenol	67%		19-152%
4165-60-0	Nitrobenzene-d5	76%		26-134%
321-60-8	2-Fluorobiphenyl	85%		39-124%
1718-51-0	Terphenyl-d14	75%		36-134%

(a) Associated CCV outside of control limits high, sample was ND.
(b) Associated CCV outside of control limits high.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-108(2-4)
Lab Sample ID: JC86406-1
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/15/19
Date Received: 04/16/19
Percent Solids: 87.0

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	35000 J	120	19	mg/kg	2	04/19/19	04/24/19	GT	SW846 6010D [4]	SW846 3050B [6]
Antimony	0.48 U	2.3	0.48	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [6]
Arsenic [a]	11.9	4.6	0.65	mg/kg	2	04/19/19	04/23/19	ND	SW846 6010D [3]	SW846 3050B [6]
Barium	65.7	23	2.2	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [6]
Beryllium	0.72	0.23	0.093	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [6]
Cadmium [a]	0.16 U	1.2	0.16	mg/kg	2	04/19/19	04/23/19	ND	SW846 6010D [3]	SW846 3050B [6]
Calcium	2080 J	580	51	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [6]
Chromium	51.6 J	1.2	0.43	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [6]
Cobalt	5.0 J	5.8	0.33	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [6]
Copper [a]	13.5	5.8	2.0	mg/kg	2	04/19/19	04/23/19	ND	SW846 6010D [3]	SW846 3050B [6]
Iron	38100 J	120	45	mg/kg	2	04/19/19	04/24/19	GT	SW846 6010D [4]	SW846 3050B [6]
Lead [a]	13.9 J	4.6	0.95	mg/kg	2	04/19/19	04/23/19	ND	SW846 6010D [3]	SW846 3050B [6]
Magnesium	1420	580	16	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [6]
Manganese [a]	83.7 J	3.5	0.95	mg/kg	2	04/19/19	04/23/19	ND	SW846 6010D [3]	SW846 3050B [6]
Mercury	0.023 J	0.037	0.016	mg/kg	1	04/17/19	04/17/19	LL	SW846 7471B [1]	SW846 7471B [5]
Nickel	13.4	4.6	0.41	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [6]
Potassium	1190 J	1200	37	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [6]
Selenium [a]	1.5 U	4.6	1.5	mg/kg	2	04/19/19	04/23/19	ND	SW846 6010D [3]	SW846 3050B [6]
Silver [a]	0.39 U	1.2	0.39	mg/kg	2	04/19/19	04/23/19	ND	SW846 6010D [3]	SW846 3050B [6]
Sodium	126 J	1200	90	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [6]
Thallium [a]	1.3 U	2.3	1.3	mg/kg	2	04/19/19	04/23/19	ND	SW846 6010D [3]	SW846 3050B [6]
Vanadium	66.6 J	5.8	0.22	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [6]
Zinc	44.0	5.8	2.7	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [6]

(1) Instrument QC Batch: MA46522
(2) Instrument QC Batch: MA46556
(3) Instrument QC Batch: MA46568
(4) Instrument QC Batch: MA46578
(5) Prep QC Batch: MP14302
(6) Prep QC Batch: MP14400

(a) Elevated detection limit due to dilution required for high interfering element.

RL = Reporting Limit
MDL = Method Detection Limit
U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: S-108(2-4)
Lab Sample ID: JC86406-1
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/15/19
Date Received: 04/16/19
Percent Solids: 87.0

General Chemistry

Analyte	Result		RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	10.8	J	0.26	0.13	mg/kg	1	04/25/19 15:23	KI	SW846 9012B/LACHAT
Solids, Percent	87				%	1	04/18/19 15:55	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: S-108(8-10)
Lab Sample ID: JC86406-2
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/15/19
Date Received: 04/16/19
Percent Solids: 80.3

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	23000 J	62	9.9	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [5]
Antimony	0.51 U	2.5	0.51	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [5]
Arsenic [a]	9.0	4.9	0.69	mg/kg	2	04/19/19	04/23/19	ND	SW846 6010D [3]	SW846 3050B [5]
Barium	75.9	25	2.3	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [5]
Beryllium	0.75	0.25	0.099	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [5]
Cadmium	0.099 J	0.62	0.086	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [5]
Calcium	1300 J	620	54	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [5]
Chromium	32.9 J	1.2	0.46	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [5]
Cobalt	7.6	6.2	0.35	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [5]
Copper [a]	14.1	6.2	2.1	mg/kg	2	04/19/19	04/23/19	ND	SW846 6010D [3]	SW846 3050B [5]
Iron	27900 J	120	47	mg/kg	2	04/19/19	04/23/19	ND	SW846 6010D [3]	SW846 3050B [5]
Lead [a]	38.1 J	4.9	1.0	mg/kg	2	04/19/19	04/23/19	ND	SW846 6010D [3]	SW846 3050B [5]
Magnesium	2290	620	17	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [5]
Manganese [a]	201 J	3.7	1.0	mg/kg	2	04/19/19	04/23/19	ND	SW846 6010D [3]	SW846 3050B [5]
Mercury	2.6 J	0.20	0.086	mg/kg	5	04/17/19	04/17/19	LL	SW846 7471B [1]	SW846 7471B [4]
Nickel	15.1	4.9	0.43	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [5]
Potassium	1440	1200	39	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [5]
Selenium [a]	1.6 U	4.9	1.6	mg/kg	2	04/19/19	04/23/19	ND	SW846 6010D [3]	SW846 3050B [5]
Silver [a]	0.42 U	1.2	0.42	mg/kg	2	04/19/19	04/23/19	ND	SW846 6010D [3]	SW846 3050B [5]
Sodium	96 U	1200	96	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [5]
Thallium [a]	1.4 U	2.5	1.4	mg/kg	2	04/19/19	04/23/19	ND	SW846 6010D [3]	SW846 3050B [5]
Vanadium	46.1 J	6.2	0.23	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [5]
Zinc	63.4	6.2	2.8	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA46522
(2) Instrument QC Batch: MA46556
(3) Instrument QC Batch: MA46568
(4) Prep QC Batch: MP14302
(5) Prep QC Batch: MP14400

(a) Elevated detection limit due to dilution required for high interfering element.

RL = Reporting Limit
MDL = Method Detection Limit
U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	S-108(8-10)		
Lab Sample ID:	JC86406-2	**Date Sampled:**	04/15/19
Matrix:	SO - Soil	**Date Received:**	04/16/19
		Percent Solids:	80.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result		RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	3.3	J	0.28	0.14	mg/kg	1	04/25/19 15:24	KI	SW846 9012B/LACHAT
Solids, Percent	80.3				%	1	04/18/19 15:55	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: S-108(15-17)
Lab Sample ID: JC86406-3
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/15/19
Date Received: 04/16/19
Percent Solids: 56.8

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	11600 J	85	14	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Antimony	0.70 U	3.4	0.70	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Arsenic	6.1	3.4	0.48	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Barium	46.6	34	3.2	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Beryllium	0.53	0.34	0.14	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cadmium	0.15 J	0.85	0.12	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Calcium	714 J	850	75	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Chromium	19.6 J	1.7	0.63	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cobalt	4.9 J	8.5	0.48	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Copper	12.6	4.3	1.4	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Iron	17900 J	85	33	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Lead	45.4 J	3.4	0.70	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Magnesium	2060	850	23	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Manganese	156 J	2.6	0.70	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Mercury	1.7 J	0.10	0.045	mg/kg	2	04/17/19	04/17/19	LL	SW846 7471B [1]	SW846 7471B [3]
Nickel	11.7	6.8	0.60	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Potassium	961 J	1700	54	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Selenium	1.1 U	3.4	1.1	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Silver	0.29 U	0.85	0.29	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Sodium	130 U	1700	130	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Thallium	0.99 U	1.7	0.99	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Vanadium	24.8 J	8.5	0.32	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Zinc	55.1	8.5	3.9	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA46522
(2) Instrument QC Batch: MA46556
(3) Prep QC Batch: MP14302
(4) Prep QC Batch: MP14400

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	S-108(15-17)		
Lab Sample ID:	JC86406-3	**Date Sampled:**	04/15/19
Matrix:	SO - Soil	**Date Received:**	04/16/19
		Percent Solids:	56.8
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result		RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	9.6	J	0.41	0.20	mg/kg	1	04/25/19 15:26	KI	SW846 9012B/LACHAT
Solids, Percent	56.8				%	1	04/18/19 15:55	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: SO-DUP-0415
Lab Sample ID: JC86406-4
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/15/19
Date Received: 04/16/19
Percent Solids: 87.6

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	9710 J	57	9.2	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Antimony	0.47 U	2.3	0.47	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Arsenic	6.5	2.3	0.32	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Barium	43.9	23	2.2	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Beryllium	0.51	0.23	0.091	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cadmium	1.2	0.57	0.080	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Calcium	644 J	570	50	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Chromium	14.6 J	1.1	0.42	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cobalt	7.4	5.7	0.32	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Copper	13.2	2.9	0.96	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Iron	16600 J	57	22	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Lead	32.1 J	2.3	0.47	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Magnesium	1950	570	16	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Manganese	261 J	1.7	0.47	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Mercury	0.31 J	0.035	0.016	mg/kg	1	04/17/19	04/17/19	LL	SW846 7471B [1]	SW846 7471B [3]
Nickel	11.9	4.6	0.40	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Potassium	1070 J	1100	36	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Selenium	0.74 U	2.3	0.74	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Silver	0.19 U	0.57	0.19	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Sodium	139 J	1100	89	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Thallium	0.66 U	1.1	0.66	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Vanadium	20.1 J	5.7	0.22	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Zinc	51.0	5.7	2.6	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA46522
(2) Instrument QC Batch: MA46556
(3) Prep QC Batch: MP14302
(4) Prep QC Batch: MP14400

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	SO-DUP-0415		
Lab Sample ID:	JC86406-4	**Date Sampled:**	04/15/19
Matrix:	SO - Soil	**Date Received:**	04/16/19
		Percent Solids:	87.6
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result		RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	12.7	J	0.26	0.13	mg/kg	1	04/25/19 15:27	KI	SW846 9012B/LACHAT
Solids, Percent	87.6				%	1	04/18/19 15:55	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: PCTP-17R(5-6)
Lab Sample ID: JC86406-5
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/15/19
Date Received: 04/16/19
Percent Solids: 87.7

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	7830 J	57	9.2	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [5]
Antimony	0.47 U	2.3	0.47	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [5]
Arsenic [a]	5.8	4.6	0.64	mg/kg	2	04/19/19	04/23/19	ND	SW846 6010D [3]	SW846 3050B [5]
Barium	23.5	23	2.2	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [5]
Beryllium	0.31	0.23	0.091	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [5]
Cadmium [a]	0.16 U	1.1	0.16	mg/kg	2	04/19/19	04/23/19	ND	SW846 6010D [3]	SW846 3050B [5]
Calcium	176 J	570	50	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [5]
Chromium	17.3 J	1.1	0.42	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [5]
Cobalt	4.2 J	5.7	0.32	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [5]
Copper [a]	19.3	5.7	1.9	mg/kg	2	04/19/19	04/23/19	ND	SW846 6010D [3]	SW846 3050B [5]
Iron	33600 J	110	44	mg/kg	2	04/19/19	04/23/19	ND	SW846 6010D [3]	SW846 3050B [5]
Lead [a]	6.6 J	4.6	0.94	mg/kg	2	04/19/19	04/23/19	ND	SW846 6010D [3]	SW846 3050B [5]
Magnesium	1720	570	16	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [5]
Manganese [a]	102 J	3.4	0.94	mg/kg	2	04/19/19	04/23/19	ND	SW846 6010D [3]	SW846 3050B [5]
Mercury	0.46 J	0.036	0.016	mg/kg	1	04/17/19	04/17/19	LL	SW846 7471B [1]	SW846 7471B [4]
Nickel	20.3	4.6	0.40	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [5]
Potassium	813 J	1100	36	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [5]
Selenium [a]	1.5 U	4.6	1.5	mg/kg	2	04/19/19	04/23/19	ND	SW846 6010D [3]	SW846 3050B [5]
Silver [a]	0.39 U	1.1	0.39	mg/kg	2	04/19/19	04/23/19	ND	SW846 6010D [3]	SW846 3050B [5]
Sodium	89 U	1100	89	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [5]
Thallium [a]	1.3 U	2.3	1.3	mg/kg	2	04/19/19	04/23/19	ND	SW846 6010D [3]	SW846 3050B [5]
Vanadium	19.8 J	5.7	0.22	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [5]
Zinc	28.0	5.7	2.6	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA46522
(2) Instrument QC Batch: MA46556
(3) Instrument QC Batch: MA46568
(4) Prep QC Batch: MP14302
(5) Prep QC Batch: MP14400

(a) Elevated detection limit due to dilution required for high interfering element.

RL = Reporting Limit
MDL = Method Detection Limit
U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: PCTP-17R(5-6)
Lab Sample ID: JC86406-5
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/15/19
Date Received: 04/16/19
Percent Solids: 87.7

General Chemistry

Analyte	Result		RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	8.3	J	0.25	0.13	mg/kg	1	04/25/19 15:28	KI	SW846 9012B/LACHAT
Solids, Percent	87.7				%	1	04/18/19 15:55	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: PCTP-17R(7-9)
Lab Sample ID: JC86406-6
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/15/19
Date Received: 04/16/19
Percent Solids: 89.1

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	17400 J	56	9.0	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [5]
Antimony [a]	0.92 U	4.5	0.92	mg/kg	2	04/19/19	04/23/19	ND	SW846 6010D [3]	SW846 3050B [5]
Arsenic [a]	2.9 J	4.5	0.63	mg/kg	2	04/19/19	04/23/19	ND	SW846 6010D [3]	SW846 3050B [5]
Barium	120	22	2.1	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [5]
Beryllium [a]	0.80	0.45	0.18	mg/kg	2	04/19/19	04/23/19	ND	SW846 6010D [3]	SW846 3050B [5]
Cadmium	0.079 U	0.56	0.079	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [5]
Calcium	1950 J	560	50	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [5]
Chromium	27.3 J	1.1	0.42	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [5]
Cobalt [a]	11.7	11	0.63	mg/kg	2	04/19/19	04/23/19	ND	SW846 6010D [3]	SW846 3050B [5]
Copper [a]	16.6	5.6	1.9	mg/kg	2	04/19/19	04/23/19	ND	SW846 6010D [3]	SW846 3050B [5]
Iron	23600 J	110	43	mg/kg	2	04/19/19	04/23/19	ND	SW846 6010D [3]	SW846 3050B [5]
Lead [a]	9.1 J	4.5	0.92	mg/kg	2	04/19/19	04/23/19	ND	SW846 6010D [3]	SW846 3050B [5]
Magnesium	10600	560	15	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [5]
Manganese [a]	427 J	3.4	0.92	mg/kg	2	04/19/19	04/23/19	ND	SW846 6010D [3]	SW846 3050B [5]
Mercury	0.038 J	0.033	0.014	mg/kg	1	04/17/19	04/17/19	LL	SW846 7471B [1]	SW846 7471B [4]
Nickel	25.4	4.5	0.39	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [5]
Potassium	9760	1100	36	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [5]
Selenium [a]	1.5 U	4.5	1.5	mg/kg	2	04/19/19	04/23/19	ND	SW846 6010D [3]	SW846 3050B [5]
Silver [a]	0.61 J	1.1	0.38	mg/kg	2	04/19/19	04/23/19	ND	SW846 6010D [3]	SW846 3050B [5]
Sodium	272 J	1100	87	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [5]
Thallium [a]	1.3 U	2.2	1.3	mg/kg	2	04/19/19	04/23/19	ND	SW846 6010D [3]	SW846 3050B [5]
Vanadium	33.2 J	5.6	0.21	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [5]
Zinc	73.8	5.6	2.6	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA46522
(2) Instrument QC Batch: MA46556
(3) Instrument QC Batch: MA46568
(4) Prep QC Batch: MP14302
(5) Prep QC Batch: MP14400

(a) Elevated detection limit due to dilution required for high interfering element.

RL = Reporting Limit
MDL = Method Detection Limit
U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: PCTP-17R(7-9)
Lab Sample ID: JC86406-6
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/15/19
Date Received: 04/16/19
Percent Solids: 89.1

General Chemistry

Analyte	Result		RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	0.58	J	0.24	0.12	mg/kg	1	04/25/19 15:30	KI	SW846 9012B/LACHAT
Solids, Percent	89.1				%	1	04/18/19 15:55	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: PCTP-17R(9-11)
Lab Sample ID: JC86406-7
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/15/19
Date Received: 04/16/19
Percent Solids: 58.5

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	12100 J	89	14	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Antimony	0.73 U	3.6	0.73	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Arsenic	7.5	3.6	0.50	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Barium	62.4	36	3.4	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Beryllium	0.71	0.36	0.14	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cadmium	0.18 J	0.89	0.12	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Calcium	1250 J	890	79	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Chromium	22.2 J	1.8	0.66	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cobalt	9.2	8.9	0.50	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Copper	27.9	4.5	1.5	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Iron	23000 J	89	34	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Lead	40.9 J	3.6	0.73	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Magnesium	3190	890	24	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Manganese	374 J	2.7	0.73	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Mercury	3.0 J	0.28	0.12	mg/kg	5	04/17/19	04/17/19	LL	SW846 7471B [1]	SW846 7471B [3]
Nickel	17.2	7.1	0.62	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Potassium	1320 J	1800	57	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Selenium	1.2 U	3.6	1.2	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Silver	0.30 U	0.89	0.30	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Sodium	409 J	1800	140	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Thallium	1.0 U	1.8	1.0	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Vanadium	26.2 J	8.9	0.34	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Zinc	111	8.9	4.1	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA46522
(2) Instrument QC Batch: MA46556
(3) Prep QC Batch: MP14302
(4) Prep QC Batch: MP14400

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: PCTP-17R(9-11)
Lab Sample ID: JC86406-7
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/15/19
Date Received: 04/16/19
Percent Solids: 58.5

General Chemistry

Analyte	Result		RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	9.5	J	0.43	0.21	mg/kg	1	04/25/19 15:31	KI	SW846 9012B/LACHAT
Solids, Percent	58.5				%	1	04/18/19 15:55	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: PCTP-17R(18-20)
Lab Sample ID: JC86406-8
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/15/19
Date Received: 04/16/19
Percent Solids: 52.1

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	14400 J	92	15	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Antimony	0.76 U	3.7	0.76	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Arsenic	14.6	3.7	0.52	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Barium	312	37	3.5	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Beryllium	0.61	0.37	0.15	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cadmium	0.87 J	0.92	0.13	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Calcium	2910 J	920	82	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Chromium	32.5 J	1.8	0.68	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cobalt	7.2 J	9.2	0.52	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Copper	288	4.6	1.6	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Iron	27800 J	92	35	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Lead	697 J	3.7	0.76	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Magnesium	2530	920	25	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Manganese	204 J	2.8	0.76	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Mercury	1.3 J	0.056	0.024	mg/kg	1	04/17/19	04/17/19	LL	SW846 7471B [1]	SW846 7471B [3]
Nickel	22.7	7.4	0.65	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Potassium	1170 J	1800	59	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Selenium	1.2 U	3.7	1.2	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Silver	0.66 J	0.92	0.31	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Sodium	589 J	1800	140	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Thallium	1.1 U	1.8	1.1	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Vanadium	70.6 J	9.2	0.35	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Zinc	448	9.2	4.2	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA46522
(2) Instrument QC Batch: MA46556
(3) Prep QC Batch: MP14302
(4) Prep QC Batch: MP14400

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: PCTP-17R(18-20)
Lab Sample ID: JC86406-8
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/15/19
Date Received: 04/16/19
Percent Solids: 52.1

General Chemistry

Analyte	Result		RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	3.0	J	0.41	0.21	mg/kg	1	04/25/19 15:32	KI	SW846 9012B/LACHAT
Solids, Percent	52.1				%	1	04/18/19 15:55	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: PCTP-17R(24-25)
Lab Sample ID: JC86406-9
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/15/19
Date Received: 04/16/19
Percent Solids: 52.7

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	11800 J	92	15	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Antimony	0.76 U	3.7	0.76	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Arsenic	7.6	3.7	0.52	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Barium	41.7	37	3.5	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Beryllium	0.68	0.37	0.15	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cadmium	0.13 U	0.92	0.13	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Calcium	1060 J	920	81	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Chromium	18.9 J	1.8	0.68	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cobalt	12.3	9.2	0.52	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Copper	16.6	4.6	1.5	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Iron	22600 J	92	35	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Lead	18.3 J	3.7	0.76	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Magnesium	3180	920	25	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Manganese	493 J	2.8	0.76	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Mercury	0.057 J	0.056	0.024	mg/kg	1	04/17/19	04/17/19	LL	SW846 7471B [1]	SW846 7471B [3]
Nickel	18.5	7.4	0.64	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Potassium	1410 J	1800	59	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Selenium	1.2 U	3.7	1.2	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Silver	0.31 U	0.92	0.31	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Sodium	140 U	1800	140	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Thallium	1.1 U	1.8	1.1	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Vanadium	24.4 J	9.2	0.35	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Zinc	57.6	9.2	4.2	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA46522
(2) Instrument QC Batch: MA46556
(3) Prep QC Batch: MP14302
(4) Prep QC Batch: MP14400

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	PCTP-17R(24-25)		
Lab Sample ID:	JC86406-9	**Date Sampled:**	04/15/19
Matrix:	SO - Soil	**Date Received:**	04/16/19
		Percent Solids:	52.7
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result		RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	1.5	J	0.41	0.20	mg/kg	1	04/25/19 15:37	KI	SW846 9012B/LACHAT
Solids, Percent	52.7				%	1	04/18/19 15:55	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: S-114(2-4)
Lab Sample ID: JC86406-10
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/15/19
Date Received: 04/16/19
Percent Solids: 83.0

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	12200 J	57	9.2	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Antimony	0.47 U	2.3	0.47	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Arsenic	7.0	2.3	0.32	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Barium	76.0	23	2.2	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Beryllium	0.75	0.23	0.092	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cadmium	0.18 J	0.57	0.080	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Calcium	6050 J	570	51	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Chromium	21.4 J	1.1	0.42	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cobalt	5.0 J	5.7	0.32	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Copper	18.1	2.9	0.96	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Iron	15700 J	57	22	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Lead	193 J	2.3	0.47	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Magnesium	2330	570	16	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Manganese	160 J	1.7	0.47	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Mercury	0.57 J	0.038	0.017	mg/kg	1	04/17/19	04/17/19	LL	SW846 7471B [1]	SW846 7471B [3]
Nickel	10.6	4.6	0.40	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Potassium	1210	1100	36	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Selenium	1.2 J	2.3	0.75	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Silver	0.20 U	0.57	0.20	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Sodium	98.2 J	1100	89	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Thallium	0.67 U	1.1	0.67	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Vanadium	25.0 J	5.7	0.22	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Zinc	80.7	5.7	2.6	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA46522
(2) Instrument QC Batch: MA46556
(3) Prep QC Batch: MP14302
(4) Prep QC Batch: MP14400

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: S-114(2-4)
Lab Sample ID: JC86406-10
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/15/19
Date Received: 04/16/19
Percent Solids: 83.0

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	0.14 U	0.29	0.14	mg/kg	1	04/25/19 15:12	KI	SW846 9012B/LACHAT
Solids, Percent	83			%	1	04/18/19 15:55	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: S-114(8-10)
Lab Sample ID: JC86406-11
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/15/19
Date Received: 04/16/19
Percent Solids: 67.3

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	11700 J	76	12	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [5]
Antimony	0.62 U	3.0	0.62	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [5]
Arsenic	6.9	3.0	0.42	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [5]
Barium	42.0	30	2.9	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [5]
Beryllium	0.59	0.30	0.12	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [5]
Cadmium	0.11 U	0.76	0.11	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [5]
Calcium	645 J	760	67	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [5]
Chromium [a]	19.5 J	1.5	0.56	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [3]	SW846 3050B [5]
Cobalt	8.2	7.6	0.42	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [5]
Copper	13.8	3.8	1.3	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [5]
Iron	20000	76	29	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [5]
Lead	14.8 J	3.0	0.62	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [5]
Magnesium	2430	760	21	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [5]
Manganese [a]	335 J	2.3	0.62	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [3]	SW846 3050B [5]
Mercury	0.81 J	0.047	0.021	mg/kg	1	04/17/19	04/17/19	LL	SW846 7471B [1]	SW846 7471B [4]
Nickel	14.7	6.1	0.53	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [5]
Potassium	1090 J	1500	48	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [5]
Selenium	0.99 U	3.0	0.99	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [5]
Silver	0.26 U	0.76	0.26	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [5]
Sodium	120 U	1500	120	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [5]
Thallium	0.88 U	1.5	0.88	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [5]
Vanadium	24.6 J	7.6	0.29	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [5]
Zinc	45.1	7.6	3.5	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA46522
(2) Instrument QC Batch: MA46556
(3) Instrument QC Batch: MA46568
(4) Prep QC Batch: MP14302
(5) Prep QC Batch: MP14400

(a) Elevated detection limit due to dilution required for high interfering element.

RL = Reporting Limit
MDL = Method Detection Limit
U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	S-114(8-10)		
Lab Sample ID:	JC86406-11	**Date Sampled:**	04/15/19
Matrix:	SO - Soil	**Date Received:**	04/16/19
		Percent Solids:	67.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result		RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	0.59	J	0.37	0.19	mg/kg	1	04/25/19 15:13	KI	SW846 9012B/LACHAT
Solids, Percent	67.3				%	1	04/18/19 15:55	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: S-114(14-15)
Lab Sample ID: JC86406-12
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/15/19
Date Received: 04/16/19
Percent Solids: 72.1

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	10800 J	69	11	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Antimony	0.56 U	2.7	0.56	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Arsenic	7.0	2.7	0.38	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Barium	24.7 J	27	2.6	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Beryllium	0.55	0.27	0.11	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cadmium	0.096 U	0.69	0.096	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Calcium	178 J	690	61	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Chromium	16.8 J	1.4	0.51	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cobalt	9.1	6.9	0.38	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Copper	13.2	3.4	1.2	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Iron	21100 J	69	26	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Lead	9.2 J	2.7	0.56	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Magnesium	2150	690	19	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Manganese	150 J	2.1	0.56	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Mercury	1.7 J	0.20	0.088	mg/kg	5	04/17/19	04/17/19	LL	SW846 7471B [1]	SW846 7471B [3]
Nickel	14.7	5.5	0.48	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Potassium	954 J	1400	44	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Selenium	0.89 U	2.7	0.89	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Silver	0.23 U	0.69	0.23	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Sodium	162 J	1400	110	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Thallium	0.80 U	1.4	0.80	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Vanadium	21.9 J	6.9	0.26	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Zinc	38.4	6.9	3.2	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA46522
(2) Instrument QC Batch: MA46556
(3) Prep QC Batch: MP14302
(4) Prep QC Batch: MP14400

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	S-114(14-15)		
Lab Sample ID:	JC86406-12	**Date Sampled:**	04/15/19
Matrix:	SO - Soil	**Date Received:**	04/16/19
		Percent Solids:	72.1
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result		RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	12.1	J	0.30	0.15	mg/kg	1	04/25/19 15:15	KI	SW846 9012B/LACHAT
Solids, Percent	72.1				%	1	04/18/19 15:55	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: S-114(23-25)
Lab Sample ID: JC86406-13
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/15/19
Date Received: 04/16/19
Percent Solids: 59.2

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	14700 J	89	14	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Antimony	0.73 U	3.6	0.73	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Arsenic	8.3	3.6	0.50	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Barium	45.6	36	3.4	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Beryllium	0.69	0.36	0.14	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cadmium	0.12 U	0.89	0.12	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Calcium	3380 J	890	79	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Chromium	27.5 J	1.8	0.66	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cobalt	9.7	8.9	0.50	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Copper	16.9	4.4	1.5	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Iron	26700 J	89	34	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Lead	14.3 J	3.6	0.73	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Magnesium	3360	890	24	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Manganese	259 J	2.7	0.73	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Mercury	0.029 J	0.055	0.024	mg/kg	1	04/17/19	04/17/19	LL	SW846 7471B [1]	SW846 7471B [3]
Nickel	19.7	7.1	0.62	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Potassium	1460 J	1800	57	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Selenium	1.2 U	3.6	1.2	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Silver	0.30 U	0.89	0.30	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Sodium	201 J	1800	140	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Thallium	1.0 U	1.8	1.0	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Vanadium	30.8 J	8.9	0.34	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Zinc	55.6	8.9	4.1	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA46522
(2) Instrument QC Batch: MA46556
(3) Prep QC Batch: MP14302
(4) Prep QC Batch: MP14400

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	S-114(23-25)		
Lab Sample ID:	JC86406-13	**Date Sampled:**	04/15/19
Matrix:	SO - Soil	**Date Received:**	04/16/19
		Percent Solids:	59.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result		RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	4.6	J	0.41	0.20	mg/kg	1	04/25/19 15:16	KI	SW846 9012B/LACHAT
Solids, Percent	59.2				%	1	04/18/19 15:55	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: S-109(2-4)
Lab Sample ID: JC86406-14
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/15/19
Date Received: 04/16/19
Percent Solids: 88.1

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	8650 J	57	9.1	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Antimony	0.47 U	2.3	0.47	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Arsenic	5.3	2.3	0.32	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Barium	33.8	23	2.2	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Beryllium	0.50	0.23	0.091	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cadmium	0.079 U	0.57	0.079	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Calcium	792 J	570	50	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Chromium	13.9 J	1.1	0.42	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cobalt	3.6 J	5.7	0.32	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Copper	8.9	2.8	0.95	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Iron	12700 J	57	22	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Lead	23.3 J	2.3	0.47	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Magnesium	1330	570	16	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Manganese	91.5 J	1.7	0.47	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Mercury	0.13 J	0.037	0.016	mg/kg	1	04/17/19	04/17/19	LL	SW846 7471B [1]	SW846 7471B [3]
Nickel	8.1	4.5	0.40	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Potassium	540 J	1100	36	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Selenium	0.74 U	2.3	0.74	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Silver	0.19 U	0.57	0.19	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Sodium	157 J	1100	88	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Thallium	0.66 U	1.1	0.66	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Vanadium	16.6 J	5.7	0.22	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Zinc	31.2	5.7	2.6	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA46522
(2) Instrument QC Batch: MA46556
(3) Prep QC Batch: MP14302
(4) Prep QC Batch: MP14400

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	S-109(2-4)		
Lab Sample ID:	JC86406-14	**Date Sampled:**	04/15/19
Matrix:	SO - Soil	**Date Received:**	04/16/19
		Percent Solids:	88.1
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result		RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	5.5	J	0.28	0.14	mg/kg	1	04/25/19 15:20	KI	SW846 9012B/LACHAT
Solids, Percent	88.1				%	1	04/18/19 15:55	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: S-109(8-10)
Lab Sample ID: JC86406-15
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/15/19
Date Received: 04/16/19
Percent Solids: 81.2

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	11400 J	62	10	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Antimony	0.51 U	2.5	0.51	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Arsenic	11.0	2.5	0.35	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Barium	126	25	2.4	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Beryllium	1.8	0.25	0.10	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cadmium	1.1	0.62	0.087	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Calcium	24300 J	620	55	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Chromium	44.5 J	1.2	0.46	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cobalt	8.9	6.2	0.35	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Copper	75.6	3.1	1.0	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Iron	19900 J	62	24	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Lead	147 J	2.5	0.51	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Magnesium	5920	620	17	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Manganese	359 J	1.9	0.51	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Mercury	0.19 J	0.037	0.016	mg/kg	1	04/17/19	04/17/19	LL	SW846 7471B [1]	SW846 7471B [3]
Nickel	19.4	5.0	0.44	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Potassium	1150 J	1200	40	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Selenium	2.0 J	2.5	0.81	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Silver	0.21 U	0.62	0.21	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Sodium	722 J	1200	97	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Thallium	0.72 U	1.2	0.72	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Vanadium	25.8 J	6.2	0.24	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Zinc	335	6.2	2.9	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA46522
(2) Instrument QC Batch: MA46556
(3) Prep QC Batch: MP14302
(4) Prep QC Batch: MP14400

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: S-109(8-10)
Lab Sample ID: JC86406-15
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/15/19
Date Received: 04/16/19
Percent Solids: 81.2

General Chemistry

Analyte	Result		RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	17.5	J	0.32	0.16	mg/kg	1	04/25/19 15:22	KI	SW846 9012B/LACHAT
Solids, Percent	81.2				%	1	04/18/19 15:55	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

ARCADIS Design & Consultancy for natural and built assets

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Philly Coke

DATA REVIEW

Philadelphia, Pennsylvania

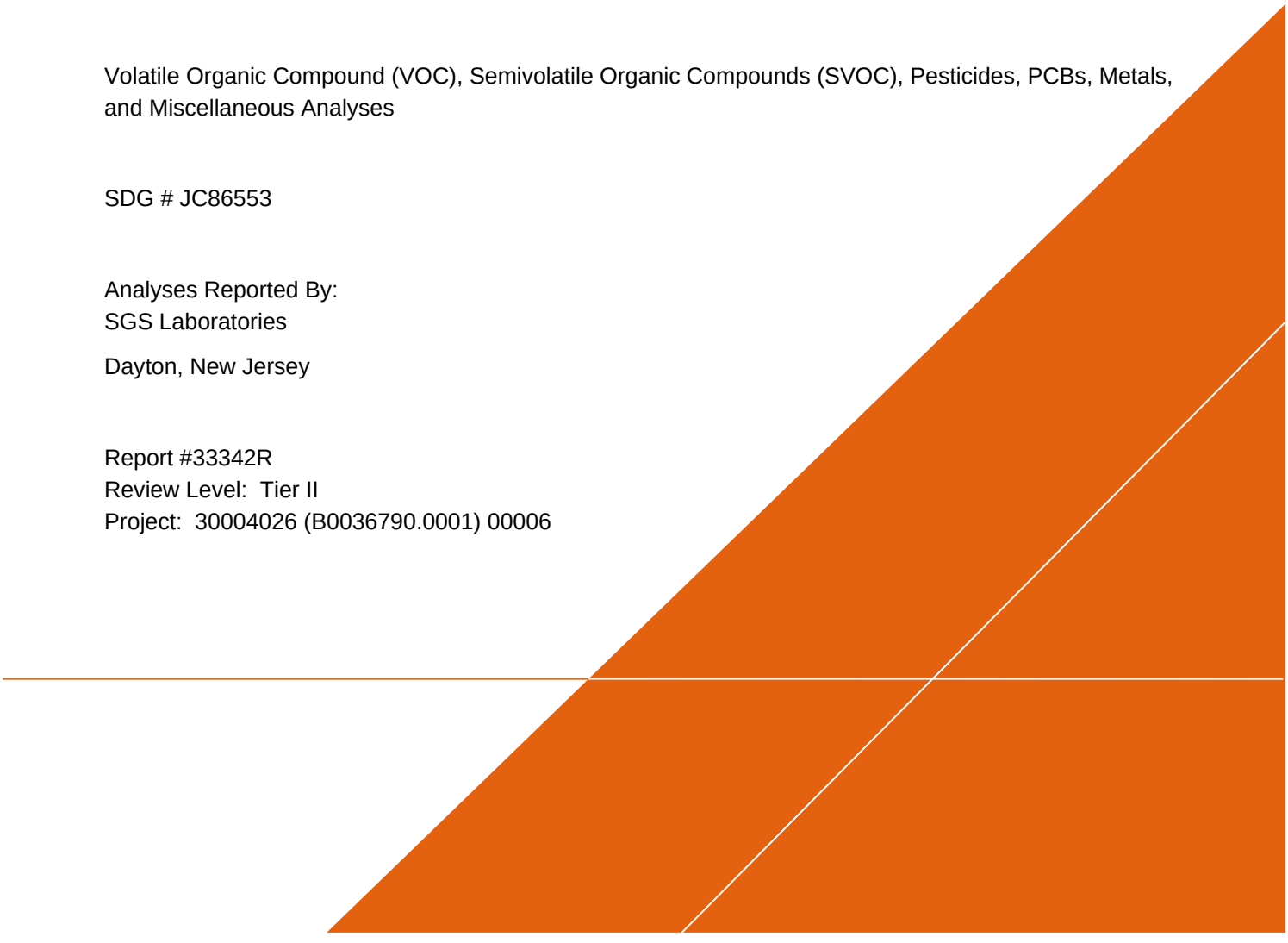
Volatile Organic Compound (VOC), Semivolatile Organic Compounds (SVOC), Pesticides, PCBs, Metals, and Miscellaneous Analyses

SDG # JC86553

Analyses Reported By:
SGS Laboratories

Dayton, New Jersey

Report #33342R
Review Level: Tier II
Project: 30004026 (B0036790.0001) 00006



SUMMARY

This data review report summarizes the review of Sample Delivery Group (SDG) # JC86553 for samples collected in association with the National Grid Philly Coke site in Philadelphia, Pennsylvania. The review was conducted as a Tier II evaluation and included review of laboratory analytical data package completeness. Field documentation was not included in this review. Included with this assessment are the post-validation annotated sample result sheets, and chain of custody (COC). Analyses were performed on the following samples

SDG Number	Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis				
						VOC	SVOC	PEST/ PCB	Metals	MISC
JC86553	S-116(4-6) (04-16-2019)	JC86553-1	Soil	4/16/2019		X	X		X	X
	S-115(4-6) (04-16-2019)	JC86553-2	Soil	4/16/2019		X	X		X	X
	SO-DUP-0416 (04-16-2019)	JC86553-3	Soil	4/16/2019	S-115(4-6) (04-16-2019)	X	X		X	X
	S-117(4-6) (04-16-2019)	JC86553-4	Soil	4/16/2019		X	X		X	X
	TP-15R(5-7) (04-16-2019)	JC86553-5	Soil	4/16/2019		X	X		X	X
	TP-15R(16.5-12.5) (04-16-2019)	JC86553-6	Soil	4/16/2019		X	X		X	X
	S-118(4-6) (04-16-2019)	JC86553-7	Soil	4/16/2019		X	X		X	X
	PCTP-49R(8-10) (04-16-2019)	JC86553-8	Soil	4/16/2019		X	X		X	X
	PCTP-49R(10-11) (04-16-2019)	JC86553-9	Soil	4/16/2019		X	X		X	X
	PSSTP-10R(1-2) (04-16-2019)	JC86553-10	Soil	4/16/2019		X	X	X	X	X
	PSSTP-10R(8-9) (04-16-2019)	JC86553-11	Soil	4/16/2019		X	X	X	X	X
	S-130(2-4) (04-17-2019)	JC86553-12	Soil	4/17/2019		X	X		X	X
	S-130(7-8) (04-17-2019)	JC86553-13	Soil	4/17/2019		X	X		X	X
	S-130(10-12) (04-17-2019)	JC86553-14	Soil	4/17/2019		X	X		X	X
	S-130(13-15) (04-17-2019)	JC86553-15	Soil	4/17/2019		X	X		X	X
	S-126(7-9) (04-17-2019)	JC86553-16	Soil	4/17/2019		X	X		X	X
	S-126(13-15) (04-17-2019)	JC86553-17	Soil	4/17/2019		X	X		X	X
	S-127(2-4) (04-17-2019)	JC86553-18	Soil	4/17/2019		X	X		X	X
	SO-DUP-0417 (04-17-2019)	JC86553-19	Soil	4/17/2019	S-127(2-4) (04-17-2019)	X	X		X	X
	S-127(6-8) (04-17-2019)	JC86553-20	Soil	4/17/2019		X	X		X	X
	S-127(13-15) (04-17-2019)	JC86553-21	Soil	4/17/2019		X	X		X	X
	SB-131(2-4) (04-17-2019)	JC86553-22	Soil	4/17/2019		X	X		X	X

SDG Number	Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis				
						VOC	SVOC	PEST/ PCB	Metals	MISC
	S-131(7-9) (04-17-2019)	JC86553-23	Soil	4/17/2019		X	X		X	X
	S-132(2-4) (04-17-2019)	JC86553-24	Soil	4/17/2019		X	X		X	X
	S-132(8-10) (04-17-2019)	JC86553-25	Soil	4/17/2019		X	X		X	X
	S-133(2-4) (04-17-2019)	JC86553-26	Soil	4/17/2019		X	X		X	X
	S-133(7-9) (04-17-2019)	JC86553-27	Soil	4/17/2019		X	X		X	X
	S-133(13-15) (04-17-2019)	JC86553-28	Soil	4/17/2019		X	X		X	X

Notes:

1. PEST/PCB = Pesticides and polychlorinated biphenyls
2. SVOC = Semivolatile Organic Compounds
3. VOC = Volatile Organic Compound
4. MISC = Miscellaneous (total cyanide)

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance (QA) or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260C, 8270D, 8081A, and 8082A. Data were reviewed in accordance with the USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540/R-2017-002, January 2017 and the USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Organic Data Review, EPA540/R-99/008, October 1999 (as applicable).

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The compound was positively identified; however, the associated numerical value is an estimated concentration only.

  UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.

  JN The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.

  UB Compound considered non-detect at the listed value due to associated blank contamination.

  N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is

that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times/Preservation

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260C	Water	14 days from collection to analysis (preserved) 7 days from collection to analysis (non-preserved)	Cool to <6 °C; preserved to a pH of less than 2 s.u.
	Soil	48 hours from collection to extraction and 14 days from extraction to analysis	Cool to <6 °C.

Note:
s.u. Standard units

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore, detected sample results were not associated with blank contamination.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. VOC analysis requires that all surrogates associated with the analysis exhibit recoveries within the laboratory-established acceptance limits.

Sample locations associated with surrogates exhibiting recoveries outside of the control limits presented in the following table.

Sample Locations	Surrogate	Recovery
S-115(4-6) (04-16-2019) SO-DUP-0416 (04-16-2019) S-117(4-6) (04-16-2019)	1,2-Dichloroethane-d4	AC
	4-Bromofluorobenzene	> UL
	Dibromofluoromethane	AC
	Toluene-d8	AC

Notes:

UCL Upper control limit

AC Acceptable

The criteria used to evaluate the surrogate recoveries are presented in the following table. In the case of a surrogate deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> UL	Non-detect	No Action
	Detect	J
< LL but > 10%	Non-detect	UJ
	Detect	J
< 10%	Non-detect	R
	Detect	J

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

Sample locations associated with the MS/MSD exhibiting recoveries outside of the control limits are presented in the following table.

Sample Locations	Compound	MS Recovery	MSD Recovery
S-131(7-9) (04-17-2019)	Carbon disulfide	<LL but >10%	--
S-116(4-6) (04-16-2019)	Numerous compounds	<LL but >10%	<LL but >10%

The criteria used to evaluate the MS/MSD recoveries are presented in the following table. In the case of an MS/MSD deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> the upper control limit (UL)	Non-detect	No Action
	Detect	J
< the lower control limit (LL) but > 10%	Non-detect	UJ
	Detect	J

Control Limit	Sample Result	Qualification
< 10%	Non-detect	R
	Detect	J
Parent sample concentration > four times the MS/MSD spiking solution concentration.	Detect	No Action
	Non-detect	

Sample locations associated with MS/MSD recoveries exhibiting an RPD greater than of the control limit presented in the following table.

Sample Locations	Compound
S-116(4-6) (04-16-2019)	Numerous compounds

The criteria used to evaluate the RPD between the MS/MSD recoveries are presented in the following table. In the case of an RPD deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> UL	Non-detect	UJ
	Detect	J

5. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) Analysis

The LCS/LCSD analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS/LCSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

Sample locations associated with LCS/LCSD analysis exhibiting recoveries outside of the control limits presented in the following table.

Sample Locations	Compound	LCS Recovery	LCSD Recovery
TP-15R(5-7) (04-16-2019) PCTP-49R(10-11) (04-16-2019) S-130(10-12) (04-17-2019) S-127(2-4) (04-17-2019) SO-DUP-0417 (04-17-2019)	1,2-Dibromoethane	>UL	AC

Note:
AC = Acceptable

The criteria used to evaluate the LCS/LCSD recoveries are presented in the following table. In the case of an LCS/LCSD deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> the upper control limit (UL)	Non-detect	No Action
	Detect	J
< the lower control limit (LL) but > 10%	Non-detect	UJ
	Detect	J
< 10%	Non-detect	R
	Detect	J

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of three times the RL is applied for soil matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
S-115(4-6) (04-16-2019)/ SO-DUP-0416 (04-16-2019)	Acetone	14.3 J	38.8	AC
	Benzene	7.9	11.2	AC
	Carbon Disulfide	1.8 J	1.6 J	AC
	Cyclohexane	0.84 J	3.3 U	AC
	Methylcyclohexane	1.5 J	1.6 J	AC
S-127(2-4) (04-17-2019)/ SO-DUP-0417 (04-17-2019)	Benzene	134	365	92.6%
	m&p-Xylenes	434	912	71.0%
	o-Xylene	198	383	63.7%
	Toluene	143	360	86.3%
	Total Xylenes	632	1300	69.2%

Notes:
AC Acceptable
NC Not compliant

Several analytes associated with sample locations S-127(2-4) (04-17-2019) and SO-DUP-0417 (04-17-2019) exhibited a field duplicate RPD greater than the control limit. The associated sample results from sample locations for the listed analyte were qualified as estimated.

7. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

8. System Performance and Overall Assessment

The laboratory narrative indicates continuing calibration deviations. These deviations are normally not evaluated in a tier II data review. Sample results that had continuing calibration recoveries that exceed the control limit high and were non detect did not require qualification. Sample results where the calibration recoveries were high and the compound was detected or calibration recoveries were low were qualified as estimated (J or UJ).

The laboratory narrative indicates internal standard deviations. These deviations are normally not evaluated in a tier II data review. Internal standard performance criteria ensure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

Sample locations associated with internal standards exhibiting responses outside of the control limits are presented in the following table.

Sample Locations	Internal Standard	Response
S-117(4-6) (04-16-2019)	Chlorobenzene-D5	< LL but > 25%
	1,4-Dichlorobenzene-d4	<25%
SO-DUP-0416 (04-16-2019)	1,4-Dichlorobenzene-d4	<25%
S-115(4-6) (04-16-2019)	1,4-Dichlorobenzene-d4	< LL but > 25%

Note:

AC Acceptable

The criteria used to evaluate the internal standard responses are presented in the following table. In the case of an internal standard deviation, the compounds quantitated under the deviant internal standard are qualified as documented in the table below.

Control limit	Sample Result	Qualification
> the upper control limit (UL)	Non-detect	No action
	Detect	J
< the lower control limit (LL) but > 25%	Non-detect	UJ
	Detect	J
< 25%	Non-detect	R
	Detect	J

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: SW-846 8260	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks	X				X
C. Trip blanks	X				X
Laboratory Control Sample (LCS)		X	X		
Laboratory Control Sample Duplicate(LCSD)	X				X
LCS/LCSD Precision (RPD)	X				X
Matrix Spike (MS)		X	X		
Matrix Spike Duplicate(MSD)		X	X		
MS/MSD Precision (RPD)		X	X		
Field/Lab Duplicate (RPD)		X	X		
Surrogate Spike Recoveries		X		X	
Dilution Factor		X		X	
Moisture Content		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

SEMIVOLATILE ORGANIC COMPOUND (SVOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8270D	Water	7 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C
	Soil	14 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

All compounds associated with the QA blanks exhibited a concentration less than the MDL, with the exception of the compounds listed in the following table. Sample results associated with QA blank contamination that were greater than the BAL resulted in the removal of the laboratory qualifier (B) of data. Sample results less than the BAL associated with the following sample locations were qualified as listed in the following table.

Sample Locations	Analytes	Sample Result	Qualification
S-126(7-9) (04-17-2019) S-132(8-10) (04-17-2019)	1,1'-Biphenyl Carbazole	Detected sample results <RL and <BAL	"UB" at the RL
S-126(13-15) (04-17-2019) S-133(7-9) (04-17-2019) S-133(13-15) (04-17-2019)	1,1'-Biphenyl		

Note:

RL Reporting limit

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. SVOC analysis requires that two of the three SVOC surrogate compounds within each fraction exhibit recoveries within the laboratory-established acceptance limits.

Sample locations associated with surrogates exhibiting recoveries outside of the control limits presented in the following table.

Sample Locations	Surrogate	Recovery
TP-15R(5-7)	Phenol-d6	AC
	2-Fluorophenol	AC
	2,4,6-Tribromophenol	AC
	Nitrobenzene-d5	>UL
	2-Fluorobiphenyl	AC
	Terphenyl-d14	AC
S-127(2-4) (initial dilution)	Phenol-d6	AC
	2-Fluorophenol	AC
	2,4,6-Tribromophenol	AC
	Nitrobenzene-d5	AC
	2-Fluorobiphenyl	<LL but >10%
	Terphenyl-d14	<LL but >10%
S-133(2-4)	Phenol-d6	AC
	2-Fluorophenol	AC
	2,4,6-Tribromophenol	AC
	Nitrobenzene-d5	AC
	2-Fluorobiphenyl	<LL but >10%
	Terphenyl-d14	AC

Notes:

AC Acceptable

The criteria used to evaluate the surrogate recoveries are presented in the following table. In the case of a surrogate deviation, the sample results associated with the deviant fraction are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> UL	Non-detect	No Action
	Detect	J
< LL but > 10%	Non-detect	UJ
	Detect	J
< 10%	Non-detect	R
	Detect	J

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

The MS/MSD exhibited recoveries within the control limits

5. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) Analysis

The LCS/LCSD analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS/LCSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

The LCS/LCSD exhibited acceptable recoveries and RPD between the MS/MSD recoveries.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of three times the RL is applied for soil matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
S-115(4-6) (04-16-2019)/ SO-DUP-0416 (04-16-2019)	1,1-Biphenyl	61.2 J	71.4 J	15.3 %
	2-Methylnaphthalene	279	303	8.2 %
	2-Methylphenol	40.5 J	43.5 J	AC
	3&4-Methylphenol	112	124	AC
	Acenaphthene	179	231	25.3 %
	Acenaphthylene	309	329	6.2 %
	Anthracene	597	838	33.5 %
	Benz(a)anthracene	2120	3380	45.8 %
	Benzo(a)pyrene	2560	4860	61.9 %
	Benzo(b)fluoranthene	3160	6130	63.9 %
	Benzo(g,h,i)perylene	1760	3060	53.9 %
	Benzo(k)fluoranthene	1040	1680	47.0 %
	Carbazole	281	484	NC

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
	Chrysene	2260	3700	48.3 %
	Dibenz(a,h)anthracene	504	844	50.4 %
	Dibenzofuran	208	209	AC
	Fluoranthene	3190	5290	49.5 %
	Fluorene	268	293	8.9 %
	Indeno(1,2,3-cd)pyrene	1880	3260	53.6 %
	Naphthalene	1880	1940	3.1 %
	Phenanthrene	2170	2950	30.4 %
	Phenol	200	194	AC
	Pyrene	2890	4930	52.1 %
S-127(2-4) (04-17-2019)/ SO-DUP-0417 (04-17-2019)	1,1-Biphenyl	9320	14700	44.7 %
	2,4-Dimethylphenol	997	1930	63.7 %
	2-Methylnaphthalene	41100	64300	44.0 %
	2-Methylphenol	573	1180	69.2 %
	3&4-Methylphenol	1160	2390	69.2 %
	Acenaphthene	4140	7150	53.3 %
	Acenaphthylene	12200	19900	47.9 %
	Acetophenone	95.4 J	194 J	AC
	Anthracene	54800	90800	49.4 %
	Benz(a)anthracene	45300	75200	49.6 %
	Benzo(a)pyrene	37600	60900	47.3 %
	Benzo(b)fluoranthene	46100	74400	46.9 %
	Benzo(g,h,i)perylene	18700	31000	49.4 %
	Benzo(k)fluoranthene	15700	29400	60.7 %
	Carbazole	27500	43300	44.6 %
	Chrysene	39300	64600	48.7 %
	Dibenz(a,h)anthracene	5740	11000	62.8 %
	Dibenzofuran	46600	73000	44.1 %
	Fluoranthene	130000	211000	47.5 %
	Fluorene	64300	103000	46.2 %
	Indeno(1,2,3-cd)pyrene	19600	32200	48.6 %

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
	Naphthalene	168000	278000	49.3 %
	Phenanthrene	216000	350000	47.3 %
	Phenol	338	720	NC
	Pyrene	82800	137000	49.3 %

Notes:
AC Acceptable
NC Not compliant

Several analytes associated with sample locations S-115(4-6) (04-16-2019), SO-DUP-0416 (04-16-2019), S-127(2-4) (04-17-2019), and SO-DUP-0417 (04-17-2019) exhibited a field duplicate RPD greater than the control limit. The associated sample results from sample locations for the listed analyte were qualified as estimated.

7. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

Several samples were diluted to bring target compounds within linear range of the instrument. Sample results that were reported from a secondary dilution were qualified with a “D”, indicating the result is diluted.

8. System Performance and Overall Assessment

The laboratory narrative indicates continuing calibration deviations. These deviations are normally not evaluated in a tier II data review. Sample results that had continuing calibration recoveries that exceed the control limit high and were non detect did not require qualification. Sample results where the calibration recoveries were high and the compound was detected or calibration recoveries were low were qualified as estimated (J or UJ).

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR SVOCs

SVOCs: SW-846 8270	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X	X		
B. Equipment blanks		X		X	
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R	X				X
LCS/LCSD Precision (RPD)	X				X
Matrix Spike (MS) %R		X		X	
Matrix Spike Duplicate(MSD) %R		X		X	
MS/MSD Precision (RPD)		X		X	
Field/Lab Duplicate (RPD)		X	X		
Surrogate Spike Recoveries		X	X		
Dilution Factor		X		X	
Moisture Content		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

PESTICIDE ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8081A	Water	7 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C
	Soil	14 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. Herbicide analysis requires that one of the two pesticide surrogate compounds exhibit recoveries within the laboratory-established acceptance limits.

All surrogate recoveries were within control limits.

3. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

An MS/MSD was not performed on a sample within this SDG.

5. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

All compounds associated with the LCS analysis exhibited recoveries within the control limits.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 40% for water matrices and 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

A field duplicate was not performed on a sample within this SDG.

7. Compound Identification

The retention times of all quantitated peaks must fall within the calculated retention time windows for both the primary and confirmation columns. When dual column analysis is performed the percent difference (%D) of detected sample results must be less than 40%.

Sample locations associated with %D analysis exhibiting recoveries outside of the control limits presented in the following table.

Sample Locations	Compound	%D
PSSTP-10R(8-9)	4,4'-DDE	84.2%

The criteria used to evaluate the %D are presented in the following table. In the case of a %D deviation, the sample results are qualified as documented in the table below.

Control Limit (%D)	Qualification
>40% to 70%	J
>70% to 100%	JN
>100% [1]	R
>100% to 200% (Interference detected)[2]	J or JN
>50% (pesticide) sample results less than the RL)	U

When the pesticide sample results are less than the RL and the %D greater than 50% the sample result are raised to the RL and reported as non-detect.

Notes:

1: If the pattern is confirmed sample results will be qualified as estimated (J). If pattern exhibits interference or if the pesticide cannot be positively determined due to weathering the sample results will be qualified as tentative identification estimate (JN).

2: If interference is detected in either column the sample results will be qualified as tentative identification estimate (JN).

8. System Performance and Overall Assessment

The laboratory narrative indicates continuing calibration deviations. These deviations are normally not evaluated in a tier II data review. Sample results that had continuing calibration recoveries that exceed the control limit high and were non detect did not require qualification. Sample results where the calibration recoveries were high and the compound was detected or calibration recoveries were low were qualified as estimated (J or UJ).

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR PESTICIDES

Pesticides; SW-846 8081	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY (GC/ECD)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks	X				X
Laboratory Control Sample (LCS)		X		X	
Laboratory Control Sample Duplicate(LCSD)	X				X
LCS/LCSD Precision (RPD)	X				X
Matrix Spike (MS)	X				X
Matrix Spike Duplicate(MSD)	X				X
MS/MSD Precision (RPD)	X				X
Field/Lab Duplicate (RPD)	X				X
Surrogate Spike Recoveries		X		X	
Column %D $\leq$ 40% (If dual column is performed for reporting-not confirmation)		X	X		
Dilution Factor		X		X	
Moisture Content		X		X	

Notes:

%RSD – relative standard deviation
%R - percent recovery
RPD - relative percent difference
%D – difference.

POLYCHLORINATED BIPHENYLS (PCBs) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8082A	Soil	14 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore, detected sample results were not associated with blank contamination.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. PCB analysis requires that one of the two PCB surrogate compounds exhibit recoveries within the laboratory-established acceptance limits.

All surrogate recoveries were within control limits.

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

The MS/MSD was not performed on a sample within this SDG.

5. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

All compounds associated with the LCS analysis exhibited recoveries within the control limits.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of three times the RL is applied for soil matrices.

A field duplicate was not performed on a sample within this SDG.

7. Compound Identification

The retention times of all quantitated peaks must fall within the calculated retention time windows for both the primary and confirmation columns. When dual column analysis is performed the relative percent difference (%RPD) of detected sample results must be less than 40%.

No Aroclors were detected in the samples within this SDG.

8. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR PCBs

PCBs; SW-846 8082A	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY (GC/ECD)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks					X
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R					X
LCS/LCSD Precision (RPD)					X
Matrix Spike (MS) %R	X				X
Matrix Spike Duplicate(MSD) %R	X				X
MS/MSD Precision (RPD)	X				X
Field/Lab Duplicate (RPD)	X				X
Surrogate Spike Recoveries		X		X	
Column (%D) (If dual column is performed-not confirmation purposes only)		X		X	
Dilution Factor		X		X	
Moisture Content		X		X	

%R - percent recovery

RPD - relative percent difference

%D – difference

INORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 6010D, 7471A, and 9012B. Data were reviewed in accordance with the USEPA CLP National Functional Guidelines for Inorganic Superfund Methods Data Review, EPA 540/R-2017-001, January 2017; and the USEPA CLP National Functional Guidelines for Inorganic Data Review, EPA 540-R-01-008, July 2002 (as applicable).

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and that it was already subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with the USEPA National Functional Guidelines:

- Concentration (C) Qualifiers
  - U The analyte was analyzed for but not detected. The associated value is the analyte instrument detection limit.
  - J The reported value was obtained from a reading less than the reporting limit (RL), but greater than or equal to the method detection limit (MDL).
- Quantitation (Q) Qualifiers
  - E The reported value is estimated due to the presence of interference.
  - N Spiked sample recovery is not within control limits.
  - * Duplicate analysis is not within control limits.
- Validation Qualifiers
  - J The analyte was positively identified; however, the associated numerical value is an estimated concentration only.
  - UJ The analyte was not detected above the reporting limit. However, the reported limit is approximate and may or may not represent the actual limit of detection.
  - UB Analyte considered non-detect at the listed value due to associated blank contamination.
  - R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

METALS ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 6010D	Water	180 days from collection to analysis	Preserved to a pH of less than 2.
	Soil	180 days from collection to analysis	Cool to <6 °C.
SW-846 7471A	Soil	28 days from collection to analysis	Cool to <6 °C.
SW-846 7470A	Water	28 days from collection to analysis	Cool to <6 °C; preserved to a pH of less than 2.

All samples were analyzed within the specified holding times.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Analytes were detected in the associated QA blanks; however, the associated sample results were greater than the BAL and/or were non-detect. No qualification of the sample results was required.

3. Matrix Spike (MS)/Matrix Spike Duplicate(MSD)/Laboratory Duplicate Analysis

MS/MSD and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

3.1 MS/MSD Analysis

All metal analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the analyte's concentration detected in the parent sample exceeds the MS concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

All analytes associated with MS/MSD recoveries were within control limits with the exception of the following analyte present in the table below.

Sample Location	Analyte	MS Recovery	MSD Recovery
S-116(4-6) (04-16-2019)	Aluminum	215.9%	206.8%
	Antimony	63.9%	64.1%
	Manganese	130.3%	131.8%
	Zinc	169.8%	110.1%
S-133(2-4) (04-17-2019)	Mercury	25.2%	76.6%

The criteria used to evaluate MS/MSD recoveries are presented in the following table. In the case of an MS/MSD deviation, the sample results are qualified. The qualifications for all metals except mercury are applied to all sample results associated with this SDG. The qualification of Mercury is applied to all samples except S-116(4-6) (04-16-2019).

Control limit	Sample Result	Qualification
MS/MSD percent recovery 30% to 74%	Non-detect	UJ
	Detect	J
MS/MSD percent recovery <30%	Non-detect	R
	Detect	J
MS/MSD percent recovery >125%	Non-detect	No Action
	Detect	J

3.2 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the RL. A control limit of 20% for water matrices and 35% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of one times the RL is applied for water matrices and two times the RL for soil matrices.

MS/MSD analysis was performed in replacement of the laboratory duplicate analysis. The MS/MSD analysis exhibited RPDs within the control limits.

4. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of three times the RL is applied for soil matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
S-115(4-6) (04-16-2019)/	Aluminum	2250	1750	25.0 %

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
SO-DUP-0416 (04-16-2019)	Arsenic	21.6	16.8	25.0 %
	Barium	72.1	49.4	AC
	Beryllium	0.61	0.45	AC
	Calcium	1770	3880	NC
	Chromium	90.2	25.4	112.1 %
	Copper	135	98.5	31.2 %
	Iron	32200	25900	21.6 %
	Lead	162	108	40.0 %
	Magnesium	640 U	1820	AC
	Manganese	211	280	28.1 %
	Mercury	0.22	0.14	AC
	Nickel	24	19.2	22.2 %
	Vanadium	11.1	10.4	AC
	Zinc	183	115	45.6 %
S-127(2-4) (04-17-2019)/ SO-DUP-0417 (04-17-2019)	Aluminum	9820	11600	16.6 %
	Arsenic	9.7	7.9	AC
	Barium	121	176	37.0 %
	Beryllium	0.82	0.90	AC
	Calcium	14800	19700	28.4 %
	Chromium	22	24.9	12.3 %
	Copper	37.6	47.7	23.6 %
	Iron	25700	21800	16.4 %
	Lead	417	454	8.4 %
	Magnesium	7300	9260	23.6 %
	Manganese	624	1080	53.5 %
	Nickel	14.4	15.6	7.9 %
	Potassium	1440	1600	10.5 %
	Vanadium	24.2	36.3	39.9 %
	Zinc	208	180	14.4 %

Notes:

AC Acceptable

NC Not compliant

Calcium and chromium associated with sample locations S-115(4-6) (04-16-2019) and SO-DUP-0416 (04-16-2019), and manganese associated with S-127(2-4) (04-17-2019) and SO-DUP-0417 (04-17-2019) exhibited a field duplicate RPD greater than the control limit. The associated sample results from all sample locations for the listed analytes were qualified as estimated.

5. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The analytes associated with the LCS analysis must exhibit a percent recovery between the control limits of 80% and 120%.

The LCS analysis exhibited recoveries within the control limits.

6. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR METAL

METALS; SW846 6010D/7471A	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Inductively Coupled Plasma-Atomic Emission Spectrometry (ICP-AES)					
Tier II Validation					
Holding Times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method Blanks		X		X	
B. Equipment/Field Blanks	X				X
Laboratory Control Sample (LCS)		X		X	
Matrix Spike (MS) %R		X	X		
Matrix Spike Duplicate (MSD) %R		X	X		
MS/MSD Precision (RPD)		X		X	
Field/Lab Duplicate (RPD)		X	X		
Total vs. Dissolved	X				X

Notes:

%R Percent recovery

RPD Relative percent difference

GENERAL CHEMISTRY ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
Cyanide by SW-846 9012	Water	14 days from collection to analysis	Cool to <6 °C; preserved to a pH of greater than 12.
	Soil		Cool to <6 °C.

All samples were analyzed within the specified holding times.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Analytes were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Matrix Spike/Matrix Spike Duplicate (MS/MSD)/Laboratory Duplicate Analysis

MS/MSD and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

3.1 MS/MSD Analysis

All analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the analyte's concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

All analytes associated with MS/MSD recoveries were within control limits with the exception of the following analyte present in the table below.

Sample Location	Analyte	MS Recovery
S-127(6-8) (04-17-2019)	Cyanide	37.2%

The criteria used to evaluate MS/MSD recoveries are presented in the following table. In the case of an MS/MSD deviation, the sample results are qualified. The qualifications for all metals except mercury are

applied to all sample results associated with this SDG except S-116(4-6) (04-16-2019), which exhibited a passing MS recovery.

Control limit	Sample Result	Qualification
MS/MSD percent recovery 30% to 74%	Non-detect	UJ
	Detect	J
MS/MSD percent recovery <30%	Non-detect	R
	Detect	J
MS/MSD percent recovery >125%	Non-detect	No Action
	Detect	J

3.2 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the RL. A control limit of 20% for water matrices and 35% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of one times the RL is applied for water matrices and two times the RL for soil matrices.

The laboratory duplicate analysis exhibited RPD within control limits.

4. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The analytes associated with the LCS analysis must exhibit a percent recovery between the control limits of 80% and 120%.

The LCS analysis exhibited recoveries within the control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of three times the RL is applied for soil matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
S-115(4-6) (04-16-2019)/ SO-DUP-0416 (04-16-2019)	Cyanide	18.3	21.2	14.6%
S-127(2-4) (04-17-2019)/ SO-DUP-0417 (04-17-2019)	Cyanide	1.1	0.63	AC

Notes:
AC Acceptable

The calculated RPDs between the parent sample and field duplicate were acceptable.

6. System Performance and Overall Assessment

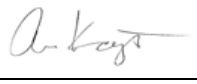
Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR GENERAL CHEMISTRY

General Chemistry: EPA 9012	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Miscellaneous Instrumentation					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks					X
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R					X
LCS/LCSD Precision (RPD)					X
Matrix Spike (MS) %R		X	X		
Matrix Spike Duplicate(MSD) %R	X				X
MS/MSD Precision (RPD)	X				X
Field/Lab Duplicate (RPD)		X		X	
Dilution Factor		X		X	
Moisture Content					X

Notes:
%R - percent recovery
RPD - relative percent difference

VALIDATION PERFORMED BY: Andrew Korycinski

SIGNATURE: 

DATE: July 17, 2019

PEER REVIEW: Dennis Capria

DATE: July 22, 2019

CHAIN OF CUSTODY
SAMPLE ANALYSIS DATA SHEETS

CHAIN OF CUSTODY

SGS North America Inc. - Dayton
2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200 FAX: 732-329-3499/3480
www.sgs.com/ehsusa

Page 1 of 3

FED-EX Tracking #:
Bottle Order Control #: KR-041219-171
SGS Quote #:
SGS Job #: JC86553

Client / Reporting Information

Company Name: Arcadis-US
Street Address: 1100 Fayette St #300
City: Syracuse State: NY Zip: 13202
Project Contact: Cory Healy E-mail: Lawrence.Healy@Arcadis-us.com
Phone #: (315) 335-4493
Sampler(s) Name(s): Evan Green Phone #: (603) 305-2692

Project Information

Project Name: Philadelphia PA
Street: 4501 Richmond St
City: Philadelphia State: PA
Project #: B00362740.0001
Client Purchase Order #: B00362740.0001
Project Manager: John Brussel

Billing Information (if different from Report to)

Company Name: Same
Street Address:
City: State:
Attention:

Requested Analysis

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL - Sludge; SED-Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB - Field Blank; EB-Equipment Blank; RB - Rinse Blank; TB - Trip Blank

SGS Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Grab (G) Comp (C)	Matrix	# of bottles	HCl	NaOH	HNO_3	H_2SO_4	NONE	DI Water	MEOH	ENCORE	Number preserved Bottles	8260 TCL 20	CN	AB8270TCL20	MTAL	PB8081 PEST TCL	PB8082 PCB 11	LAB USE ONLY
	S-116 (4-6)		4/16/19	0835	EG	G	SO	5					2	2			1	X	X	X	X			CFLR
1	S-116 (4-6) MS		4/16/19	0835	EG	G	SO	5					2	2			1	X	X	X	X			1462
	S-116 (4-6) MSD		4/16/19	0835	EG	G	SO	5					2	2			1	X	X	X	X			
2	S-115 (4-6)		4/16/19	0915	EG	G	SO	5					2	2			1	X	X	X	X			MFLR
3	SO-DUP-04L6		4/16/19	-:-	EG	G	SO	5					2	2			1	X	X	X	X			4095
4	S-117 (2-4)		4/16/19	1000	EG	G	SO	5					2	2			1	X	X	X	X			4096
5	TP-15R (5-7)		4/16/19	1040	EG	G	SO	5					2	2			1	X	X	X	X			
6	TP-15R (10.5-12.5)		4/16/19	1050	EG	G	SO	5					2	2			1	X	X	X	X			
7	S-118 (4-6)		4/16/19	1125	EG	G	SO	5					2	2			1	X	X	X	X			
8	PCTP-49R (8-10)		4/16/19	1250	EG	G	SO	5					2	2			1	X	X	X	X			
9	PCTP-49R (10-11)		4/16/19	1305	EG	G	SO	5					2	2			1	X	X	X	X			
10	PSSTP-10R (1-2)		4/16/19	1345	EG	G	SO	6					3	2			1	X	X	X	X	X	X	

Turn Around Time (Business Days)

Approved By (SGS PM): / Date:

- [ ] 10 Business Days
- [x] 5 Business Days
- [ ] 3 Business Days*
- [ ] 2 Business Days*
- [ ] 1 Business Day*
- [ ] Other

All data available via Lablink

* Approval needed for 1-3 Business Day TAT

Deliverable

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] NJ Reduced (Level 3)
- [x] Full Tier I (Level 4)
- [ ] Commercial "C"
- [ ] NJ DKQP
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] MA MCP Criteria
- [ ] CT RCP Criteria
- [ ] State Forms
- [ ] EDD Format
- [ ] DOD-QSM5

Commercial "A" = Results only; Commercial "B" = Results + QC Summary
Commercial "C" = Results + QC Summary + Partial Raw data

Comments / Special Instructions

http://www.sgs.com/en/terms-and-conditions

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by:	Date / Time:	Received By:	Relinquished By:	Date / Time:	Received By:
1	4/17/19 1625	1	2	4/17/19 1740	2
3		3	4		4
5		5	Custody Seal #	Intact / Not Intact	Preserved where applicable: Absent / Therm. ID:	On Ice: Cooler Temp. °C: 1.4, 2.2 corr

EHSA-QAC-0023-02-FORM-Dayton - Standard COC.xlsx

CHAIN OF CUSTODY

SGS North America Inc. - Dayton
2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200 FAX: 732-329-3499/3480
www.sgs.com/ehsusa

FED-EX Tracking # | Bottle Order Control #
SGS Quote # | SGS Job # JC86553

Client / Reporting Information

Company Name: Arcadis-US
Street Address: 1100 Fayette St #301
City: Syracuse State: NY Zip: 13202
Project Contact: Cindy Healy E-mail: Lawrence.Healy@Arcadis-us.com
Phone #: (315) 335-9443
Sampler(s) Name(s): Evan Grom Phone #: (315) 335-2612

Project Information

Project Name: Philadelphia Coke
Street: 4541 Richmond St
City: Philadelphia State: PA
Project #: B0036746.0001
Client Purchase Order #: B0036746.0001
Project Manager: John Bonsell

Billing Information (if different from Report to)

Company Name:
Street Address:
City: State: Zip:
Attention:

Requested Analysis

SGS Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Grab (G) Comp (C)	Matrix	# of bottles	Number of preserved Bottles: HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	Methanol	VB360-TCL20	CN	ABB270TCL20	MTAL	PB0581PESTTCL	PB0582PCB11
11	PSSTP-10R(8-9)		4/14/14	1400	EG	G	SO	6					3	2				X	X	X	X	X	X
12	S-130 (2-4)		4/17/14	755	GB			5					2	3				X	X	X	X		
13	S-130 (7-8)			805																			
14	S-130 (12-13)			815																			
15	S-130 (13-15)			820																			
16	S-126 (7-9)			900																			
17	S-126 (13-15)			915																			
18	S-127 (2-4)			940																			
19	SO-DUP-041714			—																			
20	S-127 (7-9)			1000																			
21	S-127 (13-15)			1015																			
22	S-131 (2-4)			1110																			

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL - Sludge
SED-Sediment
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe
FB - Field Blank
EB-Equipment Blank
RB - Rinse Blank
TB - Trip Blank

LAB USE ONLY

Turn Around Time (Business Days)

Approved By (SGS PM): / Date:

- [ ] 10 Business Days
- [X] 5 Business Days
- [ ] 3 Business Days*
- [ ] 2 Business Days*
- [ ] 1 Business Day*
- [ ] Other

All data available via Lablink

* Approval needed for 1-3 Business Day TAT

Deliverable

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] NJ Reduced (Level 3)
- [X] Full Tier I (Level 4)
- [ ] Commercial "C"
- [ ] NJ DKQP
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] MA MCP Criteria_____
- [ ] CT RCP Criteria_____
- [ ] State Forms
- [ ] EDD Format _____
- [ ] DOD-QSM5

Commercial "A" = Results only; Commercial "B" = Results + QC Summary
Commercial "C" = Results + QC Summary + Partial Raw data

Comments / Special Instructions

http://www.sgs.com/en/terms-and-conditions

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by:	Date / Time:	Received By:	Relinquished by:	Date / Time:	Received By:
1	4/17/14 1625	1	2	4/17/14 1740	2
3		3	4		4
5		5	Custody Seal #	Intact / Not intact	Preserved where applicable / Absent / Therm. ID: / On Ice / Cooler Temp 1.4, 2.5 °C

EHSA-QAC-0023-02-FORM-Dayton - Standard COC.xlsx

CHAIN OF CUSTODY

SGS North America Inc. - Dayton
2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200 FAX: 732-329-3499/3480
www.sgs.com/ehsusa

Page 3 of 3

FED-EX Tracking #: | Bottle Order Control #:
SGS Quote #: | SGS Job #: JC86553

Client / Reporting Information

Company Name: Arcadis-US
Street Address: 110 W Fayette St #300
City: Syracuse State: NY Zip: 13202
Project Contact: Carry Healy E-mail: Larry.w.Healy@arcadis.com
Phone #: 315-335-9493
Sampler(s) Name(s): Gr Bailey Phone #: 352-345-0881

Project Information

Project Name: Philadelphia Coke
Street: 4501 Richmond St
City: Philadelphia State: PA
Project #: 30061790.0001
Client Purchase Order #:
Project Manager: John Bucsik

Billing Information (if different from Report to)

Company Name: Same
Street Address:
City: State: Zip:
Attention:

Requested Analysis

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL - Sludge; SED-Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB - Field Blank; EB-Equipment Blank; RB - Rinse Blank; TB - Trip Blank

SGS Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Grab (G) Comp (C)	Matrix	# of bottles	Preserved Bottles: HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	8260 GTCL20	CN	8270 TCL20	MTAL	P6891 PEST TCL P4052 PCB II	LAB USE ONLY
23	S-131 (7-9)		4/17/19	1120	GB	G	SO	5					2	2			X	X	X	X		
24	S-132 (2-4)			1150																		
25	S-132 (8-6)			1205																		
26	S-133 (2-4)			1255																		
27	S-133 (7-9)			1305																		
28	S-135 (13-15)			1315																		

Turn Around Time (Business Days)

Approved By (SGS PM): / Date:

- [ ] 10 Business Days
- [x] 5 Business Days
- [ ] 3 Business Days*
- [ ] 2 Business Days*
- [ ] 1 Business Day*
- [ ] Other

All data available via Lablink | * Approval needed for 1-3 Business Day TAT

Deliverable

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] NJ Reduced (Level 3)
- [x] Full Tier I (Level 4)
- [ ] Commercial "C"
- [ ] NJ DKQP
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] MA MCP Criteria_____
- [ ] CT RCP Criteria_____
- [ ] State Forms
- [ ] EDD Format _____
- [ ] DOD-QSM5

Commercial "A" = Results only; Commercial "B" = Results + QC Summary
Commercial "C" = Results + QC Summary + Partial Raw data

Comments / Special Instructions

http://www.sgs.com/en/terms-and-conditions

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by:	Date / Time:	Received By:	Relinquished by:	Date / Time:	Received By:
1	4/17/19 1605	1	2	4/17/19 1740	2
3		3	4		4
5		5	Custody Seal #	Intact / Not intact	Preserved where applicable: Absent / Therm. ID: / On ice / Cooler Temp. °C

EHSA-QAC-0023-02-FORM-Dayton - Standard COC.xlsx

SGS LabLink@1039014 11:14 10-May-2019

Report of Analysis

Client Sample ID:	S-116(4-6)		
Lab Sample ID:	JC86553-1	**Date Sampled:**	04/16/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8260C	**Percent Solids:**	81.5
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3C151395.D	1	04/24/19 22:23	PS	n/a	n/a	V3C6807
Run #2							

	Initial Weight
Run #1	4.0 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	53.1	15	7.7	ug/kg	J
71-43-2	Benzene	ND	0.77	0.58	ug/kg	UJ
74-97-5	Bromochloromethane	ND	7.7	0.66	ug/kg	
75-27-4	Bromodichloromethane	ND	3.1	0.68	ug/kg	
75-25-2	Bromoform	ND	7.7	0.62	ug/kg	
74-83-9	Bromomethane [a]	ND	7.7	1.5	ug/kg	
78-93-3	2-Butanone (MEK)	ND	15	5.8	ug/kg	
75-15-0	Carbon disulfide	ND	3.1	1.4	ug/kg	
56-23-5	Carbon tetrachloride	ND	3.1	0.85	ug/kg	
108-90-7	Chlorobenzene	ND	3.1	0.55	ug/kg	
75-00-3	Chloroethane	ND	7.7	1.1	ug/kg	
67-66-3	Chloroform	ND	3.1	0.57	ug/kg	
74-87-3	Chloromethane	ND	7.7	3.0	ug/kg	
110-82-7	Cyclohexane	ND	3.1	0.63	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	3.1	1.3	ug/kg	
124-48-1	Dibromochloromethane	ND	3.1	0.52	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.5	0.50	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.5	0.47	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.5	0.55	ug/kg	UJ
106-46-7	1,4-Dichlorobenzene	ND	1.5	0.53	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	7.7	0.98	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.5	0.59	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.5	0.73	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.5	1.0	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.5	1.5	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.5	1.0	ug/kg	
78-87-5	1,2-Dichloropropane	ND	3.1	0.63	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	3.1	0.54	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	3.1	0.51	ug/kg	
100-41-4	Ethylbenzene	ND	1.5	0.85	ug/kg	
76-13-1	Freon 113	ND	7.7	1.2	ug/kg	
591-78-6	2-Hexanone	ND	7.7	2.0	ug/kg	J

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-116(4-6)		
Lab Sample ID:	JC86553-1	**Date Sampled:**	04/16/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8260C	**Percent Solids:**	81.5
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	3.1	1.1	ug/kg	UJ
79-20-9	Methyl Acetate	ND	7.7	2.1	ug/kg	UJ
108-87-2	Methylcyclohexane	ND	3.1	1.1	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.5	0.54	ug/kg	UJ
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	7.7	2.4	ug/kg	UJ
75-09-2	Methylene chloride	ND	7.7	3.9	ug/kg	UJ
100-42-5	Styrene	ND	3.1	0.89	ug/kg	UJ
79-34-5	1,1,2,2-Tetrachloroethane	ND	3.1	0.60	ug/kg	
127-18-4	Tetrachloroethene	ND	3.1	0.71	ug/kg	UJ
108-88-3	Toluene	ND	1.5	0.58	ug/kg	UJ
87-61-6	1,2,3-Trichlorobenzene	ND	7.7	1.5	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	7.7	1.5	ug/kg	UJ
71-55-6	1,1,1-Trichloroethane	ND	3.1	0.66	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	3.1	0.53	ug/kg	
79-01-6	Trichloroethene	ND	1.5	1.2	ug/kg	
75-69-4	Trichlorofluoromethane	ND	7.7	1.1	ug/kg	
75-01-4	Vinyl chloride	ND	3.1	0.72	ug/kg	
	m,p-Xylene	ND	1.5	1.2	ug/kg	
95-47-6	o-Xylene	ND	1.5	0.90	ug/kg	
1330-20-7	Xylene (total)	ND	1.5	0.90	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%		75-127%
17060-07-0	1,2-Dichloroethane-D4	99%		75-130%
2037-26-5	Toluene-D8	111%		80-120%
460-00-4	4-Bromofluorobenzene	124%		79-127%

(a) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS LabLink@1039014 11:14 10-May-2019

Report of Analysis

Client Sample ID:	S-116(4-6)		
Lab Sample ID:	JC86553-1	**Date Sampled:**	04/16/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	81.5
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5P58719.D	1	04/22/19 06:12	CB	04/19/19 07:45	OP19847	E5P2780
Run #2	5P58740.D	5	04/22/19 16:12	YC	04/19/19 07:45	OP19847	E5P2781

	Initial Weight	Final Volume
Run #1	30.0 g	1.0 ml
Run #2	30.0 g	1.0 ml

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	82	20	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	200	25	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	200	35	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	200	73	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	200	150	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	200	44	ug/kg	
95-48-7	2-Methylphenol	ND	82	26	ug/kg	
	3&4-Methylphenol	ND	82	34	ug/kg	
88-75-5	2-Nitrophenol	ND	200	27	ug/kg	
100-02-7	4-Nitrophenol	ND	410	110	ug/kg	
87-86-5	Pentachlorophenol	ND	160	38	ug/kg	
108-95-2	Phenol	ND	82	21	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	200	27	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	200	31	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	200	24	ug/kg	
83-32-9	Acenaphthene	869	41	14	ug/kg	
208-96-8	Acenaphthylene	895	41	21	ug/kg	
98-86-2	Acetophenone	ND	200	8.8	ug/kg	
120-12-7	Anthracene	1840	41	25	ug/kg	
1912-24-9	Atrazine	ND	82	18	ug/kg	
56-55-3	Benzo(a)anthracene	3820	41	12	ug/kg	
50-32-8	Benzo(a)pyrene	5110 [a]	200	93	ug/kg	D
205-99-2	Benzo(b)fluoranthene	6640 [a]	200	90	ug/kg	D
191-24-2	Benzo(g,h,i)perylene	2810	41	20	ug/kg	
207-08-9	Benzo(k)fluoranthene	1900 [a]	200	96	ug/kg	D
101-55-3	4-Bromophenyl phenyl ether	ND	82	16	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	82	10	ug/kg	
92-52-4	1,1'-Biphenyl	113	82	5.6	ug/kg	
100-52-7	Benzaldehyde	ND	200	10	ug/kg	
91-58-7	2-Chloronaphthalene	ND	82	9.7	ug/kg	
106-47-8	4-Chloroaniline	ND	200	15	ug/kg	
86-74-8	Carbazole	704	82	5.9	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-116(4-6)		
Lab Sample ID:	JC86553-1	**Date Sampled:**	04/16/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	81.5
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	82	16	ug/kg	
218-01-9	Chrysene	3960	41	13	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	82	8.8	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	82	18	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	82	15	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	82	13	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	41	13	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	41	21	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	82	34	ug/kg	
123-91-1	1,4-Dioxane	ND	41	27	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	951	41	18	ug/kg	
132-64-9	Dibenzofuran	905	82	17	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	82	6.7	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	82	10	ug/kg	
84-66-2	Diethyl phthalate	ND	82	8.7	ug/kg	
131-11-3	Dimethyl phthalate	ND	82	7.3	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	82	9.6	ug/kg	
206-44-0	Fluoranthene	8360 [a]	200	91	ug/kg	D
86-73-7	Fluorene	1840	41	19	ug/kg	
118-74-1	Hexachlorobenzene	ND	82	10	ug/kg	
87-68-3	Hexachlorobutadiene	ND	41	16	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	410	16	ug/kg	
67-72-1	Hexachloroethane	ND	200	20	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	3050	41	19	ug/kg	
78-59-1	Isophorone	ND	82	8.8	ug/kg	
91-57-6	2-Methylnaphthalene	274	41	9.2	ug/kg	
88-74-4	2-Nitroaniline	ND	200	9.7	ug/kg	
99-09-2	3-Nitroaniline	ND	200	10	ug/kg	
100-01-6	4-Nitroaniline	ND	200	11	ug/kg	
91-20-3	Naphthalene	1150	41	12	ug/kg	
98-95-3	Nitrobenzene	ND	82	16	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	82	12	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	200	15	ug/kg	
85-01-8	Phenanthrene	6590 [a]	200	69	ug/kg	D
129-00-0	Pyrene	6780 [a]	200	65	ug/kg	D
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	200	10	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	54%	62%	23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-116(4-6)		
Lab Sample ID:	JC86553-1	**Date Sampled:**	04/16/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	81.5
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	55%	60%	27-114%
118-79-6	2,4,6-Tribromophenol	59%	64%	19-152%
4165-60-0	Nitrobenzene-d5	60%	65%	26-134%
321-60-8	2-Fluorobiphenyl	64%	72%	39-124%
1718-51-0	Terphenyl-d14	58%	64%	36-134%

(a) Result is from Run# 2

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS LabLink@1039014 11:14 10-May-2019

Report of Analysis

Client Sample ID:	S-115(4-6)		
Lab Sample ID:	JC86553-2	**Date Sampled:**	04/16/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8260C	**Percent Solids:**	81.6
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3C151396.D	1	04/24/19 22:46	PS	n/a	n/a	V3C6807
Run #2 [a]	3C151437.D	1	04/25/19 16:27	PS	n/a	n/a	V3C6808

	Initial Weight
Run #1	3.6 g
Run #2	3.1 g

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	14.3	17	8.5	ug/kg	J
71-43-2	Benzene	7.9	0.85	0.64	ug/kg	J
74-97-5	Bromochloromethane	ND	8.5	0.73	ug/kg	
75-27-4	Bromodichloromethane	ND	3.4	0.76	ug/kg	
75-25-2	Bromoform	ND	8.5	0.69	ug/kg	
74-83-9	Bromomethane [b]	ND	8.5	1.7	ug/kg	UJ
78-93-3	2-Butanone (MEK)	ND	17	6.4	ug/kg	
75-15-0	Carbon disulfide	1.8	3.4	1.6	ug/kg	J
56-23-5	Carbon tetrachloride	ND	3.4	0.94	ug/kg	
108-90-7	Chlorobenzene	ND	3.4	0.60	ug/kg	
75-00-3	Chloroethane	ND	8.5	1.2	ug/kg	
67-66-3	Chloroform	ND	3.4	0.63	ug/kg	
74-87-3	Chloromethane	ND	8.5	3.3	ug/kg	
110-82-7	Cyclohexane	0.84	3.4	0.69	ug/kg	J
96-12-8	1,2-Dibromo-3-chloropropane	ND	3.4	1.4	ug/kg	UJ
124-48-1	Dibromochloromethane	ND	3.4	0.58	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.7	0.55	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.7	0.52	ug/kg	UJ
541-73-1	1,3-Dichlorobenzene	ND	1.7	0.61	ug/kg	UJ
106-46-7	1,4-Dichlorobenzene	ND	1.7	0.59	ug/kg	UJ
75-71-8	Dichlorodifluoromethane	ND	8.5	1.1	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.7	0.66	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.7	0.80	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.7	1.1	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.7	1.6	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.7	1.1	ug/kg	
78-87-5	1,2-Dichloropropane	ND	3.4	0.69	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	3.4	0.60	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	3.4	0.56	ug/kg	
100-41-4	Ethylbenzene	ND	1.7	0.94	ug/kg	
76-13-1	Freon 113	ND	8.5	1.3	ug/kg	
591-78-6	2-Hexanone	ND	8.5	2.2	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-115(4-6)		
Lab Sample ID:	JC86553-2	**Date Sampled:**	04/16/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8260C	**Percent Solids:**	81.6
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	3.4	1.2	ug/kg	
79-20-9	Methyl Acetate	ND	8.5	2.4	ug/kg	
108-87-2	Methylcyclohexane	1.5	3.4	1.2	ug/kg	J
1634-04-4	Methyl Tert Butyl Ether	ND	1.7	0.60	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	8.5	2.7	ug/kg	
75-09-2	Methylene chloride	ND	8.5	4.3	ug/kg	
100-42-5	Styrene	ND	3.4	0.98	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	3.4	0.67	ug/kg	UJ
127-18-4	Tetrachloroethene	ND	3.4	0.79	ug/kg	
108-88-3	Toluene	ND	1.7	0.64	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	8.5	1.7	ug/kg	UJ
120-82-1	1,2,4-Trichlorobenzene	ND	8.5	1.7	ug/kg	UJ
71-55-6	1,1,1-Trichloroethane	ND	3.4	0.73	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	3.4	0.58	ug/kg	
79-01-6	Trichloroethene	ND	1.7	1.3	ug/kg	
75-69-4	Trichlorofluoromethane	ND	8.5	1.2	ug/kg	
75-01-4	Vinyl chloride	ND	3.4	0.80	ug/kg	
	m,p-Xylene	ND	1.7	1.3	ug/kg	
95-47-6	o-Xylene	ND	1.7	1.0	ug/kg	
1330-20-7	Xylene (total)	ND	1.7	1.0	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%	98%	75-127%
17060-07-0	1,2-Dichloroethane-D4	98%	98%	75-130%
2037-26-5	Toluene-D8	123% [c]	132% [c]	80-120%
460-00-4	4-Bromofluorobenzene	156% [c]	157% [c]	79-127%

(a) Confirmation run.
(b) Associated CCV outside of control limits low.
(c) Outside control limits due to matrix interference.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	S-115(4-6)		
Lab Sample ID:	JC86553-2	**Date Sampled:**	04/16/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	81.6
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5P58722.D	1	04/22/19 07:18	CB	04/19/19 07:45	OP19847	E5P2780
Run #2							

	Initial Weight	Final Volume
Run #1	31.4 g	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	78	19	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	200	24	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	200	33	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	200	69	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	200	150	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	200	42	ug/kg	
95-48-7	2-Methylphenol	40.5	78	25	ug/kg	J
	3&4-Methylphenol	112	78	32	ug/kg	
88-75-5	2-Nitrophenol	ND	200	26	ug/kg	
100-02-7	4-Nitrophenol	ND	390	100	ug/kg	
87-86-5	Pentachlorophenol	ND	160	37	ug/kg	
108-95-2	Phenol	200	78	20	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	200	26	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	200	29	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	200	23	ug/kg	
83-32-9	Acenaphthene	179	39	13	ug/kg	
208-96-8	Acenaphthylene	309	39	20	ug/kg	
98-86-2	Acetophenone	ND	200	8.4	ug/kg	
120-12-7	Anthracene	597	39	24	ug/kg	
1912-24-9	Atrazine	ND	78	17	ug/kg	
56-55-3	Benzo(a)anthracene	2120	39	11	ug/kg	
50-32-8	Benzo(a)pyrene	2560	39	18	ug/kg	J
205-99-2	Benzo(b)fluoranthene	3160	39	17	ug/kg	J
191-24-2	Benzo(g,h,i)perylene	1760	39	20	ug/kg	J
207-08-9	Benzo(k)fluoranthene	1040	39	18	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	78	15	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	78	9.5	ug/kg	
92-52-4	1,1'-Biphenyl	61.2	78	5.3	ug/kg	J
100-52-7	Benzaldehyde	ND	200	9.7	ug/kg	
91-58-7	2-Chloronaphthalene	ND	78	9.3	ug/kg	
106-47-8	4-Chloroaniline	ND	200	14	ug/kg	
86-74-8	Carbazole	281	78	5.7	ug/kg	J

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-115(4-6)
Lab Sample ID: JC86553-2
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/16/19
Date Received: 04/17/19
Percent Solids: 81.6

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	78	15	ug/kg	
218-01-9	Chrysene	2260	39	12	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	78	8.4	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	78	17	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	78	14	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	78	13	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	39	12	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	39	20	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	78	33	ug/kg	
123-91-1	1,4-Dioxane	ND	39	26	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	504	39	17	ug/kg	J
132-64-9	Dibenzofuran	208	78	16	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	78	6.4	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	78	9.7	ug/kg	
84-66-2	Diethyl phthalate	ND	78	8.3	ug/kg	
131-11-3	Dimethyl phthalate	ND	78	6.9	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	78	9.1	ug/kg	
206-44-0	Fluoranthene	3190	39	17	ug/kg	
86-73-7	Fluorene	268	39	18	ug/kg	
118-74-1	Hexachlorobenzene	ND	78	9.9	ug/kg	
87-68-3	Hexachlorobutadiene	ND	39	16	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	390	16	ug/kg	
67-72-1	Hexachloroethane	ND	200	19	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	1880	39	18	ug/kg	J
78-59-1	Isophorone	ND	78	8.4	ug/kg	
91-57-6	2-Methylnaphthalene	279	39	8.8	ug/kg	
88-74-4	2-Nitroaniline	ND	200	9.2	ug/kg	
99-09-2	3-Nitroaniline	ND	200	9.8	ug/kg	
100-01-6	4-Nitroaniline	ND	200	10	ug/kg	
91-20-3	Naphthalene	1880	39	11	ug/kg	
98-95-3	Nitrobenzene	ND	78	15	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	78	11	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	200	14	ug/kg	
85-01-8	Phenanthrene	2170	39	13	ug/kg	
129-00-0	Pyrene	2890	39	12	ug/kg	J
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	200	9.9	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	55%		23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-115(4-6)
Lab Sample ID: JC86553-2
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/16/19
Date Received: 04/17/19
Percent Solids: 81.6

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	54%		27-114%
118-79-6	2,4,6-Tribromophenol	55%		19-152%
4165-60-0	Nitrobenzene-d5	62%		26-134%
321-60-8	2-Fluorobiphenyl	61%		39-124%
1718-51-0	Terphenyl-d14	55%		36-134%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	SO-DUP-0416		
Lab Sample ID:	JC86553-3	**Date Sampled:**	04/16/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8260C	**Percent Solids:**	81.4
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3C151397.D	1	04/24/19 23:09	PS	n/a	n/a	V3C6807
Run #2 [a]	3C151438.D	1	04/25/19 16:50	PS	n/a	n/a	V3C6808

	Initial Weight
Run #1	3.7 g
Run #2	4.3 g

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	38.8	16	8.2	ug/kg	
71-43-2	Benzene	11.2	0.82	0.62	ug/kg	
74-97-5	Bromochloromethane	ND	8.2	0.71	ug/kg	
75-27-4	Bromodichloromethane	ND	3.3	0.73	ug/kg	
75-25-2	Bromoform	ND	8.2	0.66	ug/kg	
74-83-9	Bromomethane [b]	ND	8.2	1.6	ug/kg	UJ
78-93-3	2-Butanone (MEK)	ND	16	6.1	ug/kg	
75-15-0	Carbon disulfide	1.6	3.3	1.5	ug/kg	J
56-23-5	Carbon tetrachloride	ND	3.3	0.90	ug/kg	
108-90-7	Chlorobenzene	ND	3.3	0.58	ug/kg	
75-00-3	Chloroethane	ND	8.2	1.1	ug/kg	
67-66-3	Chloroform	ND	3.3	0.61	ug/kg	
74-87-3	Chloromethane	ND	8.2	3.2	ug/kg	
110-82-7	Cyclohexane	ND	3.3	0.67	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	3.3	1.4	ug/kg	UJ
124-48-1	Dibromochloromethane	ND	3.3	0.56	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.6	0.53	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.6	0.50	ug/kg	UJ
541-73-1	1,3-Dichlorobenzene	ND	1.6	0.59	ug/kg	UJ
106-46-7	1,4-Dichlorobenzene	ND	1.6	0.56	ug/kg	UJ
75-71-8	Dichlorodifluoromethane	ND	8.2	1.0	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.6	0.63	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.6	0.77	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.6	1.1	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.6	1.6	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.6	1.1	ug/kg	
78-87-5	1,2-Dichloropropane	ND	3.3	0.67	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	3.3	0.58	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	3.3	0.54	ug/kg	
100-41-4	Ethylbenzene	ND	1.6	0.91	ug/kg	
76-13-1	Freon 113	ND	8.2	1.3	ug/kg	
591-78-6	2-Hexanone	ND	8.2	2.1	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SO-DUP-0416		
Lab Sample ID:	JC86553-3	**Date Sampled:**	04/16/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8260C	**Percent Solids:**	81.4
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	3.3	1.1	ug/kg	
79-20-9	Methyl Acetate	ND	8.2	2.3	ug/kg	
108-87-2	Methylcyclohexane	1.6	3.3	1.2	ug/kg	J
1634-04-4	Methyl Tert Butyl Ether	ND	1.6	0.58	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	8.2	2.6	ug/kg	
75-09-2	Methylene chloride	ND	8.2	4.1	ug/kg	
100-42-5	Styrene	ND	3.3	0.94	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	3.3	0.64	ug/kg	UJ
127-18-4	Tetrachloroethene	ND	3.3	0.76	ug/kg	
108-88-3	Toluene	ND	1.6	0.62	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	8.2	1.6	ug/kg	UJ
120-82-1	1,2,4-Trichlorobenzene	ND	8.2	1.6	ug/kg	UJ
71-55-6	1,1,1-Trichloroethane	ND	3.3	0.70	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	3.3	0.56	ug/kg	
79-01-6	Trichloroethene	ND	1.6	1.3	ug/kg	
75-69-4	Trichlorofluoromethane	ND	8.2	1.1	ug/kg	
75-01-4	Vinyl chloride	ND	3.3	0.77	ug/kg	
	m,p-Xylene	ND	1.6	1.2	ug/kg	
95-47-6	o-Xylene	ND	1.6	0.96	ug/kg	
1330-20-7	Xylene (total)	ND	1.6	0.96	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	97%	97%	75-127%
17060-07-0	1,2-Dichloroethane-D4	97%	95%	75-130%
2037-26-5	Toluene-D8	133% c	150% c	80-120%
460-00-4	4-Bromofluorobenzene	170% c	185% c	79-127%

(a) Confirmation run.
(b) Associated CCV outside of control limits low.
(c) Outside control limits due to matrix interference.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	SO-DUP-0416		
Lab Sample ID:	JC86553-3	**Date Sampled:**	04/16/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	81.4
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5P58723.D	1	04/22/19 07:40	CB	04/19/19 07:45	OP19847	E5P2780
Run #2	5P58736.D	2	04/22/19 14:41	YC	04/19/19 07:45	OP19847	E5P2781

	Initial Weight	Final Volume
Run #1	31.7 g	1.0 ml
Run #2	31.7 g	1.0 ml

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	78	19	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	190	24	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	190	33	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	190	69	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	190	150	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	190	41	ug/kg	
95-48-7	2-Methylphenol	43.5	78	25	ug/kg	J
	3&4-Methylphenol	124	78	32	ug/kg	
88-75-5	2-Nitrophenol	ND	190	26	ug/kg	
100-02-7	4-Nitrophenol	ND	390	100	ug/kg	
87-86-5	Pentachlorophenol	ND	160	36	ug/kg	
108-95-2	Phenol	194	78	20	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	190	26	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	190	29	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	190	23	ug/kg	
83-32-9	Acenaphthene	231	39	13	ug/kg	
208-96-8	Acenaphthylene	329	39	20	ug/kg	
98-86-2	Acetophenone	ND	190	8.3	ug/kg	
120-12-7	Anthracene	838	39	24	ug/kg	
1912-24-9	Atrazine	ND	78	17	ug/kg	
56-55-3	Benzo(a)anthracene	3380	39	11	ug/kg	
50-32-8	Benzo(a)pyrene	4860 [a]	78	35	ug/kg	D J
205-99-2	Benzo(b)fluoranthene	6130 [a]	78	34	ug/kg	D J
191-24-2	Benzo(g,h,i)perylene	3060	39	19	ug/kg	J
207-08-9	Benzo(k)fluoranthene	1680 [a]	78	36	ug/kg	D
101-55-3	4-Bromophenyl phenyl ether	ND	78	15	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	78	9.5	ug/kg	
92-52-4	1,1'-Biphenyl	71.4	78	5.3	ug/kg	J
100-52-7	Benzaldehyde	ND	190	9.6	ug/kg	
91-58-7	2-Chloronaphthalene	ND	78	9.2	ug/kg	
106-47-8	4-Chloroaniline	ND	190	14	ug/kg	
86-74-8	Carbazole	484	78	5.6	ug/kg	J

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SO-DUP-0416		
Lab Sample ID:	JC86553-3	**Date Sampled:**	04/16/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	81.4
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	78	15	ug/kg	
218-01-9	Chrysene	3700	39	12	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	78	8.3	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	78	17	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	78	14	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	78	13	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	39	12	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	39	19	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	78	32	ug/kg	
123-91-1	1,4-Dioxane	ND	39	26	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	844	39	17	ug/kg	J
132-64-9	Dibenzofuran	209	78	16	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	78	6.3	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	78	9.6	ug/kg	
84-66-2	Diethyl phthalate	ND	78	8.3	ug/kg	
131-11-3	Dimethyl phthalate	ND	78	6.9	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	78	9.1	ug/kg	
206-44-0	Fluoranthene	5290 [a]	78	35	ug/kg	D
86-73-7	Fluorene	293	39	18	ug/kg	
118-74-1	Hexachlorobenzene	ND	78	9.8	ug/kg	
87-68-3	Hexachlorobutadiene	ND	39	16	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	390	15	ug/kg	
67-72-1	Hexachloroethane	ND	190	19	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	3260	39	18	ug/kg	J
78-59-1	Isophorone	ND	78	8.3	ug/kg	
91-57-6	2-Methylnaphthalene	303	39	8.8	ug/kg	
88-74-4	2-Nitroaniline	ND	190	9.1	ug/kg	
99-09-2	3-Nitroaniline	ND	190	9.7	ug/kg	
100-01-6	4-Nitroaniline	ND	190	10	ug/kg	
91-20-3	Naphthalene	1940	39	11	ug/kg	
98-95-3	Nitrobenzene	ND	78	15	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	78	11	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	190	14	ug/kg	
85-01-8	Phenanthrene	2950	39	13	ug/kg	
129-00-0	Pyrene	4930 [a]	78	25	ug/kg	D J
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	190	9.8	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	49%	51%	23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SO-DUP-0416		
Lab Sample ID:	JC86553-3	**Date Sampled:**	04/16/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	81.4
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	50%	55%	27-114%
118-79-6	2,4,6-Tribromophenol	55%	55%	19-152%
4165-60-0	Nitrobenzene-d5	57%	61%	26-134%
321-60-8	2-Fluorobiphenyl	61%	64%	39-124%
1718-51-0	Terphenyl-d14	54%	60%	36-134%

(a) Result is from Run# 2

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	S-117(4-6)		
Lab Sample ID:	JC86553-4	**Date Sampled:**	04/16/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8260C	**Percent Solids:**	80.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3C151398.D	1	04/24/19 23:33	PS	n/a	n/a	V3C6807
Run #2 [a]	3C151439.D	1	04/25/19 17:14	PS	n/a	n/a	V3C6808

	Initial Weight
Run #1	4.5 g
Run #2	4.5 g

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	27.4	14	6.9	ug/kg	J
71-43-2	Benzene	ND	0.69	0.52	ug/kg	
74-97-5	Bromochloromethane	ND	6.9	0.59	ug/kg	
75-27-4	Bromodichloromethane	ND	2.7	0.61	ug/kg	
75-25-2	Bromoform	ND	6.9	0.55	ug/kg	
74-83-9	Bromomethane [b]	ND	6.9	1.4	ug/kg	UJ
78-93-3	2-Butanone (MEK)	ND	14	5.1	ug/kg	
75-15-0	Carbon disulfide	ND	2.7	1.3	ug/kg	
56-23-5	Carbon tetrachloride	ND	2.7	0.76	ug/kg	
108-90-7	Chlorobenzene	ND	2.7	0.49	ug/kg	UJ
75-00-3	Chloroethane	ND	6.9	0.94	ug/kg	
67-66-3	Chloroform	ND	2.7	0.51	ug/kg	
74-87-3	Chloromethane	ND	6.9	2.7	ug/kg	
110-82-7	Cyclohexane	0.62	2.7	0.56	ug/kg	J
96-12-8	1,2-Dibromo-3-chloropropane	~~ND~~	~~2.7~~	~~1.1~~	~~ug/kg~~	R
124-48-1	Dibromochloromethane	ND	2.7	0.46	ug/kg	UJ
106-93-4	1,2-Dibromoethane	ND	1.4	0.45	ug/kg	UJ
95-50-1	1,2-Dichlorobenzene	~~ND~~	~~1.4~~	~~0.42~~	~~ug/kg~~	R
541-73-1	1,3-Dichlorobenzene	~~ND~~	~~1.4~~	~~0.49~~	~~ug/kg~~	R
106-46-7	1,4-Dichlorobenzene	~~ND~~	~~1.4~~	~~0.47~~	~~ug/kg~~	R
75-71-8	Dichlorodifluoromethane	ND	6.9	0.87	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.4	0.53	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.4	0.65	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.4	0.90	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.4	1.3	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.4	0.92	ug/kg	
78-87-5	1,2-Dichloropropane	ND	2.7	0.56	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	2.7	0.48	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2.7	0.45	ug/kg	
100-41-4	Ethylbenzene	ND	1.4	0.76	ug/kg	UJ
76-13-1	Freon 113	ND	6.9	1.0	ug/kg	
591-78-6	2-Hexanone	ND	6.9	1.7	ug/kg	UJ

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-117(4-6)		
Lab Sample ID:	JC86553-4	**Date Sampled:**	04/16/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8260C	**Percent Solids:**	80.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	2.7	0.96	ug/kg	UJ
79-20-9	Methyl Acetate	ND	6.9	1.9	ug/kg	
108-87-2	Methylcyclohexane	1.4	2.7	0.97	ug/kg	J
1634-04-4	Methyl Tert Butyl Ether	ND	1.4	0.48	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	6.9	2.1	ug/kg	
75-09-2	Methylene chloride	ND	6.9	3.4	ug/kg	
100-42-5	Styrene	ND	2.7	0.79	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	~~ND~~	~~2.7~~	~~0.54~~	~~ug/kg~~	R
127-18-4	Tetrachloroethene	ND	2.7	0.64	ug/kg	UJ
108-88-3	Toluene	ND	1.4	0.52	ug/kg	UJ
87-61-6	1,2,3-Trichlorobenzene	~~ND~~	~~6.9~~	~~1.4~~	~~ug/kg~~	R
120-82-1	1,2,4-Trichlorobenzene	~~ND~~	~~6.9~~	~~1.4~~	~~ug/kg~~	R
71-55-6	1,1,1-Trichloroethane	ND	2.7	0.59	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2.7	0.47	ug/kg	UJ
79-01-6	Trichloroethene	ND	1.4	1.0	ug/kg	
75-69-4	Trichlorofluoromethane	ND	6.9	0.94	ug/kg	
75-01-4	Vinyl chloride	ND	2.7	0.64	ug/kg	
	m,p-Xylene	ND	1.4	1.0	ug/kg	UJ
95-47-6	o-Xylene	ND	1.4	0.80	ug/kg	UJ
1330-20-7	Xylene (total)	ND	1.4	0.80	ug/kg	UJ

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	97%	116%	75-127%
17060-07-0	1,2-Dichloroethane-D4	98%	113%	75-130%
2037-26-5	Toluene-D8	129% [c]	196% [c]	80-120%
460-00-4	4-Bromofluorobenzene	155% [c]	193% [c]	79-127%

(a) Confirmation run.
(b) Associated CCV outside of control limits low.
(c) Outside control limits due to matrix interference.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	S-117(4-6)		
Lab Sample ID:	JC86553-4	**Date Sampled:**	04/16/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	80.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5P58724.D	1	04/22/19 08:02	CB	04/19/19 07:45	OP19847	E5P2780
Run #2	5P58741.D	5	04/22/19 16:35	YC	04/19/19 07:45	OP19847	E5P2781

	Initial Weight	Final Volume
Run #1	30.6 g	1.0 ml
Run #2	30.6 g	1.0 ml

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	81	20	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	200	25	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	200	35	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	200	72	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	200	150	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	200	44	ug/kg	
95-48-7	2-Methylphenol	ND	81	26	ug/kg	
	3&4-Methylphenol	ND	81	33	ug/kg	
88-75-5	2-Nitrophenol	ND	200	27	ug/kg	
100-02-7	4-Nitrophenol	ND	410	110	ug/kg	
87-86-5	Pentachlorophenol	ND	160	38	ug/kg	
108-95-2	Phenol	84.8	81	21	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	200	27	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	200	30	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	200	24	ug/kg	
83-32-9	Acenaphthene	370	41	14	ug/kg	
208-96-8	Acenaphthylene	161	41	21	ug/kg	
98-86-2	Acetophenone	ND	200	8.7	ug/kg	
120-12-7	Anthracene	761	41	25	ug/kg	
1912-24-9	Atrazine	ND	81	17	ug/kg	
56-55-3	Benzo(a)anthracene	6070 [a]	200	58	ug/kg	D
50-32-8	Benzo(a)pyrene	8330 [a]	200	93	ug/kg	
205-99-2	Benzo(b)fluoranthene	9840 [a]	200	90	ug/kg	
191-24-2	Benzo(g,h,i)perylene	5520 [a]	200	100	ug/kg	
207-08-9	Benzo(k)fluoranthene	3740 [a]	200	95	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	81	16	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	81	9.9	ug/kg	
92-52-4	1,1'-Biphenyl	67.2	81	5.6	ug/kg	J
100-52-7	Benzaldehyde	ND	200	10	ug/kg	
91-58-7	2-Chloronaphthalene	ND	81	9.7	ug/kg	
106-47-8	4-Chloroaniline	ND	200	15	ug/kg	
86-74-8	Carbazole	644	81	5.9	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-117(4-6)
Lab Sample ID: JC86553-4
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/16/19
Date Received: 04/17/19
Percent Solids: 80.3

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	81	16	ug/kg	
218-01-9	Chrysene	6590 [a]	200	64	ug/kg	D
111-91-1	bis(2-Chloroethoxy)methane	ND	81	8.7	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	81	18	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	81	15	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	81	13	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	41	13	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	41	20	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	81	34	ug/kg	
123-91-1	1,4-Dioxane	ND	41	27	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	1580	41	18	ug/kg	
132-64-9	Dibenzofuran	196	81	17	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	81	6.6	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	81	10	ug/kg	
84-66-2	Diethyl phthalate	ND	81	8.7	ug/kg	
131-11-3	Dimethyl phthalate	ND	81	7.2	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	81	9.5	ug/kg	
206-44-0	Fluoranthene	8510 [a]	200	91	ug/kg	D
86-73-7	Fluorene	249	41	19	ug/kg	
118-74-1	Hexachlorobenzene	ND	81	10	ug/kg	
87-68-3	Hexachlorobutadiene	ND	41	16	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	410	16	ug/kg	
67-72-1	Hexachloroethane	ND	200	20	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	6060 [a]	200	95	ug/kg	D
78-59-1	Isophorone	ND	81	8.7	ug/kg	
91-57-6	2-Methylnaphthalene	305	41	9.2	ug/kg	
88-74-4	2-Nitroaniline	ND	200	9.6	ug/kg	
99-09-2	3-Nitroaniline	ND	200	10	ug/kg	
100-01-6	4-Nitroaniline	ND	200	11	ug/kg	
91-20-3	Naphthalene	765	41	11	ug/kg	
98-95-3	Nitrobenzene	ND	81	16	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	81	12	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	200	15	ug/kg	
85-01-8	Phenanthrene	2790	41	14	ug/kg	
129-00-0	Pyrene	7550 [a]	200	65	ug/kg	D
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	200	10	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	48%	52%	23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-117(4-6)		
Lab Sample ID:	JC86553-4	**Date Sampled:**	04/16/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	80.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	48%	57%	27-114%
118-79-6	2,4,6-Tribromophenol	54%	56%	19-152%
4165-60-0	Nitrobenzene-d5	53%	59%	26-134%
321-60-8	2-Fluorobiphenyl	59%	67%	39-124%
1718-51-0	Terphenyl-d14	53%	62%	36-134%

(a) Result is from Run# 2

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	TP-15R(5-7)		
Lab Sample ID:	JC86553-5	**Date Sampled:**	04/16/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8260C	**Percent Solids:**	81.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	I225557.D	1	04/19/19 17:56	TDN	n/a	n/a	VI9087
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	3.1 g	10.0 ml	100 ul
Run #2			

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	2100	1100	ug/kg	
71-43-2	Benzene	4180	110	79	ug/kg	
74-97-5	Bromochloromethane	ND	1100	90	ug/kg	
75-27-4	Bromodichloromethane	ND	420	93	ug/kg	
75-25-2	Bromoform	ND	1100	85	ug/kg	
74-83-9	Bromomethane	ND	1100	210	ug/kg	
78-93-3	2-Butanone (MEK)	ND	2100	790	ug/kg	
75-15-0	Carbon disulfide	ND	420	200	ug/kg	
56-23-5	Carbon tetrachloride	ND	420	120	ug/kg	
108-90-7	Chlorobenzene	ND	420	74	ug/kg	
75-00-3	Chloroethane	ND	1100	140	ug/kg	
67-66-3	Chloroform	ND	420	78	ug/kg	
74-87-3	Chloromethane	ND	1100	410	ug/kg	
110-82-7	Cyclohexane	305	420	85	ug/kg	J
96-12-8	1,2-Dibromo-3-chloropropane	ND	420	180	ug/kg	
124-48-1	Dibromochloromethane	ND	420	71	ug/kg	
106-93-4	1,2-Dibromoethane [b]	ND	210	68	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	210	64	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	210	75	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	210	72	ug/kg	
75-71-8	Dichlorodifluoromethane [b]	ND	1100	130	ug/kg	
75-34-3	1,1-Dichloroethane	ND	210	81	ug/kg	
107-06-2	1,2-Dichloroethane	ND	210	99	ug/kg	
75-35-4	1,1-Dichloroethene	ND	210	140	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	210	200	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	210	140	ug/kg	
78-87-5	1,2-Dichloropropane	ND	420	86	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	420	74	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	420	69	ug/kg	
100-41-4	Ethylbenzene	ND	210	120	ug/kg	
76-13-1	Freon 113	ND	1100	160	ug/kg	
591-78-6	2-Hexanone	ND	1100	270	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TP-15R(5-7)		
Lab Sample ID:	JC86553-5	**Date Sampled:**	04/16/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8260C	**Percent Solids:**	81.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	420	150	ug/kg	
79-20-9	Methyl Acetate	ND	1100	290	ug/kg	
108-87-2	Methylcyclohexane	895	420	150	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	210	74	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	1100	330	ug/kg	
75-09-2	Methylene chloride	ND	1100	530	ug/kg	
100-42-5	Styrene	ND	420	120	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	420	82	ug/kg	
127-18-4	Tetrachloroethene	ND	420	97	ug/kg	
108-88-3	Toluene	505	210	79	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	1100	210	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	1100	210	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	420	90	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	420	72	ug/kg	
79-01-6	Trichloroethene	ND	210	160	ug/kg	
75-69-4	Trichlorofluoromethane	ND	1100	140	ug/kg	
75-01-4	Vinyl chloride	ND	420	99	ug/kg	
	m,p-Xylene	509	210	160	ug/kg	
95-47-6	o-Xylene	312	210	120	ug/kg	
1330-20-7	Xylene (total)	821	210	120	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	105%		75-127%
17060-07-0	1,2-Dichloroethane-D4	111%		75-130%
2037-26-5	Toluene-D8	100%		80-120%
460-00-4	4-Bromofluorobenzene	109%		79-127%

(a) Diluted due to high concentration of non-target compound.
(b) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS LabLink@1039014 11:14 10-May-2019

Report of Analysis

Client Sample ID:	TP-15R(5-7)		
Lab Sample ID:	JC86553-5	**Date Sampled:**	04/16/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	81.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5P58725.D	1	04/22/19 08:25	CB	04/19/19 07:45	OP19847	E5P2780
Run #2	5P58743.D	10	04/22/19 17:20	YC	04/19/19 07:45	OP19847	E5P2781
Run #3	5P58745.D	50	04/22/19 18:05	YC	04/19/19 07:45	OP19847	E5P2781

	Initial Weight	Final Volume
Run #1	15.6 g	1.0 ml
Run #2	15.6 g	1.0 ml
Run #3	15.6 g	1.0 ml

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	160	39	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	390	48	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	390	67	ug/kg	
105-67-9	2,4-Dimethylphenol [a]	495	390	140	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	390	300	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	390	84	ug/kg	
95-48-7	2-Methylphenol	233	160	50	ug/kg	
	3&4-Methylphenol	635	160	65	ug/kg	
88-75-5	2-Nitrophenol	ND	390	52	ug/kg	
100-02-7	4-Nitrophenol	ND	790	210	ug/kg	
87-86-5	Pentachlorophenol	ND	320	74	ug/kg	
108-95-2	Phenol	682	160	41	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	390	52	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	390	59	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	390	47	ug/kg	
83-32-9	Acenaphthene	59000 [b]	790	270	ug/kg	D
208-96-8	Acenaphthylene	23700 [b]	790	400	ug/kg	D
98-86-2	Acetophenone	ND	390	17	ug/kg	
120-12-7	Anthracene	53000 [b]	790	480	ug/kg	D
1912-24-9	Atrazine	ND	160	34	ug/kg	
56-55-3	Benzo(a)anthracene	67400 [b]	790	220	ug/kg	D
50-32-8	Benzo(a)pyrene	61500 [b]	790	360	ug/kg	
205-99-2	Benzo(b)fluoranthene	73600 [b]	790	350	ug/kg	
191-24-2	Benzo(g,h,i)perylene	36400 [b]	790	390	ug/kg	
207-08-9	Benzo(k)fluoranthene	23500 [b]	790	370	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	160	30	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	160	19	ug/kg	
92-52-4	1,1'-Biphenyl	13300 [b]	1600	110	ug/kg	D
100-52-7	Benzaldehyde	ND	390	20	ug/kg	
91-58-7	2-Chloronaphthalene	ND	160	19	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: TP-15R(5-7)
Lab Sample ID: JC86553-5
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/16/19
Date Received: 04/17/19
Percent Solids: 81.2

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
106-47-8	4-Chloroaniline	ND	390	28	ug/kg	
86-74-8	Carbazole	28100 b	1600	110	ug/kg	D
105-60-2	Caprolactam	ND	160	31	ug/kg	
218-01-9	Chrysene	57300 b	790	250	ug/kg	D
111-91-1	bis(2-Chloroethoxy)methane	ND	160	17	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	160	34	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	160	28	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	160	26	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	79	24	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	79	40	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	160	66	ug/kg	
123-91-1	1,4-Dioxane	ND	79	52	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	11400 b	790	350	ug/kg	D
132-64-9	Dibenzofuran	56000 b	1600	320	ug/kg	D
84-74-2	Di-n-butyl phthalate	ND	160	13	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	160	20	ug/kg	
84-66-2	Diethyl phthalate	ND	160	17	ug/kg	
131-11-3	Dimethyl phthalate	ND	160	14	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	160	18	ug/kg	
206-44-0	Fluoranthene	198000 c	3900	1800	ug/kg	D
86-73-7	Fluorene	105000 c	3900	1800	ug/kg	D
118-74-1	Hexachlorobenzene	ND	160	20	ug/kg	
87-68-3	Hexachlorobutadiene	ND	79	32	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	790	31	ug/kg	
67-72-1	Hexachloroethane	ND	390	39	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	40500 b	790	370	ug/kg	D
78-59-1	Isophorone	ND	160	17	ug/kg	
91-57-6	2-Methylnaphthalene	33200 b	790	180	ug/kg	D
88-74-4	2-Nitroaniline	ND	390	19	ug/kg	
99-09-2	3-Nitroaniline	ND	390	20	ug/kg	
100-01-6	4-Nitroaniline	ND	390	20	ug/kg	
91-20-3	Naphthalene	255000 c	3900	1100	ug/kg	D
98-95-3	Nitrobenzene	ND	160	30	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	160	23	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	390	29	ug/kg	
85-01-8	Phenanthrene	275000 c	3900	1300	ug/kg	D
129-00-0	Pyrene	136000 c	3900	1300	ug/kg	D
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	390	20	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: TP-15R(5-7)
Lab Sample ID: JC86553-5
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/16/19
Date Received: 04/17/19
Percent Solids: 81.2

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Run# 3	Limits
367-12-4	2-Fluorophenol	111%	55%	65%	23-115%
4165-62-2	Phenol-d5	111%	64%	67%	27-114%
118-79-6	2,4,6-Tribromophenol	130%	61%	67%	19-152%
4165-60-0	Nitrobenzene-d5	138% [d]	75%	71%	26-134%
321-60-8	2-Fluorobiphenyl	113%	79%	73%	39-124%
1718-51-0	Terphenyl-d14	123%	73%	74%	36-134%

(a) Estimated value, due to corresponding internal standard failing low.
(b) Result is from Run# 2
(c) Result is from Run# 3
(d) Outside control limits due to matrix interference.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID: TP-15R(16.5-12.5)
Lab Sample ID: JC86553-6
Matrix: SO - Soil
Method: SW846 8260C
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/16/19
Date Received: 04/17/19
Percent Solids: 74.5

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3C151399.D	1	04/24/19 23:56	PS	n/a	n/a	V3C6807
Run #2							

	Initial Weight
Run #1	5.5 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	19.1	12	6.1	ug/kg	
71-43-2	Benzene	ND	0.61	0.46	ug/kg	
74-97-5	Bromochloromethane	ND	6.1	0.53	ug/kg	
75-27-4	Bromodichloromethane	ND	2.5	0.54	ug/kg	
75-25-2	Bromoform	ND	6.1	0.49	ug/kg	
74-83-9	Bromomethane [a]	ND	6.1	1.2	ug/kg	UJ
78-93-3	2-Butanone (MEK)	ND	12	4.6	ug/kg	
75-15-0	Carbon disulfide	ND	2.5	1.1	ug/kg	
56-23-5	Carbon tetrachloride	ND	2.5	0.67	ug/kg	
108-90-7	Chlorobenzene	ND	2.5	0.43	ug/kg	
75-00-3	Chloroethane	ND	6.1	0.84	ug/kg	
67-66-3	Chloroform	ND	2.5	0.46	ug/kg	
74-87-3	Chloromethane	ND	6.1	2.4	ug/kg	
110-82-7	Cyclohexane	ND	2.5	0.50	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.5	1.0	ug/kg	
124-48-1	Dibromochloromethane	ND	2.5	0.41	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.2	0.40	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.2	0.37	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.2	0.44	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.2	0.42	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	6.1	0.78	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.2	0.47	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.2	0.58	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.2	0.80	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.2	1.2	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.2	0.82	ug/kg	
78-87-5	1,2-Dichloropropane	ND	2.5	0.50	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	2.5	0.43	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2.5	0.40	ug/kg	
100-41-4	Ethylbenzene	ND	1.2	0.68	ug/kg	
76-13-1	Freon 113	ND	6.1	0.93	ug/kg	
591-78-6	2-Hexanone	ND	6.1	1.6	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: TP-15R(16.5-12.5)
Lab Sample ID: JC86553-6
Matrix: SO - Soil
Method: SW846 8260C
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/16/19
Date Received: 04/17/19
Percent Solids: 74.5

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	2.5	0.86	ug/kg	
79-20-9	Methyl Acetate	ND	6.1	1.7	ug/kg	
108-87-2	Methylcyclohexane	ND	2.5	0.87	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.2	0.43	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	6.1	1.9	ug/kg	
75-09-2	Methylene chloride	ND	6.1	3.1	ug/kg	
100-42-5	Styrene	ND	2.5	0.71	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.5	0.48	ug/kg	
127-18-4	Tetrachloroethene	ND	2.5	0.57	ug/kg	
108-88-3	Toluene	ND	1.2	0.46	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	6.1	1.2	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	6.1	1.2	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	2.5	0.52	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2.5	0.42	ug/kg	
79-01-6	Trichloroethene	ND	1.2	0.93	ug/kg	
75-69-4	Trichlorofluoromethane	ND	6.1	0.84	ug/kg	
75-01-4	Vinyl chloride	ND	2.5	0.58	ug/kg	
	m,p-Xylene	ND	1.2	0.92	ug/kg	
95-47-6	o-Xylene	ND	1.2	0.72	ug/kg	
1330-20-7	Xylene (total)	ND	1.2	0.72	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%		75-127%
17060-07-0	1,2-Dichloroethane-D4	101%		75-130%
2037-26-5	Toluene-D8	107%		80-120%
460-00-4	4-Bromofluorobenzene	114%		79-127%

(a) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID: TP-15R(16.5-12.5)
Lab Sample ID: JC86553-6
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/16/19
Date Received: 04/17/19
Percent Solids: 74.5

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	5P59068.D	2	04/30/19 16:04	CC	04/19/19 07:45	OP19847	E5P2792
Run #2							

	Initial Weight	Final Volume
Run #1	31.8 g	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	170	42	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	420	52	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	420	72	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	420	150	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	420	320	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	420	90	ug/kg	
95-48-7	2-Methylphenol	ND	170	54	ug/kg	
	3&4-Methylphenol	ND	170	69	ug/kg	
88-75-5	2-Nitrophenol	ND	420	56	ug/kg	
100-02-7	4-Nitrophenol	ND	840	230	ug/kg	
87-86-5	Pentachlorophenol	ND	340	79	ug/kg	
108-95-2	Phenol	ND	170	44	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	420	56	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	420	63	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	420	50	ug/kg	
83-32-9	Acenaphthene	148	84	29	ug/kg	
208-96-8	Acenaphthylene	46.9	84	43	ug/kg	J
98-86-2	Acetophenone	ND	420	18	ug/kg	
120-12-7	Anthracene	202	84	52	ug/kg	
1912-24-9	Atrazine	ND	170	36	ug/kg	
56-55-3	Benzo(a)anthracene	446	84	24	ug/kg	
50-32-8	Benzo(a)pyrene	482	84	38	ug/kg	
205-99-2	Benzo(b)fluoranthene	574	84	37	ug/kg	
191-24-2	Benzo(g,h,i)perylene	270	84	42	ug/kg	
207-08-9	Benzo(k)fluoranthene	201	84	39	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	170	33	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	170	21	ug/kg	
92-52-4	1,1'-Biphenyl	18.0	170	12	ug/kg	J
100-52-7	Benzaldehyde	ND	420	21	ug/kg	
91-58-7	2-Chloronaphthalene	ND	170	20	ug/kg	
106-47-8	4-Chloroaniline	ND	420	30	ug/kg	
86-74-8	Carbazole	105	170	12	ug/kg	J

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: TP-15R(16.5-12.5)
Lab Sample ID: JC86553-6
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/16/19
Date Received: 04/17/19
Percent Solids: 74.5

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	170	33	ug/kg	
218-01-9	Chrysene	429	84	27	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	170	18	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	170	36	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	170	30	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	170	27	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	84	26	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	84	42	ug/kg	
91-94-1	3,3'-Dichlorobenzidine [b]	ND	170	70	ug/kg	UJ
123-91-1	1,4-Dioxane	ND	84	56	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	81.1	84	37	ug/kg	J
132-64-9	Dibenzofuran	69.5	170	34	ug/kg	J
84-74-2	Di-n-butyl phthalate	ND	170	14	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	170	21	ug/kg	
84-66-2	Diethyl phthalate	ND	170	18	ug/kg	
131-11-3	Dimethyl phthalate	ND	170	15	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	170	20	ug/kg	
206-44-0	Fluoranthene	732	84	38	ug/kg	
86-73-7	Fluorene	122	84	39	ug/kg	
118-74-1	Hexachlorobenzene	ND	170	21	ug/kg	
87-68-3	Hexachlorobutadiene	ND	84	34	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	840	34	ug/kg	
67-72-1	Hexachloroethane	ND	420	42	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	298	84	40	ug/kg	
78-59-1	Isophorone	ND	170	18	ug/kg	
91-57-6	2-Methylnaphthalene	42.1	84	19	ug/kg	J
88-74-4	2-Nitroaniline	ND	420	20	ug/kg	
99-09-2	3-Nitroaniline	ND	420	21	ug/kg	
100-01-6	4-Nitroaniline	ND	420	22	ug/kg	
91-20-3	Naphthalene	316	84	24	ug/kg	
98-95-3	Nitrobenzene	ND	170	33	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	170	24	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	420	31	ug/kg	
85-01-8	Phenanthrene	688	84	28	ug/kg	
129-00-0	Pyrene	778	84	27	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	420	21	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	67%		23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TP-15R(16.5-12.5)		
Lab Sample ID:	JC86553-6	**Date Sampled:**	04/16/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	74.5
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	70%		27-114%
118-79-6	2,4,6-Tribromophenol	63%		19-152%
4165-60-0	Nitrobenzene-d5	77%		26-134%
321-60-8	2-Fluorobiphenyl	77%		39-124%
1718-51-0	Terphenyl-d14	74%		36-134%

(a) Dilution required due to matrix interference.
(b) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	S-118(4-6)		
Lab Sample ID:	JC86553-7	**Date Sampled:**	04/16/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8260C	**Percent Solids:**	87.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3C151403.D	1	04/25/19 01:28	PS	n/a	n/a	V3C6807
Run #2							

	Initial Weight
Run #1	3.5 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	36.6	16	8.2	ug/kg	
71-43-2	Benzene	2.4	0.82	0.62	ug/kg	
74-97-5	Bromochloromethane	ND	8.2	0.70	ug/kg	
75-27-4	Bromodichloromethane	ND	3.3	0.72	ug/kg	
75-25-2	Bromoform	ND	8.2	0.66	ug/kg	
74-83-9	Bromomethane [a]	ND	8.2	1.6	ug/kg	UJ
78-93-3	2-Butanone (MEK)	ND	16	6.1	ug/kg	
75-15-0	Carbon disulfide	4.2	3.3	1.5	ug/kg	
56-23-5	Carbon tetrachloride	ND	3.3	0.90	ug/kg	
108-90-7	Chlorobenzene	ND	3.3	0.58	ug/kg	
75-00-3	Chloroethane	ND	8.2	1.1	ug/kg	
67-66-3	Chloroform	ND	3.3	0.61	ug/kg	
74-87-3	Chloromethane	ND	8.2	3.2	ug/kg	
110-82-7	Cyclohexane	1.1	3.3	0.66	ug/kg	J
96-12-8	1,2-Dibromo-3-chloropropane	ND	3.3	1.4	ug/kg	
124-48-1	Dibromochloromethane	ND	3.3	0.55	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.6	0.53	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.6	0.50	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.6	0.59	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.6	0.56	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	8.2	1.0	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.6	0.63	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.6	0.77	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.6	1.1	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.6	1.6	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.6	1.1	ug/kg	
78-87-5	1,2-Dichloropropane	ND	3.3	0.66	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	3.3	0.57	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	3.3	0.53	ug/kg	
100-41-4	Ethylbenzene	ND	1.6	0.90	ug/kg	
76-13-1	Freon 113	ND	8.2	1.2	ug/kg	
591-78-6	2-Hexanone	ND	8.2	2.1	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-118(4-6)		
Lab Sample ID:	JC86553-7	**Date Sampled:**	04/16/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8260C	**Percent Solids:**	87.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	3.3	1.1	ug/kg	
79-20-9	Methyl Acetate	ND	8.2	2.3	ug/kg	
108-87-2	Methylcyclohexane	2.1	3.3	1.2	ug/kg	J
1634-04-4	Methyl Tert Butyl Ether	ND	1.6	0.57	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	8.2	2.5	ug/kg	
75-09-2	Methylene chloride	ND	8.2	4.1	ug/kg	
100-42-5	Styrene	ND	3.3	0.94	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	3.3	0.64	ug/kg	
127-18-4	Tetrachloroethene	ND	3.3	0.75	ug/kg	
108-88-3	Toluene	0.90	1.6	0.61	ug/kg	J
87-61-6	1,2,3-Trichlorobenzene	ND	8.2	1.6	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	8.2	1.6	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	3.3	0.70	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	3.3	0.56	ug/kg	
79-01-6	Trichloroethene	ND	1.6	1.2	ug/kg	
75-69-4	Trichlorofluoromethane	ND	8.2	1.1	ug/kg	
75-01-4	Vinyl chloride	ND	3.3	0.77	ug/kg	
	m,p-Xylene	ND	1.6	1.2	ug/kg	
95-47-6	o-Xylene	ND	1.6	0.95	ug/kg	
1330-20-7	Xylene (total)	ND	1.6	0.95	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%		75-127%
17060-07-0	1,2-Dichloroethane-D4	101%		75-130%
2037-26-5	Toluene-D8	105%		80-120%
460-00-4	4-Bromofluorobenzene	110%		79-127%

(a) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS LabLink@1039014 11:14 10-May-2019

Report of Analysis

Client Sample ID:	S-118(4-6)		
Lab Sample ID:	JC86553-7	**Date Sampled:**	04/16/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	87.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5P58726.D	1	04/22/19 08:47	CB	04/19/19 07:45	OP19847	E5P2780
Run #2	5P58744.D	10	04/22/19 17:42	YC	04/19/19 07:45	OP19847	E5P2781
Run #3	5P58746.D	50	04/22/19 18:28	YC	04/19/19 07:45	OP19847	E5P2781

	Initial Weight	Final Volume
Run #1	30.0 g	1.0 ml
Run #2	30.0 g	1.0 ml
Run #3	30.0 g	1.0 ml

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	76	19	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	190	23	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	190	33	ug/kg	
105-67-9	2,4-Dimethylphenol	77.3	190	68	ug/kg	J
51-28-5	2,4-Dinitrophenol	ND	190	140	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	190	41	ug/kg	
95-48-7	2-Methylphenol	49.4	76	24	ug/kg	J
	3&4-Methylphenol	181	76	31	ug/kg	
88-75-5	2-Nitrophenol	ND	190	25	ug/kg	
100-02-7	4-Nitrophenol	ND	380	100	ug/kg	
87-86-5	Pentachlorophenol	ND	150	36	ug/kg	
108-95-2	Phenol	214	76	20	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	190	25	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	190	29	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	190	23	ug/kg	
83-32-9	Acenaphthene	3230	38	13	ug/kg	
208-96-8	Acenaphthylene	20500 [a]	380	190	ug/kg	D
98-86-2	Acetophenone	ND	190	8.2	ug/kg	
120-12-7	Anthracene	28100 [a]	380	230	ug/kg	D
1912-24-9	Atrazine	ND	76	16	ug/kg	
56-55-3	Benzo(a)anthracene	48600 [b]	1900	540	ug/kg	D
50-32-8	Benzo(a)pyrene	37200 [a]	380	170	ug/kg	
205-99-2	Benzo(b)fluoranthene	55700 [b]	1900	840	ug/kg	
191-24-2	Benzo(g,h,i)perylene	23400 [a]	380	190	ug/kg	
207-08-9	Benzo(k)fluoranthene	18300 [b]	1900	890	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	76	15	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	76	9.3	ug/kg	
92-52-4	1,1'-Biphenyl	1570	76	5.2	ug/kg	
100-52-7	Benzaldehyde	ND	190	9.5	ug/kg	
91-58-7	2-Chloronaphthalene	ND	76	9.1	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-118(4-6)		
Lab Sample ID:	JC86553-7	**Date Sampled:**	04/16/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	87.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
106-47-8	4-Chloroaniline	ND	190	14	ug/kg	
86-74-8	Carbazole	9670 [a]	760	55	ug/kg	D
105-60-2	Caprolactam	ND	76	15	ug/kg	
218-01-9	Chrysene	42400 [b]	1900	600	ug/kg	D
111-91-1	bis(2-Chloroethoxy)methane	ND	76	8.2	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	76	16	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	76	14	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	76	12	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	38	12	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	38	19	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	76	32	ug/kg	
123-91-1	1,4-Dioxane	ND	38	25	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	7500 [a]	380	170	ug/kg	D
132-64-9	Dibenzofuran	14400 [a]	760	160	ug/kg	D
84-74-2	Di-n-butyl phthalate	ND	76	6.2	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	76	9.5	ug/kg	
84-66-2	Diethyl phthalate	ND	76	8.1	ug/kg	
131-11-3	Dimethyl phthalate	ND	76	6.8	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	76	8.9	ug/kg	
206-44-0	Fluoranthene	120000 [b]	1900	850	ug/kg	D
86-73-7	Fluorene	29100 [a]	380	180	ug/kg	D
118-74-1	Hexachlorobenzene	ND	76	9.7	ug/kg	
87-68-3	Hexachlorobutadiene	ND	38	15	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	380	15	ug/kg	
67-72-1	Hexachloroethane	ND	190	19	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	26300 [a]	380	180	ug/kg	D
78-59-1	Isophorone	ND	76	8.2	ug/kg	
91-57-6	2-Methylnaphthalene	2440	38	8.6	ug/kg	
88-74-4	2-Nitroaniline	ND	190	9.0	ug/kg	
99-09-2	3-Nitroaniline	ND	190	9.5	ug/kg	
100-01-6	4-Nitroaniline	ND	190	9.9	ug/kg	
91-20-3	Naphthalene	6590 [a]	380	110	ug/kg	D
98-95-3	Nitrobenzene	ND	76	15	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	76	11	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	190	14	ug/kg	
85-01-8	Phenanthrene	107000 [b]	1900	640	ug/kg	D
129-00-0	Pyrene	83400 [b]	1900	610	ug/kg	D
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	190	9.7	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-118(4-6)
Lab Sample ID: JC86553-7
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/16/19
Date Received: 04/17/19
Percent Solids: 87.3

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Run# 3	Limits
367-12-4	2-Fluorophenol	58%	49%	51%	23-115%
4165-62-2	Phenol-d5	61%	57%	57%	27-114%
118-79-6	2,4,6-Tribromophenol	65%	52%	0% [c]	19-152%
4165-60-0	Nitrobenzene-d5	64%	60%	60%	26-134%
321-60-8	2-Fluorobiphenyl	65%	74%	69%	39-124%
1718-51-0	Terphenyl-d14	62%	69%	65%	36-134%

(a) Result is from Run# 2
(b) Result is from Run# 3
(c) Outside control limits due to dilution.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PCTP-49R(8-10)		
Lab Sample ID:	JC86553-8	**Date Sampled:**	04/16/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8260C	**Percent Solids:**	79.6
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3C151404.D	1	04/25/19 01:52	PS	n/a	n/a	V3C6807
Run #2							

	Initial Weight
Run #1	5.8 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	28.0	11	5.4	ug/kg	
71-43-2	Benzene	3.4	0.54	0.41	ug/kg	
74-97-5	Bromochloromethane	ND	5.4	0.46	ug/kg	
75-27-4	Bromodichloromethane	ND	2.2	0.48	ug/kg	
75-25-2	Bromoform	ND	5.4	0.44	ug/kg	
74-83-9	Bromomethane [a]	ND	5.4	1.1	ug/kg	UJ
78-93-3	2-Butanone (MEK)	ND	11	4.0	ug/kg	
75-15-0	Carbon disulfide	8.0	2.2	1.0	ug/kg	
56-23-5	Carbon tetrachloride	ND	2.2	0.59	ug/kg	
108-90-7	Chlorobenzene	ND	2.2	0.38	ug/kg	
75-00-3	Chloroethane	ND	5.4	0.74	ug/kg	
67-66-3	Chloroform	ND	2.2	0.40	ug/kg	
74-87-3	Chloromethane	ND	5.4	2.1	ug/kg	
110-82-7	Cyclohexane	ND	2.2	0.44	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.2	0.90	ug/kg	
124-48-1	Dibromochloromethane	ND	2.2	0.37	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.1	0.35	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.1	0.33	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.1	0.39	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.1	0.37	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	5.4	0.69	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.1	0.42	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.1	0.51	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.1	0.71	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.1	1.0	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.1	0.72	ug/kg	
78-87-5	1,2-Dichloropropane	ND	2.2	0.44	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	2.2	0.38	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2.2	0.35	ug/kg	
100-41-4	Ethylbenzene	ND	1.1	0.60	ug/kg	
76-13-1	Freon 113	ND	5.4	0.82	ug/kg	
591-78-6	2-Hexanone	ND	5.4	1.4	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCTP-49R(8-10)		
Lab Sample ID:	JC86553-8	**Date Sampled:**	04/16/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8260C	**Percent Solids:**	79.6
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	1.3	2.2	0.75	ug/kg	J
79-20-9	Methyl Acetate	ND	5.4	1.5	ug/kg	
108-87-2	Methylcyclohexane	ND	2.2	0.76	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.1	0.38	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.4	1.7	ug/kg	
75-09-2	Methylene chloride	ND	5.4	2.7	ug/kg	
100-42-5	Styrene	ND	2.2	0.62	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.2	0.42	ug/kg	
127-18-4	Tetrachloroethene	ND	2.2	0.50	ug/kg	
108-88-3	Toluene	ND	1.1	0.41	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	5.4	1.1	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	5.4	1.1	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	2.2	0.46	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2.2	0.37	ug/kg	
79-01-6	Trichloroethene	ND	1.1	0.82	ug/kg	
75-69-4	Trichlorofluoromethane	ND	5.4	0.74	ug/kg	
75-01-4	Vinyl chloride	ND	2.2	0.51	ug/kg	
	m,p-Xylene	ND	1.1	0.81	ug/kg	
95-47-6	o-Xylene	ND	1.1	0.63	ug/kg	
1330-20-7	Xylene (total)	ND	1.1	0.63	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%		75-127%
17060-07-0	1,2-Dichloroethane-D4	101%		75-130%
2037-26-5	Toluene-D8	105%		80-120%
460-00-4	4-Bromofluorobenzene	111%		79-127%

(a) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID: PCTP-49R(8-10)
Lab Sample ID: JC86553-8
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/16/19
Date Received: 04/17/19
Percent Solids: 79.6

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5P58714.D	1	04/22/19 04:21	CB	04/19/19 07:45	OP19847	E5P2780
Run #2							

	Initial Weight	Final Volume
Run #1	31.8 g	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	79	20	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	200	24	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	200	34	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	200	70	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	200	150	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	200	42	ug/kg	
95-48-7	2-Methylphenol	47.8	79	25	ug/kg	J
	3&4-Methylphenol	105	79	32	ug/kg	
88-75-5	2-Nitrophenol	ND	200	26	ug/kg	
100-02-7	4-Nitrophenol	ND	400	110	ug/kg	
87-86-5	Pentachlorophenol	ND	160	37	ug/kg	
108-95-2	Phenol	145	79	21	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	200	26	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	200	30	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	200	24	ug/kg	
83-32-9	Acenaphthene	470	40	14	ug/kg	
208-96-8	Acenaphthylene	87.1	40	20	ug/kg	
98-86-2	Acetophenone	ND	200	8.5	ug/kg	
120-12-7	Anthracene	320	40	24	ug/kg	
1912-24-9	Atrazine	ND	79	17	ug/kg	
56-55-3	Benzo(a)anthracene	398	40	11	ug/kg	
50-32-8	Benzo(a)pyrene	468	40	18	ug/kg	
205-99-2	Benzo(b)fluoranthene	426	40	17	ug/kg	
191-24-2	Benzo(g,h,i)perylene	264	40	20	ug/kg	
207-08-9	Benzo(k)fluoranthene	176	40	18	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	79	15	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	79	9.6	ug/kg	
92-52-4	1,1'-Biphenyl	17.8	79	5.4	ug/kg	J
100-52-7	Benzaldehyde	ND	200	9.8	ug/kg	
91-58-7	2-Chloronaphthalene	ND	79	9.4	ug/kg	
106-47-8	4-Chloroaniline	ND	200	14	ug/kg	
86-74-8	Carbazole	47.9	79	5.7	ug/kg	J

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PCTP-49R(8-10)
Lab Sample ID: JC86553-8
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/16/19
Date Received: 04/17/19
Percent Solids: 79.6

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	79	16	ug/kg	
218-01-9	Chrysene	387	40	12	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	79	8.5	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	79	17	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	79	14	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	79	13	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	40	12	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	40	20	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	79	33	ug/kg	
123-91-1	1,4-Dioxane	ND	40	26	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	59.2	40	17	ug/kg	
132-64-9	Dibenzofuran	77.3	79	16	ug/kg	J
84-74-2	Di-n-butyl phthalate	ND	79	6.4	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	79	9.8	ug/kg	
84-66-2	Diethyl phthalate	ND	79	8.4	ug/kg	
131-11-3	Dimethyl phthalate	ND	79	7.0	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	79	9.2	ug/kg	
206-44-0	Fluoranthene	576	40	18	ug/kg	
86-73-7	Fluorene	327	40	18	ug/kg	
118-74-1	Hexachlorobenzene	ND	79	10	ug/kg	
87-68-3	Hexachlorobutadiene	ND	40	16	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	400	16	ug/kg	
67-72-1	Hexachloroethane	ND	200	20	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	259	40	19	ug/kg	
78-59-1	Isophorone	ND	79	8.5	ug/kg	
91-57-6	2-Methylnaphthalene	32.2	40	8.9	ug/kg	J
88-74-4	2-Nitroaniline	ND	200	9.3	ug/kg	
99-09-2	3-Nitroaniline	ND	200	9.9	ug/kg	
100-01-6	4-Nitroaniline	ND	200	10	ug/kg	
91-20-3	Naphthalene	159	40	11	ug/kg	
98-95-3	Nitrobenzene	ND	79	15	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	79	11	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	200	14	ug/kg	
85-01-8	Phenanthrene	845	40	13	ug/kg	
129-00-0	Pyrene	719	40	13	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	200	10	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	41%		23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PCTP-49R(8-10)
Lab Sample ID: JC86553-8
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/16/19
Date Received: 04/17/19
Percent Solids: 79.6

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	43%		27-114%
118-79-6	2,4,6-Tribromophenol	44%		19-152%
4165-60-0	Nitrobenzene-d5	44%		26-134%
321-60-8	2-Fluorobiphenyl	48%		39-124%
1718-51-0	Terphenyl-d14	43%		36-134%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PCTP-49R(10-11)		
Lab Sample ID:	JC86553-9	**Date Sampled:**	04/16/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8260C	**Percent Solids:**	62.8
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	I225561.D	1	04/19/19 19:53	TDN	n/a	n/a	VI9087
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.5 g	10.0 ml	100 ul
Run #2			

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	1700	870	ug/kg	
71-43-2	Benzene	563	87	66	ug/kg	
74-97-5	Bromochloromethane	ND	870	75	ug/kg	
75-27-4	Bromodichloromethane	ND	350	77	ug/kg	
75-25-2	Bromoform	ND	870	70	ug/kg	
74-83-9	Bromomethane	ND	870	170	ug/kg	
78-93-3	2-Butanone (MEK)	ND	1700	650	ug/kg	
75-15-0	Carbon disulfide	6610	350	160	ug/kg	
56-23-5	Carbon tetrachloride	ND	350	96	ug/kg	
108-90-7	Chlorobenzene	ND	350	62	ug/kg	
75-00-3	Chloroethane	ND	870	120	ug/kg	
67-66-3	Chloroform	ND	350	65	ug/kg	
74-87-3	Chloromethane	ND	870	340	ug/kg	
110-82-7	Cyclohexane	ND	350	71	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	350	150	ug/kg	
124-48-1	Dibromochloromethane	ND	350	59	ug/kg	
106-93-4	1,2-Dibromoethane [b]	ND	170	57	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	170	53	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	170	63	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	170	60	ug/kg	
75-71-8	Dichlorodifluoromethane [b]	ND	870	110	ug/kg	
75-34-3	1,1-Dichloroethane	ND	170	67	ug/kg	
107-06-2	1,2-Dichloroethane	ND	170	82	ug/kg	
75-35-4	1,1-Dichloroethene	ND	170	110	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	170	170	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	170	120	ug/kg	
78-87-5	1,2-Dichloropropane	ND	350	71	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	350	61	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	350	57	ug/kg	
100-41-4	Ethylbenzene	1850	170	96	ug/kg	
76-13-1	Freon 113	ND	870	130	ug/kg	
591-78-6	2-Hexanone	ND	870	220	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCTP-49R(10-11)		
Lab Sample ID:	JC86553-9	**Date Sampled:**	04/16/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8260C	**Percent Solids:**	62.8
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	3030	350	120	ug/kg	
79-20-9	Methyl Acetate	ND	870	240	ug/kg	
108-87-2	Methylcyclohexane	778	350	120	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	170	61	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	870	270	ug/kg	
75-09-2	Methylene chloride	ND	870	440	ug/kg	
100-42-5	Styrene	ND	350	100	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	350	68	ug/kg	
127-18-4	Tetrachloroethene	ND	350	81	ug/kg	
108-88-3	Toluene	406	170	66	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	870	170	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	870	170	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	350	74	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	350	60	ug/kg	
79-01-6	Trichloroethene	ND	170	130	ug/kg	
75-69-4	Trichlorofluoromethane	ND	870	120	ug/kg	
75-01-4	Vinyl chloride	ND	350	82	ug/kg	
	m,p-Xylene	847	170	130	ug/kg	
95-47-6	o-Xylene	756	170	100	ug/kg	
1330-20-7	Xylene (total)	1600	170	100	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		75-127%
17060-07-0	1,2-Dichloroethane-D4	103%		75-130%
2037-26-5	Toluene-D8	101%		80-120%
460-00-4	4-Bromofluorobenzene	113%		79-127%

(a) Diluted due to high concentration of non-target compound.
(b) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PCTP-49R(10-11)
Lab Sample ID: JC86553-9
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/16/19
Date Received: 04/17/19
Percent Solids: 62.8

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5P58715.D	1	04/22/19 04:43	CB	04/19/19 07:45	OP19847	E5P2780
Run #2	5P58739.D	5	04/22/19 15:49	YC	04/19/19 07:45	OP19847	E5P2781

	Initial Weight	Final Volume
Run #1	31.8 g	1.0 ml
Run #2	31.8 g	1.0 ml

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	100	25	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	250	31	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	250	43	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	250	89	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	250	190	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	250	54	ug/kg	
95-48-7	2-Methylphenol	72.7	100	32	ug/kg	J
	3&4-Methylphenol	250	100	41	ug/kg	
88-75-5	2-Nitrophenol	ND	250	33	ug/kg	
100-02-7	4-Nitrophenol	ND	500	130	ug/kg	
87-86-5	Pentachlorophenol	ND	200	47	ug/kg	
108-95-2	Phenol	293	100	26	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	250	33	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	250	38	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	250	30	ug/kg	
83-32-9	Acenaphthene	3880	50	17	ug/kg	
208-96-8	Acenaphthylene	219	50	25	ug/kg	
98-86-2	Acetophenone	ND	250	11	ug/kg	
120-12-7	Anthracene	1790	50	31	ug/kg	
1912-24-9	Atrazine	ND	100	21	ug/kg	
56-55-3	Benzo(a)anthracene	951	50	14	ug/kg	
50-32-8	Benzo(a)pyrene	917	50	23	ug/kg	
205-99-2	Benzo(b)fluoranthene	944	50	22	ug/kg	
191-24-2	Benzo(g,h,i)perylene	490	50	25	ug/kg	
207-08-9	Benzo(k)fluoranthene	327	50	23	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	100	19	ug/kg	
85-68-7	Butyl benzyl phthalate	58.6	100	12	ug/kg	J
92-52-4	1,1'-Biphenyl	878	100	6.9	ug/kg	
100-52-7	Benzaldehyde	ND	250	12	ug/kg	
91-58-7	2-Chloronaphthalene	ND	100	12	ug/kg	
106-47-8	4-Chloroaniline	ND	250	18	ug/kg	
86-74-8	Carbazole	739	100	7.3	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PCTP-49R(10-11)
Lab Sample ID: JC86553-9
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/16/19
Date Received: 04/17/19
Percent Solids: 62.8

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	100	20	ug/kg	
218-01-9	Chrysene	1060	50	16	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	100	11	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	100	22	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	100	18	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	100	16	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	50	16	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	50	25	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	100	42	ug/kg	
123-91-1	1,4-Dioxane	ND	50	33	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	105	50	22	ug/kg	
132-64-9	Dibenzofuran	1910	100	20	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	100	8.2	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	100	12	ug/kg	
84-66-2	Diethyl phthalate	ND	100	11	ug/kg	
131-11-3	Dimethyl phthalate	ND	100	8.9	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	100	12	ug/kg	
206-44-0	Fluoranthene	2820	50	22	ug/kg	
86-73-7	Fluorene	2910	50	23	ug/kg	
118-74-1	Hexachlorobenzene	ND	100	13	ug/kg	
87-68-3	Hexachlorobutadiene	ND	50	20	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	500	20	ug/kg	
67-72-1	Hexachloroethane	ND	250	25	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	482	50	23	ug/kg	
78-59-1	Isophorone	ND	100	11	ug/kg	
91-57-6	2-Methylnaphthalene	957	50	11	ug/kg	
88-74-4	2-Nitroaniline	ND	250	12	ug/kg	
99-09-2	3-Nitroaniline	ND	250	13	ug/kg	
100-01-6	4-Nitroaniline	ND	250	13	ug/kg	
91-20-3	Naphthalene	2020	50	14	ug/kg	
98-95-3	Nitrobenzene	ND	100	19	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	100	14	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	250	18	ug/kg	
85-01-8	Phenanthrene	9200 [a]	250	84	ug/kg	D
129-00-0	Pyrene	2580	50	16	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	250	13	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	52%	47%	23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCTP-49R(10-11)		
Lab Sample ID:	JC86553-9	**Date Sampled:**	04/16/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	62.8
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	52%	54%	27-114%
118-79-6	2,4,6-Tribromophenol	51%	63%	19-152%
4165-60-0	Nitrobenzene-d5	52%	59%	26-134%
321-60-8	2-Fluorobiphenyl	59%	66%	39-124%
1718-51-0	Terphenyl-d14	51%	58%	36-134%

(a) Result is from Run# 2

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PSSTP-10R(1-2)		
Lab Sample ID:	JC86553-10	**Date Sampled:**	04/16/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8260C	**Percent Solids:**	88.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3C151405.D	1	04/25/19 02:15	PS	n/a	n/a	V3C6807
Run #2							

	Initial Weight
Run #1	4.5 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	394	13	6.3	ug/kg	
71-43-2	Benzene	ND	0.63	0.47	ug/kg	
74-97-5	Bromochloromethane	ND	6.3	0.54	ug/kg	
75-27-4	Bromodichloromethane	ND	2.5	0.55	ug/kg	
75-25-2	Bromoform	ND	6.3	0.50	ug/kg	
74-83-9	Bromomethane [a]	ND	6.3	1.2	ug/kg	UJ
78-93-3	2-Butanone (MEK)	ND	13	4.7	ug/kg	
75-15-0	Carbon disulfide	ND	2.5	1.2	ug/kg	
56-23-5	Carbon tetrachloride	ND	2.5	0.69	ug/kg	
108-90-7	Chlorobenzene	ND	2.5	0.44	ug/kg	
75-00-3	Chloroethane	ND	6.3	0.86	ug/kg	
67-66-3	Chloroform	ND	2.5	0.47	ug/kg	
74-87-3	Chloromethane	ND	6.3	2.5	ug/kg	
110-82-7	Cyclohexane	ND	2.5	0.51	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.5	1.0	ug/kg	
124-48-1	Dibromochloromethane	ND	2.5	0.42	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.3	0.41	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.3	0.38	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.3	0.45	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.3	0.43	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	6.3	0.79	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.3	0.48	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.3	0.59	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.3	0.82	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.3	1.2	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.3	0.83	ug/kg	
78-87-5	1,2-Dichloropropane	ND	2.5	0.51	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	2.5	0.44	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2.5	0.41	ug/kg	
100-41-4	Ethylbenzene	ND	1.3	0.69	ug/kg	
76-13-1	Freon 113	ND	6.3	0.95	ug/kg	
591-78-6	2-Hexanone	ND	6.3	1.6	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PSSTP-10R(1-2)		
Lab Sample ID:	JC86553-10	**Date Sampled:**	04/16/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8260C	**Percent Solids:**	88.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	2.5	0.87	ug/kg	
79-20-9	Methyl Acetate	6.1	6.3	1.7	ug/kg	J
108-87-2	Methylcyclohexane	ND	2.5	0.88	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.3	0.44	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	6.3	2.0	ug/kg	
75-09-2	Methylene chloride	ND	6.3	3.1	ug/kg	
100-42-5	Styrene	ND	2.5	0.72	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.5	0.49	ug/kg	
127-18-4	Tetrachloroethene	ND	2.5	0.58	ug/kg	
108-88-3	Toluene	ND	1.3	0.47	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	6.3	1.3	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	6.3	1.3	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	2.5	0.53	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2.5	0.43	ug/kg	
79-01-6	Trichloroethene	ND	1.3	0.95	ug/kg	
75-69-4	Trichlorofluoromethane	ND	6.3	0.85	ug/kg	
75-01-4	Vinyl chloride	ND	2.5	0.59	ug/kg	
	m,p-Xylene	ND	1.3	0.93	ug/kg	
95-47-6	o-Xylene	ND	1.3	0.73	ug/kg	
1330-20-7	Xylene (total)	ND	1.3	0.73	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%		75-127%
17060-07-0	1,2-Dichloroethane-D4	106%		75-130%
2037-26-5	Toluene-D8	105%		80-120%
460-00-4	4-Bromofluorobenzene	109%		79-127%

(a) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PSSTP-10R(1-2)		
Lab Sample ID:	JC86553-10	**Date Sampled:**	04/16/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	88.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5P58716.D	1	04/22/19 05:05	CB	04/19/19 07:45	OP19847	E5P2780
Run #2							

	Initial Weight	Final Volume
Run #1	30.7 g	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	74	18	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	180	23	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	180	32	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	180	66	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	180	140	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	180	40	ug/kg	
95-48-7	2-Methylphenol	ND	74	24	ug/kg	
	3&4-Methylphenol	ND	74	30	ug/kg	
88-75-5	2-Nitrophenol	ND	180	24	ug/kg	
100-02-7	4-Nitrophenol	ND	370	99	ug/kg	
87-86-5	Pentachlorophenol	ND	150	35	ug/kg	
108-95-2	Phenol	ND	74	19	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	180	24	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	180	28	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	180	22	ug/kg	
83-32-9	Acenaphthene	28.4	37	13	ug/kg	J
208-96-8	Acenaphthylene	266	37	19	ug/kg	
98-86-2	Acetophenone	ND	180	7.9	ug/kg	
120-12-7	Anthracene	608	37	23	ug/kg	
1912-24-9	Atrazine	ND	74	16	ug/kg	
56-55-3	Benzo(a)anthracene	1760	37	10	ug/kg	
50-32-8	Benzo(a)pyrene	1310	37	17	ug/kg	
205-99-2	Benzo(b)fluoranthene	1970	37	16	ug/kg	
191-24-2	Benzo(g,h,i)perylene	909	37	18	ug/kg	
207-08-9	Benzo(k)fluoranthene	781	37	17	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	74	14	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	74	9.0	ug/kg	
92-52-4	1,1'-Biphenyl	13.2	74	5.1	ug/kg	J
100-52-7	Benzaldehyde	ND	180	9.2	ug/kg	
91-58-7	2-Chloronaphthalene	ND	74	8.8	ug/kg	
106-47-8	4-Chloroaniline	ND	180	13	ug/kg	
86-74-8	Carbazole	218	74	5.4	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PSSTP-10R(1-2)
Lab Sample ID: JC86553-10
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/16/19
Date Received: 04/17/19
Percent Solids: 88.2

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	74	15	ug/kg	
218-01-9	Chrysene	1720	37	12	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	74	7.9	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	74	16	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	74	13	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	74	12	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	37	11	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	37	19	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	74	31	ug/kg	
123-91-1	1,4-Dioxane	ND	37	24	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	354	37	16	ug/kg	
132-64-9	Dibenzofuran	115	74	15	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	74	6.0	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	74	9.2	ug/kg	
84-66-2	Diethyl phthalate	ND	74	7.9	ug/kg	
131-11-3	Dimethyl phthalate	ND	74	6.6	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	74	8.6	ug/kg	
206-44-0	Fluoranthene	3210	37	16	ug/kg	
86-73-7	Fluorene	203	37	17	ug/kg	
118-74-1	Hexachlorobenzene	ND	74	9.3	ug/kg	
87-68-3	Hexachlorobutadiene	ND	37	15	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	370	15	ug/kg	
67-72-1	Hexachloroethane	ND	180	18	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	1030	37	17	ug/kg	
78-59-1	Isophorone	ND	74	7.9	ug/kg	
91-57-6	2-Methylnaphthalene	27.3	37	8.3	ug/kg	J
88-74-4	2-Nitroaniline	ND	180	8.7	ug/kg	
99-09-2	3-Nitroaniline	ND	180	9.2	ug/kg	
100-01-6	4-Nitroaniline	ND	180	9.6	ug/kg	
91-20-3	Naphthalene	81.3	37	10	ug/kg	
98-95-3	Nitrobenzene	ND	74	14	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	74	11	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	180	14	ug/kg	
85-01-8	Phenanthrene	2250	37	12	ug/kg	
129-00-0	Pyrene	2560	37	12	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	180	9.4	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	38%		23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PSSTP-10R(1-2)		
Lab Sample ID:	JC86553-10	**Date Sampled:**	04/16/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	88.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	39%		27-114%
118-79-6	2,4,6-Tribromophenol	41%		19-152%
4165-60-0	Nitrobenzene-d5	43%		26-134%
321-60-8	2-Fluorobiphenyl	45%		39-124%
1718-51-0	Terphenyl-d14	42%		36-134%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PSSTP-10R(1-2)		
Lab Sample ID:	JC86553-10	**Date Sampled:**	04/16/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8081B SW846 3546	**Percent Solids:**	88.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4G958615.D	1	04/22/19 12:05	MH	04/22/19 10:00	OP19865	G4G2733
Run #2							

	Initial Weight	Final Volume
Run #1	15.5 g	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	0.73	0.60	ug/kg	
319-84-6	alpha-BHC	ND	0.73	0.59	ug/kg	
319-85-7	beta-BHC	ND	0.73	0.66	ug/kg	
319-86-8	delta-BHC	ND	0.73	0.70	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	0.73	0.54	ug/kg	
5103-71-9	alpha-Chlordane [a]	ND	0.73	0.59	ug/kg	UJ
5103-74-2	gamma-Chlordane [a]	ND	0.73	0.33	ug/kg	UJ
60-57-1	Dieldrin	ND	0.73	0.50	ug/kg	
72-54-8	4,4'-DDD	ND	0.73	0.67	ug/kg	
72-55-9	4,4'-DDE [a]	ND	0.73	0.64	ug/kg	UJ
50-29-3	4,4'-DDT	ND	0.73	0.65	ug/kg	
72-20-8	Endrin	ND	0.73	0.57	ug/kg	
1031-07-8	Endosulfan sulfate	ND	0.73	0.57	ug/kg	
7421-93-4	Endrin aldehyde	ND	0.73	0.41	ug/kg	
959-98-8	Endosulfan-I	ND	0.73	0.42	ug/kg	
33213-65-9	Endosulfan-II	ND	0.73	0.46	ug/kg	
76-44-8	Heptachlor	ND	0.73	0.63	ug/kg	
1024-57-3	Heptachlor epoxide	ND	0.73	0.51	ug/kg	
72-43-5	Methoxychlor	ND	1.5	0.58	ug/kg	
53494-70-5	Endrin ketone	ND	0.73	0.53	ug/kg	
8001-35-2	Toxaphene	ND	18	17	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	71%		25-135%
877-09-8	Tetrachloro-m-xylene	73%		25-135%
2051-24-3	Decachlorobiphenyl	98%		10-156%
2051-24-3	Decachlorobiphenyl	134%		10-156%

(a) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PSSTP-10R(1-2)		
Lab Sample ID:	JC86553-10	**Date Sampled:**	04/16/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8082A SW846 3546	**Percent Solids:**	88.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2G178686.D	1	04/22/19 16:35	TR	04/22/19 10:00	OP19863	G2G4637
Run #2							

	Initial Weight	Final Volume
Run #1	15.5 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	37	17	ug/kg	
11104-28-2	Aroclor 1221	ND	37	19	ug/kg	
11141-16-5	Aroclor 1232	ND	37	28	ug/kg	
53469-21-9	Aroclor 1242	ND	37	15	ug/kg	
12672-29-6	Aroclor 1248	ND	37	33	ug/kg	
11097-69-1	Aroclor 1254	ND	37	20	ug/kg	
11096-82-5	Aroclor 1260 [a]	ND	37	16	ug/kg	
11100-14-4	Aroclor 1268	ND	37	15	ug/kg	
37324-23-5	Aroclor 1262	ND	37	24	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	85%		31-146%
877-09-8	Tetrachloro-m-xylene	82%		31-146%
2051-24-3	Decachlorobiphenyl	108%		17-164%
2051-24-3	Decachlorobiphenyl	169% [b]		17-164%

(a) Associated CCV outside of control limits low.
(b) Outside control limits due to matrix interference.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PSSTP-10R(8-9)		
Lab Sample ID:	JC86553-11	**Date Sampled:**	04/16/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8260C	**Percent Solids:**	84.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3C151406.D	1	04/25/19 02:38	PS	n/a	n/a	V3C6807
Run #2							

	Initial Weight
Run #1	6.5 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	22.6	9.1	4.6	ug/kg	
71-43-2	Benzene	ND	0.46	0.34	ug/kg	
74-97-5	Bromochloromethane	ND	4.6	0.39	ug/kg	
75-27-4	Bromodichloromethane	ND	1.8	0.40	ug/kg	
75-25-2	Bromoform	ND	4.6	0.37	ug/kg	
74-83-9	Bromomethane [a]	ND	4.6	0.91	ug/kg	UJ
78-93-3	2-Butanone (MEK)	ND	9.1	3.4	ug/kg	
75-15-0	Carbon disulfide	ND	1.8	0.85	ug/kg	
56-23-5	Carbon tetrachloride	ND	1.8	0.50	ug/kg	
108-90-7	Chlorobenzene	ND	1.8	0.32	ug/kg	
75-00-3	Chloroethane	ND	4.6	0.63	ug/kg	
67-66-3	Chloroform	ND	1.8	0.34	ug/kg	
74-87-3	Chloromethane	ND	4.6	1.8	ug/kg	
110-82-7	Cyclohexane	ND	1.8	0.37	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	1.8	0.76	ug/kg	
124-48-1	Dibromochloromethane	ND	1.8	0.31	ug/kg	
106-93-4	1,2-Dibromoethane	ND	0.91	0.30	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	0.91	0.28	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	0.91	0.33	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	0.91	0.31	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	4.6	0.58	ug/kg	
75-34-3	1,1-Dichloroethane	ND	0.91	0.35	ug/kg	
107-06-2	1,2-Dichloroethane	ND	0.91	0.43	ug/kg	
75-35-4	1,1-Dichloroethene	ND	0.91	0.60	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	0.91	0.87	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	0.91	0.61	ug/kg	
78-87-5	1,2-Dichloropropane	ND	1.8	0.37	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	1.8	0.32	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	1.8	0.30	ug/kg	
100-41-4	Ethylbenzene	ND	0.91	0.50	ug/kg	
76-13-1	Freon 113	ND	4.6	0.70	ug/kg	
591-78-6	2-Hexanone	ND	4.6	1.2	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PSSTP-10R(8-9)		
Lab Sample ID:	JC86553-11	**Date Sampled:**	04/16/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8260C	**Percent Solids:**	84.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	1.8	0.64	ug/kg	
79-20-9	Methyl Acetate	ND	4.6	1.3	ug/kg	
108-87-2	Methylcyclohexane	ND	1.8	0.65	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.91	0.32	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	4.6	1.4	ug/kg	
75-09-2	Methylene chloride	ND	4.6	2.3	ug/kg	
100-42-5	Styrene	ND	1.8	0.52	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.8	0.36	ug/kg	
127-18-4	Tetrachloroethene	ND	1.8	0.42	ug/kg	
108-88-3	Toluene	ND	0.91	0.34	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	4.6	0.91	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	4.6	0.91	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	1.8	0.39	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	1.8	0.31	ug/kg	
79-01-6	Trichloroethene	ND	0.91	0.70	ug/kg	
75-69-4	Trichlorofluoromethane	ND	4.6	0.62	ug/kg	
75-01-4	Vinyl chloride	ND	1.8	0.43	ug/kg	
	m,p-Xylene	ND	0.91	0.68	ug/kg	
95-47-6	o-Xylene	ND	0.91	0.53	ug/kg	
1330-20-7	Xylene (total)	ND	0.91	0.53	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%		75-127%
17060-07-0	1,2-Dichloroethane-D4	103%		75-130%
2037-26-5	Toluene-D8	104%		80-120%
460-00-4	4-Bromofluorobenzene	110%		79-127%

(a) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PSSTP-10R(8-9)		
Lab Sample ID:	JC86553-11	**Date Sampled:**	04/16/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	84.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5P58720.D	1	04/22/19 06:34	CB	04/19/19 07:45	OP19847	E5P2780
Run #2							

	Initial Weight	Final Volume
Run #1	30.9 g	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	77	19	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	190	24	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	190	33	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	190	68	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	190	140	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	190	41	ug/kg	
95-48-7	2-Methylphenol	ND	77	25	ug/kg	
	3&4-Methylphenol	ND	77	32	ug/kg	
88-75-5	2-Nitrophenol	ND	190	25	ug/kg	
100-02-7	4-Nitrophenol	ND	380	100	ug/kg	
87-86-5	Pentachlorophenol	ND	150	36	ug/kg	
108-95-2	Phenol	ND	77	20	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	190	25	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	190	29	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	190	23	ug/kg	
83-32-9	Acenaphthene	14.7	38	13	ug/kg	J
208-96-8	Acenaphthylene	124	38	20	ug/kg	
98-86-2	Acetophenone	23.2	190	8.3	ug/kg	J
120-12-7	Anthracene	35.1	38	24	ug/kg	J
1912-24-9	Atrazine	ND	77	16	ug/kg	
56-55-3	Benzo(a)anthracene	125	38	11	ug/kg	
50-32-8	Benzo(a)pyrene	163	38	17	ug/kg	
205-99-2	Benzo(b)fluoranthene	217	38	17	ug/kg	
191-24-2	Benzo(g,h,i)perylene	135	38	19	ug/kg	
207-08-9	Benzo(k)fluoranthene	72.1	38	18	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	77	15	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	77	9.4	ug/kg	
92-52-4	1,1'-Biphenyl	ND	77	5.3	ug/kg	
100-52-7	Benzaldehyde	ND	190	9.5	ug/kg	
91-58-7	2-Chloronaphthalene	ND	77	9.1	ug/kg	
106-47-8	4-Chloroaniline	ND	190	14	ug/kg	
86-74-8	Carbazole	9.3	77	5.6	ug/kg	J

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PSSTP-10R(8-9)
Lab Sample ID: JC86553-11
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/16/19
Date Received: 04/17/19
Percent Solids: 84.3

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	77	15	ug/kg	
218-01-9	Chrysene	145	38	12	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	77	8.2	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	77	17	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	77	14	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	77	12	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	38	12	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	38	19	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	77	32	ug/kg	
123-91-1	1,4-Dioxane	ND	38	25	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	33.2	38	17	ug/kg	J
132-64-9	Dibenzofuran	ND	77	16	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	77	6.3	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	77	9.6	ug/kg	
84-66-2	Diethyl phthalate	ND	77	8.2	ug/kg	
131-11-3	Dimethyl phthalate	ND	77	6.8	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	77	9.0	ug/kg	
206-44-0	Fluoranthene	160	38	17	ug/kg	
86-73-7	Fluorene	ND	38	18	ug/kg	
118-74-1	Hexachlorobenzene	ND	77	9.7	ug/kg	
87-68-3	Hexachlorobutadiene	ND	38	15	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	380	15	ug/kg	
67-72-1	Hexachloroethane	ND	190	19	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	134	38	18	ug/kg	
78-59-1	Isophorone	ND	77	8.2	ug/kg	
91-57-6	2-Methylnaphthalene	ND	38	8.7	ug/kg	
88-74-4	2-Nitroaniline	ND	190	9.1	ug/kg	
99-09-2	3-Nitroaniline	ND	190	9.6	ug/kg	
100-01-6	4-Nitroaniline	ND	190	9.9	ug/kg	
91-20-3	Naphthalene	36.8	38	11	ug/kg	J
98-95-3	Nitrobenzene	ND	77	15	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	77	11	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	190	14	ug/kg	
85-01-8	Phenanthrene	89.0	38	13	ug/kg	
129-00-0	Pyrene	174	38	12	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	190	9.8	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	64%		23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PSSTP-10R(8-9)		
Lab Sample ID:	JC86553-11	**Date Sampled:**	04/16/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	84.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	65%		27-114%
118-79-6	2,4,6-Tribromophenol	73%		19-152%
4165-60-0	Nitrobenzene-d5	69%		26-134%
321-60-8	2-Fluorobiphenyl	71%		39-124%
1718-51-0	Terphenyl-d14	68%		36-134%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PSSTP-10R(8-9)		
Lab Sample ID:	JC86553-11	**Date Sampled:**	04/16/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8081B SW846 3546	**Percent Solids:**	84.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4G958616.D	1	04/22/19 12:22	MH	04/22/19 10:00	OP19865	G4G2733
Run #2							

	Initial Weight	Final Volume
Run #1	15.0 g	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	0.79	0.65	ug/kg	
319-84-6	alpha-BHC	ND	0.79	0.64	ug/kg	
319-85-7	beta-BHC	ND	0.79	0.71	ug/kg	
319-86-8	delta-BHC	ND	0.79	0.76	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	0.79	0.58	ug/kg	
5103-71-9	alpha-Chlordane [a]	ND	0.79	0.64	ug/kg	UJ
5103-74-2	gamma-Chlordane [a]	ND	0.79	0.36	ug/kg	UJ
60-57-1	Dieldrin	ND	0.79	0.54	ug/kg	
72-54-8	4,4'-DDD	ND	0.79	0.73	ug/kg	
72-55-9	4,4'-DDE [b]	1.1	0.79	0.69	ug/kg	JN
50-29-3	4,4'-DDT	ND	0.79	0.70	ug/kg	
72-20-8	Endrin	ND	0.79	0.61	ug/kg	
1031-07-8	Endosulfan sulfate	ND	0.79	0.62	ug/kg	
7421-93-4	Endrin aldehyde	ND	0.79	0.45	ug/kg	
959-98-8	Endosulfan-I	ND	0.79	0.46	ug/kg	
33213-65-9	Endosulfan-II	ND	0.79	0.49	ug/kg	
76-44-8	Heptachlor	ND	0.79	0.68	ug/kg	
1024-57-3	Heptachlor epoxide	ND	0.79	0.55	ug/kg	
72-43-5	Methoxychlor	ND	1.6	0.63	ug/kg	
53494-70-5	Endrin ketone	ND	0.79	0.57	ug/kg	
8001-35-2	Toxaphene	ND	20	18	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	62%		25-135%
877-09-8	Tetrachloro-m-xylene	34%		25-135%
2051-24-3	Decachlorobiphenyl	53%		10-156%
2051-24-3	Decachlorobiphenyl	40%		10-156%

(a) Associated CCV outside of control limits low.
(b) More than 40 % RPD for detected concentrations between the two GC columns.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PSSTP-10R(8-9)		
Lab Sample ID:	JC86553-11	**Date Sampled:**	04/16/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8082A SW846 3546	**Percent Solids:**	84.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2G178687.D	1	04/22/19 16:52	TR	04/22/19 10:00	OP19863	G2G4637
Run #2							

	Initial Weight	Final Volume
Run #1	15.0 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	40	18	ug/kg	
11104-28-2	Aroclor 1221	ND	40	20	ug/kg	
11141-16-5	Aroclor 1232	ND	40	30	ug/kg	
53469-21-9	Aroclor 1242	ND	40	16	ug/kg	
12672-29-6	Aroclor 1248	ND	40	35	ug/kg	
11097-69-1	Aroclor 1254	ND	40	21	ug/kg	
11096-82-5	Aroclor 1260 [a]	ND	40	17	ug/kg	
11100-14-4	Aroclor 1268	ND	40	17	ug/kg	
37324-23-5	Aroclor 1262	ND	40	26	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	121%		31-146%
877-09-8	Tetrachloro-m-xylene	97%		31-146%
2051-24-3	Decachlorobiphenyl	71%		17-164%
2051-24-3	Decachlorobiphenyl	77%		17-164%

(a) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	S-130(2-4)		
Lab Sample ID:	JC86553-12	**Date Sampled:**	04/17/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8260C	**Percent Solids:**	80.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3C151407.D	1	04/25/19 03:01	PS	n/a	n/a	V3C6807
Run #2							

	Initial Weight
Run #1	3.4 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	18	9.1	ug/kg	
71-43-2	Benzene	17.6	0.91	0.68	ug/kg	
74-97-5	Bromochloromethane	ND	9.1	0.78	ug/kg	
75-27-4	Bromodichloromethane	ND	3.6	0.80	ug/kg	
75-25-2	Bromoform	ND	9.1	0.73	ug/kg	
74-83-9	Bromomethane [a]	ND	9.1	1.8	ug/kg	UJ
78-93-3	2-Butanone (MEK)	ND	18	6.8	ug/kg	
75-15-0	Carbon disulfide	1.7	3.6	1.7	ug/kg	J
56-23-5	Carbon tetrachloride	ND	3.6	1.0	ug/kg	
108-90-7	Chlorobenzene	ND	3.6	0.64	ug/kg	
75-00-3	Chloroethane	ND	9.1	1.2	ug/kg	
67-66-3	Chloroform	ND	3.6	0.67	ug/kg	
74-87-3	Chloromethane	ND	9.1	3.5	ug/kg	
110-82-7	Cyclohexane	ND	3.6	0.73	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	3.6	1.5	ug/kg	
124-48-1	Dibromochloromethane	ND	3.6	0.61	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.8	0.59	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.8	0.55	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.8	0.65	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.8	0.62	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	9.1	1.1	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.8	0.70	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.8	0.85	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.8	1.2	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.8	1.7	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.8	1.2	ug/kg	
78-87-5	1,2-Dichloropropane	ND	3.6	0.74	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	3.6	0.64	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	3.6	0.59	ug/kg	
100-41-4	Ethylbenzene	ND	1.8	1.0	ug/kg	
76-13-1	Freon 113	ND	9.1	1.4	ug/kg	
591-78-6	2-Hexanone	ND	9.1	2.3	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-130(2-4)		
Lab Sample ID:	JC86553-12	**Date Sampled:**	04/17/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8260C	**Percent Solids:**	80.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	3.6	1.3	ug/kg	
79-20-9	Methyl Acetate	ND	9.1	2.5	ug/kg	
108-87-2	Methylcyclohexane	ND	3.6	1.3	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.8	0.64	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	9.1	2.8	ug/kg	
75-09-2	Methylene chloride	ND	9.1	4.5	ug/kg	
100-42-5	Styrene	ND	3.6	1.0	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	3.6	0.71	ug/kg	
127-18-4	Tetrachloroethene	ND	3.6	0.84	ug/kg	
108-88-3	Toluene	1.5	1.8	0.68	ug/kg	J
87-61-6	1,2,3-Trichlorobenzene	ND	9.1	1.8	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	9.1	1.8	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	3.6	0.77	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	3.6	0.62	ug/kg	
79-01-6	Trichloroethene	ND	1.8	1.4	ug/kg	
75-69-4	Trichlorofluoromethane	ND	9.1	1.2	ug/kg	
75-01-4	Vinyl chloride	ND	3.6	0.85	ug/kg	
	m,p-Xylene	ND	1.8	1.4	ug/kg	
95-47-6	o-Xylene	ND	1.8	1.1	ug/kg	
1330-20-7	Xylene (total)	ND	1.8	1.1	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%		75-127%
17060-07-0	1,2-Dichloroethane-D4	101%		75-130%
2037-26-5	Toluene-D8	106%		80-120%
460-00-4	4-Bromofluorobenzene	111%		79-127%

(a) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	S-130(2-4)		
Lab Sample ID:	JC86553-12	**Date Sampled:**	04/17/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	80.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5P58721.D	1	04/22/19 06:56	CB	04/19/19 07:45	OP19847	E5P2780
Run #2	5P58737.D	2	04/22/19 15:04	YC	04/19/19 07:45	OP19847	E5P2781

	Initial Weight	Final Volume
Run #1	31.5 g	1.0 ml
Run #2	31.5 g	1.0 ml

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	79	20	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	200	24	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	200	34	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	200	70	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	200	150	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	200	42	ug/kg	
95-48-7	2-Methylphenol	188	79	25	ug/kg	
	3&4-Methylphenol	368	79	32	ug/kg	
88-75-5	2-Nitrophenol	ND	200	26	ug/kg	
100-02-7	4-Nitrophenol	ND	400	110	ug/kg	
87-86-5	Pentachlorophenol	ND	160	37	ug/kg	
108-95-2	Phenol	647	79	21	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	200	26	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	200	30	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	200	24	ug/kg	
83-32-9	Acenaphthene	ND	40	14	ug/kg	
208-96-8	Acenaphthylene	120	40	20	ug/kg	
98-86-2	Acetophenone	83.5	200	8.5	ug/kg	J
120-12-7	Anthracene	28.5	40	24	ug/kg	J
1912-24-9	Atrazine	ND	79	17	ug/kg	
56-55-3	Benzo(a)anthracene	26.9	40	11	ug/kg	J
50-32-8	Benzo(a)pyrene	30.0	40	18	ug/kg	J
205-99-2	Benzo(b)fluoranthene	45.6	40	17	ug/kg	
191-24-2	Benzo(g,h,i)perylene	38.0	40	20	ug/kg	J
207-08-9	Benzo(k)fluoranthene	ND	40	18	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	79	15	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	79	9.6	ug/kg	
92-52-4	1,1'-Biphenyl	98.0	79	5.4	ug/kg	
100-52-7	Benzaldehyde	ND	200	9.8	ug/kg	
91-58-7	2-Chloronaphthalene	ND	79	9.4	ug/kg	
106-47-8	4-Chloroaniline	ND	200	14	ug/kg	
86-74-8	Carbazole	21.4	79	5.7	ug/kg	J

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-130(2-4)		
Lab Sample ID:	JC86553-12	**Date Sampled:**	04/17/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	80.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	79	16	ug/kg	
218-01-9	Chrysene	53.1	40	12	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	79	8.5	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	79	17	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	79	14	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	79	13	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	40	12	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	40	20	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	79	33	ug/kg	
123-91-1	1,4-Dioxane	ND	40	26	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	40	17	ug/kg	
132-64-9	Dibenzofuran	76.0	79	16	ug/kg	J
84-74-2	Di-n-butyl phthalate	ND	79	6.4	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	79	9.8	ug/kg	
84-66-2	Diethyl phthalate	ND	79	8.4	ug/kg	
131-11-3	Dimethyl phthalate	ND	79	7.0	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	79	9.3	ug/kg	
206-44-0	Fluoranthene	29.9	40	18	ug/kg	J
86-73-7	Fluorene	23.0	40	18	ug/kg	J
118-74-1	Hexachlorobenzene	ND	79	10	ug/kg	
87-68-3	Hexachlorobutadiene	ND	40	16	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	400	16	ug/kg	
67-72-1	Hexachloroethane	ND	200	20	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	32.6	40	19	ug/kg	J
78-59-1	Isophorone	ND	79	8.5	ug/kg	
91-57-6	2-Methylnaphthalene	592	40	8.9	ug/kg	
88-74-4	2-Nitroaniline	ND	200	9.3	ug/kg	
99-09-2	3-Nitroaniline	ND	200	9.9	ug/kg	
100-01-6	4-Nitroaniline	ND	200	10	ug/kg	
91-20-3	Naphthalene	6710 [a]	79	22	ug/kg	D
98-95-3	Nitrobenzene	ND	79	15	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	79	11	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	200	14	ug/kg	
85-01-8	Phenanthrene	249	40	13	ug/kg	
129-00-0	Pyrene	34.7	40	13	ug/kg	J
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	200	10	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	51%	54%	23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-130(2-4)		
Lab Sample ID:	JC86553-12	**Date Sampled:**	04/17/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	80.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	53%	56%	27-114%
118-79-6	2,4,6-Tribromophenol	62%	67%	19-152%
4165-60-0	Nitrobenzene-d5	61%	62%	26-134%
321-60-8	2-Fluorobiphenyl	59%	64%	39-124%
1718-51-0	Terphenyl-d14	50%	55%	36-134%

(a) Result is from Run# 2

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	S-130(7-8)		
Lab Sample ID:	JC86553-13	**Date Sampled:**	04/17/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8260C	**Percent Solids:**	73.0
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3C151408.D	1	04/25/19 03:24	PS	n/a	n/a	V3C6807
Run #2							

	Initial Weight
Run #1	5.7 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	133	12	6.0	ug/kg	
71-43-2	Benzene	66.1	0.60	0.45	ug/kg	
74-97-5	Bromochloromethane	ND	6.0	0.51	ug/kg	
75-27-4	Bromodichloromethane	ND	2.4	0.53	ug/kg	
75-25-2	Bromoform	ND	6.0	0.48	ug/kg	
74-83-9	Bromomethane [a]	ND	6.0	1.2	ug/kg	UJ
78-93-3	2-Butanone (MEK)	16.2	12	4.5	ug/kg	
75-15-0	Carbon disulfide	3.0	2.4	1.1	ug/kg	
56-23-5	Carbon tetrachloride	ND	2.4	0.66	ug/kg	
108-90-7	Chlorobenzene	ND	2.4	0.42	ug/kg	
75-00-3	Chloroethane	ND	6.0	0.82	ug/kg	
67-66-3	Chloroform	ND	2.4	0.44	ug/kg	
74-87-3	Chloromethane	ND	6.0	2.3	ug/kg	
110-82-7	Cyclohexane	ND	2.4	0.48	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.4	1.0	ug/kg	
124-48-1	Dibromochloromethane	ND	2.4	0.40	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.2	0.39	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.2	0.36	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.2	0.43	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.2	0.41	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	6.0	0.76	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.2	0.46	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.2	0.56	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.2	0.78	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.2	1.1	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.2	0.80	ug/kg	
78-87-5	1,2-Dichloropropane	ND	2.4	0.49	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	2.4	0.42	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2.4	0.39	ug/kg	
100-41-4	Ethylbenzene	0.71	1.2	0.66	ug/kg	J
76-13-1	Freon 113	ND	6.0	0.91	ug/kg	
591-78-6	2-Hexanone	ND	6.0	1.5	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-130(7-8)		
Lab Sample ID:	JC86553-13	**Date Sampled:**	04/17/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8260C	**Percent Solids:**	73.0
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	2.4	0.83	ug/kg	
79-20-9	Methyl Acetate	2.4	6.0	1.7	ug/kg	J
108-87-2	Methylcyclohexane	ND	2.4	0.84	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.2	0.42	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	6.0	1.9	ug/kg	
75-09-2	Methylene chloride	ND	6.0	3.0	ug/kg	
100-42-5	Styrene	ND	2.4	0.69	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.4	0.47	ug/kg	
127-18-4	Tetrachloroethene	ND	2.4	0.55	ug/kg	
108-88-3	Toluene	1.5	1.2	0.45	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	6.0	1.2	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	6.0	1.2	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	2.4	0.51	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2.4	0.41	ug/kg	
79-01-6	Trichloroethene	ND	1.2	0.91	ug/kg	
75-69-4	Trichlorofluoromethane	ND	6.0	0.81	ug/kg	
75-01-4	Vinyl chloride	ND	2.4	0.56	ug/kg	
	m,p-Xylene	ND	1.2	0.89	ug/kg	
95-47-6	o-Xylene	ND	1.2	0.70	ug/kg	
1330-20-7	Xylene (total)	ND	1.2	0.70	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%		75-127%
17060-07-0	1,2-Dichloroethane-D4	101%		75-130%
2037-26-5	Toluene-D8	106%		80-120%
460-00-4	4-Bromofluorobenzene	111%		79-127%

(a) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	S-130(7-8)		
Lab Sample ID:	JC86553-13	**Date Sampled:**	04/17/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	73.0
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5P58709.D	1	04/22/19 02:30	CB	04/19/19 07:45	OP19847	E5P2780
Run #2	5P58738.D	5	04/22/19 15:26	YC	04/19/19 07:45	OP19847	E5P2781

	Initial Weight	Final Volume
Run #1	31.2 g	1.0 ml
Run #2	31.2 g	1.0 ml

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	88	22	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	220	27	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	220	37	ug/kg	
105-67-9	2,4-Dimethylphenol	783	220	78	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	220	170	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	220	47	ug/kg	
95-48-7	2-Methylphenol	1540	88	28	ug/kg	
	3&4-Methylphenol	1480	88	36	ug/kg	
88-75-5	2-Nitrophenol	ND	220	29	ug/kg	
100-02-7	4-Nitrophenol	ND	440	120	ug/kg	
87-86-5	Pentachlorophenol	ND	180	41	ug/kg	
108-95-2	Phenol	1730	88	23	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	220	29	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	220	33	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	220	26	ug/kg	
83-32-9	Acenaphthene	90.8	44	15	ug/kg	
208-96-8	Acenaphthylene	29.2	44	22	ug/kg	J
98-86-2	Acetophenone	42.4	220	9.4	ug/kg	J
120-12-7	Anthracene	85.4	44	27	ug/kg	
1912-24-9	Atrazine	ND	88	19	ug/kg	
56-55-3	Benzo(a)anthracene	77.0	44	12	ug/kg	
50-32-8	Benzo(a)pyrene	63.5	44	20	ug/kg	
205-99-2	Benzo(b)fluoranthene	84.0	44	19	ug/kg	
191-24-2	Benzo(g,h,i)perylene	44.0	44	22	ug/kg	
207-08-9	Benzo(k)fluoranthene	26.5	44	21	ug/kg	J
101-55-3	4-Bromophenyl phenyl ether	ND	88	17	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	88	11	ug/kg	
92-52-4	1,1'-Biphenyl	41.3	88	6.0	ug/kg	J
100-52-7	Benzaldehyde	ND	220	11	ug/kg	
91-58-7	2-Chloronaphthalene	ND	88	10	ug/kg	
106-47-8	4-Chloroaniline	ND	220	16	ug/kg	
86-74-8	Carbazole	40.0	88	6.4	ug/kg	J

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-130(7-8)		
Lab Sample ID:	JC86553-13	**Date Sampled:**	04/17/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	73.0
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	88	17	ug/kg	
218-01-9	Chrysene	93.1	44	14	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	88	9.4	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	88	19	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	88	16	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	88	14	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	44	14	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	44	22	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	88	37	ug/kg	
123-91-1	1,4-Dioxane	ND	44	29	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	44	19	ug/kg	
132-64-9	Dibenzofuran	51.4	88	18	ug/kg	J
84-74-2	Di-n-butyl phthalate	ND	88	7.2	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	88	11	ug/kg	
84-66-2	Diethyl phthalate	ND	88	9.4	ug/kg	
131-11-3	Dimethyl phthalate	ND	88	7.8	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	88	10	ug/kg	
206-44-0	Fluoranthene	153	44	20	ug/kg	
86-73-7	Fluorene	82.6	44	20	ug/kg	
118-74-1	Hexachlorobenzene	ND	88	11	ug/kg	
87-68-3	Hexachlorobutadiene	ND	44	18	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	440	17	ug/kg	
67-72-1	Hexachloroethane	ND	220	22	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	44.1	44	21	ug/kg	
78-59-1	Isophorone	ND	88	9.4	ug/kg	
91-57-6	2-Methylnaphthalene	227	44	9.9	ug/kg	
88-74-4	2-Nitroaniline	ND	220	10	ug/kg	
99-09-2	3-Nitroaniline	ND	220	11	ug/kg	
100-01-6	4-Nitroaniline	ND	220	11	ug/kg	
91-20-3	Naphthalene	11700 [a]	220	62	ug/kg	D
98-95-3	Nitrobenzene	ND	88	17	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	88	13	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	220	16	ug/kg	
85-01-8	Phenanthrene	270	44	15	ug/kg	
129-00-0	Pyrene	141	44	14	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	220	11	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	50%	59%	23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-130(7-8)		
Lab Sample ID:	JC86553-13	**Date Sampled:**	04/17/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	73.0
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	53%	60%	27-114%
118-79-6	2,4,6-Tribromophenol	55%	61%	19-152%
4165-60-0	Nitrobenzene-d5	55%	64%	26-134%
321-60-8	2-Fluorobiphenyl	61%	66%	39-124%
1718-51-0	Terphenyl-d14	52%	61%	36-134%

(a) Result is from Run# 2

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	S-130(10-12)		
Lab Sample ID:	JC86553-14	**Date Sampled:**	04/17/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8260C	**Percent Solids:**	56.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	I225558.D	1	04/19/19 18:25	TDN	n/a	n/a	VI9087
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.0 g	10.0 ml	100 ul
Run #2			

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	2100	1100	ug/kg	
71-43-2	Benzene	285	110	81	ug/kg	
74-97-5	Bromochloromethane	ND	1100	92	ug/kg	
75-27-4	Bromodichloromethane	ND	430	95	ug/kg	
75-25-2	Bromoform	ND	1100	86	ug/kg	
74-83-9	Bromomethane	ND	1100	210	ug/kg	
78-93-3	2-Butanone (MEK)	ND	2100	800	ug/kg	
75-15-0	Carbon disulfide	2080	430	200	ug/kg	
56-23-5	Carbon tetrachloride	ND	430	120	ug/kg	
108-90-7	Chlorobenzene	ND	430	76	ug/kg	
75-00-3	Chloroethane	ND	1100	150	ug/kg	
67-66-3	Chloroform	ND	430	79	ug/kg	
74-87-3	Chloromethane	ND	1100	420	ug/kg	
110-82-7	Cyclohexane	ND	430	87	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	430	180	ug/kg	
124-48-1	Dibromochloromethane	ND	430	72	ug/kg	
106-93-4	1,2-Dibromoethane [b]	ND	210	69	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	210	65	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	210	77	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	210	73	ug/kg	
75-71-8	Dichlorodifluoromethane [b]	ND	1100	140	ug/kg	
75-34-3	1,1-Dichloroethane	ND	210	82	ug/kg	
107-06-2	1,2-Dichloroethane	ND	210	100	ug/kg	
75-35-4	1,1-Dichloroethene	ND	210	140	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	210	200	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	210	140	ug/kg	
78-87-5	1,2-Dichloropropane	ND	430	87	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	430	75	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	430	70	ug/kg	
100-41-4	Ethylbenzene	235	210	120	ug/kg	
76-13-1	Freon 113	ND	1100	160	ug/kg	
591-78-6	2-Hexanone	ND	1100	270	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-130(10-12)		
Lab Sample ID:	JC86553-14	**Date Sampled:**	04/17/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8260C	**Percent Solids:**	56.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	541	430	150	ug/kg	
79-20-9	Methyl Acetate	ND	1100	300	ug/kg	
108-87-2	Methylcyclohexane	209	430	150	ug/kg	J
1634-04-4	Methyl Tert Butyl Ether	ND	210	75	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	1100	330	ug/kg	
75-09-2	Methylene chloride	ND	1100	530	ug/kg	
100-42-5	Styrene	ND	430	120	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	430	83	ug/kg	
127-18-4	Tetrachloroethene	ND	430	99	ug/kg	
108-88-3	Toluene	381	210	80	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	1100	210	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	1100	210	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	430	91	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	430	73	ug/kg	
79-01-6	Trichloroethene	ND	210	160	ug/kg	
75-69-4	Trichlorofluoromethane	ND	1100	150	ug/kg	
75-01-4	Vinyl chloride	ND	430	100	ug/kg	
	m,p-Xylene	162	210	160	ug/kg	J
95-47-6	o-Xylene	ND	210	120	ug/kg	
1330-20-7	Xylene (total)	162	210	120	ug/kg	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	104%		75-127%
17060-07-0	1,2-Dichloroethane-D4	112%		75-130%
2037-26-5	Toluene-D8	100%		80-120%
460-00-4	4-Bromofluorobenzene	108%		79-127%

(a) Diluted due to high concentration of non-target compound.
(b) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	S-130(10-12)		
Lab Sample ID:	JC86553-14	**Date Sampled:**	04/17/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	56.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5P58717.D	1	04/22/19 05:28	CB	04/19/19 07:45	OP19847	E5P2780
Run #2	5P58742.D	5	04/22/19 16:58	YC	04/19/19 07:45	OP19847	E5P2781

	Initial Weight	Final Volume
Run #1	31.3 g	1.0 ml
Run #2	31.3 g	1.0 ml

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	110	28	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	280	34	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	280	48	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	280	100	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	280	210	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	280	60	ug/kg	
95-48-7	2-Methylphenol	166	110	36	ug/kg	
	3&4-Methylphenol	231	110	46	ug/kg	
88-75-5	2-Nitrophenol	ND	280	37	ug/kg	
100-02-7	4-Nitrophenol	ND	560	150	ug/kg	
87-86-5	Pentachlorophenol	ND	220	53	ug/kg	
108-95-2	Phenol	196	110	29	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	280	37	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	280	42	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	280	33	ug/kg	
83-32-9	Acenaphthene	6800 [a]	280	97	ug/kg	D
208-96-8	Acenaphthylene	325	56	29	ug/kg	
98-86-2	Acetophenone	ND	280	12	ug/kg	
120-12-7	Anthracene	1880	56	34	ug/kg	
1912-24-9	Atrazine	ND	110	24	ug/kg	
56-55-3	Benzo(a)anthracene	1150	56	16	ug/kg	
50-32-8	Benzo(a)pyrene	1060	56	26	ug/kg	
205-99-2	Benzo(b)fluoranthene	993	56	25	ug/kg	
191-24-2	Benzo(g,h,i)perylene	513	56	28	ug/kg	
207-08-9	Benzo(k)fluoranthene	318	56	26	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	110	22	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	110	14	ug/kg	
92-52-4	1,1'-Biphenyl	160	110	7.7	ug/kg	
100-52-7	Benzaldehyde	ND	280	14	ug/kg	
91-58-7	2-Chloronaphthalene	ND	110	13	ug/kg	
106-47-8	4-Chloroaniline	ND	280	20	ug/kg	
86-74-8	Carbazole	783	110	8.1	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-130(10-12)
Lab Sample ID: JC86553-14
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/17/19
Date Received: 04/17/19
Percent Solids: 56.9

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	110	22	ug/kg	
218-01-9	Chrysene	1220	56	18	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	110	12	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	110	24	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	110	20	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	110	18	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	56	17	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	56	28	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	110	47	ug/kg	
123-91-1	1,4-Dioxane	ND	56	37	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	160	56	25	ug/kg	
132-64-9	Dibenzofuran	1540	110	23	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	110	9.2	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	110	14	ug/kg	
84-66-2	Diethyl phthalate	ND	110	12	ug/kg	
131-11-3	Dimethyl phthalate	ND	110	10	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	110	13	ug/kg	
206-44-0	Fluoranthene	2900	56	25	ug/kg	
86-73-7	Fluorene	3290	56	26	ug/kg	
118-74-1	Hexachlorobenzene	ND	110	14	ug/kg	
87-68-3	Hexachlorobutadiene	ND	56	23	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	560	22	ug/kg	
67-72-1	Hexachloroethane	ND	280	28	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	502	56	26	ug/kg	
78-59-1	Isophorone	ND	110	12	ug/kg	
91-57-6	2-Methylnaphthalene	3720	56	13	ug/kg	
88-74-4	2-Nitroaniline	ND	280	13	ug/kg	
99-09-2	3-Nitroaniline	ND	280	14	ug/kg	
100-01-6	4-Nitroaniline	ND	280	15	ug/kg	
91-20-3	Naphthalene	2110	56	16	ug/kg	
98-95-3	Nitrobenzene	ND	110	22	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	110	16	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	280	21	ug/kg	
85-01-8	Phenanthrene	9570 [a]	280	94	ug/kg	D
129-00-0	Pyrene	3080	56	18	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	280	14	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	54%	60%	23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-130(10-12)		
Lab Sample ID:	JC86553-14	**Date Sampled:**	04/17/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	56.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	56%	63%	27-114%
118-79-6	2,4,6-Tribromophenol	58%	60%	19-152%
4165-60-0	Nitrobenzene-d5	61%	66%	26-134%
321-60-8	2-Fluorobiphenyl	71%	76%	39-124%
1718-51-0	Terphenyl-d14	59%	67%	36-134%

(a) Result is from Run# 2

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	S-130(13-15)		
Lab Sample ID:	JC86553-15	**Date Sampled:**	04/17/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8260C	**Percent Solids:**	60.6
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	I225605.D	1	04/22/19 13:34	TDN	n/a	n/a	VI9089
Run #2							

	Initial Weight
Run #1	5.0 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	49.2	17	8.3	ug/kg	
71-43-2	Benzene	ND	0.83	0.62	ug/kg	
74-97-5	Bromochloromethane	ND	8.3	0.71	ug/kg	
75-27-4	Bromodichloromethane	ND	3.3	0.73	ug/kg	
75-25-2	Bromoform	ND	8.3	0.67	ug/kg	
74-83-9	Bromomethane	ND	8.3	1.6	ug/kg	
78-93-3	2-Butanone (MEK)	8.4	17	6.2	ug/kg	J
75-15-0	Carbon disulfide	ND	3.3	1.5	ug/kg	
56-23-5	Carbon tetrachloride	ND	3.3	0.91	ug/kg	
108-90-7	Chlorobenzene	ND	3.3	0.58	ug/kg	
75-00-3	Chloroethane	ND	8.3	1.1	ug/kg	
67-66-3	Chloroform	ND	3.3	0.61	ug/kg	
74-87-3	Chloromethane	ND	8.3	3.2	ug/kg	
110-82-7	Cyclohexane	ND	3.3	0.67	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	3.3	1.4	ug/kg	
124-48-1	Dibromochloromethane	ND	3.3	0.56	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.7	0.54	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.7	0.50	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.7	0.59	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.7	0.57	ug/kg	
75-71-8	Dichlorodifluoromethane [a]	ND	8.3	1.0	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.7	0.64	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.7	0.78	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.7	1.1	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.7	1.6	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.7	1.1	ug/kg	
78-87-5	1,2-Dichloropropane	ND	3.3	0.67	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	3.3	0.58	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	3.3	0.54	ug/kg	
100-41-4	Ethylbenzene	ND	1.7	0.91	ug/kg	
76-13-1	Freon 113	ND	8.3	1.3	ug/kg	
591-78-6	2-Hexanone	ND	8.3	2.1	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-130(13-15)		
Lab Sample ID:	JC86553-15	**Date Sampled:**	04/17/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8260C	**Percent Solids:**	60.6
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	1.4	3.3	1.2	ug/kg	J
79-20-9	Methyl Acetate	ND	8.3	2.3	ug/kg	
108-87-2	Methylcyclohexane	1.4	3.3	1.2	ug/kg	J
1634-04-4	Methyl Tert Butyl Ether	ND	1.7	0.58	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	8.3	2.6	ug/kg	
75-09-2	Methylene chloride	ND	8.3	4.1	ug/kg	
100-42-5	Styrene	ND	3.3	0.95	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	3.3	0.64	ug/kg	
127-18-4	Tetrachloroethene	ND	3.3	0.76	ug/kg	
108-88-3	Toluene	ND	1.7	0.62	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	8.3	1.7	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	8.3	1.7	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	3.3	0.70	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	3.3	0.56	ug/kg	
79-01-6	Trichloroethene	ND	1.7	1.3	ug/kg	
75-69-4	Trichlorofluoromethane	ND	8.3	1.1	ug/kg	
75-01-4	Vinyl chloride	ND	3.3	0.77	ug/kg	
	m,p-Xylene	ND	1.7	1.2	ug/kg	
95-47-6	o-Xylene	ND	1.7	0.96	ug/kg	
1330-20-7	Xylene (total)	ND	1.7	0.96	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	109%		75-127%
17060-07-0	1,2-Dichloroethane-D4	116%		75-130%
2037-26-5	Toluene-D8	98%		80-120%
460-00-4	4-Bromofluorobenzene	110%		79-127%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	S-130(13-15)		
Lab Sample ID:	JC86553-15	**Date Sampled:**	04/17/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	60.6
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5P58718.D	1	04/22/19 05:50	CB	04/19/19 07:45	OP19847	E5P2780
Run #2							

	Initial Weight	Final Volume
Run #1	31.9 g	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	100	26	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	260	32	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	260	44	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	260	92	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	260	190	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	260	55	ug/kg	
95-48-7	2-Methylphenol	ND	100	33	ug/kg	
	3&4-Methylphenol	128	100	43	ug/kg	
88-75-5	2-Nitrophenol	ND	260	34	ug/kg	
100-02-7	4-Nitrophenol	ND	520	140	ug/kg	
87-86-5	Pentachlorophenol	ND	210	49	ug/kg	
108-95-2	Phenol	ND	100	27	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	260	34	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	260	39	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	260	31	ug/kg	
83-32-9	Acenaphthene	1100	52	18	ug/kg	
208-96-8	Acenaphthylene	136	52	26	ug/kg	
98-86-2	Acetophenone	ND	260	11	ug/kg	
120-12-7	Anthracene	440	52	32	ug/kg	
1912-24-9	Atrazine	ND	100	22	ug/kg	
56-55-3	Benzo(a)anthracene	436	52	15	ug/kg	
50-32-8	Benzo(a)pyrene	445	52	24	ug/kg	
205-99-2	Benzo(b)fluoranthene	480	52	23	ug/kg	
191-24-2	Benzo(g,h,i)perylene	253	52	26	ug/kg	
207-08-9	Benzo(k)fluoranthene	146	52	24	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	100	20	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	100	13	ug/kg	
92-52-4	1,1'-Biphenyl	45.2	100	7.1	ug/kg	J
100-52-7	Benzaldehyde	ND	260	13	ug/kg	
91-58-7	2-Chloronaphthalene	ND	100	12	ug/kg	
106-47-8	4-Chloroaniline	ND	260	19	ug/kg	
86-74-8	Carbazole	24.7	100	7.5	ug/kg	J

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-130(13-15)
Lab Sample ID: JC86553-15
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/17/19
Date Received: 04/17/19
Percent Solids: 60.6

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	100	20	ug/kg	
218-01-9	Chrysene	535	52	16	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	100	11	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	100	22	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	100	19	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	100	17	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	52	16	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	52	26	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	100	43	ug/kg	
123-91-1	1,4-Dioxane	ND	52	34	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	61.1	52	23	ug/kg	
132-64-9	Dibenzofuran	82.3	100	21	ug/kg	J
84-74-2	Di-n-butyl phthalate	ND	100	8.4	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	100	13	ug/kg	
84-66-2	Diethyl phthalate	ND	100	11	ug/kg	
131-11-3	Dimethyl phthalate	ND	100	9.2	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	100	12	ug/kg	
206-44-0	Fluoranthene	982	52	23	ug/kg	
86-73-7	Fluorene	550	52	24	ug/kg	
118-74-1	Hexachlorobenzene	ND	100	13	ug/kg	
87-68-3	Hexachlorobutadiene	ND	52	21	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	520	21	ug/kg	
67-72-1	Hexachloroethane	ND	260	26	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	239	52	24	ug/kg	
78-59-1	Isophorone	ND	100	11	ug/kg	
91-57-6	2-Methylnaphthalene	279	52	12	ug/kg	
88-74-4	2-Nitroaniline	ND	260	12	ug/kg	
99-09-2	3-Nitroaniline	ND	260	13	ug/kg	
100-01-6	4-Nitroaniline	ND	260	13	ug/kg	
91-20-3	Naphthalene	587	52	15	ug/kg	
98-95-3	Nitrobenzene	ND	100	20	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	100	15	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	260	19	ug/kg	
85-01-8	Phenanthrene	1900	52	17	ug/kg	
129-00-0	Pyrene	1130	52	17	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	260	13	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	47%		23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-130(13-15)		
Lab Sample ID:	JC86553-15	**Date Sampled:**	04/17/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	60.6
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	46%		27-114%
118-79-6	2,4,6-Tribromophenol	50%		19-152%
4165-60-0	Nitrobenzene-d5	54%		26-134%
321-60-8	2-Fluorobiphenyl	58%		39-124%
1718-51-0	Terphenyl-d14	48%		36-134%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	S-126(7-9)		
Lab Sample ID:	JC86553-16	**Date Sampled:**	04/17/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8260C	**Percent Solids:**	84.7
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3C151409.D	1	04/25/19 03:48	PS	n/a	n/a	V3C6807
Run #2							

	Initial Weight
Run #1	6.7 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	29.3	8.8	4.4	ug/kg	
71-43-2	Benzene	3.5	0.44	0.33	ug/kg	
74-97-5	Bromochloromethane	ND	4.4	0.38	ug/kg	
75-27-4	Bromodichloromethane	ND	1.8	0.39	ug/kg	
75-25-2	Bromoform	ND	4.4	0.35	ug/kg	
74-83-9	Bromomethane [a]	ND	4.4	0.87	ug/kg	UJ
78-93-3	2-Butanone (MEK)	ND	8.8	3.3	ug/kg	
75-15-0	Carbon disulfide	1.2	1.8	0.82	ug/kg	J
56-23-5	Carbon tetrachloride	ND	1.8	0.48	ug/kg	
108-90-7	Chlorobenzene	ND	1.8	0.31	ug/kg	
75-00-3	Chloroethane	ND	4.4	0.60	ug/kg	
67-66-3	Chloroform	ND	1.8	0.33	ug/kg	
74-87-3	Chloromethane	ND	4.4	1.7	ug/kg	
110-82-7	Cyclohexane	ND	1.8	0.36	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	1.8	0.73	ug/kg	
124-48-1	Dibromochloromethane	ND	1.8	0.30	ug/kg	
106-93-4	1,2-Dibromoethane	ND	0.88	0.29	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	0.88	0.27	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	0.88	0.32	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	0.88	0.30	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	4.4	0.56	ug/kg	
75-34-3	1,1-Dichloroethane	ND	0.88	0.34	ug/kg	
107-06-2	1,2-Dichloroethane	ND	0.88	0.41	ug/kg	
75-35-4	1,1-Dichloroethene	ND	0.88	0.58	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	0.88	0.84	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	0.88	0.59	ug/kg	
78-87-5	1,2-Dichloropropane	ND	1.8	0.36	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	1.8	0.31	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	1.8	0.29	ug/kg	
100-41-4	Ethylbenzene	ND	0.88	0.48	ug/kg	
76-13-1	Freon 113	ND	4.4	0.67	ug/kg	
591-78-6	2-Hexanone	ND	4.4	1.1	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-126(7-9)		
Lab Sample ID:	JC86553-16	**Date Sampled:**	04/17/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8260C	**Percent Solids:**	84.7
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	1.8	0.61	ug/kg	
79-20-9	Methyl Acetate	ND	4.4	1.2	ug/kg	
108-87-2	Methylcyclohexane	ND	1.8	0.62	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.88	0.31	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	4.4	1.4	ug/kg	
75-09-2	Methylene chloride	ND	4.4	2.2	ug/kg	
100-42-5	Styrene	ND	1.8	0.51	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.8	0.34	ug/kg	
127-18-4	Tetrachloroethene	ND	1.8	0.41	ug/kg	
108-88-3	Toluene	ND	0.88	0.33	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	4.4	0.88	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	4.4	0.88	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	1.8	0.37	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	1.8	0.30	ug/kg	
79-01-6	Trichloroethene	ND	0.88	0.67	ug/kg	
75-69-4	Trichlorofluoromethane	ND	4.4	0.60	ug/kg	
75-01-4	Vinyl chloride	ND	1.8	0.41	ug/kg	
	m,p-Xylene	ND	0.88	0.66	ug/kg	
95-47-6	o-Xylene	ND	0.88	0.51	ug/kg	
1330-20-7	Xylene (total)	ND	0.88	0.51	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	104%		75-127%
17060-07-0	1,2-Dichloroethane-D4	102%		75-130%
2037-26-5	Toluene-D8	104%		80-120%
460-00-4	4-Bromofluorobenzene	109%		79-127%

(a) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	S-126(7-9)		
Lab Sample ID:	JC86553-16	**Date Sampled:**	04/17/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	84.7
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M153642.D	1	04/21/19 04:59	CB	04/19/19 07:45	OP19854	EM6566
Run #2							

	Initial Weight	Final Volume
Run #1	30.2 g	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	78	19	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	200	24	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	200	33	ug/kg	
105-67-9	2,4-Dimethylphenol	91.3	200	70	ug/kg	J
51-28-5	2,4-Dinitrophenol	ND	200	150	ug/kg	
534-52-1	4,6-Dinitro-o-cresol [a]	ND	200	42	ug/kg	
95-48-7	2-Methylphenol	63.0	78	25	ug/kg	J
	3&4-Methylphenol	129	78	32	ug/kg	
88-75-5	2-Nitrophenol	ND	200	26	ug/kg	
100-02-7	4-Nitrophenol	ND	390	100	ug/kg	
87-86-5	Pentachlorophenol [a]	ND	160	37	ug/kg	
108-95-2	Phenol	37.3	78	20	ug/kg	J
58-90-2	2,3,4,6-Tetrachlorophenol	ND	200	26	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	200	29	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	200	23	ug/kg	
83-32-9	Acenaphthene	ND	39	13	ug/kg	
208-96-8	Acenaphthylene	ND	39	20	ug/kg	
98-86-2	Acetophenone	12.0	200	8.4	ug/kg	J
120-12-7	Anthracene	35.1	39	24	ug/kg	J
1912-24-9	Atrazine	ND	78	17	ug/kg	
56-55-3	Benzo(a)anthracene	98.5	39	11	ug/kg	
50-32-8	Benzo(a)pyrene	93.7	39	18	ug/kg	
205-99-2	Benzo(b)fluoranthene	116	39	17	ug/kg	
191-24-2	Benzo(g,h,i)perylene	62.4	39	20	ug/kg	
207-08-9	Benzo(k)fluoranthene	40.5	39	18	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	78	15	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	78	9.5	ug/kg	
92-52-4	1,1'-Biphenyl 78	~~6.7~~	78	5.4	ug/kg	~~JB~~ UB
100-52-7	Benzaldehyde	ND	200	9.7	ug/kg	
91-58-7	2-Chloronaphthalene	ND	78	9.3	ug/kg	
106-47-8	4-Chloroaniline	ND	200	14	ug/kg	
86-74-8	Carbazole 78	~~16.6~~	78	5.7	ug/kg	~~JB~~ UB

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-126(7-9)		
Lab Sample ID:	JC86553-16	**Date Sampled:**	04/17/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	84.7
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	78	15	ug/kg	
218-01-9	Chrysene	110	39	12	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	78	8.4	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	78	17	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	78	14	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	78	13	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	39	12	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	39	20	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	78	33	ug/kg	
123-91-1	1,4-Dioxane [b]	ND	39	26	ug/kg	UJ
53-70-3	Dibenzo(a,h)anthracene	ND	39	17	ug/kg	
132-64-9	Dibenzofuran	ND	78	16	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	78	6.4	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	78	9.7	ug/kg	
84-66-2	Diethyl phthalate	ND	78	8.3	ug/kg	
131-11-3	Dimethyl phthalate	ND	78	7.0	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	78	9.1	ug/kg	
206-44-0	Fluoranthene	182	39	17	ug/kg	
86-73-7	Fluorene	20.1	39	18	ug/kg	J
118-74-1	Hexachlorobenzene	ND	78	9.9	ug/kg	
87-68-3	Hexachlorobutadiene	ND	39	16	ug/kg	
77-47-4	Hexachlorocyclopentadiene [a]	ND	390	16	ug/kg	
67-72-1	Hexachloroethane	ND	200	19	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	77.3	39	18	ug/kg	
78-59-1	Isophorone	ND	78	8.4	ug/kg	
91-57-6	2-Methylnaphthalene	11.4	39	8.8	ug/kg	J
88-74-4	2-Nitroaniline	ND	200	9.2	ug/kg	
99-09-2	3-Nitroaniline	ND	200	9.8	ug/kg	
100-01-6	4-Nitroaniline	ND	200	10	ug/kg	
91-20-3	Naphthalene	251	39	11	ug/kg	
98-95-3	Nitrobenzene	ND	78	15	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	78	11	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	200	14	ug/kg	
85-01-8	Phenanthrene	105	39	13	ug/kg	
129-00-0	Pyrene	176	39	13	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	200	9.9	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	32%		23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-126(7-9)		
Lab Sample ID:	JC86553-16	**Date Sampled:**	04/17/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	84.7
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	32%		27-114%
118-79-6	2,4,6-Tribromophenol	50%		19-152%
4165-60-0	Nitrobenzene-d5	40%		26-134%
321-60-8	2-Fluorobiphenyl	45%		39-124%
1718-51-0	Terphenyl-d14	41%		36-134%

(a) Associated CCV outside of control limits high, sample was ND.
(b) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	S-126(13-15)		
Lab Sample ID:	JC86553-17	**Date Sampled:**	04/17/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8260C	**Percent Solids:**	60.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3C151410.D	1	04/25/19 04:11	PS	n/a	n/a	V3C6807
Run #2							

	Initial Weight
Run #1	6.6 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	69.8	13	6.3	ug/kg	
71-43-2	Benzene	ND	0.63	0.48	ug/kg	
74-97-5	Bromochloromethane	ND	6.3	0.54	ug/kg	
75-27-4	Bromodichloromethane	ND	2.5	0.56	ug/kg	
75-25-2	Bromoform	ND	6.3	0.51	ug/kg	
74-83-9	Bromomethane [a]	ND	6.3	1.3	ug/kg	UJ
78-93-3	2-Butanone (MEK)	9.3	13	4.7	ug/kg	J
75-15-0	Carbon disulfide	ND	2.5	1.2	ug/kg	
56-23-5	Carbon tetrachloride	ND	2.5	0.70	ug/kg	
108-90-7	Chlorobenzene	ND	2.5	0.45	ug/kg	
75-00-3	Chloroethane	ND	6.3	0.87	ug/kg	
67-66-3	Chloroform	ND	2.5	0.47	ug/kg	
74-87-3	Chloromethane	ND	6.3	2.5	ug/kg	
110-82-7	Cyclohexane	ND	2.5	0.51	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.5	1.1	ug/kg	
124-48-1	Dibromochloromethane	ND	2.5	0.43	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.3	0.41	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.3	0.39	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.3	0.45	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.3	0.44	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	6.3	0.80	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.3	0.49	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.3	0.59	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.3	0.83	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.3	1.2	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.3	0.84	ug/kg	
78-87-5	1,2-Dichloropropane	ND	2.5	0.52	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	2.5	0.45	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2.5	0.41	ug/kg	
100-41-4	Ethylbenzene	ND	1.3	0.70	ug/kg	
76-13-1	Freon 113	ND	6.3	0.96	ug/kg	
591-78-6	2-Hexanone	ND	6.3	1.6	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-126(13-15)		
Lab Sample ID:	JC86553-17	**Date Sampled:**	04/17/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8260C	**Percent Solids:**	60.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	4.3	2.5	0.88	ug/kg	
79-20-9	Methyl Acetate	ND	6.3	1.8	ug/kg	
108-87-2	Methylcyclohexane	ND	2.5	0.90	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.3	0.45	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	6.3	2.0	ug/kg	
75-09-2	Methylene chloride	ND	6.3	3.2	ug/kg	
100-42-5	Styrene	ND	2.5	0.73	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.5	0.49	ug/kg	
127-18-4	Tetrachloroethene	ND	2.5	0.58	ug/kg	
108-88-3	Toluene	ND	1.3	0.48	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	6.3	1.3	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	6.3	1.3	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	2.5	0.54	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2.5	0.43	ug/kg	
79-01-6	Trichloroethene	ND	1.3	0.96	ug/kg	
75-69-4	Trichlorofluoromethane	ND	6.3	0.86	ug/kg	
75-01-4	Vinyl chloride	ND	2.5	0.59	ug/kg	
	m,p-Xylene	ND	1.3	0.94	ug/kg	
95-47-6	o-Xylene	ND	1.3	0.74	ug/kg	
1330-20-7	Xylene (total)	ND	1.3	0.74	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%		75-127%
17060-07-0	1,2-Dichloroethane-D4	103%		75-130%
2037-26-5	Toluene-D8	105%		80-120%
460-00-4	4-Bromofluorobenzene	110%		79-127%

(a) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	S-126(13-15)		
Lab Sample ID:	JC86553-17	**Date Sampled:**	04/17/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	60.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M153645.D	1	04/21/19 06:23	CB	04/19/19 07:45	OP19854	EM6566
Run #2	M153681.D	5	04/22/19 18:20	YC	04/19/19 07:45	OP19854	EM6567

	Initial Weight	Final Volume
Run #1	30.3 g	1.0 ml
Run #2	30.3 g	1.0 ml

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	110	27	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	270	34	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	270	47	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	270	97	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	270	210	ug/kg	
534-52-1	4,6-Dinitro-o-cresol [a]	ND	270	59	ug/kg	
95-48-7	2-Methylphenol	ND	110	35	ug/kg	
	3&4-Methylphenol	74.6	110	45	ug/kg	J
88-75-5	2-Nitrophenol	ND	270	36	ug/kg	
100-02-7	4-Nitrophenol	ND	550	150	ug/kg	
87-86-5	Pentachlorophenol [a]	ND	220	51	ug/kg	
108-95-2	Phenol	ND	110	29	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	270	36	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	270	41	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	270	33	ug/kg	
83-32-9	Acenaphthene	6790 [b]	270	94	ug/kg	D
208-96-8	Acenaphthylene	256	55	28	ug/kg	
98-86-2	Acetophenone	ND	270	12	ug/kg	
120-12-7	Anthracene	3090	55	34	ug/kg	
1912-24-9	Atrazine	ND	110	23	ug/kg	
56-55-3	Benzo(a)anthracene	1250	55	15	ug/kg	
50-32-8	Benzo(a)pyrene	992	55	25	ug/kg	
205-99-2	Benzo(b)fluoranthene	972	55	24	ug/kg	
191-24-2	Benzo(g,h,i)perylene	462	55	27	ug/kg	
207-08-9	Benzo(k)fluoranthene	376	55	26	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	110	21	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	110	13	ug/kg	
92-52-4	1,1'-Biphenyl 110	~~82.5~~	110	7.5	ug/kg	~~JB~~ UB
100-52-7	Benzaldehyde	ND	270	14	ug/kg	
91-58-7	2-Chloronaphthalene	ND	110	13	ug/kg	
106-47-8	4-Chloroaniline	ND	270	20	ug/kg	
86-74-8	Carbazole	687	110	7.9	ug/kg	~~B~~

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-126(13-15)		
Lab Sample ID:	JC86553-17	**Date Sampled:**	04/17/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	60.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	110	22	ug/kg	
218-01-9	Chrysene	1420	55	17	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	110	12	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	110	24	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	110	20	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	110	18	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	55	17	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	55	27	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	110	46	ug/kg	
123-91-1	1,4-Dioxane [c]	ND	55	36	ug/kg	UJ
53-70-3	Dibenzo(a,h)anthracene	122	55	24	ug/kg	
132-64-9	Dibenzofuran	2190	110	22	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	110	8.9	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	110	14	ug/kg	
84-66-2	Diethyl phthalate	ND	110	12	ug/kg	
131-11-3	Dimethyl phthalate	ND	110	9.7	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	110	13	ug/kg	
206-44-0	Fluoranthene	5010	55	24	ug/kg	
86-73-7	Fluorene	4390	55	25	ug/kg	
118-74-1	Hexachlorobenzene	ND	110	14	ug/kg	
87-68-3	Hexachlorobutadiene	ND	55	22	ug/kg	
77-47-4	Hexachlorocyclopentadiene [a]	ND	550	22	ug/kg	
67-72-1	Hexachloroethane	ND	270	27	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	414	55	26	ug/kg	
78-59-1	Isophorone	ND	110	12	ug/kg	
91-57-6	2-Methylnaphthalene	853	55	12	ug/kg	
88-74-4	2-Nitroaniline	ND	270	13	ug/kg	
99-09-2	3-Nitroaniline	ND	270	14	ug/kg	
100-01-6	4-Nitroaniline	ND	270	14	ug/kg	
91-20-3	Naphthalene	831	55	15	ug/kg	
98-95-3	Nitrobenzene	ND	110	21	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	110	16	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	270	20	ug/kg	
85-01-8	Phenanthrene	16500 [b]	270	92	ug/kg	D
129-00-0	Pyrene	4390	55	18	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	270	14	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	37%	43%	23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-126(13-15)		
Lab Sample ID:	JC86553-17	**Date Sampled:**	04/17/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	60.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	38%	43%	27-114%
118-79-6	2,4,6-Tribromophenol	66%	72%	19-152%
4165-60-0	Nitrobenzene-d5	48%	52%	26-134%
321-60-8	2-Fluorobiphenyl	56%	61%	39-124%
1718-51-0	Terphenyl-d14	52%	57%	36-134%

(a) Associated CCV outside of control limits high, sample was ND.
(b) Result is from Run# 2
(c) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	S-127(2-4)		
Lab Sample ID:	JC86553-18	**Date Sampled:**	04/17/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8260C	**Percent Solids:**	88.6
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	I225560.D	1	04/19/19 19:24	TDN	n/a	n/a	VI9087
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	4.9 g	10.0 ml	100 ul
Run #2			

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	1200	610	ug/kg	
71-43-2	Benzene	134	61	46	ug/kg	J
74-97-5	Bromochloromethane	ND	610	52	ug/kg	
75-27-4	Bromodichloromethane	ND	240	54	ug/kg	
75-25-2	Bromoform	ND	610	49	ug/kg	
74-83-9	Bromomethane	ND	610	120	ug/kg	
78-93-3	2-Butanone (MEK)	ND	1200	450	ug/kg	
75-15-0	Carbon disulfide	ND	240	110	ug/kg	
56-23-5	Carbon tetrachloride	ND	240	67	ug/kg	
108-90-7	Chlorobenzene	ND	240	43	ug/kg	
75-00-3	Chloroethane	ND	610	84	ug/kg	
67-66-3	Chloroform	ND	240	45	ug/kg	
74-87-3	Chloromethane	ND	610	240	ug/kg	
110-82-7	Cyclohexane	ND	240	49	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	240	100	ug/kg	
124-48-1	Dibromochloromethane	ND	240	41	ug/kg	
106-93-4	1,2-Dibromoethane [b]	ND	120	40	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	120	37	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	120	44	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	120	42	ug/kg	
75-71-8	Dichlorodifluoromethane [b]	ND	610	77	ug/kg	
75-34-3	1,1-Dichloroethane	ND	120	47	ug/kg	
107-06-2	1,2-Dichloroethane	ND	120	57	ug/kg	
75-35-4	1,1-Dichloroethene	ND	120	80	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	120	120	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	120	81	ug/kg	
78-87-5	1,2-Dichloropropane	ND	240	49	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	240	43	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	240	40	ug/kg	
100-41-4	Ethylbenzene	ND	120	67	ug/kg	
76-13-1	Freon 113	ND	610	93	ug/kg	
591-78-6	2-Hexanone	ND	610	150	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-127(2-4)		
Lab Sample ID:	JC86553-18	**Date Sampled:**	04/17/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8260C	**Percent Solids:**	88.6
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	240	85	ug/kg	
79-20-9	Methyl Acetate	ND	610	170	ug/kg	
108-87-2	Methylcyclohexane	ND	240	86	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	120	43	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	610	190	ug/kg	
75-09-2	Methylene chloride	ND	610	300	ug/kg	
100-42-5	Styrene	ND	240	70	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	240	47	ug/kg	
127-18-4	Tetrachloroethene	ND	240	56	ug/kg	
108-88-3	Toluene	143	120	46	ug/kg	J
87-61-6	1,2,3-Trichlorobenzene	ND	610	120	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	610	120	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	240	52	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	240	42	ug/kg	
79-01-6	Trichloroethene	ND	120	93	ug/kg	
75-69-4	Trichlorofluoromethane	ND	610	83	ug/kg	
75-01-4	Vinyl chloride	ND	240	57	ug/kg	
	m,p-Xylene	434	120	91	ug/kg	J
95-47-6	o-Xylene	198	120	71	ug/kg	J
1330-20-7	Xylene (total)	632	120	71	ug/kg	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%		75-127%
17060-07-0	1,2-Dichloroethane-D4	106%		75-130%
2037-26-5	Toluene-D8	99%		80-120%
460-00-4	4-Bromofluorobenzene	107%		79-127%

(a) Diluted due to high concentration of non-target compound.
(b) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	S-127(2-4)		
Lab Sample ID:	JC86553-18	**Date Sampled:**	04/17/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	88.6
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	M153685.D	2	04/22/19 20:15	YC	04/19/19 07:45	OP19854	EM6567
Run #2	M153729.D	20	04/23/19 17:23	CC	04/19/19 07:45	OP19854	EM6569
Run #3	M153727.D	200	04/23/19 16:26	CC	04/19/19 07:45	OP19854	EM6569

	Initial Weight	Final Volume
Run #1	30.4 g	1.0 ml
Run #2	30.4 g	1.0 ml
Run #3	30.4 g	1.0 ml

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	150	37	ug/kg	UJ
59-50-7	4-Chloro-3-methyl phenol	ND	370	46	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	370	63	ug/kg	
105-67-9	2,4-Dimethylphenol	997	370	130	ug/kg	J
51-28-5	2,4-Dinitrophenol	ND	370	280	ug/kg	UJ
534-52-1	4,6-Dinitro-o-cresol	ND	370	79	ug/kg	UJ
95-48-7	2-Methylphenol	573	150	47	ug/kg	J
	3&4-Methylphenol	1160	150	61	ug/kg	J
88-75-5	2-Nitrophenol	ND	370	49	ug/kg	UJ
100-02-7	4-Nitrophenol [b]	ND	740	200	ug/kg	
87-86-5	Pentachlorophenol	ND	300	70	ug/kg	
108-95-2	Phenol	338	150	39	ug/kg	J
58-90-2	2,3,4,6-Tetrachlorophenol	ND	370	49	ug/kg	UJ
95-95-4	2,4,5-Trichlorophenol	ND	370	56	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	370	44	ug/kg	
83-32-9	Acenaphthene	4140	74	26	ug/kg	J
208-96-8	Acenaphthylene	12200 [c]	740	380	ug/kg	D
98-86-2	Acetophenone	95.4	370	16	ug/kg	J
120-12-7	Anthracene	54800 [c]	740	460	ug/kg	DJ
1912-24-9	Atrazine	ND	150	32	ug/kg	UJ
56-55-3	Benzo(a)anthracene	45300 [c]	740	210	ug/kg	DJ
50-32-8	Benzo(a)pyrene	37600 [c]	740	340	ug/kg	D
205-99-2	Benzo(b)fluoranthene	46100 [c]	740	330	ug/kg	D
191-24-2	Benzo(g,h,i)perylene	18700 [c]	740	370	ug/kg	D
207-08-9	Benzo(k)fluoranthene	15700 [c]	740	350	ug/kg	DJ
101-55-3	4-Bromophenyl phenyl ether	ND	150	29	ug/kg	UJ
85-68-7	Butyl benzyl phthalate	ND	150	18	ug/kg	UJ
92-52-4	1,1'-Biphenyl	9320 [c]	1500	100	ug/kg	~~B~~ D
100-52-7	Benzaldehyde	ND	370	18	ug/kg	UJ
91-58-7	2-Chloronaphthalene	ND	150	18	ug/kg	UJ

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-127(2-4)		
Lab Sample ID:	JC86553-18	**Date Sampled:**	04/17/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	88.6
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
106-47-8	4-Chloroaniline	ND	370	27	ug/kg	UJ
86-74-8	Carbazole	27500 c	1500	110	ug/kg	~~B~~ D
105-60-2	Caprolactam	ND	150	29	ug/kg	UJ
218-01-9	Chrysene	39300 c	740	230	ug/kg	D
111-91-1	bis(2-Chloroethoxy)methane	ND	150	16	ug/kg	UJ
111-44-4	bis(2-Chloroethyl)ether b	ND	150	32	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	150	27	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	150	24	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	74	23	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	74	37	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	150	62	ug/kg	
123-91-1	1,4-Dioxane b	ND	74	49	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	5740 c	740	330	ug/kg	D J
132-64-9	Dibenzofuran	46600 c	1500	300	ug/kg	D
84-74-2	Di-n-butyl phthalate	ND	150	12	ug/kg	UJ
117-84-0	Di-n-octyl phthalate	ND	150	18	ug/kg	
84-66-2	Diethyl phthalate	ND	150	16	ug/kg	
131-11-3	Dimethyl phthalate	ND	150	13	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	150	17	ug/kg	
206-44-0	Fluoranthene	130000 d	7400	3300	ug/kg	D
86-73-7	Fluorene	64300 c	740	340	ug/kg	D
118-74-1	Hexachlorobenzene	ND	150	19	ug/kg	UJ
87-68-3	Hexachlorobutadiene	ND	74	30	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	740	30	ug/kg	
67-72-1	Hexachloroethane	ND	370	37	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	19600 c	740	350	ug/kg	D
78-59-1	Isophorone	ND	150	16	ug/kg	UJ
91-57-6	2-Methylnaphthalene	41100 c	740	170	ug/kg	DJ
88-74-4	2-Nitroaniline	ND	370	18	ug/kg	UJ
99-09-2	3-Nitroaniline	ND	370	19	ug/kg	UJ
100-01-6	4-Nitroaniline	ND	370	19	ug/kg	UJ
91-20-3	Naphthalene	168000 d	7400	2100	ug/kg	D
98-95-3	Nitrobenzene	ND	150	29	ug/kg	UJ
621-64-7	N-Nitroso-di-n-propylamine	ND	150	21	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	370	27	ug/kg	
85-01-8	Phenanthrene	216000 d	7400	2500	ug/kg	D
129-00-0	Pyrene	82800 d	7400	2400	ug/kg	D
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	370	19	ug/kg	UJ

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-127(2-4)		
Lab Sample ID:	JC86553-18	**Date Sampled:**	04/17/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	88.6
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Run# 3	Limits
367-12-4	2-Fluorophenol	28%	32%	0% [e]	23-115%
4165-62-2	Phenol-d5	29%	33%	0% [e]	27-114%
118-79-6	2,4,6-Tribromophenol	49%	47%	0% [e]	19-152%
4165-60-0	Nitrobenzene-d5	32%	40%	43%	26-134%
321-60-8	2-Fluorobiphenyl	36% [f]	43%	48%	39-124%
1718-51-0	Terphenyl-d14	30% [f]	42%	50%	36-134%

(a) Dilution required due to viscosity of the extract matrix.
(b) Associated CCV outside of control limits low.
(c) Result is from Run# 2
(d) Result is from Run# 3
(e) Outside control limits due to dilution.
(f) Outside control limits due to matrix interference.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	SO-DUP-0417		
Lab Sample ID:	JC86553-19	**Date Sampled:**	04/17/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8260C	**Percent Solids:**	83.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	I225562.D	1	04/19/19 20:23	TDN	n/a	n/a	VI9087
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	4.4 g	10.0 ml	100 ul
Run #2			

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	1500	730	ug/kg	
71-43-2	Benzene	365	73	55	ug/kg	J
74-97-5	Bromochloromethane	ND	730	62	ug/kg	
75-27-4	Bromodichloromethane	ND	290	64	ug/kg	
75-25-2	Bromoform	ND	730	58	ug/kg	
74-83-9	Bromomethane	ND	730	140	ug/kg	
78-93-3	2-Butanone (MEK)	ND	1500	540	ug/kg	
75-15-0	Carbon disulfide	ND	290	130	ug/kg	
56-23-5	Carbon tetrachloride	ND	290	80	ug/kg	
108-90-7	Chlorobenzene	ND	290	51	ug/kg	
75-00-3	Chloroethane	ND	730	100	ug/kg	
67-66-3	Chloroform	ND	290	54	ug/kg	
74-87-3	Chloromethane	ND	730	280	ug/kg	
110-82-7	Cyclohexane	ND	290	59	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	290	120	ug/kg	
124-48-1	Dibromochloromethane	ND	290	49	ug/kg	
106-93-4	1,2-Dibromoethane [b]	ND	150	47	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	150	44	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	150	52	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	150	50	ug/kg	
75-71-8	Dichlorodifluoromethane [b]	ND	730	92	ug/kg	
75-34-3	1,1-Dichloroethane	ND	150	56	ug/kg	
107-06-2	1,2-Dichloroethane	ND	150	68	ug/kg	
75-35-4	1,1-Dichloroethene	ND	150	95	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	150	140	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	150	97	ug/kg	
78-87-5	1,2-Dichloropropane	ND	290	59	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	290	51	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	290	47	ug/kg	
100-41-4	Ethylbenzene	ND	150	80	ug/kg	
76-13-1	Freon 113	ND	730	110	ug/kg	
591-78-6	2-Hexanone	ND	730	180	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SO-DUP-0417		
Lab Sample ID:	JC86553-19	**Date Sampled:**	04/17/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8260C	**Percent Solids:**	83.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	290	100	ug/kg	
79-20-9	Methyl Acetate	ND	730	200	ug/kg	
108-87-2	Methylcyclohexane	ND	290	100	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	150	51	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	730	230	ug/kg	
75-09-2	Methylene chloride	ND	730	360	ug/kg	
100-42-5	Styrene	ND	290	83	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	290	57	ug/kg	
127-18-4	Tetrachloroethene	ND	290	67	ug/kg	
108-88-3	Toluene	360	150	55	ug/kg	J
87-61-6	1,2,3-Trichlorobenzene	ND	730	150	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	730	150	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	290	62	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	290	50	ug/kg	
79-01-6	Trichloroethene	ND	150	110	ug/kg	
75-69-4	Trichlorofluoromethane	ND	730	99	ug/kg	
75-01-4	Vinyl chloride	ND	290	68	ug/kg	
	m,p-Xylene	912	150	110	ug/kg	J
95-47-6	o-Xylene	383	150	85	ug/kg	J
1330-20-7	Xylene (total)	1300	150	85	ug/kg	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	104%		75-127%
17060-07-0	1,2-Dichloroethane-D4	107%		75-130%
2037-26-5	Toluene-D8	99%		80-120%
460-00-4	4-Bromofluorobenzene	106%		79-127%

(a) Diluted due to high concentration of non-target compound.
(b) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	SO-DUP-0417		
Lab Sample ID:	JC86553-19	**Date Sampled:**	04/17/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	83.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	M153686.D	2	04/22/19 20:43	YC	04/19/19 07:45	OP19854	EM6567
Run #2	M153730.D	20	04/23/19 17:52	CC	04/19/19 07:45	OP19854	EM6569
Run #3	M153728.D	200	04/23/19 16:55	CC	04/19/19 07:45	OP19854	EM6569

	Initial Weight	Final Volume
Run #1	30.5 g	1.0 ml
Run #2	30.5 g	1.0 ml
Run #3	30.5 g	1.0 ml

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	160	39	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	390	48	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	390	67	ug/kg	
105-67-9	2,4-Dimethylphenol	1930	390	140	ug/kg	J
51-28-5	2,4-Dinitrophenol	ND	390	290	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	390	84	ug/kg	
95-48-7	2-Methylphenol	1180	160	50	ug/kg	J
	3&4-Methylphenol	2390	160	64	ug/kg	J
88-75-5	2-Nitrophenol	ND	390	52	ug/kg	
100-02-7	4-Nitrophenol [b]	ND	780	210	ug/kg	UJ
87-86-5	Pentachlorophenol	ND	310	73	ug/kg	
108-95-2	Phenol	720	160	41	ug/kg	J
58-90-2	2,3,4,6-Tetrachlorophenol	ND	390	52	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	390	59	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	390	47	ug/kg	
83-32-9	Acenaphthene	7150	78	27	ug/kg	J
208-96-8	Acenaphthylene	19900 [c]	780	400	ug/kg	D
98-86-2	Acetophenone	194	390	17	ug/kg	J
120-12-7	Anthracene	90800 [d]	7800	4800	ug/kg	D
1912-24-9	Atrazine	ND	160	33	ug/kg	
56-55-3	Benzo(a)anthracene	75200 [c]	780	220	ug/kg	D
50-32-8	Benzo(a)pyrene	60900 [c]	780	360	ug/kg	D
205-99-2	Benzo(b)fluoranthene	74400 [c]	780	350	ug/kg	D
191-24-2	Benzo(g,h,i)perylene	31000 [c]	780	390	ug/kg	D
207-08-9	Benzo(k)fluoranthene	29400 [c]	780	360	ug/kg	DJ
101-55-3	4-Bromophenyl phenyl ether	ND	160	30	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	160	19	ug/kg	
92-52-4	1,1'-Biphenyl	14700 [c]	1600	110	ug/kg	~~B~~ D
100-52-7	Benzaldehyde	ND	390	19	ug/kg	
91-58-7	2-Chloronaphthalene	ND	160	19	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SO-DUP-0417		
Lab Sample ID:	JC86553-19	**Date Sampled:**	04/17/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	83.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
106-47-8	4-Chloroaniline	ND	390	28	ug/kg	
86-74-8	Carbazole	43300 c	1600	110	ug/kg	~~B~~ D
105-60-2	Caprolactam	ND	160	31	ug/kg	
218-01-9	Chrysene	64600 c	780	250	ug/kg	D
111-91-1	bis(2-Chloroethoxy)methane	ND	160	17	ug/kg	
111-44-4	bis(2-Chloroethyl)ether b	ND	160	34	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	160	28	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	160	25	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	78	24	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	78	39	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	160	65	ug/kg	
123-91-1	1,4-Dioxane b	ND	78	52	ug/kg	UJ
53-70-3	Dibenzo(a,h)anthracene	11000 c	780	350	ug/kg	D J
132-64-9	Dibenzofuran	73000 c	1600	320	ug/kg	D
84-74-2	Di-n-butyl phthalate	ND	160	13	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	160	19	ug/kg	
84-66-2	Diethyl phthalate	ND	160	17	ug/kg	
131-11-3	Dimethyl phthalate	ND	160	14	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	160	18	ug/kg	
206-44-0	Fluoranthene	211000 d	7800	3500	ug/kg	D
86-73-7	Fluorene	103000 d	7800	3600	ug/kg	D
118-74-1	Hexachlorobenzene	ND	160	20	ug/kg	
87-68-3	Hexachlorobutadiene	ND	78	31	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	780	31	ug/kg	
67-72-1	Hexachloroethane	ND	390	39	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	32200 c	780	370	ug/kg	D
78-59-1	Isophorone	ND	160	17	ug/kg	
91-57-6	2-Methylnaphthalene	64300 c	780	180	ug/kg	D
88-74-4	2-Nitroaniline	ND	390	18	ug/kg	
99-09-2	3-Nitroaniline	ND	390	20	ug/kg	
100-01-6	4-Nitroaniline	ND	390	20	ug/kg	
91-20-3	Naphthalene	278000 d	7800	2200	ug/kg	D
98-95-3	Nitrobenzene	ND	160	30	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	160	23	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	390	29	ug/kg	
85-01-8	Phenanthrene	350000 d	7800	2600	ug/kg	D
129-00-0	Pyrene	137000 d	7800	2500	ug/kg	D
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	390	20	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SO-DUP-0417		
Lab Sample ID:	JC86553-19	**Date Sampled:**	04/17/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	83.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Run# 3	Limits
367-12-4	2-Fluorophenol	46%	49%	74%	23-115%
4165-62-2	Phenol-d5	48%	46%	48%	27-114%
118-79-6	2,4,6-Tribromophenol	69%	77%	0% [e]	19-152%
4165-60-0	Nitrobenzene-d5	52%	55%	63%	26-134%
321-60-8	2-Fluorobiphenyl	55%	61%	73%	39-124%
1718-51-0	Terphenyl-d14	45%	61%	70%	36-134%

(a) Dilution required due to viscosity of the extract matrix.
(b) Associated CCV outside of control limits low.
(c) Result is from Run# 2
(d) Result is from Run# 3
(e) Outside control limits due to dilution.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	S-127(6-8)		
Lab Sample ID:	JC86553-20	**Date Sampled:**	04/17/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8260C	**Percent Solids:**	87.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	D263961.D	1	04/23/19 13:55	TDN	n/a	n/a	VD10639
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	6.9 g	10.0 ml	10.0 ul
Run #2			

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	9000	4500	ug/kg	
71-43-2	Benzene	8520	450	340	ug/kg	
74-97-5	Bromochloromethane	ND	4500	390	ug/kg	
75-27-4	Bromodichloromethane	ND	1800	400	ug/kg	
75-25-2	Bromoform	ND	4500	360	ug/kg	
74-83-9	Bromomethane	ND	4500	900	ug/kg	
78-93-3	2-Butanone (MEK)	ND	9000	3400	ug/kg	
75-15-0	Carbon disulfide	ND	1800	840	ug/kg	
56-23-5	Carbon tetrachloride	ND	1800	500	ug/kg	
108-90-7	Chlorobenzene	ND	1800	320	ug/kg	
75-00-3	Chloroethane	ND	4500	620	ug/kg	
67-66-3	Chloroform	ND	1800	340	ug/kg	
74-87-3	Chloromethane	ND	4500	1800	ug/kg	
110-82-7	Cyclohexane	ND	1800	370	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	1800	750	ug/kg	
124-48-1	Dibromochloromethane	ND	1800	310	ug/kg	
106-93-4	1,2-Dibromoethane	ND	900	290	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	900	280	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	900	320	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	900	310	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	4500	570	ug/kg	
75-34-3	1,1-Dichloroethane	ND	900	350	ug/kg	
107-06-2	1,2-Dichloroethane [b]	ND	900	420	ug/kg	UJ
75-35-4	1,1-Dichloroethene	ND	900	590	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	900	860	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	900	600	ug/kg	
78-87-5	1,2-Dichloropropane	ND	1800	370	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	1800	320	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	1800	300	ug/kg	
100-41-4	Ethylbenzene	7460	900	500	ug/kg	
76-13-1	Freon 113	ND	4500	690	ug/kg	
591-78-6	2-Hexanone	ND	4500	1100	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-127(6-8)		
Lab Sample ID:	JC86553-20	**Date Sampled:**	04/17/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8260C	**Percent Solids:**	87.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	1800	630	ug/kg	
79-20-9	Methyl Acetate	ND	4500	1300	ug/kg	
108-87-2	Methylcyclohexane	ND	1800	640	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	900	320	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	4500	1400	ug/kg	
75-09-2	Methylene chloride	ND	4500	2300	ug/kg	
100-42-5	Styrene	ND	1800	520	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1800	350	ug/kg	
127-18-4	Tetrachloroethene	ND	1800	420	ug/kg	
108-88-3	Toluene	7560	900	340	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	4500	900	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	4500	900	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	1800	380	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	1800	310	ug/kg	
79-01-6	Trichloroethene	ND	900	690	ug/kg	
75-69-4	Trichlorofluoromethane	ND	4500	610	ug/kg	
75-01-4	Vinyl chloride	ND	1800	420	ug/kg	
	m,p-Xylene	19700	900	670	ug/kg	
95-47-6	o-Xylene	8260	900	530	ug/kg	
1330-20-7	Xylene (total)	27900	900	530	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	106%		75-127%
17060-07-0	1,2-Dichloroethane-D4	94%		75-130%
2037-26-5	Toluene-D8	100%		80-120%
460-00-4	4-Bromofluorobenzene	84%		79-127%

(a) Diluted due to high concentration of non-target compound.
(b) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	S-127(6-8)		
Lab Sample ID:	JC86553-20	**Date Sampled:**	04/17/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	87.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	M153654.D	1	04/21/19 10:37	CB	04/19/19 07:45	OP19854	EM6566
Run #2	M153684.D	20	04/22/19 19:46	YC	04/19/19 07:45	OP19854	EM6567
Run #3	M153726.D	100	04/23/19 15:57	CC	04/19/19 07:45	OP19854	EM6569

	Initial Weight	Final Volume
Run #1	15.4 g	1.0 ml
Run #2	15.4 g	1.0 ml
Run #3	15.4 g	1.0 ml

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	150	37	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	370	46	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	370	63	ug/kg	
105-67-9	2,4-Dimethylphenol	3170	370	130	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	370	280	ug/kg	
534-52-1	4,6-Dinitro-o-cresol [b]	ND	370	80	ug/kg	
95-48-7	2-Methylphenol	362	150	48	ug/kg	
	3&4-Methylphenol	2160	150	61	ug/kg	
88-75-5	2-Nitrophenol	ND	370	49	ug/kg	
100-02-7	4-Nitrophenol	ND	740	200	ug/kg	
87-86-5	Pentachlorophenol [b]	ND	300	70	ug/kg	
108-95-2	Phenol	276	150	39	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	370	49	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	370	56	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	370	44	ug/kg	
83-32-9	Acenaphthene	42600 [c]	1500	510	ug/kg	D
208-96-8	Acenaphthylene	16400 [c]	1500	760	ug/kg	D
98-86-2	Acetophenone	ND	370	16	ug/kg	
120-12-7	Anthracene	29900 [c]	1500	910	ug/kg	D
1912-24-9	Atrazine	ND	150	32	ug/kg	
56-55-3	Benzo(a)anthracene	30500 [c]	1500	420	ug/kg	D
50-32-8	Benzo(a)pyrene	27100 [c]	1500	680	ug/kg	
205-99-2	Benzo(b)fluoranthene	31900 [c]	1500	660	ug/kg	
191-24-2	Benzo(g,h,i)perylene	14300 [c]	1500	740	ug/kg	
207-08-9	Benzo(k)fluoranthene	11300 [c]	1500	690	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	150	29	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	150	18	ug/kg	
92-52-4	1,1'-Biphenyl	7080	150	10	ug/kg	B
100-52-7	Benzaldehyde	ND	370	18	ug/kg	
91-58-7	2-Chloronaphthalene	ND	150	18	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-127(6-8)
Lab Sample ID: JC86553-20
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/17/19
Date Received: 04/17/19
Percent Solids: 87.3

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
106-47-8	4-Chloroaniline	ND	370	27	ug/kg	
86-74-8	Carbazole	15600 [c]	3000	220	ug/kg	B D
105-60-2	Caprolactam	ND	150	29	ug/kg	
218-01-9	Chrysene	25100 [c]	1500	470	ug/kg	D
111-91-1	bis(2-Chloroethoxy)methane	ND	150	16	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	150	32	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	150	27	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	150	24	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	74	23	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	74	37	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	150	62	ug/kg	
123-91-1	1,4-Dioxane [d]	ND	74	49	ug/kg	UJ
53-70-3	Dibenzo(a,h)anthracene	3370	74	33	ug/kg	
132-64-9	Dibenzofuran	38300 [c]	3000	610	ug/kg	D
84-74-2	Di-n-butyl phthalate	ND	150	12	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	150	19	ug/kg	
84-66-2	Diethyl phthalate	ND	150	16	ug/kg	
131-11-3	Dimethyl phthalate	ND	150	13	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	150	17	ug/kg	
206-44-0	Fluoranthene	87100 [c]	1500	660	ug/kg	D
86-73-7	Fluorene	51300 [c]	1500	680	ug/kg	D
118-74-1	Hexachlorobenzene	ND	150	19	ug/kg	
87-68-3	Hexachlorobutadiene	ND	74	30	ug/kg	
77-47-4	Hexachlorocyclopentadiene [b]	ND	740	30	ug/kg	
67-72-1	Hexachloroethane	ND	370	37	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	13900 [c]	1500	700	ug/kg	D
78-59-1	Isophorone	ND	150	16	ug/kg	
91-57-6	2-Methylnaphthalene	46800 [c]	1500	340	ug/kg	D
88-74-4	2-Nitroaniline	ND	370	18	ug/kg	
99-09-2	3-Nitroaniline	ND	370	19	ug/kg	
100-01-6	4-Nitroaniline	ND	370	19	ug/kg	
91-20-3	Naphthalene	282000 [e]	7400	2100	ug/kg	D
98-95-3	Nitrobenzene	ND	150	29	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	150	21	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	370	27	ug/kg	
85-01-8	Phenanthrene	154000 [e]	7400	2500	ug/kg	D
129-00-0	Pyrene	55800 [c]	1500	480	ug/kg	D
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	370	19	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-127(6-8)		
Lab Sample ID:	JC86553-20	**Date Sampled:**	04/17/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	87.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Run# 3	Limits
367-12-4	2-Fluorophenol	49%	69%	72%	23-115%
4165-62-2	Phenol-d5	53%	68%	81%	27-114%
118-79-6	2,4,6-Tribromophenol	84%	118%	125%	19-152%
4165-60-0	Nitrobenzene-d5	62%	85%	92%	26-134%
321-60-8	2-Fluorobiphenyl	74%	98%	107%	39-124%
1718-51-0	Terphenyl-d14	62%	92%	90%	36-134%

(a) Elevated detection limit due to low volume of sample extracted.
(b) Associated CCV outside of control limits high, sample was ND.
(c) Result is from Run# 2
(d) Associated CCV outside of control limits low.
(e) Result is from Run# 3

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Report of Analysis

Client Sample ID:	S-127(13-15)		
Lab Sample ID:	JC86553-21	**Date Sampled:**	04/17/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8260C	**Percent Solids:**	62.4
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	I225606.D	1	04/22/19 14:03	TDN	n/a	n/a	VI9089
Run #2							

	Initial Weight
Run #1	5.5 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	69.3	15	7.3	ug/kg	
71-43-2	Benzene	ND	0.73	0.55	ug/kg	
74-97-5	Bromochloromethane	ND	7.3	0.63	ug/kg	
75-27-4	Bromodichloromethane	ND	2.9	0.65	ug/kg	
75-25-2	Bromoform	ND	7.3	0.59	ug/kg	
74-83-9	Bromomethane	ND	7.3	1.5	ug/kg	
78-93-3	2-Butanone (MEK)	11.2	15	5.4	ug/kg	J
75-15-0	Carbon disulfide	ND	2.9	1.4	ug/kg	
56-23-5	Carbon tetrachloride	ND	2.9	0.80	ug/kg	
108-90-7	Chlorobenzene	ND	2.9	0.52	ug/kg	
75-00-3	Chloroethane	ND	7.3	1.0	ug/kg	
67-66-3	Chloroform	ND	2.9	0.54	ug/kg	
74-87-3	Chloromethane	ND	7.3	2.9	ug/kg	
110-82-7	Cyclohexane	ND	2.9	0.59	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.9	1.2	ug/kg	
124-48-1	Dibromochloromethane	ND	2.9	0.49	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.5	0.47	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.5	0.44	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.5	0.52	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.5	0.50	ug/kg	
75-71-8	Dichlorodifluoromethane [a]	ND	7.3	0.93	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.5	0.56	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.5	0.68	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.5	0.96	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.5	1.4	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.5	0.97	ug/kg	
78-87-5	1,2-Dichloropropane	ND	2.9	0.59	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	2.9	0.51	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2.9	0.48	ug/kg	
100-41-4	Ethylbenzene	ND	1.5	0.80	ug/kg	
76-13-1	Freon 113	ND	7.3	1.1	ug/kg	
591-78-6	2-Hexanone	ND	7.3	1.9	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-127(13-15)		
Lab Sample ID:	JC86553-21	**Date Sampled:**	04/17/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8260C	**Percent Solids:**	62.4
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	1.2	2.9	1.0	ug/kg	J
79-20-9	Methyl Acetate	ND	7.3	2.0	ug/kg	
108-87-2	Methylcyclohexane	3.4	2.9	1.0	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.5	0.51	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	7.3	2.3	ug/kg	
75-09-2	Methylene chloride	ND	7.3	3.6	ug/kg	
100-42-5	Styrene	ND	2.9	0.84	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.9	0.57	ug/kg	
127-18-4	Tetrachloroethene	ND	2.9	0.67	ug/kg	
108-88-3	Toluene	0.60	1.5	0.55	ug/kg	J
87-61-6	1,2,3-Trichlorobenzene	ND	7.3	1.5	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	7.3	1.5	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	2.9	0.62	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2.9	0.50	ug/kg	
79-01-6	Trichloroethene	ND	1.5	1.1	ug/kg	
75-69-4	Trichlorofluoromethane	ND	7.3	0.99	ug/kg	
75-01-4	Vinyl chloride	ND	2.9	0.68	ug/kg	
	m,p-Xylene	ND	1.5	1.1	ug/kg	
95-47-6	o-Xylene	ND	1.5	0.85	ug/kg	
1330-20-7	Xylene (total)	ND	1.5	0.85	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	113%		75-127%
17060-07-0	1,2-Dichloroethane-D4	112%		75-130%
2037-26-5	Toluene-D8	99%		80-120%
460-00-4	4-Bromofluorobenzene	117%		79-127%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
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J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	S-127(13-15)		
Lab Sample ID:	JC86553-21	**Date Sampled:**	04/17/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	62.4
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M153646.D	1	04/21/19 06:51	CB	04/19/19 07:45	OP19854	EM6566
Run #2							

	Initial Weight	Final Volume
Run #1	30.3 g	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	110	26	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	260	32	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	260	45	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	260	94	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	260	200	ug/kg	
534-52-1	4,6-Dinitro-o-cresol [a]	ND	260	57	ug/kg	
95-48-7	2-Methylphenol	ND	110	34	ug/kg	
	3&4-Methylphenol	142	110	43	ug/kg	
88-75-5	2-Nitrophenol	ND	260	35	ug/kg	
100-02-7	4-Nitrophenol	ND	530	140	ug/kg	
87-86-5	Pentachlorophenol [a]	ND	210	50	ug/kg	
108-95-2	Phenol	ND	110	28	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	260	35	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	260	40	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	260	32	ug/kg	
83-32-9	Acenaphthene	1500	53	18	ug/kg	
208-96-8	Acenaphthylene	228	53	27	ug/kg	
98-86-2	Acetophenone	ND	260	11	ug/kg	
120-12-7	Anthracene	1040	53	32	ug/kg	
1912-24-9	Atrazine	ND	110	23	ug/kg	
56-55-3	Benzo(a)anthracene	940	53	15	ug/kg	
50-32-8	Benzo(a)pyrene	1070	53	24	ug/kg	
205-99-2	Benzo(b)fluoranthene	1080	53	23	ug/kg	
191-24-2	Benzo(g,h,i)perylene	587	53	26	ug/kg	
207-08-9	Benzo(k)fluoranthene	384	53	25	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	110	20	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	110	13	ug/kg	
92-52-4	1,1'-Biphenyl	77.3	110	7.2	ug/kg	JB
100-52-7	Benzaldehyde	ND	260	13	ug/kg	
91-58-7	2-Chloronaphthalene	ND	110	13	ug/kg	
106-47-8	4-Chloroaniline	ND	260	19	ug/kg	
86-74-8	Carbazole	59.9	110	7.7	ug/kg	JB

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RL = Reporting Limit
E = Indicates value exceeds calibration range
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N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-127(13-15)
Lab Sample ID: JC86553-21
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/17/19
Date Received: 04/17/19
Percent Solids: 62.4

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	110	21	ug/kg	
218-01-9	Chrysene	1100	53	17	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	110	11	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	110	23	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	110	19	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	110	17	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	53	16	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	53	27	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	110	44	ug/kg	
123-91-1	1,4-Dioxane [b]	ND	53	35	ug/kg	UJ
53-70-3	Dibenzo(a,h)anthracene	145	53	23	ug/kg	
132-64-9	Dibenzofuran	382	110	22	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	110	8.6	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	110	13	ug/kg	
84-66-2	Diethyl phthalate	ND	110	11	ug/kg	
131-11-3	Dimethyl phthalate	ND	110	9.4	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	110	12	ug/kg	
206-44-0	Fluoranthene	2090	53	24	ug/kg	
86-73-7	Fluorene	1120	53	24	ug/kg	
118-74-1	Hexachlorobenzene	ND	110	13	ug/kg	
87-68-3	Hexachlorobutadiene	ND	53	21	ug/kg	
77-47-4	Hexachlorocyclopentadiene [a]	ND	530	21	ug/kg	
67-72-1	Hexachloroethane	ND	260	26	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	518	53	25	ug/kg	
78-59-1	Isophorone	ND	110	11	ug/kg	
91-57-6	2-Methylnaphthalene	405	53	12	ug/kg	
88-74-4	2-Nitroaniline	ND	260	12	ug/kg	
99-09-2	3-Nitroaniline	ND	260	13	ug/kg	
100-01-6	4-Nitroaniline	ND	260	14	ug/kg	
91-20-3	Naphthalene	1030	53	15	ug/kg	
98-95-3	Nitrobenzene	ND	110	20	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	110	15	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	260	19	ug/kg	
85-01-8	Phenanthrene	4690	53	18	ug/kg	
129-00-0	Pyrene	2300	53	17	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	260	13	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	40%		23-115%

ND = Not detected MDL = Method Detection Limit
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N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-127(13-15)		
Lab Sample ID:	JC86553-21	**Date Sampled:**	04/17/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	62.4
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	41%		27-114%
118-79-6	2,4,6-Tribromophenol	67%		19-152%
4165-60-0	Nitrobenzene-d5	53%		26-134%
321-60-8	2-Fluorobiphenyl	60%		39-124%
1718-51-0	Terphenyl-d14	56%		36-134%

(a) Associated CCV outside of control limits high, sample was ND.
(b) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	SB-131(2-4)		
Lab Sample ID:	JC86553-22	**Date Sampled:**	04/17/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8260C	**Percent Solids:**	85.0
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3C151411.D	1	04/25/19 04:34	PS	n/a	n/a	V3C6807
Run #2							

	Initial Weight
Run #1	6.0 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	32.4	9.8	4.9	ug/kg	
71-43-2	Benzene	ND	0.49	0.37	ug/kg	
74-97-5	Bromochloromethane	ND	4.9	0.42	ug/kg	
75-27-4	Bromodichloromethane	ND	2.0	0.43	ug/kg	
75-25-2	Bromoform	ND	4.9	0.39	ug/kg	
74-83-9	Bromomethane [a]	ND	4.9	0.97	ug/kg	UJ
78-93-3	2-Butanone (MEK)	ND	9.8	3.7	ug/kg	
75-15-0	Carbon disulfide	ND	2.0	0.91	ug/kg	
56-23-5	Carbon tetrachloride	ND	2.0	0.54	ug/kg	
108-90-7	Chlorobenzene	ND	2.0	0.35	ug/kg	
75-00-3	Chloroethane	ND	4.9	0.67	ug/kg	
67-66-3	Chloroform	ND	2.0	0.36	ug/kg	
74-87-3	Chloromethane	ND	4.9	1.9	ug/kg	
110-82-7	Cyclohexane	ND	2.0	0.40	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.82	ug/kg	
124-48-1	Dibromochloromethane	ND	2.0	0.33	ug/kg	
106-93-4	1,2-Dibromoethane	ND	0.98	0.32	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	0.98	0.30	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	0.98	0.35	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	0.98	0.34	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	4.9	0.62	ug/kg	
75-34-3	1,1-Dichloroethane	ND	0.98	0.38	ug/kg	
107-06-2	1,2-Dichloroethane	ND	0.98	0.46	ug/kg	
75-35-4	1,1-Dichloroethene	ND	0.98	0.64	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	0.98	0.94	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	0.98	0.65	ug/kg	
78-87-5	1,2-Dichloropropane	ND	2.0	0.40	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	2.0	0.34	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2.0	0.32	ug/kg	
100-41-4	Ethylbenzene	ND	0.98	0.54	ug/kg	
76-13-1	Freon 113	ND	4.9	0.74	ug/kg	
591-78-6	2-Hexanone	ND	4.9	1.2	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-131(2-4)		
Lab Sample ID:	JC86553-22	**Date Sampled:**	04/17/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8260C	**Percent Solids:**	85.0
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	2.0	0.68	ug/kg	
79-20-9	Methyl Acetate	ND	4.9	1.4	ug/kg	
108-87-2	Methylcyclohexane	ND	2.0	0.69	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.98	0.34	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	4.9	1.5	ug/kg	
75-09-2	Methylene chloride	ND	4.9	2.4	ug/kg	
100-42-5	Styrene	ND	2.0	0.56	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.0	0.38	ug/kg	
127-18-4	Tetrachloroethene	ND	2.0	0.45	ug/kg	
108-88-3	Toluene	ND	0.98	0.37	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	4.9	0.98	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	4.9	0.98	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	2.0	0.42	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2.0	0.33	ug/kg	
79-01-6	Trichloroethene	ND	0.98	0.74	ug/kg	
75-69-4	Trichlorofluoromethane	ND	4.9	0.67	ug/kg	
75-01-4	Vinyl chloride	ND	2.0	0.46	ug/kg	
	m,p-Xylene	ND	0.98	0.73	ug/kg	
95-47-6	o-Xylene	ND	0.98	0.57	ug/kg	
1330-20-7	Xylene (total)	ND	0.98	0.57	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	104%		75-127%
17060-07-0	1,2-Dichloroethane-D4	104%		75-130%
2037-26-5	Toluene-D8	103%		80-120%
460-00-4	4-Bromofluorobenzene	109%		79-127%

(a) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS LabLink@1039014 11:14 10-May-2019

Report of Analysis

Client Sample ID:	SB-131(2-4)		
Lab Sample ID:	JC86553-22	**Date Sampled:**	04/17/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	85.0
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M153638.D	1	04/21/19 03:05	CB	04/19/19 07:45	OP19854	EM6566
Run #2							

	Initial Weight	Final Volume
Run #1	31.2 g	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	75	19	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	190	23	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	190	32	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	190	67	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	190	140	ug/kg	
534-52-1	4,6-Dinitro-o-cresol [a]	ND	190	40	ug/kg	
95-48-7	2-Methylphenol	ND	75	24	ug/kg	
	3&4-Methylphenol	ND	75	31	ug/kg	
88-75-5	2-Nitrophenol	ND	190	25	ug/kg	
100-02-7	4-Nitrophenol	ND	380	100	ug/kg	
87-86-5	Pentachlorophenol [a]	ND	150	35	ug/kg	
108-95-2	Phenol	ND	75	20	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	190	25	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	190	28	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	190	22	ug/kg	
83-32-9	Acenaphthene	ND	38	13	ug/kg	
208-96-8	Acenaphthylene	ND	38	19	ug/kg	
98-86-2	Acetophenone	ND	190	8.1	ug/kg	
120-12-7	Anthracene	ND	38	23	ug/kg	
1912-24-9	Atrazine	ND	75	16	ug/kg	
56-55-3	Benzo(a)anthracene	11.4	38	11	ug/kg	J
50-32-8	Benzo(a)pyrene	ND	38	17	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	38	17	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	38	19	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	38	18	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	75	15	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	75	9.2	ug/kg	
92-52-4	1,1'-Biphenyl	ND	75	5.2	ug/kg	
100-52-7	Benzaldehyde	ND	190	9.4	ug/kg	
91-58-7	2-Chloronaphthalene	ND	75	9.0	ug/kg	
106-47-8	4-Chloroaniline	ND	190	14	ug/kg	
86-74-8	Carbazole	ND	75	5.5	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-131(2-4)		
Lab Sample ID:	JC86553-22	**Date Sampled:**	04/17/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	85.0
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	75	15	ug/kg	
218-01-9	Chrysene	ND	38	12	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	75	8.1	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	75	16	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	75	14	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	75	12	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	38	12	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	38	19	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	75	31	ug/kg	
123-91-1	1,4-Dioxane [b]	ND	38	25	ug/kg	UJ
53-70-3	Dibenzo(a,h)anthracene	ND	38	17	ug/kg	
132-64-9	Dibenzofuran	ND	75	15	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	75	6.1	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	75	9.4	ug/kg	
84-66-2	Diethyl phthalate	ND	75	8.0	ug/kg	
131-11-3	Dimethyl phthalate	ND	75	6.7	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	75	8.8	ug/kg	
206-44-0	Fluoranthene	17.1	38	17	ug/kg	J
86-73-7	Fluorene	ND	38	17	ug/kg	
118-74-1	Hexachlorobenzene	ND	75	9.5	ug/kg	
87-68-3	Hexachlorobutadiene	ND	38	15	ug/kg	
77-47-4	Hexachlorocyclopentadiene [a]	ND	380	15	ug/kg	
67-72-1	Hexachloroethane	ND	190	19	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	38	18	ug/kg	
78-59-1	Isophorone	ND	75	8.1	ug/kg	
91-57-6	2-Methylnaphthalene	ND	38	8.5	ug/kg	
88-74-4	2-Nitroaniline	ND	190	8.9	ug/kg	
99-09-2	3-Nitroaniline	ND	190	9.4	ug/kg	
100-01-6	4-Nitroaniline	ND	190	9.8	ug/kg	
91-20-3	Naphthalene	ND	38	11	ug/kg	
98-95-3	Nitrobenzene	ND	75	15	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	75	11	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	190	14	ug/kg	
85-01-8	Phenanthrene	16.0	38	13	ug/kg	J
129-00-0	Pyrene	13.1	38	12	ug/kg	J
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	190	9.6	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	35%		23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-131(2-4)		
Lab Sample ID:	JC86553-22	**Date Sampled:**	04/17/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	85.0
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	35%		27-114%
118-79-6	2,4,6-Tribromophenol	55%		19-152%
4165-60-0	Nitrobenzene-d5	42%		26-134%
321-60-8	2-Fluorobiphenyl	48%		39-124%
1718-51-0	Terphenyl-d14	46%		36-134%

(a) Associated CCV outside of control limits high, sample was ND.
(b) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	S-131(7-9)		
Lab Sample ID:	JC86553-23	**Date Sampled:**	04/17/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8260C	**Percent Solids:**	59.7
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	I225607.D	1	04/22/19 14:33	TDN	n/a	n/a	VI9089
Run #2							

	Initial Weight
Run #1	4.3 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	57.7	19	9.7	ug/kg	
71-43-2	Benzene	1.8	0.97	0.73	ug/kg	
74-97-5	Bromochloromethane	ND	9.7	0.84	ug/kg	
75-27-4	Bromodichloromethane	ND	3.9	0.86	ug/kg	
75-25-2	Bromoform	ND	9.7	0.78	ug/kg	
74-83-9	Bromomethane	ND	9.7	1.9	ug/kg	
78-93-3	2-Butanone (MEK)	8.5	19	7.3	ug/kg	J
75-15-0	Carbon disulfide	3.8	3.9	1.8	ug/kg	J
56-23-5	Carbon tetrachloride	ND	3.9	1.1	ug/kg	
108-90-7	Chlorobenzene	ND	3.9	0.69	ug/kg	
75-00-3	Chloroethane	ND	9.7	1.3	ug/kg	
67-66-3	Chloroform	ND	3.9	0.72	ug/kg	
74-87-3	Chloromethane	ND	9.7	3.8	ug/kg	
110-82-7	Cyclohexane	ND	3.9	0.79	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	3.9	1.6	ug/kg	
124-48-1	Dibromochloromethane	ND	3.9	0.66	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.9	0.63	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.9	0.59	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.9	0.70	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.9	0.67	ug/kg	
75-71-8	Dichlorodifluoromethane [a]	ND	9.7	1.2	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.9	0.75	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.9	0.92	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.9	1.3	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.9	1.9	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.9	1.3	ug/kg	
78-87-5	1,2-Dichloropropane	ND	3.9	0.79	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	3.9	0.69	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	3.9	0.64	ug/kg	
100-41-4	Ethylbenzene	2.1	1.9	1.1	ug/kg	
76-13-1	Freon 113	ND	9.7	1.5	ug/kg	
591-78-6	2-Hexanone	ND	9.7	2.5	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-131(7-9)		
Lab Sample ID:	JC86553-23	**Date Sampled:**	04/17/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8260C	**Percent Solids:**	59.7
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	4.4	3.9	1.4	ug/kg	
79-20-9	Methyl Acetate	ND	9.7	2.7	ug/kg	
108-87-2	Methylcyclohexane	2.4	3.9	1.4	ug/kg	J
1634-04-4	Methyl Tert Butyl Ether	ND	1.9	0.69	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	9.7	3.0	ug/kg	
75-09-2	Methylene chloride	ND	9.7	4.9	ug/kg	
100-42-5	Styrene	ND	3.9	1.1	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	3.9	0.76	ug/kg	
127-18-4	Tetrachloroethene	ND	3.9	0.90	ug/kg	
108-88-3	Toluene	0.83	1.9	0.73	ug/kg	J
87-61-6	1,2,3-Trichlorobenzene	ND	9.7	1.9	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	9.7	1.9	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	3.9	0.83	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	3.9	0.67	ug/kg	
79-01-6	Trichloroethene	ND	1.9	1.5	ug/kg	
75-69-4	Trichlorofluoromethane	ND	9.7	1.3	ug/kg	
75-01-4	Vinyl chloride	ND	3.9	0.91	ug/kg	
	m,p-Xylene	ND	1.9	1.5	ug/kg	
95-47-6	o-Xylene	ND	1.9	1.1	ug/kg	
1330-20-7	Xylene (total)	1.7	1.9	1.1	ug/kg	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	109%		75-127%
17060-07-0	1,2-Dichloroethane-D4	109%		75-130%
2037-26-5	Toluene-D8	98%		80-120%
460-00-4	4-Bromofluorobenzene	110%		79-127%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	S-131(7-9)		
Lab Sample ID:	JC86553-23	**Date Sampled:**	04/17/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	59.7
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M153647.D	1	04/21/19 07:20	CB	04/19/19 07:45	OP19854	EM6566
Run #2	M153682.D	5	04/22/19 18:49	YC	04/19/19 07:45	OP19854	EM6567

	Initial Weight	Final Volume
Run #1	30.4 g	1.0 ml
Run #2	30.4 g	1.0 ml

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	110	27	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	280	34	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	280	47	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	280	98	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	280	210	ug/kg	
534-52-1	4,6-Dinitro-o-cresol [a]	ND	280	59	ug/kg	
95-48-7	2-Methylphenol	ND	110	35	ug/kg	
	3&4-Methylphenol	101	110	45	ug/kg	J
88-75-5	2-Nitrophenol	ND	280	36	ug/kg	
100-02-7	4-Nitrophenol	ND	550	150	ug/kg	
87-86-5	Pentachlorophenol [a]	ND	220	52	ug/kg	
108-95-2	Phenol	ND	110	29	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	280	36	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	280	41	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	280	33	ug/kg	
83-32-9	Acenaphthene	7650 [b]	280	95	ug/kg	D
208-96-8	Acenaphthylene	223	55	28	ug/kg	
98-86-2	Acetophenone	33.4	280	12	ug/kg	J
120-12-7	Anthracene	4930	55	34	ug/kg	
1912-24-9	Atrazine	ND	110	24	ug/kg	
56-55-3	Benzo(a)anthracene	1590	55	16	ug/kg	
50-32-8	Benzo(a)pyrene	989	55	25	ug/kg	
205-99-2	Benzo(b)fluoranthene	1230	55	24	ug/kg	
191-24-2	Benzo(g,h,i)perylene	426	55	28	ug/kg	
207-08-9	Benzo(k)fluoranthene	411	55	26	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	110	21	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	110	13	ug/kg	
92-52-4	1,1'-Biphenyl	218	110	7.5	ug/kg	B
100-52-7	Benzaldehyde	ND	280	14	ug/kg	
91-58-7	2-Chloronaphthalene	ND	110	13	ug/kg	
106-47-8	4-Chloroaniline	ND	280	20	ug/kg	
86-74-8	Carbazole	1610	110	8.0	ug/kg	B

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-131(7-9)
Lab Sample ID: JC86553-23
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/17/19
Date Received: 04/17/19
Percent Solids: 59.7

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	110	22	ug/kg	
218-01-9	Chrysene	2020	55	17	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	110	12	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	110	24	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	110	20	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	110	18	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	55	17	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	55	28	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	110	46	ug/kg	
123-91-1	1,4-Dioxane [c]	ND	55	36	ug/kg	UJ
53-70-3	Dibenzo(a,h)anthracene	120	55	24	ug/kg	
132-64-9	Dibenzofuran	2780	110	22	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	110	9.0	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	110	14	ug/kg	
84-66-2	Diethyl phthalate	ND	110	12	ug/kg	
131-11-3	Dimethyl phthalate	ND	110	9.8	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	110	13	ug/kg	
206-44-0	Fluoranthene	6590 [b]	280	120	ug/kg	D
86-73-7	Fluorene	5690 [b]	280	130	ug/kg	D
118-74-1	Hexachlorobenzene	ND	110	14	ug/kg	
87-68-3	Hexachlorobutadiene	ND	55	22	ug/kg	
77-47-4	Hexachlorocyclopentadiene [a]	ND	550	22	ug/kg	
67-72-1	Hexachloroethane	ND	280	27	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	400	55	26	ug/kg	
78-59-1	Isophorone	ND	110	12	ug/kg	
91-57-6	2-Methylnaphthalene	752	55	12	ug/kg	
88-74-4	2-Nitroaniline	ND	280	13	ug/kg	
99-09-2	3-Nitroaniline	ND	280	14	ug/kg	
100-01-6	4-Nitroaniline	ND	280	14	ug/kg	
91-20-3	Naphthalene	1120	55	16	ug/kg	
98-95-3	Nitrobenzene	ND	110	21	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	110	16	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	280	20	ug/kg	
85-01-8	Phenanthrene	17000 [b]	280	93	ug/kg	D
129-00-0	Pyrene	5270	55	18	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	280	14	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	50%	46%	23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-131(7-9)		
Lab Sample ID:	JC86553-23	**Date Sampled:**	04/17/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	59.7
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	50%	49%	27-114%
118-79-6	2,4,6-Tribromophenol	82%	79%	19-152%
4165-60-0	Nitrobenzene-d5	61%	58%	26-134%
321-60-8	2-Fluorobiphenyl	71%	70%	39-124%
1718-51-0	Terphenyl-d14	67%	62%	36-134%

(a) Associated CCV outside of control limits high, sample was ND.
(b) Result is from Run# 2
(c) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	S-132(2-4)		
Lab Sample ID:	JC86553-24	**Date Sampled:**	04/17/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8260C	**Percent Solids:**	83.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3V44300.D	1	04/24/19 19:23	RS	n/a	n/a	V3V1778
Run #2							

	Initial Weight
Run #1	4.4 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	14	6.8	ug/kg	
71-43-2	Benzene	ND	0.68	0.51	ug/kg	
74-97-5	Bromochloromethane	ND	6.8	0.58	ug/kg	
75-27-4	Bromodichloromethane	ND	2.7	0.60	ug/kg	
75-25-2	Bromoform	ND	6.8	0.55	ug/kg	
74-83-9	Bromomethane	ND	6.8	1.3	ug/kg	
78-93-3	2-Butanone (MEK)	ND	14	5.1	ug/kg	
75-15-0	Carbon disulfide	ND	2.7	1.3	ug/kg	
56-23-5	Carbon tetrachloride	ND	2.7	0.74	ug/kg	
108-90-7	Chlorobenzene	ND	2.7	0.48	ug/kg	
75-00-3	Chloroethane	ND	6.8	0.93	ug/kg	
67-66-3	Chloroform	ND	2.7	0.50	ug/kg	
74-87-3	Chloromethane	ND	6.8	2.7	ug/kg	
110-82-7	Cyclohexane [a]	ND	2.7	0.55	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.7	1.1	ug/kg	
124-48-1	Dibromochloromethane	ND	2.7	0.46	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.4	0.44	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.4	0.41	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.4	0.49	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.4	0.47	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	6.8	0.86	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.4	0.52	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.4	0.64	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.4	0.89	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.4	1.3	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.4	0.90	ug/kg	
78-87-5	1,2-Dichloropropane	ND	2.7	0.55	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	2.7	0.48	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2.7	0.44	ug/kg	
100-41-4	Ethylbenzene	ND	1.4	0.75	ug/kg	
76-13-1	Freon 113	ND	6.8	1.0	ug/kg	
591-78-6	2-Hexanone	ND	6.8	1.7	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-132(2-4)		
Lab Sample ID:	JC86553-24	**Date Sampled:**	04/17/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8260C	**Percent Solids:**	83.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	2.7	0.94	ug/kg	
79-20-9	Methyl Acetate	ND	6.8	1.9	ug/kg	
108-87-2	Methylcyclohexane [a]	ND	2.7	0.96	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.4	0.48	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	6.8	2.1	ug/kg	
75-09-2	Methylene chloride	ND	6.8	3.4	ug/kg	
100-42-5	Styrene	ND	2.7	0.78	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.7	0.53	ug/kg	
127-18-4	Tetrachloroethene	ND	2.7	0.63	ug/kg	
108-88-3	Toluene	ND	1.4	0.51	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	6.8	1.4	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	6.8	1.4	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	2.7	0.58	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2.7	0.46	ug/kg	
79-01-6	Trichloroethene	ND	1.4	1.0	ug/kg	
75-69-4	Trichlorofluoromethane	ND	6.8	0.92	ug/kg	
75-01-4	Vinyl chloride	ND	2.7	0.64	ug/kg	
	m,p-Xylene	ND	1.4	1.0	ug/kg	
95-47-6	o-Xylene	ND	1.4	0.79	ug/kg	
1330-20-7	Xylene (total)	ND	1.4	0.79	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	98%		75-127%
17060-07-0	1,2-Dichloroethane-D4	98%		75-130%
2037-26-5	Toluene-D8	103%		80-120%
460-00-4	4-Bromofluorobenzene	103%		79-127%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	S-132(2-4)		
Lab Sample ID:	JC86553-24	**Date Sampled:**	04/17/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	83.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M153653.D	1	04/21/19 10:09	CB	04/19/19 07:45	OP19854	EM6566
Run #2	M153683.D	20	04/22/19 19:18	YC	04/19/19 07:45	OP19854	EM6567

	Initial Weight	Final Volume
Run #1	31.3 g	1.0 ml
Run #2	31.3 g	1.0 ml

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	76	19	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	190	23	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	190	32	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	190	68	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	190	140	ug/kg	
534-52-1	4,6-Dinitro-o-cresol [a]	ND	190	41	ug/kg	
95-48-7	2-Methylphenol	71.6	76	24	ug/kg	J
	3&4-Methylphenol	177	76	31	ug/kg	
88-75-5	2-Nitrophenol	ND	190	25	ug/kg	
100-02-7	4-Nitrophenol	ND	380	100	ug/kg	
87-86-5	Pentachlorophenol [a]	ND	150	36	ug/kg	
108-95-2	Phenol	196	76	20	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	190	25	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	190	29	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	190	23	ug/kg	
83-32-9	Acenaphthene	925	38	13	ug/kg	
208-96-8	Acenaphthylene	14200 [b]	760	390	ug/kg	D
98-86-2	Acetophenone	38.5	190	8.2	ug/kg	J
120-12-7	Anthracene	13600 [b]	760	470	ug/kg	D
1912-24-9	Atrazine	ND	76	16	ug/kg	
56-55-3	Benzo(a)anthracene	36100 [b]	760	220	ug/kg	D
50-32-8	Benzo(a)pyrene	33500 [b]	760	350	ug/kg	
205-99-2	Benzo(b)fluoranthene	45200 [b]	760	340	ug/kg	
191-24-2	Benzo(g,h,i)perylene	19400 [b]	760	380	ug/kg	
207-08-9	Benzo(k)fluoranthene	15600 [b]	760	360	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	76	15	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	76	9.3	ug/kg	
92-52-4	1,1'-Biphenyl	195	76	5.2	ug/kg	~~B~~
100-52-7	Benzaldehyde	ND	190	9.4	ug/kg	
91-58-7	2-Chloronaphthalene	ND	76	9.1	ug/kg	
106-47-8	4-Chloroaniline	ND	190	14	ug/kg	
86-74-8	Carbazole	2190	76	5.5	ug/kg	~~B~~

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-132(2-4)
Lab Sample ID: JC86553-24
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/17/19
Date Received: 04/17/19
Percent Solids: 83.9

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	76	15	ug/kg	
218-01-9	Chrysene	31200 [b]	760	240	ug/kg	D
111-91-1	bis(2-Chloroethoxy)methane	ND	76	8.1	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	76	16	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	76	14	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	76	12	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	38	12	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	38	19	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	76	32	ug/kg	
123-91-1	1,4-Dioxane [c]	ND	38	25	ug/kg	UJ
53-70-3	Dibenzo(a,h)anthracene	5910 [b]	760	340	ug/kg	D
132-64-9	Dibenzofuran	3190	76	15	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	76	6.2	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	76	9.5	ug/kg	
84-66-2	Diethyl phthalate	ND	76	8.1	ug/kg	
131-11-3	Dimethyl phthalate	ND	76	6.8	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	76	8.9	ug/kg	
206-44-0	Fluoranthene	73700 [b]	760	340	ug/kg	D
86-73-7	Fluorene	6940 [b]	760	350	ug/kg	D
118-74-1	Hexachlorobenzene	ND	76	9.6	ug/kg	
87-68-3	Hexachlorobutadiene	ND	38	15	ug/kg	
77-47-4	Hexachlorocyclopentadiene [a]	ND	380	15	ug/kg	
67-72-1	Hexachloroethane	ND	190	19	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	19700 [b]	760	360	ug/kg	D
78-59-1	Isophorone	ND	76	8.1	ug/kg	
91-57-6	2-Methylnaphthalene	1280	38	8.6	ug/kg	
88-74-4	2-Nitroaniline	ND	190	9.0	ug/kg	
99-09-2	3-Nitroaniline	ND	190	9.5	ug/kg	
100-01-6	4-Nitroaniline	ND	190	9.9	ug/kg	
91-20-3	Naphthalene	2990	38	11	ug/kg	
98-95-3	Nitrobenzene	ND	76	15	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	76	11	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	190	14	ug/kg	
85-01-8	Phenanthrene	43800 [b]	760	260	ug/kg	D
129-00-0	Pyrene	53300 [b]	760	240	ug/kg	D
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	190	9.7	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	35%	44%	23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-132(2-4)		
Lab Sample ID:	JC86553-24	**Date Sampled:**	04/17/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	83.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	34%	46%	27-114%
118-79-6	2,4,6-Tribromophenol	61%	65%	19-152%
4165-60-0	Nitrobenzene-d5	44%	58%	26-134%
321-60-8	2-Fluorobiphenyl	51%	65%	39-124%
1718-51-0	Terphenyl-d14	39%	61%	36-134%

(a) Associated CCV outside of control limits high, sample was ND.
(b) Result is from Run# 2
(c) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	S-132(8-10)		
Lab Sample ID:	JC86553-25	**Date Sampled:**	04/17/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8260C	**Percent Solids:**	56.1
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	D264003.D	1	04/24/19 10:46	TDN	n/a	n/a	VD10641
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	4.5 g	10.0 ml	100 ul
Run #2			

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone [b]	ND	2400	1200	ug/kg	
71-43-2	Benzene	363	120	89	ug/kg	
74-97-5	Bromochloromethane	ND	1200	100	ug/kg	
75-27-4	Bromodichloromethane	ND	470	110	ug/kg	
75-25-2	Bromoform	ND	1200	96	ug/kg	
74-83-9	Bromomethane	ND	1200	240	ug/kg	
78-93-3	2-Butanone (MEK)	ND	2400	890	ug/kg	
75-15-0	Carbon disulfide	607	470	220	ug/kg	
56-23-5	Carbon tetrachloride	ND	470	130	ug/kg	
108-90-7	Chlorobenzene	ND	470	84	ug/kg	
75-00-3	Chloroethane	ND	1200	160	ug/kg	
67-66-3	Chloroform	ND	470	88	ug/kg	
74-87-3	Chloromethane	ND	1200	460	ug/kg	
110-82-7	Cyclohexane	ND	470	96	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	470	200	ug/kg	
124-48-1	Dibromochloromethane	ND	470	80	ug/kg	
106-93-4	1,2-Dibromoethane	ND	240	77	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	240	72	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	240	85	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	240	82	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	1200	150	ug/kg	
75-34-3	1,1-Dichloroethane	ND	240	91	ug/kg	
107-06-2	1,2-Dichloroethane [c]	ND	240	110	ug/kg	UJ
75-35-4	1,1-Dichloroethene	ND	240	160	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	240	230	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	240	160	ug/kg	
78-87-5	1,2-Dichloropropane	ND	470	97	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	470	83	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	470	78	ug/kg	
100-41-4	Ethylbenzene	249	240	130	ug/kg	
76-13-1	Freon 113	ND	1200	180	ug/kg	
591-78-6	2-Hexanone	ND	1200	300	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-132(8-10)		
Lab Sample ID:	JC86553-25	**Date Sampled:**	04/17/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8260C	**Percent Solids:**	56.1
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	470	170	ug/kg	
79-20-9	Methyl Acetate	1030	1200	330	ug/kg	J
108-87-2	Methylcyclohexane	ND	470	170	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	240	83	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	1200	370	ug/kg	
75-09-2	Methylene chloride	ND	1200	590	ug/kg	
100-42-5	Styrene	ND	470	140	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	470	93	ug/kg	
127-18-4	Tetrachloroethene	ND	470	110	ug/kg	
108-88-3	Toluene	1630	240	89	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	1200	240	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	1200	240	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	470	100	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	470	81	ug/kg	
79-01-6	Trichloroethene	ND	240	180	ug/kg	
75-69-4	Trichlorofluoromethane	ND	1200	160	ug/kg	
75-01-4	Vinyl chloride	ND	470	110	ug/kg	
	m,p-Xylene	311	240	180	ug/kg	
95-47-6	o-Xylene	ND	240	140	ug/kg	
1330-20-7	Xylene (total)	311	240	140	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		75-127%
17060-07-0	1,2-Dichloroethane-D4	92%		75-130%
2037-26-5	Toluene-D8	98%		80-120%
460-00-4	4-Bromofluorobenzene	93%		79-127%

(a) Diluted due to high concentration of non-target compound.
(b) Associated CCV outside of control limits high, sample was ND.
(c) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	S-132(8-10)		
Lab Sample ID:	JC86553-25	**Date Sampled:**	04/17/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	56.1
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M153643.D	1	04/21/19 05:27	CB	04/19/19 07:45	OP19854	EM6566
Run #2							

	Initial Weight	Final Volume
Run #1	30.6 g	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	120	29	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	290	36	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	290	50	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	290	100	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	290	220	ug/kg	
534-52-1	4,6-Dinitro-o-cresol [a]	ND	290	62	ug/kg	
95-48-7	2-Methylphenol	ND	120	37	ug/kg	
	3&4-Methylphenol	345	120	48	ug/kg	
88-75-5	2-Nitrophenol	ND	290	39	ug/kg	
100-02-7	4-Nitrophenol	ND	580	160	ug/kg	
87-86-5	Pentachlorophenol [a]	ND	230	55	ug/kg	
108-95-2	Phenol	ND	120	30	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	290	39	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	290	44	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	290	35	ug/kg	
83-32-9	Acenaphthene	265	58	20	ug/kg	
208-96-8	Acenaphthylene	62.1	58	30	ug/kg	
98-86-2	Acetophenone	18.2	290	13	ug/kg	J
120-12-7	Anthracene	98.8	58	36	ug/kg	
1912-24-9	Atrazine	ND	120	25	ug/kg	
56-55-3	Benzo(a)anthracene	137	58	16	ug/kg	
50-32-8	Benzo(a)pyrene	184	58	27	ug/kg	
205-99-2	Benzo(b)fluoranthene	177	58	26	ug/kg	
191-24-2	Benzo(g,h,i)perylene	121	58	29	ug/kg	
207-08-9	Benzo(k)fluoranthene	71.7	58	27	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	120	22	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	120	14	ug/kg	
92-52-4	1,1'-Biphenyl 120	~~34.8~~	120	8.0	ug/kg	~~JB~~ UB
100-52-7	Benzaldehyde	ND	290	14	ug/kg	
91-58-7	2-Chloronaphthalene	ND	120	14	ug/kg	
106-47-8	4-Chloroaniline	ND	290	21	ug/kg	
86-74-8	Carbazole 120	~~32.2~~	120	8.4	ug/kg	~~JB~~ UB

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-132(8-10)
Lab Sample ID: JC86553-25
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/17/19
Date Received: 04/17/19
Percent Solids: 56.1

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	120	23	ug/kg	
218-01-9	Chrysene	175	58	18	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	120	12	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	120	25	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	120	21	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	120	19	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	58	18	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	58	29	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	120	49	ug/kg	
123-91-1	1,4-Dioxane [b]	ND	58	39	ug/kg	UJ
53-70-3	Dibenzo(a,h)anthracene	27.0	58	26	ug/kg	J
132-64-9	Dibenzofuran	45.0	120	24	ug/kg	J
84-74-2	Di-n-butyl phthalate	ND	120	9.5	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	120	15	ug/kg	
84-66-2	Diethyl phthalate	ND	120	12	ug/kg	
131-11-3	Dimethyl phthalate	ND	120	10	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	120	14	ug/kg	
206-44-0	Fluoranthene	282	58	26	ug/kg	
86-73-7	Fluorene	103	58	27	ug/kg	
118-74-1	Hexachlorobenzene	ND	120	15	ug/kg	
87-68-3	Hexachlorobutadiene	ND	58	23	ug/kg	
77-47-4	Hexachlorocyclopentadiene [a]	ND	580	23	ug/kg	
67-72-1	Hexachloroethane	ND	290	29	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	120	58	27	ug/kg	
78-59-1	Isophorone	ND	120	12	ug/kg	
91-57-6	2-Methylnaphthalene	181	58	13	ug/kg	
88-74-4	2-Nitroaniline	ND	290	14	ug/kg	
99-09-2	3-Nitroaniline	ND	290	15	ug/kg	
100-01-6	4-Nitroaniline	ND	290	15	ug/kg	
91-20-3	Naphthalene	762	58	16	ug/kg	
98-95-3	Nitrobenzene	ND	120	22	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	120	17	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	290	21	ug/kg	
85-01-8	Phenanthrene	340	58	20	ug/kg	
129-00-0	Pyrene	347	58	19	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	290	15	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	46%		23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-132(8-10)		
Lab Sample ID:	JC86553-25	**Date Sampled:**	04/17/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	56.1
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	46%		27-114%
118-79-6	2,4,6-Tribromophenol	77%		19-152%
4165-60-0	Nitrobenzene-d5	57%		26-134%
321-60-8	2-Fluorobiphenyl	68%		39-124%
1718-51-0	Terphenyl-d14	64%		36-134%

(a) Associated CCV outside of control limits high, sample was ND.
(b) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	S-133(2-4)		
Lab Sample ID:	JC86553-26	**Date Sampled:**	04/17/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8260C	**Percent Solids:**	83.7
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3C151412.D	1	04/25/19 04:57	PS	n/a	n/a	V3C6807
Run #2							

	Initial Weight
Run #1	4.4 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	447	13	6.7	ug/kg	
71-43-2	Benzene	ND	0.67	0.51	ug/kg	
74-97-5	Bromochloromethane	ND	6.7	0.58	ug/kg	
75-27-4	Bromodichloromethane	ND	2.7	0.60	ug/kg	
75-25-2	Bromoform	ND	6.7	0.54	ug/kg	
74-83-9	Bromomethane [a]	ND	6.7	1.3	ug/kg	UJ
78-93-3	2-Butanone (MEK)	40.3	13	5.0	ug/kg	
75-15-0	Carbon disulfide	9.5	2.7	1.2	ug/kg	
56-23-5	Carbon tetrachloride	ND	2.7	0.74	ug/kg	
108-90-7	Chlorobenzene	ND	2.7	0.48	ug/kg	
75-00-3	Chloroethane	ND	6.7	0.92	ug/kg	
67-66-3	Chloroform	ND	2.7	0.50	ug/kg	
74-87-3	Chloromethane	ND	6.7	2.6	ug/kg	
110-82-7	Cyclohexane	ND	2.7	0.55	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.7	1.1	ug/kg	
124-48-1	Dibromochloromethane	ND	2.7	0.45	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.3	0.44	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.3	0.41	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.3	0.48	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.3	0.46	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	6.7	0.85	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.3	0.52	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.3	0.63	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.3	0.88	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.3	1.3	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.3	0.90	ug/kg	
78-87-5	1,2-Dichloropropane	ND	2.7	0.55	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	2.7	0.47	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2.7	0.44	ug/kg	
100-41-4	Ethylbenzene	ND	1.3	0.74	ug/kg	
76-13-1	Freon 113	ND	6.7	1.0	ug/kg	
591-78-6	2-Hexanone	ND	6.7	1.7	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-133(2-4)		
Lab Sample ID:	JC86553-26	**Date Sampled:**	04/17/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8260C	**Percent Solids:**	83.7
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	2.7	0.94	ug/kg	
79-20-9	Methyl Acetate	ND	6.7	1.9	ug/kg	
108-87-2	Methylcyclohexane	ND	2.7	0.95	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.3	0.47	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	6.7	2.1	ug/kg	
75-09-2	Methylene chloride	ND	6.7	3.4	ug/kg	
100-42-5	Styrene	ND	2.7	0.77	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.7	0.52	ug/kg	
127-18-4	Tetrachloroethene	ND	2.7	0.62	ug/kg	
108-88-3	Toluene	ND	1.3	0.51	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	6.7	1.3	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	6.7	1.3	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	2.7	0.57	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2.7	0.46	ug/kg	
79-01-6	Trichloroethene	ND	1.3	1.0	ug/kg	
75-69-4	Trichlorofluoromethane	ND	6.7	0.92	ug/kg	
75-01-4	Vinyl chloride	ND	2.7	0.63	ug/kg	
	m,p-Xylene	ND	1.3	1.0	ug/kg	
95-47-6	o-Xylene	ND	1.3	0.78	ug/kg	
1330-20-7	Xylene (total)	ND	1.3	0.78	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	78%		75-127%
17060-07-0	1,2-Dichloroethane-D4	103%		75-130%
2037-26-5	Toluene-D8	106%		80-120%
460-00-4	4-Bromofluorobenzene	114%		79-127%

(a) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	S-133(2-4)		
Lab Sample ID:	JC86553-26	**Date Sampled:**	04/17/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	83.7
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M153652.D	1	04/21/19 09:41	CB	04/19/19 07:45	OP19854	EM6566
Run #2							

	Initial Weight	Final Volume
Run #1	30.4 g	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q	
95-57-8	2-Chlorophenol	ND	79	19	ug/kg		
59-50-7	4-Chloro-3-methyl phenol	ND	200	24	ug/kg		
120-83-2	2,4-Dichlorophenol	ND	200	34	ug/kg		
105-67-9	2,4-Dimethylphenol	ND	200	70	ug/kg		
51-28-5	2,4-Dinitrophenol	ND	200	150	ug/kg		
534-52-1	4,6-Dinitro-o-cresol [a]	ND	200	42	ug/kg		
95-48-7	2-Methylphenol	ND	79	25	ug/kg		
	3&4-Methylphenol	ND	79	32	ug/kg		
88-75-5	2-Nitrophenol	ND	200	26	ug/kg		
100-02-7	4-Nitrophenol	ND	390	100	ug/kg		
87-86-5	Pentachlorophenol [b]	447	160	37	ug/kg	J	
108-95-2	Phenol	ND	79	21	ug/kg		
58-90-2	2,3,4,6-Tetrachlorophenol	29.1	200	26	ug/kg	J	
95-95-4	2,4,5-Trichlorophenol	ND	200	29	ug/kg		
88-06-2	2,4,6-Trichlorophenol	ND	200	23	ug/kg		
83-32-9	Acenaphthene	84.3	39	14	ug/kg		
208-96-8	Acenaphthylene	351	39	20	ug/kg		
98-86-2	Acetophenone	ND	200	8.4	ug/kg		
120-12-7	Anthracene	661	39	24	ug/kg		
1912-24-9	Atrazine	ND	79	17	ug/kg		
56-55-3	Benzo(a)anthracene	1560	39	11	ug/kg		
50-32-8	Benzo(a)pyrene	1570	39	18	ug/kg		
205-99-2	Benzo(b)fluoranthene	2170	39	17	ug/kg		
191-24-2	Benzo(g,h,i)perylene	1150	39	20	ug/kg		
207-08-9	Benzo(k)fluoranthene	719	39	18	ug/kg		
101-55-3	4-Bromophenyl phenyl ether	ND	79	15	ug/kg		
85-68-7	Butyl benzyl phthalate	45.4	79	9.6	ug/kg	J	
92-52-4	1,1'-Biphenyl	33.4	79	5.4	ug/kg	~~JB~~	UB
100-52-7	Benzaldehyde	ND	200	9.7	ug/kg		
91-58-7	2-Chloronaphthalene	ND	79	9.4	ug/kg		
106-47-8	4-Chloroaniline	ND	200	14	ug/kg		
86-74-8	Carbazole	355	79	5.7	ug/kg	~~B~~	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-133(2-4)		
Lab Sample ID:	JC86553-26	**Date Sampled:**	04/17/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	83.7
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	79	16	ug/kg	
218-01-9	Chrysene	1580	39	12	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	79	8.4	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	79	17	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	79	14	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	79	13	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	39	12	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	39	20	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	79	33	ug/kg	
123-91-1	1,4-Dioxane [c]	ND	39	26	ug/kg	UJ
53-70-3	Dibenzo(a,h)anthracene	289	39	17	ug/kg	
132-64-9	Dibenzofuran	278	79	16	ug/kg	
84-74-2	Di-n-butyl phthalate	98.2	79	6.4	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	79	9.8	ug/kg	
84-66-2	Diethyl phthalate	ND	79	8.4	ug/kg	
131-11-3	Dimethyl phthalate	ND	79	7.0	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	396	79	9.2	ug/kg	
206-44-0	Fluoranthene	3520	39	18	ug/kg	
86-73-7	Fluorene	328	39	18	ug/kg	
118-74-1	Hexachlorobenzene	ND	79	9.9	ug/kg	
87-68-3	Hexachlorobutadiene	ND	39	16	ug/kg	
77-47-4	Hexachlorocyclopentadiene [a]	ND	390	16	ug/kg	
67-72-1	Hexachloroethane	ND	200	19	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	1130	39	18	ug/kg	
78-59-1	Isophorone	ND	79	8.4	ug/kg	
91-57-6	2-Methylnaphthalene	74.5	39	8.9	ug/kg	
88-74-4	2-Nitroaniline	ND	200	9.3	ug/kg	
99-09-2	3-Nitroaniline	ND	200	9.8	ug/kg	
100-01-6	4-Nitroaniline	ND	200	10	ug/kg	
91-20-3	Naphthalene	157	39	11	ug/kg	
98-95-3	Nitrobenzene	ND	79	15	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	79	11	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	200	14	ug/kg	
85-01-8	Phenanthrene	3260	39	13	ug/kg	
129-00-0	Pyrene	2850	39	13	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	200	10	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	21% [d]		23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-133(2-4)		
Lab Sample ID:	JC86553-26	**Date Sampled:**	04/17/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	83.7
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	27%		27-114%
118-79-6	2,4,6-Tribromophenol	22%		19-152%
4165-60-0	Nitrobenzene-d5	37%		26-134%
321-60-8	2-Fluorobiphenyl	41%		39-124%
1718-51-0	Terphenyl-d14	40%		36-134%

(a) Associated CCV outside of control limits high, sample was ND.
(b) Associated CCV outside of control limits high.
(c) Associated CCV outside of control limits low.
(d) Outside control limits due to matrix interference.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	S-133(7-9)		
Lab Sample ID:	JC86553-27	**Date Sampled:**	04/17/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8260C	**Percent Solids:**	92.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3C151353.D	1	04/23/19 20:16	PS	n/a	n/a	V3C6805
Run #2							

	Initial Weight
Run #1	3.1 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	173	17	8.7	ug/kg	
71-43-2	Benzene	8.8	0.87	0.66	ug/kg	
74-97-5	Bromochloromethane	ND	8.7	0.75	ug/kg	
75-27-4	Bromodichloromethane	ND	3.5	0.77	ug/kg	
75-25-2	Bromoform	ND	8.7	0.70	ug/kg	
74-83-9	Bromomethane	ND	8.7	1.7	ug/kg	
78-93-3	2-Butanone (MEK)	30.4	17	6.5	ug/kg	
75-15-0	Carbon disulfide	6.3	3.5	1.6	ug/kg	
56-23-5	Carbon tetrachloride	ND	3.5	0.96	ug/kg	
108-90-7	Chlorobenzene	ND	3.5	0.62	ug/kg	
75-00-3	Chloroethane	ND	8.7	1.2	ug/kg	
67-66-3	Chloroform	ND	3.5	0.65	ug/kg	
74-87-3	Chloromethane	ND	8.7	3.4	ug/kg	
110-82-7	Cyclohexane	ND	3.5	0.71	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	3.5	1.5	ug/kg	
124-48-1	Dibromochloromethane	ND	3.5	0.59	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.7	0.57	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.7	0.53	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.7	0.63	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.7	0.60	ug/kg	
75-71-8	Dichlorodifluoromethane [a]	ND	8.7	1.1	ug/kg	UJ
75-34-3	1,1-Dichloroethane	ND	1.7	0.67	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.7	0.82	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.7	1.1	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.7	1.7	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.7	1.2	ug/kg	
78-87-5	1,2-Dichloropropane	ND	3.5	0.71	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	3.5	0.62	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	3.5	0.57	ug/kg	
100-41-4	Ethylbenzene	ND	1.7	0.97	ug/kg	
76-13-1	Freon 113	ND	8.7	1.3	ug/kg	
591-78-6	2-Hexanone	ND	8.7	2.2	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-133(7-9)		
Lab Sample ID:	JC86553-27	**Date Sampled:**	04/17/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8260C	**Percent Solids:**	92.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	3.5	1.2	ug/kg	
79-20-9	Methyl Acetate	3.9	8.7	2.4	ug/kg	J
108-87-2	Methylcyclohexane	ND	3.5	1.2	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.7	0.62	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	8.7	2.7	ug/kg	
75-09-2	Methylene chloride	ND	8.7	4.4	ug/kg	
100-42-5	Styrene	ND	3.5	1.0	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	3.5	0.68	ug/kg	
127-18-4	Tetrachloroethene	ND	3.5	0.81	ug/kg	
108-88-3	Toluene	1.0	1.7	0.66	ug/kg	J
87-61-6	1,2,3-Trichlorobenzene	ND	8.7	1.7	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	8.7	1.7	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	3.5	0.75	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	3.5	0.60	ug/kg	
79-01-6	Trichloroethene	ND	1.7	1.3	ug/kg	
75-69-4	Trichlorofluoromethane [a]	ND	8.7	1.2	ug/kg	UJ
75-01-4	Vinyl chloride	ND	3.5	0.82	ug/kg	
	m,p-Xylene	ND	1.7	1.3	ug/kg	
95-47-6	o-Xylene	ND	1.7	1.0	ug/kg	
1330-20-7	Xylene (total)	ND	1.7	1.0	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	107%		75-127%
17060-07-0	1,2-Dichloroethane-D4	112%		75-130%
2037-26-5	Toluene-D8	105%		80-120%
460-00-4	4-Bromofluorobenzene	115%		79-127%

(a) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID: S-133(7-9)
Lab Sample ID: JC86553-27
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/17/19
Date Received: 04/17/19
Percent Solids: 92.2

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M153644.D	1	04/21/19 05:55	CB	04/19/19 07:45	OP19854	EM6566
Run #2							

	Initial Weight	Final Volume
Run #1	30.6 g	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	71	18	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	180	22	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	180	30	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	180	63	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	180	130	ug/kg	
534-52-1	4,6-Dinitro-o-cresol [a]	ND	180	38	ug/kg	
95-48-7	2-Methylphenol	ND	71	23	ug/kg	
	3&4-Methylphenol	ND	71	29	ug/kg	
88-75-5	2-Nitrophenol	ND	180	23	ug/kg	
100-02-7	4-Nitrophenol	ND	350	95	ug/kg	
87-86-5	Pentachlorophenol [a]	ND	140	33	ug/kg	
108-95-2	Phenol	23.2	71	19	ug/kg	J
58-90-2	2,3,4,6-Tetrachlorophenol	ND	180	23	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	180	27	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	180	21	ug/kg	
83-32-9	Acenaphthene	758	35	12	ug/kg	
208-96-8	Acenaphthylene	55.1	35	18	ug/kg	
98-86-2	Acetophenone	ND	180	7.6	ug/kg	
120-12-7	Anthracene	139	35	22	ug/kg	
1912-24-9	Atrazine	ND	71	15	ug/kg	
56-55-3	Benzo(a)anthracene	87.3	35	10	ug/kg	
50-32-8	Benzo(a)pyrene	72.4	35	16	ug/kg	
205-99-2	Benzo(b)fluoranthene	95.5	35	16	ug/kg	
191-24-2	Benzo(g,h,i)perylene	36.7	35	18	ug/kg	
207-08-9	Benzo(k)fluoranthene	36.0	35	17	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	71	14	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	71	8.6	ug/kg	
92-52-4	1,1'-Biphenyl 71	~~44.6~~	71	4.9	ug/kg	~~JB~~ UB
100-52-7	Benzaldehyde	ND	180	8.8	ug/kg	
91-58-7	2-Chloronaphthalene	ND	71	8.4	ug/kg	
106-47-8	4-Chloroaniline	ND	180	13	ug/kg	
86-74-8	Carbazole	ND	71	5.1	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-133(7-9)		
Lab Sample ID:	JC86553-27	**Date Sampled:**	04/17/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	92.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	71	14	ug/kg	
218-01-9	Chrysene	99.7	35	11	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	71	7.6	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	71	15	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	71	13	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	71	11	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	35	11	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	35	18	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	71	30	ug/kg	
123-91-1	1,4-Dioxane [b]	ND	35	23	ug/kg	UJ
53-70-3	Dibenzo(a,h)anthracene	ND	35	16	ug/kg	
132-64-9	Dibenzofuran	103	71	14	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	71	5.8	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	71	8.8	ug/kg	
84-66-2	Diethyl phthalate	ND	71	7.5	ug/kg	
131-11-3	Dimethyl phthalate	ND	71	6.3	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	71	8.3	ug/kg	
206-44-0	Fluoranthene	289	35	16	ug/kg	
86-73-7	Fluorene	465	35	16	ug/kg	
118-74-1	Hexachlorobenzene	ND	71	9.0	ug/kg	
87-68-3	Hexachlorobutadiene	ND	35	14	ug/kg	
77-47-4	Hexachlorocyclopentadiene [a]	ND	350	14	ug/kg	
67-72-1	Hexachloroethane	ND	180	18	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	51.6	35	17	ug/kg	
78-59-1	Isophorone	ND	71	7.6	ug/kg	
91-57-6	2-Methylnaphthalene	77.1	35	8.0	ug/kg	
88-74-4	2-Nitroaniline	ND	180	8.4	ug/kg	
99-09-2	3-Nitroaniline	ND	180	8.9	ug/kg	
100-01-6	4-Nitroaniline	ND	180	9.2	ug/kg	
91-20-3	Naphthalene	1260	35	10	ug/kg	
98-95-3	Nitrobenzene	ND	71	14	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	71	10	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	180	13	ug/kg	
85-01-8	Phenanthrene	173	35	12	ug/kg	
129-00-0	Pyrene	296	35	11	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	180	9.0	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	46%		23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-133(7-9)		
Lab Sample ID:	JC86553-27	**Date Sampled:**	04/17/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	92.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	45%		27-114%
118-79-6	2,4,6-Tribromophenol	90%		19-152%
4165-60-0	Nitrobenzene-d5	59%		26-134%
321-60-8	2-Fluorobiphenyl	68%		39-124%
1718-51-0	Terphenyl-d14	50%		36-134%

(a) Associated CCV outside of control limits high, sample was ND.
(b) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	S-133(13-15)		
Lab Sample ID:	JC86553-28	**Date Sampled:**	04/17/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8260C	**Percent Solids:**	64.8
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Y184764.D	1	04/26/19 12:50	EH	n/a	n/a	VY8016
Run #2							

	Initial Weight
Run #1	5.2 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	64.8	15	7.4	ug/kg	
71-43-2	Benzene	ND	0.74	0.56	ug/kg	
74-97-5	Bromochloromethane	ND	7.4	0.64	ug/kg	
75-27-4	Bromodichloromethane	ND	3.0	0.66	ug/kg	
75-25-2	Bromoform	ND	7.4	0.60	ug/kg	
74-83-9	Bromomethane	ND	7.4	1.5	ug/kg	
78-93-3	2-Butanone (MEK)	10.4	15	5.5	ug/kg	J
75-15-0	Carbon disulfide	ND	3.0	1.4	ug/kg	
56-23-5	Carbon tetrachloride	ND	3.0	0.82	ug/kg	
108-90-7	Chlorobenzene	ND	3.0	0.53	ug/kg	
75-00-3	Chloroethane	ND	7.4	1.0	ug/kg	
67-66-3	Chloroform	ND	3.0	0.55	ug/kg	
74-87-3	Chloromethane	ND	7.4	2.9	ug/kg	
110-82-7	Cyclohexane	ND	3.0	0.60	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	3.0	1.2	ug/kg	
124-48-1	Dibromochloromethane	ND	3.0	0.50	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.5	0.48	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.5	0.45	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.5	0.53	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.5	0.51	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	7.4	0.94	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.5	0.57	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.5	0.70	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.5	0.97	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.5	1.4	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.5	0.99	ug/kg	
78-87-5	1,2-Dichloropropane	ND	3.0	0.60	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	3.0	0.52	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	3.0	0.49	ug/kg	
100-41-4	Ethylbenzene	ND	1.5	0.82	ug/kg	
76-13-1	Freon 113 [a]	ND	7.4	1.1	ug/kg	
591-78-6	2-Hexanone	ND	7.4	1.9	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-133(13-15)		
Lab Sample ID:	JC86553-28	**Date Sampled:**	04/17/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8260C	**Percent Solids:**	64.8
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	1.0	3.0	1.0	ug/kg	J
79-20-9	Methyl Acetate	ND	7.4	2.1	ug/kg	
108-87-2	Methylcyclohexane	1.9	3.0	1.0	ug/kg	J
1634-04-4	Methyl Tert Butyl Ether	ND	1.5	0.52	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	7.4	2.3	ug/kg	
75-09-2	Methylene chloride	ND	7.4	3.7	ug/kg	
100-42-5	Styrene	ND	3.0	0.85	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane [b]	ND	3.0	0.58	ug/kg	UJ
127-18-4	Tetrachloroethene	ND	3.0	0.69	ug/kg	
108-88-3	Toluene	ND	1.5	0.56	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	7.4	1.5	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	7.4	1.5	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	3.0	0.63	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	3.0	0.51	ug/kg	
79-01-6	Trichloroethene	ND	1.5	1.1	ug/kg	
75-69-4	Trichlorofluoromethane	ND	7.4	1.0	ug/kg	
75-01-4	Vinyl chloride	ND	3.0	0.70	ug/kg	
	m,p-Xylene	ND	1.5	1.1	ug/kg	
95-47-6	o-Xylene	ND	1.5	0.87	ug/kg	
1330-20-7	Xylene (total)	ND	1.5	0.87	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	115%		75-127%
17060-07-0	1,2-Dichloroethane-D4	97%		75-130%
2037-26-5	Toluene-D8	89%		80-120%
460-00-4	4-Bromofluorobenzene	97%		79-127%

(a) Associated CCV outside of control limits high, sample was ND.
(b) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS LabLink@1039014 11:14 10-May-2019

Report of Analysis

Client Sample ID:	S-133(13-15)		
Lab Sample ID:	JC86553-28	**Date Sampled:**	04/17/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	64.8
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M153648.D	1	04/21/19 07:48	CB	04/19/19 07:45	OP19854	EM6566
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	100	25	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	260	31	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	260	44	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	260	91	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	260	190	ug/kg	
534-52-1	4,6-Dinitro-o-cresol [a]	ND	260	55	ug/kg	
95-48-7	2-Methylphenol	ND	100	33	ug/kg	
	3&4-Methylphenol	121	100	42	ug/kg	
88-75-5	2-Nitrophenol	ND	260	34	ug/kg	
100-02-7	4-Nitrophenol	ND	510	140	ug/kg	
87-86-5	Pentachlorophenol [a]	ND	210	48	ug/kg	
108-95-2	Phenol	ND	100	27	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	260	34	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	260	38	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	260	31	ug/kg	
83-32-9	Acenaphthene	461	51	18	ug/kg	
208-96-8	Acenaphthylene	234	51	26	ug/kg	
98-86-2	Acetophenone	11.8	260	11	ug/kg	J
120-12-7	Anthracene	390	51	31	ug/kg	
1912-24-9	Atrazine	ND	100	22	ug/kg	
56-55-3	Benzo(a)anthracene	807	51	15	ug/kg	
50-32-8	Benzo(a)pyrene	1060	51	23	ug/kg	
205-99-2	Benzo(b)fluoranthene	1050	51	23	ug/kg	
191-24-2	Benzo(g,h,i)perylene	616	51	26	ug/kg	
207-08-9	Benzo(k)fluoranthene	376	51	24	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	100	20	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	100	13	ug/kg	
92-52-4	1,1'-Biphenyl 100	53.7	100	7.0	ug/kg	JB UB
100-52-7	Benzaldehyde	ND	260	13	ug/kg	
91-58-7	2-Chloronaphthalene	ND	100	12	ug/kg	
106-47-8	4-Chloroaniline	ND	260	18	ug/kg	
86-74-8	Carbazole	57.1	100	7.4	ug/kg	JB

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-133(13-15)
Lab Sample ID: JC86553-28
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/17/19
Date Received: 04/17/19
Percent Solids: 64.8

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	100	20	ug/kg	
218-01-9	Chrysene	931	51	16	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	100	11	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	100	22	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	100	18	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	100	17	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	51	16	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	51	26	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	100	43	ug/kg	
123-91-1	1,4-Dioxane [b]	ND	51	34	ug/kg	UJ
53-70-3	Dibenzo(a,h)anthracene	163	51	23	ug/kg	
132-64-9	Dibenzofuran	94.3	100	21	ug/kg	J
84-74-2	Di-n-butyl phthalate	ND	100	8.4	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	100	13	ug/kg	
84-66-2	Diethyl phthalate	ND	100	11	ug/kg	
131-11-3	Dimethyl phthalate	ND	100	9.1	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	100	12	ug/kg	
206-44-0	Fluoranthene	1270	51	23	ug/kg	
86-73-7	Fluorene	293	51	24	ug/kg	
118-74-1	Hexachlorobenzene	ND	100	13	ug/kg	
87-68-3	Hexachlorobutadiene	ND	51	21	ug/kg	
77-47-4	Hexachlorocyclopentadiene [a]	ND	510	20	ug/kg	
67-72-1	Hexachloroethane	ND	260	25	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	580	51	24	ug/kg	
78-59-1	Isophorone	ND	100	11	ug/kg	
91-57-6	2-Methylnaphthalene	253	51	12	ug/kg	
88-74-4	2-Nitroaniline	ND	260	12	ug/kg	
99-09-2	3-Nitroaniline	ND	260	13	ug/kg	
100-01-6	4-Nitroaniline	ND	260	13	ug/kg	
91-20-3	Naphthalene	752	51	14	ug/kg	
98-95-3	Nitrobenzene	ND	100	20	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	100	15	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	260	19	ug/kg	
85-01-8	Phenanthrene	916	51	17	ug/kg	
129-00-0	Pyrene	1400	51	16	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	260	13	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	43%		23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-133(13-15)		
Lab Sample ID:	JC86553-28	**Date Sampled:**	04/17/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	64.8
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	44%		27-114%
118-79-6	2,4,6-Tribromophenol	75%		19-152%
4165-60-0	Nitrobenzene-d5	56%		26-134%
321-60-8	2-Fluorobiphenyl	65%		39-124%
1718-51-0	Terphenyl-d14	60%		36-134%

(a) Associated CCV outside of control limits high, sample was ND.
(b) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-116(4-6)
Lab Sample ID: JC86553-1
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/16/19
Date Received: 04/17/19
Percent Solids: 81.5

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	1310 J	65	10	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [3]
Antimony	0.68 J	2.6	0.53	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [3]
Arsenic	12.1	2.6	0.36	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [3]
Barium	55.0	26	2.5	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [3]
Beryllium	0.52	0.26	0.10	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [3]
Cadmium	0.70	0.65	0.090	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [3]
Calcium	1110 J	650	57	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [3]
Chromium	13.8 J	1.3	0.48	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [3]
Cobalt	3.0 J	6.5	0.36	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [3]
Copper	110	3.2	1.1	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [3]
Iron	19000	65	25	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [3]
Lead	69.0	2.6	0.53	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [3]
Magnesium	202 J	650	18	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [3]
Manganese	253 J	1.9	0.53	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [3]
Mercury	0.26	0.040	0.017	mg/kg	1	04/19/19	04/19/19	LL	SW846 7471B [1]	SW846 7471B [4]
Nickel	15.9	5.2	0.45	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [3]
Potassium	201 J	1300	41	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [3]
Selenium	2.1 J	2.6	0.84	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [3]
Silver	0.22 U	0.65	0.22	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [3]
Sodium	100 U	1300	100	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [3]
Thallium	0.75 U	1.3	0.75	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [3]
Vanadium	9.2	6.5	0.25	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [3]
Zinc	216 J	6.5	3.0	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [3]

(1) Instrument QC Batch: MA46538
(2) Instrument QC Batch: MA46556
(3) Prep QC Batch: MP14348
(4) Prep QC Batch: MP14381

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	S-116(4-6)		
Lab Sample ID:	JC86553-1	**Date Sampled:**	04/16/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
		Percent Solids:	81.5
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	2.5	0.26	0.13	mg/kg	1	04/25/19 15:04	KI	SW846 9012B/LACHAT
Solids, Percent	81.5			%	1	04/24/19 16:15	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: S-115(4-6)
Lab Sample ID: JC86553-2
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/16/19
Date Received: 04/17/19
Percent Solids: 81.6

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	2250 J	64	10	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Antimony	1.1 J	2.6	0.52	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Arsenic [a]	21.6	5.1	0.71	mg/kg	2	04/19/19	04/23/19	ND	SW846 6010D [3]	SW846 3050B [4]
Barium	72.1	26	2.4	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Beryllium	0.61	0.26	0.10	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cadmium [a]	0.50 J	1.3	0.18	mg/kg	2	04/19/19	04/23/19	ND	SW846 6010D [3]	SW846 3050B [4]
Calcium	1770 J	640	56	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Chromium	90.2 J	1.3	0.47	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cobalt	4.4 J	6.4	0.36	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Copper [a]	135	6.4	2.1	mg/kg	2	04/19/19	04/23/19	ND	SW846 6010D [3]	SW846 3050B [4]
Iron	32200	130	49	mg/kg	2	04/19/19	04/23/19	ND	SW846 6010D [3]	SW846 3050B [4]
Lead [a]	162	5.1	1.0	mg/kg	2	04/19/19	04/23/19	ND	SW846 6010D [3]	SW846 3050B [4]
Magnesium	464 J	640	17	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Manganese [a]	211 J	3.8	1.0	mg/kg	2	04/19/19	04/23/19	ND	SW846 6010D [3]	SW846 3050B [4]
Mercury	0.22 J	0.040	0.018	mg/kg	1	04/19/19	04/19/19	LL	SW846 7471B [1]	SW846 7471B [5]
Nickel	24.0	5.1	0.45	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Potassium	290 J	1300	41	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Selenium [a]	1.7 U	5.1	1.7	mg/kg	2	04/19/19	04/23/19	ND	SW846 6010D [3]	SW846 3050B [4]
Silver [a]	0.43 U	1.3	0.43	mg/kg	2	04/19/19	04/23/19	ND	SW846 6010D [3]	SW846 3050B [4]
Sodium	99 U	1300	99	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Thallium [a]	1.5 U	2.6	1.5	mg/kg	2	04/19/19	04/23/19	ND	SW846 6010D [3]	SW846 3050B [4]
Vanadium	11.1	6.4	0.24	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]
Zinc	183 J	6.4	2.9	mg/kg	1	04/19/19	04/22/19	ND	SW846 6010D [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA46538
(2) Instrument QC Batch: MA46556
(3) Instrument QC Batch: MA46568
(4) Prep QC Batch: MP14348
(5) Prep QC Batch: MP14381

(a) Elevated detection limit due to dilution required for high interfering element.

RL = Reporting Limit
MDL = Method Detection Limit
U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	S-115(4-6)		
Lab Sample ID:	JC86553-2	**Date Sampled:**	04/16/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
		Percent Solids:	81.6
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result		RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	18.3	J	0.31	0.15	mg/kg	1	04/23/19 14:38	KI	SW846 9012B/LACHAT
Solids, Percent	81.6				%	1	04/26/19 15:30	JMP	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: SO-DUP-0416
Lab Sample ID: JC86553-3
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/16/19
Date Received: 04/17/19
Percent Solids: 81.4

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	1750 J	63	10	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Antimony	1.3 J	2.5	0.51	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Arsenic [a]	16.8	5.0	0.70	mg/kg	2	04/19/19	04/23/19	ND	SW846 6010D [3]	SW846 3050B [4]
Barium	49.4	25	2.4	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Beryllium	0.45	0.25	0.10	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cadmium	0.39 J	0.63	0.088	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Calcium	3880 J	630	55	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Chromium	25.4 J	1.3	0.46	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cobalt	3.7 J	6.3	0.35	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Copper [a]	98.5	6.3	2.1	mg/kg	2	04/19/19	04/23/19	ND	SW846 6010D [3]	SW846 3050B [4]
Iron	25900	130	48	mg/kg	2	04/19/19	04/23/19	ND	SW846 6010D [3]	SW846 3050B [4]
Lead [a]	108	5.0	1.0	mg/kg	2	04/19/19	04/23/19	ND	SW846 6010D [3]	SW846 3050B [4]
Magnesium	1820	630	17	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Manganese [a]	280 J	3.8	1.0	mg/kg	2	04/19/19	04/23/19	ND	SW846 6010D [3]	SW846 3050B [4]
Mercury	0.14 J	0.040	0.017	mg/kg	1	04/19/19	04/19/19	LL	SW846 7471B [1]	SW846 7471B [5]
Nickel	19.2	5.0	0.44	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Potassium	255 J	1300	40	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Selenium [a]	1.6 U	5.0	1.6	mg/kg	2	04/19/19	04/23/19	ND	SW846 6010D [3]	SW846 3050B [4]
Silver [a]	0.43 U	1.3	0.43	mg/kg	2	04/19/19	04/23/19	ND	SW846 6010D [3]	SW846 3050B [4]
Sodium	98 U	1300	98	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Thallium [a]	1.5 U	2.5	1.5	mg/kg	2	04/19/19	04/23/19	ND	SW846 6010D [3]	SW846 3050B [4]
Vanadium	10.4	6.3	0.24	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Zinc	115 J	6.3	2.9	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA46538
(2) Instrument QC Batch: MA46556
(3) Instrument QC Batch: MA46568
(4) Prep QC Batch: MP14348
(5) Prep QC Batch: MP14381

(a) Elevated detection limit due to dilution required for high interfering element.

RL = Reporting Limit
MDL = Method Detection Limit
U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	SO-DUP-0416		
Lab Sample ID:	JC86553-3	**Date Sampled:**	04/16/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
		Percent Solids:	81.4
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result		RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	21.2	J	0.29	0.15	mg/kg	1	04/23/19 14:39	KI	SW846 9012B/LACHAT
Solids, Percent	81.4				%	1	04/26/19 15:30	JMP	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: S-117(4-6)
Lab Sample ID: JC86553-4
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/16/19
Date Received: 04/17/19
Percent Solids: 80.3

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	1310 J	62	10	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Antimony	1.2 J	2.5	0.51	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Arsenic	12.6	2.5	0.35	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Barium	81.5	25	2.4	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Beryllium	0.41	0.25	0.10	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Cadmium	0.49 J	0.62	0.087	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Calcium	1420 J	620	55	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Chromium	18.1 J	1.2	0.46	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Cobalt	3.0 J	6.2	0.35	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Copper	312	3.1	1.0	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Iron	22900	62	24	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Lead	134	2.5	0.51	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Magnesium	561 J	620	17	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Manganese	193 J	1.9	0.51	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Mercury	0.19 J	0.039	0.017	mg/kg	1	04/19/19	04/19/19	LL	SW846 7471B [1]	SW846 7471B [4]
Nickel	17.1	5.0	0.44	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Potassium	226 J	1200	40	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Selenium	1.7 J	2.5	0.81	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Silver	0.21 U	0.62	0.21	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Sodium	142 J	1200	97	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Thallium	0.72 U	1.2	0.72	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Vanadium	9.4	6.2	0.24	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Zinc	169 J	6.2	2.9	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]

(1) Instrument QC Batch: MA46538
(2) Instrument QC Batch: MA46556
(3) Prep QC Batch: MP14348
(4) Prep QC Batch: MP14381

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	S-117(4-6)		
Lab Sample ID:	JC86553-4	**Date Sampled:**	04/16/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
		Percent Solids:	80.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result		RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	13.2	J	0.30	0.15	mg/kg	1	04/23/19 14:40	KI	SW846 9012B/LACHAT
Solids, Percent	80.3				%	1	04/26/19 15:30	JMP	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: TP-15R(5-7)
Lab Sample ID: JC86553-5
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/16/19
Date Received: 04/17/19
Percent Solids: 81.2

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	1680 J	64	10	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Antimony	1.6 J	2.6	0.53	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Arsenic	17.0	2.6	0.36	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Barium	62.0	26	2.4	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Beryllium	0.73	0.26	0.10	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cadmium	0.83	0.64	0.090	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Calcium	5490 J	640	57	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Chromium	16.4 J	1.3	0.47	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cobalt	3.5 J	6.4	0.36	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Copper	598	3.2	1.1	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Iron	20000	64	25	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Lead	257	2.6	0.53	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Magnesium	2510	640	18	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Manganese	213 J	1.9	0.53	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Mercury	2.1 J	0.19	0.083	mg/kg	5	04/19/19	04/19/19	LL	SW846 7471B [1]	SW846 7471B [5]
Nickel	25.5	5.1	0.45	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Potassium	260 J	1300	41	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Selenium	2.6	2.6	0.83	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Silver	0.22 U	0.64	0.22	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Sodium	144 J	1300	100	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Thallium	0.74 U	1.3	0.74	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Vanadium	10.9	6.4	0.24	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Zinc	1210 J	13	5.9	mg/kg	2	04/19/19	04/30/19	ND	SW846 6010D [3]	SW846 3050B [4]

(1) Instrument QC Batch: MA46538
(2) Instrument QC Batch: MA46556
(3) Instrument QC Batch: MA46611
(4) Prep QC Batch: MP14348
(5) Prep QC Batch: MP14381

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: TP-15R(5-7)
Lab Sample ID: JC86553-5
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/16/19
Date Received: 04/17/19
Percent Solids: 81.2

General Chemistry

Analyte	Result		RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	7.0	J	0.27	0.14	mg/kg	1	04/23/19 14:42	KI	SW846 9012B/LACHAT
Solids, Percent	81.2				%	1	04/26/19 15:00	JMP	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: TP-15R(16.5-12.5)
Lab Sample ID: JC86553-6
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/16/19
Date Received: 04/17/19
Percent Solids: 74.5

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	5060 J	68	11	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Antimony	0.56 U J	2.7	0.56	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Arsenic	7.0	2.7	0.38	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Barium	34.3	27	2.6	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Beryllium	0.41	0.27	0.11	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Cadmium	0.12 J	0.68	0.095	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Calcium	506 J	680	60	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Chromium	14.2 J	1.4	0.50	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Cobalt	5.8 J	6.8	0.38	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Copper	21.1	3.4	1.1	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Iron	12500	68	26	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Lead	50.9	2.7	0.56	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Magnesium	1660	680	19	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Manganese	184 J	2.0	0.56	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Mercury	0.096 J	0.041	0.018	mg/kg	1	04/19/19	04/19/19	LL	SW846 7471B [1]	SW846 7471B [4]
Nickel	11.4	5.4	0.47	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Potassium	626 J	1400	43	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Selenium	0.88 U	2.7	0.88	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Silver	0.23 U	0.68	0.23	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Sodium	110 U	1400	110	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Thallium	0.79 U	1.4	0.79	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Vanadium	7.1	6.8	0.26	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Zinc	104 J	6.8	3.1	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]

(1) Instrument QC Batch: MA46538
(2) Instrument QC Batch: MA46556
(3) Prep QC Batch: MP14348
(4) Prep QC Batch: MP14381

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: TP-15R(16.5-12.5)
Lab Sample ID: JC86553-6
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/16/19
Date Received: 04/17/19
Percent Solids: 74.5

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	0.14 U J	0.29	0.14	mg/kg	1	04/23/19 14:43	KI	SW846 9012B/LACHAT
Solids, Percent	74.5			%	1	04/26/19 15:00	JMP	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: S-118(4-6)
Lab Sample ID: JC86553-7
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/16/19
Date Received: 04/17/19
Percent Solids: 87.3

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	4680 J	56	9.0	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Antimony	0.56 J	2.2	0.46	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Arsenic	5.7	2.2	0.31	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Barium	38.8	22	2.1	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Beryllium	0.40	0.22	0.089	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Cadmium	0.23 J	0.56	0.078	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Calcium	2590 J	560	49	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Chromium	24.4 J	1.1	0.41	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Cobalt	3.7 J	5.6	0.31	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Copper	37.1	2.8	0.93	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Iron	10500	56	21	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Lead	65.2	2.2	0.46	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Magnesium	1510	560	15	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Manganese	83.6 J	1.7	0.46	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Mercury	0.49 J	0.034	0.015	mg/kg	1	04/19/19	04/19/19	LL	SW846 7471B [1]	SW846 7471B [4]
Nickel	12.3	4.4	0.39	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Potassium	565 J	1100	35	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Selenium	0.72 U	2.2	0.72	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Silver	0.19 U	0.56	0.19	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Sodium	87 U	1100	87	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Thallium	0.65 U	1.1	0.65	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Vanadium	13.6	5.6	0.21	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Zinc	86.5 J	5.6	2.6	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]

(1) Instrument QC Batch: MA46538
(2) Instrument QC Batch: MA46568
(3) Prep QC Batch: MP14348
(4) Prep QC Batch: MP14381

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	S-118(4-6)		
Lab Sample ID:	JC86553-7	**Date Sampled:**	04/16/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
		Percent Solids:	87.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result		RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	18.3	J	0.27	0.14	mg/kg	1	04/23/19 14:47	KI	SW846 9012B/LACHAT
Solids, Percent	87.3				%	1	04/26/19 15:00	JMP	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: PCTP-49R(8-10)
Lab Sample ID: JC86553-8
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/16/19
Date Received: 04/17/19
Percent Solids: 79.6

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	5030 J	60	9.6	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Antimony	0.49 U J	2.4	0.49	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Arsenic	5.6	2.4	0.34	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Barium	37.7	24	2.3	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Beryllium	0.39	0.24	0.096	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Cadmium	0.18 J	0.60	0.084	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Calcium	1030 J	600	53	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Chromium	15.2 J	1.2	0.44	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Cobalt	5.4 J	6.0	0.34	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Copper	14.4	3.0	1.0	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Iron	12000	60	23	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Lead	32.4	2.4	0.49	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Magnesium	1640	600	16	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Manganese	258 J	1.8	0.49	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Mercury	0.12 J	0.038	0.017	mg/kg	1	04/19/19	04/19/19	LL	SW846 7471B [1]	SW846 7471B [4]
Nickel	10.2	4.8	0.42	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Potassium	724 J	1200	38	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Selenium	0.78 U	2.4	0.78	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Silver	0.20 U	0.60	0.20	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Sodium	93 U	1200	93	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Thallium	0.69 U	1.2	0.69	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Vanadium	7.8	6.0	0.23	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Zinc	82.5 J	6.0	2.8	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]

(1) Instrument QC Batch: MA46538
(2) Instrument QC Batch: MA46556
(3) Prep QC Batch: MP14348
(4) Prep QC Batch: MP14381

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: PCTP-49R(8-10)
Lab Sample ID: JC86553-8
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/16/19
Date Received: 04/17/19
Percent Solids: 79.6

General Chemistry

Analyte	Result		RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	0.13 U	J	0.27	0.13	mg/kg	1	04/23/19 14:49	KI	SW846 9012B/LACHAT
Solids, Percent	79.6				%	1	04/26/19 15:00	JMP	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: PCTP-49R(10-11)
Lab Sample ID: JC86553-9
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/16/19
Date Received: 04/17/19
Percent Solids: 62.8

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	10000 J	80	13	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Antimony	0.66 U J	3.2	0.66	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Arsenic	24.6	3.2	0.45	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Barium	118	32	3.1	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Beryllium	0.72	0.32	0.13	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Cadmium	1.2	0.80	0.11	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Calcium	3320 J	800	71	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Chromium	71.6 J	1.6	0.60	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Cobalt	11.2	8.0	0.45	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Copper	62.3	4.0	1.4	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Iron	21300	80	31	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Lead	139	3.2	0.66	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Magnesium	3000	800	22	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Manganese	563 J	2.4	0.66	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Mercury	1.2 J	0.052	0.023	mg/kg	1	04/19/19	04/19/19	LL	SW846 7471B [1]	SW846 7471B [4]
Nickel	20.0	6.4	0.56	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Potassium	1330 J	1600	51	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Selenium	1.2 J	3.2	1.0	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Silver	0.47 J	0.80	0.27	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Sodium	442 J	1600	130	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Thallium	0.93 U	1.6	0.93	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Vanadium	19.3	8.0	0.31	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Zinc	365 J	8.0	3.7	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]

(1) Instrument QC Batch: MA46538
(2) Instrument QC Batch: MA46556
(3) Prep QC Batch: MP14348
(4) Prep QC Batch: MP14381

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: PCTP-49R(10-11)
Lab Sample ID: JC86553-9
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/16/19
Date Received: 04/17/19
Percent Solids: 62.8

General Chemistry

Analyte	Result		RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	0.52	J	0.34	0.17	mg/kg	1	04/23/19 14:50	KI	SW846 9012B/LACHAT
Solids, Percent	62.8				%	1	04/24/19 16:15	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: PSSTP-10R(1-2)
Lab Sample ID: JC86553-10
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/16/19
Date Received: 04/17/19
Percent Solids: 88.2

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	5430 J	58	9.3	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [3]	SW846 3050B [4]
Antimony	0.56 J	2.3	0.47	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Arsenic	7.9	2.3	0.32	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Barium	42.5	23	2.2	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Beryllium	0.40	0.23	0.093	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cadmium	0.32 J	0.58	0.081	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Calcium	519 J	580	51	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Chromium	19.5 J	1.2	0.43	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cobalt	5.2 J	5.8	0.32	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Copper	63.1	2.9	0.97	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Iron	13300	58	22	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [3]	SW846 3050B [4]
Lead	153	2.3	0.47	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Magnesium	1540	580	16	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Manganese	202 J	1.7	0.47	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Mercury	0.24 J	0.036	0.016	mg/kg	1	04/19/19	04/19/19	LL	SW846 7471B [1]	SW846 7471B [5]
Nickel	10	4.6	0.40	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Potassium	798 J	1200	37	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Selenium	0.75 U	2.3	0.75	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Silver	0.20 U	0.58	0.20	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Sodium	90 U	1200	90	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Thallium	0.67 U	1.2	0.67	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Vanadium	12.5	5.8	0.22	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Zinc	99.8 J	5.8	2.7	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA46538
(2) Instrument QC Batch: MA46556
(3) Instrument QC Batch: MA46568
(4) Prep QC Batch: MP14348
(5) Prep QC Batch: MP14381

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	PSSTP-10R(1-2)		
Lab Sample ID:	JC86553-10	**Date Sampled:**	04/16/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
		Percent Solids:	88.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	0.14 U J	0.27	0.14	mg/kg	1	04/23/19 14:51	KI	SW846 9012B/LACHAT
Solids, Percent	88.2			%	1	04/26/19 15:00	JMP	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: PSSTP-10R(8-9)
Lab Sample ID: JC86553-11
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/16/19
Date Received: 04/17/19
Percent Solids: 84.3

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	7300 J	61	9.9	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Antimony	0.50 U J	2.4	0.50	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Arsenic [a]	12.1	4.9	0.68	mg/kg	2	04/19/19	04/23/19	ND	SW846 6010D [3]	SW846 3050B [4]
Barium	51.5	24	2.3	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Beryllium	0.46	0.24	0.098	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cadmium	0.27 J	0.61	0.086	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Calcium	478 J	610	54	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Chromium	16.4 J	1.2	0.45	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cobalt	5.4 J	6.1	0.34	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Copper [a]	61.7	6.1	2.1	mg/kg	2	04/19/19	04/23/19	ND	SW846 6010D [3]	SW846 3050B [4]
Iron	26300	120	47	mg/kg	2	04/19/19	04/23/19	ND	SW846 6010D [3]	SW846 3050B [4]
Lead [a]	192	4.9	1.0	mg/kg	2	04/19/19	04/23/19	ND	SW846 6010D [3]	SW846 3050B [4]
Magnesium	1460	610	17	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Manganese [a]	192 J	3.7	1.0	mg/kg	2	04/19/19	04/23/19	ND	SW846 6010D [3]	SW846 3050B [4]
Mercury	0.17 J	0.036	0.016	mg/kg	1	04/19/19	04/19/19	LL	SW846 7471B [1]	SW846 7471B [5]
Nickel	12.6	4.9	0.43	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Potassium	729 J	1200	39	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Selenium [a]	1.6 U	4.9	1.6	mg/kg	2	04/19/19	04/23/19	ND	SW846 6010D [3]	SW846 3050B [4]
Silver [a]	0.42 U	1.2	0.42	mg/kg	2	04/19/19	04/23/19	ND	SW846 6010D [3]	SW846 3050B [4]
Sodium	95 U	1200	95	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Thallium [a]	1.4 U	2.4	1.4	mg/kg	2	04/19/19	04/23/19	ND	SW846 6010D [3]	SW846 3050B [4]
Vanadium	16.9	6.1	0.23	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Zinc	110 J	6.1	2.8	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA46538
(2) Instrument QC Batch: MA46556
(3) Instrument QC Batch: MA46568
(4) Prep QC Batch: MP14348
(5) Prep QC Batch: MP14381

(a) Elevated detection limit due to dilution required for high interfering element.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: PSSTP-10R(8-9)
Lab Sample ID: JC86553-11
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/16/19
Date Received: 04/17/19
Percent Solids: 84.3

General Chemistry

Analyte	Result		RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	0.28	J	0.25	0.13	mg/kg	1	04/23/19 14:53	KI	SW846 9012B/LACHAT
Solids, Percent	84.3				%	1	04/26/19 15:00	JMP	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: S-130(2-4)
Lab Sample ID: JC86553-12
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/17/19
Date Received: 04/17/19
Percent Solids: 80.3

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	2610 J	65	10	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Antimony	0.67 J	2.6	0.53	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Arsenic	8.1	2.6	0.36	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Barium	120	26	2.5	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Beryllium	0.38	0.26	0.10	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Cadmium	0.14 J	0.65	0.091	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Calcium	2040 J	650	57	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Chromium	18.5 J	1.3	0.48	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Cobalt	2.9 J	6.5	0.36	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Copper	96.7	3.2	1.1	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Iron	8800	65	25	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Lead	181	2.6	0.53	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Magnesium	291 J	650	18	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Manganese	44.8 J	1.9	0.53	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Mercury	0.57 J	0.038	0.017	mg/kg	1	04/19/19	04/19/19	LL	SW846 7471B [1]	SW846 7471B [4]
Nickel	11.0	5.2	0.45	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Potassium	368 J	1300	41	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Selenium	1.5 J	2.6	0.84	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Silver	0.22 U	0.65	0.22	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Sodium	100 U	1300	100	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Thallium	0.75 U	1.3	0.75	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Vanadium	12.4	6.5	0.25	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Zinc	48.2 J	6.5	3.0	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]

(1) Instrument QC Batch: MA46538
(2) Instrument QC Batch: MA46556
(3) Prep QC Batch: MP14348
(4) Prep QC Batch: MP14381

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	S-130(2-4)		
Lab Sample ID:	JC86553-12	**Date Sampled:**	04/17/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
		Percent Solids:	80.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result		RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	8.4	J	0.27	0.13	mg/kg	1	04/23/19 14:54	KI	SW846 9012B/LACHAT
Solids, Percent	80.3				%	1	04/26/19 15:00	JMP	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: S-130(7-8)
Lab Sample ID: JC86553-13
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/17/19
Date Received: 04/17/19
Percent Solids: 73.0

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	4490 J	65	11	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Antimony	0.53 U J	2.6	0.53	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Arsenic	16.5	2.6	0.37	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Barium	45.8	26	2.5	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Beryllium	0.60	0.26	0.10	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Cadmium	0.90	0.65	0.091	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Calcium	1050 J	650	58	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Chromium	18.4 J	1.3	0.48	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Cobalt	8.7	6.5	0.37	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Copper	46.8	3.3	1.1	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Iron	14800	65	25	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Lead	169	2.6	0.53	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Magnesium	911	650	18	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Manganese	158 J	2.0	0.53	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Mercury	0.15 J	0.031	0.014	mg/kg	1	04/19/19	04/19/19	LL	SW846 7471B [1]	SW846 7471B [4]
Nickel	26.2	5.2	0.46	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Potassium	467 J	1300	41	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Selenium	2.3 J	2.6	0.85	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Silver	0.22 U	0.65	0.22	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Sodium	100 U	1300	100	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Thallium	0.76 U	1.3	0.76	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Vanadium	13.8	6.5	0.25	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Zinc	85.8 J	6.5	3.0	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]

(1) Instrument QC Batch: MA46538
(2) Instrument QC Batch: MA46556
(3) Prep QC Batch: MP14348
(4) Prep QC Batch: MP14381

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	S-130(7-8)		
Lab Sample ID:	JC86553-13	**Date Sampled:**	04/17/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
		Percent Solids:	73.0
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result		RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	1.8	J	0.29	0.15	mg/kg	1	04/23/19 14:55	KI	SW846 9012B/LACHAT
Solids, Percent	73				%	1	04/26/19 15:00	JMP	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: S-130(10-12)
Lab Sample ID: JC86553-14
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/17/19
Date Received: 04/17/19
Percent Solids: 56.9

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	16300 J	85	14	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Antimony	0.70 U J	3.4	0.70	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Arsenic	35.8	3.4	0.48	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Barium	165	34	3.2	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Beryllium	1.2	0.34	0.14	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Cadmium	1.6	0.85	0.12	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Calcium	3880 J	850	75	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Chromium	151 J	1.7	0.63	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Cobalt	15.5	8.5	0.48	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Copper	103	4.3	1.4	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Iron	29600	85	33	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Lead	212	3.4	0.70	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Magnesium	4050	850	23	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Manganese	718 J	2.6	0.70	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Mercury	1.6 J	0.11	0.050	mg/kg	2	04/19/19	04/19/19	LL	SW846 7471B [1]	SW846 7471B [4]
Nickel	33.5	6.8	0.60	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Potassium	1890	1700	54	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Selenium	1.5 J	3.4	1.1	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Silver	0.77 J	0.85	0.29	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Sodium	270 J	1700	130	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Thallium	0.99 U	1.7	0.99	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Vanadium	35.8	8.5	0.32	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Zinc	485 J	8.5	3.9	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]

(1) Instrument QC Batch: MA46538
(2) Instrument QC Batch: MA46556
(3) Prep QC Batch: MP14348
(4) Prep QC Batch: MP14381

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	S-130(10-12)		
Lab Sample ID:	JC86553-14	**Date Sampled:**	04/17/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
		Percent Solids:	56.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result		RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	0.81	J	0.38	0.19	mg/kg	1	04/23/19 14:57	KI	SW846 9012B/LACHAT
Solids, Percent	56.9				%	1	04/26/19 15:00	JMP	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: S-130(13-15)
Lab Sample ID: JC86553-15
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/17/19
Date Received: 04/17/19
Percent Solids: 60.6

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	19400 J	86	14	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [3]	SW846 3050B [4]
Antimony	1.1 J	3.4	0.70	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Arsenic	64.3	3.4	0.48	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Barium	260	34	3.3	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [3]	SW846 3050B [4]
Beryllium	1.6	0.34	0.14	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cadmium	2.8	0.86	0.12	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Calcium	5250 J	860	76	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [3]	SW846 3050B [4]
Chromium	427 J	1.7	0.64	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cobalt	17.8	8.6	0.48	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Copper	204	4.3	1.4	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Iron	32300	86	33	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [3]	SW846 3050B [4]
Lead	497	3.4	0.70	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Magnesium	4550	860	23	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [3]	SW846 3050B [4]
Manganese	743 J	2.6	0.70	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Mercury	2.3 J	0.26	0.12	mg/kg	5	04/19/19	04/19/19	LL	SW846 7471B [1]	SW846 7471B [5]
Nickel	38.4	6.9	0.60	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Potassium	2180	1700	55	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Selenium	3.6	3.4	1.1	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Silver	2.5	0.86	0.29	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Sodium	421 J	1700	130	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Thallium	1.0 U	1.7	1.0	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Vanadium	38.7	8.6	0.33	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Zinc	1040 J	8.6	4.0	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA46538
(2) Instrument QC Batch: MA46556
(3) Instrument QC Batch: MA46568
(4) Prep QC Batch: MP14348
(5) Prep QC Batch: MP14381

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	S-130(13-15)		
Lab Sample ID:	JC86553-15	**Date Sampled:**	04/17/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
		Percent Solids:	60.6
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result		RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	0.92	J	0.41	0.21	mg/kg	1	04/23/19 14:58	KI	SW846 9012B/LACHAT
Solids, Percent	60.6				%	1	04/23/19 16:00	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: S-126(7-9)
Lab Sample ID: JC86553-16
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/17/19
Date Received: 04/17/19
Percent Solids: 84.7

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	8020 J	57	9.1	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Antimony	0.47 U J	2.3	0.47	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Arsenic	6.9	2.3	0.32	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Barium	85.0	23	2.2	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Beryllium	0.56	0.23	0.091	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Cadmium	0.28 J	0.57	0.079	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Calcium	1120 J	570	50	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Chromium	14.7 J	1.1	0.42	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Cobalt	5.7	5.7	0.32	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Copper	31.9	2.8	0.95	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Iron	19200	57	22	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Lead	749	2.3	0.47	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Magnesium	1250	570	16	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Manganese	137 J	1.7	0.47	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Mercury	0.31 J	0.038	0.017	mg/kg	1	04/19/19	04/19/19	LL	SW846 7471B [1]	SW846 7471B [4]
Nickel	11.9	4.5	0.40	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Potassium	842 J	1100	36	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Selenium	0.74 U	2.3	0.74	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Silver	0.19 U	0.57	0.19	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Sodium	88 U	1100	88	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Thallium	0.66 U	1.1	0.66	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Vanadium	15.8	5.7	0.22	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Zinc	118 J	5.7	2.6	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]

(1) Instrument QC Batch: MA46538
(2) Instrument QC Batch: MA46556
(3) Prep QC Batch: MP14348
(4) Prep QC Batch: MP14381

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	S-126(7-9)		
Lab Sample ID:	JC86553-16	**Date Sampled:**	04/17/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
		Percent Solids:	84.7
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	0.14 U J	0.28	0.14	mg/kg	1	04/23/19 15:00	KI	SW846 9012B/LACHAT
Solids, Percent	84.7			%	1	04/26/19 15:00	JMP	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: S-126(13-15)
Lab Sample ID: JC86553-17
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/17/19
Date Received: 04/17/19
Percent Solids: 60.3

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	18700 J	85	14	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Antimony	0.69 U J	3.4	0.69	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Arsenic	60.2	3.4	0.47	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Barium	216	34	3.2	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Beryllium	1.5	0.34	0.14	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Cadmium	1.7	0.85	0.12	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Calcium	3480 J	850	75	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Chromium	273 J	1.7	0.63	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Cobalt	15.9	8.5	0.47	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Copper	156	4.2	1.4	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Iron	31000	85	32	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Lead	303	3.4	0.69	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Magnesium	4080	850	23	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Manganese	736 J	2.5	0.69	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Mercury	1.4 J	0.10	0.046	mg/kg	2	04/19/19	04/19/19	LL	SW846 7471B [1]	SW846 7471B [4]
Nickel	33.0	6.8	0.59	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Potassium	1900	1700	54	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Selenium	1.8 J	3.4	1.1	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Silver	1.1	0.85	0.29	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Sodium	215 J	1700	130	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Thallium	0.98 U	1.7	0.98	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Vanadium	35.4	8.5	0.32	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Zinc	632 J	8.5	3.9	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]

(1) Instrument QC Batch: MA46538
(2) Instrument QC Batch: MA46556
(3) Prep QC Batch: MP14348
(4) Prep QC Batch: MP14381

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	S-126(13-15)		
Lab Sample ID:	JC86553-17	**Date Sampled:**	04/17/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
		Percent Solids:	60.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	0.33 J	0.37	0.18	mg/kg	1	04/23/19 15:04	KI	SW846 9012B/LACHAT
Solids, Percent	60.3			%	1	04/26/19 15:00	JMP	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: S-127(2-4)
Lab Sample ID: JC86553-18
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/17/19
Date Received: 04/17/19
Percent Solids: 88.6

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	9820 J	58	9.3	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Antimony	0.47 U J	2.3	0.47	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Arsenic [a]	9.7	4.6	0.64	mg/kg	2	04/19/19	04/23/19	ND	SW846 6010D [3]	SW846 3050B [4]
Barium	121	23	2.2	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Beryllium	0.82	0.23	0.092	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cadmium	0.35 J	0.58	0.081	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Calcium	14800	580	51	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Chromium	22.0	1.2	0.43	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cobalt	4.9 J	5.8	0.32	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Copper [a]	37.6	5.8	1.9	mg/kg	2	04/19/19	04/23/19	ND	SW846 6010D [3]	SW846 3050B [4]
Iron	25700	120	44	mg/kg	2	04/19/19	04/23/19	ND	SW846 6010D [3]	SW846 3050B [4]
Lead [a]	417	4.6	0.94	mg/kg	2	04/19/19	04/23/19	ND	SW846 6010D [3]	SW846 3050B [4]
Magnesium	7300	580	16	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Manganese [a]	624 J	3.5	0.94	mg/kg	2	04/19/19	04/23/19	ND	SW846 6010D [3]	SW846 3050B [4]
Mercury R	~~0.016 U~~	~~0.037~~	~~0.016~~	mg/kg	1	04/19/19	04/19/19	LL	SW846 7471B [1]	SW846 7471B [5]
Nickel	14.4	4.6	0.40	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Potassium	1440	1200	37	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Selenium [a]	1.5 U	4.6	1.5	mg/kg	2	04/19/19	04/23/19	ND	SW846 6010D [3]	SW846 3050B [4]
Silver [a]	0.39 U	1.2	0.39	mg/kg	2	04/19/19	04/23/19	ND	SW846 6010D [3]	SW846 3050B [4]
Sodium	252 J	1200	90	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Thallium [a]	1.3 U	2.3	1.3	mg/kg	2	04/19/19	04/23/19	ND	SW846 6010D [3]	SW846 3050B [4]
Vanadium	24.2	5.8	0.22	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Zinc	208 J	5.8	2.6	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA46538
(2) Instrument QC Batch: MA46556
(3) Instrument QC Batch: MA46568
(4) Prep QC Batch: MP14348
(5) Prep QC Batch: MP14381

(a) Elevated detection limit due to dilution required for high interfering element.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	S-127(2-4)		
Lab Sample ID:	JC86553-18	**Date Sampled:**	04/17/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
		Percent Solids:	88.6
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result		RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	1.1	J	0.27	0.14	mg/kg	1	04/23/19 15:05	KI	SW846 9012B/LACHAT
Solids, Percent	88.6				%	1	04/26/19 15:00	JMP	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: SO-DUP-0417
Lab Sample ID: JC86553-19
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/17/19
Date Received: 04/17/19
Percent Solids: 83.9

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	11600 J	60	9.7	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Antimony	0.49 U J	2.4	0.49	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Arsenic	7.9	2.4	0.34	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Barium	176	24	2.3	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Beryllium	0.90	0.24	0.096	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cadmium	0.33 J	0.60	0.084	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Calcium	19700	600	53	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Chromium	24.9	1.2	0.45	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cobalt	5.3 J	6.0	0.34	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Copper	47.7	3.0	1.0	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Iron	21800	60	23	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Lead	454	2.4	0.49	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Magnesium	9260	600	16	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Manganese	1080 J	3.6	0.99	mg/kg	2	04/19/19	04/30/19	ND	SW846 6010D [3]	SW846 3050B [4]
Mercury R	~~0.016 U~~	~~0.037~~	~~0.016~~	mg/kg	1	04/19/19	04/19/19	LL	SW846 7471B [1]	SW846 7471B [5]
Nickel	15.6	4.8	0.42	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Potassium	1600	1200	38	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Selenium	0.78 U	2.4	0.78	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Silver	0.20 U	0.60	0.20	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Sodium	348 J	1200	94	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Thallium [a]	1.4 U	2.4	1.4	mg/kg	2	04/19/19	04/30/19	ND	SW846 6010D [3]	SW846 3050B [4]
Vanadium	36.3	6.0	0.23	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]
Zinc	180 J	6.0	2.8	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA46538
(2) Instrument QC Batch: MA46556
(3) Instrument QC Batch: MA46611
(4) Prep QC Batch: MP14348
(5) Prep QC Batch: MP14381

(a) Elevated detection limit due to dilution required for high interfering element.

RL = Reporting Limit
MDL = Method Detection Limit
U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	SO-DUP-0417		
Lab Sample ID:	JC86553-19	**Date Sampled:**	04/17/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
		Percent Solids:	83.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result		RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	0.63	J	0.28	0.14	mg/kg	1	04/23/19 15:06	KI	SW846 9012B/LACHAT
Solids, Percent	83.9				%	1	04/26/19 15:00	JMP	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: S-127(6-8)
Lab Sample ID: JC86553-20
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/17/19
Date Received: 04/17/19
Percent Solids: 87.3

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	9850 J	57	9.1	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Antimony	0.46 U J	2.3	0.46	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Arsenic	8.2	2.3	0.32	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Barium	29.5	23	2.2	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Beryllium	0.45	0.23	0.091	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Cadmium	0.10 J	0.57	0.079	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Calcium	516 J	570	50	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Chromium	15.4 J	1.1	0.42	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Cobalt	4.7 J	5.7	0.32	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Copper	12.2	2.8	0.95	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Iron	19400	57	22	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Lead	24.1	2.3	0.46	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Magnesium	1700	570	16	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Manganese	172 J	1.7	0.46	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Mercury	0.052 J	0.037	0.016	mg/kg	1	04/19/19	04/19/19	LL	SW846 7471B [1]	SW846 7471B [4]
Nickel	11.6	4.5	0.40	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Potassium	954 J	1100	36	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Selenium	0.74 U	2.3	0.74	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Silver	0.19 U	0.57	0.19	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Sodium	88 U	1100	88	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Thallium	0.66 U	1.1	0.66	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Vanadium	19.3	5.7	0.22	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]
Zinc	159 J	5.7	2.6	mg/kg	1	04/19/19	04/23/19	ND	SW846 6010D [2]	SW846 3050B [3]

(1) Instrument QC Batch: MA46538
(2) Instrument QC Batch: MA46556
(3) Prep QC Batch: MP14348
(4) Prep QC Batch: MP14381

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	S-127(6-8)		
Lab Sample ID:	JC86553-20	**Date Sampled:**	04/17/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
		Percent Solids:	87.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	0.13 U J	0.25	0.13	mg/kg	1	04/23/19 14:04	KI	SW846 9012B/LACHAT
Solids, Percent	87.3			%	1	04/24/19 16:15	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: S-127(13-15)
Lab Sample ID: JC86553-21
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/17/19
Date Received: 04/17/19
Percent Solids: 62.4

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	16400 J	79	13	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Antimony	0.71 J	3.1	0.64	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Arsenic	41.6	3.1	0.44	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Barium	165	31	3.0	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Beryllium	0.97	0.31	0.13	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Cadmium	1.8	0.79	0.11	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Calcium	2900 J	790	69	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Chromium	122 J	1.6	0.58	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Cobalt	13.9	7.9	0.44	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Copper	97.5	3.9	1.3	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Iron	24000	79	30	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Lead	186	3.1	0.64	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Magnesium	3750	790	21	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Manganese	562 J	2.4	0.64	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Mercury	0.87 J	0.050	0.022	mg/kg	1	04/19/19	04/19/19	LL	SW846 7471B [1]	SW846 7471B [4]
Nickel	26.7	6.3	0.55	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Potassium	1670	1600	50	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Selenium	1.4 J	3.1	1.0	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Silver	0.27 U	0.79	0.27	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Sodium	175 J	1600	120	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Thallium	0.91 U	1.6	0.91	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Vanadium	31.4	7.9	0.30	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Zinc	507 J	7.9	3.6	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]

(1) Instrument QC Batch: MA46538
(2) Instrument QC Batch: MA46544
(3) Prep QC Batch: MP14349
(4) Prep QC Batch: MP14380

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: S-127(13-15)
Lab Sample ID: JC86553-21
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/17/19
Date Received: 04/17/19
Percent Solids: 62.4

General Chemistry

Analyte	Result		RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	0.50	J	0.36	0.18	mg/kg	1	04/23/19 14:05	KI	SW846 9012B/LACHAT
Solids, Percent	62.4				%	1	04/23/19 16:00	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: SB-131(2-4)
Lab Sample ID: JC86553-22
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/17/19
Date Received: 04/17/19
Percent Solids: 85.0

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	21400 J	61	9.9	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [4]
Antimony	0.50 U J	2.5	0.50	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [4]
Arsenic	4.9	2.5	0.34	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [4]
Barium	51.6	25	2.3	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [4]
Beryllium	0.66	0.25	0.098	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [4]
Cadmium	0.086 U	0.61	0.086	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [4]
Calcium	672 J	610	54	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [4]
Chromium	31.5 J	1.2	0.45	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [4]
Cobalt	7.5	6.1	0.34	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [4]
Copper	12.0	3.1	1.0	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [4]
Iron	21200	61	24	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [4]
Lead	20.2	2.5	0.50	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [4]
Magnesium	2110	610	17	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [4]
Manganese	209 J	1.8	0.50	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [4]
Mercury R	~~0.016 U~~	~~0.038~~	~~0.016~~	mg/kg	1	04/19/19	04/19/19	LL	SW846 7471B [1]	SW846 7471B [5]
Nickel	14.2	4.9	0.43	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [4]
Potassium	1060 J	1200	39	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [4]
Selenium	0.80 U	2.5	0.80	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [4]
Silver	0.21 U	0.61	0.21	mg/kg	1	04/19/19	04/30/19	ND	SW846 6010D [3]	SW846 3050B [4]
Sodium	95 U	1200	95	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [4]
Thallium	0.71 U	1.2	0.71	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [4]
Vanadium	45.3	6.1	0.23	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [4]
Zinc	55.9 J	6.1	2.8	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA46538
(2) Instrument QC Batch: MA46544
(3) Instrument QC Batch: MA46623
(4) Prep QC Batch: MP14349
(5) Prep QC Batch: MP14380

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	SB-131(2-4)		
Lab Sample ID:	JC86553-22	**Date Sampled:**	04/17/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
		Percent Solids:	85.0
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result		RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	0.44	J	0.29	0.15	mg/kg	1	04/23/19 14:06	KI	SW846 9012B/LACHAT
Solids, Percent	85				%	1	04/26/19 15:00	JMP	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: S-131(7-9)
Lab Sample ID: JC86553-23
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/17/19
Date Received: 04/17/19
Percent Solids: 59.7

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	16600 J	85	14	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Antimony	0.69 U J	3.4	0.69	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Arsenic	33.4	3.4	0.47	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Barium	150	34	3.2	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Beryllium	1.0	0.34	0.14	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Cadmium	1.2	0.85	0.12	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Calcium	3310 J	850	75	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Chromium	129 J	1.7	0.63	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Cobalt	17.6	8.5	0.47	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Copper	85.8	4.2	1.4	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Iron	29800	85	32	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Lead	153	3.4	0.69	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Magnesium	4100	850	23	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Manganese	867 J	2.5	0.69	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Mercury	1.2 J	0.050	0.022	mg/kg	1	04/19/19	04/19/19	LL	SW846 7471B [1]	SW846 7471B [4]
Nickel	29.7	6.8	0.59	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Potassium	1710	1700	54	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Selenium	1.1 U	3.4	1.1	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Silver	0.29 U	0.85	0.29	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Sodium	222 J	1700	130	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Thallium	0.98 U	1.7	0.98	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Vanadium	32.4	8.5	0.32	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Zinc	453 J	8.5	3.9	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]

(1) Instrument QC Batch: MA46538
(2) Instrument QC Batch: MA46544
(3) Prep QC Batch: MP14349
(4) Prep QC Batch: MP14380

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	S-131(7-9)		
Lab Sample ID:	JC86553-23	**Date Sampled:**	04/17/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
		Percent Solids:	59.7
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result		RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	2.1	J	0.40	0.20	mg/kg	1	04/23/19 14:08	KI	SW846 9012B/LACHAT
Solids, Percent	59.7				%	1	04/24/19 16:15	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: S-132(2-4)
Lab Sample ID: JC86553-24
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/17/19
Date Received: 04/17/19
Percent Solids: 83.9

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	4930 J	59	9.5	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [5]
Antimony [a]	3.9 J	4.7	0.97	mg/kg	2	04/19/19	04/22/19	ND	SW846 6010D [3]	SW846 3050B [5]
Arsenic	21.1	2.4	0.33	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [5]
Barium	163	24	2.2	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [5]
Beryllium	0.35	0.24	0.094	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [5]
Cadmium	0.34 J	0.59	0.083	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [5]
Calcium	5200 J	590	52	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [5]
Chromium	169 J	1.2	0.44	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [5]
Cobalt	4.7 J	5.9	0.33	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [5]
Copper [a]	195	8.9	3.0	mg/kg	3	04/19/19	04/30/19	ND	SW846 6010D [4]	SW846 3050B [5]
Iron	47000	180	68	mg/kg	3	04/19/19	04/30/19	ND	SW846 6010D [4]	SW846 3050B [5]
Lead [a]	246	7.1	1.5	mg/kg	3	04/19/19	04/30/19	ND	SW846 6010D [4]	SW846 3050B [5]
Magnesium	1920	590	16	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [5]
Manganese [a]	268 J	5.3	1.5	mg/kg	3	04/19/19	04/30/19	ND	SW846 6010D [4]	SW846 3050B [5]
Mercury	1.4 J	0.19	0.085	mg/kg	5	04/19/19	04/19/19	LL	SW846 7471B [1]	SW846 7471B [6]
Nickel	25.5	4.7	0.41	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [5]
Potassium	956 J	1200	38	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [5]
Selenium [a]	2.3 U	7.1	2.3	mg/kg	3	04/19/19	04/30/19	ND	SW846 6010D [4]	SW846 3050B [5]
Silver [a]	0.60 U	1.8	0.60	mg/kg	3	04/19/19	04/30/19	ND	SW846 6010D [4]	SW846 3050B [5]
Sodium	201 J	1200	92	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [5]
Thallium [a]	2.1 U	3.5	2.1	mg/kg	3	04/19/19	04/30/19	ND	SW846 6010D [4]	SW846 3050B [5]
Vanadium	35.7	5.9	0.22	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [5]
Zinc	331 J	5.9	2.7	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA46538
(2) Instrument QC Batch: MA46544
(3) Instrument QC Batch: MA46553
(4) Instrument QC Batch: MA46623
(5) Prep QC Batch: MP14349
(6) Prep QC Batch: MP14380

(a) Elevated detection limit due to dilution required for high interfering element.

RL = Reporting Limit
MDL = Method Detection Limit
U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	S-132(2-4)		
Lab Sample ID:	JC86553-24	**Date Sampled:**	04/17/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
		Percent Solids:	83.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result		RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	4.2	J	0.28	0.14	mg/kg	1	04/23/19 14:09	KI	SW846 9012B/LACHAT
Solids, Percent	83.9				%	1	04/26/19 15:00	JMP	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: S-132(8-10)
Lab Sample ID: JC86553-25
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/17/19
Date Received: 04/17/19
Percent Solids: 56.1

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	19900 J	93	15	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Antimony	3.6 J	3.7	0.76	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Arsenic	34.5	3.7	0.52	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Barium	241	37	3.5	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Beryllium	1.3	0.37	0.15	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Cadmium	1.4	0.93	0.13	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Calcium	3910 J	930	82	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Chromium	149 J	1.9	0.69	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Cobalt	17.4	9.3	0.52	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Copper	93.6	4.6	1.6	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Iron	32000	93	36	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Lead	178	3.7	0.76	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Magnesium	4840	930	25	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Manganese	1180 J	2.8	0.76	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Mercury	1.3 J	0.10	0.046	mg/kg	2	04/19/19	04/19/19	LL	SW846 7471B [1]	SW846 7471B [4]
Nickel	34.5	7.4	0.65	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Potassium	2080	1900	59	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Selenium	1.2 U	3.7	1.2	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Silver	0.32 U	0.93	0.32	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Sodium	171 J	1900	140	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Thallium	1.1 U	1.9	1.1	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Vanadium	41.1	9.3	0.35	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Zinc	514 J	9.3	4.3	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]

(1) Instrument QC Batch: MA46538
(2) Instrument QC Batch: MA46544
(3) Prep QC Batch: MP14349
(4) Prep QC Batch: MP14380

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: S-132(8-10)
Lab Sample ID: JC86553-25
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/17/19
Date Received: 04/17/19
Percent Solids: 56.1

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	0.50 J	0.43	0.21	mg/kg	1	04/23/19 14:11	KI	SW846 9012B/LACHAT
Solids, Percent	56.1			%	1	04/26/19 10:25	RC	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: S-133(2-4)
Lab Sample ID: JC86553-26
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/17/19
Date Received: 04/17/19
Percent Solids: 83.7

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	11400 J	59	9.5	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [4]
Antimony [a]	2.8 J	4.7	0.97	mg/kg	2	04/19/19	04/22/19	ND	SW846 6010D [3]	SW846 3050B [4]
Arsenic	11.2	2.4	0.33	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [4]
Barium	168	24	2.2	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [4]
Beryllium	0.93	0.24	0.095	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [4]
Cadmium	4.8	0.59	0.083	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [4]
Calcium	21100 J	590	52	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [4]
Chromium	107 J	1.2	0.44	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [4]
Cobalt	7.2	5.9	0.33	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [4]
Copper [a]	143	5.9	2.0	mg/kg	2	04/19/19	04/22/19	ND	SW846 6010D [3]	SW846 3050B [4]
Iron	33800	120	45	mg/kg	2	04/19/19	04/22/19	ND	SW846 6010D [3]	SW846 3050B [4]
Lead [a]	297	4.7	0.97	mg/kg	2	04/19/19	04/22/19	ND	SW846 6010D [3]	SW846 3050B [4]
Magnesium	4590	590	16	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [4]
Manganese [a]	607 J	3.5	0.97	mg/kg	2	04/19/19	04/22/19	ND	SW846 6010D [3]	SW846 3050B [4]
Mercury	1.3 J	0.20	0.087	mg/kg	5	04/19/19	04/19/19	LL	SW846 7471B [1]	SW846 7471B [5]
Nickel	56.3	4.7	0.41	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [4]
Potassium	2050	1200	38	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [4]
Selenium [a]	1.5 U	4.7	1.5	mg/kg	2	04/19/19	04/22/19	ND	SW846 6010D [3]	SW846 3050B [4]
Silver [a]	0.40 U	1.2	0.40	mg/kg	2	04/19/19	04/22/19	ND	SW846 6010D [3]	SW846 3050B [4]
Sodium	167 J	1200	92	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [4]
Thallium [a]	1.4 U	2.4	1.4	mg/kg	2	04/19/19	04/22/19	ND	SW846 6010D [3]	SW846 3050B [4]
Vanadium	24.9	5.9	0.22	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [4]
Zinc	383 J	5.9	2.7	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA46538
(2) Instrument QC Batch: MA46544
(3) Instrument QC Batch: MA46553
(4) Prep QC Batch: MP14349
(5) Prep QC Batch: MP14380

(a) Elevated detection limit due to dilution required for high interfering element.

RL = Reporting Limit
MDL = Method Detection Limit
U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: S-133(2-4)
Lab Sample ID: JC86553-26
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/17/19
Date Received: 04/17/19
Percent Solids: 83.7

General Chemistry

Analyte	Result		RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	0.61	J	0.26	0.13	mg/kg	1	04/23/19 14:15	KI	SW846 9012B/LACHAT
Solids, Percent	83.7				%	1	04/22/19 14:44	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: S-133(7-9)
Lab Sample ID: JC86553-27
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/17/19
Date Received: 04/17/19
Percent Solids: 92.2

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	6230 J	52	8.4	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Antimony	1.3 J	2.1	0.43	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Arsenic	3.8	2.1	0.29	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Barium	43.5	21	2.0	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Beryllium	0.37	0.21	0.083	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Cadmium	0.073 J	0.52	0.073	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Calcium	1400 J	520	46	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Chromium	17.6 J	1.0	0.39	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Cobalt	4.5 J	5.2	0.29	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Copper	28.6	2.6	0.88	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Iron	14600	52	20	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Lead	23.1	2.1	0.43	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Magnesium	2220	520	14	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Manganese	254 J	1.6	0.43	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Mercury	0.070 J	0.035	0.015	mg/kg	1	04/19/19	04/19/19	LL	SW846 7471B [1]	SW846 7471B [4]
Nickel	11.4	4.2	0.37	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Potassium	988 J	1000	33	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Selenium	0.68 U	2.1	0.68	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Silver	0.18 U	0.52	0.18	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Sodium	135 J	1000	81	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Thallium	0.60 U	1.0	0.60	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Vanadium	15.6	5.2	0.20	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Zinc	56.1 J	5.2	2.4	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]

(1) Instrument QC Batch: MA46538
(2) Instrument QC Batch: MA46544
(3) Prep QC Batch: MP14349
(4) Prep QC Batch: MP14380

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	S-133(7-9)		
Lab Sample ID:	JC86553-27	**Date Sampled:**	04/17/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
		Percent Solids:	92.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result		RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	0.28	J	0.24	0.12	mg/kg	1	04/23/19 14:16	KI	SW846 9012B/LACHAT
Solids, Percent	92.2				%	1	04/26/19 15:00	JMP	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: S-133(13-15)
Lab Sample ID: JC86553-28
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/17/19
Date Received: 04/17/19
Percent Solids: 64.8

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	17200 J	81	13	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Antimony	4.2 J	3.2	0.67	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Arsenic	38.4	3.2	0.45	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Barium	195	32	3.1	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Beryllium	1.1	0.32	0.13	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Cadmium	1.6	0.81	0.11	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Calcium	2630 J	810	72	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Chromium	207 J	1.6	0.60	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Cobalt	14.7	8.1	0.45	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Copper	127	4.1	1.4	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Iron	26500	81	31	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Lead	270	3.2	0.67	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Magnesium	3320	810	22	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Manganese	785 J	2.4	0.67	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Mercury	1.6 J	0.24	0.11	mg/kg	5	04/19/19	04/19/19	LL	SW846 7471B [1]	SW846 7471B [4]
Nickel	28.3	6.5	0.57	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Potassium	1580 J	1600	52	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Selenium	1.1 U	3.2	1.1	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Silver	0.68 J	0.81	0.28	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Sodium	142 J	1600	130	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Thallium	0.94 U	1.6	0.94	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Vanadium	32.4	8.1	0.31	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]
Zinc	679 J	8.1	3.7	mg/kg	1	04/19/19	04/20/19	GT	SW846 6010D [2]	SW846 3050B [3]

(1) Instrument QC Batch: MA46538
(2) Instrument QC Batch: MA46544
(3) Prep QC Batch: MP14349
(4) Prep QC Batch: MP14380

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	S-133(13-15)		
Lab Sample ID:	JC86553-28	**Date Sampled:**	04/17/19
Matrix:	SO - Soil	**Date Received:**	04/17/19
		Percent Solids:	64.8
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	0.36 J	0.37	0.19	mg/kg	1	04/23/19 14:17	KI	SW846 9012B/LACHAT
Solids, Percent	64.8			%	1	04/26/19 15:00	JMP	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

ARCADIS Design & Consultancy for natural and built assets

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DATA REVIEW

Philadelphia, Pennsylvania

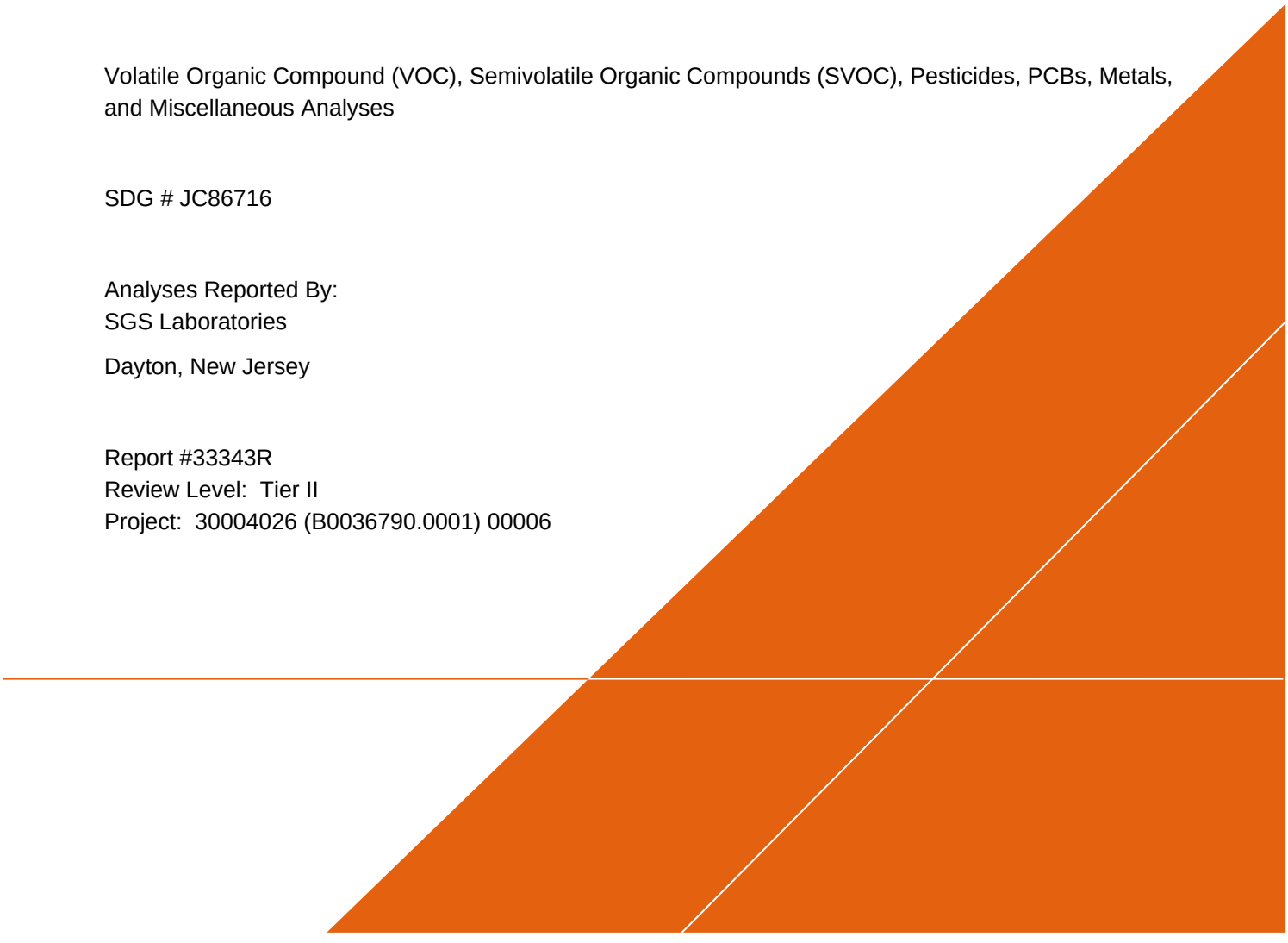
Volatile Organic Compound (VOC), Semivolatile Organic Compounds (SVOC), Pesticides, PCBs, Metals, and Miscellaneous Analyses

SDG # JC86716

Analyses Reported By:
SGS Laboratories

Dayton, New Jersey

Report #33343R
Review Level: Tier II
Project: 30004026 (B0036790.0001) 00006



SUMMARY

This data review report summarizes the review of Sample Delivery Group (SDG) # JC86716 for samples collected in association with the National Grid Philly Coke site in Philadelphia, Pennsylvania. The review was conducted as a Tier II evaluation and included review of laboratory analytical data package completeness. Field documentation was not included in this review. Included with this assessment are the post-validation annotated sample result sheets, and chain of custody (COC). Analyses were performed on the following samples

SDG Number	Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis				
						VOC	SVOC	PEST/ PCB	Metals	MISC
JC86716	S-129 (2-4) (04-18-2019)	JC86716-1	Soil	4/18/2019		X	X		X	X
	S-129 (8-10) (04-18-2019)	JC86716-2	Soil	4/18/2019		X	X		X	X
	S-129 (10-12) (04-18-2019)	JC86716-3	Soil	4/18/2019		X	X		X	X
	S-128 (2-4) (04-18-2019)	JC86716-4	Soil	4/18/2019		X	X		X	X
	S-128 (10-12) (04-18-2019)	JC86716-5	Soil	4/18/2019		X	X		X	X
	S-128 (13-15) (04-18-2019)	JC86716-6	Soil	4/18/2019		X	X		X	X
	S-125 (7-9) (04-18-2019)	JC86716-7	Soil	4/18/2019		X	X		X	X
	S-125 (11-13) (04-18-2019)	JC86716-8	Soil	4/18/2019		X	X		X	X
	S-125 (13-15) (04-18-2019)	JC86716-9	Soil	4/18/2019		X	X		X	X
	TP-63R (7-9) (04-18-2019)	JC86716-10	Soil	4/18/2019		X	X		X	X
	TP-63R (11-13) (04-18-2019)	JC86716-11	Soil	4/18/2019		X	X		X	X
	S-124 (7-9) (04-18-2019)	JC86716-12	Soil	4/18/2019		X	X		X	X
	S-124 (10-12) (04-18-2019)	JC86716-13	Soil	4/18/2019		X	X		X	X
	S-123 (7-9) (04-18-2019)	JC86716-14	Soil	4/18/2019		X	X		X	X
	S-123 (13-15) (04-18-2019)	JC86716-15	Soil	4/18/2019		X	X		X	X
	PSSTP-07R (0.5-2) (04-18-2019)	JC86716-16	Soil	4/18/2019		X	X	X	X	X
	SO-DUP-0418 (04-18-2019)	JC86716-17	Soil	4/18/2019	PSSTP-07R (0.5-2) (04-18-2019)	X	X	X	X	X
	PSSTP-07R (8-9) (04-18-2019)	JC86716-18	Soil	4/18/2019		X	X	X	X	X
	PSSTP-07R (20-22) (04-18-2019)	JC86716-19	Soil	4/18/2019		X	X		X	X
	PCTP-51R (10-12) (04-18-2019)	JC86716-20	Soil	4/18/2019		X	X		X	X
	PCSB-30R (0.5-2) (04-19-2019)	JC86716-21	Soil	4/19/2019		X	X	X	X	X
	PCSB-26R (0.5-2) (04-19-2019)	JC86716-22	Soil	4/19/2019		X	X	X	X	X

SDG Number	Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis				
						VOC	SVOC	PEST/ PCB	Metals	MISC
	PCSB-49R (3-5) (04-19-2019)	JC86716-23	Soil	4/19/2019		X	X		X	X
	PCSB-49R (10-12) (04-19-2019)	JC86716-24	Soil	4/19/2019		X	X		X	X

Notes:

1. PEST/PCB = Pesticides and polychlorinated biphenyls
2. SVOC = Semivolatile Organic Compounds
3. VOC = Volatile Organic Compound
4. MISC = Miscellaneous (total cyanide)

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance (QA) or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260C, 8270D, 8081A, and 8082A. Data were reviewed in accordance with the USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540/R-2017-002, January 2017 and the USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Organic Data Review, EPA540/R-99/008, October 1999 (as applicable).

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers
  - U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
  - B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- Quantitation (Q) Qualifiers
  - E The compound was quantitated above the calibration range.
  - D Concentration is based on a diluted sample analysis.
- Validation Qualifiers
  - J The compound was positively identified; however, the associated numerical value is an estimated concentration only.
  - UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.
  - JN The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.
  - UB Compound considered non-detect at the listed value due to associated blank contamination.
  - N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.
  - R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is

that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times/Preservation

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260C	Water	14 days from collection to analysis (preserved) 7 days from collection to analysis (non-preserved)	Cool to <6 °C; preserved to a pH of less than 2 s.u.
	Soil	48 hours from collection to extraction and 14 days from extraction to analysis	Cool to <6 °C.

Note:
s.u. Standard units

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore, detected sample results were not associated with blank contamination.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. VOC analysis requires that all surrogates associated with the analysis exhibit recoveries within the laboratory-established acceptance limits.

All surrogate recoveries were within control limits.

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

Sample locations associated with the MS/MSD exhibiting recoveries outside of the control limits are presented in the following table.

Sample Locations	Compound	MS Recovery	MSD Recovery
PCSB-30R (0.5-2) (04-19-2019)	Carbon disulfide	<LL but >10%	<LL but >10%
	1,2-Dibromoethane	<LL but >10%	AC
	1,3-Dichlorobenzene	<LL but >10%	<LL but >10%
	1,4-Dichlorobenzene	<LL but >10%	<LL but >10%
	trans-1,2-Dichloroethene	<LL but >10%	<LL but >10%
	cis-1,3-Dichloropropene	<LL but >10%	<LL but >10%
	trans-1,3-Dichloropropene	<LL but >10%	<LL but >10%
S-128 (2-4) (04-18-2019)	Benzene	<LL but >10%	<LL but >10%
	Methyl Acetate	AC	>UL

The criteria used to evaluate the MS/MSD recoveries are presented in the following table. In the case of an MS/MSD deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> the upper control limit (UL)	Non-detect	No Action
	Detect	J
< the lower control limit (LL) but > 10%	Non-detect	UJ
	Detect	J
< 10%	Non-detect	R
	Detect	J
Parent sample concentration > four times the MS/MSD spiking solution concentration.	Detect	No Action
	Non-detect	

Sample locations associated with MS/MSD recoveries exhibiting an RPD greater than of the control limit presented in the following table.

Sample Locations	Compound
S-128 (2-4) (04-18-2019)	Methyl Acetate 1,2,3-Trichlorobenzene

The criteria used to evaluate the RPD between the MS/MSD recoveries are presented in the following table. In the case of an RPD deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> UL	Non-detect	UJ
	Detect	J

5. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) Analysis

The LCS/LCSD analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS/LCSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

Sample locations associated with LCS/LCSD analysis exhibiting recoveries outside of the control limits presented in the following table.

Sample Locations	Compound	LCS Recovery	LCSD Recovery
S-129 (2-4) (04-18-2019) S-129 (10-12) (04-18-2019) S-128 (2-4) (04-18-2019) S-128 (13-15) (04-18-2019) S-125 (13-15) (04-18-2019) TP-63R (7-9) (04-18-2019) TP-63R (11-13) (04-18-2019) S-124 (10-12) (04-18-2019) S-123 (7-9) (04-18-2019) S-123 (13-15) (04-18-2019)	1,2-Dibromoethane	>UL	--

Note:
AC = Acceptable

The criteria used to evaluate the LCS/LCSD recoveries are presented in the following table. In the case of an LCS/LCSD deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> the upper control limit (UL)	Non-detect	No Action
	Detect	J
< the lower control limit (LL) but > 10%	Non-detect	UJ
	Detect	J
< 10%	Non-detect	R
	Detect	J

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of three times the RL is applied for soil matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
PSSTP-07R (0.5-2) (04-18-2019)/ SO-DUP-0418 (04-18-2019)	Acetone	10 U	9.5 J	AC
	Benzene	0.89	3.4	NC

Notes:

AC Acceptable

NC Not compliant

Benzene associated with sample locations PSSTP-07R (0.5-2) (04-18-2019) and SO-DUP-0418 (04-18-2019) exhibited a field duplicate RPD greater than the control limit. The associated sample results from these sample locations for the listed analyte were qualified as estimated.

7. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

8. System Performance and Overall Assessment

The laboratory narrative indicates continuing calibration deviations. These deviations are normally not evaluated in a tier II data review. Sample results that had continuing calibration recoveries that exceed the control limit high and were non detect did not require qualification. Sample results where the calibration recoveries were high and the compound was detected or calibration recoveries were low were qualified as estimated (J or UJ).

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: SW-846 8260	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks	X				X
C. Trip blanks	X				X
Laboratory Control Sample (LCS)		X	X		
Laboratory Control Sample Duplicate(LCSD)	X				X
LCS/LCSD Precision (RPD)	X				X
Matrix Spike (MS)		X	X		
Matrix Spike Duplicate(MSD)		X	X		
MS/MSD Precision (RPD)		X	X		
Field/Lab Duplicate (RPD)		X	X		
Surrogate Spike Recoveries		X		X	
Dilution Factor		X		X	
Moisture Content		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

SEMIVOLATILE ORGANIC COMPOUND (SVOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8270D	Water	7 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C
	Soil	14 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore, detected sample results were not associated with blank contamination.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. SVOC analysis requires that two of the three SVOC surrogate compounds within each fraction exhibit recoveries within the laboratory-established acceptance limits.

Sample locations associated with surrogates exhibiting recoveries outside of the control limits presented in the following table.

Sample Locations	Surrogate	Recovery
S-129 (8-10) S-128 (10-12)	Phenol-d6	AC
	2-Fluorophenol	AC
	2,4,6-Tribromophenol	AC
	Nitrobenzene-d5	>UL
	2-Fluorobiphenyl	AC
	Terphenyl-d14	AC

Notes:

AC Acceptable

The criteria used to evaluate the surrogate recoveries are presented in the following table. In the case of a surrogate deviation, the sample results associated with the deviant fraction are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> UL	Non-detect	No Action
	Detect	J
< LL but > 10%	Non-detect	UJ
	Detect	J
< 10%	Non-detect	R
	Detect	J

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

Sample locations associated with the MS/MSD exhibiting recoveries outside of the control limits are presented in the following table.

Sample Locations	Compound	MS Recovery	MSD Recovery
S-128 (2-4) (04-18-2019)	2,4-Dinitrophenol	AC	< 10%
	4,6-Dinitro-o-cresol	AC	< 10%
	Hexachlorocyclopentadiene	AC	< 10%
	Pyrene	< 10%	< 10%

The criteria used to evaluate the MS/MSD recoveries are presented in the following table. In the case of an MS/MSD deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> the upper control limit (UL)	Non-detect	No Action
	Detect	J
< the lower control limit (LL) but > 10%	Non-detect	UJ
	Detect	J

Control Limit	Sample Result	Qualification
< 10%	Non-detect	R
	Detect	J

5. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) Analysis

The LCS/LCSD analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS/LCSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

The LCS/LCSD exhibited acceptable recoveries and RPD between the MS/MSD recoveries.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of three times the RL is applied for soil matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
PSSTP-07R (0.5-2) (04-18-2019)/ SO-DUP-0418 (04-18-2019)	1,1-Biphenyl	10.7 J	8.5 J	AC
	2-Methylnaphthalene	19.5 J	15.1 J	AC
	Acenaphthene	125	90.6	31.9 %
	Acenaphthylene	72	88.6	20.6 %
	Anthracene	321	346	7.4 %
	Benz(a)anthracene	939	983	4.5 %
	Benzaldehyde	22.1 J	17.7 J	AC
	Benzo(a)pyrene	979	987	0.8 %
	Benzo(b)fluoranthene	1210	1210	0.0 %
	Benzo(g,h,i)perylene	626	558	11.4 %
	Benzo(k)fluoranthene	481	401	18.1 %
	bis(2-Ethylhexyl)phthalate	191	110	AC
	Carbazole	139	102	AC
	Chrysene	847	907	6.8 %
	Dibenz(a,h)anthracene	132	135	AC
	Dibenzofuran	67.6 J	59.6 J	AC
	Di-n-butyl phthalate	343	294	15.3 %

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
	Fluoranthene	1710	1820	6.2 %
	Fluorene	136	128	AC
	Indeno(1,2,3-cd)pyrene	660	633	4.1 %
	Naphthalene	32.1 J	19.2 J	AC
	Phenanthrene	1200	1210	0.8 %
	Pyrene	1590	1680	5.5 %

Notes:
AC Acceptable

The calculated RPDs between the parent sample and field duplicate were acceptable.

7. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

Several samples were diluted to bring target compounds within linear range of the instrument. Sample results that were reported from a secondary dilution were qualified with a “D”, indicating the result is diluted.

8. System Performance and Overall Assessment

The laboratory narrative indicates continuing calibration deviations. These deviations are normally not evaluated in a tier II data review. Sample results that had continuing calibration recoveries that exceed the control limit high and were non detect did not require qualification. Sample results where the calibration recoveries were high and the compound was detected or calibration recoveries were low were qualified as estimated (J or UJ).

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR SVOCs

SVOCs: SW-846 8270	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks		X		X	
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R	X				X
LCS/LCSD Precision (RPD)	X				X
Matrix Spike (MS) %R		X	X		
Matrix Spike Duplicate(MSD) %R		X	X		
MS/MSD Precision (RPD)		X		X	
Field/Lab Duplicate (RPD)		X		X	
Surrogate Spike Recoveries		X	X		
Dilution Factor		X		X	
Moisture Content		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

PESTICIDE ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8081A	Water	7 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C
	Soil	14 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. Herbicide analysis requires that one of the two pesticide surrogate compounds exhibit recoveries within the laboratory-established acceptance limits.

All surrogate recoveries were within control limits.

3. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

The MS/MSD exhibited acceptable recoveries and RPD between the MS/MSD recoveries.

5. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

All compounds associated with the LCS analysis exhibited recoveries within the control limits.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 40% for water matrices and 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
PSSTP-07R (0.5-2) (04-18-2019)/ SO-DUP-0418 (04-18-2019)	4,4-DDD	2.5	1.6	AC
	4,4-DDT	7.6	4.9	43.1 %
	Heptachlor epoxide	1.2	0.99	AC
	trans-chlordane	1.5	1.2	AC

Notes:
AC Acceptable

The calculated RPDs between the parent sample and field duplicate were acceptable.

7. Compound Identification

The retention times of all quantitated peaks must fall within the calculated retention time windows for both the primary and confirmation columns. When dual column analysis is performed the percent difference (%D) of detected sample results must be less than 40%.

Sample locations associated with %D analysis exhibiting recoveries outside of the control limits presented in the following table.

Sample Locations	Compound	%D
PSSTP-07R (0.5-2)	gamma-Chlordane	96.6%
	Heptachlor epoxide	66.7%
SO-DUP-0418	gamma-Chlordane	54.5%

The criteria used to evaluate the %D are presented in the following table. In the case of a %D deviation, the sample results are qualified as documented in the table below.

Control Limit (%D)	Qualification
>40% to 70%	J
>70% to 100%	JN
>100% [1]	R
>100% to 200% (Interference detected)[2]	J or JN
>50% (pesticide) sample results less than the RL)	U

When the pesticide sample results are less than the RL and the %D greater than 50% the sample result are raised to the RL and reported as non-detect.

Notes:

1: If the pattern is confirmed sample results will be qualified as estimated (J). If pattern exhibits interference or if the pesticide cannot be positively determined due to weathering the sample results will be qualified as tentative identification estimate (JN).

2: If interference is detected in either column the sample results will be qualified as tentative identification estimate (JN).

8. System Performance and Overall Assessment

The laboratory narrative indicates continuing calibration deviations. These deviations are normally not evaluated in a tier II data review. Sample results that had continuing calibration recoveries that exceed the control limit high and were non detect did not require qualification. Sample results where the calibration recoveries were high and the compound was detected or calibration recoveries were low were qualified as estimated (J or UJ).

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR PESTICIDES

Pesticides; SW-846 8081	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY (GC/ECD)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks	X				X
Laboratory Control Sample (LCS)		X		X	
Laboratory Control Sample Duplicate(LCSD)	X				X
LCS/LCSD Precision (RPD)	X				X
Matrix Spike (MS)		X		X	
Matrix Spike Duplicate(MSD)		X		X	
MS/MSD Precision (RPD)		X		X	
Field/Lab Duplicate (RPD)		X		X	
Surrogate Spike Recoveries		X		X	
Column %D $\leq$ 40% (If dual column is performed for reporting-not confirmation)		X	X		
Dilution Factor		X		X	
Moisture Content		X		X	

Notes:

%RSD – relative standard deviation
%R - percent recovery
RPD - relative percent difference
%D – difference.

POLYCHLORINATED BIPHENYLS (PCBs) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8082A	Soil	14 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore, detected sample results were not associated with blank contamination.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. PCB analysis requires that one of the two PCB surrogate compounds exhibit recoveries within the laboratory-established acceptance limits.

All surrogate recoveries were within control limits.

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

The MS/MSD was not performed on a sample within this SDG.

5. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

All compounds associated with the LCS analysis exhibited recoveries within the control limits.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of three times the RL is applied for soil matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
PSSTP-07R (0.5-2) (04-18-2019)/ SO-DUP-0418 (04-18-2019)	Aroclor 1254	40 U	61	AC

Notes:
AC Acceptable

The calculated RPDs between the parent sample and field duplicate were acceptable.

7. Compound Identification

The retention times of all quantitated peaks must fall within the calculated retention time windows for both the primary and confirmation columns. When dual column analysis is performed the relative percent difference (%RPD) of detected sample results must be less than 40%.

No Aroclors were detected in the samples within this SDG.

8. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR PCBs

PCBs; SW-846 8082A	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY (GC/ECD)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks					X
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R					X
LCS/LCSD Precision (RPD)					X
Matrix Spike (MS) %R		X		X	
Matrix Spike Duplicate(MSD) %R		X		X	
MS/MSD Precision (RPD)		X		X	
Field/Lab Duplicate (RPD)		X		X	
Surrogate Spike Recoveries		X		X	
Column (%D) (If dual column is performed-not confirmation purposes only)		X		X	
Dilution Factor		X		X	
Moisture Content		X		X	

%R - percent recovery

RPD - relative percent difference

%D – difference

INORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 6010D, 7471A, and 9012B. Data were reviewed in accordance with the USEPA CLP National Functional Guidelines for Inorganic Superfund Methods Data Review, EPA 540/R-2017-001, January 2017; and the USEPA CLP National Functional Guidelines for Inorganic Data Review, EPA 540-R-01-008, July 2002 (as applicable).

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and that it was already subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with the USEPA National Functional Guidelines:

- Concentration (C) Qualifiers
  - U The analyte was analyzed for but not detected. The associated value is the analyte instrument detection limit.
  - J The reported value was obtained from a reading less than the reporting limit (RL), but greater than or equal to the method detection limit (MDL).
- Quantitation (Q) Qualifiers
  - E The reported value is estimated due to the presence of interference.
  - N Spiked sample recovery is not within control limits.
  - * Duplicate analysis is not within control limits.
- Validation Qualifiers
  - J The analyte was positively identified; however, the associated numerical value is an estimated concentration only.
  - UJ The analyte was not detected above the reporting limit. However, the reported limit is approximate and may or may not represent the actual limit of detection.
  - UB Analyte considered non-detect at the listed value due to associated blank contamination.
  - R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

METALS ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 6010D	Water	180 days from collection to analysis	Preserved to a pH of less than 2.
	Soil	180 days from collection to analysis	Cool to <6 °C.
SW-846 7471A	Soil	28 days from collection to analysis	Cool to <6 °C.
SW-846 7470A	Water	28 days from collection to analysis	Cool to <6 °C; preserved to a pH of less than 2.

All samples were analyzed within the specified holding times.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Analytes were detected in the associated QA blanks; however, the associated sample results were greater than the BAL and/or were non-detect. No qualification of the sample results was required.

3. Matrix Spike (MS)/Matrix Spike Duplicate(MSD)/Laboratory Duplicate Analysis

MS/MSD and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

3.1 MS/MSD Analysis

All metal analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the analyte's concentration detected in the parent sample exceeds the MS concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

All analytes associated with MS/MSD recoveries were within control limits with the exception of the following analyte present in the table below.

Sample Location	Analyte	MS Recovery	MSD Recovery
S-128 (2-4) (04-18-2019)	Antimony	65.6%	65.9%
	Lead	59.0%	134.6%
	Magnesium	35.5%	49.3%
	Manganese	17.5%	54.5%
	Mercury	157.9%	236.9%

The criteria used to evaluate MS/MSD recoveries are presented in the following table. In the case of an MS/MSD deviation, the sample results are qualified. The qualifications for all metals are applied to all sample results associated with this SDG except PCSB-30R (0.5-2) (04-19-2019).

Control limit	Sample Result	Qualification
MS/MSD percent recovery 30% to 74%	Non-detect	UJ
	Detect	J
MS/MSD percent recovery <30%	Non-detect	R
	Detect	J
MS/MSD percent recovery >125%	Non-detect	No Action
	Detect	J

3.2 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the RL. A control limit of 20% for water matrices and 35% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of one times the RL is applied for water matrices and two times the RL for soil matrices.

MS/MSD analysis was performed in replacement of the laboratory duplicate analysis. The MS/MSD analysis exhibited RPDs within the control limits.

4. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of three times the RL is applied for soil matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
PSSTP-07R (0.5-2) (04-18-2019)/	Aluminum	11100	7460	39.2 %

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
SO-DUP-0418 (04-18-2019)	Arsenic	6.6	6.9	AC
	Barium	110	146	28.1 %
	Beryllium	0.52	0.37	33.7 %
	Cadmium	0.65 U	0.74	AC
	Calcium	22400	27600	20.8 %
	Chromium	18	20	10.5 %
	Copper	17.7	28.1	45.4 %
	Iron	17000	16000	6.0 %
	Lead	158	201	23.9 %
	Magnesium	4540	4260	6.3 %
	Manganese	316	297	6.1 %
	Mercury	0.19	0.23	19.0%
	Nickel	11.1	11.6	4.4 %
	Vanadium	18	15.3	16.2 %
	Zinc	127	164	25.4 %

Notes:
AC Acceptable

The calculated RPDs between the parent sample and field duplicate were acceptable.

5. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The analytes associated with the LCS analysis must exhibit a percent recovery between the control limits of 80% and 120%.

The LCS analysis exhibited recoveries within the control limits.

6. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR METAL

METALS; SW846 6010D/7471A	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Inductively Coupled Plasma-Atomic Emission Spectrometry (ICP-AES)					
Tier II Validation					
Holding Times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method Blanks		X		X	
B. Equipment/Field Blanks	X				X
Laboratory Control Sample (LCS)		X		X	
Matrix Spike (MS) %R		X	X		
Matrix Spike Duplicate (MSD) %R		X	X		
MS/MSD Precision (RPD)		X		X	
Field/Lab Duplicate (RPD)		X		X	
Total vs. Dissolved	X				X

Notes:

%R Percent recovery

RPD Relative percent difference

GENERAL CHEMISTRY ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
Cyanide by SW-846 9012	Water	14 days from collection to analysis	Cool to <6 °C; preserved to a pH of greater than 12.
	Soil		Cool to <6 °C.

All samples were analyzed within the specified holding times.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Analytes were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Matrix Spike/Matrix Spike Duplicate (MS/MSD)/Laboratory Duplicate Analysis

MS/MSD and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

3.1 MS/MSD Analysis

All analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the analyte's concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

All analytes associated with MS/MSD recoveries were within control limits with the exception of the following analyte present in the table below.

Sample Location	Analyte	MS Recovery
S-128 (2-4) (04-18-2019)	Cyanide	54.0%

The criteria used to evaluate MS/MSD recoveries are presented in the following table. In the case of an MS/MSD deviation, the sample results are qualified. The qualifications are applied to all sample results

associated with this SDG except S-129 (2-4) (04-18-2019), S-125 (13-15) (04-18-2019), and PCSB-30R (0.5-2) (04-19-2019), which exhibited a passing MS recovery.

Control limit	Sample Result	Qualification
MS/MSD percent recovery 30% to 74%	Non-detect	UJ
	Detect	J
MS/MSD percent recovery <30%	Non-detect	R
	Detect	J
MS/MSD percent recovery >125%	Non-detect	No Action
	Detect	J

3.2 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the RL. A control limit of 20% for water matrices and 35% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of one times the RL is applied for water matrices and two times the RL for soil matrices.

The laboratory duplicate analysis exhibited RPD within control limits.

4. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The analytes associated with the LCS analysis must exhibit a percent recovery between the control limits of 80% and 120%.

The LCS analysis exhibited recoveries within the control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of three times the RL is applied for soil matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
PSSTP-07R (0.5-2) (04-18-2019)/ SO-DUP-0418 (04-18-2019)	Cyanide	0.33	0.37	AC

Notes:
AC Acceptable

The calculated RPDs between the parent sample and field duplicate were acceptable.

6. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR GENERAL CHEMISTRY

General Chemistry: EPA 9012	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Miscellaneous Instrumentation					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks					X
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R					X
LCS/LCSD Precision (RPD)					X
Matrix Spike (MS) %R		X	X		
Matrix Spike Duplicate(MSD) %R	X				X
MS/MSD Precision (RPD)	X				X
Field/Lab Duplicate (RPD)		X		X	
Dilution Factor		X		X	
Moisture Content					X

Notes:
%R - percent recovery
RPD - relative percent difference

VALIDATION PERFORMED BY: Andrew Korycinski

SIGNATURE:

DATE: July 17, 2019

PEER REVIEW: Dennis Capria

DATE: July 22, 2019

CHAIN OF CUSTODY
SAMPLE ANALYSIS DATA SHEETS

SLL

CHAIN OF CUSTODY

SGS North America Inc. - Dayton
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TEL. 732-329-0200 FAX: 732-329-3499/3480
www.sgs.com/ehsusa

Page 1 of 3

PM L

FED-EX Tracking #: | Bottle Order Control #: ER-041619-205
SGS Quote #: | SGS Job #: JC86716

Client / Reporting Information

Company Name: Arcadis
Street Address: 110 W Fayette St #300
City: Syracuse State: NY Zip: 13202
Project Contact: Cary Healy / Laurence.Healy@arcadis.com E-mail:
Phone #: 315-335-9493
Sampler(s) Name(s): C. Bashaw 302 345 0859 Phone #:

Project Information

Project Name: Philly Color
Street: 4501 Richmond St
City: Philadelphia State: PA
Project #: B0036790.0001
Client Purchase Order #: B0036790.0001
Project Manager: John Bussiel

Billing Information (If different from Report to)
Company Name: Same
Street Address:
City: State: Zip:
Attention:

Requested Analysis

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL - Sludge; SED-Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB - Field Blank; EB-Equipment Blank; RB - Rinse Blank; TB - Trip Blank

SGS Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Grab (G) Comp (C)	Matrix	# of bottles	Number of preserved Bottles: HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	VOA 8260 TCL 2x	VOA 8260 TCL 2x	VOA 8270 TCL 2x	Pest/PCB/TTRL 2x	8082 PCB 1x	LAB USE ONLY
1	S-129 (2-4)		4/16/19	800	GB	G	SO	5					X				X	X	X	X	X	
2	S-129 (8-10)			810																		
3	S-129 (10-12)			820																		D43
	S-128 (2-4)			900																		C64TL
4	S-128 (2-4) MS			900																		14M3
	S-128 (2-4) MSD			900																		40104
5	S-129 (10-12)			915																		40103
6	S-128 (13-15)			930																		
7	S-125 (7-9)			1025																		
8	S-125 (11-13)			1035																		
9	S-125 (13-15)			1045																		
10	TP-03R (7-9)			1055	✓	✓	✓	✓					✓	✓			✓	✓	✓	✓	✓	

Turn Around Time (Business Days)

Approved By (SGS PM): / Date:

- [X] 10 Business Days
- [ ] 5 Business Days
- [ ] 3 Business Days*
- [ ] 2 Business Days*
- [ ] 1 Business Day*
- [ ] Other

All data available via Lablink | * Approval needed for 1-3 Business Day TAT

Deliverable

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] NJ Reduced (Level 3)
- [X] Full Tier I (Level 4)
- [ ] Commercial "C"
- [ ] NJ DKQP
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] MA MCP Criteria
- [ ] CT RCP Criteria
- [ ] State Forms
- [ ] EDD Format
- [ ] DOD-QSM5

Commercial "A" = Results only, Commercial "B" = Results + QC Summary
Commercial "C" = Results + QC Summary + Partial Raw data

Comments / Special Instructions

Initial Assessment 2 B (1)
Label Verification

http://www.sgs.com/en/terms-and-conditions

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by:	Date / Time:	Received By:	Relinquished By:	Date / Time:	Received By:
1	4/18/19 1425	1	2	4/19/19 1510	2
3		3	4		4
5		5	Custody Seal #	Preserved where applicable	On Ice: 2.5, 2.9

Custody Seal #: ☐ Intact ☐ Not Intact | Preserved where applicable: ☐ Absent | ☐ Therm. ID:

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5.1 5

CHAIN OF CUSTODY

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2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200 FAX: 732-329-3499/3480
www.sgs.com/ehsusa

FED-EX Tracking #: | Bottle Order Control #:
SGS Quote #: | SGS Job #: JC86716

Client / Reporting Information

Company Name: Aregds
Street Address: 110 W. Fayette St #3a
City: Syracuse State: NY Zip: 13202
Project Contact: Hardy/Cavanagh-Hardy@cardno.com E-mail:
Phone #: 315-335-9493
Sampler(s) Name(s): C. Bastiliga Phone #: 302-345-2554

Project Information

Project Name: Philly Cafe
Street: 4601 Richmond St
City: Philadelphia State: PA
Project #: BC086790.0001
Client Purchase Order #: BC094796.0001
Project Manager: John Bressi

Billing Information (if different from Report to)

Company Name: Same
Street Address:
City: State: Zip:
Attention:

Requested Analysis

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL - Sludge; SED - Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB - Field Blank; EB - Equipment Blank; RB - Rinse Blank; TB - Trip Blank

SGS Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Grab (G) Comp (C)	Matrix	# of bottles	Preserved Bottles: HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	Methanol	V8260 TCL20	CN	ABN 8270 TCL20	METAL	PEST PBSTCL	PCB#1	PCB#2	LAB USE ONLY
11	TP-6SR (11-13		4/18/19	1110	GB	G	SO	5					2	2				X	X	X	X				
12	3-124 (7-9)			1135									2					X	X	X	X				
13	S-124 (10-12)			1145									2					X	X	X	X				
14	S-123 (7-9)			1240									2					X	X	X	X				
15	S-123 (13-15)			1255									2					X	X	X	X				
16	PSSTP-07R (6.5-7)			1335				6					5					X	X	X	X	X	X		
17	SC-Dup-041 8			—				6					5					X	X	X	X	X	X		
18	PSSTP-07R (6-9)			~~1350~~ 1400				6					3					X	X	X	X	X	X		
19	PSSTP-07R (20-22)			1400				5					3						X	X	X				
20	PCTP-5IR (10-12)			1445				5					2					X	X	X	X	X	X		
21	PC3R-26R (6.5-7)		4/19/19	1020				6					3					X	X	X	X				
	PCSB-26R (6.5-7) MS			1020				6					3					X	X	X	X	X	X		

Turn Around Time (Business Days)

Approved By (SGS PM): / Date:

- [X] 10 Business Days
- [ ] 5 Business Days
- [ ] 3 Business Days*
- [ ] 2 Business Days*
- [ ] 1 Business Day*
- [ ] Other

All data available via Labilink. * Approval needed for 1-3 Business Day TAT

Deliverable

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] NJ Reduced (Level 3)
- [X] Full Tier I (Level 4)
- [ ] Commercial "C"
- [ ] NJ DKQP
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] MA MCP Criteria
- [ ] CT RCP Criteria
- [ ] State Forms
- [ ] EDD Format
- [ ] DOD-QSM5

Commercial "A" = Results only; Commercial "B" = Results + QC Summary
Commercial "C" = Results + QC Summary + Partial Raw data

Comments / Special Instructions

http://www.sgs.com/en/terms-and-conditions

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	Relinquished by:	Date / Time:	Received By:	Relinquished By:	Date / Time:	Received By:
1		4/19/19 1625	1	2	4/19/19 1820	2
3		Date / Time:	3	4	Date / Time:	4
5		Date / Time:	5	Custody Seal #	Intact / Not intact	Preserved where applicable: Absent / Therm. ID: / On Ice: 2.5, 2.7

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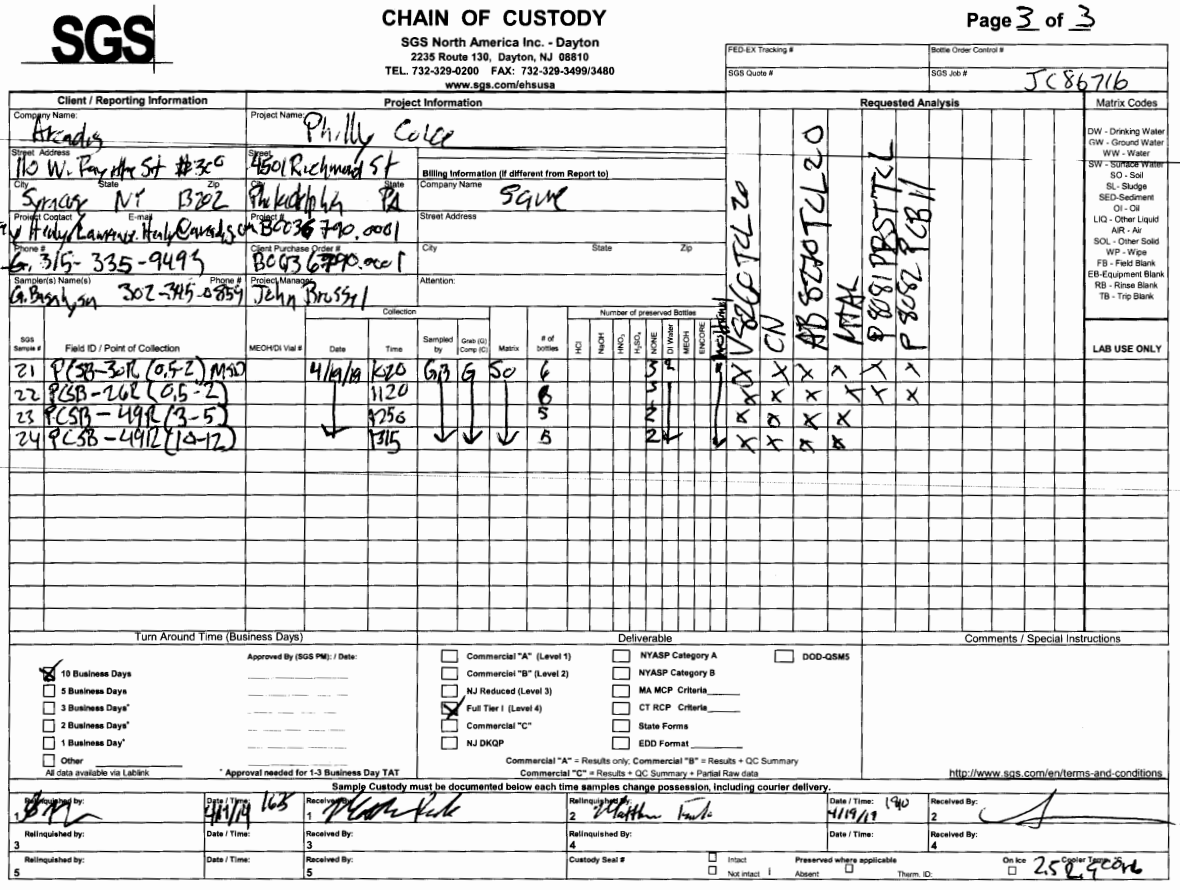

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www.sgs.com/ehsusa

Page 3 of 3

FED-EX Tracking #: | Bottle Order Control #:
SGS Quote #: | SGS Job #: JC86716

Client / Reporting Information
Company Name: Arcadis
Street Address: 110 W. Fayette St #300
City: Syracuse State: NY Zip: 13202
Project Contact: Holly Lawrence E-mail: Holly.Lawrence@arcadis-us.com
Phone #: 315-335-9493
Sampler(s) Name(s): G. Basilyan Phone #: 302-345-0859

Project Information
Project Name: Philly Coke
Street: 4501 Richmond St
City: Philadelphia State: PA
Project #: BC036790.0001
Client Purchase Order #: BC036790.0001
Project Manager: John Brussi
Billing Information (if different from Report to)
Company Name: SGS
Street Address:
City: State: Zip:
Attention:

Requested Analysis

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL - Sludge; SED-Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB - Field Blank; EB-Equipment Blank; RB - Rinse Blank; TB - Trip Blank

SGS Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Grab (G) / Comp (C)	Matrix	# of bottles	Preserved Bottles: HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	Unpreserved	VOC TCL 20	CN	ABN 8270 TCL 20	METAL 6010 8081 PEST TCL	8082 PCB 11	LAB USE ONLY
21	PCSB-30R (0.5-2) MS/D		4/18/19	1020	GB	G	SO	6					3	3			X	X	X	X	X	X	
22	PCSB-26R (0.5-2)			1120				6					4	4			X	X	X	X	X	X	
23	PCSB-49R (3-5)			1256				5					2	2			X	X	X	X			
24	PCSB-49R (10-12)			1315				5					2	2			X	X	X	X			

Turn Around Time (Business Days)
Approved By (SGS PM): / Date:
- [x] 10 Business Days
- [ ] 5 Business Days
- [ ] 3 Business Days*
- [ ] 2 Business Days*
- [ ] 1 Business Day*
- [ ] Other
All data available via Labilink * Approval needed for 1-3 Business Day TAT

Deliverable
- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] NJ Reduced (Level 3)
- [x] Full Tier I (Level 4)
- [ ] Commercial "C"
- [ ] NJ DKQP
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] MA MCP Criteria_____
- [ ] CT RCP Criteria_____
- [ ] State Forms
- [ ] EDD Format _____
- [ ] DOD-QSM5

Commercial "A" = Results only; Commercial "B" = Results + QC Summary
Commercial "C" = Results + QC Summary + Partial Raw data

Comments / Special Instructions
http://www.sgs.com/en/terms-and-conditions

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by:	Date / Time:	Received By:	Relinquished By:	Date / Time:	Received By:
1		4/18/19 1615				
2					4/19/19 1940	
3						
4						
5				Custody Seal #	Intact / Not Intact	Preserved where applicable: Absent / Therm. ID: / On Ice: 2.5 / Cooler Temp: 2.6

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SGS North America Inc.

Report of Analysis

Client Sample ID:	S-129 (2-4)		
Lab Sample ID:	JC86716-1	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8260C	**Percent Solids:**	86.4
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	I225772.D	1	04/27/19 13:31	TDN	n/a	n/a	VI9096
Run #2							

	Initial Weight
Run #1	4.6 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	55.2	13	6.3	ug/kg	
71-43-2	Benzene	1.2	0.63	0.47	ug/kg	
74-97-5	Bromochloromethane	ND	6.3	0.54	ug/kg	
75-27-4	Bromodichloromethane	ND	2.5	0.56	ug/kg	
75-25-2	Bromoform	ND	6.3	0.51	ug/kg	
74-83-9	Bromomethane	ND	6.3	1.3	ug/kg	
78-93-3	2-Butanone (MEK)	ND	13	4.7	ug/kg	
75-15-0	Carbon disulfide	1.3	2.5	1.2	ug/kg	J
56-23-5	Carbon tetrachloride	ND	2.5	0.69	ug/kg	
108-90-7	Chlorobenzene	ND	2.5	0.45	ug/kg	
75-00-3	Chloroethane	ND	6.3	0.86	ug/kg	
67-66-3	Chloroform	ND	2.5	0.47	ug/kg	
74-87-3	Chloromethane	ND	6.3	2.5	ug/kg	
110-82-7	Cyclohexane	ND	2.5	0.51	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.5	1.1	ug/kg	
124-48-1	Dibromochloromethane	ND	2.5	0.43	ug/kg	
106-93-4	1,2-Dibromoethane [a]	ND	1.3	0.41	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.3	0.38	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.3	0.45	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.3	0.43	ug/kg	
75-71-8	Dichlorodifluoromethane [b]	ND	6.3	0.80	ug/kg	
75-34-3	1,1-Dichloroethane	0.52	1.3	0.48	ug/kg	J
107-06-2	1,2-Dichloroethane	ND	1.3	0.59	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.3	0.83	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.3	1.2	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.3	0.84	ug/kg	
78-87-5	1,2-Dichloropropane	ND	2.5	0.51	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	2.5	0.44	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2.5	0.41	ug/kg	
100-41-4	Ethylbenzene	ND	1.3	0.69	ug/kg	
76-13-1	Freon 113	ND	6.3	0.96	ug/kg	
591-78-6	2-Hexanone	ND	6.3	1.6	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-129 (2-4)		
Lab Sample ID:	JC86716-1	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8260C	**Percent Solids:**	86.4
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	2.5	0.88	ug/kg	
79-20-9	Methyl Acetate	ND	6.3	1.7	ug/kg	
108-87-2	Methylcyclohexane	ND	2.5	0.89	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.3	0.44	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	6.3	2.0	ug/kg	
75-09-2	Methylene chloride	ND	6.3	3.1	ug/kg	
100-42-5	Styrene	ND	2.5	0.72	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.5	0.49	ug/kg	
127-18-4	Tetrachloroethene	ND	2.5	0.58	ug/kg	
108-88-3	Toluene	ND	1.3	0.47	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	6.3	1.3	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	6.3	1.3	ug/kg	
71-55-6	1,1,1-Trichloroethane	0.82	2.5	0.54	ug/kg	J
79-00-5	1,1,2-Trichloroethane	ND	2.5	0.43	ug/kg	
79-01-6	Trichloroethene	ND	1.3	0.96	ug/kg	
75-69-4	Trichlorofluoromethane	ND	6.3	0.86	ug/kg	
75-01-4	Vinyl chloride	ND	2.5	0.59	ug/kg	
	m,p-Xylene	ND	1.3	0.94	ug/kg	
95-47-6	o-Xylene	ND	1.3	0.73	ug/kg	
1330-20-7	Xylene (total)	ND	1.3	0.73	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	107%		75-127%
17060-07-0	1,2-Dichloroethane-D4	124%		75-130%
2037-26-5	Toluene-D8	100%		80-120%
460-00-4	4-Bromofluorobenzene	112%		79-127%

(a) This compound in BS is outside in house QC limits bias high. Associated CCV outside of control limits high, sample was ND.
(b) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	S-129 (2-4)		
Lab Sample ID:	JC86716-1	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	86.4
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2P86925.D	1	04/27/19 10:22	CS	04/24/19 11:00	OP19948	E2P3839
Run #2	2P86918.D	5	04/27/19 07:55	CS	04/24/19 11:00	OP19948	E2P3839

	Initial Weight	Final Volume
Run #1	31.3 g	1.0 ml
Run #2	31.3 g	1.0 ml

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	74	18	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	180	23	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	180	32	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	180	66	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	180	140	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	180	40	ug/kg	
95-48-7	2-Methylphenol	ND	74	24	ug/kg	
	3&4-Methylphenol	ND	74	30	ug/kg	
88-75-5	2-Nitrophenol	ND	180	24	ug/kg	
100-02-7	4-Nitrophenol	ND	370	99	ug/kg	
87-86-5	Pentachlorophenol	ND	150	35	ug/kg	
108-95-2	Phenol	ND	74	19	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	180	24	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	180	28	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	180	22	ug/kg	
83-32-9	Acenaphthene	255	37	13	ug/kg	
208-96-8	Acenaphthylene	809	37	19	ug/kg	
98-86-2	Acetophenone	17.0	180	8.0	ug/kg	J
120-12-7	Anthracene	1220	37	23	ug/kg	
1912-24-9	Atrazine	ND	74	16	ug/kg	
56-55-3	Benzo(a)anthracene	2670	37	10	ug/kg	
50-32-8	Benzo(a)pyrene	2940	37	17	ug/kg	
205-99-2	Benzo(b)fluoranthene	4370 [a]	180	82	ug/kg	D
191-24-2	Benzo(g,h,i)perylene	1430	37	18	ug/kg	
207-08-9	Benzo(k)fluoranthene	1780 [a]	180	86	ug/kg	D
101-55-3	4-Bromophenyl phenyl ether	ND	74	14	ug/kg	
85-68-7	Butyl benzyl phthalate	47.0	74	9.0	ug/kg	J
92-52-4	1,1'-Biphenyl	47.9	74	5.1	ug/kg	J
100-52-7	Benzaldehyde	22.0	180	9.2	ug/kg	J
91-58-7	2-Chloronaphthalene	ND	74	8.8	ug/kg	
106-47-8	4-Chloroaniline	ND	180	13	ug/kg	
86-74-8	Carbazole	413	74	5.4	ug/kg	

ND = Not detected MDL = Method Detection Limit
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J = Indicates an estimated value
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N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-129 (2-4)
Lab Sample ID: JC86716-1
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/18/19
Date Received: 04/19/19
Percent Solids: 86.4

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	74	15	ug/kg	
218-01-9	Chrysene	2970	37	12	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	74	7.9	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	74	16	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	74	13	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	74	12	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	37	11	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	37	19	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	74	31	ug/kg	
123-91-1	1,4-Dioxane	ND	37	24	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	533	37	16	ug/kg	
132-64-9	Dibenzofuran	384	74	15	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	74	6.0	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	74	9.2	ug/kg	
84-66-2	Diethyl phthalate	ND	74	7.9	ug/kg	
131-11-3	Dimethyl phthalate	ND	74	6.6	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	80.5	74	8.7	ug/kg	
206-44-0	Fluoranthene	6350 [a]	180	82	ug/kg	D
86-73-7	Fluorene	689	37	17	ug/kg	
118-74-1	Hexachlorobenzene	ND	74	9.4	ug/kg	
87-68-3	Hexachlorobutadiene	ND	37	15	ug/kg	
77-47-4	Hexachlorocyclopentadiene [b]	ND	370	15	ug/kg	UJ
67-72-1	Hexachloroethane	ND	180	18	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	1410	37	17	ug/kg	
78-59-1	Isophorone	ND	74	7.9	ug/kg	
91-57-6	2-Methylnaphthalene	159	37	8.4	ug/kg	
88-74-4	2-Nitroaniline	ND	180	8.7	ug/kg	
99-09-2	3-Nitroaniline	ND	180	9.2	ug/kg	
100-01-6	4-Nitroaniline	ND	180	9.6	ug/kg	
91-20-3	Naphthalene	352	37	10	ug/kg	
98-95-3	Nitrobenzene	ND	74	14	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	74	11	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	180	14	ug/kg	
85-01-8	Phenanthrene	5830 [a]	180	62	ug/kg	D
129-00-0	Pyrene	5930 [a]	180	59	ug/kg	D
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	180	9.4	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	41%	49%	23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
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J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-129 (2-4)		
Lab Sample ID:	JC86716-1	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	86.4
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	50%	58%	27-114%
118-79-6	2,4,6-Tribromophenol	56%	58%	19-152%
4165-60-0	Nitrobenzene-d5	56%	72%	26-134%
321-60-8	2-Fluorobiphenyl	70%	76%	39-124%
1718-51-0	Terphenyl-d14	55%	67%	36-134%

(a) Result is from Run# 2
(b) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-129 (2-4)
Lab Sample ID: JC86716-1
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/18/19
Date Received: 04/19/19
Percent Solids: 86.4

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	8600	57	9.2	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Antimony	0.47 U J	2.3	0.47	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Arsenic	6.3	2.3	0.32	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Barium	157	23	2.2	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Beryllium	0.39	0.23	0.092	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Cadmium	0.88	0.57	0.080	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Calcium	35700	1700	150	mg/kg	3	04/23/19	05/01/19	ND	SW846 6010D [3]	SW846 3050B [4]
Chromium	24.3	1.1	0.42	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Cobalt	4.9 J	5.7	0.32	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Copper	66.7	2.9	0.96	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Iron	17400	57	22	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Lead	279 J	2.3	0.47	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Magnesium	9790 J	570	16	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Manganese	260 J	1.7	0.47	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Mercury	0.56 J	0.035	0.015	mg/kg	1	04/23/19	04/23/19	LL	SW846 7471B [1]	SW846 7471B [5]
Nickel	18.9	4.6	0.40	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Potassium	1200	1100	36	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Selenium	0.74 U	2.3	0.74	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Silver	0.52 J	0.57	0.19	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Sodium	212 J	1100	89	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Thallium	0.66 U	1.1	0.66	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Vanadium	24.7	5.7	0.22	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Zinc	308	5.7	2.6	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA46561
(2) Instrument QC Batch: MA46589
(3) Instrument QC Batch: MA46629
(4) Prep QC Batch: MP14499
(5) Prep QC Batch: MP14502

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	S-129 (2-4)		
Lab Sample ID:	JC86716-1	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
		Percent Solids:	86.4
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	0.64	0.33	0.17	mg/kg	1	04/30/19 13:11	KI	SW846 9012B/LACHAT
Solids, Percent	86.4			%	1	04/29/19 17:22	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

SGS North America Inc.

Report of Analysis

Client Sample ID:	S-129 (8-10)		
Lab Sample ID:	JC86716-2	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8260C	**Percent Solids:**	84.6
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	I225831.D	1	04/30/19 13:53	TDN	n/a	n/a	VI9098
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	4.8 g	10.0 ml	1.0 ul
Run #2			

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	130000	66000	ug/kg	
71-43-2	Benzene	44300	6600	5000	ug/kg	
74-97-5	Bromochloromethane	ND	66000	5700	ug/kg	
75-27-4	Bromodichloromethane	ND	26000	5900	ug/kg	
75-25-2	Bromoform	ND	66000	5300	ug/kg	
74-83-9	Bromomethane	ND	66000	13000	ug/kg	
78-93-3	2-Butanone (MEK)	ND	130000	49000	ug/kg	
75-15-0	Carbon disulfide	ND	26000	12000	ug/kg	
56-23-5	Carbon tetrachloride	ND	26000	7300	ug/kg	
108-90-7	Chlorobenzene	ND	26000	4700	ug/kg	
75-00-3	Chloroethane	ND	66000	9100	ug/kg	
67-66-3	Chloroform	ND	26000	4900	ug/kg	
74-87-3	Chloromethane	ND	66000	26000	ug/kg	
110-82-7	Cyclohexane	ND	26000	5400	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	26000	11000	ug/kg	
124-48-1	Dibromochloromethane	ND	26000	4500	ug/kg	
106-93-4	1,2-Dibromoethane	ND	13000	4300	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	13000	4000	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	13000	4700	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	13000	4500	ug/kg	
75-71-8	Dichlorodifluoromethane [b]	ND	66000	8400	ug/kg	
75-34-3	1,1-Dichloroethane	ND	13000	5100	ug/kg	
107-06-2	1,2-Dichloroethane	ND	13000	6200	ug/kg	
75-35-4	1,1-Dichloroethene	ND	13000	8700	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	13000	13000	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	13000	8800	ug/kg	
78-87-5	1,2-Dichloropropane	ND	26000	5400	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	26000	4700	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	26000	4300	ug/kg	
100-41-4	Ethylbenzene	11600	13000	7300	ug/kg	J
76-13-1	Freon 113	ND	66000	10000	ug/kg	
591-78-6	2-Hexanone	ND	66000	17000	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-129 (8-10)		
Lab Sample ID:	JC86716-2	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8260C	**Percent Solids:**	84.6
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	26000	9200	ug/kg	
79-20-9	Methyl Acetate	ND	66000	18000	ug/kg	
108-87-2	Methylcyclohexane	ND	26000	9300	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	13000	4700	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	66000	21000	ug/kg	
75-09-2	Methylene chloride	ND	66000	33000	ug/kg	
100-42-5	Styrene	ND	26000	7600	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	26000	5200	ug/kg	
127-18-4	Tetrachloroethene	ND	26000	6100	ug/kg	
108-88-3	Toluene	17600	13000	5000	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	66000	13000	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	66000	13000	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	26000	5600	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	26000	4500	ug/kg	
79-01-6	Trichloroethene	ND	13000	10000	ug/kg	
75-69-4	Trichlorofluoromethane	ND	66000	9000	ug/kg	
75-01-4	Vinyl chloride	ND	26000	6200	ug/kg	
	m,p-Xylene	80900	13000	9900	ug/kg	
95-47-6	o-Xylene	29700	13000	7700	ug/kg	
1330-20-7	Xylene (total)	111000	13000	7700	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	105%		75-127%
17060-07-0	1,2-Dichloroethane-D4	106%		75-130%
2037-26-5	Toluene-D8	102%		80-120%
460-00-4	4-Bromofluorobenzene	110%		79-127%

(a) Diluted due to high concentration of non-target compound.
(b) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	S-129 (8-10)		
Lab Sample ID:	JC86716-2	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	84.6
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	2P86928.D	10	04/27/19 11:26	CS	04/24/19 11:00	OP19948	E2P3839
Run #2	2P86936.D	500	04/29/19 12:27	YC	04/24/19 11:00	OP19948	E2P3840
Run #3	6P481498.D	1000	04/30/19 14:45	AR	04/24/19 11:00	OP19948	E6P2577

	Initial Weight	Final Volume
Run #1	30.5 g	1.0 ml
Run #2	30.5 g	1.0 ml
Run #3	30.5 g	1.0 ml

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	780	190	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	1900	240	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	1900	330	ug/kg	
105-67-9	2,4-Dimethylphenol	4180	1900	690	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	1900	1500	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	1900	410	ug/kg	
95-48-7	2-Methylphenol	ND	780	250	ug/kg	
	3&4-Methylphenol	390	780	320	ug/kg	J
88-75-5	2-Nitrophenol	ND	1900	260	ug/kg	
100-02-7	4-Nitrophenol	ND	3900	1000	ug/kg	
87-86-5	Pentachlorophenol	ND	1600	360	ug/kg	
108-95-2	Phenol	ND	780	200	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	1900	260	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	1900	290	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	1900	230	ug/kg	
83-32-9	Acenaphthene	469000 [b]	19000	6700	ug/kg	D
208-96-8	Acenaphthylene	121000 [b]	19000	9800	ug/kg	D
98-86-2	Acetophenone	ND	1900	83	ug/kg	
120-12-7	Anthracene	325000 [b]	19000	12000	ug/kg	D
1912-24-9	Atrazine	ND	780	170	ug/kg	
56-55-3	Benzo(a)anthracene	357000 [b]	19000	5500	ug/kg	D
50-32-8	Benzo(a)pyrene	299000 [b]	19000	8800	ug/kg	
205-99-2	Benzo(b)fluoranthene	345000 [b]	19000	8600	ug/kg	
191-24-2	Benzo(g,h,i)perylene	135000 [b]	19000	9700	ug/kg	
207-08-9	Benzo(k)fluoranthene	147000 [b]	19000	9000	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	780	150	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	780	95	ug/kg	
92-52-4	1,1'-Biphenyl	127000 [b]	39000	2700	ug/kg	D
100-52-7	Benzaldehyde	ND	1900	96	ug/kg	
91-58-7	2-Chloronaphthalene	ND	780	92	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-129 (8-10)
Lab Sample ID: JC86716-2
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/18/19
Date Received: 04/19/19
Percent Solids: 84.6

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
106-47-8	4-Chloroaniline	ND	1900	140	ug/kg	
86-74-8	Carbazole	152000 [b]	39000	2800	ug/kg	D
105-60-2	Caprolactam	ND	780	150	ug/kg	
218-01-9	Chrysene	296000 [b]	19000	6100	ug/kg	D
111-91-1	bis(2-Chloroethoxy)methane	ND	780	83	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	780	170	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	780	140	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	780	130	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	390	120	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	390	190	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	780	320	ug/kg	
123-91-1	1,4-Dioxane	ND	390	260	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	9110	390	170	ug/kg	
132-64-9	Dibenzofuran	472000 [b]	39000	7900	ug/kg	D
84-74-2	Di-n-butyl phthalate	ND	780	63	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	780	97	ug/kg	
84-66-2	Diethyl phthalate	ND	780	83	ug/kg	
131-11-3	Dimethyl phthalate	ND	780	69	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	780	91	ug/kg	
206-44-0	Fluoranthene	864000 [b]	19000	8600	ug/kg	D
86-73-7	Fluorene	693000 [b]	19000	8900	ug/kg	D
118-74-1	Hexachlorobenzene	ND	780	98	ug/kg	
87-68-3	Hexachlorobutadiene	ND	390	160	ug/kg	
77-47-4	Hexachlorocyclopentadiene [c]	ND	3900	150	ug/kg	UJ
67-72-1	Hexachloroethane	ND	1900	190	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	120000 [b]	19000	9100	ug/kg	D
78-59-1	Isophorone	ND	780	83	ug/kg	
91-57-6	2-Methylnaphthalene	533000 [b]	19000	4400	ug/kg	D
88-74-4	2-Nitroaniline	ND	1900	91	ug/kg	
99-09-2	3-Nitroaniline	ND	1900	97	ug/kg	
100-01-6	4-Nitroaniline	ND	1900	100	ug/kg	
91-20-3	Naphthalene	2440000 [d]	39000	11000	ug/kg	D
98-95-3	Nitrobenzene	ND	780	150	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	780	110	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	1900	140	ug/kg	
85-01-8	Phenanthrene	1700000 [b]	19000	6500	ug/kg	D
129-00-0	Pyrene	586000 [b]	19000	6200	ug/kg	D
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	1900	98	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-129 (8-10)		
Lab Sample ID:	JC86716-2	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	84.6
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Run# 3	Limits
367-12-4	2-Fluorophenol	51%	26%	0% [e]	23-115%
4165-62-2	Phenol-d5	60%	293% [e]	0% [e]	27-114%
118-79-6	2,4,6-Tribromophenol	87%	71%	0% [e]	19-152%
4165-60-0	Nitrobenzene-d5	137% [f]	85%	0% [e]	26-134%
321-60-8	2-Fluorobiphenyl	71%	117%	121%	39-124%
1718-51-0	Terphenyl-d14	80%	96%	0% [e]	36-134%

(a) Dilution required due to viscosity of the extract matrix.
(b) Result is from Run# 2
(c) Associated CCV outside of control limits low.
(d) Result is from Run# 3
(e) Outside control limits due to dilution.
(f) Outside control limits due to dilution and matrix interference.

Report of Analysis

Client Sample ID: S-129 (8-10)
Lab Sample ID: JC86716-2
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/18/19
Date Received: 04/19/19
Percent Solids: 84.6

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	5970	59	9.5	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Antimony	0.48 U J	2.4	0.48	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Arsenic	7.4	2.4	0.33	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Barium	58.4	24	2.2	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Beryllium	0.32	0.24	0.095	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Cadmium	0.50 J	0.59	0.083	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Calcium	1380	590	52	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Chromium	11.5	1.2	0.44	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Cobalt	5.9	5.9	0.33	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Copper	45.2	3.0	0.99	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Iron	17000	59	23	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Lead	196 J	2.4	0.48	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Magnesium	1170 J	590	16	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Manganese	469 J	1.8	0.48	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Mercury	0.086 J	0.033	0.014	mg/kg	1	04/23/19	04/23/19	LL	SW846 7471B [1]	SW846 7471B [4]
Nickel	11.7	4.7	0.41	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Potassium	601 J	1200	38	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Selenium	0.77 U	2.4	0.77	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Silver	0.20 U	0.59	0.20	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Sodium	92 U	1200	92	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Thallium	0.69 U	1.2	0.69	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Vanadium	10.6	5.9	0.22	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Zinc	249	5.9	2.7	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]

(1) Instrument QC Batch: MA46561
(2) Instrument QC Batch: MA46589
(3) Prep QC Batch: MP14499
(4) Prep QC Batch: MP14502

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	S-129 (8-10)		
Lab Sample ID:	JC86716-2	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
		Percent Solids:	84.6
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result		RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	7.7	J	0.35	0.18	mg/kg	1	04/30/19 13:12	KI	SW846 9012B/LACHAT
Solids, Percent	84.6				%	1	04/29/19 17:22	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

SGS North America Inc.

Report of Analysis

Client Sample ID:	S-129 (10-12)		
Lab Sample ID:	JC86716-3	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8260C	**Percent Solids:**	55.7
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	I225773.D	1	04/27/19 14:01	TDN	n/a	n/a	VI9096
Run #2							

	Initial Weight
Run #1	5.4 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	105	17	8.3	ug/kg	
71-43-2	Benzene	82.4	0.83	0.63	ug/kg	
74-97-5	Bromochloromethane	ND	8.3	0.71	ug/kg	
75-27-4	Bromodichloromethane	ND	3.3	0.74	ug/kg	
75-25-2	Bromoform	ND	8.3	0.67	ug/kg	
74-83-9	Bromomethane	ND	8.3	1.7	ug/kg	
78-93-3	2-Butanone (MEK)	11.1	17	6.2	ug/kg	J
75-15-0	Carbon disulfide	2.0	3.3	1.5	ug/kg	J
56-23-5	Carbon tetrachloride	ND	3.3	0.91	ug/kg	
108-90-7	Chlorobenzene	ND	3.3	0.59	ug/kg	
75-00-3	Chloroethane	ND	8.3	1.1	ug/kg	
67-66-3	Chloroform	ND	3.3	0.62	ug/kg	
74-87-3	Chloromethane	ND	8.3	3.3	ug/kg	
110-82-7	Cyclohexane	ND	3.3	0.67	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	3.3	1.4	ug/kg	
124-48-1	Dibromochloromethane	ND	3.3	0.56	ug/kg	
106-93-4	1,2-Dibromoethane [a]	ND	1.7	0.54	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.7	0.51	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.7	0.60	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.7	0.57	ug/kg	
75-71-8	Dichlorodifluoromethane [b]	ND	8.3	1.1	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.7	0.64	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.7	0.78	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.7	1.1	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.7	1.6	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.7	1.1	ug/kg	
78-87-5	1,2-Dichloropropane	ND	3.3	0.68	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	3.3	0.59	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	3.3	0.54	ug/kg	
100-41-4	Ethylbenzene	1.0	1.7	0.92	ug/kg	J
76-13-1	Freon 113	ND	8.3	1.3	ug/kg	
591-78-6	2-Hexanone	ND	8.3	2.1	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-129 (10-12)		
Lab Sample ID:	JC86716-3	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8260C	**Percent Solids:**	55.7
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	2.4	3.3	1.2	ug/kg	J
79-20-9	Methyl Acetate	ND	8.3	2.3	ug/kg	
108-87-2	Methylcyclohexane	ND	3.3	1.2	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.7	0.59	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	8.3	2.6	ug/kg	
75-09-2	Methylene chloride	ND	8.3	4.2	ug/kg	
100-42-5	Styrene	ND	3.3	0.96	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	3.3	0.65	ug/kg	
127-18-4	Tetrachloroethene	ND	3.3	0.77	ug/kg	
108-88-3	Toluene	2.6	1.7	0.63	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	8.3	1.7	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	8.3	1.7	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	3.3	0.71	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	3.3	0.57	ug/kg	
79-01-6	Trichloroethene	ND	1.7	1.3	ug/kg	
75-69-4	Trichlorofluoromethane	ND	8.3	1.1	ug/kg	
75-01-4	Vinyl chloride	ND	3.3	0.78	ug/kg	
	m,p-Xylene	4.5	1.7	1.2	ug/kg	
95-47-6	o-Xylene	2.6	1.7	0.97	ug/kg	
1330-20-7	Xylene (total)	7.1	1.7	0.97	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	108%		75-127%
17060-07-0	1,2-Dichloroethane-D4	123%		75-130%
2037-26-5	Toluene-D8	100%		80-120%
460-00-4	4-Bromofluorobenzene	111%		79-127%

(a) This compound in BS is outside in house QC limits bias high. Associated CCV outside of control limits high, sample was ND.
(b) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	S-129 (10-12)		
Lab Sample ID:	JC86716-3	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	55.7
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2P86910.D	1	04/27/19 05:06	CS	04/24/19 11:00	OP19948	E2P3839
Run #2							

	Initial Weight	Final Volume
Run #1	30.7 g	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	120	29	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	290	36	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	290	50	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	290	100	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	290	220	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	290	63	ug/kg	
95-48-7	2-Methylphenol	ND	120	37	ug/kg	
	3&4-Methylphenol	60.4	120	48	ug/kg	J
88-75-5	2-Nitrophenol	ND	290	39	ug/kg	
100-02-7	4-Nitrophenol	ND	580	160	ug/kg	
87-86-5	Pentachlorophenol	197	230	55	ug/kg	J
108-95-2	Phenol	ND	120	31	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	290	39	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	290	44	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	290	35	ug/kg	
83-32-9	Acenaphthene	885	58	20	ug/kg	
208-96-8	Acenaphthylene	85.9	58	30	ug/kg	
98-86-2	Acetophenone	ND	290	13	ug/kg	
120-12-7	Anthracene	392	58	36	ug/kg	
1912-24-9	Atrazine	ND	120	25	ug/kg	
56-55-3	Benzo(a)anthracene	314	58	17	ug/kg	
50-32-8	Benzo(a)pyrene	303	58	27	ug/kg	
205-99-2	Benzo(b)fluoranthene	336	58	26	ug/kg	
191-24-2	Benzo(g,h,i)perylene	168	58	29	ug/kg	
207-08-9	Benzo(k)fluoranthene	147	58	27	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	120	23	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	120	14	ug/kg	
92-52-4	1,1'-Biphenyl	54.2	120	8.0	ug/kg	J
100-52-7	Benzaldehyde	ND	290	15	ug/kg	
91-58-7	2-Chloronaphthalene	ND	120	14	ug/kg	
106-47-8	4-Chloroaniline	ND	290	21	ug/kg	
86-74-8	Carbazole	191	120	8.5	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-129 (10-12)
Lab Sample ID: JC86716-3
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/18/19
Date Received: 04/19/19
Percent Solids: 55.7

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	120	23	ug/kg	
218-01-9	Chrysene	382	58	18	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	120	13	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	120	25	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	120	21	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	120	19	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	58	18	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	58	29	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	120	49	ug/kg	
123-91-1	1,4-Dioxane	ND	58	39	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	53.5	58	26	ug/kg	J
132-64-9	Dibenzofuran	256	120	24	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	120	9.5	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	120	15	ug/kg	
84-66-2	Diethyl phthalate	ND	120	12	ug/kg	
131-11-3	Dimethyl phthalate	ND	120	10	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	120	14	ug/kg	
206-44-0	Fluoranthene	750	58	26	ug/kg	
86-73-7	Fluorene	604	58	27	ug/kg	
118-74-1	Hexachlorobenzene	ND	120	15	ug/kg	
87-68-3	Hexachlorobutadiene	ND	58	24	ug/kg	
77-47-4	Hexachlorocyclopentadiene [a]	ND	580	23	ug/kg	UJ
67-72-1	Hexachloroethane	ND	290	29	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	139	58	27	ug/kg	
78-59-1	Isophorone	ND	120	13	ug/kg	
91-57-6	2-Methylnaphthalene	234	58	13	ug/kg	
88-74-4	2-Nitroaniline	ND	290	14	ug/kg	
99-09-2	3-Nitroaniline	ND	290	15	ug/kg	
100-01-6	4-Nitroaniline	ND	290	15	ug/kg	
91-20-3	Naphthalene	984	58	16	ug/kg	
98-95-3	Nitrobenzene	ND	120	23	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	120	17	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	290	21	ug/kg	
85-01-8	Phenanthrene	1070	58	20	ug/kg	
129-00-0	Pyrene	752	58	19	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	290	15	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	50%		23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-129 (10-12)		
Lab Sample ID:	JC86716-3	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	55.7
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	57%		27-114%
118-79-6	2,4,6-Tribromophenol	68%		19-152%
4165-60-0	Nitrobenzene-d5	70%		26-134%
321-60-8	2-Fluorobiphenyl	78%		39-124%
1718-51-0	Terphenyl-d14	70%		36-134%

(a) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-129 (10-12)
Lab Sample ID: JC86716-3
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/18/19
Date Received: 04/19/19
Percent Solids: 55.7

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	14200	91	15	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Antimony	0.74 U J	3.6	0.74	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Arsenic	24.9	3.6	0.51	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Barium	154	36	3.4	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Beryllium	0.82	0.36	0.15	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Cadmium	1.2	0.91	0.13	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Calcium	4120	910	80	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Chromium	109	1.8	0.67	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Cobalt	12.8	9.1	0.51	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Copper	78.4	4.5	1.5	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Iron	24400	91	35	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Lead	196 J	3.6	0.74	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Magnesium	4380 J	910	25	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Manganese	843 J	2.7	0.74	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Mercury	0.88 J	0.054	0.024	mg/kg	1	04/23/19	04/23/19	LL	SW846 7471B [1]	SW846 7471B [4]
Nickel	26.3	7.3	0.63	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Potassium	1780 J	1800	58	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Selenium	1.2 U	3.6	1.2	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Silver	0.34 J	0.91	0.31	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Sodium	179 J	1800	140	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Thallium	1.1 U	1.8	1.1	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Vanadium	27.8	9.1	0.34	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Zinc	380	9.1	4.2	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]

(1) Instrument QC Batch: MA46561
(2) Instrument QC Batch: MA46589
(3) Prep QC Batch: MP14499
(4) Prep QC Batch: MP14502

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	S-129 (10-12)		
Lab Sample ID:	JC86716-3	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
		Percent Solids:	55.7
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result		RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	1.0	J	0.43	0.22	mg/kg	1	04/30/19 13:13	KI	SW846 9012B/LACHAT
Solids, Percent	55.7				%	1	04/29/19 17:22	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

SGS North America Inc.

Report of Analysis

Client Sample ID:	S-128 (2-4)		
Lab Sample ID:	JC86716-4	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8260C	**Percent Solids:**	83.1
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	I225771.D	1	04/27/19 13:02	TDN	n/a	n/a	VI9096
Run #2							

	Initial Weight
Run #1	4.1 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	15	7.3	ug/kg	
71-43-2	Benzene	25.2	0.73	0.55	ug/kg	J
74-97-5	Bromochloromethane	ND	7.3	0.63	ug/kg	
75-27-4	Bromodichloromethane	ND	2.9	0.65	ug/kg	
75-25-2	Bromoform	ND	7.3	0.59	ug/kg	
74-83-9	Bromomethane	ND	7.3	1.5	ug/kg	
78-93-3	2-Butanone (MEK)	ND	15	5.5	ug/kg	
75-15-0	Carbon disulfide	ND	2.9	1.4	ug/kg	
56-23-5	Carbon tetrachloride	ND	2.9	0.81	ug/kg	
108-90-7	Chlorobenzene	ND	2.9	0.52	ug/kg	
75-00-3	Chloroethane	ND	7.3	1.0	ug/kg	
67-66-3	Chloroform	ND	2.9	0.55	ug/kg	
74-87-3	Chloromethane	ND	7.3	2.9	ug/kg	
110-82-7	Cyclohexane	ND	2.9	0.60	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.9	1.2	ug/kg	
124-48-1	Dibromochloromethane	ND	2.9	0.50	ug/kg	
106-93-4	1,2-Dibromoethane [a]	ND	1.5	0.48	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.5	0.45	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.5	0.53	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.5	0.50	ug/kg	
75-71-8	Dichlorodifluoromethane [b]	ND	7.3	0.93	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.5	0.56	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.5	0.69	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.5	0.96	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.5	1.4	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.5	0.98	ug/kg	
78-87-5	1,2-Dichloropropane	ND	2.9	0.60	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	2.9	0.52	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2.9	0.48	ug/kg	
100-41-4	Ethylbenzene	ND	1.5	0.81	ug/kg	
76-13-1	Freon 113	ND	7.3	1.1	ug/kg	
591-78-6	2-Hexanone	ND	7.3	1.9	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-128 (2-4)		
Lab Sample ID:	JC86716-4	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8260C	**Percent Solids:**	83.1
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	2.9	1.0	ug/kg	
79-20-9	Methyl Acetate	ND	7.3	2.0	ug/kg	UJ
108-87-2	Methylcyclohexane	ND	2.9	1.0	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.5	0.52	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	7.3	2.3	ug/kg	
75-09-2	Methylene chloride	ND	7.3	3.7	ug/kg	
100-42-5	Styrene	ND	2.9	0.84	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.9	0.57	ug/kg	
127-18-4	Tetrachloroethene	ND	2.9	0.68	ug/kg	
108-88-3	Toluene	1.0	1.5	0.55	ug/kg	J
87-61-6	1,2,3-Trichlorobenzene	ND	7.3	1.5	ug/kg	UJ
120-82-1	1,2,4-Trichlorobenzene	ND	7.3	1.5	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	2.9	0.63	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2.9	0.50	ug/kg	
79-01-6	Trichloroethene	ND	1.5	1.1	ug/kg	
75-69-4	Trichlorofluoromethane	ND	7.3	1.0	ug/kg	
75-01-4	Vinyl chloride	ND	2.9	0.69	ug/kg	
	m,p-Xylene	ND	1.5	1.1	ug/kg	
95-47-6	o-Xylene	ND	1.5	0.86	ug/kg	
1330-20-7	Xylene (total)	ND	1.5	0.86	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	108%		75-127%
17060-07-0	1,2-Dichloroethane-D4	122%		75-130%
2037-26-5	Toluene-D8	100%		80-120%
460-00-4	4-Bromofluorobenzene	110%		79-127%

(a) This compound in BS is outside in house QC limits bias high. Associated CCV outside of control limits high, sample was ND.
(b) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	S-128 (2-4)		
Lab Sample ID:	JC86716-4	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	83.1
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2P86922.D	1	04/27/19 09:19	CS	04/24/19 11:00	OP19948	E2P3839
Run #2	2P86916.D	5	04/27/19 07:13	CS	04/24/19 11:00	OP19948	E2P3839

	Initial Weight	Final Volume
Run #1	30.4 g	1.0 ml
Run #2	30.4 g	1.0 ml

ABN TCL List (SOM0 2.0)

CAS No.	Compound		Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol		ND	79	20	ug/kg	
59-50-7	4-Chloro-3-methyl phenol		ND	200	24	ug/kg	
120-83-2	2,4-Dichlorophenol		ND	200	34	ug/kg	
105-67-9	2,4-Dimethylphenol		ND	200	70	ug/kg	
51-28-5	2,4-Dinitrophenol	R	ND	200	150	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	R	ND	200	42	ug/kg	
95-48-7	2-Methylphenol		ND	79	25	ug/kg	
	3&4-Methylphenol		ND	79	33	ug/kg	
88-75-5	2-Nitrophenol		ND	200	26	ug/kg	
100-02-7	4-Nitrophenol		ND	400	110	ug/kg	
87-86-5	Pentachlorophenol		ND	160	37	ug/kg	
108-95-2	Phenol		ND	79	21	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol		ND	200	26	ug/kg	
95-95-4	2,4,5-Trichlorophenol		ND	200	30	ug/kg	
88-06-2	2,4,6-Trichlorophenol		ND	200	24	ug/kg	
83-32-9	Acenaphthene		996	40	14	ug/kg	
208-96-8	Acenaphthylene		511	40	20	ug/kg	
98-86-2	Acetophenone		ND	200	8.5	ug/kg	
120-12-7	Anthracene		2030	40	24	ug/kg	
1912-24-9	Atrazine		ND	79	17	ug/kg	
56-55-3	Benzo(a)anthracene		5260 [a]	200	56	ug/kg	D
50-32-8	Benzo(a)pyrene		5480 [a]	200	90	ug/kg	D
205-99-2	Benzo(b)fluoranthene		7310 [a]	200	87	ug/kg	D
191-24-2	Benzo(g,h,i)perylene		2850	40	20	ug/kg	
207-08-9	Benzo(k)fluoranthene		1600	40	18	ug/kg	
101-55-3	4-Bromophenyl phenyl ether		ND	79	15	ug/kg	
85-68-7	Butyl benzyl phthalate		ND	79	9.7	ug/kg	
92-52-4	1,1'-Biphenyl		68.5	79	5.4	ug/kg	J
100-52-7	Benzaldehyde		ND	200	9.8	ug/kg	
91-58-7	2-Chloronaphthalene		ND	79	9.4	ug/kg	
106-47-8	4-Chloroaniline		ND	200	14	ug/kg	
86-74-8	Carbazole		916	79	5.7	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-128 (2-4)		
Lab Sample ID:	JC86716-4	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	83.1
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	79	16	ug/kg	
218-01-9	Chrysene	5530 [a]	200	62	ug/kg	D
111-91-1	bis(2-Chloroethoxy)methane	ND	79	8.5	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	79	17	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	79	14	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	79	13	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	40	12	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	40	20	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	79	33	ug/kg	
123-91-1	1,4-Dioxane	ND	40	26	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	1090	40	17	ug/kg	
132-64-9	Dibenzofuran	545	79	16	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	79	6.5	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	79	9.9	ug/kg	
84-66-2	Diethyl phthalate	ND	79	8.4	ug/kg	
131-11-3	Dimethyl phthalate	ND	79	7.0	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	93.8	79	9.3	ug/kg	
206-44-0	Fluoranthene	9620 [a]	200	88	ug/kg	D
86-73-7	Fluorene	1050	40	18	ug/kg	
118-74-1	Hexachlorobenzene	ND	79	10	ug/kg	
87-68-3	Hexachlorobutadiene	ND	40	16	ug/kg	
77-47-4	Hexachlorocyclopentadiene [b]	R ND	400	16	ug/kg	
67-72-1	Hexachloroethane	ND	200	20	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	2830	40	19	ug/kg	
78-59-1	Isophorone	ND	79	8.5	ug/kg	
91-57-6	2-Methylnaphthalene	237	40	8.9	ug/kg	
88-74-4	2-Nitroaniline	ND	200	9.3	ug/kg	
99-09-2	3-Nitroaniline	ND	200	9.9	ug/kg	
100-01-6	4-Nitroaniline	ND	200	10	ug/kg	
91-20-3	Naphthalene	510	40	11	ug/kg	
98-95-3	Nitrobenzene	ND	79	15	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	79	11	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	200	14	ug/kg	
85-01-8	Phenanthrene	8700 [a]	200	67	ug/kg	D
129-00-0	Pyrene	9220 [a]	200	63	ug/kg	D
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	200	10	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	44%	41%	23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-128 (2-4)		
Lab Sample ID:	JC86716-4	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	83.1
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	53%	53%	27-114%
118-79-6	2,4,6-Tribromophenol	64%	58%	19-152%
4165-60-0	Nitrobenzene-d5	60%	66%	26-134%
321-60-8	2-Fluorobiphenyl	71%	70%	39-124%
1718-51-0	Terphenyl-d14	59%	62%	36-134%

(a) Result is from Run# 2
(b) Associated CCV outside of control limits low.

Report of Analysis

Client Sample ID: S-128 (2-4)
Lab Sample ID: JC86716-4
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/18/19
Date Received: 04/19/19
Percent Solids: 83.1

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	8370	60	9.6	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Antimony	0.49 U J	2.4	0.49	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Arsenic	9.3	2.4	0.33	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Barium	211	24	2.3	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Beryllium	0.49	0.24	0.095	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Cadmium	0.99	0.60	0.083	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Calcium	58100	1800	160	mg/kg	3	04/23/19	05/01/19	GT	SW846 6010D [3]	SW846 3050B [4]
Chromium	25.9	1.2	0.44	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Cobalt	5.3 J	6.0	0.33	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Copper [a]	52.7	8.9	3.0	mg/kg	3	04/23/19	05/01/19	GT	SW846 6010D [3]	SW846 3050B [4]
Iron	41100	180	69	mg/kg	3	04/23/19	05/01/19	GT	SW846 6010D [3]	SW846 3050B [4]
Lead	769 J	2.4	0.49	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Magnesium	7110 J	600	16	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Manganese [a]	617 J	5.4	1.5	mg/kg	3	04/23/19	05/01/19	GT	SW846 6010D [3]	SW846 3050B [4]
Mercury	0.93 J	0.073	0.032	mg/kg	2	04/23/19	04/23/19	LL	SW846 7471B [1]	SW846 7471B [5]
Nickel	17.9	4.8	0.42	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Potassium	1080 J	1200	38	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Selenium [a]	3.0 J	7.1	2.3	mg/kg	3	04/23/19	05/01/19	GT	SW846 6010D [3]	SW846 3050B [4]
Silver [a]	0.61 U	1.8	0.61	mg/kg	3	04/23/19	05/01/19	GT	SW846 6010D [3]	SW846 3050B [4]
Sodium	265 J	1200	93	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Thallium [a]	2.1 U	3.6	2.1	mg/kg	3	04/23/19	05/01/19	GT	SW846 6010D [3]	SW846 3050B [4]
Vanadium	23.4	6.0	0.23	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Zinc	721	6.0	2.7	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA46561
(2) Instrument QC Batch: MA46589
(3) Instrument QC Batch: MA46631
(4) Prep QC Batch: MP14499
(5) Prep QC Batch: MP14502

(a) Elevated detection limit due to dilution required for high interfering element.

RL = Reporting Limit
MDL = Method Detection Limit
U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: S-128 (2-4)
Lab Sample ID: JC86716-4
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/18/19
Date Received: 04/19/19
Percent Solids: 83.1

General Chemistry

Analyte	Result		RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	0.38	J	0.25	0.12	mg/kg	1	04/30/19 13:17	KI	SW846 9012B/LACHAT
Solids, Percent	83.1				%	1	04/29/19 17:22	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

SGS North America Inc.

Report of Analysis

Client Sample ID:	S-128 (10-12)		
Lab Sample ID:	JC86716-5	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8260C	**Percent Solids:**	72.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	I225832.D	1	04/30/19 14:23	TDN	n/a	n/a	VI9098
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	6.4 g	10.0 ml	20.0 ul
Run #2			

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	6300	3100	ug/kg	
71-43-2	Benzene	1290	310	240	ug/kg	
74-97-5	Bromochloromethane	ND	3100	270	ug/kg	
75-27-4	Bromodichloromethane	ND	1300	280	ug/kg	
75-25-2	Bromoform	ND	3100	250	ug/kg	
74-83-9	Bromomethane	ND	3100	630	ug/kg	
78-93-3	2-Butanone (MEK)	ND	6300	2400	ug/kg	
75-15-0	Carbon disulfide	ND	1300	580	ug/kg	
56-23-5	Carbon tetrachloride	ND	1300	350	ug/kg	
108-90-7	Chlorobenzene	ND	1300	220	ug/kg	
75-00-3	Chloroethane	ND	3100	430	ug/kg	
67-66-3	Chloroform	ND	1300	230	ug/kg	
74-87-3	Chloromethane	ND	3100	1200	ug/kg	
110-82-7	Cyclohexane	ND	1300	260	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	1300	530	ug/kg	
124-48-1	Dibromochloromethane	ND	1300	210	ug/kg	
106-93-4	1,2-Dibromoethane	ND	630	200	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	630	190	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	630	230	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	630	220	ug/kg	
75-71-8	Dichlorodifluoromethane [b]	ND	3100	400	ug/kg	
75-34-3	1,1-Dichloroethane	ND	630	240	ug/kg	
107-06-2	1,2-Dichloroethane	ND	630	300	ug/kg	
75-35-4	1,1-Dichloroethene	ND	630	410	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	630	600	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	630	420	ug/kg	
78-87-5	1,2-Dichloropropane	ND	1300	260	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	1300	220	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	1300	210	ug/kg	
100-41-4	Ethylbenzene	ND	630	350	ug/kg	
76-13-1	Freon 113	ND	3100	480	ug/kg	
591-78-6	2-Hexanone	ND	3100	800	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-128 (10-12)
Lab Sample ID: JC86716-5
Matrix: SO - Soil
Method: SW846 8260C
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/18/19
Date Received: 04/19/19
Percent Solids: 72.9

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	1300	440	ug/kg	
79-20-9	Methyl Acetate	ND	3100	870	ug/kg	
108-87-2	Methylcyclohexane	ND	1300	440	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	630	220	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	3100	980	ug/kg	
75-09-2	Methylene chloride	ND	3100	1600	ug/kg	
100-42-5	Styrene	ND	1300	360	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1300	250	ug/kg	
127-18-4	Tetrachloroethene	ND	1300	290	ug/kg	
108-88-3	Toluene	626	630	240	ug/kg	J
87-61-6	1,2,3-Trichlorobenzene	ND	3100	630	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	3100	630	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	1300	270	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	1300	220	ug/kg	
79-01-6	Trichloroethene	ND	630	480	ug/kg	
75-69-4	Trichlorofluoromethane	ND	3100	430	ug/kg	
75-01-4	Vinyl chloride	ND	1300	290	ug/kg	
	m,p-Xylene	915	630	470	ug/kg	
95-47-6	o-Xylene	ND	630	370	ug/kg	
1330-20-7	Xylene (total)	915	630	370	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%		75-127%
17060-07-0	1,2-Dichloroethane-D4	105%		75-130%
2037-26-5	Toluene-D8	104%		80-120%
460-00-4	4-Bromofluorobenzene	112%		79-127%

(a) Diluted due to high concentration of non-target compound.
(b) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	S-128 (10-12)		
Lab Sample ID:	JC86716-5	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	72.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	2P86926.D	2	04/27/19 10:43	CS	04/24/19 11:00	OP19948	E2P3839
Run #2	2P86917.D	100	04/27/19 07:34	CS	04/24/19 11:00	OP19948	E2P3839
Run #3	6P481499.D	200	04/30/19 15:09	AR	04/24/19 11:00	OP19948	E6P2577

	Initial Weight	Final Volume
Run #1	31.8 g	1.0 ml
Run #2	31.8 g	1.0 ml
Run #3	31.8 g	1.0 ml

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	170	43	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	430	53	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	430	74	ug/kg	
105-67-9	2,4-Dimethylphenol	659	430	150	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	430	320	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	430	92	ug/kg	
95-48-7	2-Methylphenol	136	170	55	ug/kg	J
	3&4-Methylphenol	389	170	71	ug/kg	
88-75-5	2-Nitrophenol	ND	430	57	ug/kg	
100-02-7	4-Nitrophenol	ND	860	230	ug/kg	
87-86-5	Pentachlorophenol	ND	350	81	ug/kg	
108-95-2	Phenol	204	170	45	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	430	57	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	430	65	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	430	51	ug/kg	
83-32-9	Acenaphthene	60500 [b]	4300	1500	ug/kg	D
208-96-8	Acenaphthylene	33600 [b]	4300	2200	ug/kg	D
98-86-2	Acetophenone	ND	430	19	ug/kg	
120-12-7	Anthracene	140000 [b]	4300	2600	ug/kg	D
1912-24-9	Atrazine	ND	170	37	ug/kg	
56-55-3	Benzo(a)anthracene	141000 [b]	4300	1200	ug/kg	D
50-32-8	Benzo(a)pyrene	110000 [b]	4300	2000	ug/kg	
205-99-2	Benzo(b)fluoranthene	150000 [b]	4300	1900	ug/kg	
191-24-2	Benzo(g,h,i)perylene	55500 [b]	4300	2200	ug/kg	
207-08-9	Benzo(k)fluoranthene	50000 [b]	4300	2000	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	170	33	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	170	21	ug/kg	
92-52-4	1,1'-Biphenyl	29300 [b]	8600	590	ug/kg	D
100-52-7	Benzaldehyde	ND	430	21	ug/kg	
91-58-7	2-Chloronaphthalene	ND	170	21	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-128 (10-12)
Lab Sample ID: JC86716-5
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/18/19
Date Received: 04/19/19
Percent Solids: 72.9

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
106-47-8	4-Chloroaniline	ND	430	31	ug/kg	
86-74-8	Carbazole	70900 [b]	8600	630	ug/kg	D
105-60-2	Caprolactam	ND	170	34	ug/kg	
218-01-9	Chrysene	135000 [b]	4300	1400	ug/kg	D
111-91-1	bis(2-Chloroethoxy)methane	ND	170	18	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	170	37	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	170	31	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	170	28	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	86	27	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	86	43	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	170	72	ug/kg	
123-91-1	1,4-Dioxane	ND	86	57	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	2360	86	38	ug/kg	
132-64-9	Dibenzofuran	172000 [b]	8600	1800	ug/kg	D
84-74-2	Di-n-butyl phthalate	ND	170	14	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	170	21	ug/kg	
84-66-2	Diethyl phthalate	ND	170	18	ug/kg	
131-11-3	Dimethyl phthalate	ND	170	15	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	170	20	ug/kg	
206-44-0	Fluoranthene	396000 [b]	4300	1900	ug/kg	D
86-73-7	Fluorene	197000 [b]	4300	2000	ug/kg	
118-74-1	Hexachlorobenzene	ND	170	22	ug/kg	
87-68-3	Hexachlorobutadiene	ND	86	35	ug/kg	
77-47-4	Hexachlorocyclopentadiene [c]	ND	860	34	ug/kg	UJ
67-72-1	Hexachloroethane	ND	430	43	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	51700 [b]	4300	2000	ug/kg	D
78-59-1	Isophorone	ND	170	18	ug/kg	
91-57-6	2-Methylnaphthalene	123000 [b]	4300	970	ug/kg	D
88-74-4	2-Nitroaniline	ND	430	20	ug/kg	
99-09-2	3-Nitroaniline	ND	430	22	ug/kg	
100-01-6	4-Nitroaniline	ND	430	22	ug/kg	
91-20-3	Naphthalene	557000 [d]	8600	2400	ug/kg	D
98-95-3	Nitrobenzene	ND	170	33	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	170	25	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	430	32	ug/kg	
85-01-8	Phenanthrene	718000 [d]	8600	2900	ug/kg	D
129-00-0	Pyrene	286000 [b]	4300	1400	ug/kg	D
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	430	22	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-128 (10-12)		
Lab Sample ID:	JC86716-5	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	72.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Run# 3	Limits
367-12-4	2-Fluorophenol	52%	43%	0% [e]	23-115%
4165-62-2	Phenol-d5	59%	59%	55%	27-114%
118-79-6	2,4,6-Tribromophenol	116%	85%	91%	19-152%
4165-60-0	Nitrobenzene-d5	139% [f]	91%	73%	26-134%
321-60-8	2-Fluorobiphenyl	67%	105%	98%	39-124%
1718-51-0	Terphenyl-d14	79%	105%	89%	36-134%

(a) Dilution required due to viscosity of the extract matrix.
(b) Result is from Run# 2
(c) Associated CCV outside of control limits low.
(d) Result is from Run# 3
(e) Outside control limits due to dilution.
(f) Outside control limits due to matrix interference.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-128 (10-12)
Lab Sample ID: JC86716-5
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/18/19
Date Received: 04/19/19
Percent Solids: 72.9

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	14500	69	11	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Antimony	0.56 U J	2.7	0.56	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Arsenic	12.9	2.7	0.38	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Barium	148	27	2.6	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Beryllium	1.3	0.27	0.11	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Cadmium	0.49 J	0.69	0.096	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Calcium	30900	1400	120	mg/kg	2	04/23/19	05/01/19	ND	SW846 6010D [3]	SW846 3050B [4]
Chromium	33.3	1.4	0.51	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Cobalt	7.5	6.9	0.38	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Copper	52.3	3.4	1.2	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Iron	13200	69	26	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Lead	84.2 J	2.7	0.56	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Magnesium	15000 J	690	19	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Manganese	1380 J	4.1	1.1	mg/kg	2	04/23/19	05/01/19	ND	SW846 6010D [3]	SW846 3050B [4]
Mercury	0.29 J	0.041	0.018	mg/kg	1	04/23/19	04/23/19	LL	SW846 7471B [1]	SW846 7471B [5]
Nickel	21.5	5.5	0.48	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Potassium	2320	1400	44	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Selenium	1.4 J	2.7	0.89	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Silver	0.23 U	0.69	0.23	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Sodium	1400	1400	110	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Thallium [a]	1.6 U	2.7	1.6	mg/kg	2	04/23/19	05/01/19	ND	SW846 6010D [3]	SW846 3050B [4]
Vanadium	32.0	6.9	0.26	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Zinc	144	6.9	3.2	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA46561
(2) Instrument QC Batch: MA46589
(3) Instrument QC Batch: MA46629
(4) Prep QC Batch: MP14499
(5) Prep QC Batch: MP14502

(a) Elevated detection limit due to dilution required for high interfering element.

RL = Reporting Limit
MDL = Method Detection Limit
U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	S-128 (10-12)		
Lab Sample ID:	JC86716-5	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
		Percent Solids:	72.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result		RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	2.1	J	0.28	0.14	mg/kg	1	04/30/19 13:19	KI	SW846 9012B/LACHAT
Solids, Percent	72.9				%	1	04/29/19 17:22	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

SGS North America Inc.

Report of Analysis

Client Sample ID:	S-128 (13-15)		
Lab Sample ID:	JC86716-6	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8260C	**Percent Solids:**	54.6
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	I225774.D	1	04/27/19 14:30	TDN	n/a	n/a	VI9096
Run #2							

	Initial Weight
Run #1	4.8 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	125	19	9.5	ug/kg	
71-43-2	Benzene	1.9	0.95	0.72	ug/kg	
74-97-5	Bromochloromethane	ND	9.5	0.82	ug/kg	
75-27-4	Bromodichloromethane	ND	3.8	0.85	ug/kg	
75-25-2	Bromoform	ND	9.5	0.77	ug/kg	
74-83-9	Bromomethane	ND	9.5	1.9	ug/kg	
78-93-3	2-Butanone (MEK)	19.6	19	7.1	ug/kg	
75-15-0	Carbon disulfide	ND	3.8	1.8	ug/kg	
56-23-5	Carbon tetrachloride	ND	3.8	1.0	ug/kg	
108-90-7	Chlorobenzene	ND	3.8	0.68	ug/kg	
75-00-3	Chloroethane	ND	9.5	1.3	ug/kg	
67-66-3	Chloroform	ND	3.8	0.71	ug/kg	
74-87-3	Chloromethane	ND	9.5	3.7	ug/kg	
110-82-7	Cyclohexane	ND	3.8	0.77	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	3.8	1.6	ug/kg	
124-48-1	Dibromochloromethane	ND	3.8	0.64	ug/kg	
106-93-4	1,2-Dibromoethane [a]	ND	1.9	0.62	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.9	0.58	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.9	0.68	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.9	0.66	ug/kg	
75-71-8	Dichlorodifluoromethane [b]	ND	9.5	1.2	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.9	0.73	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.9	0.90	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.9	1.3	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.9	1.8	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.9	1.3	ug/kg	
78-87-5	1,2-Dichloropropane	ND	3.8	0.78	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	3.8	0.67	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	3.8	0.62	ug/kg	
100-41-4	Ethylbenzene	ND	1.9	1.1	ug/kg	
76-13-1	Freon 113	ND	9.5	1.5	ug/kg	
591-78-6	2-Hexanone	ND	9.5	2.4	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-128 (13-15)		
Lab Sample ID:	JC86716-6	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8260C	**Percent Solids:**	54.6
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	2.0	3.8	1.3	ug/kg	J
79-20-9	Methyl Acetate	ND	9.5	2.7	ug/kg	
108-87-2	Methylcyclohexane	3.5	3.8	1.3	ug/kg	J
1634-04-4	Methyl Tert Butyl Ether	ND	1.9	0.67	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	9.5	3.0	ug/kg	
75-09-2	Methylene chloride	ND	9.5	4.8	ug/kg	
100-42-5	Styrene	ND	3.8	1.1	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	3.8	0.74	ug/kg	
127-18-4	Tetrachloroethene	ND	3.8	0.88	ug/kg	
108-88-3	Toluene	ND	1.9	0.72	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	9.5	1.9	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	9.5	1.9	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	3.8	0.81	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	3.8	0.65	ug/kg	
79-01-6	Trichloroethene	ND	1.9	1.5	ug/kg	
75-69-4	Trichlorofluoromethane	ND	9.5	1.3	ug/kg	
75-01-4	Vinyl chloride	ND	3.8	0.89	ug/kg	
	m,p-Xylene	ND	1.9	1.4	ug/kg	
95-47-6	o-Xylene	1.3	1.9	1.1	ug/kg	J
1330-20-7	Xylene (total)	1.3	1.9	1.1	ug/kg	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	107%		75-127%
17060-07-0	1,2-Dichloroethane-D4	124%		75-130%
2037-26-5	Toluene-D8	103%		80-120%
460-00-4	4-Bromofluorobenzene	114%		79-127%

(a) This compound in BS is outside in house QC limits bias high. Associated CCV outside of control limits high, sample was ND.
(b) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	S-128 (13-15)		
Lab Sample ID:	JC86716-6	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	54.6
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2P86911.D	1	04/27/19 05:27	CS	04/24/19 11:00	OP19948	E2P3839
Run #2							

	Initial Weight	Final Volume
Run #1	31.0 g	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	120	29	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	300	36	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	300	50	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	300	110	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	300	220	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	300	63	ug/kg	
95-48-7	2-Methylphenol	ND	120	38	ug/kg	
	3&4-Methylphenol	154	120	49	ug/kg	
88-75-5	2-Nitrophenol	ND	300	39	ug/kg	
100-02-7	4-Nitrophenol	ND	590	160	ug/kg	
87-86-5	Pentachlorophenol	ND	240	55	ug/kg	
108-95-2	Phenol	ND	120	31	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	300	39	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	300	44	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	300	35	ug/kg	
83-32-9	Acenaphthene	1990	59	20	ug/kg	
208-96-8	Acenaphthylene	119	59	30	ug/kg	
98-86-2	Acetophenone	ND	300	13	ug/kg	
120-12-7	Anthracene	996	59	36	ug/kg	
1912-24-9	Atrazine	ND	120	25	ug/kg	
56-55-3	Benzo(a)anthracene	584	59	17	ug/kg	
50-32-8	Benzo(a)pyrene	533	59	27	ug/kg	
205-99-2	Benzo(b)fluoranthene	585	59	26	ug/kg	
191-24-2	Benzo(g,h,i)perylene	273	59	30	ug/kg	
207-08-9	Benzo(k)fluoranthene	166	59	28	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	120	23	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	120	14	ug/kg	
92-52-4	1,1'-Biphenyl	36.9	120	8.1	ug/kg	J
100-52-7	Benzaldehyde	ND	300	15	ug/kg	
91-58-7	2-Chloronaphthalene	ND	120	14	ug/kg	
106-47-8	4-Chloroaniline	ND	300	21	ug/kg	
86-74-8	Carbazole	65.9	120	8.6	ug/kg	J

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-128 (13-15)
Lab Sample ID: JC86716-6
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/18/19
Date Received: 04/19/19
Percent Solids: 54.6

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	120	23	ug/kg	
218-01-9	Chrysene	776	59	19	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	120	13	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	120	25	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	120	21	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	120	19	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	59	18	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	59	30	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	120	49	ug/kg	
123-91-1	1,4-Dioxane	ND	59	39	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	77.6	59	26	ug/kg	
132-64-9	Dibenzofuran	502	120	24	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	120	9.6	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	120	15	ug/kg	
84-66-2	Diethyl phthalate	ND	120	13	ug/kg	
131-11-3	Dimethyl phthalate	ND	120	11	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	120	14	ug/kg	
206-44-0	Fluoranthene	1830	59	26	ug/kg	
86-73-7	Fluorene	1310	59	27	ug/kg	
118-74-1	Hexachlorobenzene	ND	120	15	ug/kg	
87-68-3	Hexachlorobutadiene	ND	59	24	ug/kg	
77-47-4	Hexachlorocyclopentadiene [a]	ND	590	24	ug/kg	UJ
67-72-1	Hexachloroethane	ND	300	29	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	209	59	28	ug/kg	
78-59-1	Isophorone	ND	120	13	ug/kg	
91-57-6	2-Methylnaphthalene	142	59	13	ug/kg	
88-74-4	2-Nitroaniline	ND	300	14	ug/kg	
99-09-2	3-Nitroaniline	ND	300	15	ug/kg	
100-01-6	4-Nitroaniline	ND	300	15	ug/kg	
91-20-3	Naphthalene	451	59	17	ug/kg	
98-95-3	Nitrobenzene	ND	120	23	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	120	17	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	300	22	ug/kg	
85-01-8	Phenanthrene	5120	59	20	ug/kg	
129-00-0	Pyrene	1910	59	19	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	300	15	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	45%		23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-128 (13-15)		
Lab Sample ID:	JC86716-6	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	54.6
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	51%		27-114%
118-79-6	2,4,6-Tribromophenol	61%		19-152%
4165-60-0	Nitrobenzene-d5	61%		26-134%
321-60-8	2-Fluorobiphenyl	71%		39-124%
1718-51-0	Terphenyl-d14	64%		36-134%

(a) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-128 (13-15)
Lab Sample ID: JC86716-6
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/18/19
Date Received: 04/19/19
Percent Solids: 54.6

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	24500	89	14	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Antimony	0.73 U J	3.6	0.73	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Arsenic	80.7	3.6	0.50	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Barium	257	36	3.4	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Beryllium	1.7	0.36	0.14	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Cadmium	3.1	0.89	0.12	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Calcium	6290	890	79	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Chromium	247	1.8	0.66	mg/kg	1	04/23/19	05/01/19	ND	SW846 6010D [3]	SW846 3050B [4]
Cobalt	22.6	8.9	0.50	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Copper [a]	182	8.9	3.0	mg/kg	2	04/23/19	05/01/19	ND	SW846 6010D [3]	SW846 3050B [4]
Iron	39800	180	68	mg/kg	2	04/23/19	05/01/19	ND	SW846 6010D [3]	SW846 3050B [4]
Lead	374 J	3.6	0.73	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Magnesium	5290 J	890	24	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Manganese [a]	886 J	5.3	1.5	mg/kg	2	04/23/19	05/01/19	ND	SW846 6010D [3]	SW846 3050B [4]
Mercury	2.0 J	0.12	0.052	mg/kg	2	04/23/19	04/23/19	LL	SW846 7471B [1]	SW846 7471B [5]
Nickel	43.3	7.1	0.62	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Potassium	2470	1800	57	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Selenium [a]	4.3 J	7.1	2.3	mg/kg	2	04/23/19	05/01/19	ND	SW846 6010D [3]	SW846 3050B [4]
Silver [a]	2.5	1.8	0.60	mg/kg	2	04/23/19	05/01/19	ND	SW846 6010D [3]	SW846 3050B [4]
Sodium	337 J	1800	140	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Thallium [a]	2.1 U	3.6	2.1	mg/kg	2	04/23/19	05/01/19	ND	SW846 6010D [3]	SW846 3050B [4]
Vanadium	44.3	8.9	0.34	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Zinc	960	8.9	4.1	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA46561
(2) Instrument QC Batch: MA46589
(3) Instrument QC Batch: MA46629
(4) Prep QC Batch: MP14499
(5) Prep QC Batch: MP14502

(a) Elevated detection limit due to dilution required for high interfering element.

RL = Reporting Limit
MDL = Method Detection Limit
U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	S-128 (13-15)		
Lab Sample ID:	JC86716-6	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
		Percent Solids:	54.6
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result		RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	1.7	J	0.55	0.27	mg/kg	1	04/30/19 13:20	KI	SW846 9012B/LACHAT
Solids, Percent	54.6				%	1	04/29/19 17:22	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

SGS North America Inc.

Report of Analysis

Client Sample ID:	S-125 (7-9)		
Lab Sample ID:	JC86716-7	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8260C	**Percent Solids:**	83.4
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	I225833.D	1	04/30/19 14:52	TDN	n/a	n/a	VI9098
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.2 g	10.0 ml	4.0 ul
Run #2			

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	31000	16000	ug/kg	
71-43-2	Benzene	157000	1600	1200	ug/kg	
74-97-5	Bromochloromethane	ND	16000	1300	ug/kg	
75-27-4	Bromodichloromethane	ND	6300	1400	ug/kg	
75-25-2	Bromoform	ND	16000	1300	ug/kg	
74-83-9	Bromomethane	ND	16000	3100	ug/kg	
78-93-3	2-Butanone (MEK)	ND	31000	12000	ug/kg	
75-15-0	Carbon disulfide	ND	6300	2900	ug/kg	
56-23-5	Carbon tetrachloride	ND	6300	1700	ug/kg	
108-90-7	Chlorobenzene	47500	6300	1100	ug/kg	
75-00-3	Chloroethane	ND	16000	2200	ug/kg	
67-66-3	Chloroform	ND	6300	1200	ug/kg	
74-87-3	Chloromethane	ND	16000	6100	ug/kg	
110-82-7	Cyclohexane	ND	6300	1300	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	6300	2600	ug/kg	
124-48-1	Dibromochloromethane	ND	6300	1100	ug/kg	
106-93-4	1,2-Dibromoethane	ND	3100	1000	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	3100	950	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	3100	1100	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	3100	1100	ug/kg	
75-71-8	Dichlorodifluoromethane [b]	ND	16000	2000	ug/kg	
75-34-3	1,1-Dichloroethane	ND	3100	1200	ug/kg	
107-06-2	1,2-Dichloroethane	ND	3100	1500	ug/kg	
75-35-4	1,1-Dichloroethene	ND	3100	2100	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	3100	3000	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	3100	2100	ug/kg	
78-87-5	1,2-Dichloropropane	ND	6300	1300	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	6300	1100	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	6300	1000	ug/kg	
100-41-4	Ethylbenzene	51000	3100	1700	ug/kg	
76-13-1	Freon 113	ND	16000	2400	ug/kg	
591-78-6	2-Hexanone	ND	16000	4000	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-125 (7-9)		
Lab Sample ID:	JC86716-7	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8260C	**Percent Solids:**	83.4
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	6300	2200	ug/kg	
79-20-9	Methyl Acetate	ND	16000	4400	ug/kg	
108-87-2	Methylcyclohexane	ND	6300	2200	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	3100	1100	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	16000	4900	ug/kg	
75-09-2	Methylene chloride	ND	16000	7800	ug/kg	
100-42-5	Styrene	ND	6300	1800	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	6300	1200	ug/kg	
127-18-4	Tetrachloroethene	ND	6300	1400	ug/kg	
108-88-3	Toluene	22700	3100	1200	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	16000	3100	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	16000	3100	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	6300	1300	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	6300	1100	ug/kg	
79-01-6	Trichloroethene	ND	3100	2400	ug/kg	
75-69-4	Trichlorofluoromethane	ND	16000	2100	ug/kg	
75-01-4	Vinyl chloride	ND	6300	1500	ug/kg	
	m,p-Xylene	89700	3100	2300	ug/kg	
95-47-6	o-Xylene	23100	3100	1800	ug/kg	
1330-20-7	Xylene (total)	113000	3100	1800	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	105%		75-127%
17060-07-0	1,2-Dichloroethane-D4	108%		75-130%
2037-26-5	Toluene-D8	103%		80-120%
460-00-4	4-Bromofluorobenzene	110%		79-127%

(a) Diluted due to high concentration of non-target compound.
(b) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	S-125 (7-9)		
Lab Sample ID:	JC86716-7	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	83.4
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2P86921.D	1	04/27/19 08:58	CS	04/24/19 11:00	OP19948	E2P3839
Run #2	2P86915.D	10	04/27/19 06:52	CS	04/24/19 11:00	OP19948	E2P3839

	Initial Weight	Final Volume
Run #1	30.3 g	1.0 ml
Run #2	30.3 g	1.0 ml

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	79	20	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	200	24	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	200	34	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	200	70	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	200	150	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	200	42	ug/kg	
95-48-7	2-Methylphenol	ND	79	25	ug/kg	
	3&4-Methylphenol	ND	79	33	ug/kg	
88-75-5	2-Nitrophenol	ND	200	26	ug/kg	
100-02-7	4-Nitrophenol	ND	400	110	ug/kg	
87-86-5	Pentachlorophenol	ND	160	37	ug/kg	
108-95-2	Phenol	ND	79	21	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	200	26	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	200	30	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	200	24	ug/kg	
83-32-9	Acenaphthene	9610 [a]	400	140	ug/kg	D
208-96-8	Acenaphthylene	1410	40	20	ug/kg	
98-86-2	Acetophenone	ND	200	8.5	ug/kg	
120-12-7	Anthracene	7700 [a]	400	240	ug/kg	D
1912-24-9	Atrazine	ND	79	17	ug/kg	
56-55-3	Benzo(a)anthracene	6070 [a]	400	110	ug/kg	D
50-32-8	Benzo(a)pyrene	5490 [a]	400	180	ug/kg	D
205-99-2	Benzo(b)fluoranthene	6310 [a]	400	170	ug/kg	D
191-24-2	Benzo(g,h,i)perylene	2470	40	20	ug/kg	
207-08-9	Benzo(k)fluoranthene	2770 [a]	400	180	ug/kg	D
101-55-3	4-Bromophenyl phenyl ether	ND	79	15	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	79	9.7	ug/kg	
92-52-4	1,1'-Biphenyl	1330	79	5.4	ug/kg	
100-52-7	Benzaldehyde	ND	200	9.8	ug/kg	
91-58-7	2-Chloronaphthalene	ND	79	9.4	ug/kg	
106-47-8	4-Chloroaniline	ND	200	14	ug/kg	
86-74-8	Carbazole	9030 [a]	790	57	ug/kg	D

ND = Not detected MDL = Method Detection Limit
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E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-125 (7-9)		
Lab Sample ID:	JC86716-7	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	83.4
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	79	16	ug/kg	
218-01-9	Chrysene	5090 [a]	400	120	ug/kg	D
111-91-1	bis(2-Chloroethoxy)methane	ND	79	8.5	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	79	17	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	79	14	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	79	13	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	40	12	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	40	20	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	79	33	ug/kg	
123-91-1	1,4-Dioxane	ND	40	26	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	866	40	17	ug/kg	
132-64-9	Dibenzofuran	7740 [a]	790	160	ug/kg	D
84-74-2	Di-n-butyl phthalate	ND	79	6.5	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	79	9.9	ug/kg	
84-66-2	Diethyl phthalate	ND	79	8.4	ug/kg	
131-11-3	Dimethyl phthalate	ND	79	7.0	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	79	9.3	ug/kg	
206-44-0	Fluoranthene	17100 [a]	400	180	ug/kg	D
86-73-7	Fluorene	11900 [a]	400	180	ug/kg	D
118-74-1	Hexachlorobenzene	ND	79	10	ug/kg	
87-68-3	Hexachlorobutadiene	ND	40	16	ug/kg	
77-47-4	Hexachlorocyclopentadiene [b]	ND	400	16	ug/kg	UJ
67-72-1	Hexachloroethane	ND	200	20	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	2310	40	19	ug/kg	
78-59-1	Isophorone	ND	79	8.5	ug/kg	
91-57-6	2-Methylnaphthalene	1480	40	8.9	ug/kg	
88-74-4	2-Nitroaniline	ND	200	9.3	ug/kg	
99-09-2	3-Nitroaniline	ND	200	9.9	ug/kg	
100-01-6	4-Nitroaniline	ND	200	10	ug/kg	
91-20-3	Naphthalene	19200 [a]	400	110	ug/kg	D
98-95-3	Nitrobenzene	ND	79	15	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	79	11	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	200	14	ug/kg	
85-01-8	Phenanthrene	29800 [a]	400	130	ug/kg	D
129-00-0	Pyrene	12500 [a]	400	130	ug/kg	D
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	200	10	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	35%	36%	23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-125 (7-9)		
Lab Sample ID:	JC86716-7	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	83.4
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	42%	47%	27-114%
118-79-6	2,4,6-Tribromophenol	50%	43%	19-152%
4165-60-0	Nitrobenzene-d5	48%	53%	26-134%
321-60-8	2-Fluorobiphenyl	53%	61%	39-124%
1718-51-0	Terphenyl-d14	47%	51%	36-134%

(a) Result is from Run# 2
(b) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-125 (7-9)
Lab Sample ID: JC86716-7
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/18/19
Date Received: 04/19/19
Percent Solids: 83.4

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	2190	59	9.5	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Antimony	0.48 U J	2.4	0.48	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Arsenic	3.6	2.4	0.33	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Barium	33.3	24	2.2	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Beryllium	0.35	0.24	0.094	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Cadmium	0.18 J	0.59	0.082	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Calcium	31600	1200	100	mg/kg	2	04/23/19	05/01/19	ND	SW846 6010D [3]	SW846 3050B [4]
Chromium	7.1	1.2	0.43	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Cobalt	8.5	5.9	0.33	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Copper	42.2	2.9	0.99	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Iron	5710	59	23	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Lead	10.9 J	2.4	0.48	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Magnesium	870 J	590	16	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Manganese	66.3 J	1.8	0.48	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Mercury	0.018 J	0.035	0.015	mg/kg	1	04/23/19	04/23/19	LL	SW846 7471B [1]	SW846 7471B [5]
Nickel	67.6	4.7	0.41	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Potassium	183 J	1200	37	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Selenium	0.76 U	2.4	0.76	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Silver	0.20 U	0.59	0.20	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Sodium	91 U	1200	91	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Thallium	0.68 U	1.2	0.68	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Vanadium	3.9 J	5.9	0.22	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Zinc	512	5.9	2.7	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA46561
(2) Instrument QC Batch: MA46589
(3) Instrument QC Batch: MA46629
(4) Prep QC Batch: MP14499
(5) Prep QC Batch: MP14502

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	S-125 (7-9)		
Lab Sample ID:	JC86716-7	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
		Percent Solids:	83.4
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result		RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	8.3	J	0.31	0.16	mg/kg	1	05/01/19 16:02	KI	SW846 9012B/LACHAT
Solids, Percent	83.4				%	1	04/29/19 17:22	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

SGS North America Inc.

Report of Analysis

Client Sample ID:	S-125 (11-13)		
Lab Sample ID:	JC86716-8	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8260C	**Percent Solids:**	82.7
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	I225834.D	1	04/30/19 15:21	TDN	n/a	n/a	VI9098
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	6.2 g	10.0 ml	5.0 ul
Run #2			

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	22000	11000	ug/kg	
71-43-2	Benzene	69000	1100	810	ug/kg	
74-97-5	Bromochloromethane	ND	11000	930	ug/kg	
75-27-4	Bromodichloromethane	ND	4300	960	ug/kg	
75-25-2	Bromoform	ND	11000	870	ug/kg	
74-83-9	Bromomethane	ND	11000	2200	ug/kg	
78-93-3	2-Butanone (MEK)	ND	22000	8100	ug/kg	
75-15-0	Carbon disulfide	ND	4300	2000	ug/kg	
56-23-5	Carbon tetrachloride	ND	4300	1200	ug/kg	
108-90-7	Chlorobenzene	19000	4300	760	ug/kg	
75-00-3	Chloroethane	ND	11000	1500	ug/kg	
67-66-3	Chloroform	ND	4300	800	ug/kg	
74-87-3	Chloromethane	ND	11000	4200	ug/kg	
110-82-7	Cyclohexane	ND	4300	880	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	4300	1800	ug/kg	
124-48-1	Dibromochloromethane	ND	4300	730	ug/kg	
106-93-4	1,2-Dibromoethane	ND	2200	700	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	2200	660	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	2200	780	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	2200	740	ug/kg	
75-71-8	Dichlorodifluoromethane [b]	ND	11000	1400	ug/kg	
75-34-3	1,1-Dichloroethane	ND	2200	830	ug/kg	
107-06-2	1,2-Dichloroethane	ND	2200	1000	ug/kg	
75-35-4	1,1-Dichloroethene	ND	2200	1400	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	2200	2100	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	2200	1400	ug/kg	
78-87-5	1,2-Dichloropropane	ND	4300	880	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	4300	760	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	4300	710	ug/kg	
100-41-4	Ethylbenzene	18200	2200	1200	ug/kg	
76-13-1	Freon 113	ND	11000	1600	ug/kg	
591-78-6	2-Hexanone	ND	11000	2700	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-125 (11-13)		
Lab Sample ID:	JC86716-8	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8260C	**Percent Solids:**	82.7
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	4300	1500	ug/kg	
79-20-9	Methyl Acetate	ND	11000	3000	ug/kg	
108-87-2	Methylcyclohexane	ND	4300	1500	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	2200	760	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	11000	3400	ug/kg	
75-09-2	Methylene chloride	ND	11000	5400	ug/kg	
100-42-5	Styrene	ND	4300	1200	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	4300	840	ug/kg	
127-18-4	Tetrachloroethene	ND	4300	1000	ug/kg	
108-88-3	Toluene	14600	2200	810	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	11000	2200	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	11000	2200	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	4300	920	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	4300	740	ug/kg	
79-01-6	Trichloroethene	ND	2200	1600	ug/kg	
75-69-4	Trichlorofluoromethane	ND	11000	1500	ug/kg	
75-01-4	Vinyl chloride	ND	4300	1000	ug/kg	
	m,p-Xylene	29700	2200	1600	ug/kg	
95-47-6	o-Xylene	8230	2200	1300	ug/kg	
1330-20-7	Xylene (total)	37900	2200	1300	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	105%		75-127%
17060-07-0	1,2-Dichloroethane-D4	108%		75-130%
2037-26-5	Toluene-D8	103%		80-120%
460-00-4	4-Bromofluorobenzene	107%		79-127%

(a) Diluted due to high concentration of non-target compound.
(b) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	S-125 (11-13)		
Lab Sample ID:	JC86716-8	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	82.7
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	2P86927.D	2	04/27/19 11:05	CS	04/24/19 11:00	OP19948	E2P3839
Run #2	2P86914.D	40	04/27/19 06:30	CS	04/24/19 11:00	OP19948	E2P3839
Run #3	2P86937.D	200	04/29/19 12:49	YC	04/24/19 11:00	OP19948	E2P3840

	Initial Weight	Final Volume
Run #1	31.3 g	1.0 ml
Run #2	31.3 g	1.0 ml
Run #3	31.3 g	1.0 ml

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	150	38	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	390	47	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	390	66	ug/kg	
105-67-9	2,4-Dimethylphenol	1060	390	140	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	390	290	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	390	83	ug/kg	
95-48-7	2-Methylphenol	85.2	150	49	ug/kg	J
	3&4-Methylphenol	66.2	150	64	ug/kg	J
88-75-5	2-Nitrophenol	ND	390	51	ug/kg	
100-02-7	4-Nitrophenol	ND	770	210	ug/kg	
87-86-5	Pentachlorophenol	ND	310	73	ug/kg	
108-95-2	Phenol	126	150	40	ug/kg	J
58-90-2	2,3,4,6-Tetrachlorophenol	ND	390	51	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	390	58	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	390	46	ug/kg	
83-32-9	Acenaphthene	82500 [b]	1500	530	ug/kg	D
208-96-8	Acenaphthylene	22900 [b]	1500	790	ug/kg	D
98-86-2	Acetophenone	ND	390	17	ug/kg	
120-12-7	Anthracene	54400 [b]	1500	950	ug/kg	D
1912-24-9	Atrazine	ND	150	33	ug/kg	
56-55-3	Benzo(a)anthracene	48000 [b]	1500	440	ug/kg	D
50-32-8	Benzo(a)pyrene	43400 [b]	1500	700	ug/kg	D
205-99-2	Benzo(b)fluoranthene	52200 [b]	1500	680	ug/kg	D
191-24-2	Benzo(g,h,i)perylene	20800 [b]	1500	770	ug/kg	D
207-08-9	Benzo(k)fluoranthene	6040	77	36	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	150	30	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	150	19	ug/kg	
92-52-4	1,1'-Biphenyl	15300 [b]	3100	210	ug/kg	D
100-52-7	Benzaldehyde	ND	390	19	ug/kg	
91-58-7	2-Chloronaphthalene	ND	150	18	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-125 (11-13)		
Lab Sample ID:	JC86716-8	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	82.7
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
106-47-8	4-Chloroaniline	ND	390	28	ug/kg	
86-74-8	Carbazole	27000 [b]	3100	220	ug/kg	D
105-60-2	Caprolactam	ND	150	31	ug/kg	
218-01-9	Chrysene	41400 [b]	1500	490	ug/kg	D
111-91-1	bis(2-Chloroethoxy)methane	ND	150	17	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	150	33	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	150	28	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	150	25	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	77	24	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	77	39	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	150	64	ug/kg	
123-91-1	1,4-Dioxane	ND	77	51	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	1570	77	34	ug/kg	
132-64-9	Dibenzofuran	63300 [b]	3100	630	ug/kg	D
84-74-2	Di-n-butyl phthalate	ND	150	13	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	150	19	ug/kg	
84-66-2	Diethyl phthalate	ND	150	16	ug/kg	
131-11-3	Dimethyl phthalate	ND	150	14	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	150	18	ug/kg	
206-44-0	Fluoranthene	128000 [b]	1500	690	ug/kg	D
86-73-7	Fluorene	94400 [b]	1500	710	ug/kg	D
118-74-1	Hexachlorobenzene	ND	150	20	ug/kg	
87-68-3	Hexachlorobutadiene	ND	77	31	ug/kg	
77-47-4	Hexachlorocyclopentadiene [c]	ND	770	31	ug/kg	UJ
67-72-1	Hexachloroethane	ND	390	38	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	18700 [b]	1500	720	ug/kg	D
78-59-1	Isophorone	ND	150	17	ug/kg	
91-57-6	2-Methylnaphthalene	57700 [b]	1500	350	ug/kg	D
88-74-4	2-Nitroaniline	ND	390	18	ug/kg	
99-09-2	3-Nitroaniline	ND	390	19	ug/kg	
100-01-6	4-Nitroaniline	ND	390	20	ug/kg	
91-20-3	Naphthalene	302000 [d]	7700	2200	ug/kg	D
98-95-3	Nitrobenzene	ND	150	30	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	150	22	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	390	28	ug/kg	
85-01-8	Phenanthrene	254000 [d]	7700	2600	ug/kg	D
129-00-0	Pyrene	87800 [b]	1500	490	ug/kg	D
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	390	20	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-125 (11-13)		
Lab Sample ID:	JC86716-8	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	82.7
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Run# 3	Limits
367-12-4	2-Fluorophenol	35%	37%	39%	23-115%
4165-62-2	Phenol-d5	52%	57%	0% [e]	27-114%
118-79-6	2,4,6-Tribromophenol	87%	57%	54%	19-152%
4165-60-0	Nitrobenzene-d5	90%	78%	72%	26-134%
321-60-8	2-Fluorobiphenyl	67%	85%	88%	39-124%
1718-51-0	Terphenyl-d14	53%	72%	76%	36-134%

(a) Dilution required due to viscosity of the extract matrix.
(b) Result is from Run# 2
(c) Associated CCV outside of control limits low.
(d) Result is from Run# 3
(e) Outside control limits due to dilution.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-125 (11-13)
Lab Sample ID: JC86716-8
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/18/19
Date Received: 04/19/19
Percent Solids: 82.7

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	6940	64	10	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Antimony	0.52 U J	2.5	0.52	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Arsenic	4.7	2.5	0.36	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Barium	57.6	25	2.4	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Beryllium	0.57	0.25	0.10	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Cadmium	0.17 J	0.64	0.089	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Calcium	13600	640	56	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Chromium	19.8	1.3	0.47	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Cobalt	6.2 J	6.4	0.36	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Copper	28.8	3.2	1.1	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Iron	12900	64	24	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Lead	30.3 J	2.5	0.52	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Magnesium	1540 J	640	17	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Manganese	205 J	1.9	0.52	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Mercury	0.065 J	0.028	0.012	mg/kg	1	04/23/19	04/23/19	LL	SW846 7471B [1]	SW846 7471B [4]
Nickel	30.5	5.1	0.45	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Potassium	661 J	1300	40	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Selenium	0.83 U	2.5	0.83	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Silver	0.22 U	0.64	0.22	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Sodium	102 J	1300	99	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Thallium	0.74 U	1.3	0.74	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Vanadium	16.6	6.4	0.24	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Zinc	268	6.4	2.9	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]

(1) Instrument QC Batch: MA46561
(2) Instrument QC Batch: MA46589
(3) Prep QC Batch: MP14499
(4) Prep QC Batch: MP14502

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	S-125 (11-13)		
Lab Sample ID:	JC86716-8	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
		Percent Solids:	82.7
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result		RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	1.3	J	0.36	0.18	mg/kg	1	05/01/19 16:04	KI	SW846 9012B/LACHAT
Solids, Percent	82.7				%	1	04/29/19 17:22	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

SGS North America Inc.

Report of Analysis

Client Sample ID:	S-125 (13-15)		
Lab Sample ID:	JC86716-9	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8260C	**Percent Solids:**	56.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	I225775.D	1	04/27/19 15:00	TDN	n/a	n/a	VI9096
Run #2							

	Initial Weight
Run #1	5.2 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	106	17	8.6	ug/kg	
71-43-2	Benzene	91.6	0.86	0.65	ug/kg	
74-97-5	Bromochloromethane	ND	8.6	0.74	ug/kg	
75-27-4	Bromodichloromethane	ND	3.4	0.76	ug/kg	
75-25-2	Bromoform	ND	8.6	0.69	ug/kg	
74-83-9	Bromomethane	ND	8.6	1.7	ug/kg	
78-93-3	2-Butanone (MEK)	8.4	17	6.4	ug/kg	J
75-15-0	Carbon disulfide	ND	3.4	1.6	ug/kg	
56-23-5	Carbon tetrachloride	ND	3.4	0.94	ug/kg	
108-90-7	Chlorobenzene	2.1	3.4	0.61	ug/kg	J
75-00-3	Chloroethane	ND	8.6	1.2	ug/kg	
67-66-3	Chloroform	ND	3.4	0.64	ug/kg	
74-87-3	Chloromethane	ND	8.6	3.4	ug/kg	
110-82-7	Cyclohexane	ND	3.4	0.69	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	3.4	1.4	ug/kg	
124-48-1	Dibromochloromethane	ND	3.4	0.58	ug/kg	
106-93-4	1,2-Dibromoethane [a]	ND	1.7	0.56	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.7	0.52	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.7	0.61	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.7	0.59	ug/kg	
75-71-8	Dichlorodifluoromethane [b]	ND	8.6	1.1	ug/kg	UJ
75-34-3	1,1-Dichloroethane	ND	1.7	0.66	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.7	0.80	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.7	1.1	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.7	1.6	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.7	1.1	ug/kg	
78-87-5	1,2-Dichloropropane	ND	3.4	0.70	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	3.4	0.60	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	3.4	0.56	ug/kg	
100-41-4	Ethylbenzene	3.7	1.7	0.94	ug/kg	
76-13-1	Freon 113	ND	8.6	1.3	ug/kg	
591-78-6	2-Hexanone	ND	8.6	2.2	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-125 (13-15)		
Lab Sample ID:	JC86716-9	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8260C	**Percent Solids:**	56.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	3.4	1.2	ug/kg	
79-20-9	Methyl Acetate	ND	8.6	2.4	ug/kg	
108-87-2	Methylcyclohexane	ND	3.4	1.2	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.7	0.60	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	8.6	2.7	ug/kg	
75-09-2	Methylene chloride	ND	8.6	4.3	ug/kg	
100-42-5	Styrene	ND	3.4	0.98	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	3.4	0.67	ug/kg	
127-18-4	Tetrachloroethene	ND	3.4	0.79	ug/kg	
108-88-3	Toluene	3.2	1.7	0.64	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	8.6	1.7	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	8.6	1.7	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	3.4	0.73	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	3.4	0.59	ug/kg	
79-01-6	Trichloroethene	ND	1.7	1.3	ug/kg	
75-69-4	Trichlorofluoromethane	ND	8.6	1.2	ug/kg	
75-01-4	Vinyl chloride	ND	3.4	0.80	ug/kg	
	m,p-Xylene	5.0	1.7	1.3	ug/kg	
95-47-6	o-Xylene	2.1	1.7	1.0	ug/kg	
1330-20-7	Xylene (total)	7.1	1.7	1.0	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	106%		75-127%
17060-07-0	1,2-Dichloroethane-D4	122%		75-130%
2037-26-5	Toluene-D8	101%		80-120%
460-00-4	4-Bromofluorobenzene	114%		79-127%

(a) This compound in BS is outside in house QC limits bias high. Associated CCV outside of control limits high, sample was ND.
(b) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	S-125 (13-15)		
Lab Sample ID:	JC86716-9	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	56.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5P58942.D	1	04/26/19 16:53	CC	04/25/19 13:30	OP19971	E5P2787
Run #2							

	Initial Weight	Final Volume
Run #1	30.2 g	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	120	29	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	290	36	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	290	50	ug/kg	
105-67-9	2,4-Dimethylphenol [a]	ND	290	100	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	290	220	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	290	63	ug/kg	
95-48-7	2-Methylphenol	ND	120	38	ug/kg	
	3&4-Methylphenol	ND	120	48	ug/kg	
88-75-5	2-Nitrophenol	ND	290	39	ug/kg	
100-02-7	4-Nitrophenol [a]	ND	590	160	ug/kg	
87-86-5	Pentachlorophenol	ND	240	55	ug/kg	
108-95-2	Phenol	ND	120	31	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	290	39	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	290	44	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	290	35	ug/kg	
83-32-9	Acenaphthene	206	59	20	ug/kg	
208-96-8	Acenaphthylene	40.3	59	30	ug/kg	J
98-86-2	Acetophenone	ND	290	13	ug/kg	
120-12-7	Anthracene	137	59	36	ug/kg	
1912-24-9	Atrazine	ND	120	25	ug/kg	
56-55-3	Benzo(a)anthracene	154	59	17	ug/kg	
50-32-8	Benzo(a)pyrene	158	59	27	ug/kg	
205-99-2	Benzo(b)fluoranthene	184	59	26	ug/kg	
191-24-2	Benzo(g,h,i)perylene	84.9	59	29	ug/kg	
207-08-9	Benzo(k)fluoranthene	61.4	59	28	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	120	23	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	120	14	ug/kg	
92-52-4	1,1'-Biphenyl	17.3	120	8.1	ug/kg	J
100-52-7	Benzaldehyde	ND	290	15	ug/kg	
91-58-7	2-Chloronaphthalene	ND	120	14	ug/kg	
106-47-8	4-Chloroaniline	ND	290	21	ug/kg	
86-74-8	Carbazole	32.1	120	8.5	ug/kg	J

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-125 (13-15)
Lab Sample ID: JC86716-9
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/18/19
Date Received: 04/19/19
Percent Solids: 56.2

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	120	23	ug/kg	
218-01-9	Chrysene	148	59	19	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	120	13	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	120	25	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	120	21	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	120	19	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	59	18	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	59	30	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	120	49	ug/kg	
123-91-1	1,4-Dioxane	ND	59	39	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	59	26	ug/kg	
132-64-9	Dibenzofuran	77.7	120	24	ug/kg	J
84-74-2	Di-n-butyl phthalate	ND	120	9.6	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	120	15	ug/kg	
84-66-2	Diethyl phthalate	ND	120	13	ug/kg	
131-11-3	Dimethyl phthalate	ND	120	10	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	120	14	ug/kg	
206-44-0	Fluoranthene	378	59	26	ug/kg	
86-73-7	Fluorene	164	59	27	ug/kg	
118-74-1	Hexachlorobenzene	ND	120	15	ug/kg	
87-68-3	Hexachlorobutadiene	ND	59	24	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	590	23	ug/kg	
67-72-1	Hexachloroethane	ND	290	29	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	90.2	59	28	ug/kg	
78-59-1	Isophorone	ND	120	13	ug/kg	
91-57-6	2-Methylnaphthalene	62.8	59	13	ug/kg	
88-74-4	2-Nitroaniline	ND	290	14	ug/kg	
99-09-2	3-Nitroaniline	ND	290	15	ug/kg	
100-01-6	4-Nitroaniline	ND	290	15	ug/kg	
91-20-3	Naphthalene	213	59	17	ug/kg	
98-95-3	Nitrobenzene	ND	120	23	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	120	17	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	290	22	ug/kg	
85-01-8	Phenanthrene	613	59	20	ug/kg	
129-00-0	Pyrene	303	59	19	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	290	15	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	63%		23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-125 (13-15)		
Lab Sample ID:	JC86716-9	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	56.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	64%		27-114%
118-79-6	2,4,6-Tribromophenol	69%		19-152%
4165-60-0	Nitrobenzene-d5	71%		26-134%
321-60-8	2-Fluorobiphenyl	68%		39-124%
1718-51-0	Terphenyl-d14	64%		36-134%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-125 (13-15)
Lab Sample ID: JC86716-9
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/18/19
Date Received: 04/19/19
Percent Solids: 56.2

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	19900	92	15	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Antimony	1.6 J	3.7	0.75	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Arsenic	56.3	3.7	0.51	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Barium	267	37	3.5	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Beryllium	1.3	0.37	0.15	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Cadmium	2.5	0.92	0.13	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Calcium	5330	920	81	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Chromium	271	1.8	0.68	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Cobalt	19.1	9.2	0.51	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Copper	162	4.6	1.5	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Iron	32200 J	92	35	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Lead	408 J	3.7	0.75	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Magnesium	4760 J	920	25	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Manganese	947 J	2.8	0.75	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Mercury	2.0	0.10	0.045	mg/kg	2	04/23/19	04/23/19	LL	SW846 7471B [1]	SW846 7471B [4]
Nickel	37.8	7.3	0.64	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Potassium	2090	1800	58	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Selenium	1.4 J	3.7	1.2	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Silver	1.4	0.92	0.31	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Sodium	276 J	1800	140	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Thallium	1.1 U	1.8	1.1	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Vanadium	40.1	9.2	0.35	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Zinc	850	9.2	4.2	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]

(1) Instrument QC Batch: MA46561
(2) Instrument QC Batch: MA46589
(3) Prep QC Batch: MP14499
(4) Prep QC Batch: MP14502

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	S-125 (13-15)		
Lab Sample ID:	JC86716-9	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
		Percent Solids:	56.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	1.1	0.49	0.24	mg/kg	1	05/01/19 16:05	KI	SW846 9012B/LACHAT
Solids, Percent	56.2			%	1	04/29/19 17:22	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

SGS North America Inc.

Report of Analysis

Client Sample ID:	TP-63R (7-9)		
Lab Sample ID:	JC86716-10	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8260C	**Percent Solids:**	77.1
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	I225776.D	1	04/27/19 15:29	TDN	n/a	n/a	VI9096
Run #2							

	Initial Weight
Run #1	4.1 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	16	7.9	ug/kg	
71-43-2	Benzene	32.7	0.79	0.60	ug/kg	
74-97-5	Bromochloromethane	ND	7.9	0.68	ug/kg	
75-27-4	Bromodichloromethane	ND	3.2	0.70	ug/kg	
75-25-2	Bromoform	ND	7.9	0.64	ug/kg	
74-83-9	Bromomethane	ND	7.9	1.6	ug/kg	
78-93-3	2-Butanone (MEK)	ND	16	5.9	ug/kg	
75-15-0	Carbon disulfide	ND	3.2	1.5	ug/kg	
56-23-5	Carbon tetrachloride	ND	3.2	0.87	ug/kg	
108-90-7	Chlorobenzene	ND	3.2	0.56	ug/kg	
75-00-3	Chloroethane	ND	7.9	1.1	ug/kg	
67-66-3	Chloroform	ND	3.2	0.59	ug/kg	
74-87-3	Chloromethane	ND	7.9	3.1	ug/kg	
110-82-7	Cyclohexane	ND	3.2	0.64	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	3.2	1.3	ug/kg	
124-48-1	Dibromochloromethane	ND	3.2	0.53	ug/kg	
106-93-4	1,2-Dibromoethane [a]	ND	1.6	0.51	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.6	0.48	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.6	0.57	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.6	0.54	ug/kg	
75-71-8	Dichlorodifluoromethane [b]	ND	7.9	1.0	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.6	0.61	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.6	0.74	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.6	1.0	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.6	1.5	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.6	1.1	ug/kg	
78-87-5	1,2-Dichloropropane	ND	3.2	0.64	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	3.2	0.56	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	3.2	0.52	ug/kg	
100-41-4	Ethylbenzene	ND	1.6	0.87	ug/kg	
76-13-1	Freon 113	ND	7.9	1.2	ug/kg	
591-78-6	2-Hexanone	ND	7.9	2.0	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TP-63R (7-9)		
Lab Sample ID:	JC86716-10	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8260C	**Percent Solids:**	77.1
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	3.2	1.1	ug/kg	
79-20-9	Methyl Acetate	ND	7.9	2.2	ug/kg	
108-87-2	Methylcyclohexane	ND	3.2	1.1	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.6	0.56	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	7.9	2.5	ug/kg	
75-09-2	Methylene chloride	ND	7.9	4.0	ug/kg	
100-42-5	Styrene	ND	3.2	0.91	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	3.2	0.62	ug/kg	
127-18-4	Tetrachloroethene	ND	3.2	0.73	ug/kg	
108-88-3	Toluene	9.0	1.6	0.59	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	7.9	1.6	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	7.9	1.6	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	3.2	0.67	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	3.2	0.54	ug/kg	
79-01-6	Trichloroethene	ND	1.6	1.2	ug/kg	
75-69-4	Trichlorofluoromethane	ND	7.9	1.1	ug/kg	
75-01-4	Vinyl chloride	ND	3.2	0.74	ug/kg	
	m,p-Xylene	10	1.6	1.2	ug/kg	
95-47-6	o-Xylene	5.5	1.6	0.92	ug/kg	
1330-20-7	Xylene (total)	15.5	1.6	0.92	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	106%		75-127%
17060-07-0	1,2-Dichloroethane-D4	116%		75-130%
2037-26-5	Toluene-D8	101%		80-120%
460-00-4	4-Bromofluorobenzene	110%		79-127%

(a) This compound in BS is outside in house QC limits bias high. Associated CCV outside of control limits high, sample was ND.
(b) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	TP-63R (7-9)		
Lab Sample ID:	JC86716-10	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	77.1
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	5P58952.D	2	04/26/19 20:40	CC	04/25/19 13:30	OP19971	E5P2787
Run #2	5P59009.D	20	04/29/19 12:10	CC	04/25/19 13:30	OP19971	E5P2789

	Initial Weight	Final Volume
Run #1	30.7 g	1.0 ml
Run #2	30.7 g	1.0 ml

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	170	42	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	420	52	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	420	72	ug/kg	
105-67-9	2,4-Dimethylphenol [b]	ND	420	150	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	420	320	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	420	90	ug/kg	
95-48-7	2-Methylphenol	ND	170	54	ug/kg	
	3&4-Methylphenol	ND	170	69	ug/kg	
88-75-5	2-Nitrophenol	ND	420	56	ug/kg	
100-02-7	4-Nitrophenol [b]	ND	840	230	ug/kg	
87-86-5	Pentachlorophenol	ND	340	79	ug/kg	
108-95-2	Phenol	ND	170	44	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	420	56	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	420	63	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	420	50	ug/kg	
83-32-9	Acenaphthene	871	84	29	ug/kg	
208-96-8	Acenaphthylene	8910 [c]	840	430	ug/kg	D
98-86-2	Acetophenone	40.6	420	18	ug/kg	J
120-12-7	Anthracene	5900	84	52	ug/kg	
1912-24-9	Atrazine	ND	170	36	ug/kg	
56-55-3	Benzo(a)anthracene	30600 [c]	840	240	ug/kg	D
50-32-8	Benzo(a)pyrene	31200 [c]	840	380	ug/kg	
205-99-2	Benzo(b)fluoranthene	38500 [c]	840	370	ug/kg	
191-24-2	Benzo(g,h,i)perylene	19200 [c]	840	420	ug/kg	
207-08-9	Benzo(k)fluoranthene	14400 [c]	840	390	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	170	33	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	170	21	ug/kg	
92-52-4	1,1'-Biphenyl	79.3	170	12	ug/kg	J
100-52-7	Benzaldehyde	ND	420	21	ug/kg	
91-58-7	2-Chloronaphthalene	ND	170	20	ug/kg	
106-47-8	4-Chloroaniline	ND	420	30	ug/kg	
86-74-8	Carbazole	465	170	12	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: TP-63R (7-9)
Lab Sample ID: JC86716-10
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/18/19
Date Received: 04/19/19
Percent Solids: 77.1

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	170	33	ug/kg	
218-01-9	Chrysene	20900 c	840	270	ug/kg	D
111-91-1	bis(2-Chloroethoxy)methane	ND	170	18	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	170	36	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	170	30	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	170	27	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	84	26	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	84	42	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	170	70	ug/kg	
123-91-1	1,4-Dioxane	ND	84	56	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	5450	84	37	ug/kg	
132-64-9	Dibenzofuran	480	170	34	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	170	14	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	170	21	ug/kg	
84-66-2	Diethyl phthalate	ND	170	18	ug/kg	
131-11-3	Dimethyl phthalate	ND	170	15	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	170	20	ug/kg	
206-44-0	Fluoranthene	48400 c	840	380	ug/kg	D
86-73-7	Fluorene	1220	84	39	ug/kg	
118-74-1	Hexachlorobenzene	ND	170	21	ug/kg	
87-68-3	Hexachlorobutadiene	ND	84	34	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	840	34	ug/kg	
67-72-1	Hexachloroethane	ND	420	42	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	20800 c	840	400	ug/kg	D
78-59-1	Isophorone	ND	170	18	ug/kg	
91-57-6	2-Methylnaphthalene	150	84	19	ug/kg	
88-74-4	2-Nitroaniline	ND	420	20	ug/kg	
99-09-2	3-Nitroaniline	ND	420	21	ug/kg	
100-01-6	4-Nitroaniline	ND	420	22	ug/kg	
91-20-3	Naphthalene	581	84	24	ug/kg	
98-95-3	Nitrobenzene	ND	170	33	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	170	24	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	420	31	ug/kg	
85-01-8	Phenanthrene	6060	84	28	ug/kg	
129-00-0	Pyrene	39300 c	840	270	ug/kg	D
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	420	21	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	54%	42%	23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TP-63R (7-9)		
Lab Sample ID:	JC86716-10	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	77.1
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	55%	49%	27-114%
118-79-6	2,4,6-Tribromophenol	58%	54%	19-152%
4165-60-0	Nitrobenzene-d5	57%	53%	26-134%
321-60-8	2-Fluorobiphenyl	54%	56%	39-124%
1718-51-0	Terphenyl-d14	56%	52%	36-134%

(a) Dilution required due to viscosity of the extract matrix.
(b) Associated CCV outside of control limits high, sample was ND.
(c) Result is from Run# 2

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: TP-63R (7-9)
Lab Sample ID: JC86716-10
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/18/19
Date Received: 04/19/19
Percent Solids: 77.1

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	3540	62	10	mg/kg	1	04/23/19	05/01/19	ND	SW846 6010D [3]	SW846 3050B [4]
Antimony	0.66 J	2.5	0.51	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Arsenic	9.4	2.5	0.35	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Barium	47.0	25	2.4	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Beryllium	0.45	0.25	0.10	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Cadmium	0.34 J	0.62	0.087	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Calcium	2750	620	55	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Chromium	10.9	1.2	0.46	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Cobalt	3.0 J	6.2	0.35	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Copper	86.9	3.1	1.0	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Iron	14400	62	24	mg/kg	1	04/23/19	05/01/19	ND	SW846 6010D [3]	SW846 3050B [4]
Lead	142 J	2.5	0.51	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Magnesium	579 J	620	17	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Manganese	42.1 J	1.9	0.51	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Mercury	0.29 J	0.040	0.018	mg/kg	1	04/23/19	04/23/19	LL	SW846 7471B [1]	SW846 7471B [5]
Nickel	9.9	5.0	0.44	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Potassium	485 J	1200	40	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Selenium	1.3 J	2.5	0.81	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Silver	0.21 U	0.62	0.21	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Sodium	97 U	1200	97	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Thallium	0.72 U	1.2	0.72	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Vanadium	13.8	6.2	0.24	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Zinc	113	6.2	2.9	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA46561
(2) Instrument QC Batch: MA46589
(3) Instrument QC Batch: MA46629
(4) Prep QC Batch: MP14499
(5) Prep QC Batch: MP14502

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: TP-63R (7-9)
Lab Sample ID: JC86716-10
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/18/19
Date Received: 04/19/19
Percent Solids: 77.1

General Chemistry

Analyte	Result		RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	2.8	J	0.30	0.15	mg/kg	1	05/01/19 16:06	KI	SW846 9012B/LACHAT
Solids, Percent	77.1				%	1	04/29/19 17:22	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

SGS North America Inc.

Report of Analysis

Client Sample ID:	TP-63R (11-13)		
Lab Sample ID:	JC86716-11	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8260C	**Percent Solids:**	54.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	I225777.D	1	04/27/19 15:59	TDN	n/a	n/a	VI9096
Run #2							

	Initial Weight
Run #1	4.6 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	95.4	20	9.9	ug/kg	
71-43-2	Benzene	46.2	0.99	0.75	ug/kg	
74-97-5	Bromochloromethane	ND	9.9	0.85	ug/kg	
75-27-4	Bromodichloromethane	ND	4.0	0.88	ug/kg	
75-25-2	Bromoform	ND	9.9	0.80	ug/kg	
74-83-9	Bromomethane	ND	9.9	2.0	ug/kg	
78-93-3	2-Butanone (MEK)	11.3	20	7.4	ug/kg	J
75-15-0	Carbon disulfide	ND	4.0	1.8	ug/kg	
56-23-5	Carbon tetrachloride	ND	4.0	1.1	ug/kg	
108-90-7	Chlorobenzene	ND	4.0	0.70	ug/kg	
75-00-3	Chloroethane	ND	9.9	1.4	ug/kg	
67-66-3	Chloroform	ND	4.0	0.74	ug/kg	
74-87-3	Chloromethane	ND	9.9	3.9	ug/kg	
110-82-7	Cyclohexane	ND	4.0	0.80	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	4.0	1.7	ug/kg	
124-48-1	Dibromochloromethane	ND	4.0	0.67	ug/kg	
106-93-4	1,2-Dibromoethane [a]	ND	2.0	0.64	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	2.0	0.60	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	2.0	0.71	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	2.0	0.68	ug/kg	
75-71-8	Dichlorodifluoromethane [b]	ND	9.9	1.3	ug/kg	
75-34-3	1,1-Dichloroethane	ND	2.0	0.76	ug/kg	
107-06-2	1,2-Dichloroethane	ND	2.0	0.93	ug/kg	
75-35-4	1,1-Dichloroethene	ND	2.0	1.3	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	2.0	1.9	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	2.0	1.3	ug/kg	
78-87-5	1,2-Dichloropropane	ND	4.0	0.81	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	4.0	0.70	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	4.0	0.65	ug/kg	
100-41-4	Ethylbenzene	ND	2.0	1.1	ug/kg	
76-13-1	Freon 113	ND	9.9	1.5	ug/kg	
591-78-6	2-Hexanone	ND	9.9	2.5	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TP-63R (11-13)		
Lab Sample ID:	JC86716-11	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8260C	**Percent Solids:**	54.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	4.0	1.4	ug/kg	
79-20-9	Methyl Acetate	ND	9.9	2.8	ug/kg	
108-87-2	Methylcyclohexane	ND	4.0	1.4	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	2.0	0.70	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	9.9	3.1	ug/kg	
75-09-2	Methylene chloride	ND	9.9	4.9	ug/kg	
100-42-5	Styrene	ND	4.0	1.1	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	4.0	0.77	ug/kg	
127-18-4	Tetrachloroethene	ND	4.0	0.91	ug/kg	
108-88-3	Toluene	2.0	2.0	0.74	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	9.9	2.0	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	9.9	2.0	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	4.0	0.84	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	4.0	0.68	ug/kg	
79-01-6	Trichloroethene	ND	2.0	1.5	ug/kg	
75-69-4	Trichlorofluoromethane	ND	9.9	1.3	ug/kg	
75-01-4	Vinyl chloride	ND	4.0	0.93	ug/kg	
	m,p-Xylene	ND	2.0	1.5	ug/kg	
95-47-6	o-Xylene	ND	2.0	1.2	ug/kg	
1330-20-7	Xylene (total)	ND	2.0	1.2	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	109%		75-127%
17060-07-0	1,2-Dichloroethane-D4	123%		75-130%
2037-26-5	Toluene-D8	101%		80-120%
460-00-4	4-Bromofluorobenzene	112%		79-127%

(a) This compound in BS is outside in house QC limits bias high. Associated CCV outside of control limits high, sample was ND.
(b) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	TP-63R (11-13)		
Lab Sample ID:	JC86716-11	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	54.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5P58943.D	1	04/26/19 17:16	CC	04/25/19 13:30	OP19971	E5P2787
Run #2							

	Initial Weight	Final Volume
Run #1	30.2 g	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	120	30	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	300	37	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	300	51	ug/kg	
105-67-9	2,4-Dimethylphenol [a]	ND	300	110	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	300	230	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	300	65	ug/kg	
95-48-7	2-Methylphenol	ND	120	39	ug/kg	
	3&4-Methylphenol	ND	120	50	ug/kg	
88-75-5	2-Nitrophenol	ND	300	40	ug/kg	
100-02-7	4-Nitrophenol [a]	ND	600	160	ug/kg	
87-86-5	Pentachlorophenol	ND	240	57	ug/kg	
108-95-2	Phenol	ND	120	31	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	300	40	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	300	45	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	300	36	ug/kg	
83-32-9	Acenaphthene	ND	60	21	ug/kg	
208-96-8	Acenaphthylene	ND	60	31	ug/kg	
98-86-2	Acetophenone	ND	300	13	ug/kg	
120-12-7	Anthracene	ND	60	37	ug/kg	
1912-24-9	Atrazine	ND	120	26	ug/kg	
56-55-3	Benzo(a)anthracene	25.5	60	17	ug/kg	J
50-32-8	Benzo(a)pyrene	30.2	60	27	ug/kg	J
205-99-2	Benzo(b)fluoranthene	32.4	60	27	ug/kg	J
191-24-2	Benzo(g,h,i)perylene	ND	60	30	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	60	28	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	120	23	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	120	15	ug/kg	
92-52-4	1,1'-Biphenyl	ND	120	8.3	ug/kg	
100-52-7	Benzaldehyde	ND	300	15	ug/kg	
91-58-7	2-Chloronaphthalene	ND	120	14	ug/kg	
106-47-8	4-Chloroaniline	ND	300	22	ug/kg	
86-74-8	Carbazole	ND	120	8.7	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: TP-63R (11-13)
Lab Sample ID: JC86716-11
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/18/19
Date Received: 04/19/19
Percent Solids: 54.9

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	120	24	ug/kg	
218-01-9	Chrysene	27.7	60	19	ug/kg	J
111-91-1	bis(2-Chloroethoxy)methane	ND	120	13	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	120	26	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	120	22	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	120	20	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	60	19	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	60	30	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	120	50	ug/kg	
123-91-1	1,4-Dioxane	ND	60	40	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	60	27	ug/kg	
132-64-9	Dibenzofuran	ND	120	25	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	120	9.8	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	120	15	ug/kg	
84-66-2	Diethyl phthalate	ND	120	13	ug/kg	
131-11-3	Dimethyl phthalate	ND	120	11	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	120	14	ug/kg	
206-44-0	Fluoranthene	40.3	60	27	ug/kg	J
86-73-7	Fluorene	ND	60	28	ug/kg	
118-74-1	Hexachlorobenzene	ND	120	15	ug/kg	
87-68-3	Hexachlorobutadiene	ND	60	24	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	600	24	ug/kg	
67-72-1	Hexachloroethane	ND	300	30	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	60	28	ug/kg	
78-59-1	Isophorone	ND	120	13	ug/kg	
91-57-6	2-Methylnaphthalene	ND	60	14	ug/kg	
88-74-4	2-Nitroaniline	ND	300	14	ug/kg	
99-09-2	3-Nitroaniline	ND	300	15	ug/kg	
100-01-6	4-Nitroaniline	ND	300	16	ug/kg	
91-20-3	Naphthalene	ND	60	17	ug/kg	
98-95-3	Nitrobenzene	ND	120	23	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	120	17	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	300	22	ug/kg	
85-01-8	Phenanthrene	ND	60	20	ug/kg	
129-00-0	Pyrene	44.9	60	19	ug/kg	J
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	300	15	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	54%		23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TP-63R (11-13)		
Lab Sample ID:	JC86716-11	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	54.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	57%		27-114%
118-79-6	2,4,6-Tribromophenol	57%		19-152%
4165-60-0	Nitrobenzene-d5	61%		26-134%
321-60-8	2-Fluorobiphenyl	57%		39-124%
1718-51-0	Terphenyl-d14	52%		36-134%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: TP-63R (11-13)
Lab Sample ID: JC86716-11
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/18/19
Date Received: 04/19/19
Percent Solids: 54.9

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	20500	93	15	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Antimony	0.76 U J	3.7	0.76	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Arsenic	37.2	3.7	0.52	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Barium	177	37	3.5	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Beryllium	1.3	0.37	0.15	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Cadmium	1.6	0.93	0.13	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Calcium	4260	930	82	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Chromium	157	1.9	0.69	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Cobalt	18.1	9.3	0.52	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Copper	99.8	4.6	1.6	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Iron	34400	93	36	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Lead	194 J	3.7	0.76	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Magnesium	5450 J	930	25	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Manganese	1250 J	2.8	0.76	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Mercury	1.6 J	0.12	0.051	mg/kg	2	04/23/19	04/23/19	LL	SW846 7471B [1]	SW846 7471B [4]
Nickel	35.1	7.4	0.65	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Potassium	2280	1900	59	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Selenium	1.2 U	3.7	1.2	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Silver	0.32 U	0.93	0.32	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Sodium	264 J	1900	140	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Thallium	1.1 U	1.9	1.1	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Vanadium	41.1	9.3	0.35	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Zinc	534	9.3	4.3	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]

(1) Instrument QC Batch: MA46561
(2) Instrument QC Batch: MA46589
(3) Prep QC Batch: MP14499
(4) Prep QC Batch: MP14502

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: TP-63R (11-13)
Lab Sample ID: JC86716-11
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/18/19
Date Received: 04/19/19
Percent Solids: 54.9

General Chemistry

Analyte	Result		RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	0.82	J	0.52	0.26	mg/kg	1	05/01/19 16:08	KI	SW846 9012B/LACHAT
Solids, Percent	54.9				%	1	04/29/19 17:22	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

SGS North America Inc.

Report of Analysis

Client Sample ID:	S-124 (7-9)		
Lab Sample ID:	JC86716-12	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8260C	**Percent Solids:**	68.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	D264127.D	1	04/29/19 20:29	TDN	n/a	n/a	VD10645
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	2.0 g	10.0 ml	100 ul
Run #2			

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone [b]	ND	3900	1900	ug/kg	
71-43-2	Benzene	38800	190	150	ug/kg	
74-97-5	Bromochloromethane	ND	1900	170	ug/kg	
75-27-4	Bromodichloromethane	ND	780	170	ug/kg	
75-25-2	Bromoform	ND	1900	160	ug/kg	
74-83-9	Bromomethane	ND	1900	390	ug/kg	
78-93-3	2-Butanone (MEK)	ND	3900	1500	ug/kg	
75-15-0	Carbon disulfide	1680	780	360	ug/kg	
56-23-5	Carbon tetrachloride	ND	780	210	ug/kg	
108-90-7	Chlorobenzene	1120	780	140	ug/kg	
75-00-3	Chloroethane	ND	1900	270	ug/kg	
67-66-3	Chloroform	ND	780	150	ug/kg	
74-87-3	Chloromethane	ND	1900	760	ug/kg	
110-82-7	Cyclohexane	ND	780	160	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	780	330	ug/kg	
124-48-1	Dibromochloromethane	ND	780	130	ug/kg	
106-93-4	1,2-Dibromoethane	ND	390	130	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	390	120	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	390	140	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	390	130	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	1900	250	ug/kg	
75-34-3	1,1-Dichloroethane	ND	390	150	ug/kg	
107-06-2	1,2-Dichloroethane [c]	ND	390	180	ug/kg	UJ
75-35-4	1,1-Dichloroethene	ND	390	260	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	390	370	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	390	260	ug/kg	
78-87-5	1,2-Dichloropropane	ND	780	160	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	780	140	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	780	130	ug/kg	
100-41-4	Ethylbenzene	3420	390	220	ug/kg	
76-13-1	Freon 113	ND	1900	300	ug/kg	
591-78-6	2-Hexanone	ND	1900	500	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-124 (7-9)		
Lab Sample ID:	JC86716-12	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8260C	**Percent Solids:**	68.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	780	270	ug/kg	
79-20-9	Methyl Acetate	ND	1900	540	ug/kg	
108-87-2	Methylcyclohexane	ND	780	280	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	390	140	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	1900	610	ug/kg	
75-09-2	Methylene chloride	ND	1900	970	ug/kg	
100-42-5	Styrene	ND	780	220	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	780	150	ug/kg	
127-18-4	Tetrachloroethene	ND	780	180	ug/kg	
108-88-3	Toluene	1670	390	150	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	1900	390	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	1900	390	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	780	170	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	780	130	ug/kg	
79-01-6	Trichloroethene	ND	390	300	ug/kg	
75-69-4	Trichlorofluoromethane	ND	1900	270	ug/kg	
75-01-4	Vinyl chloride	ND	780	180	ug/kg	
	m,p-Xylene	1560	390	290	ug/kg	
95-47-6	o-Xylene	634	390	230	ug/kg	
1330-20-7	Xylene (total)	2200	390	230	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	104%		75-127%
17060-07-0	1,2-Dichloroethane-D4	89%		75-130%
2037-26-5	Toluene-D8	92%		80-120%
460-00-4	4-Bromofluorobenzene	94%		79-127%

(a) Diluted due to high concentration of target compound.
(b) Associated CCV outside of control limits high, sample was ND.
(c) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	S-124 (7-9)		
Lab Sample ID:	JC86716-12	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	68.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5P58947.D	1	04/26/19 18:47	CC	04/25/19 13:30	OP19971	E5P2787
Run #2							

	Initial Weight	Final Volume
Run #1	30.2 g	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	97	24	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	240	30	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	240	41	ug/kg	
105-67-9	2,4-Dimethylphenol [a]	ND	240	86	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	240	180	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	240	52	ug/kg	
95-48-7	2-Methylphenol	ND	97	31	ug/kg	
	3&4-Methylphenol	ND	97	40	ug/kg	
88-75-5	2-Nitrophenol	ND	240	32	ug/kg	
100-02-7	4-Nitrophenol [a]	ND	490	130	ug/kg	
87-86-5	Pentachlorophenol	ND	190	46	ug/kg	
108-95-2	Phenol	ND	97	25	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	240	32	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	240	36	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	240	29	ug/kg	
83-32-9	Acenaphthene	73.1	49	17	ug/kg	
208-96-8	Acenaphthylene	67.2	49	25	ug/kg	
98-86-2	Acetophenone	ND	240	10	ug/kg	
120-12-7	Anthracene	ND	49	30	ug/kg	
1912-24-9	Atrazine	ND	97	21	ug/kg	
56-55-3	Benzo(a)anthracene	24.9	49	14	ug/kg	J
50-32-8	Benzo(a)pyrene	27.4	49	22	ug/kg	J
205-99-2	Benzo(b)fluoranthene	44.8	49	21	ug/kg	J
191-24-2	Benzo(g,h,i)perylene	41.7	49	24	ug/kg	J
207-08-9	Benzo(k)fluoranthene	ND	49	23	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	97	19	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	97	12	ug/kg	
92-52-4	1,1'-Biphenyl	35.1	97	6.7	ug/kg	J
100-52-7	Benzaldehyde	ND	240	12	ug/kg	
91-58-7	2-Chloronaphthalene	ND	97	12	ug/kg	
106-47-8	4-Chloroaniline	ND	240	17	ug/kg	
86-74-8	Carbazole	ND	97	7.0	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-124 (7-9)
Lab Sample ID: JC86716-12
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/18/19
Date Received: 04/19/19
Percent Solids: 68.2

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	97	19	ug/kg	
218-01-9	Chrysene	29.8	49	15	ug/kg	J
111-91-1	bis(2-Chloroethoxy)methane	ND	97	10	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	97	21	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	97	17	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	97	16	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	49	15	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	49	24	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	97	40	ug/kg	
123-91-1	1,4-Dioxane	ND	49	32	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	49	21	ug/kg	
132-64-9	Dibenzofuran	ND	97	20	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	97	7.9	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	97	12	ug/kg	
84-66-2	Diethyl phthalate	ND	97	10	ug/kg	
131-11-3	Dimethyl phthalate	ND	97	8.6	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	97	11	ug/kg	
206-44-0	Fluoranthene	46.5	49	22	ug/kg	J
86-73-7	Fluorene	ND	49	22	ug/kg	
118-74-1	Hexachlorobenzene	ND	97	12	ug/kg	
87-68-3	Hexachlorobutadiene	ND	49	20	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	490	19	ug/kg	
67-72-1	Hexachloroethane	ND	240	24	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	40.9	49	23	ug/kg	J
78-59-1	Isophorone	ND	97	10	ug/kg	
91-57-6	2-Methylnaphthalene	60.1	49	11	ug/kg	
88-74-4	2-Nitroaniline	ND	240	11	ug/kg	
99-09-2	3-Nitroaniline	ND	240	12	ug/kg	
100-01-6	4-Nitroaniline	ND	240	13	ug/kg	
91-20-3	Naphthalene	176	49	14	ug/kg	
98-95-3	Nitrobenzene	ND	97	19	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	97	14	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	240	18	ug/kg	
85-01-8	Phenanthrene	ND	49	16	ug/kg	
129-00-0	Pyrene	56.4	49	16	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	240	12	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	52%		23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-124 (7-9)		
Lab Sample ID:	JC86716-12	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	68.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	53%		27-114%
118-79-6	2,4,6-Tribromophenol	60%		19-152%
4165-60-0	Nitrobenzene-d5	58%		26-134%
321-60-8	2-Fluorobiphenyl	59%		39-124%
1718-51-0	Terphenyl-d14	46%		36-134%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-124 (7-9)
Lab Sample ID: JC86716-12
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/18/19
Date Received: 04/19/19
Percent Solids: 68.2

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	14700	75	12	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Antimony	0.61 U J	3.0	0.61	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Arsenic	11.9	3.0	0.42	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Barium	103	30	2.8	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Beryllium	0.93	0.30	0.12	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Cadmium	1.6	0.75	0.10	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Calcium	2430	750	66	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Chromium	25.9	1.5	0.55	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Cobalt	15.7	7.5	0.42	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Copper	119	3.7	1.3	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Iron	20800	75	29	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Lead	225 J	3.0	0.61	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Magnesium	2700 J	750	20	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Manganese	189 J	2.2	0.61	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Mercury	0.49 J	0.042	0.019	mg/kg	1	04/23/19	04/23/19	LL	SW846 7471B [1]	SW846 7471B [4]
Nickel	39.5	6.0	0.52	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Potassium	2290	1500	48	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Selenium	1.5 J	3.0	0.97	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Silver	0.25 U	0.75	0.25	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Sodium	135 J	1500	120	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Thallium	0.88 J	1.5	0.87	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Vanadium	39.0	7.5	0.28	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Zinc	527	7.5	3.4	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]

(1) Instrument QC Batch: MA46561
(2) Instrument QC Batch: MA46589
(3) Prep QC Batch: MP14499
(4) Prep QC Batch: MP14502

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	S-124 (7-9)		
Lab Sample ID:	JC86716-12	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
		Percent Solids:	68.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result		RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	2.3	J	0.35	0.18	mg/kg	1	05/01/19 16:12	KI	SW846 9012B/LACHAT
Solids, Percent	68.2				%	1	04/29/19 17:22	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

SGS North America Inc.

Report of Analysis

Client Sample ID:	S-124 (10-12)		
Lab Sample ID:	JC86716-13	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8260C	**Percent Solids:**	58.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	I225779.D	1	04/27/19 16:58	TDN	n/a	n/a	VI9096
Run #2							

	Initial Weight
Run #1	4.8 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	124	18	8.9	ug/kg	
71-43-2	Benzene	33.7	0.89	0.67	ug/kg	
74-97-5	Bromochloromethane	ND	8.9	0.77	ug/kg	
75-27-4	Bromodichloromethane	ND	3.6	0.79	ug/kg	
75-25-2	Bromoform	ND	8.9	0.72	ug/kg	
74-83-9	Bromomethane	ND	8.9	1.8	ug/kg	
78-93-3	2-Butanone (MEK)	15.3	18	6.7	ug/kg	J
75-15-0	Carbon disulfide	ND	3.6	1.7	ug/kg	
56-23-5	Carbon tetrachloride	ND	3.6	0.98	ug/kg	
108-90-7	Chlorobenzene	ND	3.6	0.63	ug/kg	
75-00-3	Chloroethane	ND	8.9	1.2	ug/kg	
67-66-3	Chloroform	ND	3.6	0.66	ug/kg	
74-87-3	Chloromethane	ND	8.9	3.5	ug/kg	
110-82-7	Cyclohexane	ND	3.6	0.73	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	3.6	1.5	ug/kg	
124-48-1	Dibromochloromethane	ND	3.6	0.60	ug/kg	
106-93-4	1,2-Dibromoethane [a]	ND	1.8	0.58	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.8	0.54	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.8	0.64	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.8	0.61	ug/kg	
75-71-8	Dichlorodifluoromethane [b]	ND	8.9	1.1	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.8	0.69	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.8	0.84	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.8	1.2	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.8	1.7	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.8	1.2	ug/kg	
78-87-5	1,2-Dichloropropane	ND	3.6	0.73	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	3.6	0.63	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	3.6	0.58	ug/kg	
100-41-4	Ethylbenzene	ND	1.8	0.99	ug/kg	
76-13-1	Freon 113	ND	8.9	1.4	ug/kg	
591-78-6	2-Hexanone	ND	8.9	2.3	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-124 (10-12)		
Lab Sample ID:	JC86716-13	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8260C	**Percent Solids:**	58.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	3.6	1.2	ug/kg	
79-20-9	Methyl Acetate	ND	8.9	2.5	ug/kg	
108-87-2	Methylcyclohexane	ND	3.6	1.3	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.8	0.63	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	8.9	2.8	ug/kg	
75-09-2	Methylene chloride	ND	8.9	4.5	ug/kg	
100-42-5	Styrene	ND	3.6	1.0	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	3.6	0.70	ug/kg	
127-18-4	Tetrachloroethene	ND	3.6	0.83	ug/kg	
108-88-3	Toluene	0.69	1.8	0.67	ug/kg	J
87-61-6	1,2,3-Trichlorobenzene	ND	8.9	1.8	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	8.9	1.8	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	3.6	0.76	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	3.6	0.61	ug/kg	
79-01-6	Trichloroethene	ND	1.8	1.4	ug/kg	
75-69-4	Trichlorofluoromethane	ND	8.9	1.2	ug/kg	
75-01-4	Vinyl chloride	ND	3.6	0.84	ug/kg	
	m,p-Xylene	ND	1.8	1.3	ug/kg	
95-47-6	o-Xylene	ND	1.8	1.0	ug/kg	
1330-20-7	Xylene (total)	ND	1.8	1.0	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	111%		75-127%
17060-07-0	1,2-Dichloroethane-D4	126%		75-130%
2037-26-5	Toluene-D8	100%		80-120%
460-00-4	4-Bromofluorobenzene	116%		79-127%

(a) This compound in BS is outside in house QC limits bias high. Associated CCV outside of control limits high, sample was ND.
(b) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	S-124 (10-12)		
Lab Sample ID:	JC86716-13	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	58.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5P58945.D	1	04/26/19 18:01	CC	04/25/19 13:30	OP19971	E5P2787
Run #2							

	Initial Weight	Final Volume
Run #1	30.7 g	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	110	28	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	280	34	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	280	48	ug/kg	
105-67-9	2,4-Dimethylphenol [a]	ND	280	99	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	280	210	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	280	60	ug/kg	
95-48-7	2-Methylphenol	ND	110	36	ug/kg	
	3&4-Methylphenol	ND	110	46	ug/kg	
88-75-5	2-Nitrophenol	ND	280	37	ug/kg	
100-02-7	4-Nitrophenol [a]	ND	560	150	ug/kg	
87-86-5	Pentachlorophenol	ND	220	52	ug/kg	
108-95-2	Phenol	ND	110	29	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	280	37	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	280	42	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	280	33	ug/kg	
83-32-9	Acenaphthene	261	56	19	ug/kg	
208-96-8	Acenaphthylene	44.6	56	28	ug/kg	J
98-86-2	Acetophenone	ND	280	12	ug/kg	
120-12-7	Anthracene	74.6	56	34	ug/kg	
1912-24-9	Atrazine	ND	110	24	ug/kg	
56-55-3	Benzo(a)anthracene	126	56	16	ug/kg	
50-32-8	Benzo(a)pyrene	164	56	25	ug/kg	
205-99-2	Benzo(b)fluoranthene	170	56	25	ug/kg	
191-24-2	Benzo(g,h,i)perylene	91.4	56	28	ug/kg	
207-08-9	Benzo(k)fluoranthene	58.5	56	26	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	110	22	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	110	14	ug/kg	
92-52-4	1,1'-Biphenyl	ND	110	7.7	ug/kg	
100-52-7	Benzaldehyde	ND	280	14	ug/kg	
91-58-7	2-Chloronaphthalene	ND	110	13	ug/kg	
106-47-8	4-Chloroaniline	ND	280	20	ug/kg	
86-74-8	Carbazole	ND	110	8.1	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-124 (10-12)
Lab Sample ID: JC86716-13
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/18/19
Date Received: 04/19/19
Percent Solids: 58.3

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	110	22	ug/kg	
218-01-9	Chrysene	145	56	18	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	110	12	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	110	24	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	110	20	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	110	18	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	56	17	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	56	28	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	110	47	ug/kg	
123-91-1	1,4-Dioxane	ND	56	37	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	56	25	ug/kg	
132-64-9	Dibenzofuran	ND	110	23	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	110	9.1	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	110	14	ug/kg	
84-66-2	Diethyl phthalate	ND	110	12	ug/kg	
131-11-3	Dimethyl phthalate	ND	110	9.9	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	110	13	ug/kg	
206-44-0	Fluoranthene	322	56	25	ug/kg	
86-73-7	Fluorene	151	56	26	ug/kg	
118-74-1	Hexachlorobenzene	ND	110	14	ug/kg	
87-68-3	Hexachlorobutadiene	ND	56	22	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	560	22	ug/kg	
67-72-1	Hexachloroethane	ND	280	28	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	98.3	56	26	ug/kg	
78-59-1	Isophorone	ND	110	12	ug/kg	
91-57-6	2-Methylnaphthalene	22.5	56	13	ug/kg	J
88-74-4	2-Nitroaniline	ND	280	13	ug/kg	
99-09-2	3-Nitroaniline	ND	280	14	ug/kg	
100-01-6	4-Nitroaniline	ND	280	14	ug/kg	
91-20-3	Naphthalene	50.3	56	16	ug/kg	J
98-95-3	Nitrobenzene	ND	110	22	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	110	16	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	280	20	ug/kg	
85-01-8	Phenanthrene	152	56	19	ug/kg	
129-00-0	Pyrene	302	56	18	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	280	14	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	59%		23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-124 (10-12)		
Lab Sample ID:	JC86716-13	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	58.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	60%		27-114%
118-79-6	2,4,6-Tribromophenol	63%		19-152%
4165-60-0	Nitrobenzene-d5	66%		26-134%
321-60-8	2-Fluorobiphenyl	63%		39-124%
1718-51-0	Terphenyl-d14	57%		36-134%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-124 (10-12)
Lab Sample ID: JC86716-13
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/18/19
Date Received: 04/19/19
Percent Solids: 58.3

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	17000	88	14	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Antimony	0.72 U J	3.5	0.72	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Arsenic	69.9	3.5	0.49	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Barium	193	35	3.3	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Beryllium	1.1	0.35	0.14	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Cadmium	3.1	0.88	0.12	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Calcium	4750	880	77	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Chromium	296	1.8	0.65	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Cobalt	17.4	8.8	0.49	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Copper	136	4.4	1.5	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Iron	28200	88	34	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Lead	280 J	3.5	0.72	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Magnesium	4510 J	880	24	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Manganese	868 J	2.6	0.72	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Mercury	2.4 J	0.27	0.12	mg/kg	5	04/23/19	04/23/19	LL	SW846 7471B [1]	SW846 7471B [4]
Nickel	31.8	7.0	0.61	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Potassium	1810	1800	56	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Selenium	1.1 U	3.5	1.1	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Silver	0.96	0.88	0.30	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Sodium	237 J	1800	140	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Thallium	1.0 U	1.8	1.0	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Vanadium	35.0	8.8	0.33	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Zinc	929	8.8	4.0	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]

(1) Instrument QC Batch: MA46561
(2) Instrument QC Batch: MA46589
(3) Prep QC Batch: MP14499
(4) Prep QC Batch: MP14502

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: S-124 (10-12)
Lab Sample ID: JC86716-13
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/18/19
Date Received: 04/19/19
Percent Solids: 58.3

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	0.18 J	0.34	0.17	mg/kg	1	05/01/19 16:13	KI	SW846 9012B/LACHAT
Solids, Percent	58.3			%	1	04/29/19 17:22	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

SGS North America Inc.

Report of Analysis

Client Sample ID:	S-123 (7-9)		
Lab Sample ID:	JC86716-14	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8260C	**Percent Solids:**	77.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	I225780.D	1	04/27/19 17:28	TDN	n/a	n/a	VI9096
Run #2							

	Initial Weight
Run #1	5.7 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	11	5.6	ug/kg	
71-43-2	Benzene	0.85	0.56	0.42	ug/kg	
74-97-5	Bromochloromethane	ND	5.6	0.48	ug/kg	
75-27-4	Bromodichloromethane	ND	2.3	0.50	ug/kg	
75-25-2	Bromoform	ND	5.6	0.45	ug/kg	
74-83-9	Bromomethane	ND	5.6	1.1	ug/kg	
78-93-3	2-Butanone (MEK)	ND	11	4.2	ug/kg	
75-15-0	Carbon disulfide	ND	2.3	1.0	ug/kg	
56-23-5	Carbon tetrachloride	ND	2.3	0.62	ug/kg	
108-90-7	Chlorobenzene	ND	2.3	0.40	ug/kg	
75-00-3	Chloroethane	ND	5.6	0.77	ug/kg	
67-66-3	Chloroform	ND	2.3	0.42	ug/kg	
74-87-3	Chloromethane	ND	5.6	2.2	ug/kg	
110-82-7	Cyclohexane	ND	2.3	0.46	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.3	0.94	ug/kg	
124-48-1	Dibromochloromethane	ND	2.3	0.38	ug/kg	
106-93-4	1,2-Dibromoethane [a]	ND	1.1	0.37	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.1	0.34	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.1	0.40	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.1	0.39	ug/kg	
75-71-8	Dichlorodifluoromethane [b]	ND	5.6	0.72	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.1	0.43	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.1	0.53	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.1	0.74	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.1	1.1	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.1	0.75	ug/kg	
78-87-5	1,2-Dichloropropane	ND	2.3	0.46	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	2.3	0.40	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2.3	0.37	ug/kg	
100-41-4	Ethylbenzene	ND	1.1	0.62	ug/kg	
76-13-1	Freon 113	ND	5.6	0.86	ug/kg	
591-78-6	2-Hexanone	ND	5.6	1.4	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-123 (7-9)		
Lab Sample ID:	JC86716-14	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8260C	**Percent Solids:**	77.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	2.3	0.78	ug/kg	
79-20-9	Methyl Acetate	ND	5.6	1.6	ug/kg	
108-87-2	Methylcyclohexane	ND	2.3	0.80	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.1	0.40	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.6	1.8	ug/kg	
75-09-2	Methylene chloride	ND	5.6	2.8	ug/kg	
100-42-5	Styrene	ND	2.3	0.65	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.3	0.44	ug/kg	
127-18-4	Tetrachloroethene	ND	2.3	0.52	ug/kg	
108-88-3	Toluene	ND	1.1	0.42	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	5.6	1.1	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	5.6	1.1	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	2.3	0.48	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2.3	0.39	ug/kg	
79-01-6	Trichloroethene	ND	1.1	0.86	ug/kg	
75-69-4	Trichlorofluoromethane	ND	5.6	0.77	ug/kg	
75-01-4	Vinyl chloride	ND	2.3	0.53	ug/kg	
	m,p-Xylene	ND	1.1	0.84	ug/kg	
95-47-6	o-Xylene	ND	1.1	0.66	ug/kg	
1330-20-7	Xylene (total)	ND	1.1	0.66	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	105%		75-127%
17060-07-0	1,2-Dichloroethane-D4	115%		75-130%
2037-26-5	Toluene-D8	102%		80-120%
460-00-4	4-Bromofluorobenzene	112%		79-127%

(a) Associated CCV and BS outside of control limits high, sample was ND.
(b) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	S-123 (7-9)		
Lab Sample ID:	JC86716-14	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	77.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5P58946.D	1	04/26/19 18:24	CC	04/25/19 13:30	OP19971	E5P2787
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	86	21	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	210	26	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	210	36	ug/kg	
105-67-9	2,4-Dimethylphenol [a]	ND	210	76	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	210	160	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	210	46	ug/kg	
95-48-7	2-Methylphenol	ND	86	27	ug/kg	
	3&4-Methylphenol	ND	86	35	ug/kg	
88-75-5	2-Nitrophenol	ND	210	28	ug/kg	
100-02-7	4-Nitrophenol [a]	ND	430	110	ug/kg	
87-86-5	Pentachlorophenol	ND	170	40	ug/kg	
108-95-2	Phenol	ND	86	22	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	210	28	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	210	32	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	210	26	ug/kg	
83-32-9	Acenaphthene	62.8	43	15	ug/kg	
208-96-8	Acenaphthylene	95.6	43	22	ug/kg	
98-86-2	Acetophenone	ND	210	9.2	ug/kg	
120-12-7	Anthracene	151	43	26	ug/kg	
1912-24-9	Atrazine	ND	86	18	ug/kg	
56-55-3	Benzo(a)anthracene	496	43	12	ug/kg	
50-32-8	Benzo(a)pyrene	581	43	19	ug/kg	
205-99-2	Benzo(b)fluoranthene	753	43	19	ug/kg	
191-24-2	Benzo(g,h,i)perylene	415	43	21	ug/kg	
207-08-9	Benzo(k)fluoranthene	251	43	20	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	86	17	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	86	10	ug/kg	
92-52-4	1,1'-Biphenyl	9.6	86	5.9	ug/kg	J
100-52-7	Benzaldehyde	ND	210	11	ug/kg	
91-58-7	2-Chloronaphthalene	ND	86	10	ug/kg	
106-47-8	4-Chloroaniline	ND	210	15	ug/kg	
86-74-8	Carbazole	57.3	86	6.2	ug/kg	J

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-123 (7-9)
Lab Sample ID: JC86716-14
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/18/19
Date Received: 04/19/19
Percent Solids: 77.9

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	86	17	ug/kg	
218-01-9	Chrysene	502	43	13	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	86	9.2	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	86	18	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	86	15	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	86	14	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	43	13	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	43	21	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	86	36	ug/kg	
123-91-1	1,4-Dioxane	ND	43	28	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	115	43	19	ug/kg	
132-64-9	Dibenzofuran	38.4	86	17	ug/kg	J
84-74-2	Di-n-butyl phthalate	ND	86	7.0	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	86	11	ug/kg	
84-66-2	Diethyl phthalate	ND	86	9.1	ug/kg	
131-11-3	Dimethyl phthalate	ND	86	7.6	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	86	10	ug/kg	
206-44-0	Fluoranthene	889	43	19	ug/kg	
86-73-7	Fluorene	59.4	43	20	ug/kg	
118-74-1	Hexachlorobenzene	ND	86	11	ug/kg	
87-68-3	Hexachlorobutadiene	ND	43	17	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	430	17	ug/kg	
67-72-1	Hexachloroethane	ND	210	21	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	437	43	20	ug/kg	
78-59-1	Isophorone	ND	86	9.2	ug/kg	
91-57-6	2-Methylnaphthalene	31.0	43	9.7	ug/kg	J
88-74-4	2-Nitroaniline	ND	210	10	ug/kg	
99-09-2	3-Nitroaniline	ND	210	11	ug/kg	
100-01-6	4-Nitroaniline	ND	210	11	ug/kg	
91-20-3	Naphthalene	141	43	12	ug/kg	
98-95-3	Nitrobenzene	ND	86	17	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	86	12	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	210	16	ug/kg	
85-01-8	Phenanthrene	517	43	14	ug/kg	
129-00-0	Pyrene	755	43	14	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	210	11	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	54%		23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-123 (7-9)		
Lab Sample ID:	JC86716-14	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	77.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	56%		27-114%
118-79-6	2,4,6-Tribromophenol	59%		19-152%
4165-60-0	Nitrobenzene-d5	61%		26-134%
321-60-8	2-Fluorobiphenyl	58%		39-124%
1718-51-0	Terphenyl-d14	52%		36-134%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-123 (7-9)
Lab Sample ID: JC86716-14
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/18/19
Date Received: 04/19/19
Percent Solids: 77.9

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	17300	67	11	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Antimony	0.68 J	2.7	0.55	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Arsenic	11.9	2.7	0.37	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Barium	109	27	2.5	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Beryllium	0.74	0.27	0.11	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Cadmium	0.28 J	0.67	0.094	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Calcium	2140	670	59	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Chromium	28.4	1.3	0.49	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Cobalt	7.7	6.7	0.37	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Copper	92.0	3.3	1.1	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Iron	26300	67	26	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Lead	459 J	2.7	0.55	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Magnesium	2520 J	670	18	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Manganese	186 J	2.0	0.55	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Mercury	0.68 J	0.037	0.016	mg/kg	1	04/23/19	04/23/19	LL	SW846 7471B [1]	SW846 7471B [4]
Nickel	22.6	5.3	0.47	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Potassium	1900	1300	42	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Selenium	0.87 U	2.7	0.87	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Silver	0.23 U	0.67	0.23	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Sodium	109 J	1300	100	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Thallium	0.82 J	1.3	0.78	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Vanadium	38.5	6.7	0.25	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Zinc	569	6.7	3.1	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]

(1) Instrument QC Batch: MA46561
(2) Instrument QC Batch: MA46589
(3) Prep QC Batch: MP14499
(4) Prep QC Batch: MP14502

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	S-123 (7-9)		
Lab Sample ID:	JC86716-14	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
		Percent Solids:	77.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result		RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	2.9	J	0.35	0.18	mg/kg	1	05/01/19 16:14	KI	SW846 9012B/LACHAT
Solids, Percent	77.9				%	1	04/29/19 17:22	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

SGS North America Inc.

Report of Analysis

Client Sample ID:	S-123 (13-15)		
Lab Sample ID:	JC86716-15	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8260C	**Percent Solids:**	60.0
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	I225781.D	1	04/27/19 17:57	TDN	n/a	n/a	VI9096
Run #2							

	Initial Weight
Run #1	4.7 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	127	18	8.9	ug/kg	
71-43-2	Benzene	46.6	0.89	0.67	ug/kg	
74-97-5	Bromochloromethane	ND	8.9	0.76	ug/kg	
75-27-4	Bromodichloromethane	ND	3.5	0.79	ug/kg	
75-25-2	Bromoform	ND	8.9	0.71	ug/kg	
74-83-9	Bromomethane	ND	8.9	1.8	ug/kg	
78-93-3	2-Butanone (MEK)	17.4	18	6.6	ug/kg	J
75-15-0	Carbon disulfide	ND	3.5	1.6	ug/kg	
56-23-5	Carbon tetrachloride	ND	3.5	0.98	ug/kg	
108-90-7	Chlorobenzene	ND	3.5	0.63	ug/kg	
75-00-3	Chloroethane	ND	8.9	1.2	ug/kg	
67-66-3	Chloroform	ND	3.5	0.66	ug/kg	
74-87-3	Chloromethane	ND	8.9	3.5	ug/kg	
110-82-7	Cyclohexane	ND	3.5	0.72	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	3.5	1.5	ug/kg	
124-48-1	Dibromochloromethane	ND	3.5	0.60	ug/kg	
106-93-4	1,2-Dibromoethane [a]	ND	1.8	0.58	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.8	0.54	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.8	0.64	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.8	0.61	ug/kg	
75-71-8	Dichlorodifluoromethane [b]	ND	8.9	1.1	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.8	0.68	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.8	0.83	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.8	1.2	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.8	1.7	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.8	1.2	ug/kg	
78-87-5	1,2-Dichloropropane	ND	3.5	0.72	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	3.5	0.62	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	3.5	0.58	ug/kg	
100-41-4	Ethylbenzene	ND	1.8	0.98	ug/kg	
76-13-1	Freon 113	ND	8.9	1.4	ug/kg	
591-78-6	2-Hexanone	ND	8.9	2.3	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-123 (13-15)		
Lab Sample ID:	JC86716-15	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8260C	**Percent Solids:**	60.0
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	3.5	1.2	ug/kg	
79-20-9	Methyl Acetate	ND	8.9	2.5	ug/kg	
108-87-2	Methylcyclohexane	1.9	3.5	1.3	ug/kg	J
1634-04-4	Methyl Tert Butyl Ether	ND	1.8	0.62	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	8.9	2.8	ug/kg	
75-09-2	Methylene chloride	ND	8.9	4.4	ug/kg	
100-42-5	Styrene	ND	3.5	1.0	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	3.5	0.69	ug/kg	
127-18-4	Tetrachloroethene	ND	3.5	0.82	ug/kg	
108-88-3	Toluene	0.92	1.8	0.67	ug/kg	J
87-61-6	1,2,3-Trichlorobenzene	ND	8.9	1.8	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	8.9	1.8	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	3.5	0.76	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	3.5	0.61	ug/kg	
79-01-6	Trichloroethene	ND	1.8	1.4	ug/kg	
75-69-4	Trichlorofluoromethane	ND	8.9	1.2	ug/kg	
75-01-4	Vinyl chloride	ND	3.5	0.83	ug/kg	
	m,p-Xylene	ND	1.8	1.3	ug/kg	
95-47-6	o-Xylene	ND	1.8	1.0	ug/kg	
1330-20-7	Xylene (total)	ND	1.8	1.0	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	106%		75-127%
17060-07-0	1,2-Dichloroethane-D4	121%		75-130%
2037-26-5	Toluene-D8	100%		80-120%
460-00-4	4-Bromofluorobenzene	116%		79-127%

(a) This compound in BS is outside in house QC limits bias high. Associated CCV outside of control limits high, sample was ND.
(b) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	S-123 (13-15)		
Lab Sample ID:	JC86716-15	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	60.0
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5P58944.D	1	04/26/19 17:39	CC	04/25/19 13:30	OP19971	E5P2787
Run #2							

	Initial Weight	Final Volume
Run #1	30.8 g	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	110	27	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	270	33	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	270	46	ug/kg	
105-67-9	2,4-Dimethylphenol [a]	ND	270	96	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	270	200	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	270	58	ug/kg	
95-48-7	2-Methylphenol	ND	110	35	ug/kg	
	3&4-Methylphenol	ND	110	44	ug/kg	
88-75-5	2-Nitrophenol	ND	270	36	ug/kg	
100-02-7	4-Nitrophenol [a]	ND	540	140	ug/kg	
87-86-5	Pentachlorophenol	ND	220	51	ug/kg	
108-95-2	Phenol	ND	110	28	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	270	36	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	270	41	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	270	32	ug/kg	
83-32-9	Acenaphthene	ND	54	19	ug/kg	
208-96-8	Acenaphthylene	ND	54	27	ug/kg	
98-86-2	Acetophenone	ND	270	12	ug/kg	
120-12-7	Anthracene	ND	54	33	ug/kg	
1912-24-9	Atrazine	ND	110	23	ug/kg	
56-55-3	Benzo(a)anthracene	30.2	54	15	ug/kg	J
50-32-8	Benzo(a)pyrene	42.6	54	25	ug/kg	J
205-99-2	Benzo(b)fluoranthene	50.5	54	24	ug/kg	J
191-24-2	Benzo(g,h,i)perylene	38.0	54	27	ug/kg	J
207-08-9	Benzo(k)fluoranthene	ND	54	25	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	110	21	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	110	13	ug/kg	
92-52-4	1,1'-Biphenyl	ND	110	7.4	ug/kg	
100-52-7	Benzaldehyde	ND	270	13	ug/kg	
91-58-7	2-Chloronaphthalene	ND	110	13	ug/kg	
106-47-8	4-Chloroaniline	ND	270	19	ug/kg	
86-74-8	Carbazole	ND	110	7.8	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-123 (13-15)
Lab Sample ID: JC86716-15
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/18/19
Date Received: 04/19/19
Percent Solids: 60.0

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	110	21	ug/kg	
218-01-9	Chrysene	34.2	54	17	ug/kg	J
111-91-1	bis(2-Chloroethoxy)methane	ND	110	12	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	110	23	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	110	19	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	110	18	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	54	17	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	54	27	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	110	45	ug/kg	
123-91-1	1,4-Dioxane	ND	54	36	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	54	24	ug/kg	
132-64-9	Dibenzofuran	ND	110	22	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	110	8.8	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	110	13	ug/kg	
84-66-2	Diethyl phthalate	ND	110	12	ug/kg	
131-11-3	Dimethyl phthalate	ND	110	9.6	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	110	13	ug/kg	
206-44-0	Fluoranthene	56.0	54	24	ug/kg	
86-73-7	Fluorene	ND	54	25	ug/kg	
118-74-1	Hexachlorobenzene	ND	110	14	ug/kg	
87-68-3	Hexachlorobutadiene	ND	54	22	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	540	22	ug/kg	
67-72-1	Hexachloroethane	ND	270	27	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	36.5	54	25	ug/kg	J
78-59-1	Isophorone	ND	110	12	ug/kg	
91-57-6	2-Methylnaphthalene	ND	54	12	ug/kg	
88-74-4	2-Nitroaniline	ND	270	13	ug/kg	
99-09-2	3-Nitroaniline	ND	270	14	ug/kg	
100-01-6	4-Nitroaniline	ND	270	14	ug/kg	
91-20-3	Naphthalene	ND	54	15	ug/kg	
98-95-3	Nitrobenzene	ND	110	21	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	110	16	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	270	20	ug/kg	
85-01-8	Phenanthrene	24.3	54	18	ug/kg	J
129-00-0	Pyrene	61.3	54	17	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	270	14	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	57%		23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-123 (13-15)		
Lab Sample ID:	JC86716-15	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	60.0
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	62%		27-114%
118-79-6	2,4,6-Tribromophenol	62%		19-152%
4165-60-0	Nitrobenzene-d5	68%		26-134%
321-60-8	2-Fluorobiphenyl	63%		39-124%
1718-51-0	Terphenyl-d14	54%		36-134%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-123 (13-15)
Lab Sample ID: JC86716-15
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/18/19
Date Received: 04/19/19
Percent Solids: 60.0

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	22700	84	14	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Antimony	0.69 U J	3.4	0.69	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Arsenic	46.9	3.4	0.47	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Barium	212	34	3.2	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Beryllium	1.6	0.34	0.13	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Cadmium	2.5	0.84	0.12	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Calcium	4290	840	74	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Chromium	187	1.7	0.62	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Cobalt	22.5	8.4	0.47	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Copper [a]	158	8.4	2.8	mg/kg	2	04/23/19	05/01/19	ND	SW846 6010D [3]	SW846 3050B [4]
Iron	39600	170	65	mg/kg	2	04/23/19	05/01/19	ND	SW846 6010D [3]	SW846 3050B [4]
Lead	288 J	3.4	0.69	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Magnesium	5210 J	840	23	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Manganese	1090 J	5.1	1.4	mg/kg	2	04/23/19	05/01/19	ND	SW846 6010D [3]	SW846 3050B [4]
Mercury	1.6 J	0.10	0.045	mg/kg	2	04/23/19	04/23/19	LL	SW846 7471B [1]	SW846 7471B [5]
Nickel	41.7	6.7	0.59	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Potassium	2370	1700	54	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Selenium [a]	3.5 J	6.7	2.2	mg/kg	2	04/23/19	05/01/19	ND	SW846 6010D [3]	SW846 3050B [4]
Silver [a]	2.2	1.7	0.57	mg/kg	2	04/23/19	05/01/19	ND	SW846 6010D [3]	SW846 3050B [4]
Sodium	264 J	1700	130	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Thallium [a]	2.0 U	3.4	2.0	mg/kg	2	04/23/19	05/01/19	ND	SW846 6010D [3]	SW846 3050B [4]
Vanadium	42.2	8.4	0.32	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Zinc	793	8.4	3.9	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA46561
(2) Instrument QC Batch: MA46589
(3) Instrument QC Batch: MA46629
(4) Prep QC Batch: MP14499
(5) Prep QC Batch: MP14502

(a) Elevated detection limit due to dilution required for high interfering element.

RL = Reporting Limit
MDL = Method Detection Limit
U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	S-123 (13-15)		
Lab Sample ID:	JC86716-15	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
		Percent Solids:	60.0
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result		RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	1.1	J	0.50	0.25	mg/kg	1	05/01/19 16:16	KI	SW846 9012B/LACHAT
Solids, Percent	60				%	1	04/29/19 17:22	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

SGS North America Inc.

Report of Analysis

Client Sample ID:	PSSTP-07R (0.5-2)		
Lab Sample ID:	JC86716-16	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8260C	**Percent Solids:**	80.5
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Y184792.D	1	04/27/19 15:07	PS	n/a	n/a	VY8018
Run #2							

	Initial Weight
Run #1	6.0 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	5.2	ug/kg	
71-43-2	Benzene	0.89	0.52	0.39	ug/kg	J
74-97-5	Bromochloromethane	ND	5.2	0.45	ug/kg	
75-27-4	Bromodichloromethane	ND	2.1	0.46	ug/kg	
75-25-2	Bromoform	ND	5.2	0.42	ug/kg	
74-83-9	Bromomethane	ND	5.2	1.0	ug/kg	
78-93-3	2-Butanone (MEK)	ND	10	3.9	ug/kg	
75-15-0	Carbon disulfide	ND	2.1	0.96	ug/kg	
56-23-5	Carbon tetrachloride	ND	2.1	0.57	ug/kg	
108-90-7	Chlorobenzene	ND	2.1	0.37	ug/kg	
75-00-3	Chloroethane	ND	5.2	0.71	ug/kg	
67-66-3	Chloroform	ND	2.1	0.39	ug/kg	
74-87-3	Chloromethane	ND	5.2	2.0	ug/kg	
110-82-7	Cyclohexane	ND	2.1	0.42	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.1	0.87	ug/kg	
124-48-1	Dibromochloromethane	ND	2.1	0.35	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.0	0.34	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.32	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.37	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.36	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	5.2	0.66	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.0	0.40	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.0	0.49	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.0	0.68	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.99	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.69	ug/kg	
78-87-5	1,2-Dichloropropane	ND	2.1	0.42	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	2.1	0.36	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2.1	0.34	ug/kg	
100-41-4	Ethylbenzene	ND	1.0	0.57	ug/kg	
76-13-1	Freon 113	ND	5.2	0.79	ug/kg	
591-78-6	2-Hexanone	ND	5.2	1.3	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PSSTP-07R (0.5-2)		
Lab Sample ID:	JC86716-16	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8260C	**Percent Solids:**	80.5
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	2.1	0.72	ug/kg	
79-20-9	Methyl Acetate	ND	5.2	1.4	ug/kg	
108-87-2	Methylcyclohexane	ND	2.1	0.73	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.36	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.2	1.6	ug/kg	
75-09-2	Methylene chloride	ND	5.2	2.6	ug/kg	
100-42-5	Styrene	ND	2.1	0.60	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.1	0.40	ug/kg	
127-18-4	Tetrachloroethene	ND	2.1	0.48	ug/kg	
108-88-3	Toluene	ND	1.0	0.39	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	5.2	1.0	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	5.2	1.0	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	2.1	0.44	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2.1	0.35	ug/kg	
79-01-6	Trichloroethene	ND	1.0	0.79	ug/kg	
75-69-4	Trichlorofluoromethane	ND	5.2	0.70	ug/kg	
75-01-4	Vinyl chloride	ND	2.1	0.49	ug/kg	
	m,p-Xylene	ND	1.0	0.77	ug/kg	
95-47-6	o-Xylene	ND	1.0	0.60	ug/kg	
1330-20-7	Xylene (total)	ND	1.0	0.60	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%		75-127%
17060-07-0	1,2-Dichloroethane-D4	102%		75-130%
2037-26-5	Toluene-D8	97%		80-120%
460-00-4	4-Bromofluorobenzene	95%		79-127%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	PSSTP-07R (0.5-2)		
Lab Sample ID:	JC86716-16	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	80.5
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5P59081.D	1	04/30/19 21:03	CC	04/25/19 13:30	OP19972	E5P2792
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	83	20	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	210	25	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	210	35	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	210	74	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	210	160	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	210	44	ug/kg	
95-48-7	2-Methylphenol	ND	83	26	ug/kg	
	3&4-Methylphenol	ND	83	34	ug/kg	
88-75-5	2-Nitrophenol	ND	210	27	ug/kg	
100-02-7	4-Nitrophenol	ND	410	110	ug/kg	
87-86-5	Pentachlorophenol	ND	170	39	ug/kg	
108-95-2	Phenol	ND	83	22	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	210	27	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	210	31	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	210	25	ug/kg	
83-32-9	Acenaphthene	125	41	14	ug/kg	
208-96-8	Acenaphthylene	72.0	41	21	ug/kg	
98-86-2	Acetophenone	ND	210	8.9	ug/kg	
120-12-7	Anthracene	321	41	25	ug/kg	
1912-24-9	Atrazine	ND	83	18	ug/kg	
56-55-3	Benzo(a)anthracene	939	41	12	ug/kg	
50-32-8	Benzo(a)pyrene	979	41	19	ug/kg	
205-99-2	Benzo(b)fluoranthene	1210	41	18	ug/kg	
191-24-2	Benzo(g,h,i)perylene	626	41	21	ug/kg	
207-08-9	Benzo(k)fluoranthene	481	41	19	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	83	16	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	83	10	ug/kg	
92-52-4	1,1'-Biphenyl	10.7	83	5.7	ug/kg	J
100-52-7	Benzaldehyde	22.1	210	10	ug/kg	J
91-58-7	2-Chloronaphthalene	ND	83	9.9	ug/kg	
106-47-8	4-Chloroaniline	ND	210	15	ug/kg	
86-74-8	Carbazole	139	83	6.0	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PSSTP-07R (0.5-2)
Lab Sample ID: JC86716-16
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/18/19
Date Received: 04/19/19
Percent Solids: 80.5

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	83	16	ug/kg	
218-01-9	Chrysene	847	41	13	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	83	8.9	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	83	18	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	83	15	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	83	13	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	41	13	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	41	21	ug/kg	
91-94-1	3,3'-Dichlorobenzidine [a]	ND	83	35	ug/kg	UJ
123-91-1	1,4-Dioxane	ND	41	27	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	132	41	18	ug/kg	
132-64-9	Dibenzofuran	67.6	83	17	ug/kg	J
84-74-2	Di-n-butyl phthalate	343	83	6.7	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	83	10	ug/kg	
84-66-2	Diethyl phthalate	ND	83	8.8	ug/kg	
131-11-3	Dimethyl phthalate	ND	83	7.4	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	191	83	9.7	ug/kg	
206-44-0	Fluoranthene	1710	41	18	ug/kg	
86-73-7	Fluorene	136	41	19	ug/kg	
118-74-1	Hexachlorobenzene	ND	83	10	ug/kg	
87-68-3	Hexachlorobutadiene	ND	41	17	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	410	16	ug/kg	
67-72-1	Hexachloroethane	ND	210	20	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	660	41	19	ug/kg	
78-59-1	Isophorone	ND	83	8.9	ug/kg	
91-57-6	2-Methylnaphthalene	19.5	41	9.4	ug/kg	J
88-74-4	2-Nitroaniline	ND	210	9.8	ug/kg	
99-09-2	3-Nitroaniline	ND	210	10	ug/kg	
100-01-6	4-Nitroaniline	ND	210	11	ug/kg	
91-20-3	Naphthalene	32.1	41	12	ug/kg	J
98-95-3	Nitrobenzene	ND	83	16	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	83	12	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	210	15	ug/kg	
85-01-8	Phenanthrene	1200	41	14	ug/kg	
129-00-0	Pyrene	1590	41	13	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	210	11	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	58%		23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PSSTP-07R (0.5-2)		
Lab Sample ID:	JC86716-16	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	80.5
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	62%		27-114%
118-79-6	2,4,6-Tribromophenol	59%		19-152%
4165-60-0	Nitrobenzene-d5	69%		26-134%
321-60-8	2-Fluorobiphenyl	65%		39-124%
1718-51-0	Terphenyl-d14	62%		36-134%

(a) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	PSSTP-07R (0.5-2)		
Lab Sample ID:	JC86716-16	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8081B SW846 3546	**Percent Solids:**	80.5
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4G958741.D	1	05/01/19 15:32	MH	05/01/19 06:00	OP19993	G4G2741
Run #2							

	Initial Weight	Final Volume
Run #1	15.6 g	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	0.80	0.66	ug/kg	
319-84-6	alpha-BHC	ND	0.80	0.65	ug/kg	
319-85-7	beta-BHC	ND	0.80	0.72	ug/kg	
319-86-8	delta-BHC	ND	0.80	0.76	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	0.80	0.59	ug/kg	
5103-71-9	alpha-Chlordane	ND	0.80	0.64	ug/kg	
5103-74-2	gamma-Chlordane [a]	1.5	0.80	0.36	ug/kg	JN
60-57-1	Dieldrin	ND	0.80	0.55	ug/kg	
72-54-8	4,4'-DDD	2.5	0.80	0.73	ug/kg	
72-55-9	4,4'-DDE	ND	0.80	0.70	ug/kg	
50-29-3	4,4'-DDT	7.6	0.80	0.71	ug/kg	
72-20-8	Endrin	ND	0.80	0.62	ug/kg	
1031-07-8	Endosulfan sulfate	ND	0.80	0.62	ug/kg	
7421-93-4	Endrin aldehyde	ND	0.80	0.45	ug/kg	
959-98-8	Endosulfan-I	ND	0.80	0.46	ug/kg	
33213-65-9	Endosulfan-II	ND	0.80	0.50	ug/kg	
76-44-8	Heptachlor	ND	0.80	0.69	ug/kg	
1024-57-3	Heptachlor epoxide [a]	1.2	0.80	0.56	ug/kg	J
72-43-5	Methoxychlor	ND	1.6	0.63	ug/kg	
53494-70-5	Endrin ketone	ND	0.80	0.58	ug/kg	
8001-35-2	Toxaphene	ND	20	19	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	60%		25-135%
877-09-8	Tetrachloro-m-xylene	62%		25-135%
2051-24-3	Decachlorobiphenyl	62%		10-156%
2051-24-3	Decachlorobiphenyl	113%		10-156%

(a) More than 40 % RPD for detected concentrations between the two GC columns.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	PSSTP-07R (0.5-2)		
Lab Sample ID:	JC86716-16	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8082A SW846 3546	**Percent Solids:**	80.5
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5G88066.D	1	05/01/19 18:21	SK	05/01/19 06:00	OP19992	G5G2121
Run #2							

	Initial Weight	Final Volume
Run #1	15.6 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	40	19	ug/kg	
11104-28-2	Aroclor 1221	ND	40	20	ug/kg	
11141-16-5	Aroclor 1232	ND	40	31	ug/kg	
53469-21-9	Aroclor 1242	ND	40	16	ug/kg	
12672-29-6	Aroclor 1248	ND	40	36	ug/kg	
11097-69-1	Aroclor 1254	ND	40	21	ug/kg	
11096-82-5	Aroclor 1260	ND	40	17	ug/kg	
11100-14-4	Aroclor 1268	ND	40	17	ug/kg	
37324-23-5	Aroclor 1262	ND	40	26	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	56%		31-146%
877-09-8	Tetrachloro-m-xylene	63%		31-146%
2051-24-3	Decachlorobiphenyl	101%		17-164%
2051-24-3	Decachlorobiphenyl	61%		17-164%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PSSTP-07R (0.5-2)
Lab Sample ID: JC86716-16
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/18/19
Date Received: 04/19/19
Percent Solids: 80.5

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	11100	65	11	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Antimony	0.54 U J	2.6	0.54	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Arsenic	6.6	2.6	0.37	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Barium	110	26	2.5	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Beryllium	0.52	0.26	0.10	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Cadmium	0.39 J	0.65	0.092	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Calcium	22400	650	58	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Chromium	18.0	1.3	0.48	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Cobalt	5.3 J	6.5	0.37	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Copper	17.7	3.3	1.1	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Iron	17000	65	25	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Lead	158 J	2.6	0.54	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Magnesium	4540 J	650	18	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Manganese	316 J	2.0	0.54	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Mercury	0.19 J	0.038	0.017	mg/kg	1	04/23/19	04/23/19	LL	SW846 7471B [1]	SW846 7471B [4]
Nickel	11.1	5.2	0.46	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Potassium	978 J	1300	42	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Selenium	0.85 U	2.6	0.85	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Silver	0.22 U	0.65	0.22	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Sodium	121 J	1300	100	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Thallium	0.76 U	1.3	0.76	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Vanadium	18.0	6.5	0.25	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Zinc	127	6.5	3.0	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]

(1) Instrument QC Batch: MA46561
(2) Instrument QC Batch: MA46589
(3) Prep QC Batch: MP14499
(4) Prep QC Batch: MP14502

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	PSSTP-07R (0.5-2)		
Lab Sample ID:	JC86716-16	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
		Percent Solids:	80.5
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result		RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	0.33	J	0.31	0.16	mg/kg	1	05/01/19 16:17	KI	SW846 9012B/LACHAT
Solids, Percent	80.5				%	1	04/29/19 17:22	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

SGS North America Inc.

Report of Analysis

Client Sample ID:	SO-DUP-0418		
Lab Sample ID:	JC86716-17	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8260C	**Percent Solids:**	86.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Y184793.D	1	04/27/19 15:36	PS	n/a	n/a	VY8018
Run #2							

	Initial Weight
Run #1	5.1 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	9.5	11	5.7	ug/kg	J
71-43-2	Benzene	3.4	0.57	0.43	ug/kg	J
74-97-5	Bromochloromethane	ND	5.7	0.49	ug/kg	
75-27-4	Bromodichloromethane	ND	2.3	0.50	ug/kg	
75-25-2	Bromoform	ND	5.7	0.46	ug/kg	
74-83-9	Bromomethane	ND	5.7	1.1	ug/kg	
78-93-3	2-Butanone (MEK)	ND	11	4.3	ug/kg	
75-15-0	Carbon disulfide	ND	2.3	1.1	ug/kg	
56-23-5	Carbon tetrachloride	ND	2.3	0.63	ug/kg	
108-90-7	Chlorobenzene	ND	2.3	0.40	ug/kg	
75-00-3	Chloroethane	ND	5.7	0.78	ug/kg	
67-66-3	Chloroform	ND	2.3	0.42	ug/kg	
74-87-3	Chloromethane	ND	5.7	2.2	ug/kg	
110-82-7	Cyclohexane	ND	2.3	0.46	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.3	0.95	ug/kg	
124-48-1	Dibromochloromethane	ND	2.3	0.38	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.1	0.37	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.1	0.35	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.1	0.41	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.1	0.39	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	5.7	0.72	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.1	0.44	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.1	0.53	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.1	0.75	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.1	1.1	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.1	0.76	ug/kg	
78-87-5	1,2-Dichloropropane	ND	2.3	0.46	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	2.3	0.40	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2.3	0.37	ug/kg	
100-41-4	Ethylbenzene	ND	1.1	0.63	ug/kg	
76-13-1	Freon 113	ND	5.7	0.87	ug/kg	
591-78-6	2-Hexanone	ND	5.7	1.4	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SO-DUP-0418		
Lab Sample ID:	JC86716-17	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8260C	**Percent Solids:**	86.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	2.3	0.79	ug/kg	
79-20-9	Methyl Acetate	ND	5.7	1.6	ug/kg	
108-87-2	Methylcyclohexane	ND	2.3	0.80	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.1	0.40	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.7	1.8	ug/kg	
75-09-2	Methylene chloride	ND	5.7	2.8	ug/kg	
100-42-5	Styrene	ND	2.3	0.65	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.3	0.44	ug/kg	
127-18-4	Tetrachloroethene	ND	2.3	0.53	ug/kg	
108-88-3	Toluene	ND	1.1	0.43	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	5.7	1.1	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	5.7	1.1	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	2.3	0.48	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2.3	0.39	ug/kg	
79-01-6	Trichloroethene	ND	1.1	0.87	ug/kg	
75-69-4	Trichlorofluoromethane	ND	5.7	0.77	ug/kg	
75-01-4	Vinyl chloride	ND	2.3	0.53	ug/kg	
	m,p-Xylene	ND	1.1	0.85	ug/kg	
95-47-6	o-Xylene	ND	1.1	0.66	ug/kg	
1330-20-7	Xylene (total)	ND	1.1	0.66	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	105%		75-127%
17060-07-0	1,2-Dichloroethane-D4	102%		75-130%
2037-26-5	Toluene-D8	99%		80-120%
460-00-4	4-Bromofluorobenzene	98%		79-127%

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SGS North America Inc.

Report of Analysis

Client Sample ID:	SO-DUP-0418		
Lab Sample ID:	JC86716-17	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	86.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5P59082.D	1	04/30/19 21:25	CC	04/25/19 13:30	OP19972	E5P2792
Run #2							

	Initial Weight	Final Volume
Run #1	30.8 g	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	75	19	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	190	23	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	190	32	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	190	67	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	190	140	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	190	40	ug/kg	
95-48-7	2-Methylphenol	ND	75	24	ug/kg	
	3&4-Methylphenol	ND	75	31	ug/kg	
88-75-5	2-Nitrophenol	ND	190	25	ug/kg	
100-02-7	4-Nitrophenol	ND	380	100	ug/kg	
87-86-5	Pentachlorophenol	ND	150	35	ug/kg	
108-95-2	Phenol	ND	75	20	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	190	25	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	190	28	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	190	22	ug/kg	
83-32-9	Acenaphthene	90.6	38	13	ug/kg	
208-96-8	Acenaphthylene	88.6	38	19	ug/kg	
98-86-2	Acetophenone	ND	190	8.1	ug/kg	
120-12-7	Anthracene	346	38	23	ug/kg	
1912-24-9	Atrazine	ND	75	16	ug/kg	
56-55-3	Benzo(a)anthracene	983	38	11	ug/kg	
50-32-8	Benzo(a)pyrene	987	38	17	ug/kg	
205-99-2	Benzo(b)fluoranthene	1210	38	17	ug/kg	
191-24-2	Benzo(g,h,i)perylene	558	38	19	ug/kg	
207-08-9	Benzo(k)fluoranthene	401	38	18	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	75	15	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	75	9.2	ug/kg	
92-52-4	1,1'-Biphenyl	8.5	75	5.2	ug/kg	J
100-52-7	Benzaldehyde	17.7	190	9.3	ug/kg	J
91-58-7	2-Chloronaphthalene	ND	75	9.0	ug/kg	
106-47-8	4-Chloroaniline	ND	190	14	ug/kg	
86-74-8	Carbazole	102	75	5.5	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SO-DUP-0418		
Lab Sample ID:	JC86716-17	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	86.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	75	15	ug/kg	
218-01-9	Chrysene	907	38	12	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	75	8.1	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	75	16	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	75	14	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	75	12	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	38	12	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	38	19	ug/kg	
91-94-1	3,3'-Dichlorobenzidine [a]	ND	75	31	ug/kg	UJ
123-91-1	1,4-Dioxane	ND	38	25	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	135	38	17	ug/kg	
132-64-9	Dibenzofuran	59.6	75	15	ug/kg	J
84-74-2	Di-n-butyl phthalate	294	75	6.1	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	75	9.4	ug/kg	
84-66-2	Diethyl phthalate	ND	75	8.0	ug/kg	
131-11-3	Dimethyl phthalate	ND	75	6.7	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	110	75	8.8	ug/kg	
206-44-0	Fluoranthene	1820	38	17	ug/kg	
86-73-7	Fluorene	128	38	17	ug/kg	
118-74-1	Hexachlorobenzene	ND	75	9.5	ug/kg	
87-68-3	Hexachlorobutadiene	ND	38	15	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	380	15	ug/kg	
67-72-1	Hexachloroethane	ND	190	19	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	633	38	18	ug/kg	
78-59-1	Isophorone	ND	75	8.1	ug/kg	
91-57-6	2-Methylnaphthalene	15.1	38	8.5	ug/kg	J
88-74-4	2-Nitroaniline	ND	190	8.9	ug/kg	
99-09-2	3-Nitroaniline	ND	190	9.4	ug/kg	
100-01-6	4-Nitroaniline	ND	190	9.8	ug/kg	
91-20-3	Naphthalene	19.2	38	11	ug/kg	J
98-95-3	Nitrobenzene	ND	75	15	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	75	11	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	190	14	ug/kg	
85-01-8	Phenanthrene	1210	38	13	ug/kg	
129-00-0	Pyrene	1680	38	12	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	190	9.6	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	57%		23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SO-DUP-0418		
Lab Sample ID:	JC86716-17	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	86.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	61%		27-114%
118-79-6	2,4,6-Tribromophenol	59%		19-152%
4165-60-0	Nitrobenzene-d5	68%		26-134%
321-60-8	2-Fluorobiphenyl	62%		39-124%
1718-51-0	Terphenyl-d14	61%		36-134%

(a) Associated CCV outside of control limits low.

SGS North America Inc.

Report of Analysis

Client Sample ID:	SO-DUP-0418		
Lab Sample ID:	JC86716-17	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8081B SW846 3546	**Percent Solids:**	86.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4G958742.D	1	05/01/19 15:49	MH	05/01/19 06:00	OP19993	G4G2741
Run #2							

	Initial Weight	Final Volume
Run #1	16.2 g	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	0.72	0.59	ug/kg	
319-84-6	alpha-BHC	ND	0.72	0.58	ug/kg	
319-85-7	beta-BHC	ND	0.72	0.65	ug/kg	
319-86-8	delta-BHC	ND	0.72	0.69	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	0.72	0.53	ug/kg	
5103-71-9	alpha-Chlordane	ND	0.72	0.58	ug/kg	
5103-74-2	gamma-Chlordane [a]	1.2	0.72	0.32	ug/kg	J
60-57-1	Dieldrin	ND	0.72	0.49	ug/kg	
72-54-8	4,4'-DDD	1.6	0.72	0.66	ug/kg	
72-55-9	4,4'-DDE	ND	0.72	0.63	ug/kg	
50-29-3	4,4'-DDT	4.9	0.72	0.63	ug/kg	
72-20-8	Endrin	ND	0.72	0.56	ug/kg	
1031-07-8	Endosulfan sulfate	ND	0.72	0.56	ug/kg	
7421-93-4	Endrin aldehyde	ND	0.72	0.41	ug/kg	
959-98-8	Endosulfan-I	ND	0.72	0.41	ug/kg	
33213-65-9	Endosulfan-II	ND	0.72	0.45	ug/kg	
76-44-8	Heptachlor	ND	0.72	0.62	ug/kg	
1024-57-3	Heptachlor epoxide	0.99	0.72	0.50	ug/kg	
72-43-5	Methoxychlor	ND	1.4	0.57	ug/kg	
53494-70-5	Endrin ketone	ND	0.72	0.52	ug/kg	
8001-35-2	Toxaphene	ND	18	17	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	56%		25-135%
877-09-8	Tetrachloro-m-xylene	59%		25-135%
2051-24-3	Decachlorobiphenyl	52%		10-156%
2051-24-3	Decachlorobiphenyl	95%		10-156%

(a) More than 40 % RPD for detected concentrations between the two GC columns.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	SO-DUP-0418		
Lab Sample ID:	JC86716-17	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8082A SW846 3546	**Percent Solids:**	86.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5G88067.D	1	05/01/19 18:54	SK	05/01/19 06:00	OP19992	G5G2121
Run #2							

	Initial Weight	Final Volume
Run #1	16.2 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	36	17	ug/kg	
11104-28-2	Aroclor 1221	ND	36	18	ug/kg	
11141-16-5	Aroclor 1232	ND	36	27	ug/kg	
53469-21-9	Aroclor 1242	ND	36	15	ug/kg	
12672-29-6	Aroclor 1248	ND	36	32	ug/kg	
11097-69-1	Aroclor 1254	61.0	36	19	ug/kg	
11096-82-5	Aroclor 1260	ND	36	15	ug/kg	
11100-14-4	Aroclor 1268	ND	36	15	ug/kg	
37324-23-5	Aroclor 1262	ND	36	23	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	57%		31-146%
877-09-8	Tetrachloro-m-xylene	64%		31-146%
2051-24-3	Decachlorobiphenyl	92%		17-164%
2051-24-3	Decachlorobiphenyl	62%		17-164%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: SO-DUP-0418
Lab Sample ID: JC86716-17
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/18/19
Date Received: 04/19/19
Percent Solids: 86.2

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	7460	60	9.6	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Antimony	0.49 U J	2.4	0.49	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Arsenic	6.9	2.4	0.33	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Barium	146	24	2.3	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Beryllium	0.37	0.24	0.096	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Cadmium	0.74	0.60	0.084	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Calcium	27600	1200	110	mg/kg	2	04/23/19	05/01/19	ND	SW846 6010D [3]	SW846 3050B [4]
Chromium	20.0	1.2	0.44	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Cobalt	5.0 J	6.0	0.33	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Copper	28.1	3.0	1.0	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Iron	16000	60	23	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Lead	201 J	2.4	0.49	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Magnesium	4260 J	600	16	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Manganese	297 J	1.8	0.49	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Mercury	0.23 J	0.035	0.015	mg/kg	1	04/23/19	04/23/19	LL	SW846 7471B [1]	SW846 7471B [5]
Nickel	11.6	4.8	0.42	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Potassium	895 J	1200	38	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Selenium	0.78 U	2.4	0.78	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Silver	0.20 U	0.60	0.20	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Sodium	118 J	1200	93	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Thallium	0.69 U	1.2	0.69	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Vanadium	15.3	6.0	0.23	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Zinc	164	6.0	2.8	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA46561
(2) Instrument QC Batch: MA46589
(3) Instrument QC Batch: MA46629
(4) Prep QC Batch: MP14499
(5) Prep QC Batch: MP14502

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	SO-DUP-0418		
Lab Sample ID:	JC86716-17	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
		Percent Solids:	86.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result		RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	0.37	J	0.29	0.15	mg/kg	1	05/01/19 16:19	KI	SW846 9012B/LACHAT
Solids, Percent	86.2				%	1	04/29/19 17:22	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

SGS North America Inc.

Report of Analysis

Client Sample ID:	PSSTP-07R (8-9)		
Lab Sample ID:	JC86716-18	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8260C	**Percent Solids:**	87.6
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Y184794.D	1	04/27/19 16:05	PS	n/a	n/a	VY8018
Run #2							

	Initial Weight
Run #1	5.9 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	9.7	4.8	ug/kg	
71-43-2	Benzene	6.1	0.48	0.36	ug/kg	
74-97-5	Bromochloromethane	ND	4.8	0.42	ug/kg	
75-27-4	Bromodichloromethane	ND	1.9	0.43	ug/kg	
75-25-2	Bromoform	ND	4.8	0.39	ug/kg	
74-83-9	Bromomethane	ND	4.8	0.96	ug/kg	
78-93-3	2-Butanone (MEK)	ND	9.7	3.6	ug/kg	
75-15-0	Carbon disulfide	ND	1.9	0.90	ug/kg	
56-23-5	Carbon tetrachloride	ND	1.9	0.53	ug/kg	
108-90-7	Chlorobenzene	ND	1.9	0.34	ug/kg	
75-00-3	Chloroethane	ND	4.8	0.66	ug/kg	
67-66-3	Chloroform	ND	1.9	0.36	ug/kg	
74-87-3	Chloromethane	ND	4.8	1.9	ug/kg	
110-82-7	Cyclohexane	ND	1.9	0.39	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	1.9	0.81	ug/kg	
124-48-1	Dibromochloromethane	ND	1.9	0.33	ug/kg	
106-93-4	1,2-Dibromoethane	ND	0.97	0.31	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	0.97	0.30	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	0.97	0.35	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	0.97	0.33	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	4.8	0.61	ug/kg	
75-34-3	1,1-Dichloroethane	ND	0.97	0.37	ug/kg	
107-06-2	1,2-Dichloroethane	ND	0.97	0.45	ug/kg	
75-35-4	1,1-Dichloroethene	ND	0.97	0.63	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	0.97	0.93	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	0.97	0.65	ug/kg	
78-87-5	1,2-Dichloropropane	ND	1.9	0.39	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	1.9	0.34	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	1.9	0.32	ug/kg	
100-41-4	Ethylbenzene	ND	0.97	0.53	ug/kg	
76-13-1	Freon 113	ND	4.8	0.74	ug/kg	
591-78-6	2-Hexanone	ND	4.8	1.2	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PSSTP-07R (8-9)		
Lab Sample ID:	JC86716-18	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8260C	**Percent Solids:**	87.6
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	1.9	0.67	ug/kg	
79-20-9	Methyl Acetate	ND	4.8	1.3	ug/kg	
108-87-2	Methylcyclohexane	ND	1.9	0.68	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.97	0.34	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	4.8	1.5	ug/kg	
75-09-2	Methylene chloride	ND	4.8	2.4	ug/kg	
100-42-5	Styrene	ND	1.9	0.56	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.9	0.38	ug/kg	
127-18-4	Tetrachloroethene	ND	1.9	0.45	ug/kg	
108-88-3	Toluene	ND	0.97	0.36	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	4.8	0.97	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	4.8	0.97	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	1.9	0.41	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	1.9	0.33	ug/kg	
79-01-6	Trichloroethene	ND	0.97	0.74	ug/kg	
75-69-4	Trichlorofluoromethane	ND	4.8	0.66	ug/kg	
75-01-4	Vinyl chloride	ND	1.9	0.45	ug/kg	
	m,p-Xylene	ND	0.97	0.72	ug/kg	
95-47-6	o-Xylene	ND	0.97	0.56	ug/kg	
1330-20-7	Xylene (total)	ND	0.97	0.56	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	104%		75-127%
17060-07-0	1,2-Dichloroethane-D4	97%		75-130%
2037-26-5	Toluene-D8	100%		80-120%
460-00-4	4-Bromofluorobenzene	97%		79-127%

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J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	PSSTP-07R (8-9)		
Lab Sample ID:	JC86716-18	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	87.6
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5P59071.D	1	04/30/19 17:16	CC	04/25/19 13:30	OP19972	E5P2792
Run #2							

	Initial Weight	Final Volume
Run #1	30.7 g	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	74	18	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	190	23	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	190	32	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	190	66	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	190	140	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	190	40	ug/kg	
95-48-7	2-Methylphenol	ND	74	24	ug/kg	
	3&4-Methylphenol	ND	74	31	ug/kg	
88-75-5	2-Nitrophenol	ND	190	25	ug/kg	
100-02-7	4-Nitrophenol	ND	370	99	ug/kg	
87-86-5	Pentachlorophenol	ND	150	35	ug/kg	
108-95-2	Phenol	ND	74	19	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	190	25	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	190	28	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	190	22	ug/kg	
83-32-9	Acenaphthene	ND	37	13	ug/kg	
208-96-8	Acenaphthylene	ND	37	19	ug/kg	
98-86-2	Acetophenone	ND	190	8.0	ug/kg	
120-12-7	Anthracene	ND	37	23	ug/kg	
1912-24-9	Atrazine	ND	74	16	ug/kg	
56-55-3	Benzo(a)anthracene	41.3	37	11	ug/kg	
50-32-8	Benzo(a)pyrene	45.3	37	17	ug/kg	
205-99-2	Benzo(b)fluoranthene	50.4	37	16	ug/kg	
191-24-2	Benzo(g,h,i)perylene	28.6	37	19	ug/kg	J
207-08-9	Benzo(k)fluoranthene	19.6	37	17	ug/kg	J
101-55-3	4-Bromophenyl phenyl ether	ND	74	14	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	74	9.1	ug/kg	
92-52-4	1,1'-Biphenyl	ND	74	5.1	ug/kg	
100-52-7	Benzaldehyde	ND	190	9.2	ug/kg	
91-58-7	2-Chloronaphthalene	ND	74	8.8	ug/kg	
106-47-8	4-Chloroaniline	ND	190	13	ug/kg	
86-74-8	Carbazole	ND	74	5.4	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PSSTP-07R (8-9)
Lab Sample ID: JC86716-18
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/18/19
Date Received: 04/19/19
Percent Solids: 87.6

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	74	15	ug/kg	
218-01-9	Chrysene	44.4	37	12	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	74	8.0	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	74	16	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	74	13	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	74	12	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	37	12	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	37	19	ug/kg	
91-94-1	3,3'-Dichlorobenzidine [a]	ND	74	31	ug/kg	UJ
123-91-1	1,4-Dioxane	ND	37	25	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	37	16	ug/kg	
132-64-9	Dibenzofuran	ND	74	15	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	74	6.1	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	74	9.3	ug/kg	
84-66-2	Diethyl phthalate	ND	74	7.9	ug/kg	
131-11-3	Dimethyl phthalate	ND	74	6.6	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	74	8.7	ug/kg	
206-44-0	Fluoranthene	38.4	37	17	ug/kg	
86-73-7	Fluorene	ND	37	17	ug/kg	
118-74-1	Hexachlorobenzene	ND	74	9.4	ug/kg	
87-68-3	Hexachlorobutadiene	ND	37	15	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	370	15	ug/kg	
67-72-1	Hexachloroethane	ND	190	18	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	28.6	37	17	ug/kg	J
78-59-1	Isophorone	ND	74	8.0	ug/kg	
91-57-6	2-Methylnaphthalene	ND	37	8.4	ug/kg	
88-74-4	2-Nitroaniline	ND	190	8.8	ug/kg	
99-09-2	3-Nitroaniline	ND	190	9.3	ug/kg	
100-01-6	4-Nitroaniline	ND	190	9.6	ug/kg	
91-20-3	Naphthalene	ND	37	10	ug/kg	
98-95-3	Nitrobenzene	ND	74	14	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	74	11	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	190	14	ug/kg	
85-01-8	Phenanthrene	16.3	37	12	ug/kg	J
129-00-0	Pyrene	58.7	37	12	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	190	9.4	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	62%		23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PSSTP-07R (8-9)		
Lab Sample ID:	JC86716-18	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	87.6
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	66%		27-114%
118-79-6	2,4,6-Tribromophenol	59%		19-152%
4165-60-0	Nitrobenzene-d5	72%		26-134%
321-60-8	2-Fluorobiphenyl	66%		39-124%
1718-51-0	Terphenyl-d14	63%		36-134%

(a) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	PSSTP-07R (8-9)		
Lab Sample ID:	JC86716-18	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8081B SW846 3546	**Percent Solids:**	87.6
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4G958743.D	1	05/01/19 16:06	MH	05/01/19 06:00	OP19993	G4G2741
Run #2							

	Initial Weight	Final Volume
Run #1	15.5 g	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	0.74	0.61	ug/kg	
319-84-6	alpha-BHC	ND	0.74	0.60	ug/kg	
319-85-7	beta-BHC	ND	0.74	0.67	ug/kg	
319-86-8	delta-BHC	ND	0.74	0.71	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	0.74	0.54	ug/kg	
5103-71-9	alpha-Chlordane	ND	0.74	0.59	ug/kg	
5103-74-2	gamma-Chlordane	ND	0.74	0.33	ug/kg	
60-57-1	Dieldrin	ND	0.74	0.51	ug/kg	
72-54-8	4,4'-DDD	ND	0.74	0.68	ug/kg	
72-55-9	4,4'-DDE	ND	0.74	0.65	ug/kg	
50-29-3	4,4'-DDT	ND	0.74	0.65	ug/kg	
72-20-8	Endrin	ND	0.74	0.57	ug/kg	
1031-07-8	Endosulfan sulfate	ND	0.74	0.58	ug/kg	
7421-93-4	Endrin aldehyde	ND	0.74	0.42	ug/kg	
959-98-8	Endosulfan-I	ND	0.74	0.42	ug/kg	
33213-65-9	Endosulfan-II	ND	0.74	0.46	ug/kg	
76-44-8	Heptachlor	ND	0.74	0.63	ug/kg	
1024-57-3	Heptachlor epoxide	ND	0.74	0.52	ug/kg	
72-43-5	Methoxychlor	ND	1.5	0.59	ug/kg	
53494-70-5	Endrin ketone	ND	0.74	0.53	ug/kg	
8001-35-2	Toxaphene	ND	18	17	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	72%		25-135%
877-09-8	Tetrachloro-m-xylene	77%		25-135%
2051-24-3	Decachlorobiphenyl	79%		10-156%
2051-24-3	Decachlorobiphenyl	2183% [a]		10-156%

(a) Outside control limits due to matrix interference.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	PSSTP-07R (8-9)		
Lab Sample ID:	JC86716-18	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8082A SW846 3546	**Percent Solids:**	87.6
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5G88068.D	1	05/01/19 19:27	SK	05/01/19 06:00	OP19992	G5G2121
Run #2							

	Initial Weight	Final Volume
Run #1	15.5 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	37	17	ug/kg	
11104-28-2	Aroclor 1221	ND	37	19	ug/kg	
11141-16-5	Aroclor 1232	ND	37	28	ug/kg	
53469-21-9	Aroclor 1242	ND	37	15	ug/kg	
12672-29-6	Aroclor 1248	ND	37	33	ug/kg	
11097-69-1	Aroclor 1254	ND	37	20	ug/kg	
11096-82-5	Aroclor 1260	ND	37	16	ug/kg	
11100-14-4	Aroclor 1268	ND	37	16	ug/kg	
37324-23-5	Aroclor 1262	ND	37	24	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	72%		31-146%
877-09-8	Tetrachloro-m-xylene	80%		31-146%
2051-24-3	Decachlorobiphenyl	156%		17-164%
2051-24-3	Decachlorobiphenyl	83%		17-164%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PSSTP-07R (8-9)
Lab Sample ID: JC86716-18
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/18/19
Date Received: 04/19/19
Percent Solids: 87.6

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	8170	60	9.7	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Antimony	0.49 U J	2.4	0.49	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Arsenic	6.6	2.4	0.34	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Barium	43.5	24	2.3	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Beryllium	0.36	0.24	0.096	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Cadmium	0.084 U	0.60	0.084	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Calcium	661	600	53	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Chromium	11.2	1.2	0.44	mg/kg	1	04/23/19	05/01/19	ND	SW846 6010D [3]	SW846 3050B [4]
Cobalt	5.5 J	6.0	0.34	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Copper	33.1	3.0	1.0	mg/kg	1	04/23/19	05/01/19	ND	SW846 6010D [3]	SW846 3050B [4]
Iron	14500	60	23	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Lead	92.2 J	2.4	0.49	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Magnesium	1680 J	600	16	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Manganese	104 J	1.8	0.49	mg/kg	1	04/23/19	05/01/19	ND	SW846 6010D [3]	SW846 3050B [4]
Mercury	0.046 J	0.034	0.015	mg/kg	1	04/23/19	04/23/19	LL	SW846 7471B [1]	SW846 7471B [5]
Nickel	12.2	4.8	0.42	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Potassium	758 J	1200	38	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Selenium	0.78 U	2.4	0.78	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Silver	0.34 J	0.60	0.20	mg/kg	1	04/23/19	05/01/19	ND	SW846 6010D [3]	SW846 3050B [4]
Sodium	93 U	1200	93	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Thallium	0.70 U	1.2	0.70	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]
Vanadium	14.0	6.0	0.23	mg/kg	1	04/23/19	05/01/19	ND	SW846 6010D [3]	SW846 3050B [4]
Zinc	51.9	6.0	2.8	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA46561
(2) Instrument QC Batch: MA46589
(3) Instrument QC Batch: MA46629
(4) Prep QC Batch: MP14499
(5) Prep QC Batch: MP14502

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: PSSTP-07R (8-9)
Lab Sample ID: JC86716-18
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/18/19
Date Received: 04/19/19
Percent Solids: 87.6

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	0.13 U J	0.26	0.13	mg/kg	1	05/01/19 16:20	KI	SW846 9012B/LACHAT
Solids, Percent	87.6			%	1	04/29/19 17:22	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

SGS North America Inc.

Report of Analysis

Client Sample ID:	PSSTP-07R (20-22)		
Lab Sample ID:	JC86716-19	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8260C	**Percent Solids:**	72.7
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Y184795.D	1	04/27/19 16:33	PS	n/a	n/a	VY8018
Run #2							

	Initial Weight
Run #1	5.4 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	139	13	6.4	ug/kg	
71-43-2	Benzene	3.3	0.64	0.48	ug/kg	
74-97-5	Bromochloromethane	ND	6.4	0.55	ug/kg	
75-27-4	Bromodichloromethane	ND	2.5	0.56	ug/kg	
75-25-2	Bromoform	ND	6.4	0.51	ug/kg	
74-83-9	Bromomethane	ND	6.4	1.3	ug/kg	
78-93-3	2-Butanone (MEK)	39.8	13	4.8	ug/kg	
75-15-0	Carbon disulfide	92.9	2.5	1.2	ug/kg	
56-23-5	Carbon tetrachloride	ND	2.5	0.70	ug/kg	
108-90-7	Chlorobenzene	ND	2.5	0.45	ug/kg	
75-00-3	Chloroethane	ND	6.4	0.87	ug/kg	
67-66-3	Chloroform	ND	2.5	0.47	ug/kg	
74-87-3	Chloromethane	ND	6.4	2.5	ug/kg	
110-82-7	Cyclohexane	ND	2.5	0.52	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.5	1.1	ug/kg	
124-48-1	Dibromochloromethane	ND	2.5	0.43	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.3	0.41	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.3	0.39	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.3	0.46	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.3	0.44	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	6.4	0.81	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.3	0.49	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.3	0.60	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.3	0.84	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.3	1.2	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.3	0.85	ug/kg	
78-87-5	1,2-Dichloropropane	ND	2.5	0.52	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	2.5	0.45	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2.5	0.42	ug/kg	
100-41-4	Ethylbenzene	ND	1.3	0.70	ug/kg	
76-13-1	Freon 113	ND	6.4	0.97	ug/kg	
591-78-6	2-Hexanone	ND	6.4	1.6	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PSSTP-07R (20-22)		
Lab Sample ID:	JC86716-19	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8260C	**Percent Solids:**	72.7
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	2.5	0.89	ug/kg	
79-20-9	Methyl Acetate	5.4	6.4	1.8	ug/kg	J
108-87-2	Methylcyclohexane	1.7	2.5	0.90	ug/kg	J
1634-04-4	Methyl Tert Butyl Ether	ND	1.3	0.45	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	6.4	2.0	ug/kg	
75-09-2	Methylene chloride	ND	6.4	3.2	ug/kg	
100-42-5	Styrene	ND	2.5	0.73	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.5	0.50	ug/kg	
127-18-4	Tetrachloroethene	ND	2.5	0.59	ug/kg	
108-88-3	Toluene	2.3	1.3	0.48	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	6.4	1.3	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	6.4	1.3	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	2.5	0.54	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2.5	0.44	ug/kg	
79-01-6	Trichloroethene	ND	1.3	0.97	ug/kg	
75-69-4	Trichlorofluoromethane	ND	6.4	0.87	ug/kg	
75-01-4	Vinyl chloride	ND	2.5	0.60	ug/kg	
	m,p-Xylene	ND	1.3	0.95	ug/kg	
95-47-6	o-Xylene	ND	1.3	0.74	ug/kg	
1330-20-7	Xylene (total)	ND	1.3	0.74	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		75-127%
17060-07-0	1,2-Dichloroethane-D4	100%		75-130%
2037-26-5	Toluene-D8	102%		80-120%
460-00-4	4-Bromofluorobenzene	100%		79-127%

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J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	PSSTP-07R (20-22)		
Lab Sample ID:	JC86716-19	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	72.7
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5P59076.D	1	04/30/19 19:09	CC	04/25/19 13:30	OP19972	E5P2792
Run #2							

	Initial Weight	Final Volume
Run #1	30.3 g	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	91	22	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	230	28	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	230	39	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	230	81	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	230	170	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	230	49	ug/kg	
95-48-7	2-Methylphenol	ND	91	29	ug/kg	
	3&4-Methylphenol	ND	91	37	ug/kg	
88-75-5	2-Nitrophenol	ND	230	30	ug/kg	
100-02-7	4-Nitrophenol	ND	450	120	ug/kg	
87-86-5	Pentachlorophenol	ND	180	43	ug/kg	
108-95-2	Phenol	ND	91	24	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	230	30	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	230	34	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	230	27	ug/kg	
83-32-9	Acenaphthene	101	45	16	ug/kg	
208-96-8	Acenaphthylene	27.5	45	23	ug/kg	J
98-86-2	Acetophenone	ND	230	9.8	ug/kg	
120-12-7	Anthracene	78.7	45	28	ug/kg	
1912-24-9	Atrazine	ND	91	19	ug/kg	
56-55-3	Benzo(a)anthracene	126	45	13	ug/kg	
50-32-8	Benzo(a)pyrene	145	45	21	ug/kg	
205-99-2	Benzo(b)fluoranthene	155	45	20	ug/kg	
191-24-2	Benzo(g,h,i)perylene	80.9	45	23	ug/kg	
207-08-9	Benzo(k)fluoranthene	61.2	45	21	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	91	18	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	91	11	ug/kg	
92-52-4	1,1'-Biphenyl	8.5	91	6.2	ug/kg	J
100-52-7	Benzaldehyde	ND	230	11	ug/kg	
91-58-7	2-Chloronaphthalene	ND	91	11	ug/kg	
106-47-8	4-Chloroaniline	ND	230	16	ug/kg	
86-74-8	Carbazole	20.1	91	6.6	ug/kg	J

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PSSTP-07R (20-22)		
Lab Sample ID:	JC86716-19	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	72.7
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	91	18	ug/kg	
218-01-9	Chrysene	133	45	14	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	91	9.7	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	91	20	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	91	16	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	91	15	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	45	14	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	45	23	ug/kg	
91-94-1	3,3'-Dichlorobenzidine [a]	ND	91	38	ug/kg	UJ
123-91-1	1,4-Dioxane	ND	45	30	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	45	20	ug/kg	
132-64-9	Dibenzofuran	21.5	91	18	ug/kg	J
84-74-2	Di-n-butyl phthalate	ND	91	7.4	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	91	11	ug/kg	
84-66-2	Diethyl phthalate	ND	91	9.7	ug/kg	
131-11-3	Dimethyl phthalate	ND	91	8.1	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	91	11	ug/kg	
206-44-0	Fluoranthene	207	45	20	ug/kg	
86-73-7	Fluorene	76.8	45	21	ug/kg	
118-74-1	Hexachlorobenzene	ND	91	11	ug/kg	
87-68-3	Hexachlorobutadiene	ND	45	18	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	450	18	ug/kg	
67-72-1	Hexachloroethane	ND	230	22	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	84.7	45	21	ug/kg	
78-59-1	Isophorone	ND	91	9.7	ug/kg	
91-57-6	2-Methylnaphthalene	16.3	45	10	ug/kg	J
88-74-4	2-Nitroaniline	ND	230	11	ug/kg	
99-09-2	3-Nitroaniline	ND	230	11	ug/kg	
100-01-6	4-Nitroaniline	ND	230	12	ug/kg	
91-20-3	Naphthalene	48.1	45	13	ug/kg	
98-95-3	Nitrobenzene	ND	91	18	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	91	13	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	230	17	ug/kg	
85-01-8	Phenanthrene	283	45	15	ug/kg	
129-00-0	Pyrene	231	45	15	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	230	12	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	68%		23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PSSTP-07R (20-22)		
Lab Sample ID:	JC86716-19	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	72.7
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	70%		27-114%
118-79-6	2,4,6-Tribromophenol	74%		19-152%
4165-60-0	Nitrobenzene-d5	79%		26-134%
321-60-8	2-Fluorobiphenyl	69%		39-124%
1718-51-0	Terphenyl-d14	64%		36-134%

(a) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PSSTP-07R (20-22)
Lab Sample ID: JC86716-19
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/18/19
Date Received: 04/19/19
Percent Solids: 72.7

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	3780	66	11	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Antimony	0.54 U J	2.6	0.54	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Arsenic	4.8	2.6	0.37	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Barium	40.3	26	2.5	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Beryllium	0.21 J	0.26	0.11	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Cadmium	0.16 J	0.66	0.093	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Calcium	1150	660	58	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Chromium	17.4	1.3	0.49	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Cobalt	4.8 J	6.6	0.37	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Copper	13.1	3.3	1.1	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Iron	8320	66	25	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Lead	44.2 J	2.6	0.54	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Magnesium	1210 J	660	18	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Manganese	193 J	2.0	0.54	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Mercury	0.50 J	0.033	0.014	mg/kg	1	04/23/19	04/23/19	LL	SW846 7471B [1]	SW846 7471B [4]
Nickel	8.2	5.3	0.46	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Potassium	583 J	1300	42	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Selenium	0.86 U	2.6	0.86	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Silver	0.22 U	0.66	0.22	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Sodium	105 J	1300	100	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Thallium	0.77 U	1.3	0.77	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Vanadium	6.8	6.6	0.25	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Zinc	69.1	6.6	3.0	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]

(1) Instrument QC Batch: MA46561
(2) Instrument QC Batch: MA46589
(3) Prep QC Batch: MP14499
(4) Prep QC Batch: MP14502

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	PSSTP-07R (20-22)		
Lab Sample ID:	JC86716-19	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
		Percent Solids:	72.7
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result		RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	1.4	J	0.33	0.17	mg/kg	1	05/01/19 16:21	KI	SW846 9012B/LACHAT
Solids, Percent	72.7				%	1	04/29/19 17:22	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

SGS North America Inc.

Report of Analysis

Client Sample ID:	PCTP-51R (10-12)		
Lab Sample ID:	JC86716-20	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8260C	**Percent Solids:**	76.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Y184796.D	1	04/27/19 17:02	PS	n/a	n/a	VY8018
Run #2							

	Initial Weight
Run #1	5.5 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	48.8	12	6.0	ug/kg	
71-43-2	Benzene	0.47	0.60	0.45	ug/kg	J
74-97-5	Bromochloromethane	ND	6.0	0.51	ug/kg	
75-27-4	Bromodichloromethane	ND	2.4	0.53	ug/kg	
75-25-2	Bromoform	ND	6.0	0.48	ug/kg	
74-83-9	Bromomethane	ND	6.0	1.2	ug/kg	
78-93-3	2-Butanone (MEK)	9.7	12	4.5	ug/kg	J
75-15-0	Carbon disulfide	ND	2.4	1.1	ug/kg	
56-23-5	Carbon tetrachloride	ND	2.4	0.66	ug/kg	
108-90-7	Chlorobenzene	ND	2.4	0.42	ug/kg	
75-00-3	Chloroethane	ND	6.0	0.82	ug/kg	
67-66-3	Chloroform	ND	2.4	0.44	ug/kg	
74-87-3	Chloromethane	ND	6.0	2.3	ug/kg	
110-82-7	Cyclohexane	ND	2.4	0.48	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.4	1.0	ug/kg	
124-48-1	Dibromochloromethane	ND	2.4	0.40	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.2	0.39	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.2	0.36	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.2	0.43	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.2	0.41	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	6.0	0.76	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.2	0.46	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.2	0.56	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.2	0.78	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.2	1.1	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.2	0.80	ug/kg	
78-87-5	1,2-Dichloropropane	ND	2.4	0.49	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	2.4	0.42	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2.4	0.39	ug/kg	
100-41-4	Ethylbenzene	ND	1.2	0.66	ug/kg	
76-13-1	Freon 113	ND	6.0	0.91	ug/kg	
591-78-6	2-Hexanone	ND	6.0	1.5	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCTP-51R (10-12)		
Lab Sample ID:	JC86716-20	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8260C	**Percent Solids:**	76.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	2.4	0.83	ug/kg	
79-20-9	Methyl Acetate	2.7	6.0	1.7	ug/kg	J
108-87-2	Methylcyclohexane	ND	2.4	0.84	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.2	0.42	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	6.0	1.9	ug/kg	
75-09-2	Methylene chloride	ND	6.0	3.0	ug/kg	
100-42-5	Styrene	ND	2.4	0.69	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.4	0.47	ug/kg	
127-18-4	Tetrachloroethene	ND	2.4	0.55	ug/kg	
108-88-3	Toluene	0.77	1.2	0.45	ug/kg	J
87-61-6	1,2,3-Trichlorobenzene	ND	6.0	1.2	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	6.0	1.2	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	2.4	0.51	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2.4	0.41	ug/kg	
79-01-6	Trichloroethene	ND	1.2	0.91	ug/kg	
75-69-4	Trichlorofluoromethane	ND	6.0	0.81	ug/kg	
75-01-4	Vinyl chloride	ND	2.4	0.56	ug/kg	
	m,p-Xylene	ND	1.2	0.89	ug/kg	
95-47-6	o-Xylene	ND	1.2	0.70	ug/kg	
1330-20-7	Xylene (total)	ND	1.2	0.70	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		75-127%
17060-07-0	1,2-Dichloroethane-D4	92%		75-130%
2037-26-5	Toluene-D8	101%		80-120%
460-00-4	4-Bromofluorobenzene	94%		79-127%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	PCTP-51R (10-12)		
Lab Sample ID:	JC86716-20	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	76.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5P59080.D	1	04/30/19 20:40	CC	04/25/19 13:30	OP19972	E5P2792
Run #2							

	Initial Weight	Final Volume
Run #1	30.2 g	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	87	21	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	220	27	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	220	37	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	220	77	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	220	160	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	220	46	ug/kg	
95-48-7	2-Methylphenol	ND	87	28	ug/kg	
	3&4-Methylphenol	ND	87	36	ug/kg	
88-75-5	2-Nitrophenol	ND	220	29	ug/kg	
100-02-7	4-Nitrophenol	ND	430	120	ug/kg	
87-86-5	Pentachlorophenol	ND	170	41	ug/kg	
108-95-2	Phenol	ND	87	23	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	220	29	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	220	33	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	220	26	ug/kg	
83-32-9	Acenaphthene	155	43	15	ug/kg	
208-96-8	Acenaphthylene	285	43	22	ug/kg	
98-86-2	Acetophenone	ND	220	9.3	ug/kg	
120-12-7	Anthracene	344	43	27	ug/kg	
1912-24-9	Atrazine	ND	87	19	ug/kg	
56-55-3	Benzo(a)anthracene	936	43	12	ug/kg	
50-32-8	Benzo(a)pyrene	976	43	20	ug/kg	
205-99-2	Benzo(b)fluoranthene	1120	43	19	ug/kg	
191-24-2	Benzo(g,h,i)perylene	603	43	22	ug/kg	
207-08-9	Benzo(k)fluoranthene	452	43	20	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	87	17	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	87	11	ug/kg	
92-52-4	1,1'-Biphenyl	11.4	87	6.0	ug/kg	J
100-52-7	Benzaldehyde	ND	220	11	ug/kg	
91-58-7	2-Chloronaphthalene	ND	87	10	ug/kg	
106-47-8	4-Chloroaniline	ND	220	16	ug/kg	
86-74-8	Carbazole	72.0	87	6.3	ug/kg	J

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PCTP-51R (10-12)
Lab Sample ID: JC86716-20
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/18/19
Date Received: 04/19/19
Percent Solids: 76.2

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	87	17	ug/kg	
218-01-9	Chrysene	865	43	14	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	87	9.3	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	87	19	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	87	16	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	87	14	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	43	13	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	43	22	ug/kg	
91-94-1	3,3'-Dichlorobenzidine [a]	ND	87	36	ug/kg	UJ
123-91-1	1,4-Dioxane	ND	43	29	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	136	43	19	ug/kg	
132-64-9	Dibenzofuran	85.4	87	18	ug/kg	J
84-74-2	Di-n-butyl phthalate	ND	87	7.1	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	87	11	ug/kg	
84-66-2	Diethyl phthalate	ND	87	9.3	ug/kg	
131-11-3	Dimethyl phthalate	ND	87	7.7	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	87	10	ug/kg	
206-44-0	Fluoranthene	1800	43	19	ug/kg	
86-73-7	Fluorene	224	43	20	ug/kg	
118-74-1	Hexachlorobenzene	ND	87	11	ug/kg	
87-68-3	Hexachlorobutadiene	ND	43	17	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	430	17	ug/kg	
67-72-1	Hexachloroethane	ND	220	22	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	642	43	20	ug/kg	
78-59-1	Isophorone	ND	87	9.3	ug/kg	
91-57-6	2-Methylnaphthalene	23.4	43	9.8	ug/kg	J
88-74-4	2-Nitroaniline	ND	220	10	ug/kg	
99-09-2	3-Nitroaniline	ND	220	11	ug/kg	
100-01-6	4-Nitroaniline	ND	220	11	ug/kg	
91-20-3	Naphthalene	82.1	43	12	ug/kg	
98-95-3	Nitrobenzene	ND	87	17	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	87	13	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	220	16	ug/kg	
85-01-8	Phenanthrene	761	43	15	ug/kg	
129-00-0	Pyrene	1490	43	14	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	220	11	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	44%		23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCTP-51R (10-12)		
Lab Sample ID:	JC86716-20	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	76.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	51%		27-114%
118-79-6	2,4,6-Tribromophenol	53%		19-152%
4165-60-0	Nitrobenzene-d5	55%		26-134%
321-60-8	2-Fluorobiphenyl	53%		39-124%
1718-51-0	Terphenyl-d14	54%		36-134%

(a) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PCTP-51R (10-12)
Lab Sample ID: JC86716-20
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/18/19
Date Received: 04/19/19
Percent Solids: 76.2

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	12000	68	11	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Antimony	0.55 U J	2.7	0.55	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Arsenic	12.2	2.7	0.38	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Barium	93.4	27	2.6	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Beryllium	2.2	0.27	0.11	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Cadmium	0.60 J	0.68	0.095	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Calcium	3300	680	60	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Chromium	64.6	1.4	0.50	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Cobalt	11.0	6.8	0.38	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Copper	73.6	3.4	1.1	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Iron	13800	68	26	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Lead	107 J	2.7	0.55	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Magnesium	3320 J	680	18	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Manganese	140 J	2.0	0.55	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Mercury	0.49 J	0.038	0.017	mg/kg	1	04/23/19	04/23/19	LL	SW846 7471B [1]	SW846 7471B [4]
Nickel	26.1	5.4	0.47	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Potassium	1570	1400	43	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Selenium	0.88 U	2.7	0.88	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Silver	0.23 U	0.68	0.23	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Sodium	139 J	1400	110	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Thallium	0.78 U	1.4	0.78	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Vanadium	22.1	6.8	0.26	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]
Zinc	278	6.8	3.1	mg/kg	1	04/23/19	04/25/19	RP	SW846 6010D [2]	SW846 3050B [3]

(1) Instrument QC Batch: MA46561
(2) Instrument QC Batch: MA46589
(3) Prep QC Batch: MP14499
(4) Prep QC Batch: MP14502

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	PCTP-51R (10-12)		
Lab Sample ID:	JC86716-20	**Date Sampled:**	04/18/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
		Percent Solids:	76.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result		RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	1.1	J	0.33	0.16	mg/kg	1	05/01/19 16:23	KI	SW846 9012B/LACHAT
Solids, Percent	76.2				%	1	04/29/19 17:22	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

SGS North America Inc.

Report of Analysis

Client Sample ID: PCSB-30R (0.5-2)
Lab Sample ID: JC86716-21
Matrix: SO - Soil
Method: SW846 8260C
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/19/19
Date Received: 04/19/19
Percent Solids: 73.3

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Y184791.D	1	04/27/19 14:39	PS	n/a	n/a	VY8018
Run #2							

	Initial Weight
Run #1	3.7 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	25.2	18	9.2	ug/kg	
71-43-2	Benzene	ND	0.92	0.70	ug/kg	
74-97-5	Bromochloromethane	ND	9.2	0.79	ug/kg	
75-27-4	Bromodichloromethane	ND	3.7	0.82	ug/kg	
75-25-2	Bromoform	ND	9.2	0.74	ug/kg	
74-83-9	Bromomethane	ND	9.2	1.8	ug/kg	
78-93-3	2-Butanone (MEK)	ND	18	6.9	ug/kg	
75-15-0	Carbon disulfide	ND	3.7	1.7	ug/kg	UJ
56-23-5	Carbon tetrachloride	ND	3.7	1.0	ug/kg	
108-90-7	Chlorobenzene	ND	3.7	0.65	ug/kg	
75-00-3	Chloroethane	ND	9.2	1.3	ug/kg	
67-66-3	Chloroform	ND	3.7	0.69	ug/kg	
74-87-3	Chloromethane	ND	9.2	3.6	ug/kg	
110-82-7	Cyclohexane	ND	3.7	0.75	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	3.7	1.5	ug/kg	
124-48-1	Dibromochloromethane	ND	3.7	0.62	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.8	0.60	ug/kg	UJ
95-50-1	1,2-Dichlorobenzene	ND	1.8	0.56	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.8	0.66	ug/kg	UJ
106-46-7	1,4-Dichlorobenzene	ND	1.8	0.63	ug/kg	UJ
75-71-8	Dichlorodifluoromethane	ND	9.2	1.2	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.8	0.71	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.8	0.87	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.8	1.2	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.8	1.8	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.8	1.2	ug/kg	UJ
78-87-5	1,2-Dichloropropane	ND	3.7	0.75	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	3.7	0.65	ug/kg	UJ
10061-02-6	trans-1,3-Dichloropropene	ND	3.7	0.60	ug/kg	UJ
100-41-4	Ethylbenzene	ND	1.8	1.0	ug/kg	
76-13-1	Freon 113	ND	9.2	1.4	ug/kg	
591-78-6	2-Hexanone	ND	9.2	2.3	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCSB-30R (0.5-2)		
Lab Sample ID:	JC86716-21	**Date Sampled:**	04/19/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8260C	**Percent Solids:**	73.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	3.7	1.3	ug/kg	
79-20-9	Methyl Acetate	ND	9.2	2.6	ug/kg	
108-87-2	Methylcyclohexane	ND	3.7	1.3	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.8	0.65	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	9.2	2.9	ug/kg	
75-09-2	Methylene chloride	ND	9.2	4.6	ug/kg	
100-42-5	Styrene	ND	3.7	1.1	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	3.7	0.72	ug/kg	
127-18-4	Tetrachloroethene	ND	3.7	0.85	ug/kg	
108-88-3	Toluene	ND	1.8	0.69	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	9.2	1.8	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	9.2	1.8	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	3.7	0.79	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	3.7	0.63	ug/kg	
79-01-6	Trichloroethene	ND	1.8	1.4	ug/kg	
75-69-4	Trichlorofluoromethane	ND	9.2	1.3	ug/kg	
75-01-4	Vinyl chloride	ND	3.7	0.86	ug/kg	
	m,p-Xylene	ND	1.8	1.4	ug/kg	
95-47-6	o-Xylene	ND	1.8	1.1	ug/kg	
1330-20-7	Xylene (total)	ND	1.8	1.1	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	99%		75-127%
17060-07-0	1,2-Dichloroethane-D4	97%		75-130%
2037-26-5	Toluene-D8	96%		80-120%
460-00-4	4-Bromofluorobenzene	103%		79-127%

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N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	PCSB-30R (0.5-2)		
Lab Sample ID:	JC86716-21	**Date Sampled:**	04/19/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	73.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5P59077.D	1	04/30/19 19:32	CC	04/25/19 13:30	OP19972	E5P2792
Run #2							

	Initial Weight	Final Volume
Run #1	30.5 g	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	89	22	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	220	27	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	220	38	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	220	80	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	220	170	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	220	48	ug/kg	
95-48-7	2-Methylphenol	ND	89	29	ug/kg	
	3&4-Methylphenol	ND	89	37	ug/kg	
88-75-5	2-Nitrophenol	ND	220	30	ug/kg	
100-02-7	4-Nitrophenol	ND	450	120	ug/kg	
87-86-5	Pentachlorophenol	ND	180	42	ug/kg	
108-95-2	Phenol	ND	89	23	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	220	30	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	220	34	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	220	27	ug/kg	
83-32-9	Acenaphthene	ND	45	15	ug/kg	
208-96-8	Acenaphthylene	ND	45	23	ug/kg	
98-86-2	Acetophenone	ND	220	9.6	ug/kg	
120-12-7	Anthracene	ND	45	27	ug/kg	
1912-24-9	Atrazine	ND	89	19	ug/kg	
56-55-3	Benzo(a)anthracene	28.3	45	13	ug/kg	J
50-32-8	Benzo(a)pyrene	33.9	45	20	ug/kg	J
205-99-2	Benzo(b)fluoranthene	47.8	45	20	ug/kg	
191-24-2	Benzo(g,h,i)perylene	28.1	45	22	ug/kg	J
207-08-9	Benzo(k)fluoranthene	ND	45	21	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	89	17	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	89	11	ug/kg	
92-52-4	1,1'-Biphenyl	ND	89	6.1	ug/kg	
100-52-7	Benzaldehyde	ND	220	11	ug/kg	
91-58-7	2-Chloronaphthalene	ND	89	11	ug/kg	
106-47-8	4-Chloroaniline	ND	220	16	ug/kg	
86-74-8	Carbazole	ND	89	6.5	ug/kg	

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J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PCSB-30R (0.5-2)
Lab Sample ID: JC86716-21
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/19/19
Date Received: 04/19/19
Percent Solids: 73.3

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	89	18	ug/kg	
218-01-9	Chrysene	27.2	45	14	ug/kg	J
111-91-1	bis(2-Chloroethoxy)methane	ND	89	9.6	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	89	19	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	89	16	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	89	14	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	45	14	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	45	22	ug/kg	
91-94-1	3,3'-Dichlorobenzidine [a]	ND	89	37	ug/kg	UJ
123-91-1	1,4-Dioxane	ND	45	30	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	45	20	ug/kg	
132-64-9	Dibenzofuran	ND	89	18	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	89	7.3	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	89	11	ug/kg	
84-66-2	Diethyl phthalate	ND	89	9.5	ug/kg	
131-11-3	Dimethyl phthalate	ND	89	8.0	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	89	10	ug/kg	
206-44-0	Fluoranthene	45.2	45	20	ug/kg	
86-73-7	Fluorene	ND	45	21	ug/kg	
118-74-1	Hexachlorobenzene	ND	89	11	ug/kg	
87-68-3	Hexachlorobutadiene	ND	45	18	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	450	18	ug/kg	
67-72-1	Hexachloroethane	ND	220	22	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	28.6	45	21	ug/kg	J
78-59-1	Isophorone	ND	89	9.6	ug/kg	
91-57-6	2-Methylnaphthalene	ND	45	10	ug/kg	
88-74-4	2-Nitroaniline	ND	220	11	ug/kg	
99-09-2	3-Nitroaniline	ND	220	11	ug/kg	
100-01-6	4-Nitroaniline	ND	220	12	ug/kg	
91-20-3	Naphthalene	ND	45	13	ug/kg	
98-95-3	Nitrobenzene	ND	89	17	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	89	13	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	220	16	ug/kg	
85-01-8	Phenanthrene	21.5	45	15	ug/kg	J
129-00-0	Pyrene	41.3	45	14	ug/kg	J
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	220	11	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	67%		23-115%

ND = Not detected MDL = Method Detection Limit
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J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCSB-30R (0.5-2)		
Lab Sample ID:	JC86716-21	**Date Sampled:**	04/19/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	73.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	69%		27-114%
118-79-6	2,4,6-Tribromophenol	71%		19-152%
4165-60-0	Nitrobenzene-d5	78%		26-134%
321-60-8	2-Fluorobiphenyl	68%		39-124%
1718-51-0	Terphenyl-d14	67%		36-134%

(a) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	PCSB-30R (0.5-2)		
Lab Sample ID:	JC86716-21	**Date Sampled:**	04/19/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8081B SW846 3546	**Percent Solids:**	73.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4G958744.D	1	05/01/19 16:23	MH	05/01/19 06:00	OP19993	G4G2741
Run #2							

	Initial Weight	Final Volume
Run #1	16.4 g	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	0.83	0.69	ug/kg	
319-84-6	alpha-BHC	ND	0.83	0.68	ug/kg	
319-85-7	beta-BHC	ND	0.83	0.75	ug/kg	
319-86-8	delta-BHC	ND	0.83	0.80	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	0.83	0.61	ug/kg	
5103-71-9	alpha-Chlordane	ND	0.83	0.67	ug/kg	
5103-74-2	gamma-Chlordane	0.59	0.83	0.38	ug/kg	J
60-57-1	Dieldrin	ND	0.83	0.57	ug/kg	
72-54-8	4,4'-DDD	3.7	0.83	0.76	ug/kg	
72-55-9	4,4'-DDE	2.9	0.83	0.73	ug/kg	
50-29-3	4,4'-DDT	15.5	0.83	0.74	ug/kg	
72-20-8	Endrin	ND	0.83	0.65	ug/kg	
1031-07-8	Endosulfan sulfate	ND	0.83	0.65	ug/kg	
7421-93-4	Endrin aldehyde	ND	0.83	0.47	ug/kg	
959-98-8	Endosulfan-I	ND	0.83	0.48	ug/kg	
33213-65-9	Endosulfan-II	ND	0.83	0.52	ug/kg	
76-44-8	Heptachlor	ND	0.83	0.72	ug/kg	
1024-57-3	Heptachlor epoxide	ND	0.83	0.58	ug/kg	
72-43-5	Methoxychlor	ND	1.7	0.66	ug/kg	
53494-70-5	Endrin ketone	ND	0.83	0.60	ug/kg	
8001-35-2	Toxaphene	ND	21	19	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	64%		25-135%
877-09-8	Tetrachloro-m-xylene	68%		25-135%
2051-24-3	Decachlorobiphenyl	61%		10-156%
2051-24-3	Decachlorobiphenyl	67%		10-156%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	PCSB-30R (0.5-2)		
Lab Sample ID:	JC86716-21	**Date Sampled:**	04/19/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8082A SW846 3546	**Percent Solids:**	73.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5G88056.D	1	05/01/19 12:03	SK	05/01/19 06:00	OP19992	G5G2121
Run #2							

	Initial Weight	Final Volume
Run #1	16.4 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	42	19	ug/kg	
11104-28-2	Aroclor 1221	ND	42	21	ug/kg	
11141-16-5	Aroclor 1232	ND	42	32	ug/kg	
53469-21-9	Aroclor 1242	ND	42	17	ug/kg	
12672-29-6	Aroclor 1248	ND	42	37	ug/kg	
11097-69-1	Aroclor 1254	ND	42	22	ug/kg	
11096-82-5	Aroclor 1260	ND	42	18	ug/kg	
11100-14-4	Aroclor 1268	ND	42	18	ug/kg	
37324-23-5	Aroclor 1262	ND	42	27	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	64%		31-146%
877-09-8	Tetrachloro-m-xylene	70%		31-146%
2051-24-3	Decachlorobiphenyl	68%		17-164%
2051-24-3	Decachlorobiphenyl	71%		17-164%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PCSB-30R (0.5-2)
Lab Sample ID: JC86716-21
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/19/19
Date Received: 04/19/19
Percent Solids: 73.3

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	1140	65	10	mg/kg	1	04/23/19	04/24/19	ND	SW846 6010D [2]	SW846 3050B [3]
Antimony	0.53 U	2.6	0.53	mg/kg	1	04/23/19	04/24/19	ND	SW846 6010D [2]	SW846 3050B [3]
Arsenic	5.2	2.6	0.36	mg/kg	1	04/23/19	04/24/19	ND	SW846 6010D [2]	SW846 3050B [3]
Barium	7.1 J	26	2.5	mg/kg	1	04/23/19	04/24/19	ND	SW846 6010D [2]	SW846 3050B [3]
Beryllium	0.10 U	0.26	0.10	mg/kg	1	04/23/19	04/24/19	ND	SW846 6010D [2]	SW846 3050B [3]
Cadmium	0.091 U	0.65	0.091	mg/kg	1	04/23/19	04/24/19	ND	SW846 6010D [2]	SW846 3050B [3]
Calcium	430 J	650	57	mg/kg	1	04/23/19	04/24/19	ND	SW846 6010D [2]	SW846 3050B [3]
Chromium	1.6	1.3	0.48	mg/kg	1	04/23/19	04/24/19	ND	SW846 6010D [2]	SW846 3050B [3]
Cobalt	0.60 J	6.5	0.36	mg/kg	1	04/23/19	04/24/19	ND	SW846 6010D [2]	SW846 3050B [3]
Copper	6.7	3.2	1.1	mg/kg	1	04/23/19	04/24/19	ND	SW846 6010D [2]	SW846 3050B [3]
Iron	3720	65	25	mg/kg	1	04/23/19	04/24/19	ND	SW846 6010D [2]	SW846 3050B [3]
Lead	15.4	2.6	0.53	mg/kg	1	04/23/19	04/24/19	ND	SW846 6010D [2]	SW846 3050B [3]
Magnesium	297 J	650	18	mg/kg	1	04/23/19	04/24/19	ND	SW846 6010D [2]	SW846 3050B [3]
Manganese	11.1	1.9	0.53	mg/kg	1	04/23/19	04/24/19	ND	SW846 6010D [2]	SW846 3050B [3]
Mercury	0.037 J	0.042	0.019	mg/kg	1	04/23/19	04/23/19	LL	SW846 7471B [1]	SW846 7471B [4]
Nickel	1.6 J	5.2	0.45	mg/kg	1	04/23/19	04/24/19	ND	SW846 6010D [2]	SW846 3050B [3]
Potassium	462 J	1300	41	mg/kg	1	04/23/19	04/24/19	ND	SW846 6010D [2]	SW846 3050B [3]
Selenium	0.84 U	2.6	0.84	mg/kg	1	04/23/19	04/24/19	ND	SW846 6010D [2]	SW846 3050B [3]
Silver	0.22 U	0.65	0.22	mg/kg	1	04/23/19	04/24/19	ND	SW846 6010D [2]	SW846 3050B [3]
Sodium	665 J	1300	100	mg/kg	1	04/23/19	04/24/19	ND	SW846 6010D [2]	SW846 3050B [3]
Thallium	0.75 U	1.3	0.75	mg/kg	1	04/23/19	04/24/19	ND	SW846 6010D [2]	SW846 3050B [3]
Vanadium	4.1 J	6.5	0.25	mg/kg	1	04/23/19	04/24/19	ND	SW846 6010D [2]	SW846 3050B [3]
Zinc	7.9	6.5	3.0	mg/kg	1	04/23/19	04/24/19	ND	SW846 6010D [2]	SW846 3050B [3]

(1) Instrument QC Batch: MA46561
(2) Instrument QC Batch: MA46576
(3) Prep QC Batch: MP14497
(4) Prep QC Batch: MP14503

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: PCSB-30R (0.5-2)
Lab Sample ID: JC86716-21
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/19/19
Date Received: 04/19/19
Percent Solids: 73.3

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	0.18 U	0.36	0.18	mg/kg	1	05/01/19 16:24	KI	SW846 9012B/LACHAT
Solids, Percent	73.3			%	1	04/29/19 17:22	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

SGS North America Inc.

Report of Analysis

Client Sample ID:	PCSB-26R (0.5-2)		
Lab Sample ID:	JC86716-22	**Date Sampled:**	04/19/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8260C	**Percent Solids:**	86.1
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Y184797.D	1	04/27/19 17:30	PS	n/a	n/a	VY8018
Run #2							

	Initial Weight
Run #1	5.0 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	8.7	12	5.8	ug/kg	J
71-43-2	Benzene	ND	0.58	0.44	ug/kg	
74-97-5	Bromochloromethane	ND	5.8	0.50	ug/kg	
75-27-4	Bromodichloromethane	ND	2.3	0.51	ug/kg	
75-25-2	Bromoform	ND	5.8	0.47	ug/kg	
74-83-9	Bromomethane	ND	5.8	1.2	ug/kg	
78-93-3	2-Butanone (MEK)	ND	12	4.3	ug/kg	
75-15-0	Carbon disulfide	ND	2.3	1.1	ug/kg	
56-23-5	Carbon tetrachloride	ND	2.3	0.64	ug/kg	
108-90-7	Chlorobenzene	ND	2.3	0.41	ug/kg	
75-00-3	Chloroethane	ND	5.8	0.80	ug/kg	
67-66-3	Chloroform	ND	2.3	0.43	ug/kg	
74-87-3	Chloromethane	ND	5.8	2.3	ug/kg	
110-82-7	Cyclohexane	ND	2.3	0.47	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.3	0.97	ug/kg	
124-48-1	Dibromochloromethane	ND	2.3	0.39	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.2	0.38	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.2	0.35	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.2	0.42	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.2	0.40	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	5.8	0.74	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.2	0.45	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.2	0.55	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.2	0.76	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.2	1.1	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.2	0.77	ug/kg	
78-87-5	1,2-Dichloropropane	ND	2.3	0.47	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	2.3	0.41	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2.3	0.38	ug/kg	
100-41-4	Ethylbenzene	ND	1.2	0.64	ug/kg	
76-13-1	Freon 113	ND	5.8	0.89	ug/kg	
591-78-6	2-Hexanone	ND	5.8	1.5	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCSB-26R (0.5-2)		
Lab Sample ID:	JC86716-22	**Date Sampled:**	04/19/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8260C	**Percent Solids:**	86.1
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	2.3	0.81	ug/kg	
79-20-9	Methyl Acetate	ND	5.8	1.6	ug/kg	
108-87-2	Methylcyclohexane	ND	2.3	0.82	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.2	0.41	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.8	1.8	ug/kg	
75-09-2	Methylene chloride	ND	5.8	2.9	ug/kg	
100-42-5	Styrene	ND	2.3	0.67	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.3	0.45	ug/kg	
127-18-4	Tetrachloroethene	ND	2.3	0.54	ug/kg	
108-88-3	Toluene	ND	1.2	0.44	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	5.8	1.2	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	5.8	1.2	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	2.3	0.49	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2.3	0.40	ug/kg	
79-01-6	Trichloroethene	ND	1.2	0.89	ug/kg	
75-69-4	Trichlorofluoromethane	ND	5.8	0.79	ug/kg	
75-01-4	Vinyl chloride	ND	2.3	0.54	ug/kg	
	m,p-Xylene	ND	1.2	0.87	ug/kg	
95-47-6	o-Xylene	ND	1.2	0.68	ug/kg	
1330-20-7	Xylene (total)	ND	1.2	0.68	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		75-127%
17060-07-0	1,2-Dichloroethane-D4	97%		75-130%
2037-26-5	Toluene-D8	97%		80-120%
460-00-4	4-Bromofluorobenzene	94%		79-127%

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N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	PCSB-26R (0.5-2)		
Lab Sample ID:	JC86716-22	**Date Sampled:**	04/19/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	86.1
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5P59074.D	1	04/30/19 18:24	CC	04/25/19 13:30	OP19972	E5P2792
Run #2							

	Initial Weight	Final Volume
Run #1	30.3 g	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	77	19	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	190	23	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	190	33	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	190	68	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	190	140	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	190	41	ug/kg	
95-48-7	2-Methylphenol	ND	77	24	ug/kg	
	3&4-Methylphenol	ND	77	32	ug/kg	
88-75-5	2-Nitrophenol	ND	190	25	ug/kg	
100-02-7	4-Nitrophenol	ND	380	100	ug/kg	
87-86-5	Pentachlorophenol	ND	150	36	ug/kg	
108-95-2	Phenol	ND	77	20	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	190	25	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	190	29	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	190	23	ug/kg	
83-32-9	Acenaphthene	ND	38	13	ug/kg	
208-96-8	Acenaphthylene	ND	38	19	ug/kg	
98-86-2	Acetophenone	ND	190	8.2	ug/kg	
120-12-7	Anthracene	ND	38	23	ug/kg	
1912-24-9	Atrazine	ND	77	16	ug/kg	
56-55-3	Benzo(a)anthracene	134	38	11	ug/kg	
50-32-8	Benzo(a)pyrene	154	38	17	ug/kg	
205-99-2	Benzo(b)fluoranthene	211	38	17	ug/kg	
191-24-2	Benzo(g,h,i)perylene	102	38	19	ug/kg	
207-08-9	Benzo(k)fluoranthene	70.2	38	18	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	77	15	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	77	9.4	ug/kg	
92-52-4	1,1'-Biphenyl	ND	77	5.3	ug/kg	
100-52-7	Benzaldehyde	ND	190	9.5	ug/kg	
91-58-7	2-Chloronaphthalene	ND	77	9.1	ug/kg	
106-47-8	4-Chloroaniline	ND	190	14	ug/kg	
86-74-8	Carbazole	11.6	77	5.6	ug/kg	J

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCSB-26R (0.5-2)		
Lab Sample ID:	JC86716-22	**Date Sampled:**	04/19/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	86.1
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	77	15	ug/kg	
218-01-9	Chrysene	142	38	12	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	77	8.2	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	77	17	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	77	14	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	77	12	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	38	12	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	38	19	ug/kg	
91-94-1	3,3'-Dichlorobenzidine [a]	ND	77	32	ug/kg	UJ
123-91-1	1,4-Dioxane	ND	38	25	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	32.6	38	17	ug/kg	J
132-64-9	Dibenzofuran	ND	77	16	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	77	6.2	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	77	9.5	ug/kg	
84-66-2	Diethyl phthalate	ND	77	8.2	ug/kg	
131-11-3	Dimethyl phthalate	ND	77	6.8	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	77	9.0	ug/kg	
206-44-0	Fluoranthene	243	38	17	ug/kg	
86-73-7	Fluorene	ND	38	18	ug/kg	
118-74-1	Hexachlorobenzene	ND	77	9.7	ug/kg	
87-68-3	Hexachlorobutadiene	ND	38	15	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	380	15	ug/kg	
67-72-1	Hexachloroethane	ND	190	19	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	107	38	18	ug/kg	
78-59-1	Isophorone	ND	77	8.2	ug/kg	
91-57-6	2-Methylnaphthalene	ND	38	8.7	ug/kg	
88-74-4	2-Nitroaniline	ND	190	9.0	ug/kg	
99-09-2	3-Nitroaniline	ND	190	9.6	ug/kg	
100-01-6	4-Nitroaniline	ND	190	9.9	ug/kg	
91-20-3	Naphthalene	ND	38	11	ug/kg	
98-95-3	Nitrobenzene	ND	77	15	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	77	11	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	190	14	ug/kg	
85-01-8	Phenanthrene	121	38	13	ug/kg	
129-00-0	Pyrene	210	38	12	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	190	9.7	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	70%		23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCSB-26R (0.5-2)		
Lab Sample ID:	JC86716-22	**Date Sampled:**	04/19/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	86.1
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	72%		27-114%
118-79-6	2,4,6-Tribromophenol	68%		19-152%
4165-60-0	Nitrobenzene-d5	80%		26-134%
321-60-8	2-Fluorobiphenyl	70%		39-124%
1718-51-0	Terphenyl-d14	64%		36-134%

(a) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	PCSB-26R (0.5-2)		
Lab Sample ID:	JC86716-22	**Date Sampled:**	04/19/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8081B SW846 3546	**Percent Solids:**	86.1
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4G958747.D	1	05/01/19 17:14	MH	05/01/19 06:00	OP19993	G4G2741
Run #2							

	Initial Weight	Final Volume
Run #1	15.4 g	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	0.75	0.62	ug/kg	
319-84-6	alpha-BHC	ND	0.75	0.61	ug/kg	
319-85-7	beta-BHC	ND	0.75	0.68	ug/kg	
319-86-8	delta-BHC	ND	0.75	0.72	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	0.75	0.56	ug/kg	
5103-71-9	alpha-Chlordane	ND	0.75	0.61	ug/kg	
5103-74-2	gamma-Chlordane	ND	0.75	0.34	ug/kg	
60-57-1	Dieldrin	ND	0.75	0.52	ug/kg	
72-54-8	4,4'-DDD	ND	0.75	0.69	ug/kg	
72-55-9	4,4'-DDE	ND	0.75	0.66	ug/kg	
50-29-3	4,4'-DDT	ND	0.75	0.67	ug/kg	
72-20-8	Endrin	ND	0.75	0.59	ug/kg	
1031-07-8	Endosulfan sulfate	ND	0.75	0.59	ug/kg	
7421-93-4	Endrin aldehyde	ND	0.75	0.43	ug/kg	
959-98-8	Endosulfan-I	ND	0.75	0.43	ug/kg	
33213-65-9	Endosulfan-II	ND	0.75	0.47	ug/kg	
76-44-8	Heptachlor	ND	0.75	0.65	ug/kg	
1024-57-3	Heptachlor epoxide	ND	0.75	0.53	ug/kg	
72-43-5	Methoxychlor	ND	1.5	0.60	ug/kg	
53494-70-5	Endrin ketone	ND	0.75	0.55	ug/kg	
8001-35-2	Toxaphene	ND	19	18	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	59%		25-135%
877-09-8	Tetrachloro-m-xylene	58%		25-135%
2051-24-3	Decachlorobiphenyl	39%		10-156%
2051-24-3	Decachlorobiphenyl	144%		10-156%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	PCSB-26R (0.5-2)		
Lab Sample ID:	JC86716-22	**Date Sampled:**	04/19/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8082A SW846 3546	**Percent Solids:**	86.1
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5G88069.D	1	05/01/19 19:59	SK	05/01/19 06:00	OP19992	G5G2121
Run #2							

	Initial Weight	Final Volume
Run #1	15.4 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	38	18	ug/kg	
11104-28-2	Aroclor 1221	ND	38	19	ug/kg	
11141-16-5	Aroclor 1232	ND	38	29	ug/kg	
53469-21-9	Aroclor 1242	ND	38	15	ug/kg	
12672-29-6	Aroclor 1248	ND	38	34	ug/kg	
11097-69-1	Aroclor 1254	ND	38	20	ug/kg	
11096-82-5	Aroclor 1260	ND	38	16	ug/kg	
11100-14-4	Aroclor 1268	ND	38	16	ug/kg	
37324-23-5	Aroclor 1262	ND	38	25	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	58%		31-146%
877-09-8	Tetrachloro-m-xylene	66%		31-146%
2051-24-3	Decachlorobiphenyl	133%		17-164%
2051-24-3	Decachlorobiphenyl	61%		17-164%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PCSB-26R (0.5-2)
Lab Sample ID: JC86716-22
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/19/19
Date Received: 04/19/19
Percent Solids: 86.1

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	10800	58	9.4	mg/kg	1	04/23/19	04/25/19	ND	SW846 6010D [2]	SW846 3050B [4]
Antimony	2.4 U J	12	2.4	mg/kg	5	04/23/19	05/01/19	ND	SW846 6010D [3]	SW846 3050B [4]
Arsenic	15.2	12	1.6	mg/kg	5	04/23/19	05/01/19	ND	SW846 6010D [3]	SW846 3050B [4]
Barium	116	23	2.2	mg/kg	1	04/23/19	04/25/19	ND	SW846 6010D [2]	SW846 3050B [4]
Beryllium	0.27	0.23	0.093	mg/kg	1	04/23/19	04/25/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cadmium	3.7	0.58	0.081	mg/kg	1	04/23/19	04/25/19	ND	SW846 6010D [2]	SW846 3050B [4]
Calcium	785	580	51	mg/kg	1	04/23/19	04/25/19	ND	SW846 6010D [2]	SW846 3050B [4]
Chromium	162	1.2	0.43	mg/kg	1	04/23/19	04/25/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cobalt	56.7	5.8	0.33	mg/kg	1	04/23/19	04/25/19	ND	SW846 6010D [2]	SW846 3050B [4]
Copper	250	15	4.9	mg/kg	5	04/23/19	05/01/19	ND	SW846 6010D [3]	SW846 3050B [4]
Iron	93300	290	110	mg/kg	5	04/23/19	05/01/19	ND	SW846 6010D [3]	SW846 3050B [4]
Lead	768 J	12	2.4	mg/kg	5	04/23/19	05/01/19	ND	SW846 6010D [3]	SW846 3050B [4]
Magnesium	522 J	580	16	mg/kg	1	04/23/19	04/25/19	ND	SW846 6010D [2]	SW846 3050B [4]
Manganese	536 J	8.7	2.4	mg/kg	5	04/23/19	05/01/19	ND	SW846 6010D [3]	SW846 3050B [4]
Mercury	0.44 J	0.037	0.016	mg/kg	1	04/23/19	04/23/19	LL	SW846 7471B [1]	SW846 7471B [5]
Nickel	243	4.6	0.41	mg/kg	1	04/23/19	04/25/19	ND	SW846 6010D [2]	SW846 3050B [4]
Potassium	682 J	1200	37	mg/kg	1	04/23/19	04/25/19	ND	SW846 6010D [2]	SW846 3050B [4]
Selenium	5.7 J	12	3.8	mg/kg	5	04/23/19	05/01/19	ND	SW846 6010D [3]	SW846 3050B [4]
Silver	2.4 J	2.9	0.99	mg/kg	5	04/23/19	05/01/19	ND	SW846 6010D [3]	SW846 3050B [4]
Sodium	90 U	1200	90	mg/kg	1	04/23/19	04/25/19	ND	SW846 6010D [2]	SW846 3050B [4]
Thallium	3.4 U	5.8	3.4	mg/kg	5	04/23/19	05/01/19	ND	SW846 6010D [3]	SW846 3050B [4]
Vanadium	26.1	5.8	0.22	mg/kg	1	04/23/19	04/25/19	ND	SW846 6010D [2]	SW846 3050B [4]
Zinc	2300	29	13	mg/kg	5	04/23/19	05/01/19	ND	SW846 6010D [3]	SW846 3050B [4]

(1) Instrument QC Batch: MA46561
(2) Instrument QC Batch: MA46577
(3) Instrument QC Batch: MA46629
(4) Prep QC Batch: MP14497
(5) Prep QC Batch: MP14503

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	PCSB-26R (0.5-2)		
Lab Sample ID:	JC86716-22	**Date Sampled:**	04/19/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
		Percent Solids:	86.1
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result		RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	1.1	J	0.33	0.17	mg/kg	1	05/01/19 16:28	KI	SW846 9012B/LACHAT
Solids, Percent	86.1				%	1	04/29/19 17:22	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

SGS North America Inc.

Report of Analysis

Client Sample ID:	PCSB-49R (3-5)		
Lab Sample ID:	JC86716-23	**Date Sampled:**	04/19/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8260C	**Percent Solids:**	90.5
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Y184798.D	1	04/27/19 17:59	PS	n/a	n/a	VY8018
Run #2							

	Initial Weight
Run #1	5.3 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	17.9	10	5.2	ug/kg	
71-43-2	Benzene	ND	0.52	0.39	ug/kg	
74-97-5	Bromochloromethane	ND	5.2	0.45	ug/kg	
75-27-4	Bromodichloromethane	ND	2.1	0.46	ug/kg	
75-25-2	Bromoform	ND	5.2	0.42	ug/kg	
74-83-9	Bromomethane	ND	5.2	1.0	ug/kg	
78-93-3	2-Butanone (MEK)	ND	10	3.9	ug/kg	
75-15-0	Carbon disulfide	ND	2.1	0.97	ug/kg	
56-23-5	Carbon tetrachloride	ND	2.1	0.57	ug/kg	
108-90-7	Chlorobenzene	ND	2.1	0.37	ug/kg	
75-00-3	Chloroethane	ND	5.2	0.72	ug/kg	
67-66-3	Chloroform	ND	2.1	0.39	ug/kg	
74-87-3	Chloromethane	ND	5.2	2.0	ug/kg	
110-82-7	Cyclohexane	ND	2.1	0.42	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.1	0.87	ug/kg	
124-48-1	Dibromochloromethane	ND	2.1	0.35	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.0	0.34	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.32	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.37	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.36	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	5.2	0.66	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.0	0.40	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.0	0.49	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.0	0.68	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	1.0	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.70	ug/kg	
78-87-5	1,2-Dichloropropane	ND	2.1	0.42	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	2.1	0.37	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2.1	0.34	ug/kg	
100-41-4	Ethylbenzene	ND	1.0	0.58	ug/kg	
76-13-1	Freon 113	ND	5.2	0.79	ug/kg	
591-78-6	2-Hexanone	ND	5.2	1.3	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCSB-49R (3-5)		
Lab Sample ID:	JC86716-23	**Date Sampled:**	04/19/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8260C	**Percent Solids:**	90.5
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	2.1	0.73	ug/kg	
79-20-9	Methyl Acetate	ND	5.2	1.4	ug/kg	
108-87-2	Methylcyclohexane	ND	2.1	0.74	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.37	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.2	1.6	ug/kg	
75-09-2	Methylene chloride	ND	5.2	2.6	ug/kg	
100-42-5	Styrene	ND	2.1	0.60	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.1	0.41	ug/kg	
127-18-4	Tetrachloroethene	ND	2.1	0.48	ug/kg	
108-88-3	Toluene	ND	1.0	0.39	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	5.2	1.0	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	5.2	1.0	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	2.1	0.44	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2.1	0.36	ug/kg	
79-01-6	Trichloroethene	ND	1.0	0.79	ug/kg	
75-69-4	Trichlorofluoromethane	ND	5.2	0.71	ug/kg	
75-01-4	Vinyl chloride	ND	2.1	0.49	ug/kg	
	m,p-Xylene	ND	1.0	0.78	ug/kg	
95-47-6	o-Xylene	ND	1.0	0.61	ug/kg	
1330-20-7	Xylene (total)	ND	1.0	0.61	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%		75-127%
17060-07-0	1,2-Dichloroethane-D4	98%		75-130%
2037-26-5	Toluene-D8	97%		80-120%
460-00-4	4-Bromofluorobenzene	96%		79-127%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	PCSB-49R (3-5)		
Lab Sample ID:	JC86716-23	**Date Sampled:**	04/19/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	90.5
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5P59073.D	1	04/30/19 18:01	CC	04/25/19 13:30	OP19972	E5P2792
Run #2							

	Initial Weight	Final Volume
Run #1	30.4 g	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	73	18	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	180	22	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	180	31	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	180	65	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	180	140	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	180	39	ug/kg	
95-48-7	2-Methylphenol	ND	73	23	ug/kg	
	3&4-Methylphenol	ND	73	30	ug/kg	
88-75-5	2-Nitrophenol	ND	180	24	ug/kg	
100-02-7	4-Nitrophenol	ND	360	97	ug/kg	
87-86-5	Pentachlorophenol	ND	150	34	ug/kg	
108-95-2	Phenol	ND	73	19	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	180	24	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	180	27	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	180	22	ug/kg	
83-32-9	Acenaphthene	ND	36	13	ug/kg	
208-96-8	Acenaphthylene	23.1	36	18	ug/kg	J
98-86-2	Acetophenone	ND	180	7.8	ug/kg	
120-12-7	Anthracene	43.0	36	22	ug/kg	
1912-24-9	Atrazine	ND	73	16	ug/kg	
56-55-3	Benzo(a)anthracene	185	36	10	ug/kg	
50-32-8	Benzo(a)pyrene	154	36	17	ug/kg	
205-99-2	Benzo(b)fluoranthene	220	36	16	ug/kg	
191-24-2	Benzo(g,h,i)perylene	74.4	36	18	ug/kg	
207-08-9	Benzo(k)fluoranthene	82.6	36	17	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	73	14	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	73	8.9	ug/kg	
92-52-4	1,1'-Biphenyl	ND	73	5.0	ug/kg	
100-52-7	Benzaldehyde	ND	180	9.0	ug/kg	
91-58-7	2-Chloronaphthalene	ND	73	8.7	ug/kg	
106-47-8	4-Chloroaniline	ND	180	13	ug/kg	
86-74-8	Carbazole	12.1	73	5.3	ug/kg	J

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PCSB-49R (3-5)
Lab Sample ID: JC86716-23
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/19/19
Date Received: 04/19/19
Percent Solids: 90.5

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	73	14	ug/kg	
218-01-9	Chrysene	140	36	11	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	73	7.8	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	73	16	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	73	13	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	73	12	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	36	11	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	36	18	ug/kg	
91-94-1	3,3'-Dichlorobenzidine [a]	ND	73	30	ug/kg	UJ
123-91-1	1,4-Dioxane	ND	36	24	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	25.5	36	16	ug/kg	J
132-64-9	Dibenzofuran	ND	73	15	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	73	5.9	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	73	9.1	ug/kg	
84-66-2	Diethyl phthalate	ND	73	7.7	ug/kg	
131-11-3	Dimethyl phthalate	ND	73	6.5	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	73	8.5	ug/kg	
206-44-0	Fluoranthene	435	36	16	ug/kg	
86-73-7	Fluorene	ND	36	17	ug/kg	
118-74-1	Hexachlorobenzene	ND	73	9.2	ug/kg	
87-68-3	Hexachlorobutadiene	ND	36	15	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	360	14	ug/kg	
67-72-1	Hexachloroethane	ND	180	18	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	84.7	36	17	ug/kg	
78-59-1	Isophorone	ND	73	7.8	ug/kg	
91-57-6	2-Methylnaphthalene	ND	36	8.2	ug/kg	
88-74-4	2-Nitroaniline	ND	180	8.6	ug/kg	
99-09-2	3-Nitroaniline	ND	180	9.1	ug/kg	
100-01-6	4-Nitroaniline	ND	180	9.4	ug/kg	
91-20-3	Naphthalene	ND	36	10	ug/kg	
98-95-3	Nitrobenzene	ND	73	14	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	73	11	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	180	13	ug/kg	
85-01-8	Phenanthrene	183	36	12	ug/kg	
129-00-0	Pyrene	343	36	12	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	180	9.2	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	66%		23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCSB-49R (3-5)		
Lab Sample ID:	JC86716-23	**Date Sampled:**	04/19/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	90.5
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	71%		27-114%
118-79-6	2,4,6-Tribromophenol	68%		19-152%
4165-60-0	Nitrobenzene-d5	77%		26-134%
321-60-8	2-Fluorobiphenyl	70%		39-124%
1718-51-0	Terphenyl-d14	67%		36-134%

(a) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PCSB-49R (3-5)
Lab Sample ID: JC86716-23
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/19/19
Date Received: 04/19/19
Percent Solids: 90.5

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	7940	54	8.6	mg/kg	1	04/23/19	04/25/19	ND	SW846 6010D [2]	SW846 3050B [3]
Antimony	0.44 U J	2.1	0.44	mg/kg	1	04/23/19	04/25/19	ND	SW846 6010D [2]	SW846 3050B [3]
Arsenic	6.3	2.1	0.30	mg/kg	1	04/23/19	04/25/19	ND	SW846 6010D [2]	SW846 3050B [3]
Barium	29.5	21	2.0	mg/kg	1	04/23/19	04/25/19	ND	SW846 6010D [2]	SW846 3050B [3]
Beryllium	0.51	0.21	0.086	mg/kg	1	04/23/19	04/25/19	ND	SW846 6010D [2]	SW846 3050B [3]
Cadmium	0.075 U	0.54	0.075	mg/kg	1	04/23/19	04/25/19	ND	SW846 6010D [2]	SW846 3050B [3]
Calcium	408 J	540	47	mg/kg	1	04/23/19	04/25/19	ND	SW846 6010D [2]	SW846 3050B [3]
Chromium	14.8	1.1	0.40	mg/kg	1	04/23/19	04/25/19	ND	SW846 6010D [2]	SW846 3050B [3]
Cobalt	5.8	5.4	0.30	mg/kg	1	04/23/19	04/25/19	ND	SW846 6010D [2]	SW846 3050B [3]
Copper	11.9	2.7	0.90	mg/kg	1	04/23/19	04/25/19	ND	SW846 6010D [2]	SW846 3050B [3]
Iron	18200	54	21	mg/kg	1	04/23/19	04/25/19	ND	SW846 6010D [2]	SW846 3050B [3]
Lead	19.0 J	2.1	0.44	mg/kg	1	04/23/19	04/25/19	ND	SW846 6010D [2]	SW846 3050B [3]
Magnesium	1850 J	540	15	mg/kg	1	04/23/19	04/25/19	ND	SW846 6010D [2]	SW846 3050B [3]
Manganese	173 J	1.6	0.44	mg/kg	1	04/23/19	04/25/19	ND	SW846 6010D [2]	SW846 3050B [3]
Mercury	0.11 J	0.033	0.015	mg/kg	1	04/23/19	04/23/19	LL	SW846 7471B [1]	SW846 7471B [4]
Nickel	12.6	4.3	0.38	mg/kg	1	04/23/19	04/25/19	ND	SW846 6010D [2]	SW846 3050B [3]
Potassium	853 J	1100	34	mg/kg	1	04/23/19	04/25/19	ND	SW846 6010D [2]	SW846 3050B [3]
Selenium	0.70 U	2.1	0.70	mg/kg	1	04/23/19	04/25/19	ND	SW846 6010D [2]	SW846 3050B [3]
Silver	0.18 U	0.54	0.18	mg/kg	1	04/23/19	04/25/19	ND	SW846 6010D [2]	SW846 3050B [3]
Sodium	83 U	1100	83	mg/kg	1	04/23/19	04/25/19	ND	SW846 6010D [2]	SW846 3050B [3]
Thallium	0.62 U	1.1	0.62	mg/kg	1	04/23/19	04/25/19	ND	SW846 6010D [2]	SW846 3050B [3]
Vanadium	19.4	5.4	0.20	mg/kg	1	04/23/19	04/25/19	ND	SW846 6010D [2]	SW846 3050B [3]
Zinc	41.3	5.4	2.5	mg/kg	1	04/23/19	04/25/19	ND	SW846 6010D [2]	SW846 3050B [3]

(1) Instrument QC Batch: MA46561
(2) Instrument QC Batch: MA46577
(3) Prep QC Batch: MP14497
(4) Prep QC Batch: MP14503

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	PCSB-49R (3-5)		
Lab Sample ID:	JC86716-23	**Date Sampled:**	04/19/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
		Percent Solids:	90.5
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	0.22 J	0.25	0.13	mg/kg	1	05/01/19 16:29	KI	SW846 9012B/LACHAT
Solids, Percent	90.5			%	1	04/29/19 17:22	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

SGS North America Inc.

Report of Analysis

Client Sample ID:	PCSB-49R (10-12)		
Lab Sample ID:	JC86716-24	**Date Sampled:**	04/19/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8260C	**Percent Solids:**	88.5
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Y184799.D	1	04/27/19 18:28	PS	n/a	n/a	VY8018
Run #2							

	Initial Weight
Run #1	5.5 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	19.7	10	5.1	ug/kg	
71-43-2	Benzene	ND	0.51	0.39	ug/kg	
74-97-5	Bromochloromethane	ND	5.1	0.44	ug/kg	
75-27-4	Bromodichloromethane	ND	2.1	0.46	ug/kg	
75-25-2	Bromoform	ND	5.1	0.41	ug/kg	
74-83-9	Bromomethane	ND	5.1	1.0	ug/kg	
78-93-3	2-Butanone (MEK)	ND	10	3.8	ug/kg	
75-15-0	Carbon disulfide	ND	2.1	0.95	ug/kg	
56-23-5	Carbon tetrachloride	ND	2.1	0.56	ug/kg	
108-90-7	Chlorobenzene	ND	2.1	0.36	ug/kg	
75-00-3	Chloroethane	ND	5.1	0.71	ug/kg	
67-66-3	Chloroform	ND	2.1	0.38	ug/kg	
74-87-3	Chloromethane	ND	5.1	2.0	ug/kg	
110-82-7	Cyclohexane	ND	2.1	0.42	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.1	0.86	ug/kg	
124-48-1	Dibromochloromethane	ND	2.1	0.35	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.0	0.33	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.31	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.37	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.35	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	5.1	0.65	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.0	0.40	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.0	0.48	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.0	0.67	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.98	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.69	ug/kg	
78-87-5	1,2-Dichloropropane	ND	2.1	0.42	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	2.1	0.36	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2.1	0.34	ug/kg	
100-41-4	Ethylbenzene	ND	1.0	0.57	ug/kg	
76-13-1	Freon 113	ND	5.1	0.78	ug/kg	
591-78-6	2-Hexanone	ND	5.1	1.3	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCSB-49R (10-12)		
Lab Sample ID:	JC86716-24	**Date Sampled:**	04/19/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8260C	**Percent Solids:**	88.5
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	2.1	0.72	ug/kg	
79-20-9	Methyl Acetate	2.1	5.1	1.4	ug/kg	J
108-87-2	Methylcyclohexane	ND	2.1	0.73	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.36	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.1	1.6	ug/kg	
75-09-2	Methylene chloride	ND	5.1	2.6	ug/kg	
100-42-5	Styrene	ND	2.1	0.59	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.1	0.40	ug/kg	
127-18-4	Tetrachloroethene	ND	2.1	0.47	ug/kg	
108-88-3	Toluene	ND	1.0	0.39	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	5.1	1.0	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	5.1	1.0	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	2.1	0.44	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2.1	0.35	ug/kg	
79-01-6	Trichloroethene	ND	1.0	0.78	ug/kg	
75-69-4	Trichlorofluoromethane	ND	5.1	0.70	ug/kg	
75-01-4	Vinyl chloride	ND	2.1	0.48	ug/kg	
	m,p-Xylene	ND	1.0	0.77	ug/kg	
95-47-6	o-Xylene	ND	1.0	0.60	ug/kg	
1330-20-7	Xylene (total)	ND	1.0	0.60	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%		75-127%
17060-07-0	1,2-Dichloroethane-D4	96%		75-130%
2037-26-5	Toluene-D8	96%		80-120%
460-00-4	4-Bromofluorobenzene	97%		79-127%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	PCSB-49R (10-12)		
Lab Sample ID:	JC86716-24	**Date Sampled:**	04/19/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	88.5
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5P59072.D	1	04/30/19 17:38	CC	04/25/19 13:30	OP19972	E5P2792
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	75	19	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	190	23	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	190	32	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	190	67	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	190	140	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	190	40	ug/kg	
95-48-7	2-Methylphenol	ND	75	24	ug/kg	
	3&4-Methylphenol	ND	75	31	ug/kg	
88-75-5	2-Nitrophenol	ND	190	25	ug/kg	
100-02-7	4-Nitrophenol	ND	380	100	ug/kg	
87-86-5	Pentachlorophenol	ND	150	35	ug/kg	
108-95-2	Phenol	ND	75	20	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	190	25	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	190	28	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	190	22	ug/kg	
83-32-9	Acenaphthene	17.1	38	13	ug/kg	J
208-96-8	Acenaphthylene	ND	38	19	ug/kg	
98-86-2	Acetophenone	ND	190	8.1	ug/kg	
120-12-7	Anthracene	ND	38	23	ug/kg	
1912-24-9	Atrazine	ND	75	16	ug/kg	
56-55-3	Benzo(a)anthracene	ND	38	11	ug/kg	
50-32-8	Benzo(a)pyrene	ND	38	17	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	38	17	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	38	19	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	38	18	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	75	15	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	75	9.2	ug/kg	
92-52-4	1,1'-Biphenyl	8.1	75	5.2	ug/kg	J
100-52-7	Benzaldehyde	ND	190	9.3	ug/kg	
91-58-7	2-Chloronaphthalene	ND	75	9.0	ug/kg	
106-47-8	4-Chloroaniline	ND	190	14	ug/kg	
86-74-8	Carbazole	ND	75	5.5	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
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B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCSB-49R (10-12)		
Lab Sample ID:	JC86716-24	**Date Sampled:**	04/19/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	88.5
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	75	15	ug/kg	
218-01-9	Chrysene	ND	38	12	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	75	8.1	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	75	16	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	75	14	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	75	12	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	38	12	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	38	19	ug/kg	
91-94-1	3,3'-Dichlorobenzidine [a]	ND	75	31	ug/kg	UJ
123-91-1	1,4-Dioxane	ND	38	25	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	38	17	ug/kg	
132-64-9	Dibenzofuran	22.9	75	15	ug/kg	J
84-74-2	Di-n-butyl phthalate	ND	75	6.1	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	75	9.4	ug/kg	
84-66-2	Diethyl phthalate	ND	75	8.0	ug/kg	
131-11-3	Dimethyl phthalate	ND	75	6.7	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	75	8.8	ug/kg	
206-44-0	Fluoranthene	ND	38	17	ug/kg	
86-73-7	Fluorene	39.2	38	17	ug/kg	
118-74-1	Hexachlorobenzene	ND	75	9.5	ug/kg	
87-68-3	Hexachlorobutadiene	ND	38	15	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	380	15	ug/kg	
67-72-1	Hexachloroethane	ND	190	19	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	38	18	ug/kg	
78-59-1	Isophorone	ND	75	8.1	ug/kg	
91-57-6	2-Methylnaphthalene	33.3	38	8.5	ug/kg	J
88-74-4	2-Nitroaniline	ND	190	8.9	ug/kg	
99-09-2	3-Nitroaniline	ND	190	9.4	ug/kg	
100-01-6	4-Nitroaniline	ND	190	9.8	ug/kg	
91-20-3	Naphthalene	15.8	38	11	ug/kg	J
98-95-3	Nitrobenzene	ND	75	15	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	75	11	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	190	14	ug/kg	
85-01-8	Phenanthrene	99.0	38	13	ug/kg	
129-00-0	Pyrene	18.7	38	12	ug/kg	J
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	190	9.6	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	64%		23-115%

ND = Not detected MDL = Method Detection Limit
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E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PCSB-49R (10-12)		
Lab Sample ID:	JC86716-24	**Date Sampled:**	04/19/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	88.5
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	67%		27-114%
118-79-6	2,4,6-Tribromophenol	61%		19-152%
4165-60-0	Nitrobenzene-d5	76%		26-134%
321-60-8	2-Fluorobiphenyl	65%		39-124%
1718-51-0	Terphenyl-d14	58%		36-134%

(a) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PCSB-49R (10-12)
Lab Sample ID: JC86716-24
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/19/19
Date Received: 04/19/19
Percent Solids: 88.5

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	4490	56	9.1	mg/kg	1	04/23/19	05/01/19	ND	SW846 6010D [3]	SW846 3050B [4]
Antimony	0.46 U J	2.3	0.46	mg/kg	1	04/23/19	04/25/19	ND	SW846 6010D [2]	SW846 3050B [4]
Arsenic	2.8	2.3	0.32	mg/kg	1	04/23/19	04/25/19	ND	SW846 6010D [2]	SW846 3050B [4]
Barium	37.7	23	2.1	mg/kg	1	04/23/19	04/25/19	ND	SW846 6010D [2]	SW846 3050B [4]
Beryllium	0.27	0.23	0.090	mg/kg	1	04/23/19	04/25/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cadmium	0.079 U	0.56	0.079	mg/kg	1	04/23/19	04/25/19	ND	SW846 6010D [2]	SW846 3050B [4]
Calcium	257 J	560	50	mg/kg	1	04/23/19	04/25/19	ND	SW846 6010D [2]	SW846 3050B [4]
Chromium	8.5	1.1	0.42	mg/kg	1	04/23/19	05/01/19	ND	SW846 6010D [3]	SW846 3050B [4]
Cobalt	4.2 J	5.6	0.32	mg/kg	1	04/23/19	04/25/19	ND	SW846 6010D [2]	SW846 3050B [4]
Copper	8.8	2.8	0.95	mg/kg	1	04/23/19	05/01/19	ND	SW846 6010D [3]	SW846 3050B [4]
Iron	11000	56	22	mg/kg	1	04/23/19	05/01/19	ND	SW846 6010D [3]	SW846 3050B [4]
Lead	72.4 J	2.3	0.46	mg/kg	1	04/23/19	04/25/19	ND	SW846 6010D [2]	SW846 3050B [4]
Magnesium	1050 J	560	15	mg/kg	1	04/23/19	04/25/19	ND	SW846 6010D [2]	SW846 3050B [4]
Manganese	88.3 J	1.7	0.46	mg/kg	1	04/23/19	05/01/19	ND	SW846 6010D [3]	SW846 3050B [4]
Mercury	0.19 J	0.031	0.014	mg/kg	1	04/23/19	04/23/19	LL	SW846 7471B [1]	SW846 7471B [5]
Nickel	10.3	4.5	0.40	mg/kg	1	04/23/19	04/25/19	ND	SW846 6010D [2]	SW846 3050B [4]
Potassium	595 J	1100	36	mg/kg	1	04/23/19	04/25/19	ND	SW846 6010D [2]	SW846 3050B [4]
Selenium	0.73 U	2.3	0.73	mg/kg	1	04/23/19	04/25/19	ND	SW846 6010D [2]	SW846 3050B [4]
Silver	0.19 J	0.56	0.19	mg/kg	1	04/23/19	05/01/19	ND	SW846 6010D [3]	SW846 3050B [4]
Sodium	88 U	1100	88	mg/kg	1	04/23/19	04/25/19	ND	SW846 6010D [2]	SW846 3050B [4]
Thallium	0.66 U	1.1	0.66	mg/kg	1	04/23/19	04/25/19	ND	SW846 6010D [2]	SW846 3050B [4]
Vanadium	10.4	5.6	0.21	mg/kg	1	04/23/19	05/01/19	ND	SW846 6010D [3]	SW846 3050B [4]
Zinc	61.7	5.6	2.6	mg/kg	1	04/23/19	04/25/19	ND	SW846 6010D [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA46561
(2) Instrument QC Batch: MA46577
(3) Instrument QC Batch: MA46629
(4) Prep QC Batch: MP14497
(5) Prep QC Batch: MP14503

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	PCSB-49R (10-12)		
Lab Sample ID:	JC86716-24	**Date Sampled:**	04/19/19
Matrix:	SO - Soil	**Date Received:**	04/19/19
		Percent Solids:	88.5
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	0.16 U J	0.32	0.16	mg/kg	1	05/01/19 16:31	KI	SW846 9012B/LACHAT
Solids, Percent	88.5			%	1	04/29/19 17:22	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

ARCADIS Design & Consultancy for natural and built assets

National Grid

Philly Coke

DATA REVIEW

Philadelphia, Pennsylvania

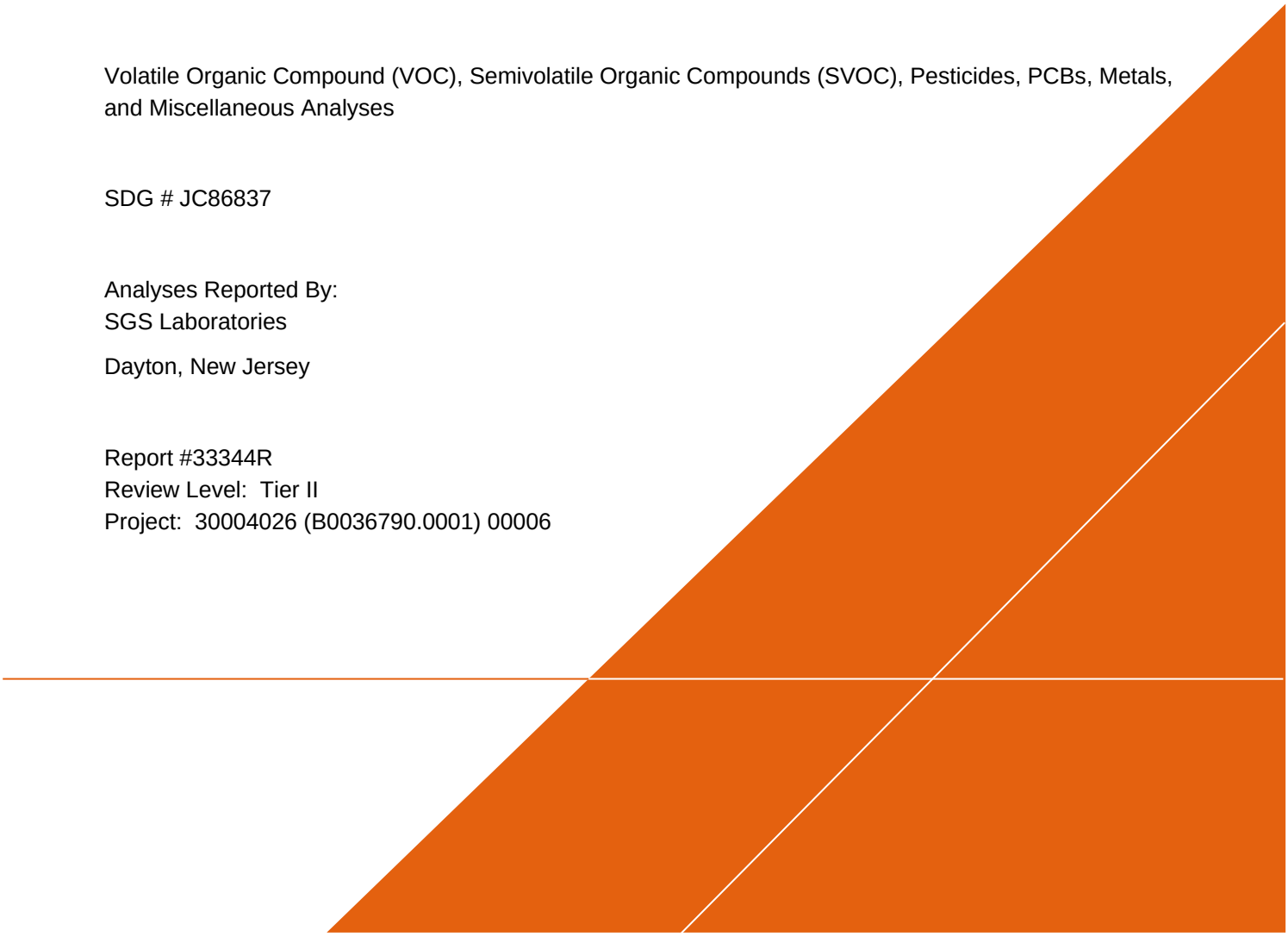
Volatile Organic Compound (VOC), Semivolatile Organic Compounds (SVOC), Pesticides, PCBs, Metals, and Miscellaneous Analyses

SDG # JC86837

Analyses Reported By:
SGS Laboratories

Dayton, New Jersey

Report #33344R
Review Level: Tier II
Project: 30004026 (B0036790.0001) 00006



SUMMARY

This data review report summarizes the review of Sample Delivery Group (SDG) # JC86837 for samples collected in association with the National Grid Philly Coke site in Philadelphia, Pennsylvania. The review was conducted as a Tier II evaluation and included review of laboratory analytical data package completeness. Field documentation was not included in this review. Included with this assessment are the post-validation annotated sample result sheets, and chain of custody (COC). Analyses were performed on the following samples

SDG Number	Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis				
						VOC	SVOC	PEST/ PCB	Metals	MISC
JC86837	PSCB-41R(0.5-2) (04-22-2019)	JC86837-1	Soil	4/22/2019		X	X	X	X	X
	PSCB-41R(9-11) (04-22-2019)	JC86837-2	Soil	4/22/2019		X	X		X	X
	TP-44R(3-5) (04-22-2019)	JC86837-3	Soil	4/22/2019		X	X		X	X
	TP-44R(5-7) (04-22-2019)	JC86837-4	Soil	4/22/2019		X	X		X	X
	TP-44R(7-9) (04-22-2019)	JC86837-5	Soil	4/22/2019		X	X		X	X
	S-135(4-6) (04-22-2019)	JC86837-6	Soil	4/22/2019		X	X		X	X
	S-135(8-10) (04-22-2019)	JC86837-7	Soil	4/22/2019		X	X		X	X
	S-136(4-6) (04-22-2019)	JC86837-8	Soil	4/22/2019		X	X		X	X
	S-136(7-9) (04-22-2019)	JC86837-9	Soil	4/22/2019		X	X		X	X
	S-111(2-4) (04-23-2019)	JC86837-10	Soil	4/23/2019		X	X		X	X
	S-111(4.5-6.5) (04-23-2019)	JC86837-11	Soil	4/23/2019		X	X		X	X
	S-107(2-4) (04-23-2019)	JC86837-12	Soil	4/23/2019		X	X		X	X

Notes:

1. PEST/PCB = Pesticides and polychlorinated biphenyls
2. SVOC = Semivolatile Organic Compounds
3. VOC = Volatile Organic Compound
4. MISC = Miscellaneous (total cyanide)

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance (QA) or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260C, 8270D, 8081A, and 8082A. Data were reviewed in accordance with the USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540/R-2017-002, January 2017 and the USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Organic Data Review, EPA540/R-99/008, October 1999 (as applicable).

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The compound was positively identified; however, the associated numerical value is an estimated concentration only.

  UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.

  JN The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.

  UB Compound considered non-detect at the listed value due to associated blank contamination.

  N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is

that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times/Preservation

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260C	Water	14 days from collection to analysis (preserved) 7 days from collection to analysis (non-preserved)	Cool to <6 °C; preserved to a pH of less than 2 s.u.
	Soil	48 hours from collection to extraction and 14 days from extraction to analysis	Cool to <6 °C.

Note:
s.u. Standard units

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore, detected sample results were not associated with blank contamination.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. VOC analysis requires that all surrogates associated with the analysis exhibit recoveries within the laboratory-established acceptance limits.

All surrogate recoveries were within control limits.

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

The MS/MSD was not performed on a sample within this SDG.

5. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) Analysis

The LCS/LCSD analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS/LCSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

All compounds associated with the LCS/LCSD analysis exhibited recoveries within the control limits.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of three times the RL is applied for soil matrices.

A field duplicate was not performed on a sample within this SDG.

7. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

8. System Performance and Overall Assessment

The laboratory narrative indicates continuing calibration deviations. These deviations are normally not evaluated in a tier II data review. Sample results that had continuing calibration recoveries that exceed the control limit high and were non detect did not require qualification. Sample results where the calibration recoveries were high and the compound was detected or calibration recoveries were low were qualified as estimated (J or UJ).

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: SW-846 8260	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks	X				X
C. Trip blanks	X				X
Laboratory Control Sample (LCS)		X		X	
Laboratory Control Sample Duplicate(LCSD)	X				X
LCS/LCSD Precision (RPD)	X				X
Matrix Spike (MS)	X				X
Matrix Spike Duplicate(MSD)	X				X
MS/MSD Precision (RPD)	X				X
Field/Lab Duplicate (RPD)	X				X
Surrogate Spike Recoveries		X		X	
Dilution Factor		X		X	
Moisture Content		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

SEMIVOLATILE ORGANIC COMPOUND (SVOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8270D	Water	7 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C
	Soil	14 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore, detected sample results were not associated with blank contamination.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. SVOC analysis requires that two of the three SVOC surrogate compounds within each fraction exhibit recoveries within the laboratory-established acceptance limits.

All surrogate recoveries were within control limits.

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

The MS/MSD exhibited acceptable recoveries and RPD between the MS/MSD recoveries.

5. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) Analysis

The LCS/LCSD analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS/LCSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

Sample locations associated with LCS/LCSD recoveries exhibiting an RPD greater than of the control limit presented in the following table.

Sample Locations	Compound
S-136(4-6) (04-22-2019) S-136(7-9) (04-22-2019) S-111(2-4) (04-23-2019) S-111(4.5-6.5) (04-23-2019) S-107(2-4) (04-23-2019)	3&4-Methylphenol Acetophenone Hexachloroethane N-Nitroso-di-n-propylamine

The criteria used to evaluate the RPD between the LCS/LCSD recoveries are presented in the following table. In the case of an RPD deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> UL	Non-detect	UJ
	Detect	J

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of three times the RL is applied for soil matrices.

A field duplicate was not performed on a sample within this SDG.

7. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

Several samples were diluted to bring target compounds within linear range of the instrument. Sample results that were reported from a secondary dilution were qualified with a “D”, indicating the result is diluted.

8. System Performance and Overall Assessment

The laboratory narrative indicates continuing calibration deviations. These deviations are normally not evaluated in a tier II data review. Sample results that had continuing calibration recoveries that exceed the control limit high and were non detect did not require qualification. Sample results where the calibration recoveries were high and the compound was detected or calibration recoveries were low were qualified as estimated (J or UJ).

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR SVOCs

SVOCs: SW-846 8270	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks		X		X	
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R	X				X
LCS/LCSD Precision (RPD)	X				X
Matrix Spike (MS) %R		X	X		
Matrix Spike Duplicate(MSD) %R		X	X		
MS/MSD Precision (RPD)		X		X	
Field/Lab Duplicate (RPD)		X		X	
Surrogate Spike Recoveries		X	X		
Dilution Factor		X		X	
Moisture Content		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

PESTICIDE ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8081A	Water	7 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C
	Soil	14 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. Herbicide analysis requires that one of the two pesticide surrogate compounds exhibit recoveries within the laboratory-established acceptance limits.

All surrogate recoveries were within control limits.

3. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

The MS/MSD exhibited acceptable recoveries and RPD between the MS/MSD recoveries.

5. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

Sample locations associated with LCS/LCSD analysis exhibiting recoveries outside of the control limits presented in the following table.

Sample Locations	Compound	LCS Recovery	LCSD Recovery
PSCB-41R(0.5-2)	Aldrin	<LL but >10%	--
	alpha-BHC	<LL but >10%	--

The criteria used to evaluate the LCS/LCSD recoveries are presented in the following table. In the case of an LCS/LCSD deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> the upper control limit (UL)	Non-detect	No Action
	Detect	J
< the lower control limit (LL) but > 10%	Non-detect	UJ
	Detect	J
< 10%	Non-detect	R
	Detect	J

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 40% for water matrices and 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

A field duplicate was not performed on a sample within this SDG.

7. Compound Identification

The retention times of all quantitated peaks must fall within the calculated retention time windows for both the primary and confirmation columns. When dual column analysis is performed the percent difference (%D) of detected sample results must be less than 40%.

Sample locations associated with %D analysis exhibiting recoveries outside of the control limits presented in the following table.

Sample Locations	Compound	%D
PSCB-41R(0.5-2)	4,4'-DDD	97.7%

The criteria used to evaluate the %D are presented in the following table. In the case of a %D deviation, the sample results are qualified as documented in the table below.

Control Limit (%D)	Qualification
>40% to 70%	J
>70% to 100%	JN
>100% [1]	R
>100% to 200% (Interference detected)[2]	J or JN
>50% (pesticide) sample results less than the RL)	U

When the pesticide sample results are less than the RL and the %D greater than 50% the sample result are raised to the RL and reported as non-detect.

Notes:

1: If the pattern is confirmed sample results will be qualified as estimated (J). If pattern exhibits interference or if the pesticide cannot be positively determined due to weathering the sample results will be qualified as tentative identification estimate (JN).

2: If interference is detected in either column the sample results will be qualified as tentative identification estimate (JN).

8. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR PESTICIDES

Pesticides; SW-846 8081	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY (GC/ECD)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks	X				X
Laboratory Control Sample (LCS)		X	X		
Laboratory Control Sample Duplicate(LCSD)	X				X
LCS/LCSD Precision (RPD)	X				X
Matrix Spike (MS)	X				X
Matrix Spike Duplicate(MSD)	X				X
MS/MSD Precision (RPD)	X				X
Field/Lab Duplicate (RPD)	X				X
Surrogate Spike Recoveries		X		X	
Column %D $\leq$ 40% (If dual column is performed for reporting-not confirmation)		X	X		
Dilution Factor		X		X	
Moisture Content		X		X	

Notes:

%RSD – relative standard deviation
%R - percent recovery
RPD - relative percent difference
%D – difference.

POLYCHLORINATED BIPHENYLS (PCBs) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8082A	Soil	14 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore, detected sample results were not associated with blank contamination.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. PCB analysis requires that one of the two PCB surrogate compounds exhibit recoveries within the laboratory-established acceptance limits.

All surrogate recoveries were within control limits.

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

The MS/MSD was not performed on a sample within this SDG.

5. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

All compounds associated with the LCS analysis exhibited recoveries within the control limits.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of three times the RL is applied for soil matrices.

A field duplicate was not performed on a sample within this SDG.

7. Compound Identification

The retention times of all quantitated peaks must fall within the calculated retention time windows for both the primary and confirmation columns. When dual column analysis is performed the relative percent difference (%RPD) of detected sample results must be less than 40%.

No Aroclors were detected in the samples within this SDG.

8. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR PCBs

PCBs; SW-846 8082A	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY (GC/ECD)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks					X
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R					X
LCS/LCSD Precision (RPD)					X
Matrix Spike (MS) %R	X				X
Matrix Spike Duplicate(MSD) %R	X				X
MS/MSD Precision (RPD)	X				X
Field/Lab Duplicate (RPD)	X				X
Surrogate Spike Recoveries		X		X	
Column (%D) (If dual column is performed-not confirmation purposes only)		X		X	
Dilution Factor		X		X	
Moisture Content		X		X	

%R - percent recovery

RPD - relative percent difference

%D – difference

INORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 6010D, 7471A, and 9012B. Data were reviewed in accordance with the USEPA CLP National Functional Guidelines for Inorganic Superfund Methods Data Review, EPA 540/R-2017-001, January 2017; and the USEPA CLP National Functional Guidelines for Inorganic Data Review, EPA 540-R-01-008, July 2002 (as applicable).

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and that it was already subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with the USEPA National Functional Guidelines:

- Concentration (C) Qualifiers
  - U The analyte was analyzed for but not detected. The associated value is the analyte instrument detection limit.
  - J The reported value was obtained from a reading less than the reporting limit (RL), but greater than or equal to the method detection limit (MDL).
- Quantitation (Q) Qualifiers
  - E The reported value is estimated due to the presence of interference.
  - N Spiked sample recovery is not within control limits.
  - * Duplicate analysis is not within control limits.
- Validation Qualifiers
  - J The analyte was positively identified; however, the associated numerical value is an estimated concentration only.
  - UJ The analyte was not detected above the reporting limit. However, the reported limit is approximate and may or may not represent the actual limit of detection.
  - UB Analyte considered non-detect at the listed value due to associated blank contamination.
  - R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

METALS ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 6010D	Water	180 days from collection to analysis	Preserved to a pH of less than 2.
	Soil	180 days from collection to analysis	Cool to <6 °C.
SW-846 7471A	Soil	28 days from collection to analysis	Cool to <6 °C.
SW-846 7470A	Water	28 days from collection to analysis	Cool to <6 °C; preserved to a pH of less than 2.

All samples were analyzed within the specified holding times.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Analytes were detected in the associated QA blanks; however, the associated sample results were greater than the BAL and/or were non-detect. No qualification of the sample results was required.

3. Matrix Spike (MS)/Matrix Spike Duplicate(MSD)/Laboratory Duplicate Analysis

MS/MSD and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

3.1 MS/MSD Analysis

All metal analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the analyte's concentration detected in the parent sample exceeds the MS concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

All analytes associated with MS/MSD recoveries were within control limits with the exception of the following analyte present in the table below.

Sample Location	Analyte	MS Recovery	MSD Recovery
S-111(2-4) (04-23-2019)	Mercury	88.3%	54.1%

The criteria used to evaluate MS/MSD recoveries are presented in the following table. In the case of an MS/MSD deviation, the sample results are qualified. The qualifications for all metals are applied to all sample results associated with this SDG.

Control limit	Sample Result	Qualification
MS/MSD percent recovery 30% to 74%	Non-detect	UJ
	Detect	J
MS/MSD percent recovery <30%	Non-detect	R
	Detect	J
MS/MSD percent recovery >125%	Non-detect	No Action
	Detect	J

3.2 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the RL. A control limit of 20% for water matrices and 35% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of one times the RL is applied for water matrices and two times the RL for soil matrices.

MS/MSD analysis was performed in replacement of the laboratory duplicate analysis. The MS/MSD analysis exhibited RPDs within the control limits.

4. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of three times the RL is applied for soil matrices.

A field duplicate was not performed on a sample within this SDG.

5. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The analytes associated with the LCS analysis must exhibit a percent recovery between the control limits of 80% and 120%.

The LCS analysis exhibited recoveries within the control limits.

6. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR METAL

METALS; SW846 6010D/7471A	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Inductively Coupled Plasma-Atomic Emission Spectrometry (ICP-AES)					
Tier II Validation					
Holding Times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method Blanks		X		X	
B. Equipment/Field Blanks	X				X
Laboratory Control Sample (LCS)		X		X	
Matrix Spike (MS) %R		X		X	
Matrix Spike Duplicate (MSD) %R		X	X		
MS/MSD Precision (RPD)		X		X	
Field/Lab Duplicate (RPD)	X				X
Total vs. Dissolved	X				X

Notes:

%R Percent recovery

RPD Relative percent difference

GENERAL CHEMISTRY ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
Cyanide by SW-846 9012	Water	14 days from collection to analysis	Cool to <6 °C; preserved to a pH of greater than 12.
	Soil		Cool to <6 °C.

All samples were analyzed within the specified holding times.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Analytes were not detected above the MDL in the associated blanks; therefore detected sample results were not associated with blank contamination.

3. Matrix Spike/Matrix Spike Duplicate (MS/MSD)/Laboratory Duplicate Analysis

MS/MSD and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

3.1 MS/MSD Analysis

All analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the analyte's concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

All analytes associated with MS/MSD recoveries were within control limits.

3.2 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the RL. A control limit of 20% for water matrices and 35% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of one times the RL is applied for water matrices and two times the RL for soil matrices.

The laboratory duplicate analysis exhibited RPD within control limits.

4. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The analytes associated with the LCS analysis must exhibit a percent recovery between the control limits of 80% and 120%.

The LCS analysis exhibited recoveries within the control limits.

5. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of three times the RL is applied for soil matrices.

A field duplicate was not performed on a sample within this SDG.

6. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR GENERAL CHEMISTRY

General Chemistry: EPA 9012	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Miscellaneous Instrumentation					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks					X
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R					X
LCS/LCSD Precision (RPD)					X
Matrix Spike (MS) %R		X	X		
Matrix Spike Duplicate(MSD) %R	X				X
MS/MSD Precision (RPD)	X				X
Field/Lab Duplicate (RPD)		X		X	
Dilution Factor		X		X	
Moisture Content					X

Notes:
%R - percent recovery
RPD - relative percent difference

VALIDATION PERFORMED BY: Andrew Korycinski

SIGNATURE:

DATE: July 19, 2019

PEER REVIEW: Dennis Capria

DATE: July 22, 2019

CHAIN OF CUSTODY
SAMPLE ANALYSIS DATA SHEETS

SGS

SLC

CHAIN OF CUSTODY

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Page 1 of 1

FED-EX Tracking #:
Bottle Order Control #: ER-041619-205
SGS Quote #:
SGS Job #: JC86837

Client / Reporting Information

Company Name: Arcadis-US
Street Address: 110 W Fayette St #300
City: Syracuse State: NY Zip: 13202
Project Contact: Corey Hoak E-mail: Lawrence.Hoak@arcadis.com
Phone #: 315-335-9493
Sampler(s) Name(s): Evan Green (603) 305-2692 Phone #:

Project Information

Project Name: Philadelphia CoR
Street: 4501 Richmond St
City: Philadelphia State: PA
Project #: B003674.0001
Client Purchase Order #: B003674.0001
Project Manager: John Brussel

Billing Information (if different from Report to)

Company Name: Same
Street Address:
City: State: Zip:
Attention:

Requested Analysis

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL - Sludge; SED-Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB - Field Blank; EB-Equipment Blank; RB - Rinse Blank; TB - Trip Blank

SGS Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Grab (G) Comp (C)	Matrix	# of bottles	Number of preserved Bottles: HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	Preserved	VS8260TCL 20	CN	ABN70 TCL20	METAL	PBOSA PEST TCL	PB082 PCB11	LAB USE ONLY
1	PSCR-41R (0.5-2)		4/23/19	910	GB	G	SO	6					3					X	X	X	X	X	X	D45
2	PSCR-41R (4-11)			1000				5					2					X	X	X	X			P1
3	TP-44R (3-5)			1035				5										X	X	X	X			L4M6
4	TP-44R (5-7)			1050				5										X	X	X	X			40110
5	TP-44R (7-9)			1105				5										X	X	X	X			
6	S-135 (4-6)			1155				5										X	X	X	X			
7	S-135 (8-10)			1210				5										X	X	X	X			
8	S-136 (4-6)			1306				5										X	X	X	X			
9	S-136 (7-9)		✓	1310	✓	✓	✓	5					✓				✓	X	X	X	X			
10	S-111 (2-4)		4/23/19	1210	EG	G	SO	5					2				1	X	X	X	X			
11	S-111 (4.5-6.5)		4/23/19	1220	EG	G	SO	5					2				1	X	X	X	X			
12	S-107 (2-4)		4/23/19	1335	EG	G	SO	5					2				1	X	X	X	X			

Turn Around Time (Business Days)

Approved By (SGS PM): / Date:

- [X] 10 Business Days
- [ ] 5 Business Days
- [ ] 3 Business Days*
- [ ] 2 Business Days*
- [ ] 1 Business Day*
- [ ] Other

All data available via Leblink

* Approval needed for 1-3 Business Day TAT

Deliverable

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] NJ Reduced (Level 3)
- [X] Full Tier I (Level 4)
- [ ] Commercial "C"
- [ ] NJ DKQP
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] MA MCP Criteria
- [ ] CT RCP Criteria
- [ ] State Forms
- [ ] EDD Format
- [ ] DOD-QSM5

Commercial "A" = Results only; Commercial "B" = Results + QC Summary
Commercial "C" = Results + QC Summary + Partial Raw data

Comments / Special Instructions

INITIAL ASESSMENT 3A (A)

LABEL VERIFICATION

http://www.sgs.com/en/terms-and-conditions

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by:	Date / Time:	Received By:	Relinquished by:	Date / Time:	Received By:
1		4/23/19 1620	1	2	4/23/19 1755	2
3			3	4		4
5			5			

Custody Seal #: [ ] Intact [ ] Not intact
Preserved where applicable: [ ] Absent
Therm. ID:
On Ice: [ ] Cooler Temp °C: 3.3 2.6

EHSA-QAC-0023-02-FORM-Dayton - Standard COC.xlsx

SGS LabLink@1039014 11:16 10-May-2019

Report of Analysis

Client Sample ID:	PSCB-41R(0.5-2)		
Lab Sample ID:	JC86837-1	**Date Sampled:**	04/22/19
Matrix:	SO - Soil	**Date Received:**	04/23/19
Method:	SW846 8260C	**Percent Solids:**	80.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	I225838.D	1	04/30/19 17:18	TDN	n/a	n/a	VI9098
Run #2	I225861.D	1	05/01/19 10:27	TDN	n/a	n/a	VI9099

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	4.8 g	10.0 ml	100 ul
Run #2	4.8 g	10.0 ml	10.0 ul

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	1400	700	ug/kg	
71-43-2	Benzene	6320	70	53	ug/kg	
74-97-5	Bromochloromethane	ND	700	60	ug/kg	
75-27-4	Bromodichloromethane	ND	280	62	ug/kg	
75-25-2	Bromoform	ND	700	57	ug/kg	
74-83-9	Bromomethane	ND	700	140	ug/kg	
78-93-3	2-Butanone (MEK)	ND	1400	530	ug/kg	
75-15-0	Carbon disulfide	ND	280	130	ug/kg	
56-23-5	Carbon tetrachloride	ND	280	77	ug/kg	
108-90-7	Chlorobenzene	ND	280	50	ug/kg	
75-00-3	Chloroethane	ND	700	97	ug/kg	
67-66-3	Chloroform	ND	280	52	ug/kg	
74-87-3	Chloromethane	ND	700	280	ug/kg	
110-82-7	Cyclohexane	4890	280	57	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	280	120	ug/kg	
124-48-1	Dibromochloromethane	ND	280	48	ug/kg	
106-93-4	1,2-Dibromoethane	ND	140	46	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	140	43	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	140	50	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	140	48	ug/kg	
75-71-8	Dichlorodifluoromethane [b]	ND	700	89	ug/kg	
75-34-3	1,1-Dichloroethane	ND	140	54	ug/kg	
107-06-2	1,2-Dichloroethane	ND	140	66	ug/kg	
75-35-4	1,1-Dichloroethene	ND	140	92	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	140	130	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	140	94	ug/kg	
78-87-5	1,2-Dichloropropane	ND	280	57	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	280	49	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	280	46	ug/kg	
100-41-4	Ethylbenzene	12300	140	78	ug/kg	
76-13-1	Freon 113	ND	700	110	ug/kg	
591-78-6	2-Hexanone	ND	700	180	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PSCB-41R(0.5-2)		
Lab Sample ID:	JC86837-1	**Date Sampled:**	04/22/19
Matrix:	SO - Soil	**Date Received:**	04/23/19
Method:	SW846 8260C	**Percent Solids:**	80.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	943	280	98	ug/kg	
79-20-9	Methyl Acetate	ND	700	200	ug/kg	
108-87-2	Methylcyclohexane	8780	280	99	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	140	49	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	700	220	ug/kg	
75-09-2	Methylene chloride	ND	700	350	ug/kg	
100-42-5	Styrene	ND	280	81	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	280	55	ug/kg	
127-18-4	Tetrachloroethene	ND	280	65	ug/kg	
108-88-3	Toluene	53400 [c]	1400	530	ug/kg	D
87-61-6	1,2,3-Trichlorobenzene	ND	700	140	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	700	140	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	280	60	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	280	48	ug/kg	
79-01-6	Trichloroethene	ND	140	110	ug/kg	
75-69-4	Trichlorofluoromethane	ND	700	96	ug/kg	
75-01-4	Vinyl chloride	ND	280	66	ug/kg	
	m,p-Xylene	51900	140	100	ug/kg	
95-47-6	o-Xylene	19100	140	82	ug/kg	
1330-20-7	Xylene (total)	71000	140	82	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%	104%	75-127%
17060-07-0	1,2-Dichloroethane-D4	105%	112%	75-130%
2037-26-5	Toluene-D8	103%	103%	80-120%
460-00-4	4-Bromofluorobenzene	115%	109%	79-127%

(a) Diluted due to high concentration of target and non-target compound.
(b) Associated CCV outside of control limits high, sample was ND.
(c) Result is from Run# 2

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Report of Analysis

Client Sample ID:	PSCB-41R(0.5-2)		
Lab Sample ID:	JC86837-1	**Date Sampled:**	04/22/19
Matrix:	SO - Soil	**Date Received:**	04/23/19
Method:	SW846 8270D SW846 8151/3546	**Percent Solids:**	80.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M153945.D	1	05/01/19 18:57	CC	04/28/19 13:30	OP20021	EM6577
Run #2	M153987.D	10	05/02/19 19:25	CC	04/28/19 13:30	OP20021	EM6579
Run #3	M153986.D	100	05/02/19 18:57	CC	04/28/19 13:30	OP20021	EM6579

	Initial Weight	Final Volume
Run #1	30.7 g	1.0 ml
Run #2	30.7 g	1.0 ml
Run #3	30.7 g	1.0 ml

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	81	20	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	200	25	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	200	34	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	200	72	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	200	150	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	200	43	ug/kg	
95-48-7	2-Methylphenol	ND	81	26	ug/kg	
	3&4-Methylphenol	ND	81	33	ug/kg	
88-75-5	2-Nitrophenol [a]	ND	200	27	ug/kg	
100-02-7	4-Nitrophenol	ND	400	110	ug/kg	
87-86-5	Pentachlorophenol [a]	ND	160	38	ug/kg	
108-95-2	Phenol	ND	81	21	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	200	27	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	200	30	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	200	24	ug/kg	
83-32-9	Acenaphthene	66200 [b]	4000	1400	ug/kg	DJ
208-96-8	Acenaphthylene	1150	40	20	ug/kg	
98-86-2	Acetophenone	ND	200	8.7	ug/kg	
120-12-7	Anthracene	28100 [c]	400	250	ug/kg	D
1912-24-9	Atrazine [a]	ND	81	17	ug/kg	
56-55-3	Benzo(a)anthracene	19400 [c]	400	110	ug/kg	D
50-32-8	Benzo(a)pyrene	14400 [c]	400	180	ug/kg	
205-99-2	Benzo(b)fluoranthene	17800 [c]	400	180	ug/kg	
191-24-2	Benzo(g,h,i)perylene	8460 [c]	400	200	ug/kg	
207-08-9	Benzo(k)fluoranthene	6970 [c]	400	190	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	81	16	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	81	9.8	ug/kg	
92-52-4	1,1'-Biphenyl	6430 [c]	810	55	ug/kg	D
100-52-7	Benzaldehyde	ND	200	10	ug/kg	
91-58-7	2-Chloronaphthalene	ND	81	9.6	ug/kg	

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Report of Analysis

Client Sample ID:	PSCB-41R(0.5-2)		
Lab Sample ID:	JC86837-1	**Date Sampled:**	04/22/19
Matrix:	SO - Soil	**Date Received:**	04/23/19
Method:	SW846 8270D SW846 8151/3546	**Percent Solids:**	80.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
106-47-8	4-Chloroaniline	ND	200	14	ug/kg	
86-74-8	Carbazole	9890 c	810	58	ug/kg	D
105-60-2	Caprolactam	ND	81	16	ug/kg	
218-01-9	Chrysene	17700 c	400	130	ug/kg	D
111-91-1	bis(2-Chloroethoxy)methane	ND	81	8.6	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	81	17	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	81	14	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	81	13	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	40	12	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	40	20	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	81	34	ug/kg	
123-91-1	1,4-Dioxane d	ND	40	27	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	2690	40	18	ug/kg	
132-64-9	Dibenzofuran	32500 c	810	160	ug/kg	D
84-74-2	Di-n-butyl phthalate	ND	81	6.6	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	81	10	ug/kg	
84-66-2	Diethyl phthalate	ND	81	8.6	ug/kg	
131-11-3	Dimethyl phthalate	ND	81	7.2	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	81	9.4	ug/kg	
206-44-0	Fluoranthene	97900 b	4000	1800	ug/kg	D
86-73-7	Fluorene	48500 b	4000	1800	ug/kg	D
118-74-1	Hexachlorobenzene	ND	81	10	ug/kg	
87-68-3	Hexachlorobutadiene	ND	40	16	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	400	16	ug/kg	
67-72-1	Hexachloroethane	ND	200	20	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	9140 c	400	190	ug/kg	D
78-59-1	Isophorone	ND	81	8.6	ug/kg	
91-57-6	2-Methylnaphthalene	22800 c	400	91	ug/kg	D
88-74-4	2-Nitroaniline	ND	200	9.5	ug/kg	
99-09-2	3-Nitroaniline	ND	200	10	ug/kg	
100-01-6	4-Nitroaniline	ND	200	10	ug/kg	
91-20-3	Naphthalene	14100 c	400	110	ug/kg	D
98-95-3	Nitrobenzene	ND	81	16	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	81	12	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	200	15	ug/kg	
85-01-8	Phenanthrene	158000 b	4000	1400	ug/kg	D
129-00-0	Pyrene	61600 b	4000	1300	ug/kg	D
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	200	10	ug/kg	

ND = Not detected MDL = Method Detection Limit
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N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PSCB-41R(0.5-2)		
Lab Sample ID:	JC86837-1	**Date Sampled:**	04/22/19
Matrix:	SO - Soil	**Date Received:**	04/23/19
Method:	SW846 8270D SW846 8151/3546	**Percent Solids:**	80.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Run# 3	Limits
367-12-4	2-Fluorophenol	57%	48%	0% [e]	23-115%
4165-62-2	Phenol-d5	51%	56%	0% [e]	27-114%
118-79-6	2,4,6-Tribromophenol	84%	86%	123%	19-152%
4165-60-0	Nitrobenzene-d5	67%	72%	83%	26-134%
321-60-8	2-Fluorobiphenyl	68%	72%	73%	39-124%
1718-51-0	Terphenyl-d14	60%	69%	69%	36-134%

(a) Associated CCV outside of control limits high, sample was ND.
(b) Result is from Run# 3
(c) Result is from Run# 2
(d) Associated CCV outside of control limits low.
(e) Outside control limits due to dilution.

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J = Indicates an estimated value
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N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PSCB-41R(0.5-2)		
Lab Sample ID:	JC86837-1	**Date Sampled:**	04/22/19
Matrix:	SO - Soil	**Date Received:**	04/23/19
Method:	SW846 8081B SW846 3546	**Percent Solids:**	80.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6G64659.D	1	05/03/19 19:01	MH	05/02/19 10:30	OP20020	G6G2001
Run #2							

	Initial Weight	Final Volume
Run #1	15.7 g	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	0.79	0.65	ug/kg	UJ
319-84-6	alpha-BHC	ND	0.79	0.64	ug/kg	UJ
319-85-7	beta-BHC	ND	0.79	0.71	ug/kg	
319-86-8	delta-BHC	ND	0.79	0.76	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	0.79	0.58	ug/kg	
5103-71-9	alpha-Chlordane	ND	0.79	0.64	ug/kg	
5103-74-2	gamma-Chlordane	ND	0.79	0.36	ug/kg	
60-57-1	Dieldrin	ND	0.79	0.54	ug/kg	
72-54-8	4,4'-DDD [a]	4.4	0.79	0.72	ug/kg	JN
72-55-9	4,4'-DDE	5.4	0.79	0.69	ug/kg	
50-29-3	4,4'-DDT	5.6	0.79	0.70	ug/kg	
72-20-8	Endrin	ND	0.79	0.61	ug/kg	
1031-07-8	Endosulfan sulfate	ND	0.79	0.61	ug/kg	
7421-93-4	Endrin aldehyde	ND	0.79	0.45	ug/kg	
959-98-8	Endosulfan-I	ND	0.79	0.45	ug/kg	
33213-65-9	Endosulfan-II	ND	0.79	0.49	ug/kg	
76-44-8	Heptachlor	ND	0.79	0.68	ug/kg	
1024-57-3	Heptachlor epoxide	ND	0.79	0.55	ug/kg	
72-43-5	Methoxychlor	ND	1.6	0.63	ug/kg	
53494-70-5	Endrin ketone	ND	0.79	0.57	ug/kg	
8001-35-2	Toxaphene	ND	20	18	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	89%		25-135%
877-09-8	Tetrachloro-m-xylene	63%		25-135%
2051-24-3	Decachlorobiphenyl	59%		10-156%
2051-24-3	Decachlorobiphenyl	171% [b]		10-156%

(a) More than 40 % RPD for detected concentrations between the two GC columns.
(b) Outside control limits due to matrix interference.

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J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PSCB-41R(0.5-2)		
Lab Sample ID:	JC86837-1	**Date Sampled:**	04/22/19
Matrix:	SO - Soil	**Date Received:**	04/23/19
Method:	SW846 8082A SW846 3546	**Percent Solids:**	80.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XX2434623.D	1	05/04/19 17:47	TR	05/02/19 10:30	OP20019	GXX6680
Run #2							

	Initial Weight	Final Volume
Run #1	15.7 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	39	18	ug/kg	
11104-28-2	Aroclor 1221	ND	39	20	ug/kg	
11141-16-5	Aroclor 1232	ND	39	30	ug/kg	
53469-21-9	Aroclor 1242	ND	39	16	ug/kg	
12672-29-6	Aroclor 1248	ND	39	35	ug/kg	
11097-69-1	Aroclor 1254	ND	39	21	ug/kg	
11096-82-5	Aroclor 1260	ND	39	17	ug/kg	
11100-14-4	Aroclor 1268	ND	39	17	ug/kg	
37324-23-5	Aroclor 1262	ND	39	26	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	140%		31-146%
877-09-8	Tetrachloro-m-xylene	335% [a]		31-146%
2051-24-3	Decachlorobiphenyl	67%		17-164%
2051-24-3	Decachlorobiphenyl	210% [a]		17-164%

(a) Outside control limits due to matrix interference.

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J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	PSCB-41R(9-11)		
Lab Sample ID:	JC86837-2	**Date Sampled:**	04/22/19
Matrix:	SO - Soil	**Date Received:**	04/23/19
Method:	SW846 8260C	**Percent Solids:**	70.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3C151614.D	1	05/01/19 16:35	PS	n/a	n/a	V3C6814
Run #2							

	Initial Weight
Run #1	5.4 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	184	13	6.5	ug/kg	
71-43-2	Benzene	1.5	0.65	0.49	ug/kg	
74-97-5	Bromochloromethane	ND	6.5	0.56	ug/kg	
75-27-4	Bromodichloromethane	ND	2.6	0.58	ug/kg	
75-25-2	Bromoform	ND	6.5	0.53	ug/kg	
74-83-9	Bromomethane	ND	6.5	1.3	ug/kg	
78-93-3	2-Butanone (MEK)	11.3	13	4.9	ug/kg	J
75-15-0	Carbon disulfide	ND	2.6	1.2	ug/kg	
56-23-5	Carbon tetrachloride	ND	2.6	0.72	ug/kg	
108-90-7	Chlorobenzene	ND	2.6	0.46	ug/kg	
75-00-3	Chloroethane	ND	6.5	0.90	ug/kg	
67-66-3	Chloroform	ND	2.6	0.49	ug/kg	
74-87-3	Chloromethane	ND	6.5	2.6	ug/kg	
110-82-7	Cyclohexane	2.3	2.6	0.53	ug/kg	J
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.6	1.1	ug/kg	
124-48-1	Dibromochloromethane	ND	2.6	0.44	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.3	0.42	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.3	0.40	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.3	0.47	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.3	0.45	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	6.5	0.83	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.3	0.50	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.3	0.61	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.3	0.86	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.3	1.2	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.3	0.87	ug/kg	
78-87-5	1,2-Dichloropropane	ND	2.6	0.53	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	2.6	0.46	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2.6	0.43	ug/kg	
100-41-4	Ethylbenzene	7.7	1.3	0.72	ug/kg	
76-13-1	Freon 113	ND	6.5	1.0	ug/kg	
591-78-6	2-Hexanone	ND	6.5	1.7	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PSCB-41R(9-11)		
Lab Sample ID:	JC86837-2	**Date Sampled:**	04/22/19
Matrix:	SO - Soil	**Date Received:**	04/23/19
Method:	SW846 8260C	**Percent Solids:**	70.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	1.1	2.6	0.91	ug/kg	J
79-20-9	Methyl Acetate	ND	6.5	1.8	ug/kg	
108-87-2	Methylcyclohexane	5.4	2.6	0.92	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.3	0.46	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK [a]	ND	6.5	2.0	ug/kg	
75-09-2	Methylene chloride	ND	6.5	3.3	ug/kg	
100-42-5	Styrene	ND	2.6	0.75	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.6	0.51	ug/kg	
127-18-4	Tetrachloroethene	ND	2.6	0.60	ug/kg	
108-88-3	Toluene	12.4	1.3	0.49	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	6.5	1.3	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	6.5	1.3	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	2.6	0.56	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2.6	0.45	ug/kg	
79-01-6	Trichloroethene	ND	1.3	1.0	ug/kg	
75-69-4	Trichlorofluoromethane [b]	ND	6.5	0.89	ug/kg	UJ
75-01-4	Vinyl chloride	ND	2.6	0.61	ug/kg	
	m,p-Xylene	73.5	1.3	0.97	ug/kg	
95-47-6	o-Xylene	31.6	1.3	0.76	ug/kg	
1330-20-7	Xylene (total)	105	1.3	0.76	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%		75-127%
17060-07-0	1,2-Dichloroethane-D4	97%		75-130%
2037-26-5	Toluene-D8	108%		80-120%
460-00-4	4-Bromofluorobenzene	114%		79-127%

(a) Associated CCV outside of control limits high, sample was ND.
(b) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS LabLink@1039014 11:16 10-May-2019

Report of Analysis

Client Sample ID:	PSCB-41R(9-11)		
Lab Sample ID:	JC86837-2	**Date Sampled:**	04/22/19
Matrix:	SO - Soil	**Date Received:**	04/23/19
Method:	SW846 8270D SW846 8151/3546	**Percent Solids:**	70.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M153938.D	1	05/01/19 15:10	CC	04/28/19 13:30	OP20021	EM6577
Run #2							

	Initial Weight	Final Volume
Run #1	30.4 g	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	93	23	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	230	28	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	230	40	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	230	83	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	230	170	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	230	50	ug/kg	
95-48-7	2-Methylphenol	ND	93	30	ug/kg	
	3&4-Methylphenol	ND	93	38	ug/kg	
88-75-5	2-Nitrophenol [a]	ND	230	31	ug/kg	
100-02-7	4-Nitrophenol	ND	460	120	ug/kg	
87-86-5	Pentachlorophenol [a]	ND	190	44	ug/kg	
108-95-2	Phenol	ND	93	24	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	230	31	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	230	35	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	230	28	ug/kg	
83-32-9	Acenaphthene	ND	46	16	ug/kg	
208-96-8	Acenaphthylene	ND	46	24	ug/kg	
98-86-2	Acetophenone	ND	230	10	ug/kg	
120-12-7	Anthracene	ND	46	28	ug/kg	
1912-24-9	Atrazine [a]	ND	93	20	ug/kg	
56-55-3	Benzo(a)anthracene	ND	46	13	ug/kg	
50-32-8	Benzo(a)pyrene	ND	46	21	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	46	21	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	46	23	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	46	22	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	93	18	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	93	11	ug/kg	
92-52-4	1,1'-Biphenyl	ND	93	6.4	ug/kg	
100-52-7	Benzaldehyde	ND	230	12	ug/kg	
91-58-7	2-Chloronaphthalene	ND	93	11	ug/kg	
106-47-8	4-Chloroaniline	ND	230	17	ug/kg	
86-74-8	Carbazole	ND	93	6.7	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PSCB-41R(9-11)
Lab Sample ID: JC86837-2
Matrix: SO - Soil
Method: SW846 8270D SW846 8151/3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/22/19
Date Received: 04/23/19
Percent Solids: 70.9

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	93	18	ug/kg	
218-01-9	Chrysene	ND	46	15	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	93	9.9	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	93	20	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	93	17	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	93	15	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	46	14	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	46	23	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	93	39	ug/kg	
123-91-1	1,4-Dioxane [b]	ND	46	31	ug/kg	UJ
53-70-3	Dibenzo(a,h)anthracene	ND	46	21	ug/kg	
132-64-9	Dibenzofuran	ND	93	19	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	93	7.6	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	93	12	ug/kg	
84-66-2	Diethyl phthalate	ND	93	9.9	ug/kg	
131-11-3	Dimethyl phthalate	ND	93	8.3	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	93	11	ug/kg	
206-44-0	Fluoranthene	ND	46	21	ug/kg	
86-73-7	Fluorene	ND	46	21	ug/kg	
118-74-1	Hexachlorobenzene	ND	93	12	ug/kg	
87-68-3	Hexachlorobutadiene	ND	46	19	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	460	18	ug/kg	
67-72-1	Hexachloroethane	ND	230	23	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	46	22	ug/kg	
78-59-1	Isophorone	ND	93	9.9	ug/kg	
91-57-6	2-Methylnaphthalene	ND	46	10	ug/kg	
88-74-4	2-Nitroaniline	ND	230	11	ug/kg	
99-09-2	3-Nitroaniline	ND	230	12	ug/kg	
100-01-6	4-Nitroaniline	ND	230	12	ug/kg	
91-20-3	Naphthalene	ND	46	13	ug/kg	
98-95-3	Nitrobenzene	ND	93	18	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	93	13	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	230	17	ug/kg	
85-01-8	Phenanthrene	ND	46	16	ug/kg	
129-00-0	Pyrene	ND	46	15	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	230	12	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	62%		23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PSCB-41R(9-11)		
Lab Sample ID:	JC86837-2	**Date Sampled:**	04/22/19
Matrix:	SO - Soil	**Date Received:**	04/23/19
Method:	SW846 8270D SW846 8151/3546	**Percent Solids:**	70.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	62%		27-114%
118-79-6	2,4,6-Tribromophenol	105%		19-152%
4165-60-0	Nitrobenzene-d5	76%		26-134%
321-60-8	2-Fluorobiphenyl	87%		39-124%
1718-51-0	Terphenyl-d14	81%		36-134%

(a) Associated CCV outside of control limits high, sample was ND.
(b) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	TP-44R(3-5)		
Lab Sample ID:	JC86837-3	**Date Sampled:**	04/22/19
Matrix:	SO - Soil	**Date Received:**	04/23/19
Method:	SW846 8260C	**Percent Solids:**	78.7
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	I225876.D	1	05/01/19 17:47	TDN	n/a	n/a	VI9099
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	3.4 g	10.0 ml	100 ul
Run #2			

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	2000	1000	ug/kg	
71-43-2	Benzene	494	100	76	ug/kg	
74-97-5	Bromochloromethane	ND	1000	86	ug/kg	
75-27-4	Bromodichloromethane	ND	400	89	ug/kg	
75-25-2	Bromoform	ND	1000	81	ug/kg	
74-83-9	Bromomethane	ND	1000	200	ug/kg	
78-93-3	2-Butanone (MEK)	ND	2000	750	ug/kg	
75-15-0	Carbon disulfide	ND	400	190	ug/kg	
56-23-5	Carbon tetrachloride	ND	400	110	ug/kg	
108-90-7	Chlorobenzene	ND	400	71	ug/kg	
75-00-3	Chloroethane	ND	1000	140	ug/kg	
67-66-3	Chloroform	ND	400	75	ug/kg	
74-87-3	Chloromethane [b]	ND	1000	390	ug/kg	
110-82-7	Cyclohexane	ND	400	81	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	400	170	ug/kg	
124-48-1	Dibromochloromethane	ND	400	68	ug/kg	
106-93-4	1,2-Dibromoethane	ND	200	65	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	200	61	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	200	72	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	200	69	ug/kg	
75-71-8	Dichlorodifluoromethane [b]	ND	1000	130	ug/kg	
75-34-3	1,1-Dichloroethane	ND	200	77	ug/kg	
107-06-2	1,2-Dichloroethane	ND	200	94	ug/kg	
75-35-4	1,1-Dichloroethene	ND	200	130	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	200	190	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	200	130	ug/kg	
78-87-5	1,2-Dichloropropane	ND	400	82	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	400	71	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	400	66	ug/kg	
100-41-4	Ethylbenzene	2290	200	110	ug/kg	
76-13-1	Freon 113	ND	1000	150	ug/kg	
591-78-6	2-Hexanone	ND	1000	250	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TP-44R(3-5)		
Lab Sample ID:	JC86837-3	**Date Sampled:**	04/22/19
Matrix:	SO - Soil	**Date Received:**	04/23/19
Method:	SW846 8260C	**Percent Solids:**	78.7
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	400	140	ug/kg	
79-20-9	Methyl Acetate	ND	1000	280	ug/kg	
108-87-2	Methylcyclohexane	ND	400	140	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	200	71	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	1000	310	ug/kg	
75-09-2	Methylene chloride	ND	1000	500	ug/kg	
100-42-5	Styrene	ND	400	120	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	400	78	ug/kg	
127-18-4	Tetrachloroethene	ND	400	93	ug/kg	
108-88-3	Toluene	1040	200	75	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	1000	200	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	1000	200	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	400	85	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	400	69	ug/kg	
79-01-6	Trichloroethene	ND	200	150	ug/kg	
75-69-4	Trichlorofluoromethane	ND	1000	140	ug/kg	
75-01-4	Vinyl chloride [b]	ND	400	94	ug/kg	
	m,p-Xylene	2950	200	150	ug/kg	
95-47-6	o-Xylene	354	200	120	ug/kg	
1330-20-7	Xylene (total)	3300	200	120	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	104%		75-127%
17060-07-0	1,2-Dichloroethane-D4	108%		75-130%
2037-26-5	Toluene-D8	102%		80-120%
460-00-4	4-Bromofluorobenzene	113%		79-127%

(a) Diluted due to high concentration of non-target compound.
(b) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID: TP-44R(3-5)
Lab Sample ID: JC86837-3
Matrix: SO - Soil
Method: SW846 8270D SW846 8151/3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/22/19
Date Received: 04/23/19
Percent Solids: 78.7

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M153943.D	1	05/01/19 18:00	CC	04/28/19 13:30	OP20021	EM6577
Run #2							

	Initial Weight	Final Volume
Run #1	30.8 g	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	83	20	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	210	25	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	210	35	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	210	73	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	210	160	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	210	44	ug/kg	
95-48-7	2-Methylphenol	ND	83	26	ug/kg	
	3&4-Methylphenol	ND	83	34	ug/kg	
88-75-5	2-Nitrophenol [a]	ND	210	27	ug/kg	
100-02-7	4-Nitrophenol	ND	410	110	ug/kg	
87-86-5	Pentachlorophenol [a]	ND	170	39	ug/kg	
108-95-2	Phenol	ND	83	22	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	210	27	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	210	31	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	210	25	ug/kg	
83-32-9	Acenaphthene	70.7	41	14	ug/kg	
208-96-8	Acenaphthylene	ND	41	21	ug/kg	
98-86-2	Acetophenone	ND	210	8.9	ug/kg	
120-12-7	Anthracene	35.1	41	25	ug/kg	J
1912-24-9	Atrazine [a]	ND	83	18	ug/kg	
56-55-3	Benzo(a)anthracene	16.5	41	12	ug/kg	J
50-32-8	Benzo(a)pyrene	ND	41	19	ug/kg	
205-99-2	Benzo(b)fluoranthene	19.2	41	18	ug/kg	J
191-24-2	Benzo(g,h,i)perylene	ND	41	21	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	41	19	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	83	16	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	83	10	ug/kg	
92-52-4	1,1'-Biphenyl	227	83	5.7	ug/kg	
100-52-7	Benzaldehyde	ND	210	10	ug/kg	
91-58-7	2-Chloronaphthalene	ND	83	9.8	ug/kg	
106-47-8	4-Chloroaniline	ND	210	15	ug/kg	
86-74-8	Carbazole	63.2	83	6.0	ug/kg	J

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: TP-44R(3-5)
Lab Sample ID: JC86837-3
Matrix: SO - Soil
Method: SW846 8270D SW846 8151/3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/22/19
Date Received: 04/23/19
Percent Solids: 78.7

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	83	16	ug/kg	
218-01-9	Chrysene	39.8	41	13	ug/kg	J
111-91-1	bis(2-Chloroethoxy)methane	ND	83	8.8	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	83	18	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	83	15	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	83	13	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	41	13	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	41	21	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	83	34	ug/kg	
123-91-1	1,4-Dioxane [b]	ND	41	27	ug/kg	UJ
53-70-3	Dibenzo(a,h)anthracene	ND	41	18	ug/kg	
132-64-9	Dibenzofuran	219	83	17	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	83	6.7	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	83	10	ug/kg	
84-66-2	Diethyl phthalate	ND	83	8.8	ug/kg	
131-11-3	Dimethyl phthalate	ND	83	7.3	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	83	9.7	ug/kg	
206-44-0	Fluoranthene	23.2	41	18	ug/kg	J
86-73-7	Fluorene	161	41	19	ug/kg	
118-74-1	Hexachlorobenzene	ND	83	10	ug/kg	
87-68-3	Hexachlorobutadiene	ND	41	17	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	410	16	ug/kg	
67-72-1	Hexachloroethane	ND	210	20	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	31.6	41	19	ug/kg	J
78-59-1	Isophorone	ND	83	8.8	ug/kg	
91-57-6	2-Methylnaphthalene	4110	41	9.3	ug/kg	
88-74-4	2-Nitroaniline	ND	210	9.7	ug/kg	
99-09-2	3-Nitroaniline	ND	210	10	ug/kg	
100-01-6	4-Nitroaniline	ND	210	11	ug/kg	
91-20-3	Naphthalene	1420	41	12	ug/kg	
98-95-3	Nitrobenzene	ND	83	16	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	83	12	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	210	15	ug/kg	
85-01-8	Phenanthrene	284	41	14	ug/kg	
129-00-0	Pyrene	70.2	41	13	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	210	10	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	46%		23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TP-44R(3-5)		
Lab Sample ID:	JC86837-3	**Date Sampled:**	04/22/19
Matrix:	SO - Soil	**Date Received:**	04/23/19
Method:	SW846 8270D SW846 8151/3546	**Percent Solids:**	78.7
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	47%		27-114%
118-79-6	2,4,6-Tribromophenol	89%		19-152%
4165-60-0	Nitrobenzene-d5	62%		26-134%
321-60-8	2-Fluorobiphenyl	72%		39-124%
1718-51-0	Terphenyl-d14	60%		36-134%

(a) Associated CCV outside of control limits high, sample was ND.
(b) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	TP-44R(5-7)		
Lab Sample ID:	JC86837-4	**Date Sampled:**	04/22/19
Matrix:	SO - Soil	**Date Received:**	04/23/19
Method:	SW846 8260C	**Percent Solids:**	76.1
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	I225877.D	1	05/01/19 18:16	TDN	n/a	n/a	VI9099
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.7 g	10.0 ml	100 ul
Run #2			

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	1300	650	ug/kg	
71-43-2	Benzene	ND	65	49	ug/kg	
74-97-5	Bromochloromethane	ND	650	56	ug/kg	
75-27-4	Bromodichloromethane	ND	260	58	ug/kg	
75-25-2	Bromoform	ND	650	53	ug/kg	
74-83-9	Bromomethane	ND	650	130	ug/kg	
78-93-3	2-Butanone (MEK)	ND	1300	490	ug/kg	
75-15-0	Carbon disulfide	ND	260	120	ug/kg	
56-23-5	Carbon tetrachloride	ND	260	72	ug/kg	
108-90-7	Chlorobenzene	ND	260	46	ug/kg	
75-00-3	Chloroethane	ND	650	90	ug/kg	
67-66-3	Chloroform	ND	260	49	ug/kg	
74-87-3	Chloromethane [b]	ND	650	260	ug/kg	
110-82-7	Cyclohexane	ND	260	53	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	260	110	ug/kg	
124-48-1	Dibromochloromethane	ND	260	44	ug/kg	
106-93-4	1,2-Dibromoethane	ND	130	43	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	130	40	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	130	47	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	130	45	ug/kg	
75-71-8	Dichlorodifluoromethane [b]	ND	650	83	ug/kg	
75-34-3	1,1-Dichloroethane	ND	130	50	ug/kg	
107-06-2	1,2-Dichloroethane	ND	130	62	ug/kg	
75-35-4	1,1-Dichloroethene	ND	130	86	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	130	130	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	130	87	ug/kg	
78-87-5	1,2-Dichloropropane	ND	260	53	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	260	46	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	260	43	ug/kg	
100-41-4	Ethylbenzene	ND	130	72	ug/kg	
76-13-1	Freon 113	ND	650	100	ug/kg	
591-78-6	2-Hexanone	ND	650	170	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: TP-44R(5-7)
Lab Sample ID: JC86837-4
Matrix: SO - Soil
Method: SW846 8260C
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/22/19
Date Received: 04/23/19
Percent Solids: 76.1

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	260	91	ug/kg	
79-20-9	Methyl Acetate	ND	650	180	ug/kg	
108-87-2	Methylcyclohexane	ND	260	93	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	130	46	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	650	200	ug/kg	
75-09-2	Methylene chloride	ND	650	330	ug/kg	
100-42-5	Styrene	ND	260	75	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	260	51	ug/kg	
127-18-4	Tetrachloroethene	ND	260	61	ug/kg	
108-88-3	Toluene	68.4	130	49	ug/kg	J
87-61-6	1,2,3-Trichlorobenzene	ND	650	130	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	650	130	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	260	56	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	260	45	ug/kg	
79-01-6	Trichloroethene	ND	130	100	ug/kg	
75-69-4	Trichlorofluoromethane	ND	650	89	ug/kg	
75-01-4	Vinyl chloride [b]	ND	260	61	ug/kg	
	m,p-Xylene	ND	130	98	ug/kg	
95-47-6	o-Xylene	ND	130	76	ug/kg	
1330-20-7	Xylene (total)	ND	130	76	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	104%		75-127%
17060-07-0	1,2-Dichloroethane-D4	106%		75-130%
2037-26-5	Toluene-D8	102%		80-120%
460-00-4	4-Bromofluorobenzene	116%		79-127%

(a) Diluted due to high concentration of non-target compound.
(b) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID: TP-44R(5-7)
Lab Sample ID: JC86837-4
Matrix: SO - Soil
Method: SW846 8270D SW846 8151/3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/22/19
Date Received: 04/23/19
Percent Solids: 76.1

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M153940.D	1	05/01/19 16:07	CC	04/28/19 13:30	OP20021	EM6577
Run #2							

	Initial Weight	Final Volume
Run #1	30.2 g	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	87	21	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	220	27	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	220	37	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	220	77	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	220	160	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	220	47	ug/kg	
95-48-7	2-Methylphenol	ND	87	28	ug/kg	
	3&4-Methylphenol	ND	87	36	ug/kg	
88-75-5	2-Nitrophenol [a]	ND	220	29	ug/kg	
100-02-7	4-Nitrophenol	ND	440	120	ug/kg	
87-86-5	Pentachlorophenol [a]	ND	170	41	ug/kg	
108-95-2	Phenol	ND	87	23	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	220	29	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	220	33	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	220	26	ug/kg	
83-32-9	Acenaphthene	671	44	15	ug/kg	
208-96-8	Acenaphthylene	ND	44	22	ug/kg	
98-86-2	Acetophenone	ND	220	9.4	ug/kg	
120-12-7	Anthracene	226	44	27	ug/kg	
1912-24-9	Atrazine [a]	ND	87	19	ug/kg	
56-55-3	Benzo(a)anthracene	32.7	44	12	ug/kg	J
50-32-8	Benzo(a)pyrene	ND	44	20	ug/kg	
205-99-2	Benzo(b)fluoranthene	21.8	44	19	ug/kg	J
191-24-2	Benzo(g,h,i)perylene	ND	44	22	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	44	20	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	87	17	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	87	11	ug/kg	
92-52-4	1,1'-Biphenyl	ND	87	6.0	ug/kg	
100-52-7	Benzaldehyde	ND	220	11	ug/kg	
91-58-7	2-Chloronaphthalene	ND	87	10	ug/kg	
106-47-8	4-Chloroaniline	ND	220	16	ug/kg	
86-74-8	Carbazole	ND	87	6.3	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: TP-44R(5-7)
Lab Sample ID: JC86837-4
Matrix: SO - Soil
Method: SW846 8270D SW846 8151/3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/22/19
Date Received: 04/23/19
Percent Solids: 76.1

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	87	17	ug/kg	
218-01-9	Chrysene	29.6	44	14	ug/kg	J
111-91-1	bis(2-Chloroethoxy)methane	ND	87	9.3	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	87	19	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	87	16	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	87	14	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	44	13	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	44	22	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	87	36	ug/kg	
123-91-1	1,4-Dioxane [b]	ND	44	29	ug/kg	UJ
53-70-3	Dibenzo(a,h)anthracene	ND	44	19	ug/kg	
132-64-9	Dibenzofuran	600	87	18	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	87	7.1	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	87	11	ug/kg	
84-66-2	Diethyl phthalate	ND	87	9.3	ug/kg	
131-11-3	Dimethyl phthalate	ND	87	7.7	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	87	10	ug/kg	
206-44-0	Fluoranthene	134	44	19	ug/kg	
86-73-7	Fluorene	1210	44	20	ug/kg	
118-74-1	Hexachlorobenzene	ND	87	11	ug/kg	
87-68-3	Hexachlorobutadiene	ND	44	17	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	440	17	ug/kg	
67-72-1	Hexachloroethane	ND	220	22	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	34.7	44	20	ug/kg	J
78-59-1	Isophorone	ND	87	9.3	ug/kg	
91-57-6	2-Methylnaphthalene	ND	44	9.8	ug/kg	
88-74-4	2-Nitroaniline	ND	220	10	ug/kg	
99-09-2	3-Nitroaniline	ND	220	11	ug/kg	
100-01-6	4-Nitroaniline	ND	220	11	ug/kg	
91-20-3	Naphthalene	ND	44	12	ug/kg	
98-95-3	Nitrobenzene	ND	87	17	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	87	13	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	220	16	ug/kg	
85-01-8	Phenanthrene	236	44	15	ug/kg	
129-00-0	Pyrene	154	44	14	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	220	11	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	65%		23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TP-44R(5-7)		
Lab Sample ID:	JC86837-4	**Date Sampled:**	04/22/19
Matrix:	SO - Soil	**Date Received:**	04/23/19
Method:	SW846 8270D SW846 8151/3546	**Percent Solids:**	76.1
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	60%		27-114%
118-79-6	2,4,6-Tribromophenol	112%		19-152%
4165-60-0	Nitrobenzene-d5	81%		26-134%
321-60-8	2-Fluorobiphenyl	95%		39-124%
1718-51-0	Terphenyl-d14	63%		36-134%

(a) Associated CCV outside of control limits high, sample was ND.
(b) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	TP-44R(7-9)		
Lab Sample ID:	JC86837-5	**Date Sampled:**	04/22/19
Matrix:	SO - Soil	**Date Received:**	04/23/19
Method:	SW846 8260C	**Percent Solids:**	77.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3C151615.D	1	05/01/19 16:58	PS	n/a	n/a	V3C6814
Run #2							

	Initial Weight
Run #1	5.3 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	44.9	12	6.1	ug/kg	
71-43-2	Benzene	1.2	0.61	0.46	ug/kg	
74-97-5	Bromochloromethane	ND	6.1	0.52	ug/kg	
75-27-4	Bromodichloromethane	ND	2.4	0.54	ug/kg	
75-25-2	Bromoform	ND	6.1	0.49	ug/kg	
74-83-9	Bromomethane	ND	6.1	1.2	ug/kg	
78-93-3	2-Butanone (MEK)	ND	12	4.5	ug/kg	
75-15-0	Carbon disulfide	ND	2.4	1.1	ug/kg	
56-23-5	Carbon tetrachloride	ND	2.4	0.67	ug/kg	
108-90-7	Chlorobenzene	ND	2.4	0.43	ug/kg	
75-00-3	Chloroethane	ND	6.1	0.83	ug/kg	
67-66-3	Chloroform	ND	2.4	0.45	ug/kg	
74-87-3	Chloromethane	ND	6.1	2.4	ug/kg	
110-82-7	Cyclohexane	ND	2.4	0.49	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.4	1.0	ug/kg	
124-48-1	Dibromochloromethane	ND	2.4	0.41	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.2	0.39	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.2	0.37	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.2	0.43	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.2	0.42	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	6.1	0.77	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.2	0.47	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.2	0.57	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.2	0.79	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.2	1.2	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.2	0.81	ug/kg	
78-87-5	1,2-Dichloropropane	ND	2.4	0.49	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	2.4	0.43	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2.4	0.40	ug/kg	
100-41-4	Ethylbenzene	ND	1.2	0.67	ug/kg	
76-13-1	Freon 113	ND	6.1	0.92	ug/kg	
591-78-6	2-Hexanone	ND	6.1	1.5	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: TP-44R(7-9)
Lab Sample ID: JC86837-5
Matrix: SO - Soil
Method: SW846 8260C
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/22/19
Date Received: 04/23/19
Percent Solids: 77.9

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	2.4	0.84	ug/kg	
79-20-9	Methyl Acetate	ND	6.1	1.7	ug/kg	
108-87-2	Methylcyclohexane	ND	2.4	0.86	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.2	0.43	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK [a]	ND	6.1	1.9	ug/kg	
75-09-2	Methylene chloride	ND	6.1	3.0	ug/kg	
100-42-5	Styrene	ND	2.4	0.70	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.4	0.47	ug/kg	
127-18-4	Tetrachloroethene	ND	2.4	0.56	ug/kg	
108-88-3	Toluene	2.3	1.2	0.46	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	6.1	1.2	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	6.1	1.2	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	2.4	0.52	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2.4	0.41	ug/kg	
79-01-6	Trichloroethene	ND	1.2	0.92	ug/kg	
75-69-4	Trichlorofluoromethane [b]	ND	6.1	0.82	ug/kg	UJ
75-01-4	Vinyl chloride	ND	2.4	0.57	ug/kg	
	m,p-Xylene	ND	1.2	0.90	ug/kg	
95-47-6	o-Xylene	ND	1.2	0.71	ug/kg	
1330-20-7	Xylene (total)	ND	1.2	0.71	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	99%		75-127%
17060-07-0	1,2-Dichloroethane-D4	95%		75-130%
2037-26-5	Toluene-D8	102%		80-120%
460-00-4	4-Bromofluorobenzene	102%		79-127%

(a) Associated CCV outside of control limits high, sample was ND.
(b) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS LabLink@1039014 11:16 10-May-2019

Report of Analysis

Client Sample ID:	TP-44R(7-9)		
Lab Sample ID:	JC86837-5	**Date Sampled:**	04/22/19
Matrix:	SO - Soil	**Date Received:**	04/23/19
Method:	SW846 8270D SW846 8151/3546	**Percent Solids:**	77.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M153939.D	1	05/01/19 15:38	CC	04/28/19 13:30	OP20021	EM6577
Run #2							

	Initial Weight	Final Volume
Run #1	30.6 g	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	84	21	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	210	26	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	210	36	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	210	75	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	210	160	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	210	45	ug/kg	
95-48-7	2-Methylphenol	ND	84	27	ug/kg	
	3&4-Methylphenol	ND	84	34	ug/kg	
88-75-5	2-Nitrophenol [a]	ND	210	28	ug/kg	
100-02-7	4-Nitrophenol	ND	420	110	ug/kg	
87-86-5	Pentachlorophenol [a]	ND	170	39	ug/kg	
108-95-2	Phenol	ND	84	22	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	210	28	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	210	31	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	210	25	ug/kg	
83-32-9	Acenaphthene	29.3	42	14	ug/kg	J
208-96-8	Acenaphthylene	ND	42	21	ug/kg	
98-86-2	Acetophenone	ND	210	9.0	ug/kg	
120-12-7	Anthracene	ND	42	26	ug/kg	
1912-24-9	Atrazine [a]	ND	84	18	ug/kg	
56-55-3	Benzo(a)anthracene	ND	42	12	ug/kg	
50-32-8	Benzo(a)pyrene	ND	42	19	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	42	19	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	42	21	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	42	20	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	84	16	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	84	10	ug/kg	
92-52-4	1,1'-Biphenyl	6.7	84	5.7	ug/kg	J
100-52-7	Benzaldehyde	ND	210	10	ug/kg	
91-58-7	2-Chloronaphthalene	ND	84	10	ug/kg	
106-47-8	4-Chloroaniline	ND	210	15	ug/kg	
86-74-8	Carbazole	ND	84	6.1	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: TP-44R(7-9)
Lab Sample ID: JC86837-5
Matrix: SO - Soil
Method: SW846 8270D SW846 8151/3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/22/19
Date Received: 04/23/19
Percent Solids: 77.9

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	84	17	ug/kg	
218-01-9	Chrysene	ND	42	13	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	84	9.0	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	84	18	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	84	15	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	84	14	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	42	13	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	42	21	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	84	35	ug/kg	
123-91-1	1,4-Dioxane [b]	ND	42	28	ug/kg	UJ
53-70-3	Dibenzo(a,h)anthracene	ND	42	19	ug/kg	
132-64-9	Dibenzofuran	ND	84	17	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	84	6.8	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	84	10	ug/kg	
84-66-2	Diethyl phthalate	ND	84	8.9	ug/kg	
131-11-3	Dimethyl phthalate	ND	84	7.5	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	84	9.8	ug/kg	
206-44-0	Fluoranthene	ND	42	19	ug/kg	
86-73-7	Fluorene	ND	42	19	ug/kg	
118-74-1	Hexachlorobenzene	ND	84	11	ug/kg	
87-68-3	Hexachlorobutadiene	ND	42	17	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	420	17	ug/kg	
67-72-1	Hexachloroethane	ND	210	21	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	42	20	ug/kg	
78-59-1	Isophorone	ND	84	9.0	ug/kg	
91-57-6	2-Methylnaphthalene	14.7	42	9.5	ug/kg	J
88-74-4	2-Nitroaniline	ND	210	9.9	ug/kg	
99-09-2	3-Nitroaniline	ND	210	10	ug/kg	
100-01-6	4-Nitroaniline	ND	210	11	ug/kg	
91-20-3	Naphthalene	ND	42	12	ug/kg	
98-95-3	Nitrobenzene	ND	84	16	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	84	12	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	210	15	ug/kg	
85-01-8	Phenanthrene	ND	42	14	ug/kg	
129-00-0	Pyrene	ND	42	13	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	210	11	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	63%		23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: TP-44R(7-9)
Lab Sample ID: JC86837-5
Matrix: SO - Soil
Method: SW846 8270D SW846 8151/3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/22/19
Date Received: 04/23/19
Percent Solids: 77.9

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	63%		27-114%
118-79-6	2,4,6-Tribromophenol	109%		19-152%
4165-60-0	Nitrobenzene-d5	77%		26-134%
321-60-8	2-Fluorobiphenyl	86%		39-124%
1718-51-0	Terphenyl-d14	79%		36-134%

(a) Associated CCV outside of control limits high, sample was ND.
(b) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	S-135(4-6)		
Lab Sample ID:	JC86837-6	**Date Sampled:**	04/22/19
Matrix:	SO - Soil	**Date Received:**	04/23/19
Method:	SW846 8260C	**Percent Solids:**	71.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	I225878.D	1	05/01/19 18:45	TDN	n/a	n/a	VI9099
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	4.8 g	10.0 ml	100 ul
Run #2			

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	1700	830	ug/kg	
71-43-2	Benzene	ND	83	63	ug/kg	
74-97-5	Bromochloromethane	ND	830	71	ug/kg	
75-27-4	Bromodichloromethane	ND	330	74	ug/kg	
75-25-2	Bromoform	ND	830	67	ug/kg	
74-83-9	Bromomethane	ND	830	170	ug/kg	
78-93-3	2-Butanone (MEK)	ND	1700	620	ug/kg	
75-15-0	Carbon disulfide	ND	330	150	ug/kg	
56-23-5	Carbon tetrachloride	ND	330	91	ug/kg	
108-90-7	Chlorobenzene	ND	330	59	ug/kg	
75-00-3	Chloroethane	ND	830	110	ug/kg	
67-66-3	Chloroform	ND	330	62	ug/kg	
74-87-3	Chloromethane [b]	ND	830	330	ug/kg	
110-82-7	Cyclohexane	ND	330	67	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	330	140	ug/kg	
124-48-1	Dibromochloromethane	ND	330	56	ug/kg	
106-93-4	1,2-Dibromoethane	ND	170	54	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	170	51	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	170	60	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	170	57	ug/kg	
75-71-8	Dichlorodifluoromethane [b]	ND	830	110	ug/kg	
75-34-3	1,1-Dichloroethane	ND	170	64	ug/kg	
107-06-2	1,2-Dichloroethane	ND	170	78	ug/kg	
75-35-4	1,1-Dichloroethene	ND	170	110	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	170	160	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	170	110	ug/kg	
78-87-5	1,2-Dichloropropane	ND	330	68	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	330	59	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	330	54	ug/kg	
100-41-4	Ethylbenzene	119	170	92	ug/kg	J
76-13-1	Freon 113	ND	830	130	ug/kg	
591-78-6	2-Hexanone	ND	830	210	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-135(4-6)		
Lab Sample ID:	JC86837-6	**Date Sampled:**	04/22/19
Matrix:	SO - Soil	**Date Received:**	04/23/19
Method:	SW846 8260C	**Percent Solids:**	71.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	330	120	ug/kg	
79-20-9	Methyl Acetate	ND	830	230	ug/kg	
108-87-2	Methylcyclohexane	ND	330	120	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	170	59	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	830	260	ug/kg	
75-09-2	Methylene chloride	ND	830	420	ug/kg	
100-42-5	Styrene	ND	330	96	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	330	65	ug/kg	
127-18-4	Tetrachloroethene	ND	330	77	ug/kg	
108-88-3	Toluene	2070	170	62	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	830	170	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	830	170	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	330	71	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	330	57	ug/kg	
79-01-6	Trichloroethene	ND	170	130	ug/kg	
75-69-4	Trichlorofluoromethane	ND	830	110	ug/kg	
75-01-4	Vinyl chloride [b]	ND	330	78	ug/kg	
	m,p-Xylene	212	170	120	ug/kg	
95-47-6	o-Xylene	ND	170	97	ug/kg	
1330-20-7	Xylene (total)	212	170	97	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%		75-127%
17060-07-0	1,2-Dichloroethane-D4	100%		75-130%
2037-26-5	Toluene-D8	103%		80-120%
460-00-4	4-Bromofluorobenzene	124%		79-127%

(a) Diluted due to high concentration of target and non-target compound.
(b) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID: S-135(4-6)
Lab Sample ID: JC86837-6
Matrix: SO - Soil
Method: SW846 8270D SW846 8151/3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/22/19
Date Received: 04/23/19
Percent Solids: 71.3

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M153942.D	1	05/01/19 17:32	CC	04/28/19 13:30	OP20021	EM6577
Run #2							

	Initial Weight	Final Volume
Run #1	30.2 g	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	93	23	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	230	28	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	230	40	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	230	83	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	230	170	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	230	50	ug/kg	
95-48-7	2-Methylphenol	ND	93	30	ug/kg	
	3&4-Methylphenol	82.7	93	38	ug/kg	J
88-75-5	2-Nitrophenol [a]	ND	230	31	ug/kg	
100-02-7	4-Nitrophenol	ND	460	120	ug/kg	
87-86-5	Pentachlorophenol [a]	ND	190	44	ug/kg	
108-95-2	Phenol	ND	93	24	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	230	31	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	230	35	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	230	28	ug/kg	
83-32-9	Acenaphthene	216	46	16	ug/kg	
208-96-8	Acenaphthylene	ND	46	24	ug/kg	
98-86-2	Acetophenone	ND	230	10	ug/kg	
120-12-7	Anthracene	114	46	28	ug/kg	
1912-24-9	Atrazine [a]	ND	93	20	ug/kg	
56-55-3	Benzo(a)anthracene	126	46	13	ug/kg	
50-32-8	Benzo(a)pyrene	143	46	21	ug/kg	
205-99-2	Benzo(b)fluoranthene	152	46	21	ug/kg	
191-24-2	Benzo(g,h,i)perylene	96.6	46	23	ug/kg	
207-08-9	Benzo(k)fluoranthene	62.3	46	22	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	93	18	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	93	11	ug/kg	
92-52-4	1,1'-Biphenyl	ND	93	6.4	ug/kg	
100-52-7	Benzaldehyde	ND	230	12	ug/kg	
91-58-7	2-Chloronaphthalene	ND	93	11	ug/kg	
106-47-8	4-Chloroaniline	ND	230	17	ug/kg	
86-74-8	Carbazole	ND	93	6.7	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-135(4-6)
Lab Sample ID: JC86837-6
Matrix: SO - Soil
Method: SW846 8270D SW846 8151/3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/22/19
Date Received: 04/23/19
Percent Solids: 71.3

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	93	18	ug/kg	
218-01-9	Chrysene	150	46	15	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	93	9.9	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	93	20	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	93	17	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	93	15	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	46	14	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	46	23	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	93	39	ug/kg	
123-91-1	1,4-Dioxane [b]	ND	46	31	ug/kg	UJ
53-70-3	Dibenzo(a,h)anthracene	28.7	46	21	ug/kg	J
132-64-9	Dibenzofuran	131	93	19	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	93	7.6	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	93	12	ug/kg	
84-66-2	Diethyl phthalate	ND	93	9.9	ug/kg	
131-11-3	Dimethyl phthalate	ND	93	8.3	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	93	11	ug/kg	
206-44-0	Fluoranthene	305	46	21	ug/kg	
86-73-7	Fluorene	302	46	21	ug/kg	
118-74-1	Hexachlorobenzene	ND	93	12	ug/kg	
87-68-3	Hexachlorobutadiene	ND	46	19	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	460	18	ug/kg	
67-72-1	Hexachloroethane	ND	230	23	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	105	46	22	ug/kg	
78-59-1	Isophorone	ND	93	9.9	ug/kg	
91-57-6	2-Methylnaphthalene	108	46	10	ug/kg	
88-74-4	2-Nitroaniline	ND	230	11	ug/kg	
99-09-2	3-Nitroaniline	ND	230	12	ug/kg	
100-01-6	4-Nitroaniline	ND	230	12	ug/kg	
91-20-3	Naphthalene	104	46	13	ug/kg	
98-95-3	Nitrobenzene	ND	93	18	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	93	13	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	230	17	ug/kg	
85-01-8	Phenanthrene	142	46	16	ug/kg	
129-00-0	Pyrene	274	46	15	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	230	12	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	59%		23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-135(4-6)		
Lab Sample ID:	JC86837-6	**Date Sampled:**	04/22/19
Matrix:	SO - Soil	**Date Received:**	04/23/19
Method:	SW846 8270D SW846 8151/3546	**Percent Solids:**	71.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	56%		27-114%
118-79-6	2,4,6-Tribromophenol	100%		19-152%
4165-60-0	Nitrobenzene-d5	75%		26-134%
321-60-8	2-Fluorobiphenyl	89%		39-124%
1718-51-0	Terphenyl-d14	70%		36-134%

(a) Associated CCV outside of control limits high, sample was ND.
(b) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	S-135(8-10)		
Lab Sample ID:	JC86837-7	**Date Sampled:**	04/22/19
Matrix:	SO - Soil	**Date Received:**	04/23/19
Method:	SW846 8260C	**Percent Solids:**	69.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3C151616.D	1	05/01/19 17:21	PS	n/a	n/a	V3C6814
Run #2							

	Initial Weight
Run #1	5.6 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	105	13	6.4	ug/kg	
71-43-2	Benzene	ND	0.64	0.48	ug/kg	
74-97-5	Bromochloromethane	ND	6.4	0.55	ug/kg	
75-27-4	Bromodichloromethane	ND	2.6	0.57	ug/kg	
75-25-2	Bromoform	ND	6.4	0.51	ug/kg	
74-83-9	Bromomethane	ND	6.4	1.3	ug/kg	
78-93-3	2-Butanone (MEK)	9.6	13	4.8	ug/kg	J
75-15-0	Carbon disulfide	ND	2.6	1.2	ug/kg	
56-23-5	Carbon tetrachloride	ND	2.6	0.70	ug/kg	
108-90-7	Chlorobenzene	ND	2.6	0.45	ug/kg	
75-00-3	Chloroethane	ND	6.4	0.88	ug/kg	
67-66-3	Chloroform	ND	2.6	0.48	ug/kg	
74-87-3	Chloromethane	ND	6.4	2.5	ug/kg	
110-82-7	Cyclohexane	ND	2.6	0.52	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.6	1.1	ug/kg	
124-48-1	Dibromochloromethane	ND	2.6	0.43	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.3	0.42	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.3	0.39	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.3	0.46	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.3	0.44	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	6.4	0.81	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.3	0.49	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.3	0.60	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.3	0.84	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.3	1.2	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.3	0.85	ug/kg	
78-87-5	1,2-Dichloropropane	ND	2.6	0.52	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	2.6	0.45	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2.6	0.42	ug/kg	
100-41-4	Ethylbenzene	ND	1.3	0.71	ug/kg	
76-13-1	Freon 113	ND	6.4	0.97	ug/kg	
591-78-6	2-Hexanone	ND	6.4	1.6	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-135(8-10)		
Lab Sample ID:	JC86837-7	**Date Sampled:**	04/22/19
Matrix:	SO - Soil	**Date Received:**	04/23/19
Method:	SW846 8260C	**Percent Solids:**	69.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	2.6	0.89	ug/kg	
79-20-9	Methyl Acetate	ND	6.4	1.8	ug/kg	
108-87-2	Methylcyclohexane	ND	2.6	0.90	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.3	0.45	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK [a]	ND	6.4	2.0	ug/kg	
75-09-2	Methylene chloride	ND	6.4	3.2	ug/kg	
100-42-5	Styrene	ND	2.6	0.73	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.6	0.50	ug/kg	
127-18-4	Tetrachloroethene	ND	2.6	0.59	ug/kg	
108-88-3	Toluene	0.80	1.3	0.48	ug/kg	J
87-61-6	1,2,3-Trichlorobenzene	ND	6.4	1.3	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	6.4	1.3	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	2.6	0.54	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2.6	0.44	ug/kg	
79-01-6	Trichloroethene	ND	1.3	0.97	ug/kg	
75-69-4	Trichlorofluoromethane [b]	ND	6.4	0.87	ug/kg	UJ
75-01-4	Vinyl chloride	ND	2.6	0.60	ug/kg	
	m,p-Xylene	ND	1.3	0.95	ug/kg	
95-47-6	o-Xylene	ND	1.3	0.74	ug/kg	
1330-20-7	Xylene (total)	ND	1.3	0.74	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	95%		75-127%
17060-07-0	1,2-Dichloroethane-D4	95%		75-130%
2037-26-5	Toluene-D8	105%		80-120%
460-00-4	4-Bromofluorobenzene	112%		79-127%

(a) Associated CCV outside of control limits high, sample was ND.
(b) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS LabLink@1039014 11:16 10-May-2019

Report of Analysis

Client Sample ID: S-135(8-10)
Lab Sample ID: JC86837-7
Matrix: SO - Soil
Method: SW846 8270D SW846 8151/3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/22/19
Date Received: 04/23/19
Percent Solids: 69.9

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	M153941.D	1	05/01/19 16:35	CC	04/28/19 13:30	OP20021	EM6577
Run #2							

	Initial Weight	Final Volume
Run #1	30.2 g	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	95	23	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	240	29	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	240	40	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	240	84	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	240	180	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	240	51	ug/kg	
95-48-7	2-Methylphenol	ND	95	30	ug/kg	
	3&4-Methylphenol	ND	95	39	ug/kg	
88-75-5	2-Nitrophenol [a]	ND	240	31	ug/kg	
100-02-7	4-Nitrophenol	ND	470	130	ug/kg	
87-86-5	Pentachlorophenol [a]	ND	190	44	ug/kg	
108-95-2	Phenol	ND	95	25	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	240	31	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	240	35	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	240	28	ug/kg	
83-32-9	Acenaphthene	ND	47	16	ug/kg	
208-96-8	Acenaphthylene	ND	47	24	ug/kg	
98-86-2	Acetophenone	ND	240	10	ug/kg	
120-12-7	Anthracene	ND	47	29	ug/kg	
1912-24-9	Atrazine [a]	ND	95	20	ug/kg	
56-55-3	Benzo(a)anthracene	42.2	47	13	ug/kg	J
50-32-8	Benzo(a)pyrene	40.8	47	22	ug/kg	J
205-99-2	Benzo(b)fluoranthene	49.2	47	21	ug/kg	
191-24-2	Benzo(g,h,i)perylene	29.1	47	24	ug/kg	J
207-08-9	Benzo(k)fluoranthene	ND	47	22	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	95	18	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	95	12	ug/kg	
92-52-4	1,1'-Biphenyl	9.1	95	6.5	ug/kg	J
100-52-7	Benzaldehyde	ND	240	12	ug/kg	
91-58-7	2-Chloronaphthalene	ND	95	11	ug/kg	
106-47-8	4-Chloroaniline	ND	240	17	ug/kg	
86-74-8	Carbazole	7.1	95	6.9	ug/kg	J

ND = Not detected MDL = Method Detection Limit
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J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-135(8-10)
Lab Sample ID: JC86837-7
Matrix: SO - Soil
Method: SW846 8270D SW846 8151/3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/22/19
Date Received: 04/23/19
Percent Solids: 69.9

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	95	19	ug/kg	
218-01-9	Chrysene	39.1	47	15	ug/kg	J
111-91-1	bis(2-Chloroethoxy)methane	ND	95	10	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	95	20	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	95	17	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	95	15	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	47	15	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	47	24	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	95	40	ug/kg	
123-91-1	1,4-Dioxane [b]	ND	47	31	ug/kg	UJ
53-70-3	Dibenzo(a,h)anthracene	ND	47	21	ug/kg	
132-64-9	Dibenzofuran	ND	95	19	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	95	7.7	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	95	12	ug/kg	
84-66-2	Diethyl phthalate	ND	95	10	ug/kg	
131-11-3	Dimethyl phthalate	ND	95	8.4	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	95	11	ug/kg	
206-44-0	Fluoranthene	48.1	47	21	ug/kg	
86-73-7	Fluorene	ND	47	22	ug/kg	
118-74-1	Hexachlorobenzene	ND	95	12	ug/kg	
87-68-3	Hexachlorobutadiene	ND	47	19	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	470	19	ug/kg	
67-72-1	Hexachloroethane	ND	240	23	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	46.4	47	22	ug/kg	J
78-59-1	Isophorone	ND	95	10	ug/kg	
91-57-6	2-Methylnaphthalene	ND	47	11	ug/kg	
88-74-4	2-Nitroaniline	ND	240	11	ug/kg	
99-09-2	3-Nitroaniline	ND	240	12	ug/kg	
100-01-6	4-Nitroaniline	ND	240	12	ug/kg	
91-20-3	Naphthalene	25.8	47	13	ug/kg	J
98-95-3	Nitrobenzene	ND	95	18	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	95	14	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	240	17	ug/kg	
85-01-8	Phenanthrene	34.3	47	16	ug/kg	J
129-00-0	Pyrene	57.4	47	15	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	240	12	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	59%		23-115%

ND = Not detected MDL = Method Detection Limit
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E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-135(8-10)		
Lab Sample ID:	JC86837-7	**Date Sampled:**	04/22/19
Matrix:	SO - Soil	**Date Received:**	04/23/19
Method:	SW846 8270D SW846 8151/3546	**Percent Solids:**	69.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	58%		27-114%
118-79-6	2,4,6-Tribromophenol	102%		19-152%
4165-60-0	Nitrobenzene-d5	75%		26-134%
321-60-8	2-Fluorobiphenyl	81%		39-124%
1718-51-0	Terphenyl-d14	73%		36-134%

(a) Associated CCV outside of control limits high, sample was ND.
(b) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	S-136(4-6)		
Lab Sample ID:	JC86837-8	**Date Sampled:**	04/22/19
Matrix:	SO - Soil	**Date Received:**	04/23/19
Method:	SW846 8260C	**Percent Solids:**	72.6
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Y184888.D	1	05/02/19 14:26	PS	n/a	n/a	VY8023
Run #2							

	Initial Weight
Run #1	4.7 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	176	15	7.3	ug/kg	
71-43-2	Benzene	2.2	0.73	0.55	ug/kg	
74-97-5	Bromochloromethane	ND	7.3	0.63	ug/kg	
75-27-4	Bromodichloromethane	ND	2.9	0.65	ug/kg	
75-25-2	Bromoform	ND	7.3	0.59	ug/kg	
74-83-9	Bromomethane	ND	7.3	1.5	ug/kg	
78-93-3	2-Butanone (MEK)	22.9	15	5.5	ug/kg	
75-15-0	Carbon disulfide	ND	2.9	1.4	ug/kg	
56-23-5	Carbon tetrachloride	ND	2.9	0.81	ug/kg	
108-90-7	Chlorobenzene	ND	2.9	0.52	ug/kg	
75-00-3	Chloroethane	ND	7.3	1.0	ug/kg	
67-66-3	Chloroform	ND	2.9	0.55	ug/kg	
74-87-3	Chloromethane	ND	7.3	2.9	ug/kg	
110-82-7	Cyclohexane	ND	2.9	0.59	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.9	1.2	ug/kg	
124-48-1	Dibromochloromethane	ND	2.9	0.50	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.5	0.48	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.5	0.45	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.5	0.53	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.5	0.50	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	7.3	0.93	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.5	0.56	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.5	0.69	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.5	0.96	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.5	1.4	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.5	0.98	ug/kg	
78-87-5	1,2-Dichloropropane	ND	2.9	0.60	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	2.9	0.52	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2.9	0.48	ug/kg	
100-41-4	Ethylbenzene	ND	1.5	0.81	ug/kg	
76-13-1	Freon 113 [a]	ND	7.3	1.1	ug/kg	
591-78-6	2-Hexanone	ND	7.3	1.9	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-136(4-6)		
Lab Sample ID:	JC86837-8	**Date Sampled:**	04/22/19
Matrix:	SO - Soil	**Date Received:**	04/23/19
Method:	SW846 8260C	**Percent Solids:**	72.6
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	2.9	1.0	ug/kg	
79-20-9	Methyl Acetate	ND	7.3	2.0	ug/kg	
108-87-2	Methylcyclohexane	ND	2.9	1.0	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.5	0.52	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	7.3	2.3	ug/kg	
75-09-2	Methylene chloride	ND	7.3	3.7	ug/kg	
100-42-5	Styrene	ND	2.9	0.84	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.9	0.57	ug/kg	
127-18-4	Tetrachloroethene	ND	2.9	0.68	ug/kg	
108-88-3	Toluene	1.3	1.5	0.55	ug/kg	J
87-61-6	1,2,3-Trichlorobenzene	ND	7.3	1.5	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	7.3	1.5	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	2.9	0.62	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2.9	0.50	ug/kg	
79-01-6	Trichloroethene	ND	1.5	1.1	ug/kg	
75-69-4	Trichlorofluoromethane	ND	7.3	1.0	ug/kg	
75-01-4	Vinyl chloride	ND	2.9	0.69	ug/kg	
	m,p-Xylene	ND	1.5	1.1	ug/kg	
95-47-6	o-Xylene	ND	1.5	0.85	ug/kg	
1330-20-7	Xylene (total)	ND	1.5	0.85	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	110%		75-127%
17060-07-0	1,2-Dichloroethane-D4	105%		75-130%
2037-26-5	Toluene-D8	96%		80-120%
460-00-4	4-Bromofluorobenzene	96%		79-127%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	S-136(4-6)		
Lab Sample ID:	JC86837-8	**Date Sampled:**	04/22/19
Matrix:	SO - Soil	**Date Received:**	04/23/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	72.6
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6P481465.D	1	04/29/19 14:02	AR	04/28/19 13:30	OP20035	E6P2576
Run #2							

	Initial Weight	Final Volume
Run #1	30.2 g	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	91	23	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	230	28	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	230	39	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	230	81	ug/kg	
51-28-5	2,4-Dinitrophenol [a]	ND	230	170	ug/kg	UJ
534-52-1	4,6-Dinitro-o-cresol [a]	ND	230	49	ug/kg	UJ
95-48-7	2-Methylphenol	ND	91	29	ug/kg	
	3&4-Methylphenol	ND	91	37	ug/kg	UJ
88-75-5	2-Nitrophenol	ND	230	30	ug/kg	
100-02-7	4-Nitrophenol	ND	460	120	ug/kg	
87-86-5	Pentachlorophenol	ND	180	43	ug/kg	
108-95-2	Phenol	ND	91	24	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	230	30	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	230	34	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	230	27	ug/kg	
83-32-9	Acenaphthene	37.5	46	16	ug/kg	J
208-96-8	Acenaphthylene	47.3	46	23	ug/kg	
98-86-2	Acetophenone	ND	230	9.8	ug/kg	UJ
120-12-7	Anthracene	61.6	46	28	ug/kg	
1912-24-9	Atrazine	ND	91	20	ug/kg	
56-55-3	Benzo(a)anthracene	79.9	46	13	ug/kg	
50-32-8	Benzo(a)pyrene	99.0	46	21	ug/kg	
205-99-2	Benzo(b)fluoranthene	102	46	20	ug/kg	
191-24-2	Benzo(g,h,i)perylene	73.1	46	23	ug/kg	
207-08-9	Benzo(k)fluoranthene	44.1	46	21	ug/kg	J
101-55-3	4-Bromophenyl phenyl ether	ND	91	18	ug/kg	
85-68-7	Butyl benzyl phthalate [b]	ND	91	11	ug/kg	
92-52-4	1,1'-Biphenyl	24.2	91	6.2	ug/kg	J
100-52-7	Benzaldehyde	14.9	230	11	ug/kg	J
91-58-7	2-Chloronaphthalene	ND	91	11	ug/kg	
106-47-8	4-Chloroaniline	ND	230	16	ug/kg	
86-74-8	Carbazole	ND	91	6.6	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
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N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-136(4-6)		
Lab Sample ID:	JC86837-8	**Date Sampled:**	04/22/19
Matrix:	SO - Soil	**Date Received:**	04/23/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	72.6
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	91	18	ug/kg	
218-01-9	Chrysene	84.1	46	14	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	91	9.8	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	91	20	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	91	16	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	91	15	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	46	14	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	46	23	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	91	38	ug/kg	
123-91-1	1,4-Dioxane	ND	46	30	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	46	20	ug/kg	
132-64-9	Dibenzofuran	ND	91	19	ug/kg	
84-74-2	Di-n-butyl phthalate [b]	ND	91	7.4	ug/kg	
117-84-0	Di-n-octyl phthalate [b]	ND	91	11	ug/kg	
84-66-2	Diethyl phthalate	ND	91	9.7	ug/kg	
131-11-3	Dimethyl phthalate	ND	91	8.1	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate [b]	ND	91	11	ug/kg	
206-44-0	Fluoranthene	111	46	20	ug/kg	
86-73-7	Fluorene	33.1	46	21	ug/kg	J
118-74-1	Hexachlorobenzene	ND	91	12	ug/kg	
87-68-3	Hexachlorobutadiene	ND	46	18	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	460	18	ug/kg	
67-72-1	Hexachloroethane	ND	230	23	ug/kg	UJ
193-39-5	Indeno(1,2,3-cd)pyrene	53.7	46	21	ug/kg	
78-59-1	Isophorone	ND	91	9.8	ug/kg	
91-57-6	2-Methylnaphthalene	76.5	46	10	ug/kg	
88-74-4	2-Nitroaniline	ND	230	11	ug/kg	
99-09-2	3-Nitroaniline	ND	230	11	ug/kg	
100-01-6	4-Nitroaniline	ND	230	12	ug/kg	
91-20-3	Naphthalene	395	46	13	ug/kg	
98-95-3	Nitrobenzene	ND	91	18	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	91	13	ug/kg	UJ
86-30-6	N-Nitrosodiphenylamine	ND	230	17	ug/kg	
85-01-8	Phenanthrene	72.2	46	15	ug/kg	
129-00-0	Pyrene	156	46	15	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	230	12	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	86%		23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-136(4-6)		
Lab Sample ID:	JC86837-8	**Date Sampled:**	04/22/19
Matrix:	SO - Soil	**Date Received:**	04/23/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	72.6
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	79%		27-114%
118-79-6	2,4,6-Tribromophenol	75%		19-152%
4165-60-0	Nitrobenzene-d5	74%		26-134%
321-60-8	2-Fluorobiphenyl	78%		39-124%
1718-51-0	Terphenyl-d14	84%		36-134%

(a) Associated CCV outside of control limits low.
(b) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	S-136(7-9)		
Lab Sample ID:	JC86837-9	**Date Sampled:**	04/22/19
Matrix:	SO - Soil	**Date Received:**	04/23/19
Method:	SW846 8260C	**Percent Solids:**	81.4
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3C151617.D	1	05/01/19 17:44	PS	n/a	n/a	V3C6814
Run #2							

	Initial Weight
Run #1	5.4 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	66.4	11	5.7	ug/kg	
71-43-2	Benzene	ND	0.57	0.43	ug/kg	
74-97-5	Bromochloromethane	ND	5.7	0.49	ug/kg	
75-27-4	Bromodichloromethane	ND	2.3	0.50	ug/kg	
75-25-2	Bromoform	ND	5.7	0.46	ug/kg	
74-83-9	Bromomethane	ND	5.7	1.1	ug/kg	
78-93-3	2-Butanone (MEK)	ND	11	4.3	ug/kg	
75-15-0	Carbon disulfide	ND	2.3	1.1	ug/kg	
56-23-5	Carbon tetrachloride	ND	2.3	0.63	ug/kg	
108-90-7	Chlorobenzene	ND	2.3	0.40	ug/kg	
75-00-3	Chloroethane	ND	5.7	0.78	ug/kg	
67-66-3	Chloroform	ND	2.3	0.42	ug/kg	
74-87-3	Chloromethane	ND	5.7	2.2	ug/kg	
110-82-7	Cyclohexane	ND	2.3	0.46	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.3	0.95	ug/kg	
124-48-1	Dibromochloromethane	ND	2.3	0.38	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.1	0.37	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.1	0.35	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.1	0.41	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.1	0.39	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	5.7	0.72	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.1	0.44	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.1	0.53	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.1	0.75	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.1	1.1	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.1	0.76	ug/kg	
78-87-5	1,2-Dichloropropane	ND	2.3	0.46	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	2.3	0.40	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2.3	0.37	ug/kg	
100-41-4	Ethylbenzene	ND	1.1	0.63	ug/kg	
76-13-1	Freon 113	ND	5.7	0.87	ug/kg	
591-78-6	2-Hexanone	ND	5.7	1.4	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-136(7-9)		
Lab Sample ID:	JC86837-9	**Date Sampled:**	04/22/19
Matrix:	SO - Soil	**Date Received:**	04/23/19
Method:	SW846 8260C	**Percent Solids:**	81.4
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	2.3	0.79	ug/kg	
79-20-9	Methyl Acetate	ND	5.7	1.6	ug/kg	
108-87-2	Methylcyclohexane	ND	2.3	0.80	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.1	0.40	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK [a]	ND	5.7	1.8	ug/kg	
75-09-2	Methylene chloride	ND	5.7	2.8	ug/kg	
100-42-5	Styrene	ND	2.3	0.65	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.3	0.44	ug/kg	
127-18-4	Tetrachloroethene	ND	2.3	0.53	ug/kg	
108-88-3	Toluene	0.68	1.1	0.43	ug/kg	J
87-61-6	1,2,3-Trichlorobenzene	ND	5.7	1.1	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	5.7	1.1	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	2.3	0.48	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2.3	0.39	ug/kg	
79-01-6	Trichloroethene	ND	1.1	0.87	ug/kg	
75-69-4	Trichlorofluoromethane [b]	ND	5.7	0.77	ug/kg	UJ
75-01-4	Vinyl chloride	ND	2.3	0.53	ug/kg	
	m,p-Xylene	ND	1.1	0.85	ug/kg	
95-47-6	o-Xylene	ND	1.1	0.66	ug/kg	
1330-20-7	Xylene (total)	ND	1.1	0.66	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	96%		75-127%
17060-07-0	1,2-Dichloroethane-D4	95%		75-130%
2037-26-5	Toluene-D8	102%		80-120%
460-00-4	4-Bromofluorobenzene	103%		79-127%

(a) Associated CCV outside of control limits high, sample was ND.
(b) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	S-136(7-9)		
Lab Sample ID:	JC86837-9	**Date Sampled:**	04/22/19
Matrix:	SO - Soil	**Date Received:**	04/23/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	81.4
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6P481475.D	1	04/29/19 18:48	AR	04/28/19 13:30	OP20035	E6P2576
Run #2							

	Initial Weight	Final Volume
Run #1	30.9 g	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	80	20	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	200	24	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	200	34	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	200	71	ug/kg	
51-28-5	2,4-Dinitrophenol [a]	ND	200	150	ug/kg	UJ
534-52-1	4,6-Dinitro-o-cresol [a]	ND	200	43	ug/kg	UJ
95-48-7	2-Methylphenol	ND	80	25	ug/kg	
	3&4-Methylphenol	ND	80	33	ug/kg	UJ
88-75-5	2-Nitrophenol	ND	200	26	ug/kg	
100-02-7	4-Nitrophenol	ND	400	110	ug/kg	
87-86-5	Pentachlorophenol	ND	160	37	ug/kg	
108-95-2	Phenol	ND	80	21	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	200	26	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	200	30	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	200	24	ug/kg	
83-32-9	Acenaphthene	ND	40	14	ug/kg	
208-96-8	Acenaphthylene	ND	40	20	ug/kg	
98-86-2	Acetophenone	ND	200	8.5	ug/kg	UJ
120-12-7	Anthracene	ND	40	24	ug/kg	
1912-24-9	Atrazine	ND	80	17	ug/kg	
56-55-3	Benzo(a)anthracene	ND	40	11	ug/kg	
50-32-8	Benzo(a)pyrene	ND	40	18	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	40	18	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	40	20	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	40	19	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	80	15	ug/kg	
85-68-7	Butyl benzyl phthalate [b]	ND	80	9.7	ug/kg	
92-52-4	1,1'-Biphenyl	ND	80	5.4	ug/kg	
100-52-7	Benzaldehyde	ND	200	9.9	ug/kg	
91-58-7	2-Chloronaphthalene	ND	80	9.5	ug/kg	
106-47-8	4-Chloroaniline	ND	200	14	ug/kg	
86-74-8	Carbazole	ND	80	5.8	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: S-136(7-9)
Lab Sample ID: JC86837-9
Matrix: SO - Soil
Method: SW846 8270D SW846 3546
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/22/19
Date Received: 04/23/19
Percent Solids: 81.4

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	80	16	ug/kg	
218-01-9	Chrysene	ND	40	13	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	80	8.5	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	80	17	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	80	14	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	80	13	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	40	12	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	40	20	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	80	33	ug/kg	
123-91-1	1,4-Dioxane	ND	40	26	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	40	18	ug/kg	
132-64-9	Dibenzofuran	ND	80	16	ug/kg	
84-74-2	Di-n-butyl phthalate [b]	ND	80	6.5	ug/kg	
117-84-0	Di-n-octyl phthalate [b]	ND	80	9.9	ug/kg	
84-66-2	Diethyl phthalate	ND	80	8.5	ug/kg	
131-11-3	Dimethyl phthalate	ND	80	7.1	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate [b]	ND	80	9.3	ug/kg	
206-44-0	Fluoranthene	ND	40	18	ug/kg	
86-73-7	Fluorene	ND	40	18	ug/kg	
118-74-1	Hexachlorobenzene	ND	80	10	ug/kg	
87-68-3	Hexachlorobutadiene	ND	40	16	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	400	16	ug/kg	
67-72-1	Hexachloroethane	ND	200	20	ug/kg	UJ
193-39-5	Indeno(1,2,3-cd)pyrene	ND	40	19	ug/kg	
78-59-1	Isophorone	ND	80	8.5	ug/kg	
91-57-6	2-Methylnaphthalene	ND	40	9.0	ug/kg	
88-74-4	2-Nitroaniline	ND	200	9.4	ug/kg	
99-09-2	3-Nitroaniline	ND	200	9.9	ug/kg	
100-01-6	4-Nitroaniline	ND	200	10	ug/kg	
91-20-3	Naphthalene	ND	40	11	ug/kg	
98-95-3	Nitrobenzene	ND	80	15	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	80	11	ug/kg	UJ
86-30-6	N-Nitrosodiphenylamine	ND	200	15	ug/kg	
85-01-8	Phenanthrene	ND	40	13	ug/kg	
129-00-0	Pyrene	ND	40	13	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	200	10	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	80%		23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-136(7-9)		
Lab Sample ID:	JC86837-9	**Date Sampled:**	04/22/19
Matrix:	SO - Soil	**Date Received:**	04/23/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	81.4
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	79%		27-114%
118-79-6	2,4,6-Tribromophenol	71%		19-152%
4165-60-0	Nitrobenzene-d5	95%		26-134%
321-60-8	2-Fluorobiphenyl	79%		39-124%
1718-51-0	Terphenyl-d14	85%		36-134%

(a) Associated CCV outside of control limits low.
(b) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	S-111(2-4)		
Lab Sample ID:	JC86837-10	**Date Sampled:**	04/23/19
Matrix:	SO - Soil	**Date Received:**	04/23/19
Method:	SW846 8260C	**Percent Solids:**	86.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3C151618.D	1	05/01/19 18:07	PS	n/a	n/a	V3C6814
Run #2							

	Initial Weight
Run #1	4.5 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	13	6.4	ug/kg	
71-43-2	Benzene	ND	0.64	0.49	ug/kg	
74-97-5	Bromochloromethane	ND	6.4	0.55	ug/kg	
75-27-4	Bromodichloromethane	ND	2.6	0.57	ug/kg	
75-25-2	Bromoform	ND	6.4	0.52	ug/kg	
74-83-9	Bromomethane	ND	6.4	1.3	ug/kg	
78-93-3	2-Butanone (MEK)	ND	13	4.8	ug/kg	
75-15-0	Carbon disulfide	1.3	2.6	1.2	ug/kg	J
56-23-5	Carbon tetrachloride	ND	2.6	0.71	ug/kg	
108-90-7	Chlorobenzene	ND	2.6	0.46	ug/kg	
75-00-3	Chloroethane	ND	6.4	0.89	ug/kg	
67-66-3	Chloroform	ND	2.6	0.48	ug/kg	
74-87-3	Chloromethane	ND	6.4	2.5	ug/kg	
110-82-7	Cyclohexane	ND	2.6	0.52	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.6	1.1	ug/kg	
124-48-1	Dibromochloromethane	ND	2.6	0.44	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.3	0.42	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.3	0.39	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.3	0.46	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.3	0.44	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	6.4	0.82	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.3	0.50	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.3	0.61	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.3	0.85	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.3	1.2	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.3	0.86	ug/kg	
78-87-5	1,2-Dichloropropane	ND	2.6	0.52	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	2.6	0.45	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2.6	0.42	ug/kg	
100-41-4	Ethylbenzene	ND	1.3	0.71	ug/kg	
76-13-1	Freon 113	ND	6.4	0.98	ug/kg	
591-78-6	2-Hexanone	ND	6.4	1.6	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-111(2-4)		
Lab Sample ID:	JC86837-10	**Date Sampled:**	04/23/19
Matrix:	SO - Soil	**Date Received:**	04/23/19
Method:	SW846 8260C	**Percent Solids:**	86.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	2.6	0.90	ug/kg	
79-20-9	Methyl Acetate	ND	6.4	1.8	ug/kg	
108-87-2	Methylcyclohexane	ND	2.6	0.91	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.3	0.45	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK [a]	ND	6.4	2.0	ug/kg	
75-09-2	Methylene chloride	ND	6.4	3.2	ug/kg	
100-42-5	Styrene	ND	2.6	0.74	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.6	0.50	ug/kg	
127-18-4	Tetrachloroethene	ND	2.6	0.60	ug/kg	
108-88-3	Toluene	ND	1.3	0.48	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	6.4	1.3	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	6.4	1.3	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	2.6	0.55	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2.6	0.44	ug/kg	
79-01-6	Trichloroethene	ND	1.3	0.98	ug/kg	
75-69-4	Trichlorofluoromethane [b]	ND	6.4	0.88	ug/kg	UJ
75-01-4	Vinyl chloride	ND	2.6	0.60	ug/kg	
	m,p-Xylene	ND	1.3	0.96	ug/kg	
95-47-6	o-Xylene	ND	1.3	0.75	ug/kg	
1330-20-7	Xylene (total)	ND	1.3	0.75	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	97%		75-127%
17060-07-0	1,2-Dichloroethane-D4	96%		75-130%
2037-26-5	Toluene-D8	112%		80-120%
460-00-4	4-Bromofluorobenzene	120%		79-127%

(a) Associated CCV outside of control limits high, sample was ND.
(b) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS LabLink@1039014 11:16 10-May-2019

Report of Analysis

Client Sample ID:	S-111(2-4)		
Lab Sample ID:	JC86837-10	**Date Sampled:**	04/23/19
Matrix:	SO - Soil	**Date Received:**	04/23/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	86.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6P481545.D	1	05/01/19 21:02	AR	04/28/19 13:30	OP20035	E6P2578
Run #2	6P481539.D	5	05/01/19 18:37	AR	04/28/19 13:30	OP20035	E6P2578

	Initial Weight	Final Volume
Run #1	30.7 g	1.0 ml
Run #2	30.7 g	1.0 ml

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	76	19	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	190	23	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	190	32	ug/kg	
105-67-9	2,4-Dimethylphenol [a]	ND	190	67	ug/kg	
51-28-5	2,4-Dinitrophenol [b]	ND	190	140	ug/kg	UJ
534-52-1	4,6-Dinitro-o-cresol	ND	190	40	ug/kg	
95-48-7	2-Methylphenol	ND	76	24	ug/kg	
	3&4-Methylphenol	53.3	76	31	ug/kg	J
88-75-5	2-Nitrophenol	ND	190	25	ug/kg	
100-02-7	4-Nitrophenol	ND	380	100	ug/kg	
87-86-5	Pentachlorophenol	ND	150	35	ug/kg	
108-95-2	Phenol	49.0	76	20	ug/kg	J
58-90-2	2,3,4,6-Tetrachlorophenol	ND	190	25	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	190	28	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	190	23	ug/kg	
83-32-9	Acenaphthene	121	38	13	ug/kg	
208-96-8	Acenaphthylene	3140	38	19	ug/kg	
98-86-2	Acetophenone	31.8	190	8.1	ug/kg	J
120-12-7	Anthracene	2210	38	23	ug/kg	
1912-24-9	Atrazine	ND	76	16	ug/kg	
56-55-3	Benzo(a)anthracene	4480 [c]	190	53	ug/kg	D
50-32-8	Benzo(a)pyrene	7110 [c]	190	86	ug/kg	
205-99-2	Benzo(b)fluoranthene	8790 [c]	190	84	ug/kg	
191-24-2	Benzo(g,h,i)perylene	5670 [c]	190	94	ug/kg	
207-08-9	Benzo(k)fluoranthene	2720 [c]	190	88	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	76	15	ug/kg	
85-68-7	Butyl benzyl phthalate [a]	ND	76	9.2	ug/kg	
92-52-4	1,1'-Biphenyl	101	76	5.2	ug/kg	
100-52-7	Benzaldehyde	ND	190	9.4	ug/kg	
91-58-7	2-Chloronaphthalene	ND	76	9.0	ug/kg	
106-47-8	4-Chloroaniline	ND	190	14	ug/kg	
86-74-8	Carbazole	354	76	5.5	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-111(2-4)		
Lab Sample ID:	JC86837-10	**Date Sampled:**	04/23/19
Matrix:	SO - Soil	**Date Received:**	04/23/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	86.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	76	15	ug/kg	
218-01-9	Chrysene	4260 [c]	190	60	ug/kg	D
111-91-1	bis(2-Chloroethoxy)methane	ND	76	8.1	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	76	16	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	76	14	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	76	12	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	38	12	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	38	19	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	76	32	ug/kg	
123-91-1	1,4-Dioxane	ND	38	25	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	2020	38	17	ug/kg	
132-64-9	Dibenzofuran	387	76	15	ug/kg	
84-74-2	Di-n-butyl phthalate [a]	ND	76	6.2	ug/kg	
117-84-0	Di-n-octyl phthalate [a]	ND	76	9.4	ug/kg	
84-66-2	Diethyl phthalate	ND	76	8.0	ug/kg	
131-11-3	Dimethyl phthalate	ND	76	6.7	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate [a]	ND	76	8.8	ug/kg	
206-44-0	Fluoranthene	6890 [c]	190	84	ug/kg	
86-73-7	Fluorene	448	38	17	ug/kg	
118-74-1	Hexachlorobenzene	ND	76	9.6	ug/kg	
87-68-3	Hexachlorobutadiene	ND	38	15	ug/kg	
77-47-4	Hexachlorocyclopentadiene [b]	ND	380	15	ug/kg	UJ
67-72-1	Hexachloroethane	ND	190	19	ug/kg	UJ
193-39-5	Indeno(1,2,3-cd)pyrene	4870 [c]	190	89	ug/kg	D
78-59-1	Isophorone	ND	76	8.1	ug/kg	
91-57-6	2-Methylnaphthalene	447	38	8.5	ug/kg	
88-74-4	2-Nitroaniline [a]	ND	190	8.9	ug/kg	
99-09-2	3-Nitroaniline	ND	190	9.4	ug/kg	
100-01-6	4-Nitroaniline	ND	190	9.8	ug/kg	
91-20-3	Naphthalene	1470	38	11	ug/kg	
98-95-3	Nitrobenzene	ND	76	15	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	76	11	ug/kg	UJ
86-30-6	N-Nitrosodiphenylamine	ND	190	14	ug/kg	
85-01-8	Phenanthrene	3220	38	13	ug/kg	
129-00-0	Pyrene	6440 [c]	190	60	ug/kg	D
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	190	9.6	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	78%	69%	23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-111(2-4)		
Lab Sample ID:	JC86837-10	**Date Sampled:**	04/23/19
Matrix:	SO - Soil	**Date Received:**	04/23/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	86.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	80%	74%	27-114%
118-79-6	2,4,6-Tribromophenol	79%	73%	19-152%
4165-60-0	Nitrobenzene-d5	94%	88%	26-134%
321-60-8	2-Fluorobiphenyl	84%	82%	39-124%
1718-51-0	Terphenyl-d14	78%	79%	36-134%

(a) Associated CCV outside of control limits high, sample was ND.
(b) Associated CCV outside of control limits low.
(c) Result is from Run# 2

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	S-111(4.5-6.5)		
Lab Sample ID:	JC86837-11	**Date Sampled:**	04/23/19
Matrix:	SO - Soil	**Date Received:**	04/23/19
Method:	SW846 8260C	**Percent Solids:**	87.4
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3C151619.D	1	05/01/19 18:30	PS	n/a	n/a	V3C6814
Run #2							

	Initial Weight
Run #1	5.2 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	64.3	11	5.5	ug/kg	
71-43-2	Benzene	ND	0.55	0.41	ug/kg	
74-97-5	Bromochloromethane	ND	5.5	0.47	ug/kg	
75-27-4	Bromodichloromethane	ND	2.2	0.49	ug/kg	
75-25-2	Bromoform	ND	5.5	0.44	ug/kg	
74-83-9	Bromomethane	ND	5.5	1.1	ug/kg	
78-93-3	2-Butanone (MEK)	ND	11	4.1	ug/kg	
75-15-0	Carbon disulfide	ND	2.2	1.0	ug/kg	
56-23-5	Carbon tetrachloride	ND	2.2	0.61	ug/kg	
108-90-7	Chlorobenzene	ND	2.2	0.39	ug/kg	
75-00-3	Chloroethane	ND	5.5	0.76	ug/kg	
67-66-3	Chloroform	ND	2.2	0.41	ug/kg	
74-87-3	Chloromethane	ND	5.5	2.2	ug/kg	
110-82-7	Cyclohexane	ND	2.2	0.45	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.2	0.92	ug/kg	
124-48-1	Dibromochloromethane	ND	2.2	0.37	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.1	0.36	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.1	0.34	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.1	0.39	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.1	0.38	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	5.5	0.70	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.1	0.42	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.1	0.52	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.1	0.72	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.1	1.1	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.1	0.73	ug/kg	
78-87-5	1,2-Dichloropropane	ND	2.2	0.45	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	2.2	0.39	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2.2	0.36	ug/kg	
100-41-4	Ethylbenzene	ND	1.1	0.61	ug/kg	
76-13-1	Freon 113	ND	5.5	0.84	ug/kg	
591-78-6	2-Hexanone	ND	5.5	1.4	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-111(4.5-6.5)		
Lab Sample ID:	JC86837-11	**Date Sampled:**	04/23/19
Matrix:	SO - Soil	**Date Received:**	04/23/19
Method:	SW846 8260C	**Percent Solids:**	87.4
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	2.2	0.77	ug/kg	
79-20-9	Methyl Acetate	ND	5.5	1.5	ug/kg	
108-87-2	Methylcyclohexane	ND	2.2	0.78	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.1	0.39	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK [a]	ND	5.5	1.7	ug/kg	
75-09-2	Methylene chloride	ND	5.5	2.8	ug/kg	
100-42-5	Styrene	ND	2.2	0.63	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.2	0.43	ug/kg	
127-18-4	Tetrachloroethene	ND	2.2	0.51	ug/kg	
108-88-3	Toluene	0.60	1.1	0.41	ug/kg	J
87-61-6	1,2,3-Trichlorobenzene	ND	5.5	1.1	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	5.5	1.1	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	2.2	0.47	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2.2	0.38	ug/kg	
79-01-6	Trichloroethene	ND	1.1	0.84	ug/kg	
75-69-4	Trichlorofluoromethane [b]	ND	5.5	0.75	ug/kg	UJ
75-01-4	Vinyl chloride	ND	2.2	0.52	ug/kg	
	m,p-Xylene	ND	1.1	0.82	ug/kg	
95-47-6	o-Xylene	ND	1.1	0.64	ug/kg	
1330-20-7	Xylene (total)	ND	1.1	0.64	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	95%		75-127%
17060-07-0	1,2-Dichloroethane-D4	98%		75-130%
2037-26-5	Toluene-D8	102%		80-120%
460-00-4	4-Bromofluorobenzene	101%		79-127%

(a) Associated CCV outside of control limits high, sample was ND.
(b) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS LabLink@1039014 11:16 10-May-2019

Report of Analysis

Client Sample ID:	S-111(4.5-6.5)		
Lab Sample ID:	JC86837-11	**Date Sampled:**	04/23/19
Matrix:	SO - Soil	**Date Received:**	04/23/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	87.4
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6P481476.D	1	04/29/19 19:12	AR	04/28/19 13:30	OP20035	E6P2576
Run #2							

	Initial Weight	Final Volume
Run #1	31.0 g	1.0 ml
Run #2		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	74	18	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	180	23	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	180	31	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	180	66	ug/kg	
51-28-5	2,4-Dinitrophenol [a]	ND	180	140	ug/kg	UJ
534-52-1	4,6-Dinitro-o-cresol [a]	ND	180	39	ug/kg	UJ
95-48-7	2-Methylphenol	ND	74	24	ug/kg	
	3&4-Methylphenol	ND	74	30	ug/kg	UJ
88-75-5	2-Nitrophenol	ND	180	24	ug/kg	
100-02-7	4-Nitrophenol	ND	370	99	ug/kg	
87-86-5	Pentachlorophenol	ND	150	35	ug/kg	
108-95-2	Phenol	ND	74	19	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	180	24	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	180	28	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	180	22	ug/kg	
83-32-9	Acenaphthene	ND	37	13	ug/kg	
208-96-8	Acenaphthylene	104	37	19	ug/kg	
98-86-2	Acetophenone	ND	180	7.9	ug/kg	UJ
120-12-7	Anthracene	33.0	37	23	ug/kg	J
1912-24-9	Atrazine	ND	74	16	ug/kg	
56-55-3	Benzo(a)anthracene	42.7	37	10	ug/kg	
50-32-8	Benzo(a)pyrene	312	37	17	ug/kg	
205-99-2	Benzo(b)fluoranthene	353	37	16	ug/kg	
191-24-2	Benzo(g,h,i)perylene	233	37	18	ug/kg	
207-08-9	Benzo(k)fluoranthene	131	37	17	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	74	14	ug/kg	
85-68-7	Butyl benzyl phthalate [b]	ND	74	9.0	ug/kg	
92-52-4	1,1'-Biphenyl	ND	74	5.1	ug/kg	
100-52-7	Benzaldehyde	ND	180	9.2	ug/kg	
91-58-7	2-Chloronaphthalene	ND	74	8.8	ug/kg	
106-47-8	4-Chloroaniline	ND	180	13	ug/kg	
86-74-8	Carbazole	ND	74	5.4	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-111(4.5-6.5)		
Lab Sample ID:	JC86837-11	**Date Sampled:**	04/23/19
Matrix:	SO - Soil	**Date Received:**	04/23/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	87.4
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	74	15	ug/kg	
218-01-9	Chrysene	76.5	37	12	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	74	7.9	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	74	16	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	74	13	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	74	12	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	37	11	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	37	19	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	74	31	ug/kg	
123-91-1	1,4-Dioxane	ND	37	24	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	58.9	37	16	ug/kg	
132-64-9	Dibenzofuran	ND	74	15	ug/kg	
84-74-2	Di-n-butyl phthalate [b]	ND	74	6.0	ug/kg	
117-84-0	Di-n-octyl phthalate [b]	ND	74	9.2	ug/kg	
84-66-2	Diethyl phthalate	ND	74	7.9	ug/kg	
131-11-3	Dimethyl phthalate	ND	74	6.6	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate [b]	ND	74	8.6	ug/kg	
206-44-0	Fluoranthene	16.8	37	16	ug/kg	J
86-73-7	Fluorene	ND	37	17	ug/kg	
118-74-1	Hexachlorobenzene	ND	74	9.3	ug/kg	
87-68-3	Hexachlorobutadiene	ND	37	15	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	370	15	ug/kg	
67-72-1	Hexachloroethane	ND	180	18	ug/kg	UJ
193-39-5	Indeno(1,2,3-cd)pyrene	207	37	17	ug/kg	
78-59-1	Isophorone	ND	74	7.9	ug/kg	
91-57-6	2-Methylnaphthalene	ND	37	8.3	ug/kg	
88-74-4	2-Nitroaniline	ND	180	8.7	ug/kg	
99-09-2	3-Nitroaniline	ND	180	9.2	ug/kg	
100-01-6	4-Nitroaniline	ND	180	9.6	ug/kg	
91-20-3	Naphthalene	13.3	37	10	ug/kg	J
98-95-3	Nitrobenzene	ND	74	14	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	74	11	ug/kg	UJ
86-30-6	N-Nitrosodiphenylamine	ND	180	14	ug/kg	
85-01-8	Phenanthrene	ND	37	12	ug/kg	
129-00-0	Pyrene	45.4	37	12	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	180	9.4	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	76%		23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-111(4.5-6.5)		
Lab Sample ID:	JC86837-11	**Date Sampled:**	04/23/19
Matrix:	SO - Soil	**Date Received:**	04/23/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	87.4
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	75%		27-114%
118-79-6	2,4,6-Tribromophenol	64%		19-152%
4165-60-0	Nitrobenzene-d5	89%		26-134%
321-60-8	2-Fluorobiphenyl	74%		39-124%
1718-51-0	Terphenyl-d14	85%		36-134%

(a) Associated CCV outside of control limits low.
(b) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS LabLink@1039014 11:16 10-May-2019

Report of Analysis

Client Sample ID:	S-107(2-4)		
Lab Sample ID:	JC86837-12	**Date Sampled:**	04/23/19
Matrix:	SO - Soil	**Date Received:**	04/23/19
Method:	SW846 8260C	**Percent Solids:**	87.0
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3C151620.D	1	05/01/19 18:54	PS	n/a	n/a	V3C6814
Run #2							

	Initial Weight
Run #1	3.5 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	16	8.2	ug/kg	
71-43-2	Benzene	ND	0.82	0.62	ug/kg	
74-97-5	Bromochloromethane	ND	8.2	0.71	ug/kg	
75-27-4	Bromodichloromethane	ND	3.3	0.73	ug/kg	
75-25-2	Bromoform	ND	8.2	0.66	ug/kg	
74-83-9	Bromomethane	ND	8.2	1.6	ug/kg	
78-93-3	2-Butanone (MEK)	ND	16	6.1	ug/kg	
75-15-0	Carbon disulfide	ND	3.3	1.5	ug/kg	
56-23-5	Carbon tetrachloride	ND	3.3	0.90	ug/kg	
108-90-7	Chlorobenzene	ND	3.3	0.58	ug/kg	
75-00-3	Chloroethane	ND	8.2	1.1	ug/kg	
67-66-3	Chloroform	ND	3.3	0.61	ug/kg	
74-87-3	Chloromethane	ND	8.2	3.2	ug/kg	
110-82-7	Cyclohexane	ND	3.3	0.67	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	3.3	1.4	ug/kg	
124-48-1	Dibromochloromethane	ND	3.3	0.56	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.6	0.53	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.6	0.50	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.6	0.59	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.6	0.56	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	8.2	1.0	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.6	0.63	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.6	0.77	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.6	1.1	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.6	1.6	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.6	1.1	ug/kg	
78-87-5	1,2-Dichloropropane	ND	3.3	0.67	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	3.3	0.58	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	3.3	0.54	ug/kg	
100-41-4	Ethylbenzene	ND	1.6	0.91	ug/kg	
76-13-1	Freon 113	ND	8.2	1.3	ug/kg	
591-78-6	2-Hexanone	ND	8.2	2.1	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-107(2-4)		
Lab Sample ID:	JC86837-12	**Date Sampled:**	04/23/19
Matrix:	SO - Soil	**Date Received:**	04/23/19
Method:	SW846 8260C	**Percent Solids:**	87.0
Project:	National Grid, Philly Coke, Philadelphia, PA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
98-82-8	Isopropylbenzene	ND	3.3	1.1	ug/kg	
79-20-9	Methyl Acetate	ND	8.2	2.3	ug/kg	
108-87-2	Methylcyclohexane	ND	3.3	1.2	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.6	0.58	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK [a]	ND	8.2	2.6	ug/kg	
75-09-2	Methylene chloride	ND	8.2	4.1	ug/kg	
100-42-5	Styrene	ND	3.3	0.94	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	3.3	0.64	ug/kg	
127-18-4	Tetrachloroethene	ND	3.3	0.76	ug/kg	
108-88-3	Toluene	ND	1.6	0.62	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	8.2	1.6	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	8.2	1.6	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	3.3	0.70	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	3.3	0.56	ug/kg	
79-01-6	Trichloroethene	ND	1.6	1.3	ug/kg	
75-69-4	Trichlorofluoromethane [b]	ND	8.2	1.1	ug/kg	UJ
75-01-4	Vinyl chloride	ND	3.3	0.77	ug/kg	
	m,p-Xylene	ND	1.6	1.2	ug/kg	
95-47-6	o-Xylene	ND	1.6	0.96	ug/kg	
1330-20-7	Xylene (total)	ND	1.6	0.96	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	96%		75-127%
17060-07-0	1,2-Dichloroethane-D4	99%		75-130%
2037-26-5	Toluene-D8	109%		80-120%
460-00-4	4-Bromofluorobenzene	111%		79-127%

(a) Associated CCV outside of control limits high, sample was ND.
(b) Associated CCV outside of control limits low.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	S-107(2-4)		
Lab Sample ID:	JC86837-12	**Date Sampled:**	04/23/19
Matrix:	SO - Soil	**Date Received:**	04/23/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	87.0
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6P481481.D	1	04/29/19 21:14	AR	04/28/19 13:30	OP20035	E6P2576
Run #2	6P481536.D	10	05/01/19 17:25	AR	04/28/19 13:30	OP20035	E6P2578

	Initial Weight	Final Volume
Run #1	31.2 g	1.0 ml
Run #2	31.2 g	1.0 ml

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	74	18	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	180	23	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	180	31	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	180	66	ug/kg	
51-28-5	2,4-Dinitrophenol [a]	ND	180	140	ug/kg	UJ
534-52-1	4,6-Dinitro-o-cresol [a]	ND	180	39	ug/kg	UJ
95-48-7	2-Methylphenol	ND	74	24	ug/kg	
	3&4-Methylphenol	ND	74	30	ug/kg	UJ
88-75-5	2-Nitrophenol	ND	180	24	ug/kg	
100-02-7	4-Nitrophenol	ND	370	98	ug/kg	
87-86-5	Pentachlorophenol	ND	150	35	ug/kg	
108-95-2	Phenol	ND	74	19	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	180	24	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	180	28	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	180	22	ug/kg	
83-32-9	Acenaphthene	146	37	13	ug/kg	
208-96-8	Acenaphthylene	1610	37	19	ug/kg	
98-86-2	Acetophenone	ND	180	7.9	ug/kg	UJ
120-12-7	Anthracene	3960 [b]	370	230	ug/kg	D
1912-24-9	Atrazine	ND	74	16	ug/kg	
56-55-3	Benzo(a)anthracene	6510 [b]	370	100	ug/kg	D
50-32-8	Benzo(a)pyrene	5540 [b]	370	170	ug/kg	D
205-99-2	Benzo(b)fluoranthene	6860 [b]	370	160	ug/kg	D
191-24-2	Benzo(g,h,i)perylene	3600 [b]	370	180	ug/kg	D
207-08-9	Benzo(k)fluoranthene	3070	37	17	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	74	14	ug/kg	
85-68-7	Butyl benzyl phthalate [c]	ND	74	9.0	ug/kg	
92-52-4	1,1'-Biphenyl	143	74	5.0	ug/kg	
100-52-7	Benzaldehyde	ND	180	9.1	ug/kg	
91-58-7	2-Chloronaphthalene	ND	74	8.8	ug/kg	
106-47-8	4-Chloroaniline	ND	180	13	ug/kg	
86-74-8	Carbazole	459	74	5.3	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-107(2-4)		
Lab Sample ID:	JC86837-12	**Date Sampled:**	04/23/19
Matrix:	SO - Soil	**Date Received:**	04/23/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	87.0
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	74	15	ug/kg	
218-01-9	Chrysene	5800 [b]	370	120	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	74	7.9	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	74	16	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	74	13	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	74	12	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	37	11	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	37	18	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	74	31	ug/kg	
123-91-1	1,4-Dioxane	ND	37	24	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	1450	37	16	ug/kg	
132-64-9	Dibenzofuran	989	74	15	ug/kg	
84-74-2	Di-n-butyl phthalate [c]	ND	74	6.0	ug/kg	
117-84-0	Di-n-octyl phthalate [c]	ND	74	9.2	ug/kg	
84-66-2	Diethyl phthalate	ND	74	7.8	ug/kg	
131-11-3	Dimethyl phthalate	ND	74	6.6	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate [c]	ND	74	8.6	ug/kg	
206-44-0	Fluoranthene	14400 [b]	370	160	ug/kg	
86-73-7	Fluorene	2280	37	17	ug/kg	
118-74-1	Hexachlorobenzene	ND	74	9.3	ug/kg	
87-68-3	Hexachlorobutadiene	ND	37	15	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	370	15	ug/kg	
67-72-1	Hexachloroethane	ND	180	18	ug/kg	UJ
193-39-5	Indeno(1,2,3-cd)pyrene	2990 [b]	370	170	ug/kg	
78-59-1	Isophorone	ND	74	7.9	ug/kg	
91-57-6	2-Methylnaphthalene	359	37	8.3	ug/kg	
88-74-4	2-Nitroaniline	ND	180	8.7	ug/kg	
99-09-2	3-Nitroaniline	ND	180	9.2	ug/kg	
100-01-6	4-Nitroaniline	ND	180	9.5	ug/kg	
91-20-3	Naphthalene	627	37	10	ug/kg	
98-95-3	Nitrobenzene	ND	74	14	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	74	11	ug/kg	UJ
86-30-6	N-Nitrosodiphenylamine	ND	180	13	ug/kg	
85-01-8	Phenanthrene	11300 [b]	370	120	ug/kg	
129-00-0	Pyrene	10500 [b]	370	120	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	180	9.4	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	73%	59%	23-115%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	S-107(2-4)		
Lab Sample ID:	JC86837-12	**Date Sampled:**	04/23/19
Matrix:	SO - Soil	**Date Received:**	04/23/19
Method:	SW846 8270D SW846 3546	**Percent Solids:**	87.0
Project:	National Grid, Philly Coke, Philadelphia, PA		

ABN TCL List (SOM0 2.0)

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	77%	68%	27-114%
118-79-6	2,4,6-Tribromophenol	70%	64%	19-152%
4165-60-0	Nitrobenzene-d5	84%	75%	26-134%
321-60-8	2-Fluorobiphenyl	72%	66%	39-124%
1718-51-0	Terphenyl-d14	63%	70%	36-134%

(a) Associated CCV outside of control limits low.
(b) Result is from Run# 2
(c) Associated CCV outside of control limits high, sample was ND.

Report of Analysis

Client Sample ID: PSCB-41R(0.5-2)
Lab Sample ID: JC86837-1
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/22/19
Date Received: 04/23/19
Percent Solids: 80.9

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	7590	61	9.8	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Antimony	20.6	2.4	0.50	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Arsenic [a]	19.5	4.8	0.68	mg/kg	2	04/26/19	05/02/19	MET	SW846 6010D [3]	SW846 3050B [5]
Barium	175	24	2.3	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Beryllium	0.91	0.24	0.097	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Cadmium	1.4	0.61	0.085	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Calcium	11500	610	54	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Chromium	26.0	1.2	0.45	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Cobalt	7.8	6.1	0.34	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Copper [a]	193	6.1	2.0	mg/kg	2	04/26/19	05/02/19	MET	SW846 6010D [3]	SW846 3050B [5]
Iron	28300	120	47	mg/kg	2	04/26/19	05/02/19	MET	SW846 6010D [3]	SW846 3050B [5]
Lead [a]	986	4.8	0.99	mg/kg	2	04/26/19	05/02/19	MET	SW846 6010D [3]	SW846 3050B [5]
Magnesium	4570	610	17	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Manganese [a]	552	3.6	0.99	mg/kg	2	04/26/19	05/02/19	MET	SW846 6010D [3]	SW846 3050B [5]
Mercury	0.34 J	0.037	0.016	mg/kg	1	04/25/19	04/25/19	LL	SW846 7471B [1]	SW846 7471B [4]
Nickel	38.4	4.8	0.42	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Potassium	1120 J	1200	39	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Selenium [a]	1.6 U	4.8	1.6	mg/kg	2	04/26/19	05/02/19	MET	SW846 6010D [3]	SW846 3050B [5]
Silver [a]	0.41 U	1.2	0.41	mg/kg	2	04/26/19	05/02/19	MET	SW846 6010D [3]	SW846 3050B [5]
Sodium	208 J	1200	94	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Thallium [a]	1.4 U	2.4	1.4	mg/kg	2	04/26/19	05/02/19	MET	SW846 6010D [3]	SW846 3050B [5]
Vanadium	32.1	6.1	0.23	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Zinc	530	6.1	2.8	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA46581
(2) Instrument QC Batch: MA46628
(3) Instrument QC Batch: MA46638
(4) Prep QC Batch: MP14565
(5) Prep QC Batch: MP14579

(a) Elevated detection limit due to dilution required for high interfering element.

RL = Reporting Limit
MDL = Method Detection Limit
U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: PSCB-41R(0.5-2)
Lab Sample ID: JC86837-1
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/22/19
Date Received: 04/23/19
Percent Solids: 80.9

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	0.53	0.32	0.16	mg/kg	1	05/03/19 14:14	KI	SW846 9012B/LACHAT
Solids, Percent	80.9			%	1	04/30/19 14:13	JMP	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: PSCB-41R(9-11)
Lab Sample ID: JC86837-2
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/22/19
Date Received: 04/23/19
Percent Solids: 70.9

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	16700	69	11	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Antimony	0.57 U	2.8	0.57	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Arsenic	5.5	2.8	0.39	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Barium	117	28	2.6	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Beryllium	0.83	0.28	0.11	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cadmium	0.097 J	0.69	0.097	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Calcium	2630	690	61	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Chromium	38.5	1.4	0.51	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cobalt	9.8	6.9	0.39	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Copper	9.0	3.5	1.2	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Iron	19800	69	27	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Lead	19.4	2.8	0.57	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Magnesium	4730	690	19	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Manganese	341	2.1	0.57	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Mercury	0.019 U J	0.043	0.019	mg/kg	1	04/25/19	04/25/19	LL	SW846 7471B [1]	SW846 7471B [3]
Nickel	24.2	5.5	0.48	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Potassium	2010	1400	44	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Selenium	0.90 U	2.8	0.90	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Silver	0.24 U	0.69	0.24	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Sodium	256 J	1400	110	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Thallium	0.80 U	1.4	0.80	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Vanadium	34.8	6.9	0.26	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Zinc	59.4	6.9	3.2	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA46581
(2) Instrument QC Batch: MA46628
(3) Prep QC Batch: MP14565
(4) Prep QC Batch: MP14579

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: PSCB-41R(9-11)
Lab Sample ID: JC86837-2
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/22/19
Date Received: 04/23/19
Percent Solids: 70.9

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	0.15 U	0.29	0.15	mg/kg	1	05/03/19 14:15	KI	SW846 9012B/LACHAT
Solids, Percent	70.9			%	1	04/30/19 14:13	JMP	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: TP-44R(3-5)
Lab Sample ID: JC86837-3
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/22/19
Date Received: 04/23/19
Percent Solids: 78.7

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	2730	62	9.9	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Antimony	2.5	2.5	0.51	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Arsenic	17.0	2.5	0.35	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Barium	57.7	25	2.3	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Beryllium	0.38	0.25	0.099	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cadmium	0.086 U	0.62	0.086	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Calcium	852	620	54	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Chromium	8.9	1.2	0.46	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cobalt	3.5 J	6.2	0.35	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Copper	154	3.1	1.0	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Iron	10700	62	24	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Lead	220	2.5	0.51	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Magnesium	332 J	620	17	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Manganese	23.0	1.9	0.51	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Mercury	0.23 J	0.041	0.018	mg/kg	1	04/25/19	04/25/19	LL	SW846 7471B [1]	SW846 7471B [3]
Nickel	8.2	4.9	0.43	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Potassium	361 J	1200	39	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Selenium	1.2 J	2.5	0.80	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Silver	0.21 U	0.62	0.21	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Sodium	96 U	1200	96	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Thallium	0.72 U	1.2	0.72	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Vanadium	11.2	6.2	0.23	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Zinc	19.5	6.2	2.8	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA46581
(2) Instrument QC Batch: MA46628
(3) Prep QC Batch: MP14565
(4) Prep QC Batch: MP14579

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: TP-44R(3-5)
Lab Sample ID: JC86837-3
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/22/19
Date Received: 04/23/19
Percent Solids: 78.7

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	2.7	0.32	0.16	mg/kg	1	05/03/19 14:16	KI	SW846 9012B/LACHAT
Solids, Percent	78.7			%	1	04/30/19 14:13	JMP	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: TP-44R(5-7)
Lab Sample ID: JC86837-4
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/22/19
Date Received: 04/23/19
Percent Solids: 76.1

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	4720	66	11	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Antimony	0.92 J	2.7	0.54	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Arsenic	7.0	2.7	0.37	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Barium	407	27	2.5	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Beryllium	0.20 J	0.27	0.11	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Cadmium	0.093 U	0.66	0.093	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Calcium	640 J	660	59	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Chromium	14.3	1.3	0.49	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Cobalt	3.4 J	6.6	0.37	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Copper	17.8	3.3	1.1	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Iron	9770	66	25	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Lead	2840	13	2.7	mg/kg	5	04/26/19	05/02/19	MET	SW846 6010D [3]	SW846 3050B [5]
Magnesium	1810	660	18	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Manganese	95.2	2.0	0.54	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Mercury	0.67 J	0.035	0.015	mg/kg	1	04/25/19	04/25/19	LL	SW846 7471B [1]	SW846 7471B [4]
Nickel	8.1	5.3	0.46	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Potassium	1220 J	1300	42	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Selenium	0.86 U	2.7	0.86	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Silver	0.23 U	0.66	0.23	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Sodium	100 U	1300	100	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Thallium	0.77 U	1.3	0.77	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Vanadium	8.4	6.6	0.25	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Zinc	79.1	6.6	3.1	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA46581
(2) Instrument QC Batch: MA46628
(3) Instrument QC Batch: MA46638
(4) Prep QC Batch: MP14565
(5) Prep QC Batch: MP14579

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: TP-44R(5-7)
Lab Sample ID: JC86837-4
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/22/19
Date Received: 04/23/19
Percent Solids: 76.1

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	0.16 U	0.33	0.16	mg/kg	1	05/03/19 14:18	KI	SW846 9012B/LACHAT
Solids, Percent	76.1			%	1	04/30/19 14:13	JMP	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: TP-44R(7-9)
Lab Sample ID: JC86837-5
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/22/19
Date Received: 04/23/19
Percent Solids: 77.9

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	5920	64	10	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Antimony	0.53 U	2.6	0.53	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Arsenic	5.9	2.6	0.36	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Barium	35.2	26	2.4	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Beryllium	0.35	0.26	0.10	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cadmium	0.46 J	0.64	0.090	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Calcium	484 J	640	57	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Chromium	13.5	1.3	0.47	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cobalt	4.7 J	6.4	0.36	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Copper	8.4	3.2	1.1	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Iron	11300	64	25	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Lead	18.8	2.6	0.53	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Magnesium	1580	640	18	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Manganese	83.7	1.9	0.53	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Mercury	0.026 J	0.041	0.018	mg/kg	1	04/25/19	04/25/19	LL	SW846 7471B [1]	SW846 7471B [3]
Nickel	9.0	5.1	0.45	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Potassium	985 J	1300	41	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Selenium	0.83 U	2.6	0.83	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Silver	0.22 U	0.64	0.22	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Sodium	100 U	1300	100	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Thallium	0.74 U	1.3	0.74	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Vanadium	12.3	6.4	0.24	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Zinc	167	6.4	3.0	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA46581
(2) Instrument QC Batch: MA46628
(3) Prep QC Batch: MP14565
(4) Prep QC Batch: MP14579

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: TP-44R(7-9)
Lab Sample ID: JC86837-5
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/22/19
Date Received: 04/23/19
Percent Solids: 77.9

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	0.17 U	0.33	0.17	mg/kg	1	05/03/19 14:19	KI	SW846 9012B/LACHAT
Solids, Percent	77.9			%	1	04/30/19 14:13	JMP	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: S-135(4-6)
Lab Sample ID: JC86837-6
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/22/19
Date Received: 04/23/19
Percent Solids: 71.3

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	12300	70	11	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Antimony	0.58 U	2.8	0.58	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Arsenic	52.2	2.8	0.39	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Barium	136	28	2.7	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Beryllium	0.95	0.28	0.11	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cadmium	1.6	0.70	0.098	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Calcium	2810	700	62	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Chromium	125	1.4	0.52	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cobalt	13.2	7.0	0.39	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Copper	104	3.5	1.2	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Iron	23100	70	27	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Lead	189	2.8	0.58	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Magnesium	3340	700	19	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Manganese	557	2.1	0.58	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Mercury	0.99 J	0.040	0.017	mg/kg	1	04/25/19	04/25/19	LL	SW846 7471B [1]	SW846 7471B [3]
Nickel	24.2	5.6	0.49	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Potassium	1530	1400	45	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Selenium	1.3 J	2.8	0.91	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Silver	0.79	0.70	0.24	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Sodium	121 J	1400	110	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Thallium	0.81 U	1.4	0.81	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Vanadium	24.7	7.0	0.27	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Zinc	531	7.0	3.2	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA46581
(2) Instrument QC Batch: MA46628
(3) Prep QC Batch: MP14565
(4) Prep QC Batch: MP14579

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	S-135(4-6)		
Lab Sample ID:	JC86837-6	**Date Sampled:**	04/22/19
Matrix:	SO - Soil	**Date Received:**	04/23/19
		Percent Solids:	71.3
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	0.67	0.38	0.19	mg/kg	1	05/03/19 14:21	KI	SW846 9012B/LACHAT
Solids, Percent	71.3			%	1	04/30/19 14:13	JMP	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: S-135(8-10)
Lab Sample ID: JC86837-7
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/22/19
Date Received: 04/23/19
Percent Solids: 69.9

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	7510	70	11	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Antimony	0.58 U	2.8	0.58	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Arsenic	4.6	2.8	0.39	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Barium	46.6	28	2.7	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Beryllium	0.36	0.28	0.11	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cadmium	0.14 J	0.70	0.098	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Calcium	1940	700	62	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Chromium	23.7	1.4	0.52	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cobalt	6.8 J	7.0	0.39	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Copper	10.1	3.5	1.2	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Iron	13500	70	27	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Lead	25.6	2.8	0.58	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Magnesium	3200	700	19	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Manganese	401	2.1	0.58	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Mercury	0.051 J	0.043	0.019	mg/kg	1	04/25/19	04/25/19	LL	SW846 7471B [1]	SW846 7471B [3]
Nickel	15.3	5.6	0.49	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Potassium	1150 J	1400	45	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Selenium	0.91 U	2.8	0.91	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Silver	0.24 U	0.70	0.24	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Sodium	116 J	1400	110	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Thallium	0.81 U	1.4	0.81	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Vanadium	15.9	7.0	0.27	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Zinc	61.9	7.0	3.2	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA46581
(2) Instrument QC Batch: MA46628
(3) Prep QC Batch: MP14565
(4) Prep QC Batch: MP14579

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	S-135(8-10)		
Lab Sample ID:	JC86837-7	**Date Sampled:**	04/22/19
Matrix:	SO - Soil	**Date Received:**	04/23/19
		Percent Solids:	69.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	0.19 U	0.37	0.19	mg/kg	1	05/03/19 14:22	KI	SW846 9012B/LACHAT
Solids, Percent	69.9			%	1	04/30/19 14:13	JMP	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: S-136(4-6)
Lab Sample ID: JC86837-8
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/22/19
Date Received: 04/23/19
Percent Solids: 72.6

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	10400	71	11	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Antimony	0.58 U	2.8	0.58	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Arsenic	20.8	2.8	0.40	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Barium	123	28	2.7	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Beryllium	0.70	0.28	0.11	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cadmium	2.1	0.71	0.099	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Calcium	1820	710	63	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Chromium	79.0	1.4	0.53	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cobalt	8.0	7.1	0.40	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Copper	74.3	3.6	1.2	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Iron	17600	71	27	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Lead	137	2.8	0.58	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Magnesium	2690	710	19	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Manganese	144	2.1	0.58	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Mercury	0.80 J	0.040	0.018	mg/kg	1	04/25/19	04/25/19	LL	SW846 7471B [1]	SW846 7471B [3]
Nickel	21.4	5.7	0.50	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Potassium	1230 J	1400	45	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Selenium	1.1 J	2.8	0.92	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Silver	0.43 J	0.71	0.24	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Sodium	121 J	1400	110	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Thallium	0.82 U	1.4	0.82	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Vanadium	22.0	7.1	0.27	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Zinc	332	7.1	3.3	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA46581
(2) Instrument QC Batch: MA46628
(3) Prep QC Batch: MP14565
(4) Prep QC Batch: MP14579

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	S-136(4-6)		
Lab Sample ID:	JC86837-8	**Date Sampled:**	04/22/19
Matrix:	SO - Soil	**Date Received:**	04/23/19
		Percent Solids:	72.6
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	2.7	0.33	0.17	mg/kg	1	05/03/19 14:23	KI	SW846 9012B/LACHAT
Solids, Percent	72.6			%	1	04/30/19 14:13	JMP	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: S-136(7-9)
Lab Sample ID: JC86837-9
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/22/19
Date Received: 04/23/19
Percent Solids: 81.4

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	4850	63	10	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Antimony	0.52 U	2.5	0.52	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Arsenic	5.7	2.5	0.35	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Barium	29.3	25	2.4	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Beryllium	0.22 J	0.25	0.10	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Cadmium	0.10 J	0.63	0.089	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Calcium	1040	630	56	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Chromium	12.4	1.3	0.47	mg/kg	1	04/26/19	05/02/19	MET	SW846 6010D [3]	SW846 3050B [5]
Cobalt	6.2 J	6.3	0.35	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Copper	6.8	3.2	1.1	mg/kg	1	04/26/19	05/02/19	MET	SW846 6010D [3]	SW846 3050B [5]
Iron	10400	63	24	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Lead	9.0	2.5	0.52	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Magnesium	1820	630	17	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Manganese	304	1.9	0.52	mg/kg	1	04/26/19	05/02/19	MET	SW846 6010D [3]	SW846 3050B [5]
Mercury	0.037 J	0.038	0.017	mg/kg	1	04/25/19	04/25/19	LL	SW846 7471B [1]	SW846 7471B [4]
Nickel	10.1	5.1	0.44	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Potassium	774 J	1300	40	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Selenium	0.82 U	2.5	0.82	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Silver	0.22 U	0.63	0.22	mg/kg	1	04/26/19	05/02/19	MET	SW846 6010D [3]	SW846 3050B [5]
Sodium	99 U	1300	99	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Thallium	0.73 U	1.3	0.73	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Vanadium	8.1	6.3	0.24	mg/kg	1	04/26/19	05/02/19	MET	SW846 6010D [3]	SW846 3050B [5]
Zinc	86.6	6.3	2.9	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA46581
(2) Instrument QC Batch: MA46628
(3) Instrument QC Batch: MA46638
(4) Prep QC Batch: MP14565
(5) Prep QC Batch: MP14579

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	S-136(7-9)		
Lab Sample ID:	JC86837-9	**Date Sampled:**	04/22/19
Matrix:	SO - Soil	**Date Received:**	04/23/19
		Percent Solids:	81.4
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	0.72	0.32	0.16	mg/kg	1	05/03/19 14:27	KI	SW846 9012B/LACHAT
Solids, Percent	81.4			%	1	04/30/19 14:13	JMP	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: S-111(2-4)
Lab Sample ID: JC86837-10
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/23/19
Date Received: 04/23/19
Percent Solids: 86.2

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	5750	59	9.5	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Antimony	0.65 J	2.4	0.49	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Arsenic	6.7	2.4	0.33	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Barium	66.5	24	2.2	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Beryllium	0.41	0.24	0.095	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cadmium	0.50 J	0.59	0.083	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Calcium	6330	590	52	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Chromium	16.2	1.2	0.44	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cobalt	5.2 J	5.9	0.33	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Copper	49.0	3.0	0.99	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Iron	15400	59	23	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Lead	137	2.4	0.49	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Magnesium	3330	590	16	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Manganese	143	1.8	0.49	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Mercury	0.44 J	0.035	0.015	mg/kg	1	04/25/19	04/25/19	LL	SW846 7471B [1]	SW846 7471B [3]
Nickel	16.6	4.7	0.41	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Potassium	697 J	1200	38	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Selenium	0.77 U	2.4	0.77	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Silver	0.20 U	0.59	0.20	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Sodium	92 U	1200	92	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Thallium	0.69 U	1.2	0.69	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Vanadium	27.1	5.9	0.22	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Zinc	126	5.9	2.7	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA46581
(2) Instrument QC Batch: MA46628
(3) Prep QC Batch: MP14565
(4) Prep QC Batch: MP14579

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	S-111(2-4)		
Lab Sample ID:	JC86837-10	**Date Sampled:**	04/23/19
Matrix:	SO - Soil	**Date Received:**	04/23/19
		Percent Solids:	86.2
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	0.78	0.30	0.15	mg/kg	1	05/03/19 14:29	KI	SW846 9012B/LACHAT
Solids, Percent	86.2			%	1	04/30/19 08:30	RC	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: S-111(4.5-6.5)
Lab Sample ID: JC86837-11
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/23/19
Date Received: 04/23/19
Percent Solids: 87.4

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	8310	58	9.3	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Antimony	0.47 U	2.3	0.47	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Arsenic	4.5	2.3	0.32	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Barium	23.9	23	2.2	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Beryllium	1.0	0.23	0.092	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cadmium	0.34 J	0.58	0.081	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Calcium	358 J	580	51	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Chromium	31.0	1.2	0.43	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Cobalt	6.8	5.8	0.32	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Copper	41.5	2.9	0.97	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Iron	19600	58	22	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Lead	44.8	2.3	0.47	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Magnesium	1410	580	16	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Manganese	89.5	1.7	0.47	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Mercury	0.16 J	0.029	0.013	mg/kg	1	04/25/19	04/25/19	LL	SW846 7471B [1]	SW846 7471B [3]
Nickel	15.1	4.6	0.40	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Potassium	872 J	1200	37	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Selenium	0.75 U	2.3	0.75	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Silver	0.20 U	0.58	0.20	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Sodium	90 U	1200	90	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Thallium	0.67 U	1.2	0.67	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Vanadium	18.7	5.8	0.22	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]
Zinc	144	5.8	2.7	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA46581
(2) Instrument QC Batch: MA46628
(3) Prep QC Batch: MP14565
(4) Prep QC Batch: MP14579

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	S-111(4.5-6.5)		
Lab Sample ID:	JC86837-11	**Date Sampled:**	04/23/19
Matrix:	SO - Soil	**Date Received:**	04/23/19
		Percent Solids:	87.4
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	2.8	0.29	0.14	mg/kg	1	05/03/19 14:30	KI	SW846 9012B/LACHAT
Solids, Percent	87.4			%	1	04/30/19 14:13	JMP	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID: S-107(2-4)
Lab Sample ID: JC86837-12
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 04/23/19
Date Received: 04/23/19
Percent Solids: 87.0

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	8800	57	9.2	mg/kg	1	04/26/19	05/02/19	MET	SW846 6010D [3]	SW846 3050B [5]
Antimony	2.7	2.3	0.47	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Arsenic	57.7	2.3	0.32	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Barium	85.0	23	2.2	mg/kg	1	04/26/19	05/02/19	MET	SW846 6010D [3]	SW846 3050B [5]
Beryllium	0.63	0.23	0.091	mg/kg	1	04/26/19	05/02/19	MET	SW846 6010D [3]	SW846 3050B [5]
Cadmium	0.46 J	0.57	0.080	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Calcium	757	570	50	mg/kg	1	04/26/19	05/02/19	MET	SW846 6010D [3]	SW846 3050B [5]
Chromium	15.4	1.1	0.42	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Cobalt	5.0 J	5.7	0.32	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Copper	52.7	2.8	0.96	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Iron	18500	57	22	mg/kg	1	04/26/19	05/02/19	MET	SW846 6010D [3]	SW846 3050B [5]
Lead	683	2.3	0.47	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Magnesium	1490	570	16	mg/kg	1	04/26/19	05/02/19	MET	SW846 6010D [3]	SW846 3050B [5]
Manganese	131	1.7	0.47	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Mercury	0.36 J	0.038	0.017	mg/kg	1	04/25/19	04/25/19	LL	SW846 7471B [1]	SW846 7471B [4]
Nickel	13.4	4.6	0.40	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Potassium	660 J	1100	36	mg/kg	1	04/26/19	05/02/19	MET	SW846 6010D [3]	SW846 3050B [5]
Selenium	0.74 U	2.3	0.74	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Silver	0.19 U	0.57	0.19	mg/kg	1	04/26/19	05/02/19	MET	SW846 6010D [3]	SW846 3050B [5]
Sodium	89 U	1100	89	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Thallium	0.66 U	1.1	0.66	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Vanadium	16.7	5.7	0.22	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]
Zinc	144	5.7	2.6	mg/kg	1	04/26/19	05/01/19	ND	SW846 6010D [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA46581
(2) Instrument QC Batch: MA46628
(3) Instrument QC Batch: MA46638
(4) Prep QC Batch: MP14565
(5) Prep QC Batch: MP14579

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	S-107(2-4)		
Lab Sample ID:	JC86837-12	**Date Sampled:**	04/23/19
Matrix:	SO - Soil	**Date Received:**	04/23/19
		Percent Solids:	87.0
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Cyanide	12.3	0.29	0.14	mg/kg	1	05/02/19 16:39	KI	SW846 9012B/LACHAT
Solids, Percent	87			%	1	04/30/19 14:13	JMP	SM2540 G 18TH ED MOD

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

APPENDIX I

Investigation-Derived Waste Characterization and Documentation

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0
Automated Report

Technical Report for

Arcadis

National Grid, Philly Coke, Philadelphia, PA

B0036790.0001.00002

SGS Job Number: JC95610

Sampling Date: 09/25/19

Report to:

Arcadis

Lawrence.Healy@arcadis-us.com

ATTN: Lawrence Healy

Total number of pages in report: 190

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Laura Degenhardt
General Manager

Client Service contact: Kelly Ramos 732-329-0200

Certifications: NJ(12129), NY(10983), CA, CT, FL, IL, IN, KS, KY, LA, MA, MD, ME, MN, NC, OH VAP (CL0056), AK (UST-103), AZ (AZ0786), PA, RI, SC, TX, UT, VA, WV, DoD ELAP (ANAB L2248)

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Test results relate only to samples analyzed.

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EHS.US.CustomerCare@sgs.com

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Sample Summary

Arcadis

Job No: JC95610

National Grid, Philly Coke, Philadelphia, PA
Project No: B0036790.0001.00002

Sample Number	Collected Date	Time	By	Received	Matrix Code	Matrix Type	Client Sample ID
JC95610-1	09/25/19	09:30	CO	09/25/19	SO	Soil	WC-092519

This report contains results reported as ND = Not detected. The following applies:
Organics ND = Not detected above the MDL

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

CASE NARRATIVE / CONFORMANCE SUMMARY

Client:	Arcadis	**Job No**	JC95610
Site:	National Grid, Philly Coke, Philadelphia, PA	**Report Date**	10/9/2019 4:19:55 PM

On 09/25/2019, 1 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were received at SGS North America Inc. at a maximum corrected temperature of 3.3 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. Job Number of JC95610 was assigned to the project. Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section.

Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

Compounds qualified as out of range in the continuing calibration summary report are acceptable as per method requirements when there is a high bias but the sample result is non-detect.

MS Volatiles By Method SW846 8260C

Matrix: LEACHATE **Batch ID:** V3D6388

- All samples were analyzed within the recommended method holding time.
- Sample(s) JC95392-5MS, JC95392-5MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- RPD(s) for MS/MSD for 1,1-Dichloroethene, 1,4-Dichlorobenzene, Chloroform are outside control limits.Analytical precision exceeds in-house control limits.

MS Semi-volatiles By Method SW846 8270D

Matrix: LEACHATE **Batch ID:** OP23137

- All samples were extracted within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC95821-11ALS, JC95821-11AMS, JC95821-11AMSD were used as the QC samples indicated.
- Matrix Spike Recovery(s) for Pyridine are outside of in house control limits.
- JC95610-1 for 2,4-Dinitrotoluene: Associated CCV outside of control limits high, sample was ND.

GC/LC Semi-volatiles By Method SW846 8082A

Matrix: SO **Batch ID:** OP23056

- All samples were extracted within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC95413-1MS, JC95413-1MSD were used as the QC samples indicated.
- JC95610-1 for Tetrachloro-m-xylene: Outside control limits due to matrix interference.
- JC95610-1 for Decachlorobiphenyl: Outside control limits due to matrix interference.

Metals Analysis By Method SW846 6010D

Matrix: LEACHATE **Batch ID:** MP17700

- All samples were digested within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC95821-11AMS, JC95821-11AMSD, JC95821-11ASDL were used as the QC samples for metals.
- RPD(s) for Serial Dilution for Lead, Silver are outside control limits. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

Metals Analysis By Method SW846 7470A

Matrix:	LEACHATE	Batch ID:	MP17705

- All samples were digested within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC95821-11AMS, JC95821-11AMSD were used as the QC samples for metals.

General Chemistry By Method SM2540 G 18TH ED MOD

Matrix:	SO	Batch ID:	GN708

- Sample(s) JC95922-2DUP were used as the QC samples for Solids, Percent.

General Chemistry By Method SW846 9045D

Matrix:	SO	Batch ID:	GN875

- Sample(s) JC95639-5ADUP were used as the QC samples for Corrosivity as pH.

SGS North America Inc. certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting the Quality System precision, accuracy and completeness objectives except as noted.

Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria.

SGS North America Inc. is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety. Data release is authorized by SGS North America Inc indicated via signature on the report cover

Summary of Hits

Job Number: JC95610
Account: Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA
Collected: 09/25/19

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
JC95610-1	**WC-092519**					
Corrosivity as pH		7.62 NC			su	SW846 9045D
Benzene		0.0116	0.0025	0.0021	mg/l	SW846 8260C
2-Methylphenol		0.0932	0.020	0.0089	mg/l	SW846 8270D
3&4-Methylphenol		0.141	0.020	0.0088	mg/l	SW846 8270D
Lead		11.6	0.50		mg/l	SW846 6010D

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID: WC-092519
Lab Sample ID: JC95610-1
Matrix: SO - Soil
Method: SW846 8260C SW846 1311
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 09/25/19
Date Received: 09/25/19
Percent Solids: 66.9

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3D149472.D	5	09/30/19 17:43	EH	09/25/19 09:00	GP23888	V3D6388
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCLP Leachate **TCLP Leachate method SW846 1311**

CAS No.	Compound	Result	HW#	MCL	RL	MDL	Units	Q
71-43-2	Benzene	0.0116	D018	0.50	0.0025	0.0021	mg/l	
78-93-3	2-Butanone (MEK)	ND	D035	200	0.10	0.034	mg/l	
56-23-5	Carbon tetrachloride	ND	D019	0.50	0.0050	0.0028	mg/l	
108-90-7	Chlorobenzene	ND	D021	100	0.0050	0.0028	mg/l	
67-66-3	Chloroform	ND	D022	6.0	0.0050	0.0025	mg/l	
106-46-7	1,4-Dichlorobenzene	ND	D027	7.5	0.0050	0.0025	mg/l	
107-06-2	1,2-Dichloroethane	ND	D028	0.50	0.0050	0.0030	mg/l	
75-35-4	1,1-Dichloroethene	ND	D029	0.70	0.0050	0.0030	mg/l	
127-18-4	Tetrachloroethene	ND	D039	0.70	0.0050	0.0045	mg/l	
79-01-6	Trichloroethene	ND	D040	0.50	0.0050	0.0026	mg/l	
75-01-4	Vinyl chloride	ND	D043	0.20	0.0050	0.0039	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	111%		76-120%
17060-07-0	1,2-Dichloroethane-D4	103%		64-135%
2037-26-5	Toluene-D8	101%		76-117%
460-00-4	4-Bromofluorobenzene	94%		72-122%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
MCL = Maximum Contamination Level (40 CFR 261 7/1/11) B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WC-092519		
Lab Sample ID:	JC95610-1	**Date Sampled:**	09/25/19
Matrix:	SO - Soil	**Date Received:**	09/25/19
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	66.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	P132162.D	1	10/09/19 01:16	CS	10/08/19 08:00	OP23137	EP5993
Run #2							

	Initial Volume	Final Volume
Run #1	100 ml	1.0 ml
Run #2		

ABN TCLP Leachate **TCLP Leachate method SW846 1311**

CAS No.	Compound	Result	HW#	MCL	RL	MDL	Units	Q
95-48-7	2-Methylphenol	0.0932	D023	200	0.020	0.0089	mg/l	
	3&4-Methylphenol	0.141	D024	200	0.020	0.0088	mg/l	
87-86-5	Pentachlorophenol	ND	D037	100	0.10	0.014	mg/l	
95-95-4	2,4,5-Trichlorophenol	ND	D041	400	0.050	0.013	mg/l	
88-06-2	2,4,6-Trichlorophenol	ND	D042	2.0	0.050	0.0092	mg/l	
106-46-7	1,4-Dichlorobenzene	ND	D027	7.5	0.020	0.0017	mg/l	
121-14-2	2,4-Dinitrotoluene [a]	ND	D030	0.13	0.020	0.0055	mg/l	
118-74-1	Hexachlorobenzene	ND	D032	0.13	0.020	0.0033	mg/l	
87-68-3	Hexachlorobutadiene	ND	D033	0.50	0.010	0.0049	mg/l	
67-72-1	Hexachloroethane	ND	D034	3.0	0.050	0.0039	mg/l	
98-95-3	Nitrobenzene	ND	D036	2.0	0.020	0.0064	mg/l	
110-86-1	Pyridine	ND	D038	5.0	0.020	0.0039	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	44%		14-88%
4165-62-2	Phenol-d5	32%		10-110%
118-79-6	2,4,6-Tribromophenol	78%		39-149%
4165-60-0	Nitrobenzene-d5	81%		32-128%
321-60-8	2-Fluorobiphenyl	60%		35-119%
1718-51-0	Terphenyl-d14	70%		10-126%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
MCL = Maximum Contamination Level (40 CFR 261 7/1/11) B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	WC-092519		
Lab Sample ID:	JC95610-1	**Date Sampled:**	09/25/19
Matrix:	SO - Soil	**Date Received:**	09/25/19
Method:	SW846 8082A SW846 3510C	**Percent Solids:**	66.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XX2440964.D	1	10/02/19 09:30	TR	10/01/19 09:00	OP23056	GXX6824
Run #2							

	Initial Weight	Final Volume
Run #1	16.2 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	46	21	ug/kg	
11104-28-2	Aroclor 1221	ND	46	29	ug/kg	
11141-16-5	Aroclor 1232	ND	46	29	ug/kg	
53469-21-9	Aroclor 1242	ND	46	19	ug/kg	
12672-29-6	Aroclor 1248	ND	46	41	ug/kg	
11097-69-1	Aroclor 1254	ND	46	25	ug/kg	
11096-82-5	Aroclor 1260	ND	46	20	ug/kg	
11100-14-4	Aroclor 1268	ND	46	19	ug/kg	
37324-23-5	Aroclor 1262	ND	46	30	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	1434% [a]		31-146%
877-09-8	Tetrachloro-m-xylene	325% [a]		31-146%
2051-24-3	Decachlorobiphenyl	85%		17-164%
2051-24-3	Decachlorobiphenyl	262% [a]		17-164%

(a) Outside control limits due to matrix interference.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: WC-092519
Lab Sample ID: JC95610-1
Matrix: SO - Soil
Project: National Grid, Philly Coke, Philadelphia, PA

Date Sampled: 09/25/19
Date Received: 09/25/19
Percent Solids: 66.9

Metals Analysis, TCLP Leachate SW846 1311

Analyte	Result	HW#	MCL	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	< 0.50	D004	5.0	0.50	mg/l	5	10/03/19	10/04/19	ND	SW846 6010D [2]	SW846 3010A [3]
Barium	< 1.0	D005	100	1.0	mg/l	5	10/03/19	10/04/19	ND	SW846 6010D [2]	SW846 3010A [3]
Cadmium	< 0.020	D006	1.0	0.020	mg/l	5	10/03/19	10/04/19	ND	SW846 6010D [2]	SW846 3010A [3]
Chromium	< 0.050	D007	5.0	0.050	mg/l	5	10/03/19	10/04/19	ND	SW846 6010D [2]	SW846 3010A [3]
Lead	11.6	D008	5.0	0.50	mg/l	5	10/03/19	10/04/19	ND	SW846 6010D [2]	SW846 3010A [3]
Mercury	< 0.00020	D009	0.20	0.00020	mg/l	1	10/04/19	10/04/19	LL	SW846 7470A [1]	SW846 7470A [4]
Selenium	< 0.50	D010	1.0	0.50	mg/l	5	10/03/19	10/04/19	ND	SW846 6010D [2]	SW846 3010A [3]
Silver	< 0.050	D011	5.0	0.050	mg/l	5	10/03/19	10/04/19	ND	SW846 6010D [2]	SW846 3010A [3]

(1) Instrument QC Batch: MA47567
(2) Instrument QC Batch: MA47570
(3) Prep QC Batch: MP17700
(4) Prep QC Batch: MP17705

RL = Reporting Limit
MCL = Maximum Contamination Level (40 CFR 261 7/1/11)

Report of Analysis

Client Sample ID:	WC-092519		
Lab Sample ID:	JC95610-1	**Date Sampled:**	09/25/19
Matrix:	SO - Soil	**Date Received:**	09/25/19
		Percent Solids:	66.9
Project:	National Grid, Philly Coke, Philadelphia, PA		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Corrosivity as pH	7.62 NC		su	1	10/07/19 17:42	JW	SW846 9045D
Solids, Percent	66.9		%	1	10/02/19 17:05	BG	SM2540 G 18TH ED MOD

RL = Reporting Limit

GC/LC Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- GC Identification Summaries (Hits)
- Surrogate Recovery Summaries
- GC Surrogate Retention Time Summaries
- Initial and Continuing Calibration Summaries
- Run Sequence Reports

CHAIN OF CUSTODY

SGS North America Inc. - Dayton
2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200 FAX: 732-329-3499/3480
www.sgs.com/ehsusa

Page __ of __

FED-EX Tracking #:
Bottle Order Control #: KR-09619-173
SGS Quote #:
SGS Job #: JC95610

Client / Reporting Information

Company Name: ARCADIS
Street Address: 1 LINCOLN CENTER
City: SYRACUSE State: NY Zip: 13202
Project Contact: CAREY HEALY E-mail:
Phone #: 315-671-9338
Sampler(s) Name(s): CHRIS CRTOLANO Phone #:

Project Information

Project Name: NATIONAL GRID - PHILLY COKE
Street: RICHMOND ST
City: PHILA State: PA
Project #:
Client Purchase Order #:
Project Manager:

Billing Information (if different from Report to)

Company Name:
Street Address:
City: State: Zip:
Attention:

Requested Analysis

SGS Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Grab (G) Comp (C)	Matrix	# of bottles	HCl	NaOH	HNO_3	H_2SO_4	NONE	DI Water	MEOH	ENCORE	PCB	Corrosivity	TCLP VOCs	TCLP SVOC	TCLP Metals	LAB USE ONLY
1	WC-092519	X	9/25/19	0930	CO	G	SO	3					1		2		X	X	X	X	X	C13 H571

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
SED-Sediment
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe
FB - Field Blank
EB-Equipment Blank
RB - Rinse Blank
TB - Trip Blank

Turn Around Time (Business Days)

Approved By (SGS PM): / Date:

- [X] 10 Business Days
- [ ] 5 Business Days
- [ ] 3 Business Days
- [ ] 2 Business Days
- [ ] 1 Business Day
- [ ] Other

All data available via Labink

Approval needed for X3 Business Day TAT

Deliverable

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] NJ Reduced (Level 3)
- [X] Full Tier I (Level 4)
- [ ] Commercial "C"
- [ ] NJ DKQP
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] MA MCP Criteria
- [ ] CT RCP Criteria
- [ ] State Forms
- [ ] EDD Format
- [ ] DOD-QSM5

Commercial "A" = Results only; Commercial "B" = Results + QC Summary
Commercial "C" = Results + QC Summary + Partial Raw data

Comments / Special Instructions

2x25g 5in Cove.s
Initial Assessment JA YM
Label Verification

http://www.sgs.com/en/terms-and-conditions

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by:	Date / Time:	Received By:
1		9/25/19	
2		9/25/19 1310	2
3	Relinquished by:	Date / Time:	Received By: 3
4	Relinquished By:	Date / Time:	Received By: 4
5	Relinquished by:	Date / Time:	Received By: 5

Custody Seal #: [ ] Intact [ ] Not Intact
Preserved where applicable: [ ] Absent
Therm. ID: IR7 On Ice: [X] Cooler Temp. °C: 3.4CTp

EHSA-QAC-0023-02-FORM-Dayton - Standard COC.xlsx

5.1 5

JC95610: Chain of Custody
Page 1 of 2

SGS Sample Receipt Summary

Job Number: JC95610 **Client:** ARCADIS U.S. **Project:** NATIONAL GRID, PHILLY COKE, PHILADELPHI

Date / Time Received: 9/25/2019 1:10:00 PM **Delivery Method:** **Airbill #'s:**

Cooler Temps (Raw Measured) °C: Cooler 1: (3.4);

Cooler Temps (Corrected) °C: Cooler 1: (3.3);

Cooler Security	Y	or	N		Y	or	N
1. Custody Seals Present:	☑		☐	3. COC Present:	☑		☐
2. Custody Seals Intact:	☑		☐	4. Smpl Dates/Time OK	☑		☐

Cooler Temperature	Y	or	N
1. Temp criteria achieved:	☑		☐
2. Cooler temp verification:	IR Gun		
3. Cooler media:	Ice (Bag)		
4. No. Coolers:	1		

Quality Control Preservation	Y	or	N	N/A
1. Trip Blank present / cooler:	☐		☑	☐
2. Trip Blank listed on COC:	☐		☑	☐
3. Samples preserved properly:	☑		☐	
4. VOCs headspace free:	☐		☐	☑

Sample Integrity - Documentation	Y	or	N
1. Sample labels present on bottles:	☑		☐
2. Container labeling complete:	☑		☐
3. Sample container label / COC agree:	☑		☐

Sample Integrity - Condition	Y	or	N
1. Sample recvd within HT:	☑		☐
2. All containers accounted for:	☑		☐
3. Condition of sample:	Intact		

Sample Integrity - Instructions	Y	or	N	N/A
1. Analysis requested is clear:	☑		☐	
2. Bottles received for unspecified tests	☐		☑	
3. Sufficient volume recvd for analysis:	☑		☐	
4. Compositing instructions clear:	☐		☐	☑
5. Filtering instructions clear:	☐		☐	☑

Test Strip Lot #s: pH 1-12: 229517 pH 12+: 208717 Other: (Specify)

Comments

SM089-03
Rev. Date 12/7/17

JC95610: Chain of Custody
Page 2 of 2

Internal Sample Tracking Chronicle

Arcadis

Job No: JC95610

National Grid, Philly Coke, Philadelphia, PA
Project No: B0036790.0001.00002

Sample Number	Method	Analyzed	By	Prepped	By	Test Codes
JC95610-1 WC-092519	Collected: 25-SEP-19 09:30 By: CO		Received: 25-SEP-19 By: AS			
JC95610-1	SW846 8260C	30-SEP-19 17:43	EH	25-SEP-19	TM	V8260TCLP
JC95610-1	SW846 8082A	02-OCT-19 09:30	TR	01-OCT-19	LJ	P8082PCB11
JC95610-1	SM2540 G 18TH ED MOD	02-OCT-19 17:05	BG			SOL104
JC95610-1	SW846 7470A	04-OCT-19 12:04	LL	04-OCT-19	LL	EHG
JC95610-1	SW846 6010D	04-OCT-19 22:01	ND	03-OCT-19	MR	EAG,EAS,EBA,ECD,ECR,EPB,ESE
JC95610-1	SW846 9045D	07-OCT-19 17:42	JW			CORR
JC95610-1	SW846 8270D	09-OCT-19 01:16	CS	08-OCT-19	RL	AB8270TCLP

SGS Internal Chain of Custody

Job Number: JC95610
Account: BBLNYS Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA
Received: 09/25/19

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
JC95610-1.1	Secured Storage	Dwayne Johnson	09/27/19 13:53	Retrieve from Storage
JC95610-1.1	Dwayne Johnson	Secured Staging Area	09/27/19 13:53	Return to Storage
JC95610-1.1	Secured Staging Area	Kyle McKeon	09/27/19 14:24	Retrieve from Storage
JC95610-1.1	Kyle McKeon	Secured Storage	09/27/19 19:53	Return to Storage
JC95610-1.1	Secured Storage	Matthew Robbins	09/30/19 18:09	Retrieve from Storage
JC95610-1.1	Matthew Robbins	Secured Staging Area	09/30/19 18:09	Return to Storage
JC95610-1.1	Secured Staging Area	Luis Jimenez	09/30/19 21:58	Retrieve from Storage
JC95610-1.1	Luis Jimenez	Natasha Torres	09/30/19 22:35	Custody Transfer
JC95610-1.1	Natasha Torres	Luis Jimenez	10/01/19 09:32	Custody Transfer
JC95610-1.1	Secured Storage	Benjamin Gaines	10/02/19 10:55	Retrieve from Storage
Bottle was returned to secure storage, but inadvertently not scanned.				
JC95610-1.1	Benjamin Gaines	Secured Staging Area	10/02/19 10:55	Return to Storage
JC95610-1.1	Secured Staging Area	Benjamin Gaines	10/02/19 14:44	Retrieve from Storage
JC95610-1.1	Benjamin Gaines	Secured Storage	10/02/19 16:34	Return to Storage
JC95610-1.1	Secured Storage	Tharun Murali	10/03/19 09:47	Retrieve from Storage
JC95610-1.1	Tharun Murali	Secured Storage	10/03/19 09:47	Return to Storage
JC95610-1.1	Secured Storage	Dwayne Johnson	10/07/19 11:11	Retrieve from Storage
JC95610-1.1	Dwayne Johnson	Secured Staging Area	10/07/19 11:11	Return to Storage
JC95610-1.1	Secured Staging Area	Jennell Webber	10/07/19 11:55	Retrieve from Storage
JC95610-1.1	Jennell Webber	Secured Storage	10/07/19 18:00	Return to Storage
JC95610-1.1.1	Kyle McKeon	Organics Prep	09/27/19 14:30	Extract from JC95610-1.1
JC95610-1.1.2	Kyle McKeon	Organics Prep	09/27/19 14:39	Extract from JC95610-1.1
JC95610-1.1.2	Organics Prep	Luis Jimenez	09/27/19 21:19	Extract from JC95610-1.1
JC95610-1.1.2	Luis Jimenez	Extract Storage	09/27/19 21:19	Return to Storage
JC95610-1.1.2	Extract Storage	Christine Phillips	09/28/19 02:32	Retrieve from Storage
JC95610-1.1.2	Christine Phillips	GC5G	09/28/19 02:32	Load on Instrument
JC95610-1.1.3	Luis Jimenez	Organics Prep	09/30/19 21:59	Extract from JC95610-1.1
JC95610-1.1.3	Organics Prep	Luis Jimenez	10/01/19 13:22	Extract from JC95610-1.1
JC95610-1.1.3	Luis Jimenez	Extract Storage	10/01/19 13:22	Return to Storage
JC95610-1.1.3	Extract Storage	Tianwei Ruan	10/01/19 16:15	Retrieve from Storage
JC95610-1.1.3	Tianwei Ruan	GCXX	10/01/19 16:15	Load on Instrument
JC95610-1.1.4	Tharun Murali	TCLP	10/03/19 09:47	Leachate from JC95610-1.1
JC95610-1.1.4	TCLP	Tharun Murali	10/03/19 12:05	Leachate from JC95610-1.1
JC95610-1.1.4	Tharun Murali	Secured Storage	10/03/19 12:05	Return to Storage
JC95610-1.1.4	Secured Storage	Vikas Parikh	10/04/19 06:13	Retrieve from Storage
JC95610-1.1.4	Vikas Parikh	Secured Storage	10/04/19 06:15	Return to Storage
JC95610-1.1.4	Secured Storage	Rhys Longton	10/04/19 09:24	Retrieve from Storage
JC95610-1.1.4	Rhys Longton	Secured Storage	10/04/19 18:22	Return to Storage
JC95610-1.1.4	Secured Storage	Vikas Parikh	10/08/19 06:25	Retrieve from Storage
JC95610-1.1.4	Vikas Parikh	Secured Storage	10/08/19 06:41	Return to Storage

SGS Internal Chain of Custody

Job Number: JC95610
Account: BBLNYS Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA
Received: 09/25/19

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
JC95610-1.1.4	Secured Storage	Jonathon Ford	10/08/19 09:15	Retrieve from Storage
JC95610-1.1.4	Jonathon Ford	Secured Storage	10/12/19 08:12	Return to Storage
JC95610-1.1.5	TCLP	Tharun Murali	10/03/19 12:05	Leachate from JC95610-1.1
JC95610-1.1.5	Tharun Murali	Secured Storage	10/03/19 12:05	Return to Storage
JC95610-1.1.6	Rhys Longton	Organics Prep	10/04/19 09:26	Extract from JC95610-1.1.4
JC95610-1.1.6	Organics Prep	Rhys Longton	10/04/19 18:23	Extract from JC95610-1.1.4
JC95610-1.1.6	Rhys Longton	Extract Storage	10/04/19 18:24	Return to Storage
JC95610-1.1.6	Extract Storage	Christopher Sowa	10/05/19 05:01	Retrieve from Storage
JC95610-1.1.6	Christopher Sowa	GCMSZ	10/05/19 05:01	Load on Instrument
JC95610-1.1.6	GCMSZ	James Canas	10/07/19 09:58	Unload from Instrument
JC95610-1.1.6	James Canas	Extract Freezer	10/07/19 09:58	Return to Storage
JC95610-1.1.7	Jonathon Ford	Organics Prep	10/08/19 09:16	Extract from JC95610-1.1.4
JC95610-1.1.7	Organics Prep	Rhys Longton	10/08/19 16:40	Extract from JC95610-1.1.4
JC95610-1.1.7	Rhys Longton	Extract Storage	10/08/19 16:40	Return to Storage
JC95610-1.1.7	Extract Storage	Christopher Sowa	10/09/19 00:18	Retrieve from Storage
JC95610-1.1.7	Christopher Sowa	GCMSP	10/09/19 00:18	Load on Instrument
JC95610-1.1.7	GCMSP	Angela Rastelli	10/09/19 11:21	Unload from Instrument
JC95610-1.1.7	Angela Rastelli	Extract Freezer	10/09/19 11:21	Return to Storage
JC95610-1.2	Secured Storage	Todd Shoemaker	09/25/19 15:15	Retrieve from Storage
JC95610-1.2	Todd Shoemaker	Secured Staging Area	09/25/19 15:15	Return to Storage
JC95610-1.2	Secured Staging Area	Tharun Murali	09/25/19 15:23	Retrieve from Storage
JC95610-1.2	Tharun Murali	Secured Storage	09/25/19 17:51	Return to Storage
JC95610-1.2.1	Tharun Murali	TCLP	09/25/19 15:23	Leachate from JC95610-1.2
JC95610-1.2.1	TCLP	Tharun Murali	09/26/19 10:05	Leachate from JC95610-1.2
JC95610-1.2.1	Tharun Murali	Secured Storage	09/26/19 10:05	Return to Storage
JC95610-1.2.2	TCLP	Tharun Murali	09/26/19 10:05	Leachate from JC95610-1.2
JC95610-1.2.2	Tharun Murali	Secured Storage	09/26/19 10:05	Return to Storage
JC95610-1.2.2	Secured Storage	Eddie Huang	09/30/19 10:10	Retrieve from Storage
JC95610-1.2.2	Eddie Huang	GCMS2D	09/30/19 10:10	Load on Instrument
JC95610-1.2.2	GCMS2D	Eddie Huang	09/30/19 10:10	Unload from Instrument
JC95610-1.2.2	Eddie Huang	GCMS3D	09/30/19 10:10	Load on Instrument
JC95610-1.2.2	GCMS3D	Eddie Huang	10/01/19 11:14	Unload from Instrument
JC95610-1.2.2	Eddie Huang	Secured Storage	10/01/19 11:14	Return to Storage

MS Volatiles

6

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Instrument Performance Checks (BFB)
- Internal Standard Area Summaries
- Surrogate Recovery Summaries
- Initial and Continuing Calibration Summaries
- Run Sequence Reports

Method Blank Summary

Job Number: JC95610
Account: BBLNYS Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3D6388-MB	3D149454.D	1	09/30/19	EH	n/a	n/a	V3D6388

The QC reported here applies to the following samples: **Method:** SW846 8260C

JC95610-1

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.50	0.43	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	6.9	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.55	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.56	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.51	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.59	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.90	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.53	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.79	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	102%	76-120%
17060-07-0	1,2-Dichloroethane-D4	95%	64-135%
2037-26-5	Toluene-D8	104%	76-117%
460-00-4	4-Bromofluorobenzene	92%	72-122%

Method Blank Summary

Job Number: JC95610
Account: BBLNYS Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3D6386-MB	3D149400.D	1	09/26/19	EH	n/a	n/a	V3D6386

The QC reported here applies to the following samples: **Method:** SW846 8260C

GP23888-16LB, GP23888-16LS

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.50	0.43	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	6.9	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.55	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.56	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.51	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.59	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.90	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.53	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.79	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	99%	76-120%
17060-07-0	1,2-Dichloroethane-D4	93%	64-135%
2037-26-5	Toluene-D8	103%	76-117%
460-00-4	4-Bromofluorobenzene	91%	72-122%

Leachate Blank Summary

Job Number: JC95610
Account: BBLNYS Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GP23888-16LB	3D149415.D	5	09/26/19	EH	09/25/19	GP23888	V3D6386

The QC reported here applies to the following samples: **Method:** SW846 8260C

JC95610-1

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	2.5	2.1	ug/l	
78-93-3	2-Butanone (MEK)	ND	50	34	ug/l	
56-23-5	Carbon tetrachloride	ND	5.0	2.8	ug/l	
108-90-7	Chlorobenzene	ND	5.0	2.8	ug/l	
67-66-3	Chloroform	ND	5.0	2.5	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	5.0	2.5	ug/l	
107-06-2	1,2-Dichloroethane	ND	5.0	3.0	ug/l	
75-35-4	1,1-Dichloroethene	ND	5.0	3.0	ug/l	
127-18-4	Tetrachloroethene	ND	5.0	4.5	ug/l	
79-01-6	Trichloroethene	ND	5.0	2.6	ug/l	
75-01-4	Vinyl chloride	ND	5.0	3.9	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	99%	76-120%
17060-07-0	1,2-Dichloroethane-D4	93%	64-135%
2037-26-5	Toluene-D8	103%	76-117%
460-00-4	4-Bromofluorobenzene	92%	72-122%

Blank Spike/Blank Spike Duplicate Summary

Job Number: JC95610
Account: BBLNYS Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3D6388-BS	3D149451.D	1	09/30/19	EH	n/a	n/a	V3D6388
V3D6388-BSD	3D149452.D	1	09/30/19	EH	n/a	n/a	V3D6388

The QC reported here applies to the following samples: **Method:** SW846 8260C

JC95610-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	50	50.1	100	50.1	100	0	75-122/30
78-93-3	2-Butanone (MEK)	200	177	89	187	94	5	64-130/30
56-23-5	Carbon tetrachloride	50	52.1	104	51.6	103	1	75-148/30
108-90-7	Chlorobenzene	50	50.6	101	50.9	102	1	76-124/30
67-66-3	Chloroform	50	48.0	96	48.7	97	1	77-124/30
106-46-7	1,4-Dichlorobenzene	50	48.9	98	49.9	100	2	71-123/30
107-06-2	1,2-Dichloroethane	50	45.3	91	46.8	94	3	66-150/30
75-35-4	1,1-Dichloroethene	50	52.2	104	52.0	104	0	61-132/30
127-18-4	Tetrachloroethene	50	52.7	105	53.5	107	2	70-136/30
79-01-6	Trichloroethene	50	52.8	106	52.7	105	0	79-126/30
75-01-4	Vinyl chloride	50	56.7	113	56.3	113	1	56-146/30

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
1868-53-7	Dibromofluoromethane	102%	100%	76-120%
17060-07-0	1,2-Dichloroethane-D4	93%	91%	64-135%
2037-26-5	Toluene-D8	102%	102%	76-117%
460-00-4	4-Bromofluorobenzene	94%	94%	72-122%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: JC95610
Account: BBLNYS Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JC95392-5MS	3D149463.D	5	09/30/19	EH	n/a	n/a	V3D6388
JC95392-5MSD	3D149464.D	5	09/30/19	EH	n/a	n/a	V3D6388
JC95392-5	3D149456.D	5	09/30/19	EH	09/27/19	GP23943	V3D6388

The QC reported here applies to the following samples: **Method:** SW846 8260C

JC95610-1

CAS No.	Compound	JC95392-5 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND		250	238	95	250	208	83	13	38-139/13
78-93-3	2-Butanone (MEK)	ND		1000	974	97	1000	846	85	14	58-140/14
56-23-5	Carbon tetrachloride	ND		250	274	110	250	232	93	17	50-161/18
108-90-7	Chlorobenzene	ND		250	239	96	250	212	85	12	65-128/12
67-66-3	Chloroform	ND		250	256	102	250	214	86	18* [a]	66-132/14
106-46-7	1,4-Dichlorobenzene	ND		250	229	92	250	200	80	14* [a]	63-126/13
107-06-2	1,2-Dichloroethane	ND		250	235	94	250	206	82	13	59-153/15
75-35-4	1,1-Dichloroethene	ND		250	266	106	250	222	89	18* [a]	41-144/17
127-18-4	Tetrachloroethene	ND		250	252	101	250	218	87	14	48-145/15
79-01-6	Trichloroethene	ND		250	249	100	250	218	87	13	53-141/15
75-01-4	Vinyl chloride	ND		250	260	104	250	225	90	14	34-151/20

CAS No.	Surrogate Recoveries	MS	MSD	JC95392-5	Limits
1868-53-7	Dibromofluoromethane	115%	109%	103%	76-120%
17060-07-0	1,2-Dichloroethane-D4	100%	97%	98%	64-135%
2037-26-5	Toluene-D8	101%	102%	103%	76-117%
460-00-4	4-Bromofluorobenzene	94%	92%	93%	72-122%

(a) Analytical precision exceeds in-house control limits.

* = Outside of Control Limits.

Leachate Spike Summary

Job Number: JC95610
Account: BBLNYS Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GP23888-16LS	3D149422.D	5	09/26/19	EH	09/25/19	GP23888	V3D6386
JC95262-6	3D149416.D	5	09/26/19	EH	09/25/19	GP23888	V3D6386

The QC reported here applies to the following samples: **Method:** SW846 8260C

JC95610-1

CAS No.	Compound	JC95262-6 ug/l	Q	Spike ug/l	LS ug/l	LS %	Limits
71-43-2	Benzene	ND		250	208	83	38-139
78-93-3	2-Butanone (MEK)	ND		1000	787	79	58-140
56-23-5	Carbon tetrachloride	ND		250	214	86	50-161
108-90-7	Chlorobenzene	ND		250	221	88	65-128
67-66-3	Chloroform	ND		250	205	82	66-132
106-46-7	1,4-Dichlorobenzene	ND		250	212	85	63-126
107-06-2	1,2-Dichloroethane	ND		250	198	79	59-153
75-35-4	1,1-Dichloroethene	ND		250	218	87	41-144
127-18-4	Tetrachloroethene	ND		250	223	89	48-145
79-01-6	Trichloroethene	ND		250	226	90	53-141
75-01-4	Vinyl chloride	ND		250	190	76	34-151

CAS No.	Surrogate Recoveries	LS	JC95262-6	Limits
1868-53-7	Dibromofluoromethane	103%	100%	76-120%
17060-07-0	1,2-Dichloroethane-D4	90%	94%	64-135%
2037-26-5	Toluene-D8	101%	102%	76-117%
460-00-4	4-Bromofluorobenzene	90%	92%	72-122%

* = Outside of Control Limits.

Instrument Performance Check (BFB)

Job Number: JC95610
Account: BBLNYS Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

Sample:	V3D6212-BFB	**Injection Date:**	03/07/19
Lab File ID:	3D145269.D	**Injection Time:**	17:57
Instrument ID:	GCMS3D		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	14.99 - 40.0% of mass 95	16616	17.6		Pass
75	30.0 - 60.0% of mass 95	44517	47.2		Pass
95	Base peak, 100% relative abundance	94402	100.0		Pass
96	5.0 - 9.0% of mass 95	6251	6.62		Pass
173	Less than 2.0% of mass 174	981	1.04	(1.17) [a]	Pass
174	50.0 - 120.0% of mass 95	83682	88.6		Pass
175	5.0 - 9.0% of mass 174	6242	6.61	(7.46) [a]	Pass
176	95.0 - 101.0% of mass 174	80954	85.8	(96.7) [a]	Pass
177	5.0 - 9.0% of mass 176	5431	5.75	(6.71) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
V3D6212-IC6212	3D145270.D	03/07/19	18:37	00:40	Initial cal 0.2
V3D6212-IC6212	3D145271.D	03/07/19	19:02	01:05	Initial cal 0.5
V3D6212-IC6212	3D145272.D	03/07/19	19:27	01:30	Initial cal 1
V3D6212-IC6212	3D145273.D	03/07/19	19:52	01:55	Initial cal 2
V3D6212-IC6212	3D145274.D	03/07/19	20:17	02:20	Initial cal 4
V3D6212-IC6212	3D145275.D	03/07/19	20:43	02:46	Initial cal 8
V3D6212-IC6212	3D145276.D	03/07/19	21:08	03:11	Initial cal 20
V3D6212-ICC6212	3D145277.D	03/07/19	21:33	03:36	Initial cal 50
V3D6212-IC6212	3D145278.D	03/07/19	21:58	04:01	Initial cal 100
V3D6212-IC6212	3D145279.D	03/07/19	22:24	04:27	Initial cal 200
V3D6212-ICV6212	3D145282.D	03/07/19	23:39	05:42	Initial cal verification 50

Instrument Performance Check (BFB)

Job Number: JC95610
Account: BBLNYS Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

Sample:	V3D6386-BFB	**Injection Date:**	09/26/19
Lab File ID:	3D149397.D	**Injection Time:**	07:19
Instrument ID:	GCMS3D		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	14.99 - 40.0% of mass 95	12041	16.7		Pass
75	30.0 - 60.0% of mass 95	33002	45.7		Pass
95	Base peak, 100% relative abundance	72277	100.0		Pass
96	5.0 - 9.0% of mass 95	4689	6.49		Pass
173	Less than 2.0% of mass 174	265	0.37	(0.37) [a]	Pass
174	50.0 - 120.0% of mass 95	71114	98.4		Pass
175	5.0 - 9.0% of mass 174	5441	7.53	(7.65) [a]	Pass
176	95.0 - 101.0% of mass 174	68010	94.1	(95.6) [a]	Pass
177	5.0 - 9.0% of mass 176	4537	6.28	(6.67) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
V3D6386-CC6212	3D149397.D	09/26/19	07:19	00:00	Continuing cal 20
V3D6386-BS	3D149398.D	09/26/19	08:22	01:03	Blank Spike
V3D6386-MB	3D149400.D	09/26/19	09:20	02:01	Method Blank
GP23871-15LB	3D149401.D	09/26/19	10:08	02:49	Leachate Blank
ZZZZZZ	3D149402.D	09/26/19	10:33	03:14	(unrelated sample)
JC95314-16	3D149403.D	09/26/19	10:59	03:40	(used for QC only; not part of job JC95610)
ZZZZZZ	3D149404.D	09/26/19	11:24	04:05	(unrelated sample)
ZZZZZZ	3D149405.D	09/26/19	11:50	04:31	(unrelated sample)
ZZZZZZ	3D149406.D	09/26/19	12:15	04:56	(unrelated sample)
JC95314-16MS	3D149408.D	09/26/19	13:05	05:46	Matrix Spike
GP23871-15LS	3D149408.D	09/26/19	13:05	05:46	Leachate Spike
JC95314-16MSD	3D149409.D	09/26/19	13:30	06:11	Matrix Spike Duplicate
ZZZZZZ	3D149411.D	09/26/19	14:21	07:02	(unrelated sample)
ZZZZZZ	3D149412.D	09/26/19	14:46	07:27	(unrelated sample)
ZZZZZZ	3D149413.D	09/26/19	15:12	07:53	(unrelated sample)
GP23888-16LB	3D149415.D	09/26/19	16:03	08:44	Leachate Blank
ZZZZZZ	3D149416.D	09/26/19	16:28	09:09	(unrelated sample)
ZZZZZZ	3D149417.D	09/26/19	16:54	09:35	(unrelated sample)
ZZZZZZ	3D149418.D	09/26/19	17:19	10:00	(unrelated sample)
ZZZZZZ	3D149419.D	09/26/19	17:44	10:25	(unrelated sample)
ZZZZZZ	3D149420.D	09/26/19	18:10	10:51	(unrelated sample)
ZZZZZZ	3D149421.D	09/26/19	18:35	11:16	(unrelated sample)
GP23888-16LS	3D149422.D	09/26/19	19:00	11:41	Leachate Spike

Instrument Performance Check (BFB)

Job Number: JC95610
Account: BBLNYS Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

Sample: V3D6388-BFB
Lab File ID: 3D149450.D
Instrument ID: GCMS3D
Injection Date: 09/30/19
Injection Time: 08:10

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	14.99 - 40.0% of mass 95	16802	16.6		Pass
75	30.0 - 60.0% of mass 95	45538	45.0		Pass
95	Base peak, 100% relative abundance	101098	100.0		Pass
96	5.0 - 9.0% of mass 95	6538	6.47		Pass
173	Less than 2.0% of mass 174	0	0.00	(0.00) [a]	Pass
174	50.0 - 120.0% of mass 95	93880	92.9		Pass
175	5.0 - 9.0% of mass 174	7392	7.31	(7.87) [a]	Pass
176	95.0 - 101.0% of mass 174	90386	89.4	(96.3) [a]	Pass
177	5.0 - 9.0% of mass 176	6225	6.16	(6.89) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
V3D6388-CC6212	3D149450.D	09/30/19	08:10	00:00	Continuing cal 20
V3D6388-BS	3D149451.D	09/30/19	08:42	00:32	Blank Spike
V3D6388-BSD	3D149452.D	09/30/19	09:07	00:57	Blank Spike Duplicate
V3D6388-MB	3D149454.D	09/30/19	10:04	01:54	Method Blank
GP23943-1LB	3D149455.D	09/30/19	10:33	02:23	Leachate Blank
JC95392-5	3D149456.D	09/30/19	10:58	02:48	(used for QC only; not part of job JC95610)
ZZZZZZ	3D149457.D	09/30/19	11:24	03:14	(unrelated sample)
ZZZZZZ	3D149458.D	09/30/19	11:49	03:39	(unrelated sample)
ZZZZZZ	3D149459.D	09/30/19	12:15	04:05	(unrelated sample)
ZZZZZZ	3D149460.D	09/30/19	12:40	04:30	(unrelated sample)
ZZZZZZ	3D149461.D	09/30/19	13:05	04:55	(unrelated sample)
ZZZZZZ	3D149462.D	09/30/19	13:31	05:21	(unrelated sample)
GP23943-1LS	3D149463A.D	09/30/19	13:56	05:46	Leachate Spike
JC95392-5MS	3D149463.D	09/30/19	13:56	05:46	Matrix Spike
JC95392-5MSD	3D149464.D	09/30/19	14:21	06:11	Matrix Spike Duplicate
GP23923-18LB	3D149466.D	09/30/19	15:11	07:01	Leachate Blank
ZZZZZZ	3D149467.D	09/30/19	15:37	07:27	(unrelated sample)
ZZZZZZ	3D149468.D	09/30/19	16:02	07:52	(unrelated sample)
ZZZZZZ	3D149469.D	09/30/19	16:27	08:17	(unrelated sample)
ZZZZZZ	3D149470.D	09/30/19	16:53	08:43	(unrelated sample)
ZZZZZZ	3D149471.D	09/30/19	17:18	09:08	(unrelated sample)
JC95610-1	3D149472.D	09/30/19	17:43	09:33	WC-092519
GP23923-18LS	3D149474.D	09/30/19	18:33	10:23	Leachate Spike

Internal Standard Area Summary

Job Number: JC95610
Account: BBLNYS Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

Check Std:	V3D6386-CC6212	**Injection Date:**	09/26/19
Lab File ID:	3D149397.D	**Injection Time:**	07:19
Instrument ID:	GCMS3D	**Method:**	SW846 8260C

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
Check Std	120478	2.96	237986	4.16	333385	4.72	281691	7.11	144472	9.31
Upper Limit [a]	240956	3.46	475972	4.66	666770	5.22	563382	7.61	288944	9.81
Lower Limit [b]	60239	2.46	118993	3.66	166693	4.22	140846	6.61	72236	8.81

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
V3D6386-BS	121295	2.96	237694	4.16	329677	4.72	281398	7.11	143589	9.31
V3D6386-MB	115222	2.96	239286	4.16	328248	4.72	279306	7.11	140740	9.31
GP23871-15LB	112298	2.96	233643	4.16	319876	4.72	274043	7.11	139960	9.31
ZZZZZZ	128415	2.96	245714	4.16	340497	4.72	290128	7.11	148454	9.31
JC95314-16	121972	2.96	245323	4.16	341572	4.72	291334	7.11	148009	9.31
ZZZZZZ	114557	2.96	233796	4.16	315754	4.72	267176	7.11	137164	9.31
ZZZZZZ	118510	2.96	236777	4.16	329258	4.72	277970	7.11	143097	9.31
ZZZZZZ	113286	2.96	236549	4.16	325009	4.72	269863	7.11	138574	9.31
JC95314-16MS	127375	2.96	240611	4.16	338087	4.72	292454	7.11	150225	9.31
GP23871-15LS	127375	2.96	240611	4.16	338087	4.72	292454	7.11	150225	9.31
JC95314-16MSD	135108	2.96	248399	4.16	348295	4.72	300063	7.11	156294	9.31
ZZZZZZ	120790	2.96	242149	4.16	339118	4.72	286509	7.11	148058	9.31
ZZZZZZ	123474	2.96	247504	4.16	339460	4.72	284536	7.11	149611	9.31
ZZZZZZ	119331	2.96	251845	4.16	352272	4.72	300677	7.11	155561	9.31
GP23888-16LB	121788	2.96	244086	4.16	336672	4.72	283018	7.11	144616	9.31
ZZZZZZ	119809	2.96	244896	4.16	340566	4.72	291974	7.11	148815	9.31
ZZZZZZ	118971	2.96	246002	4.16	340448	4.72	284385	7.11	146101	9.31
ZZZZZZ	124235	2.96	249595	4.16	340903	4.72	292147	7.11	152065	9.31
ZZZZZZ	119391	2.96	245139	4.16	340279	4.72	290534	7.11	150603	9.31
ZZZZZZ	116075	2.96	240881	4.16	332681	4.72	283185	7.11	143330	9.31
ZZZZZZ	126463	2.96	246333	4.16	341908	4.72	291290	7.11	149326	9.31
GP23888-16LS	128973	2.96	246043	4.16	350127	4.72	298405	7.11	154262	9.31

IS 1 = Tert Butyl Alcohol-D9
IS 2 = Pentafluorobenzene
IS 3 = 1,4-Difluorobenzene
IS 4 = Chlorobenzene-D5
IS 5 = 1,4-Dichlorobenzene-d4

(a) Upper Limit = + 100% of check standard area; Retention time + 0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

Internal Standard Area Summary

Job Number: JC95610
Account: BBLNYS Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

Check Std:	V3D6388-CC6212	**Injection Date:**	09/30/19
Lab File ID:	3D149450.D	**Injection Time:**	08:10
Instrument ID:	GCMS3D	**Method:**	SW846 8260C

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
Check Std	186428	2.96	329498	4.16	458641	4.72	388088	7.11	201132	9.31
Upper Limit [a]	372856	3.46	658996	4.66	917282	5.22	776176	7.61	402264	9.81
Lower Limit [b]	93214	2.46	164749	3.66	229321	4.22	194044	6.61	100566	8.81

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
V3D6388-BS	187962	2.96	331558	4.16	469387	4.72	403431	7.11	204545	9.31
V3D6388-BSD	189320	2.96	320150	4.16	451024	4.72	384794	7.11	195669	9.31
V3D6388-MB	169791	2.96	314744	4.16	436142	4.72	370612	7.11	188070	9.31
GP23943-1LB	178755	2.96	302929	4.16	427676	4.72	365575	7.11	190346	9.31
JC95392-5	172723	2.96	313988	4.16	441187	4.72	378860	7.11	193621	9.31
ZZZZZZ	173235	2.96	310640	4.16	435874	4.72	376003	7.11	191439	9.31
ZZZZZZ	172453	2.96	300589	4.16	436001	4.72	370952	7.11	187921	9.31
ZZZZZZ	168813	2.96	294063	4.16	424102	4.72	365779	7.11	187592	9.31
ZZZZZZ	173919	2.96	293321	4.16	423250	4.72	364615	7.11	185915	9.31
ZZZZZZ	171125	2.96	282093	4.16	407000	4.72	352501	7.11	183910	9.31
ZZZZZZ	161620	2.96	284873	4.16	401227	4.72	343997	7.11	177360	9.31
GP23943-1LS	177353	2.96	284703	4.16	433953	4.72	379160	7.11	196394	9.31
JC95392-5MS	177353	2.96	284703	4.16	433953	4.72	379160	7.11	196394	9.31
JC95392-5MSD	189748	2.96	298669	4.16	441199	4.72	380097	7.11	197292	9.31
GP23923-18LB	167616	2.96	288292	4.16	421858	4.72	366386	7.11	186881	9.31
ZZZZZZ	158339	2.96	279787	4.16	408278	4.72	351278	7.11	180045	9.31
ZZZZZZ	170013	2.96	288651	4.16	417853	4.72	360028	7.11	185820	9.31
ZZZZZZ	170208	2.96	293274	4.16	425888	4.72	361670	7.11	187396	9.31
ZZZZZZ	161871	2.96	284968	4.16	419491	4.72	358718	7.11	186965	9.31
ZZZZZZ	170255	2.96	291314	4.16	423587	4.72	360949	7.11	184103	9.31
JC95610-1	175611	2.96	289282	4.16	422088	4.72	369101	7.11	188376	9.31
GP23923-18LS	183220	2.96	292692	4.16	433151	4.72	372007	7.11	189981	9.31

IS 1 = Tert Butyl Alcohol-D9
IS 2 = Pentafluorobenzene
IS 3 = 1,4-Difluorobenzene
IS 4 = Chlorobenzene-D5
IS 5 = 1,4-Dichlorobenzene-d4

(a) Upper Limit = + 100% of check standard area; Retention time + 0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

Surrogate Recovery Summary

Job Number: JC95610
Account: BBLNYS Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

Method: SW846 8260C **Matrix:** LEACHATE

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3	S4
JC95610-1	3D149472.D	111	103	101	94
GP23888-16LB	3D149415.D	99	93	103	92
GP23888-16LS	3D149422.D	103	90	101	90
JC95392-5MS	3D149463.D	115	100	101	94
JC95392-5MSD	3D149464.D	109	97	102	92
V3D6388-BS	3D149451.D	102	93	102	94
V3D6388-BSD	3D149452.D	100	91	102	94
V3D6388-MB	3D149454.D	102	95	104	92
V3D6386-MB	3D149400.D	99	93	103	91

Surrogate Compounds	Recovery Limits
S1 = Dibromofluoromethane	76-120%
S2 = 1,2-Dichloroethane-D4	64-135%
S3 = Toluene-D8	76-117%
S4 = 4-Bromofluorobenzene	72-122%

Initial Calibration Summary

Job Number: JC95610
Account: BBLNYS Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

Sample: V3D6212-ICC6212
Lab FileID: 3D145277.D

Response Factor Report MS3D

Method : C:\MSDCHEM\1\METHODS\M3D6212.M (RTE Integrator)
Title : SW846 8260C/ EPA 624, Rxi-624 60 m x 0.25 mm x 1.4Fri Mar 08 17:11:15 2019
Last Update : Fri Mar 08 17:11:15 2019
Response via : Initial Calibration

Calibration Files
1 =3D145272.D 0.5 =3D145271.D 100 =3D145278.D 50 =3D145277.D
20 =3D145276.D 200 =3D145279.D 4 =3D145274.D 2 =3D145273.D
8 =3D145275.D 0.2 =3D145270.D = =

Compound	1	0.5	100	50	20	200	4	2	8	0.2	Avg	%RSD
1) tert butyl alcohol-d9	----------ISTD----------											
2) tertiary butyl alcohol	1.429	1.270	1.229	1.244	1.253	1.258	1.206	1.308	1.247	1.499	1.294	7.32
3) ethanol	0.144	0.116	0.109	0.114	0.117	0.103	0.114	0.124	0.119	0.141	0.120	10.95
4) 1,4-dioxane	0.131	0.107	0.113	0.115	0.120	0.115	0.110	0.119	0.119		0.117	5.89
5) I pentafluorobenzene	----------ISTD----------											
6) chlorodifluoromethane	0.502	0.444	0.459	0.456	0.453	0.459	0.426	0.474	0.445	0.428	0.455	4.86
7) dichlorodifluoromethane	0.500	0.531	0.523	0.533	0.530	0.514	0.506	0.491	0.509	0.401	0.504	7.67
8) chloromethane	0.485	0.501	0.462	0.468	0.462	0.474	0.461	0.449	0.456		0.469	3.36
9) vinyl chloride	0.471	0.463	0.493	0.499	0.494	0.497	0.456	0.456	0.483	0.437	0.475	4.52
10) 1,3-butadiene	0.444	0.359	0.385	0.385	0.389	0.381	0.369	0.402	0.390	0.423	0.393	6.37
11) bromomethane	0.191		0.178	0.180	0.185	0.147	0.170	0.184	0.185		0.178	7.65
12) chloroethane	0.319	0.357	0.289	0.293	0.291	0.272	0.289	0.280	0.281	0.266	0.294	9.04
13) trichlorofluoromethane	0.577	0.602	0.601	0.618	0.607	0.595	0.589	0.556	0.597	0.628	0.597	3.37
14) vinyl bromide	0.282	0.264	0.286	0.288	0.282	0.291	0.270	0.254	0.273	0.281	0.277	4.18
15) ethyl ether	0.242	0.237	0.224	0.225	0.221	0.225	0.203	0.237	0.217	0.181	0.221	8.20
16) acrolein	0.092	0.090	0.089	0.090	0.085	0.089	0.091	0.083	0.084	0.081	0.087	4.39
17) freon 113	0.356	0.314	0.324	0.324	0.329	0.326	0.320	0.333	0.319		0.327	3.74
18) 1,1-dichloroethene	0.385	0.290	0.349	0.345	0.348	0.352	0.316	0.330	0.337	0.265	0.332	10.31
19) acetone	0.057		0.050	0.049	0.049	0.050	0.048	0.048	0.049		0.050	5.76
20) acetonitrile	0.092	0.080	0.074	0.073	0.073	0.073	0.071	0.076	0.073		0.076	8.41
21) iodomethane *This compound fails Initial Calibration criteria*			0.252	0.195	0.102	0.280	0.038	0.037	0.057		0.137	75.39
22) carbon disulfide	1.058	0.950	0.889	0.872	0.872	0.911	0.847	0.887	0.854		0.904	7.23
23) methylene chloride												

```
      0.418 0.367 0.351 0.348 0.348 0.352 0.355 0.375 0.353 0.455  0.372    9.69
24)  methyl acetate
      0.491 0.419 0.402 0.392 0.399 0.394 0.398 0.418 0.392 0.427  0.413    7.25
25)  methyl tert butyl ether
      1.247 1.053 1.117 1.103 1.113 1.116 1.073 1.106 1.117 1.050  1.109    4.95
26)  trans-1,2-dichloroethene
      0.408 0.376 0.365 0.365 0.365 0.371 0.347 0.362 0.361 0.408  0.373    5.40
27)  di-isopropyl ether
      1.430 1.212 1.239 1.250 1.242 1.241 1.201 1.255 1.236 1.181  1.249    5.45
28)  2-butanone
      0.077 0.062 0.070 0.069 0.068 0.069 0.063 0.067 0.069 0.060  0.068    7.02
29)  1,1-dichloroethane
      0.701 0.607 0.625 0.627 0.631 0.627 0.610 0.634 0.630 0.575  0.627    5.04
30)  chloroprene
      0.683 0.524 0.610 0.611 0.607 0.609 0.581 0.592 0.612 0.551  0.598    7.05
31)  acrylonitrile
      0.206 0.161 0.196 0.194 0.191 0.195 0.193 0.197 0.192        0.192    6.42
32)  hexane
      0.352 0.309 0.314 0.308 0.307 0.307 0.301 0.320 0.309        0.314    4.84
33)  vinyl acetate
      0.112 0.091 0.112 0.110 0.111 0.114 0.100 0.104 0.106        0.107    6.78
34)  ethyl tert-butyl ether
      1.300 1.151 1.190 1.192 1.188 1.201 1.160 1.187 1.184 1.114  1.187    4.01
35)  ethyl acetate
      0.090       0.082 0.082 0.080 0.082 0.087 0.080 0.087        0.084    4.50
36)  2,2-dichloropropane
      0.637 0.529 0.527 0.531 0.543 0.527 0.507 0.549 0.531 0.523  0.540    6.64
37)  cis-1,2-dichloroethene
      0.433 0.362 0.397 0.394 0.399 0.401 0.388 0.386 0.394 0.457  0.401    6.59
38)  methyl acrylate
      0.078       0.082 0.081 0.079 0.082 0.072 0.080 0.076        0.079    4.30
39)  propionitrile
      0.097 0.081 0.084 0.083 0.083 0.083 0.083 0.082 0.083 0.074  0.083    6.88
40)  bromochloromethane
      0.211 0.165 0.174 0.179 0.183 0.171 0.178 0.190 0.177 0.157  0.178    8.17
41)  tetrahydrofuran
      0.094       0.075 0.074 0.075 0.073 0.070 0.065 0.074        0.075   11.10
42)  chloroform
      0.443 0.402 0.391 0.390 0.389 0.393 0.386 0.395 0.397 0.505  0.409    9.15
43)  t-butyl formate
      0.350 0.288 0.370 0.359 0.355 0.374 0.320 0.316 0.333        0.341    8.27
44)  dibromofluoromethane (s)
      0.357 0.354 0.360 0.359 0.356 0.354 0.354 0.356 0.356 0.346  0.355    1.04
45)  methacrylonitrile
      0.212 0.160 0.208 0.205 0.200 0.207 0.193 0.206 0.202        0.199    7.86
46)  1,1,1-trichloroethane
      0.618 0.562 0.565 0.561 0.562 0.572 0.528 0.578 0.548 0.531  0.563    4.51
47)  cyclohexane
      0.604 0.640 0.579 0.589 0.586 0.587 0.579 0.575 0.568 0.663  0.597    5.15
48)  1,1-dichloropropene
      0.612 0.498 0.522 0.514 0.515 0.526 0.479 0.522 0.517 0.483  0.519    7.05
49)  iso-butyl alcohol
      0.039 0.034 0.033 0.032 0.031 0.034 0.032 0.032 0.031        0.033    7.55
50)  carbon tetrachloride
      0.475 0.440 0.485 0.472 0.468 0.492 0.442 0.459 0.468 0.394  0.460    6.16
51)  tert amyl alcohol
      0.035 0.028 0.028 0.028 0.028 0.027 0.028 0.026 0.028        0.028    9.09

52) I   1,4-difluorobenzene   ----------------ISTD---------------------
53)  1,2-dichloroethane-d4 (s)
```

```
      0.284 0.286 0.276 0.276 0.273 0.268 0.286 0.289 0.285 0.285  0.281    2.45
54)  n-butyl alcohol
      0.018 0.015 0.017 0.016 0.016 0.017 0.015 0.015 0.016        0.016    6.68
55)  2,2,4-trimethylpentane
      0.789 0.723 0.694 0.687 0.692 0.697 0.685 0.730 0.709 0.685  0.709    4.54
56)  benzene
      1.194 1.110 1.053 1.050 1.069 1.058 1.033 1.098 1.061 1.042  1.077    4.42
57)  tert-amyl methyl ether
      0.229 0.212 0.207 0.207 0.210 0.211 0.202 0.211 0.211 0.194  0.209    4.24
58)  heptane
      0.208 0.187 0.183 0.181 0.181 0.182 0.173 0.192 0.183 0.161  0.183    6.55
59)  isopropyl acetate
      0.097       0.090 0.089 0.090 0.090 0.084 0.085 0.086        0.089    4.54
60)  1,2-dichloroethane
      0.454       0.337 0.343 0.345 0.339 0.354 0.368 0.356        0.362   10.70
61)  trichloroethene
      0.310 0.265 0.289 0.286 0.288 0.292 0.271 0.298 0.285 0.313  0.290    5.19
62)  ethyl acrylate
      0.472 0.423 0.454 0.449 0.452 0.456 0.438 0.445 0.441 0.391  0.442    4.98
63)  2-nitropropane
      0.088 0.086 0.085 0.078 0.074 0.088 0.077 0.067 0.072        0.079    9.37
64)  2-chloroethyl vinyl ether
      0.171 0.146 0.199 0.195 0.191 0.200 0.170 0.172 0.182        0.181    9.78
65)  methyl methacrylate
      0.398 0.373 0.338 0.336 0.332 0.337 0.319 0.330 0.330 0.422  0.352    9.76
66)  1,2-dichloropropane
      0.291 0.248 0.259 0.259 0.258 0.261 0.251 0.262 0.256        0.261    4.70
67)  dibromomethane
      0.174 0.149 0.155 0.154 0.154 0.156 0.155 0.154 0.152 0.126  0.153    7.67
68)  methylcyclohexane
                  0.445 0.441 0.440 0.444 0.455 0.514 0.452        0.456    5.75
69)  bromodichloromethane
      0.357 0.307 0.332 0.324 0.317 0.337 0.306 0.302 0.310 0.294  0.319    5.97
70)  epichlorohydrin
      0.045 0.038 0.046 0.045 0.045 0.044 0.041 0.042 0.043        0.043    5.70
71)  cis-1,3-dichloropropene
      0.436 0.365 0.424 0.418 0.415 0.431 0.392 0.422 0.407 0.475  0.419    6.83
72)  4-methyl-2-pentanone
      0.166 0.139 0.151 0.150 0.151 0.149 0.147 0.150 0.151 0.134  0.149    5.59
73)  3-methyl-1-butanol
      0.024 0.018 0.025 0.024 0.023 0.025 0.022 0.021 0.023        0.023    8.69

74) I   chlorobenzene-d5      ----------------ISTD--------------------
75)  toluene-d8 (s)
      1.263 1.272 1.260 1.264 1.277 1.265 1.262 1.277 1.283 1.277  1.270    0.65
76)  toluene
      0.873 0.796 0.786 0.787 0.791 0.802 0.798 0.813 0.800 0.862  0.811    3.84
77)  trans-1,3-dichloropropene
      0.483 0.436 0.452 0.451 0.443 0.468 0.420 0.426 0.436 0.519  0.453    6.57
78)  ethyl methacrylate
      0.519 0.437 0.490 0.491 0.489 0.498 0.455 0.450 0.484 0.436  0.475    5.93
79)  1,1,2-trichloroethane
      0.254 0.202 0.227 0.230 0.231 0.231 0.225 0.237 0.228        0.230    5.80
80)  tetrachloroethene
      0.318 0.269 0.280 0.283 0.284 0.286 0.269 0.277 0.283 0.291  0.284    4.88
81)  1,3-dichloropropane
      0.552 0.457 0.472 0.480 0.482 0.488 0.457 0.492 0.479 0.435  0.479    6.45
82)  2-hexanone
      0.202 0.161 0.183 0.185 0.184 0.183 0.178 0.177 0.183 0.164  0.180    6.37
83)  butyl acetate
```

```
      0.308 0.249 0.287 0.294 0.287 0.293 0.281 0.284 0.286 0.274  0.284    5.41
 84)  dibromochloromethane
      0.296 0.251 0.296 0.288 0.272 0.308 0.254 0.257 0.264 0.232  0.272    9.00
 85)  1,2-dibromoethane
      0.404 0.324 0.358 0.362 0.359 0.366 0.346 0.341 0.356 0.426  0.364    8.17
 86)  n-butyl ether
      1.455 1.157 1.296 1.303 1.298 1.323 1.236 1.306 1.325 1.267  1.297    5.79
 87)  chlorobenzene
      0.968 0.870 0.826 0.842 0.834 0.854 0.827 0.879 0.843 0.891  0.863    4.96
 88)  1,1,1,2-tetrachloroethane
      0.298 0.274 0.293 0.291 0.284 0.302 0.251 0.277 0.274        0.283    5.60
 89)  ethylbenzene
      1.680 1.400 1.453 1.478 1.485 1.482 1.425 1.510 1.484 1.449  1.484    5.11
 90)  m,p-xylene
      0.658 0.571 0.567 0.575 0.576 0.577 0.553 0.592 0.579 0.582  0.583    4.83
 91)  o-xylene
      0.645 0.555 0.541 0.551 0.552 0.552 0.545 0.539 0.555 0.582  0.562    5.64
 92)  styrene
      1.038 0.880 0.947 0.956 0.948 0.963 0.914 0.941 0.948 0.888  0.942    4.69
 93)  bromoform
      0.197       0.226 0.215 0.201 0.238 0.169 0.181 0.187        0.202   11.60
 94)  butyl acrylate
      0.709 0.605 0.713 0.718 0.704 0.726 0.647 0.625 0.680 0.557  0.668    8.59
 95)  n-amyl acetate
      0.325 0.242 0.297 0.299 0.296 0.298 0.275 0.283 0.288        0.289    7.79
 96)  isopropylbenzene
      1.575 1.412 1.407 1.420 1.419 1.422 1.373 1.409 1.430 1.311  1.418    4.60
 97)  cis-1,4-dichloro-2-butene
      0.142       0.169 0.167 0.153 0.174 0.134 0.137 0.140        0.152   10.58

 98) I   1,4-dichlorobenzene-d ----------------ISTD---------------------
 99)  4-bromofluorobenzene (s)
      0.938 0.948 0.951 0.945 0.946 0.953 0.943 0.936 0.940 0.940  0.944    0.61
100)  bromobenzene
      0.924 0.814 0.777 0.783 0.786 0.802 0.772 0.780 0.767 0.728  0.793    6.47
101)  1,1,2,2-tetrachloroethane
      0.959 0.791 0.886 0.894 0.877 0.908 0.841 0.870 0.866 0.782  0.867    6.07
102)  trans-1,4-dichloro-2-butene
      0.292       0.267 0.261 0.257 0.273 0.242 0.239 0.239        0.259    7.31
103)  1,2,3-trichloropropane
      0.338 0.290 0.295 0.293 0.296 0.302 0.301 0.286 0.302        0.300    5.06
104)  n-propylbenzene
      3.702 3.414 3.457 3.406 3.438 3.514 3.230 3.312 3.300 3.388  3.416    3.82
105)  2-chlorotoluene
      0.824 0.688 0.717 0.711 0.723 0.738 0.682 0.691 0.693 0.648  0.711    6.59
106)  4-chlorotoluene
      0.801 0.741 0.716 0.711 0.714 0.736 0.669 0.714 0.693 0.627  0.712    6.42
107)  1,3,5-trimethylbenzene
      2.698 2.289 2.416 2.405 2.434 2.464 2.289 2.376 2.375 2.353  2.410    4.82
108)  tert-butylbenzene
      0.600 0.498 0.537 0.526 0.541 0.549 0.521 0.537 0.525        0.537    5.16
109)  1,2,4-trimethylbenzene
      2.683 2.294 2.399 2.384 2.377 2.457 2.233 2.316 2.377 2.250  2.377    5.40
110)  sec-butylbenzene
      3.090 2.740 2.904 2.853 2.867 2.914 2.663 2.768 2.822 2.523  2.814    5.48
111)  1,3-dichlorobenzene
      1.539 1.339 1.374 1.371 1.388 1.413 1.314 1.385 1.365 1.529  1.402    5.33
112)  p-isopropyltoluene
      2.721 2.274 2.473 2.455 2.440 2.517 2.310 2.391 2.424 2.519  2.453    5.05
113)  1,4-dichlorobenzene
```

Initial Calibration Summary

Job Number: JC95610 **Sample:** V3D6212-ICC6212
Account: BBLNYS Arcadis **Lab FileID:** 3D145277.D
Project: National Grid, Philly Coke, Philadelphia, PA

```
       1.592 1.401 1.406 1.393 1.402 1.429 1.366 1.431 1.383        1.423    4.69
114)  benzyl chloride
       1.777 1.487 1.780 1.776 1.701 1.863 1.496 1.531 1.561 1.617  1.659    8.27
115)  1,2-dichlorobenzene
       1.433 1.349 1.300 1.298 1.336 1.343 1.255 1.364 1.291 1.424  1.339    4.28
116)  n-butylbenzene
       1.178 0.955 1.147 1.118 1.107 1.164 1.044 1.041 1.079 1.007  1.084    6.66
117)  1,2-dibromo-3-chloropropane
       0.175       0.194 0.190 0.177 0.208 0.163 0.156 0.164        0.178   10.01
118)  1,3,5-trichlorobenzene
       1.031 0.897 0.955 0.944 0.929 0.988 0.871 0.882 0.917 1.049  0.946    6.41
119)  2-ethylhexyl acrylate
                   0.506 0.471 0.397 0.547             0.366        0.457   16.44
120)  1,2,4-trichlorobenzene
       0.815 0.757 0.877 0.840 0.828 0.898 0.771 0.758 0.789 0.862  0.819    6.14
121)  hexachlorobutadiene
       0.334 0.314 0.336 0.330 0.320 0.355 0.297 0.296 0.323        0.323    5.87
122)  naphthalene
       2.702 2.396 2.704 2.626 2.554 2.789 2.331 2.351 2.393 3.160  2.601    9.87
123)  1,2,3-trichlorobenzene
       0.831 0.688 0.808 0.788 0.756 0.825 0.705 0.695 0.749 0.660  0.750    8.20
124)  hexachloroethane
       0.331       0.390 0.368 0.336 0.419 0.297 0.313 0.307        0.345   12.58
125)  2-methylnaphthalene
                   1.248 1.156 0.998 1.279 0.825       0.905        1.069   17.51
126)  Bis(chloromethyl)ether
                                                                    0.000#  -1.00
127)  Ethylenimine
                                                                    0.000#  -1.00
 ---------------------------------------------------------------------------
 (#) = Out of Range  ###  Number of calibration levels exceeded format  ###

           M3D6212.M         Fri Mar 08 17:12:13 2019   3D
```

Initial Calibration Verification

Job Number: JC95610
Account: BBLNYS Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

Sample: V3D6212-ICV6212
Lab FileID: 3D145282.D

Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\DATA\V3D6212\3D145282.D Vial: 14
Acq On : 7 Mar 2019 11:39 pm Operator: juntaep
Sample : icv6212-50 Inst : MS3D
Misc : MS32815,V3D6212,5,,,,1 Multiplr: 1.00
MS Integration Params: rteint.p

Method : C:\MSDCHEM\1\METHODS\M3D6212.M (RTE Integrator)
Title : SW846 8260C/ EPA 624, Rxi-624 60 m x 0.25 mm x 1.4Fri Mar 08 17:11:15 2019
Last Update : Fri Mar 08 17:11:15 2019
Response via : Multiple Level Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 30% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1		tert butyl alcohol-d9	1.000	1.000	0.0	96	0.00	2.99
2	M	tertiary butyl alcohol	1.294	1.301	-0.5	100	0.00	3.04
3		ethanol	0.120	0.121	-0.8	102	0.00	2.42
4	M	1,4-dioxane	0.117	0.125	-6.8	105	0.00	5.18
5	I	pentafluorobenzene	1.000	1.000	0.0	96	0.00	4.19
6	M	chlorodifluoromethane	0.455	0.429	5.7	90	0.00	1.61
7	M	dichlorodifluoromethane	0.504	0.520	-3.2	93	0.00	1.60
8	M	chloromethane	0.469	0.512	-9.2	105	0.00	1.75
9	M	vinyl chloride	0.475	0.479	-0.8	92	0.00	1.83
10		1,3-butadiene	0.393	0.401	-2.0	100	0.00	1.86
11	M	bromomethane	0.178	0.213	-19.7	113	0.00	2.07
12	M	chloroethane	0.294	0.263	10.5	86	0.00	2.15
13	M	trichlorofluoromethane	0.597	0.580	2.8	90	0.00	2.33
14		vinyl bromide	0.277	0.285	-2.9	95	0.00	2.29
15	M	ethyl ether	0.221	0.231	-4.5	98	0.00	2.51
16	M	acrolein	0.087	0.104	-19.5	111	0.00	2.61
17		freon 113	0.327	0.329	-0.6	97	0.00	2.69
18	M	1,1-dichloroethene	0.332	0.310	6.6	86	0.00	2.69
19	M	acetone	0.050	0.052	-4.0	102	0.00	2.69
20	M	acetonitrile	0.076	0.075	1.3	98	0.00	2.88
21	M	iodomethane	0.137	0.158	-15.3	77	0.00	2.80
22	M	carbon disulfide	0.904	0.911	-0.8	100	0.00	2.86
23	M	methylene chloride	0.372	0.349	6.2	96	0.00	3.01
24	M	methyl acetate	0.413	0.401	2.9	98	0.00	2.90
25	M	methyl tert butyl ether	1.109	1.157	-4.3	101	0.00	3.18
26	M	trans-1,2-dichloroethene	0.373	0.349	6.4	92	0.00	3.19
27	M	di-isopropyl ether	1.249	1.212	3.0	93	0.00	3.48
28	M	2-butanone	0.068	0.073	-7.4	100	0.00	3.84
29	M	1,1-dichloroethane	0.627	0.620	1.1	95	0.00	3.49
30	M	chloroprene	0.598	0.613	-2.5	96	0.00	3.54
31	M	acrylonitrile	0.192	0.218	-13.5	108	0.00	3.15
32		hexane	0.314	0.254	19.1	79	0.00	3.38
33	M	vinyl acetate	0.107	0.106	0.9	93	0.00	3.46
34	M	ethyl tert-butyl ether	1.187	1.184	0.3	95	0.00	3.72
35	M	ethyl acetate	0.084	0.084	0.0	98	0.00	3.85
36	M	2,2-dichloropropane	0.540	0.504	6.7	91	0.00	3.88
37	M	cis-1,2-dichloroethene	0.401	0.407	-1.5	99	0.00	3.87
38		methyl acrylate	0.079	0.084	-6.3	99	0.00	3.89
39	M	propionitrile	0.083	0.088	-6.0	102	0.00	3.88
40	M	bromochloromethane	0.178	0.184	-3.4	98	0.00	4.04
41	M	tetrahydrofuran	0.075	0.079	-5.3	101	0.00	4.04

Initial Calibration Verification

Job Number: JC95610
Account: BBLNYS Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

Sample: V3D6212-ICV6212
Lab FileID: 3D145282.D

42	M	chloroform	0.409	0.392	4.2	96	0.00	4.09
43	M	t-butyl formate	0.341	0.330	3.2	88	0.00	4.11
44	S	dibromofluoromethane (s)	0.355	0.365	-2.8	97	0.00	4.20
45	M	methacrylonitrile	0.199	0.211	-6.0	99	0.00	3.99
46	M	1,1,1-trichloroethane	0.563	0.542	3.7	93	0.00	4.23
47		cyclohexane	0.597	0.543	9.0	88	0.00	4.29
48		1,1-dichloropropene	0.519	0.512	1.3	95	0.00	4.33
49		iso-butyl alcohol	0.033	0.035	-6.1	104	0.00	4.33
50		carbon tetrachloride	0.460	0.465	-1.1	94	0.00	4.35
51		tert amyl alcohol	0.028	0.030	-7.1	105	0.00	4.43
52	I	1,4-difluorobenzene	1.000	1.000	0.0	96	0.00	4.75
53	S	1,2-dichloroethane-d4 (s)	0.281	0.277	1.4	96	0.00	4.45
54	M	n-butyl alcohol	0.016	0.017	-6.3	102	0.00	4.81
55		2,2,4-trimethylpentane	0.709	0.650	8.3	91	0.00	4.55
56	M	benzene	1.077	1.062	1.4	97	0.00	4.48
57	M	tert-amyl methyl ether	0.209	0.205	1.9	95	0.00	4.54
58	M	heptane	0.183	0.189	-3.3	100	0.00	4.66
59	M	isopropyl acetate	0.089	0.089	0.0	95	0.00	4.45
60	M	1,2-dichloroethane	0.362	0.351	3.0	98	0.00	4.50
61	M	trichloroethene	0.290	0.290	0.0	97	0.00	4.95
62		ethyl acrylate	0.442	0.481	-8.8	103	0.00	4.96
63	M	2-nitropropane	0.079	0.087	-10.1	106	0.00	5.49
64	M	2-chloroethyl vinyl ether	0.181	0.212	-17.1	104	0.00	5.53
65	M	methyl methacrylate	0.352	0.354	-0.6	101	0.00	5.14
66	M	1,2-dichloropropane	0.261	0.264	-1.1	98	0.00	5.14
67	M	dibromomethane	0.153	0.162	-5.9	101	0.00	5.21
68	M	methylcyclohexane	0.456	0.418	8.3	91	0.00	5.14
69	M	bromodichloromethane	0.319	0.331	-3.8	98	0.00	5.33
70		epichlorohydrin	0.043	0.046	-7.0	97	0.00	5.58
71	M	cis-1,3-dichloropropene	0.419	0.433	-3.3	99	0.00	5.67
72	M	4-methyl-2-pentanone	0.149	0.160	-7.4	103	0.00	5.77
73	M	3-methyl-1-butanol	0.023	0.027	-17.4	105	0.00	5.79
74	I	chlorobenzene-d5	1.000	1.000	0.0	97	0.00	7.14
75	S	toluene-d8 (s)	1.270	1.256	1.1	96	0.00	5.90
76		toluene	0.811	0.809	0.2	100	0.00	5.96
77		trans-1,3-dichloropropene	0.453	0.448	1.1	96	0.00	6.12
78		ethyl methacrylate	0.475	0.490	-3.2	97	0.00	6.14
79		1,1,2-trichloroethane	0.230	0.239	-3.9	101	0.00	6.29
80	M	tetrachloroethene	0.284	0.284	0.0	97	0.00	6.39
81	M	1,3-dichloropropane	0.479	0.507	-5.8	102	0.00	6.44
82		2-hexanone	0.180	0.193	-7.2	102	0.00	6.46
83	M	butyl acetate	0.284	0.305	-7.4	100	0.00	6.54
84	M	dibromochloromethane	0.272	0.312	-14.7	105	0.00	6.63
85	M	1,2-dibromoethane	0.364	0.377	-3.6	101	0.00	6.74
86		n-butyl ether	1.297	1.353	-4.3	101	0.00	7.22
87	M	chlorobenzene	0.863	0.851	1.4	98	0.00	7.17
88	M	1,1,1,2-tetrachloroethane	0.283	0.307	-8.5	102	0.00	7.24
89	M	ethylbenzene	1.484	1.499	-1.0	98	0.00	7.25
90	M	m,p-xylene	0.583	0.585	-0.3	99	0.00	7.36
91	M	o-xylene	0.562	0.561	0.2	99	0.00	7.72
92	M	styrene	0.942	0.990	-5.1	100	0.00	7.74
93	M	bromoform	0.202	0.238	-17.8	107	0.00	7.91
94		butyl acrylate	0.668	0.753	-12.7	101	0.00	7.64
95		n-amyl acetate	0.289	0.291	-0.7	94	0.00	7.85
96		isopropylbenzene	1.418	1.451	-2.3	99	0.00	8.06
97		cis-1,4-dichloro-2-butene	0.152	0.167	-9.9	97	0.00	8.10
98	I	1,4-dichlorobenzene-d4	1.000	1.000	0.0	97	0.00	9.34

Initial Calibration Verification

Job Number: JC95610
Account: BBLNYS Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

Sample: V3D6212-ICV6212
Lab FileID: 3D145282.D

99	S	4-bromofluorobenzene (s)	0.944	0.943	0.1	97	0.00	8.22
100	M	bromobenzene	0.793	0.803	-1.3	100	0.00	8.37
101	M	1,1,2,2-tetrachloroethane	0.867	0.922	-6.3	100	0.00	8.34
102	M	trans-1,4-dichloro-2-bute	0.259	0.308	-18.9	115	0.00	8.38
103	M	1,2,3-trichloropropane	0.300	0.305	-1.7	101	0.00	8.39
104	M	n-propylbenzene	3.416	3.459	-1.3	99	0.00	8.45
105	M	2-chlorotoluene	0.711	0.720	-1.3	99	0.00	8.55
106	M	4-chlorotoluene	0.712	0.754	-5.9	103	0.00	8.66
107	M	1,3,5-trimethylbenzene	2.410	2.423	-0.5	98	0.00	8.62
108	M	tert-butylbenzene	0.537	0.593	-10.4	110	0.00	8.93
109	M	1,2,4-trimethylbenzene	2.377	2.499	-5.1	102	0.00	8.99
110	M	sec-butylbenzene	2.814	2.893	-2.8	99	0.00	9.14
111	M	1,3-dichlorobenzene	1.402	1.420	-1.3	101	0.00	9.27
112	M	p-isopropyltoluene	2.453	2.497	-1.8	99	0.00	9.29
113	M	1,4-dichlorobenzene	1.423	1.428	-0.4	100	0.00	9.36
114		benzyl chloride	1.659	1.400	15.6	77	0.00	9.47
115	M	1,2-dichlorobenzene	1.339	1.346	-0.5	101	0.00	9.72
116	M	n-butylbenzene	1.084	1.135	-4.7	99	0.00	9.69
117	M	1,2-dibromo-3-chloropropa	0.178	0.191	-7.3	97	0.00	10.48
118		1,3,5-trichlorobenzene	0.946	0.964	-1.9	99	0.00	10.68
119		2-ethylhexyl acrylate	0.457	0.570	-24.7	118	0.00	11.48
120	M	1,2,4-trichlorobenzene	0.819	0.869	-6.1	101	0.00	11.31
121	M	hexachlorobutadiene	0.323	0.329	-1.9	97	0.00	11.45
122	M	naphthalene	2.601	2.750	-5.7	102	0.00	11.57
123	M	1,2,3-trichlorobenzene	0.750	0.806	-7.5	100	0.00	11.79
124	m	hexachloroethane	0.345	0.384	-11.3	102	0.00	9.99
125		2-methylnaphthalene	1.069	1.186	-10.9	100	0.00	12.70
126		Bis(chloromethyl)ether		----------NA----------				
127		Ethylenimine		----------NA----------				

(#) = Out of Range SPCC's out = 0 CCC's out = 0
3D145277.D M3D6212.M Fri Mar 08 17:11:58 2019 3D

Continuing Calibration Summary

Job Number: JC95610 **Sample:** V3D6386-CC6212
Account: BBLNYS Arcadis **Lab FileID:** 3D149397.D
Project: National Grid, Philly Coke, Philadelphia, PA

Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\DATA\V3D6386\3D149397.D Vial: 2
Acq On : 26 Sep 2019 7:19 am Operator: EddieH
Sample : CC6212-20 Inst : MS3D
Misc : MS37788,V3D6386,5,,,,1 Multiplr: 1.00
MS Integration Params: rteint.p

Method : C:\MSDCHEM\1\METHODS\M3D6212.M (RTE Integrator)
Title : SW846 8260C/ EPA 624, Rxi-624 60 m x 0.25 mm x 1.4Wed Aug 28 14:33:35 2019
Last Update : Wed Aug 28 14:33:35 2019
Response via : Multiple Level Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1		tert butyl alcohol-d9	1.000	1.000	0.0	56	-0.03	2.96
2	M	tertiary butyl alcohol	1.294	1.303	-0.7	58	-0.03	3.01
3		ethanol	0.120	0.125	-4.2	60	-0.03	2.39
4	M	1,4-dioxane	0.117	0.133	-13.7	62	-0.03	5.15
5	I	pentafluorobenzene	1.000	1.000	0.0	74	-0.03	4.16
6	M	chlorodifluoromethane	0.455	0.405	11.0	66	-0.02	1.59
7	M	dichlorodifluoromethane	0.504	0.453	10.1	63	-0.02	1.58
8	M	chloromethane	0.469	0.427	9.0	68	-0.02	1.72
9	M	vinyl chloride	0.475	0.448	5.7	67	-0.02	1.81
10		1,3-butadiene	0.393	0.255	35.1#	48#	-0.02	1.84
11	M	bromomethane	0.178	0.202	-13.5	80	-0.02	2.05
12	M	chloroethane	0.294	0.242	17.7	61	-0.02	2.13
13	M	trichlorofluoromethane	0.597	0.501	16.1	61	-0.02	2.31
14		vinyl bromide	0.277	0.278	-0.4	73	-0.02	2.27
15	M	ethyl ether	0.221	0.206	6.8	69	-0.02	2.49
16	M	acrolein	0.087	0.072	17.2	62	-0.02	2.58
17		freon 113	0.327	0.275	15.9	62	-0.02	2.66
18	M	1,1-dichloroethene	0.332	0.308	7.2	65	-0.02	2.66
19	M	acetone	0.050	0.040	20.0#	61	-0.02	2.67
20	M	acetonitrile	0.076	0.064	15.8	65	-0.03	2.85
21	M	iodomethane	0.137	0.246	-79.6#	177	-0.03	2.77
22	M	carbon disulfide	0.904	0.743	17.8	63	-0.02	2.83
23	M	methylene chloride	0.372	0.363	2.4	77	-0.03	2.98
24	M	methyl acetate	0.413	0.306	25.9#	56	-0.03	2.87
25	M	methyl tert butyl ether	1.109	1.026	7.5	68	-0.02	3.15
26	M	trans-1,2-dichloroethene	0.373	0.335	10.2	68	-0.02	3.17
27	M	di-isopropyl ether	1.249	1.111	11.0	66	-0.02	3.46
28	M	2-butanone	0.068	0.055	19.1	60	-0.03	3.80
29	M	1,1-dichloroethane	0.627	0.614	2.1	72	-0.03	3.46
30	M	chloroprene	0.598	0.515	13.9	63	-0.02	3.51
31	M	acrylonitrile	0.192	0.165	14.1	64	-0.03	3.12
32		hexane	0.314	0.249	20.7#	60	-0.02	3.35
33	M	vinyl acetate	0.107	0.089	16.8	60	-0.02	3.43
34	M	ethyl tert-butyl ether	1.187	1.038	12.6	64	-0.02	3.70
35	M	ethyl acetate	0.084	0.071	15.5	65	0.00	3.82
36	M	2,2-dichloropropane	0.540	0.506	6.3	69	-0.02	3.85
37	M	cis-1,2-dichloroethene	0.401	0.385	4.0	71	-0.03	3.84
38		methyl acrylate	0.079	0.065	17.7	61	-0.03	3.86
39	M	propionitrile	0.083	0.070	15.7	63	-0.04	3.85
40	M	bromochloromethane	0.178	0.190	-6.7	77	-0.04	4.00
41	M	tetrahydrofuran	0.075	0.064	14.7	62	-0.02	4.02

Continuing Calibration Summary

Job Number: JC95610 **Sample:** V3D6386-CC6212
Account: BBLNYS Arcadis **Lab FileID:** 3D149397.D
Project: National Grid, Philly Coke, Philadelphia, PA

42	M	chloroform	0.409	0.374	8.6	71	-0.03	4.05
43	M	t-butyl formate	0.341	0.307	10.0	64	-0.03	4.08
44	S	dibromofluoromethane (s)	0.355	0.356	-0.3	74	-0.04	4.16
45	M	methacrylonitrile	0.199	0.168	15.6	62	-0.03	3.96
46	M	1,1,1-trichloroethane	0.563	0.522	7.3	68	-0.03	4.20
47		cyclohexane	0.597	0.528	11.6	66	-0.03	4.26
48		1,1-dichloropropene	0.519	0.471	9.2	67	-0.03	4.30
49		iso-butyl alcohol	0.033	0.022	33.3#	51	-0.03	4.30
50		carbon tetrachloride	0.460	0.438	4.8	69	-0.03	4.32
51		tert amyl alcohol	0.028	0.024	14.3	62	-0.03	4.39
52	I	1,4-difluorobenzene	1.000	1.000	0.0	74	-0.03	4.72
53	S	1,2-dichloroethane-d4 (s)	0.281	0.257	8.5	70	0.00	4.41
54	M	n-butyl alcohol	0.016	0.013	18.8	57	-0.03	4.78
55		2,2,4-trimethylpentane	0.709	0.566	20.2#	61	-0.02	4.52
56	M	benzene	1.077	1.004	6.8	70	-0.03	4.45
57	M	tert-amyl methyl ether	0.209	0.181	13.4	64	-0.03	4.52
58	M	heptane	0.183	0.172	6.0	70	-0.02	4.63
59	M	isopropyl acetate	0.089	0.074	16.9	61	-0.02	4.43
60	M	1,2-dichloroethane	0.362	0.314	13.3	68	-0.03	4.47
61	M	trichloroethene	0.290	0.293	-1.0	75	-0.03	4.92
62		ethyl acrylate	0.442	0.377	14.7	62	-0.02	4.94
63	M	2-nitropropane	0.079	0.065	17.7	65	-0.03	5.46
64	M	2-chloroethyl vinyl ether	0.181	0.172	5.0	67	-0.03	5.49
65	M	methyl methacrylate	0.352	0.287	18.5	64	-0.03	5.11
66	M	1,2-dichloropropane	0.261	0.259	0.8	74	-0.04	5.11
67	M	dibromomethane	0.153	0.145	5.2	70	-0.03	5.18
68	M	methylcyclohexane	0.456	0.403	11.6	68	-0.02	5.11
69	M	bromodichloromethane	0.319	0.309	3.1	72	-0.04	5.30
70		epichlorohydrin	0.043	0.035	18.6	59	-0.03	5.54
71	M	cis-1,3-dichloropropene	0.419	0.407	2.9	73	-0.03	5.64
72	M	4-methyl-2-pentanone	0.149	0.126	15.4	62	-0.03	5.74
73	M	3-methyl-1-butanol	0.023	0.019	17.4	59	-0.04	5.75
74	I	chlorobenzene-d5	1.000	1.000	0.0	74	-0.03	7.11
75	S	toluene-d8 (s)	1.270	1.302	-2.5	75	-0.03	5.87
76		toluene	0.811	0.782	3.6	73	-0.03	5.92
77		trans-1,3-dichloropropene	0.453	0.425	6.2	71	-0.03	6.09
78		ethyl methacrylate	0.475	0.423	10.9	64	-0.03	6.11
79		1,1,2-trichloroethane	0.230	0.230	0.0	73	-0.03	6.26
80	M	tetrachloroethene	0.284	0.302	-6.3	78	-0.03	6.36
81	M	1,3-dichloropropane	0.479	0.476	0.6	73	-0.03	6.41
82		2-hexanone	0.180	0.151	16.1	60	-0.03	6.42
83	M	butyl acetate	0.284	0.259	8.8	67	-0.02	6.52
84	M	dibromochloromethane	0.272	0.313	-15.1	85	-0.03	6.60
85	M	1,2-dibromoethane	0.364	0.319	12.4	66	-0.03	6.71
86		n-butyl ether	1.297	1.238	4.5	70	-0.03	7.19
87	M	chlorobenzene	0.863	0.860	0.3	76	-0.04	7.14
88	M	1,1,1,2-tetrachloroethane	0.283	0.299	-5.7	78	-0.03	7.21
89	M	ethylbenzene	1.484	1.468	1.1	73	-0.03	7.22
90	M	m,p-xylene	0.583	0.577	1.0	74	-0.03	7.33
91	M	o-xylene	0.562	0.557	0.9	74	-0.03	7.69
92	M	styrene	0.942	0.932	1.1	72	-0.03	7.71
93	M	bromoform	0.202	0.236	-16.8	87	-0.04	7.88
94		butyl acrylate	0.668	0.618	7.5	65	-0.03	7.61
95		n-amyl acetate	0.289	0.266	8.0	66	-0.03	7.81
96		isopropylbenzene	1.418	1.409	0.6	73	-0.03	8.03
97		cis-1,4-dichloro-2-butene	0.152	0.140	7.9	68	-0.03	8.07
98	I	1,4-dichlorobenzene-d4	1.000	1.000	0.0	81	-0.03	9.31

Continuing Calibration Summary

Job Number: JC95610 **Sample:** V3D6386-CC6212
Account: BBLNYS Arcadis **Lab FileID:** 3D149397.D
Project: National Grid, Philly Coke, Philadelphia, PA

99	S	4-bromofluorobenzene (s)	0.944	0.870	7.8	75	-0.03	8.19
100	M	bromobenzene	0.793	0.749	5.5	78	-0.03	8.34
101	M	1,1,2,2-tetrachloroethane	0.867	0.714	17.6	66	0.00	8.30
102	M	trans-1,4-dichloro-2-bute	0.259	0.227	12.4	72	-0.03	8.34
103	M	1,2,3-trichloropropane	0.300	0.260	13.3	72	-0.04	8.36
104	M	n-propylbenzene	3.416	3.098	9.3	73	-0.03	8.42
105	M	2-chlorotoluene	0.711	0.659	7.3	74	-0.03	8.52
106	M	4-chlorotoluene	0.712	0.664	6.7	76	-0.03	8.63
107	M	1,3,5-trimethylbenzene	2.410	2.106	12.6	70	-0.03	8.59
108	M	tert-butylbenzene	0.537	0.505	6.0	76	-0.03	8.89
109	M	1,2,4-trimethylbenzene	2.377	2.105	11.4	72	-0.03	8.95
110	M	sec-butylbenzene	2.814	2.633	6.4	75	-0.03	9.11
111	M	1,3-dichlorobenzene	1.402	1.289	8.1	76	-0.03	9.24
112	M	p-isopropyltoluene	2.453	2.263	7.7	76	-0.03	9.26
113	M	1,4-dichlorobenzene	1.423	1.356	4.7	79	-0.03	9.33
114		benzyl chloride	1.659	1.522	8.3	73	-0.03	9.44
115	M	1,2-dichlorobenzene	1.339	1.264	5.6	77	-0.03	9.69
116	M	n-butylbenzene	1.084	1.019	6.0	75	-0.03	9.66
117	M	1,2-dibromo-3-chloropropa	0.178	0.155	12.9	71	-0.04	10.45
118		1,3,5-trichlorobenzene	0.946	0.907	4.1	80	-0.04	10.64
119		2-ethylhexyl acrylate	0.457	0.339	25.8#	69	-0.03	11.45
120	M	1,2,4-trichlorobenzene	0.819	0.815	0.5	80	-0.04	11.27
121	M	hexachlorobutadiene	0.323	0.350	-8.4	89	-0.03	11.42
122	M	naphthalene	2.601	2.324	10.6	74	-0.04	11.53
123	M	1,2,3-trichlorobenzene	0.750	0.761	-1.5	82	-0.04	11.76
124	m	hexachloroethane	0.345	0.366	-6.1	89	-0.03	9.96
125		2-methylnaphthalene	1.069	0.857	19.8	70	-0.04	12.67
126		Bis(chloromethyl)ether		----------NA----------				
127		Ethylenimine		----------NA----------				

(#) = Out of Range SPCC's out = 0 CCC's out = 0
3D145276.D M3D6212.M Thu Sep 26 15:39:39 2019 3D

Continuing Calibration Summary

Job Number: JC95610
Account: BBLNYS Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

Sample: V3D6388-CC6212
Lab FileID: 3D149450.D

Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\DATA\V3D6388\3D149450.D Vial: 4
Acq On : 30 Sep 2019 8:10 am Operator: EddieH
Sample : CC6212-20 Inst : MS3D
Misc : MS37930,V3D6388,5,,,,1 Multiplr: 1.00
MS Integration Params: rteint.p

Method : C:\MSDCHEM\1\METHODS\M3D6212.M (RTE Integrator)
Title : SW846 8260C/ EPA 624, Rxi-624 60 m x 0.25 mm x 1.4Wed Aug 28 14:33:35 2019
Last Update : Wed Aug 28 14:33:35 2019
Response via : Multiple Level Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1		tert butyl alcohol-d9	1.000	1.000	0.0	87	-0.03	2.96
2	M	tertiary butyl alcohol	1.294	1.406	-8.7	98	-0.03	3.01
3		ethanol	0.120	0.142	-18.3	106	-0.03	2.39
4	M	1,4-dioxane	0.117	0.137	-17.1	99	-0.03	5.15
5	I	pentafluorobenzene	1.000	1.000	0.0	102	-0.03	4.16
6	M	chlorodifluoromethane	0.455	0.491	-7.9	110	-0.02	1.59
7	M	dichlorodifluoromethane	0.504	0.449	10.9	86	-0.02	1.58
8	M	chloromethane	0.469	0.486	-3.6	107	-0.02	1.72
9	M	vinyl chloride	0.475	0.455	4.2	94	-0.02	1.81
10		1,3-butadiene	0.393	0.305	22.4#	80	-0.02	1.84
11	M	bromomethane	0.178	0.210	-18.0	116	-0.02	2.05
12	M	chloroethane	0.294	0.237	19.4	83	-0.02	2.13
13	M	trichlorofluoromethane	0.597	0.458	23.3#	77	-0.02	2.31
14		vinyl bromide	0.277	0.253	8.7	92	-0.02	2.27
15	M	ethyl ether	0.221	0.237	-7.2	110	-0.02	2.49
16	M	acrolein	0.087	0.097	-11.5	116	-0.02	2.58
17		freon 113	0.327	0.261	20.2#	81	-0.02	2.66
18	M	1,1-dichloroethene	0.332	0.303	8.7	89	-0.02	2.66
19	M	acetone	0.050	0.048	4.0	101	-0.02	2.67
20	M	acetonitrile	0.076	0.080	-5.3	113	-0.04	2.85
21	M	iodomethane	0.137	0.240	-75.2#	239#	-0.03	2.77
22	M	carbon disulfide	0.904	0.792	12.4	93	-0.02	2.83
23	M	methylene chloride	0.372	0.386	-3.8	113	-0.03	2.98
24	M	methyl acetate	0.413	0.385	6.8	98	-0.03	2.87
25	M	methyl tert butyl ether	1.109	1.141	-2.9	105	-0.02	3.15
26	M	trans-1,2-dichloroethene	0.373	0.334	10.5	93	-0.02	3.17
27	M	di-isopropyl ether	1.249	1.273	-1.9	105	-0.02	3.46
28	M	2-butanone	0.068	0.062	8.8	93	-0.03	3.80
29	M	1,1-dichloroethane	0.627	0.644	-2.7	104	-0.03	3.46
30	M	chloroprene	0.598	0.524	12.4	88	-0.03	3.50
31	M	acrylonitrile	0.192	0.194	-1.0	104	-0.03	3.12
32		hexane	0.314	0.253	19.4	84	-0.02	3.35
33	M	vinyl acetate	0.107	0.097	9.3	89	-0.03	3.43
34	M	ethyl tert-butyl ether	1.187	1.153	2.9	99	-0.02	3.70
35	M	ethyl acetate	0.084	0.083	1.2	106	0.00	3.82
36	M	2,2-dichloropropane	0.540	0.524	3.0	99	-0.03	3.85
37	M	cis-1,2-dichloroethene	0.401	0.385	4.0	98	-0.03	3.84
38		methyl acrylate	0.079	0.068	13.9	88	-0.03	3.86
39	M	propionitrile	0.083	0.085	-2.4	105	-0.04	3.85
40	M	bromochloromethane	0.178	0.191	-7.3	107	-0.03	4.00
41	M	tetrahydrofuran	0.075	0.073	2.7	99	-0.02	4.02

Continuing Calibration Summary

Job Number: JC95610 **Sample:** V3D6388-CC6212
Account: BBLNYS Arcadis **Lab FileID:** 3D149450.D
Project: National Grid, Philly Coke, Philadelphia, PA

42	M	chloroform	0.409	0.370	9.5	97	-0.03	4.05
43	M	t-butyl formate	0.341	0.382	-12.0	110	-0.03	4.08
44	S	dibromofluoromethane (s)	0.355	0.356	-0.3	102	-0.04	4.16
45	M	methacrylonitrile	0.199	0.195	2.0	100	-0.03	3.96
46	M	1,1,1-trichloroethane	0.563	0.506	10.1	92	-0.03	4.20
47		cyclohexane	0.597	0.467	21.8#	81	-0.03	4.26
48		1,1-dichloropropene	0.519	0.481	7.3	95	-0.03	4.30
49		iso-butyl alcohol	0.033	0.028	15.2	91	-0.03	4.30
50		carbon tetrachloride	0.460	0.421	8.5	92	-0.03	4.32
51		tert amyl alcohol	0.028	0.026	7.1	93	-0.03	4.39
52	I	1,4-difluorobenzene	1.000	1.000	0.0	102	-0.03	4.72
53	S	1,2-dichloroethane-d4 (s)	0.281	0.256	8.9	95	0.00	4.41
54	M	n-butyl alcohol	0.016	0.015	6.3	97	-0.03	4.78
55		2,2,4-trimethylpentane	0.709	0.576	18.8	85	-0.02	4.52
56	M	benzene	1.077	1.035	3.9	99	-0.03	4.45
57	M	tert-amyl methyl ether	0.209	0.192	8.1	93	-0.03	4.52
58	M	heptane	0.183	0.165	9.8	93	-0.02	4.63
59	M	isopropyl acetate	0.089	0.086	3.4	97	-0.03	4.42
60	M	1,2-dichloroethane	0.362	0.331	8.6	98	-0.03	4.47
61	M	trichloroethene	0.290	0.282	2.8	100	-0.03	4.92
62		ethyl acrylate	0.442	0.432	2.3	97	-0.03	4.93
63	M	2-nitropropane	0.079	0.083	-5.1	114	-0.03	5.46
64	M	2-chloroethyl vinyl ether	0.181	0.197	-8.8	105	-0.03	5.49
65	M	methyl methacrylate	0.352	0.307	12.8	94	-0.03	5.11
66	M	1,2-dichloropropane	0.261	0.271	-3.8	107	-0.04	5.11
67	M	dibromomethane	0.153	0.154	-0.7	102	-0.03	5.18
68	M	methylcyclohexane	0.456	0.387	15.1	90	-0.02	5.11
69	M	bromodichloromethane	0.319	0.326	-2.2	105	-0.04	5.30
70		epichlorohydrin	0.043	0.043	0.0	98	-0.03	5.54
71	M	cis-1,3-dichloropropene	0.419	0.441	-5.3	108	-0.03	5.64
72	M	4-methyl-2-pentanone	0.149	0.146	2.0	99	-0.03	5.74
73	M	3-methyl-1-butanol	0.023	0.023	0.0	100	-0.04	5.75
74	I	chlorobenzene-d5	1.000	1.000	0.0	102	-0.03	7.11
75	S	toluene-d8 (s)	1.270	1.303	-2.6	104	-0.03	5.87
76		toluene	0.811	0.777	4.2	100	-0.03	5.92
77		trans-1,3-dichloropropene	0.453	0.475	-4.9	109	-0.03	6.09
78		ethyl methacrylate	0.475	0.456	4.0	95	-0.03	6.11
79		1,1,2-trichloroethane	0.230	0.241	-4.8	106	-0.03	6.26
80	M	tetrachloroethene	0.284	0.277	2.5	99	-0.03	6.36
81	M	1,3-dichloropropane	0.479	0.513	-7.1	108	-0.03	6.41
82		2-hexanone	0.180	0.180	0.0	99	-0.03	6.42
83	M	butyl acetate	0.284	0.299	-5.3	106	-0.03	6.51
84	M	dibromochloromethane	0.272	0.317	-16.5	118	-0.03	6.60
85	M	1,2-dibromoethane	0.364	0.336	7.7	95	-0.03	6.71
86		n-butyl ether	1.297	1.346	-3.8	105	-0.03	7.19
87	M	chlorobenzene	0.863	0.843	2.3	103	-0.04	7.14
88	M	1,1,1,2-tetrachloroethane	0.283	0.295	-4.2	105	-0.03	7.21
89	M	ethylbenzene	1.484	1.451	2.2	99	-0.03	7.22
90	M	m,p-xylene	0.583	0.565	3.1	100	-0.03	7.33
91	M	o-xylene	0.562	0.555	1.2	102	-0.03	7.69
92	M	styrene	0.942	0.929	1.4	99	-0.03	7.71
93	M	bromoform	0.202	0.246	-21.8#	124	-0.04	7.88
94		butyl acrylate	0.668	0.680	-1.8	98	-0.03	7.61
95		n-amyl acetate	0.289	0.299	-3.5	103	-0.03	7.81
96		isopropylbenzene	1.418	1.406	0.8	101	-0.03	8.03
97		cis-1,4-dichloro-2-butene	0.152	0.164	-7.9	109	-0.03	8.07
98	I	1,4-dichlorobenzene-d4	1.000	1.000	0.0	113	-0.03	9.31

Continuing Calibration Summary

Job Number: JC95610 **Sample:** V3D6388-CC6212
Account: BBLNYS Arcadis **Lab FileID:** 3D149450.D
Project: National Grid, Philly Coke, Philadelphia, PA

99	S	4-bromofluorobenzene (s)	0.944	0.871	7.7	104	-0.03	8.19
100	M	bromobenzene	0.793	0.725	8.6	105	-0.03	8.34
101	M	1,1,2,2-tetrachloroethane	0.867	0.801	7.6	104	0.00	8.30
102	M	trans-1,4-dichloro-2-bute	0.259	0.258	0.4	114	-0.03	8.34
103	M	1,2,3-trichloropropane	0.300	0.270	10.0	103	-0.04	8.36
104	M	n-propylbenzene	3.416	3.077	9.9	101	-0.03	8.42
105	M	2-chlorotoluene	0.711	0.669	5.9	105	-0.03	8.52
106	M	4-chlorotoluene	0.712	0.664	6.7	106	-0.03	8.63
107	M	1,3,5-trimethylbenzene	2.410	2.053	14.8	96	-0.03	8.59
108	M	tert-butylbenzene	0.537	0.482	10.2	101	-0.03	8.89
109	M	1,2,4-trimethylbenzene	2.377	2.167	8.8	103	-0.03	8.95
110	M	sec-butylbenzene	2.814	2.584	8.2	102	-0.03	9.11
111	M	1,3-dichlorobenzene	1.402	1.323	5.6	108	-0.03	9.24
112	M	p-isopropyltoluene	2.453	2.263	7.7	105	-0.03	9.26
113	M	1,4-dichlorobenzene	1.423	1.359	4.5	110	-0.03	9.33
114		benzyl chloride	1.659	1.877	-13.1	125	-0.03	9.44
115	M	1,2-dichlorobenzene	1.339	1.291	3.6	110	-0.04	9.68
116	M	n-butylbenzene	1.084	1.027	5.3	105	-0.04	9.66
117	M	1,2-dibromo-3-chloropropa	0.178	0.167	6.2	107	-0.04	10.45
118		1,3,5-trichlorobenzene	0.946	0.941	0.5	115	-0.04	10.64
119		2-ethylhexyl acrylate	0.457	0.397	13.1	113	-0.03	11.45
120	M	1,2,4-trichlorobenzene	0.819	0.863	-5.4	118	-0.04	11.27
121	M	hexachlorobutadiene	0.323	0.342	-5.9	121	-0.03	11.42
122	M	naphthalene	2.601	2.605	-0.2	116	-0.04	11.53
123	M	1,2,3-trichlorobenzene	0.750	0.808	-7.7	121	-0.04	11.76
124	m	hexachloroethane	0.345	0.356	-3.2	120	-0.03	9.96
125		2-methylnaphthalene	1.069	1.094	-2.3	124	-0.04	12.67
126		Bis(chloromethyl)ether		----------NA----------				
127		Ethylenimine		----------NA----------				

(#) = Out of Range SPCC's out = 0 CCC's out = 0
3D145276.D M3D6212.M Mon Sep 30 11:42:13 2019 3D

Run Sequence Report

Job Number: JC95610
Account: BBLNYS Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

Run ID: V3D6212	**Method:** SW846 8260C	**Instrument ID:** GCMS3D

Lab Sample ID	Lab File ID	Date/Time Analyzed	Prep QC Batch	Client Sample ID
V3D6212-BFB	3D145269.D	03/07/19 17:57	n/a	BFB Tune
V3D6212-IC6212	3D145270.D	03/07/19 18:37	n/a	Initial cal 0.2
V3D6212-IC6212	3D145271.D	03/07/19 19:02	n/a	Initial cal 0.5
V3D6212-IC6212	3D145272.D	03/07/19 19:27	n/a	Initial cal 1
V3D6212-IC6212	3D145273.D	03/07/19 19:52	n/a	Initial cal 2
V3D6212-IC6212	3D145274.D	03/07/19 20:17	n/a	Initial cal 4
V3D6212-IC6212	3D145275.D	03/07/19 20:43	n/a	Initial cal 8
V3D6212-IC6212	3D145276.D	03/07/19 21:08	n/a	Initial cal 20
V3D6212-ICC6212	3D145277.D	03/07/19 21:33	n/a	Initial cal 50
V3D6212-IC6212	3D145278.D	03/07/19 21:58	n/a	Initial cal 100
V3D6212-IC6212	3D145279.D	03/07/19 22:24	n/a	Initial cal 200
V3D6212-ICV6212	3D145282.D	03/07/19 23:39	n/a	Initial cal verification 50

Run Sequence Report

Job Number: JC95610
Account: BBLNYS Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

Run ID: V3D6386	**Method:** SW846 8260C	**Instrument ID:** GCMS3D

Lab Sample ID	Lab File ID	Date/Time Analyzed	Prep QC Batch	Client Sample ID
V3D6386-BFB	3D149397.D	09/26/19 07:19	n/a	BFB Tune
V3D6386-CC6212	3D149397.D	09/26/19 07:19	n/a	Continuing cal 20
V3D6386-BS	3D149398.D	09/26/19 08:22	n/a	Blank Spike
V3D6386-MB	3D149400.D	09/26/19 09:20	n/a	Method Blank
GP23871-15LB	3D149401.D	09/26/19 10:08	GP23871	Leachate Blank
ZZZZZZ	3D149402.D	09/26/19 10:33	GP23871	(unrelated sample)
JC95314-16	3D149403.D	09/26/19 10:59	GP23871	(used for QC only; not part of job JC95610)
ZZZZZZ	3D149404.D	09/26/19 11:24	GP23776	(unrelated sample)
ZZZZZZ	3D149405.D	09/26/19 11:50	GP23776	(unrelated sample)
ZZZZZZ	3D149406.D	09/26/19 12:15	GP23776	(unrelated sample)
JC95314-16MS	3D149408.D	09/26/19 13:05	n/a	Matrix Spike
GP23871-15LS	3D149408.D	09/26/19 13:05	GP23871	Leachate Spike
JC95314-16MSD	3D149409.D	09/26/19 13:30	n/a	Matrix Spike Duplicate
ZZZZZZ	3D149411.D	09/26/19 14:21	GP23871	(unrelated sample)
ZZZZZZ	3D149412.D	09/26/19 14:46	GP23871	(unrelated sample)
ZZZZZZ	3D149413.D	09/26/19 15:12	GP23871	(unrelated sample)
GP23888-16LB	3D149415.D	09/26/19 16:03	GP23888	Leachate Blank
ZZZZZZ	3D149416.D	09/26/19 16:28	GP23888	(unrelated sample)
ZZZZZZ	3D149417.D	09/26/19 16:54	GP23888	(unrelated sample)
ZZZZZZ	3D149418.D	09/26/19 17:19	GP23888	(unrelated sample)
ZZZZZZ	3D149419.D	09/26/19 17:44	GP23888	(unrelated sample)
ZZZZZZ	3D149420.D	09/26/19 18:10	GP23888	(unrelated sample)
ZZZZZZ	3D149421.D	09/26/19 18:35	GP23888	(unrelated sample)
GP23888-16LS	3D149422.D	09/26/19 19:00	GP23888	Leachate Spike

Run Sequence Report

Job Number: JC95610
Account: BBLNYS Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

Run ID: V3D6388	**Method:** SW846 8260C	**Instrument ID:** GCMS3D

Lab Sample ID	Lab File ID	Date/Time Analyzed	Prep QC Batch	Client Sample ID
V3D6388-BFB	3D149450.D	09/30/19 08:10	n/a	BFB Tune
V3D6388-CC6212	3D149450.D	09/30/19 08:10	n/a	Continuing cal 20
V3D6388-BS	3D149451.D	09/30/19 08:42	n/a	Blank Spike
V3D6388-BSD	3D149452.D	09/30/19 09:07	n/a	Blank Spike Duplicate
V3D6388-MB	3D149454.D	09/30/19 10:04	n/a	Method Blank
GP23943-1LB	3D149455.D	09/30/19 10:33	GP23943	Leachate Blank
JC95392-5	3D149456.D	09/30/19 10:58	GP23943	(used for QC only; not part of job JC95610)
ZZZZZZ	3D149457.D	09/30/19 11:24	GP23943	(unrelated sample)
ZZZZZZ	3D149458.D	09/30/19 11:49	GP23943	(unrelated sample)
ZZZZZZ	3D149459.D	09/30/19 12:15	GP23943	(unrelated sample)
ZZZZZZ	3D149460.D	09/30/19 12:40	GP23943	(unrelated sample)
ZZZZZZ	3D149461.D	09/30/19 13:05	GP23943	(unrelated sample)
ZZZZZZ	3D149462.D	09/30/19 13:31	GP23943	(unrelated sample)
JC95392-5MS	3D149463.D	09/30/19 13:56	n/a	Matrix Spike
GP23943-1LS	3D149463A.D	09/30/19 13:56	GP23943	Leachate Spike
JC95392-5MSD	3D149464.D	09/30/19 14:21	n/a	Matrix Spike Duplicate
GP23923-18LB	3D149466.D	09/30/19 15:11	GP23923	Leachate Blank
ZZZZZZ	3D149467.D	09/30/19 15:37	GP23871	(unrelated sample)
ZZZZZZ	3D149468.D	09/30/19 16:02	GP23923	(unrelated sample)
ZZZZZZ	3D149469.D	09/30/19 16:27	GP23923	(unrelated sample)
ZZZZZZ	3D149470.D	09/30/19 16:53	GP23888	(unrelated sample)
ZZZZZZ	3D149471.D	09/30/19 17:18	GP23923	(unrelated sample)
JC95610-1	3D149472.D	09/30/19 17:43	GP23888	WC-092519
GP23923-18LS	3D149474.D	09/30/19 18:33	GP23923	Leachate Spike

MS Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Instrument Performance Checks (DFTPP)
- Internal Standard Area Summaries
- Surrogate Recovery Summaries
- Initial and Continuing Calibration Summaries
- Run Sequence Reports

Method Blank Summary

Job Number: JC95610
Account: BBLNYS Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP23137-MB2	P132154.D	1	10/08/19	CS	10/08/19	OP23137	EP5993

The QC reported here applies to the following samples: **Method:** SW846 8270D

JC95610-1

CAS No.	Compound	Result	RL	MDL	Units	Q
95-48-7	2-Methylphenol	ND	2.0	0.89	ug/l	
	3&4-Methylphenol	ND	2.0	0.88	ug/l	
87-86-5	Pentachlorophenol	ND	10	1.4	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	5.0	1.3	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	5.0	0.92	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	2.0	0.17	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	2.0	0.55	ug/l	
118-74-1	Hexachlorobenzene	ND	2.0	0.33	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.49	ug/l	
67-72-1	Hexachloroethane	ND	5.0	0.39	ug/l	
98-95-3	Nitrobenzene	ND	2.0	0.64	ug/l	
110-86-1	Pyridine	ND	2.0	0.39	ug/l	

CAS No.	Surrogate Recoveries		Limits
367-12-4	2-Fluorophenol	44%	14-88%
4165-62-2	Phenol-d5	31%	10-110%
118-79-6	2,4,6-Tribromophenol	74%	39-149%
4165-60-0	Nitrobenzene-d5	74%	32-128%
321-60-8	2-Fluorobiphenyl	70%	35-119%
1718-51-0	Terphenyl-d14	66%	10-126%

Leachate Blank Summary

Job Number: JC95610
Account: BBLNYS Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP23137-LB9	P132155.D	1	10/08/19	CS	10/08/19	OP23137	EP5993

The QC reported here applies to the following samples: **Method:** SW846 8270D

JC95610-1

CAS No.	Compound	Result	RL	MDL	Units	Q
95-48-7	2-Methylphenol	ND	20	8.9	ug/l	
	3&4-Methylphenol	ND	20	8.8	ug/l	
87-86-5	Pentachlorophenol	ND	100	14	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	50	13	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	50	9.2	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	20	1.7	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	20	5.5	ug/l	
118-74-1	Hexachlorobenzene	ND	20	3.3	ug/l	
87-68-3	Hexachlorobutadiene	ND	10	4.9	ug/l	
67-72-1	Hexachloroethane	ND	50	3.9	ug/l	
98-95-3	Nitrobenzene	ND	20	6.4	ug/l	
110-86-1	Pyridine	ND	20	3.9	ug/l	

CAS No.	Surrogate Recoveries		Limits
367-12-4	2-Fluorophenol	41%	14-88%
4165-62-2	Phenol-d5	29%	10-110%
118-79-6	2,4,6-Tribromophenol	69%	39-149%
4165-60-0	Nitrobenzene-d5	70%	32-128%
321-60-8	2-Fluorobiphenyl	66%	35-119%
1718-51-0	Terphenyl-d14	65%	10-126%

Blank Spike Summary

Job Number: JC95610
Account: BBLNYS Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP23137-BS2	P132158.D	1	10/08/19	CS	10/08/19	OP23137	EP5993

The QC reported here applies to the following samples: **Method:** SW846 8270D

JC95610-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
95-48-7	2-Methylphenol	500	395	79	42-103
	3&4-Methylphenol	500	384	77	39-110
87-86-5	Pentachlorophenol	500	344	69	30-136
95-95-4	2,4,5-Trichlorophenol	500	382	76	55-116
88-06-2	2,4,6-Trichlorophenol	500	378	76	56-115
106-46-7	1,4-Dichlorobenzene	500	321	64	39-110
121-14-2	2,4-Dinitrotoluene	500	517	103	57-122
118-74-1	Hexachlorobenzene	500	380	76	49-122
87-68-3	Hexachlorobutadiene	500	268	54	24-112
67-72-1	Hexachloroethane	500	251	50	31-107
98-95-3	Nitrobenzene	500	372	74	44-116
110-86-1	Pyridine	500	99.5	20	10-110

CAS No.	Surrogate Recoveries	BSP	Limits
367-12-4	2-Fluorophenol	53%	14-88%
4165-62-2	Phenol-d5	44%	10-110%
118-79-6	2,4,6-Tribromophenol	75%	39-149%
4165-60-0	Nitrobenzene-d5	80%	32-128%
321-60-8	2-Fluorobiphenyl	75%	35-119%
1718-51-0	Terphenyl-d14	76%	10-126%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: JC95610
Account: BBLNYS Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP23137-MS	P132159.D	1	10/08/19	CS	10/08/19	OP23137	EP5993
OP23137-MSD	P132160.D	1	10/09/19	CS	10/08/19	OP23137	EP5993
JC95821-11A	P132161.D	1	10/09/19	CS	10/08/19	OP23137	EP5993

The QC reported here applies to the following samples: **Method:** SW846 8270D

JC95610-1

CAS No.	Compound	JC95821-11A ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
95-48-7	2-Methylphenol	ND		500	404	81	500	392	78	3	47-112/18
	3&4-Methylphenol	ND		500	391	78	500	378	76	3	44-113/19
87-86-5	Pentachlorophenol	ND		500	384	77	500	368	74	4	25-151/25
95-95-4	2,4,5-Trichlorophenol	ND		500	395	79	500	417	83	5	51-124/20
88-06-2	2,4,6-Trichlorophenol	ND		500	390	78	500	404	81	4	53-120/21
106-46-7	1,4-Dichlorobenzene	ND		500	370	74	500	383	77	3	40-105/22
121-14-2	2,4-Dinitrotoluene	ND		500	507	101	500	525	105	3	54-123/27
118-74-1	Hexachlorobenzene	ND		500	397	79	500	396	79	0	46-125/24
87-68-3	Hexachlorobutadiene	ND		500	310	62	500	325	65	5	26-121/24
67-72-1	Hexachloroethane	ND		500	299	60	500	311	62	4	35-111/26
98-95-3	Nitrobenzene	ND		500	413	83	500	408	82	1	35-130/25
110-86-1	Pyridine	ND		500	52.1	10* [a]	500	71.2	14	31	12-102/41

CAS No.	Surrogate Recoveries	MS	MSD	JC95821-11A	Limits
367-12-4	2-Fluorophenol	59%	57%	37%	14-88%
4165-62-2	Phenol-d5	42%	43%	27%	10-110%
118-79-6	2,4,6-Tribromophenol	81%	75%	80%	39-149%
4165-60-0	Nitrobenzene-d5	88%	89%	69%	32-128%
321-60-8	2-Fluorobiphenyl	78%	84%	64%	35-119%
1718-51-0	Terphenyl-d14	76%	66%	71%	10-126%

(a) Outside of in house control limits.

* = Outside of Control Limits.

Leachate Spike Summary

Job Number: JC95610
Account: BBLNYS Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP23137-LS4	P132159.D	1	10/08/19	CS	10/08/19	OP23137	EP5993
JC95821-11A	P132161.D	1	10/09/19	CS	10/08/19	OP23137	EP5993

The QC reported here applies to the following samples: **Method:** SW846 8270D

JC95610-1

CAS No.	Compound	JC95821-11A ug/l	Q	Spike ug/l	LS ug/l	LS %	Limits
95-48-7	2-Methylphenol	ND		500	404	81	47-112
	3&4-Methylphenol	ND		500	391	78	44-113
87-86-5	Pentachlorophenol	ND		500	384	77	25-151
95-95-4	2,4,5-Trichlorophenol	ND		500	395	79	51-124
88-06-2	2,4,6-Trichlorophenol	ND		500	390	78	53-120
106-46-7	1,4-Dichlorobenzene	ND		500	370	74	40-105
121-14-2	2,4-Dinitrotoluene	ND		500	507	101	54-123
118-74-1	Hexachlorobenzene	ND		500	397	79	46-125
87-68-3	Hexachlorobutadiene	ND		500	310	62	26-121
67-72-1	Hexachloroethane	ND		500	299	60	35-111
98-95-3	Nitrobenzene	ND		500	413	83	35-130
110-86-1	Pyridine	ND		500	52.1	10* [a]	12-102

CAS No.	Surrogate Recoveries	LS	JC95821-11A	Limits
367-12-4	2-Fluorophenol	59%	37%	14-88%
4165-62-2	Phenol-d5	42%	27%	10-110%
118-79-6	2,4,6-Tribromophenol	81%	80%	39-149%
4165-60-0	Nitrobenzene-d5	88%	69%	32-128%
321-60-8	2-Fluorobiphenyl	78%	64%	35-119%
1718-51-0	Terphenyl-d14	76%	71%	10-126%

(a) Outside of in house control limits.

* = Outside of Control Limits.

Instrument Performance Check (DFTPP)

Job Number: JC95610
Account: BBLNYS Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

Sample: EP5919-DFTPP
Lab File ID: P130614.D
Instrument ID: GCMSP
Injection Date: 07/09/19
Injection Time: 23:15

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
51	30.0 - 60.0% of mass 198	15053	35.5		Pass
68	Less than 2.0% of mass 69	0	0.00	(0.00) [a]	Pass
69	Mass 69 relative abundance	14769	34.8		Pass
70	Less than 2.0% of mass 69	52	0.12	(0.35) [a]	Pass
127	40.0 - 60.0% of mass 198	18279	43.1		Pass
197	Less than 1.0% of mass 198	166	0.39		Pass
198	Base peak, 100% relative abundance	42399	100.0		Pass
199	5.0 - 9.0% of mass 198	3004	7.09		Pass
275	10.0 - 30.0% of mass 198	10856	25.6		Pass
365	1.0 - 100.0% of mass 198	1420	3.35		Pass
441	Present, but less than mass 443	3975	9.38	(75.1) [b]	Pass
442	40.0 - 100.0% of mass 198	25920	61.1		Pass
443	17.0 - 23.0% of mass 442	5290	12.5	(20.4) [c]	Pass

(a) Value is % of mass 69
(b) Value is % of mass 443
(c) Value is % of mass 442

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
EP5919-IC5919	P130615.D	07/09/19	23:30	00:15	Initial cal 1
EP5919-IC5919	P130616.D	07/09/19	23:57	00:42	Initial cal 2
EP5919-IC5919	P130617.D	07/10/19	00:27	01:12	Initial cal 25
EP5919-IC5919	P130618.D	07/10/19	00:54	01:39	Initial cal 100
EP5919-IC5919	P130619.D	07/10/19	01:21	02:06	Initial cal 80
EP5919-ICC5919	P130620.D	07/10/19	01:48	02:33	Initial cal 50
EP5919-IC5919	P130621.D	07/10/19	02:16	03:01	Initial cal 10
EP5919-IC5919	P130622.D	07/10/19	02:42	03:27	Initial cal 5
EP5919-ICV5919	P130623.D	07/10/19	03:09	03:54	Initial cal verification 50
EP5919-ICV5919	P130625.D	07/10/19	04:03	04:48	Initial cal verification 50
EP5919-ICV5919	P130627.D	07/10/19	04:57	05:42	Initial cal verification 50
EP5919-ICV5919	P130628.D	07/10/19	05:24	06:09	Initial cal verification 50

Instrument Performance Check (DFTPP)

Job Number: JC95610
Account: BBLNYS Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

Sample: EP5921-DFTPP
Lab File ID: P130641.D
Instrument ID: GCMSP
Injection Date: 07/10/19
Injection Time: 10:51

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
51	30.0 - 60.0% of mass 198	7820	44.8		Pass
68	Less than 2.0% of mass 69	0	0.00	(0.00) [a]	Pass
69	Mass 69 relative abundance	7759	44.4		Pass
70	Less than 2.0% of mass 69	0	0.00	(0.00) [a]	Pass
127	40.0 - 60.0% of mass 198	8753	50.1		Pass
197	Less than 1.0% of mass 198	83	0.48		Pass
198	Base peak, 100% relative abundance	17456	100.0		Pass
199	5.0 - 9.0% of mass 198	1162	6.66		Pass
275	10.0 - 30.0% of mass 198	4038	23.1		Pass
365	1.0 - 100.0% of mass 198	618	3.54		Pass
441	Present, but less than mass 443	1608	9.21	(82.7) [b]	Pass
442	40.0 - 100.0% of mass 198	10065	57.7		Pass
443	17.0 - 23.0% of mass 442	1945	11.1	(19.3) [c]	Pass

(a) Value is % of mass 69
(b) Value is % of mass 443
(c) Value is % of mass 442

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
EP5921-IC5921	P130642.D	07/10/19	11:03	00:12	Initial cal 100
EP5921-ICC5921	P130644.D	07/10/19	11:57	01:06	Initial cal 50
EP5921-IC5921	P130645.D	07/10/19	12:24	01:33	Initial cal 25
EP5921-IC5921	P130646.D	07/10/19	12:51	02:00	Initial cal 10
EP5921-IC5921	P130647.D	07/10/19	13:18	02:27	Initial cal 5
EP5921-IC5921	P130648.D	07/10/19	13:45	02:54	Initial cal 2
EP5921-IC5921	P130649.D	07/10/19	14:13	03:22	Initial cal 1
EP5921-IC5921	P130650.D	07/10/19	14:40	03:49	Initial cal 80
EP5921-ICV5921	P130651.D	07/10/19	15:07	04:16	Initial cal verification 50
EP5921-ICV5921	P130652.D	07/10/19	15:34	04:43	Initial cal verification 50
EP5921-ICV5921	P130653.D	07/10/19	16:01	05:10	Initial cal verification 50
EP5921-ICV5919	P130654.D	07/10/19	16:29	05:38	Initial cal verification 50
EP5921-ICV5919	P130655A.D	07/10/19	17:25	06:34	Initial cal verification 50

Instrument Performance Check (DFTPP)

Job Number: JC95610
Account: BBLNYS Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

Sample: EP5993-DFTPP
Lab File ID: P132152.D
Instrument ID: GCMSP
Injection Date: 10/08/19
Injection Time: 20:30

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
51	30.0 - 60.0% of mass 198	12023	37.8		Pass
68	Less than 2.0% of mass 69	55	0.17	(0.40) [a]	Pass
69	Mass 69 relative abundance	13585	42.8		Pass
70	Less than 2.0% of mass 69	113	0.36	(0.83) [a]	Pass
127	40.0 - 60.0% of mass 198	14392	45.3		Pass
197	Less than 1.0% of mass 198	0	0.00		Pass
198	Base peak, 100% relative abundance	31765	100.0		Pass
199	5.0 - 9.0% of mass 198	2115	6.66		Pass
275	10.0 - 30.0% of mass 198	7258	22.8		Pass
365	1.0 - 100.0% of mass 198	976	3.07		Pass
441	Present, but less than mass 443	2559	8.06	(81.1) [b]	Pass
442	40.0 - 100.0% of mass 198	16324	51.4		Pass
443	17.0 - 23.0% of mass 442	3155	9.93	(19.3) [c]	Pass

(a) Value is % of mass 69
(b) Value is % of mass 443
(c) Value is % of mass 442

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
EP5993-CC5919	P132153.D	10/08/19	20:45	00:15	Continuing cal 25
OP23171-MB1	P132154.D	10/08/19	21:38	01:08	Method Blank
OP23101-MB2	P132154.D	10/08/19	21:38	01:08	Method Blank
OP23172-MB1	P132154.D	10/08/19	21:38	01:08	Method Blank
OP23138-MB3	P132154.D	10/08/19	21:38	01:08	Method Blank
OP23137-MB2	P132154.D	10/08/19	21:38	01:08	Method Blank
OP23137-LB9	P132155.D	10/08/19	22:05	01:35	Leachate Blank
OP23171-LB15	P132156.D	10/08/19	22:32	02:02	Leachate Blank
OP23138-LB12	P132157.D	10/08/19	22:59	02:29	Leachate Blank
OP23137-BS2	P132158.D	10/08/19	23:26	02:56	Blank Spike
OP23101-BS2	P132158.D	10/08/19	23:26	02:56	Blank Spike
OP23172-BS1	P132158.D	10/08/19	23:26	02:56	Blank Spike
OP23171-BS1	P132158.D	10/08/19	23:26	02:56	Blank Spike
OP23138-BS3	P132158.D	10/08/19	23:26	02:56	Blank Spike
OP23137-LS4	P132159.D	10/08/19	23:55	03:25	Leachate Spike
OP23137-MS	P132159.D	10/08/19	23:55	03:25	Matrix Spike
OP23137-MSD	P132160.D	10/09/19	00:22	03:52	Matrix Spike Duplicate
JC95821-11A	P132161.D	10/09/19	00:49	04:19	(used for QC only; not part of job JC95610)
JC95610-1	P132162.D	10/09/19	01:16	04:46	WC-092519

Instrument Performance Check (DFTPP)

Job Number: JC95610
Account: BBLNYS Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

Sample:	EP5993-DFTPP	**Injection Date:**	10/08/19
Lab File ID:	P132152.D	**Injection Time:**	20:30
Instrument ID:	GCMSP		

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
ZZZZZZ	P132163.D	10/09/19	01:43	05:13	(unrelated sample)
ZZZZZZ	P132164.D	10/09/19	02:10	05:40	(unrelated sample)
OP23171-MS	P132165.D	10/09/19	02:37	06:07	Matrix Spike
OP23171-LS7	P132165.D	10/09/19	02:37	06:07	Leachate Spike
OP23171-MSD	P132166.D	10/09/19	03:04	06:34	Matrix Spike Duplicate
JC94224-13T	P132167.D	10/09/19	03:30	07:00	(used for QC only; not part of job JC95610)
ZZZZZZ	P132168.D	10/09/19	03:57	07:27	(unrelated sample)
ZZZZZZ	P132169.D	10/09/19	04:24	07:54	(unrelated sample)
ZZZZZZ	P132170.D	10/09/19	04:51	08:21	(unrelated sample)
ZZZZZZ	P132171.D	10/09/19	05:18	08:48	(unrelated sample)
OP23138-MS	P132172.D	10/09/19	05:45	09:15	Matrix Spike
OP23138-LS5	P132172.D	10/09/19	05:45	09:15	Leachate Spike
OP23138-MSD	P132173.D	10/09/19	06:12	09:42	Matrix Spike Duplicate
JC95743-1	P132174.D	10/09/19	06:38	10:08	(used for QC only; not part of job JC95610)
ZZZZZZ	P132175.D	10/09/19	07:05	10:35	(unrelated sample)
ZZZZZZ	P132176.D	10/09/19	07:32	11:02	(unrelated sample)

Internal Standard Area Summary

Job Number: JC95610
Account: BBLNYS Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

Check Std: EP5993-CC5919 **Injection Date:** 10/08/19
Lab File ID: P132153.D **Injection Time:** 20:45
Instrument ID: GCMSP **Method:** SW846 8270D

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT	IS 6 AREA	RT
Check Std	47494	4.21	191764	5.16	125236	6.47	258413	8.14	297971	13.18	320615	16.22
Upper Limit [a]	94988	4.71	383528	5.66	250472	6.97	516826	8.64	595942	13.68	641230	16.72
Lower Limit [b]	23747	3.71	95882	4.66	62618	5.97	129207	7.64	148986	12.68	160308	15.72
Lab Sample ID	**IS 1 AREA**	**RT**	**IS 2 AREA**	**RT**	**IS 3 AREA**	**RT**	**IS 4 AREA**	**RT**	**IS 5 AREA**	**RT**	**IS 6 AREA**	**RT**
OP23171-MB1	35272	4.21	150710	5.15	98975	6.46	206488	8.13	229629	13.17	267631	16.21
OP23101-MB2	35272	4.21	150710	5.15	98975	6.46	206488	8.13	229629	13.17	267631	16.21
OP23138-MB3	35272	4.21	150710	5.15	98975	6.46	206488	8.13	229629	13.17	267631	16.21
OP23137-MB2	35272	4.21	150710	5.15	98975	6.46	206488	8.13	229629	13.17	267631	16.21
OP23172-MB1	35272	4.21	150710	5.15	98975	6.46	206488	8.13	229629	13.17	267631	16.21
OP23137-LB9	37413	4.21	157071	5.15	99263	6.46	205723	8.13	229144	13.17	270506	16.21
OP23171-LB15	40472	4.21	169032	5.15	110561	6.46	251297	8.13	256430	13.17	303395	16.21
OP23138-LB12	25501	4.21	117353	5.15	83943	6.46	182749	8.13	221914	13.17	277546	16.20
OP23137-BS2	37910	4.21	157754	5.16	108027	6.47	227279	8.14	272225	13.18	311194	16.21
OP23172-BS1	37910	4.21	157754	5.16	108027	6.47	227279	8.14	272225	13.18	311194	16.21
OP23138-BS3	37910	4.21	157754	5.16	108027	6.47	227279	8.14	272225	13.18	311194	16.21
OP23101-BS2	37910	4.21	157754	5.16	108027	6.47	227279	8.14	272225	13.18	311194	16.21
OP23171-BS1	37910	4.21	157754	5.16	108027	6.47	227279	8.14	272225	13.18	311194	16.21
OP23137-MS	44898	4.21	179976	5.15	120180	6.47	247497	8.14	276151	13.18	310858	16.21
OP23137-LS4	44898	4.21	179976	5.15	120180	6.47	247497	8.14	276151	13.18	310858	16.21
OP23137-MSD	48658	4.22	192196	5.16	121367	6.47	248625	8.14	292951	13.18	337123	16.21
JC95821-11A	37138	4.21	155850	5.15	103060	6.46	226351	8.13	258601	13.17	302110	16.20
JC95610-1	31238	4.21	132980	5.16	87971	6.46	197464	8.13	237301	13.17	285961	16.20
ZZZZZZ	39617	4.21	168478	5.15	108976	6.46	242099	8.13	299717	13.17	361008	16.20
ZZZZZZ	42567	4.21	175822	5.15	111814	6.46	226542	8.13	284593	13.17	337263	16.20
OP23171-MS	39091	4.21	162479	5.15	108379	6.47	231528	8.14	273399	13.18	311992	16.21
OP23171-LS7	39091	4.21	162479	5.15	108379	6.47	231528	8.14	273399	13.18	311992	16.21
OP23171-MSD	45726	4.22	178885	5.16	114951	6.47	241608	8.14	288964	13.18	338206	16.21
JC94224-13T	47845	4.21	197510	5.15	129818	6.46	271306	8.13	312138	13.17	364458	16.20
ZZZZZZ	36804	4.21	160462	5.15	104552	6.46	230520	8.13	275448	13.17	329322	16.20
ZZZZZZ	46632	4.21	193785	5.15	126003	6.46	249763	8.13	301738	13.17	357337	16.20
ZZZZZZ	37771	4.21	160690	5.15	106698	6.46	227551	8.12	269681	13.17	317775	16.20
ZZZZZZ	40065	4.21	169528	5.15	108271	6.46	229622	8.12	279330	13.16	325756	16.20
OP23138-LS5	42494	4.21	170655	5.15	110620	6.46	235040	8.13	276646	13.17	313965	16.21
OP23138-MS	42494	4.21	170655	5.15	110620	6.46	235040	8.13	276646	13.17	313965	16.21
OP23138-MSD	44621	4.21	180745	5.15	117145	6.46	242457	8.13	278104	13.18	312056	16.21
JC95743-1	40217	4.21	173178	5.15	115187	6.46	254374	8.13	306485	13.16	360069	16.20
ZZZZZZ	52814	4.21	199722	5.16	142607	6.46	279364	8.12	330847	13.17	384200	16.20
ZZZZZZ	39899	4.21	168197	5.15	112633	6.46	234811	8.12	275391	13.16	322051	16.20

Internal Standard Area Summary

Job Number: JC95610
Account: BBLNYS Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

Check Std:	EP5993-CC5919	**Injection Date:**	10/08/19
Lab File ID:	P132153.D	**Injection Time:**	20:45
Instrument ID:	GCMSP	**Method:**	SW846 8270D

Lab Sample ID	IS 1 AREA	IS 1 RT	IS 2 AREA	IS 2 RT	IS 3 AREA	IS 3 RT	IS 4 AREA	IS 4 RT	IS 5 AREA	IS 5 RT	IS 6 AREA	IS 6 RT

IS 1 = 1,4-Dichlorobenzene-d4
IS 2 = Naphthalene-d8
IS 3 = Acenaphthene-D10
IS 4 = Phenanthrene-d10
IS 5 = Chrysene-d12
IS 6 = Perylene-d12

(a) Upper Limit = + 100% of check standard area; Retention time + 0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

Surrogate Recovery Summary

Job Number: JC95610
Account: BBLNYS Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

Method: SW846 8270D **Matrix:** LEACHATE

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3	S4	S5	S6
JC95610-1	P132162.D	44	32	78	81	60	70
OP23137-BS2	P132158.D	53	44	75	80	75	76
OP23137-LB9	P132155.D	41	29	69	70	66	65
OP23137-LS4	P132159.D	59	42	81	88	78	76
OP23137-MB2	P132154.D	44	31	74	74	70	66
OP23137-MS	P132159.D	59	42	81	88	78	76
OP23137-MSD	P132160.D	57	43	75	89	84	66

Surrogate Compounds	Recovery Limits
S1 = 2-Fluorophenol	14-88%
S2 = Phenol-d5	10-110%
S3 = 2,4,6-Tribromophenol	39-149%
S4 = Nitrobenzene-d5	32-128%
S5 = 2-Fluorobiphenyl	35-119%
S6 = Terphenyl-d14	10-126%

Initial Calibration Summary

Job Number: JC95610
Account: BBLNYS Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

Sample: EP5919-ICC5919
Lab FileID: P130620.D

Response Factor Report MSVOAMSP

Method : C:\MSDCHEM\1\METHODS\MP5919.M (RTE Integrator)
Title : Semi Volatile Extractables by GC/MS
Last Update : Wed Jul 10 08:42:27 2019
Response via : Initial Calibration

Calibration Files
2 =p130616.D 5 =p130622.D 25 =p130617.D 80 =p130619.D
100 =p130618.D 50 =p130620.D 10 =p130621.D 1 =p130615.D

Compound	2	5	25	80	100	50	10	1	Avg	%RSD
1) I 1,4-Dichlorobenzene-d	ISTD									
2) 1,4-Dioxane	0.477	0.510	0.498	0.520	0.525	0.522	0.471	0.415	0.492	7.59
3) Pyridine	1.291	1.435	1.374	1.415	1.421	1.397	1.352	1.239	1.366	5.04
4) N-Nitrosodim	0.647	0.635	0.629	0.633	0.643	0.633	0.612	0.612	0.630	2.00
5) 2-Fluorophen	1.236	1.273	1.319	1.314	1.354	1.291	1.228	1.259	1.284	3.41
6) Indene	2.224	2.120	2.074	1.894	1.863	1.946	2.023	2.109	2.032	6.10
7) Cumene	3.316	3.224	3.192	3.130	3.097	3.171	3.062	3.159	3.169	2.48
8) Phenol-d5	1.635	1.599	1.626	1.598	1.611	1.604	1.555	1.595	1.603	1.50
9) Phenol	1.929	1.908	1.906	1.760	1.768	1.833	1.833	1.886	1.853	3.49
10) Aniline	2.163	2.069	1.817	1.592	1.584	1.639	1.910	1.902	1.834	11.90
11) bis(2-Chloro	1.273	1.344	1.309	1.241	1.242	1.249	1.260	1.284	1.275	2.83
12) 2-Chlorophen	1.399	1.413	1.410	1.351	1.362	1.373	1.350	1.451	1.389	2.56
13) Decane	1.779	1.818	1.684	1.445	1.342	1.538	1.686	1.779	1.634	10.64
14) 1,3-Dichloro	1.704	1.666	1.625	1.515	1.498	1.549	1.562	1.645	1.595	4.70
15) 1,4-Dichloro	1.732	1.639	1.616	1.490	1.479	1.541	1.561	1.622	1.585	5.31
16) Benzyl alcoh	0.788	0.770	0.811	0.780	0.805	0.783	0.775	0.754	0.783	2.36
17) 1,2-Dichloro	1.632	1.574	1.523	1.430	1.406	1.459	1.517	1.530	1.509	4.98
18) Acetophenone	1.799	1.874	1.869	1.690	1.695	1.736	1.816	1.888	1.796	4.48
19) 2-Methylphen	1.209	1.168	1.171	1.059	1.057	1.117	1.151	1.178	1.139	4.94
20) 2,2'-oxybis(	0.308	0.353	0.345	0.321	0.313	0.326	0.337	0.329	0.329	4.64
21) 3&4-Methylph	1.212	1.229	1.207	1.090	1.069	1.131	1.201	1.201	1.168	5.28
22) n-Nitroso-di	0.951	0.926	0.913	0.822	0.816	0.843	0.897	0.900	0.883	5.69
23) Hexachloroet	0.648	0.610	0.622	0.595	0.592	0.619	0.594	0.634	0.614	3.31
24) I Naphthalene-d8	ISTD									
25) Nitrobenzene	0.379	0.394	0.387	0.385	0.378	0.392	0.402	0.368	0.386	2.76
26) Nitrobenzene	0.394	0.394	0.387	0.372	0.368	0.395	0.387	0.377	0.384	2.81
27) Quinoline	0.668	0.670	0.692	0.687	0.705	0.687	0.673	0.651	0.679	2.51
28) Isophorone	0.667	0.687	0.679	0.649	0.650	0.658	0.660	0.648	0.662	2.22
29) 2-Nitropheno	0.189	0.193	0.202	0.204	0.202	0.212	0.195	0.159	0.195	8.25
30) 2,4-Dimethyl	0.292	0.292	0.322	0.339	0.337	0.340	0.301	0.223	0.306	12.81
31) Benzoic acid			0.138	0.203	0.196	0.196	0.138		0.174	19.03
32) bis(2-Chloro	0.429	0.424	0.432	0.418	0.413	0.421	0.427	0.432	0.425	1.62
33) 2,4-Dichloro	0.341	0.315	0.326	0.320	0.320	0.321	0.319	0.323	0.323	2.42
34) 2,6-Dichloro	0.294	0.294	0.304	0.290	0.290	0.301	0.291	0.300	0.296	1.87
35) 1,3,5-Trichl	0.393	0.389	0.386	0.373	0.356	0.386	0.383	0.402	0.384	3.62
36) 1,2,4-Trichl	0.373	0.359	0.365	0.353	0.348	0.361	0.355	0.381	0.362	3.01
37) 1,2,3-Trichl	0.359	0.352	0.356	0.343	0.333	0.351	0.354	0.378	0.353	3.72
38) Naphthalene	1.114	1.029	1.007	0.941	0.922	0.980	0.998	1.048	1.005	6.05
39) 4-Chloroanil	0.435	0.426	0.424	0.398	0.377	0.404	0.425	0.431	0.415	4.82
40) 2,3-Dichloro	0.401	0.390	0.386	0.363	0.367	0.382	0.370	0.382	0.380	3.39
41) Caprolactam	0.166	0.172	0.186	0.188	0.203	0.193	0.177	0.155	0.180	8.61
42) Hexachlorobu	0.229	0.222	0.220	0.221	0.211	0.223	0.220	0.214	0.220	2.47
43) 4-Chloro-3-m	0.285	0.290	0.309	0.307	0.311	0.308	0.293	0.283	0.298	3.89
44) 2-Methylnaph	0.605	0.568	0.581	0.547	0.541	0.565	0.567	0.578	0.569	3.50
45) 1-Methylnaph	0.732	0.706	0.724	0.680	0.680	0.693	0.703	0.759	0.710	3.84

Initial Calibration Summary

Job Number: JC95610 **Sample:** EP5919-ICC5919
Account: BBLNYS Arcadis **Lab FileID:** P130620.D
Project: National Grid, Philly Coke, Philadelphia, PA

46)	Dimethylnaph	0.662	0.633	0.635	0.599	0.599	0.622	0.638	0.654	0.630	3.66
47)	I Acenaphthene-d10	ISTD									
48)	Hexachlorocy	0.428	0.411	0.445	0.442	0.417	0.436	0.414	0.373	0.421	5.52
49)	2,4,6-Trichl	0.441	0.422	0.438	0.407	0.403	0.416	0.429	0.412	0.421	3.32
50)	2,4,5-Trichl	0.446	0.454	0.479	0.447	0.436	0.449	0.449	0.420	0.447	3.70
51)	2-Fluorobiph	1.545	1.499	1.482	1.365	1.288	1.400	1.477	1.516	1.447	6.05
52)	2-Chloronaph	1.275	1.250	1.229	1.128	1.083	1.146	1.202	1.237	1.194	5.65
53)	Biphenyl	1.607	1.562	1.565	1.433	1.379	1.465	1.515	1.562	1.511	5.18
54)	2-Nitroanili	0.392	0.439	0.438	0.418	0.406	0.429	0.434	0.323	0.410	9.46
55)	Dimethylphth	1.396	1.370	1.394	1.323	1.327	1.325	1.314	1.404	1.357	2.82
56)	Acenaphthyle	2.027	1.953	1.971	1.796	1.753	1.847	1.904	1.945	1.900	4.92
57)	2,6-Dinitrot	0.253	0.297	0.308	0.292	0.300	0.300	0.285	0.216	0.282	11.21
58)	3-Nitroanili	0.295	0.319	0.348	0.337	0.343	0.340	0.330	0.256	0.321	9.69
59)	Acenaphthene	1.275	1.258	1.219	1.141	1.113	1.160	1.197	1.217	1.198	4.71
60)	2,4-Dinitrop	0.063	0.085	0.142	0.167	0.170	0.155	0.106		0.127	33.45
	---- Quadratic regression ---- Coefficient = 0.9998										
	Response Ratio = -0.01575 + 0.14869 *A + 0.00512 *A^2										
61)	4-Nitropheno	0.107	0.133	0.152	0.175	0.173	0.171	0.140		0.150	16.79
62)	Dibenzofuran	1.756	1.708	1.711	1.564	1.529	1.585	1.640	1.709	1.650	5.01
63)	2,4-Dinitrot	0.316	0.366	0.406	0.410	0.409	0.409	0.380	0.245	0.368	16.16
64)	2,3,4,6-Tetr	0.327	0.324	0.363	0.363	0.370	0.350	0.317	0.333	0.343	6.03
65)	Diethylphtha	1.431	1.370	1.454	1.383	1.394	1.383	1.351	1.388	1.394	2.38
66)	Fluorene	1.406	1.411	1.376	1.254	1.219	1.290	1.343	1.358	1.332	5.31
67)	4-Chlorophen	0.725	0.676	0.693	0.646	0.637	0.656	0.656	0.711	0.675	4.69
68)	4-Nitroanili	0.295	0.316	0.347	0.330	0.338	0.342	0.336	0.259	0.320	9.35
69)	I Phenanthrene-d10	ISTD									
70)	4,6-Dinitro-		0.087	0.119	0.134	0.138	0.128	0.096		0.117	17.94
71)	n-Nitrosodip	0.543	0.547	0.543	0.509	0.503	0.524	0.531	0.550	0.531	3.38
72)	1,2-Diphenyl	0.773	0.805	0.762	0.713	0.693	0.731	0.774	0.740	0.749	4.89
73)	2,4,6-Tribro	0.115	0.108	0.122	0.126	0.126	0.123	0.107	0.117	0.118	6.42
74)	4-Bromopheny	0.237	0.231	0.236	0.241	0.240	0.244	0.225	0.236	0.236	2.42
75)	Hexachlorobe	0.256	0.245	0.257	0.254	0.254	0.258	0.248	0.245	0.252	2.19
76)	Pentachlorop	0.126	0.121	0.162	0.171	0.174	0.164	0.130	0.126	0.147	15.68
77)	Phenanthrene	1.131	1.095	1.077	1.004	0.998	1.038	1.059	1.131	1.067	4.86
78)	Anthracene	1.129	1.098	1.095	1.018	1.007	1.056	1.082	1.081	1.071	3.87
79)	Carbazole	1.029	1.000	0.979	0.965	0.964	0.994	0.999	0.994	0.991	2.16
80)	Di-n-butylph	1.170	1.271	1.410	1.372	1.413	1.392	1.309	1.130	1.308	8.40
81)	Fluoranthene	1.237	1.202	1.296	1.246	1.268	1.264	1.188	1.235	1.242	2.84
82)	Octadecane	0.558	0.576	0.598	0.547	0.526	0.568	0.571	0.553	0.562	3.84
83)	I Chrysene-d12	ISTD									
84)	Pyrene	1.478	1.442	1.422	1.393	1.381	1.405	1.423	1.393	1.417	2.23
85)	Terphenyl-d1	0.926	0.932	0.936	0.948	0.945	0.930	0.904	0.933	0.932	1.43
86)	Butylbenzylp	0.271	0.450	0.526	0.641	0.661	0.622	0.515		0.527	25.86
	---- Quadratic regression ---- Coefficient = 0.9996										
	Response Ratio = -0.02040 + 0.57773 *A + 0.03692 *A^2										
87)	Benzo[a]anth	1.271	1.251	1.288	1.283	1.305	1.273	1.232	1.344	1.281	2.65
88)	3,3'-Dichlor	0.281	0.350	0.429	0.472	0.476	0.461	0.377		0.407	18.11
89)	Chrysene	1.247	1.253	1.241	1.164	1.164	1.192	1.193	1.238	1.212	3.07
90)	bis(2-Ethylh	0.417	0.688	0.855	0.906	0.941	0.886	0.744	0.419	0.732	28.84
	---- Quadratic regression ---- Coefficient = 0.9999										
	Response Ratio = -0.01759 + 0.84266 *A + 0.04053 *A^2										
91)	I Perylene-d12	ISTD									
92)	Di-n-octylph	0.527	0.814	1.307	1.517	1.594	1.464	1.039		1.180	33.92

7.9.1

7

Initial Calibration Summary

Job Number: JC95610
Account: BBLNYS Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

Sample: EP5919-ICC5919
Lab FileID: P130620.D

```
              ---- Quadratic regression ----  Coefficient =  0.9998
                Response Ratio = -0.06426 + 1.36127 *A + 0.10153 *A^2

 93) Benzo[b]fluo 1.107 1.052 1.271 1.335 1.416 1.275 1.154 1.115 1.216  10.47
 94) Benzo[k]fluo 1.195 1.240 1.215 1.081 1.031 1.188 1.214 1.145 1.164   6.29
 95) Benzo[a]pyre 0.983 1.001 1.111 1.115 1.130 1.118 1.020 0.993 1.059   6.13
 96) Indeno[1,2,3 0.775 0.649 0.960 1.020 1.017 1.017 0.791 0.778 0.876  16.51
 97) Dibenz(a,h)a 0.685 0.626 0.923 0.999 1.003 0.977 0.783 0.653 0.831  19.56
 98) Dibenz[a,h]a 0.819 0.805 1.026 1.084 1.073 1.064 0.888 0.809 0.946  13.46
 99) 7,12-Dimethy 0.424 0.436 0.548 0.558 0.564 0.556 0.472       0.508  12.23
100) Benzo[g,h,i] 0.881 0.879 1.013 1.033 1.013 1.035 0.928 0.859 0.955   7.95


 ---------------------------------------------------------------------------
 (#) = Out of Range  ###  Number of calibration levels exceeded format  ###

           MP5919.M          Wed Jul 10 08:58:49 2019   ACLIMS
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7.9.1

7

Initial Calibration Verification

Job Number: JC95610
Account: BBLNYS Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

Sample: EP5919-ICV5919
Lab FileID: P130623.D

Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\DATA\EP5919\p130623.D Vial: 10
Acq On : 10 Jul 2019 3:09 am Operator: chriss2
Sample : icv5919-50 Inst : MSVOAMSP
Misc : op13894,ep5919,1000,,,1,1 Multiplr: 1.00
MS Integration Params: rteint.p

Method : C:\MSDCHEM\1\METHODS\MP5919.M (RTE Integrator)
Title : Semi Volatile Extractables by GC/MS
Last Update : Wed Jul 10 08:42:27 2019
Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 30% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1	I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	109	0.00	4.48
4	t	N-Nitrosodimethylamine	0.630	0.626	0.6	108	0.04	2.29
11	t	bis(2-Chloroethyl)ether	1.275	1.311	-2.8	114	0.00	4.28
14	t	1,3-Dichlorobenzene	1.595	1.517	4.9	107	0.00	4.44
15	t	1,4-Dichlorobenzene	1.585	1.546	2.5	109	0.00	4.49
17	t	1,2-Dichlorobenzene	1.509	1.435	4.9	107	0.00	4.60
20	t	2,2'-oxybis(1-Chloropropa	0.329	0.382	-16.1	128	0.00	4.68
22		n-Nitroso-di-n-propylamin	0.883	0.920	-4.2	119	0.00	4.78
23	t	Hexachloroethane	0.614	0.566	7.8	100	0.00	4.86
24	I	Naphthalene-d8	1.000	1.000	0.0	112	0.00	5.41
26	t	Nitrobenzene	0.384	0.356	7.3	101	0.00	4.90
28	t	Isophorone	0.662	0.664	-0.3	113	-0.01	5.07
32	t	bis(2-Chloroethoxy)methan	0.425	0.426	-0.2	113	0.00	5.23
36	t	1,2,4-Trichlorobenzene	0.362	0.341	5.8	105	0.00	5.37
38	t	Naphthalene	1.005	0.964	4.1	110	0.00	5.43
42	t	Hexachlorobutadiene	0.220	0.222	-0.9	111	0.00	5.52
47	I	Acenaphthene-d10	1.000	1.000	0.0	100	0.00	6.77
48	t	Hexachlorocyclopentadiene	0.421	0.365	13.3	74	0.00	6.04
52	t	2-Chloronaphthalene	1.194	1.201	-0.6	105	0.00	6.29
55	t	Dimethylphthalate	1.357	1.301	4.1	98	0.00	6.52
56	t	Acenaphthylene	1.900	1.769	6.9	96	0.00	6.64
57	t	2,6-Dinitrotoluene	0.282	0.229	18.8	76	0.00	6.58
59	t	Acenaphthene	1.198	1.099	8.3	95	0.00	6.80

Initial Calibration Verification

Job Number: JC95610
Account: BBLNYS Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

Sample: EP5919-ICV5919
Lab FileID: P130623.D

63	t	2,4-Dinitrotoluene	0.368	0.288	21.7	71	0.00	6.95
65	t	Diethylphthalate	1.394	1.315	5.7	95	0.00	7.21
66	t	Fluorene	1.332	1.244	6.6	97	0.00	7.33
67	t	4-Chlorophenyl-phenylethe	0.675	0.630	6.7	96	0.00	7.33
69	I	Phenanthrene-d10	1.000	1.000	0.0	100	0.00	8.55
71	t	n-Nitrosodiphenylamine	0.531	0.498	6.2	95	0.00	7.47
72	t	1,2-Diphenylhydrazine	0.749	0.754	-0.7	103	0.00	7.52
74	t	4-Bromophenyl-phenylether	0.236	0.224	5.1	92	0.00	7.93
75	t	Hexachlorobenzene	0.252	0.242	4.0	94	0.00	8.01
77	t	Phenanthrene	1.067	0.971	9.0	94	0.00	8.58
78	t	Anthracene	1.071	0.979	8.6	93	0.00	8.66
80	t	Di-n-butylphthalate	1.308	1.225	6.3	88	0.00	9.62
81	t	Fluoranthene	1.242	1.123	9.6	89	0.00	10.65
83	I	Chrysene-d12	1.000	1.000	0.0	89	0.00	13.70
84	t	Pyrene	1.417	1.383	2.4	87	0.00	11.08
		----------	True	Calc.	% Drift	----------		
86	t	Butylbenzylphthalate	50.000	49.310	1.4	85	0.00	12.68
		----------	AvgRF	CCRF	% Dev	----------		
87	t	Benzo[a]anthracene	1.281	1.222	4.6	85	0.00	13.68
89	t	Chrysene	1.212	1.154	4.8	86	0.00	13.76
		----------	True	Calc.	% Drift	----------		
90	t	bis(2-Ethylhexyl)phthalat	50.000	47.495	5.0	83	0.00	14.10
		----------	AvgRF	CCRF	% Dev	----------		
91	I	Perylene-d12	1.000	1.000	0.0	91	0.00	16.72
		----------	True	Calc.	% Drift	----------		
92	t	Di-n-octylphthalate	50.000	46.471	7.1	82	0.00	15.53
		----------	AvgRF	CCRF	% Dev	----------		
93	t	Benzo[b]fluoranthene	1.216	1.105	9.1	79	0.00	15.97
94	t	Benzo[k]fluoranthene	1.164	1.137	2.3	87	-0.01	16.03
95	t	Benzo[a]pyrene	1.059	1.057	0.2	86	0.00	16.60
96	t	Indeno[1,2,3-cd]pyrene	0.876	0.927	-5.8	83	0.00	18.65
98	t	Dibenz[a,h]anthracene	0.946	0.953	-0.7	81	0.00	18.71
100	t	Benzo[g,h,i]perylene	0.955	1.005	-5.2	88	0.00	19.08

(#) = Out of Range SPCC's out = 0 CCC's out = 0
p130620.D MP5919.M Wed Jul 10 08:59:12 2019 ACLIMS

Initial Calibration Verification

Job Number: JC95610
Account: BBLNYS Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

Sample: EP5919-ICV5919
Lab FileID: P130625.D

Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\DATA\EP5919\p130625.D Vial: 12
Acq On : 10 Jul 2019 4:03 am Operator: chriss2
Sample : icv5919-50 Inst : MSVOAMSP
Misc : op13894,ep5919,1000,,,1,1 Multiplr: 1.00
MS Integration Params: rteint.p

Method : C:\MSDCHEM\1\METHODS\MP5919.M (RTE Integrator)
Title : Semi Volatile Extractables by GC/MS
Last Update : Wed Jul 10 08:42:27 2019
Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 30% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1	I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	88	0.00	4.48
3	t	Pyridine	1.366	1.496	-9.5	94	0.14	2.42
10	t	Aniline	1.834	2.339	-27.5	125	0.00	4.24
16	t	Benzyl alcohol	0.783	1.007	-28.6	113	0.00	4.59
24	I	Naphthalene-d8	1.000	1.000	0.0	107	0.00	5.41
39	t	4-Chloroaniline	0.415	0.390	6.0	103	0.00	5.46
44	t	2-Methylnaphthalene	0.569	0.546	4.0	104	0.00	5.92
47	I	Acenaphthene-d10	1.000	1.000	0.0	100	0.00	6.77
54	t	2-Nitroaniline	0.410	0.312	23.9	73	0.00	6.37
58	t	3-Nitroaniline	0.321	0.295	8.1	87	0.00	6.73
62	t	Dibenzofuran	1.650	1.690	-2.4	106	0.00	6.97
68	t	4-Nitroaniline	0.320	0.305	4.7	89	-0.01	7.35
69	I	Phenanthrene-d10	1.000	1.000	0.0	107	0.00	8.55
79	t	Carbazole	0.991	0.980	1.1	105	0.00	8.93

(#) = Out of Range SPCC's out = 0 CCC's out = 0
p130620.D MP5919.M Wed Jul 10 08:59:16 2019 ACLIMS

7.9.3
7

Initial Calibration Verification

Job Number: JC95610
Account: BBLNYS Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

Sample: EP5919-ICV5919
Lab FileID: P130627.D

Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\DATA\EP5919\p130627.D Vial: 14
Acq On : 10 Jul 2019 4:57 am Operator: chriss2
Sample : icv5919-50 Inst : MSVOAMSP
Misc : op13894,ep5919,1000,,,1,1 Multiplr: 1.00
MS Integration Params: rteint.p

Method : C:\MSDCHEM\1\METHODS\MP5919.M (RTE Integrator)
Title : Semi Volatile Extractables by GC/MS
Last Update : Wed Jul 10 08:42:27 2019
Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 30% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1	I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	114	0.00	4.48
5	S	2-Fluorophenol	1.284	1.241	3.3	110	0.01	3.49
8	S	Phenol-d5	1.603	1.527	4.7	109	0.00	4.21
24	I	Naphthalene-d8	1.000	1.000	0.0	122	0.00	5.41
25	S	Nitrobenzene-d5	0.386	0.356	7.8	111	0.00	4.88
47	I	Acenaphthene-d10	1.000	1.000	0.0	110	0.00	6.77
51	S	2-Fluorobiphenyl	1.447	1.405	2.9	110	0.00	6.20
69	I	Phenanthrene-d10	1.000	1.000	0.0	110	0.00	8.55
73	S	2,4,6-Tribromophenol	0.118	0.119	-0.8	107	0.00	7.61
83	I	Chrysene-d12	1.000	1.000	0.0	98	-0.01	13.69
85	S	Terphenyl-d14	0.932	1.006	-7.9	106	0.00	11.52

(#) = Out of Range SPCC's out = 0 CCC's out = 0
p130620.D MP5919.M Wed Jul 10 08:59:20 2019 ACLIMS

Initial Calibration Verification

Job Number: JC95610
Account: BBLNYS Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

Sample: EP5919-ICV5919
Lab FileID: P130628.D

Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\DATA\EP5919\p130628.D Vial: 15
Acq On : 10 Jul 2019 5:24 am Operator: chriss2
Sample : icv5919-50 Inst : MSVOAMSP
Misc : op13894,ep5919,1000,,,1,1 Multiplr: 1.00
MS Integration Params: rteint.p

Method : C:\MSDCHEM\1\METHODS\MP5919.M (RTE Integrator)
Title : Semi Volatile Extractables by GC/MS
Last Update : Wed Jul 10 08:42:27 2019
Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 30% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
83 I	Chrysene-d12	1.000	1.000	0.0	139	0.00	13.69
88 t	3,3'-Dichlorobenzidine	0.407	0.427	-4.9	129	0.00	13.73

(#) = Out of Range SPCC's out = 0 CCC's out = 0
p130620.D MP5919.M Wed Jul 10 08:59:22 2019 ACLIMS

7.9.5

7

Initial Calibration Verification

Job Number: JC95610
Account: BBLNYS Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

Sample: EP5921-ICV5919
Lab FileID: P130654.D

Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\DATA\EP5919\p130654.D Vial: 36
Acq On : 10 Jul 2019 4:29 pm Operator: chriss2
Sample : icv5919-50 Inst : MSVOAMSP
Misc : op13894,ep5921,1000,,,1,1 Multiplr: 1.00
MS Integration Params: rteint.p

Method : C:\MSDCHEM\1\METHODS\MP5919.M (RTE Integrator)
Title : Semi Volatile Extractables by GC/MS
Last Update : Wed Jul 10 15:13:29 2019
Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 30% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1	I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	83	0.00	4.48
2	t	1,4-Dioxane	0.492	0.473	3.9	75	0.04	1.99
6	t	Indene	2.032	2.149	-5.8	91	0.00	4.67
7	t	Cumene	3.169	2.926	7.7	76	0.00	3.88
13	t	Decane	1.634	1.465	10.3	79	0.00	4.37
18	t	Acetophenone	1.796	1.762	1.9	84	0.00	4.78
24	I	Naphthalene-d8	1.000	1.000	0.0	83	0.00	5.41
27	t	Quinoline	0.679	0.657	3.2	80	-0.01	5.66
40	t	2,3-Dichloroaniline	0.380	0.321	15.5	70	0.00	6.13
41	t	Caprolactam	0.180	0.167	7.2	72	-0.03	5.70
45	t	1-Methylnaphthalene	0.710	0.630	11.3	76	0.00	5.99
46	t	Dimethylnaphthalene	0.630	0.589	6.5	79	0.00	6.40
47	I	Acenaphthene-d10	1.000	1.000	0.0	79	0.00	6.77
53	t	Biphenyl	1.511	1.445	4.4	78	0.00	6.28
69	I	Phenanthrene-d10	1.000	1.000	0.0	78	0.00	8.55
82	t	Octadecane	0.562	0.543	3.4	74	0.00	8.48
83	I	Chrysene-d12	1.000	1.000	0.0	67	-0.01	13.69
		----------	AvgRF	CCRF	% Dev		----------	
91	I	Perylene-d12	1.000	1.000	0.0	63	0.00	16.71
99	t	7,12-Dimethylbenz(a)anthr	0.508	0.560	-10.2	63	-0.01	15.99

(#) = Out of Range SPCC's out = 0 CCC's out = 0

Initial Calibration Verification

Job Number: JC95610
Account: BBLNYS Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

Sample: EP5921-ICV5919
Lab FileID: P130654.D

p130644a.D MP5919.M Wed Jul 10 17:17:15 2019 ACLIMS

Initial Calibration Verification

Job Number: JC95610
Account: BBLNYS Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

Sample: EP5921-ICV5919
Lab FileID: P130655A.D

Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\DATA\EP5919\p130655a.D Vial: 37
Acq On : 10 Jul 2019 5:25 pm Operator: chriss2
Sample : icv5919-50 Inst : MSVOAMSP
Misc : op13894,ep5921,1000,,,1,1 Multiplr: 1.00
MS Integration Params: rteint.p

Method : C:\MSDCHEM\1\METHODS\MP5919.M (RTE Integrator)
Title : Semi Volatile Extractables by GC/MS
Last Update : Wed Jul 10 15:13:29 2019
Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 30% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1	I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	82	0.00	4.48
9	t	Phenol	1.853	1.635	11.8	73	0.00	4.23
12	t	2-Chlorophenol	1.389	1.329	4.3	79	0.00	4.33
19	t	2-Methylphenol	1.139	1.167	-2.5	85	0.00	4.67
21	t	3&4-Methylphenol	1.168	1.224	-4.8	88	0.00	4.78
24	I	Naphthalene-d8	1.000	1.000	0.0	80	0.00	5.41
29	t	2-Nitrophenol	0.195	0.193	1.0	73	0.00	5.13
30	t	2,4-Dimethylphenol	0.306	0.378	-23.5	89	0.00	5.17
31	t	Benzoic acid	0.174	0.151	13.2	62	-0.01	5.26
33	t	2,4-Dichlorophenol	0.323	0.316	2.2	79	0.00	5.31
34		2,6-Dichlorophenol	0.296	0.317	-7.1	84	0.00	5.47
43	t	4-Chloro-3-methylphenol	0.298	0.314	-5.4	81	-0.01	5.81
47	I	Acenaphthene-d10	1.000	1.000	0.0	78	0.00	6.77
49	t	2,4,6-Trichlorophenol	0.421	0.435	-3.3	82	0.00	6.13
50	t	2,4,5-Trichlorophenol	0.447	0.444	0.7	78	0.00	6.16
		----------	True	Calc.	% Drift	----------		
60	t	2,4-Dinitrophenol	50.000	36.295	27.4	49#	0.00	6.82
		----------	AvgRF	CCRF	% Dev	----------		
61	t	4-Nitrophenol	0.150	0.140	6.7	64	0.00	6.88
64		2,3,4,6-Tetrachlorophenol	0.343	0.337	1.7	76	0.00	7.09
69	I	Phenanthrene-d10	1.000	1.000	0.0	77	0.00	8.55
70	t	4,6-Dinitro-2-methylpheno	0.117	0.093	20.5	56	-0.01	7.38
76	t	Pentachlorophenol	0.147	0.162	-10.2	66	0.00	8.28

Initial Calibration Verification

Job Number: JC95610
Account: BBLNYS Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

Sample: EP5921-ICV5919
Lab FileID: P130655A.D

(#) = Out of Range SPCC's out = 0 CCC's out = 0
p130644a.D MP5919.M Thu Jul 11 08:51:35 2019 ACLIMS

Continuing Calibration Summary

Job Number: JC95610
Account: BBLNYS Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

Sample: EP5993-CC5919
Lab FileID: P132153.D

Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\DATA\EP5993\p132153.D Vial: 2
Acq On : 8 Oct 2019 8:45 pm Operator: chriss2
Sample : cc5919-25 Inst : MSVOAMSP
Misc : op21962,ep5993,1000,,,1,1 Multiplr: 1.00
MS Integration Params: rteint.p

Method : C:\MSDCHEM\1\METHODS\MP5919.M (RTE Integrator)
Title : Semi Volatile Extractables by GC/MS
Last Update : Wed Oct 09 09:08:41 2019
Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1	I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	94	-0.01	4.21
2	t	1,4-Dioxane	0.492	0.435	11.6	82	-0.02	1.60
3	t	Pyridine	1.366	1.316	3.7	90	-0.02	1.91
4	t	N-Nitrosodimethylamine	0.630	0.621	1.4	93	-0.03	1.88
5	S	2-Fluorophenol	1.284	1.286	-0.2	91	-0.02	3.23
6	t	Indene	2.032	2.116	-4.1	96	-0.01	4.41
7	t	Cumene	3.169	3.018	4.8	89	-0.01	3.59
8	S	Phenol-d5	1.603	1.752	-9.3	101	-0.02	4.00
9	t	Phenol	1.853	1.985	-7.1	98	-0.02	4.01
10	t	Aniline	1.834	2.060	-12.3	106	-0.01	3.97
11	t	bis(2-Chloroethyl)ether	1.275	1.430	-12.2	102	-0.01	4.03
12	t	2-Chlorophenol	1.389	1.391	-0.1	93	-0.01	4.08
13	t	Decane	1.634	1.369	16.2	76	-0.01	4.11
14	t	1,3-Dichlorobenzene	1.595	1.559	2.3	90	-0.01	4.17
15	t	1,4-Dichlorobenzene	1.585	1.622	-2.3	94	0.00	4.23
16	t	Benzyl alcohol	0.783	0.929	-18.6	107	-0.01	4.34
17	t	1,2-Dichlorobenzene	1.509	1.562	-3.5	96	-0.01	4.34
18	t	Acetophenone	1.796	2.033	-13.2	102	-0.01	4.52
19	t	2-Methylphenol	1.139	1.323	-16.2	106	-0.02	4.45
20	t	2,2'-oxybis(1-Chloropropa	0.329	0.380	-15.5	103	-0.01	4.43
21	t	3&4-Methylphenol	1.168	1.398	-19.7	109	-0.02	4.56
22		n-Nitroso-di-n-propylamin	0.883	1.044	-18.2	107	-0.02	4.53
23	t	Hexachloroethane	0.614	0.543	11.6	82	0.00	4.59
24	I	Naphthalene-d8	1.000	1.000	0.0	102	0.00	5.16
25	S	Nitrobenzene-d5	0.386	0.361	6.5	95	-0.01	4.64
26	t	Nitrobenzene	0.384	0.388	-1.0	102	-0.01	4.65
27	t	Quinoline	0.679	0.774	-14.0	114	-0.01	5.42
28	t	Isophorone	0.662	0.728	-10.0	109	-0.01	4.83
29	t	2-Nitrophenol	0.195	0.211	-8.2	106	0.00	4.89
30	t	2,4-Dimethylphenol	0.306	0.345	-12.7	109	-0.01	4.94
31	t	Benzoic acid	0.174	0.271	-55.7#	199	-0.03	5.06
32	t	bis(2-Chloroethoxy)methan	0.425	0.436	-2.6	102	-0.01	4.99
33	t	2,4-Dichlorophenol	0.323	0.334	-3.4	104	0.00	5.08
34		2,6-Dichlorophenol	0.296	0.321	-8.4	107	-0.01	5.23
35		1,3,5-Trichlorobenzene	0.384	0.349	9.1	92	0.00	4.89
36	t	1,2,4-Trichlorobenzene	0.362	0.337	6.9	94	0.00	5.12
37		1,2,3-Trichlorobenzene	0.353	0.321	9.1	91	0.00	5.28
38	t	Naphthalene	1.005	0.993	1.2	100	-0.01	5.17
39	t	4-Chloroaniline	0.415	0.448	-8.0	107	-0.01	5.22
40	t	2,3-Dichloroaniline	0.380	0.422	-11.1	111	0.00	5.88
41	t	Caprolactam	0.180	0.208	-15.6	114	-0.04	5.49

Continuing Calibration Summary

Job Number: JC95610
Account: BBLNYS Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

Sample: EP5993-CC5919
Lab FileID: P132153.D

42	t	Hexachlorobutadiene	0.220	0.193	12.3	89	0.00	5.27
43	t	4-Chloro-3-methylphenol	0.298	0.334	-12.1	110	-0.02	5.60
44	t	2-Methylnaphthalene	0.569	0.580	-1.9	101	0.00	5.67
45	t	1-Methylnaphthalene	0.710	0.797	-12.3	112	0.00	5.74
46	t	Dimethylnaphthalene	0.630	0.684	-8.6	109	-0.01	6.13
47	I	Acenaphthene-d10	1.000	1.000	0.0	118	-0.01	6.47
48	t	Hexachlorocyclopentadiene	0.421	0.176	58.2#	47#	0.00	5.78
49	t	2,4,6-Trichlorophenol	0.421	0.392	6.9	106	-0.02	5.89
50	t	2,4,5-Trichlorophenol	0.447	0.431	3.6	106	-0.02	5.92
51	S	2-Fluorobiphenyl	1.447	1.328	8.2	106	0.00	5.93
52	t	2-Chloronaphthalene	1.194	1.095	8.3	105	-0.01	6.02
53	t	Biphenyl	1.511	1.425	5.7	108	0.00	6.01
54	t	2-Nitroaniline	0.410	0.365	11.0	98	-0.02	6.11
55	t	Dimethylphthalate	1.357	1.380	-1.7	117	-0.01	6.24
56	t	Acenaphthylene	1.900	1.776	6.5	106	-0.01	6.35
57	t	2,6-Dinitrotoluene	0.282	0.311	-10.3	119	-0.02	6.30
58	t	3-Nitroaniline	0.321	0.369	-15.0	125	-0.02	6.45
59	t	Acenaphthene	1.198	1.158	3.3	112	-0.01	6.50
			True	Calc.	% Drift			
60	t	2,4-Dinitrophenol	50.000	53.284	-6.6	128	-0.02	6.55
			AvgRF	CCRF	% Dev			
61	t	4-Nitrophenol	0.150	0.171	-14.0	133	-0.03	6.65
62	t	Dibenzofuran	1.650	1.629	1.3	112	-0.02	6.65
63	t	2,4-Dinitrotoluene	0.368	0.462	-25.5#	134	-0.02	6.66
64		2,3,4,6-Tetrachlorophenol	0.343	0.309	9.9	100	-0.02	6.79
65	t	Diethylphthalate	1.394	1.451	-4.1	118	-0.02	6.88
66	t	Fluorene	1.332	1.440	-8.1	124	-0.02	6.99
67	t	4-Chlorophenyl-phenylethe	0.675	0.696	-3.1	119	-0.02	6.99
68	t	4-Nitroaniline	0.320	0.375	-17.2	128	-0.03	7.04
69	I	Phenanthrene-d10	1.000	1.000	0.0	128	-0.02	8.14
70	t	4,6-Dinitro-2-methylpheno	0.117	0.126	-7.7	136	-0.03	7.08
71	t	n-Nitrosodiphenylamine	0.531	0.486	8.5	115	-0.02	7.12
72	t	1,2-Diphenylhydrazine	0.749	0.658	12.1	111	-0.02	7.16
73	S	2,4,6-Tribromophenol	0.118	0.101	14.4	106	-0.02	7.25
74	t	4-Bromophenyl-phenylether	0.236	0.210	11.0	114	-0.02	7.54
75	t	Hexachlorobenzene	0.252	0.225	10.7	112	-0.02	7.63
76	t	Pentachlorophenol	0.147	0.121	17.7	96	-0.03	7.91
77	t	Phenanthrene	1.067	1.010	5.3	120	-0.02	8.17
78	t	Anthracene	1.071	1.027	4.1	120	-0.03	8.24
79	t	Carbazole	0.991	1.035	-4.4	136	-0.03	8.51
80	t	Di-n-butylphthalate	1.308	1.410	-7.8	128	-0.02	9.16
81	t	Fluoranthene	1.242	1.298	-4.5	129	-0.03	10.16
82	t	Octadecane	0.562	0.446	20.6#	96	-0.02	8.06
83	I	Chrysene-d12	1.000	1.000	0.0	156	-0.03	13.18
84	t	Pyrene	1.417	1.190	16.0	130	-0.03	10.58
85	S	Terphenyl-d14	0.932	0.782	16.1	130	-0.03	11.01
			True	Calc.	% Drift			
86	t	Butylbenzylphthalate	25.000	26.631	-6.5	180	-0.03	12.16
			AvgRF	CCRF	% Dev			
87	t	Benzo[a]anthracene	1.281	1.201	6.2	145	-0.03	13.16
88	t	3,3'-Dichlorobenzidine	0.407	0.463	-13.8	168	-0.04	13.21
89	t	Chrysene	1.212	1.101	9.2	138	-0.04	13.24

Continuing Calibration Summary

Job Number: JC95610
Account: BBLNYS Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

Sample: EP5993-CC5919
Lab FileID: P132153.D

			True	Calc.	% Drift			
90	t	bis(2-Ethylhexyl)phthalat	25.000	25.556	-2.2	157	-0.03	13.56
			AvgRF	CCRF	% Dev			
91	I	Perylene-d12	1.000	1.000	0.0	163	-0.02	16.22
			True	Calc.	% Drift			
92	t	Di-n-octylphthalate	25.000	27.049	-8.2	181	-0.03	15.00
			AvgRF	CCRF	% Dev			
93	t	Benzo[b]fluoranthene	1.216	1.217	-0.1	157	0.00	15.47
94	t	Benzo[k]fluoranthene	1.164	1.111	4.6	149	0.00	15.52
95	t	Benzo[a]pyrene	1.059	1.058	0.1	156	-0.04	16.09
96	t	Indeno[1,2,3-cd]pyrene	0.876	0.988	-12.8	168	-0.04	18.16
97	t	Dibenz(a,h)acridine	0.831	0.934	-12.4	165	-0.04	17.79
98	t	Dibenz[a,h]anthracene	0.946	1.060	-12.1	169	-0.04	18.22
99	t	7,12-Dimethylbenz(a)anthr	0.508	0.538	-5.9	160	-0.04	15.48
100	t	Benzo[g,h,i]perylene	0.955	0.977	-2.3	158	-0.04	18.59

(#) = Out of Range SPCC's out = 0 CCC's out = 0
p132001.D MP5919.M Wed Oct 09 09:13:20 2019 ACLIMS

7.9.8

7

Run Sequence Report

Job Number: JC95610
Account: BBLNYS Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

Run ID: EP5919	**Method:** SW846 8270D	**Instrument ID:** GCMSP

Lab Sample ID	Lab File ID	Date/Time Analyzed	Prep QC Batch	Client Sample ID
EP5919-DFTPP	P130614.D	07/09/19 23:15	n/a	DFTPP Tune
EP5919-IC5919	P130615.D	07/09/19 23:30	n/a	Initial cal 1
EP5919-IC5919	P130616.D	07/09/19 23:57	n/a	Initial cal 2
EP5919-IC5919	P130617.D	07/10/19 00:27	n/a	Initial cal 25
EP5919-IC5919	P130618.D	07/10/19 00:54	n/a	Initial cal 100
EP5919-IC5919	P130619.D	07/10/19 01:21	n/a	Initial cal 80
EP5919-ICC5919	P130620.D	07/10/19 01:48	n/a	Initial cal 50
EP5919-IC5919	P130621.D	07/10/19 02:16	n/a	Initial cal 10
EP5919-IC5919	P130622.D	07/10/19 02:42	n/a	Initial cal 5
EP5919-ICV5919	P130623.D	07/10/19 03:09	n/a	Initial cal verification 50
EP5919-ICV5919	P130625.D	07/10/19 04:03	n/a	Initial cal verification 50
EP5919-ICV5919	P130627.D	07/10/19 04:57	n/a	Initial cal verification 50
EP5919-ICV5919	P130628.D	07/10/19 05:24	n/a	Initial cal verification 50

Run Sequence Report

Job Number: JC95610
Account: BBLNYS Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

Run ID: EP5921	**Method:** SW846 8270D	**Instrument ID:** GCMSP

Lab Sample ID	Lab File ID	Date/Time Analyzed	Prep QC Batch	Client Sample ID
EP5921-DFTPP	P130641.D	07/10/19 10:51	n/a	DFTPP Tune
EP5921-IC5921	P130642.D	07/10/19 11:03	n/a	Initial cal 100
EP5921-ICC5921	P130644.D	07/10/19 11:57	n/a	Initial cal 50
EP5921-IC5921	P130645.D	07/10/19 12:24	n/a	Initial cal 25
EP5921-IC5921	P130646.D	07/10/19 12:51	n/a	Initial cal 10
EP5921-IC5921	P130647.D	07/10/19 13:18	n/a	Initial cal 5
EP5921-IC5921	P130648.D	07/10/19 13:45	n/a	Initial cal 2
EP5921-IC5921	P130649.D	07/10/19 14:13	n/a	Initial cal 1
EP5921-IC5921	P130650.D	07/10/19 14:40	n/a	Initial cal 80
EP5921-ICV5921	P130651.D	07/10/19 15:07	n/a	Initial cal verification 50
EP5921-ICV5921	P130652.D	07/10/19 15:34	n/a	Initial cal verification 50
EP5921-ICV5921	P130653.D	07/10/19 16:01	n/a	Initial cal verification 50
EP5921-ICV5919	P130654.D	07/10/19 16:29	n/a	Initial cal verification 50
EP5921-ICV5919	P130655A.D	07/10/19 17:25	n/a	Initial cal verification 50

Run Sequence Report

Job Number: JC95610
Account: BBLNYS Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

Run ID: EP5993	**Method:** SW846 8270D	**Instrument ID:** GCMSP

Lab Sample ID	Lab File ID	Date/Time Analyzed	Prep QC Batch	Client Sample ID
EP5993-DFTPP	P132152.D	10/08/19 20:30	n/a	DFTPP Tune
EP5993-CC5919	P132153.D	10/08/19 20:45	n/a	Continuing cal 25
OP23101-MB2	P132154.D	10/08/19 21:38	OP23101	Method Blank
OP23137-MB2	P132154.D	10/08/19 21:38	OP23137	Method Blank
OP23138-MB3	P132154.D	10/08/19 21:38	OP23138	Method Blank
OP23172-MB1	P132154.D	10/08/19 21:38	OP23172	Method Blank
OP23171-MB1	P132154.D	10/08/19 21:38	OP23171	Method Blank
OP23137-LB9	P132155.D	10/08/19 22:05	OP23137	Leachate Blank
OP23171-LB15	P132156.D	10/08/19 22:32	OP23171	Leachate Blank
OP23138-LB12	P132157.D	10/08/19 22:59	OP23138	Leachate Blank
OP23101-BS2	P132158.D	10/08/19 23:26	OP23101	Blank Spike
OP23137-BS2	P132158.D	10/08/19 23:26	OP23137	Blank Spike
OP23138-BS3	P132158.D	10/08/19 23:26	OP23138	Blank Spike
OP23172-BS1	P132158.D	10/08/19 23:26	OP23172	Blank Spike
OP23171-BS1	P132158.D	10/08/19 23:26	OP23171	Blank Spike
OP23137-LS4	P132159.D	10/08/19 23:55	OP23137	Leachate Spike
OP23137-MS	P132159.D	10/08/19 23:55	OP23137	Matrix Spike
OP23137-MSD	P132160.D	10/09/19 00:22	OP23137	Matrix Spike Duplicate
JC95821-11A	P132161.D	10/09/19 00:49	OP23137	(used for QC only; not part of job JC95610)
JC95610-1	P132162.D	10/09/19 01:16	OP23137	WC-092519
ZZZZZZ	P132163.D	10/09/19 01:43	OP23137	(unrelated sample)
ZZZZZZ	P132164.D	10/09/19 02:10	OP23137	(unrelated sample)
OP23171-LS7	P132165.D	10/09/19 02:37	OP23171	Leachate Spike
OP23171-MS	P132165.D	10/09/19 02:37	OP23171	Matrix Spike
OP23171-MSD	P132166.D	10/09/19 03:04	OP23171	Matrix Spike Duplicate
JC94224-13T	P132167.D	10/09/19 03:30	OP23171	(used for QC only; not part of job JC95610)
ZZZZZZ	P132168.D	10/09/19 03:57	OP23171	(unrelated sample)
ZZZZZZ	P132169.D	10/09/19 04:24	OP23171	(unrelated sample)
ZZZZZZ	P132170.D	10/09/19 04:51	OP23171	(unrelated sample)
ZZZZZZ	P132171.D	10/09/19 05:18	OP23171	(unrelated sample)
OP23138-LS5	P132172.D	10/09/19 05:45	OP23138	Leachate Spike
OP23138-MS	P132172.D	10/09/19 05:45	OP23138	Matrix Spike
OP23138-MSD	P132173.D	10/09/19 06:12	OP23138	Matrix Spike Duplicate
JC95743-1	P132174.D	10/09/19 06:38	OP23138	(used for QC only; not part of job JC95610)
ZZZZZZ	P132175.D	10/09/19 07:05	OP23138	(unrelated sample)
ZZZZZZ	P132176.D	10/09/19 07:32	OP23101	(unrelated sample)

GC/LC Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- GC Identification Summaries (Hits)
- Surrogate Recovery Summaries
- GC Surrogate Retention Time Summaries
- Initial and Continuing Calibration Summaries
- Run Sequence Reports

Method Blank Summary

Job Number: JC95610
Account: BBLNYS Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP23056-MB1	XX2440930.D	1	10/01/19	TR	10/01/19	OP23056	GXX6824

The QC reported here applies to the following samples: **Method:** SW846 8082A

JC95610-1

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	33	16	ug/kg	
11104-28-2	Aroclor 1221	ND	33	21	ug/kg	
11141-16-5	Aroclor 1232	ND	33	21	ug/kg	
53469-21-9	Aroclor 1242	ND	33	14	ug/kg	
12672-29-6	Aroclor 1248	ND	33	30	ug/kg	
11097-69-1	Aroclor 1254	ND	33	18	ug/kg	
11096-82-5	Aroclor 1260	ND	33	14	ug/kg	
11100-14-4	Aroclor 1268	ND	33	14	ug/kg	
37324-23-5	Aroclor 1262	ND	33	22	ug/kg	

CAS No.	Surrogate Recoveries		Limits
877-09-8	Tetrachloro-m-xylene	76%	31-146%
877-09-8	Tetrachloro-m-xylene	84%	31-146%
2051-24-3	Decachlorobiphenyl	69%	17-164%
2051-24-3	Decachlorobiphenyl	78%	17-164%

Blank Spike Summary

Job Number: JC95610
Account: BBLNYS Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP23056-BS1	XX2440931.D	1	10/01/19	TR	10/01/19	OP23056	GXX6824

The QC reported here applies to the following samples: **Method:** SW846 8082A

JC95610-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
12674-11-2	Aroclor 1016	133	121	91	67-157
11104-28-2	Aroclor 1221		ND		70-130
11141-16-5	Aroclor 1232		ND		70-130
53469-21-9	Aroclor 1242		ND		70-130
12672-29-6	Aroclor 1248		ND		70-130
11097-69-1	Aroclor 1254		ND		70-130
11096-82-5	Aroclor 1260	133	110	82	63-155
11100-14-4	Aroclor 1268		ND		50-150 [a]
37324-23-5	Aroclor 1262		ND		50-150 [a]

CAS No.	Surrogate Recoveries	BSP	Limits
877-09-8	Tetrachloro-m-xylene	91%	31-146%
877-09-8	Tetrachloro-m-xylene	99%	31-146%
2051-24-3	Decachlorobiphenyl	81%	17-164%
2051-24-3	Decachlorobiphenyl	91%	17-164%

(a) Advisory control limits.

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: JC95610
Account: BBLNYS Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP23056-MS	XX2440933.D	1	10/01/19	TR	10/01/19	OP23056	GXX6824
OP23056-MSD	XX2440934.D	1	10/01/19	TR	10/01/19	OP23056	GXX6824
JC95413-1	XX2440932.D	1	10/01/19	TR	10/01/19	OP23056	GXX6824

The QC reported here applies to the following samples: **Method:** SW846 8082A

JC95610-1

CAS No.	Compound	JC95413-1 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	Spike ug/kg	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
12674-11-2	Aroclor 1016	ND		153	115	75	157	93.8	60	20	36-191/60
11104-28-2	Aroclor 1221	ND			ND			ND		nc	70-130/50
11141-16-5	Aroclor 1232	ND			ND			ND		nc	70-130/1
53469-21-9	Aroclor 1242	ND			ND			ND		nc	70-130/6
12672-29-6	Aroclor 1248	ND			ND			ND		nc	70-130/33
11097-69-1	Aroclor 1254	ND			ND			ND		nc	70-130/38
11096-82-5	Aroclor 1260	ND		153	166	109	157	84.1	54	65	15-200/68
11100-14-4	Aroclor 1268	ND			ND			ND		nc	-/50
37324-23-5	Aroclor 1262	ND			ND			ND		nc	-/17

CAS No.	Surrogate Recoveries	MS	MSD	JC95413-1	Limits
877-09-8	Tetrachloro-m-xylene	67%	58%	82%	31-146%
877-09-8	Tetrachloro-m-xylene	75%	64%	89%	31-146%
2051-24-3	Decachlorobiphenyl	49%	37%	53%	17-164%
2051-24-3	Decachlorobiphenyl	74%	64%	116%	17-164%

* = Outside of Control Limits.

GC Identification Summary

Job Number: JC95610
Account: BBLNYS Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

Check Std:	GXX6824-CC6801	**Injection Date:**	10/01/19
Lab File ID:	XX2440919.D	**Injection Time:**	18:18
Instrument ID:	GCXX	**Method:**	SW846 8082A

Sample ID:	OP23056-BS1	**Injection Date:**	10/01/19
Lab File ID:	XX2440931.D	**Injection Time:**	21:58
Client ID:	Blank Spike		

Compound	Column	RT	StdRT	Conc	Q	Units	RPD Conc
Aroclor 1016	1 [a]			121		ug/kg	16.0
Aroclor 1016	2			142		ug/kg	
AR1016-A	1	3.73	3.73	134		ug/kg	
AR1016-A	2	4.72	4.72	157		ug/kg	
AR1016-B	1	4.16	4.16	126		ug/kg	
AR1016-B	2	5.30	5.30	142		ug/kg	
AR1016-C	1	4.75	4.75	112		ug/kg	
AR1016-C	2	5.95	5.95	130		ug/kg	
AR1016-D	1	4.92	4.92	119		ug/kg	
AR1016-D	2	6.14	6.14	144		ug/kg	
AR1016-E	1	5.46	5.45	115		ug/kg	
AR1016-E	2	6.81	6.81	138		ug/kg	
Aroclor 1260	1 [a]			110		ug/kg	18.9
Aroclor 1260	2			133		ug/kg	
AR1260-A	1	7.89	7.89	112		ug/kg	
AR1260-A	2	9.44	9.45	130		ug/kg	
AR1260-B	1	8.05	8.05	122		ug/kg	
AR1260-B	2	9.56	9.56	139		ug/kg	
AR1260-C	1	8.40	8.39	106		ug/kg	
AR1260-C	2	10.00	10.00	139		ug/kg	
AR1260-D	1	8.83	8.83	104		ug/kg	
AR1260-D	2	10.35	10.35	131		ug/kg	
AR1260-E	1	9.23	9.23	109		ug/kg	
AR1260-E	2	10.90	10.90	127		ug/kg	

(a) QC results reported from this column.

GC Identification Summary

Job Number: JC95610
Account: BBLNYS Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

Check Std:	GXX6824-CC6801	**Injection Date:**	10/01/19
Lab File ID:	XX2440919.D	**Injection Time:**	18:18
Instrument ID:	GCXX	**Method:**	SW846 8082A

Sample ID:	OP23056-MS	**Injection Date:**	10/01/19
Lab File ID:	XX2440933.D	**Injection Time:**	22:50
Client ID:	Matrix Spike		

Compound	Column	RT	StdRT	Conc	Q	Units	RPD Conc
Aroclor 1016	1 [a]			115		ug/kg	27.1
Aroclor 1016	2			151		ug/kg	
AR1016-A	1	3.73	3.73	152		ug/kg	
AR1016-A	2	4.72	4.72	178		ug/kg	
AR1016-B	1	4.16	4.16	110		ug/kg	
AR1016-B	2	5.30	5.30	122		ug/kg	
AR1016-C	1	4.75	4.75	90.6		ug/kg	
AR1016-C	2	5.92	5.95	130		ug/kg	
AR1016-D	1	4.92	4.92	123		ug/kg	
AR1016-D	2	6.14	6.14	132		ug/kg	
AR1016-E	1	5.45	5.45	100		ug/kg	
AR1016-E	2	6.81	6.81	194		ug/kg	
Aroclor 1260	1 [a]			166		ug/kg	3.6
Aroclor 1260	2			172		ug/kg	
AR1260-A	1	7.89	7.89	145		ug/kg	
AR1260-A	2	9.45	9.45	150		ug/kg	
AR1260-B	1	8.05	8.05	158		ug/kg	
AR1260-B	2	9.56	9.56	163		ug/kg	
AR1260-C	1	8.39	8.39	87.9		ug/kg	
AR1260-C	2	9.99	10.00	212		ug/kg	
AR1260-D	1	8.84	8.83	159		ug/kg	
AR1260-D	2	10.35	10.35	98.5		ug/kg	
AR1260-E	1	9.28	9.23	279		ug/kg	
AR1260-E	2	10.86	10.90	235		ug/kg	

(a) QC results reported from this column.

GC Identification Summary

Job Number: JC95610
Account: BBLNYS Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

Check Std:	GXX6824-CC6801	**Injection Date:**	10/01/19
Lab File ID:	XX2440919.D	**Injection Time:**	18:18
Instrument ID:	GCXX	**Method:**	SW846 8082A

Sample ID:	OP23056-MSD	**Injection Date:**	10/01/19
Lab File ID:	XX2440934.D	**Injection Time:**	23:24
Client ID:	Matrix Spike Duplicate		

Compound	Column	RT	StdRT	Conc	Q	Units	RPD Conc
Aroclor 1016	1 [a]			93.8		ug/kg	14.1
Aroclor 1016	2			108		ug/kg	
AR1016-A	1	3.73	3.73	122		ug/kg	
AR1016-A	2	4.73	4.72	130		ug/kg	
AR1016-B	1	4.16	4.16	94.1		ug/kg	
AR1016-B	2	5.30	5.30	108		ug/kg	
AR1016-C	1	4.75	4.75	80.6		ug/kg	
AR1016-C	2	5.95	5.95	95.7		ug/kg	
AR1016-D	1	4.92	4.92	109		ug/kg	
AR1016-D	2	6.14	6.14	90.2		ug/kg	
AR1016-E	1	5.45	5.45	63.0		ug/kg	
AR1016-E	2	6.81	6.81	115		ug/kg	
Aroclor 1260	1 [a]			84.1		ug/kg	15.1
Aroclor 1260	2			97.8		ug/kg	
AR1260-A	1	7.89	7.89	84.9		ug/kg	
AR1260-A	2	9.45	9.45	92.1		ug/kg	
AR1260-B	1	8.05	8.05	93.7		ug/kg	
AR1260-B	2	9.56	9.56	106		ug/kg	
AR1260-C	1	8.39	8.39	61.7		ug/kg	
AR1260-C	2	10.00	10.00	99.1		ug/kg	
AR1260-D	1	8.83	8.83	80.0		ug/kg	
AR1260-D	2	10.35	10.35	84.8		ug/kg	
AR1260-E	1	9.28	9.23	100		ug/kg	
AR1260-E	2	10.86	10.90	107		ug/kg	

(a) QC results reported from this column.

Surrogate Recovery Summary

Job Number: JC95610
Account: BBLNYS Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

Method: SW846 8082A **Matrix:** SO

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1 [a]	S1 [b]	S2 [a]	S2 [b]
JC95610-1	XX2440964.D	1434* [c]	325* [c]	85	262* [c]
OP23056-BS1	XX2440931.D	91	99	81	91
OP23056-MB1	XX2440930.D	76	84	69	78
OP23056-MS	XX2440933.D	67	75	49	74
OP23056-MSD	XX2440934.D	58	64	37	64

Surrogate Compounds	Recovery Limits
S1 = Tetrachloro-m-xylene	31-146%
S2 = Decachlorobiphenyl	17-164%

(a) Recovery from GC signal #1
(b) Recovery from GC signal #2
(c) Outside control limits due to matrix interference.

GC Surrogate Retention Time Summary

Job Number: JC95610
Account: BBLNYS Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

Check Std:	GXX6824-CC6801	**Injection Date:**	10/01/19
Lab File ID:	XX2440919.D	**Injection Time:**	18:18
Instrument ID:	GCXX	**Method:**	SW846 8082A

	S1 [a] RT	S1 [b] RT	S2 [a] RT	S2 [b] RT
Check Std	3.32	4.04	10.79	12.58

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	S1 [a] RT	S1 [b] RT	S2 [a] RT	S2 [b] RT
OP23056-MB1	XX2440930.D	10/01/19	21:40	3.32	4.04	10.79	12.58
OP23056-BS1	XX2440931.D	10/01/19	21:58	3.32	4.04	10.79	12.58
JC95413-1	XX2440932.D	10/01/19	22:17	3.33	4.04	10.79	12.58
OP23056-MS	XX2440933.D	10/01/19	22:50	3.32	4.04	10.79	12.58
OP23056-MSD	XX2440934.D	10/01/19	23:24	3.32	4.04	10.79	12.58
ZZZZZZ	XX2440935.D	10/01/19	23:57	3.33	4.04	10.78	12.58
ZZZZZZ	XX2440936.D	10/02/19	00:16	3.32	4.04	10.79	12.58

Surrogate Compounds

S1 = Tetrachloro-m-xylene
S2 = Decachlorobiphenyl

(a) Retention time from GC signal #1
(b) Retention time from GC signal #2

GC Surrogate Retention Time Summary

Job Number: JC95610
Account: BBLNYS Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

Check Std:	GXX6824-CC6801	**Injection Date:**	10/02/19
Lab File ID:	XX2440961.D	**Injection Time:**	07:53
Instrument ID:	GCXX	**Method:**	SW846 8082A

	S1 [a] RT	S1 [b] RT	S2 [a] RT	S2 [b] RT
Check Std	3.32	4.04	10.79	12.58

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	S1 [a] RT	S1 [b] RT	S2 [a] RT	S2 [b] RT
JC95610-1	XX2440964.D	10/02/19	09:30	3.26	4.05	10.80	12.57
ZZZZZZ	XX2440968.D	10/02/19	11:33	3.26	4.04	10.79	12.59

Surrogate Compounds

S1 = Tetrachloro-m-xylene
S2 = Decachlorobiphenyl

(a) Retention time from GC signal #1
(b) Retention time from GC signal #2

Initial Calibration Summary

Job Number: JC95610
Account: BBLNYS Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

Sample: GXX6801-ICC6801
Lab FileID: XX2439729.D

Response Factor Report HP G1530A

Method Path : C:\msdchem\1\METHODS\
Method File : PCB6801.M
Title :
Last Update : Wed Sep 11 16:20:28 2019
Response Via : Initial Calibration

Calibration Files
50 =XX2439726.D 250 =XX2439727.D 500 =XX2439728.D
1000 =XX2439729.D 2000 =XX2439730.D 3000 =XX2439731.D

	Compound	50	250	500	1000	2000	3000	Avg	%RSD
1) S	Tetrachloro-m...	1.320	1.291	1.336	1.434	1.506	1.575	1.410 E7	8.07
2)	AR1221-A				1.017			1.017 E5	0.00
3)	AR1221-B				1.579			1.579 E5	0.00
4)	AR1221-C				5.051			5.051 E5	0.00
5)	AR1221-D				7.679			7.679 E4	0.00
6)	AR1221-E				4.983			4.983 E4	0.00
7)	AR1232-A				3.744			3.744 E5	0.00
8)	AR1232-B				2.504			2.504 E5	0.00
9)	AR1232-C				5.428			5.428 E5	0.00
10)	AR1232-D				2.021			2.021 E5	0.00
11)	AR1232-E				1.966			1.966 E5	0.00
12)	AR1242-A				4.573			4.573 E5	0.00
13)	AR1242-B				1.073			1.073 E6	0.00
14)	AR1242-C				3.967			3.967 E5	0.00
15)	AR1242-D				4.113			4.113 E5	0.00
16)	AR1242-E				3.478			3.478 E5	0.00
17)	AR1248-A				2.171			2.171 E5	0.00
18)	AR1248-B				5.944			5.944 E5	0.00
19)	AR1248-C				6.018			6.018 E5	0.00
20)	AR1248-D				6.062			6.062 E5	0.00
21)	AR1248-E				3.195			3.195 E5	0.00
22)	AR1248-F				5.196			5.196 E5	0.00
23)	AR1248-G				4.546			4.546 E5	0.00
24)	AR1254-A				4.551			4.551 E5	0.00
25)	AR1254-B				6.880			6.880 E5	0.00
26)	AR1254-C				5.442			5.442 E5	0.00
27)	AR1254-D				9.753			9.753 E5	0.00
28)	AR1254-E				7.143			7.143 E5	0.00
29)	AR1254-F				6.444			6.444 E5	0.00
30)	AR1254-G				9.846			9.846 E5	0.00
31)	AR1262-A				7.692			7.692 E5	0.00
32)	AR1262-B				9.517			9.517 E5	0.00
33)	AR1262-C				9.213			9.213 E5	0.00
34)	AR1262-D				2.040			2.040 E6	0.00
35)	AR1262-E				2.320			2.320 E6	0.00
36)	AR1268-A				2.368			2.368 E6	0.00
37)	AR1268-B				2.403			2.403 E6	0.00
38)	AR1268-C				2.011			2.011 E6	0.00
39)	AR1268-D				8.394			8.394 E5	0.00
40)	AR1268-E				7.046			7.046 E6	0.00
41)	AR1016-A	2.986	2.805	2.835	2.865	2.850	2.903	2.874 E5	2.23
42)	AR1016-B	5.265	5.088	5.122	5.208	5.224	5.285	5.199 E5	1.51
43)	AR1016-C	1.236	1.195	1.206	1.243	1.259	1.293	1.239 E6	2.89
44)	AR1016-D	4.597	4.496	4.485	4.598	4.621	4.706	4.584 E5	1.80
45)	AR1016-E	5.579	4.707	4.621	4.649	4.693	4.768	4.836 E5	7.59
46)	AR1260-A	1.081	1.079	1.079	1.121	1.148	1.170	1.113 E6	3.56

Initial Calibration Summary

Job Number: JC95610
Account: BBLNYS Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

Sample: GXX6801-ICC6801
Lab FileID: XX2439729.D

47)		AR1260-B	5.780	5.562	5.574	5.748	5.855	5.958	5.746	E5	2.71
48)		AR1260-C	6.583	6.218	6.215	6.423	6.560	6.676	6.446	E5	3.03
49)		AR1260-D	1.462	1.488	1.518	1.581	1.627	1.663	1.556	E6	5.13
50)		AR1260-E	1.599	1.559	1.578	1.645	1.680	1.718	1.630	E6	3.80
51)	S	Decachlorobip...	1.646	1.600	1.604	1.637	1.652	1.685	1.637	E7	1.94

Signal #2 Calibration Files

50	=XX2439726.D	250	=XX2439727.D	500	=XX2439728.D
1000	=XX2439729.D	2000	=XX2439730.D	3000	=XX2439731.D

		Compound	50	250	500	1000	2000	3000	Avg		%RSD
1)	S	Tetrachloro-m...		9.054	9.325	9.501	9.693	9.948	9.504	E6	3.60
2)		AR1221-A				6.302			6.302	E4	0.00
3)		AR1221-B				1.035			1.035	E5	0.00
4)		AR1221-C				2.550			2.550	E5	0.00
5)		AR1221-D				4.924			4.924	E4	0.00
6)		AR1221-E				3.058			3.058	E4	0.00
7)		AR1232-A				1.956			1.956	E5	0.00
8)		AR1232-B				1.542			1.542	E5	0.00
9)		AR1232-C				3.389			3.389	E5	0.00
10)		AR1232-D				1.285			1.285	E5	0.00
11)		AR1232-E				9.156			9.156	E4	0.00
12)		AR1242-A				3.020			3.020	E5	0.00
13)		AR1242-B				6.578			6.578	E5	0.00
14)		AR1242-C				2.481			2.481	E5	0.00
15)		AR1242-D				1.913			1.913	E5	0.00
16)		AR1242-E				2.370			2.370	E5	0.00
17)		AR1248-A				1.401			1.401	E5	0.00
18)		AR1248-B				3.963			3.963	E5	0.00
19)		AR1248-C				2.185			2.185	E5	0.00
20)		AR1248-D				2.973			2.973	E5	0.00
21)		AR1248-E				2.952			2.952	E5	0.00
22)		AR1248-F				4.016			4.016	E5	0.00
23)		AR1248-G				3.909			3.909	E5	0.00
24)		AR1254-A				3.612			3.612	E5	0.00
25)		AR1254-B				4.103			4.103	E5	0.00
26)		AR1254-C				3.371			3.371	E5	0.00
27)		AR1254-D				6.523			6.523	E5	0.00
28)		AR1254-E				5.087			5.087	E5	0.00
29)		AR1254-F				5.436			5.436	E5	0.00
30)		AR1254-G				6.564			6.564	E5	0.00
31)		AR1262-A				5.055			5.055	E5	0.00
32)		AR1262-B				8.120			8.120	E5	0.00
33)		AR1262-C				6.442			6.442	E5	0.00
34)		AR1262-D				1.594			1.594	E6	0.00
35)		AR1262-E				1.733			1.733	E6	0.00
36)		AR1268-A				1.944			1.944	E6	0.00
37)		AR1268-B				1.738			1.738	E6	0.00
38)		AR1268-C				1.516			1.516	E6	0.00
39)		AR1268-D				6.171			6.171	E5	0.00
40)		AR1268-E				4.480			4.480	E6	0.00
41)		AR1016-A	1.621	1.658	1.584	1.562	1.544	1.560	1.588	E5	2.72
42)		AR1016-B	3.837	3.569	3.486	3.473	3.465	3.507	3.556	E5	4.00
43)		AR1016-C	8.695	7.855	7.636	7.713	7.793	7.934	7.938	E5	4.86
44)		AR1016-D	2.922	2.893	2.831	2.853	2.877	2.922	2.883	E5	1.27
45)		AR1016-E	2.639	2.278	2.217	2.233	2.237	2.273	2.313	E5	6.99
46)		AR1260-A	8.369	7.675	7.576	7.748	7.851	8.013	7.872	E5	3.63
47)		AR1260-B	5.082	4.965	4.936	4.988	5.075	5.159	5.034	E5	1.69
48)		AR1260-C	4.843	4.705	4.679	4.767	4.807	4.934	4.789	E5	1.96

Initial Calibration Summary

Job Number: JC95610
Account: BBLNYS Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

Sample: GXX6801-ICC6801
Lab FileID: XX2439729.D

49)		AR1260-D	1.251	1.255	1.256	1.284	1.293	1.301	1.273	E6	1.74
50)		AR1260-E	1.233	1.179	1.169	1.198	1.213	1.243	1.206	E6	2.42
51)	S	Decachlorobip...	1.093	0.974	0.970	0.970	0.986	1.009	1.000	E7	4.77

(#) = Out of Range

PCB6801.M Thu Sep 12 08:54:43 2019

Initial Calibration Verification

Job Number: JC95610
Account: BBLNYS Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

Sample: GXX6801-ICV6801
Lab FileID: XX2439736.D

Evaluate Continuing Calibration Report

Data Path : C:\msdchem\1\DATA\gxx6801\
Data File : XX2439736.D
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
Acq On   : 11 Sep 2019   3:53 pm
Operator : tianweir
Sample   : icv6801-1000
Misc   : op22532,GXX6801,15.0,,,10,1
ALS Vial : 13   Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 12 08:50:46 2019
Quant Method : C:\msdchem\1\METHODS\PCB6801.M
Quant Title :
QLast Update : Wed Sep 11 16:20:28 2019
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Large solvent peaks clipped

Volume Inj.   : 1ul
Signal #1 Phase : ZB-CLP1   Signal #2 Phase: ZB-CLP2
Signal #1 Info : 30m X 0.32mm(.32u Signal #2 Info : 30m X 0.32 mm (.25um)

Min. RRF   :   0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.10min
Max. RRF Dev : 20%   Max. Rel. Area : 150%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(Min)
1	S	Tetrachloro-m-xylene	14.104	15.308 E6	-8.5	107	0.00
41		AR1016-A	287.399	297.607 E3	-3.6	104	0.00
42		AR1016-B	519.856	549.287 E3	-5.7	105	0.00
43		AR1016-C	1.239	1.306 E6	-5.4	105	0.00
44		AR1016-D	458.368	476.807 E3	-4.0	104	0.00
45		AR1016-E	483.606	479.597 E3	0.8	103	0.00
46		AR1260-A	1.113	1.212 E6	-8.9	108	0.00
47		AR1260-B	574.637	623.033 E3	-8.4	108	0.00
48		AR1260-C	644.585	713.870 E3	-10.7	111	0.00
49		AR1260-D	1.556	1.700 E6	-9.3	108	0.00
50		AR1260-E	1.630	1.702 E6	-4.4	103	0.00
51	S	Decachlorobiphenyl	16.372	16.831 E6	-2.8	103	0.00

Signal #2

1	S	Tetrachloro-m-xylene	9.504	10.020 E6	-5.4	105	0.00
41		AR1016-A	158.801	163.027 E3	-2.7	104	0.00
42		AR1016-B	355.612	361.925 E3	-1.8	104	0.00
43		AR1016-C	793.755	801.977 E3	-1.0	104	0.00
44		AR1016-D	288.293	297.047 E3	-3.0	104	0.00
45		AR1016-E	231.289	227.752 E3	1.5	102	0.00
46		AR1260-A	787.189	839.706 E3	-6.7	108	0.00
47		AR1260-B	503.405	540.071 E3	-7.3	108	0.00
48		AR1260-C	478.920	514.479 E3	-7.4	108	0.00
49		AR1260-D	1.273	1.374 E6	-7.9	107	0.00
50		AR1260-E	1.206	1.238 E6	-2.7	103	0.00
51	S	Decachlorobiphenyl	10.004	10.102 E6	-1.0	104	0.00

Initial Calibration Verification

Job Number: JC95610
Account: BBLNYS Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

Sample: GXX6801-ICV6801
Lab FileID: XX2439736.D

(#) = Out of Range SPCC's out = 0 CCC's out = 0

PCB6801.M Thu Sep 12 08:54:16 2019

Initial Calibration Verification

Job Number: JC95610
Account: BBLNYS Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

Sample: GXX6801-ICV6801
Lab FileID: XX2439737.D

Evaluate Continuing Calibration Report

Data Path : C:\msdchem\1\DATA\gxx6801\
Data File : XX2439737.D
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
Acq On   : 11 Sep 2019   4:11 pm
Operator : tianweir
Sample   : icv6801-1000
Misc   : op22532,GXX6801,15.0,,,10,1
ALS Vial : 14   Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 12:36:08 2019
Quant Method : C:\msdchem\1\METHODS\PCB6801.M
Quant Title :
QLast Update : Wed Sep 11 16:20:28 2019
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Large solvent peaks clipped

Volume Inj.   : 1ul
Signal #1 Phase : ZB-CLP1   Signal #2 Phase: ZB-CLP2
Signal #1 Info : 30m X 0.32mm(.32u Signal #2 Info : 30m X 0.32 mm (.25um)

Min. RRF   :   0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.10min
Max. RRF Dev : 20%   Max. Rel. Area : 150%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(Min)
2	AR1221-A	101.732	103.748 E3	-2.0	102	0.00
3	AR1221-B	157.948	145.844 E3	7.7	92	0.00
4	AR1221-C	505.114	461.317 E3	8.7	91	0.00
5	AR1221-D	76.789	65.751 E3	14.4	86	0.00
6	AR1221-E	49.826	48.769 E3	2.1	98	0.00
24	AR1254-A	455.129	462.650 E3	-1.7	102	0.00
25	AR1254-B	688.004	697.410 E3	-1.4	101	0.00
26	AR1254-C	544.166	535.852 E3	1.5	98	0.00
27	AR1254-D	975.322	975.206 E3	0.0	100	0.00
28	AR1254-E	714.281	708.965 E3	0.7	99	0.00
29	AR1254-F	644.393	638.131 E3	1.0	99	0.00
30	AR1254-G	984.564	994.946 E3	-1.1	101	0.00

Signal #2

2	AR1221-A	63.020	64.309 E3	-2.0	102	0.00
3	AR1221-B	103.485	95.227 E3	8.0	92	0.00
4	AR1221-C	254.956	234.809 E3	7.9	92	0.00
5	AR1221-D	49.245	39.480 E3	19.8	80	0.00
6	AR1221-E	30.577	30.505 E3	0.2	100	0.00
24	AR1254-A	361.209	362.416 E3	-0.3	100	0.00
25	AR1254-B	410.338	407.909 E3	0.6	99	0.00
26	AR1254-C	337.147	330.339 E3	2.0	98	0.00
27	AR1254-D	652.338	655.423 E3	-0.5	100	0.00
28	AR1254-E	508.693	506.694 E3	0.4	100	0.00
29	AR1254-F	543.623	545.140 E3	-0.3	100	-0.03
30	AR1254-G	656.369	667.333 E3	-1.7	102	0.00

Initial Calibration Verification

Job Number: JC95610
Account: BBLNYS Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

Sample: GXX6801-ICV6801
Lab FileID: XX2439737.D

(#) = Out of Range SPCC's out = 0 CCC's out = 0

PCB6801.M Fri Sep 13 12:36:25 2019

Initial Calibration Verification

Job Number: JC95610
Account: BBLNYS Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

Sample: GXX6801-ICV6801
Lab FileID: XX2439738.D

Evaluate Continuing Calibration Report

Data Path : C:\msdchem\1\DATA\gxx6801\
Data File : XX2439738.D
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
Acq On   : 11 Sep 2019   4:29 pm
Operator : tianweir
Sample   : icv6801-1000
Misc   : op22532,GXX6801,15.0,,,10,1
ALS Vial : 15   Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 12 08:49:44 2019
Quant Method : C:\msdchem\1\METHODS\PCB6801.M
Quant Title :
QLast Update : Wed Sep 11 16:20:28 2019
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Large solvent peaks clipped

Volume Inj.   : 1ul
Signal #1 Phase : ZB-CLP1   Signal #2 Phase: ZB-CLP2
Signal #1 Info : 30m X 0.32mm(.32u Signal #2 Info : 30m X 0.32 mm (.25um)

Min. RRF   :   0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.10min
Max. RRF Dev : 20%   Max. Rel. Area : 150%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(Min)
7	AR1232-A	374.370	389.942 E3	-4.2	104	0.00
8	AR1232-B	250.366	261.691 E3	-4.5	105	0.00
9	AR1232-C	542.764	565.470 E3	-4.2	104	0.00
10	AR1232-D	202.075	211.227 E3	-4.5	105	0.00
11	AR1232-E	196.626	203.761 E3	-3.6	104	0.00
31	AR1262-A	769.154	749.082 E3	2.6	97	0.00
32	AR1262-B	951.665	930.892 E3	2.2	98	0.00
33	AR1262-C	921.263	900.146 E3	2.3	98	0.00
34	AR1262-D	2.040	1.988 E6	2.5	97	0.00
35	AR1262-E	2.320	2.282 E6	1.6	98	0.00

Signal #2

7	AR1232-A	195.638	203.161 E3	-3.8	104	0.00
8	AR1232-B	154.178	160.956 E3	-4.4	104	0.00
9	AR1232-C	338.865	351.526 E3	-3.7	104	0.00
10	AR1232-D	128.480	133.536 E3	-3.9	104	0.00
11	AR1232-E	91.565	95.549 E3	-4.4	104	0.00
31	AR1262-A	505.460	497.729 E3	1.5	98	0.00
32	AR1262-B	811.989	799.136 E3	1.6	98	0.00
33	AR1262-C	644.168	633.588 E3	1.6	98	0.00
34	AR1262-D	1.594	1.564 E6	1.9	98	0.00
35	AR1262-E	1.733	1.703 E6	1.7	98	0.00

Initial Calibration Verification

Job Number: JC95610
Account: BBLNYS Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

Sample: GXX6801-ICV6801
Lab FileID: XX2439738.D

(#) = Out of Range SPCC's out = 0 CCC's out = 0

PCB6801.M Thu Sep 12 08:54:20 2019

Initial Calibration Verification

Job Number: JC95610
Account: BBLNYS Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

Sample: GXX6801-ICV6801
Lab FileID: XX2439739.D

Evaluate Continuing Calibration Report

Data Path : C:\msdchem\1\DATA\gxx6801\
Data File : XX2439739.D
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
Acq On   : 11 Sep 2019   4:47 pm
Operator : tianweir
Sample   : icv6801-1000
Misc   : op22532,GXX6801,15.0,,,10,1
ALS Vial : 16   Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 12 08:51:23 2019
Quant Method : C:\msdchem\1\METHODS\PCB6801.M
Quant Title :
QLast Update : Wed Sep 11 16:20:28 2019
Response via : Initial Calibration
Integrator: ChemStation   6890 Scale Mode: Large solvent peaks clipped

Volume Inj.   : 1ul
Signal #1 Phase : ZB-CLP1   Signal #2 Phase: ZB-CLP2
Signal #1 Info : 30m X 0.32mm(.32u Signal #2 Info : 30m X 0.32 mm (.25um)

Min. RRF   :   0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.10min
Max. RRF Dev : 20%   Max. Rel. Area : 150%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(Min)
12	AR1242-A	457.343	440.310 E3	3.7	96	0.00
13	AR1242-B	1.073	1.031 E6	3.9	96	0.00
14	AR1242-C	396.676	383.072 E3	3.4	97	0.00
15	AR1242-D	411.284	397.646 E3	3.3	97	0.00
16	AR1242-E	347.820	332.902 E3	4.3	96	0.00
36	AR1268-A	2.368	2.272 E6	4.1	96	0.00
37	AR1268-B	2.403	2.304 E6	4.1	96	0.00
38	AR1268-C	2.011	1.934 E6	3.8	96	0.00
39	AR1268-D	839.387	800.362 E3	4.6	95	0.00
40	AR1268-E	7.046	6.790 E6	3.6	96	0.00

Signal #2

12	AR1242-A	301.987	291.705 E3	3.4	97	0.00
13	AR1242-B	657.786	635.356 E3	3.4	97	0.00
14	AR1242-C	248.063	242.390 E3	2.3	98	0.00
15	AR1242-D	191.269	190.115 E3	0.6	99	0.00
16	AR1242-E	237.021	243.244 E3	-2.6	103	0.00
36	AR1268-A	1.944	1.886 E6	3.0	97	0.00
37	AR1268-B	1.738	1.730 E6	0.5	99	0.00
38	AR1268-C	1.516	1.488 E6	1.8	98	0.00
39	AR1268-D	617.115	605.802 E3	1.8	98	0.00
40	AR1268-E	4.480	4.299 E6	4.0	96	0.00

Initial Calibration Verification

Job Number: JC95610
Account: BBLNYS Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

Sample: GXX6801-ICV6801
Lab FileID: XX2439739.D

(#) = Out of Range SPCC's out = 0 CCC's out = 0

PCB6801.M Thu Sep 12 08:54:23 2019

Initial Calibration Verification

Job Number: JC95610
Account: BBLNYS Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

Sample: GXX6801-ICV6801
Lab FileID: XX2439740.D

Evaluate Continuing Calibration Report

Data Path : C:\msdchem\1\DATA\gxx6801\
Data File : XX2439740.D
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
Acq On : 11 Sep 2019 5:06 pm
Operator : tianweir
Sample : icv6801-1000
Misc : op22532,GXX6801,15.0,,,10,1
ALS Vial : 17 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 12 08:52:06 2019
Quant Method : C:\msdchem\1\METHODS\PCB6801.M
Quant Title :
QLast Update : Wed Sep 11 16:20:28 2019
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1ul
Signal #1 Phase : ZB-CLP1 Signal #2 Phase: ZB-CLP2
Signal #1 Info : 30m X 0.32mm(.32u Signal #2 Info : 30m X 0.32 mm (.25um)

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.10min
Max. RRF Dev : 20% Max. Rel. Area : 150%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(Min)
17	AR1248-A	217.058	201.482 E3	7.2	93	0.00
18	AR1248-B	594.374	581.706 E3	2.1	98	0.00
19	AR1248-C	601.828	642.300 E3	-6.7	107	0.00
20	AR1248-D	606.189	633.071 E3	-4.4	104	0.00
21	AR1248-E	319.548	339.584 E3	-6.3	106	0.00
22	AR1248-F	519.608	570.717 E3	-9.8	110	0.00
23	AR1248-G	454.642	480.681 E3	-5.7	106	0.00

Signal #2

17	AR1248-A	140.140	128.342 E3	8.4	92	0.00
18	AR1248-B	396.292	384.669 E3	2.9	97	0.00
19	AR1248-C	218.538	224.370 E3	-2.7	103	0.00
20	AR1248-D	297.333	306.292 E3	-3.0	103	0.00
21	AR1248-E	295.160	309.428 E3	-4.8	105	0.00
22	AR1248-F	401.589	422.719 E3	-5.3	105	0.00
23	AR1248-G	390.888	416.207 E3	-6.5	106	0.00

(#) = Out of Range SPCC's out = 0 CCC's out = 0

PCB6801.M Thu Sep 12 08:54:25 2019

Continuing Calibration Summary

Job Number: JC95610
Account: BBLNYS Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

Sample: GXX6824-CC6801
Lab FileID: XX2440919.D

Evaluate Continuing Calibration Report

Signal #1 : C:\msdchem\1\data\an...\xx2440919.d\ECD1A.CH Vial: 64
Signal #2 : C:\msdchem\1\data\anndg\gxx6824\xx2440919.d\ECD2B.CH
Acq On : 01 Oct 2019 6:18 pm Operator: tianweir
Sample : cc6801-1000 Inst : HP G1530A
Misc : op23034,gxx6824,16.0,,,10,1 Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e

Method : C:\MSDCHEM\1\METHODS\PCB6801.M (ChemStation Integrator)
Title :
Last Update : Tue Oct 01 23:33:59 2019
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.10min
Max. RRF Dev : 20% Max. Rel. Area : 150%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	RT Window
1	S	Tetrachloro-m-xylene	14.104	14.706 E6	-4.3	103	0.00	3.29- 3.35
2		AR1221-A		----------NA----------				
3		AR1221-B		----------NA----------				
4		AR1221-C		----------NA----------				
5		AR1221-D		----------NA----------				
6		AR1221-E		----------NA----------				
7		AR1232-A		----------NA----------				
8		AR1232-B		----------NA----------				
9		AR1232-C		----------NA----------				
10		AR1232-D		----------NA----------				
11		AR1232-E		----------NA----------				
12		AR1242-A		----------NA----------				
13		AR1242-B		----------NA----------				
14		AR1242-C		----------NA----------				
15		AR1242-D		----------NA----------				
16		AR1242-E		----------NA----------				
17		AR1248-A		----------NA----------				
18		AR1248-B		----------NA----------				
19		AR1248-C		----------NA----------				
20		AR1248-D		----------NA----------				
21		AR1248-E		----------NA----------				
22		AR1248-F		----------NA----------				
23		AR1248-G		----------NA----------				
24		AR1254-A		----------NA----------				
25		AR1254-B		----------NA----------				
26		AR1254-C		----------NA----------				
27		AR1254-D		----------NA----------				
28		AR1254-E		----------NA----------				
29		AR1254-F		----------NA----------				
30		AR1254-G		----------NA----------				
31		AR1262-A		----------NA----------				
32		AR1262-B		----------NA----------				
33		AR1262-C		----------NA----------				
34		AR1262-D		----------NA----------				
35		AR1262-E		----------NA----------				
36		AR1268-A		----------NA----------				
37		AR1268-B		----------NA----------				
38		AR1268-C		----------NA----------				
39		AR1268-D		----------NA----------				
40		AR1268-E		----------NA----------				
41		AR1016-A	287.399	294.729 E3	-2.6	103	0.00	3.70- 3.76

Continuing Calibration Summary

Job Number: JC95610
Account: BBLNYS Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

Sample: GXX6824-CC6801
Lab FileID: XX2440919.D

42		AR1016-B	519.856	520.315	E3	-0.1	100	0.00	4.13- 4.19
43		AR1016-C	1.239	1.200	E6	3.1	97	0.00	4.72- 4.78
44		AR1016-D	458.368	452.360	E3	1.3	98	0.00	4.89- 4.95
45		AR1016-E	483.606	459.104	E3	5.1	99	0.00	5.42- 5.49
46		AR1260-A	1.113	1.041	E6	6.5	93	0.00	7.86- 7.92
47		AR1260-B	574.637	546.905	E3	4.8	95	0.00	8.02- 8.08
48		AR1260-C	644.585	604.600	E3	6.2	94	0.00	8.36- 8.43
49		AR1260-D	1.556	1.387	E6	10.9	88	0.00	8.80- 8.86
50		AR1260-E	1.630	1.484	E6	9.0	90	0.00	9.20- 9.26
51	S	Decachlorobiphenyl	16.372	14.694	E6	10.2	90	0.00	10.75-10.82
*****		Signal #2 *****							
1	S	Tetrachloro-m-xylene	9.504	10.104	E6	-6.3	106	0.00	4.01- 4.07
2		AR1221-A	----------NA----------						
3		AR1221-B	----------NA----------						
4		AR1221-C	----------NA----------						
5		AR1221-D	----------NA----------						
6		AR1221-E	----------NA----------						
7		AR1232-A	----------NA----------						
8		AR1232-B	----------NA----------						
9		AR1232-C	----------NA----------						
10		AR1232-D	----------NA----------						
11		AR1232-E	----------NA----------						
12		AR1242-A	----------NA----------						
13		AR1242-B	----------NA----------						
14		AR1242-C	----------NA----------						
15		AR1242-D	----------NA----------						
16		AR1242-E	----------NA----------						
17		AR1248-A	----------NA----------						
18		AR1248-B	----------NA----------						
19		AR1248-C	----------NA----------						
20		AR1248-D	----------NA----------						
21		AR1248-E	----------NA----------						
22		AR1248-F	----------NA----------						
23		AR1248-G	----------NA----------						
24		AR1254-A	----------NA----------						
25		AR1254-B	----------NA----------						
26		AR1254-C	----------NA----------						
27		AR1254-D	----------NA----------						
28		AR1254-E	----------NA----------						
29		AR1254-F	----------NA----------						
30		AR1254-G	----------NA----------						
31		AR1262-A	----------NA----------						
32		AR1262-B	----------NA----------						
33		AR1262-C	----------NA----------						
34		AR1262-D	----------NA----------						
35		AR1262-E	----------NA----------						
36		AR1268-A	----------NA----------						
37		AR1268-B	----------NA----------						
38		AR1268-C	----------NA----------						
39		AR1268-D	----------NA----------						
40		AR1268-E	----------NA----------						
41		AR1016-A	158.801	169.653	E3	-6.8	109	0.00	4.69- 4.75
42		AR1016-B	355.612	366.368	E3	-3.0	105	0.00	5.27- 5.33
43		AR1016-C	793.755	792.699	E3	0.1	103	0.00	5.92- 5.98
44		AR1016-D	288.293	298.481	E3	-3.5	105	0.00	6.11- 6.17
45		AR1016-E	231.289	233.611	E3	-1.0	105	0.00	6.78- 6.84
46		AR1260-A	787.189	805.195	E3	-2.3	104	0.00	9.42- 9.48
47		AR1260-B	503.405	504.880	E3	-0.3	101	0.00	9.53- 9.59

Continuing Calibration Summary

Job Number: JC95610
Account: BBLNYS Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

Sample: GXX6824-CC6801
Lab FileID: XX2440919.D

48		AR1260-C	478.920	482.718	E3	-0.8	101	0.00	9.97-10.03
49		AR1260-D	1.273	1.230	E6	3.4	96	0.00	10.32-10.38
50		AR1260-E	1.206	1.206	E6	0.0	101	0.00	10.87-10.93
51	S	Decachlorobiphenyl	10.004	9.926	E6	0.8	102	0.00	12.55-12.61

(#) = Out of Range SPCC's out = 0 CCC's out = 0
xx2440919.d PCB6801.M Tue Oct 01 23:37:51 2019

8.7.7

8

Continuing Calibration Summary

Job Number: JC95610
Account: BBLNYS Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

Sample: GXX6824-CC6801
Lab FileID: XX2440928.D

Evaluate Continuing Calibration Report

Signal #1 : C:\msdchem\1\data\an...\xx2440928.d\ECD1A.CH Vial: 72
Signal #2 : C:\msdchem\1\data\anndg\gxx6824\xx2440928.d\ECD2B.CH
Acq On : 01 Oct 2019 9:03 pm Operator: tianweir
Sample : cc6801-500 Inst : HP G1530A
Misc : op23034,gxx6824,16.0,,,10,1 Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e

Method : C:\MSDCHEM\1\METHODS\pcb6801.m (ChemStation Integrator)
Title :
Last Update : Tue Oct 01 23:38:09 2019
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.10min
Max. RRF Dev : 20% Max. Rel. Area : 150%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	RT Window
1	S	Tetrachloro-m-xylene	14.104	14.962 E6	-6.1	112	0.00	3.29- 3.35
2		AR1221-A		----------NA----------				
3		AR1221-B		----------NA----------				
4		AR1221-C		----------NA----------				
5		AR1221-D		----------NA----------				
6		AR1221-E		----------NA----------				
7		AR1232-A		----------NA----------				
8		AR1232-B		----------NA----------				
9		AR1232-C		----------NA----------				
10		AR1232-D		----------NA----------				
11		AR1232-E		----------NA----------				
12		AR1242-A		----------NA----------				
13		AR1242-B		----------NA----------				
14		AR1242-C		----------NA----------				
15		AR1242-D		----------NA----------				
16		AR1242-E		----------NA----------				
17		AR1248-A		----------NA----------				
18		AR1248-B		----------NA----------				
19		AR1248-C		----------NA----------				
20		AR1248-D		----------NA----------				
21		AR1248-E		----------NA----------				
22		AR1248-F		----------NA----------				
23		AR1248-G		----------NA----------				
24		AR1254-A		----------NA----------				
25		AR1254-B		----------NA----------				
26		AR1254-C		----------NA----------				
27		AR1254-D		----------NA----------				
28		AR1254-E		----------NA----------				
29		AR1254-F		----------NA----------				
30		AR1254-G		----------NA----------				
31		AR1262-A		----------NA----------				
32		AR1262-B		----------NA----------				
33		AR1262-C		----------NA----------				
34		AR1262-D		----------NA----------				
35		AR1262-E		----------NA----------				
36		AR1268-A		----------NA----------				
37		AR1268-B		----------NA----------				
38		AR1268-C		----------NA----------				
39		AR1268-D		----------NA----------				
40		AR1268-E		----------NA----------				
41		AR1016-A	287.399	312.618 E3	-8.8	110	0.00	3.70- 3.76

Continuing Calibration Summary

Job Number: JC95610 **Sample:** GXX6824-CC6801
Account: BBLNYS Arcadis **Lab FileID:** XX2440928.D
Project: National Grid, Philly Coke, Philadelphia, PA

42		AR1016-B	519.856	550.070	E3	-5.8	107	0.00	4.13- 4.19
43		AR1016-C	1.239	1.249	E6	-0.8	104	0.00	4.72- 4.78
44		AR1016-D	458.368	471.722	E3	-2.9	105	0.00	4.89- 4.95
45		AR1016-E	483.606	486.499	E3	-0.6	105	0.00	5.42- 5.49
46		AR1260-A	1.113	1.063	E6	4.5	99	0.00	7.86- 7.92
47		AR1260-B	574.637	622.028	E3	-8.2	112	0.00	8.02- 8.08
48		AR1260-C	644.585	631.289	E3	2.1	102	0.00	8.36- 8.43
49		AR1260-D	1.556	1.388	E6	10.8	91	0.00	8.80- 8.86
50		AR1260-E	1.630	1.493	E6	8.4	95	0.00	9.20- 9.26
51	S	Decachlorobiphenyl	16.372	15.582	E6	4.8	97	0.00	10.75-10.82
*****		Signal #2 *****							
1	S	Tetrachloro-m-xylene	9.504	10.848	E6	-14.1	116	0.00	4.01- 4.07
2		AR1221-A	----------NA----------						
3		AR1221-B	----------NA----------						
4		AR1221-C	----------NA----------						
5		AR1221-D	----------NA----------						
6		AR1221-E	----------NA----------						
7		AR1232-A	----------NA----------						
8		AR1232-B	----------NA----------						
9		AR1232-C	----------NA----------						
10		AR1232-D	----------NA----------						
11		AR1232-E	----------NA----------						
12		AR1242-A	----------NA----------						
13		AR1242-B	----------NA----------						
14		AR1242-C	----------NA----------						
15		AR1242-D	----------NA----------						
16		AR1242-E	----------NA----------						
17		AR1248-A	----------NA----------						
18		AR1248-B	----------NA----------						
19		AR1248-C	----------NA----------						
20		AR1248-D	----------NA----------						
21		AR1248-E	----------NA----------						
22		AR1248-F	----------NA----------						
23		AR1248-G	----------NA----------						
24		AR1254-A	----------NA----------						
25		AR1254-B	----------NA----------						
26		AR1254-C	----------NA----------						
27		AR1254-D	----------NA----------						
28		AR1254-E	----------NA----------						
29		AR1254-F	----------NA----------						
30		AR1254-G	----------NA----------						
31		AR1262-A	----------NA----------						
32		AR1262-B	----------NA----------						
33		AR1262-C	----------NA----------						
34		AR1262-D	----------NA----------						
35		AR1262-E	----------NA----------						
36		AR1268-A	----------NA----------						
37		AR1268-B	----------NA----------						
38		AR1268-C	----------NA----------						
39		AR1268-D	----------NA----------						
40		AR1268-E	----------NA----------						
41		AR1016-A	158.801	186.955	E3	-17.7	118	0.00	4.69- 4.75
42		AR1016-B	355.612	405.262	E3	-14.0	116	0.00	5.27- 5.33
43		AR1016-C	793.755	860.475	E3	-8.4	113	0.00	5.92- 5.98
44		AR1016-D	288.293	342.730	E3	-18.9	121	0.00	6.11- 6.17
45		AR1016-E	231.289	259.841	E3	-12.3	117	0.00	6.78- 6.84
46		AR1260-A	787.189	847.240	E3	-7.6	112	0.00	9.41- 9.47
47		AR1260-B	503.405	554.257	E3	-10.1	112	0.00	9.53- 9.59

Continuing Calibration Summary

Job Number: JC95610
Account: BBLNYS Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

Sample: GXX6824-CC6801
Lab FileID: XX2440928.D

48		AR1260-C	478.920	529.470	E3	-10.6	113	0.00	9.97-10.03
49		AR1260-D	1.273	1.338	E6	-5.1	107	0.00	10.32-10.38
50		AR1260-E	1.206	1.298	E6	-7.6	111	0.00	10.87-10.93
51	S	Decachlorobiphenyl	10.004	10.740	E6	-7.4	111	0.00	12.55-12.61

(#) = Out of Range SPCC's out = 0 CCC's out = 0
xx2440306.d pcb6801.m Wed Oct 02 00:39:55 2019

8.7.8

8

Continuing Calibration Summary

Job Number: JC95610
Account: BBLNYS Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

Sample: GXX6824-CC6801
Lab FileID: XX2440939.D

Evaluate Continuing Calibration Report

Signal #1 : C:\msdchem\1\data\an...\xx2440939.d\ECD1A.CH Vial: 80
Signal #2 : C:\msdchem\1\data\anndg\gxx6824\xx2440939.d\ECD2B.CH
Acq On : 02 Oct 2019 1:11 am Operator: tianweir
Sample : cc6801-1000 Inst : HP G1530A
Misc : op23056,gxx6824,15.0,,,10,1 Multiplr: 1.00
IntFile Signal #1: autoint1.e IntFile Signal #2: autoint2.e

Method : C:\MSDCHEM\1\METHODS\PCB6801.M (ChemStation Integrator)
Title :
Last Update : Tue Oct 01 23:38:09 2019
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.10min
Max. RRF Dev : 20% Max. Rel. Area : 150%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	RT Window
1	S	Tetrachloro-m-xylene	14.104	14.679 E6	-4.1	102	0.00	3.29- 3.35
2		AR1221-A		----------NA----------				
3		AR1221-B		----------NA----------				
4		AR1221-C		----------NA----------				
5		AR1221-D		----------NA----------				
6		AR1221-E		----------NA----------				
7		AR1232-A		----------NA----------				
8		AR1232-B		----------NA----------				
9		AR1232-C		----------NA----------				
10		AR1232-D		----------NA----------				
11		AR1232-E		----------NA----------				
12		AR1242-A		----------NA----------				
13		AR1242-B		----------NA----------				
14		AR1242-C		----------NA----------				
15		AR1242-D		----------NA----------				
16		AR1242-E		----------NA----------				
17		AR1248-A		----------NA----------				
18		AR1248-B		----------NA----------				
19		AR1248-C		----------NA----------				
20		AR1248-D		----------NA----------				
21		AR1248-E		----------NA----------				
22		AR1248-F		----------NA----------				
23		AR1248-G		----------NA----------				
24		AR1254-A		----------NA----------				
25		AR1254-B		----------NA----------				
26		AR1254-C		----------NA----------				
27		AR1254-D		----------NA----------				
28		AR1254-E		----------NA----------				
29		AR1254-F		----------NA----------				
30		AR1254-G		----------NA----------				
31		AR1262-A		----------NA----------				
32		AR1262-B		----------NA----------				
33		AR1262-C		----------NA----------				
34		AR1262-D		----------NA----------				
35		AR1262-E		----------NA----------				
36		AR1268-A		----------NA----------				
37		AR1268-B		----------NA----------				
38		AR1268-C		----------NA----------				
39		AR1268-D		----------NA----------				
40		AR1268-E		----------NA----------				
41		AR1016-A	287.399	292.996 E3	-1.9	102	0.00	3.70- 3.76

Continuing Calibration Summary

Job Number: JC95610
Account: BBLNYS Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

Sample: GXX6824-CC6801
Lab FileID: XX2440939.D

42		AR1016-B	519.856	516.919	E3	0.6	99	0.00	4.13- 4.19
43		AR1016-C	1.239	1.196	E6	3.5	96	0.00	4.72- 4.78
44		AR1016-D	458.368	450.875	E3	1.6	98	0.00	4.89- 4.95
45		AR1016-E	483.606	454.802	E3	6.0	98	0.00	5.42- 5.49
46		AR1260-A	1.113	1.030	E6	7.5	92	0.00	7.86- 7.92
47		AR1260-B	574.637	538.332	E3	6.3	94	0.00	8.02- 8.08
48		AR1260-C	644.585	600.299	E3	6.9	93	0.00	8.36- 8.43
49		AR1260-D	1.556	1.483	E6	4.7	94	0.00	8.80- 8.86
50		AR1260-E	1.630	1.365	E6	16.3	83	0.00	9.20- 9.26
51	S	Decachlorobiphenyl	16.372	14.176	E6	13.4	87	0.00	10.76-10.83

***** Signal #2 *****

1	S	Tetrachloro-m-xylene	9.504	10.661	E6	-12.2	112	0.00	4.01- 4.07
2		AR1221-A		----------NA----------					
3		AR1221-B		----------NA----------					
4		AR1221-C		----------NA----------					
5		AR1221-D		----------NA----------					
6		AR1221-E		----------NA----------					
7		AR1232-A		----------NA----------					
8		AR1232-B		----------NA----------					
9		AR1232-C		----------NA----------					
10		AR1232-D		----------NA----------					
11		AR1232-E		----------NA----------					
12		AR1242-A		----------NA----------					
13		AR1242-B		----------NA----------					
14		AR1242-C		----------NA----------					
15		AR1242-D		----------NA----------					
16		AR1242-E		----------NA----------					
17		AR1248-A		----------NA----------					
18		AR1248-B		----------NA----------					
19		AR1248-C		----------NA----------					
20		AR1248-D		----------NA----------					
21		AR1248-E		----------NA----------					
22		AR1248-F		----------NA----------					
23		AR1248-G		----------NA----------					
24		AR1254-A		----------NA----------					
25		AR1254-B		----------NA----------					
26		AR1254-C		----------NA----------					
27		AR1254-D		----------NA----------					
28		AR1254-E		----------NA----------					
29		AR1254-F		----------NA----------					
30		AR1254-G		----------NA----------					
31		AR1262-A		----------NA----------					
32		AR1262-B		----------NA----------					
33		AR1262-C		----------NA----------					
34		AR1262-D		----------NA----------					
35		AR1262-E		----------NA----------					
36		AR1268-A		----------NA----------					
37		AR1268-B		----------NA----------					
38		AR1268-C		----------NA----------					
39		AR1268-D		----------NA----------					
40		AR1268-E		----------NA----------					
41		AR1016-A	158.801	177.231	E3	-11.6	113	0.00	4.69- 4.75
42		AR1016-B	355.612	386.406	E3	-8.7	111	0.00	5.27- 5.33
43		AR1016-C	793.755	837.136	E3	-5.5	109	0.00	5.92- 5.98
44		AR1016-D	288.293	330.643	E3	-14.7	116	0.00	6.11- 6.17
45		AR1016-E	231.289	243.861	E3	-5.4	109	0.00	6.78- 6.84
46		AR1260-A	787.189	780.856	E3	0.8	101	0.00	9.41- 9.47
47		AR1260-B	503.405	506.063	E3	-0.5	101	0.00	9.53- 9.59

Continuing Calibration Summary

Job Number: JC95610
Account: BBLNYS Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

Sample: GXX6824-CC6801
Lab FileID: XX2440939.D

48		AR1260-C	478.920	482.498	E3	-0.7	101	0.00	9.97-10.03
49		AR1260-D	1.273	1.210	E6	4.9	94	0.00	10.32-10.38
50		AR1260-E	1.206	1.174	E6	2.7	98	0.00	10.87-10.93
51	S	Decachlorobiphenyl	10.004	9.621	E6	3.8	99	0.00	12.55-12.61

(#) = Out of Range SPCC's out = 0 CCC's out = 0
xx2440919.d PCB6801.M Wed Oct 02 04:55:00 2019

Continuing Calibration Summary

Job Number: JC95610 **Sample:** GXX6824-CC6801
Account: BBLNYS Arcadis **Lab FileID:** XX2440961.D
Project: National Grid, Philly Coke, Philadelphia, PA

Evaluate Continuing Calibration Report

Data Path : C:\msdchem\1\DATA\gxx6824\
Data File : XX2440961.D
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
Acq On : 02 Oct 2019 7:53 am
Operator : tianweir
Sample : cc6801-1000
Misc : op23056,gxx6824,15.0,,,10,1
ALS Vial : 80 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Oct 02 08:33:49 2019
Quant Method : C:\MSDCHEM\1\METHODS\PCB6801.M
Quant Title :
QLast Update : Fri Sep 13 10:16:02 2019
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1ul
Signal #1 Phase : ZB-CLP1 Signal #2 Phase: ZB-CLP2
Signal #1 Info : 30m X 0.32mm(.32u Signal #2 Info : 30m X 0.32 mm (.25um)

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.10min
Max. RRF Dev : 20% Max. Rel. Area : 150%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(Min)
1	S	Tetrachloro-m-xylene	14.104	14.302 E6	-1.4	100	0.00
41		AR1016-A	287.399	284.551 E3	1.0	99	0.00
42		AR1016-B	519.856	502.002 E3	3.4	96	0.00
43		AR1016-C	1.239	1.170 E6	5.6	94	0.00
44		AR1016-D	458.368	435.074 E3	5.1	95	0.00
45		AR1016-E	483.606	440.338 E3	8.9	95	0.00
46		AR1260-A	1.113	0.988 E6	11.2	88	0.00
47		AR1260-B	574.637	511.663 E3	11.0	89	0.00
48		AR1260-C	644.585	565.258 E3	12.3	88	0.00
49		AR1260-D	1.556	1.460 E6	6.2	92	0.00
50		AR1260-E	1.630	1.307 E6	19.8	79	0.00
51	S	Decachlorobiphenyl	16.372	13.868 E6	15.3	85	0.00

Signal #2

1	S	Tetrachloro-m-xylene	9.504	10.491 E6	-10.4	110	0.00
41		AR1016-A	158.801	173.346 E3	-9.2	111	0.00
42		AR1016-B	355.612	356.607 E3	-0.3	103	0.00
43		AR1016-C	793.755	825.036 E3	-3.9	107	0.00
44		AR1016-D	288.293	305.030 E3	-5.8	107	0.00
45		AR1016-E	231.289	235.331 E3	-1.7	105	0.00
46		AR1260-A	787.189	762.476 E3	3.1	98	0.00
47		AR1260-B	503.405	489.082 E3	2.8	98	0.00
48		AR1260-C	478.920	475.363 E3	0.7	100	0.00
49		AR1260-D	1.273	1.237 E6	2.8	96	0.00
50		AR1260-E	1.206	1.195 E6	0.9	100	0.00
51	S	Decachlorobiphenyl	10.004	8.801 E6	12.0	91	0.00

Continuing Calibration Summary

Job Number: JC95610
Account: BBLNYS Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

Sample: GXX6824-CC6801
Lab FileID: XX2440961.D

(#) = Out of Range SPCC's out = 0 CCC's out = 0

PCB6801.M Wed Oct 02 08:34:16 2019

Continuing Calibration Summary

Job Number: JC95610 **Sample:** GXX6824-CC6801
Account: BBLNYS Arcadis **Lab FileID:** XX2440969.D
Project: National Grid, Philly Coke, Philadelphia, PA

Evaluate Continuing Calibration Report

Data Path : C:\msdchem\1\DATA\gxx6824\
Data File : XX2440969.D
Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH
Acq On : 02 Oct 2019 12:37 pm
Operator : tianweir
Sample : cc6801-500
Misc : op23056,gxx6824,15.0,,,10,1
ALS Vial : 88 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Oct 02 12:56:47 2019
Quant Method : C:\MSDCHEM\1\METHODS\PCB6801.M
Quant Title :
QLast Update : Fri Sep 13 10:16:02 2019
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1ul
Signal #1 Phase : ZB-CLP1 Signal #2 Phase: ZB-CLP2
Signal #1 Info : 30m X 0.32mm(.32u Signal #2 Info : 30m X 0.32 mm (.25um)

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.10min
Max. RRF Dev : 20% Max. Rel. Area : 150%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(Min)
1	S	Tetrachloro-m-xylene	14.104	15.148 E6	-7.4	113	0.00
41		AR1016-A	287.399	322.320 E3	-12.2	114	0.00
42		AR1016-B	519.856	488.868 E3	6.0	95	-0.01
43		AR1016-C	1.239	1.160 E6	6.4	96	0.00
44		AR1016-D	458.368	424.897 E3	7.3	95	0.00
45		AR1016-E	483.606	431.397 E3	10.8	93	-0.01
46		AR1260-A	1.113	0.974 E6	12.5	90	0.00
47		AR1260-B	574.637	538.621 E3	6.3	97	0.00
48		AR1260-C	644.585	600.729 E3	6.8	97	0.00
49		AR1260-D	1.556	1.635 E6	-5.1	108	0.00
50		AR1260-E	1.630	1.437 E6	11.8	91	0.00
51	S	Decachlorobiphenyl	16.372	14.319 E6	12.5	89	0.00

Signal #2

1	S	Tetrachloro-m-xylene	9.504	10.285 E6	-8.2	110	0.00
41		AR1016-A	158.801	192.662 E3	-21.3#	122	0.00
42		AR1016-B	355.612	379.221 E3	-6.6	109	0.00
43		AR1016-C	793.755	831.849 E3	-4.8	109	0.00
44		AR1016-D	288.293	309.346 E3	-7.3	109	0.00
45		AR1016-E	231.289	236.499 E3	-2.3	107	0.00
46		AR1260-A	787.189	771.378 E3	2.0	102	0.00
47		AR1260-B	503.405	502.620 E3	0.2	102	0.00
48		AR1260-C	478.920	490.018 E3	-2.3	105	0.00
49		AR1260-D	1.273	1.249 E6	1.9	99	0.00
50		AR1260-E	1.206	1.194 E6	1.0	102	0.00
51	S	Decachlorobiphenyl	10.004	9.761 E6	2.4	101	0.00

8.7.11
8

Continuing Calibration Summary

Job Number: JC95610
Account: BBLNYS Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

Sample: GXX6824-CC6801
Lab FileID: XX2440969.D

(#) = Out of Range SPCC's out = 0 CCC's out = 0

PCB6801.M Wed Oct 02 12:57:06 2019

Run Sequence Report

Job Number: JC95610
Account: BBLNYS Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

Run ID: GXX6801	**Method:** SW846 8082A	**Instrument ID:** GCXX

Lab Sample ID	Lab File ID	Date/Time Analyzed	Prep QC Batch	Client Sample ID
GXX6801-IC6801	XX2439726.D	09/11/19 12:50	n/a	Initial cal 50
GXX6801-IC6801	XX2439727.D	09/11/19 13:08	n/a	Initial cal 250
GXX6801-IC6801	XX2439728.D	09/11/19 13:27	n/a	Initial cal 500
GXX6801-ICC6801	XX2439729.D	09/11/19 13:45	n/a	Initial cal 1000
GXX6801-IC6801	XX2439730.D	09/11/19 14:03	n/a	Initial cal 2000
GXX6801-IC6801	XX2439731.D	09/11/19 14:21	n/a	Initial cal 3000
GXX6801-IC6801	XX2439732.D	09/11/19 14:40	n/a	Initial cal 1000
GXX6801-IC6801	XX2439733.D	09/11/19 14:58	n/a	Initial cal 1000
GXX6801-IC6801	XX2439734.D	09/11/19 15:16	n/a	Initial cal 1000
GXX6801-IC6801	XX2439735.D	09/11/19 15:34	n/a	Initial cal 1000
GXX6801-ICV6801	XX2439736.D	09/11/19 15:53	n/a	Initial cal verification 1000
GXX6801-ICV6801	XX2439737.D	09/11/19 16:11	n/a	Initial cal verification 1000
GXX6801-ICV6801	XX2439738.D	09/11/19 16:29	n/a	Initial cal verification 1000
GXX6801-ICV6801	XX2439739.D	09/11/19 16:47	n/a	Initial cal verification 1000
GXX6801-ICV6801	XX2439740.D	09/11/19 17:06	n/a	Initial cal verification 1000

Run Sequence Report

Job Number: JC95610
Account: BBLNYS Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

Run ID: GXX6824	**Method:** SW846 8082A	**Instrument ID:** GCXX

Lab Sample ID	Lab File ID	Date/Time Analyzed	Prep QC Batch	Client Sample ID
OP23043-MB1	XX2440910.D	10/01/19 15:03	OP23043	Method Blank
OP23043-BS1	XX2440911.D	10/01/19 15:22	OP23043	Blank Spike
OP23043-BSD	XX2440912.D	10/01/19 15:40	OP23043	Blank Spike Duplicate
ZZZZZZ	XX2440913.D	10/01/19 15:58	OP23043	(unrelated sample)
ZZZZZZ	XX2440914.D	10/01/19 16:17	OP23043	(unrelated sample)
ZZZZZZ	XX2440915.D	10/01/19 16:35	OP23043	(unrelated sample)
ZZZZZZ	XX2440916.D	10/01/19 16:53	OP23043	(unrelated sample)
ZZZZZZ	XX2440917.D	10/01/19 17:11	OP23043	(unrelated sample)
GXX6824-CC6801	XX2440919.D	10/01/19 18:18	n/a	Continuing cal 1000
GXX6824-CC6801	XX2440928.D	10/01/19 21:03	n/a	Continuing cal 500
OP23056-MB1	XX2440930.D	10/01/19 21:40	OP23056	Method Blank
OP23056-BS1	XX2440931.D	10/01/19 21:58	OP23056	Blank Spike
JC95413-1	XX2440932.D	10/01/19 22:17	OP23056	(used for QC only; not part of job JC95610)
OP23056-MS	XX2440933.D	10/01/19 22:50	OP23056	Matrix Spike
OP23056-MSD	XX2440934.D	10/01/19 23:24	OP23056	Matrix Spike Duplicate
ZZZZZZ	XX2440935.D	10/01/19 23:57	OP23056	(unrelated sample)
ZZZZZZ	XX2440936.D	10/02/19 00:16	OP23056	(unrelated sample)
GXX6824-CC6801	XX2440939.D	10/02/19 01:11	n/a	Continuing cal 1000
ZZZZZZ	XX2440941.D	10/02/19 01:47	OP23056	(unrelated sample)
ZZZZZZ	XX2440942.D	10/02/19 02:05	OP23056	(unrelated sample)
ZZZZZZ	XX2440944.D	10/02/19 02:42	OP23056	(unrelated sample)
ZZZZZZ	XX2440945.D	10/02/19 03:00	OP23056	(unrelated sample)
ZZZZZZ	XX2440947.D	10/02/19 03:37	OP23056	(unrelated sample)
GXX6824-CC6801	XX2440950.D	10/02/19 04:32	n/a	Continuing cal 500
ZZZZZZ	XX2440952.D	10/02/19 05:09	OP23056	(unrelated sample)
ZZZZZZ	XX2440953.D	10/02/19 05:27	OP23056	(unrelated sample)
ZZZZZZ	XX2440954.D	10/02/19 05:45	OP23056	(unrelated sample)
ZZZZZZ	XX2440956.D	10/02/19 06:22	OP23056	(unrelated sample)
ZZZZZZ	XX2440957.D	10/02/19 06:40	OP23056	(unrelated sample)
ZZZZZZ	XX2440958.D	10/02/19 06:58	OP23056	(unrelated sample)
GXX6824-CC6801	XX2440961.D	10/02/19 07:53	n/a	Continuing cal 1000
JC95610-1	XX2440964.D	10/02/19 09:30	OP23056	WC-092519
ZZZZZZ	XX2440968.D	10/02/19 11:33	OP23056	(unrelated sample)
GXX6824-CC6801	XX2440969.D	10/02/19 12:37	n/a	Continuing cal 500

Metals Analysis

QC Data Summaries

Includes the following where applicable:

- Instrument Runlogs
- Initial and Continuing Calibration Blanks
- Initial and Continuing Calibration Checks
- High and Low Check Standards
- Interfering Element Check Standards
- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries
- IDL and Linear Range Summaries

SGS Instrument Runlog
Inorganics Analyses

Login Number: JC95610
Account: BBLNYS - Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

File ID: H7100419W1.CSV Date Analyzed: 10/04/19 Methods: SW846 7470A
Analyst: LL Run ID: MA47567
Parameters: Hg

Time	Sample Description	Dilution Factor	PS Recov	Comments
10:56	MA47567-STD1	1		See rerun
10:57	MA47567-STD2	1		B=2.3053E-004, C=5.1471E-002, RHO=0.9997348
10:59	MA47567-STD3	1		STDC
11:00	MA47567-STD4	1		STDD
11:02	MA47567-STD5	1		STDE
11:04	MA47567-STD6	1		STDF
11:09	MA47567-STD7	1		STDA
11:14	MA47567-ICV1	1		
11:15	MA47567-ICB1	1		
11:18	MA47567-CCV1	1		
11:19	MA47567-CCB1	1		
11:21	MA47567-CRI1	1		
11:23	MA47567-CCV2	1		
11:25	MA47567-CCB2	1		
11:28	ZZZZZZ	1		
11:29	MP17704-B1	1		
11:30	MP17704-MB1	1		
11:32	MP17704-S1	1		
11:34	MP17704-S2	1		
11:35	JC96032-1	1		(sample used for QC only; not part of login JC95610)
11:37	ZZZZZZ	1		
11:39	ZZZZZZ	1		
11:40	ZZZZZZ	1		
11:41	MA47567-CCV3	1		
11:43	MA47567-CCB3	1		
11:45	ZZZZZZ	1		
11:46	ZZZZZZ	1		
11:47	ZZZZZZ	1		
11:49	ZZZZZZ	1		
11:50	ZZZZZZ	1		
11:51	MP17705-MB1	1		
11:53	MP17705-B1	1		
11:54	MA47567-CCV4	1		

SGS Instrument Runlog
Inorganics Analyses

Login Number: JC95610
Account: BBLNYS - Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

File ID: H7100419W1.CSV Date Analyzed: 10/04/19 Methods: SW846 7470A
Analyst: LL Run ID: MA47567
Parameters: Hg

Time	Sample Description	Dilution Factor	PS Recov	Comments
11:56	MA47567-CCB4	1		
11:58	MP17705-S1	1		
11:59	MP17705-S2	1		
12:01	JC95821-11A	1		(sample used for QC only; not part of login JC95610)
12:03	ZZZZZZ	1		
12:04	JC95610-1	1		
---------->	Last reportable sample/prep for job JC95610			
12:06	ZZZZZZ	1		
12:07	ZZZZZZ	1		
12:08	ZZZZZZ	1		
12:10	ZZZZZZ	1		
12:11	MA47567-CCV5	1		
12:12	MA47567-CCB5	1		
---------->	Last reportable CCB for job JC95610			
12:15	ZZZZZZ	1		
12:16	ZZZZZZ	1		
12:18	ZZZZZZ	1		
12:19	ZZZZZZ	1		
12:22	ZZZZZZ	1		
12:24	MA47567-CCV6	1		
12:26	MA47567-CCB6	1		

Refer to raw data for calibration curve and standards.

REPORTED ELEMENTS SUMMARY

Login Number: JC95610
Account: BBLNYS - Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

File ID: H7100419W1.CSV Date Analyzed: 10/04/19 Methods: SW846 7470A
Analyst: LL Run ID: MA47567
Parameters: Hg

Time	Sample Description	Element: Dilution	Hg	
11:14	MA47567-ICV1	1	X	
11:15	MA47567-ICB1	1	X	
11:18	MA47567-CCV1	1	X	
11:19	MA47567-CCB1	1	X	
11:21	MA47567-CRI1	1	X	
11:23	MA47567-CCV2	1	X	
11:25	MA47567-CCB2	1	X	
11:28	ZZZZZZ	1		
11:29	MP17704-B1	1	X	
11:30	MP17704-MB1	1	X	
11:32	MP17704-S1	1	X	
11:34	MP17704-S2	1	X	
11:35	JC96032-1	1	X	(a)
11:37	ZZZZZZ	1		
11:39	ZZZZZZ	1		
11:40	ZZZZZZ	1		
11:41	MA47567-CCV3	1	X	
11:43	MA47567-CCB3	1	X	
11:45	ZZZZZZ	1		
11:46	ZZZZZZ	1		
11:47	ZZZZZZ	1		
11:49	ZZZZZZ	1		
11:50	ZZZZZZ	1		
11:51	MP17705-MB1	1	X	
11:53	MP17705-B1	1	X	
11:54	MA47567-CCV4	1	X	
11:56	MA47567-CCB4	1	X	
11:58	MP17705-S1	1	X	
11:59	MP17705-S2	1	X	
12:01	JC95821-11A	1	X	(a)
12:03	ZZZZZZ	1		
12:04	JC95610-1	1	X	
12:06	ZZZZZZ	1		
		Element:	Hg	

REPORTED ELEMENTS SUMMARY

Login Number: JC95610
Account: BBLNYS - Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

File ID: H7100419W1.CSV Date Analyzed: 10/04/19 Methods: SW846 7470A
Analyst: LL Run ID: MA47567
Parameters: Hg

Time	Sample Description	Dilution	Element: Hg
12:07	ZZZZZZ	1	
12:08	ZZZZZZ	1	
12:10	ZZZZZZ	1	
12:11	MA47567-CCV5	1	X
12:12	MA47567-CCB5	1	X
12:15	ZZZZZZ	1	
12:16	ZZZZZZ	1	
12:18	ZZZZZZ	1	
12:19	ZZZZZZ	1	
12:22	ZZZZZZ	1	
12:24	MA47567-CCV6	1	X
12:26	MA47567-CCB6	1	X

(a) Sample used for QC only; not part of login JC95610.

Element: Hg

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JC95610
Account: BBLNYS - Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

File ID: H7100419W1.CSV Date Analyzed: 10/04/19 Methods: SW846 7470A
QC Limits: result < RL Run ID: MA47567 Units: ug/l

Time: / Sample ID:			11:15 ICB1		11:19 CCB1		11:25 CCB2		11:43 CCB3	
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final
Mercury	0.20	.024	-0.00290	<0.20	-0.00250	<0.20	-0.0437	<0.20	-0.0288	<0.20

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JC95610
Account: BBLNYS - Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

File ID: H7100419W1.CSV Date Analyzed: 10/04/19 Methods: SW846 7470A
QC Limits: result < RL Run ID: MA47567 Units: ug/l

			Time:		11:56		12:12	
			Sample ID:		CCB4		CCB5	
Metal	RL	IDL	raw	final	raw	final		
Mercury	0.20	.024	-0.000900	<0.20	-0.00890	<0.20		

(*) Outside of QC limits
(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JC95610
Account: BBLNYS - Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

File ID: H7100419W1.CSV Date Analyzed: 10/04/19 Methods: SW846 7470A
QC Limits: 90 to 110 % Recovery Run ID: MA47567 Units: ug/l

Time:		11:14			11:18			11:23	
Sample ID:	ICV	ICV1		CCV	CCV1		CCV	CCV2	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Mercury	3	2.99	99.7	2.5	2.47	98.8	2.5	2.33	93.2

(*) Outside of QC limits
(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JC95610
Account: BBLNYS - Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

File ID: H7100419W1.CSV Date Analyzed: 10/04/19 Methods: SW846 7470A
QC Limits: 90 to 110 % Recovery Run ID: MA47567 Units: ug/l

Time:		11:41			11:54			12:11	
Sample ID:	CCV	CCV3		CCV	CCV4		CCV	CCV5	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Mercury	2.5	2.65	106.0	2.5	2.48	99.2	2.5	2.51	100.4

(*) Outside of QC limits
(anr) Analyte not requested

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JC95610
Account: BBLNYS - Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

File ID: H7100419W1.CSV Date Analyzed: 10/04/19 Methods: SW846 7470A
QC Limits: 70 to 130 % Recovery Run ID: MA47567 Units: ug/l

Time:			11:21	
Sample ID:	CRI	CRIA	CRI1	
Metal	True	True	Results	% Rec
Mercury	0.20		0.234	117.0

(*) Outside of QC limits
(anr) Analyte not requested

SGS Instrument Runlog
Inorganics Analyses

Login Number: JC95610
Account: BBLNYS - Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

File ID: SC100419M1.ICP Date Analyzed: 10/04/19 Methods: EPA 200.7, SW846 6010D
Analyst: ND Run ID: MA47570
Parameters: As,Ba,Cd,Cr,Pb,Se,Ag

Time	Sample Description	Dilution Factor	PS Recov	Comments
11:39	MA47570-STD1	1		STDA
11:44	MA47570-STD2	1		STDB
11:50	ZZZZZZ	1		
11:55	ZZZZZZ	1		
12:00	MA47570-ICV1	1		
12:08	MA47570-ICB1	1		
12:14	MA47570-ICCV1	1		
12:26	MA47570-CCB1	1		
12:31	MA47570-CRID1	1		See rerun
12:36	ZZZZZZ	1		tip missed cup
12:41	ZZZZZZ	1		tip missed cup
12:46	ZZZZZZ	1		tip missed cup
12:51	ZZZZZZ	1		tip missed cup
12:57	MA47570-HSTD1	1		
13:03	ZZZZZZ	1		
13:08	ZZZZZZ	1		Tip missed cup
13:28	MA47570-HSTD2	1		
13:34	ZZZZZZ	1		
13:39	MA47570-CCV1	1		
13:44	MA47570-CCB2	1		
13:49	MA47570-CRI1	1		
13:54	MA47570-CRID2	1		
13:59	MA47570-ICSA1	1		
14:04	MA47570-ICSAB1	1		
14:09	ZZZZZZ	1		
14:14	ZZZZZZ	1		
14:19	ZZZZZZ	500		
14:24	MP17641-PS1	10		
14:28	ZZZZZZ	5		
14:33	MA47570-CCV2	1		
14:38	MA47570-CCB3	1		
14:43	ZZZZZZ	2		
14:48	ZZZZZZ	2		

SGS Instrument Runlog
Inorganics Analyses

Login Number: JC95610
Account: BBLNYS - Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

File ID: SC100419M1.ICP Date Analyzed: 10/04/19 Methods: EPA 200.7, SW846 6010D
Analyst: ND Run ID: MA47570
Parameters: As,Ba,Cd,Cr,Pb,Se,Ag

Time	Sample Description	Dilution Factor	PS Recov	Comments
14:54	MP17641-SD1	50		
14:59	ZZZZZZ	10		
15:03	ZZZZZZ	1		
15:08	ZZZZZZ	2		
15:13	MP17641-SD1	500		
15:18	ZZZZZZ	1		
15:23	ZZZZZZ	5		
15:28	MA47570-CCV3	1		
15:33	MA47570-CCB4	1		
15:38	ZZZZZZ	2		
15:43	ZZZZZZ	1		
15:48	ZZZZZZ	1		
15:53	ZZZZZZ	5		
15:58	ZZZZZZ	1		
16:03	ZZZZZZ	5		
16:08	ZZZZZZ	2		
16:13	ZZZZZZ	1		
16:18	ZZZZZZ	2		
16:23	MA47570-CCV4	1		
16:28	MA47570-CCB5	1		
16:33	ZZZZZZ	10		
16:38	ZZZZZZ	2		
16:43	MA47570-ICSA2	1		
16:48	MA47570-ICSAB2	1		
16:53	MA47570-CCV5	1		
16:58	MA47570-CCB6	1		
17:03	ZZZZZZ	1		
17:08	ZZZZZZ	1		
17:13	ZZZZZZ	1		
17:18	ZZZZZZ	1		
17:23	ZZZZZZ	1		
17:29	ZZZZZZ	1		
17:34	ZZZZZZ	1		

SGS Instrument Runlog
Inorganics Analyses

Login Number: JC95610
Account: BBLNYS - Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

File ID: SC100419M1.ICP Date Analyzed: 10/04/19 Methods: EPA 200.7, SW846 6010D
Analyst: ND Run ID: MA47570
Parameters: As,Ba,Cd,Cr,Pb,Se,Ag

Time	Sample Description	Dilution Factor	PS Recov	Comments
17:39	MP17697-MB1	5		
17:44	MP17697-B1	5		
17:49	MA47570-CCV6	1		
17:54	MA47570-CCB7	1		
17:59	MP17697-S1	5		
18:03	MP17697-S2	5		
18:08	JC95862-1	5		(sample used for QC only; not part of login JC95610)
18:13	MP17697-SD1	25		
18:18	ZZZZZZ	5		
18:23	ZZZZZZ	5		
18:28	ZZZZZZ	5		
18:33	ZZZZZZ	5		
18:38	ZZZZZZ	5		
18:43	MA47570-CCV7	1		
18:48	MA47570-CCB8	1		
18:53	ZZZZZZ	5		
18:58	ZZZZZZ	5		
19:03	ZZZZZZ	5		
19:08	ZZZZZZ	5		
19:13	MP17698-MB1	5		No ending QC
19:18	MP17698-B1	5		No ending QC
19:23	MP17698-B2	5		No ending QC
19:27	MP17698-S1	5		No ending QC
19:32	MP17698-S2	5		No ending QC
19:37	MA47570-CCV8	1		
19:42	MA47570-CCB9	1		
19:47	JC95531-1	5		(sample used for QC only; not part of login JC95610)
19:52	MP17698-SD1	25		No ending QC
19:57	MP17700-MB1	5		
20:02	MP17700-MB2	5		
20:07	MP17700-B1	5		
20:12	MP17700-B2	5		
20:16	MP17700-S1	5		

SGS Instrument Runlog
Inorganics Analyses

Login Number: JC95610
Account: BBLNYS - Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

File ID: SC100419M1.ICP Date Analyzed: 10/04/19 Methods: EPA 200.7, SW846 6010D
Analyst: ND Run ID: MA47570
Parameters: As,Ba,Cd,Cr,Pb,Se,Ag

Time	Sample Description	Dilution Factor	PS Recov	Comments
20:21	MP17700-S2	5		
20:26	JC95821-11A	5		(sample used for QC only; not part of login JC95610)
20:31	MP17700-SD1	25		
20:36	MA47570-CCV9	1		
20:41	MA47570-CCB10	1		
20:46	ZZZZZZ	1		Tip missed cup
20:51	ZZZZZZ	1		
20:56	ZZZZZZ	1		
21:01	ZZZZZZ	1		
21:06	ZZZZZZ	1		
21:11	ZZZZZZ	1		
21:16	ZZZZZZ	1		
21:21	ZZZZZZ	1		
21:26	ZZZZZZ	1		
21:31	ZZZZZZ	1		
21:36	ZZZZZZ	1		
21:41	ZZZZZZ	1		
21:46	MA47570-CCV10	1		
21:51	MA47570-CCB11	1		
21:56	ZZZZZZ	5		
22:01	JC95610-1	5		
---------->	Last reportable sample/prep for job JC95610			
22:06	ZZZZZZ	5		
22:11	ZZZZZZ	5		
22:16	ZZZZZZ	5		
22:21	ZZZZZZ	5		
22:26	MP17692-MB1	1		
22:31	MP17692-B1	1		
22:36	MP17692-S1	1		
22:40	MP17692-S2	1		
22:45	MA47570-CCV11	1		
22:50	MA47570-CCB12	1		
---------->	Last reportable CCB for job JC95610			
22:55	DA20472-6	1		(sample used for QC only; not part of login JC95610)
23:00	MP17692-SD1	5		

SGS Instrument Runlog
Inorganics Analyses

Login Number: JC95610
Account: BBLNYS - Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

File ID: SC100419M1.ICP Date Analyzed: 10/04/19 Methods: EPA 200.7, SW846 6010D
Analyst: ND Run ID: MA47570
Parameters: As,Ba,Cd,Cr,Pb,Se,Ag

Time	Sample Description	Dilution Factor	PS Recov	Comments
23:05	MP17691-MB1	5		
23:10	MP17691-B1	5		
23:15	MP17691-S1	5		
23:20	MP17691-S2	5		
23:24	JC95743-1	5		(sample used for QC only; not part of login JC95610)
23:29	MP17691-SD1	25		
23:34	ZZZZZZ	1		
23:39	ZZZZZZ	1		
23:44	MA47570-CCV12	1		
23:49	MA47570-CCB13	1		
23:54	ZZZZZZ	1		
23:59	ZZZZZZ	1		
00:04	ZZZZZZ	1		
00:09	ZZZZZZ	1		
00:14	ZZZZZZ	1		
00:19	MP17592-PS1	1		
00:24	MP17699-B1	1		Batch to reanalysis, CCB tip missed cup
00:29	MP17699-MB1	1		
00:34	MP17699-S1	1		
00:39	MA47570-CCV13	1		
00:44	MA47570-CCB14	1		
00:49	MP17699-S2	1		
00:53	JC95963-7F	1		(sample used for QC only; not part of login JC95610)
00:58	MP17699-SD1	5		
01:03	ZZZZZZ	1		
01:08	ZZZZZZ	1		
01:13	ZZZZZZ	1		
01:18	ZZZZZZ	1		
01:23	ZZZZZZ	1		
01:28	ZZZZZZ	1		
01:33	ZZZZZZ	1		
01:38	MA47570-CCV14	1		
01:43	MA47570-CCB15	1		Tip missed cup

SGS Instrument Runlog
Inorganics Analyses

Login Number: JC95610
Account: BBLNYS - Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

File ID: SC100419M1.ICP Date Analyzed: 10/04/19 Methods: EPA 200.7, SW846 6010D
Analyst: ND Run ID: MA47570
Parameters: As,Ba,Cd,Cr,Pb,Se,Ag

Time	Sample Description	Dilution Factor	PS Recov	Comments
01:48	ZZZZZZ	1		
01:52	ZZZZZZ	1		
01:58	ZZZZZZ	1		
02:02	ZZZZZZ	1		
02:07	ZZZZZZ	1		
02:12	ZZZZZZ	1		
02:17	ZZZZZZ	1		
02:22	ZZZZZZ	1		
02:27	ZZZZZZ	1		
02:32	ZZZZZZ	1		
02:37	MA47570-CCV15	1		
02:42	MA47570-CCB16	1		

Refer to raw data for calibration curve and standards.

REPORTED ELEMENTS SUMMARY

Login Number: JC95610
Account: BBLNYS - Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

File ID: SC100419M1.ICP Date Analyzed: 10/04/19 Methods: EPA 200.7, SW846 6010D
Analyst: ND Run ID: MA47570
Parameters: As,Ba,Cd,Cr,Pb,Se,Ag

Time	Sample Description	Element: Dilution	As	Ba	Cd	Cr	Pb	Se	Ag
11:50	ZZZZZZ	1							
11:55	ZZZZZZ	1							
12:00	MA47570-ICV1	1	X	X	X	X	X	X	X
12:08	MA47570-ICB1	1	X	X	X	X	X	X	X
12:14	MA47570-ICCV1	1	X	X	X	X	X	X	X
12:26	MA47570-CCB1	1	X	X	X	X	X	X	X
12:31	MA47570-CRID1	1	See	rerun					
12:36	ZZZZZZ	1							
12:41	ZZZZZZ	1							
12:46	ZZZZZZ	1							
12:51	ZZZZZZ	1							
12:57	MA47570-HSTD1	1							
13:03	ZZZZZZ	1							
13:08	ZZZZZZ	1							
13:28	MA47570-HSTD2	1	X	X	X	X	X	X	X
13:34	ZZZZZZ	1							
13:39	MA47570-CCV1	1	X	X	X	X	X	X	X
13:44	MA47570-CCB2	1	X	X	X	X	X	X	X
13:49	MA47570-CRI1	1	X	X	X	X	X	X	X
13:54	MA47570-CRID2	1	X	X	X	X	X	X	X
13:59	MA47570-ICSA1	1	X	X	X	X	X	X	X
14:04	MA47570-ICSAB1	1	X	X	X	X	X	X	X
14:09	ZZZZZZ	1							
14:14	ZZZZZZ	1							
14:19	ZZZZZZ	500							
14:24	MP17641-PS1	10							
14:28	ZZZZZZ	5							
14:33	MA47570-CCV2	1	X	X	X	X	X	X	X
14:38	MA47570-CCB3	1	X	X	X	X	X	X	X
14:43	ZZZZZZ	2							
14:48	ZZZZZZ	2							
14:54	MP17641-SD1	50							
14:59	ZZZZZZ	10							
		Element:	As	Ba	Cd	Cr	Pb	Se	Ag

REPORTED ELEMENTS SUMMARY

Login Number: JC95610
Account: BBLNYS - Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

File ID: SC100419M1.ICP Date Analyzed: 10/04/19 Methods: EPA 200.7, SW846 6010D
Analyst: ND Run ID: MA47570
Parameters: As,Ba,Cd,Cr,Pb,Se,Ag

Time	Sample Description	Element: Dilution	As	Ba	Cd	Cr	Pb	Se	Ag
15:03	ZZZZZZ	1							
15:08	ZZZZZZ	2							
15:13	MP17641-SD1	500							
15:18	ZZZZZZ	1							
15:23	ZZZZZZ	5							
15:28	MA47570-CCV3	1	X	X	X	X	X	X	X
15:33	MA47570-CCB4	1	X	X	X	X	X	X	X
15:38	ZZZZZZ	2							
15:43	ZZZZZZ	1							
15:48	ZZZZZZ	1							
15:53	ZZZZZZ	5							
15:58	ZZZZZZ	1							
16:03	ZZZZZZ	5							
16:08	ZZZZZZ	2							
16:13	ZZZZZZ	1							
16:18	ZZZZZZ	2							
16:23	MA47570-CCV4	1	X	X	X	X	X	X	X
16:28	MA47570-CCB5	1	X	X	X	X	X	X	X
16:33	ZZZZZZ	10							
16:38	ZZZZZZ	2							
16:43	MA47570-ICSA2	1	X	X	X	X	X	X	X
16:48	MA47570-ICSAB2	1	X	X	X	X	X	X	X
16:53	MA47570-CCV5	1	X	X	X	X	X	X	X
16:58	MA47570-CCB6	1	X	X	X	X	X	X	X
17:03	ZZZZZZ	1							
17:08	ZZZZZZ	1							
17:13	ZZZZZZ	1							
17:18	ZZZZZZ	1							
17:23	ZZZZZZ	1							
17:29	ZZZZZZ	1							
17:34	ZZZZZZ	1							
17:39	MP17697-MB1	5			X		X		
17:44	MP17697-B1	5			X		X		
		Element:	As	Ba	Cd	Cr	Pb	Se	Ag

REPORTED ELEMENTS SUMMARY

Login Number: JC95610
Account: BBLNYS - Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

File ID: SC100419M1.ICP Date Analyzed: 10/04/19 Methods: EPA 200.7, SW846 6010D
Analyst: ND Run ID: MA47570
Parameters: As,Ba,Cd,Cr,Pb,Se,Ag

Time	Sample Description	Dilution	Element: As	Ba	Cd	Cr	Pb	Se	Ag	
17:49	MA47570-CCV6	1	X	X	X	X	X	X	X	
17:54	MA47570-CCB7	1	X	X	X	X	X	X	X	
17:59	MP17697-S1	5			X		X			
18:03	MP17697-S2	5			X		X			
18:08	JC95862-1	5			X		X			(a)
18:13	MP17697-SD1	25			X		X			
18:18	ZZZZZZ	5								
18:23	ZZZZZZ	5								
18:28	ZZZZZZ	5								
18:33	ZZZZZZ	5								
18:38	ZZZZZZ	5								
18:43	MA47570-CCV7	1	X	X	X	X	X	X	X	
18:48	MA47570-CCB8	1	X	X	X	X	X	X	X	
18:53	ZZZZZZ	5								
18:58	ZZZZZZ	5								
19:03	ZZZZZZ	5								
19:08	ZZZZZZ	5								
19:13	MP17698-MB1	5	No ending QC							
19:18	MP17698-B1	5	No ending QC							
19:23	MP17698-B2	5	No ending QC							
19:27	MP17698-S1	5	No ending QC							
19:32	MP17698-S2	5	No ending QC							
19:37	MA47570-CCV8	1	X	X	X	X	X	X	X	
19:42	MA47570-CCB9	1	X	X	X	X	X	X	X	
19:47	JC95531-1	5	No ending QC							
19:52	MP17698-SD1	25	No ending QC							
19:57	MP17700-MB1	5	X	X	X	X	X	X	X	
20:02	MP17700-MB2	5	X	X	X	X	X	X	X	
20:07	MP17700-B1	5	X	X	X	X	X	X	X	
20:12	MP17700-B2	5	X	X	X	X	X	X	X	
20:16	MP17700-S1	5	X	X	X	X	X	X	X	
20:21	MP17700-S2	5	X	X	X	X	X	X	X	
20:26	JC95821-11A	5	X	X	X	X	X	X	X	(a)
		Element:	As	Ba	Cd	Cr	Pb	Se	Ag	

REPORTED ELEMENTS SUMMARY

Login Number: JC95610
Account: BBLNYS - Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

File ID: SC100419M1.ICP Date Analyzed: 10/04/19 Methods: EPA 200.7, SW846 6010D
Analyst: ND Run ID: MA47570
Parameters: As,Ba,Cd,Cr,Pb,Se,Ag

Time	Sample Description	Element: Dilution	As	Ba	Cd	Cr	Pb	Se	Ag	
20:31	MP17700-SD1	25	X	X	X	X	X	X	X	
20:36	MA47570-CCV9	1	X	X	X	X	X	X	X	
20:41	MA47570-CCB10	1	X	X	X	X	X	X	X	
20:46	ZZZZZZ	1								
20:51	ZZZZZZ	1								
20:56	ZZZZZZ	1								
21:01	ZZZZZZ	1								
21:06	ZZZZZZ	1								
21:11	ZZZZZZ	1								
21:16	ZZZZZZ	1								
21:21	ZZZZZZ	1								
21:26	ZZZZZZ	1								
21:31	ZZZZZZ	1								
21:36	ZZZZZZ	1								
21:41	ZZZZZZ	1								
21:46	MA47570-CCV10	1	X	X	X	X	X	X	X	
21:51	MA47570-CCB11	1	X	X	X	X	X	X	X	
21:56	ZZZZZZ	5								
22:01	JC95610-1	5	X	X	X	X	X	X	X	
22:06	ZZZZZZ	5								
22:11	ZZZZZZ	5								
22:16	ZZZZZZ	5								
22:21	ZZZZZZ	5								
22:26	MP17692-MB1	1	X	X	X	X	X	X	X	
22:31	MP17692-B1	1	X	X	X	X	X	X	X	
22:36	MP17692-S1	1	X	X	X	X	X	X	X	
22:40	MP17692-S2	1	X	X	X	X	X	X	X	
22:45	MA47570-CCV11	1	X	X	X	X	X	X	X	
22:50	MA47570-CCB12	1	X	X	X	X	X	X	X	
22:55	DA20472-6	1	X	X	X	X	X	X	X	(a)
23:00	MP17692-SD1	5	X	X	X	X	X	X	X	
23:05	MP17691-MB1	5	X	X	X	X	X	X	X	
23:10	MP17691-B1	5	X	X	X	X	X	X	X	
		Element:	As	Ba	Cd	Cr	Pb	Se	Ag	

REPORTED ELEMENTS SUMMARY

Login Number: JC95610
Account: BBLNYS - Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

File ID: SC100419M1.ICP Date Analyzed: 10/04/19 Methods: EPA 200.7, SW846 6010D
Analyst: ND Run ID: MA47570
Parameters: As,Ba,Cd,Cr,Pb,Se,Ag

Time	Sample Description	Element: Dilution	As	Ba	Cd	Cr	Pb	Se	Ag	
23:15	MP17691-S1	5	X	X	X	X	X	X	X	
23:20	MP17691-S2	5	X	X	X	X	X	X	X	
23:24	JC95743-1	5	X	X	X	X	X	X	X	(a)
23:29	MP17691-SD1	25	X	X	X	X	X	X	X	
23:34	ZZZZZZ	1								
23:39	ZZZZZZ	1								
23:44	MA47570-CCV12	1	X	X	X	X	X	X	X	
23:49	MA47570-CCB13	1	X	X	X	X	X	X	X	
23:54	ZZZZZZ	1								
23:59	ZZZZZZ	1								
00:04	ZZZZZZ	1								
00:09	ZZZZZZ	1								
00:14	ZZZZZZ	1								
00:19	MP17592-PS1	1								
00:24	MP17699-B1	1	Batch to reanalysis, CCB tip missed cup							
00:29	MP17699-MB1	1								
00:34	MP17699-S1	1								
00:39	MA47570-CCV13	1	X	X	X	X	X	X	X	
00:44	MA47570-CCB14	1	X	X	X	X	X	X	X	
00:49	MP17699-S2	1								
00:53	JC95963-7F	1								
00:58	MP17699-SD1	5								
01:03	ZZZZZZ	1								
01:08	ZZZZZZ	1								
01:13	ZZZZZZ	1								
01:18	ZZZZZZ	1								
01:23	ZZZZZZ	1								
01:28	ZZZZZZ	1								
01:33	ZZZZZZ	1								
01:38	MA47570-CCV14	1								
01:43	MA47570-CCB15	1	Tip missed cup							
01:48	ZZZZZZ	1								
01:52	ZZZZZZ	1								
		Element:	As	Ba	Cd	Cr	Pb	Se	Ag	

REPORTED ELEMENTS SUMMARY

Login Number: JC95610
Account: BBLNYS - Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

File ID: SC100419M1.ICP Date Analyzed: 10/04/19 Methods: EPA 200.7, SW846 6010D
Analyst: ND Run ID: MA47570
Parameters: As,Ba,Cd,Cr,Pb,Se,Ag

Time	Sample Description	Element: Dilution	As	Ba	Cd	Cr	Pb	Se	Ag
01:58	ZZZZZZ	1							
02:02	ZZZZZZ	1							
02:07	ZZZZZZ	1							
02:12	ZZZZZZ	1							
02:17	ZZZZZZ	1							
02:22	ZZZZZZ	1							
02:27	ZZZZZZ	1							
02:32	ZZZZZZ	1							
02:37	MA47570-CCV15	1							
02:42	MA47570-CCB16	1							

(a) Sample used for QC only; not part of login JC95610.

Element:	As	Ba	Cd	Cr	Pb	Se	Ag

INTERNAL STANDARD SUMMARY

Login Number: JC95610
Account: BBLNYS - Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

File ID: SC100419M1.ICP Date Analyzed: 10/04/19 Methods: EPA 200.7, SW846 6010D
Analyst: ND Run ID: MA47570
Parameters: As,Ba,Cd,Cr,Pb,Se,Ag

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
11:39	MA47570-STD1	7947 R	181180 R	28940 R	10819 R
11:44	MA47570-STD2	7488	170530	28142	9798
11:50	ZZZZZZ	7671	173640	28488	10037
11:55	ZZZZZZ	7956	180400	28874	10833
12:00	MA47570-ICV1	7694	173800	28734	10041
12:08	MA47570-ICB1	7940	180960	28712	10833
12:14	MA47570-ICCV1	7687	174620	28274	10052
12:26	MA47570-CCB1	7928	179080	28705	10815
12:31	MA47570-CRID1	No results reported for the elements associated with this internal standard.			
12:36	ZZZZZZ	No results reported for the elements associated with this internal standard.			
12:41	ZZZZZZ	No results reported for the elements associated with this internal standard.			
12:46	ZZZZZZ	No results reported for the elements associated with this internal standard.			
12:51	ZZZZZZ	No results reported for the elements associated with this internal standard.			
12:57	MA47570-HSTD1	7138	160580	27296	9134
13:03	ZZZZZZ	7775	176690	28438	10896
13:08	ZZZZZZ	No results reported for the elements associated with this internal standard.			
13:28	MA47570-HSTD2	7647	176140	27988	10644
13:34	ZZZZZZ	7732	179490	28609	10783
13:39	MA47570-CCV1	7645	173480	28443	9993
13:44	MA47570-CCB2	7932	180760	28619	10791
13:49	MA47570-CRI1	7832	178020	28373	10564
13:54	MA47570-CRID2	7892	179940	28507	10722
13:59	MA47570-ICSA1	7081	158300	27324	9109
14:04	MA47570-ICSAB1	7115	158480	27596	9144
14:09	ZZZZZZ	7974	181720	28710	10859
14:14	ZZZZZZ	7980	183090	29113	10865
14:19	ZZZZZZ	7908	181940	28694	10788
14:24	MP17641-PS1	7743	180930	28245	10720
14:28	ZZZZZZ	7928	180220	29551	10602
14:33	MA47570-CCV2	7654	173190	28272	10001
14:38	MA47570-CCB3	7942	180990	28639	10809
14:43	ZZZZZZ	8104	182290	29833	10396
14:48	ZZZZZZ	8135	182890	30290	10333

INTERNAL STANDARD SUMMARY

Login Number: JC95610
Account: BBLNYS - Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

File ID: SC100419M1.ICP Date Analyzed: 10/04/19 Methods: EPA 200.7, SW846 6010D
Analyst: ND Run ID: MA47570
Parameters: As,Ba,Cd,Cr,Pb,Se,Ag

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
14:54	MP17641-SD1	7979	182800	28908	10860
14:59	ZZZZZZ	7998	182020	29506	10698
15:03	ZZZZZZ	8054	183770	29287	10956
15:08	ZZZZZZ	8234	184170	30458	10559
15:13	MP17641-SD1	8021	182820	28689	10948
15:18	ZZZZZZ	8064	183450	29262	10974
15:23	ZZZZZZ	7781	176700	28743	10301
15:28	MA47570-CCV3	7681	174430	28001	10087
15:33	MA47570-CCB4	7972	181720	28498	10892
15:38	ZZZZZZ	7555	171760	28376	9800
15:43	ZZZZZZ	8114	184360	29225	11013
15:48	ZZZZZZ	8290	186560	30702	10669
15:53	ZZZZZZ	7938	179020	28633	10977
15:58	ZZZZZZ	No results reported for the elements associated with this internal standard.			
16:03	ZZZZZZ	8906	199140	32093	10696
16:08	ZZZZZZ	7777	175410	29251	10201
16:13	ZZZZZZ	8064	182860	28857	11019
16:18	ZZZZZZ	No results reported for the elements associated with this internal standard.			
16:23	MA47570-CCV4	7720	172840	27696	10124
16:28	MA47570-CCB5	8007	179720	28035	10938
16:33	ZZZZZZ	8004	180710	28492	10955
16:38	ZZZZZZ	8065	180830	29153	10590
16:43	MA47570-ICSA2	7187	160630	27059	9247
16:48	MA47570-ICSAB2	7215	160030	27091	9298
16:53	MA47570-CCV5	7749	173670	27522	10163
16:58	MA47570-CCB6	8010	182220	27989	10967
17:03	ZZZZZZ	9058	202050	34092	9670
17:08	ZZZZZZ	8504	190530	31911	9738
17:13	ZZZZZZ	8454	190400	31668	9712
17:18	ZZZZZZ	7994	181330	29029	10509
17:23	ZZZZZZ	9124	205160	34320	9730
17:29	ZZZZZZ	8494	190450	31972	9755
17:34	ZZZZZZ	8452	190120	31841	9761

INTERNAL STANDARD SUMMARY

Login Number: JC95610
Account: BBLNYS - Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

File ID: SC100419M1.ICP Date Analyzed: 10/04/19 Methods: EPA 200.7, SW846 6010D
Analyst: ND Run ID: MA47570
Parameters: As,Ba,Cd,Cr,Pb,Se,Ag

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
17:39	MP17697-MB1	8083	183160	28832	11117
17:44	MP17697-B1	8046	183010	28669	10872
17:49	MA47570-CCV6	7760	175720	28095	10282
17:54	MA47570-CCB7	8055	180310	28645	11118
17:59	MP17697-S1	7300	166100	27682	9563
18:03	MP17697-S2	7288	166290	27652	9550
18:08	JC95862-1	7283	165270	27395	9569
18:13	MP17697-SD1	7759	176860	27983	10449
18:18	ZZZZZZ	7221	166750	27594	9447
18:23	ZZZZZZ	7317	167090	27561	9574
18:28	ZZZZZZ	7333	167810	27664	9621
18:33	ZZZZZZ	7342	167970	27777	9649
18:38	ZZZZZZ	7262	165930	27457	9484
18:43	MA47570-CCV7	7795	177160	27996	10349
18:48	MA47570-CCB8	8085	182950	28190	11178
18:53	ZZZZZZ	7339	168310	27736	9675
18:58	ZZZZZZ	7236	165160	27349	9456
19:03	ZZZZZZ	7393	167230	27606	9736
19:08	ZZZZZZ	7278	166110	27506	9572
19:13	MP17698-MB1	No results reported for the elements associated with this internal standard.			
19:18	MP17698-B1	No results reported for the elements associated with this internal standard.			
19:23	MP17698-B2	No results reported for the elements associated with this internal standard.			
19:27	MP17698-S1	No results reported for the elements associated with this internal standard.			
19:32	MP17698-S2	No results reported for the elements associated with this internal standard.			
19:37	MA47570-CCV8	7801	176390	27871	10370
19:42	MA47570-CCB9	8074	181020	28030	11197
19:47	JC95531-1	No results reported for the elements associated with this internal standard.			
19:52	MP17698-SD1	No results reported for the elements associated with this internal standard.			
19:57	MP17700-MB1	7632	170230	27655	9995
20:02	MP17700-MB2	8057	182730	28338	11161
20:07	MP17700-B1	7654	171500	27833	9954
20:12	MP17700-B2	8037	182270	28186	10930
20:16	MP17700-S1	7555	169300	27629	9758

INTERNAL STANDARD SUMMARY

Login Number: JC95610
Account: BBLNYS - Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

File ID: SC100419M1.ICP Date Analyzed: 10/04/19 Methods: EPA 200.7, SW846 6010D
Analyst: ND Run ID: MA47570
Parameters: As,Ba,Cd,Cr,Pb,Se,Ag

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
20:21	MP17700-S2	7542	169700	27782	9758
20:26	JC95821-11A	7478	168410	27752	9728
20:31	MP17700-SD1	7786	176520	27752	10432
20:36	MA47570-CCV9	7722	174630	27649	10274
20:41	MA47570-CCB10	8024	182210	27912	11123
20:46	ZZZZZZ	No results reported for the elements associated with this internal standard.			
20:51	ZZZZZZ	8034	182470	27883	11081
20:56	ZZZZZZ	8030	182760	28061	11093
21:01	ZZZZZZ	8059	181010	28136	11131
21:06	ZZZZZZ	8074	179860	28067	11192
21:11	ZZZZZZ	8085	182430	28266	11152
21:16	ZZZZZZ	8030	181560	27909	11133
21:21	ZZZZZZ	8016	182650	27921	11189
21:26	ZZZZZZ	8027	180210	27922	11207
21:31	ZZZZZZ	8266	172790	28718	10217
21:36	ZZZZZZ	7434	167800	27117	9823
21:41	ZZZZZZ	7416	165290	27196	9832
21:46	MA47570-CCV10	7778	175470	27678	10327
21:51	MA47570-CCB11	8036	182100	27461	11125
21:56	ZZZZZZ	7265	164660	27030	9508
22:01	JC95610-1	7521	167320	27323	9792
22:06	ZZZZZZ	7530	168400	27377	9756
22:11	ZZZZZZ	7660	169860	27446	10022
22:16	ZZZZZZ	7587	168670	27304	9896
22:21	ZZZZZZ	7534	169280	27339	9820
22:26	MP17692-MB1	8117	182820	28433	11228
22:31	MP17692-B1	7836	176360	28057	10509
22:36	MP17692-S1	7675	173720	27106	10326
22:40	MP17692-S2	7695	173260	27275	10355
22:45	MA47570-CCV11	7832	176210	27982	10410
22:50	MA47570-CCB12	8118	184330	28475	11248
22:55	DA20472-6	8017	182260	27960	11152
23:00	MP17692-SD1	8095	182050	27870	11213

INTERNAL STANDARD SUMMARY

Login Number: JC95610
Account: BBLNYS - Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

File ID: SC100419M1.ICP Date Analyzed: 10/04/19 Methods: EPA 200.7, SW846 6010D
Analyst: ND Run ID: MA47570
Parameters: As,Ba,Cd,Cr,Pb,Se,Ag

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
23:05	MP17691-MB1	8142	183200	28298	11263
23:10	MP17691-B1	8119	181660	28428	11028
23:15	MP17691-S1	7926	179730	28295	10706
23:20	MP17691-S2	7930	177670	27796	10716
23:24	JC95743-1	7956	180810	27953	10853
23:29	MP17691-SD1	8074	182390	28024	11151
23:34	ZZZZZZ	8018	182660	28284	11021
23:39	ZZZZZZ	7726	177720	28253	10852
23:44	MA47570-CCV12	7806	175520	27707	10393
23:49	MA47570-CCB13	8100	183280	28037	11248
23:54	ZZZZZZ	7962	181030	28135	10969
23:59	ZZZZZZ	7954	181580	28098	10956
00:04	ZZZZZZ	6565	141810	26013	8243
00:09	ZZZZZZ	7805	178300	27311	10585
00:14	ZZZZZZ	8131	182390	28292	11277
00:19	MP17592-PS1	7986	180700	29273	10001
00:24	MP17699-B1	No results reported for the elements associated with this internal standard.			
00:29	MP17699-MB1	No results reported for the elements associated with this internal standard.			
00:34	MP17699-S1	No results reported for the elements associated with this internal standard.			
00:39	MA47570-CCV13	7835	176840	27520	10457
00:44	MA47570-CCB14	8105	182380	27903	11275
00:49	MP17699-S2	No results reported for the elements associated with this internal standard.			
00:53	JC95963-7F	No results reported for the elements associated with this internal standard.			
00:58	MP17699-SD1	No results reported for the elements associated with this internal standard.			
01:03	ZZZZZZ	No results reported for the elements associated with this internal standard.			
01:08	ZZZZZZ	No results reported for the elements associated with this internal standard.			
01:13	ZZZZZZ	No results reported for the elements associated with this internal standard.			
01:18	ZZZZZZ	No results reported for the elements associated with this internal standard.			
01:23	ZZZZZZ	No results reported for the elements associated with this internal standard.			
01:28	ZZZZZZ	No results reported for the elements associated with this internal standard.			
01:33	ZZZZZZ	No results reported for the elements associated with this internal standard.			
01:38	MA47570-CCV14	No results reported for the elements associated with this internal standard.			
01:43	MA47570-CCB15	No results reported for the elements associated with this internal standard.			

INTERNAL STANDARD SUMMARY

Login Number: JC95610
Account: BBLNYS - Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

File ID: SC100419M1.ICP Date Analyzed: 10/04/19 Methods: EPA 200.7, SW846 6010D
Analyst: ND Run ID: MA47570
Parameters: As,Ba,Cd,Cr,Pb,Se,Ag

Time	Sample Description	Istd#1	Istd#2	Istd#3	Istd#4
01:48	ZZZZZZ	No results reported for the elements associated with this internal standard.			
01:52	ZZZZZZ	No results reported for the elements associated with this internal standard.			
01:58	ZZZZZZ	No results reported for the elements associated with this internal standard.			
02:02	ZZZZZZ	No results reported for the elements associated with this internal standard.			
02:07	ZZZZZZ	No results reported for the elements associated with this internal standard.			
02:12	ZZZZZZ	No results reported for the elements associated with this internal standard.			
02:17	ZZZZZZ	No results reported for the elements associated with this internal standard.			
02:22	ZZZZZZ	No results reported for the elements associated with this internal standard.			
02:27	ZZZZZZ	No results reported for the elements associated with this internal standard.			
02:32	ZZZZZZ	No results reported for the elements associated with this internal standard.			
02:37	MA47570-CCV15	No results reported for the elements associated with this internal standard.			
02:42	MA47570-CCB16	No results reported for the elements associated with this internal standard.			

R = Reference for ISTD limits. ! = Outside limits.

LEGEND:

Istd#	Parameter	Limits
Istd#1	Yttrium (2243)	70-130 %
Istd#2	Yttrium (3600)	70-130 %
Istd#3	Yttrium (3710)	70-130 %
Istd#4	Indium	70-130 %

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JC95610
Account: BBLNYS - Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

File ID: SC100419M1.ICP Date Analyzed: 10/04/19 Methods: EPA 200.7, SW846 6010D
QC Limits: result < RL Run ID: MA47570 Units: ug/l

Time: / Sample ID:			12:08 ICB1		12:26 CCB1		13:44 CCB2		14:38 CCB3	
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final
Aluminum	200	14	anr							
Antimony	6.0	1.4	anr							
Arsenic	3.0	1.5	1.00	<3.0	1.60	<3.0	0.600	<3.0	1.50	<3.0
Barium	200	.5	0.400	<200	1.00	<200	0.600	<200	0.800	<200
Beryllium	1.0	.1	anr							
Bismuth	20	1.8								
Boron	100	.8	anr							
Cadmium	3.0	.3	0.300	<3.0	0.600	<3.0	0.500	<3.0	0.400	<3.0
Calcium	5000	3.9	anr							
Cerium	100									
Chromium	10	.3	0.800	<10	1.10	<10	0.800	<10	0.700	<10
Cobalt	50	.3	anr							
Copper	10	.6	anr							
Iron	100	2.6	anr							
Lead	3.0	1.6	0.400	<3.0	0.600	<3.0	0.600	<3.0	-0.400	<3.0
Lithium	50	2.1								
Magnesium	5000	16	anr							
Manganese	15	.1	anr							
Molybdenum	20	.4								
Nickel	10	.5	anr							
Phosphorus	50	1.9								
Potassium	10000	79	anr							
Selenium	10	3	0.300	<10	0.500	<10	0.00	<10	0.900	<10
Silicon	200	1.2								
Silver	10	.5	-0.200	<10	-0.200	<10	-0.200	<10	-0.400	<10
Sodium	10000	9.9	anr							
Strontium	10	.3								
Sulfur	50	3.5								
Thallium	10	1.3	anr							
Tin	10	.7	anr							
Titanium	10	.5								
Tungsten	50	1.7								
Vanadium	50	.5	anr							

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JC95610
Account: BBLNYS - Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

File ID: SC100419M1.ICP Date Analyzed: 10/04/19 Methods: EPA 200.7, SW846 6010D
QC Limits: result < RL Run ID: MA47570 Units: ug/l

Time: / Sample ID:			12:08 ICB1		12:26 CCB1		13:44 CCB2		14:38 CCB3	
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final
Zinc	20	.2	anr							
Zirconium	10	.3								

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JC95610
Account: BBLNYS - Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

File ID: SC100419M1.ICP Date Analyzed: 10/04/19 Methods: EPA 200.7, SW846 6010D
QC Limits: result < RL Run ID: MA47570 Units: ug/l

Time: / Sample ID:			15:33 CCB4		16:28 CCB5		16:58 CCB6		17:54 CCB7	
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final
Aluminum	200	14	anr							
Antimony	6.0	1.4	anr							
Arsenic	3.0	1.5	0.500	<3.0	0.600	<3.0	1.40	<3.0	0.200	<3.0
Barium	200	.5	0.400	<200	0.500	<200	0.800	<200	0.00	<200
Beryllium	1.0	.1	anr							
Bismuth	20	1.8								
Boron	100	.8	anr							
Cadmium	3.0	.3	0.200	<3.0	0.500	<3.0	0.500	<3.0	-0.100	<3.0
Calcium	5000	3.9	anr							
Cerium	100									
Chromium	10	.3	0.500	<10	1.20	<10	1.00	<10	0.200	<10
Cobalt	50	.3	anr							
Copper	10	.6	anr							
Iron	100	2.6	anr							
Lead	3.0	1.6	0.100	<3.0	0.300	<3.0	-0.300	<3.0	0.100	<3.0
Lithium	50	2.1								
Magnesium	5000	16	anr							
Manganese	15	.1	anr							
Molybdenum	20	.4								
Nickel	10	.5	anr							
Phosphorus	50	1.9								
Potassium	10000	79	anr							
Selenium	10	3	0.600	<10	0.300	<10	0.500	<10	-0.600	<10
Silicon	200	1.2								
Silver	10	.5	0.200	<10	0.300	<10	0.300	<10	0.500	<10
Sodium	10000	9.9	anr							
Strontium	10	.3								
Sulfur	50	3.5								
Thallium	10	1.3	anr							
Tin	10	.7	anr							
Titanium	10	.5								
Tungsten	50	1.7								
Vanadium	50	.5	anr							

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JC95610
Account: BBLNYS - Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

File ID: SC100419M1.ICP Date Analyzed: 10/04/19 Methods: EPA 200.7, SW846 6010D
QC Limits: result < RL Run ID: MA47570 Units: ug/l

Time: / Sample ID:			15:33 CCB4		16:28 CCB5		16:58 CCB6		17:54 CCB7	
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final
Zinc	20	.2	anr							
Zirconium	10	.3								

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JC95610
Account: BBLNYS - Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

File ID: SC100419M1.ICP Date Analyzed: 10/04/19 Methods: EPA 200.7, SW846 6010D
QC Limits: result < RL Run ID: MA47570 Units: ug/l

Time: / Sample ID:			18:48 CCB8		19:42 CCB9		20:41 CCB10		21:51 CCB11	
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final
Aluminum	200	14	anr							
Antimony	6.0	1.4	anr							
Arsenic	3.0	1.5	0.200	<3.0	0.100	<3.0	0.300	<3.0	0.00	<3.0
Barium	200	.5	0.200	<200	0.00	<200	0.200	<200	0.300	<200
Beryllium	1.0	.1	anr							
Bismuth	20	1.8								
Boron	100	.8	anr							
Cadmium	3.0	.3	-0.100	<3.0	0.00	<3.0	-0.100	<3.0	0.00	<3.0
Calcium	5000	3.9	anr							
Cerium	100									
Chromium	10	.3	0.100	<10	0.100	<10	0.300	<10	0.300	<10
Cobalt	50	.3	anr							
Copper	10	.6	anr							
Iron	100	2.6	anr							
Lead	3.0	1.6	0.00	<3.0	-0.200	<3.0	-0.400	<3.0	-0.500	<3.0
Lithium	50	2.1								
Magnesium	5000	16	anr							
Manganese	15	.1	anr							
Molybdenum	20	.4								
Nickel	10	.5	anr							
Phosphorus	50	1.9								
Potassium	10000	79	anr							
Selenium	10	3	1.40	<10	0.100	<10	-0.400	<10	0.00	<10
Silicon	200	1.2								
Silver	10	.5	0.600	<10	0.800	<10	0.600	<10	0.500	<10
Sodium	10000	9.9	anr							
Strontium	10	.3								
Sulfur	50	3.5								
Thallium	10	1.3	anr							
Tin	10	.7	anr							
Titanium	10	.5								
Tungsten	50	1.7								
Vanadium	50	.5	anr							

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JC95610
Account: BBLNYS - Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

File ID: SC100419M1.ICP Date Analyzed: 10/04/19 Methods: EPA 200.7, SW846 6010D
QC Limits: result < RL Run ID: MA47570 Units: ug/l

Time: / Sample ID:			18:48 CCB8		19:42 CCB9		20:41 CCB10		21:51 CCB11	
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final
Zinc	20	.2	anr							
Zirconium	10	.3								

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JC95610
Account: BBLNYS - Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

File ID: SC100419M1.ICP Date Analyzed: 10/04/19 Methods: EPA 200.7, SW846 6010D
QC Limits: result < RL Run ID: MA47570 Units: ug/l

Time:			22:50	
Sample ID:			CCB12	
Metal	RL	IDL	raw	final
Aluminum	200	14	anr	
Antimony	6.0	1.4	anr	
Arsenic	3.0	1.5	0.100	<3.0
Barium	200	.5	0.00	<200
Beryllium	1.0	.1	anr	
Bismuth	20	1.8		
Boron	100	.8	anr	
Cadmium	3.0	.3	0.100	<3.0
Calcium	5000	3.9	anr	
Cerium	100			
Chromium	10	.3	0.200	<10
Cobalt	50	.3	anr	
Copper	10	.6	anr	
Iron	100	2.6	anr	
Lead	3.0	1.6	-1.10	<3.0
Lithium	50	2.1		
Magnesium	5000	16	anr	
Manganese	15	.1	anr	
Molybdenum	20	.4		
Nickel	10	.5	anr	
Phosphorus	50	1.9		
Potassium	10000	79	anr	
Selenium	10	3	0.700	<10
Silicon	200	1.2		
Silver	10	.5	0.600	<10
Sodium	10000	9.9	anr	
Strontium	10	.3		
Sulfur	50	3.5		
Thallium	10	1.3	anr	
Tin	10	.7	anr	
Titanium	10	.5		
Tungsten	50	1.7		
Vanadium	50	.5	anr	

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JC95610
Account: BBLNYS - Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

File ID: SC100419M1.ICP Date Analyzed: 10/04/19 Methods: EPA 200.7, SW846 6010D
QC Limits: result < RL Run ID: MA47570 Units: ug/l

Time:			22:50	
Sample ID:			CCB12	
Metal	RL	IDL	raw	final
Zinc	20	.2	anr	
Zirconium	10	.3		

(*) Outside of QC limits
(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial Continuing Calibration Check

Login Number: JC95610
Account: BBLNYS - Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

File ID: SC100419M1.ICP Date Analyzed: 10/04/19 Methods: EPA 200.7, SW846 6010D
QC Limits: to % Recovery Run ID: MA47570 Units: ug/l

Time:		12:14	
Sample ID:	ICCV	ICCV1	
Metal	True	Results	% Rec
Aluminum	anr		
Antimony	anr		
Arsenic	2000	1920	96.0
Barium	2000	2010	100.5
Beryllium	anr		
Bismuth			
Boron	anr		
Cadmium	2000	1980	99.0
Calcium	anr		
Cerium			
Chromium	2000	2010	100.5
Cobalt	anr		
Copper	anr		
Iron	anr		
Lead	2000	2010	100.5
Lithium			
Magnesium	anr		
Manganese	anr		
Molybdenum			
Nickel	anr		
Phosphorus			
Potassium	anr		
Selenium	2000	1980	99.0
Silicon			
Silver	250	250	100.0
Sodium	anr		
Strontium			
Sulfur			
Thallium	anr		
Tin	anr		
Titanium			
Tungsten			
Vanadium	anr		

CALIBRATION CHECK STANDARDS SUMMARY
Initial Continuing Calibration Check

Login Number: JC95610
Account: BBLNYS - Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

File ID: SC100419M1.ICP Date Analyzed: 10/04/19 Methods: EPA 200.7, SW846 6010D
QC Limits: to % Recovery Run ID: MA47570 Units: ug/l

Time:		12:14	
Sample ID:	ICCV	ICCV1	
Metal	True	Results	% Rec
Zinc	anr		
Zirconium			

(*) Outside of QC limits
(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JC95610
Account: BBLNYS - Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

File ID: SC100419M1.ICP Date Analyzed: 10/04/19 Methods: EPA 200.7, SW846 6010D
QC Limits: 95 to 105 % Recovery Run ID: MA47570 Units: ug/l

Time:		12:00			13:39			14:33	
Sample ID:	ICV	ICV1		CCV	CCV1		CCV	CCV2	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Aluminum	anr								
Antimony	anr								
Arsenic	2000	1910	95.5	2000	1940	97.0	2000	1930	96.5
Barium	2000	2020	101.0	2000	2010	100.5	2000	2000	100.0
Beryllium	anr								
Bismuth									
Boron	anr								
Cadmium	2000	1990	99.5	2000	1990	99.5	2000	1980	99.0
Calcium	anr								
Cerium									
Chromium	2000	1990	99.5	2000	2020	101.0	2000	2020	101.0
Cobalt	anr								
Copper	anr								
Iron	anr								
Lead	2000	1910	95.5	2000	2030	101.5	2000	2020	101.0
Lithium									
Magnesium	anr								
Manganese	anr								
Molybdenum									
Nickel	anr								
Phosphorus									
Potassium	anr								
Selenium	2000	2020	101.0	2000	2000	100.0	2000	1990	99.5
Silicon									
Silver	250	252	100.8	250	251	100.4	250	250	100.0
Sodium	anr								
Strontium									
Sulfur									
Thallium	anr								
Tin	anr								
Titanium									
Tungsten									
Vanadium	anr								

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JC95610
Account: BBLNYS - Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

File ID: SC100419M1.ICP Date Analyzed: 10/04/19 Methods: EPA 200.7, SW846 6010D
QC Limits: 95 to 105 % Recovery Run ID: MA47570 Units: ug/l

Time:		12:00			13:39			14:33	
Sample ID:	ICV	ICV1		CCV	CCV1		CCV	CCV2	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Zinc	anr								
Zirconium									

(*) Outside of QC limits
(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JC95610
Account: BBLNYS - Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

File ID: SC100419M1.ICP Date Analyzed: 10/04/19 Methods: EPA 200.7, SW846 6010D
QC Limits: 95 to 105 % Recovery Run ID: MA47570 Units: ug/l

Time:		15:28			16:23			16:53	
Sample ID:	CCV	CCV3		CCV	CCV4		CCV	CCV5	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Aluminum	anr								
Antimony	anr								
Arsenic	2000	1920	96.0	2000	1900	95.0	2000	1890	94.5
Barium	2000	2010	100.5	2000	2000	100.0	2000	1980	99.0
Beryllium	anr								
Bismuth									
Boron	anr								
Cadmium	2000	1980	99.0	2000	1980	99.0	2000	1960	98.0
Calcium	anr								
Cerium									
Chromium	2000	2010	100.5	2000	2020	101.0	2000	2010	100.5
Cobalt	anr								
Copper	anr								
Iron	anr								
Lead	2000	2020	101.0	2000	2000	100.0	2000	1990	99.5
Lithium									
Magnesium	anr								
Manganese	anr								
Molybdenum									
Nickel	anr								
Phosphorus									
Potassium	anr								
Selenium	2000	1970	98.5	2000	1950	97.5	2000	1930	96.5
Silicon									
Silver	250	250	100.0	250	250	100.0	250	248	99.2
Sodium	anr								
Strontium									
Sulfur									
Thallium	anr								
Tin	anr								
Titanium									
Tungsten									
Vanadium	anr								

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JC95610
Account: BBLNYS - Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

File ID: SC100419M1.ICP Date Analyzed: 10/04/19 Methods: EPA 200.7, SW846 6010D
QC Limits: 95 to 105 % Recovery Run ID: MA47570 Units: ug/l

Time:		15:28			16:23			16:53	
Sample ID:	CCV	CCV3		CCV	CCV4		CCV	CCV5	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Zinc	anr								
Zirconium									

(*) Outside of QC limits
(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JC95610
Account: BBLNYS - Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

File ID: SC100419M1.ICP Date Analyzed: 10/04/19 Methods: EPA 200.7, SW846 6010D
QC Limits: 95 to 105 % Recovery Run ID: MA47570 Units: ug/l

Time:		17:49			18:43			19:37	
Sample ID:	CCV	CCV6		CCV	CCV7		CCV	CCV8	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Aluminum	anr								
Antimony	anr								
Arsenic	2000	1890	94.5	2000	1880	94.0	2000	1880	94.0
Barium	2000	1990	99.5	2000	2000	100.0	2000	1990	99.5
Beryllium	anr								
Bismuth									
Boron	anr								
Cadmium	2000	1980	99.0	2000	1990	99.5	2000	1980	99.0
Calcium	anr								
Cerium									
Chromium	2000	1990	99.5	2000	1980	99.0	2000	1980	99.0
Cobalt	anr								
Copper	anr								
Iron	anr								
Lead	2000	1990	99.5	2000	1980	99.0	2000	1980	99.0
Lithium									
Magnesium	anr								
Manganese	anr								
Molybdenum									
Nickel	anr								
Phosphorus									
Potassium	anr								
Selenium	2000	1940	97.0	2000	1940	97.0	2000	1930	96.5
Silicon									
Silver	250	248	99.2	250	247	98.8	250	247	98.8
Sodium	anr								
Strontium									
Sulfur									
Thallium	anr								
Tin	anr								
Titanium									
Tungsten									
Vanadium	anr								

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JC95610
Account: BBLNYS - Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

File ID: SC100419M1.ICP Date Analyzed: 10/04/19 Methods: EPA 200.7, SW846 6010D
QC Limits: 95 to 105 % Recovery Run ID: MA47570 Units: ug/l

Time:		17:49			18:43			19:37	
Sample ID:	CCV	CCV6		CCV	CCV7		CCV	CCV8	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Zinc	anr								
Zirconium									

(*) Outside of QC limits
(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JC95610
Account: BBLNYS - Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

File ID: SC100419M1.ICP Date Analyzed: 10/04/19 Methods: EPA 200.7, SW846 6010D
QC Limits: 95 to 105 % Recovery Run ID: MA47570 Units: ug/l

Time:		20:36			21:46			22:45	
Sample ID:	CCV	CCV9		CCV	CCV10		CCV	CCV11	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Aluminum	anr								
Antimony	anr								
Arsenic	2000	1890	94.5	2000	1880	94.0	2000	1870	93.5
Barium	2000	2010	100.5	2000	2000	100.0	2000	1990	99.5
Beryllium	anr								
Bismuth									
Boron	anr								
Cadmium	2000	1990	99.5	2000	1990	99.5	2000	1990	99.5
Calcium	anr								
Cerium									
Chromium	2000	2000	100.0	2000	1990	99.5	2000	1990	99.5
Cobalt	anr								
Copper	anr								
Iron	anr								
Lead	2000	1990	99.5	2000	1980	99.0	2000	1980	99.0
Lithium									
Magnesium	anr								
Manganese	anr								
Molybdenum									
Nickel	anr								
Phosphorus									
Potassium	anr								
Selenium	2000	1940	97.0	2000	1930	96.5	2000	1930	96.5
Silicon									
Silver	250	249	99.6	250	248	99.2	250	249	99.6
Sodium	anr								
Strontium									
Sulfur									
Thallium	anr								
Tin	anr								
Titanium									
Tungsten									
Vanadium	anr								

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: JC95610
Account: BBLNYS - Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

File ID: SC100419M1.ICP Date Analyzed: 10/04/19 Methods: EPA 200.7, SW846 6010D
QC Limits: 95 to 105 % Recovery Run ID: MA47570 Units: ug/l

Time:		20:36			21:46			22:45	
Sample ID:	CCV	CCV9		CCV	CCV10		CCV	CCV11	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Zinc	anr								
Zirconium									

(*) Outside of QC limits
(anr) Analyte not requested

HIGH STANDARD CHECK SUMMARY

Login Number: JC95610
Account: BBLNYS - Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

File ID: SC100419M1.ICP Date Analyzed: 10/04/19 Methods: EPA 200.7, SW846 6010D
QC Limits: 90 to 110 % Recovery Run ID: MA47570 Units: ug/l

Time:		12:57			13:28	
Sample ID:	HSTD	HSTD1		HSTD	HSTD2	
Metal	True	Results	% Rec	True	Results	% Rec
Aluminum	anr					
Antimony						
Arsenic				8000	7570	94.6
Barium				8000	8520	106.5
Beryllium						
Bismuth						
Boron						
Cadmium				8000	8220	102.8
Calcium	anr					
Cerium						
Chromium				8000	8400	105.0
Cobalt						
Copper						
Iron	anr					
Lead				8000	7930	99.1
Lithium						
Magnesium	anr					
Manganese						
Molybdenum						
Nickel						
Phosphorus						
Potassium	anr					
Selenium				8000	8290	103.6
Silicon						
Silver				625	639	102.2
Sodium	anr					
Strontium						
Sulfur						
Thallium						
Tin						
Titanium						
Tungsten						
Vanadium						

HIGH STANDARD CHECK SUMMARY

Login Number: JC95610
Account: BBLNYS - Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

File ID: SC100419M1.ICP Date Analyzed: 10/04/19 Methods: EPA 200.7, SW846 6010D
QC Limits: 90 to 110 % Recovery Run ID: MA47570 Units: ug/l

Time:		12:57			13:28	
Sample ID:	HSTD	HSTD1		HSTD	HSTD2	
Metal	True	Results	% Rec	True	Results	% Rec
Zinc						
Zirconium						

(*) Outside of QC limits
(anr) Analyte not requested

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JC95610
Account: BBLNYS - Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

File ID: SC100419M1.ICP Date Analyzed: 10/04/19 Methods: EPA 200.7, SW846 6010D
QC Limits: CRI 80-120% CRIA 80-120% Run ID: MA47570 Units: ug/l

Time:				13:49		13:54	
Sample ID:	CRI	CRIA	CRID	CRI1		CRID2	
Metal	True	True	True	Results	% Rec	Results	% Rec
Aluminum	200	500	100	anr			
Antimony	6.0	20	3.0	anr			
Arsenic	8.0	20	3.0	7.60	95.0	3.10	103.3
Barium	200		4.0	203	101.5	4.20	105.0
Beryllium	2.0		1.0	anr			
Bismuth	20						
Boron	100		10	anr			
Cadmium	3.0		1.0	2.90	96.7	0.900	90.0
Calcium	5000	2000	1000	anr			
Cerium							
Chromium	10		2.0	10.5	105.0	2.30	115.0
Cobalt	50		3.0	anr			
Copper	10		2.0	anr			
Iron	100	500		anr			
Lead	3.0	20	2.5	2.70	90.0	-0.600U	0.0* (a)
Lithium	50						
Magnesium	5000	2000	100	anr			
Manganese	15		3.0	anr			
Molybdenum	20						
Nickel	10		4.0	anr			
Phosphorus	50						
Potassium	5000		2000	anr			
Selenium	10	20	5.0	10.5	105.0	4.60	92.0
Silicon	200						
Silver	5.0		2.0	4.80	96.0	-0.400U	0.0* (a)
Sodium	5000		1000	anr			
Strontium	10						
Sulfur	50						
Thallium	10		2.0	anr			
Tin	10			anr			
Titanium	10						
Tungsten	50						
Vanadium	50		2.0	anr			

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JC95610
Account: BBLNYS - Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

File ID: SC100419M1.ICP Date Analyzed: 10/04/19 Methods: EPA 200.7, SW846 6010D
QC Limits: CRI 80-120% CRIA 80-120% Run ID: MA47570 Units: ug/l

Time:				13:49		13:54	
Sample ID:	CRI	CRIA	CRID	CRI1		CRID2	
Metal	True	True	True	Results	% Rec	Results	% Rec
Zinc	20		10	anr			
Zirconium	10						

(*) Outside of QC limits
(anr) Analyte not requested
(a) No samples reported for this element at this RL in the area bracketed by this QC.

INTERFERING ELEMENT CHECK STANDARDS SUMMARY
Part 1 - ICSA and ICSAB Standards

Login Number: JC95610
Account: BBLNYS - Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

File ID: SC100419M1.ICP Date Analyzed: 10/04/19 Methods: EPA 200.7, SW846 6010D
QC Limits: 80 to 120 % Recovery Run ID: MA47570 Units: ug/l

Time:			13:59		14:04		16:43		16:48	
Sample ID:	ICSA	ICSAB	ICSA1		ICSAB1		ICSA2		ICSAB2	
Metal	True	True	Results	% Rec	Results	% Rec	Results	% Rec	Results	% Rec
Aluminum	500000	500000	503000	100.6	497000	99.4	499000	99.8	497000	99.4
Antimony		1000	-4.20		971	97.1	-2.70		957	95.7
Arsenic		1000	1.10		1010	101.0	0.600		992	99.2
Barium		500	0.500		506	101.2	0.500		501	100.2
Beryllium		500	0.600		503	100.6	0.600		506	101.2
Bismuth		500	-3.70		499	99.8	-5.00		487	97.4
Boron		500	-1.50		484	96.8	-4.00		471	94.2
Cadmium		1000	0.400		1000	100.0	0.400		991	99.1
Calcium	400000	400000	403000	100.8	382000	95.5	400000	100.0	378000	94.5
Cerium			24.9		10.7		24.9		7.10	
Chromium		500	1.40		490	98.0	1.30		486	97.2
Cobalt		500	-0.400		488	97.6	-0.300		475	95.0
Copper		500	0.500		508	101.6	0.700		497	99.4
Iron	200000	200000	199000	99.5	185000	92.5	200000	100.0	186000	93.0
Lead		1000	0.600		888	88.8	0.200		876	87.6
Lithium		500	-10.3		505	101.0	-11.9		497	99.4
Magnesium	500000	500000	511000	102.2	500000	100.0	509000	101.8	499000	99.8
Manganese		500	0.100		508	101.6	0.100		507	101.4
Molybdenum		500	1.90		468	93.6	2.10		454	90.8
Nickel		1000	2.70		965	96.5	2.80		955	95.5
Phosphorus		500	-12.6		468	93.6	-14.7		453	90.6
Potassium			161		195		114		126	
Selenium		1000	0.700		999	99.9	1.20		971	97.1
Silicon		500	7.20		500	100.0	10.1		493	98.6
Silver		1000	-1.00		1050	105.0	2.50		1030	103.0
Sodium			87.2		98.9		11.4		29.2	
Strontium		500	-2.10		510	102.0	-2.20		507	101.4
Sulfur		500	5.40		485	97.0	6.90		467	93.4
Thallium		1000	-0.200		965	96.5	0.300		956	95.6
Tin		500	-2.00		449	89.8	-1.50		436	87.2
Titanium		500	-1.00		487	97.4	-0.900		478	95.6
Tungsten		500	-6.50		437	87.4	-7.40		425	85.0
Vanadium		500	-5.00		490	98.0	-5.10		482	96.4

INTERFERING ELEMENT CHECK STANDARDS SUMMARY
Part 1 - ICSA and ICSAB Standards

Login Number: JC95610
Account: BBLNYS - Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

File ID: SC100419M1.ICP Date Analyzed: 10/04/19 Methods: EPA 200.7, SW846 6010D
QC Limits: 80 to 120 % Recovery Run ID: MA47570 Units: ug/l

Time:			13:59		14:04		16:43		16:48	
Sample ID:	ICSA	ICSAB	ICSA1		ICSAB1		ICSA2		ICSAB2	
Metal	True	True	Results	% Rec	Results	% Rec	Results	% Rec	Results	% Rec
Zinc		1000	1.70		950	95.0	1.80		942	94.2
Zirconium		500	2.20		490	98.0	1.90		486	97.2

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: JC95610
Account: BBLNYS - Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

QC Batch ID: MP17700
Matrix Type: LEACHATE

Methods: SW846 6010D
Units: mg/l

Prep Date:				10/03/19		10/03/19	
Metal	RL	IDL	MDL	MB raw	final	MB raw	final
Aluminum	1.0	.072	.23				
Antimony	0.50	.007	.024				
Arsenic	0.50	.0075	.014	0.00060	<0.50	0.0011	<0.50
Barium	1.0	.0025	.067	0.0028	<1.0	-0.00080	<1.0
Beryllium	0.010	.0005	.0025				
Bismuth	0.10	.009	.02				
Boron	0.50	.004	.31				
Cadmium	0.020	.0015	.005	-0.00030	<0.020	-0.0013	<0.020
Calcium	25	.02	.5				
Chromium	0.050	.0015	.01	0.0023	<0.050	0.0015	<0.050
Cobalt	0.25	.0015	.013				
Copper	0.050	.003	.03				
Iron	0.50	.013	.16				
Lead	0.50	.008	.009	-0.0033	<0.50	-0.0052	<0.50
Lithium	0.25	.011	.037				
Magnesium	25	.082	.7				
Manganese	0.075	.0005	.007				
Molybdenum	0.10	.002	.018				
Nickel	0.050	.0025	.0085				
Phosphorus	0.25	.0095	.089				
Potassium	50	.4	1				
Selenium	0.50	.015	.025	-0.0026	<0.50	-0.0015	<0.50
Silicon	1.0	.006	.51				
Silver	0.050	.0025	.0095	0.0031	<0.050	0.0025	<0.050
Sodium	50	.05	2.8				
Strontium	0.050	.0015	.005				
Sulfur	0.25	.018	.23				
Thallium	0.50	.0065	.009				
Tin	0.050	.0035	.019				
Titanium	0.050	.0025	.013				
Tungsten	0.25	.0085	.2				
Vanadium	0.25	.0025	.009				
Zinc	0.10	.001	.035				

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: JC95610
Account: BBLNYS - Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

QC Batch ID: MP17700 Methods: SW846 6010D
Matrix Type: LEACHATE Units: mg/l

Prep Date:				10/03/19		10/03/19	
Metal	RL	IDL	MDL	MB raw	final	MB raw	final
Zirconium	0.050	.0015	.021				

Associated samples MP17700: JC95610-1

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: JC95610
Account: BBLNYS - Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

QC Batch ID: MP17700
Matrix Type: LEACHATE

Methods: SW846 6010D
Units: mg/l

Prep Date: 10/03/19

Metal	JC95821-11A Original	MS	Spikelot MPSPK2	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic	0.0	2.0	2.0	100.0	75-125
Barium	0.51	2.5	2.0	99.5	75-125
Beryllium	anr				
Bismuth					
Boron	anr				
Cadmium	0.0	2.0	2.0	100.0	75-125
Calcium					
Chromium	0.0	2.0	2.0	100.0	75-125
Cobalt					
Copper	anr				
Iron					
Lead	0.040	2.1	2.0	103.0	75-125
Lithium					
Magnesium					
Manganese					
Molybdenum					
Nickel	anr				
Phosphorus					
Potassium					
Selenium	0.0	2.0	2.0	100.0	75-125
Silicon					
Silver	0.0036	0.26	0.25	102.6	75-125
Strontium					
Sulfur					
Thallium					
Tin					
Titanium					
Tungsten					
Vanadium					
Zinc	anr				
Zirconium					

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: JC95610
Account: BBLNYS - Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

QC Batch ID: MP17700
Matrix Type: LEACHATE

Methods: SW846 6010D
Units: mg/l

Prep Date: 10/03/19

Metal	JC95821-11A Original MS	Spikelot MPSPK2	% Rec	QC Limits

Associated samples MP17700: JC95610-1

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: JC95610
Account: BBLNYS - Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

QC Batch ID: MP17700
Matrix Type: LEACHATE

Methods: SW846 6010D
Units: mg/l

Prep Date: 10/03/19

Metal	JC95821-11A Original	MSD	Spikelot MPSPK2	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	0.0	1.9	2.0	95.0	5.1	20
Barium	0.51	2.4	2.0	94.5	4.1	20
Beryllium	anr					
Bismuth						
Boron	anr					
Cadmium	0.0	2.0	2.0	100.0	0.0	20
Calcium						
Chromium	0.0	2.0	2.0	100.0	0.0	20
Cobalt						
Copper	anr					
Iron						
Lead	0.040	2.0	2.0	98.0	4.9	20
Lithium						
Magnesium						
Manganese						
Molybdenum						
Nickel	anr					
Phosphorus						
Potassium						
Selenium	0.0	2.0	2.0	100.0	0.0	20
Silicon						
Silver	0.0036	0.26	0.25	102.6	0.0	20
Strontium						
Sulfur						
Thallium						
Tin						
Titanium						
Tungsten						
Vanadium						
Zinc	anr					
Zirconium						

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: JC95610
Account: BBLNYS - Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

QC Batch ID: MP17700
Matrix Type: LEACHATE
Methods: SW846 6010D
Units: mg/l

Prep Date: 10/03/19

Metal	JC95821-11A Original MSD	Spikelot MPSPK2	% Rec	MSD RPD	QC Limit

Associated samples MP17700: JC95610-1

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: JC95610
Account: BBLNYS - Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

QC Batch ID: MP17700
Matrix Type: LEACHATE

Methods: SW846 6010D
Units: mg/l

Prep Date:			10/03/19				10/03/19	
Metal	BSP Result	Spikelot MPSPK2	% Rec	QC Limits	BSP Result	Spikelot MPSPK2	% Rec	QC Limits
Aluminum								
Antimony								
Arsenic	1.9	2.0	95.0	80-120	1.8	2.0	90.0	80-120
Barium	2.0	2.0	100.0	80-120	2.0	2.0	100.0	80-120
Beryllium	anr							
Bismuth								
Boron	anr							
Cadmium	2.0	2.0	100.0	80-120	2.0	2.0	100.0	80-120
Calcium								
Chromium	2.0	2.0	100.0	80-120	2.0	2.0	100.0	80-120
Cobalt								
Copper	anr							
Iron								
Lead	2.0	2.0	100.0	80-120	2.0	2.0	100.0	80-120
Lithium								
Magnesium								
Manganese								
Molybdenum								
Nickel	anr							
Phosphorus								
Potassium								
Selenium	2.0	2.0	100.0	80-120	1.9	2.0	95.0	80-120
Silicon								
Silver	0.26	0.25	104.0	80-120	0.25	0.25	100.0	80-120
Sodium								
Strontium								
Sulfur								
Thallium								
Tin								
Titanium								
Tungsten								
Vanadium								
Zinc	anr							

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: JC95610
Account: BBLNYS - Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

QC Batch ID: MP17700
Matrix Type: LEACHATE

Methods: SW846 6010D
Units: mg/l

Prep Date: 10/03/19 10/03/19

Metal	BSP Result	Spikelot MPSPK2	% Rec	QC Limits	BSP Result	Spikelot MPSPK2	% Rec	QC Limits
Zirconium								

Associated samples MP17700: JC95610-1

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: JC95610
Account: BBLNYS - Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

QC Batch ID: MP17700
Matrix Type: LEACHATE

Methods: SW846 6010D
Units: ug/l

Prep Date: 10/03/19

Metal	JC95821-11A Original	SDL 5:25	%DIF	QC Limits
Aluminum				
Antimony				
Arsenic	0.00	0.00	NC	0-10
Barium	506	492	2.8	0-10
Beryllium	anr			
Bismuth				
Boron	anr			
Cadmium	0.00	0.00	NC	0-10
Calcium				
Chromium	0.00	0.00	NC	0-10
Cobalt				
Copper	anr			
Iron				
Lead	40.2	0.00	100.0(a)	0-10
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel	anr			
Phosphorus				
Potassium				
Selenium	0.00	0.00	NC	0-10
Silicon				
Silver	3.60	16.6	361.1(a)	0-10
Sodium				
Strontium				
Sulfur				
Thallium				
Tin				
Titanium				
Tungsten				
Vanadium				
Zinc	anr			

SERIAL DILUTION RESULTS SUMMARY

Login Number: JC95610
Account: BBLNYS - Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

QC Batch ID: MP17700
Matrix Type: LEACHATE

Methods: SW846 6010D
Units: ug/l

Prep Date: 10/03/19

Metal	JC95821-11A Original SDL 5:25 %DIF	QC Limits
Zirconium		

Associated samples MP17700: JC95610-1

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested
(a) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: JC95610
Account: BBLNYS - Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

QC Batch ID: MP17705 Methods: SW846 7470A
Matrix Type: LEACHATE Units: mg/l

Prep Date: 10/04/19

Metal	RL	IDL	MDL	MB raw	final
Mercury	0.00020	.000023	.000095	0.000046	<0.00020

Associated samples MP17705: JC95610-1

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: JC95610
Account: BBLNYS - Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

QC Batch ID: MP17705
Matrix Type: LEACHATE

Methods: SW846 7470A
Units: mg/l

Prep Date: 10/04/19

Metal	JC95821-11A Original	MS	Spikelot HGPW3	% Rec	QC Limits
Mercury	0.0	0.0021	0.0020	105.0	75-125

Associated samples MP17705: JC95610-1

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: JC95610
Account: BBLNYS - Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

QC Batch ID: MP17705 Methods: SW846 7470A
Matrix Type: LEACHATE Units: mg/l

Prep Date: 10/04/19

Metal	JC95821-11A Original	MSD	Spikelot HGPW3	% Rec	MSD RPD	QC Limit
Mercury	0.0	0.0022	0.0020	110.0	4.7	20

Associated samples MP17705: JC95610-1

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: JC95610
Account: BBLNYS - Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

QC Batch ID: MP17705
Matrix Type: LEACHATE

Methods: SW846 7470A
Units: mg/l

Prep Date: 10/04/19

Metal	BSP Result	Spikelot HGPW3	% Rec	QC Limits
Mercury	0.0022	0.0020	110.0	80-120

Associated samples MP17705: JC95610-1

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

Instrument Detection Limits

Job Number: JC95610
Account: BBLNYS Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

Instrument ID: LEEMANHG7 **Effective Date:** 08/01/19

Analyte	IDL ug/l
Mercury	.0238

The above applies to the following instrument runs:
MA47567

Instrument Detection Limits

Job Number: JC95610
Account: BBLNYS Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

Instrument ID: SSTRACE3 **Effective Date:** 02/18/19

Analyte	IDL ug/l
Aluminum	14.3
Antimony	1.4
Arsenic	1.5
Barium	.5
Beryllium	.1
Bismuth	1.8
Boron	.8
Cadmium	.3
Calcium	3.9
Chromium	.3
Cobalt	.3
Copper	.6
Iron	2.6
Lead	1.6
Lithium	2.1
Magnesium	16.3
Manganese	.1
Molybdenum	.4
Nickel	.5
Phosphorus	1.9
Potassium	79
Selenium	3
Silicon	1.2
Silver	.5
Sodium	9.9
Sulfur	3.5
Strontium	.3
Thallium	1.3
Tin	.7
Titanium	.5
Tungsten	1.7
Vanadium	.5
Yttrium	5
Zinc	.2
Zirconium	.3

The above applies to the following instrument runs:
MA47570

Instrument Linear Ranges

Job Number: JC95610
Account: BBLNYS Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

Instrument ID: LEEMANHG7 **Effective Date:** 03/10/17

Analyte	Linear Range ug/l
Mercury	5

The above applies to the following instrument runs:
MA47567

Instrument Linear Ranges

Job Number: JC95610
Account: BBLNYS Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

Instrument ID: SSTRACE3 **Effective Date:** 08/22/19

Analyte	Linear Range ug/l
Aluminum	300000
Antimony	8000
Arsenic	8000
Barium	8000
Beryllium	8000
Bismuth	8000
Boron	8000
Cadmium	8000
Calcium	200000
Cerium	8000
Chromium	8000
Cobalt	8000
Copper	8000
Iron	200000
Lead	8000
Lithium	8000
Magnesium	300000
Manganese	8000
Molybdenum	8000
Nickel	8000
Palladium	8000
Phosphorus	8000
Potassium	200000
Selenium	8000
Silicon	25000
Silver	625
Sodium	200000
Sulfur	100000
Strontium	8000
Thallium	8000
Tin	8000
Titanium	8000
Tungsten	8000
Vanadium	8000
Zinc	8000
Zirconium	8000

The above applies to the following instrument runs:
MA47570

General Chemistry

QC Data Summaries

Includes the following where applicable:

- Method Blank and Blank Spike Summaries
- Duplicate Summaries
- Matrix Spike Summaries
- Percent Solids Raw Data Summary

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: JC95610
Account: BBLNYS - Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Corrosivity as pH	GN875	JC95639-5A	su	10.43	10.56	1.2	0-5%
Solids, Percent	GN708	JC95922-2	%	79.5	79.9	0.5	0-5%

Associated Samples:
Batch GN708: JC95610-1
Batch GN875: JC95610-1
(*) Outside of QC limits

Percent Solids Raw Data Summary

Job Number: JC95610
Account: BBLNYS Arcadis
Project: National Grid, Philly Coke, Philadelphia, PA

Sample: JC95610-1 **Analyzed:** 02-OCT-19 by BG **Method:** SM2540 G 18TH ED MOD
ClientID: WC-092519

Wet Weight (Total)	33.21	g
Tare Weight	24.63	g
Dry Weight (Total)	30.37	g
Solids, Percent	66.9	%

Please print or type. 306120

Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST	1 Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Manifest Tracking Number
	PAD 003 427 903	1	(800) 424-9300	020997921 JJK

5. Generator's Name and Mailing Address
Philadelphia Gas Co, Inc. c/o Niagara Mohawk Power Corp.
300 Erie Blvd. West, Syracuse, NY 13202
Generator's Phone: (315)428-5731 Attn: Brian Stearns

Generator's Site Address (if different than mailing address)
4301 Richmond Street
Philadelphia, PA 19137

6. Transporter 1 Company Name
Freehold Cartage Inc.
U.S. EPA ID Number
NJD 054 128 164

7. Transporter 2 Company Name
U.S. EPA ID Number

8. Designated Facility Name and Site Address
Clean Earth of North Jersey
105 Jacobus Ave., S. Kearny, NJ 07032
973 344-4004
Facility's Phone:
U.S. EPA ID Number
NJD 991 291 103

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes		
X	1 RQ, NA3077, Hazardous Waste, Solid, N.O.S., 9, PG III (contains lead)	4	DM	EST 1600	P	D008	L	
	2							
	3.							
	4							

14. Special Handling Instructions and Additional Information
1: App# 1853001626 container size: 55 GAL

EMERGENCY RESPONSE: (800) 424-9300 CHEMTREC
Job# WILM-MISC1-

15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name: SUSAN N SWANSON
Signature: Susan M Swanson
Month: 12 Day: 17 Year: 20

16. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter signature (for exports only): Date leaving U.S.:

17. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: Michael Brochon
Signature:
Month: 12 Day: 17 Year: 20
Transporter 2 Printed/Typed Name:
Signature:
Month: Day: Year:

18. Discrepancy
18a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Manifest Reference Number:

18b. Alternate Facility (or Generator)
U.S. EPA ID Number
Facility's Phone:
Received Pending Manifest Review/Quality Control Data

18c. Signature of Alternate Facility (or Generator)
Month: Day: Year:

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

1	2	3.	4
H10			

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a
Printed/Typed Name: Doug Morgan
Signature:
Month: D Day: 17 Year: 20

GENERATOR | TRANSPORTER | INT'L | DESIGNATED FACILITY

EPA Form 8700-22 (Rev. 12-17) Previous editions are obsolete.

DESIGNATED FACILITY TO GENERATOR

CLEANEARTH
Faster, smarter, greener solutions.™

115 Jacobus Avenue, Kearny, NJ 07032 973-344-4004

Land Disposal Notification and Certification Form

Generator Name	
Philadelphia Coke Co. Inc. c/o Niagara Mohawk Power Corporation - Richmond St., Philadelphia PA	
EPA ID # PAD 000 427 906	Manifest # 020997921 JJK

1. "If the waste(s) is subject to any California List Restrictions, enter the letter from page 2 (either A, B1, B2, B3, C or D) next to each restriction that is applicable and also list the applicable approval code number(s)."

App. Code	HOCs	App. Code	PCBs	App. Code	Metals

See reverse for California List Restrictions

2. Identify ALL US EPA hazardous waste codes that apply to this waste shipment, as defined by 40 CFR 261, and 6NYCRR 376. For each waste code, identify the corresponding subcategory, or check NONE if the waste code has no sub-category. Also check which treatment standards apply. If spent solvent waste codes are listed on this form (F001, F002, F003, F004, F005), please refer to the instructions on the reverse (top) of this page. If D001, D002, D012 through D043, or F039 codes apply (except for D001, Ignitable Liquid, High Toc), complete pages 3 and 4 of this form.

3. Manifest Line Number	4. Approval Number	5. US EPA Hazardous Waste Number	6. Wastewater (WW) or Non-Wastewater (NWW)	7. Subcategory Enter the Subcategory Description. If not applicable, CHECK NONE DESCRIPTION	NONE	8. APPLICABLE TREATMENT STANDARDS 8a. Performance Based 268.40	8b. Specified Technology: If applicable enter treatment code(s). 40 CFR 268.42 TABLE 1	9. How must the waste be managed? Enter the letter from page 2
1	193081 626	D008	NWW	Non-battery	☐	X		A
					☐			
					☐			
					☐			
					☐			
					☐			
					☐			
					☐			
					☐			
					☐			

☐ Check here to list additional US EPA waste code(s) and subcategory(s), and use a supplemental sheet.

I hereby certify that all information submitted in this and all associated documents is complete and accurate, to the best of my knowledge and information.

Signature	Title	Date
Susan M Swanson	Project Manager	2/17/20

Clean Earth of North Jersey, Inc. Underlying Hazardous Constituent (UHC) LDR Form

GENERATOR NAME: Philadelphia Coke c/0 Niagara Mohawk Power Corp.- Richmond St. Phil, PA **MANIFEST DOC. NO.:** 20997921 JJK

APPROVAL CODE #: 193081626

If D001through D043 requires treatment to 268.48 standards, then each underlying hazardous constituent present in the waste at the point of generation, and at a level above the UTS constituent specific treatment standard, must be listed. Write the letter (A,B1,B2,C or D) which corresponds to the letter found on Clean Earth of North Jersey, Inc. LDR Notification and Certification Form (page 2), beside each constituent present, to properly described how the constituent(s) must be managed under 40 CFR 268.7. If no underlying hazardous constituents are present, please check appropriate section on Page 2 of this form.

CONSTITUENT	HOW MUST CONSISTUENT BE MANAGED	WW (mg/l)	NWW (mg/kg)	CONSTITUENT	HOW MUST CONSISTUENT BE MANAGED	WW (mg/l)	NWW (mg/kg)
ORGANIC CONSTITUENTS				1,2-Dibromo-3-Chloropropane		0.11000	15.000
Acenaphthylene		0.05900	3.400	1,2-Dibromoethane (Ethylene dibromide)		0.02800	15.000
Acenaphthene		0.05900	3.400	Dibromomethane		0.11000	15.000
Acetone		0.28000	160.000	2,4-Dichlorophenoxyacetic acid (2,4-D)		0.72000	10.000
Acetonitrile		5.60000	38.000	o,p-DDD		0.02300	0.087
Acetophenone		0.01000	9.700	p,p-DDD		0.02300	0.087
2-Acetylaminofluorene		0.05900	140.000	o,p-DDE		0.03100	0.087
Acrolein		0.29000	NA	p,p-DDE		0.03100	0.087
Acrylamide		19.000	23.000	o,p-DDT		0.00390	0.087
Acrylonitrile		0.24000	84.000	p,p-DDT		0.00390	0.087
Aldicard sulfone		0.05600	0.280	Dibenzo(a,h) anthracene		0.05500	8.200
Aldrin		0.02100	0.066	Dibenzo(a,e)pyrene		0.06100	NA
4-Aminobiphenyl		0.13000	NA	m-Dichlorobenzene		0.03600	6.000
Aniline		0.81000	14.000	o-Dichlorobenzene		0.08800	6.000
Anthracene		0.05900	3.400	p-Dichlorobenzene		0.09000	6.000
Aramite		0.36000	NA	Dichlorodifluoromethane		0.23000	7.200
Barban		0.05600	1.400	1,1-Dichloroethane		0.05900	6.000
alpha-BHC		0.00014	0.066	1,2-Dichloroethane		0.21000	6.000
beta-BHC		0.00014	0.066	1,1-Dichloroethylene		0.02500	6.000
delta-BHC		0.02300	0.066	trans-1,2-Dichloroethylene		0.05400	30.000
gamma-BHC (Lindane)		0.00170	0.066	2,4-Dichlorophenol		0.04400	14.000
Bendiocarb		0.05600	1.400	2,6-Dichlorophenol		0.04400	14.000
Benomyl		0.05600	1.400	1,2-Dichloropropane		0.85000	18.000
Benzene		0.14000	10.000	cis-1,3-Dichloropropylene		0.03600	18.000
Benz (a) anthracene		0.05900	3.400	trans-1,3-Dichloropropylene		0.03600	18.000
Benzal chloride		0.05500	6.000	Dieldrin		0.01700	0.130
Benzo (b) fluoranthene		0.11000	6.800	Diethyl phthalate		0.20000	28.000
Benzo (k) fluorathene		0.11000	6.800	p-Dimethylaminoazobenzene		0.13000	NA
Benzo (g,h,i) perylene		0.00550	1.800	2,4-Dimethyl phenol		0.03600	14.000
Benzo (a) pyrene		0.06100	3.400	Dimethyl phthalate		0.04700	28.000
Bromodichloromethane		0.35000	15.000	Di-n-butyl phthalate		0.05700	28.000
Bromoform (Tribromomethane)		0.63000	15.000	1,4-Dinitrobenzene		0.32000	2.300
Bromomethane (methyl bromide)		0.11000	15.000	4,6-Dinitro-o-cresol		0.28000	160.000
4-Bromophenyl phenyl ether		0.05500	15.000	2,4-Dinitrophenol		0.12000	160.000
n-Butanol (n-Butyl alcohol)		5.60000	2.600	2,4-Dinitrotoluene		0.32000	140.000
Butylate		0.04200	1.400	2,6-Dinitrotoluene		0.55000	28.000
Butyl benzyl phthalate		0.01700	28.000	Di-n-octyl phthalate		0.01700	28.000
2-sec-Butyl-4,6-dinitrophenol (Dinoseb)		0.06600	2.500	Di-n-propylnitrosoamine		0.40000	14.000
Carbaryl		0.00600	0.140	Dithiocarbamates (Total)			28.000
Carbendazim		0.05600	1.400	1,4-Dioxane		12.00000	170.000
Carbofuran		0.00600	0.140	Diphenyl amine		0.92000	13.000
Carbofuran phenol		0.05600	1.400	Diphenylnitrosamine		0.92000	13.000
Carbon disulfide		3.80000	4.800[1]	1,2-Diphenyl hydrazine		0.08700	NA
Carbon tetrachloride		0.05700	6.000	Disulfoton		0.01700	6.200
Carbosulfan		0.02800	1.400	Endosulfan I		0.02300	0.066
Chlordane (alpha & gamma)		0.00330	0.260	Endosulfan II		0.02900	0.130
p-Chloroaniline		0.46000	16	Endosulfan sulfate		0.02900	0.130
Chlorobenzene		0.05700	6.000	Endrin		0.00280	0.130
Chlorobenzilate		0.10000	NA	Endrin aldehyde		0.02500	0.130
2-chloro-1,3-butadiene		0.05700	0.280	EPTC		0.04200	1.400
Chlorodibromomethane		0.05700	15.000	Ethyl acetate		0.34000	33.000
Chloroethane		0.27000	6.000	Ethyl benzene		0.05700	10.000
bis-(2-Chloroethoxy) methane		0.03600	7.200	Ethyl cyanide (Propanenitrile)		0.24000	360.000
bis-(2-Chloroethyl) ether		0.03300	6	Ethyl ether		0.12000	160.000
Chloroform		0.04600	6	bis-(2-Ethylhexyl) phthalate		0.28000	28.000
bis-(2-Chloroisopropyl) ether		0.05500	7.2	Ethyl methacrylate		0.14000	160.000
p-Chloro-m-cresol		0.01800	14.000	Ethylene oxide		0.12000	NA
2-Chloroethyl Vinyl ether		0.06200	NA	Famphur		0.01700	15.000
Chloromethane (methyl chloride)		0.19000	30.000	Fluoranthene		0.06800	3.400
2-Chloronaphthalene		0.05500	5.600	Fluorene		0.05900	3.400
2-Chlorophenol		0.04400	5.700	Formetanate hydrochloride		0.05600	1.400
3-Chloropropylene		0.03600	30.000	Heptachlor		0.00120	0.066
Chrysene		0.05900	3.400	Heptachlor epoxide		0.01600	0.066
m-Cresol		0.77000	5.600	Hexachlorobenzene		0.05500	10.000
o-Cresol		0.11000	5.600	Hexachlorobutadiene		0.05500	5.600
p-Cresol		0.77000	5.600	Hexachlorocyclopentadiene		0.05700	2.400
m-Cumenyl methylcarbamate		0.05600	1.400	Hexachlorodibenzo-furans		0.000063	0.001
Cyclohexanone		0.36000	0.750[1]	Hexachlorodibenzo-p-dioxins		0.00006	0.001

Clean Earth of North Jersey, Inc. Underlying Hazardous Constituent (UHC) LDR Form

GENERATOR NAME: Philadelphia Coke c/0 Niagara Mohawk Power Corp.- Richmond St. Phil, PA

MANIFEST DOC. NO 020997921 JJK

APPROVAL CODE #: 193081626

CONSTITUENT	HOW MUST CONSISTUENT BE MANAGED	WW (mg/l)	NWW (mg/kg)	CONSTITUENT	HOW MUST CONSISTUENT BE MANAGED	WW (mg/l)	NWW (mg/kg)
Hexachloroethane		0.05500	30.000	Promecarb		0.05600	1.400
Hexachloropropylene		0.03500	30.000	Pronamide		0.09300	1.500
Indeno (1,2,3-c,d) pyrene		0.00550	3.400	Propham		0.05600	1.400
Iodomethane		0.19000	65.000	Propoxur		0.05600	1.400
Isobutanol (Isobutyl Alcohol)		5.60000	170.000	Prosulfocarb		0.04200	1.400
Isodrin		0.02100	0.066	Pyrene		0.06700	8.200
Isosafrole		0.08100	2.600	Pyridine		0.01400	16.000
Kepone		0.00110	0.130	Safrole		0.08100	22.000
Methacrylonitrile		0.24000	84.000	Silvex (2,4,5-TP)		0.72000	7.900
Methanol		5.60000	0.750[1]	1,2,4,5-Tetrachlorobenzene		0.05500	14.000
Methapyrilene		0.08100	1.500	Tetrachlorodibenzo-furans		0.000063	0.001
Methiocarb		0.05600	1.400	Tetrachlorodibenzo-p-dioxins		0.000063	0.001
Methomyl		0.02800	0.140	1,1,1,2-Tetrachloroethane		0.05700	6.000
Methoxychlor		0.25000	0.180	1,1,2,2-Tetrachloroethane		0.05700	6.000
3-Methylcholanthrene		0.00550	15.000	Tetrachloroethylene		0.05600	6.000
4,4-Methylene-Bis-(2-chloroaniline)		0.50000	30.000	2,3,4,6-Tetrachlorophenol		0.03000	7.400
Methylene Chloride		0.08900	30.000	Thiodicarb		0.01900	1.400
Methyl ethyl ketone		0.28000	36.000	Thiophanate-methyl		0.05600	1.400
Methyl isobutyl ketone		0.14000	33.000	Toluene		0.08000	10.000
Methyl methacrylate		0.14000	160.000	Toxaphene		0.00950	2.600
Methyl methanesulfonate		0.01800	NA	Triallate		0.04200	1.400
Methyl parathion		0.01400	4.600	Tribromomethane/Bromoform		0.06300	15.000
Metolcarb		0.05600	1.400	2,4,6-Tribromophenol		0.03500	7.400
Mexacarbate		0.05600	1.400	1,2,4-Trichlorobenzene		0.05500	19.000
Molinate		0.04200	1.400	1,1,1-Trichloroethane		0.05400	6.000
Naphthalene		0.05900	5.600	1,1,2-Trichloroethane		0.05400	6.000
2-Naphthylamine		0.52000	NA	Trichloroethylene		0.05400	6.000
o-Nitroaniline		0.27000	14.000	Trichloromonofluoromethane		0.02000	30.000
p-Nitroaniline		0.02800	28.000	2,4,5-Trichlorophenol		0.18000	7.400
Nitrobenzene		0.06800	14.000	2,4,6-Trichlorophenol		0.03500	7.400
5-Nitro-o-toluidine		0.32000	28.000	2,4,5-Trichlorophenoxyacetic acit/2,4,5-T		0.07200	7.900
o-Nitrophenol		0.02800	13.000	1,2,3-Trichloropropane		0.85000	30.000
p-Nitrophenol		0.12000	29.000	1,1,2-Trichloro-1,2,2-trifluoroethane		0.05700	30.000
N-Nitrosodiethylamine		0.40000	28.000	Triethylamine		0.08100	1.500
N-Nitrosodimethylamine		0.40000	2.300	Tris(2,3,-dibromopropyl) phosphate		0.11000	0.100
N-Nitroso-di-n-butylamine		0.40000	17.000	Vernolate		0.04200	1.400
N-Nitrosomethylethylamine		0.40000	2.300	Vinyl chloride		0.27000	6.000
N-Nitrosomorpholine		0.40000	2.300	Xylene (sum of o-,m-, and p- isomers)		0.32000	30.000
N-Nitrosopiperidine		0.01300	35.000	***Inorganic Constituents***			
N-Nitrosopyrrolidine		0.01300	35.000	Cyanides (Total)		1.20000	590.000
Oxamyl		0.05600	0.280	Cyanides (Amenable)		0.86000	30.000
Parathion		0.01400	4.600	Antimony		1.90000	1.150[1]
PCBs (total) all isomers or Aroclors		0.10000	10.000	Arsenic		1.40000	5.000[1]
Pebulate		0.04200	1.400	Barium		1.20000	21.000[1]
Pentachlorobenzene		0.05500	10.000	Beryllium		0.82000	1.220[1]
Pentachloroethane		0.05500	6.000	Cadmium		0.69000	0.110[1]
Pentachlorodibenzo-furans		0.000035	0.001	Chromium(Total)		2.77000	0.600[1]
Pentachlorodibenzo-p-dioxins		0.000063	0.001	Fluoride [2]		35.0000	NA
Pentachloronitrobenzene		0.05500	4.800	Lead		0.69000	0.750[1]
Pentachlorophenol		0.08900	7.400	Mercury (Non WW from retort)		NA	0.200[1]
Phenacetin		0.08100	16.000	Mercury (All others)		0.15000	0.025[1]
Phenanthrene		0.05900	5.600	Nickel		3.98000	11.000[1]
Phenol		0.03900	6.200	Selenium		0.82000	5.700[1]
Phorate		0.02100	4.600	Silver		0.43000	0.140[1]
Phthalic acid		0.05500	28.00	Sulfide [2]		14.00000	NA
Phthalic anhydride		0.05500	28.000	Thallium		1.40000	0.20[1]
Physostigmine		0.05600	1.400	Vanadium [2]		4.30000	1.600[1]
Physostigmine salicylate		0.05600	1.400	Zinc [2]		2.61000	4.300 [1]

[1]These concentrations are expressed in mg/l and are measured through an analysis of TCLP extract; all others measured through a total waste analysis.

[2]These constituents are not Underlying Hazardous Constituents in characteristic wastes, according to the definition at 268.2(i).

☐ This waste stream contains none of the Underlying Hazardous Constituents (UHC's) listed above or on Page 1, above the UHC's specific treatment standard (UTS) at the point of generation.

The information above was determined by:

☒ Generator's knowledge of the waste
☐ Laboratory analysis

SUSAN M SWANSON
Print Name

Susan M Swanson
Signature

2/17/20
Date

Project Manager
Title

Form UHC-LD2-09/01

Clean Earth of North Jersey

***** CERTIFICATE OF DISPOSAL *****

1/10/2022

Site: Philadelphia Coke Co, Inc
4501 Richmond St
Philadelphia, PA 19137

Epa Id #: PAD000427906

Approval #:

This is to document the disposition of waste materials receieved from your facility between 2/17/2020 8:16:23 PM and 2/17/2020 8:16:23 PM on the following Manifest numbers:

Manifest	Management Method	Arrived
020997921JJK	H110	2/17/2020

The material was shipped from Clean Earth of North Jersey on the following manifests to the following facilities:

Manifest	Shipped	TSDF
9126024	03/25/2020	Fairless Hills Landfill
9126023	03/25/2020	Fairless Hills Landfill
9126021	03/25/2020	Fairless Hills Landfill
9126020	03/25/2020	Fairless Hills Landfill
9126022	03/25/2020	Fairless Hills Landfill

Clean Earth of North Jersey

***** CERTIFICATE OF DISPOSAL *****

1/10/2022

Site: Philadelphia Coke Co, Inc
4501 Richmond St
Philadelphia, PA 19137

Epa Id #: PAD000427906

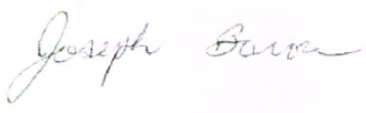
Approval #:

The disposition of all material is in accordance and compliance with all required and applicable federal and state laws and regulations. Clean Earth of North Jersey's EPA ID is NJD991291105.

Please be advised that those waste streams showing multiple outgoing shipments may have been comingled with other waste prior to shipment.

Thank you for the opportunity to be of service.

Very truly yours
Clean Earth of North Jersey



Joe Barone Operations Manager

APPENDIX J

Local Well Details Per the Pennsylvania Groundwater Information System

PA Well ID	Figure 11 Designation	Well Use	Water Use	Quad Name	Well Address	Well Zip Code	Date Drilled	Type of Action	Latitude	Longitude	Driller	Original Owner	Well Depth	Bottom of Casing	Casing Diameter
506243	MONITORING WELL LOCATION	MONITORING			Salmon Street		12/11/2012 0:00	WELL ABANDONMENT	40.00292	-75.06624	PARRATT-WOLFF INC	Rohm and Haas Chemicals	20		
506244	MONITORING WELL LOCATION	MONITORING	OTHER		Pratt Street		12/11/2012 0:00	WELL ABANDONMENT	40.0031	-75.0668	PARRATT-WOLFF INC	Rohm and Haas Chemicals	25		
506245	MONITORING WELL LOCATION	MONITORING			Pratt Street		12/11/2012 0:00	WELL ABANDONMENT	40.00335	-75.06724	PARRATT-WOLFF INC	Rohm and Haas Chemicals	22		
506268	UNKNOWN WITHDRAWAL WELL LOCATION	UNKNOWN			Bridge Street		12/11/2012 0:00	WELL ABANDONMENT	40.00428	-75.06713	PARRATT-WOLFF INC	Rohm and Haas Chemicals	10		
645775	UNUSED/ABANDONED/DESTROYED WELL LOCATION	ABANDONED	OTHER	FRANKFORD	5000 Richmond Street		11/3/2016 0:00	WELL ABANDONMENT	40.00446	-75.06701	PARRATT-WOLFF INC	Rohm and Haas Company	15		
645924	UNUSED/ABANDONED/DESTROYED WELL LOCATION	ABANDONED	OTHER	FRANKFORD	5000 Richmond Street	19137	11/3/2016 0:00	WELL ABANDONMENT	40.00444	-75.06698	PARRATT-WOLFF INC	Rohm and Haas Company	15		
645926	UNUSED/ABANDONED/DESTROYED WELL LOCATION	ABANDONED	OTHER	FRANKFORD	5000 Richmond Street		11/3/2016 0:00	WELL ABANDONMENT	40.00425	-75.06696	PARRATT-WOLFF INC	Rohm and Haas Company	13		
645923	UNUSED/ABANDONED/DESTROYED WELL LOCATION	ABANDONED	OTHER	FRANKFORD	5000 Richmond Street	Not F	11/3/2016 0:00	WELL ABANDONMENT	40.0049	-75.0657	PARRATT-WOLFF INC	Rohm and Haas Company	11.5		
645925	UNUSED/ABANDONED/DESTROYED WELL LOCATION	ABANDONED	OTHER	FRANKFORD	5000 Richmond Street	19137	11/3/2016 0:00	WELL ABANDONMENT	40.00435	-75.06705	PARRATT-WOLFF INC	Rohm and Haas Company	15		
645568	UNUSED/ABANDONED/DESTROYED WELL LOCATION	ABANDONED			5000 Richmond Street		11/3/2016 0:00	WELL ABANDONMENT	40.00441	-75.06707	PARRATT-WOLFF INC	Rohm and Haas Company	20		
645773	UNUSED/ABANDONED/DESTROYED WELL LOCATION	ABANDONED	OTHER	FRANKFORD	5000 Richmond Street		11/3/2016 0:00	WELL ABANDONMENT	40.00494	-75.06573	PARRATT-WOLFF INC	Rohm and Haas Company	11.7		
645774	UNUSED/ABANDONED/DESTROYED WELL LOCATION	ABANDONED	OTHER	FRANKFORD	5000 Richmond Street		11/3/2016 0:00	WELL ABANDONMENT	40.00433	-75.06701	PARRATT-WOLFF INC	Rohm and Haas Company	15		
645776	UNUSED/ABANDONED/DESTROYED WELL LOCATION	ABANDONED	OTHER	FRANKFORD	5000 Richmond Street	19137	11/3/2016 0:00	WELL ABANDONMENT	40.00458	-75.06658	PARRATT-WOLFF INC	Rohm and Haas Company	19.5		
645777	UNUSED/ABANDONED/DESTROYED WELL LOCATION	ABANDONED	OTHER	FRANKFORD	5000 Richmond Street	Not F	11/3/2016 0:00	WELL ABANDONMENT	40.0049	-75.06561	PARRATT-WOLFF INC	Rohm and Haas Company	14.5		
605188	UNUSED/ABANDONED/DESTROYED WELL LOCATION	OBSERVATION	UNUSED	FRANKFORD	BRIDGE and THOMPSON ST.	19137	10/30/2009 0:00	NEW WELL	40.00382	-75.06718	EICHELBERGERS INC.	ROHM and HAAS	15	2	2
605189	UNUSED/ABANDONED/DESTROYED WELL LOCATION	OBSERVATION	UNUSED	FRANKFORD	BRIDGE and E. THOMPSON STS	19137	10/30/2009 0:00	NEW WELL	40.00382	-75.06705	EICHELBERGERS INC.	ROHM and HAAS	16	3	2
30526	UNUSED/ABANDONED/DESTROYED WELL LOCATION	UNUSED	UNUSED	FRANKFORD			10/1/1956 0:00		40.00222	-75.06389	RULON AND COOK INC	ROHM AND HAAS CO	54	25	6
30195	UNUSED/ABANDONED/DESTROYED WELL LOCATION	UNUSED	UNUSED	FRANKFORD			10/1/1956 0:00		40.0025	-75.06417	RULON AND COOK INC	ROHM AND HAAS CO	52	39	
30230	UNUSED/ABANDONED/DESTROYED WELL LOCATION	DESTROYED	UNUSED	FRANKFORD			9/1/1933 0:00		40.00583	-75.07056	JOHN RULON	SAM BERNSTEIN & CO	32		14
	UNUSED/ABANDONED/DESTROYED WELL LOCATION	DESTROYED	UNUSED	FRANKFORD			9/1/1933 0:00		40.00583	-75.07056	JOHN RULON	SAM BERNSTEIN & CO	32		20
30229	UNUSED/ABANDONED/DESTROYED WELL LOCATION	OBSERVATION	UNUSED	FRANKFORD			8/29/1977 0:00		40.00556	-75.06556	UNKNOWN	ROHM & HAAS CO	11		1.25
30212	UNUSED/ABANDONED/DESTROYED WELL LOCATION	OBSERVATION	UNUSED	FRANKFORD			8/26/1977 0:00		40.00417	-75.06222	UNKNOWN	ROHM & HAAS CO	16		1.25
30530	UNUSED/ABANDONED/DESTROYED WELL LOCATION	OBSERVATION	UNUSED	FRANKFORD			8/26/1977 0:00		40.005	-75.06778	UNKNOWN	ROHM & HAAS CO	17.5		1.25
30143	UNUSED/ABANDONED/DESTROYED WELL LOCATION	DESTROYED	UNUSED	CAMDEN			8/12/1914 0:00		39.99056	-75.07278	RIDPATH AND POTTER COMPANY	AMER SMELTING & REF	200	82	8
30211	UNUSED/ABANDONED/DESTROYED WELL LOCATION	OBSERVATION	UNUSED	FRANKFORD			8/3/1972 0:00		40.00389	-75.06361	RIDPATH AND POTTER COMPANY	ROHM & HAAS CO	19.5	12	1.25
30199	UNUSED/ABANDONED/DESTROYED WELL LOCATION	OBSERVATION	UNUSED	FRANKFORD			7/31/1972 0:00		40.00306	-75.06139	RIDPATH AND POTTER COMPANY	ROHM & HAAS CO	28	17	1.25
	UNUSED/ABANDONED/DESTROYED WELL LOCATION	OBSERVATION	UNUSED	FRANKFORD			7/31/1972 0:00		40.00306	-75.06139	RIDPATH AND POTTER COMPANY	ROHM & HAAS CO	28	17	1.25
30189	UNUSED/ABANDONED/DESTROYED WELL LOCATION	OBSERVATION	UNUSED	FRANKFORD			7/25/1972 0:00		40.00194	-75.0625	RIDPATH AND POTTER COMPANY	ROHM & HAAS CO	19.5	8.5	1.25
30198	UNUSED/ABANDONED/DESTROYED WELL LOCATION	OBSERVATION	UNUSED	FRANKFORD			7/17/1972 0:00		40.00278	-75.06361	RIDPATH AND POTTER COMPANY	ROHM & HAAS CO	23	12	1.25
30213	UNUSED/ABANDONED/DESTROYED WELL LOCATION	OBSERVATION	UNUSED	FRANKFORD			7/12/1972 0:00		40.00417	-75.06639	RIDPATH AND POTTER COMPANY	ROHM & HAAS CO	18	3.5	1.25
30206	UNUSED/ABANDONED/DESTROYED WELL LOCATION	OBSERVATION	UNUSED	FRANKFORD			7/11/1972 0:00		40.00361	-75.06528	RIDPATH AND POTTER COMPANY	ROHM & HAAS CO	21	10	1.25
30139	UNUSED/ABANDONED/DESTROYED WELL LOCATION	UNUSED	UNUSED	CAMDEN			6/20/1975 0:00		39.99028	-75.06944	RAAB WELL DRILLING INC	KEYSTONE CONCRETE	83	73	8
	UNUSED/ABANDONED/DESTROYED WELL LOCATION	UNUSED	UNUSED	CAMDEN			6/20/1975 0:00		39.99028	-75.06944	RAAB WELL DRILLING INC	KEYSTONE CONCRETE	83	73	8
30220	UNUSED/ABANDONED/DESTROYED WELL LOCATION	DESTROYED	UNUSED	FRANKFORD			6/1/1935 0:00		40.005	-75.07194	JOHN RULON	ALLIED CHEMICAL CORP	40		12
	UNUSED/ABANDONED/DESTROYED WELL LOCATION	DESTROYED	UNUSED	FRANKFORD			6/1/1935 0:00		40.005	-75.07194	JOHN RULON	ALLIED CHEMICAL CORP	40		20
30214	UNUSED/ABANDONED/DESTROYED WELL LOCATION	DESTROYED	UNUSED	FRANKFORD			5/25/1934 0:00		40.00417	-75.06694	LAYNE CHRISTENSEN COMPANY	ROHM AND HAAS CO	44		8
	UNUSED/ABANDONED/DESTROYED WELL LOCATION	DESTROYED	UNUSED	FRANKFORD			5/25/1934 0:00		40.00417	-75.06694	LAYNE CHRISTENSEN COMPANY	ROHM AND HAAS CO	44		6
30205	UNUSED/ABANDONED/DESTROYED WELL LOCATION	DESTROYED	UNUSED	FRANKFORD			5/21/1934 0:00		40.00361	-75.06389	LAYNE CHRISTENSEN COMPANY	ROHM AND HAAS CO	65		8
	UNUSED/ABANDONED/DESTROYED WELL LOCATION	DESTROYED	UNUSED	FRANKFORD			5/21/1934 0:00		40.00361	-75.06389	LAYNE CHRISTENSEN COMPANY	ROHM AND HAAS CO	65		6
30210	UNUSED/ABANDONED/DESTROYED WELL LOCATION	DESTROYED	UNUSED	FRANKFORD			5/14/1934 0:00		40.00389	-75.06222	LAYNE CHRISTENSEN COMPANY	ROHM AND HAAS CO	80		6
	UNUSED/ABANDONED/DESTROYED WELL LOCATION	DESTROYED	UNUSED	FRANKFORD			5/14/1934 0:00		40.00389	-75.06222	LAYNE CHRISTENSEN COMPANY	ROHM AND HAAS CO	80		8
30186	UNUSED/ABANDONED/DESTROYED WELL LOCATION	DESTROYED	UNUSED	FRANKFORD			5/7/1934 0:00		40.00167	-75.06194	LAYNE CHRISTENSEN COMPANY	ROHM AND HAAS CO	67		6
	UNUSED/ABANDONED/DESTROYED WELL LOCATION	DESTROYED	UNUSED	FRANKFORD			5/7/1934 0:00		40.00167	-75.06194	LAYNE CHRISTENSEN COMPANY	ROHM AND HAAS CO	67		8
30226	UNUSED/ABANDONED/DESTROYED WELL LOCATION	DESTROYED	UNUSED	FRANKFORD			5/1/1935 0:00		40.00528	-75.07222	JOHN RULON	ALLIED CHEMICAL CORP	40		12
	UNUSED/ABANDONED/DESTROYED WELL LOCATION	DESTROYED	UNUSED	FRANKFORD			5/1/1935 0:00		40.00528	-75.07222	JOHN RULON	ALLIED CHEMICAL CORP	40		20
30221	UNUSED/ABANDONED/DESTROYED WELL LOCATION	UNUSED	UNUSED	FRANKFORD			5/1/1935 0:00		40.005	-75.07333	JOHN RULON	ALLIED CHEMICAL CORP	42		20
	UNUSED/ABANDONED/DESTROYED WELL LOCATION	UNUSED	UNUSED	FRANKFORD			5/1/1935 0:00		40.005	-75.07333	JOHN RULON	ALLIED CHEMICAL CORP	42		12
136057	MONITORING WELL LOCATION	TEST		FRANKFORD			4/1/1984 0:00	NEW WELL	40.00611	-75.06833	IT ENVIRONMENTAL INC	ALLIED CHEMICAL	22	17	
601611	MONITORING WELL LOCATION	MONITORING	OTHER	FRANKFORD	2634 Bridge Street	19137	3/23/2015 0:00	NEW WELL	40.00396	-75.0671	EAST COAST DRILLING INC	7-ELEVEN CORPORATION	14	4	2
30231	UNUSED/ABANDONED/DESTROYED WELL LOCATION	DESTROYED	UNUSED	FRANKFORD			1/1/1938 0:00		40.00611	-75.07	ARTESIAN WELL DRLG CO	M FISHMAN & SONS INC	34	24	12
30517	UNUSED/ABANDONED/DESTROYED WELL LOCATION	DESTROYED	UNUSED	CAMDEN			1/1/1920 0:00		39.99167	-75.07361	UNKNOWN	AMER SMELTING & REF	400		6
30516	UNUSED/ABANDONED/DESTROYED WELL LOCATION	UNUSED	UNUSED	CAMDEN			1/1/1903 0:00		39.99056	-75.06778	THOMAS B HARPER	F S WALTON & CO	55	41	8
	UNUSED/ABANDONED/DESTROYED WELL LOCATION	UNUSED	UNUSED	CAMDEN			1/1/1903 0:00		39.99056	-75.06778	THOMAS B HARPER	F S WALTON & CO	55	41	8
30515	UNUSED/ABANDONED/DESTROYED WELL LOCATION	DESTROYED	UNUSED	CAMDEN					39.99028	-75.06944	UNKNOWN	LIBERTY CORP	110		6
680160	OTHER WITHDRAWAL WELL LOCATION	WITHDRAWAL	OTHER	FRANKFORD	Reynolds and Bath Street	19137	9/27/2019	NEW WELL	40.00016	-75.06371	EAST COAST DRILLING INC	Rohm and Haas	26	16	2
	OTHER WITHDRAWAL WELL LOCATION	WITHDRAWAL	OTHER	FRANKFORD	Reynolds and Bath Street	19137	9/27/2019	NEW WELL	40.00016	-75.06371	EAST COAST DRILLING INC	Rohm and Haas	26	20	6
663786	UNUSED/ABANDONED/DESTROYED WELL LOCATION	ABANDONED		CAMDEN	3000 Orthodox Street	19137	7/20/2018	WELL ABANDONMENT	39.99203	-75.06975	ODYSSEY ENVIRONMENTAL SERVICES INC.	USF Red Star	15.05		
663785	UNUSED/ABANDONED/DESTROYED WELL LOCATION	ABANDONED		CAMDEN	3000 Orthodox Street	19137	7/20/2018	WELL ABANDONMENT	39.9922	-75.06953	ODYSSEY ENVIRONMENTAL SERVICES INC.	USF Red Star	14.7		
663750	UNUSED/ABANDONED/DESTROYED WELL LOCATION	ABANDONED		CAMDEN	3000 Orthodox Street	19137	7/20/2018	WELL ABANDONMENT	39.99197	-75.06959	ODYSSEY ENVIRONMENTAL SERVICES INC.	USF Red Star	15.55		
663749	UNUSED/ABANDONED/DESTROYED WELL LOCATION	ABANDONED		CAMDEN	3000 Orthodox Street	19137	7/20/2018	WELL ABANDONMENT	39.99182	-75.06946	ODYSSEY ENVIRONMENTAL SERVICES INC.	USF Red Star	14.53		
663741	UNUSED/ABANDONED/DESTROYED WELL LOCATION	ABANDONED		CAMDEN	3000 Orthodox Street	19137	7/20/2018	WELL ABANDONMENT	39.99185	-75.06966	ODYSSEY ENVIRONMENTAL SERVICES INC.	USF Red Star	18.55		
663699	UNUSED/ABANDONED/DESTROYED WELL LOCATION	ABANDONED		CAMDEN	3000 Orthodox Street	19137	7/20/2018	WELL ABANDONMENT	39.99182	-75.0699	ODYSSEY ENVIRONMENTAL SERVICES INC.	USF Red Star	14.65		
663698	UNUSED/ABANDONED/DESTROYED WELL LOCATION	ABANDONED		CAMDEN	3000 Orthodox Street	19137	7/20/2018	WELL ABANDONMENT	39.99173	-75.06974	ODYSSEY ENVIRONMENTAL SERVICES INC.	USF Red Star	14.45		
605522	MONITORING WELL LOCATION	MONITORING	OTHER	CAMDEN	NR INTRSXN ORTHODOX ST AND DELAWARE AVE		1/9/2003	NEW WELL	39.9918	-75.06805	TALON DRILLING COMPANY	FMR NATCO Atlantic Metal - FMR ATLANTIC METALS CORP	90		
	DOMESTIC WITHDRAWAL WELL LOCATION[3]	WITHDRAWAL	DOMESTIC	CAMDEN	NR INTRSXN ORTHODOX ST AND DELAWARE AVE		1/9/2003	NEW WELL	39.9918	-75.06805	TALON DRILLING COMPANY	FMR NATCO Atlantic Metal - FMR ATLANTIC METALS CORP	90		

PA Well ID	Figure 11 Designation	Depth to Bedrock	Well Yield	Static Water Level	Water Level	Yield Measurement Type	Formation	Paper Image
506243	MONITORING WELL LOCATION							
506244	MONITORING WELL LOCATION							
506245	MONITORING WELL LOCATION							
506268	UNKNOWN WITHDRAWAL WELL LOCATION					UNKNOWN		
645775	UNUSED/ABANDONED/DESTROYED WELL LOCATION							
645924	UNUSED/ABANDONED/DESTROYED WELL LOCATION							
645926	UNUSED/ABANDONED/DESTROYED WELL LOCATION							
645923	UNUSED/ABANDONED/DESTROYED WELL LOCATION							
645925	UNUSED/ABANDONED/DESTROYED WELL LOCATION							
645568	UNUSED/ABANDONED/DESTROYED WELL LOCATION							
645773	UNUSED/ABANDONED/DESTROYED WELL LOCATION							
645774	UNUSED/ABANDONED/DESTROYED WELL LOCATION							
645776	UNUSED/ABANDONED/DESTROYED WELL LOCATION							
645777	UNUSED/ABANDONED/DESTROYED WELL LOCATION							
605188	UNUSED/ABANDONED/DESTROYED WELL LOCATION							
605189	UNUSED/ABANDONED/DESTROYED WELL LOCATION							
30526	UNUSED/ABANDONED/DESTROYED WELL LOCATION		3.3			VOLUMETRIC WATCH & BUCKET	MAGOTHY-RARITAN-POTOMAC AQUIFER SYSTEM LOWER SAND UNIT	
30195	UNUSED/ABANDONED/DESTROYED WELL LOCATION						MAGOTHY-RARITAN-POTOMAC AQUIFER SYSTEM LOWER SAND UNIT	
30230	UNUSED/ABANDONED/DESTROYED WELL LOCATION		450			REPORTED METHOD NOT KNOWN	TRENTON GRAVEL	
	UNUSED/ABANDONED/DESTROYED WELL LOCATION		450			REPORTED METHOD NOT KNOWN	TRENTON GRAVEL	
30229	UNUSED/ABANDONED/DESTROYED WELL LOCATION		0.01	1.85		VOLUMETRIC WATCH & BUCKET	TRENTON GRAVEL	
30212	UNUSED/ABANDONED/DESTROYED WELL LOCATION		0.07	2.62		VOLUMETRIC WATCH & BUCKET	TRENTON GRAVEL	
30530	UNUSED/ABANDONED/DESTROYED WELL LOCATION		0.36	3.65	5.15	VOLUMETRIC WATCH & BUCKET	TRENTON GRAVEL	
30143	UNUSED/ABANDONED/DESTROYED WELL LOCATION		60	4		REPORTED METHOD NOT KNOWN	WISSAHICKON FORMATION	
30211	UNUSED/ABANDONED/DESTROYED WELL LOCATION		0.5	13.6			TRENTON GRAVEL	
30199	UNUSED/ABANDONED/DESTROYED WELL LOCATION			19.2			TRENTON GRAVEL	
	UNUSED/ABANDONED/DESTROYED WELL LOCATION		2			VOLUMETRIC WATCH & BUCKET	TRENTON GRAVEL	
30189	UNUSED/ABANDONED/DESTROYED WELL LOCATION		0.5	12.3		VOLUMETRIC WATCH & BUCKET	TRENTON GRAVEL	
30198	UNUSED/ABANDONED/DESTROYED WELL LOCATION		1.5	12.8		VOLUMETRIC WATCH & BUCKET	TRENTON GRAVEL	
30213	UNUSED/ABANDONED/DESTROYED WELL LOCATION		1	5.65		VOLUMETRIC WATCH & BUCKET	TRENTON GRAVEL	
30206	UNUSED/ABANDONED/DESTROYED WELL LOCATION		0.5	11.9		VOLUMETRIC WATCH & BUCKET	TRENTON GRAVEL	
30139	UNUSED/ABANDONED/DESTROYED WELL LOCATION			11.4			MAGOTHY-RARITAN-POTOMAC AQUIFER SYSTEM LOWER SAND UNIT	
	UNUSED/ABANDONED/DESTROYED WELL LOCATION		430	2.222222	50	ORIFICE	MAGOTHY-RARITAN-POTOMAC AQUIFER SYSTEM LOWER SAND UNIT	
30220	UNUSED/ABANDONED/DESTROYED WELL LOCATION		200			REPORTED METHOD NOT KNOWN	TRENTON GRAVEL	
	UNUSED/ABANDONED/DESTROYED WELL LOCATION		200			REPORTED METHOD NOT KNOWN	TRENTON GRAVEL	
30214	UNUSED/ABANDONED/DESTROYED WELL LOCATION			8			MAGOTHY-RARITAN-POTOMAC AQUIFER SYSTEM LOWER SAND UNIT	
	UNUSED/ABANDONED/DESTROYED WELL LOCATION			8			MAGOTHY-RARITAN-POTOMAC AQUIFER SYSTEM LOWER SAND UNIT	
30205	UNUSED/ABANDONED/DESTROYED WELL LOCATION			20			MAGOTHY-RARITAN-POTOMAC AQUIFER SYSTEM LOWER SAND UNIT	
	UNUSED/ABANDONED/DESTROYED WELL LOCATION			20			MAGOTHY-RARITAN-POTOMAC AQUIFER SYSTEM LOWER SAND UNIT	
30210	UNUSED/ABANDONED/DESTROYED WELL LOCATION			20			MAGOTHY-RARITAN-POTOMAC AQUIFER SYSTEM LOWER SAND UNIT	
	UNUSED/ABANDONED/DESTROYED WELL LOCATION			20			MAGOTHY-RARITAN-POTOMAC AQUIFER SYSTEM LOWER SAND UNIT	
30186	UNUSED/ABANDONED/DESTROYED WELL LOCATION			20			MAGOTHY-RARITAN-POTOMAC AQUIFER SYSTEM LOWER SAND UNIT	
	UNUSED/ABANDONED/DESTROYED WELL LOCATION			20			MAGOTHY-RARITAN-POTOMAC AQUIFER SYSTEM LOWER SAND UNIT	
30226	UNUSED/ABANDONED/DESTROYED WELL LOCATION		200			REPORTED METHOD NOT KNOWN	TRENTON GRAVEL	
	UNUSED/ABANDONED/DESTROYED WELL LOCATION		200			REPORTED METHOD NOT KNOWN	TRENTON GRAVEL	
30221	UNUSED/ABANDONED/DESTROYED WELL LOCATION		175			REPORTED METHOD NOT KNOWN	TRENTON GRAVEL	
	UNUSED/ABANDONED/DESTROYED WELL LOCATION		175			REPORTED METHOD NOT KNOWN	TRENTON GRAVEL	
136057	MONITORING WELL LOCATION	20		4	4		TRENTON GRAVEL	
601611	MONITORING WELL LOCATION		1	8		BAILER		
30231	UNUSED/ABANDONED/DESTROYED WELL LOCATION		225	28		REPORTED METHOD NOT KNOWN	TRENTON GRAVEL	
30517	UNUSED/ABANDONED/DESTROYED WELL LOCATION						WISSAHICKON FORMATION	
30516	UNUSED/ABANDONED/DESTROYED WELL LOCATION		53	8.74	14.5	VOLUMETRIC WATCH & BUCKET	TRENTON GRAVEL	
	UNUSED/ABANDONED/DESTROYED WELL LOCATION		66			REPORTED METHOD NOT KNOWN	TRENTON GRAVEL	
30515	UNUSED/ABANDONED/DESTROYED WELL LOCATION			12			WISSAHICKON FORMATION	
680160	OTHER WITHDRAWAL WELL LOCATION		1	9.05				
	OTHER WITHDRAWAL WELL LOCATION		1	9.05				
663786	UNUSED/ABANDONED/DESTROYED WELL LOCATION							
663785	UNUSED/ABANDONED/DESTROYED WELL LOCATION							
663750	UNUSED/ABANDONED/DESTROYED WELL LOCATION							
663749	UNUSED/ABANDONED/DESTROYED WELL LOCATION							
663741	UNUSED/ABANDONED/DESTROYED WELL LOCATION							
663699	UNUSED/ABANDONED/DESTROYED WELL LOCATION							
663698	UNUSED/ABANDONED/DESTROYED WELL LOCATION							
605522	MONITORING WELL LOCATION		1	5		UNKNOWN		http://www.iframeapps.dcnr.state.pa.us/topogeo/PaGWIS_search/DisplayReportImage.aspx?id=IM226628
	DOMESTIC WITHDRAWAL WELL LOCATION[3]		1	5		UNKNOWN		http://www.iframeapps.dcnr.state.pa.us/topogeo/PaGWIS_search/DisplayReportImage.aspx?id=IM226628

PA Well ID	Figure 11 Designation	Remarks
506243	MONITORING WELL LOCATION	Backfilled monitoring well with bentonite chips. removed flush mount cover and repaired street surface.
506244	MONITORING WELL LOCATION	Backfilled monitoring well with bentonite chips removed flush mount cover and repaired street surface.
506245	MONITORING WELL LOCATION	Backfilled monitoring well with bentonite chips removed the flush mount cover and repaired the street surface.
506268	UNKNOWN WITHDRAWAL WELL LOCATION	Backfilled monitoring well with bentonite chips removed flush mount cover and repaired street surface.
645775	UNUSED/ABANDONED/DESTROYED WELL LOCATION	Abandoned 6 inch diameter well with bentonite chips to grade.
645924	UNUSED/ABANDONED/DESTROYED WELL LOCATION	Abandoned 6 inch diameter well with bentonite chips to grade.
645926	UNUSED/ABANDONED/DESTROYED WELL LOCATION	Abandoned 6 inch diameter well with bentonite chips to grade.
645923	UNUSED/ABANDONED/DESTROYED WELL LOCATION	Abandoned 2 inch diameter well with cement grout to grade.
645925	UNUSED/ABANDONED/DESTROYED WELL LOCATION	Abandoned 6 inch diameter well with bentonite chips to grade.
645568	UNUSED/ABANDONED/DESTROYED WELL LOCATION	Abandoned 6" diameter well with bentonite chips to grade.
645773	UNUSED/ABANDONED/DESTROYED WELL LOCATION	Abandoned 2 inch diameter well with cement grout to grade.
645774	UNUSED/ABANDONED/DESTROYED WELL LOCATION	Abandoned 6 inch diameter well with bentonite chips to grade.
645776	UNUSED/ABANDONED/DESTROYED WELL LOCATION	Abandoned 6 inch diameter well with bentonite chips to grade.
645777	UNUSED/ABANDONED/DESTROYED WELL LOCATION	Abandoned 6 inch diameter well with bentonite chips to grade.
605188	UNUSED/ABANDONED/DESTROYED WELL LOCATION	
605189	UNUSED/ABANDONED/DESTROYED WELL LOCATION	
30526	UNUSED/ABANDONED/DESTROYED WELL LOCATION	
30195	UNUSED/ABANDONED/DESTROYED WELL LOCATION	
30230	UNUSED/ABANDONED/DESTROYED WELL LOCATION	
	UNUSED/ABANDONED/DESTROYED WELL LOCATION	
30229	UNUSED/ABANDONED/DESTROYED WELL LOCATION	
30212	UNUSED/ABANDONED/DESTROYED WELL LOCATION	
30530	UNUSED/ABANDONED/DESTROYED WELL LOCATION	
30143	UNUSED/ABANDONED/DESTROYED WELL LOCATION	
30211	UNUSED/ABANDONED/DESTROYED WELL LOCATION	
30199	UNUSED/ABANDONED/DESTROYED WELL LOCATION	
	UNUSED/ABANDONED/DESTROYED WELL LOCATION	
30189	UNUSED/ABANDONED/DESTROYED WELL LOCATION	
30198	UNUSED/ABANDONED/DESTROYED WELL LOCATION	
30213	UNUSED/ABANDONED/DESTROYED WELL LOCATION	
30206	UNUSED/ABANDONED/DESTROYED WELL LOCATION	
30139	UNUSED/ABANDONED/DESTROYED WELL LOCATION	
	UNUSED/ABANDONED/DESTROYED WELL LOCATION	
30220	UNUSED/ABANDONED/DESTROYED WELL LOCATION	
	UNUSED/ABANDONED/DESTROYED WELL LOCATION	
30214	UNUSED/ABANDONED/DESTROYED WELL LOCATION	
	UNUSED/ABANDONED/DESTROYED WELL LOCATION	
30205	UNUSED/ABANDONED/DESTROYED WELL LOCATION	
	UNUSED/ABANDONED/DESTROYED WELL LOCATION	
30210	UNUSED/ABANDONED/DESTROYED WELL LOCATION	
	UNUSED/ABANDONED/DESTROYED WELL LOCATION	
30186	UNUSED/ABANDONED/DESTROYED WELL LOCATION	
	UNUSED/ABANDONED/DESTROYED WELL LOCATION	
30226	UNUSED/ABANDONED/DESTROYED WELL LOCATION	
	UNUSED/ABANDONED/DESTROYED WELL LOCATION	
30221	UNUSED/ABANDONED/DESTROYED WELL LOCATION	
	UNUSED/ABANDONED/DESTROYED WELL LOCATION	
136057	MONITORING WELL LOCATION	TEMPORARY RECOVERY WELL; DIA1=26""; ROCK TYPE=ASPHALT FILL
601611	MONITORING WELL LOCATION	MW-6R - 2-inch Diam. PVC x 14'' Deep Monitoring Well. Well located in the asphalt parking lot of the 7-Eleven Convenience Store. The well was completed with a flush mount protective manhole in a 2''x2'' concrete pad.
30231	UNUSED/ABANDONED/DESTROYED WELL LOCATION	
30517	UNUSED/ABANDONED/DESTROYED WELL LOCATION	
30516	UNUSED/ABANDONED/DESTROYED WELL LOCATION	
	UNUSED/ABANDONED/DESTROYED WELL LOCATION	
30515	UNUSED/ABANDONED/DESTROYED WELL LOCATION	
680160	OTHER WITHDRAWAL WELL LOCATION	Double Cased Well OFF-20D - 6-inch PVC Outer Casing and 2-inch PVC x 26-feet BGS with 10-feet .010 Screen.
	OTHER WITHDRAWAL WELL LOCATION	Double Cased Well OFF-20D - 6-inch PVC Outer Casing and 2-inch PVC x 26-feet BGS with 10-feet .010 Screen.
663786	UNUSED/ABANDONED/DESTROYED WELL LOCATION	monitoring well abandonment. restore surface to match existing.
663785	UNUSED/ABANDONED/DESTROYED WELL LOCATION	monitoring well abandonment. restore surface to match existing.
663750	UNUSED/ABANDONED/DESTROYED WELL LOCATION	Monitoring well abandonment. restore surface to match existing.
663749	UNUSED/ABANDONED/DESTROYED WELL LOCATION	monitoring well abandonment. restore surface to match existing
663741	UNUSED/ABANDONED/DESTROYED WELL LOCATION	Monitoring well abandonment. Restore surface to match existing.
663699	UNUSED/ABANDONED/DESTROYED WELL LOCATION	Monitoring well abandonment. Restore surface to match existing.
663698	UNUSED/ABANDONED/DESTROYED WELL LOCATION	Monitoring well abandonment. restore surface to match existing
605522	MONITORING WELL LOCATION	MW6. LAT-LONG IS APPROXIMATE BASED ON SEVERAL LOCATIONS SHOWN ON DEP'S EMAP-EFACTS DATABASE.
	DOMESTIC WITHDRAWAL WELL LOCATION[3]	MW6. LAT-LONG IS APPROXIMATE BASED ON SEVERAL LOCATIONS SHOWN ON DEP'S EMAP-EFACTS DATABASE.

Notes:

1. Well Data from the Pennsylvania Topographic & Geologic Survey Database (accessed via web on October 13, 2020).
2. Per the Philadelphia Water Department Records, residents around the Site consume City water.
3. According to the Pennsylvania Groundwater Information System Website, the one domestic well located near the Site is also listed for monitoring. The one domestic well is located on a property where there is a historical diesel release. Therefore, it is likely that this well was used for and/or continues to be used for Monitoring Purposes only. More information is available in Subsection 3.2.2.1 of the Remedial Investigation Report.

APPENDIX K

Self-Implementing Cleanup Notification for PCB Remediation Waste and EPA Approval Letter

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

January 5, 2022

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

John C. Brussel
Principal Engineer/Certified Project Manager
Arcadis U.S., Inc.
One Lincoln Center
110 West Fayette Street, Suite 300
Syracuse, New York 13202

RE: PCB Remediation at the Former Philadelphia Coke Company Facility: Historical Tar Plains/Fill Area, 4501 Richmond Street, Philadelphia, PA; # 2021-61-012

Dear Mr. Brussel:

This letter is in response to Philadelphia Coke Company, Inc's (PCC) notification and certification, dated December 1, 2021, provided to the U.S. Environmental Protection Agency Region III (EPA) pursuant to the requirements of the *Self-implementing on-site cleanup and disposal of PCB remediation waste* regulation, 40 C.F.R. § 761.61(a). This notification was submitted by John Brussel, Arcadis U.S., Inc., on behalf of PPC, regarding PPC's plan to conduct on-site disposal of polychlorinated biphenyl (PCB) contaminated soils found in the Historical Tar Plains/Fill Area of the Former Philadelphia Coke Company Facility located at 4501 Richmond Street in Philadelphia, Pennsylvania.

In its notification, PPC has proposed the following PCB cleanup and disposal plan:

- On-site disposal and capping of the soils with PCB concentrations of greater than 1 ppm and less than or equal to 10 ppm in the Historical Tar Plains/Fill Area;
- capping half of the PCB-containing soils with a 6 inch asphalt cap in compliance with § 761.61(a)(7) and capping the other half with an alternate soil cap consisting of 24 inches of compacted soils and a geotextile membrane;
- the recording of deed restriction in compliance with § 761.61(a)(8) noting the existence and required maintenance of the caps; and
- decontamination of all PCB-contaminated movable equipment with an alternate to the self-implementing decontamination procedure found in § 761.79(c)(2).

EPA has reviewed PPC's notifications for the Historical Tar Plains/Fill Area of the Former Philadelphia Coke Company Facility and finds that it is consistent with the requirements of 40 C.F.R.

§ 761.61(a) except for the soil cap. Section 761.61(a)(7) requires the use of a minimum of ten (10) inches of compacted soil meeting the permeability, sieve, liquid limit, and plasticity index parameters in § 761.75(b)(1)(ii) through (b)(1)(v). PPC has proposed the use of soil which does not comply with the parameters in § 761.75(b)(1)(ii) through (b)(1)(v) but PPC will use a minimum of 24 inches of compacted soil underlain with a geotextile membrane to demarcate between the clean and PCB-containing soils. Based on the site specific conditions and low PCB levels in the soil, this alternate soil cap will present no unreasonable risk of injury to health or the environment and is being approved under § 761.61(c).

The self-implementing decontamination procedure for movable equipment set forth at § 761.79(c)(2) requires the swabbing of the surfaces with a solvent and then a double wash/rinse as defined in Subpart S. PPC has proposed using in place of the solvent, an industrial strength detergent or non-ionic surfactant solution (e.g., Alconox Detergent 8, Aqua-Cleen®) applied via high-pressure water spray/steam cleaner and brushing to remove adhered debris. The equipment surfaces will then be triple-rinsed and visually inspected following rinsing. If the visual inspection indicates that waste materials remain, the equipment will be re-cleaned and re-inspected. A field demonstration test will then be conducted for one of each of the individual types of construction equipment that have contact with PCB-containing soils to document that the decontamination method is sufficiently rigorous to reduce PCB concentrations on the equipment surfaces to the high occupancy non-porous cleanup level of less than or equal to 10 $\mu g/100cm^2$ as set forth at § 761.61(a)(4)(ii). The field demonstration test will use the standard PCB wipe test and follow the requirements of Subpart P. Upon the completion of a successful field demonstration for one of each of the individual types of construction equipment contacting PCB-containing soils, the standard PCB wipe test will not be repeated. This alternate decontamination procedure should present no unreasonable risk of injury to health or the environment and EPA is approving this alternate self-implementing decontamination procedure under the provisions of § 761.79(h) with the condition that the field demonstration test results with accompanying lab report and photographic documentation of the field demonstration are provided, via email, to and approved by the EPA Region 3 PCB Coordinator prior to implementation of the alternate decontamination procedure. Decontamination waste and residues shall be disposed of at their existing PCB concentration.

EPA hereby approves the on-site disposal and capping of PCB containing soils found in the Historical Tar Plains/Fill Area of the Former Philadelphia Coke Company Facility located at 4501 Richmond Street, Philadelphia, Pennsylvania, submitted with PPC's notification and certification, dated December 1, 2021. PPC may proceed with its cleanup in accordance with 40 C.F.R. §§ 761.61(a) and (c) and 79(h); its notification and this approval. This approval is subject to the conditions and limitations set forth in 40 C.F.R. § 761.61(a) and 79(h). The approved plan may be modified only in accordance with the procedures described at 40 C.F.R. § 761.61(a)(3)(ii).

EPA notes that within sixty (60) days of completion of the cleanup activities the owner of the property shall submit to the Director of the Land, Chemicals and Redevelopment Division of EPA Region III a copy of the deed restriction and a signed certification, as specified in 40 C.F.R. § 761.61(a)(8)(i)(B). The deed restriction shall indicate that PCB remediation waste at concentrations between 1 and 10 ppm has been left in place, the location of the PCB remediation waste, the existence, location and types of caps, that the caps must be maintained and written EPA permission must be obtained prior to breaching the caps.

EPA's approval of PPC's cleanup plan does not in any way constitute a finding by EPA that the soils in the Historical Tar Plains/Fill Area of the Former Philadelphia Coke Company Facility located at

4501 Richmond Street, Philadelphia, Pennsylvania will be safe or appropriate for any future use, does not insulate the owner of the site from action under any applicable law, and does not relieve PPC of its continuing responsibility to comply fully with 40 C.F.R. Part 761. EPA emphasizes that these regulations include several conditions and limitations that apply to persons performing a PCB cleanup activity subject to 40 C.F.R. § 761.61(a). Among other things, the regulations state that "[c]omplete compliance with 40 C.F.R. § 761.61 does not create a presumption against enforcement action for penalties for any unauthorized PCB disposal," 40 C.F.R. § 761.50(b)(3)(ii)(B). Further, "[a]ny person storing or disposing of PCBs is also responsible for determining and complying with all other applicable Federal, state, and local laws and regulations," 40 C.F.R. § 761.50(a)(6).

EPA encourages the compliance with greener cleanup practices for all cleanup projects and recommends adherence to the ASTM Standard Guide to Greener Cleanup E2893-13 (Guide) for work conducted under this approval and the notification. Greener cleanups is the practice of integrating options that minimize the environmental impacts of cleanup actions in order to incorporate practices that maximize environmental and human benefit. The Greener Cleanup Best Management Practices (BMPs) Process is found in Section 6 of the Guide. See www.astm.org/Standards/E2893.htm for additional information. EPA encourages you to review the Guide and implement any practices that are feasible. If implemented, the PCB completion report should include a section on BMP documentation, as described in Section 6.6.5 of the Guide.

EPA is requesting that an electronic copy summarizing the completed cleanup activities, including but not limited to, characterization and confirmation sampling analytical results; copies of the accompanying analytical chains of custody; field and laboratory quality control/quality assurance checks; copies of manifests; copies of certificates of disposal or similar certifications issued by the disposer and total amounts of PCB waste disposed, be submitted within sixty (60) days of completion.

The field demonstration documentation, the completion report and any questions concerning this approval or the self-implementing site cleanup plan review should be directed to Ms. Kelly Bunker, EPA Region III PCB Coordinator, at bunker.kelly@epa.gov or 215-814-2177.

Sincerely,

Dana Aunkst, Director
Land, Chemicals, and Redevelopment Division

cc: Sarah Pantelido, PADEP

Mr. Dana Aunkst
United States Environmental Protection Agency
Director – Land, Chemicals and Redevelopment Division (3LD00)
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Date: December 1, 2021
Our Ref: 30004026
Subject: *Self-Implementing Cleanup Notification for PCB Remediation Waste – Revision 1 (FINAL)*
Former Philadelphia Coke Co. Facility
PADEP eFACTS PF No. 831308
EPA ID #PAD000427906
4501 Richmond Street
Philadelphia, Philadelphia County, Pennsylvania

Dear Mr. Aunkst,

On behalf of the Philadelphia Coke Co., Inc. (PCC), Arcadis U.S., Inc. (Arcadis) is submitting this self-implementing cleanup notification for planned remedial activities to address polychlorinated biphenyl (PCB) remediation waste at the former Philadelphia Coke Plant located in the Bridesburg borough of Philadelphia, Pennsylvania (the Site). This letter also presents an alternative decontamination procedure approval request for decontamination of construction equipment to be used during implementation of the remedial activities. This notification is being submitted to the United States Environmental Protection Agency (EPA) in accordance with the Toxic Substances Control Act (TSCA) regulations presented in Title 40 of the Code of Federal Regulations (CFR) Part 761.61(a). A signed Certification Statement containing information required under 40 CFR 761.61(a)(3)(E) is included as Attachment 1 to this letter.

Analytical results for PCBs in soil samples collected at the Site were presented in a *TSCA PCB Evaluation Summary* submitted to the EPA's Resource Conservation and Control Act (RCRA) project manager, Kevin Bilash, on May 12, 2021. The submittal evaluated whether PCBs identified at the Site by previous environmental investigation are regulated under TSCA and was supported by data tables, figures, and historical aerial photographs. The summary concluded that PCBs identified in soil samples collected at the Site are related to pre-April 1978 release(s) and the observed PCB concentrations are therefore not regulated under TSCA.

In a July 8, 2021 response letter from the EPA to Arcadis, EPA agreed with the conclusions of the *TSCA PCB Evaluation Summary*, except for a portion of the Site in the southeast corner referred to as the "Historical Tar Plains / Fill Area" because soil containing PCBs in this area is located in backfill that was placed during the RCRA closure activities conducted in the 1980s to the early 1990s (discussed in Section I.B. below). Accordingly, EPA requested that PCC submit a self-implementing cleanup notification for PCB remediation waste in this limited area. Therefore, this notification addresses the PCB impacts in the Historical Tar Plains / Fill Area. The EPA response letter indicates that PCB impacts in the areas outside the Historical Tar Plains / Fill Area should be addressed in conjunction with the cleanup activities being performed under the One Cleanup Program. The *TSCA*

PCB Evaluation Summary and follow-up correspondence between Arcadis and EPA are provided in Attachment 2 to this letter.

The Site is being remediated in accordance with Pennsylvania's Land Recycling and Environmental Remediation Standards Act (Act 2), and its enabling regulations, 25 PA Code, Chapter 250. The proposed cleanup activities and Site redevelopment are described in the Remedial Investigation Report and Cleanup Plan (RIR/CP) submitted to the Pennsylvania Department of Environmental Protection (PADEP) and the EPA's RCRA project manager on July 15, 2021. In addition, the cleanup approach and proposed redevelopment was presented to PADEP staff and EPA's RCRA project manager during a March 8, 2021 meeting between PCC, the prospective site developers, PADEP, and the EPA.

Cleanup activities in the limited area covered by this notification will be conducted simultaneously with the Pennsylvania Act 2 site-wide cleanup action proposed in the RIR/CP. Cleanup activities will be integrated with Site development plans, once finalized. Conceptual development plans are currently being prepared and include commercial warehouse buildings, parking lots, access roads, driveways, and various landscape features, as shown in Attachment 3.

Relevant background information, a summary of PCB characterization results, and a description of the proposed PCB cleanup activities are presented below.

I. Background Information

A. Site Location

The Site is located at 4501 Richmond Street between Orthodox Street and Buckius Street and is adjacent to the Delaware River. The Site is approximately 63 acres in size and is currently unoccupied. The Site is overgrown with vegetation and only remnants of the former operating structures, foundations, and concrete pads remain. All former structures at the Site have been demolished to ground level, and the Site is currently vacant. A mix of residential, industrial, and commercial uses surround the Site. The Site location is shown as Figure 1.

B. Site and Regulatory History

The Site was used as a manufactured gas plant in the mid-1920s and coking facility from 1929 to 1982. Coal and Coke Storage Areas were located in the northern portion of the Site. The main Coking Operations Area was located in the center of the Site and consisted of the coke ovens, a byproducts building, tar storage, and oxide boxes. The Site also included an iron oxide waste area and tar plains. A fuel oil blending facility operated on the eastern 2.5 acres of the Site from approximately 1969 through 1989. The Fuel Blending Area consisted mainly of aboveground storage tanks and below ground piping. All Site operations concluded in 1989.

PCBs were not a raw material, product, or byproduct of either MGP or coking operations. Although historical facility mapping shows an electrical substation building in the west-central portion of the Site, aerial photos do not show electrical equipment outside of the building. There are no known or suspected releases from equipment inside the electrical substation building.

RCRA closure actions were conducted at the Site from 1988 to 1993 to address source area contamination located at specific RCRA Hazardous Waste Management Units (HWMUs) and Solid Waste Management Units (SWMUs), as follows:

- HWMUs – Approximately 9,400 tons of soil contaminated with decanter tank tar sludge from coking operations (RCRA Waste Code K087), spent iron oxide from the coal carbonization process (RCRA Waste Code D003), and benzene from production (RCRA Waste Code D018) associated with six HWMUs (tar storage tanks, waste liquor pit, tar plains, tar decanters, iron oxide boxes and pile, and seal pot) were excavated and transported for offsite disposal as hazardous waste.
- SWMUs – Approximately 29,400 tons of coke breeze, coal tar-impacted soil, and paving material from four SWMUs (trash pile, clean oxide, wood trays, and process piping) were excavated and transported for offsite disposal as a non-hazardous waste.

The Certificate of Completion for RCRA Site Closure was issued on December 28, 1994. No outstanding closure responsibilities associated with the RCRA Corrective Action remain.

In addition to the above RCRA Site Closure activities, separate cleanup activities were initiated in 1992 to address oily residues encountered in the Fuel Blending Area. These activities included the excavation and disposal of potential fuel oil sources consisting of subsurface piping and oil residues from the basement of the former pump house. A bioremediation project was conducted for almost two years and reported moderate success in reducing hydrocarbon concentrations in the surface soils (0 to 3 feet below ground surface [bgs]), but only limited success with the deeper contamination. The project was discontinued in late 1993. The above-grade Fuel Blending Area facilities were dismantled and removed in early 1998.

Lastly, seven underground storage tanks (USTs) were removed from the Site in 1992. The UST closures were approved in June 1992 by the agency preceding PADEP. Each UST excavation was backfilled with clean fill.

The Site has not been occupied since the conclusion of the RCRA Site Closure. Other than the Site investigations discussed herein and in the RIR, no other Site activities or operations besides routine mowing and perimeter chain-link fence maintenance have been conducted since the RCRA Closure was certified in 1994.

In 2013, EPA-certified Environmental Indicator Forms were completed and indicated that both human exposures and impacted groundwater migration are under control at the Site. Any further work needed will be performed to satisfy the requirements of PADEP Act 2 and TSCA.

II. Environmental Investigation Summary

A multi-phase Remedial Investigation (RI) was undertaken to assess the nature and extent of Site-related environmental impacts and evaluate the risks posed to human health and the environment by those impacts. The RI was performed in two major phases: (1) the Initial RI activities from 2003 through 2006; and (2) the Supplemental RI activities in 2018 and 2019. As part of the RI, soil, soil gas, and groundwater investigations were performed to characterize remaining residuals. Over the course of these investigations, 46 monitoring wells were installed, 197 test pits were excavated, 179 soil borings were drilled, 21 soil gas samples were collected, and hundreds of samples of environmental media were analyzed. The existing Site layout and RI sampling locations are shown on Figure 2. In total, approximately 97 groundwater and 117 soil samples were analyzed for PCBs.

PCBs were not detected in groundwater above the laboratory reporting limit (ranging from 0.25 parts per billion [ppb] to 0.36 ppb). Samples were collected from 41 monitoring wells distributed across the Site (including the

groundwater monitoring well downgradient from the Historical Tar Plains / Fill Area [PCMW-10S]). Therefore, groundwater investigation results are not further discussed in this letter.

As part of the RI activities, soil samples were collected from 89 sampling locations distributed across the Site and analyzed for PCBs. Surface soil samples were collected from the top 2 inches (below the sod layer, if present) of a 1-square-foot surface area, and subsurface soil samples were collected from select depths bgs at soil boring and test pit locations. PCB analyses were performed by an Environmental Laboratory Accreditation Program-certified laboratory using EPA SW-846 Method 8082. PCBs were not identified in any of the samples at concentrations greater than 50 parts per million (ppm). PCBs were detected at concentrations greater than 1 ppm in only 11 of the 89 sampling locations (four in the Historical Tar Plains / Fill Area as discussed in the subsection below). The soil sampling locations where PCBs have been identified at concentrations greater than 1 ppm are shown on Figure 3. The soil analytical results for total PCBs are presented in Table 1. As presented in the *TSCA PCB Evaluation Summary*, PCBs identified in soil samples collected at the Site are related to pre-April 1978 release(s) and the concentrations are therefore not regulated under TSCA, except for a portion of the Site in the southeast corner referred to as the Historical Tar Plains / Fill Area. A more detailed summary of the PCB analytical results for the soil samples collected outside the Historical Tar Plains / Fill Area is presented in the TSCA PCB Evaluation Summary. The PCB analytical results for soil samples collected from the Historical Tar Plains / Fill Area are summarized below.

PCBs have been identified at a concentration greater than 1 ppm in 4 of 17 soil samples collected from the Historical Tar Plains / Fill Area (samples PSSTP-08A, PSSTP-09A, PSSTP-19A, and PCTP-61). PCB analytical results for soil samples collected from this area are presented in Table II below:

Table II – PCB Concentrations in the Historical Tar Plains / Fill Area

Location ID	Sample Depth (ft bgs)	Date Collected	Total PCBs (ppm)
PCTP-61	0.5	9/8/05	**1.3** [0.54]
	7.5	9/8/05	<0.027
PCTP-62	0.5	9/8/05	0.58
	10.5	9/8/05	<0.042
PCTP-63	0.5	9/8/05	0.23
	10.5	9/8/05	<0.035
PCTP-80	8	9/12/05	0.31
PSSTP-07A	1-2	3/11/03	0.18
	8-9	3/11/03	<0.021
PSSTP-07R	0.5-2	4/18/19	<0.04 [0.0610]
	8-9	4/18/19	<0.037
PSSTP-08A	1-2	3/11/03	0.12
	6-7	3/11/03	**1.2**
PSSTP-09A	1-2	3/12/03	0.05
	6-7	3/12/03	**8.9**
PSSTP-19A	1-2	3/12/03	0.23
	7-8	3/12/03	**1.1**

Notes:

1. < indicates PCBs were not detected at a concentration above the reported detection limit.
2. Brackets indicate the reported concentration of a duplicate sample.
3. Bold results are greater than 1 ppm.

Soil and debris were removed from this area to an average depth of approximately 11 feet during RCRA closure between 1982 and 1988. Approval to backfill was provided in 1989 by the agency preceding PADEP. The Initial RI samples from this area that contained PCBs at concentrations greater than 1 ppm were collected within backfill placed as part of the RCRA excavations. The random areal distribution and depths of soil impacted with low-level PCBs across this area are not indicative of a historical point source release, but rather low-level impacts in fill material. Of the four samples over 1 ppm, three are just slightly over the standard, ranging from 1.1 to 1.3 ppm, and only one sample is of surface soils (PCTP-61(0.5)).

Per TSCA, soil containing PCBs at concentrations greater than 1 ppm but less than or equal to 10 ppm may remain in a “high occupancy area” provided that it is covered with a cap in accordance with the regulation in 40 CFR 761.61(a)(4)(i)(A). Portions of the Site may be occupied by workers at a frequency greater than 6.7 hours per week. Therefore, the Site will be remediated in accordance with EPA’s definition of a “high occupancy area” as presented in 40 CFR 761.3, which would allow for residential use. However, due to residual impacts (other than PCBs) remaining onsite, the Site will be restricted to non-residential use.

III. Proposed Self-Implementing Cleanup Activities

The cleanup activities proposed for the Site will provide conditions that are protective of human health for high-occupancy site use. The objectives with respect to the remediation of PCB-impacted soil are, to the extent practicable, to: (1) prevent ingestion/direct contact with impacted surface and subsurface soil; (2) prevent the migration of PCBs that would result in exceedances of the 0.5 part per billion (ppb) EPA unrestricted cleanup level for water; and (3) prevent impacted soil migration to surface water. As previously indicated, groundwater at the Site is not impacted by PCBs.

The primary cleanup activities covered under this notification include: (1) installing engineered caps(s) above the remaining soil that contains PCBs at concentrations greater than 1 ppm; and (2) establishing institutional controls in the form of an environmental covenant with deed restrictions/notifications to establish certain limitations and protocols for future site operations based on the impacts that will remain at the completion of the cleanup activities. Due to the presence of other residual impacts remaining onsite (including but not limited to PCBs), the proposed cap will be Sitewide. Site development and capping will be performed in accordance with an Erosion and Sedimentation Control (E&SC) Plan.

The proposed cap may include concrete floor slabs/foundations for new buildings; asphalt pavement and/or concrete for driveways, parking areas, and sidewalks; and/or 2-feet of clean soil (e.g., in landscaped areas) to eliminate potential direct contact with soil containing PCBs. Details on the proposed capping are presented in Section III.A.2. The cleanup activities proposed for the Site also address: (1) Site COCs in surface and subsurface soil; and (2) vapor intrusion (VI) concerns for future buildings onsite using engineering controls (i.e., via use of a vapor barrier specifically designed, manufactured and installed for use in VOC mitigation). VI mitigation is unrelated to the PCB self-implementing cleanup notification and is therefore not further discussed further herein.

An environmental covenant with deed restrictions/notifications meeting the requirements of 40 CFR 761.61(a)(8) will be incorporated as an institutional control. Due to the presence of residual impacts other than PCBs remaining onsite, Site use will be restricted to non-residential to limit potential future receptors, and groundwater use will be prohibited to eliminate potential future groundwater exposure pathways. In addition, institutional controls will stipulate inspection, periodic maintenance/repair activities, and reporting requirements for the caps, as appropriate. Details on the proposed institutional controls are provided in Section III.C.

The proposed redevelopment and installation of engineering controls are scheduled to begin in 2022, subject to PADEP and EPA approval of the RICP. The subsection below discusses the primary elements of the selected cleanup action as related to PCB soil impacts.

A. Detailed Description of Cleanup Action for Soil

The selected cleanup action for soils containing PCBs in the Historical Tar Plains / Fill Area at concentrations greater than 1 ppm and less than 10 ppm is capping with either concrete, asphalt, or two feet of clean fill.

Although unlikely, any soil that needs to be excavated from the Historical Tar Plains / Fill Area because of grade adjustment, utility installation, or foundation work will be relocated, consolidated, and capped within the Historical Tar Plains / Fill Area. Soil originating from the Historical Tar Plains / Fill Area will not be relocated outside the limits of this area for consolidation. If soil needs to be removed from the Site (e.g., from the area of PSSTP-01A, for geotechnical reasons), it will be characterized and disposed of at a facility permitted to accept the material. The anticipated disposal facility to be used for PCB-impacted soil from the Site (if any) is Clean Earth of North Jersey located on 115 Jacobus Avenue in South Kearney, New Jersey. An alternate registered RCRA Subtitle D landfill may be used depending on landfill availability for the material quantity/timing or market factors. The name of the alternative landfill (if proposed) will be provided to EPA before being used. Any soil leaving the Site will be characterized for PCBs. Based on analytical data, geotechnical data, and current redevelopment plans, soil in the Historical Tar Plains / Fill Area will not need to be excavated.

During implementation of the cleanup work (and any Site redevelopment if applicable) specific environmental controls, decontamination, health and safety requirements, and soil management, handling, and disposal requirements will be followed. Work conducted on the Site will be in accordance with the procedures defined in the RIR/CP, this notification, and a site-specific HASP.

The proposed cleanup actions and associated construction requirements for the Historical Tar Plains / Fill Area are summarized below.

1. Earthwork and Soil Management

At the start of construction, the Site will be surveyed and staked/marked to identify the Historical Tar Plains / Fill Area covered under this notification. In addition, sampling location PCTP-61 will be surveyed and marked because PCBs were detected in surface soil at this location at a concentration greater than 1 ppm. If feasible, fill will be added to this area during redevelopment in such a way that equipment will not contact soil containing PCBs greater than 1 ppm (i.e., surface soil impacts at PCTP-61 will be covered without disturbing existing soil). Any potential ground-intrusive activities that may disturb, or have the potential to disturb, impacted soil will be monitored.

Site grading or excavation activities within marked areas will be documented to identify the relocation of any impacted soils. Soil onsite can be reused as fill in areas that will be covered as part of site redevelopment. Impacted soil that is excavated will be managed in accordance with the PADEP Guidelines for E&SC. At a minimum, the E&SC measures will include silt fencing, compost filter socks, and/or hay bales that will be installed in appropriate locations in and around the remedial work area to minimize potential transportation of surface soil via wind and/or surface water, to areas outside of the limits of disturbance. If staged, impacted soil will be placed on polyethylene sheeting (minimum 6 mil thickness) adjacent to the excavation area and kept covered with appropriately anchored tarps when inactive. Small quantities of waste, along with drums of used PPE and similar

small debris type items, may be stored in labeled United States Department of Transportation-specification containers before onsite reuse or offsite disposal.

If soil is not suitable from a geotechnical perspective for use as subsurface fill and removed from the site, it will be:

- Characterized in accordance with the disposal facility's requirements.
- Transported by a permitted waste hauler contracted to transport waste materials to the certified waste disposal facility in accordance with appropriate local, State, and Federal regulations.
- Documented in a waste manifest containing a summary of transport tonnage and disposal destination. The waste manifest will be maintained onsite and submitted to PADEP in the Final Report.

For any materials disposed offsite, disposal quantities and associated documentation will be presented in the Final Report. This documentation will include waste profiles, test results, facility acceptance letters, manifests, bills of lading, and facility receipts.

2. Capping System Details and Deviations from TSCA

Based on current redevelopment plans, approximately half of the Historical Tar Plains / Fill Area will be covered by asphalt parking lots and the other half will be covered by landscaping. The asphalt parking lot will be 6 inches thick and conform to 40 CFR 761.61(a)(7). However, the 24-inch soil cover will not meet the permeability, sieve, liquid limit, and plasticity index parameters in 40 CFR 761.75(b)(1)(ii) through (b)(1)(v). The soil cover will consist of two feet of clean fill, including landscaping topsoil, in the greenspace and other landscaped areas. The soil cover will be underlain by a geotextile fabric to serve as a visual demarcation between the clean fill cap and the existing impacted soil. The limits of the various soil cover (cap) components will be documented. A Post-Remediation Care Plan (part of the institutional controls) will be developed for long-term care and maintenance of the final cap(s).

The alternative capping system is considered protective of human health for the following reasons:

1. Groundwater at the Site is not impacted by PCBs, and the Site has been vacant and open to stormwater infiltration since the completion of the RCRA cleanup action in 1993.
2. The random areal distribution and depths of soil impacted with low-level PCBs in the Historical Tar Plains / Fill Area are not indicative of a historical point source release. In fact, three of the four samples over 1 ppm in this area are just slightly in excess of 1 ppm (i.e., 1.1 to 1.3 ppm) and the fourth sample is under 10 ppm.
3. The environmental covenant and deed restriction will prohibit groundwater use at the Site in the future.
4. A stormwater management system consisting of storm sewer catch basins, manholes, and subgrade piping will be designed to minimize infiltration through residual impacted soil and to convey storm water run-off from the Site.
5. The proposed soil cover is more than double the thickness required under 40 CFR 761.61(a)(7), and it will be underlain by a demarcation layer.

B. Equipment Decontamination

Under the provisions of 40 CFR 761.79(h), PCC is requesting to decontaminate PCB remediation equipment using a self-implementing procedure other than prescribed in 40 CFR 761.79(c)(2). If any equipment contacts soil containing PCBs greater than 1 ppm (e.g., surface soil at or near sampling location PCTP-61), the surfaces of that equipment which were in contact with the soil will be cleaned using an industrial strength detergent or non-ionic surfactant solution (e.g., Alconox Detergent 8, Aqua-Cleen®) applied via high-pressure water spray/steam cleaner and brushing to remove adhered debris. The equipment surfaces will then be triple-rinsed and visually inspected following rinsing. If the visual inspection indicates that waste materials remain, the equipment will be re-cleaned and re-inspected. The cleaning will be performed in a decontamination area. The decontamination procedures deviate from the procedures in 40 CFR 761.79(c)(2) and Subpart S because a wash cycle with an organic solvent will not be used. Accordingly, a field demonstration test will be conducted to document that the decontamination method is sufficiently rigorous to reduce PCB concentrations on equipment surfaces. After a successful field demonstration test, as described below, wipe samples will not be collected from each equipment item that is decontaminated.

As part of the field demonstration, standard PCB wipe samples (10-centimeter [cm] by 10-cm, as defined in 40 CFR 761.123) will be collected following decontamination of equipment used to handle PCB impacted soil. In general accordance with 40 CFR 761.302 (Subpart P), a minimum of three wipe samples will be collected from each individual decontaminated construction equipment that contacted PCB impacted soil (e.g., if one excavator and one loader are decontaminated, six wipe samples will be collected). If the equipment surface area appears to be greater than 30 square meters (323 square feet), a fourth wipe sample will be collected. Sample locations will focus on areas that contacted PCB soils (e.g., excavator bucket, excavator/bulldozer tracks, bulldozer blade) and for these areas, the sample locations will be determined following the random number generator method presented in 40 CFR 761.308. These samples will be submitted for laboratory analysis for PCBs using USEPA SW-846 Method 8082. If PCBs are detected in the wipe samples at concentrations equal to or exceeding 10 micrograms per 100 square centimeters, the decontamination approach will be re-evaluated, and modifications implemented. If the demonstration samples indicate that the decontamination methods are adequate, then the detergent, pressure washing/brushing, and triple rinse approach will be used for the duration of the project. A summary of the field demonstration test will be provided to the EPA (TSCA and RCRA points of contact) in e-mail correspondence that includes: (1) a list of the equipment sampled; (2) a summary of decontamination procedures and wipe sampling protocol; and (3) the wipe sample results. The results of the field demonstration test will also be included in the Final Report submitted to PADEP and the EPA's RCRA project manager.

Equipment and materials (e.g., excavators, loaders, dump trucks, hand-tools) that contact impacted soil will be decontaminated before handling clean materials and before being demobilized from the Site. Liquid materials, such as decontamination water (and other residual material collected during equipment decontamination) will be containerized and transported to an industrial wastewater treatment facility for treatment/discharge. Solid waste material generated during equipment decontamination will be consolidated underneath the capping system or collected, characterized, and disposed of at a facility permitted to accept the material.

C. Institutional Controls

Institutional controls consisting of an environmental covenant, deed restriction, deed notification and post-remediation care plan will be developed to address residual impacts remaining after the completion of the redevelopment activities. The environmental covenant will: (1) restrict future use to non-residential purposes due

to residual impacts onsite other than PCBs; (2) identify the presence of constituents remaining in subsurface soil (below the cap) and in groundwater at the Site; (3) prohibit the use of groundwater at the Site; and (4) require compliance with the Post-Remediation Care Plan. In accordance with 40 CFR 761.61(a)(8), a notation on the deed will indicate that: (1) the land has been used for PCB remediation waste disposal; (2) a cap is in-place and must be maintained in compliance with the Post-Remediation Care Plan; and (3) PCB concentrations greater than 1 ppm and less than 10 ppm remain onsite below the cap. A certification, signed by the property owner, will indicate that the deed notification has been recorded in accordance with 40 CFR 761.61(a)(8)(i)(A). Once signed, the certification will be submitted to the EPA Regional Administrator.

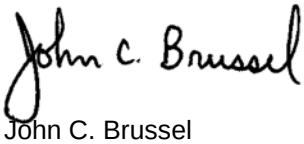
The Post-Remediation Care Plan will: (1) address possible future disturbances of certain soil (to minimize intrusive subsurface activities without appropriate controls and measures); (2) identify known locations of constituents in soil at the Site; (3) set forth the inspection and maintenance activities for capping materials; (4) document and record where and when the inspection and maintenance of engineering controls are being conducted; and (5) report inspection/maintenance results to the PADEP as provided in the environmental covenant.

IV. Summary / Conclusions

The remedial approach for the Historical Tar Plains/Fill Area is consistent with the regulatory requirements for addressing historical PCB releases under the self-implementing PCB remediation waste option contained in 40 CFR 761.61(a), except for the deviations noted above. Considering the existing and future site conditions and the low levels of impact, the proposed self-implementing cleanup and institutional controls will be protective of human health and meet the cleanup objectives for high-occupancy use. We request that the EPA review this notification and respond with any comments or questions.

On behalf of the PCC, Arcadis appreciates your efforts in reviewing this self-implementing cleanup notification and alternate decontamination approval request. Please do not hesitate to contact me at 315.671.9441 or by email at John.Brussel@arcadis.com if you have any questions or need additional information.

Sincerely,
Arcadis U.S., Inc.



John C. Brussel
Principal Engineer/Certified Project Manager

Email: John.Brussel@arcadis.com
Direct Line: 315.671.9441

CC: Kelly Bunker, EPA
Kevin Bilash, EPA
Sarah Pantelidou, PG, PADEP
Brian M. Stearns, PE, National Grid
Mike Guerin, National Grid

Dan Sheehan, PE, Arcadis
Jim Marshall, Bridge Industrial

Enclosures:

Table 1 – Soil Analytical Results for Total PCBs
Figure 1 – Site Location Map
Figure 2 – Remedial Investigation Sampling Locations
Figure 3 – Total PCB Concentrations >1 PPM
Attachment 1 – Certification Statement
Attachment 2 – TSCA PCB Evaluation Summary and Follow-up Correspondence
Attachment 3 – Site Redevelopment Plan

Table

Table 1
Soil Analytical Results – Total PCBs (mg/kg)

National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID:	Sample Depth (ft):	Date Collected:	Total PCBs
MW-102	12-13	5/16/18	<0.058
MW-103	6-7	5/16/18	0.2
	15-16	5/16/18	<0.043
PCSB-26	0.5	7/26/05	<0.028
	6	7/26/05	<0.036
	8	7/26/05	<0.036
PCSB-26R	0.5-2	4/19/19	<0.038
PCSB-27	0.5	7/26/05	<0.029
	1.5	7/26/05	<0.028
	10.5	7/26/05	<0.042
PCSB-28	0.5	7/26/05	<0.03
	2	7/26/05	<0.027
	15	7/26/05	<0.047
PCSB-29	0.5	7/26/05	<0.028
	2	7/26/05	<0.027
	11.5	7/26/05	<0.037
PCSB-30	0.5	7/26/05	<0.028
	2	7/26/05	<0.038
	15	7/26/05	<0.048
PCSB-30R	0.5-2	4/19/19	<0.042
PCSB-31	0.5	7/28/05	<0.035
PCSB-32	0.5	7/28/05	<0.033
PCSB-33	0.5	7/28/05	<0.031
PCSB-34	0.5	7/27/05	0.084
	5	7/27/05	<0.037
	16.5	7/27/05	<0.04
PCSB-35	0.5	8/2/05	0.066
PCSB-36	0.5	7/27/05	0.18
	4	7/27/05	<0.03
	16	7/27/05	<0.036
PCSB-37	0.5	8/3/05	1
PCSB-38	0.5	7/27/05	0.11
	3.5	7/27/05	<0.028
	9.5	7/27/05	<0.044
PCSB-39	0.5	7/27/05	<0.032
PCSB-40	0.5	7/28/05	0.053
PCSB-41	0.5	7/28/05	0.43
PCSB-41R	0.5-2	4/22/19	<0.039
PCSB-42	0.5	8/1/05	0.051 [<0.026]
PCSB-43	0.5	8/1/05	0.16
PCSB-44	0.5	8/3/05	0.12
PCSB-45	0.5	8/3/05	0.13 [0.13]
PCSB-46	0.5	7/27/05	0.046
PCSB-47	0.5	8/3/05	0.34
PCSB-48	0.5	8/3/05	<0.026
PCSB-49	0.5	8/3/05	0.053
PCSB-50	0.5	8/3/05	0.14
PCSB-51	0.5	8/3/05	0.12
PCSB-52	0.5	8/2/05	0.12
PCSB-54	0.5	8/3/05	0.32
PCSB-55	0.5	8/3/05	0.069
PCSB-56	0.5	8/15/05	**1.7**
PCSB-57	0.5	8/15/05	0.11
PCSB-58	0.5	8/15/05	0.13
PCSB-59	0.5	8/15/05	0.21
PCSB-60	0.5	8/15/05	0.5 [0.25]
PCTP-61	0.5	9/8/05	**1.3** [0.54]
	7.5	9/8/05	<0.027
PCTP-62	0.5	9/8/05	0.58
	10.5	9/8/05	<0.042
PCTP-63	0.5	9/8/05	0.23
	10.5	9/8/05	<0.035
PCTP-64	0.5	9/8/05	0.36
	7	9/8/05	<0.03
PCTP-65	0.5	9/8/05	<0.028
	7.5	9/8/05	<0.033
PCTP-66	0.5	9/8/05	<0.017
	7.5	9/8/05	<0.037
PCTP-66R	0-0.5	4/24/19	0.249 [0.336]
	0.5-2	4/24/19	<0.035
	8-10	4/24/19	<0.052

Location ID:	Sample Depth (ft):	Date Collected:	Total PCBs
PCTP-66R-HC	0-2	4/4/19	0.369
	2-4	4/4/19	<0.16
PCTP-67	0.5	9/12/05	0.25 [0.2]
	8	9/12/05	<0.037
PCTP-68	0.5	9/9/05	<0.018
	6	9/9/05	**1.85**
PCTP-69	0.5	9/9/05	**1.3**
	17.5	9/9/05	<0.029
PCTP-70	0.5	9/9/05	<0.028
	18	9/9/05	<0.027
PCTP-71	0.5	9/9/05	0.21
	17.5	9/9/05	<0.027
PCTP-72	0.5	9/9/05	0.3
	12	9/9/05	<0.032
PCTP-73	0.5	9/9/05	**7.9**
	9.5	9/9/05	0.85
PCTP-73R	0-0.5	4/10/19	0.932
PCTP-74	0.5	9/9/05	<0.027
	12.5	9/9/05	<0.025
PCTP-75	0.5	9/9/05	0.055
	11	9/9/05	<0.019
PCTP-76	0.5	9/12/05	0.37
	6.5	9/12/05	0.7
PCTP-77	0.5	9/12/05	0.443
	10.5	9/12/05	<0.038
PCTP-78	0.5	9/12/05	<0.027
	9.5	9/12/05	<0.034
PCTP-79	0.5	9/12/05	0.27
	10	9/12/05	<0.033
PCTP-80	8	9/12/05	0.31
PSSTP-01A	1-2	3/11/03	0.08
	5-6	3/11/03	**13**
PSSTP-01R	5-6	4/10/19	**1.51**
PSSTP-02A	1-2	3/11/03	0.43
	5-6	3/11/03	**1.14**
PSSTP-03A	1-2	3/11/03	0.214
	8-9	3/11/03	0.106
PSSTP-04A	1-2	3/11/03	0.61
	8-9	3/11/03	0.47
PSSTP-04R	1-2	4/11/19	**1.27**
	7-8	4/11/19	<0.12
	8-9	4/11/19	<0.043
	16-17	4/11/19	<0.038
PSSTP-05A	1-2	3/11/03	0.83
	5-6	3/11/03	<0.02
PSSTP-06A	1-2	3/11/03	0.11
	5-6	3/11/03	<0.021
PSSTP-07A	1-2	3/11/03	0.18
	8-9	3/11/03	<0.021
PSSTP-07R	0.5-2	4/18/19	<0.04 [0.0610]
	8-9	4/18/19	<0.037
PSSTP-08A	1-2	3/11/03	0.12
	6-7	3/11/03	**1.2**
PSSTP-09A	1-2	3/12/03	0.05
	6-7	3/12/03	**8.9**
PSSTP-10A	1-2	3/12/03	<0.019
	8-9	3/12/03	<0.028
PSSTP-10R	1-2	4/16/19	<0.037
	8-9	4/16/19	<0.04
PSSTP-11A	1-2	3/12/03	<0.019
	8-9	3/12/03	<0.021
PSSTP-12A	1-2	3/12/03	0.418
	7-8	3/12/03	<0.023
PSSTP-13A	1-2	3/12/03	<0.019
	7-8	3/12/03	<0.023
PSSTP-14A	1-2	3/12/03	<0.024
	7-8	3/12/03	<0.024
PSSTP-15A	1-2	3/12/03	0.096
	8-9	3/12/03	<0.019
PSSTP-16A	1-2	3/12/03	0.63
	5-6	3/12/03	<0.023

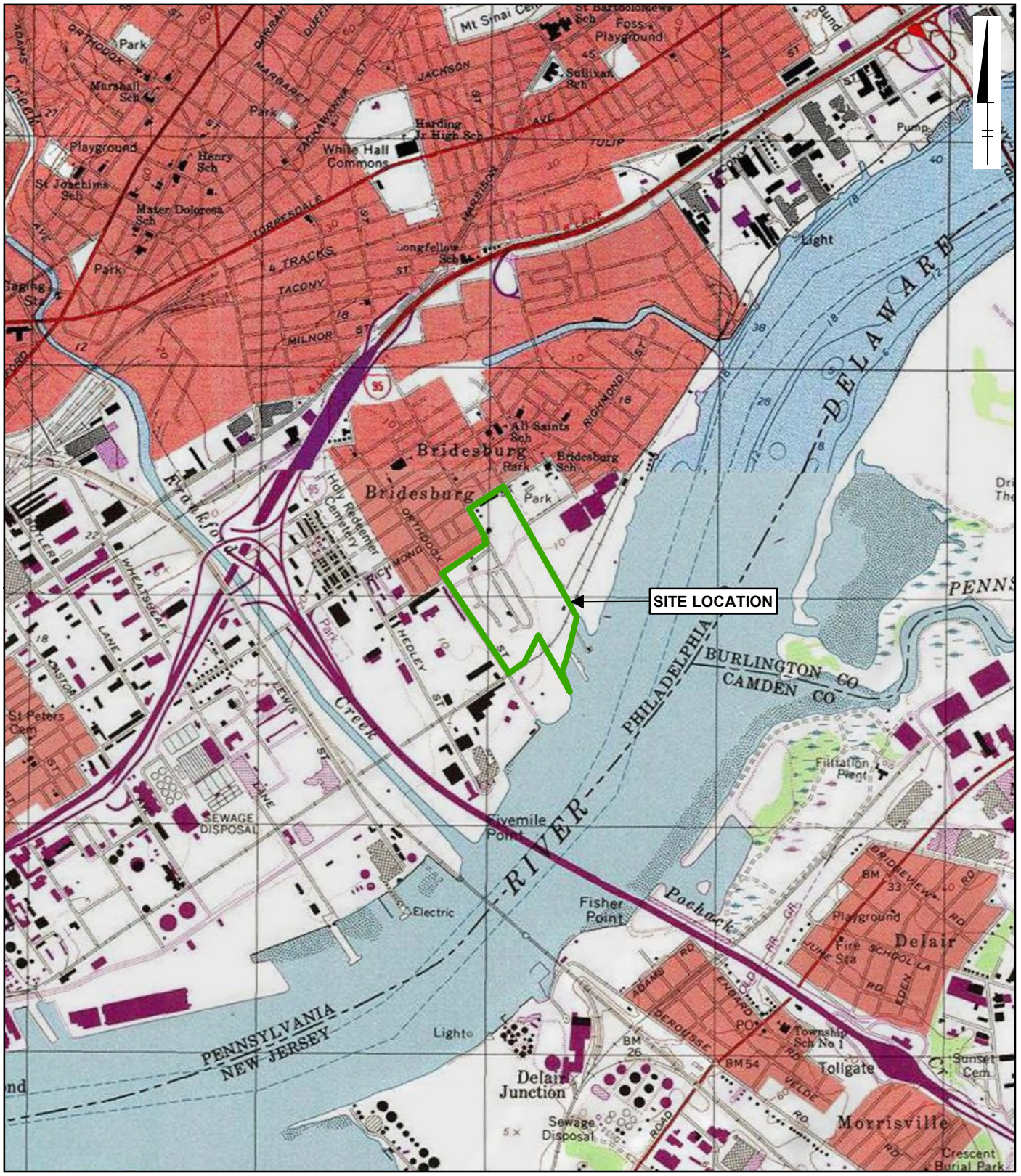
Table 1
Soil Analytical Results – Total PCBs (mg/kg)

National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID:	Sample Depth (ft):	Date Collected:	Total PCBs
PSSTP-17A	1-2	3/12/03	0.25
	8-9	3/12/03	0.073
PSSTP-18A	1-2	3/12/03	0.12
	6-7	3/12/03	<0.021
PSSTP-19A	1-2	3/12/03	0.23
	7-8	3/12/03	**1.08**
PSSTP-20A	1-2	3/13/03	0.11
	8-9	3/13/03	<0.019
PSSTP-21A	1-2	3/13/03	0.25
	8-9	3/13/03	<0.03
PSSTP-22A	1-2	3/13/03	<0.019
	6-7	3/13/03	<0.027
PSSTP-22R	0.5-2	4/24/19	<0.037
PSSTP-23A	1-2	3/13/03	<0.02
	7-8	3/13/03	<0.019
PSSTP-24A	1-2	3/13/03	<0.02
	7-8	3/13/03	<0.029
PSSTP-25A	1-2	3/13/03	0.081
	7-8	3/13/03	<0.023
PSSTP-26A	1-2	3/13/03	0.092
	7-8	3/13/03	<0.023
PSSTP-27A	1-2	3/13/03	0.2
	5-6	3/13/03	<0.023
PSSTP-28A	1-2	3/13/03	<0.019
	5-6	3/13/03	<0.022
PSSTP-29A	1-2	3/13/03	0.077
	5-6	3/13/03	<0.019
PSSTP-30A	1-2	3/13/03	<0.023
	5-6	3/13/03	<0.022
S-138	0-0.5	4/5/19	0.159
	0.5-2	4/5/19	0.426
S-139	0-0.5	4/10/19	0.406
	0.5-2	4/10/19	0.171
S-140	0-0.5	4/10/19	0.0256
	0.5-2	4/10/19	<0.038

Notes:
1. Samples prior to 2019 were collected by Paulus, Sokolowski, and Sartor Engineering, PC on the dates indicated. Samples in 2019 were collected by Arcadis on the dates indicated.
2. Sample depth is reported in feet below ground surface.
3. 2003 and 2005 samples were analyzed by Hampton-Clarke, Veritech Laboratories of Fairfield, New Jersey.
4. 2019 samples were analyzed by SGS North America Incorporated Laboratories of Dayton, New Jersey.
5. Samples were submitted for laboratory analysis for Polychlorinated biphenyls (PCBs) using USEPA SW-846 Method 8082.
6. < = constituent not detected at a concentration above the reported detection limit. These results are also reported in gray.
7. Concentrations reported in milligrams per kilogram (mg/kg) or parts per million (ppm).
8. Brackets indicate the reported concentration of a duplicate sample.
9. Data from 2019 have undergone a Tier II validation. Data prior to 2019 have not been validated.

Figures



NOTE:

1. USGS TOPOGRAPHIC MAP PROVIDED BY ESRI.

0 2,000 4,000 Feet

GRAPHIC SCALE

NATIONAL GRID
FORMER PHILADELPHIA COKE PLANT
PHILADELPHIA, PENNSYLVANIA
SELF-IMPLEMENTING PCB CLEANUP NOTIFICATION

SITE LOCATION MAP

ARCADIS Design & Consultancy for natural and built assets

FIGURE 1

City: Syr Div/Group: IM/DV Created By: K. Sinsabaugh Last Saved By: AKENS
National Grid Philly Coke (B0036790.0000.00001)
T:_ENV\NationalGrid\PhiladelphiaCoke\2021\SelfImplementingPCBCleanup\Fig1_SiteLocationMap.mxd 8/20/2021 9:35:18 AM

CASIMIR STREET
RICHMOND STREET
LEFEVRE STREET
WILMOT STREET
OVERINGTON STREET
ALLEN STREET
PLUM STREET
GARDEN STREET
BUCKIUS STREET (OPEN 50' WIDE)
BUCKIUS STREET (NOT OPEN)
DELAWARE RIVER
Philadelphia Beltway ROW
Utility Corridor
BATH STREET
ORTHODOX STREET
CASPER STREET

LEGEND:

- ARCADIS SOIL BORING LOCATION (2019)
- ARCADIS TEST PIT LOCATION (2019)
- PSS ENVIRONMENTAL SOIL BORINGS (2005)
- PSS ENVIRONMENTAL HYDROPUNCHES (2005)
- PSS ENVIRONMENTAL TEST PITS (2005)
- PSS ENVIRONMENTAL TEST PITS (2003)
- EEI GEOTECHNICAL TEST PITS (2005)
- ARCADIS GROUNDWATER MONITORING WELL LOCATION (2018-2019)
- PSS ENVIRONMENTAL GROUNDWATER MONITORING WELLS (2005)
- MISSING/DESTROYED PSS ENVIRONMENTAL GROUNDWATER MONITORING WELLS
- RCRA CLOSURE GROUNDWATER MONITORING WELL (1992 AND EARLIER)
- EEI GEOTECHNICAL SOIL BORINGS (2005)
- PSS SOIL VAPOR SAMPLING LOCATIONS (2006)
- FORMER RCRA EXCAVATION
- FORMER STRUCTURE/OPERATION
- SITE BOUNDARY
- SHORELINE

NOTE:

1. BASE MAP OBTAINED FROM FIGURE PREPARED BY PAULUS SOKOLOSKI AND SARTOR ENGINEERING, PC, TITLED "GENERAL SITE PLAN", DRAWING 2A, DATED APRIL 9, 2007 AT A SCALE OF 1"=250'.

0 250 500 Feet
GRAPHIC SCALE

NATIONAL GRID
FORMER PHILADELPHIA COKE PLANT
PHILADELPHIA, PENNSYLVANIA
SELF-IMPLEMENTING PCB CLEANUP NOTIFICATION

REMEDIAL INVESTIGATION SAMPLING LOCATIONS

ARCADIS Design & Consultancy for natural and built assets

FIGURE 2

City: Syr Div/Group: IM/DV Created By: K. Sinsabaugh Last Saved By: AKENS
National Grid Philly Coke (B0036790.0000.00001)
T:_ENV\NationalGrid\PhiladelphiaCoke\2021\SelfImplementingPCBCleanup\Fig2_Investigationsamplelocs.mxd 8/20/2021 2:10:43 PM

PSSTP-01A 3/11/03	
Sample Depth (ft)	Total PCBs
1-2	0.08
5-6	**13**

PSSTP-01R 4/10/19	
Sample Depth (ft)	Total PCBs
5-6	**1.51**

PSSTP-02A 3/11/03	
Sample Depth (ft)	Total PCBs
1-2	0.43
5-6	**1.14**

PCTP-73 9/9/05	
Sample Depth (ft)	Total PCBs
0.5	**7.9**
9.5	0.85

PCTP-73R 4/10/19	
Sample Depth (ft)	Total PCBs
0-0.5	0.932

PSSTP-04A 3/11/03	
Sample Depth (ft)	Total PCBs
1-2	0.61
8-9	0.47

PSSTP-04A 4/11/19	
Sample Depth (ft)	Total PCBs
1-2	**1.27**
7-8	<0.12
8-9	<0.043
16-17	<0.038

PCSB-56 8/15/05	
Sample Depth (ft)	Total PCBs
0.5	**1.7**

PCTP-69 9/9/05	
Sample Depth (ft)	Total PCBs
0.5	**1.3**
17.5	<0.029

PCTP-68 9/9/05	
Sample Depth (ft)	Total PCBs
0.5	<0.018
6	**1.85**

PSSTP-08A 3/11/03	
Sample Depth (ft)	Total PCBs
1-2	0.12
6-7	**1.2**

PCTP-61 9/8/05	
Sample Depth (ft)	Total PCBs
0.5	**1.3** [0.54]
7.5	<0.027

PSSTP-19A 3/12/03	
Sample Depth (ft)	Total PCBs
1-2	0.23
7-8	**1.08**

PSSTP-09A 3/12/03	
Sample Depth (ft)	Total PCBs
1-2	0.05
6-7	**8.9**

LEGEND:

- HISTORICAL TAR PLAINS/FILL AREA
- (S-101) SOIL BORING LOCATION (2019)
- (S-120) 2019 TEST PIT LOCATION (2019)
- (PCSB-04) PSS ENVIRONMENTAL SOIL BORINGS (2005)
- (PSSTP-23) PSS ENVIRONMENTAL TEST PITS (2003)
- (PCTP-01) PSS ENVIRONMENTAL TEST PITS (2005)
- RCRA EXCAVATION
- FORMER STRUCTURE/OPERATION
- SITE BOUNDARY
- SHORELINE

NOTES:

1. BASE MAP OBTAINED FROM FIGURE PREPARED BY PAULUS SOKOLOSKI AND SARTOR ENGINEERING, PC, TITLED “GENERAL SITE PLAN”, DRAWING 2A, DATED APRIL 9, 2007 AT A SCALE OF 1”=250’.

2. FIGURE ONLY SHOWS SAMPLE LOCATIONS WHERE SOIL SAMPLES WERE COLLECTED FOR LABORATORY ANALYSIS OF POLYCHLORINATED BIPHENYLS (PCBs).

3. DATABOXES ONLY SHOWN AT LOCATIONS WHERE PCB CONCENTRATIONS IN A SOIL SAMPLE EXCEEDED 1 PPM.

4. < = CONSTITUENT NOT DETECTED AT A CONCENTRATION ABOVE THE REPORTED DETECTION LIMIT.

5. CONCENTRATIONS REPORTED IN MILLIGRAMS PER KILOGRAMS (mg/Kg) OR PARTS PER MILLION (ppm).

6. SHADING INDICATES A TOTAL PCB CONCENTRATION GREATER THAN 10 PPM.

7. BOLD FONT INDICATES A TOTAL PCB CONCENTRATION GREATER THAN 1 PPM.

8. BRACKETS INDICATE THE REPORTED CONCENTRATION OF A DUPLICATE SAMPLE.

0 250 500 Feet

GRAPHIC SCALE

NATIONAL GRID
FORMER PHILADELPHIA COKE PLANT
PHILADELPHIA, PENNSYLVANIA
SELF-IMPLEMENTING PCB CLEANUP NOTIFICATION

TOTAL PCB CONCENTRATIONS >1 PPM

ARCADIS Design & Consultancy for natural and built assets

FIGURE 3

City: Syr Div/Group: IM/DV Created By: K. Sinsabaugh Last Saved By: AKENS
National Grid Philly Coke (B0036790.0000.00001)
T:_ENV\NationalGrid\PhiladelphiaCoke\2021\SelfImplementingPCBCleanup\Fig3_TotPCBconc.mxd 8/20/2021 2:22:46 PM

Attachment 1

Certification Statement

Attachment 1

Certification Statement

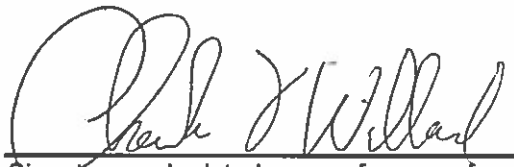
Owner: Philadelphia Coke Co., Inc. (PCC)
Party Conducting Cleanup: National Grid
Project: Former Philadelphia Coke Co. Facility – Philadelphia, Pennsylvania

All sampling plans, sample collection procedures, sample preparation procedures, extraction procedures, and instrumental/chemical analysis procedures used to assess or characterize the polychlorinated biphenyl (PCB) contamination at the Philadelphia Coke Site located at 4501 Richmond Street in Philadelphia, Pennsylvania, are on file at the location designated in the certificate, and are available for USEPA inspection.

Files are available at the following location:

Arcadis
One Lincoln Center
110 West Fayette Street, Suite 300
Syracuse, New York 13202
Contact: John C. Brussel

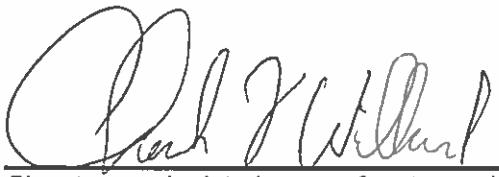
Under civil and criminal penalties of law for the making or submission of false or fraudulent statements or representations (18 U.S.C. 1001 and 15 U.S.C. 2615), I certify that the information contained in or accompanying this document is true, accurate, and complete. As to the identified section(s) of this document for which I cannot personally verify truth and accuracy, I certify as the company official having supervisory responsibility for the persons who, acting under my direct instructions, made the verification that this information is true, accurate, and complete.



12/1/2021

Signature and printed name of owner of property — Date

Charles F. Willard
President – Philadelphia Coke Co., Inc.



12/1/2021

Signature and printed name of party conducting cleanup — Date

Charles F. Willard
President – Philadelphia Coke Co., Inc.

Attachment 2

TSCA PCB Evaluation Summary and Follow-up Correspondence

TSCA PCB EVALUATION SUMMARY

TSCA PCB Evaluation Summary
Remedial Investigation
Philadelphia Coke Co., Inc. Site
Philadelphia, Pennsylvania

This document evaluates whether polychlorinated biphenyls (PCBs) identified in soil at the Philadelphia Coke Co., Inc. site (the Site) by previous environmental investigations are regulated under the Toxic Substances Control Act (TSCA) presented in Title 40 of the Code of Federal Regulation (40 CFR) Part 761. As explained below, PCBs identified in soil samples collected at the Site are related to pre-April 1978 release(s) and the concentrations are therefore not regulated under TSCA.

A brief history of the TSCA regulations and historical Site use are presented below, followed by a soil sampling summary and evaluation of the PCB soil analytical data.

TSCA Regulations Summary and Site History

PCBs were commercially manufactured in the United States from approximately 1930 until 1979, when their production was banned under the TSCA regulations found in 40 CFR Part 761. As defined in 40 CFR Part 761.3, soil that contains PCBs (based on in-place sampling prior to excavation) at a concentration less than 50 parts per million (ppm) as the result of a release that occurred before the effective date of the TSCA regulations (April 1978) is not regulated under TSCA.

Site operations began in the 1920s with a manufactured gas plant (MGP) producing gas for the City of Philadelphia for heating or lighting. Metallurgical coke production replaced the MGP operation and continued until 1982, encompassing all but the easternmost section of the Site (i.e., 2.5 acres east of the existing utility corridor). PCBs were not a raw material, product, or byproduct of either MGP or coking operations. Although historical facility mapping shows an electrical substation building in the west-central portion of the Site, aerial photos do not show electrical equipment outside of the building. There are no known or suspected releases from equipment inside the electrical substation building. All but the easternmost section of the Site has not been used since 1982. This means that there was only a four-year period of operations where PCB releases at most of the Site could be regulated under TSCA.

Fuel blending operations were performed in the easternmost section of the Site for a 20-year period from 1969 to 1989 and consisted of storing/blending #2 and #6 fuel oils brought to the Site by barge and subsequently distributing the oil locally by tanker truck. The fuel blending operation, like the MGP and coking operations, did not use or produce PCBs.

PCB Soil Sampling Summary

As part of previous Remedial Investigations at the Site, a total of 177 soil samples have been collected from 89 sampling locations distributed across the Site and analyzed for PCBs. The analytical results are summarized as follows:

- PCBs were not identified in any of the samples at concentrations greater than 50 ppm.
- PCBs concentrations identified in the samples are well-below Pennsylvania Department of Environmental Protection (PADEP) medium-specific concentrations for soil (i.e., 20 ppm to 770 ppm, depending on Aroclor).
- The highest total PCB concentration detected was 13 ppm (in a sample collected at the northwestern corner of the Site near the intersection of Richmond Street and Buckius Street). This was the only location where PCBs were detected at a concentration greater than 10 ppm.

- PCBs were detected at concentrations greater than 1 ppm in only 11 of the 89 sampling locations.

The Site layout and soil sampling locations where PCBs have been identified at concentrations greater than 1 ppm are shown on Figure 1. The soil analytical results for total PCBs are presented in Table 1. PCB soil analytical results greater than 1 ppm and corresponding sampling locations/depths are summarized in Table 2 along with an evaluation of the data, consistent with that presented below.

PCB Soil Data Evaluation

The PCB soil analytical data are evaluated by area of the Site; as explained below, it is highly unlikely that PCBs at the Site are related to a post-1978 release.

- ***Northern Portion of Site (Historical Coal and Coke Storage Areas):*** As shown on Figure 1, PCBs have been identified at concentrations >1 ppm in four sampling locations in this area (PSSTP-01/01R, PSSTP-02, PCTP-73/73R, and PSSTP-04/04R). These locations are within the footprint of former coal and coke piles that are visible on aerial photographs starting in 1929 until at least 1981 (refer to Attachment 1 for the aerial photographs). Aerial photographs show that the coke storage area footprint covered sampling locations PSSTP-02 and PCTP-73/73R as early as 1929. Aerial photographs by the 1950s show that the coke storage area footprint had expanded westward to the edge of a building located on Richmond Street (extending over sampling location PSSTP-01/01R) and the coal storage area footprint had expanded eastward to the existing utility corridor (extending over sampling location PSSTP-04/04R). It is highly unlikely that PCBs in the coal and coke storage areas could be related to a post-1978 release given that the last available aerial photograph before the end of coke production (which is dated 1981) shows site conditions consistent with earlier photos, in which the coal and coke piles consistently covered these sampling locations. Given that the coal and coke piles covered the areas where PCBs were detected for several years after 1978, these dectections are not TSCA-regulated. PCBs in this area are likely related to historic fill but not Site-related releases post-1978.
- ***Eastern Part of Site Near Philadelphia Beltway Railroad:*** PCBs have been identified at a concentration >1 ppm in only one sampling location in this area of the Site (PCSB-56). This sampling location is between the existing railroad tracks and a utility corridor, outside the former dikes surrounding the two southernmost tanks of the former fuel blending area. PCBs were not detected above 1 ppm in soil samples collected from nearby sampling locations within the former fuel blending area, indicating that PCBs at location PCSB-56 are isolated. Fuel blending operations immediately adjacent to this part of the Site continued until 1989 using #2 and #6 fuel oils (there is no documentation of PCB oil use in this area). Aerial photographs taken between the mid-1960s and 1981 show no development in the immediate vicinity of PCSB-56, and the southernmost tanks of the fuel blending area appear to have been removed by 1988. PCBs in this area are likely related to historic fill or nearby railroad operations but not Site-related releases post-1978.
- ***Southeast Corner of Site – Historical Tar Plains/Fill Area:*** PCBs have been identified at a concentration >1 ppm in four sampling locations in this area of the Site (PSSTP-08, PSSTP-09, PSSTP-19, and PCTP-61). Soil and debris were removed from this area to an average depth of approximately 11 feet during excavation as part of Resource Conservation and Recycling Act (RCRA) closure between 1982 and 1988. Approval to backfill was provided in 1989 by the agency preceding PADEP. The samples from this area that contained PCBs at concentrations >1 ppm were collected during the 2005/2006 Remedial Investigation at depths of 6-7 feet, which would be within the area where fill was placed to backfill the excavations. Therefore, PCBs in this area are attributed to regrading of historic fill at the site to remove the depressions formed by the RCRA soil excavations.

The random and low levels of PCBs identified in soil across this area (and the Site as a whole), both spatially and at various depths, are also indicative of historic fill grading and not a historic point-source release.

West-Central Portion of Site – Near Former Facilities and Buildings: PCBs have been identified at a concentration >1 ppm in two sampling locations in this area of the Site (PCTP-68 and PCTP-69), as indicated below.

- *PCTP-68:* PCBs were detected at a concentration of 1.9 ppm in a subsurface soil sample collected at a depth of 6 feet below ground surface at sampling location PCTP-68, within a concrete driveway approximately 50 feet southwest of a former electrical substation building that housed electrical equipment indoors. However, PCBs were not detected above laboratory detection limits in surface soil at this location or other surface soil sampling locations around this area. The data suggest that PCBs at this location were unrelated to a release from the ground surface in this area. Since development in this area occurred before 1978, the limited PCB presence in the subsurface would also have occurred before 1978.
- *PCTP-69:* PCBs were detected at a concentration of 1.3 ppm in surface soil at sampling location PCTP-68, which is below a former concrete pad associated with a scale house that was constructed before 1978. Since this area was capped with concrete before 1978, the limited PCB presence in the subsurface would also have occurred before 1978.

PCBs in this area are likely related to historic fill but not Site-related releases post-1978.

Table 1
Soil Analytical Results for Total PCBs (mg/kg)

Former Philadelphia Coke Co. Inc. Site
Philadelphia, Pennsylvania

Location ID:	Sample Depth (ft):	Date Collected:	Total PCBs
MW-102	12-13	5/16/18	<0.058
MW-103	6-7	5/16/18	0.2
	15-16	5/16/18	<0.043
PCSB-26	0.5	7/26/05	<0.028
	6	7/26/05	<0.036
	8	7/26/05	<0.036
PCSB-26R	0.5-2	4/19/19	<0.038
PCSB-27	0.5	7/26/05	<0.029
	1.5	7/26/05	<0.028
	10.5	7/26/05	<0.042
PCSB-28	0.5	7/26/05	<0.03
	2	7/26/05	<0.027
	15	7/26/05	<0.047
PCSB-29	0.5	7/26/05	<0.028
	2	7/26/05	<0.027
	11.5	7/26/05	<0.037
PCSB-30	0.5	7/26/05	<0.028
	2	7/26/05	<0.038
	15	7/26/05	<0.048
PCSB-30R	0.5-2	4/19/19	<0.042
PCSB-31	0.5	7/28/05	<0.035
PCSB-32	0.5	7/28/05	<0.033
PCSB-33	0.5	7/28/05	<0.031
PCSB-34	0.5	7/27/05	0.084
	5	7/27/05	<0.037
	16.5	7/27/05	<0.04
PCSB-35	0.5	8/2/05	0.066
PCSB-36	0.5	7/27/05	0.18
	4	7/27/05	<0.03
	16	7/27/05	<0.036
PCSB-37	0.5	8/3/05	1
PCSB-38	0.5	7/27/05	0.11
	3.5	7/27/05	<0.028
	9.5	7/27/05	<0.044
PCSB-39	0.5	7/27/05	<0.032
PCSB-40	0.5	7/28/05	0.053
PCSB-41	0.5	7/28/05	0.43
PCSB-41R	0.5-2	4/22/19	<0.039
PCSB-42	0.5	8/1/05	0.051 [<0.026]
PCSB-43	0.5	8/1/05	0.16
PCSB-44	0.5	8/3/05	0.12
PCSB-45	0.5	8/3/05	0.13 [0.13]
PCSB-46	0.5	7/27/05	0.046
PCSB-47	0.5	8/3/05	0.34
PCSB-48	0.5	8/3/05	<0.026
PCSB-49	0.5	8/3/05	0.053
PCSB-50	0.5	8/3/05	0.14
PCSB-51	0.5	8/3/05	0.12
PCSB-52	0.5	8/2/05	0.12
PCSB-54	0.5	8/3/05	0.32
PCSB-55	0.5	8/3/05	0.069
PCSB-56	0.5	8/15/05	**1.7**
PCSB-57	0.5	8/15/05	0.11
PCSB-58	0.5	8/15/05	0.13

Location ID:	Sample Depth (ft):	Date Collected:	Total PCBs
PCSB-59	0.5	8/15/05	0.21
PCSB-60	0.5	8/15/05	0.5 [0.25]
PCTP-61	0.5	9/8/05	**1.3** [0.54]
	7.5	9/8/05	<0.027
PCTP-62	0.5	9/8/05	0.58
	10.5	9/8/05	<0.042
PCTP-63	0.5	9/8/05	0.23
	10.5	9/8/05	<0.035
PCTP-64	0.5	9/8/05	0.36
	7	9/8/05	<0.03
PCTP-65	0.5	9/8/05	<0.028
	7.5	9/8/05	<0.033
PCTP-66	0.5	9/8/05	<0.017
	7.5	9/8/05	<0.037
PCTP-66R	0-0.5	4/24/19	0.249 [0.336]
	0.5-2	4/24/19	<0.035
	8-10	4/24/19	<0.052
PCTP-66R-HC	0-2	4/4/19	0.369
	2-4	4/4/19	<0.16
PCTP-67	0.5	9/12/05	0.25 [0.2]
	8	9/12/05	<0.037
PCTP-68	0.5	9/9/05	<0.018
	6	9/9/05	**1.85**
PCTP-69	0.5	9/9/05	**1.3**
	17.5	9/9/05	<0.029
PCTP-70	0.5	9/9/05	<0.028
	18	9/9/05	<0.027
PCTP-71	0.5	9/9/05	0.21
	17.5	9/9/05	<0.027
PCTP-72	0.5	9/9/05	0.3
	12	9/9/05	<0.032
PCTP-73	0.5	9/9/05	**7.9**
	9.5	9/9/05	0.85
PCTP-73R	0-0.5	4/10/19	0.932
PCTP-74	0.5	9/9/05	<0.027
	12.5	9/9/05	<0.025
PCTP-75	0.5	9/9/05	0.055
	11	9/9/05	<0.019
PCTP-76	0.5	9/12/05	0.37
	6.5	9/12/05	0.7
PCTP-77	0.5	9/12/05	0.443
	10.5	9/12/05	<0.038
PCTP-78	0.5	9/12/05	<0.027
	9.5	9/12/05	<0.034
PCTP-79	0.5	9/12/05	0.27
	10	9/12/05	<0.033
PCTP-80	8	9/12/05	0.31
PSSTP-01A	1-2	3/11/03	0.08
	5-6	3/11/03	**13**
PSSTP-01R	5-6	4/10/19	**1.51**
PSSTP-02A	1-2	3/11/03	0.43
	5-6	3/11/03	**1.14**
PSSTP-03A	1-2	3/11/03	0.214
	8-9	3/11/03	0.106

Table 1
Soil Analytical Results for Total PCBs (mg/kg)

Former Philadelphia Coke Co. Inc. Site
Philadelphia, Pennsylvania

Location ID:	Sample Depth (ft):	Date Collected:	Total PCBs
PSSTP-04A	1-2	3/11/03	0.61
	8-9	3/11/03	0.47
PSSTP-04R	1-2	4/11/19	**1.27**
	7-8	4/11/19	<0.12
	8-9	4/11/19	<0.043
	16-17	4/11/19	<0.038
PSSTP-05A	1-2	3/11/03	0.83
	5-6	3/11/03	<0.02
PSSTP-06A	1-2	3/11/03	0.11
	5-6	3/11/03	<0.021
PSSTP-07A	1-2	3/11/03	0.18
	8-9	3/11/03	<0.021
PSSTP-07R	0.5-2	4/18/19	<0.04 [0.0610]
	8-9	4/18/19	<0.037
PSSTP-08A	1-2	3/11/03	0.12
	6-7	3/11/03	**1.2**
PSSTP-09A	1-2	3/12/03	0.05
	6-7	3/12/03	**8.9**
PSSTP-10A	1-2	3/12/03	<0.019
	8-9	3/12/03	<0.028
PSSTP-10R	1-2	4/16/19	<0.037
	8-9	4/16/19	<0.04
PSSTP-11A	1-2	3/12/03	<0.019
	8-9	3/12/03	<0.021
PSSTP-12A	1-2	3/12/03	0.418
	7-8	3/12/03	<0.023
PSSTP-13A	1-2	3/12/03	<0.019
	7-8	3/12/03	<0.023
PSSTP-14A	1-2	3/12/03	<0.024
	7-8	3/12/03	<0.024
PSSTP-15A	1-2	3/12/03	0.096
	8-9	3/12/03	<0.019
PSSTP-16A	1-2	3/12/03	0.63
	5-6	3/12/03	<0.023

Location ID:	Sample Depth (ft):	Date Collected:	Total PCBs
PSSTP-17A	1-2	3/12/03	0.25
	8-9	3/12/03	0.073
PSSTP-18A	1-2	3/12/03	0.12
	6-7	3/12/03	<0.021
PSSTP-19A	1-2	3/12/03	0.23
	7-8	3/12/03	**1.08**
PSSTP-20A	1-2	3/13/03	0.11
	8-9	3/13/03	<0.019
PSSTP-21A	1-2	3/13/03	0.25
	8-9	3/13/03	<0.03
PSSTP-22A	1-2	3/13/03	<0.019
	6-7	3/13/03	<0.027
PSSTP-22R	0.5-2	4/24/19	<0.037
PSSTP-23A	1-2	3/13/03	<0.02
	7-8	3/13/03	<0.019
PSSTP-24A	1-2	3/13/03	<0.02
	7-8	3/13/03	<0.029
PSSTP-25A	1-2	3/13/03	0.081
	7-8	3/13/03	<0.023
PSSTP-26A	1-2	3/13/03	0.092
	7-8	3/13/03	<0.023
PSSTP-27A	1-2	3/13/03	0.2
	5-6	3/13/03	<0.023
PSSTP-28A	1-2	3/13/03	<0.019
	5-6	3/13/03	<0.022
PSSTP-29A	1-2	3/13/03	0.077
	5-6	3/13/03	<0.019
PSSTP-30A	1-2	3/13/03	<0.023
	5-6	3/13/03	<0.022
S-138	0-0.5	4/5/19	0.159
	0.5-2	4/5/19	0.426
S-139	0-0.5	4/10/19	0.406
	0.5-2	4/10/19	0.171
S-140	0-0.5	4/10/19	0.0256
	0.5-2	4/10/19	<0.038

Notes:

1. Samples prior to 2019 were collected by Paulus, Sokolowski, and Sartor Engineering, PC on the dates indicated. Samples in 2019 were collected by Arcadis on the dates indicated.
2. Sample depth is reported in feet below ground surface.
3. 2003 and 2005 samples were analyzed by Hampton-Clarke, Veritech Laboratories of Fairfield, New Jersey.
4. 2019 samples were analyzed by SGS North America Incorporated Laboratories of Dayton, New Jersey.
5. Samples were analzed for polychlorinated biphenyls (PCBs) using USEPA SW-846 Method 8082.
6. < = No PCB Aroclors detected at a concentration above the reported detection limit. These results are also reported in gray.
7. Concentrations reported in milligrams per kilogram (mg/kg) or parts per million (ppm).
8. Brackets indicate the reported concentration of a duplicate sample.
9. Data from 2019 have undergone a Tier II validation. Data prior to 2019 have not been validated.

Table 2
Evaluation of TSCA PCB Regulations Applicability

Former Philadelphia Coke Co., Inc. Site
Philadelphia, Pennsylvania

Sample Locations with PCBs >1 ppm	General Area	Sample Date	Sample Depth (feet)	Total PCBs (ppm)	Location-Specific Rationale that TSCA Does Not Apply
Northern Portion of Site - Historical Coal and Coke Storage Areas *(these sampling locations are all along/near the northern property boundary that extends along Buckius Street)*					
PSSTP-01	~200 feet east of Richmond Street	3/11/03	1-2	0.08	Polychlorinated biphenyls (PCBs) were commercially manufactured in the United States from approximately 1930 until 1979, when their production was banned under the Toxic Substances Control Act (TSCA) regulations found in Title 40 of the Code of Federal Regulation (40CFR) Part 761. PCBs are not a byproduct of coking operations. As defined in 40 CFR Part 761.3, soil that contains PCBs (based on in-place sampling prior to excavation) at a concentration less than 50 parts per million (ppm) as the result of a release that occurred prior to the effective date of the TSCA regulations (1978) is not regulated under TSCA. PCBs were not identified in soil within this area (and the overall Site) at concentrations greater than 50 ppm. PCB concentrations in soil within this area are relatively low (generally around 1 ppm or less) with one result >10 ppm. The PCB concentrations in soil in this area are well-below those outlined in Pennsylvania Department of Environmental Protection (PADEP) medium-specific concentrations for soil. In general, low-level PCBs are widespread, but random, in soil across this area and found at various depths. This is not indicative of a historic point-source release, but may be related to grading of historic fill. PCBs have been identified at concentrations >1 ppm in four sampling locations in this area. These locations are within the footprint of former coal piles that are visible on aerial photographs from 1929 until at least 1981. Aerial photographs show that the coke storage area footprint covered sampling locations PSSTP-02 and PCTP-73/73R as early as 1929. Aerial photographs by the 1950s show that the coke storage area footprint had expanded westward to the edge of a building located on Richmond Street (extending over sampling location PSSTP-01/01R) and the coal storage area footprint had expanded eastward to the existing utility corridor (extending over sampling location PSSTP-04/04R). It is highly unlikely that PCBs in the coal and coke storage areas would be related to a post-1978 release given that the last aerial photograph before the end of coke production (which is dated 1981) shows site conditions consistent with earlier photos in which the coal and coke piles consistently covered these sampling locations. Given that the coal and coke piles covered the areas where PCBs were detected for sevral years after 1978, these detections are not TSCA regulated.
			5-6	13	
PSSTP-01R		4/10/19	5-6	1.51	
PSSTP-02	~650 feet east of Richmond Street	3/11/03	1-2	0.43	
			5-6	1.14	
PCTP-73	~800 feet east of Richmond Street	9/9/05	0.5	7.9	
			9.5	0.85	
PCTP-73R		4/10/19	0-0.5	0.932	
PSSTP-04	~1,550 feet east of Richmond Street	3/11/03	1-2	0.61	
			8-9	0.47	
PSSTP-04R		4/11/19	1-2	1.27	
			7/8/2021	< 0.12	
			8-9	< 0.043	
			16-17	< 0.038	
Eastern Part of Site Near Philadelphia Beltway Railroad					
PCSB-56	~30 feet west of railroad	8/15/2005	0.5	1.7	Soil boring PCSB-56 was drilled between the existing railroad tracks and a utility corridor, outside the former dikes surrounding the two southernmost tanks of the former fuel blending area. PCBs were not detected above 1 ppm in soil samples collected from nearby sampling locations within the former fuel blending area, indicating that PCBs at location PCSB-56 are isolated. Fuel blending operations immediately adjacent to this part of the site continued until 1989 and used No. 2 and No. 6 fuel oil brought in by barge (no documentation of PCB oil use in this area). Aerial photographs taken between the mid-1960s and 1981 show no development in the immediate vicinity of PCSB-56, and the southernmost tanks of the fuel blending area appear to have been removed by 1988. PCBs in this area are likely related to historical fill or nearby railroad operations, but not Site-related releases post 1978.

Table 2
Evaluation of TSCA PCB Regulations Applicability

Former Philadelphia Coke Co., Inc. Site
Philadelphia, Pennsylvania

Sample Locations with PCBs >1 ppm	General Area	Sample Date	Sample Depth (feet)	Total PCBs (ppm)	Location-Specific Rationale that TSCA Does Not Apply
Southeast Corner of Site - Historical Tar Plains/Fill Area					
PSSTP-19	~230 feet west of utility corridor	3/12/03	1-2	0.23	These four former test pits were excavated within the historical tar plains/fill area. Soil and debris were removed from this area to an average depth of approximately 11 feet during excavation as part of Resource Conservation and Recycling Act (RCRA) closure between 1982 and 1988. Approval to backfill was provided in 1989 by the agency preceding PADEP. The samples from this area that contained PCBs at concentrations >1 ppm were collected during the 2005/2006 Remedial Investigation at depths of 6-7 feet, which would be within or near the bottom of the fill placed to backfill the excavations. Therefore, PCBs in this area are attributed to regrading of historic fill at the site to remove the depressions formed by the RCRA soil excavations. The random and low levels of PCBs identified in soil across this area (and the site as a whole), both spatially and at various depths, are also indicative of historic fill grading and not a historic point-source release.
			7-8	1.08	
PSSTP-08	~185 feet west of southeast corner of site	3/11/03	1-2	0.12	
			6-7	1.2	
PSSTP-09	~250 feet west of southeast corner of site	3/12/03	1-2	0.05	
			6-7	8.9	
PCTP-61	~450 feet west of southeast corner of site	9/8/05	0.5	1.3 [0.54]	
			7.5	< 0.027	
West-Central Portion of Site - Near Former Facilities and Buildings					
PCTP-68	~145 feet northeast of the LeFevre & Garden Street intersection	9/9/05	0.5	<0.018	PCBs have been identified at a concentration >1 ppm in two sampling locations in this area of the Site (PCTP-68 and PCTP-69), as indicated below. - *PCTP-68:* PCBs were detected at a concentration of 1.9 ppm in a subsurface soil sample collected at a depth of 6 feet below ground surface at sampling location PCTP-68, adjacent to a former electrical substation building that housed electrical equipment indoors. However, PCBs were not detected above laboratory detection limits in surface soil at this location or other surface soil sampling locations around this area. The data suggest that PCBs at this location were unrelated to a release from the ground surface in this area. Since development in this area occurred before 1978, the limited PCB presence in the subsurface would also have occurred before 1978. - *PCTP-69:* PCBs were detected at a concentration of 1.3 ppm in surface soil at sampling location PCTP-68, which is below a former concrete pad associated with a scale house that was constructed before 1978. Since this area was capped with concrete before 1978, the limited PCB presence in the subsurface would also have occurred before 1978. PCBs in this area are likely related to historical fill but not Site-related releases post-1978.
			6	1.85	
PCTP-69	~350 feet east of the LeFevre & Garden Street intersection	9/9/05	0.5	1.3	
			17.5	< 0.029	

PSSTP-01
(1-2)' 0.08 ppm
(5-6)' 13 ppm

PSSTP-01R
(5-6)' 1.51 ppm

PSSTP-02
(1-2)' 0.43 ppm

PCTP-73
(0.5)' 7.9 ppm
(9.5)' 0.85 ppm

PCTP-73R
(0-0.5)' 0.932 ppm

PCTP-69
(0.5)' 1.3 ppm
(5-6)' <0.029 ppm

PCTP-68
(0.5)' <0.018 ppm
(6)' 1.85 ppm

PSSTP-04
(1-2)' 0.61 ppm
(8-9)' 0.47 ppm

PSSTP-04R
(1-2)' 1.27 ppm
(7-8)' <0.12 ppm
(8-9)' <0.043 ppm
(16-17)' <0.038 ppm

PSSTP-19
(1-2)' 0.23 ppm
(6-7)' 1.08 ppm

PCSB-56
(0.5)' 1.7 ppm

PSSTP-08
(1-2)' 0.12 ppm
(6-7)' 1.2 ppm

PSSTP-09
(1-2)' 0.05 ppm
(6-7)' 8.9 ppm

PCTP-61
(0.5)' 1.3 [0.54] ppm
(7.5)' <0.027 ppm

CASIMIR STREET
RICHMOND STREET
LEFEVRE STREET
WILMOT STREET
OVERINGTON STREET
ALLEN STREET
GARDEN STREET
PLUM STREET
BATH STREET
ORTHODOX STREET
CASPER STREET
BUCKIUS STREET (OPEN 50' WIDE)
BUCKIUS STREET (NOT OPEN)
DELAWARE RIVER
Utility Corridor
Philadelphia Beltway ROW

Yellow highlighting indicates that one or more soil samples from this sampling location were analyzed for polychlorinated biphenyls (PCBs).

LEGEND:

- (S-101) 2019 SOIL BORING LOCATION (2019)
- (S-120) 2019 TEST PIT LOCATION (2019)
- (PCSB-04) PSS ENVIRONMENTAL SOIL BORINGS (2005)
- (PSSTP-23) PSS ENVIRONMENTAL TEST PITS (2003)
- (PCTP-01) PSS ENVIRONMENTAL TEST PITS (2005)
- (TP-46) EEI GEOTECHNICAL TEST PITS (2005)
- (PC-B6) EEI GEOTECHNICAL SOIL BORINGS (2005)
- RCRA EXCAVATION
- FORMER STRUCTURE/OPERATION
- SITE BOUNDARY
- SHORELINE

NOTES:

1. BASE MAP OBTAINED FROM FIGURE PREPARED BY PAULUS SOKOLOSKI AND SARTOR ENGINEERING, PC, TITLED "GENERAL SITE PLAN", DRAWING 2A, DATED APRIL 9, 2007 AT A SCALE OF 1"=250'.
2. FIGURE ONLY SHOWS SAMPLE LOCATIONS WHERE SOIL SAMPLES WERE COLLECTED FOR LABORATORY ANALYSIS.

0 250 500 Feet
GRAPHIC SCALE

NATIONAL GRID
FORMER PHILADELPHIA COKE PLANT
PHILADELPHIA, PENNSYLVANIA
RI REPORT

TOTAL PCB CONCENTRATIONS > 1 PPM

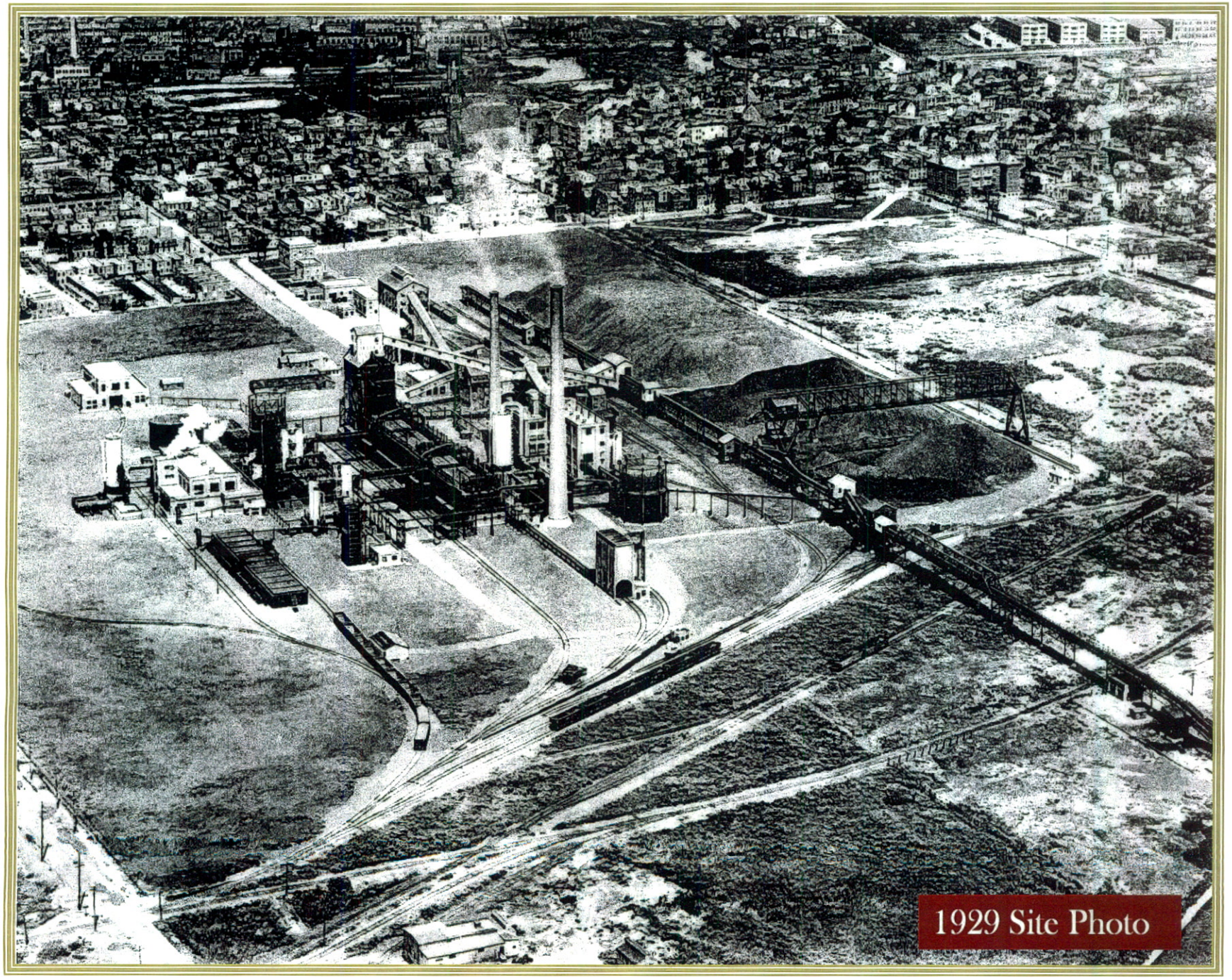
ARCADIS Design & Consultancy for natural and built assets

FIGURE 1

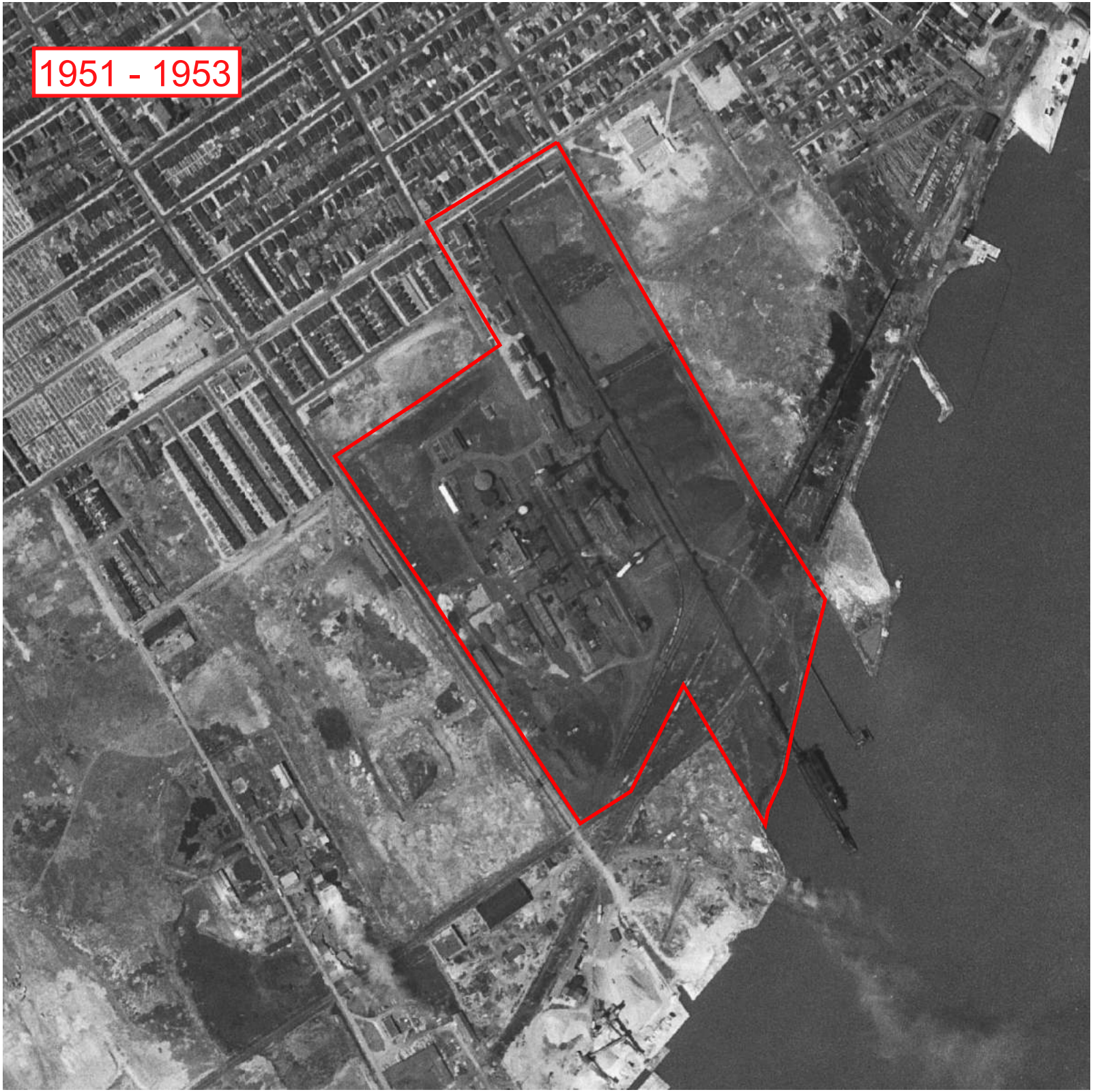
City: Syr Div/Group: IM/DV Created By: K. Sinsabaugh Last Saved By: akens
National Grid Philly Coke (B0036790.0000.00001)
Z:\GISProjects_ENV\NationalGrid\PhiladelphiaCoke\2019RI ReportFig4_analyticresults.mxd 1/21/2020 1:24:42 PM

ATTACHMENT 1

Historical Aerial Photographs

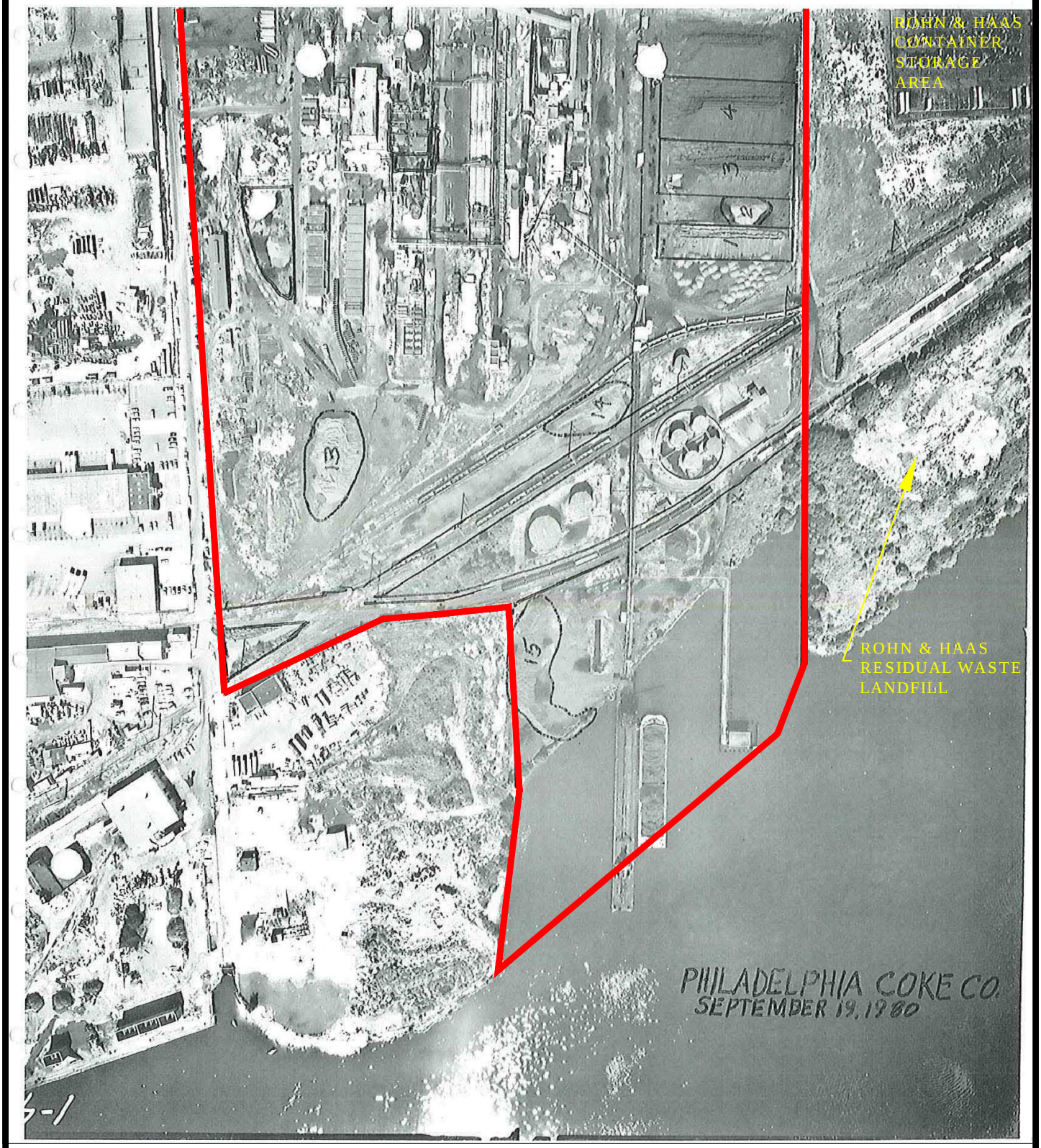

1929 Site Photo

Pre-1951


1951 - 1953

1962 - 1965

1965 - 1974



Source:
WASTE PERMIT APPLICATION
NOVENBER 18, 1980 (BASEMAP)
PADEP INSPECTION, AUGUST 1990

FIGURE 4
FACILITY LAYOUT, SOUTH AREA
PHILADELPHIA COKE COMPANY
4501 RICHMOND STREET
PHILADELPHIA, PENNSYLVANIA 19137

SCALE: NOT TO SCALE	**DATE:** NOVEMBER 2011
S.O. NO.: 120686	**FILE:** 120686-PCC-06
DSN/DWN: MM/RRR	**CHK:** SRF

Baker
Michael Baker Jr., Inc.

MICHAEL BAKER JR., INC.
MOON TOWNSHIP, PENNSYLVANIA

INQUIRY #: 4832855.5
YEAR: 1981
= 500'
N
EDR

INQUIRY #: 4832855.5
YEAR: 1988
= 500'
N
EDR

INQUIRY #: 4832855.5
YEAR: 1991
= 500'
N
EDR

1982 - 1993

EPA RESPONSE TO TSCA PCB EVALUATION

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029
July 8, 2021

VIA Email

John C. Brussel, P.E.
Principal Engineer/Certified Project Manager
Arcadis of New York, Inc.
One Lincoln Center, 110 West Fayette Street, Suite 300
Syracuse, NY 13202

Re: TSCA PCB Evaluation Summary
Philadelphia Coke Co., Inc. Site

Dear Mr. Brussel,

The U.S. Environmental Protection Agency (EPA) has received and reviewed the TSCA PCB Evaluation Summary for soil at the Philadelphia Coke Site submitted via email on May 12, 2021 on behalf of National Grid. In conclusion, it was proposed that the Polychlorinated Biphenyls (PCBs) identified in soil samples collected at the Site are related to pre-1978 releases and are not regulated under the Toxic Substances Control Act (TSCA).

EPA does not agree with the conclusion that soils in the Southeastern Corner of the Site – Historic Tar Plains/Fill Area are related to pre-1978 releases. This is due to the fact that samples collected in 2005/2006 containing PCBs >1 ppm were related to backfilling activities that occurred in 1989 which constitutes a release under TSCA. Therefore, PCB releases to soils in this area are subject to TSCA regulations. EPA requests that National Grid prepare and submit a cleanup proposal in accordance with 40 C.F.R. 761.61.

EPA does agree with the conclusion that the soils in the remaining areas evaluated (Northern Portion of the Site (Historical Coke and Coal Storage Area), Eastern Part of the Site near Philadelphia Beltway Railroad, and West-Central Portion of Site – Near Former Facilities and Buildings) are related to pre-1978 releases and are not regulated under TSCA. PCB concentrations in these areas should be addressed in conjunction with the cleanup activities being performed under the One Cleanup Program.

Please contact me at (215) 814-2796 or bilash.kevin@epa.gov if you have any questions or concerns.

Sincerely,

_____

Kevin Bilash, Remedial Project Manager
Land, Chemicals and Redevelopment Division
U.S. EPA Region III

Healy, Lawrence

From: Bilash, Kevin <Bilash.Kevin@epa.gov>
Sent: Thursday, July 8, 2021 11:59 AM
To: Brussel, John
Cc: Stearns, Brian M. (Brian.Stearns@nationalgrid.com); Sheehan, Daniel P.; Healy, Lawrence
Subject: RE: Question for Kevin - For EPA Review: TSCA PCB Evaluation - Philadelphia Coke Site, 4501 Richmond Street, Philadelphia, PA (eFACTS PF No. 831308)
Attachments: EPA PCB eval response 7_8_21.pdf

Categories: Business

Good morning John,

Thank you for the follow up and patience while going through this evaluation in coordination with my TSCA contact.
I have attached EPA's response to the TSCA PCB Evaluation Summary for the Philadelphia Coke Site submitted on May 12, 2021.
As you correctly summarized, EPA agrees that PCB releases were pre-1978 except in the southeast corner.

Regarding the capping and covenant proposal in the southeast corner, I have no initial concerns and think that is an acceptable plan.
As you know though, TSCA is not the primary Act I work under and you will see in the letter a request to prepare and submit a cleanup proposal in accordance with 40 C.F.R. 761.61.
I will look into it further and discuss the proposed cleanup with my coordinator but suggest to review 40 C.F.R. 761.61 and make sure you meet the requirements.
My thoughts are mostly related to assuring you meet the "cap" requirements as they may be different than what I'd expect under RCRA or Act 2.
Thinking forward, I am ok if you submit the cleanup proposal under separate cover when you are ready to submit the Act 2 cleanup plan unless you prefer to do so earlier.
In the meantime I will let you know any comments received from discussing this with my TSCA coordinator.

If you have any questions or concerns about the letter or contents of this email, please let me know.

Thank you,
Kevin Bilash
US EPA Region III
Land, Chemicals & Redevelopment Division 3LD20
1650 Arch Street
Philadelphia, PA 19103
Tel: 215-814-2796
Fax: 215-814-3113

From: Brussel, John [mailto:John.Brussel@arcadis.com]
Sent: Thursday, July 08, 2021 9:37 AM
To: Bilash, Kevin <Bilash.Kevin@epa.gov>
Cc: Stearns, Brian M. (Brian.Stearns@nationalgrid.com) <Brian.Stearns@nationalgrid.com>; Sheehan, Daniel P. <Daniel.Sheehan@arcadis.com>; Healy, Lawrence <Lawrence.Healy@arcadis.com>
Subject: Question for Kevin - For EPA Review: TSCA PCB Evaluation - Philadelphia Coke Site, 4501 Richmond Street, Philadelphia, PA (eFACTS PF No. 831308)

Kevin,

As a follow-up to the voice-mail message I left you yesterday afternoon, we wanted to check with you on the status of the letter you mentioned during our June 16, 2021 Teams meeting regarding the TSCA PCB evaluation for the Philadelphia Coke site and EPA's position.

Per our discussions during the call, we understand EPA agrees that PCB releases were pre-1978, except in the southeast corner of the site near the former tar plains, where soil excavation was performed as part of the RCRA corrective action in the 1988-1993 timeframe.

You had mentioned that the PCBs in soil within the southeast corner could be addressed via Covenants and Restrictions, with no further excavation or capping necessary provided that this area is designated "low occupancy" (PCBs <25 ppm).

As indicated in the call and confirmed in follow-up discussion with the developer, they are planning to cap the entire southeast corner of the site (concrete, asphalt, 2-feet of clean soil) as part of their redevelopment and have an environmental covenant as part of the overall pathway elimination cleanup approach. This planned approach would allow a "high occupancy" area designation (with PCBs >1 and <10 ppm below the cap) for the southeast corner of the site and support potential future land conveyance and public uses associated with the Delaware Avenue extension and railroad relocation in this area.

Feel free to call Brian Stearns of National Grid (315.461.7892), Dan Sheehan of Arcadis (302.884.6919), or me (315.671.9441) if you have any questions or need additional information.

Thank you.

John

From: Bilash, Kevin <Bilash.Kevin@epa.gov>
Sent: Wednesday, June 16, 2021 2:07 PM
To: Brussel, John <John.Brussel@arcadis.com>
Cc: Stearns, Brian M. (Brian.Stearns@nationalgrid.com) <Brian.Stearns@nationalgrid.com>; Sheehan, Daniel P. <Daniel.Sheehan@arcadis.com>; Healy, Lawrence <Lawrence.Healy@arcadis.com>
Subject: RE: For EPA Review: TSCA PCB Evaluation - Philadelphia Coke Site, 4501 Richmond Street, Philadelphia, PA (eFACTS PF No. 831308)

Good afternoon John,

We have and I received a first round of comments from the PCB coordinator which prompted additional questions from me back to TSCA.
I expect a response from them soon, likely by the end of this week. I will then prepare the EPA response.
Let's set up a call for next week to discuss the findings prior to our official response. Currently, I have availability Tuesday AM or all day Wednesday.

Thank you,
Kevin Bilash
US EPA Region III
Land, Chemicals & Redevelopment Division 3LD20
1650 Arch Street
Philadelphia, PA 19103
Tel: 215-814-2796
Fax: 215-814-3113

From: Brussel, John [mailto:John.Brussel@arcadis.com]
Sent: Monday, June 14, 2021 11:52 AM
To: Bilash, Kevin <Bilash.Kevin@epa.gov>
Cc: Stearns, Brian M. (Brian.Stearns@nationalgrid.com) <Brian.Stearns@nationalgrid.com>; Sheehan, Daniel P. <Daniel.Sheehan@arcadis.com>; Healy, Lawrence <Lawrence.Healy@arcadis.com>
Subject: RE: For EPA Review: TSCA PCB Evaluation - Philadelphia Coke Site, 4501 Richmond Street, Philadelphia, PA (eFACTS PF No. 831308)

Kevin,

Good morning. We were wondering if you had a chance to review the TSCA PCB Evaluation summary yet.

Please let us know if you agree with the conclusions or have any questions.

Thank you.

John

From: Brussel, John
Sent: Friday, May 28, 2021 8:49 AM
To: Bilash, Kevin <Bilash.Kevin@epa.gov>
Cc: Stearns, Brian M. (Brian.Stearns@nationalgrid.com) <Brian.Stearns@nationalgrid.com>; Sheehan, Daniel P. <Daniel.Sheehan@arcadis.com>; Healy, Lawrence <Lawrence.Healy@arcadis.com>
Subject: RE: For EPA Review: TSCA PCB Evaluation - Philadelphia Coke Site, 4501 Richmond Street, Philadelphia, PA (eFACTS PF No. 831308)

Thanks for the update Kevin.

John

From: Bilash, Kevin <Bilash.Kevin@epa.gov>
Sent: Thursday, May 27, 2021 10:11 AM
To: Brussel, John <John.Brussel@arcadis.com>
Cc: Stearns, Brian M. (Brian.Stearns@nationalgrid.com) <Brian.Stearns@nationalgrid.com>; Sheehan, Daniel P. <Daniel.Sheehan@arcadis.com>; Healy, Lawrence <Lawrence.Healy@arcadis.com>
Subject: RE: For EPA Review: TSCA PCB Evaluation - Philadelphia Coke Site, 4501 Richmond Street, Philadelphia, PA (eFACTS PF No. 831308)

John,

I just wanted to let you know I am going to start reviewing this information now. I have not forgotten about it or missed your email.
Coincidentally, over the last month+ there was an internal national PCB training that just occurred that I attended so I thought it prudent to have the latest up to date info before assessing your submittal.

Thank you,
Kevin Bilash
US EPA Region III
Land, Chemicals & Redevelopment Division 3LD20
1650 Arch Street
Philadelphia, PA 19103
Tel: 215-814-2796

Fax: 215-814-3113

From: Brussel, John [mailto:John.Brussel@arcadis.com]
Sent: Wednesday, May 12, 2021 11:56 AM
To: Bilash, Kevin <Bilash.Kevin@epa.gov>
Cc: Stearns, Brian M. (Brian.Stearns@nationalgrid.com) <Brian.Stearns@nationalgrid.com>; Sheehan, Daniel P. <Daniel.Sheehan@arcadis.com>; Healy, Lawrence <Lawrence.Healy@arcadis.com>
Subject: For EPA Review: TSCA PCB Evaluation - Philadelphia Coke Site, 4501 Richmond Street, Philadelphia, PA (eFACTS PF No. 831308)

Kevin,

On behalf of National Grid and as a follow-up to the virtual meeting that you, Dan Sheehan, and I had on April 2, 2021, please find the attached "TSCA PCB Evaluation Summary" for soil at the Philadelphia Coke Site, including the tables, figure, and historical aerial photographs that we previewed during the meeting.

As explained in the summary, the PCBs identified in soil samples collected at the Site are related to pre-1978 release(s) and the concentrations are therefore not regulated under TSCA.

Please review the attached and let us know if EPA concurs with our conclusion.

Feel free to call Dan Sheehan (our PA engineer-of-record for the project) at 302.884.6919 or me at 315.671.9441 if you have any questions or need additional information.

Thank you.

John

John C. Brussel P.E.
Principal Engineer/Certified Project Manager
Arcadis of New York, Inc.
One Lincoln Center, 110 West Fayette Street, Suite 300 | Syracuse, NY | 13202 | USA
T +1 315 671 9441 | M +1 315 317 8104
www.arcadis.com

Professional Registration / PE-NY, #075208

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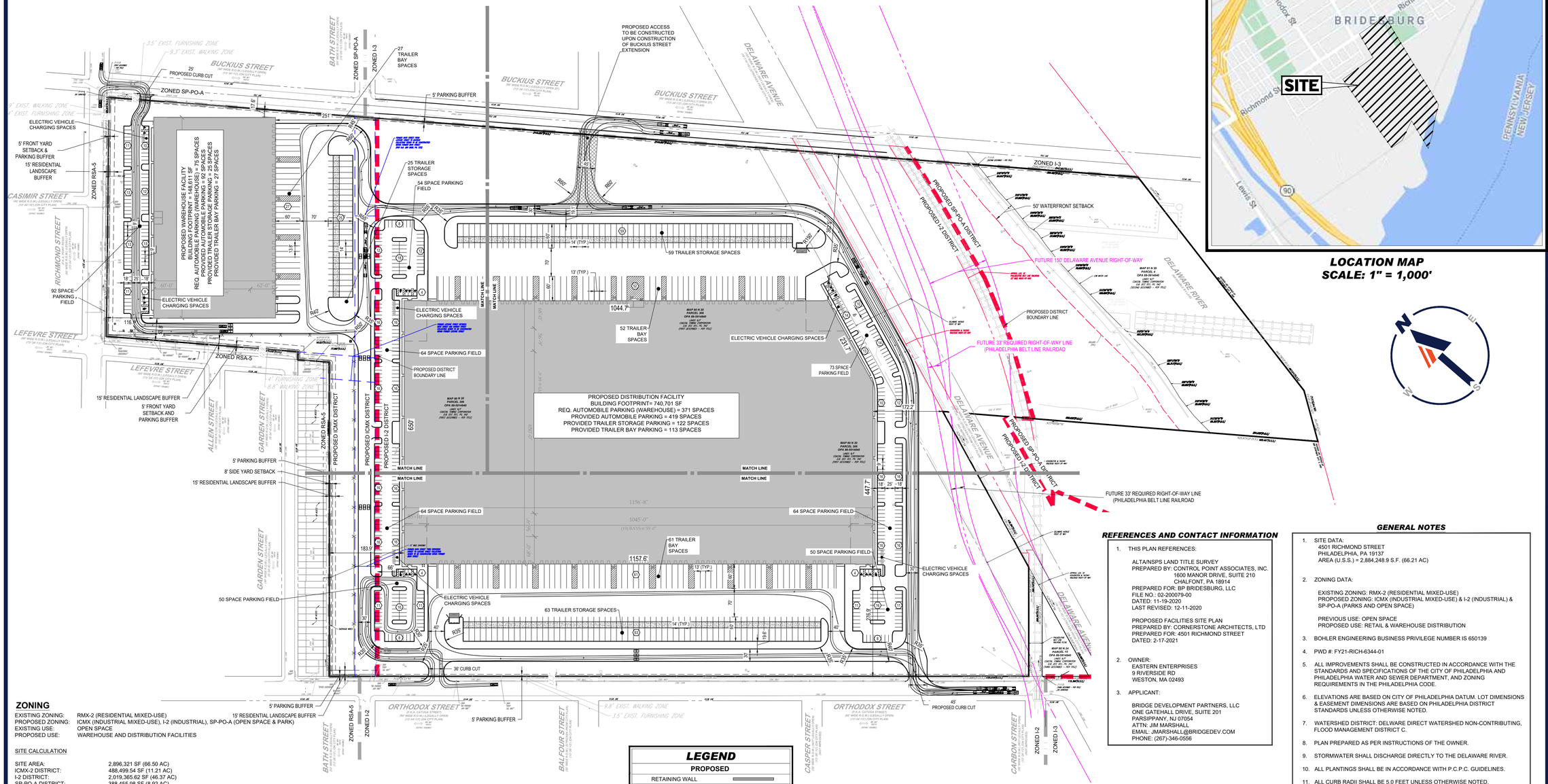
Attachment 3

Site Redevelopment Plan



LOCATION MAP
SCALE: 1" = 1,000'

ZONING

EXISTING ZONING: RMX-2 (RESIDENTIAL MIXED-USE)
PROPOSED ZONING: ICMX (INDUSTRIAL MIXED-USE), I-2 (INDUSTRIAL), SP-PO-A (OPEN SPACE & PARK)
EXISTING USE: OPEN SPACE
PROPOSED USE: WAREHOUSE AND DISTRIBUTION FACILITIES

SITE CALCULATION

SITE AREA:	2,896,321 SF (66.50 AC)
ICMX-2 DISTRICT:	488,499.54 SF (11.21 AC)
I-2 DISTRICT:	2,019,365.62 SF (46.37 AC)
SP-PO-A DISTRICT:	388,455.98 SF (8.92 AC)

ZONING DISTRICT REQUIREMENTS

	REQUIRED (ICMX)	EXISTING	PROPOSED	REQUIRED (I-2)	EXISTING	PROPOSED
MAX. OCCUPIED AREA	100%	N/A	30.42%	100%	N/A	36.68%
MIN. YARD SETBACKS						
FRONT	0*	N/A	17.6'	0*	N/A	276.9'
SIDE YARD (EA)	8*	N/A	N/A	8*	N/A	66'
REAR	8*	N/A	251'	8*	N/A	172.2'
WATERFRONT SETBACK	50'	N/A	N/A	50'	N/A	50'
LANDSCAPE BUFFER	15'	>15'	15'	15'	>15'	15'
MAX. BUILDING HEIGHT	60'	N/A	60'	60'	N/A	60'
MAX. FLOOR AREA RATIO	500%	N/A	30.42%	500%	N/A	36.68%

* WHERE A LOT ABUTS A RESIDENTIAL DISTRICT, FRONT YARDS, SIDE YARDS, AND REAR YARDS SHALL BE PROVIDED ON THE LOT ON THE SIDES ABUTTING THE RESIDENTIAL DISTRICT. THE MINIMUM REQUIREMENTS FOR THOSE YARDS SHALL BE EITHER THOSE FOR THE INDUSTRIAL DISTRICT OR THOSE FOR THE RESIDENTIAL DISTRICT ON THE ABUTTING SIDE, WHICHEVER IS LARGER

PARKING REQUIREMENTS

	REQUIRED (ICMX)	PROVIDED	REQUIRED (I-2)	PROVIDED
PARKING SPACES (WAREHOUSE & DISTRIBUTION)	1 / 2000 SF (75 SPACES)	92 SPACES	1 /2000 SF (371 SPACES)	419 SPACES
ADA PARKING SPACES	4 SPACES	4 SPACES	8 SPACES	16 SPACES
PARKING SETBACK	5' ALONG STREET FRONTAGE	5'	5' ALONG STREET FRONTAGE	5'

LEGEND — PROPOSED

RETAINING WALL
CONCRETE CURB
FLUSH CURB
FENCE
GUIDE RAIL
TREELINE
ACCESSIBLE SYMBOL
CROSSWALK
SIDEWALK
SIGN
BOLLARD
PARKING COUNT
AREA LIGHT
DRAINAGE INLET
MANHOLE
ENDWALL
RIPRAP
CLEANOUT
ROOFDRAIN
FIRE HYDRANT
UTILITY POLE
LANDSCAPE AREA

LEGEND — EXISTING

RETAINING WALL
CONCRETE CURB
FLUSH CURB
FENCE
GUIDE RAIL
TREELINE
PROPERTY LINE
R.O.W. LINE
ADJACENT PROPERTY LINE
TITLE LINE
EASEMENT LINE
SETBACK LINE
50' WATERFRONT SETBACK
EX. RAILROAD RIGHT-OF-WAY
EX. EASEMENT
EX. DELAWARE AVENUE RIGHT-OF-WAY (STRICKEN FROM CITY PLAN)
FUTURE RIGHT-OF-WAY

LEGEND — EXISTING

CONCRETE MONUMENT/ IRON PIN
SIGN
AREA LIGHT
TREE
DRAINAGE INLET
STORM/SANITARY MANHOLE
WATER/GAS VALVES
ROOF DRAIN/CLEANOUT
FIRE HYDRANT
UTILITY POLE W/ LIGHT
UTILITY POLE

REFERENCES AND CONTACT INFORMATION

1. THIS PLAN REFERENCES:

   ALTA/NSPS LAND TITLE SURVEY
   PREPARED BY: CONTROL POINT ASSOCIATES, INC.
   1600 MANOR DRIVE, SUITE 210
   CHALFONT, PA 18914
   PREPARED FOR: BP BRIDESBURG, LLC
   FILE NO.: 02-200079-00
   DATED: 11-19-2020
   LAST REVISED: 12-11-2020

   PROPOSED FACILITIES SITE PLAN
   PREPARED BY: CORNERSTONE ARCHITECTS, LTD
   PREPARED FOR: 4501 RICHMOND STREET
   DATED: 2-17-2021

2. OWNER:
   EASTERN ENTERPRISES
   9 RIVERSIDE RD
   WESTON, MA 02493

3. APPLICANT:

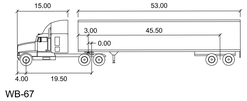
   BRIDGE DEVELOPMENT PARTNERS, LLC
   ONE GATEHALL DRIVE, SUITE 201
   PARSIPPANY, NJ 07054
   ATTN: JIM MARSHALL
   EMAIL: JMARSHALL@BRIDGEDEV.COM
   PHONE: (267)-346-0556

GENERAL NOTES

1. SITE DATA:
   4501 RICHMOND STREET
   PHILADELPHIA, PA 19137
   AREA (U.S.S.) = 2,884,248.9 S.F. (66.21 AC)
2. ZONING DATA:
   EXISTING ZONING: RMX-2 (RESIDENTIAL MIXED-USE)
   PROPOSED ZONING: ICMX (INDUSTRIAL MIXED-USE) & I-2 (INDUSTRIAL) & SP-PO-A (PARKS AND OPEN SPACE)
   PREVIOUS USE: OPEN SPACE
   PROPOSED USE: RETAIL & WAREHOUSE DISTRIBUTION
3. BOHLER ENGINEERING BUSINESS PRIVILEGE NUMBER IS 650139
4. PWD #: FY21-RICH-6344-01
5. ALL IMPROVEMENTS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS OF THE CITY OF PHILADELPHIA AND PHILADELPHIA WATER AND SEWER DEPARTMENT, AND ZONING REQUIREMENTS IN THE PHILADELPHIA CODE.
6. ELEVATIONS ARE BASED ON CITY OF PHILADELPHIA DATUM. LOT DIMENSIONS & EASEMENT DIMENSIONS ARE BASED ON PHILADELPHIA DISTRICT STANDARDS UNLESS OTHERWISE NOTED.
7. WATERSHED DISTRICT: DELWARE DIRECT WATERSHED NON-CONTRIBUTING, FLOOD MANAGEMENT DISTRICT C.
8. PLAN PREPARED AS PER INSTRUCTIONS OF THE OWNER.
9. STORMWATER SHALL DISCHARGE DIRECTLY TO THE DELAWARE RIVER.
10. ALL PLANTINGS SHALL BE IN ACCORDANCE WITH P.C.P.C. GUIDELINES.
11. ALL CURB RADII SHALL BE 5.0 FEET UNLESS OTHERWISE NOTED.
12. ELEVATIONS OF PROPOSED CONCRETE CURB TO BE DETERMINED BY THE CITY SURVEY DISTRICT. FACE OF CURB TO MATCH EXISTING CURB/EDGE OF PAVEMENT.
13. DEVELOPMENT TO BE SERVICED BY PUBLIC WATER AND SEWER IN ACCORDANCE WITH CITY OF PHILADELPHIA REQUIREMENTS.
14. BY GRAPHIC PLOTTING ONLY, THIS PROPERTY IS LOCATED IN FLOOD HAZARD ZONE X (AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN) & FLOOD HAZARD ZONE AE (WITH BFE OR DEPTH).
15. TRASH PICK-UP WILL BE VIA A PRIVATE HAULER.

P

	feet
Width	: 7.00
Track	: 6.00
Lock to Lock Time	: 6.0
Steering Angle	: 31.6



WB-67

	feet		
Tractor Width	: 8.00	Lock to Lock Time	: 6.0
Trailer Width	: 8.50	Steering Angle	: 28.4
Tractor Track	: 8.00	Articulating Angle	: 75.0
Trailer Track	: 8.50		

120 60 30 0 120
1"= 120'

BOHLER
SITE CIVIL AND CONSULTING ENGINEERING
LAND SURVEYING
PROGRAM MANAGEMENT
LANDSCAPE ARCHITECTURE
ELECTRICAL DESIGN
PERMITTING SERVICES
TRANSPORTATION SERVICES

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REV	DATE	COMMENT	DRAWN BY / CHECKED BY

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20202801994

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PROJECT NO.:	PP203056
DRAWN BY:	GB
CHECKED BY:	KM
DATE:	2/1/2021
CAD I.D.:	PP203056-SPP-2

PROJECT:

ZONING PLAN

FOR

BRIDGE ACQUISITIONS, LLC

PROPOSED DEVELOPMENT

4501 RICHMOND STREET
PHILADELPHIA, PA 19137

BOHLER
1515 MARKET STREET, SUITE 920
PHILADELPHIA, PA 19102
Phone: (267) 402-3400
Fax: (267) 402-3401
www.BohlerEngineering.com

C. BROWN
PROFESSIONAL ENGINEER
PENNSYLVANIA LICENSE No. PE075317
DELAWARE LICENSE No. 18093
NEW JERSEY LICENSE No. 24GE05081400

SHEET TITLE:

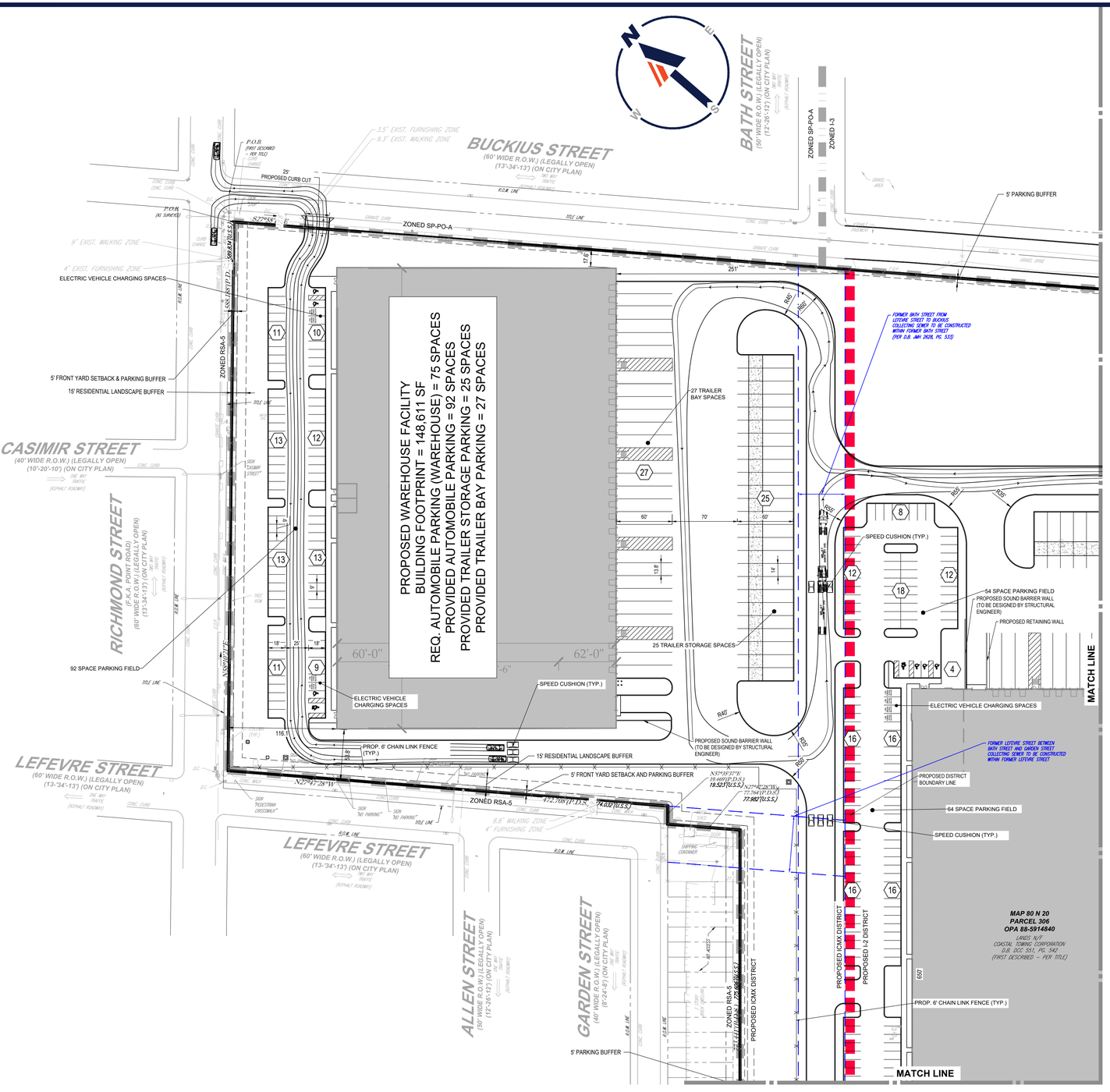
OVERALL ZONING PLAN

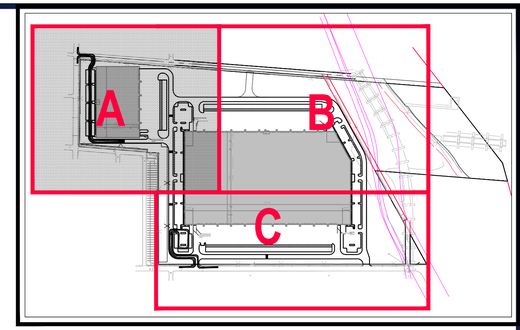
SHEET NUMBER:

1A

ORG. DATE - 2/1/2021

R:\PP203056\DRAWINGS\PLAN SETS\PERMITTING DOCS\REV-2 (ZONING CHECKLIST #1)\PP203056-SPP-2---LAYOUT- Z1-A OVRL ZONING GB





KEY MAP
SCALE: 1" = 500'

LEGEND

PROPOSED

RETAINING WALL	
CONCRETE CURB	
FLUSH CURB	
FENCE	
GUIDE RAIL	
TREELINE	
ACCESSIBLE SYMBOL	
CROSSWALK	
SIDEWALK	
SIGN	
BOLLARD	
PARKING COUNT	10
AREA LIGHT	
DRAINAGE INLET	
MANHOLE	
ENDWALL	
RIPRAP	
CLEANOUT	
ROOFDRAIN	
FIRE HYDRANT	
UTILITY POLE	
LANDSCAPE AREA	

LEGEND

EXISTING

RETAINING WALL	
CONCRETE CURB	
FLUSH CURB	
FENCE	
GUIDE RAIL	
TREELINE	
PROPERTY LINE	
R.O.W. LINE	
ADJACENT PROPERTY LINE	
TITLE LINE	
EASEMENT LINE	
SETBACK LINE	
50' WATERFRONT SETBACK	
EX. RAILROAD RIGHT-OF-WAY	
EX. EASEMENT	
EX. DELAWARE AVENUE RIGHT-OF-WAY (STRICKEN FROM CITY PLAN)	
FUTURE RIGHT-OF-WAY	

LEGEND

EXISTING

CONCRETE MONUMENT/ IRON PIN	
SIGN	
AREA LIGHT	
TREE	
DRAINAGE INLET	
STORM/SANITARY MANHOLE	
WATER/GAS VALVES	
ROOF DRAIN/CLEANOUT	
FIRE HYDRANT	
UTILITY POLE W/ LIGHT	
UTILITY POLE	

60 30 15 0 60
1"= 60'

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PROJECT NO.:	PP203056
DRAWN BY:	GB
CHECKED BY:	KM
DATE:	2/1/2021
CAD I.D.:	PP203056-SPP-2

PROJECT:

ZONING PLAN

FOR
BRIDGE ACQUISITIONS, LLC

PROPOSED DEVELOPMENT

4501 RICHMOND STREET
PHILADELPHIA, PA 19137

BOHLER
1515 MARKET STREET, SUITE 920
PHILADELPHIA, PA 19102
Phone: (267) 402-3400
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C. BROWN
PROFESSIONAL ENGINEER
PENNSYLVANIA LICENSE No. PE075317
DELAWARE LICENSE No. 18093
NEW JERSEY LICENSE No. 24GE050841400

SHEET TITLE:

ZONING PLAN

SHEET NUMBER:

1B

ORG. DATE - 2/1/2021

R:\PP203056\DRAWINGS\PLAN SETS\PERMITTING DOCS\REV-2 (ZONING) CHECKLIST #1\PP203056-SPP-2-----LAYOUT: 2 | B ZONING
GB
R:\PP203056\DRAWINGS\PLAN SETS\PERMITTING DOCS\REV-2 ZONING CHECKLIST #1\PP203056-SPP-2-----LAYOUT: 2 | B ZONING

LEGEND
PROPOSED

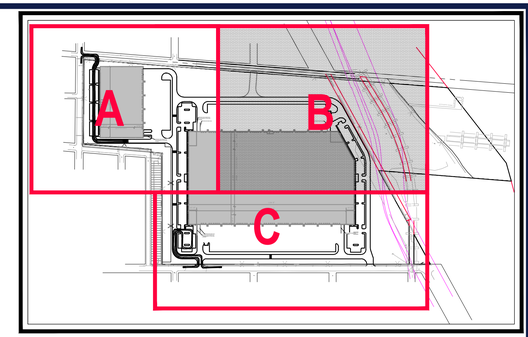
RETAINING WALL	
CONCRETE CURB	
FLUSH CURB	
FENCE	
GUIDE RAIL	
TREELINE	
ACCESSIBLE SYMBOL	
CROSSWALK	
SIDEWALK	
SIGN	
BOLLARD	
PARKING COUNT	(10)
AREA LIGHT	
DRAINAGE INLET	
MANHOLE	
ENDWALL	
RIPRAP	
CLEANOUT	
ROOFDRAIN	
FIRE HYDRANT	
UTILITY POLE	
LANDSCAPE AREA	

LEGEND
EXISTING

RETAINING WALL	
CONCRETE CURB	
FLUSH CURB	
FENCE	
GUIDE RAIL	
TREELINE	
PROPERTY LINE	
R.O.W. LINE	
ADJACENT PROPERTY LINE	
TITLE LINE	
EASEMENT LINE	
SETBACK LINE	
50' WATERFRONT SETBACK	
EX. RAILROAD RIGHT-OF-WAY	
EX. EASEMENT	
EX. DELAWARE AVENUE RIGHT-OF-WAY (STROKEN FROM CITY PLAN)	
FUTURE RIGHT-OF-WAY	

LEGEND
EXISTING

CONCRETE MONUMENT/ IRON PIN	
SIGN	
AREA LIGHT	
TREE	
DRAINAGE INLET	
STORM/SANITARY MANHOLE	
WATER/GAS VALVES	
ROOF DRAIN/CLEANOUT	
FIRE HYDRANT	
UTILITY POLE W/ LIGHT	
UTILITY POLE	



KEY MAP
SCALE: 1" = 500'

DELAWARE AVENUE
(150' WIDE R.O.W.) (NOT LEGALLY OPEN)
(18°17'4"E 18') (STROKEN FROM CITY PLAN)

BUCKIUS STREET
(60' WIDE R.O.W.) (LEGALLY OPEN 25')
(13°34'-13') (ON CITY PLAN)

UCTED STREET

EXTENSION

FORMER 94TH STREET FROM LITZENIE STREET TO BUCKIUS COLLECTING SEWER TO BE CONSTRUCTED WITHIN FORMER 94TH STREET (PER D.B. JMH 2628, PG. 533)

FORMER LITZENIE STREET BETWEEN 94TH STREET AND GARDEN STREET COLLECTING SEWER TO BE CONSTRUCTED WITHIN FORMER LITZENIE STREET

PROPOSED DISTRICT BOUNDARY LINE

PROPOSED ICMX DISTRICT

PROPOSED I-2 DISTRICT

ZONED RSA-5
PROPOSED ICMX DISTRICT
ZONED I-3
PROPOSED I-2 DISTRICT

PROPOSED DISTRIBUTION FACILITY
BUILDING FOOTPRINT= 740,701 SF
REQ. AUTOMOBILE PARKING (WAREHOUSE) = 371 SPACES
PROVIDED AUTOMOBILE PARKING = 419 SPACES
PROVIDED TRAILER STORAGE PARKING = 122 SPACES
PROVIDED TRAILER BAY PARKING = 113 SPACES

64 SPACE PARKING FIELD
PROPOSED SOUND BARRIER WALL (TO BE DESIGNED BY STRUCTURAL ENGINEER)
PROPOSED RETAINING WALL
SPEED CUSHION (TYP.)
ELECTRIC VEHICLE CHARGING SPACES
PROP. 6' CHAIN LINK FENCE (TYP.)
PROP. TRASH ENCLOSURE
59 TRAILER STORAGE SPACES
52 TRAILER BAY SPACES
73 SPACE PARKING FIELD
7 TRAILER AY SPACES
RAGE SPACES
PROPOSED SOUND BARRIER WALL (TO BE DESIGNED BY STRUCTURAL ENGINEER)

MATCH LINE

MAP 80 N 20
PARCEL 306
OPA 88-5914840
LANDS: N/F
COASTAL TOWING CORPORATION
D.B. DCC 551, PG. 542
(FIRST DESCRIBED – PER TITLE)

P.O.B. (SECOND DESCRIBED – PER TITLE)

2144.007'(P.D.S.)

N57°35'37"E 19.469'(T.D.S.) 19.523'(U.S.S.)
N27°42'22"W 77.764'(T.D.S.) 77.982'(U.S.S.)

S15°15'47"W 84.047'(P.D.S.)
S15°13'59"W 57.000'(P.D.S.)
S19°07'26"W 59.000'(P.D.S.)
S20°23'44"E 23.000'(P.D.S.)
S22°29'12"W 37.000'(P.D.S.)
S19°57'35"W 48.500'(P.D.S.)

2540.490'(P.D.S.) 2542.603'(U.S.S.)
396.482'(P.D.S.)
660.938'(P.D.S.)
N27°49'08"W

FUTURE 150' DELAWARE AVENUE RIGHT-OF-WAY
APPROX. LOC. OF PHILADELPHIA BELT LINE RAILROAD 33' WIDE RIGHT-OF-WAY
DELAWARE AVENUE RIGHT OF WAY
KENSINGTON & TACONY RAILROAD RIGHT-OF-WAY
FUTURE 32' REQUIRED RIGHT-OF-WAY LINE (PHILADELPHIA BELT LINE RAILROAD)
50' WATERFRONT SETBACK
PROPOSED SP-POA DISTRICT
PROPOSED I-2 DISTRICT
PROPOSED DISTRICT BOUNDARY LINE

DELAWARE AVENUE
(150' WIDE R.O.W.) (NOT LEGALLY OPEN)
(18°17'4"E 18') (STRIPPED FROM CITY PLAN)
(NO IMPROVED)

60 30 15 0 60
1"= 60'

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CHECKED BY:	KM
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CAD I.D.:	PP203056-SPP-2

PROJECT:

ZONING PLAN

FOR
BRIDGE ACQUISITIONS, LLC

PROPOSED DEVELOPMENT

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DELAWARE LICENSE No. 18093
NEW JERSEY LICENSE No. 24GE05681400

SHEET TITLE:

ZONING PLAN

SHEET NUMBER:

1C

ORG. DATE - 2/1/2021

R:\20\PP203056\DRAWINGS\PLAN SETS\PERMITTING DOCS\REV-2 (ZONING CHECKLIST #1)\PP203056-SPP-2-----LAYOUT_Z1-C ZONING

GB

LEGEND

PROPOSED

RETAINING WALL	
CONCRETE CURB	
FLUSH CURB	
FENCE	
GUIDE RAIL	
TREELINE	
ACCESSIBLE SYMBOL	
CROSSWALK	
SIDEWALK	
SIGN	
BOLLARD	
PARKING COUNT	10
AREA LIGHT	
DRAINAGE INLET	
MANHOLE	
ENDWALL	
RIPRAP	
CLEANOUT	
ROOFDRAIN	
FIRE HYDRANT	
UTILITY POLE	
LANDSCAPE AREA	

LEGEND

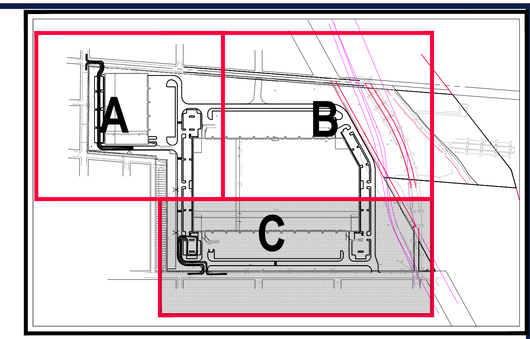
EXISTING

RETAINING WALL	
CONCRETE CURB	
FLUSH CURB	
FENCE	
GUIDE RAIL	
TREELINE	
PROPERTY LINE	
R.O.W. LINE	
ADJACENT PROPERTY LINE	
TITLE LINE	
EASEMENT LINE	
SETBACK LINE	
50' WATERFRONT SETBACK	
EX. RAILROAD RIGHT-OF-WAY	
EX. EASEMENT	
EX. DELAWARE AVENUE RIGHT-OF-WAY (STRICKEN FROM CITY PLAN)	
FUTURE RIGHT-OF-WAY	

LEGEND

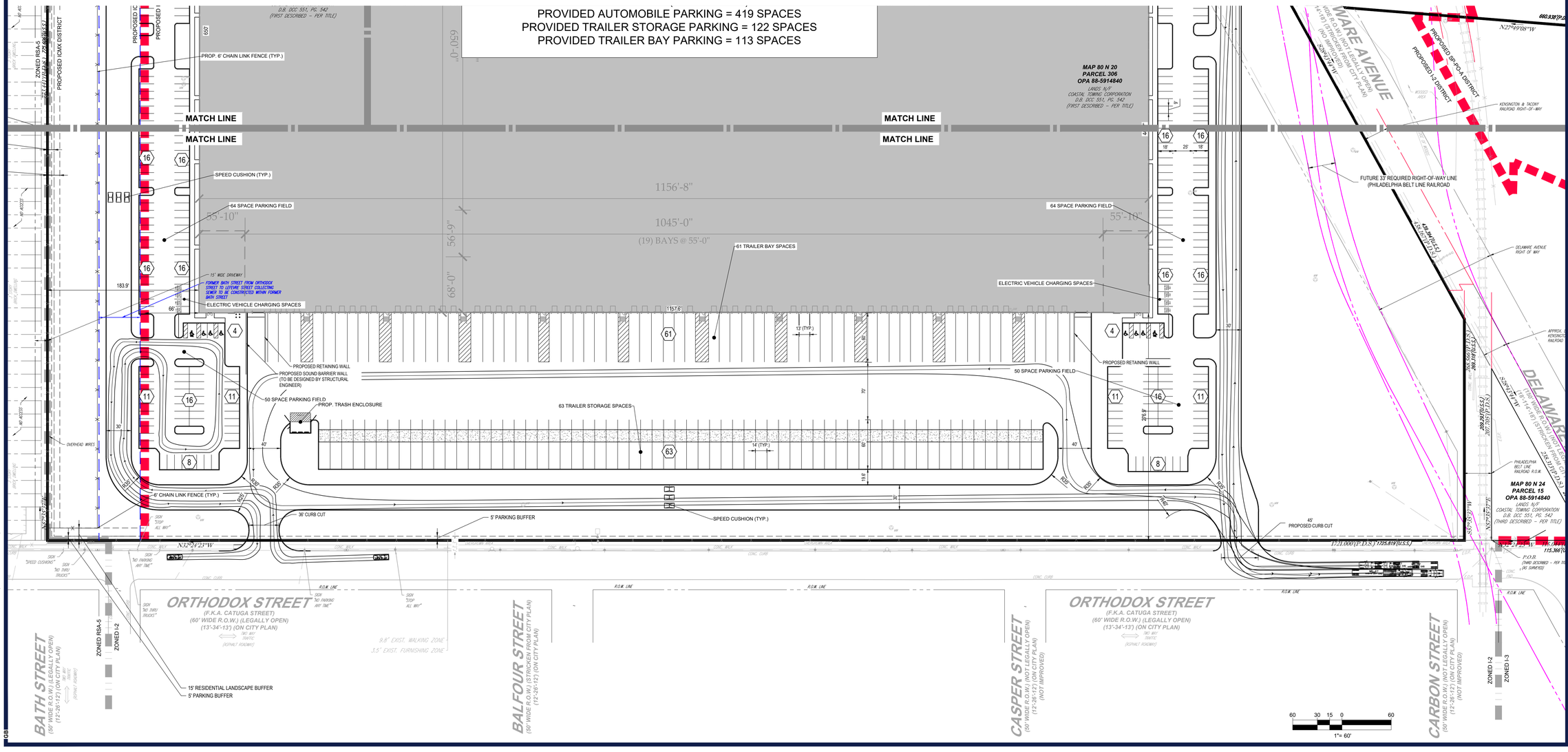
EXISTING

CONCRETE MONUMENT/ IRON PIN	
SIGN	
AREA LIGHT	
TREE	
DRAINAGE INLET	
STORM/SANITARY MANHOLE	
WATER/GAS VALVES	
ROOF DRAIN/CLEANOUT	
FIRE HYDRANT	
UTILITY POLE W/ LIGHT	
UTILITY POLE	



KEY MAP
SCALE: 1" = 500'

PROVIDED AUTOMOBILE PARKING = 419 SPACES
PROVIDED TRAILER STORAGE PARKING = 122 SPACES
PROVIDED TRAILER BAY PARKING = 113 SPACES



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DATE:	2/1/2021
CAD I.D.:	PP203056-SPP-2

PROJECT:

ZONING PLAN

FOR
BRIDGE ACQUISITIONS, LLC

PROPOSED DEVELOPMENT

4501 RICHMOND STREET
PHILADELPHIA, PA 19137

BOHLER
1515 MARKET STREET, SUITE 920
PHILADELPHIA, PA 19102
Phone: (267) 402-3400
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C. BROWN
PROFESSIONAL ENGINEER
PENNSYLVANIA LICENSE No. PE075317
DELAWARE LICENSE No. 18093
NEW JERSEY LICENSE No. 24GE05641400

SHEET TITLE:

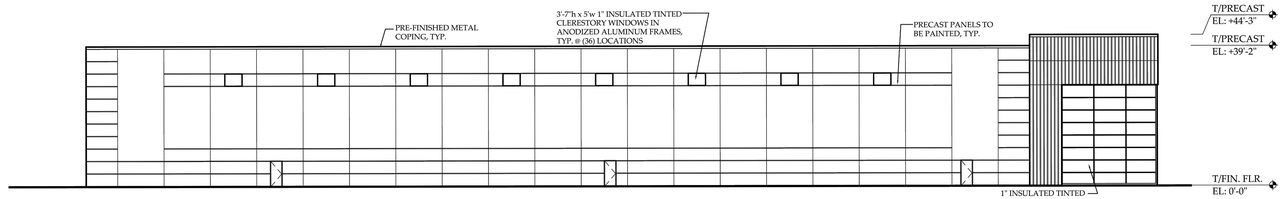
ZONING PLAN

SHEET NUMBER:

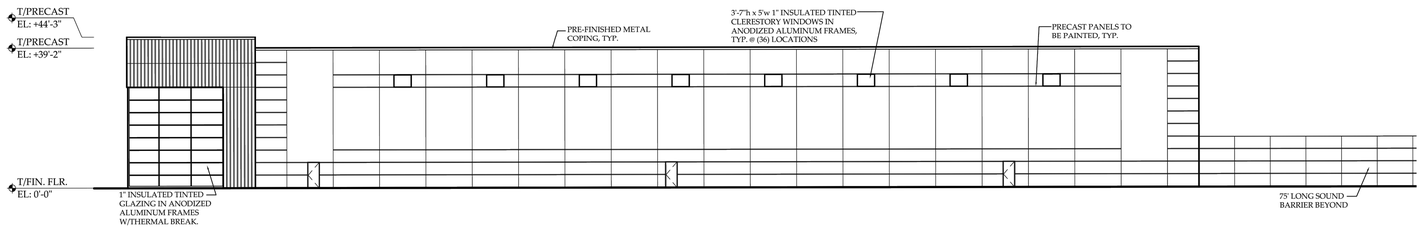
1D

ORG. DATE - 2/1/2021

R:\2019\2019036\DRAWINGS\PLAN SET\PERMITTING DOCS\REV-2 (ZONING CHECKLIST #1)\PP203056-SPP-2-----LAYOUT- Z1-D ZONING
GB

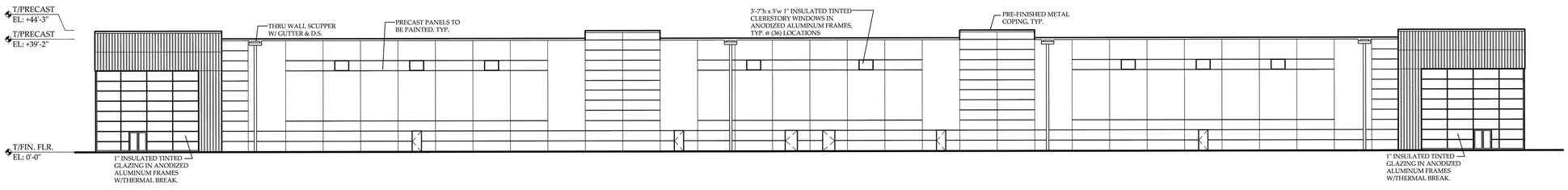


EAST ELEVATION:

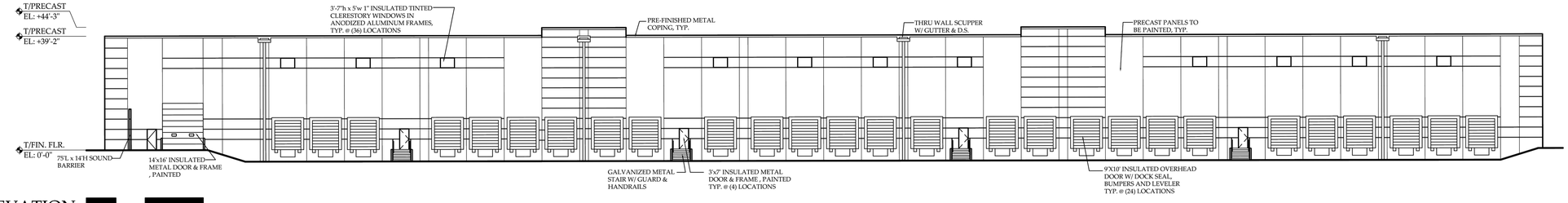


WEST ELEVATION

LOCATION MAP
SCALE: 1" = 1,000'



NORTH ELEVATION:



SOUTH ELEVATION:

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SHEET TITLE:

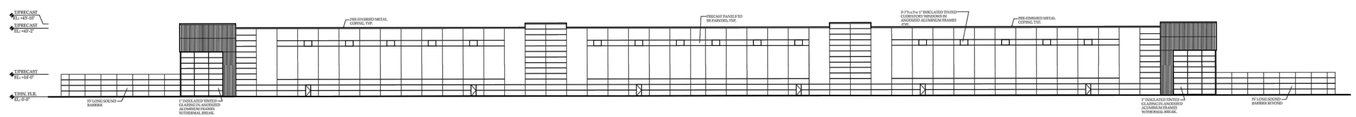
ELEVATION PLANS

SHEET NUMBER:

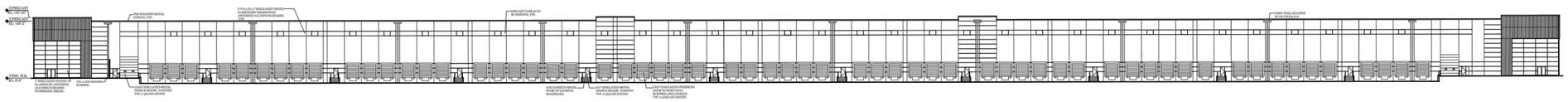
2A

ORG. DATE - 2/1/2021

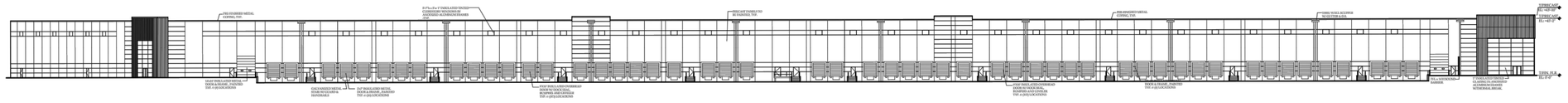
R:\2021\203056\DRAWINGS\PLAN SETS\PERMITTING DOCS\REV-2 (ZONING CHECKLIST #1)\PP203056-SPP-2.----=LAYOUT: 22-A-ELEVATIONS
GB
R:\2021\203056\DRAWINGS\PLAN SETS\PERMITTING DOCS\REV-2 (ZONING CHECKLIST #1)\PP203056-SPP-2.----=LAYOUT: 22-A-ELEVATIONS
GB



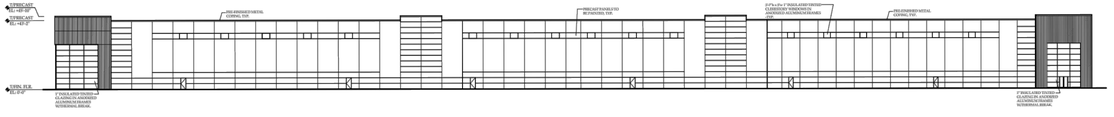
NORTH ELEVATION:
0 15 30 60 FEET



WEST ELEVATION:
0 15 30 60 FEET



EAST ELEVATION:
0 15 30 60 FEET



SOUTH ELEVATION:
0 10 20 40 FEET

LOCATION MAP
SCALE: 1" = 1,000'

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SHEET TITLE:

ELEVATION PLANS

SHEET NUMBER:

2B

ORG. DATE - 2/1/2021

R:\2\PP203056\DRAWINGS\PLAN SETS\PERMITTING DOCS\REV 2 (ZONING CHECKLIST #1)\PP203056-SPP-2----LAYOUT, 22-B-ELEVATIONS
GB
R:\SPP-2\203056\DRAWINGS\PLAN SETS\PERMITTING DOCS\REV 2 (ZONING CHECKLIST #1)\PP203056-SPP-2----LAYOUT, 22-B-ELEVATIONS
GB

APPENDIX L

Fate and Transport Analysis

Calibration Between MW-111 and MW-112 (March 19, 2018 Contours)

ADVECTIVE TRANSPORT WITH THREE DIMENSIONAL DISPERSION,1ST ORDER DECAY and RETARDATION - WITH CALIBRATION TOOL

Project:	Calibration Between MW-111 and MW-112						
Date:	3/3/2021	Prepared by:	LCH				
		Contaminant:	Benzene				

SOURCE CONC (ug/L)	Ax (ft)	Ay (ft)	Az (ft)	LAMBDA	SOURCE WIDTH (ft)	SOURCE THICKNESS (ft)	Time (days) (days)
			>=.001	day-1			
686	2.04E+01	2.04E+00	1.00E-03	0.00096	200	10	13505

Hydraulic Cond (ft/day)	Hydraulic Gradient (ft/ft)	Porosity (dec. frac.)	Soil Bulk Density (g/cm^3)	KOC	Frac. Org. Carb.	Retard-ation (R)	V (=K*i/n*R) (ft/day)
1.19E+00	0.0101	0.519	1.19	58	5.00E-03	1.664932563	0.013850827

NEW QUICK_DOMENICO.XLS

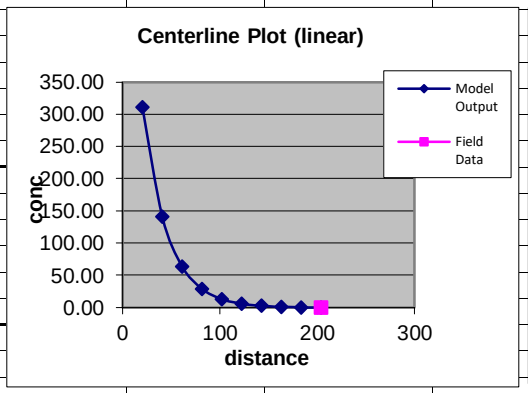
SPREADSHEET APPLICATION OF
"AN ANALYTICAL MODEL FOR
MULTIDIMENSIONAL TRANSPORT OF A
DECAYING CONTAMINANT SPECIES"
P.A. Domenico (1987)
Modified to Include Retardation

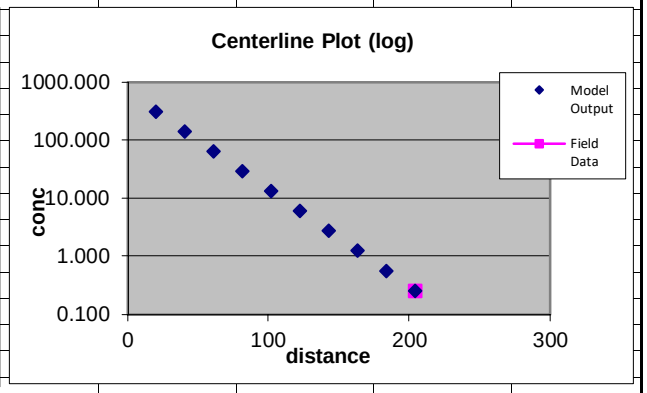
Point Concentration

x(ft)	y(ft)	z(ft)
204	38	0

	x(ft)	y(ft)	z(ft)
Conc. At	204	38	0
at	13505	days =	

0.250 ug/L





	AREAL MODEL	CALCULATION DOMAIN								
	Length (ft)	204								
	Width (ft)	38								
	20.4	*40.8*	*61.2*	*81.6*	*102*	*122.4*	*142.8*	*163.2*	*183.6*	*204*
38	311.359	141.318	64.138	29.102	13.198	5.980	2.708	1.225	0.554	0.250
19	311.359	141.318	64.141	29.112	13.213	5.996	2.721	1.234	0.560	0.254
0	311.359	141.318	64.141	29.112	13.213	5.997	2.722	1.235	0.560	0.254
-19	311.359	141.318	64.141	29.112	13.213	5.996	2.721	1.234	0.560	0.254
-38	311.359	141.318	64.138	29.102	13.198	5.980	2.708	1.225	0.554	0.250
Field Data:	**Centerline C**	**Concentration**		0.254						
	Distance from Source			204						

Modeled MW-112
Concentration Per 3/19/18
Contours - Actual
Concentration is <0.50

Appendix L
Fate and Transport Analysis

Remedial Investigation Report
National Grid Philadelphia Coke Plant
Philadelphia, Pennsylvania

ADVECTIVE TRANSPORT WITH THREE DIMENSIONAL DISPERSION,1ST ORDER DECAY and RETARDATION - WITH CALIBRATION TOOL

Project:	Calibration Between MW-111 and MW-112						
Date:	3/3/2021	Prepared by:	LCH				
		Contaminant:	Benzene				

SOURCE CONC (ug/L)	Ax (ft)	Ay (ft)	Az (ft) >=.001	LAMBDA day-1	SOURCE WIDTH (ft)	SOURCE THICKNESS (ft)	Time (days) (days)
686	2.04E+01	2.04E+00	1.00E-03	0.00096	200	10	13505

Hydraulic Cond (ft/day)	Hydraulic Gradient (ft/ft)	Porosity (dec. frac.)	Soil Bulk Density (g/cm^3)	KOC	Frac. Org. Carb.	Retard-ation (R)	V (=K*i/n*R) (ft/day)
1.19E+00	0.0101	0.519	1.19	58	5.00E-03	1.664932563	0.013850827

NEW QUICK_DOMENICO.XLS

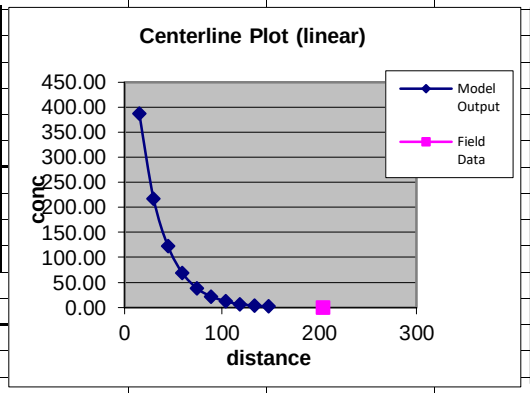
SPREADSHEET APPLICATION OF
"AN ANALYTICAL MODEL FOR
MULTIDIMENSIONAL TRANSPORT OF A
DECAYING CONTAMINANT SPECIES"
P.A. Domenico (1987)
Modified to Include Retardation

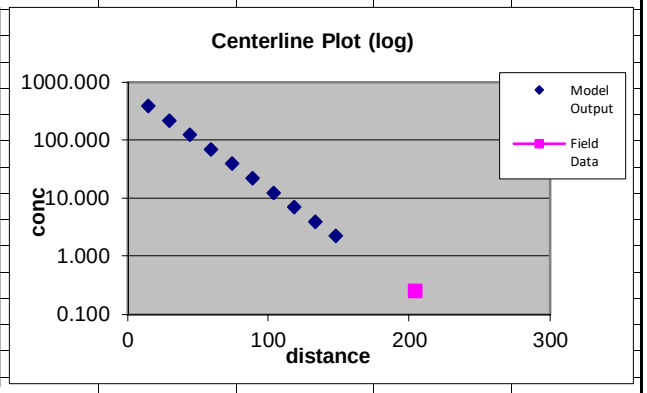
Point Concentration

x(ft)	y(ft)	z(ft)
204	38	0

	x(ft)	y(ft)	z(ft)
Conc. At	204	38	0
at	13505	days =	

0.250 ug/L





	AREAL MODEL	CALCULATION DOMAIN									
	Length (ft)	148									
	Width (ft)	110									
	14.8	*29.6*	*44.4*	*59.2*	*74*	*88.8*	*103.6*	*118.4*	*133.2*	*148*	
110	38.315	39.558	28.120	18.017	11.037	6.601	3.892	2.273	1.318	0.761	
55	386.755	218.041	122.879	69.175	38.886	21.830	12.242	6.860	3.842	2.151	
0	386.755	218.045	122.930	69.306	39.073	22.029	12.419	7.002	3.947	2.225	
-55	386.755	218.041	122.879	69.175	38.886	21.830	12.242	6.860	3.842	2.151	
-110	38.315	39.558	28.120	18.017	11.037	6.601	3.892	2.273	1.318	0.761	
Field Data:	**Centerline C**	**Concentration**		0.254							
	Distance from Source			204							

Modeled MW-113 Concentration Per 3/19/18 Contours - Actual Concentration is <0.50

Calibration Between MW-111 and MW-112 (October 3, 2019 Contour)

ADVECTIVE TRANSPORT WITH THREE DIMENSIONAL DISPERSION,1ST ORDER DECAY and RETARDATION - WITH CALIBRATION TOOL

Project:	Calibration Between MW-111 and MW-112						
Date:	3/3/2021	Prepared by:	LCH				
		Contaminant:	Benzene				

SOURCE CONC (ug/L)	Ax (ft)	Ay (ft)	Az (ft)	LAMBDA	SOURCE WIDTH (ft)	SOURCE THICKNESS (ft)	Time (days) (days)
			>=.001	day-1			
686	2.04E+01	2.04E+00	1.00E-03	0.00096	200	10	13505

Hydraulic Cond (ft/day)	Hydraulic Gradient (ft/ft)	Porosity (dec. frac.)	Soil Bulk Density (g/cm^3)	KOC	Frac. Org. Carb.	Retard-ation (R)	V (=K*i/n*R) (ft/day)
1.32E+00	0.0098	0.519	1.19	58	5.00E-03	1.664932563	0.014936466

NEW QUICK_DOMENICO.XLS

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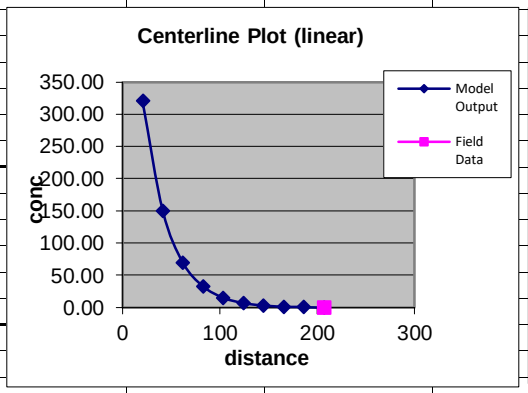
DECAYING CONTAMINANT SPECIES"
P.A. Domenico (1987)
Modified to Include Retardation

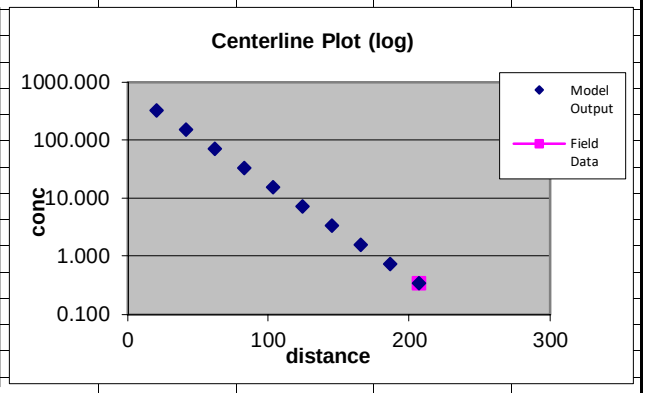
Point Concentration

x(ft)	y(ft)	z(ft)
207	82	0

	x(ft)	y(ft)	z(ft)
Conc. At	207	82	0
at	13505	days =	

0.250 ug/L





	AREAL MODEL	CALCULATION DOMAIN									
	Length (ft)	207									
	Width (ft)	82									
	20.7	*41.4*	*62.1*	*82.8*	*103.5*	*124.2*	*144.9*	*165.6*	*186.3*	*207*
82	312.623	137.446	61.022	27.390	12.392	5.639	2.577	1.182	0.543	0.250
41	320.664	149.891	70.058	32.730	15.278	7.125	3.319	1.545	0.719	0.334
0	320.664	149.892	70.065	32.751	15.309	7.156	3.345	1.563	0.731	0.341
-41	320.664	149.891	70.058	32.730	15.278	7.125	3.319	1.545	0.719	0.334
-82	312.623	137.446	61.022	27.390	12.392	5.639	2.577	1.182	0.543	0.250
Field Data:	**Centerline C**	**Concentration**		0.341						
	Distance from Source			207						

Modeled MW-112
Concentration Per 10/3/19
Contours - Actual
Concentration is <0.50

Trichloroethene at MW-5

ADVECTIVE TRANSPORT WITH THREE DIMENSIONAL DISPERSION,1ST ORDER DECAY and RETARDATION - WITH CALIBRATION TOOL

Project:	Philly Coke (MW-5)						
Date:	3/4/2021	Prepared by:	LCH				
		Contaminant:	Trichloroethene				

SOURCE CONC (MG/L)	Ax (ft)	Ay (ft)	Az (ft) >=.001	LAMBDA day-1	SOURCE WIDTH (ft)	SOURCE THICKNESS (ft)	Time (days) (days)
0.0061	1.38E+01	1.38E+00	1.00E-03	0.0000548	200	10	1825

Hydraulic Cond (ft/day)	Hydraulic Gradient (ft/ft)	Porosity (dec. frac.)	Soil Bulk Density (g/cm^3)	KOC	Frac. Org. Carb.	Retard-ation (R)	V (=K*i/n*R) (ft/day)
1.32E+00	0.00855	0.519	1.19	93	5.00E-03	2.066184971	0.010500629

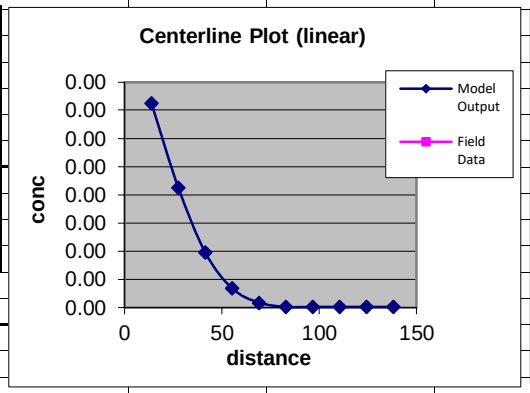
NEW QUICK_DOMENICO.XLS

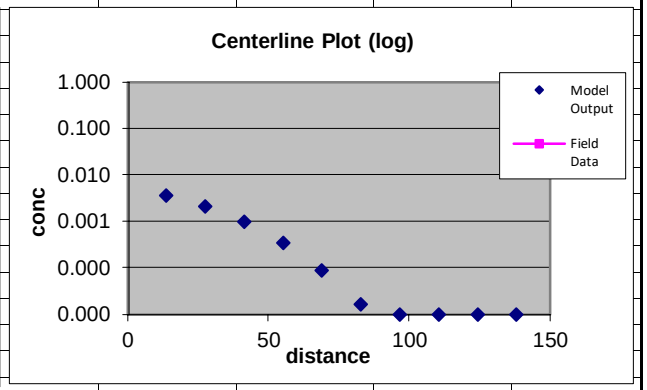
SPREADSHEET APPLICATION OF
"AN ANALYTICAL MODEL FOR
MULTIDIMENSIONAL TRANSPORT OF A
DECAYING CONTAMINANT SPECIES"
P.A. Domenico (1987)
Modified to Include Retardation

Point Concentration

x(ft)	y(ft)	z(ft)
138	0	0

	x(ft)	y(ft)	z(ft)
Conc. At	138	0	0
at	1825	days =	0.000 mg/l





AREAL MODEL DOMAIN
Length (ft) 138
Width (ft) 30

	13.8	27.6	41.4	55.2	69	82.8	96.6	110.4	124.2	138
30	0.004	0.002	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000
15	0.004	0.002	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0	0.004	0.002	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000
-15	0.004	0.002	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000
-30	0.004	0.002	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Field Data: Centerline C Concentration
Distance from Source

Appendix L
Fate and Transport Analysis

Remedial Investigation Report
National Grid Philadelphia Coke Plant
Philadelphia, Pennsylvania

ADVECTIVE TRANSPORT WITH THREE DIMENSIONAL DISPERSION,1ST ORDER DECAY and RETARDATION - WITH CALIBRATION TOOL

Project:	Philly Coke (MW-5)						
Date:	3/4/2021	Prepared by:	LCH				
		Contaminant:	Trichloroethene				

SOURCE CONC (MG/L)	Ax (ft)	Ay (ft)	Az (ft) >=.001	LAMBDA day-1	SOURCE WIDTH (ft)	SOURCE THICKNESS (ft)	Time (days) (days)
0.0061	1.38E+01	1.38E+00	1.00E-03	0.0000548	200	10	3650

Hydraulic Cond (ft/day)	Hydraulic Gradient (ft/ft)	Porosity (dec. frac.)	Soil Bulk Density (g/cm^3)	KOC	Frac. Org. Carb.	Retard-ation (R)	V (=K*i/n*R) (ft/day)
1.32E+00	0.00855	0.519	1.19	93	5.00E-03	2.066184971	0.010500629

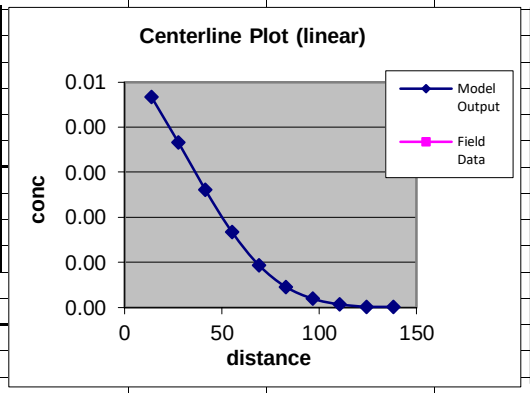
NEW QUICK_DOMENICO.XLS

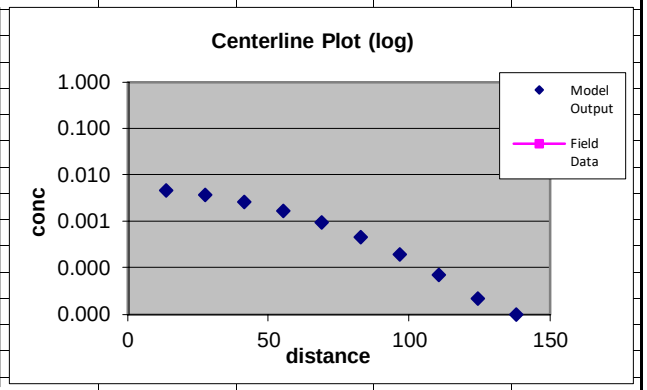
SPREADSHEET APPLICATION OF
"AN ANALYTICAL MODEL FOR
MULTIDIMENSIONAL TRANSPORT OF A
DECAYING CONTAMINANT SPECIES"
P.A. Domenico (1987)
Modified to Include Retardation

Point Concentration

x(ft)	y(ft)	z(ft)
138	0	0

	x(ft)	y(ft)	z(ft)
Conc. At	138	0	0
at	3650	days =	0.000 mg/l





AREAL MODEL CALCULATION DOMAIN
Length (ft) 138
Width (ft) 30

	13.8	27.6	41.4	55.2	69	82.8	96.6	110.4	124.2	138
30	0.005	0.004	0.003	0.002	0.001	0.000	0.000	0.000	0.000	0.000
15	0.005	0.004	0.003	0.002	0.001	0.000	0.000	0.000	0.000	0.000
0	0.005	0.004	0.003	0.002	0.001	0.000	0.000	0.000	0.000	0.000
-15	0.005	0.004	0.003	0.002	0.001	0.000	0.000	0.000	0.000	0.000
-30	0.005	0.004	0.003	0.002	0.001	0.000	0.000	0.000	0.000	0.000

Field Data: Centerline C Concentration
Distance from Source

Appendix L
Fate and Transport Analysis

Remedial Investigation Report
National Grid Philadelphia Coke Plant
Philadelphia, Pennsylvania

ADVECTIVE TRANSPORT WITH THREE DIMENSIONAL DISPERSION,1ST ORDER DECAY and RETARDATION - WITH CALIBRATION TOOL

Project:	Philly Coke (MW-5)						
Date:	3/4/2021	Prepared by:	LCH				
		Contaminant:	Trichloroethene				

SOURCE CONC (MG/L)	Ax (ft)	Ay (ft)	Az (ft) >=.001	LAMBDA day-1	SOURCE WIDTH (ft)	SOURCE THICKNESS (ft)	Time (days) (days)
0.0061	1.38E+01	1.38E+00	1.00E-03	0.0000548	200	10	5475

Hydraulic Cond (ft/day)	Hydraulic Gradient (ft/ft)	Porosity (dec. frac.)	Soil Bulk Density (g/cm^3)	KOC	Frac. Org. Carb.	Retard-ation (R)	V (=K*i/n*R) (ft/day)
1.32E+00	0.00855	0.519	1.19	93	5.00E-03	2.066184971	0.010500629

NEW QUICK_DOMENICO.XLS

SPREADSHEET APPLICATION OF
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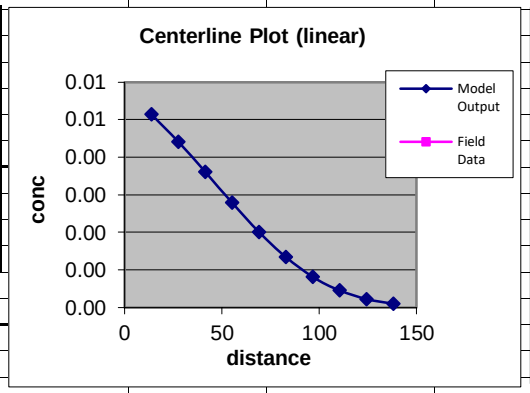
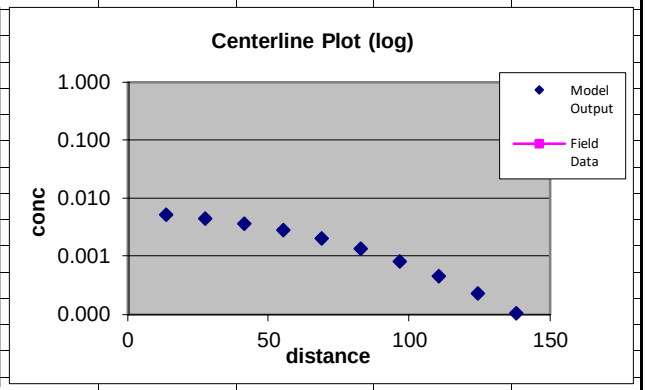
P.A. Domenico (1987)
Modified to Include Retardation

Point Concentration

x(ft)	y(ft)	z(ft)
138	0	0

	x(ft)	y(ft)	z(ft)
Conc. At	138	0	0
at	5475	days =	0.000 mg/l





AREAL MODEL CALCULATION DOMAIN
Length (ft) 138
Width (ft) 30

	13.8	27.6	41.4	55.2	69	82.8	96.6	110.4	124.2	138
30	0.005	0.004	0.004	0.003	0.002	0.001	0.001	0.000	0.000	0.000
15	0.005	0.004	0.004	0.003	0.002	0.001	0.001	0.000	0.000	0.000
0	0.005	0.004	0.004	0.003	0.002	0.001	0.001	0.000	0.000	0.000
-15	0.005	0.004	0.004	0.003	0.002	0.001	0.001	0.000	0.000	0.000
-30	0.005	0.004	0.004	0.003	0.002	0.001	0.001	0.000	0.000	0.000

Field Data: Centerline C Concentration
Distance from Source

Appendix L
Fate and Transport Analysis

Remedial Investigation Report
National Grid Philadelphia Coke Plant
Philadelphia, Pennsylvania

ADVECTIVE TRANSPORT WITH THREE DIMENSIONAL DISPERSION,1ST ORDER DECAY and RETARDATION - WITH CALIBRATION TOOL

Project:	Philly Coke (MW-5)						
Date:	3/4/2021	Prepared by:	LCH				
		Contaminant:	Trichloroethene				

SOURCE CONC (MG/L)	Ax (ft)	Ay (ft)	Az (ft) >=.001	LAMBDA day-1	SOURCE WIDTH (ft)	SOURCE THICKNESS (ft)	Time (days) (days)
0.0061	1.38E+01	1.38E+00	1.00E-03	0.0000548	200	10	10950

Hydraulic Cond (ft/day)	Hydraulic Gradient (ft/ft)	Porosity (dec. frac.)	Soil Bulk Density (g/cm^3)	KOC	Frac. Org. Carb.	Retard-ation (R)	V (=K*i/n*R) (ft/day)
1.32E+00	0.00855	0.519	1.19	93	5.00E-03	2.066184971	0.010500629

NEW QUICK_DOMENICO.XLS

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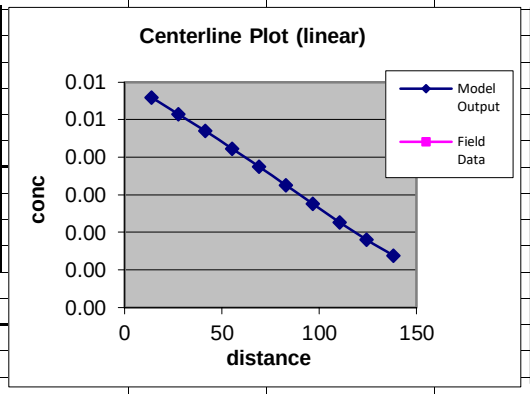
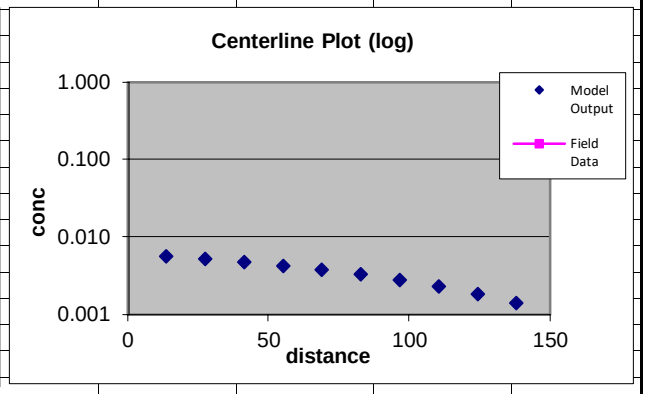
P.A. Domenico (1987)
Modified to Include Retardation

Point Concentration

x(ft)	y(ft)	z(ft)
138	0	0

	x(ft)	y(ft)	z(ft)
Conc. At	138	0	0
at	10950	days =	0.001 mg/l





AREAL MODEL CALCULATION DOMAIN
Length (ft) 138
Width (ft) 30

	13.8	27.6	41.4	55.2	69	82.8	96.6	110.4	124.2	138
30	0.006	0.005	0.005	0.004	0.004	0.003	0.003	0.002	0.002	0.001
15	0.006	0.005	0.005	0.004	0.004	0.003	0.003	0.002	0.002	0.001
0	0.006	0.005	0.005	0.004	0.004	0.003	0.003	0.002	0.002	0.001
-15	0.006	0.005	0.005	0.004	0.004	0.003	0.003	0.002	0.002	0.001
-30	0.006	0.005	0.005	0.004	0.004	0.003	0.003	0.002	0.002	0.001

Field Data: Centerline C Concentration
Distance from Source

Bis(2-ethylhexyl)phthalate at MW-102

ADVECTIVE TRANSPORT WITH THREE DIMENSIONAL DISPERSION,1ST ORDER DECAY and RETARDATION - WITH CALIBRATION TOOL

Project:	Philly Coke (MW-102)		
Date:	3/4/2021	Prepared by:	LCH
		Contaminant:	bis(2-Ethylhexyl)phthalate

SOURCE CONC (MG/L)	Ax (ft)	Ay (ft)	Az (ft) >=.001	LAMBDA day-1	SOURCE WIDTH (ft)	SOURCE THICKNESS (ft)	Time (days) (days)
0.0113	3.00E+01	3.00E+00	1.00E-03	0.00178082	200	10	1825

Hydraulic Cond (ft/day)	Hydraulic Gradient (ft/ft)	Porosity (dec. frac.)	Soil Bulk Density (g/cm^3)	KOC	Frac. Org. Carb.	Retard-ation (R)	V (=K*i/n*R) (ft/day)
1.32E+00	0.00506	0.519	1.19	87000	5.00E-03	998.3988439	1.28607E-05

NEW QUICK_DOMENICO.XLS

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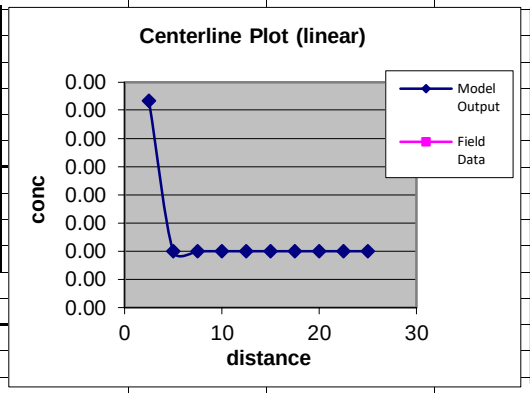
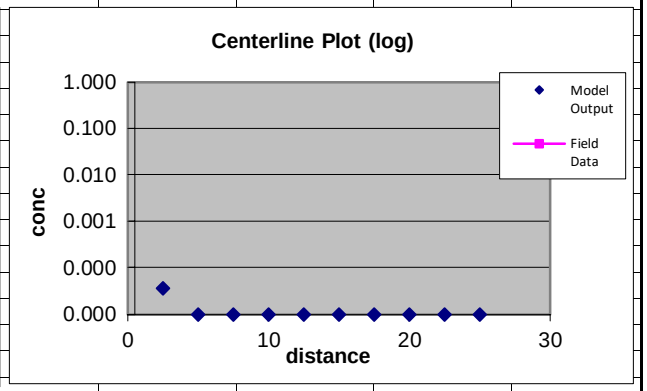
DECAYING CONTAMINANT SPECIES"
P.A. Domenico (1987)
Modified to Include Retardation

Point Concentration

x(ft)	y(ft)	z(ft)
300	0	0

	x(ft)	y(ft)	z(ft)
Conc. At	300	0	0
at	1825	days =	
			0.000
			mg/l





AREAL MODEL DOMAIN

Length (ft)	25
Width (ft)	1

	2.5	5	7.5	10	12.5	15	17.5	20	22.5	25
1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
-0.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
-1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Field Data: Centerline C Concentration
Distance from Source

ADVECTIVE TRANSPORT WITH THREE DIMENSIONAL DISPERSION,1ST ORDER DECAY and RETARDATION - WITH CALIBRATION TOOL

Project: Philly Coke (MW-102)
Date: 3/4/2021 Prepared by: LCH
Contaminant: bis(2-Ethylhexyl)phthalate

SOURCE CONC (MG/L)	Ax (ft)	Ay (ft)	Az (ft) >=.001	LAMBDA day-1	SOURCE WIDTH (ft)	SOURCE THICKNESS (ft)	Time (days) (days)
0.0113	3.00E+01	3.00E+00	1.00E-03	0.00178082	200	10	3650

Hydraulic Cond (ft/day)	Hydraulic Gradient (ft/ft)	Porosity (dec. frac.)	Soil Bulk Density (g/cm^3)	KOC	Frac. Org. Carb.	Retard-ation (R)	V (=K*i/n*R) (ft/day)
1.32E+00	0.00506	0.519	1.19	87000	5.00E-03	998.3988439	1.28607E-05

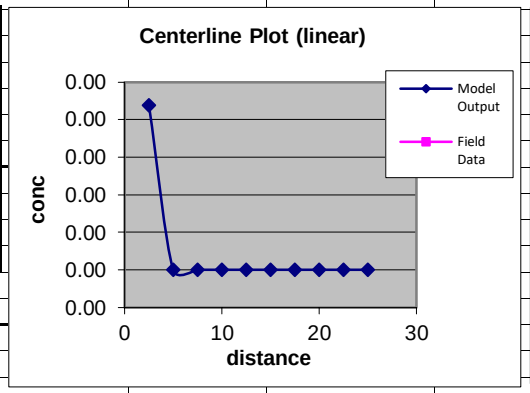
NEW QUICK_DOMENICO.XLS

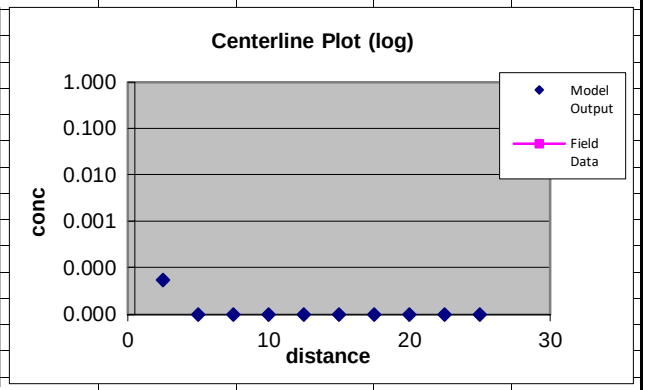
SPREADSHEET APPLICATION OF
"AN ANALYTICAL MODEL FOR
MULTIDIMENSIONAL TRANSPORT OF A
DECAYING CONTAMINANT SPECIES"
P.A. Domenico (1987)
Modified to Include Retardation

Point Concentration

x(ft)	y(ft)	z(ft)
300	0	0

	x(ft)	y(ft)	z(ft)
Conc. At	300	0	0
at	3650	days =	
			0.000
			mg/l





AREAL MODEL CALCULATION DOMAIN
Length (ft) 25
Width (ft) 1

	2.5	5	7.5	10	12.5	15	17.5	20	22.5	25
1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
-0.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
-1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Field Data: Centerline C Concentration
Distance from Source

Appendix L
Fate and Transport Analysis

Remedial Investigation Report
National Grid Philadelphia Coke Plant
Philadelphia, Pennsylvania

ADVECTIVE TRANSPORT WITH THREE DIMENSIONAL DISPERSION,1ST ORDER DECAY and RETARDATION - WITH CALIBRATION TOOL

Project:	Philly Coke (MW-102)						
Date:	3/4/2021	Prepared by:	LCH				
		Contaminant:	bis(2-Ethylhexyl)phthalate				

SOURCE CONC (MG/L)	Ax (ft)	Ay (ft)	Az (ft) >=.001	LAMBDA day-1	SOURCE WIDTH (ft)	SOURCE THICKNESS (ft)	Time (days) (days)
0.0113	3.00E+01	3.00E+00	1.00E-03	0.00178082	200	10	5475

Hydraulic Cond (ft/day)	Hydraulic Gradient (ft/ft)	Porosity (dec. frac.)	Soil Bulk Density (g/cm^3)	KOC	Frac. Org. Carb.	Retard-ation (R)	V (=K*i/n*R) (ft/day)
1.32E+00	0.00506	0.519	1.19	87000	5.00E-03	998.3988439	1.28607E-05

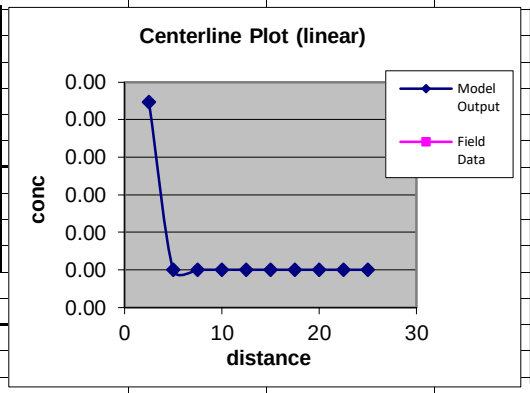
NEW QUICK_DOMENICO.XLS

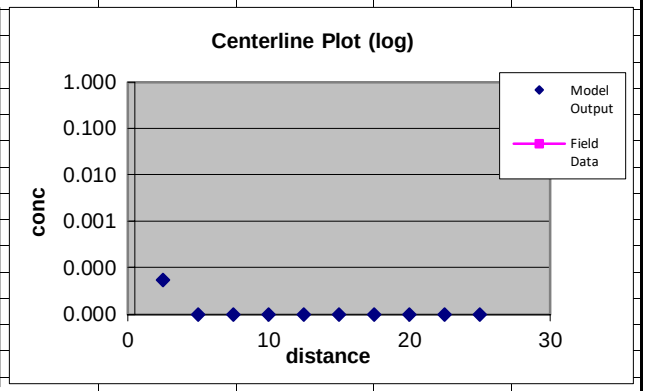
SPREADSHEET APPLICATION OF
"AN ANALYTICAL MODEL FOR
MULTIDIMENSIONAL TRANSPORT OF A
DECAYING CONTAMINANT SPECIES"
P.A. Domenico (1987)
Modified to Include Retardation

Point Concentration

x(ft)	y(ft)	z(ft)
300	0	0

	x(ft)	y(ft)	z(ft)
Conc. At	300	0	0
at	5475	days =	0.000 mg/l





AREAL MODEL CALCULATION DOMAIN

Length (ft)	25
Width (ft)	1

	2.5	5	7.5	10	12.5	15	17.5	20	22.5	25
1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
-0.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
-1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Field Data: Centerline C Concentration
Distance from Source

Appendix L
Fate and Transport Analysis

Remedial Investigation Report
National Grid Philadelphia Coke Plant
Philadelphia, Pennsylvania

ADVECTIVE TRANSPORT WITH THREE DIMENSIONAL DISPERSION,1ST ORDER DECAY and RETARDATION - WITH CALIBRATION TOOL

Project:	Philly Coke (MW-102)						
Date:	3/4/2021	Prepared by:	LCH				
		Contaminant:	bis(2-Ethylhexyl)phthalate				

SOURCE CONC (MG/L)	Ax (ft)	Ay (ft)	Az (ft) >=.001	LAMBDA day-1	SOURCE WIDTH (ft)	SOURCE THICKNESS (ft)	Time (days) (days)
0.0113	3.00E+01	3.00E+00	1.00E-03	0.00178082	200	10	10950

Hydraulic Cond (ft/day)	Hydraulic Gradient (ft/ft)	Porosity (dec. frac.)	Soil Bulk Density (g/cm^3)	KOC	Frac. Org. Carb.	Retard-ation (R)	V (=K*i/n*R) (ft/day)
1.32E+00	0.00506	0.519	1.19	87000	5.00E-03	998.3988439	1.28607E-05

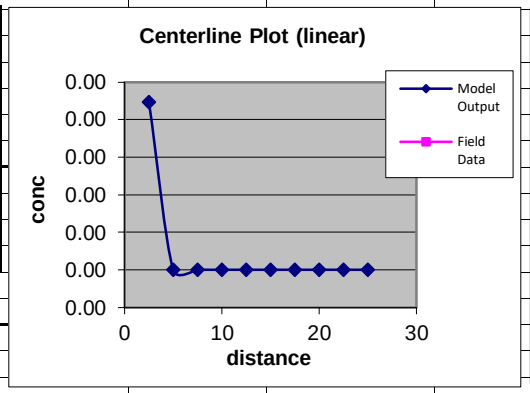
NEW QUICK_DOMENICO.XLS

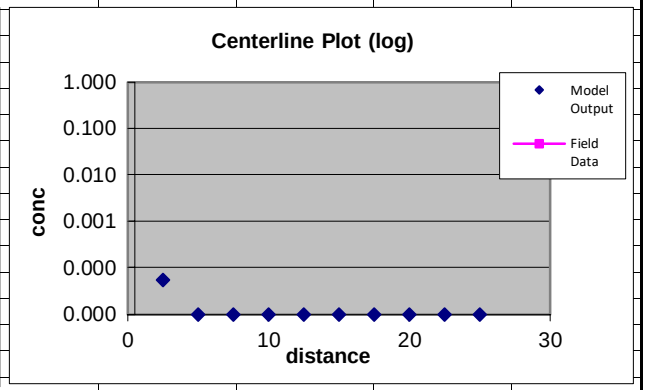
SPREADSHEET APPLICATION OF
"AN ANALYTICAL MODEL FOR
MULTIDIMENSIONAL TRANSPORT OF A
DECAYING CONTAMINANT SPECIES"
P.A. Domenico (1987)
Modified to Include Retardation

Point Concentration

x(ft)	y(ft)	z(ft)
300	0	0

	x(ft)	y(ft)	z(ft)
Conc. At	300	0	0
at	10950	days =	
			0.000
			mg/l





AREAL MODEL CALCULATION DOMAIN

Length (ft)	25
Width (ft)	1

	2.5	5	7.5	10	12.5	15	17.5	20	22.5	25
1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
-0.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
-1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Field Data: Centerline C Concentration
Distance from Source

Benzo(a)pyrene and benzo(b)fluoranthene at MW-107

Appendix L
Fate and Transport Analysis

Remedial Investigation Report
National Grid Philadelphia Coke Plant
Philadelphia, Pennsylvania

METHOD FOR ESTIMATNG FLOW, AVERAGE CONCENTRATION AND MASS LOADING TO SURFACE WATER FROM GROUNDWATER

Project: Philly Coke (MW-107)
Date: 3/4/2021
Contaminant: Benz(a)pyrene
Prepared by: LCH

PA DEPARTMENT
OF ENVIRONMENTAL PROTECTION
SWLOAD5B.XLS
A METHOD FOR ESTIMATING
COMTAMINANT LOADING TO SURFACE WATER
based on
P.A. Domenico (1987)
Modified to Include Retardation

SOURCE CONC (units)	Ax (ft)	Ay (ft)	Az (ft)	LAMBDA	SOURCE WIDTH (ft)	SOURCE THICKNESS (ft)	Time (days)
ug/L	>.0001	>.0001	>=.0001	day-1			
1.2	7	0.7	1.00E-03	0.000658	160	10	1.00E+99

Hydraulic Cond (ft/day)	Hydraulic Gradient (ft/ft)	Porosity (dec. frac.)	Soil Bulk Density (g/cm^3)	KOC	Frac. Org. Carb.	Retard-ation (R)	V (=K*i/n*R) (ft/day)
1.32E+00	0.00294	0.519	1.19	910000	5.00E-03	10433.56	7.15E-07

Edge Criterion (ug/L) 0.0001
Higest modeled conc. 0

SURFACE WATER LOADING GRID
Distance to Stream (ft) 70
Plume View Width (ft) 160
Plume View Depth (ft) 10

PENTOX NOT NEEDED

	-80	-64	-48	-32	-16	0	16	32	48	64	80
0	0	0	0	0	0	0	0	0	0	0	0
-1	0	0	0	0	0	0	0	0	0	0	0
-2	0	0	0	0	0	0	0	0	0	0	0
-3	0	0	0	0	0	0	0	0	0	0	0
-4	0	0	0	0	0	0	0	0	0	0	0
-5	0	0	0	0	0	0	0	0	0	0	0
-6	0	0	0	0	0	0	0	0	0	0	0
-7	0	0	0	0	0	0	0	0	0	0	0
-8	0	0	0	0	0	0	0	0	0	0	0
-9	0	0	0	0	0	0	0	0	0	0	0
-10	0	0	0	0	0	0	0	0	0	0	0

Average Groundwater Concentration #DIV/0! mg/l

Plume Flow 0.00000 cfs 0 MGD

Mass Loading to Stream #DIV/0! mg/day

METHOD FOR ESTIMATNG FLOW, AVERAGE CONCENTRATION AND MASS LOADING TO SURFACE WATER FROM GROUNDWATER

Project: Philly Coke (MW-107)
Date: 3/4/2021
Contaminant: Benzo(b)fluoranthene
Prepared by: LCH

PA DEPARTMENT
OF ENVIRONMENTAL PROTECTION
SWLOAD5B.XLS
A METHOD FOR ESTIMATING
COMTAMINANT LOADING TO SURFACE
WATER
based on
P.A. Domenico (1987)
Modified to Include Retardation

SOURCE CONC (units)	Ax (ft)	Ay (ft)	Az (ft)	LAMBDA	SOURCE WIDTH	SOURCE THICKNESS	Time
ug/L	>.0001	>.0001	>=.0001	day-1	(ft)	(ft)	(days)
1.7	7	0.7	1.00E-03	0.000575	160	10	1.00E+99

Hydraulic Cond (ft/day)	Hydraulic Gradient (ft/ft)	Porosity (dec. frac.)	Soil Bulk Density (g/cm^3)	KOC	Frac. Org. Carb.	Retard-ation (R)	V (=K*i/n*R) (ft/day)
1.32E+00	0.00294	0.519	1.19	550000	5.00E-03	6306.395	1.183E-06

Edge Criterion (ug/L) 0.001
Higest modeled conc. 1E-251

SURFACE WATER LOADING GRID
Distance to Stream (ft) 70
Plume View Width (ft) 160
Plume View Depth (ft) 10

PENTOX NOT NEEDED

	-80	-64	-48	-32	-16	0	16	32	48	64	80
0	5.9E-252	1.11E-251	1.2E-251	1.17E-251	1.173E-251	1.173E-251	1.17E-251	1.17E-251	1.17E-251	1.1E-251	5.9E-252
-1	5.9E-252	1.11E-251	1.2E-251	1.17E-251	1.173E-251	1.173E-251	1.17E-251	1.17E-251	1.17E-251	1.1E-251	5.9E-252
-2	5.9E-252	1.11E-251	1.2E-251	1.17E-251	1.173E-251	1.173E-251	1.17E-251	1.17E-251	1.17E-251	1.1E-251	5.9E-252
-3	5.9E-252	1.11E-251	1.2E-251	1.17E-251	1.173E-251	1.173E-251	1.17E-251	1.17E-251	1.17E-251	1.1E-251	5.9E-252
-4	5.9E-252	1.11E-251	1.2E-251	1.17E-251	1.173E-251	1.173E-251	1.17E-251	1.17E-251	1.17E-251	1.1E-251	5.9E-252
-5	5.9E-252	1.11E-251	1.2E-251	1.17E-251	1.173E-251	1.173E-251	1.17E-251	1.17E-251	1.17E-251	1.1E-251	5.9E-252
-6	5.9E-252	1.11E-251	1.2E-251	1.17E-251	1.173E-251	1.173E-251	1.17E-251	1.17E-251	1.17E-251	1.1E-251	5.9E-252
-7	5.9E-252	1.11E-251	1.2E-251	1.17E-251	1.173E-251	1.173E-251	1.17E-251	1.17E-251	1.17E-251	1.1E-251	5.9E-252
-8	5.9E-252	1.11E-251	1.2E-251	1.17E-251	1.173E-251	1.173E-251	1.17E-251	1.17E-251	1.17E-251	1.1E-251	5.9E-252
-9	5.8E-252	1.11E-251	1.2E-251	1.17E-251	1.169E-251	1.169E-251	1.17E-251	1.17E-251	1.17E-251	1.1E-251	5.8E-252
-10	2.9E-252	5.56E-252	5.9E-252	5.87E-252	5.867E-252	5.867E-252	5.87E-252	5.87E-252	5.86E-252	5.6E-252	2.9E-252

Average Groundwater Concentration #DIV/0! mg/l

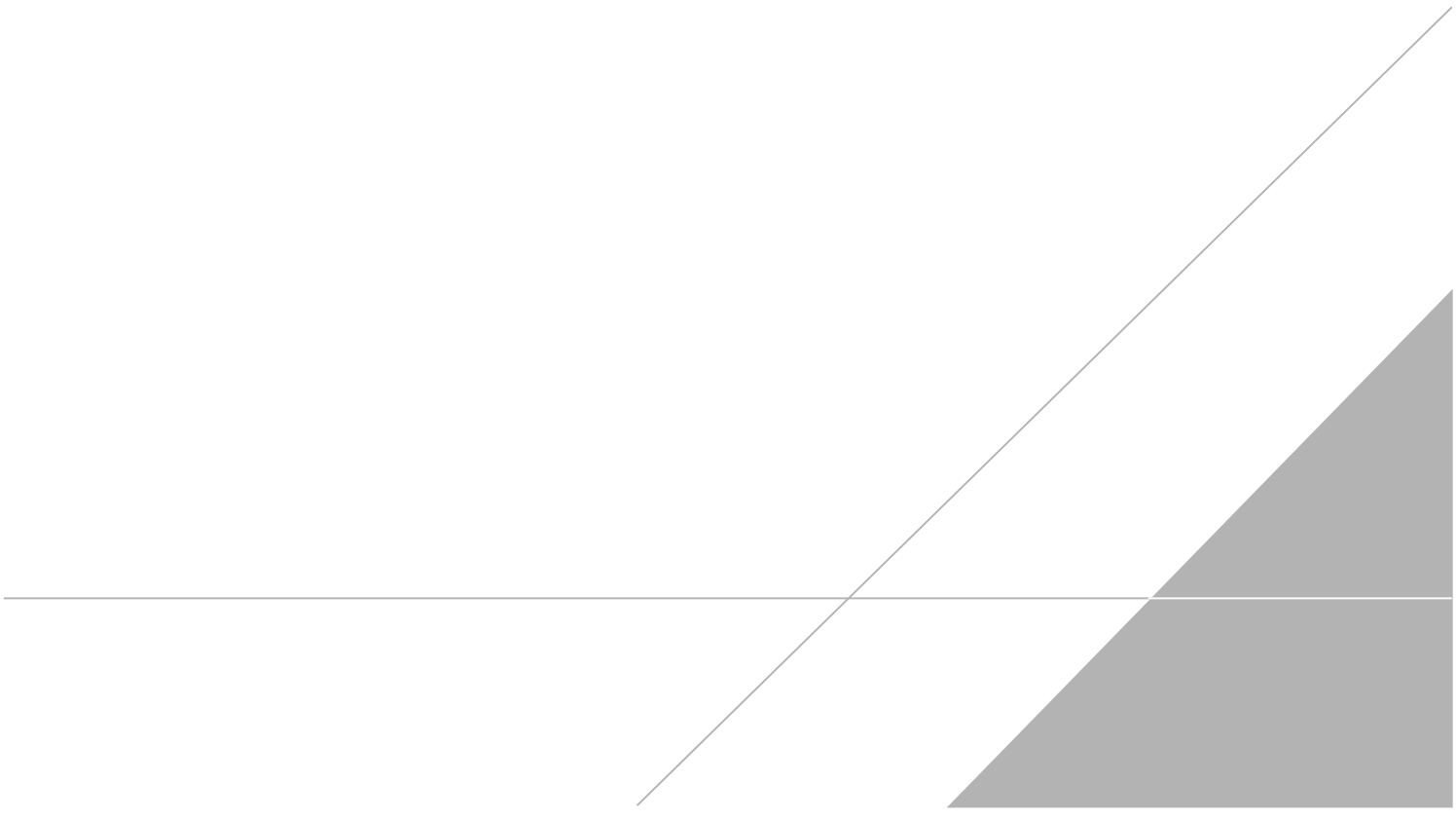
Plume Flow 0.00000 cfs 0 MGD

Mass Loading to Stream #DIV/0! mg/day

APPENDIX M

Threatened and Endangered Species Consultation Correspondence

PNDI Final Receipt #628950: Former Philadelphia Coke Plant Site



1. PROJECT INFORMATION

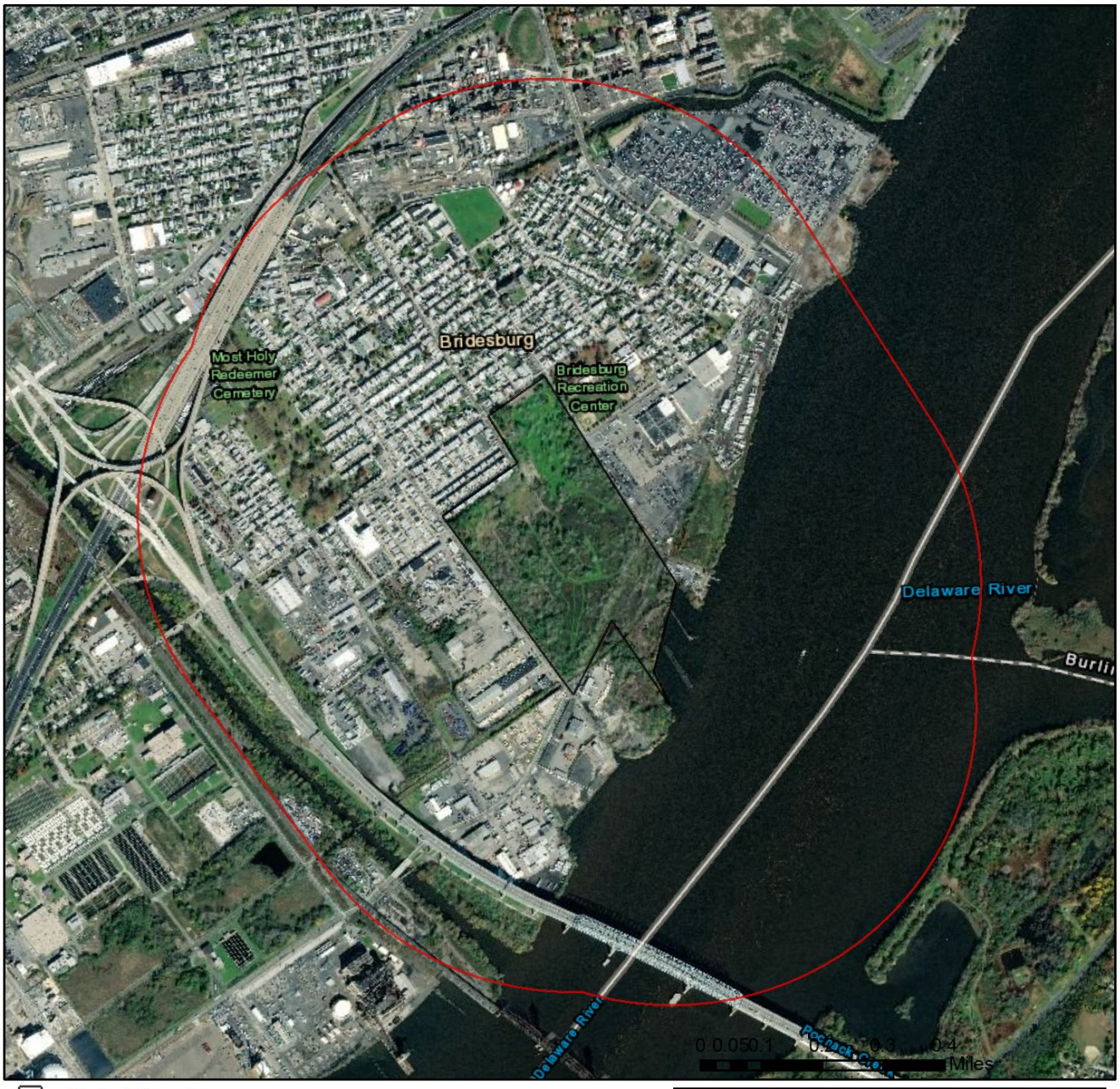
Project Name: **Former Philadelphia Coke Plant Site**
Date of Review: **10/2/2019 10:40:47 AM**
Project Category: **Hazardous Waste Clean-up, Site Remediation, and Reclamation, Spill (e.g., oil, chemical)**
Project Area: **64.82 acres**
County(s): **Philadelphia**
Township/Municipality(s): **PHILADELPHIA**
ZIP Code: **19137**
Quadrangle Name(s): **CAMDEN**
Watersheds HUC 8: **Lower Delaware**
Watersheds HUC 12: **Pompeston Creek-Delaware River; Tacony Creek-Frankford Creek**
Decimal Degrees: **39.995443, -75.068641**
Degrees Minutes Seconds: **39° 59' 43.5965" N, 75° 4' 7.1084" W**

2. SEARCH RESULTS

Agency	Results	Response
PA Game Commission	No Known Impact	No Further Review Required
PA Department of Conservation and Natural Resources	No Known Impact	No Further Review Required
PA Fish and Boat Commission	**Potential Impact**	**FURTHER REVIEW IS REQUIRED, See Agency Response**
U.S. Fish and Wildlife Service	No Known Impact	No Further Review Required

As summarized above, Pennsylvania Natural Diversity Inventory (PNDI) records indicate there may be potential impacts to threatened and endangered and/or special concern species and resources within the project area. If the response above indicates "No Further Review Required" no additional communication with the respective agency is required. If the response is "Further Review Required" or "See Agency Response," refer to the appropriate agency comments below. Please see the DEP Information Section of this receipt if a PA Department of Environmental Protection Permit is required.

Former Philadelphia Coke Plant Site

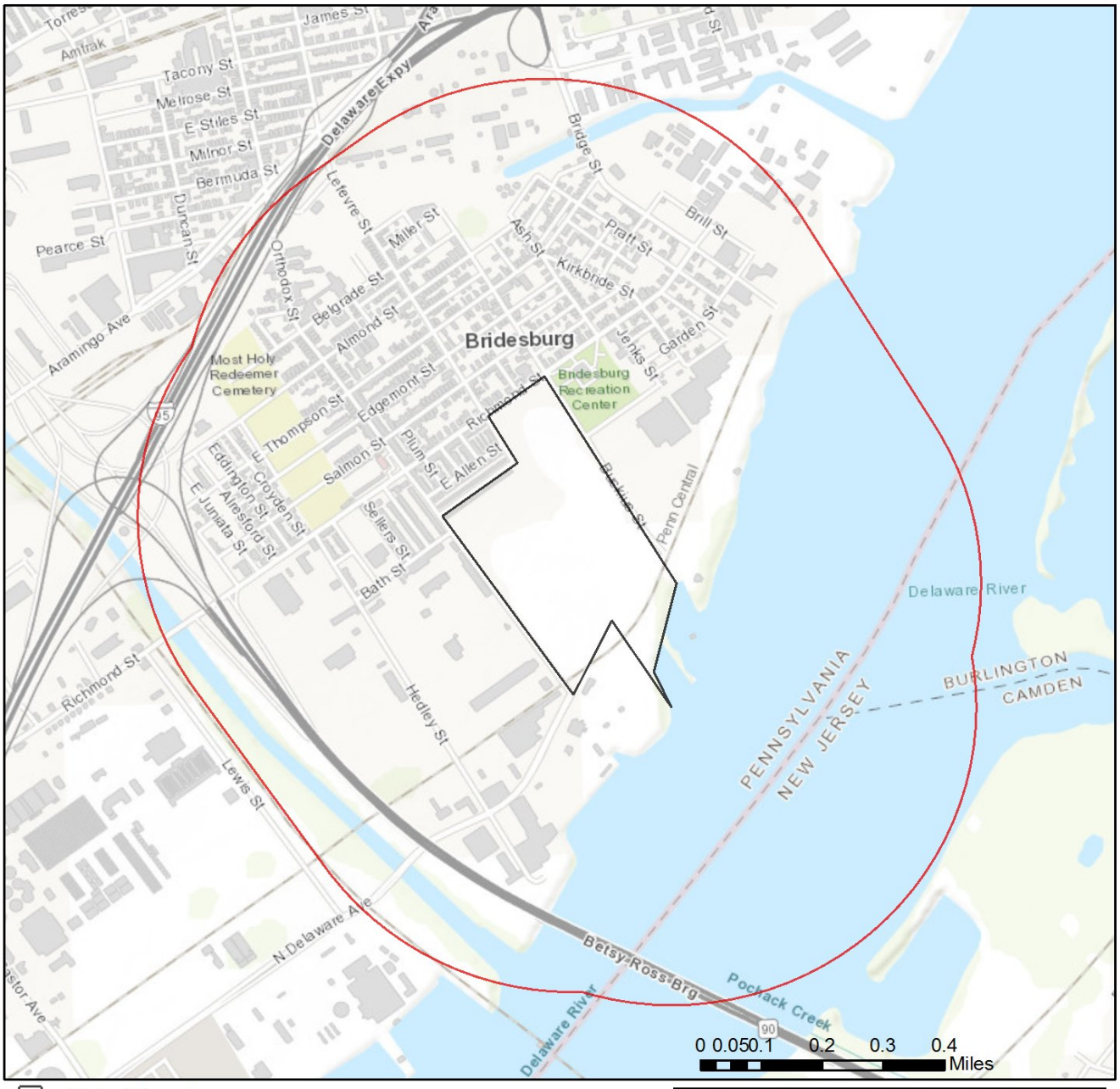


Project Boundary

Buffered Project Boundary

Service Layer Credits: Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community

Former Philadelphia Coke Plant Site



Project Boundary

Buffered Project Boundary

Service Layer Credits: Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS,

RESPONSE TO QUESTION(S) ASKED

Q1: Aquatic habitat (stream, river, lake, pond, etc.) is located on or adjacent to the subject property and project activities (including discharge) may occur within 300 feet of these habitats?
Your answer is: Yes

3. AGENCY COMMENTS

Regardless of whether a DEP permit is necessary for this proposed project, any potential impacts to threatened and endangered species and/or special concern species and resources must be resolved with the appropriate jurisdictional agency. In some cases, a permit or authorization from the jurisdictional agency may be needed if adverse impacts to these species and habitats cannot be avoided.

These agency determinations and responses are **valid for two years** (from the date of the review), and are based on the project information that was provided, including the exact project location; the project type, description, and features; and any responses to questions that were generated during this search. If any of the following change: 1) project location, 2) project size or configuration, 3) project type, or 4) responses to the questions that were asked during the online review, the results of this review are not valid, and the review must be searched again via the PNDI Environmental Review Tool and resubmitted to the jurisdictional agencies. The PNDI tool is a primary screening tool, and a desktop review may reveal more or fewer impacts than what is listed on this PNDI receipt. The jursidictional agencies **strongly advise against** conducting surveys for the species listed on the receipt prior to consultation with the agencies.

PA Game Commission
RESPONSE:
No Impact is anticipated to threatened and endangered species and/or special concern species and resources.

PA Department of Conservation and Natural Resources
RESPONSE:
No Impact is anticipated to threatened and endangered species and/or special concern species and resources.

PA Fish and Boat Commission
RESPONSE:
Further review of this project is necessary to resolve the potential impact(s). Please send project information to this agency for review (see WHAT TO SEND).

PFBC Species: (Note: The Pennsylvania Conservation Explorer tool is a primary screening tool, and a desktop review may reveal more or fewer species than what is listed below.)

Scientific Name	Common Name	Current Status
Sensitive Species**		Endangered
Sensitive Species**		Endangered
Sensitive Species**		Threatened

U.S. Fish and Wildlife Service
RESPONSE:
No impacts to **federally** listed or proposed species are anticipated. Therefore, no further consultation/coordination under the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq. is required. Because no take of federally listed species is anticipated, none is authorized. This response does not reflect potential Fish and Wildlife Service concerns under the Fish and Wildlife Coordination Act or other authorities.

* Special Concern Species or Resource - Plant or animal species classified as rare, tentatively undetermined or candidate as well as other taxa of conservation concern, significant natural communities, special concern populations (plants or animals) and unique geologic features.
** Sensitive Species - Species identified by the jurisdictional agency as collectible, having economic value, or being susceptible to decline as a result of visitation.

WHAT TO SEND TO JURISDICTIONAL AGENCIES

If project information was requested by one or more of the agencies above, upload* or email* the following information to the agency(s). Instructions for uploading project materials can be found here. This option provides the applicant with the convenience of sending project materials to a single location accessible to all three state agencies. Alternatively, applicants may email or mail their project materials (see AGENCY CONTACT INFORMATION).
***Note:** U.S.Fish and Wildlife Service requires applicants to mail project materials to the USFWS PA field office (see AGENCY CONTACT INFORMATION). USFWS will not accept project materials submitted electronically (by upload or email).

Check-list of Minimum Materials to be submitted:
____Project narrative with a description of the overall project, the work to be performed, current physical characteristics of the site and acreage to be impacted.
____A map with the project boundary and/or a basic site plan(particularly showing the relationship of the project to the physical features such as wetlands, streams, ponds, rock outcrops, etc.)
In addition to the materials listed above, USFWS REQUIRES the following
____**SIGNED** copy of a Final Project Environmental Review Receipt

The inclusion of the following information may expedite the review process.
____Color photos keyed to the basic site plan (i.e. showing on the site plan where and in what direction each photo was taken and the date of the photos)
____Information about the presence and location of wetlands in the project area, and how this was determined (e.g., by a qualified wetlands biologist), if wetlands are present in the project area, provide project plans showing the location of all project features, as well as wetlands and streams.

4. DEP INFORMATION

The Pa Department of Environmental Protection (DEP) requires that a signed copy of this receipt, along with any required documentation from jurisdictional agencies concerning resolution of potential impacts, be submitted with applications for permits requiring PNDI review. Two review options are available to permit applicants for handling PNDI coordination in conjunction with DEP's permit review process involving either T&E Species or species of special concern. Under sequential review, the permit applicant performs a PNDI screening and completes all coordination with the appropriate jurisdictional agencies prior to submitting the permit application. The applicant will include with its application, both a PNDI receipt and/or a clearance letter from the jurisdictional agency if the PNDI Receipt shows a Potential Impact to a species or the applicant chooses to obtain letters directly from the jurisdictional agencies. Under concurrent review, DEP, where feasible, will allow technical review of the permit to occur concurrently with the T&E species consultation with the jurisdictional agency. The applicant must still supply a copy of the PNDI Receipt with its permit application. The PNDI Receipt should also be submitted to the appropriate agency according to directions on the PNDI Receipt. The applicant and the jurisdictional agency will work together to resolve the potential impact(s). See the DEP PNDI policy at https://conservationexplorer.dcnr.pa.gov/content/resources.

5. ADDITIONAL INFORMATION

The PNDI environmental review website is a preliminary screening tool. There are often delays in updating species status classifications. Because the proposed status represents the best available information regarding the conservation status of the species, state jurisdictional agency staff give the proposed statuses at least the same consideration as the current legal status. If surveys or further information reveal that a threatened and endangered and/or special concern species and resources exist in your project area, contact the appropriate jurisdictional agency/agencies immediately to identify and resolve any impacts.

For a list of species known to occur in the county where your project is located, please see the species lists by county found on the PA Natural Heritage Program (PNHP) home page (www.naturalheritage.state.pa.us). Also note that the PNDI Environmental Review Tool only contains information about species occurrences that have actually been reported to the PNHP.

6. AGENCY CONTACT INFORMATION

PA Department of Conservation and Natural Resources
Bureau of Forestry, Ecological Services Section
400 Market Street, PO Box 8552
Harrisburg, PA 17105-8552
Email: RA-HeritageReview@pa.gov

U.S. Fish and Wildlife Service
Pennsylvania Field Office
Endangered Species Section
110 Radnor Rd; Suite 101
State College, PA 16801
NO Faxes Please

PA Fish and Boat Commission
Division of Environmental Services
595 E. Rolling Ridge Dr., Bellefonte, PA 16823
Email: RA-FBPACENOTIFY@pa.gov

PA Game Commission
Bureau of Wildlife Habitat Management
Division of Environmental Planning and Habitat Protection
2001 Elmerton Avenue, Harrisburg, PA 17110-9797
Email: RA-PGC_PNDI@pa.gov
NO Faxes Please

7. PROJECT CONTACT INFORMATION

Name:_____
Company/Business Name:_____
Address:_____
City, State, Zip:_____
Phone:(_____)_____Fax:(_____)_____
Email:_____

8. CERTIFICATION

I certify that ALL of the project information contained in this receipt (including project location, project size/configuration, project type, answers to questions) is true, accurate and complete. In addition, if the project type, location, size or configuration changes, or if the answers to any questions that were asked during this online review change, I agree to re-do the online environmental review.

_____ _____
applicant/project proponent signature date

Initial PADNR Consultation Planning Report Request and Response

Former Philadelphia Coke Plant Site (PNDI-628950)

View | Edit Details/Finalize | Edit/View Shape | Generate Receipt

Project Review Results

Revision date	Receipt Status	Payment Status	Receipt File	Boundary Shapefile
4/26/2017 01:27:02 PM	Generated	Payment Not Required	project_receipt_former_philadelphia_coke_plant__628950_2.pdf	Shapefile (ZIP)
4/18/2017 12:24:02 PM	Generated	Payment Complete	project_receipt_former_philadelphia_coke_plant__628950_1.pdf	Shapefile (ZIP)

Submitted by dave.buys_17392 on Tue, 04/18/2017 - 12:21

Project Type:

- Hazardous Waste Clean-up, Site Remediation, and Reclamation
  - Spill (e.g., oil, chemical)

Project ID: PNDI-628950

Project Size: Standard

Project Edit Status: Draft

Document Upload Opt-Out: Not Selected

No Documents Required: Not Selected

User Project Number: B0036790

Project Description: Former Philadelphia Coke Plant Site. National Grid. Proposed Supplemental Investigation.

Contact Name: David Buys

Organization: Arcadis

Address: 110 West Fayette Street

Address line 2: Suite 300

City: Syracuse

State/Province: New York

ZIP Code: 13202

Phone number: 315-263-6192

Email: dave.buys@arcadis.com

Introduction

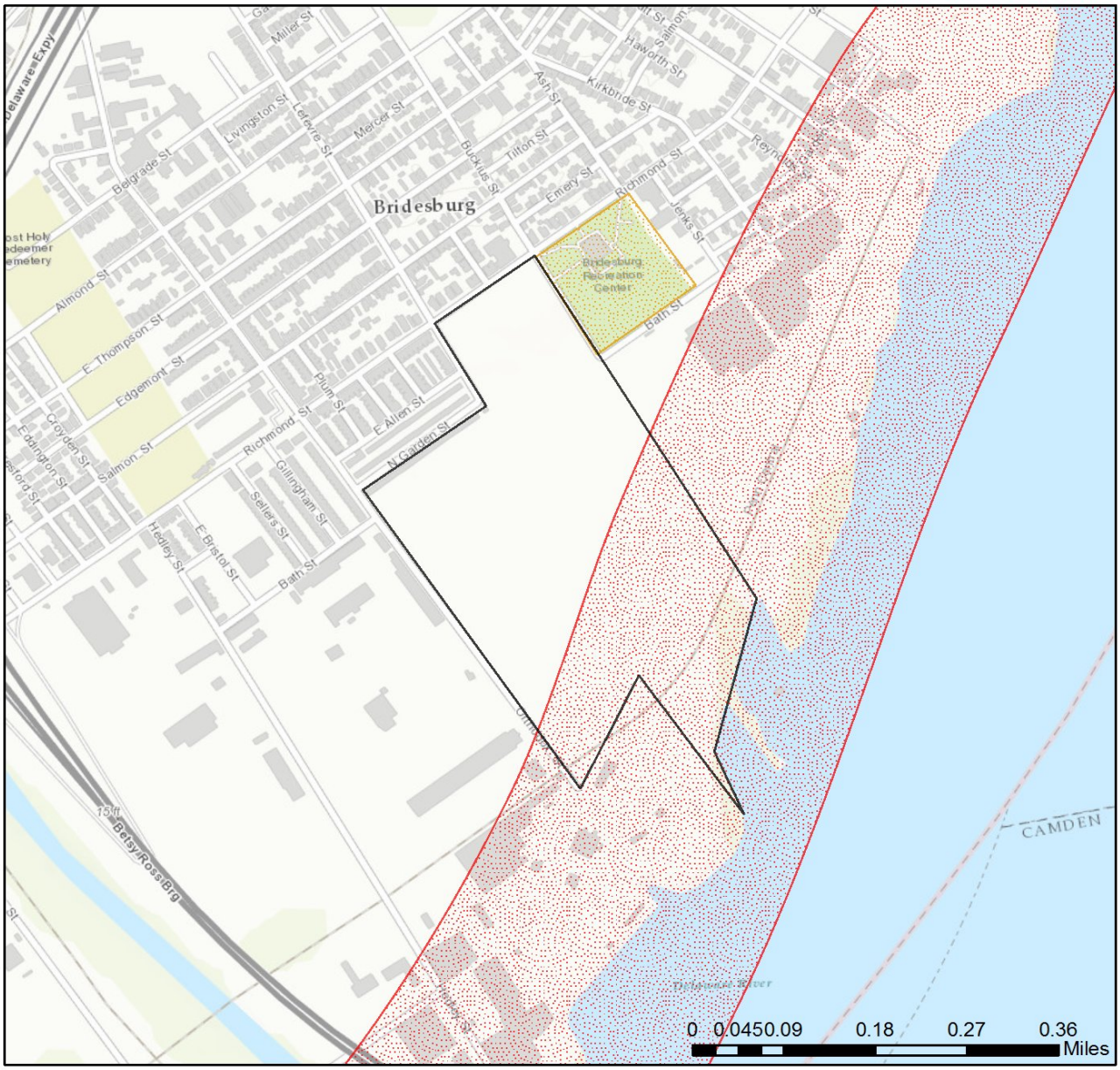
This Conservation Planning Report compiles names, descriptions, maps, locations, measurements, links and references for Natural Heritage Areas (core and supporting habitats), Important Bird Areas, State Lands, and agency designated water resources that are coincident with an area of interest defined by the user of the Pennsylvania Conservation Explorer tool. For an overview and additional details, please be sure to visit the website at www.naturalheritage.state.pa.us and download the applicable County Natural Heritage Inventory report(s).

Site Area: 66.96 acres
County(s): Philadelphia
Township/Municipality(s): PHILADELPHIA
Quadrangle Name(s): CAMDEN
Watersheds HUC 8: Lower Delaware
Watersheds HUC 12: Pompeston Creek-Delaware River; Tacony Creek-Frankford Creek
Decimal Degrees: 39.995448 N, -75.068600 W
Degrees Minutes Seconds: 39° 59' 43.6144" N, 75° 4' 6.9583" W

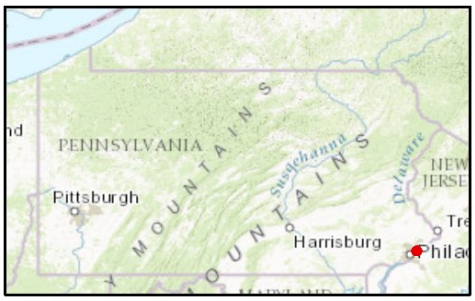
SEARCH RESULT SUMMARY

Conservation Planning Category	Detected Area Summary
Natural Heritage Areas	1 site

Former Philadelphia Coke Plant Site



Project Boundary
Core Habitats
Local Parks



Service Layer Credits: Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo,

Natural Heritage Areas

Natural Heritage Areas (NHAs) are sites that have been identified as critical habitat for species or natural communities of concern. This dataset is designed to identify, map and discuss areas that support species of concern, exemplary natural communities, and broad expanses of intact natural ecosystems that support components of Pennsylvanias native species biodiversity. These areas are prioritized based upon their ecological qualities and provided with recommendations regarding their management and protection. Most of the existing NHAs have been developed through PNHPs County Natural Heritage Inventories -- systematic studies of the critical biological resources of a county.

Natural Heritage Site Name	Description	Reference
Delaware River Shoreline	The species of concern noted within this site are only found in specific areas where tidal habitat remains protected and in a few of the more naturally managed park areas.	Link

Local Parks

A local park is a publicly owned and publicly accessible park or natural area that engages participants of all ages in outdoor recreational experiences. Local parks and open spaces connect citizens to close-to-home outdoor recreation opportunities for play and physical activities; promote health and wellness, and environmental stewardship.

Local Park	Park Type	County	State or Federal Grant Funding
Bridesburg Recreation Center	Neighborhood Parks	Philadelphia	Yes, click here for more information

For additional information about the Pennsylvania Natural Heritage Program, visit the website at www.naturalheritage.state.pa.us or you can email your questions and comments to RA-HeritageReview@pa.gov.

1. PROJECT INFORMATION

Project Name: **Former Philadelphia Coke Plant Site**
Date of Review: **4/26/2017 01:27:38 PM**
Project Category: **Hazardous Waste Clean-up, Site Remediation, and Reclamation, Spill (e.g., oil, chemical)**
Project Area: **64.82 acres**
County(s): **Philadelphia**
Township/Municipality(s): **PHILADELPHIA**
ZIP Code: **19137**
Quadrangle Name(s): **CAMDEN**
Watersheds HUC 8: **Lower Delaware**
Watersheds HUC 12: **Pompeston Creek-Delaware River; Tacony Creek-Frankford Creek**
Decimal Degrees: **39.995443, -75.068641**
Degrees Minutes Seconds: **39° 59' 43.5965" N, 75° 4' 7.1084" W**

2. SEARCH RESULTS

Agency	Results	Response
PA Game Commission	No Known Impact	No Further Review Required
PA Department of Conservation and Natural Resources	No Known Impact	No Further Review Required
PA Fish and Boat Commission	**Potential Impact**	**FURTHER REVIEW IS REQUIRED, See Agency Response**
U.S. Fish and Wildlife Service	No Known Impact	No Further Review Required

As summarized above, Pennsylvania Natural Diversity Inventory (PNDI) records indicate there may be potential impacts to threatened and endangered and/or special concern species and resources within the project area. If the response above indicates "No Further Review Required" no additional communication with the respective agency is required. If the response is "Further Review Required" or "See Agency Response," refer to the appropriate agency comments below. Please see the DEP Information Section of this receipt if a PA Department of Environmental Protection Permit is required.

NOT FOR DRAFT PRACTICE USE

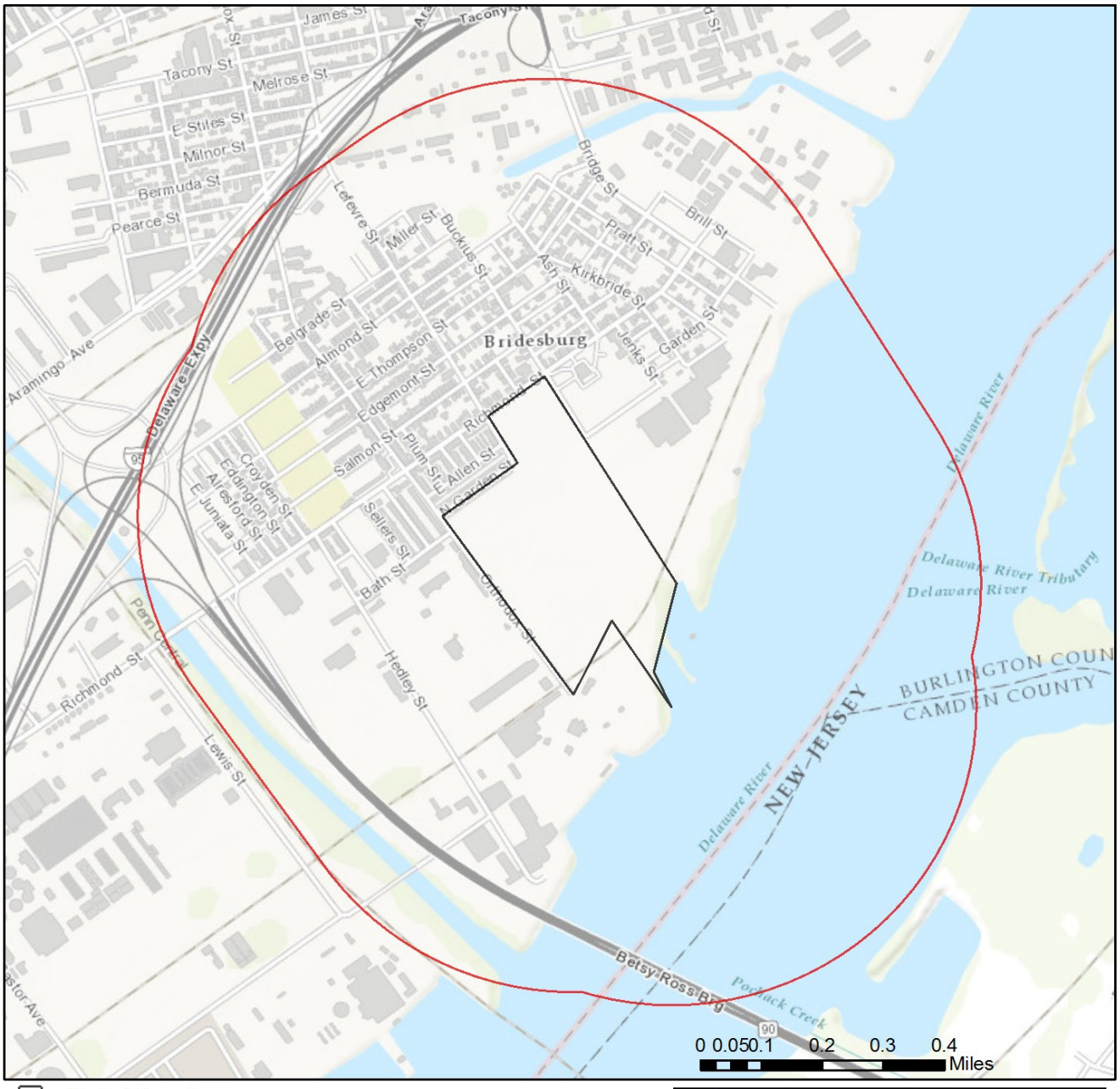
Former Philadelphia Coke Plant Site

Project Boundary

Buffered Project Boundary

Service Layer Credits: Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Esri, HERE, DeLorme, MapmyIndia, © OpenStreetMap contributors, and the GIS user

Former Philadelphia Coke Plant Site



Project Boundary

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Service Layer Credits: Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

RESPONSE TO QUESTION(S) ASKED

Q1: Aquatic habitat (stream, river, lake, pond, etc.) is located on or adjacent to the subject property and project activities (including discharge) may occur within 300 feet of these habitats?
Your answer is: Yes

3. AGENCY COMMENTS

Regardless of whether a DEP permit is necessary for this proposed project, any potential impacts to threatened and endangered species and/or special concern species and resources must be resolved with the appropriate jurisdictional agency. In some cases, a permit or authorization from the jurisdictional agency may be needed if adverse impacts to these species and habitats cannot be avoided.

These agency determinations and responses are **valid for two years** (from the date of the review), and are based on the project information that was provided, including the exact project location; the project type, description, and features; and any responses to questions that were generated during this search. If any of the following change: 1) project location, 2) project size or configuration, 3) project type, or 4) responses to the questions that were asked during the online review, the results of this review are not valid, and the review must be searched again via the PNDI Environmental Review Tool and resubmitted to the jurisdictional agencies. The PNDI tool is a primary screening tool, and a desktop review may reveal more or fewer impacts than what is listed on this PNDI receipt. The jursidictional agencies **strongly advise against** conducting surveys for the species listed on the receipt prior to consultation with the agencies.

PA Game Commission
RESPONSE:
No Impact is anticipated to threatened and endangered species and/or special concern species and resources.

PA Department of Conservation and Natural Resources
RESPONSE:
No Impact is anticipated to threatened and endangered species and/or special concern species and resources.

PA Fish and Boat Commission
RESPONSE:
Further review of this project is necessary to resolve the potential impact(s). Please send project information to this agency for review (see WHAT TO SEND).

PFBC Species: (Note: The Pennsylvania Conservation Explorer tool is a primary screening tool, and a desktop review may reveal more or fewer species than what is listed below.)

Scientific Name	Common Name	Current Status
Sensitive Species**		Endangered
Sensitive Species**		Endangered
Sensitive Species**		Threatened

U.S. Fish and Wildlife Service
RESPONSE:
No impacts to **federally** listed or proposed species are anticipated. Therefore, no further consultation/coordination under the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq. is required. Because no take of federally listed species is anticipated, none is authorized. This response does not reflect potential Fish and Wildlife Service concerns under the Fish and Wildlife Coordination Act or other authorities.

DRAFT NOT FOR ACTUAL USE

* Special Concern Species or Resource - Plant or animal species classified as rare, tentatively undetermined or candidate as well as other taxa of conservation concern, significant natural communities, special concern populations (plants or animals) and unique geologic features.
** Sensitive Species - Species identified by the jurisdictional agency as collectible, having economic value, or being susceptible to decline as a result of visitation.

WHAT TO SEND TO JURISDICTIONAL AGENCIES

If project information was requested by one or more of the agencies above, upload* or email* the following information to the agency(s). Instructions for uploading project materials can be found here. This option provides the applicant with the convenience of sending project materials to a single location accessible to all three state agencies. Alternatively, applicants may email or mail their project materials (see AGENCY CONTACT INFORMATION).
***Note:** U.S.Fish and Wildlife Service requires applicants to mail project materials to the USFWS PA field office (see AGENCY CONTACT INFORMATION). USFWS will not accept project materials submitted electronically (by upload or email).

Check-list of Minimum Materials to be submitted:
____Project narrative with a description of the overall project, the work to be performed, current physical characteristics of the site and acreage to be impacted.
____A map with the project boundary and/or a basic site plan(particularly showing the relationship of the project to the physical features such as wetlands, streams, ponds, rock outcrops, etc.)
In addition to the materials listed above, USFWS REQUIRES the following
____**SIGNED** copy of a Final Project Environmental Review Receipt

The inclusion of the following information may expedite the review process.
____Color photos keyed to the basic site plan (i.e. showing on the site plan where and in what direction each photo was taken and the date of the photos)
____Information about the presence and location of wetlands in the project area, and how this was determined (e.g., by a qualified wetlands biologist), if wetlands are present in the project area, provide project plans showing the location of all project features, as well as wetlands and streams.

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For a list of species known to occur in the county where your project is located, please see the species lists by county found on the PA Natural Heritage Program (PNHP) home page (www.naturalheritage.state.pa.us). Also note that the PNDI Environmental Review Tool only contains information about species occurrences that have actually been reported to the PNHP.

6. AGENCY CONTACT INFORMATION

PA Department of Conservation and Natural Resources
Bureau of Forestry, Ecological Services Section
400 Market Street, PO Box 8552
Harrisburg, PA 17105-8552
Email: RA-HeritageReview@pa.gov

U.S. Fish and Wildlife Service
Pennsylvania Field Office
Endangered Species Section
110 Radnor Rd; Suite 101
State College, PA 16801
NO Faxes Please

PA Fish and Boat Commission
Division of Environmental Services
450 Robinson Lane, Bellefonte, PA 16823
Email: RA-FBPACENOTIFY@pa.gov

PA Game Commission
Bureau of Wildlife Habitat Management
Division of Environmental Planning and Habitat Protection
2001 Elmerton Avenue, Harrisburg, PA 17110-9797
Email: RA-PGC_PNDI@pa.gov
NO Faxes Please

7. PROJECT CONTACT INFORMATION

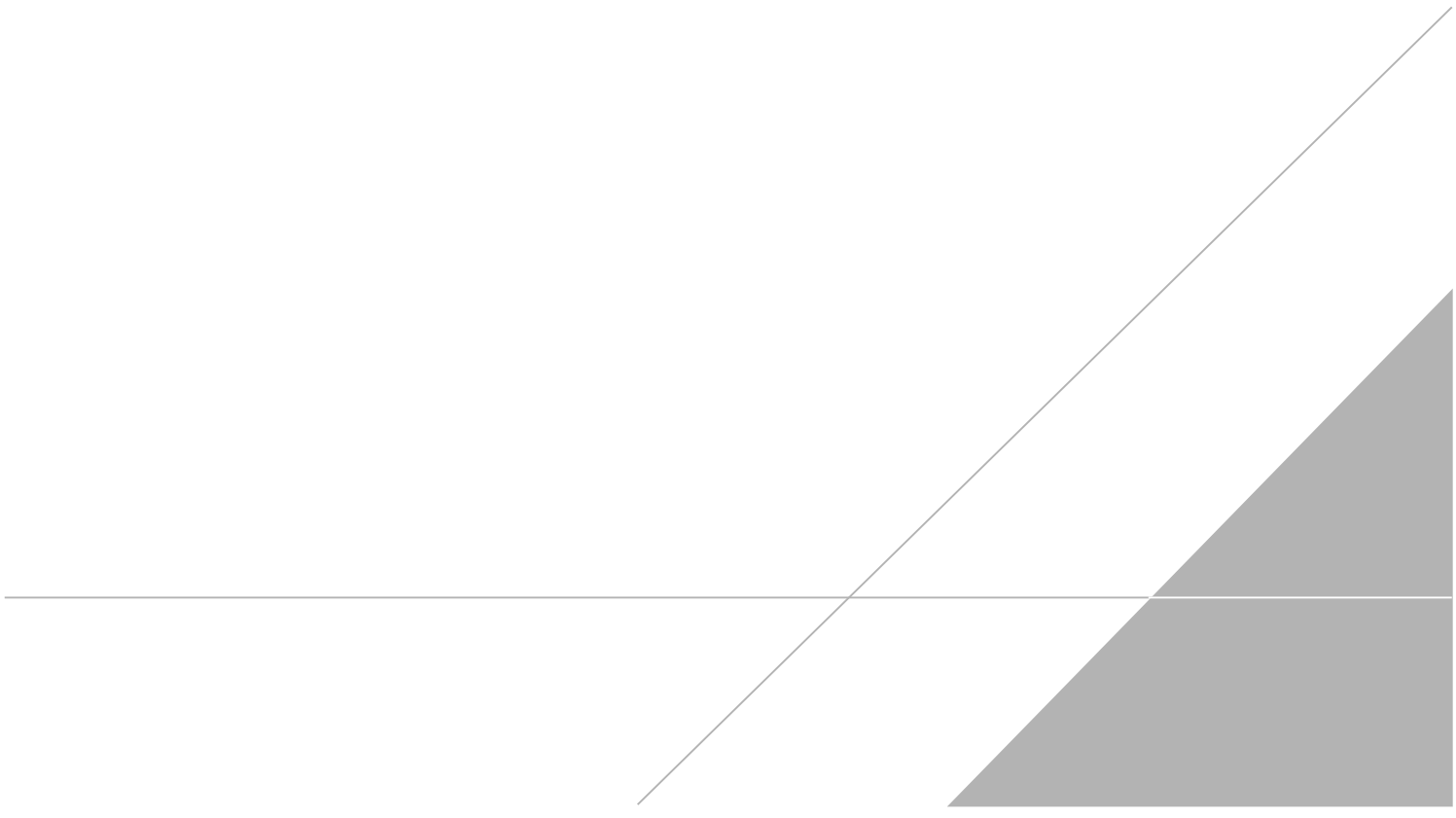
Name:_____
Company/Business Name:_____
Address:_____
City, State, Zip:_____
Phone:(_____)_____Fax:(_____)_____
Email:_____

8. CERTIFICATION

I certify that ALL of the project information contained in this receipt (including project location, project size/configuration, project type, answers to questions) is true, accurate and complete. In addition, if the project type, location, size or configuration changes, or if the answers to any questions that were asked during this online review change, I agree to re-do the online environmental review.

_____ _____
applicant/project proponent signature date

October 1, 2019: Electronic Submittal of Supporting Information for PFBC Review for PDNI Draft Receipt #628950



Proposed Remedial Investigation
National Grid Philadelphia Coke Site, Philadelphia, PA

Project Narrative

Arcadis is proposing a Remedial Investigation (RI) to verify historical sampling results and delineate areas of known impact at the National Grid Philadelphia Coke Site (Philadelphia Coke Co., Inc. facility in Philadelphia, Pennsylvania). This work would support proposed redevelopment activities through the PA Department of Environmental Protection (PADEP) Act 2 Land Recycling Program (Administered in Title 25 Chapter 250 of the Pennsylvania Codes). National Grid will submit a Notice of Intent to Remediate to PADEP prior to performing investigation activities to enter the Act 2 program. Investigation activities will be proposed to PADEP prior to initialization and potentially include:

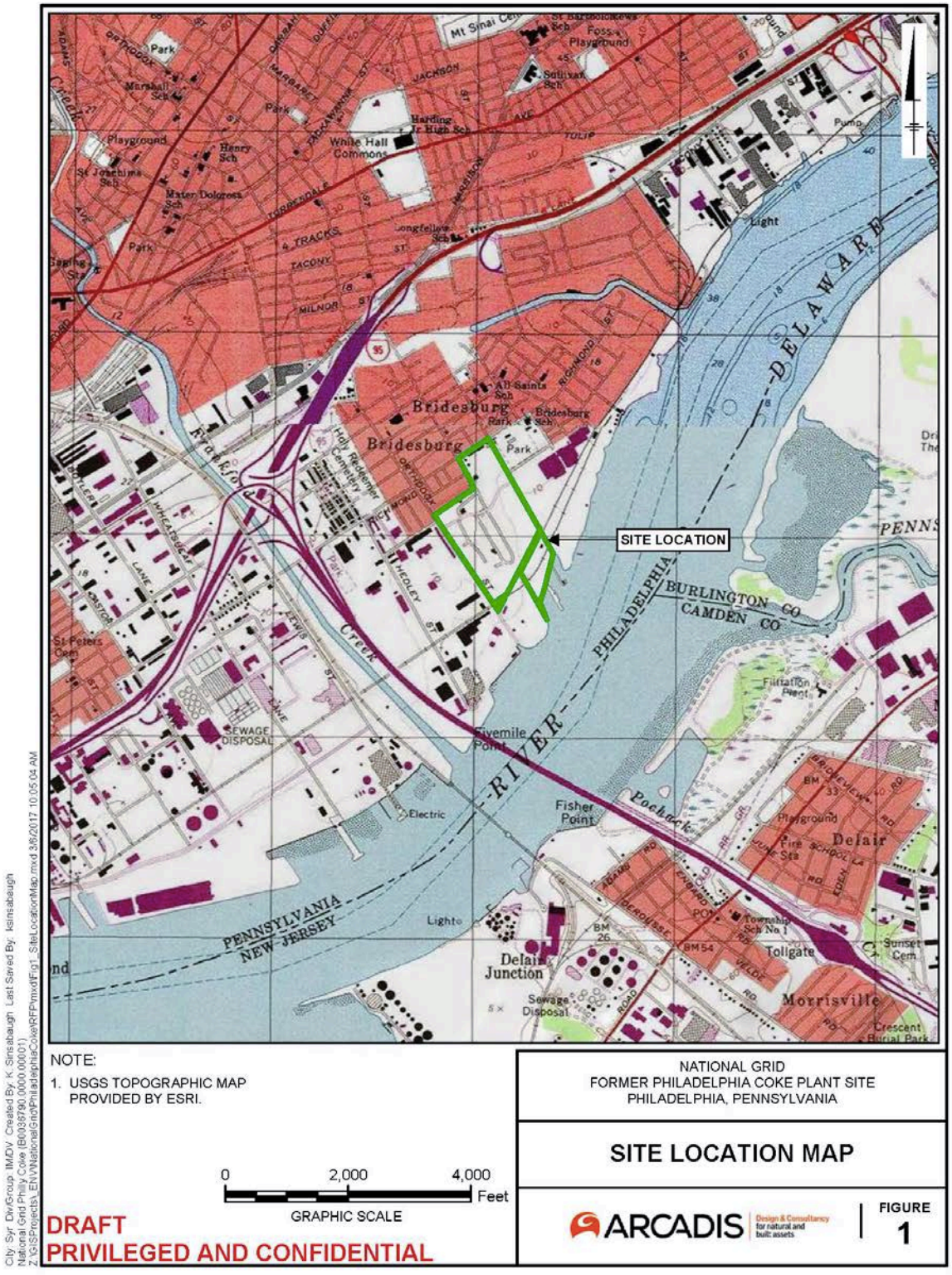
- Drilling approximately 80 soil borings.
- Excavating approximately 15 test pits.
- Installing 4 new groundwater monitoring wells and 8 new piezometers.
- Analyzing approximately 50 groundwater samples and 110 soil samples for TCL VOCs, TCL SVOCs, TAL inorganics, cyanide, pesticides, and/or PCBs.
- Surveying new and historical sample locations.
- Performing geophysical survey and vacuum excavation for utility clearance at each sampling location.
- Potentially clearing brush and trees as necessary to access proposed sampling locations.

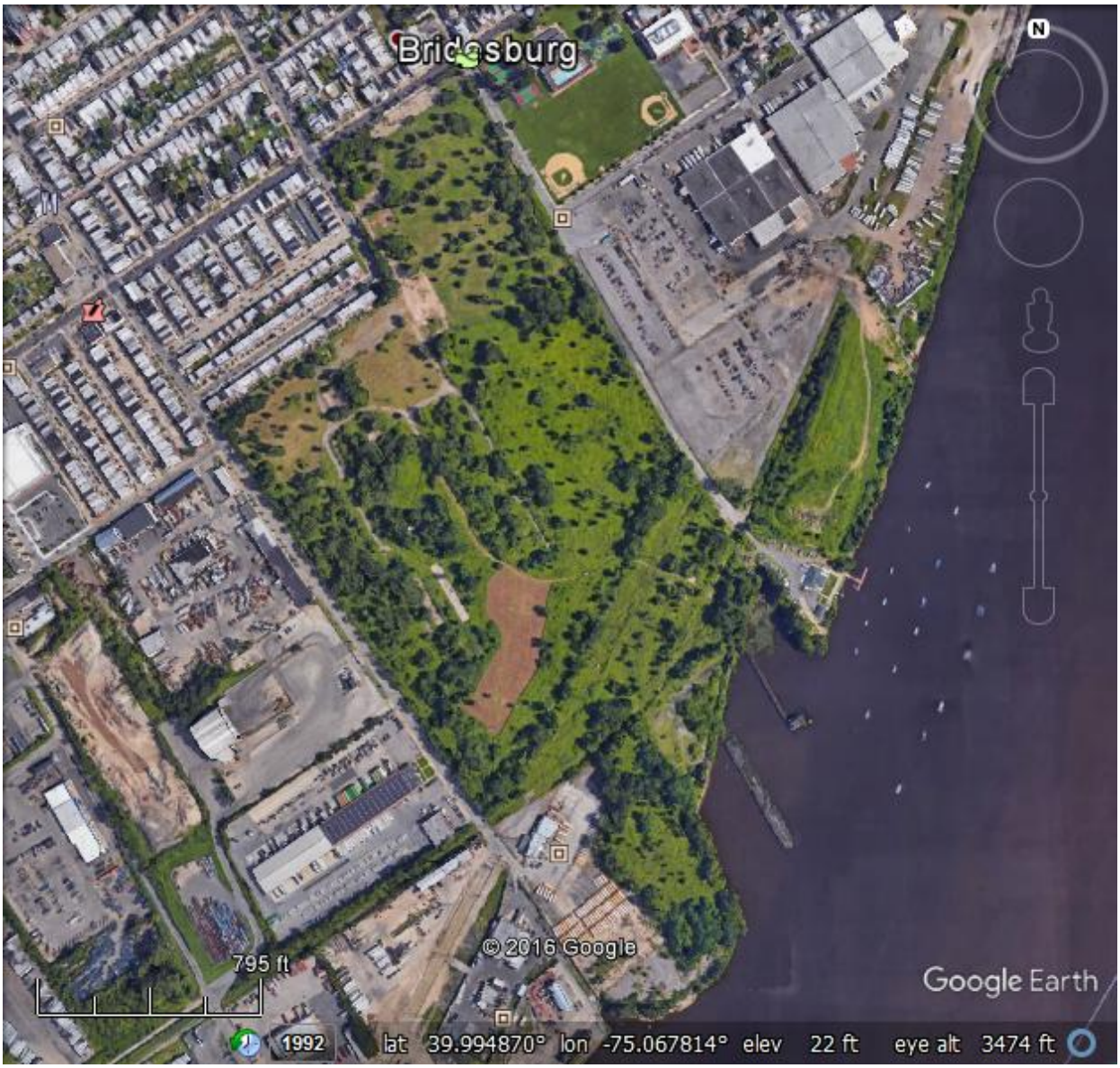
The site is located on Richmond Street between Orthodox Street and Buckius Street in the Bridesburg section of Philadelphia, Pennsylvania. The Delaware River is immediately east of the site. The total site area is approximately 67 acres, with much of this area being accessed for the proposed sampling. Although the site is immediately adjacent to the Delaware River, no in-water work will occur and no off-site disturbances to the river and its habitats and/or environs are anticipated.

The site was developed in the mid-1920s to provide manufactured gas to the City of Philadelphia. Facility operations from January 1929 to May 1982 focused on the production of metallurgical coke and its associated by-products. Principal areas of the operation included coal and coke storage, coke production, tar storage, by-product operations, and iron oxide storage. The site also included an iron oxide waste area and tar plain area. A fuel oil blending facility operated on the eastern 2.5 acres of the site from approximately 1969 through 1989 by Patterson Oil Co. and Eastern Gas Co. All former structures at the site have been demolished to ground level, and the site is currently vacant with some existing foundations and roads occurring.

A description of the natural resources that occur at the site is contained in the Natural Heritage Inventory of Philadelphia County, Pennsylvania (December 2008) for the Delaware River Shoreline on pages 136-137 for the “Between Orthodox and Buckius Streets”. In summary, the site is being reclaimed by a mix of herbaceous and woody vegetation, likely dominated by weedy introduced plant species and early successional native species. The riverfront contains a mix of rubble-armored seawall, dilapidated piers, a narrow sandy/gravel beach, and a small but well-developed tidal marsh.

Site Maps/Figures




Bridgesburg
N
795 ft
© 2016 Google
Google Earth
1992
lat 39.994870° lon -75.067814° elev 22 ft eye alt 3474 ft

1. PROJECT INFORMATION

Project Name: **Former Philadelphia Coke Plant Site**
Date of Review: **4/26/2017 01:27:38 PM**
Project Category: **Hazardous Waste Clean-up, Site Remediation, and Reclamation, Spill (e.g., oil, chemical)**
Project Area: **64.82 acres**
County(s): **Philadelphia**
Township/Municipality(s): **PHILADELPHIA**
ZIP Code: **19137**
Quadrangle Name(s): **CAMDEN**
Watersheds HUC 8: **Lower Delaware**
Watersheds HUC 12: **Pompeston Creek-Delaware River; Tacony Creek-Frankford Creek**
Decimal Degrees: **39.995443, -75.068641**
Degrees Minutes Seconds: **39° 59' 43.5965" N, 75° 4' 7.1084" W**

2. SEARCH RESULTS

Agency	Results	Response
PA Game Commission	No Known Impact	No Further Review Required
PA Department of Conservation and Natural Resources	No Known Impact	No Further Review Required
PA Fish and Boat Commission	**Potential Impact**	**FURTHER REVIEW IS REQUIRED, See Agency Response**
U.S. Fish and Wildlife Service	No Known Impact	No Further Review Required

As summarized above, Pennsylvania Natural Diversity Inventory (PNDI) records indicate there may be potential impacts to threatened and endangered and/or special concern species and resources within the project area. If the response above indicates "No Further Review Required" no additional communication with the respective agency is required. If the response is "Further Review Required" or "See Agency Response," refer to the appropriate agency comments below. Please see the DEP Information Section of this receipt if a PA Department of Environmental Protection Permit is required.

NOT FOR DRAFT USE

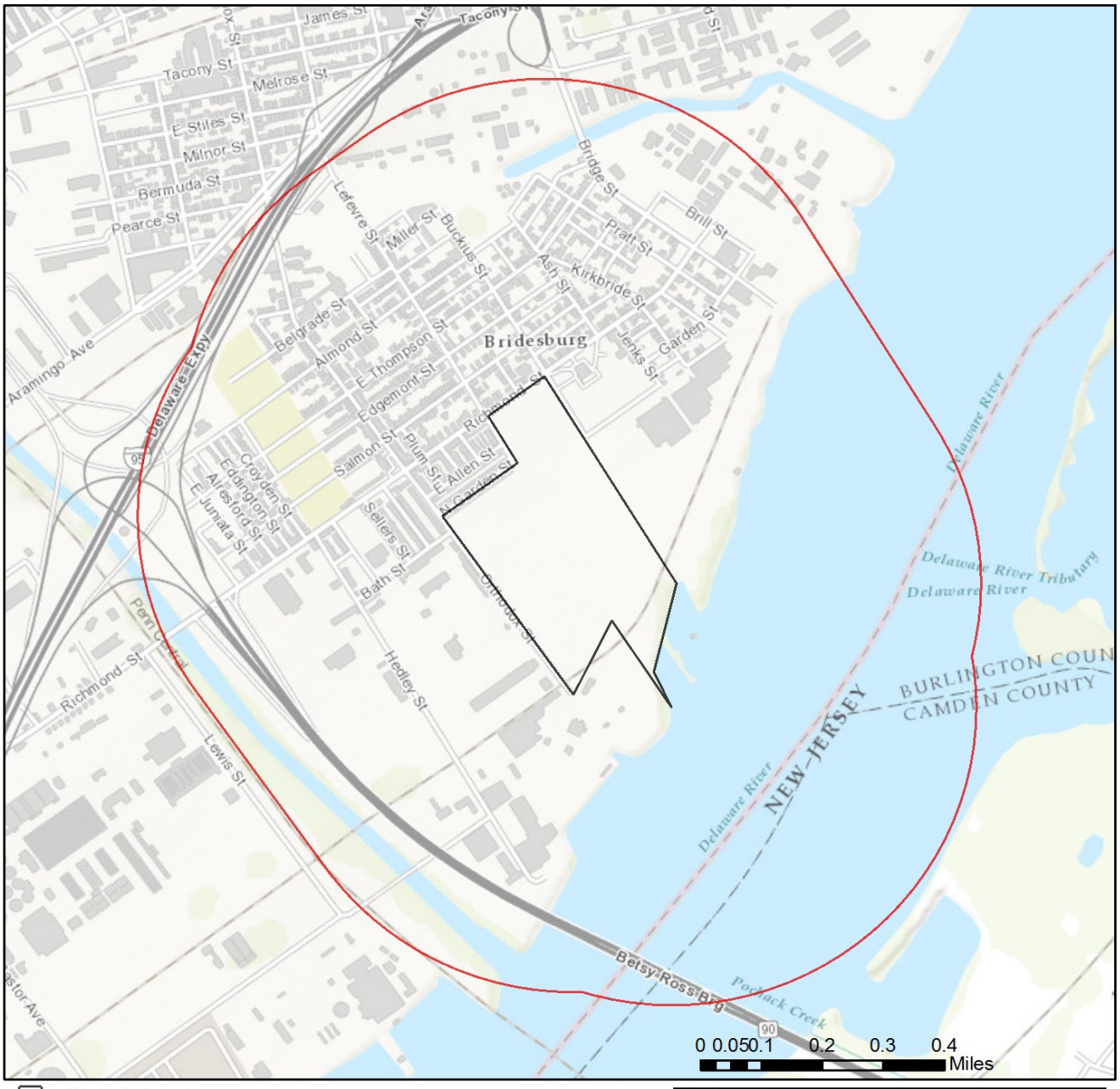
Former Philadelphia Coke Plant Site

Project Boundary

Buffered Project Boundary

Service Layer Credits: Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Esri, HERE, DeLorme, MapmyIndia, © OpenStreetMap contributors, and the GIS user

Former Philadelphia Coke Plant Site



Project Boundary

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RESPONSE TO QUESTION(S) ASKED

Q1: Aquatic habitat (stream, river, lake, pond, etc.) is located on or adjacent to the subject property and project activities (including discharge) may occur within 300 feet of these habitats?
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3. AGENCY COMMENTS

Regardless of whether a DEP permit is necessary for this proposed project, any potential impacts to threatened and endangered species and/or special concern species and resources must be resolved with the appropriate jurisdictional agency. In some cases, a permit or authorization from the jurisdictional agency may be needed if adverse impacts to these species and habitats cannot be avoided.

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RESPONSE:
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PA Fish and Boat Commission
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PFBC Species: (Note: The Pennsylvania Conservation Explorer tool is a primary screening tool, and a desktop review may reveal more or fewer species than what is listed below.)

Scientific Name	Common Name	Current Status
Sensitive Species**		Endangered
Sensitive Species**		Endangered
Sensitive Species**		Threatened

U.S. Fish and Wildlife Service
RESPONSE:
No impacts to **federally** listed or proposed species are anticipated. Therefore, no further consultation/coordination under the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq. is required. Because no take of federally listed species is anticipated, none is authorized. This response does not reflect potential Fish and Wildlife Service concerns under the Fish and Wildlife Coordination Act or other authorities.

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Check-list of Minimum Materials to be submitted:
____Project narrative with a description of the overall project, the work to be performed, current physical characteristics of the site and acreage to be impacted.
____A map with the project boundary and/or a basic site plan(particularly showing the relationship of the project to the physical features such as wetlands, streams, ponds, rock outcrops, etc.)
In addition to the materials listed above, USFWS REQUIRES the following
____**SIGNED** copy of a Final Project Environmental Review Receipt

The inclusion of the following information may expedite the review process.
____Color photos keyed to the basic site plan (i.e. showing on the site plan where and in what direction each photo was taken and the date of the photos)
____Information about the presence and location of wetlands in the project area, and how this was determined (e.g., by a qualified wetlands biologist), if wetlands are present in the project area, provide project plans showing the location of all project features, as well as wetlands and streams.

4. DEP INFORMATION

The Pa Department of Environmental Protection (DEP) requires that a signed copy of this receipt, along with any required documentation from jurisdictional agencies concerning resolution of potential impacts, be submitted with applications for permits requiring PNDI review. Two review options are available to permit applicants for handling PNDI coordination in conjunction with DEP's permit review process involving either T&E Species or species of special concern. Under sequential review, the permit applicant performs a PNDI screening and completes all coordination with the appropriate jurisdictional agencies prior to submitting the permit application. The applicant will include with its application, both a PNDI receipt and/or a clearance letter from the jurisdictional agency if the PNDI Receipt shows a Potential Impact to a species or the applicant chooses to obtain letters directly from the jurisdictional agencies. Under concurrent review, DEP, where feasible, will allow technical review of the permit to occur concurrently with the T&E species consultation with the jurisdictional agency. The applicant must still supply a copy of the PNDI Receipt with its permit application. The PNDI Receipt should also be submitted to the appropriate agency according to directions on the PNDI Receipt. The applicant and the jurisdictional agency will work together to resolve the potential impact(s). See the DEP PNDI policy at https://conservationexplorer.dcnr.pa.gov/content/resources.

5. ADDITIONAL INFORMATION

The PNDI environmental review website is a preliminary screening tool. There are often delays in updating species status classifications. Because the proposed status represents the best available information regarding the conservation status of the species, state jurisdictional agency staff give the proposed statuses at least the same consideration as the current legal status. If surveys or further information reveal that a threatened and endangered and/or special concern species and resources exist in your project area, contact the appropriate jurisdictional agency/agencies immediately to identify and resolve any impacts.

For a list of species known to occur in the county where your project is located, please see the species lists by county found on the PA Natural Heritage Program (PNHP) home page (www.naturalheritage.state.pa.us). Also note that the PNDI Environmental Review Tool only contains information about species occurrences that have actually been reported to the PNHP.

6. AGENCY CONTACT INFORMATION

PA Department of Conservation and Natural Resources
Bureau of Forestry, Ecological Services Section
400 Market Street, PO Box 8552
Harrisburg, PA 17105-8552
Email: RA-HeritageReview@pa.gov

U.S. Fish and Wildlife Service
Pennsylvania Field Office
Endangered Species Section
110 Radnor Rd; Suite 101
State College, PA 16801
NO Faxes Please

PA Fish and Boat Commission
Division of Environmental Services
450 Robinson Lane, Bellefonte, PA 16823
Email: RA-FBPACENOTIFY@pa.gov

PA Game Commission
Bureau of Wildlife Habitat Management
Division of Environmental Planning and Habitat Protection
2001 Elmerton Avenue, Harrisburg, PA 17110-9797
Email: RA-PGC_PNDI@pa.gov
NO Faxes Please

7. PROJECT CONTACT INFORMATION

Name: David J Buys
Company/Business Name: Arcadis
Address: 110 W. Fayette St, Suite 300
City, State, Zip: Syracus, NY 13202
Phone:(315) 671-9400 Fax:( )
Email: dave.buys@arcadis.com

8. CERTIFICATION

I certify that ALL of the project information contained in this receipt (including project location, project size/configuration, project type, answers to questions) is true, accurate and complete. In addition, if the project type, location, size or configuration changes, or if the answers to any questions that were asked during this online review change, I agree to re-do the online environmental review.

applicant/project proponent signature

3/29/19
date

Introduction

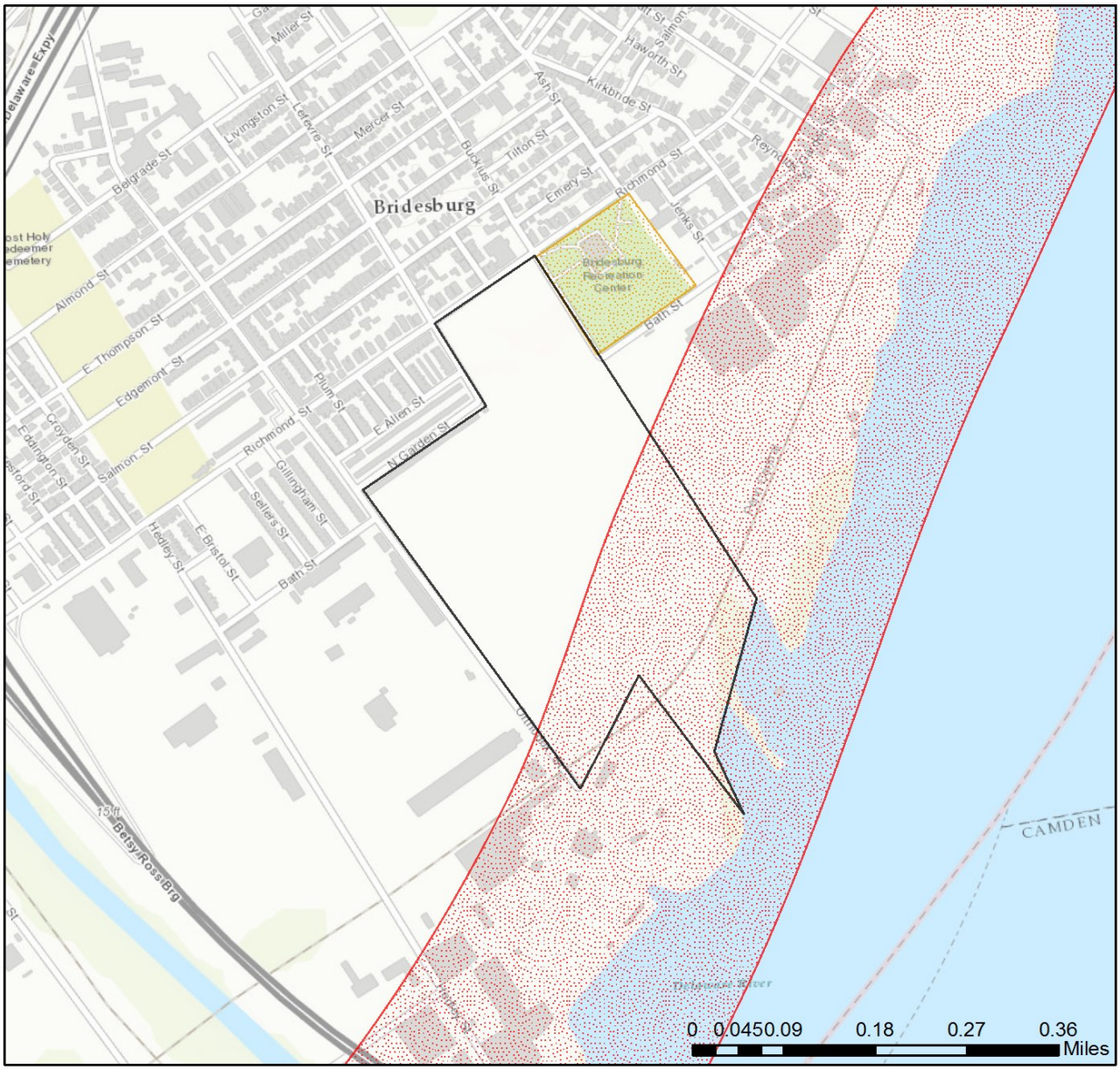
This Conservation Planning Report compiles names, descriptions, maps, locations, measurements, links and references for Natural Heritage Areas (core and supporting habitats), Important Bird Areas, State Lands, and agency designated water resources that are coincident with an area of interest defined by the user of the Pennsylvania Conservation Explorer tool. For an overview and additional details, please be sure to visit the website at www.naturalheritage.state.pa.us and download the applicable County Natural Heritage Inventory report(s).

Site Area: 66.96 acres
County(s): Philadelphia
Township/Municipality(s): PHILADELPHIA
Quadrangle Name(s): CAMDEN
Watersheds HUC 8: Lower Delaware
Watersheds HUC 12: Pompeston Creek-Delaware River; Tacony Creek-Frankford Creek
Decimal Degrees: 39.995448 N, -75.068600 W
Degrees Minutes Seconds: 39° 59' 43.6144" N, 75° 4' 6.9583" W

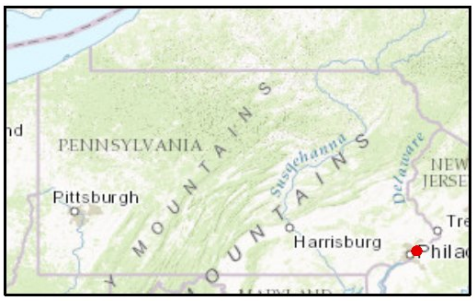
SEARCH RESULT SUMMARY

Conservation Planning Category	Detected Area Summary
Natural Heritage Areas	1 site

Former Philadelphia Coke Plant Site



Project Boundary
Core Habitats
Local Parks



Service Layer Credits: Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo,

Natural Heritage Areas

Natural Heritage Areas (NHAs) are sites that have been identified as critical habitat for species or natural communities of concern. This dataset is designed to identify, map and discuss areas that support species of concern, exemplary natural communities, and broad expanses of intact natural ecosystems that support components of Pennsylvanias native species biodiversity. These areas are prioritized based upon their ecological qualities and provided with recommendations regarding their management and protection. Most of the existing NHAs have been developed through PNHPs County Natural Heritage Inventories -- systematic studies of the critical biological resources of a county.

Natural Heritage Site Name	Description	Reference
Delaware River Shoreline	The species of concern noted within this site are only found in specific areas where tidal habitat remains protected and in a few of the more naturally managed park areas.	Link

Local Parks

A local park is a publicly owned and publicly accessible park or natural area that engages participants of all ages in outdoor recreational experiences. Local parks and open spaces connect citizens to close-to-home outdoor recreation opportunities for play and physical activities; promote health and wellness, and environmental stewardship.

Local Park	Park Type	County	State or Federal Grant Funding
Bridesburg Recreation Center	Neighborhood Parks	Philadelphia	Yes, click here for more information

For additional information about the Pennsylvania Natural Heritage Program, visit the website at www.naturalheritage.state.pa.us or you can email your questions and comments to RA-HeritageReview@pa.gov.

Delaware River Shoreline

Immediate Conservation Priority and Notable Significance

Species of concern	Taxa[1]	PNHP Rank[2]		State Legal Status[2]	Last Seen	Quality[3]
		Global	State			
Beggar-ticks (*Bidens laevis*)	P	G5	S3	TU	2008	E
Bugleweed (*Lycopus rubellus*)	P	G5	S1	PE	1998	BC
Freshwater intertidal marsh	C	G3G4	S1	N	1998	B
Golden club (*Orontium aquaticum*)	P	G5	S4	WATCH	1993	C
Multiflowered mud-plantain (*Heteranthera multiflora*)	P	G4	S1	PE	1998	BC
Osprey (*Pandion haliaetus*)	B	G5	S2B	PT	2003	E
Slaty skimmer (*Libellula incesta*)	O	G5	S3S4	N	2007	E
Subulate arrowhead (*Sagittaria subulata*)	P	G4	S3	PR	2007	AB
Swamp beggar-ticks (*Bidens bidentoides*)	P	G3G4	S1	PE	2008	BC
Swarthy skipper (*Nastra lherminier*)	L	G5	S3	N	2007	E
Salt-marsh water-hemp (*Amaranthus cannabinus*)	P	G5	S3	PR	2007	C

[1] A = Amphibian; B = Bird; C = Community; F = Fish; L = Lepidopteran; O = Odonate; P = Plant; M = Mammal; R= Reptile, U = Unionid (Mussel)
[2] Please refer to Appendix III (pg. 166) for an explanation of PNHP ranks and legal status
[3] Please refer to Appendix IV (pg. 169) for an explanation of quality ranks
[4] This species is not named at the request of the agency overseeing its protection

Most of the area between the I-95 freeway and the Delaware River has been greatly modified from the extensive system of tidal marshes that used to dominate the shoreline. Marshes were drained and filled to provide additional land for the expansion of Philadelphia and its ports. Most of this area is still within the floodplain of the river and is likely to be subject to future flooding from increasingly unpredictable weather patterns. The Delaware River shoreline in Philadelphia currently supports a mix of uses. Formerly, this area was a very active shipping and industrial hub of North America. While still an important entryway for sea freight, much of the riverfront has seen considerable change in the past few decades. Many areas that had been associated with shipping and industry have been demolished, leaving various large and small patches of vacant ground and their associated piers along the riverfront.

Since much of the Delaware River shoreline in Philadelphia is currently transitioning from past industrial and shipping activity, the city is presented with an excellent opportunity to recreate a continuous greenway corridor along this stretch of the river. This strip of land lends itself well to the reestablishment of a ribbon of native vegetation that will help provide habitat for native plants and animals while filtering and trapping runoff from the city before it enters the river. In addition, the linear corridor can function as a portion of a public greenway along the length of the Delaware riverfront. Such a public amenity would greatly improve the quality of life for all residents and visitors to the city. Future developments should be set back from the river shoreline to accommodate a 100-meter wide vegetated riparian buffer between the river's edge and development activity. The shoreline habitat can be improved by removing portions of the armored bulkheads and reconnecting the river to a portion of its natural floodplain. Replanting the riparian area in native trees and shrubs would enhance its ecological value.

The crumbling, paved footprints of past industrial activity are giving way to expanses of early successional vegetation. Vegetation has begun to colonize the unused piers and unpaved portions of the former industrial sites. Where the shoreline vegetation strip widens, it supports trees, shrubs, vines, and herbaceous vegetation between the rubble-armored hardened shoreline and the crumbling pavement of the former industrial sites. Along the periphery of the river, native species of plants and animals compete with introduced species for the limited space and resources available for their use. This disturbed strip of vegetation is frequently dominated by invasive non-native trees such as tree-of-heaven, princess tree, Norway maple, Siberian elm, white poplar, and white mulberry, but also contains native trees including sycamore, silver maple, pin oak, black cherry, hackberry, red maple, honey locust, walnut, red oak, green ash, tulip poplar, black willow, slippery elm, and box elder. Invasive shrubs

and vines frequently dominate the understory, including Japanese honeysuckle, porcelain berry, Asiatic bittersweet, multiflora rose, bush honeysuckles, common privet, barberry, paper mulberry, and autumn olive.

photo source: Rocky Gleason, PNHP

A view downriver along the Delaware River shoreline at the Benjamin Franklin Bridge.

The abandoned wooden pilings, piers, and ramps within the river help to diminish the impact on the river shoreline of wave action from passing ships and may help to encourage the formation of tidal mudflats along this portion of the river. Many of the formerly active piers have been neglected for long enough that trees, shrubs, and herbaceous vegetation have colonized them. Between the vacant piers are areas of shallow water and deep mud that in some cases already support tidal mudflat vegetation. These small estuaries help support young fish populations, an essential ecological function of shallow water habitats along the river.

The following is an assessment of the riverfront, its current ecological value, and its restoration potential beginning at the Benjamin Franklin Bridge and continuing upstream to the Bucks County line at Poquessing Creek. The current threats and disturbances along with the conservation recommendation are within each site description.

Note: Information below is truncated to only show the Between Orthodox and Buckius Streets location (i.e. the site).

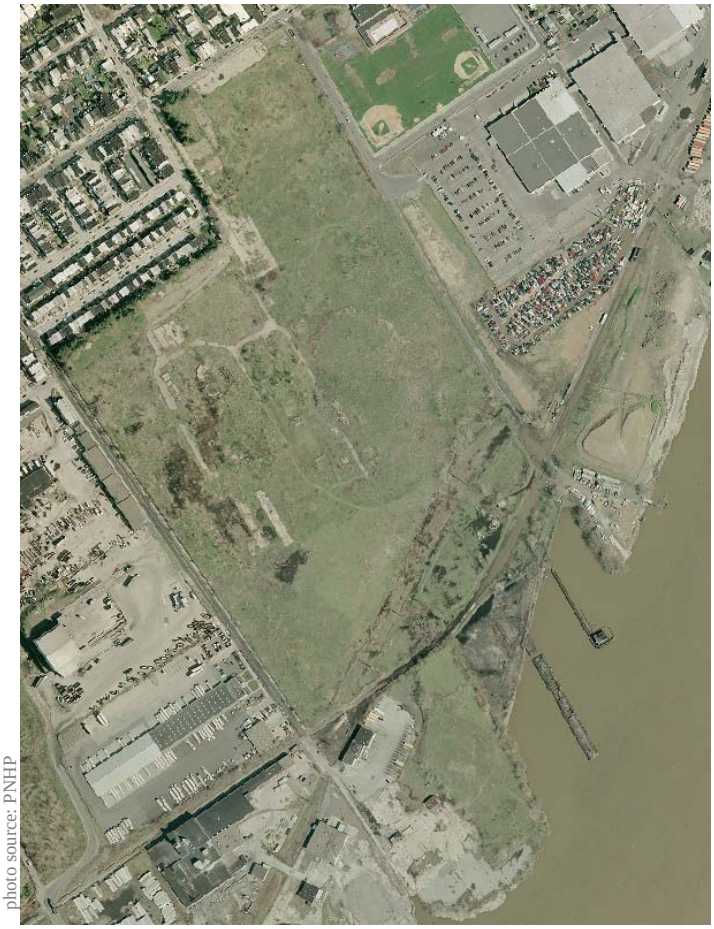


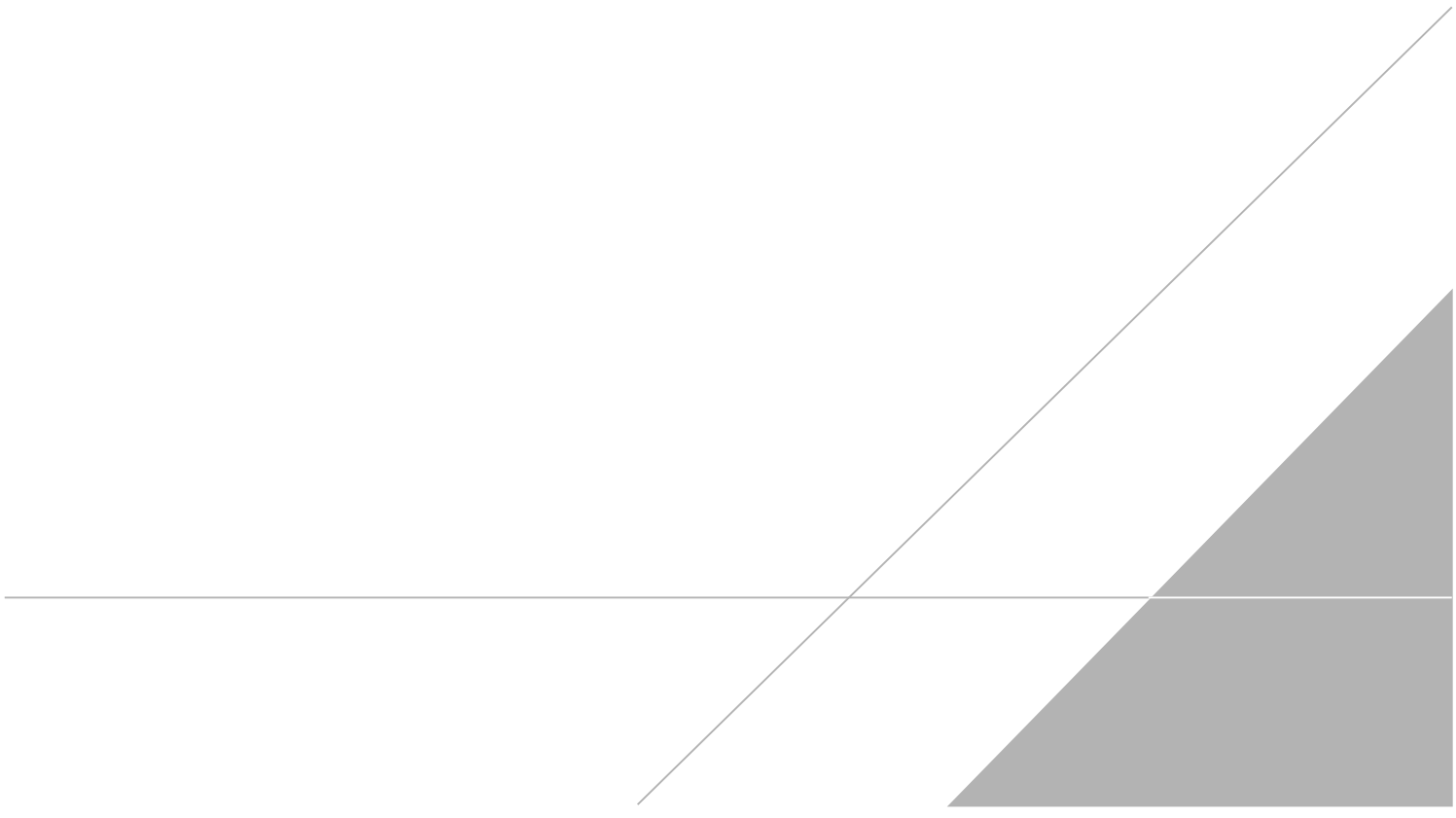
photo source: PNHP

Parcel between Orthodox and Buckius Streets

Between **Orthodox and Buckius Streets** is a 70+ acre privately owned parcel of vacant land that extends from Richmond Street to the riverfront. This area bears a few footprints of previous structures, but for the most part is reverting to herbaceous and woody vegetation and appears from the air to already have begun to resemble a park. The vegetation is likely dominated by weedy introduced plants and early successional native species. A ground survey of this area was not conducted due to inability to obtain the necessary permission. The riverfront at this location contains a mix of rubble-armored seawall, dilapidated piers, and a few more natural looking habitats including a narrow sandy/gravel beach and a small but well-developed tidal marsh. The beach occurs along the river where the shoreline lacks armoring adjacent to two older piers. The tidal marsh occurs between one of the older piers and a small private boat launch. This mudflat habitat appears to contain common emergent aquatic vegetation like yellow pond-lily and pickerel-weed, but may also support less common tidal mudflat vegetation. Biological surveys of this area are recommended to determine its current ecological value and restoration potential. Future development should be excluded from the 100-year floodplain and set back from the river's edge at least 100 meters to provide a corridor of native terrestrial vegetation and public access as a continuation of a Delaware River greenway through the area. In addition, the small tidal marsh could be enhanced by removing obstructions to flooding in this low lying area, increasing the potential for tidal marsh development.

Site Photographs

October 2, 2019: Automated Response for Former Philadelphia Coke Plant Site Final Receipt Complete from PDCNR



From: PA Conservation Explorer <RA-NRHeritageexplore@pa.gov>
Sent: Wednesday, October 2, 2019 10:42 AM
To: Buys, Dave
Subject: Former Philadelphia Coke Plant Site Final Receipt Complete

Dear David Buys,

This email is in response to the project you submitted via the PA Conservation Explorer entitled Former Philadelphia Coke Plant Site. A Final receipt has been generated based on the project boundary submitted and can be found at https://conservationexplorer.dcnr.pa.gov/project/former-philadelphia-coke-plant-site-347357. The receipt can be downloaded and/or printed for your files.

NOTE: You must be logged in to your account in order to review the report.

Final Receipt: A Final Receipt is generated under the following circumstances.

- **Finalizing a Project for Environmental Review.** A Final Receipt is created when an applicant finalizes a project in order to initiate the environmental review process. A signed copy of the Final Receipt should be sent to DEP along with any required recommendation or clearance letters from the jurisdictional agencies. See more detailed DEP instructions below.
- **Revising or Updating a Finalized Project.** A new version of the Final Receipt will be generated if an applicant resubmits the project either by editing the project footprint or selecting 'Update Receipt' option. Response letters from the jurisdictional agencies will specify the receipt version; if a new version of the PNDI receipt is generated, a new response letter will be required.

If the project requires consultation with the Department of Conservation and Natural Resources, PA Game Commission and/or PA Fish and Boat Commission, the agencies listed on the receipt have been automatically notified that the project is ready for environmental review. Agencies will not initiate the environmental review until all necessary documents have been uploaded or mailed. Direct correspondence with state agencies is not required to initiate a review, provided the minimum necessary materials are uploaded.

If you have opted to mail in your project documentation, please mail (or email) the documents to the agencies requiring consultation. The agency addresses are listed in Section 6 of the PNDI receipt.

Instructions for projects with potential impacts to the U.S. Fish and Wildlife Service (USFWS): If your project requires consultation with the USFWS, mail your project documents along with a signed copy of the final receipt to the USFWS address listed in Section 6 of the receipt.

DEP instructions for projects with Potential Impacts: The Pa Department of Environmental Protection (DEP) requires that a signed copy of this receipt, along with any required documentation from jurisdictional agencies concerning resolution of potential impacts, be submitted with applications for permits requiring PNDI review. Two review options are available to permit applicants for handling PNDI coordination in conjunction with DEP's permit review process involving either T&E Species or species of special concern. Under sequential review, the permit applicant performs a PNDI screening and completes all coordination with the appropriate jurisdictional agencies prior to submitting the permit application. The applicant will include with its application, both a PNDI receipt and/or a clearance letter

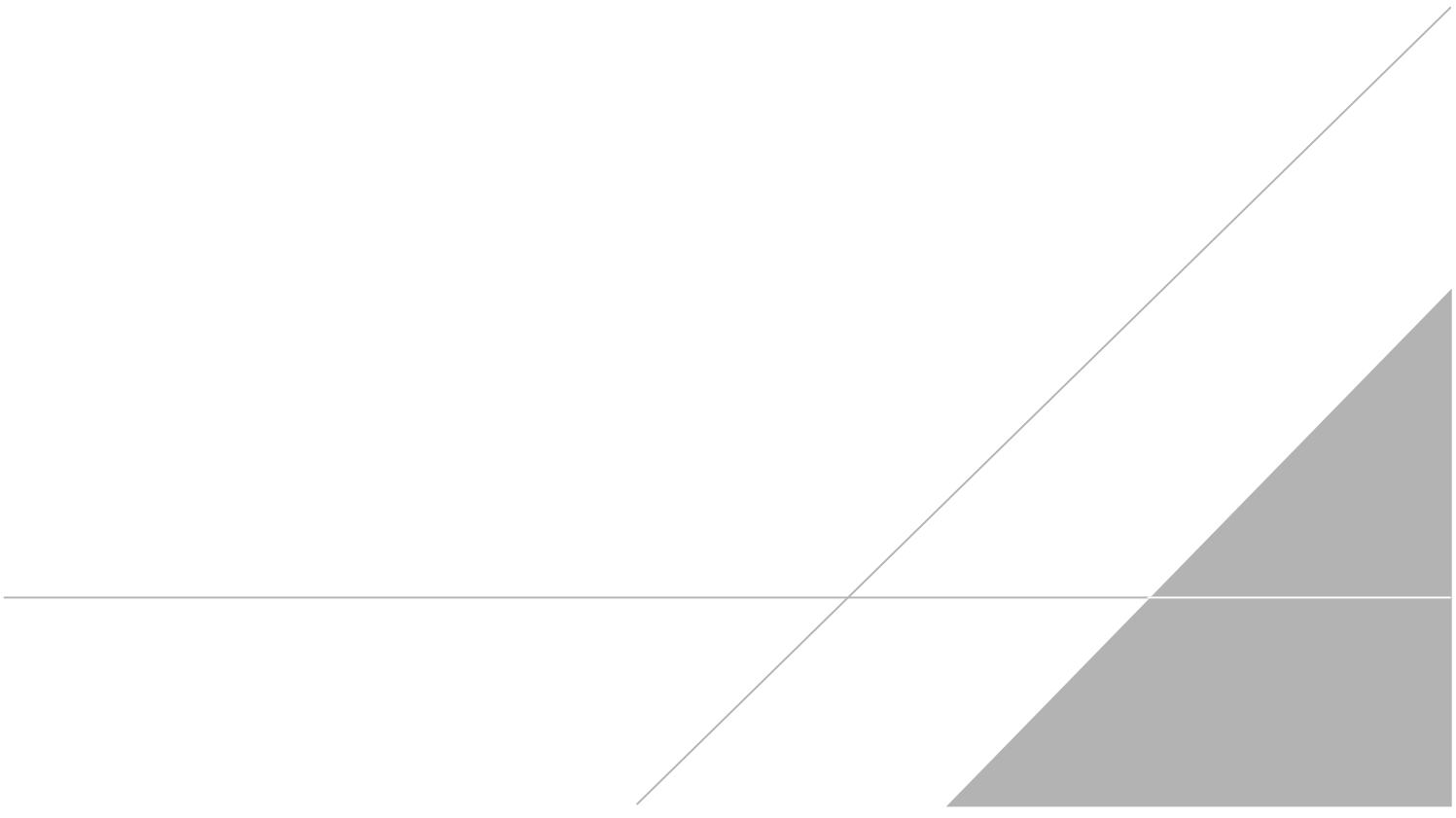
from the jurisdictional agency if the PNDI Receipt shows a Potential Impact to a species or the applicant chooses to obtain letters directly from the jurisdictional agencies. Under concurrent review, DEP, where feasible, will allow technical review of the permit to occur concurrently with the T&E species consultation with the jurisdictional agency. The applicant must still supply a copy of the PNDI Receipt with its permit application. The PNDI Receipt should also be submitted to the appropriate agency according to directions on the PNDI Receipt. The applicant and the jurisdictional agency will work together to resolve the potential impact(s). See the DEP PNDI policy at https://conservationexplorer.dcnr.pa.gov/content/resources.

If you have questions about the contents of the receipt or need further assistance, please visit the contact us page.

Sincerely,

Pennsylvania Department of Conservation and Natural Resources
https://conservationexplorer.dcnr.pa.gov/

October 11, 2019, October 16, 2019, and October 25, 2019
Correspondence with PA Fish and Boat Commission for PNDI 628950



From: Buys, Dave
Sent: Friday, October 25, 2019 3:15 PM
To: Gipe, Kathy
Subject: RE: [External] RE: PNDI 628950: Former Philadelphia Coke Plant site
Attachments: 2019.1022-Philly Coke 2018-2019 Sampling Locations.pdf

Hi Kathy,

Arcadis drilled soil borings and excavated test pits at the Philadelphia Coke site this year in March, April, and September as part of a Remedial Investigation. The attached figure shows the location of this year's soil borings (in orange) and test pits (in red). Historical soil boring and test pit locations are shown in black. This year's soil borings were drilled by a small track-mounted Geoprobe, and the test pits were excavated using a rubber-tire backhoe. The soil boring and test pit locations in the eastern portion of the site (east of the utility corridor, closest to the Delaware River) were reached via an existing access road (along which the grass is regularly mowed) and an abandoned railroad right-of-way (which is elevated and regularly mowed). No turtles were observed onsite by our soil sampling team during the work.

We will incorporate feedback from PFBC in the upcoming ecological evaluation and incorporate any ecological-related design aspects in the RI Report and Cleanup Plan to be submitted to PADEP.

Please let me know if you have any other questions.

Thank you. Dave

From: Gipe, Kathy <c-kgipe@pa.gov>
Sent: Wednesday, October 16, 2019 2:03 PM
To: Buys, Dave <Dave.Buys@arcadis.com>
Subject: RE: [External] RE: PNDI 628950: Former Philadelphia Coke Plant site

Thanks. I am thinking of turtle nesting habitat and whether or not a seasonal restriction or fenced work area would be needed without first doing a presence/absence survey.

--Kathy

From: Buys, Dave <Dave.Buys@arcadis.com>
Sent: Wednesday, October 16, 2019 1:56 PM
To: Gipe, Kathy <c-kgipe@pa.gov>
Subject: [External] RE: PNDI 628950: Former Philadelphia Coke Plant site

ATTENTION: *This email message is from an external sender. Do not open links or attachments from unknown sources. To report suspicious email, forward the message as an attachment to CWOPA_SPAM@pa.gov.*

Hi Kathy.

I will check to see if test pit and boring locations are available. Would a minimum work distance be needed from the river? Any species of concern in particular? Thank you.

Dave

David Buys, M.Sc. | Environmental Scientist | dave.buys@arcadis.com
Arcadis | Arcadis U.S., Inc.
One Lincoln Center, 110 West Fayette Street, Suite 300 | Syracuse, 13202 | NY, USA
T. +1 315 671 9400 | M. + 1 315 263 6192

Connect with us! www.arcadis.com | LinkedIn | Twitter | Facebook

ARCADIS Design & Consultancy for natural and built assets

Be green, leave it on the screen.

From: Gipe, Kathy <c-kgipe@pa.gov>
Sent: Friday, October 11, 2019 2:14 PM
To: Buys, Dave <Dave.Buys@arcadis.com>
Subject: PNDI 628950: Former Philadelphia Coke Plant site

Dave,

I am currently reviewing the above-referenced project for the PA Fish and Boat Commission. Do you have a proposed layout of the test pits and borings available yet? I am wondering in particular about their proximity to the river shoreline habitats. Please let me know; thank you.

Kathy

Kathy Gipe
Herpetologist/Nongame Biologist
Natural Diversity Section, Environmental Services
PFBC Centre Region Office
595 E Rolling Ridge DR
Bellefonte, PA 16823
814-359-5186
c-kgipe@pa.gov

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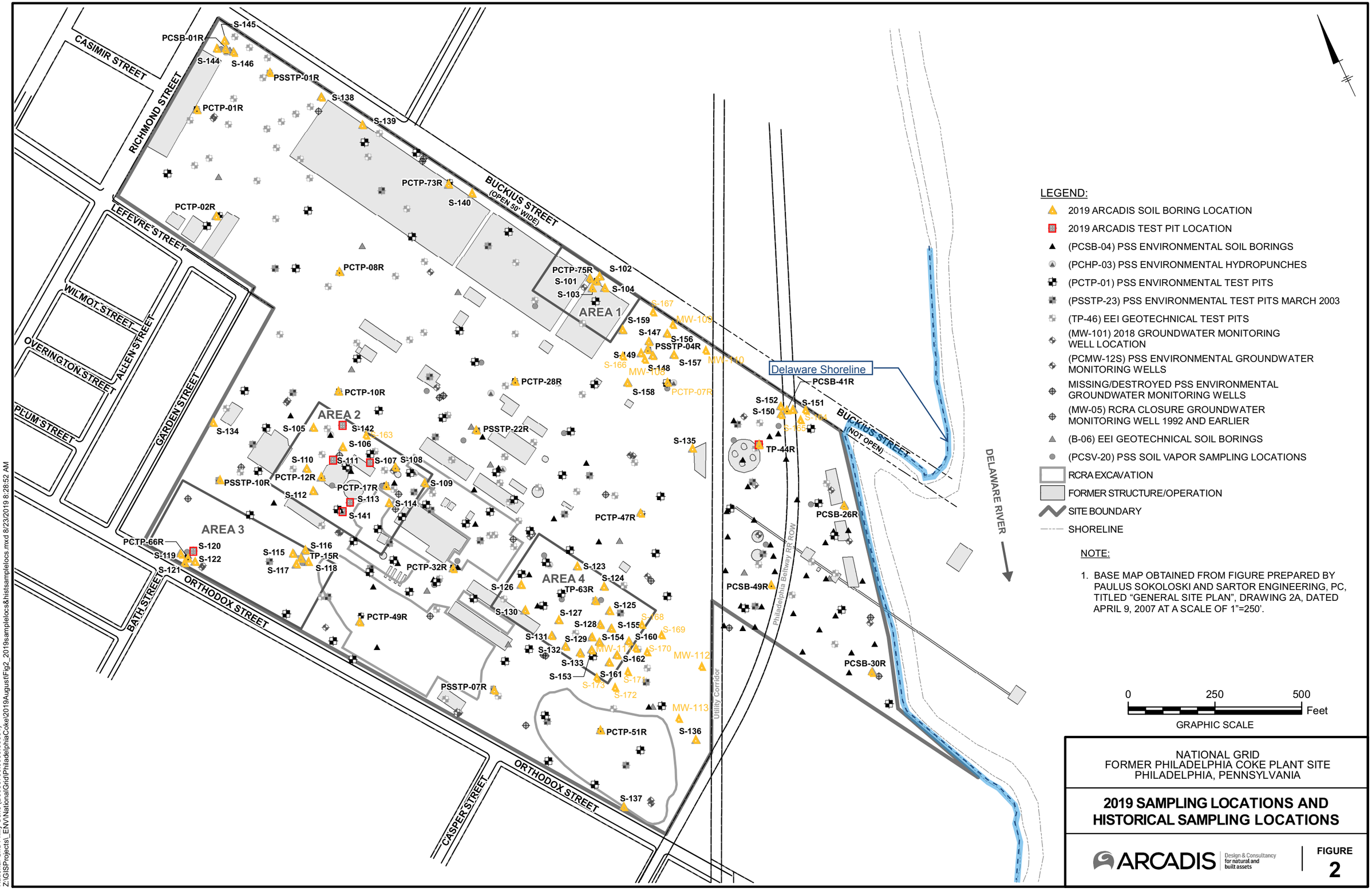


LEGEND:

- 2019 ARCADIS SOIL BORING LOCATION
- 2019 ARCADIS TEST PIT LOCATION
- (PCSB-04) PSS ENVIRONMENTAL SOIL BORINGS
- (PCHP-03) PSS ENVIRONMENTAL HYDROPUNCHES
- (PCTP-01) PSS ENVIRONMENTAL TEST PITS
- (PSSTP-23) PSS ENVIRONMENTAL TEST PITS MARCH 2003
- (TP-46) EEI GEOTECHNICAL TEST PITS
- (MW-101) 2018 GROUNDWATER MONITORING WELL LOCATION
- (PCMW-12S) PSS ENVIRONMENTAL GROUNDWATER MONITORING WELLS
- MISSING/DESTROYED PSS ENVIRONMENTAL GROUNDWATER MONITORING WELLS
- (MW-05) RCRA CLOSURE GROUNDWATER MONITORING WELL 1992 AND EARLIER
- (B-06) EEI GEOTECHNICAL SOIL BORINGS
- (PCSV-20) PSS SOIL VAPOR SAMPLING LOCATIONS
- RCRA EXCAVATION
- FORMER STRUCTURE/OPERATION
- SITE BOUNDARY
- SHORELINE

NOTE:

1. BASE MAP OBTAINED FROM FIGURE PREPARED BY PAULUS SOKOLOSKI AND SARTOR ENGINEERING, PC, TITLED "GENERAL SITE PLAN", DRAWING 2A, DATED APRIL 9, 2007 AT A SCALE OF 1"=250'.

0 250 500 Feet

GRAPHIC SCALE

NATIONAL GRID
FORMER PHILADELPHIA COKE PLANT SITE
PHILADELPHIA, PENNSYLVANIA

2019 SAMPLING LOCATIONS AND HISTORICAL SAMPLING LOCATIONS

ARCADIS Design & Consultancy for natural and built assets

FIGURE 2

City: Syr Div/Group: IM/DV Created By: K. Sinsabaugh Last Saved By: akens
National Grid Philly Coke (B0036790.0000.00001)
Z:\GISProjects_ENV\NationalGrid\PhiladelphiaCoke\2019August\Fig2_2019samplelocs&histsamplelocs.mxd 8/23/2019 8:28:52 AM

October 30, 2019 Species Impact Review (SIR) – Rare, Candidate, Threatened and Endangered Species PNDI Search No. 628950_1; from PAFBC

Pennsylvania Fish & Boat Commission
established 1866

Division of Environmental Services
Natural Diversity Section
595 E Rolling Ridge Dr.
Bellefonte, PA 16823
814-359-5237

October 30, 2019

IN REPLY REFER TO
SIR# 51992

Arcadis
David Buys
110 W. Fayette Street
Syracuse, New York 13202

RE: Species Impact Review (SIR) – Rare, Candidate, Threatened and Endangered Species
PNDI Search No. 628950_1
Former Philadelphia Coke Plant Site
PHILADELPHIA County: Philadelphia City

Dear David Buys:

This responds to your inquiry about a Pennsylvania Natural Diversity Inventory (PNDI) Internet Database search "potential conflict" or a threatened and endangered species impact review. These projects are screened for potential conflicts with rare, candidate, threatened or endangered species under Pennsylvania Fish & Boat Commission jurisdiction (fish, reptiles, amphibians, aquatic invertebrates only) using the Pennsylvania Natural Diversity Inventory (PNDI) database and our own files. These species of special concern are listed under the Endangered Species Act of 1973, the Wild Resource Conservation Act, and the Pennsylvania Fish & Boat Code (Chapter 75), or the Wildlife Code.

Northern Red-bellied Cooter (*Pseudemys rubriventris*, Threatened)
The Northern Red-bellied Cooter is one of Pennsylvania's largest native aquatic turtles. This turtle species is known to inhabit relatively large, deep streams, rivers, ponds, lakes, and marshes with permanent water and ample basking sites. Red-bellied Cooters are restricted to the southcentral and southeastern regions of the Commonwealth. The existence of this turtle species is threatened by habitat destruction, poor water quality and competition with aggressive non-native turtle species that share its range and habitat (e.g. Red-eared Slider).

You supplied descriptions and photographs of the project site. According to the information, potential habitats consistent with those known to support the species of concern may be located on portions of the property. However, current conditions are not having adverse impacts to these habitats or species. Therefore, I conclude that parcel investigated is not resulting in adverse impacts to the species of concern. Future redevelopment of portions of the property may require further investigation to determine how to avoid impacts to these species.

This response represents the most up-to-date summary of the PNDI data and our files and is valid for two (2) years from the date of this letter. An absence of recorded species information does not necessarily imply species absence. Our data files and the PNDI system are continuously being updated with species occurrence information. Should project plans change or additional information on listed or proposed species become available, this determination may be reconsidered, and consultation shall be re-initiated.

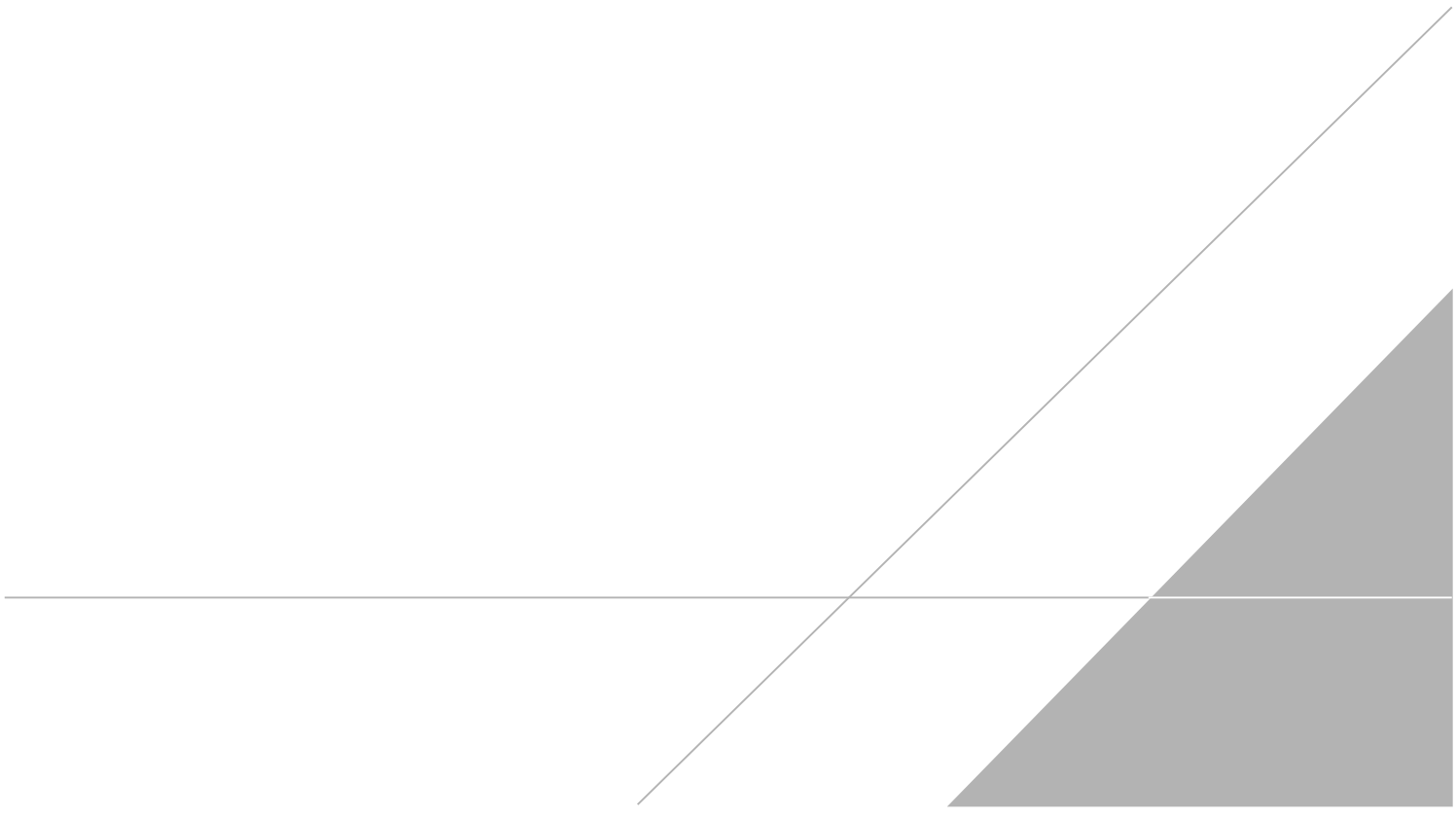
If you have any questions regarding this review, please contact Kathy Gipe at 814-359-5186 and refer to the SIR # 51992. Thank you for your cooperation and attention to this important matter of species conservation and habitat protection.

Sincerely,

Christopher A. Urban, Chief
Natural Diversity Section

CAU/KDG/dn

February 2, 2022: Further Consultation with PFBC About the Two Unnamed Endangered Aquatic Species



Brussel, John

From: Vogel, Jason
Sent: Wednesday, February 2, 2022 11:57 AM
To: c-kgipe@pa.gov
Cc: Brussel, John
Subject: PNDI 628950: Former Philadelphia Coke Plant site
Attachments: Arcadis PNDI.pdf; Philadelphia Coke-Herpetological Assoc Rpt-PFBC Response.pdf

Kathy,

Hope this finds you well. Arcadis had interacted with you on follow up to PNDI 628950 in October 2019 regarding the findings of the consultation results noted by PFBC (attached as Arcadis PNDI.pdf). As part of the threatened and endangered species evaluation and consultation for the Former Philadelphia Coke Plant Site, we had used the supporting information to detail and assess the red-bellied cooter use of the site. This information was incorporated into an Act 2 Remedial Investigation Report and Cleanup Plan [RICP] (eFACTS PF No. 831308) prepared for the site and submitted to PADEP.

We received comments from PADEP on the report regarding data gaps in review of potential threatened and endangered species; specifically as: "The report lacked a sufficient ecological evaluation for threatened and endangered species identified in the Pennsylvania Natural Diversity Inventory review. This is a data gap. 25 Pa. Code Sections 250.402(c), 250.404(a)."

In our Act 2 RICP, we evaluated the existing site habitats and potential usage for red-bellied cooter. Additionally, another consulting firm submitted its own PNDI consultation in support of site redevelopment plans (# 720080) and had similar conclusions on the red-bellied cooter. In addition, they provided an additional Phase 1 site-specific survey report on red-bellied cooter. PFBC provided a similar response in its September 23, 2021 letter. From both of these responses, we concluded that site development activities will not threaten the red-bellied cooter. Consultation information for PNDI #720080 and Phase 1 report are attached as Philadelphia Coke-Herpetological Assoc Rpt-PFBC Response.pdf.

In review of PADEP's comment, we are trying to understand if there are additional species of concerns or habitats that require evaluation and description in our RICP to address the data gap.

From the PNDI consultation information for 628950 (attached), besides the red-bellied cooter, the report made note of two endangered species, but these were not identified. **Please identify these two endangered species.**

The consultation materials also referred to the Delaware River Shoreline habitat within the upland and shoreline areas of the site between Orthodox and Buckius Streets. The current site shoreline area consists primarily of fill material, rocks, gravels and sands, with some sparse emergent vegetation (e.g., spatterdock) observed growing in the rock line. The transition area between the shoreline and upland river bank consists of rock, fill material, old bulkhead, and fencing. The vegetation in this transitional area consists primarily of invasive species (e.g., Japanese knotweed, Common reed). The Delaware River Shoreline habitat refers to a listing of threatened and endangered plant and biota species, and intertidal marsh. The current shoreline habitat is not a functioning intertidal marsh. **Does the listing of Delaware River Shoreline habitat within the PNDI require any further site assessment or evaluation to document occurrence at this site?**

If you can provide answers to our question and requested information (bolded) and advise on any other supporting documentation needs typically required for the ecological evaluation, then that would be extremely helpful.

Thank you in advance for your assistance and support on this matter.

Sincerely,

Jason Vogel
Senior Ecologist
Arcadis of New York, Inc.
One Lincoln Center | 110 West Fayette Street | Suite 300 | Syracuse NY | 13202 | USA
T. +1 315 671 9134
M. +1 315 289 7865
www.arcadis.com

February 7, 2022: PFBC Response to Additional Species Impact Review - PNDI Search No. 628950_1

Pennsylvania Fish & Boat Commission
established 1866

Division of Environmental Services
Natural Diversity Section
595 E Rolling Ridge Dr.
Bellefonte, PA 16823
814-359-5237

February 7, 2022

IN REPLY REFER TO
SIR# 51992

Arcadis of New York
Jason Vogel
One Lincoln Center
110 West Fayette St, Suite 300
Syracuse, New York 13202

RE: Species Impact Review (SIR) – Rare, Candidate, Threatened and Endangered Species
PNDI Search No. 628950_1
Former Philadelphia Coke Plant Site
PHILADELPHIA County: Philadelphia City

Dear Jason Vogel:

This responds to your inquiry about a Pennsylvania Natural Diversity Inventory (PNDI) Internet Database search "potential conflict" or a threatened and endangered species impact review. These projects are screened for potential conflicts with rare, candidate, threatened or endangered species under Pennsylvania Fish & Boat Commission jurisdiction (fish, reptiles, amphibians, aquatic invertebrates only) using the Pennsylvania Natural Diversity Inventory (PNDI) database and our own files. These species of special concern are listed under the Endangered Species Act of 1973, the Wild Resource Conservation Act, and the Pennsylvania Fish & Boat Code (Chapter 75), or the Wildlife Code.

Based on records maintained in the Pennsylvania Natural Diversity Inventory (PNDI) database and our own files, the following rare or protected species are known from the vicinity of the project site:

Common Name (Scientific Name, PA Status)
Atlantic Sturgeon (*Acipenser oxyrinchus*, Endangered)
Shortnose Sturgeon (*Acipenser brevirostrum*, Endangered)
Northern Red-bellied Cooter (*Pseudemys rubriventris*, Threatened)

Rare or protected fish species are known from the vicinity of the project site. Measures to prevent the release of sediment and harmful chemicals into waterways should be implemented. I recommend construction techniques that avoid instream work, sediment release, and changes to water quality and that fuel storage tanks for equipment re-fueling be located at least 100 feet away from waterways. Storm sewers and retention basins should be designed so as to minimize/remove all silt from the water before it is released into the stream. Strict erosion and sedimentation control measures, as well as best management

practices should be employed. According to my review of the project materials presented, there will be no adverse impact to the sturgeon species from the ongoing reclamation of this project site.

Since the data of my last correspondence, Michael Torocco of Herpetological Associates evaluated the habitats on site to determine their potential to support the Northern Red-bellied Cooter (*Pseudemys rubriventris*) (report provided for SIR #53900). According to the report, the site does contain some potential nesting and basking habitat for the species along the Delaware River shoreline. However, current conditions are not having adverse impacts to these habitats or the species. Therefore, I conclude that the parcel investigated is not resulting in adverse impacts to the Northern Red-bellied Cooter.

This response represents the most up-to-date summary of the PNDI data and our files and is valid for two (2) years from the date of this letter. An absence of recorded species information does not necessarily imply species absence. Our data files and the PNDI system are continuously being updated with species occurrence information. Should project plans change or additional information on listed or proposed species become available, this determination may be reconsidered, and consultation shall be re-initiated.

If you have any questions regarding this review, please contact Kathy Gipe at 814-359-5186 and refer to the SIR # 51992. Thank you for your cooperation and attention to this important matter of species conservation and habitat protection.

Sincerely,

Christopher A. Urban, Chief
Natural Diversity Section

CAU/KDG/dn

September 23, 2021: PFBC Response to Bohler Engineering, Inc.'s Species Impact Review - PNDI Search No. 720080_1

Pennsylvania Fish & Boat Commission
established 1866

Division of Environmental Services
Natural Diversity Section
595 E Rolling Ridge Dr.
Bellefonte, PA 16823
814-359-5237

September 23, 2021

IN REPLY REFER TO
SIR# 53900

Bohler Engineering, Inc.
Kevin McCartney
1515 Market Street, Suite 920
Philadelphia, Pennsylvania 19102

RE: Species Impact Review (SIR) – Rare, Candidate, Threatened and Endangered Species
PNDI Search No. 720080_1
4501 Richmond Street Philadelphia
PHILADELPHIA County: Philadelphia City

Dear Kevin McCartney:

This responds to your inquiry about a Pennsylvania Natural Diversity Inventory (PNDI) Internet Database search "potential conflict" or a threatened and endangered species impact review. These projects are screened for potential conflicts with rare, candidate, threatened or endangered species under Pennsylvania Fish & Boat Commission jurisdiction (fish, reptiles, amphibians, aquatic invertebrates only) using the Pennsylvania Natural Diversity Inventory (PNDI) database and our own files. These species of special concern are listed under the Endangered Species Act of 1973, the Wild Resource Conservation Act, and the Pennsylvania Fish & Boat Code (Chapter 75), or the Wildlife Code.

You provided the results of a habitat evaluation by a recognized qualified Northern Red-bellied Cooter surveyor, Michael Torocco. Mr. Torocco evaluated the habitats on site to determine their potential to support the species of concern. According to the report, the site within the limit of disturbance does not contain potential habitat for the Northern Red-bellied Cooter. I concur with the results of the evaluation; therefore, I do not foresee the proposed project resulting in adverse impacts to the Northern Red-bellied Cooter.

This response represents the most up-to-date summary of the PNDI data and our files and is valid for two (2) years from the date of this letter. An absence of recorded species information does not necessarily imply species absence. Our data files and the PNDI system are continuously being updated with species occurrence information. Should project plans change or additional information on listed or proposed species become available, this determination may be reconsidered, and consultation shall be re-initiated.

If you have any questions regarding this review, please contact Kathy Gipe at 814-359-5186 and refer to the SIR # 53900. Thank you for your cooperation and attention to this important matter of species conservation and habitat protection.

Sincerely,

Christopher A. Urban, Chief
Natural Diversity Section

CAU/KDG/dn

APPENDIX N

Ecological Screening Photolog

APPENDIX N – ECOLOGICAL SCREENING PHOTOGRAPH LOG

National Grid
Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Photograph: 1

Description:
Little Bluestem Pennsylvania Sedge Opening

Location:
Northeast section of site

Photograph taken by:
Gretchen Hubbard

Date: 11/12/2019

Photograph: 2

Description:
Little Bluestem Pennsylvania Sedge Opening

Location:
Northern extent of site

Photograph taken by:
Gretchen Hubbard

Date: 11/12/2019

National Grid
Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Photograph: 3

Description:
Access Road and Surrounding Mixed Hardwood Floodplain Thicket

Location:
Center of site

Photograph taken by:
Gretchen Hubbard

Date: 11/12/2019

Photograph: 4

Description:
Access Road and Surrounding Mixed Hardwood Floodplain Thicket

Location:
Southeast section of site

Photograph taken by:
Gretchen Hubbard

Date: 11/12/2019

National Grid
Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Photograph: 5

Description:
Red Maple Elm Willow Floodplain Forest Wetland

Location:
Wetland 2

Photograph taken by:
Gretchen Hubbard

Date: 11/12/2019

Photograph: 6

Description:
Red Maple Elm Willow Floodplain Forest

Location:
Southwest section of site

Photograph taken by:
Gretchen Hubbard

Date: 11/12/2019

APPENDIX N – ECOLOGICAL SCREENING PHOTOGRAPH LOG

National Grid
Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Photograph: 7

Description:
Access Road and Surrounding Red Maple Elm Willow Floodplain Forest

Location:
Southwest section of site

Photograph taken by:
Gretchen Hubbard

Date: 11/12/2019

Photograph: 8

Description:
Red Maple Elm Willow Floodplain Forest and Common Reed Marsh in Background

Location:
Near wetland 3

Photograph taken by:
Gretchen Hubbard

Date: 11/12/2019

National Grid
Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Photograph: 9

Description:
Mudflat Adjacent to Site in Northern Section of Shoreline

Location:
Northern shoreline

Photograph taken by:
Gretchen Hubbard

Date: 11/12/2019

Photograph: 10

Description:
Shoreline Adjacent to Site Facing Pier to North

Location:
Northeast section of site

Photograph taken by:
Gretchen Hubbard

Date: 11/12/2019

APPENDIX N – ECOLOGICAL SCREENING PHOTOGRAPH LOG

National Grid
Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Photograph: 11

Description:
Shoreline Adjacent to Site Facing South

Location:
Eastern section of site

Photograph taken by:
Gretchen Hubbard

Date: 11/12/2019

Photograph: 12

Description:
Red Maple Elm Willow Floodplain Forest Wetland

Location:
Wetland 1

Photograph taken by:
Doug Partridge

Date: 5/1/2019

National Grid
Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Photograph: 13

Description:
Common Reed Marsh Wetland

Location:
Wetland 4

Photograph taken by:
Doug Partridge

Date: 5/1/2019

Photograph: 14

Description:
Mixed Hardwood Floodplain Thicket Wetland

Location:
Wetland 5

Photograph taken by:
Doug Partridge

Date: 5/1/2019

APPENDIX O

Ecological Screening Benchmark Comparisons and Hazard Quotients

Appendix O-1
Ecological Screening Benchmark Comparisons - Surface Soil

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID:		Ecological		PCSB-26	PCSB-26R	PCSB-27		PCSB-28	PCSB-29	PCSB-30	PCSB-30R	PCSB-31	PCSB-32	PCSB-32	PCSB-33
Sample Depth (ft):	CAS	Soil Screening		0.5	0.5-2	0.5	1.5	0.5	0.5	0.5	0.5-2	0.5	0.5	0.5	0.5
Date Collected:	Number	Benchmark [1,2]		7/26/2005	4/19/2019	7/26/2005	7/26/2005	7/26/2005	7/26/2005	7/26/2005	4/19/2019	7/28/2005	7/28/2005	8/1/2005	7/28/2005
Metals (mg/kg)															
Aluminum	7429-90-5	50	g	NA	**10800**	NA	NA	NA	NA	NA	**1140**	NA	NA	NA	NA
Antimony	7440-36-0	0.27	c	**8**	< 12 UJ	**2.6**	< 2.3	**9.6**	< 2.2	< 2.2	< 2.6	< 2.8	< 2.7	NA	< 2.5
Arsenic	7440-38-2	18	d	**64**	15.2	**27**	< 2.3	**99**	2.4	4.3	5.2	3	< 2.7	NA	< 2.5
Barium	7440-39-3	330	b	**390**	116	110	39	**640**	20	28	7.1 J	< 14	< 13	NA	< 12
Beryllium	7440-41-7	21	c	1.4	0.27	0.81	< 0.68	1.1	< 0.67	0.8	< 0.26	< 0.83	< 0.8	NA	< 0.75
Cadmium	7440-43-9	0.36	c	**2.6**	**3.7**	< 0.7	< 0.68	< 0.71	< 0.67	< 0.67	< 0.65	< 0.83	< 0.8	NA	< 0.75
Calcium	7440-70-2	NA	NA	NA	785	NA	NA	NA	NA	NA	430 J	NA	NA	NA	NA
Chromium	7440-47-3	0.4	e	**34**	**162**	**8.7**	**21**	**15**	< 5.6	**11**	**1.6**	< 6.9	< 6.7	NA	< 6.2
Cobalt	7440-48-4	13	b	NA	**56.7**	NA	NA	NA	NA	NA	0.60 J	NA	NA	NA	NA
Copper	7440-50-8	28	a	**200**	**250**	**82**	26	**260**	22	20	6.7	< 6.9	9.3	NA	11
Cyanide	57-12-5	0.9	h	NA	**1.1 J**	NA	NA	NA	NA	NA	< 0.36	NA	NA	NA	NA
Iron	7439-89-6	200	f	NA	**93300**	NA	NA	NA	NA	NA	**3720**	NA	NA	NA	NA
Lead	7439-92-1	11	a	**3000**	**768 J**	**440**	**13**	**3200**	**29**	**21**	**15.4**	7.6	7	NA	< 6.2
Magnesium	7439-95-4	NA	NA	NA	522 J	NA	NA	NA	NA	NA	297 J	NA	NA	NA	NA
Manganese	7439-96-5	220	d	NA	**536 J**	NA	NA	NA	NA	NA	11.1	NA	NA	NA	NA
Mercury	7439-97-6	0.1	e	**17**	**0.44 J**	< 0.097	< 0.095	**1.8**	< 0.093	< 0.094	0.037 J	< 0.12	< 0.11	NA	< 0.1
Nickel	7440-02-0	38	d	**42**	**243**	14	14	22	< 5.6	11	1.6 J	< 6.9	< 6.7	NA	< 6.2
Potassium	7440-09-7	NA	NA	NA	682 J	NA	NA	NA	NA	NA	462 J	NA	NA	NA	NA
Selenium	7782-49-2	0.52	d	**4**	**5.7 J**	**4.2**	< 2	**4.3**	< 2	**2.1**	< 2.6	< 2.5	< 2.4	NA	< 2.2
Silver	7440-22-4	4.2	a	< 2.8	2.4 J	< 2.9	< 2.8	< 3	< 2.8	< 2.8	< 0.65	< 3.5	< 3.3	NA	< 3.1
Sodium	7440-23-5	NA	NA	NA	< 1200	NA	NA	NA	NA	NA	665 J	NA	NA	NA	NA
Vanadium	7440-62-2	2	d	NA	**26.1**	NA	NA	NA	NA	NA	**4.1 J**	NA	NA	NA	NA
Zinc	7440-66-6	46	a	**730**	**2300**	**130**	**73**	**340**	19	24	7.9	< 14	22	NA	14
Pesticides (mg/kg)															
4,4-DDD	72-54-8	0.758	i	< 0.0057	< 0.00075	< 0.0058	< 0.0057	< 0.006	< 0.0056	< 0.0056	0.0037	< 0.0069	< 0.0067	NA	< 0.0063
4,4-DDE	72-55-9	0.596	i	< 0.0057	< 0.00075	< 0.0058	< 0.0057	0.0074	< 0.0056	< 0.0056	0.0029	< 0.0069	< 0.0067	NA	< 0.0063
4,4-DDT	50-29-3	0.021	c	**0.029**	< 0.00075	**0.056**	< 0.0057	**0.066**	< 0.0056	**0.022**	0.0155	< 0.0069	< 0.0067	NA	< 0.0063
Aldrin	309-00-2	0.0025	h	< 0.0057	< 0.00075	< 0.0058	< 0.0057	< 0.006	< 0.0056	< 0.0056	< 0.00083	< 0.0069	< 0.0067	NA	< 0.0063
Beta-BHC	319-85-7	0.001	h	< 0.0057	< 0.00075	< 0.0058	< 0.0057	< 0.006	< 0.0056	< 0.0056	< 0.00083	< 0.0069	< 0.0067	NA	< 0.0063
Chlordane	57-74-9	0.224	i	< 0.011	NA	< 0.012	< 0.011	< 0.012	< 0.011	< 0.011	NA	< 0.014	< 0.013	NA	< 0.013
Dieldrin	60-57-1	0.0049	c	< 0.0057	< 0.00075	< 0.0058	< 0.0057	< 0.006	< 0.0056	< 0.0056	< 0.00083	< 0.0069	< 0.0067	NA	< 0.0063
Endosulfan I	959-98-8	0.119	i	< 0.0057	< 0.00075	< 0.0058	< 0.0057	< 0.006	< 0.0056	< 0.0056	< 0.00083	< 0.0069	< 0.0067	NA	< 0.0063
Endosulfan II	33213-65-9	0.119	i	< 0.0057	< 0.00075	< 0.0058	< 0.0057	< 0.006	< 0.0056	< 0.0056	< 0.00083	< 0.0069	< 0.0067	NA	< 0.0063
Endosulfan sulfate	1031-07-8	0.0358	i	< 0.0057	< 0.00075	< 0.0058	< 0.0057	< 0.006	< 0.0056	< 0.0056	< 0.00083	< 0.0069	< 0.0067	NA	< 0.0063
Endrin	72-20-8	0.001	h	< 0.0057	< 0.00075	< 0.0058	< 0.0057	< 0.006	< 0.0056	< 0.0056	< 0.00083	< 0.0069	< 0.0067	NA	< 0.0063
Endrin aldehyde	7421-93-4	0.0105	i	< 0.0057	< 0.00075	< 0.0058	< 0.0057	< 0.006	< 0.0056	< 0.0056	< 0.00083	< 0.0069	< 0.0067	NA	< 0.0063
Endrin ketone	53494-70-5	0.001	h	< 0.0057	< 0.00075	< 0.0058	< 0.0057	< 0.006	< 0.0056	< 0.0056	< 0.00083	< 0.0069	< 0.0067	NA	< 0.0063
Heptachlor epoxide	1024-57-3	0.152	i	< 0.0057	< 0.00075	< 0.0058	< 0.0057	< 0.006	< 0.0056	< 0.0056	< 0.00083	< 0.0069	< 0.0067	NA	< 0.0063
Methoxychlor	72-43-5	0.0199	i	< 0.0057	< 0.0015	< 0.0058	< 0.0057	< 0.006	< 0.0056	< 0.0056	< 0.0017	< 0.0069	< 0.0067	NA	< 0.0063
Toxaphene	8001-35-2	0.119	i	< 0.028	< 0.019	< 0.029	< 0.028	< 0.03	< 0.028	< 0.028	< 0.021	< 0.035	< 0.033	NA	< 0.031
trans-chlordane	5103-74-2	0.0043	NA	NA	< 0.00075	NA	NA	NA	NA	NA	0.00059 J	NA	NA	NA	NA

Location ID:		Ecological		PCSB-26	PCSB-26R	PCSB-27		PCSB-28	PCSB-29	PCSB-30	PCSB-30R	PCSB-31	PCSB-32	PCSB-32	PCSB-33
Sample Depth (ft):	CAS	Soil Screening		0.5	0.5-2	0.5	1.5	0.5	0.5	0.5	0.5-2	0.5	0.5	0.5	0.5
Date Collected:	Number	Benchmark [1,2]		7/26/2005	4/19/2019	7/26/2005	7/26/2005	7/26/2005	7/26/2005	7/26/2005	4/19/2019	7/28/2005	7/28/2005	8/1/2005	7/28/2005
Polychlorinated Biphenyls (mg/kg)															
Aroclor 1242	53469-21-9	NA	NA	< 0.028	< 0.038	< 0.029	< 0.028	< 0.03	< 0.028	< 0.028	< 0.042	< 0.035	< 0.033	NA	< 0.031
Aroclor 1248	12672-29-6	NA	NA	< 0.028	< 0.038	< 0.029	< 0.028	< 0.03	< 0.028	< 0.028	< 0.042	< 0.035	< 0.033	NA	< 0.031
Aroclor 1254	11097-69-1	40	g	< 0.028	< 0.038	< 0.029	< 0.028	< 0.03	< 0.028	< 0.028	< 0.042	< 0.035	< 0.033	NA	< 0.031
Aroclor 1260	11096-82-5	NA	NA	< 0.028	< 0.038	< 0.029	< 0.028	< 0.03	< 0.028	< 0.028	< 0.042	< 0.035	< 0.033	NA	< 0.031
Aroclor 1262	37324-23-5	40	g	NA	< 0.038	NA	NA	NA	NA	NA	< 0.042	NA	NA	NA	NA
Total Aroclor PCBs	1336-36-3	0.02	h	< 0.028	< 0.038	< 0.029	< 0.028	< 0.03	< 0.028	< 0.028	< 0.042	< 0.035	< 0.033	NA	< 0.031
Volatile Organic Compounds (mg/kg)															
Acetone	67-64-1	2.5	i	0.034	0.0087 J	< 0.013	< 0.006	< 0.013	< 0.0059	< 0.006	0.0252	< 0.0074	NA	< 0.0072	< 0.0066
Benzene	71-43-2	0.05	h	< 0.00083	< 0.00058	< 0.0013	< 0.00058	< 0.0012	< 0.00057	< 0.00057	< 0.00092	< 0.00071	NA	< 0.00069	< 0.00064
Carbon Disulfide	75-15-0	0.0941	i	< 0.0011	< 0.0023	< 0.0016	< 0.00074	< 0.0015	< 0.00072	< 0.00073	< 0.0037 UJ	< 0.0009	NA	< 0.00088	< 0.00081
Cyclohexane	110-82-7	0.1	h	NA	< 0.0023	NA	NA	NA	NA	NA	< 0.0037	NA	NA	NA	NA
Dichloromethane	75-09-2	2	h	0.018 B	< 0.0058	0.021 B	0.013 B	0.017 B	0.013 B	0.0058 B	< 0.0092	0.038 B	NA	0.021 B	0.028 B
Ethylbenzene	100-41-4	0.05	h	< 0.0012	< 0.0012	< 0.0019	< 0.00085	< 0.0018	< 0.00083	< 0.00084	< 0.0018	< 0.001	NA	< 0.001	< 0.00093
Isopropylbenzene	98-82-8	NA	NA	NA	< 0.0023	NA	NA	NA	NA	NA	< 0.0037	NA	NA	NA	NA
m&p-Xylenes	ARC-mpXyl	0.05	h	< 0.0018	< 0.0012	< 0.0028	< 0.0013	< 0.0026	< 0.0012	< 0.0012	< 0.0018	< 0.0015	NA	< 0.0015	< 0.0014
Methyl Acetate	79-20-9	2.4	k	NA	< 0.0058	NA	NA	NA	NA	NA	< 0.0092	NA	NA	NA	NA
Methylcyclohexane	108-87-2	1160	j	NA	< 0.0023	NA	NA	NA	NA	NA	< 0.0037	NA	NA	NA	NA
o,p-Xylene	136777-61-2	0.05	h	< 0.00076	NA	< 0.0012	< 0.00053	< 0.0011	< 0.00052	< 0.00053	NA	< 0.00065	NA	< 0.00063	< 0.00058
o-Xylene	95-47-6	0.05	h	NA	< 0.0012	NA	NA	NA	NA	NA	< 0.0018	NA	NA	NA	NA
Styrene (Monomer)	100-42-5	0.1	h	< 0.001	< 0.0023	< 0.0016	< 0.0007	< 0.0015	< 0.00069	< 0.0007	< 0.0037	< 0.00086	NA	< 0.00084	< 0.00078
Toluene	108-88-3	0.05	h	< 0.0012	< 0.0012	< 0.0019	< 0.00086	< 0.0018	< 0.00084	< 0.00085	< 0.0018	< 0.001	NA	< 0.001	< 0.00094
Total Xylenes	1330-20-7	0.05	h	NA	< 0.0012	NA	NA	NA	NA	NA	< 0.0018	NA	NA	NA	NA
Semi-Volatile Organic Compounds (mg/kg)															
1,1-Biphenyl	92-52-4	60	g	NA	< 0.077	NA	NA	NA	NA	NA	< 0.089	NA	NA	NA	NA
2,4-Dimethylphenol	105-67-9	0.01	i	< 0.052	< 0.19	< 0.27	< 0.032	< 0.055	< 0.031	< 0.052	< 0.22	< 0.039	< 0.038	NA	< 0.035
2-Methylnaphthalene	91-57-6	3.24	b	0.12	< 0.038	0.73	< 0.065	0.78	0.072	0.36	< 0.045	< 0.079	< 0.076	NA	0.14
2-Methylphenol	95-48-7	0.5	h	< 0.18	< 0.077	< 0.92	< 0.14	< 0.19	< 0.14	< 0.18	< 0.089	< 0.17	< 0.17	NA	< 0.16
3-Methylphenol, 4-Methylphenol	65794-96-9	0.5	h	NA	< 0.077	NA	NA	NA	NA	NA	< 0.089	NA	NA	NA	NA
4-Methylphenol	106-44-5	0.5	h	< 0.2	NA	< 1	< 0.14	< 0.21	< 0.14	< 0.2	NA	< 0.17	< 0.16	NA	< 0.15
4-Nitroaniline	100-01-6	21.9	i	NA	< 0.19	NA	NA	NA	NA	NA	< 0.22	NA	NA	NA	NA
Acenaphthene	83-32-9	20	b	0.16	< 0.038	< 0.081	< 0.0062	0.079	< 0.0061	< 0.016	< 0.045	< 0.0076	< 0.0073	NA	< 0.0069
Acenaphthylene	208-96-8	29	b	0.23	< 0.038	1.7	< 0.0057	0.35	< 0.0056	0.1	< 0.045	< 0.007	< 0.0067	NA	0.072
Acetophenone	98-86-2	300	i	NA	< 0.19	NA	NA	NA	NA	NA	< 0.22	NA	NA	NA	NA
Anthracene	120-12-7	0.1	b	**0.61**	< 0.038	**1.6**	< 0.0075	**0.47**	< 0.0073	**0.22**	< 0.045	< 0.0092	< 0.0088	NA	< 0.0082
Benz(a)anthracene	56-55-3	0.25	b	**3.8**	0.134	**9.2**	0.046	**2.4**	0.067	**0.68**	0.0283 J	< 0.0065	0.052	NA	0.23
Benzaldehyde	100-52-7	470	k	NA	< 0.19	NA	NA	NA	NA	NA	< 0.22	NA	NA	NA	NA
Benzo(a)pyrene	50-32-8	0.1	b	**3.1**	**0.154**	**8.8**	0.042	**2.1**	0.055	**0.41**	0.0339 J	< 0.0077	0.051	NA	**0.24**
Benzo(b)fluoranthene	205-99-2	18	b	4.8	0.211	11	0.13	4	0.12	0.97	0.0478	0.07	0.087	NA	0.45
Benzo(g,h,i)perylene	191-24-2	7.5	b	2.3	0.102	7.3	< 0.0054	2	0.045	0.39	0.0281 J	< 0.0067	< 0.0064	NA	0.23
Benzo(k)fluoranthene	207-08-9	2.4	b	1.8	0.0702	**4.1**	0.046	0.94	< 0.013	0.24	< 0.045	< 0.016	< 0.016	NA	0.12

Location ID:		Ecological		PCSB-26	PCSB-26R	PCSB-27		PCSB-28	PCSB-29	PCSB-30	PCSB-30R	PCSB-31	PCSB-32	PCSB-32	PCSB-33
Sample Depth (ft):	CAS	Soil Screening		0.5	0.5-2	0.5	1.5	0.5	0.5	0.5	0.5-2	0.5	0.5	0.5	0.5
Date Collected:	Number	Benchmark [1,2]		7/26/2005	4/19/2019	7/26/2005	7/26/2005	7/26/2005	7/26/2005	7/26/2005	4/19/2019	7/28/2005	7/28/2005	8/1/2005	7/28/2005
Semi-Volatile Organic Compounds (mg/kg) (cont'd)															
bis(2-Ethylhexyl)phthalate	117-81-7	0.925	i	0.11	< 0.077	< 0.17	< 0.024	0.27	0.1	0.55	< 0.089	0.077	0.1	NA	0.18
Butyl benzyl phthalate	85-68-7	0.239	i	< 0.015	< 0.077	< 0.078	< 0.01	< 0.016	< 0.01	0.13	< 0.089	< 0.013	< 0.012	NA	< 0.011
Carbazole	86-74-8	NA	b	0.18	0.0116 J	0.46	< 0.0073	0.19	< 0.0071	< 0.011	< 0.089	< 0.0089	< 0.0085	NA	< 0.008
Chrysene	218-01-9	4.73	b	3.9	0.142	**9.6**	0.085	3	0.099	0.99	0.0272 J	0.053	0.065	NA	0.36
Dibenz(a,h)anthracene	53-70-3	18	b	0.8	0.0326 J	2.5	< 0.0069	0.85	< 0.0068	0.16	< 0.045	< 0.0085	< 0.0081	NA	0.062
Dibenzofuran	132-64-9	19	j	0.16	< 0.077	0.44	< 0.049	0.35	< 0.048	0.22	< 0.089	< 0.06	< 0.057	NA	0.056
Diethyl phthalate	84-66-2	24.8	g	< 0.01	< 0.077	< 0.053	< 0.0089	< 0.011	< 0.0087	< 0.01	< 0.089	< 0.011	< 0.01	NA	< 0.0098
Di-n-butyl phthalate	84-74-2	0.15	g	< 0.0085	< 0.077	< 0.043	0.039 B	0.054 B	< 0.0075	< 0.0084	< 0.089	< 0.0094	< 0.009	NA	0.045
Di-n-octyl phthalate	117-84-0	709	i	< 0.0089	< 0.077	< 0.046	< 0.013	< 0.0094	< 0.013	< 0.0088	< 0.089	< 0.016	< 0.015	NA	< 0.014
Fluoranthene	206-44-0	0.1	b	**3.7**	**0.243**	**17**	0.049	**3.9**	**0.12**	**1.1**	0.0452	0.058	0.084	NA	**0.41**
Fluorene	86-73-7	29	b	0.17	< 0.038	0.41	< 0.0091	0.12	< 0.0089	< 0.0095	< 0.045	< 0.011	< 0.011	NA	< 0.01
Indeno(1,2,3-cd)pyrene	193-39-5	5.9	b	2.1	0.107	**6.2**	< 0.0064	1.8	< 0.0063	0.39	0.0286 J	< 0.0078	< 0.0075	NA	0.19
Naphthalene	91-20-3	0.0994	b	**0.16**	< 0.038	**1.2**	< 0.0037	**0.69**	0.054	**0.42**	< 0.045	< 0.0045	< 0.0043	NA	0.067
Phenanthrene	85-01-8	0.1	b	**1.8**	**0.121**	**5.6**	< 0.0084	**1.7**	**0.11**	**0.93**	0.0215 J	< 0.01	0.048	NA	**0.29**
Phenol	108-95-2	0.05	h	< 0.058	< 0.077	< 0.3	< 0.063	< 0.06	< 0.061	< 0.057	< 0.089	< 0.077	< 0.073	NA	< 0.069
Pyrene	129-00-0	0.1	b	**3.2**	**0.21**	**14**	0.067	**3.2**	**0.11**	**0.78**	0.0413 J	0.055	0.079	NA	**0.39**
Total PAHs	ARC-TPAH	1	h	**20.3**	NA	**51.4**	0.349	**15.09**	0.341	**3.84**	NA	0.123	0.255	NA	**1.652**

Location ID:	CAS Number	Ecological Soil Screening Benchmark [1,2]		PCSB-34	PCSB-35	PCSB-36	PCSB-37	PCSB-38	PCSB-39	PCSB-40	PCSB-41	PCSB-41R	PCSB-42	PCSB-43
Sample Depth (ft):				0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5-2	0.5	0.5
Date Collected:				7/27/2005	8/2/2005	7/27/2005	8/3/2005	7/27/2005	7/27/2005	7/28/2005	7/28/2005	4/22/2019	8/1/2005	8/1/2005
Metals (mg/kg)														
Aluminum	7429-90-5	50	g	NA	NA	NA	NA	NA	NA	NA	NA	**7590**	NA [NA]	NA
Antimony	7440-36-0	0.27	c	**3.4**	< 2.1	**17**	**8.7**	< 2.4	< 2.6	< 2.7	**14**	**20.6**	< 2.1 [< 2.1]	< 2.1
Arsenic	7440-38-2	18	d	7	13	**20**	**20**	**41**	< 2.6	3.2	13	**19.5**	5.2 [10]	**57**
Barium	7440-39-3	330	b	80	63	**780**	74	75	16	< 13	88	175	37 [49]	**390**
Beryllium	7440-41-7	21	c	6.3	< 0.62	1.1	< 0.67	< 0.73	< 0.78	< 0.8	0.68	0.91	< 0.62 [< 0.63]	< 0.64
Cadmium	7440-43-9	0.36	c	< 0.72	**0.92**	**3.7**	**3.6**	< 0.73	< 0.78	< 0.8	**2.5**	**1.4**	< 0.62 [< 0.63]	**1.4**
Calcium	7440-70-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	11500	NA [NA]	NA
Chromium	7440-47-3	0.4	e	**50**	**24**	**16**	**110**	**9.5**	< 6.5	< 6.7	**59**	**26.0**	**16 [22]**	**25**
Cobalt	7440-48-4	13	b	NA	NA	NA	NA	NA	NA	NA	NA	7.8	NA [NA]	NA
Copper	7440-50-8	28	a	**690**	**51**	**840**	**610**	**66**	17	15	**120**	**193**	21 [25]	**100**
Cyanide	57-12-5	0.9	h	NA	NA	NA	NA	NA	NA	NA	NA	0.53	NA [NA]	NA
Iron	7439-89-6	200	f	NA	NA	NA	NA	NA	NA	NA	NA	**28300**	NA [NA]	NA
Lead	7439-92-1	11	a	**1200**	**130**	**14000**	**420**	**230**	11	< 6.7	**930**	**986**	**160 [88]**	**1900**
Magnesium	7439-95-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4570	NA [NA]	NA
Manganese	7439-96-5	220	d	NA	NA	NA	NA	NA	NA	NA	NA	**552**	NA [NA]	NA
Mercury	7439-97-6	0.1	e	< 0.1	**0.27**	**1.2**	**0.47**	**0.13**	< 0.11	< 0.11	**1.6**	**0.34 J**	**0.15 [0.14]**	**0.64**
Nickel	7440-02-0	38	d	**39**	18	26	**97**	18	< 6.5	< 6.7	**39**	**38.4**	16 [18]	**87**
Potassium	7440-09-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1120 J	NA [NA]	NA
Selenium	7782-49-2	0.52	d	**2.9**	< 1.9	**3.6**	**2.4**	**2.7**	< 2.3	< 2.4	**3.3**	< 4.8	< 1.9 [< 1.9]	**2.1**
Silver	7440-22-4	4.2	a	< 3	< 2.6	< 2.9	< 2.8	< 3	< 3.2	< 3.3	< 2.7	< 1.2	< 2.6 [< 2.6]	< 2.7
Sodium	7440-23-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	208 J	NA [NA]	NA
Vanadium	7440-62-2	2	d	NA	NA	NA	NA	NA	NA	NA	NA	**32.1**	NA [NA]	NA
Zinc	7440-66-6	46	a	**1200**	**140**	**6300**	**540**	**100**	25	14	**290**	**530**	**85 [95]**	**1300**
Pesticides (mg/kg)														
4,4-DDD	72-54-8	0.758	i	< 0.006	0.012	< 0.0058	< 0.0056	0.02	< 0.0065	< 0.0067	0.085	0.0044 JN	0.0091 [< 0.0053]	< 0.0053
4,4-DDE	72-55-9	0.596	i	< 0.006	0.017	< 0.0058	0.026	0.022	< 0.0065	< 0.0067	0.15	0.0054	0.015 [< 0.0053]	0.012
4,4-DDT	50-29-3	0.021	c	< 0.006	< 0.0052	< 0.0058	**0.17**	**0.058**	< 0.0065	< 0.0067	**0.1**	0.0056	< 0.0052 [< 0.0053]	< 0.0053
Aldrin	309-00-2	0.0025	h	< 0.006	< 0.0052	< 0.0058	< 0.0056	< 0.0061	< 0.0065	< 0.0067	< 0.0054	< 0.00079 UJ	< 0.0052 [< 0.0053]	< 0.0053
Beta-BHC	319-85-7	0.001	h	< 0.006	< 0.0052	< 0.0058	< 0.0056	< 0.0061	< 0.0065	< 0.0067	< 0.0054	< 0.00079	< 0.0052 [< 0.0053]	< 0.0053
Chlordane	57-74-9	0.224	i	< 0.012	< 0.01	< 0.012	< 0.011	< 0.012	< 0.013	< 0.013	< 0.011	NA	< 0.01 [< 0.011]	< 0.011
Dieldrin	60-57-1	0.0049	c	< 0.006	< 0.0052	< 0.0058	**0.095**	< 0.0061	< 0.0065	< 0.0067	< 0.0054	< 0.00079	< 0.0052 [< 0.0053]	< 0.0053
Endosulfan I	959-98-8	0.119	i	< 0.006	< 0.0052	< 0.0058	< 0.0056	< 0.0061	< 0.0065	< 0.0067	< 0.0054	< 0.00079	< 0.0052 [< 0.0053]	< 0.0053
Endosulfan II	33213-65-9	0.119	i	< 0.006	< 0.0052	< 0.0058	0.016	< 0.0061	< 0.0065	< 0.0067	< 0.0054	< 0.00079	< 0.0052 [< 0.0053]	< 0.0053
Endosulfan sulfate	1031-07-8	0.0358	i	< 0.006	< 0.0052	< 0.0058	< 0.0056	< 0.0061	< 0.0065	< 0.0067	< 0.0054	< 0.00079	< 0.0052 [< 0.0053]	< 0.0053
Endrin	72-20-8	0.001	h	< 0.006	< 0.0052	< 0.0058	< 0.0056	< 0.0061	< 0.0065	< 0.0067	< 0.0054	< 0.00079	< 0.0052 [< 0.0053]	< 0.0053
Endrin aldehyde	7421-93-4	0.0105	i	< 0.006	< 0.0052	< 0.0058	< 0.0056	< 0.0061	< 0.0065	< 0.0067	< 0.0054	< 0.00079	< 0.0052 [< 0.0053]	< 0.0053
Endrin ketone	53494-70-5	0.001	h	< 0.006	< 0.0052	< 0.0058	< 0.0056	< 0.0061	< 0.0065	< 0.0067	< 0.0054	< 0.00079	< 0.0052 [< 0.0053]	< 0.0053
Heptachlor epoxide	1024-57-3	0.152	i	< 0.006	< 0.0052	< 0.0058	< 0.0056	< 0.0061	< 0.0065	< 0.0067	< 0.0054	< 0.00079	< 0.0052 [< 0.0053]	< 0.0053
Methoxychlor	72-43-5	0.0199	i	< 0.006	< 0.0052	< 0.0058	< 0.0056	< 0.0061	< 0.0065	< 0.0067	< 0.0054	< 0.0016	< 0.0052 [< 0.0053]	< 0.0053
Toxaphene	8001-35-2	0.119	i	< 0.03	< 0.026	< 0.029	< 0.028	< 0.03	< 0.032	< 0.033	< 0.027	< 0.02	< 0.026 [< 0.026]	< 0.027
trans-chlordane	5103-74-2	0.0043	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.00079	NA [NA]	NA

Location ID:		Ecological		PCSB-34	PCSB-35	PCSB-36	PCSB-37	PCSB-38	PCSB-39	PCSB-40	PCSB-41	PCSB-41R	PCSB-42	PCSB-43
Sample Depth (ft):	CAS	Soil Screening		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5-2	0.5	0.5
Date Collected:	Number	Benchmark [1,2]		7/27/2005	8/2/2005	7/27/2005	8/3/2005	7/27/2005	7/27/2005	7/28/2005	7/28/2005	4/22/2019	8/1/2005	8/1/2005
Polychlorinated Biphenyls (mg/kg)														
Aroclor 1242	53469-21-9	NA	NA	< 0.03	< 0.026	< 0.029	< 0.028	< 0.03	< 0.032	< 0.033	< 0.027	< 0.039	< 0.026 [< 0.026]	< 0.027
Aroclor 1248	12672-29-6	NA	NA	< 0.03	< 0.026	< 0.029	< 0.028	< 0.03	< 0.032	< 0.033	0.1	< 0.039	< 0.026 [< 0.026]	< 0.027
Aroclor 1254	11097-69-1	40	g	< 0.03	< 0.026	< 0.029	< 0.028	< 0.03	< 0.032	< 0.033	< 0.027	< 0.039	< 0.026 [< 0.026]	< 0.027
Aroclor 1260	11096-82-5	NA	NA	0.084	0.066	0.18	1	0.11	< 0.032	0.053	0.33	< 0.039	0.051 [< 0.026]	0.16
Aroclor 1262	37324-23-5	40	g	NA	NA	NA	NA	NA	NA	NA	NA	< 0.039	NA [NA]	NA
Total Aroclor PCBs	1336-36-3	0.02	h	**0.084**	**0.066**	**0.18**	**1**	**0.11**	< 0.032	**0.053**	**0.43**	< 0.039	**0.051 [< 0.026]**	**0.16**
Volatile Organic Compounds (mg/kg)														
Acetone	67-64-1	2.5	i	< 0.0064	0.018	< 0.0062	< 0.0059	< 0.0065	< 0.0069	< 0.0071	< 0.0058	< 1.4	< 0.0055 [< 0.0056]	< 0.0056
Benzene	71-43-2	0.05	h	< 0.00061	< 0.00053	< 0.00059	< 0.00057	< 0.00062	< 0.00066	< 0.00068	< 0.00055	**6.32**	< 0.00053 [< 0.00054]	< 0.00054
Carbon Disulfide	75-15-0	0.0941	i	< 0.00078	< 0.00068	< 0.00076	< 0.00072	< 0.00079	< 0.00084	< 0.00087	< 0.00071	< 0.28	< 0.00067 [< 0.00068]	< 0.00069
Cyclohexane	110-82-7	0.1	h	NA	NA	NA	NA	NA	NA	NA	NA	**4.89**	NA [NA]	NA
Dichloromethane	75-09-2	2	h	0.0093 B	0.011 B	0.0067 B	0.0023 B	0.009 B	0.018 B	0.036 B	0.011 B	< 0.7	0.014 B [0.014 B]	0.014 B
Ethylbenzene	100-41-4	0.05	h	< 0.0009	< 0.00078	< 0.00087	< 0.00083	< 0.00091	< 0.00097	< 0.00099	< 0.00081	**12.3**	< 0.00077 [< 0.00079]	< 0.00079
Isopropylbenzene	98-82-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.943	NA [NA]	NA
m&p-Xylenes	ARC-mpXyl	0.05	h	< 0.0013	< 0.0011	< 0.0013	< 0.0012	< 0.0013	< 0.0014	< 0.0015	< 0.0012	**51.9**	< 0.0011 [< 0.0012]	< 0.0012
Methyl Acetate	79-20-9	2.4	k	NA	NA	NA	NA	NA	NA	NA	NA	< 0.7	NA [NA]	NA
Methylcyclohexane	108-87-2	1160	j	NA	NA	NA	NA	NA	NA	NA	NA	8.78	NA [NA]	NA
o,p-Xylene	136777-61-2	0.05	h	< 0.00056	< 0.00049	< 0.00054	< 0.00052	< 0.00057	< 0.00061	< 0.00062	< 0.00051	NA	< 0.00048 [< 0.00049]	< 0.0005
o-Xylene	95-47-6	0.05	h	NA	NA	NA	NA	NA	NA	NA	NA	**19.1**	NA [NA]	NA
Styrene (Monomer)	100-42-5	0.1	h	< 0.00075	< 0.00065	< 0.00072	< 0.00069	< 0.00076	< 0.00081	< 0.00083	< 0.00067	< 0.28	< 0.00064 [< 0.00065]	< 0.00066
Toluene	108-88-3	0.05	h	< 0.00091	< 0.00079	< 0.00088	< 0.00084	< 0.00092	< 0.00098	< 0.001	< 0.00082	**53.4 D**	< 0.00078 [< 0.00079]	< 0.0008
Total Xylenes	1330-20-7	0.05	h	NA	NA	NA	NA	NA	NA	NA	NA	**71**	NA [NA]	NA
Semi-Volatile Organic Compounds (mg/kg)														
1,1-Biphenyl	92-52-4	60	g	NA	NA	NA	NA	NA	NA	NA	NA	6.43 D	NA [NA]	NA
2,4-Dimethylphenol	105-67-9	0.01	i	< 0.28	< 0.14	< 0.27	< 0.15	< 0.034	< 0.037	< 0.038	< 0.25	< 0.2	< 0.04 [< 0.041]	< 0.15
2-Methylnaphthalene	91-57-6	3.24	b	0.74	0.11 J	1.3	**3.8**	0.13	0.56	< 0.076	0.47	**22.8 D**	0.11 [< 0.036]	1.4
2-Methylphenol	95-48-7	0.5	h	< 0.96	< 0.5	< 0.92	< 0.53	< 0.15	< 0.16	< 0.17	< 0.86	< 0.081	< 0.077 [< 0.078]	< 0.51
3-Methylphenol, 4-Methylphenol	65794-96-9	0.5	h	NA	NA	NA	NA	NA	NA	NA	NA	< 0.081	NA [NA]	NA
4-Methylphenol	106-44-5	0.5	h	< 1.1	< 0.55	< 1	< 0.59	< 0.15	< 0.16	< 0.16	< 0.96	NA	< 0.094 [< 0.095]	< 0.56
4-Nitroaniline	100-01-6	21.9	i	NA	NA	NA	NA	NA	NA	NA	NA	< 0.2	NA [NA]	NA
Acenaphthene	83-32-9	20	b	< 0.084	< 0.043	0.47	0.81	< 0.0067	< 0.0071	< 0.0073	0.3	**66.2 DJ**	< 0.012 [< 0.013]	0.13
Acenaphthylene	208-96-8	29	b	2.3	< 0.024	1.9	< 0.026	0.072	0.068	< 0.0067	1.3	1.15	0.17 [0.052]	< 0.025
Acetophenone	98-86-2	300	i	NA	NA	NA	NA	NA	NA	NA	NA	< 0.2	NA [NA]	NA
Anthracene	120-12-7	0.1	b	**4.2**	< 0.027	**3.5**	**0.58**	0.079	< 0.0086	< 0.0088	**1.3**	**28.1 D**	**0.4 [0.052]**	**0.48**
Benz(a)anthracene	56-55-3	0.25	b	**16**	**0.58**	**11**	**1.2**	**0.37**	0.23	< 0.0062	**7.6**	**19.4 D**	**1.2 [0.29]**	**2.2**
Benzaldehyde	100-52-7	470	k	NA	NA	NA	NA	NA	NA	NA	NA	< 0.2	NA [NA]	NA
Benzo(a)pyrene	50-32-8	0.1	b	**14**	**0.61**	**9.4**	**1.4**	**0.39**	**0.24**	< 0.0074	**7.5**	**14.4 D**	**1.3 [0.26]**	**2.2**
Benzo(b)fluoranthene	205-99-2	18	b	**19**	0.88	13	1.7	0.71	0.42	0.056	10	17.8 D	1.8 [0.36]	2.8
Benzo(g,h,i)perylene	191-24-2	7.5	b	**13**	0.53	**8.1**	1.8	0.32	0.2	< 0.0064	7.1	**8.46 D**	1.1 [0.2]	2.1
Benzo(k)fluoranthene	207-08-9	2.4	b	**7.4**	0.25	**3.5**	0.67	0.21	0.13	< 0.016	**2.5**	**6.97 D**	0.5 [0.1]	0.86

Location ID:		Ecological		PCSB-34	PCSB-35	PCSB-36	PCSB-37	PCSB-38	PCSB-39	PCSB-40	PCSB-41	PCSB-41R	PCSB-42	PCSB-43
Sample Depth (ft):	CAS	Soil Screening		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5-2	0.5	0.5
Date Collected:	Number	Benchmark [1,2]		7/27/2005	8/2/2005	7/27/2005	8/3/2005	7/27/2005	7/27/2005	7/28/2005	7/28/2005	4/22/2019	8/1/2005	8/1/2005
Semi-Volatile Organic Compounds (mg/kg) (cont'd)														
bis(2-Ethylhexyl)phthalate	117-81-7	0.925	i	0.23	0.12	0.41	0.55	0.22	0.39	0.1	0.26	< 0.081	0.17 [0.22]	< 0.096
Butyl benzyl phthalate	85-68-7	0.239	i	< 0.081	< 0.042	< 0.078	< 0.045	< 0.011	< 0.012	< 0.012	< 0.073	< 0.081	< 0.014 [< 0.014]	< 0.043
Carbazole	86-74-8	NA	b	0.75	< 0.031	0.91	< 0.033	0.049	< 0.0083	< 0.0085	< 0.054	9.89 D	0.081 [< 0.012]	< 0.032
Chrysene	218-01-9	4.73	b	**16**	0.7	**11**	1.8	0.59	0.36	< 0.013	**7.1**	**17.7 D**	1.3 [0.27]	1.9
Dibenz(a,h)anthracene	53-70-3	18	b	4.3	0.17	2.9	0.55	0.11	0.076	< 0.0081	2.3	2.69	0.3 [0.036]	0.56
Dibenzofuran	132-64-9	19	j	0.83	< 0.13	0.99	0.84	0.064	0.18	< 0.057	0.22 J	**32.5 D**	0.13 [< 0.061]	0.28
Diethyl phthalate	84-66-2	24.8	g	< 0.055	< 0.029	< 0.053	< 0.031	< 0.0096	< 0.01	< 0.01	< 0.05	< 0.081	< 0.0082 [< 0.0084]	< 0.029
Di-n-butyl phthalate	84-74-2	0.15	g	< 0.045	< 0.023	< 0.043	**0.31**	< 0.0082	< 0.0088	< 0.009	< 0.041	< 0.081	< 0.0077 [< 0.0079]	< 0.024
Di-n-octyl phthalate	117-84-0	709	i	< 0.047	< 0.025	< 0.046	< 0.026	< 0.014	< 0.015	< 0.015	< 0.043	< 0.081	< 0.0081 [< 0.0083]	< 0.025
Fluoranthene	206-44-0	0.1	b	**30**	**1.2**	**20**	**2**	**0.67**	**0.31**	0.049	**15**	**97.9 D**	**2.7 [0.43]**	**3.3**
Fluorene	86-73-7	29	b	1.3	< 0.026	1.4	1.4	< 0.0097	< 0.01	< 0.011	0.23	**48.5 D**	0.18 [< 0.0075]	0.16
Indeno(1,2,3-cd)pyrene	193-39-5	5.9	b	**11**	0.45	**7**	1.2	0.28	0.18	< 0.0075	**6.2**	**9.14 D**	0.87 [0.15]	1.6
Naphthalene	91-20-3	0.0994	b	**1**	< 0.024	**1.8**	**2.1**	**0.13**	**0.27**	< 0.0043	**0.59**	**14.1 D**	0.08 [< 0.0067]	**0.59**
Phenanthrene	85-01-8	0.1	b	**15**	**0.54**	**12**	**2.9**	**0.54**	**0.56**	< 0.0099	**4.4**	**158 D**	**1.9 [0.22]**	**1.8**
Phenol	108-95-2	0.05	h	< 0.31	< 0.16	< 0.3	< 0.17	< 0.067	< 0.072	< 0.073	< 0.28	< 0.081	< 0.034 [< 0.035]	< 0.16
Pyrene	129-00-0	0.1	b	**26**	**0.76**	**17**	**2**	**0.67**	**0.31**	< 0.01	**11**	**61.6 D**	**2.6 [0.41]**	**2.5**
Total PAHs	ARC-TPAH	1	h	**87.7**	**3.64**	**57.8**	**8.52**	**2.66**	**1.636**	0.056	**43.2**	NA	**7.27 [1.466]**	**12.12**

Location ID:		Ecological		PCSB-44	PCSB-45	PCSB-46	PCSB-47	PCSB-48	PCSB-49	PCSB-50	PCSB-51	PCSB-52	PCSB-53	PCSB-54	PCSB-55
Sample Depth (ft):	CAS	Soil Screening		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Date Collected:	Number	Benchmark [1,2]		8/3/2005	8/3/2005	7/27/2005	8/3/2005	8/3/2005	8/3/2005	8/3/2005	8/3/2005	8/2/2005	8/1/2005	8/3/2005	8/3/2005
Metals (mg/kg)															
Aluminum	7429-90-5	50	g	NA	NA [NA]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	7440-36-0	0.27	c	**2.5**	**< 2.1 [3.3]**	< 2.3	**2.6**	< 2.1	< 2.1	< 2.1	**3.8**	< 2.2	< 2.2	**3**	**3.9**
Arsenic	7440-38-2	18	d	**23**	**33 [79]**	7.3	**100**	4.2	7.2	**27**	8.2	18	**22**	**27**	**75**
Barium	7440-39-3	330	b	**750**	140 [130]	31	73	31	46	100	73	140	130	83	**770**
Beryllium	7440-41-7	21	c	< 0.62	< 0.63 [< 0.64]	< 0.68	< 0.65	< 0.63	< 0.62	< 0.64	< 0.63	< 0.65	< 0.65	< 0.71	< 0.65
Cadmium	7440-43-9	0.36	c	**3.3**	**< 0.63 [0.78]**	< 0.68	< 0.65	< 0.63	< 0.62	< 0.64	**1.1**	**0.71**	< 0.65	**0.83**	**3.7**
Calcium	7440-70-2	NA	NA	NA	NA [NA]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	7440-47-3	0.4	e	**21**	**21 [31]**	< 5.7	**26**	**16**	**18**	**15**	**43**	**39**	**25**	**22**	**18**
Cobalt	7440-48-4	13	b	NA	NA [NA]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	7440-50-8	28	a	**220**	**73 [110]**	14	**76**	20	23	**62**	**150**	**73**	**58**	**90**	**250**
Cyanide	57-12-5	0.9	h	NA	NA [NA]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	7439-89-6	200	f	NA	NA [NA]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	7439-92-1	11	a	**5400**	**670 [670]**	6.9	**260**	**110**	**50**	**490**	**180**	**470**	**650**	**240**	**6200**
Magnesium	7439-95-4	NA	NA	NA	NA [NA]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	7439-96-5	220	d	NA	NA [NA]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	7439-97-6	0.1	e	**3.3**	**0.37 [0.37]**	< 0.095	**0.25**	**0.12**	**0.19**	**0.44**	**0.24**	**0.69**	**0.28**	< 0.098	< 0.091
Nickel	7440-02-0	38	d	28	20 [33]	7.6	26	13	26	17	25	23	22	19	27
Potassium	7440-09-7	NA	NA	NA	NA [NA]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	7782-49-2	0.52	d	**2.3**	**< 1.9 [2.6]**	**2.3**	**2**	< 1.9	< 1.9	< 1.9	< 1.9	< 1.9	< 1.9	< 2.1	**2.1**
Silver	7440-22-4	4.2	a	< 2.6	< 2.6 [< 2.7]	< 2.8	< 2.7	< 2.6	< 2.6	< 2.7	< 2.6	< 2.7	< 2.7	< 2.9	< 2.7
Sodium	7440-23-5	NA	NA	NA	NA [NA]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	7440-62-2	2	d	NA	NA [NA]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	7440-66-6	46	a	**2900**	**450 [420]**	15	**220**	**51**	**93**	**390**	**260**	**420**	**340**	**260**	**2700**
Pesticides (mg/kg)															
4,4-DDD	72-54-8	0.758	i	< 0.0052	< 0.0053 [< 0.0053]	< 0.0057	< 0.0054	< 0.0053	< 0.0052	< 0.0053	0.04	< 0.0054	NA	< 0.0059	< 0.0054
4,4-DDE	72-55-9	0.596	i	< 0.0052	< 0.0053 [< 0.0053]	0.014	< 0.0054	< 0.0053	< 0.0052	< 0.0053	0.02	< 0.0054	NA	0.027	< 0.0054
4,4-DDT	50-29-3	0.021	c	0.016	**0.039 [0.03]**	< 0.0057	< 0.0054	< 0.0053	0.011	**0.078**	**0.05**	< 0.0054	NA	**0.059**	< 0.0054
Aldrin	309-00-2	0.0025	h	< 0.0052	< 0.0053 [< 0.0053]	< 0.0057	< 0.0054	< 0.0053	< 0.0052	< 0.0053	< 0.0053	< 0.0054	NA	< 0.0059	< 0.0054
Beta-BHC	319-85-7	0.001	h	< 0.0052	< 0.0053 [< 0.0053]	< 0.0057	< 0.0054	< 0.0053	< 0.0052	< 0.0053	< 0.0053	< 0.0054	NA	< 0.0059	< 0.0054
Chlordane	57-74-9	0.224	i	< 0.01	< 0.011 [< 0.011]	< 0.011	< 0.011	< 0.011	< 0.01	< 0.011	0.047	< 0.011	NA	0.12	< 0.011
Dieldrin	60-57-1	0.0049	c	< 0.0052	< 0.0053 [< 0.0053]	< 0.0057	< 0.0054	< 0.0053	< 0.0052	**0.024**	< 0.0053	< 0.0054	NA	< 0.0059	< 0.0054
Endosulfan I	959-98-8	0.119	i	< 0.0052	< 0.0053 [< 0.0053]	< 0.0057	< 0.0054	< 0.0053	< 0.0052	< 0.0053	< 0.0053	< 0.0054	NA	< 0.0059	< 0.0054
Endosulfan II	33213-65-9	0.119	i	< 0.0052	< 0.0053 [< 0.0053]	< 0.0057	< 0.0054	< 0.0053	< 0.0052	< 0.0053	< 0.0053	< 0.0054	NA	< 0.0059	< 0.0054
Endosulfan sulfate	1031-07-8	0.0358	i	< 0.0052	< 0.0053 [< 0.0053]	< 0.0057	< 0.0054	< 0.0053	< 0.0052	< 0.0053	< 0.0053	< 0.0054	NA	< 0.0059	< 0.0054
Endrin	72-20-8	0.001	h	< 0.0052	< 0.0053 [< 0.0053]	< 0.0057	< 0.0054	< 0.0053	< 0.0052	< 0.0053	< 0.0053	< 0.0054	NA	< 0.0059	< 0.0054
Endrin aldehyde	7421-93-4	0.0105	i	< 0.0052	< 0.0053 [< 0.0053]	< 0.0057	< 0.0054	< 0.0053	< 0.0052	< 0.0053	< 0.0053	< 0.0054	NA	< 0.0059	< 0.0054
Endrin ketone	53494-70-5	0.001	h	< 0.0052	< 0.0053 [< 0.0053]	< 0.0057	< 0.0054	< 0.0053	< 0.0052	< 0.0053	< 0.0053	< 0.0054	NA	< 0.0059	< 0.0054
Heptachlor epoxide	1024-57-3	0.152	i	< 0.0052	< 0.0053 [< 0.0053]	< 0.0057	< 0.0054	< 0.0053	< 0.0052	< 0.0053	< 0.0053	< 0.0054	NA	< 0.0059	< 0.0054
Methoxychlor	72-43-5	0.0199	i	< 0.0052	< 0.0053 [< 0.0053]	< 0.0057	< 0.0054	< 0.0053	< 0.0052	< 0.0053	< 0.0053	< 0.0054	NA	< 0.0059	< 0.0054
Toxaphene	8001-35-2	0.119	i	< 0.026	< 0.026 [< 0.027]	< 0.028	< 0.027	< 0.026	< 0.026	< 0.027	< 0.026	< 0.027	NA	< 0.029	< 0.027
trans-chlordane	5103-74-2	0.0043	NA	NA	NA [NA]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Location ID:		Ecological		PCSB-44	PCSB-45	PCSB-46	PCSB-47	PCSB-48	PCSB-49	PCSB-50	PCSB-51	PCSB-52	PCSB-53	PCSB-54	PCSB-55
Sample Depth (ft):	CAS Number	Soil Screening Benchmark [1,2]		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Date Collected:				8/3/2005	8/3/2005	7/27/2005	8/3/2005	8/3/2005	8/3/2005	8/3/2005	8/3/2005	8/2/2005	8/1/2005	8/3/2005	8/3/2005
Polychlorinated Biphenyls (mg/kg)															
Aroclor 1242	53469-21-9	NA	NA	< 0.026	< 0.026 [< 0.027]	< 0.028	< 0.027	< 0.026	< 0.026	< 0.027	< 0.026	< 0.027	NA	< 0.029	< 0.027
Aroclor 1248	12672-29-6	NA	NA	< 0.026	< 0.026 [< 0.027]	< 0.028	< 0.027	< 0.026	< 0.026	< 0.027	< 0.026	< 0.027	NA	< 0.029	< 0.027
Aroclor 1254	11097-69-1	40	g	< 0.026	< 0.026 [< 0.027]	< 0.028	0.34	< 0.026	< 0.026	< 0.027	< 0.026	< 0.027	NA	0.32	< 0.027
Aroclor 1260	11096-82-5	NA	NA	0.12	0.13 [0.13]	0.046	< 0.027	< 0.026	0.053	0.14	0.12	0.12	NA	< 0.029	0.069
Aroclor 1262	37324-23-5	40	g	NA	NA [NA]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Aroclor PCBs	1336-36-3	0.02	h	**0.12**	**0.13 [0.13]**	**0.046**	**0.34**	< 0.026	**0.053**	**0.14**	**0.12**	**0.12**	NA	**0.32**	**0.069**
Volatile Organic Compounds (mg/kg)															
Acetone	67-64-1	2.5	i	0.028	0.036 [0.022]	< 0.006	0.036	0.3	0.019	< 0.41	< 0.0056	< 0.0057	< 0.0057	< 0.0062	0.024
Benzene	71-43-2	0.05	h	< 0.00053	< 0.00054 [< 0.00054]	< 0.00058	< 0.00055	< 0.0027	< 0.00053	< 0.031	< 0.00054	< 0.00055	< 0.00055	< 0.0006	< 0.00055
Carbon Disulfide	75-15-0	0.0941	i	< 0.00068	< 0.00068 [< 0.00069]	< 0.00074	< 0.00071	< 0.0034	< 0.00068	< 0.049	< 0.00068	< 0.0007	< 0.0007	< 0.00076	< 0.00071
Cyclohexane	110-82-7	0.1	h	NA	NA [NA]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichloromethane	75-09-2	2	h	0.01 B	0.012 B [0.009 B]	0.015 B	0.008 B	0.07 B	0.01 B	0.22 B	0.0026 B	0.013 B	0.017 B	0.0024 B	0.014 B
Ethylbenzene	100-41-4	0.05	h	< 0.00078	< 0.00079 [< 0.00079]	< 0.00085	< 0.00081	< 0.0039	< 0.00078	< 0.06	< 0.00079	< 0.0008	< 0.0008	< 0.00088	< 0.00081
Isopropylbenzene	98-82-8	NA	NA	NA	NA [NA]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
m&p-Xylenes	ARC-mpXyl	0.05	h	< 0.0011	< 0.0012 [< 0.0012]	< 0.0013	< 0.0012	< 0.0058	< 0.0011	< 0.063	< 0.0012	< 0.0012	< 0.0012	< 0.0013	< 0.0012
Methyl Acetate	79-20-9	2.4	k	NA	NA [NA]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylcyclohexane	108-87-2	1160	j	NA	NA [NA]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
o,p-Xylene	136777-61-2	0.05	h	< 0.00049	< 0.00049 [< 0.0005]	< 0.00053	< 0.00051	< 0.0025	< 0.00049	< 0.039	< 0.00049	< 0.0005	< 0.0005	< 0.00055	< 0.00051
o-Xylene	95-47-6	0.05	h	NA	NA [NA]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene (Monomer)	100-42-5	0.1	h	< 0.00065	< 0.00065 [< 0.00066]	< 0.0007	< 0.00067	< 0.0033	< 0.00065	< 0.013	< 0.00065	< 0.00067	< 0.00067	< 0.00073	< 0.00067
Toluene	108-88-3	0.05	h	< 0.00079	< 0.00079 [< 0.0008]	< 0.00086	< 0.00082	< 0.004	< 0.00079	< 0.02	< 0.00079	< 0.00081	< 0.00081	< 0.00089	< 0.00082
Total Xylenes	1330-20-7	0.05	h	NA	NA [NA]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Semi-Volatile Organic Compounds (mg/kg)															
1,1-Biphenyl	92-52-4	60	g	NA	NA [NA]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	105-67-9	0.01	i	< 0.029	< 0.048 [< 0.049]	< 0.052	< 0.031	< 0.03	< 0.029	< 0.049	< 0.15	< 0.15	< 0.15	< 0.16	< 0.05
2-Methylnaphthalene	91-57-6	3.24	b	0.093	0.68 [0.52]	1.3	0.18	< 0.06	< 0.059	1.4	0.33	0.35	1.5	1.3	0.46
2-Methylphenol	95-48-7	0.5	h	< 0.13	< 0.17 [< 0.17]	< 0.18	< 0.14	< 0.13	< 0.13	< 0.17	< 0.5	< 0.51	< 0.51	< 0.56	< 0.17
3-Methylphenol, 4-Methylphenol	65794-96-9	0.5	h	NA	NA [NA]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Methylphenol	106-44-5	0.5	h	< 0.13	< 0.19 [< 0.19]	< 0.2	< 0.13	< 0.13	< 0.13	< 0.19	< 0.56	< 0.57	< 0.57	< 0.62	< 0.19
4-Nitroaniline	100-01-6	21.9	i	NA	NA [NA]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	83-32-9	20	b	0.059	0.079 [0.14]	0.082	0.057	< 0.0058	< 0.0057	1.9	< 0.044	0.35	< 0.045	0.28	0.48
Acenaphthylene	208-96-8	29	b	0.075	0.077 [0.13]	0.14	0.087	< 0.0053	0.035	0.32	0.4	0.21	< 0.025	0.61	0.09
Acetophenone	98-86-2	300	i	NA	NA [NA]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	120-12-7	0.1	b	**0.37**	**0.28 [0.5]**	**0.13**	**0.13**	< 0.0069	0.044	**1.5**	**0.59**	**1.7**	**0.39**	**1.5**	**1.5**
Benz(a)anthracene	56-55-3	0.25	b	**1.6**	**0.9 [1.8]**	**0.48**	**0.54**	0.052	0.14	**2.1**	**2.2**	**7.5**	**1.3**	**4.9**	**3.8**
Benzaldehyde	100-52-7	470	k	NA	NA [NA]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	50-32-8	0.1	b	**1.6**	**0.89 [1.6]**	**0.3**	**0.53**	0.059	**0.15**	**2.1**	**2**	**6.7**	**1.4**	**3.6**	**3.2**
Benzo(b)fluoranthene	205-99-2	18	b	2.1	1.2 [2]	0.67	0.79	0.069	0.2	2.8	2.9	9.5	1.6	5.8	4.2
Benzo(g,h,i)perylene	191-24-2	7.5	b	1.1	0.74 [1.1]	0.33	0.43	0.055	0.19	1.6	2	4.1	1.4	2.7	2.1
Benzo(k)fluoranthene	207-08-9	2.4	b	0.83	0.43 [0.9]	0.21	0.27	< 0.012	0.066	1.1	1	2	0.73	1.6	1.6

Location ID:		Ecological		PCSB-44	PCSB-45	PCSB-46	PCSB-47	PCSB-48	PCSB-49	PCSB-50	PCSB-51	PCSB-52	PCSB-53	PCSB-54	PCSB-55
Sample Depth (ft):	CAS	Soil Screening		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Date Collected:	Number	Benchmark [1,2]		8/3/2005	8/3/2005	7/27/2005	8/3/2005	8/3/2005	8/3/2005	8/3/2005	8/3/2005	8/2/2005	8/1/2005	8/3/2005	8/3/2005
Semi-Volatile Organic Compounds (mg/kg) (cont'd)															
bis(2-Ethylhexyl)phthalate	117-81-7	0.925	i	0.06	0.039 [0.038]	0.23	0.059	< 0.022	0.039	0.12	0.15	< 0.097	0.18	**1.1**	< 0.033
Butyl benzyl phthalate	85-68-7	0.239	i	< 0.0094	< 0.014 [< 0.014]	< 0.015	< 0.0098	< 0.0095	< 0.0094	< 0.014	< 0.042	< 0.043	< 0.043	**0.31**	< 0.015
Carbazole	86-74-8	NA	b	0.12	0.098 [0.18]	0.085	0.068	< 0.0067	0.035	< 0.011	0.13	0.4	0.14	0.52	0.75
Chrysene	218-01-9	4.73	b	1.6	0.95 [1.6]	0.76	0.6	0.065	0.16	2.1	2.2	**7.3**	1.6	4.5	3.9
Dibenz(a,h)anthracene	53-70-3	18	b	0.39	0.29 [0.47]	0.15	0.13	< 0.0064	< 0.0064	0.55	0.63	1.9	0.33	1.1	0.76
Dibenzofuran	132-64-9	19	j	0.075	0.098 [0.17]	0.55	0.074	< 0.045	< 0.045	0.92	0.25	0.27	0.27	0.81	0.48
Diethyl phthalate	84-66-2	24.8	g	< 0.0082	< 0.0096 [< 0.0097]	< 0.01	< 0.0085	< 0.0083	< 0.0082	< 0.0097	< 0.029	< 0.03	< 0.03	< 0.032	< 0.0099
Di-n-butyl phthalate	84-74-2	0.15	g	0.042	0.042 [< 0.0079]	0.079	< 0.0073	< 0.0071	< 0.007	< 0.0079	0.14 B	< 0.024	< 0.024	**0.19 B**	0.054
Di-n-octyl phthalate	117-84-0	709	i	< 0.012	< 0.0083 [< 0.0084]	< 0.0089	< 0.012	< 0.012	< 0.012	< 0.0084	< 0.025	< 0.025	< 0.025	< 0.028	< 0.0086
Fluoranthene	206-44-0	0.1	b	**2.3**	**1.7 [3.7]**	**0.74**	**1**	0.098	**0.26**	**4.5**	**4.1**	**13**	**2.4**	**9.4**	**6.4**
Fluorene	86-73-7	29	b	0.062	0.096 [0.22]	< 0.0096	0.053	< 0.0084	< 0.0083	1.9	< 0.027	0.48	0.2	0.78	0.43
Indeno(1,2,3-cd)pyrene	193-39-5	5.9	b	0.98	0.67 [1]	0.29	0.36	0.037	0.11	1.5	1.6	3.9	1	2.5	2
Naphthalene	91-20-3	0.0994	b	**0.1**	**0.25 [0.25]**	**0.86**	**0.17**	< 0.0034	< 0.0034	**0.98**	**0.36**	**0.22**	**0.8**	**1.3**	**0.54**
Phenanthrene	85-01-8	0.1	b	**1.4**	**1.1 [2.1]**	**1.4**	**0.63**	0.067	**0.17**	**4.5**	**2.1**	**5.6**	**1.6**	**7.3**	**5.2**
Phenol	108-95-2	0.05	h	< 0.057	< 0.053 [< 0.054]	< 0.058	< 0.06	< 0.058	< 0.057	< 0.054	< 0.16	< 0.16	< 0.16	< 0.18	< 0.055
Pyrene	129-00-0	0.1	b	**2.1**	**1.3 [2.4]**	**0.54**	**0.95**	**0.13**	**0.26**	**3.3**	**3.3**	**11**	**2**	**7.6**	**5.5**
Total PAHs	ARC-TPAH	1	h	**9.1**	**5.33 [9.37]**	**2.86**	**3.22**	0.282	0.826	**12.25**	**12.53**	**38.8**	**7.96**	**24**	**19.46**

Location ID:		Ecological		PCSB-56	PCSB-57	PCSB-58	PCSB-59	PCSB-60	PCTP-61	PCTP-62	PCTP-63	PCTP-64	PCTP-65	PCTP-66
Sample Depth (ft):	CAS Number	Soil Screening Benchmark [1,2]		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Date Collected:				8/15/2005	8/15/2005	8/15/2005	8/15/2005	8/15/2005	9/8/2005	9/8/2005	9/8/2005	9/8/2005	9/8/2005	9/8/2005
Metals (mg/kg)														
Aluminum	7429-90-5	50	g	NA	NA	NA	NA	NA [NA]	NA [NA]	NA	NA	NA	NA	NA
Antimony	7440-36-0	0.27	c	**3.5**	**4**	**5.2**	**3.3**	**2.7 [3]**	< 2.2 [< 2.2]	**2.3**	**5.4**	**2.5**	< 2.2	< 2
Arsenic	7440-38-2	18	d	13	**19**	**28**	**39**	**35 [32]**	12 [11]	13	9.5	17	6.7	2.8
Barium	7440-39-3	330	b	63	250	61	190	140 [130]	96 [90]	140	180	140	58	15
Beryllium	7440-41-7	21	c	< 0.67	< 0.68	< 0.66	< 0.66	< 0.65 [< 0.65]	0.86 [0.79]	< 0.67	0.74	0.76	< 0.67	< 0.61
Cadmium	7440-43-9	0.36	c	**0.76**	**1.7**	< 0.66	**1.5**	**2.5 [2.2]**	< 0.67 [< 0.67]	< 0.67	**1.4**	**2.2**	< 0.67	< 0.61
Calcium	7440-70-2	NA	NA	NA	NA	NA	NA	NA [NA]	NA [NA]	NA	NA	NA	NA	NA
Chromium	7440-47-3	0.4	e	**55**	**29**	**53**	**31**	**24 [23]**	**25 [21]**	**16**	**24**	**25**	**9.7**	< 5.1
Cobalt	7440-48-4	13	b	NA	NA	NA	NA	NA [NA]	NA [NA]	NA	NA	NA	NA	NA
Copper	7440-50-8	28	a	**100**	**210**	**94**	**130**	**85 [75]**	**83 [73]**	**65**	**170**	**170**	**58**	12
Cyanide	57-12-5	0.9	h	NA	NA	NA	NA	NA [NA]	NA [NA]	NA	NA	NA	NA	NA
Iron	7439-89-6	200	f	NA	NA	NA	NA	NA [NA]	NA [NA]	NA	NA	NA	NA	NA
Lead	7439-92-1	11	a	**130**	**1600**	**180**	**960**	**710 [600]**	**680 [1100]**	**400**	**810**	**230**	**150**	**30**
Magnesium	7439-95-4	NA	NA	NA	NA	NA	NA	NA [NA]	NA [NA]	NA	NA	NA	NA	NA
Manganese	7439-96-5	220	d	NA	NA	NA	NA	NA [NA]	NA [NA]	NA	NA	NA	NA	NA
Mercury	7439-97-6	0.1	e	**0.36**	**1.3**	**0.24**	**0.66**	**0.46 [0.52]**	**0.99 [4.8]**	**0.55**	**1.2**	**0.27**	**0.38**	< 0.085
Nickel	7440-02-0	38	d	**49**	33	35	27	21 [25]	21 [19]	12	21	26	20	< 5.1
Potassium	7440-09-7	NA	NA	NA	NA	NA	NA	NA [NA]	NA [NA]	NA	NA	NA	NA	NA
Selenium	7782-49-2	0.52	d	**4**	**4.8**	**6.4**	**3.1**	**2.8 [2.9]**	**2.7 [2.7]**	< 2	**2**	**4**	< 2	< 1.8
Silver	7440-22-4	4.2	a	< 2.8	< 2.8	< 2.7	< 2.7	< 2.7 [< 2.7]	< 2.8 [< 2.8]	< 2.8	< 2.6	< 2.8	< 2.8	< 2.6
Sodium	7440-23-5	NA	NA	NA	NA	NA	NA	NA [NA]	NA [NA]	NA	NA	NA	NA	NA
Vanadium	7440-62-2	2	d	NA	NA	NA	NA	NA [NA]	NA [NA]	NA	NA	NA	NA	NA
Zinc	7440-66-6	46	a	**190**	**960**	**51**	**1300**	**3700 [2500]**	**290 [240]**	**160**	**650**	**430**	**220**	20
Pesticides (mg/kg)														
4,4-DDD	72-54-8	0.758	i	< 0.0056	< 0.0057	< 0.0055	< 0.0055	< 0.0054 [< 0.0054]	< 0.0056 [< 0.0056]	NA	< 0.0053	< 0.0056	< 0.0056	< 0.0034
4,4-DDE	72-55-9	0.596	i	0.013	< 0.0057	0.013	< 0.0055	< 0.0054 [< 0.0054]	< 0.0056 [< 0.0056]	NA	< 0.0053	< 0.0056	< 0.0056	< 0.0034
4,4-DDT	50-29-3	0.021	c	< 0.0056	**0.043**	**0.057**	**0.029**	< 0.0054 [< 0.0054]	< 0.0056 [< 0.0056]	NA	< 0.0053	< 0.0056	< 0.0056	< 0.0034
Aldrin	309-00-2	0.0025	h	< 0.0056	< 0.0057	< 0.0055	< 0.0055	< 0.0054 [< 0.0054]	< 0.0056 [< 0.0056]	NA	< 0.0053	< 0.0056	< 0.0056	< 0.0034
Beta-BHC	319-85-7	0.001	h	< 0.0056	< 0.0057	< 0.0055	< 0.0055	< 0.0054 [< 0.0054]	< 0.0056 [< 0.0056]	NA	< 0.0053	< 0.0056	< 0.0056	< 0.0034
Chlordane	57-74-9	0.224	i	< 0.011	0.056	< 0.011	0.041	< 0.011 [< 0.011]	0.041 [0.044]	NA	< 0.011	< 0.011	< 0.011	< 0.0068
Dieldrin	60-57-1	0.0049	c	**0.032**	< 0.0057	< 0.0055	< 0.0055	< 0.0054 [< 0.0054]	< 0.0056 [< 0.0056]	NA	< 0.0053	< 0.0056	< 0.0056	< 0.0034
Endosulfan I	959-98-8	0.119	i	< 0.0056	< 0.0057	< 0.0055	< 0.0055	< 0.0054 [< 0.0054]	< 0.0056 [< 0.0056]	NA	< 0.0053	< 0.0056	< 0.0056	< 0.0034
Endosulfan II	33213-65-9	0.119	i	< 0.0056	< 0.0057	< 0.0055	< 0.0055	< 0.0054 [< 0.0054]	< 0.0056 [< 0.0056]	NA	< 0.0053	< 0.0056	< 0.0056	< 0.0034
Endosulfan sulfate	1031-07-8	0.0358	i	< 0.0056	< 0.0057	< 0.0055	< 0.0055	< 0.0054 [< 0.0054]	< 0.0056 [< 0.0056]	NA	< 0.0053	< 0.0056	< 0.0056	< 0.0034
Endrin	72-20-8	0.001	h	< 0.0056	< 0.0057	< 0.0055	< 0.0055	< 0.0054 [< 0.0054]	< 0.0056 [< 0.0056]	NA	< 0.0053	< 0.0056	< 0.0056	< 0.0034
Endrin aldehyde	7421-93-4	0.0105	i	< 0.0056	< 0.0057	< 0.0055	< 0.0055	< 0.0054 [< 0.0054]	< 0.0056 [< 0.0056]	NA	< 0.0053	< 0.0056	< 0.0056	< 0.0034
Endrin ketone	53494-70-5	0.001	h	< 0.0056	< 0.0057	< 0.0055	< 0.0055	< 0.0054 [< 0.0054]	< 0.0056 [< 0.0056]	NA	< 0.0053	< 0.0056	< 0.0056	< 0.0034
Heptachlor epoxide	1024-57-3	0.152	i	< 0.0056	< 0.0057	< 0.0055	< 0.0055	< 0.0054 [< 0.0054]	< 0.0056 [< 0.0056]	NA	< 0.0053	< 0.0056	< 0.0056	< 0.0034
Methoxychlor	72-43-5	0.0199	i	< 0.0056	< 0.0057	< 0.0055	< 0.0055	< 0.0054 [< 0.0054]	< 0.0056 [< 0.0056]	NA	< 0.0053	< 0.0056	< 0.0056	< 0.0034
Toxaphene	8001-35-2	0.119	i	< 0.028	< 0.028	< 0.027	< 0.027	< 0.027 [< 0.027]	< 0.028 [< 0.028]	NA	< 0.026	< 0.028	< 0.028	< 0.017
trans-chlordane	5103-74-2	0.0043	NA	NA	NA	NA	NA	NA [NA]	NA [NA]	NA	NA	NA	NA	NA

Location ID:		Ecological		PCSB-56	PCSB-57	PCSB-58	PCSB-59	PCSB-60	PCTP-61	PCTP-62	PCTP-63	PCTP-64	PCTP-65	PCTP-66
Sample Depth (ft):	CAS Number	Soil Screening Benchmark [1,2]		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Date Collected:				8/15/2005	8/15/2005	8/15/2005	8/15/2005	8/15/2005	9/8/2005	9/8/2005	9/8/2005	9/8/2005	9/8/2005	9/8/2005
Polychlorinated Biphenyls (mg/kg)														
Aroclor 1242	53469-21-9	NA	NA	< 0.028	< 0.028	< 0.027	< 0.027	< 0.027 [< 0.027]	< 0.028 [< 0.028]	< 0.028	< 0.026	< 0.028	< 0.028	< 0.017
Aroclor 1248	12672-29-6	NA	NA	1.7	< 0.028	< 0.027	< 0.027	< 0.027 [< 0.027]	< 0.028 [< 0.028]	0.15	0.11	< 0.028	< 0.028	< 0.017
Aroclor 1254	11097-69-1	40	g	< 0.028	0.11	0.13	0.21	0.5 [0.25]	< 0.028 [< 0.028]	< 0.028	< 0.026	< 0.028	< 0.028	< 0.017
Aroclor 1260	11096-82-5	NA	NA	< 0.028	< 0.028	< 0.027	< 0.027	< 0.027 [< 0.027]	1.3 [0.54]	0.43	0.12	0.36	< 0.028	< 0.017
Aroclor 1262	37324-23-5	40	g	NA	NA	NA	NA	NA [NA]	NA [NA]	NA	NA	NA	NA	NA
Total Aroclor PCBs	1336-36-3	0.02	h	**1.7**	**0.11**	**0.13**	**0.21**	**0.5 [0.25]**	**1.3 [0.54]**	**0.58**	**0.23**	**0.36**	< 0.028	< 0.017
Volatile Organic Compounds (mg/kg)														
Acetone	67-64-1	2.5	i	< 0.006	< 0.006	< 0.0058	< 0.0058	0.02 [0.019]	< 0.0038 [< 0.006]	< 0.0038	< 0.0036	< 0.0059	< 0.0059	< 0.79
Benzene	71-43-2	0.05	h	< 0.00057	< 0.00058	< 0.00056	< 0.00056	< 0.00055 [< 0.00055]	< 0.00027 [< 0.00057]	< 0.00027	< 0.00026	< 0.00057	< 0.00057	**29**
Carbon Disulfide	75-15-0	0.0941	i	< 0.00073	< 0.00074	< 0.00071	< 0.00071	< 0.00071 [< 0.00071]	< 0.00057 [< 0.00073]	< 0.00057	< 0.00054	< 0.00072	< 0.00072	< 0.095
Cyclohexane	110-82-7	0.1	h	NA	NA	NA	NA	NA [NA]	NA [NA]	NA	NA	NA	NA	NA
Dichloromethane	75-09-2	2	h	0.041 B	0.034 B	0.018 B	0.019 B	0.018 B [0.017 B]	0.011 B [0.019 B]	0.0095 B	0.0078 B	0.0087 B	0.011 B	< 0.22
Ethylbenzene	100-41-4	0.05	h	< 0.00084	< 0.00085	< 0.00082	< 0.00082	< 0.00081 [< 0.00081]	< 0.00076 [< 0.00084]	< 0.00075	< 0.00071	< 0.00083	< 0.00083	< 0.12
Isopropylbenzene	98-82-8	NA	NA	NA	NA	NA	NA	NA [NA]	NA [NA]	NA	NA	NA	NA	NA
m&p-Xylenes	ARC-mpXyl	0.05	h	< 0.0012	< 0.0013	< 0.0012	< 0.0012	< 0.0012 [< 0.0012]	< 0.00091 [< 0.0012]	< 0.0009	< 0.00085	< 0.0012	< 0.0012	**8.2**
Methyl Acetate	79-20-9	2.4	k	NA	NA	NA	NA	NA [NA]	NA [NA]	NA	NA	NA	NA	NA
Methylcyclohexane	108-87-2	1160	j	NA	NA	NA	NA	NA [NA]	NA [NA]	NA	NA	NA	NA	NA
o,p-Xylene	136777-61-2	0.05	h	< 0.00053	< 0.00053	< 0.00051	< 0.00051	< 0.00051 [< 0.00051]	< 0.0002 [< 0.00053]	< 0.00019	< 0.00018	< 0.00052	< 0.00052	**2.2**
o-Xylene	95-47-6	0.05	h	NA	NA	NA	NA	NA [NA]	NA [NA]	NA	NA	NA	NA	NA
Styrene (Monomer)	100-42-5	0.1	h	< 0.0007	< 0.0007	< 0.00068	< 0.00068	< 0.00067 [< 0.00067]	< 0.00017 [< 0.0007]	< 0.00017	< 0.00016	< 0.00069	< 0.00069	**2.4**
Toluene	108-88-3	0.05	h	< 0.00085	< 0.00086	< 0.00083	< 0.00083	< 0.00082 [< 0.00082]	< 0.00021 [< 0.00085]	< 0.0002	< 0.00019	< 0.00084	< 0.00084	**22**
Total Xylenes	1330-20-7	0.05	h	NA	NA	NA	NA	NA [NA]	NA [NA]	NA	NA	NA	NA	NA
Semi-Volatile Organic Compounds (mg/kg)														
1,1-Biphenyl	92-52-4	60	g	NA	NA	NA	NA	NA [NA]	NA [NA]	NA	NA	NA	NA	NA
2,4-Dimethylphenol	105-67-9	0.01	i	< 0.052	< 0.16	< 0.051	< 0.051	< 0.05 [< 0.05]	< 0.052 [< 0.052]	< 1.5	< 0.48	< 0.51	< 0.15	< 94
2-Methylnaphthalene	91-57-6	3.24	b	0.11	0.38	0.68	0.43	0.55 [0.49]	0.13 [0.09]	**5.8**	< 0.45	< 0.48	< 0.14	**1300**
2-Methylphenol	95-48-7	0.5	h	< 0.18	< 0.54	< 0.17	< 0.17	< 0.17 [< 0.17]	< 0.18 [< 0.18]	< 5.3	< 1.7	< 1.8	< 0.53	< 320
3-Methylphenol, 4-Methylphenol	65794-96-9	0.5	h	NA	NA	NA	NA	NA [NA]	NA [NA]	NA	NA	NA	NA	NA
4-Methylphenol	106-44-5	0.5	h	< 0.2	< 0.6	< 0.19	< 0.19	< 0.19 [< 0.19]	< 0.2 [< 0.2]	< 5.9	< 1.9	< 2	< 0.59	**180 J**
4-Nitroaniline	100-01-6	21.9	i	NA	NA	NA	NA	NA [NA]	NA [NA]	NA	NA	NA	NA	NA
Acenaphthene	83-32-9	20	b	< 0.016	0.16	0.13	0.23	0.18 [0.23]	0.16 [0.13]	2.2	1.8	0.41	< 0.046	**180**
Acenaphthylene	208-96-8	29	b	0.039	0.8	0.074	0.1	0.15 [0.13]	0.048 [0.042]	4.5	0.51	1.2	0.54	**2000**
Acetophenone	98-86-2	300	i	NA	NA	NA	NA	NA [NA]	NA [NA]	NA	NA	NA	NA	NA
Anthracene	120-12-7	0.1	b	**0.11**	**1.6**	**0.33**	**0.39**	**0.4 [0.4]**	**0.38 [0.34]**	**32**	**8.7**	**2.6**	**1.2**	**1800**
Benz(a)anthracene	56-55-3	0.25	b	**0.43**	**7.7**	**1.1**	**1.3**	**1.6 [1.5]**	**0.93 [0.95]**	**53**	**18**	**10**	**8.4**	**1800**
Benzaldehyde	100-52-7	470	k	NA	NA	NA	NA	NA [NA]	NA [NA]	NA	NA	NA	NA	NA
Benzo(a)pyrene	50-32-8	0.1	b	**0.43**	**7.2**	**0.92**	**1.3**	**1.6 [1.4]**	**0.89 [0.95]**	**34**	**14**	**10**	**9.8**	**1300**
Benzo(b)fluoranthene	205-99-2	18	b	0.75	12	1.8	1.8	2.3 [1.8]	1.2 [1.3]	**41**	**20**	15	12	**1600**
Benzo(g,h,i)perylene	191-24-2	7.5	b	0.37	3.6	0.59	0.94	1.1 [1]	0.66 [0.73]	**19**	**9.8**	**8.3**	**8.5**	**850**
Benzo(k)fluoranthene	207-08-9	2.4	b	0.27	**2.8**	0.47	0.66	0.71 [0.75]	0.47 [0.52]	**18**	**5.1**	**5.3**	**2.9**	**690**

Location ID:		Ecological		PCSB-56	PCSB-57	PCSB-58	PCSB-59	PCSB-60	PCTP-61	PCTP-62	PCTP-63	PCTP-64	PCTP-65	PCTP-66
Sample Depth (ft):	CAS	Soil Screening		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Date Collected:	Number	Benchmark [1,2]		8/15/2005	8/15/2005	8/15/2005	8/15/2005	8/15/2005	9/8/2005	9/8/2005	9/8/2005	9/8/2005	9/8/2005	9/8/2005
Semi-Volatile Organic Compounds (mg/kg) (cont'd)														
bis(2-Ethylhexyl)phthalate	117-81-7	0.925	i	0.59	0.48	0.61	0.19	0.34 [0.34]	0.15 [0.1]	< 1	**1.1**	0.85	< 0.1	< 61
Butyl benzyl phthalate	85-68-7	0.239	i	**0.34**	**0.39**	0.1	< 0.015	0.12 [0.16]	< 0.015 [< 0.015]	< 0.45	< 0.14	**0.7**	< 0.045	< 27
Carbazole	86-74-8	NA	b	0.037	0.78	0.12	0.17	0.19 [0.15]	0.14 [0.12]	12	3.2	0.87	0.19	970
Chrysene	218-01-9	4.73	b	0.57	**6.8**	1.3	1.3	1.6 [1.2]	0.97 [0.98]	**41**	**16**	**10**	**7.8**	**1500**
Dibenz(a,h)anthracene	53-70-3	18	b	0.099	1.4	0.3	0.4	0.44 [0.43]	0.21 [0.28]	7.5	4	2.7	2.5	**270**
Dibenzofuran	132-64-9	19	j	0.053	0.36	0.3	0.17	0.2 [0.19]	0.22 [0.16]	14	2.1	0.46 J	0.11 J	**1600**
Diethyl phthalate	84-66-2	24.8	g	0.043	< 0.031	< 0.01	0.041	< 0.0099 [0.064]	< 0.01 [< 0.01]	< 0.31	< 0.096	< 0.1	< 0.031	< 19
Di-n-butyl phthalate	84-74-2	0.15	g	0.074 B	< 0.025	0.046 B	< 0.0082	0.067 B [0.11 B]	0.045 [< 0.0084]	< 0.25	< 0.079	< 0.083	< 0.025	< 15
Di-n-octyl phthalate	117-84-0	709	i	< 0.0088	< 0.027	< 0.0087	< 0.0087	< 0.0086 [< 0.0086]	< 0.0088 [< 0.0088]	< 0.26	< 0.083	< 0.087	< 0.026	< 16
Fluoranthene	206-44-0	0.1	b	**0.5**	**11**	**1.5**	**1.4**	**1.9 [1.6]**	**1.8 [1.7]**	**97**	**31**	**18**	**9.9**	**3800**
Fluorene	86-73-7	29	b	0.038	0.51	0.16	0.23	0.25 [0.25]	0.12 [0.099]	**31**	4.4	0.97	0.24	**2600**
Indeno(1,2,3-cd)pyrene	193-39-5	5.9	b	0.33	3.2	0.56	0.85	0.98 [0.87]	0.57 [0.63]	**18**	**9.1**	**7**	**6.8**	**750**
Naphthalene	91-20-3	0.0994	b	**0.13**	**0.88**	**0.8**	**0.24**	**0.3 [0.27]**	**0.12 [0.1]**	**12**	< 0.083	**0.43**	**0.28**	**6000**
Phenanthrene	85-01-8	0.1	b	**0.43**	**5.4**	**1.7**	**1.7**	**1.6 [1.5]**	**1.5 [1.2]**	**140**	**33**	**10**	**4.8**	**7700**
Phenol	108-95-2	0.05	h	< 0.057	< 0.17	< 0.056	< 0.056	< 0.055 [< 0.055]	< 0.057 [< 0.057]	< 1.7	< 0.53	< 0.56	< 0.17	**210**
Pyrene	129-00-0	0.1	b	**0.86**	**13**	**2.2**	**2.9**	**4 [3.1]**	**1.8 [2]**	**110**	**42**	**22**	**13**	**4400**
Total PAHs	ARC-TPAH	1	h	**2.879**	**41.1**	**6.45**	**7.61**	**9.23 [7.95]**	**5.24 [5.61]**	**212.5**	**86.2**	**60**	**50.2**	**7910**

Location ID:		Ecological		PCTP-66R		PCTP-66R-HC	PCTP-67	PCTP-68	PCTP-69	PCTP-70	PCTP-71	PCTP-72
Sample Depth (ft):	CAS	Soil Screening		0-0.5	0.5-2	0-2	0.5	0.5	0.5	0.5	0.5	0.5
Date Collected:	Number	Benchmark [1,2]		4/24/2019	4/24/2019	4/4/2019	9/12/2005	9/9/2005	9/9/2005	9/9/2005	9/9/2005	9/9/2005
Metals (mg/kg)												
Aluminum	7429-90-5	50	g	**7560 J [6890 J]**	**8310 J**	**6260**	NA [NA]	NA	NA	NA	NA	NA
Antimony	7440-36-0	0.27	c	**2.8 J [3.0 J]**	< 2.2 UJ	**2.6**	**9.9 [6.9]**	< 2.1	< 2.1	< 2.2	< 2.1	< 2.3
Arsenic	7440-38-2	18	d	**66.6 [60.7]**	6.7	**35.7**	**27 [31]**	5.8	**44**	**120**	**100**	7.9
Barium	7440-39-3	330	b	204 J [99.0 J]	42.9 J	79.4	150 [150]	51	71	88	70	87
Beryllium	7440-41-7	21	c	1.1 [0.90]	0.60	0.68	< 0.67 [< 0.66]	< 0.63	0.76	< 0.67	0.77	0.8
Cadmium	7440-43-9	0.36	c	**3.0 [2.8]**	0.10 J	**1.9**	**4.8 [3.4]**	< 0.63	**0.69**	< 0.67	< 0.62	< 0.68
Calcium	7440-70-2	NA	NA	8670 J [5280 J]	527 J	3170	NA [NA]	NA	NA	NA	NA	NA
Chromium	7440-47-3	0.4	e	**23.2 [23.9]**	**19.2**	**19.8**	**40 [48]**	**12**	**17**	**15**	**14**	**25**
Cobalt	7440-48-4	13	b	6.0 J [6.4]	7.5	5.8	NA [NA]	NA	NA	NA	NA	NA
Copper	7440-50-8	28	a	**217 [217]**	17.2	**127**	**480 [200]**	**110**	**110**	**33**	**46**	**75**
Cyanide	57-12-5	0.9	h	**0.54 J [1.1 J]**	**1.2 J**	0.14 J	NA [NA]	NA	NA	NA	NA	NA
Iron	7439-89-6	200	f	**12400 [13600]**	**24400**	**18900**	NA [NA]	NA	NA	NA	NA	NA
Lead	7439-92-1	11	a	**392 [386]**	**26.8**	**323**	**470 [500]**	**58**	**290**	**71**	**370**	**280**
Magnesium	7439-95-4	NA	NA	3560 J [2390 J]	1430 J	1640	NA [NA]	NA	NA	NA	NA	NA
Manganese	7439-96-5	220	d	**595 [375]**	209	**279**	NA [NA]	NA	NA	NA	NA	NA
Mercury	7439-97-6	0.1	e	**0.20 J [0.34 J]**	0.030 J	**0.23**	< 0.093 [< 0.092]	< 0.088	**0.29**	**0.27**	**0.14**	**0.93**
Nickel	7440-02-0	38	d	32.1 [32.3]	12.1	23.8	**54 [41]**	13	21	18	13	18
Potassium	7440-09-7	NA	NA	890 J [858 J]	1430	740 J	NA [NA]	NA	NA	NA	NA	NA
Selenium	7782-49-2	0.52	d	**0.88 J [< 2.6]**	< 4.4	< 2.3	**7 [4.9]**	**3**	**2.6**	< 2	< 1.9	< 2
Silver	7440-22-4	4.2	a	0.22 J [0.22 J]	< 1.1	0.33 J	< 2.8 [< 2.7]	< 2.6	< 2.6	< 2.8	< 2.6	< 2.8
Sodium	7440-23-5	NA	NA	180 J [375 J]	< 1100	130 J	NA [NA]	NA	NA	NA	NA	NA
Vanadium	7440-62-2	2	d	**27.1 [28.4]**	**22.9**	**20.5**	NA [NA]	NA	NA	NA	NA	NA
Zinc	7440-66-6	46	a	**490 J [501 J]**	**60.0 J**	**339**	**860 [970]**	**72**	**220**	**270**	**180**	**190**
Pesticides (mg/kg)												
4,4-DDD	72-54-8	0.758	i	< 0.00075 [< 0.00078]	< 0.00069	< 0.00078	< 0.028 [< 0.027]	< 0.0035	< 0.0053	NA	< 0.0052	< 0.0057
4,4-DDE	72-55-9	0.596	i	0.0047 J [0.0047 J]	< 0.00069	0.0030	< 0.028 [< 0.027]	< 0.0035	< 0.0053	NA	< 0.0052	0.0081
4,4-DDT	50-29-3	0.021	c	**0.0184 J [0.0222]**	< 0.00069	0.0113	**< 0.028 [0.073]**	< 0.0035	< 0.0053	NA	< 0.0052	< 0.0057
Aldrin	309-00-2	0.0025	h	< 0.00075 [< 0.00078]	< 0.00069	< 0.00078	< 0.028 [< 0.027]	< 0.0035	< 0.0053	NA	< 0.0052	< 0.0057
Beta-BHC	319-85-7	0.001	h	< 0.00075 [< 0.00078]	< 0.00069	< 0.00078	< 0.028 [< 0.027]	< 0.0035	< 0.0053	NA	< 0.0052	< 0.0057
Chlordane	57-74-9	0.224	i	NA [NA]	NA	NA	< 0.056 [< 0.055]	< 0.007	< 0.011	NA	< 0.01	0.056
Dieldrin	60-57-1	0.0049	c	< 0.00075 UJ [0.0043 J]	< 0.00069	< 0.00078	< 0.028 [< 0.027]	< 0.0035	< 0.0053	NA	< 0.0052	< 0.0057
Endosulfan I	959-98-8	0.119	i	< 0.00075 [< 0.00078]	< 0.00069	< 0.00078	< 0.028 [< 0.027]	< 0.0035	< 0.0053	NA	< 0.0052	< 0.0057
Endosulfan II	33213-65-9	0.119	i	< 0.00075 [< 0.00078]	< 0.00069	< 0.00078	< 0.028 [< 0.027]	< 0.0035	< 0.0053	NA	< 0.0052	< 0.0057
Endosulfan sulfate	1031-07-8	0.0358	i	0.0136 J [< 0.00078 UJ]	< 0.00069	< 0.00078	< 0.028 [< 0.027]	< 0.0035	< 0.0053	NA	< 0.0052	< 0.0057
Endrin	72-20-8	0.001	h	< 0.00075 [< 0.00078]	< 0.00069	< 0.00078	< 0.028 [< 0.027]	< 0.0035	< 0.0053	NA	< 0.0052	< 0.0057
Endrin aldehyde	7421-93-4	0.0105	i	< 0.00075 [< 0.00078]	< 0.00069	< 0.00078	< 0.028 [< 0.027]	< 0.0035	< 0.0053	NA	< 0.0052	< 0.0057
Endrin ketone	53494-70-5	0.001	h	< 0.00075 [< 0.00078]	< 0.00069	< 0.00078	< 0.028 [< 0.027]	< 0.0035	< 0.0053	NA	< 0.0052	< 0.0057
Heptachlor epoxide	1024-57-3	0.152	i	< 0.00075 [0.0011 J]	< 0.00069	< 0.00078	< 0.028 [< 0.027]	< 0.0035	< 0.0053	NA	< 0.0052	< 0.0057
Methoxychlor	72-43-5	0.0199	i	< 0.0015 [< 0.0016]	< 0.0014	< 0.0016	< 0.028 [< 0.027]	< 0.0035	< 0.0053	NA	< 0.0052	< 0.0057
Toxaphene	8001-35-2	0.119	i	< 0.019 [< 0.019]	< 0.017	< 0.02	< 0.14 [< 0.14]	< 0.018	< 0.026	NA	< 0.026	< 0.028
trans-chlordane	5103-74-2	0.0043	NA	< 0.00075 [< 0.00078]	< 0.00069	< 0.00078	NA [NA]	NA	NA	NA	NA	NA

Location ID:		Ecological		PCTP-66R		PCTP-66R-HC	PCTP-67	PCTP-68	PCTP-69	PCTP-70	PCTP-71	PCTP-72
Sample Depth (ft):	CAS	Soil Screening		0-0.5	0.5-2	0-2	0.5	0.5	0.5	0.5	0.5	0.5
Date Collected:	Number	Benchmark [1,2]		4/24/2019	4/24/2019	4/4/2019	9/12/2005	9/9/2005	9/9/2005	9/9/2005	9/9/2005	9/9/2005
Polychlorinated Biphenyls (mg/kg)												
Aroclor 1242	53469-21-9	NA	NA	< 0.037 [< 0.039]	< 0.035	< 0.2	< 0.028 [< 0.027]	< 0.018	< 0.026	< 0.028	< 0.026	< 0.028
Aroclor 1248	12672-29-6	NA	NA	< 0.037 [< 0.039]	< 0.035	< 0.2	< 0.028 [< 0.027]	< 0.018	< 0.026	< 0.028	< 0.026	< 0.028
Aroclor 1254	11097-69-1	40	g	< 0.037 [< 0.039]	< 0.035	< 0.2	< 0.028 [< 0.027]	< 0.018	1.3	< 0.028	0.21	< 0.028
Aroclor 1260	11096-82-5	NA	NA	< 0.037 [< 0.039]	< 0.035	0.369	0.25 [0.2]	< 0.018	< 0.026	< 0.028	< 0.026	0.3
Aroclor 1262	37324-23-5	40	g	0.249 [0.336]	< 0.035	< 0.2	NA [NA]	NA	NA	NA	NA	NA
Total Aroclor PCBs	1336-36-3	0.02	h	**0.249 [0.336]**	< 0.035	**0.369**	**0.25 [0.2]**	< 0.018	**1.3**	< 0.028	**0.21**	**0.3**
Volatile Organic Compounds (mg/kg)												
Acetone	67-64-1	2.5	i	< 0.02 [0.0199]	< 0.012	NA R	< 0.0059 [< 0.0058]	< 0.028	< 0.0056	< 0.0059	< 0.0055	< 0.0039
Benzene	71-43-2	0.05	h	< 0.0010 [< 0.00095]	< 0.00062	NA R	< 0.00057 [< 0.00056]	0.006	< 0.00054	< 0.00057	< 0.00053	< 0.00028
Carbon Disulfide	75-15-0	0.0941	i	< 0.0041 [< 0.0038]	< 0.0025	NA R	< 0.00072 [< 0.00071]	< 0.0034	< 0.00068	< 0.00072	< 0.00067	< 0.00058
Cyclohexane	110-82-7	0.1	h	< 0.0041 [< 0.0038]	< 0.0025	NA R	NA [NA]	NA	NA	NA	NA	NA
Dichloromethane	75-09-2	2	h	< 0.01 [< 0.0095]	< 0.0062	NA R	0.0048 B [0.0065 B]	0.03 B	0.0075 B	0.013 B	0.0058 B	0.0091 B
Ethylbenzene	100-41-4	0.05	h	< 0.0020 [< 0.0019]	< 0.0012	NA R	< 0.00083 [< 0.00082]	0.0083	< 0.00079	< 0.00083	< 0.00077	< 0.00077
Isopropylbenzene	98-82-8	NA	NA	< 0.0041 [< 0.0038]	< 0.0025	NA R	NA [NA]	NA	NA	NA	NA	NA
m&p-Xylenes	ARC-mpXyl	0.05	h	< 0.0020 [< 0.0019]	< 0.0012	NA R	< 0.0012 [< 0.0012]	**0.19**	< 0.0012	< 0.0012	< 0.0011	< 0.00092
Methyl Acetate	79-20-9	2.4	k	< 0.01 [< 0.0095]	< 0.0062	NA R	NA [NA]	NA	NA	NA	NA	NA
Methylcyclohexane	108-87-2	1160	j	< 0.0041 [< 0.0038]	< 0.0025	NA R	NA [NA]	NA	NA	NA	NA	NA
o,p-Xylene	136777-61-2	0.05	h	NA [NA]	NA	NA	< 0.00052 [< 0.00051]	**0.1**	< 0.00049	< 0.00052	< 0.00048	< 0.0002
o-Xylene	95-47-6	0.05	h	< 0.0020 [< 0.0019]	< 0.0012	NA R	NA [NA]	NA	NA	NA	NA	NA
Styrene (Monomer)	100-42-5	0.1	h	< 0.0041 [< 0.0038]	< 0.0025	NA R	< 0.00069 [< 0.00068]	< 0.0033	< 0.00065	< 0.00069	< 0.00064	< 0.00017
Toluene	108-88-3	0.05	h	< 0.0020 [< 0.0019]	< 0.0012	NA R	< 0.00084 [< 0.00083]	0.022	< 0.00079	< 0.00084	< 0.00078	< 0.00021
Total Xylenes	1330-20-7	0.05	h	< 0.0020 [< 0.0019]	< 0.0012	NA R	NA [NA]	NA	NA	NA	NA	NA
Semi-Volatile Organic Compounds (mg/kg)												
1,1-Biphenyl	92-52-4	60	g	0.226 J [4.33 J]	0.0185 J	0.211	NA [NA]	NA	NA	NA	NA	NA
2,4-Dimethylphenol	105-67-9	0.01	i	< 0.21 [< 1]	< 0.17	< 0.2	< 0.15 [< 0.062]	< 12	< 0.03	< 0.051	< 0.047	< 0.052
2-Methylnaphthalene	91-57-6	3.24	b	**0.486 J [10.5 J]**	0.106	0.502	0.13 J [0.16]	**230**	0.16	< 0.048	0.057	0.075
2-Methylphenol	95-48-7	0.5	h	< 0.083 [< 0.42]	< 0.07	< 0.079	< 0.53 [< 0.27]	< 52	< 0.13	< 0.18	< 0.16	< 0.18
3-Methylphenol, 4-Methylphenol	65794-96-9	0.5	h	0.0370 J [< 0.42]	< 0.07	< 0.079	NA [NA]	NA	NA	NA	NA	NA
4-Methylphenol	106-44-5	0.5	h	NA [NA]	NA	NA	< 0.59 [< 0.27]	< 52	< 0.13	< 0.2	< 0.18	< 0.2
4-Nitroaniline	100-01-6	21.9	i	< 0.21 [< 1]	< 0.17	< 0.2	NA [NA]	NA	NA	NA	NA	NA
Acenaphthene	83-32-9	20	b	0.244 J [4.39 J]	0.0787	0.234	0.11 [< 0.012]	**22**	0.14	0.079	0.23	0.31
Acenaphthylene	208-96-8	29	b	**2.64 J [45.6 DJ]**	0.116	2.9	< 0.026 [0.18]	**85**	0.62	0.068	< 0.0079	0.064
Acetophenone	98-86-2	300	i	0.0329 J [< 1]	< 0.17	< 0.2	NA [NA]	NA	NA	NA	NA	NA
Anthracene	120-12-7	0.1	b	**4.16 J [70.9 DJ]**	**0.143**	**5.81 DJ**	**0.26 [0.15]**	**250**	**0.99**	**0.17**	**0.52**	**0.73**
Benz(a)anthracene	56-55-3	0.25	b	**8.88 DJ [77.6 DJ]**	**0.393**	**8.24 D**	**1.5 [0.89]**	**220**	**2.3**	**1**	**1.5**	**2.3**
Benzaldehyde	100-52-7	470	k	0.0297 J [< 1]	< 0.17	< 0.2	NA [NA]	NA	NA	NA	NA	NA
Benzo(a)pyrene	50-32-8	0.1	b	**9.2 DJ [67.8 DJ]**	**0.515**	**8.36 D**	**1.5 [1]**	**190**	**1.9**	**0.99**	**1.3**	**2.1**
Benzo(b)fluoranthene	205-99-2	18	b	**11.7 DJ [85.6 DJ]**	0.681	10.4 D	1.8 [1.6]	**250**	3.6	1.5	1.5	2.7
Benzo(g,h,i)perylene	191-24-2	7.5	b	**5.99 DJ [38.1 DJ]**	0.421	5.36 DJ	1.3 [0.77]	**91**	1	0.72	0.97	1.5
Benzo(k)fluoranthene	207-08-9	2.4	b	**2.66 J [27 DJ]**	0.251	**4.16 D**	0.8 [0.49]	**79**	1.2	0.54	0.62	1.1

Location ID: / Sample Depth (ft): / Date Collected:	CAS Number	Ecological Soil Screening Benchmark [1,2]		PCTP-66R 0-0.5 4/24/2019	PCTP-66R 0.5-2 4/24/2019	PCTP-66R-HC 0-2 4/4/2019	PCTP-67 0.5 9/12/2005	PCTP-68 0.5 9/9/2005	PCTP-69 0.5 9/9/2005	PCTP-70 0.5 9/9/2005	PCTP-71 0.5 9/9/2005	PCTP-72 0.5 9/9/2005
Semi-Volatile Organic Compounds (mg/kg) (cont'd)												
bis(2-Ethylhexyl)phthalate	117-81-7	0.925	i	0.172 J [< 0.42]	< 0.07	0.149	< 0.1 [0.092]	< 8.9	0.092	0.08	0.074	0.3
Butyl benzyl phthalate	85-68-7	0.239	i	< 0.083 [< 0.42]	< 0.07	< 0.079	< 0.045 [< 0.02]	< 3.8	< 0.0095	< 0.015	0.13	< 0.015
Carbazole	86-74-8	NA	b	1.44 J [19.7]	0.0300 J	1.59	0.12 [< 0.014]	140	0.19	0.11	0.28	0.29
Chrysene	218-01-9	4.73	b	**8.37 DJ [65.7 DJ]**	0.373	**8.31 D**	1.4 [1.2]	**210**	2.6	1.1	1.4	2.4
Dibenz(a,h)anthracene	53-70-3	18	b	1.45 J [10.1]	0.105	1.66	0.37 [0.24]	**31**	0.39	0.28	0.38	0.59
Dibenzofuran	132-64-9	19	j	**1.56 J [39.8 DJ]**	0.0495 J	1.39	0.13 J [0.078 J]	**230**	0.18	0.038 J	0.13	0.16
Diethyl phthalate	84-66-2	24.8	g	< 0.083 [< 0.42]	< 0.07	< 0.079	< 0.031 [< 0.017]	< 3.3	< 0.0083	< 0.01	< 0.0094	< 0.01
Di-n-butyl phthalate	84-74-2	0.15	g	< 0.083 [< 0.42]	< 0.07	< 0.079	< 0.025 [< 0.015]	< 2.8	< 0.0071	0.04 B	< 0.0077	0.068
Di-n-octyl phthalate	117-84-0	709	i	< 0.083 [< 0.42]	< 0.07	< 0.079	< 0.026 [< 0.025]	< 4.8	< 0.012	< 0.0087	< 0.0081	< 0.0089
Fluoranthene	206-44-0	0.1	b	**19.8 DJ [200 DJ]**	**0.624**	**17.3 D**	**2 [1.6]**	**700**	**3.8**	**1.5**	**2.1**	**3.4**
Fluorene	86-73-7	29	b	**3.11 [76.2 DJ]**	0.0866	2.79 J	< 0.028 [< 0.018]	**320**	0.14	0.079	0.25	0.28
Indeno(1,2,3-cd)pyrene	193-39-5	5.9	b	**6.39 DJ [42.9 DJ]**	0.444	**5.97 DJ**	1 [0.66]	**88**	1.1	0.64	0.81	1.3
Naphthalene	91-20-3	0.0994	b	**0.782 J [11.2]**	0.0294 J	**0.643**	**0.21 [0.15]**	**1900**	**0.56**	0.043	**0.18**	**0.14**
Phenanthrene	85-01-8	0.1	b	**18.3 DJ [296 DJ]**	**0.348**	**15 D**	**1.4 [0.73]**	**1000**	**1.4**	**0.77**	**2.2**	**3**
Phenol	108-95-2	0.05	h	**0.0364 J [0.111 J]**	< 0.07	< 0.079	< 0.17 [< 0.12]	< 23	< 0.058	< 0.056	< 0.052	< 0.058
Pyrene	129-00-0	0.1	b	**15.7 DJ [147 DJ]**	**0.523**	**14.6 D**	**2.5 [1.6]**	**490**	**4.2**	**1.8**	**3.1**	**5.7**
Total PAHs	ARC-TPAH	1	h	NA [NA]	NA	NA	**8.37 [6.08]**	**1068**	**13.09**	**6.05**	**7.51**	**12.49**

Location ID:				PCTP-73	PCTP-73R	PCTP-74	PCTP-75	PCTP-76	PCTP-77	PCTP-78	PCTP-79	PSSTP-01A	PSSTP-02A	PSSTP-03A	PSSTP-04A
Sample Depth (ft):	CAS Number	Ecological Soil Screening Benchmark [1,2]		0.5	0-0.5	0.5	0.5	0.5	0.5	0.5	0.5	1-2	1-2	1-2	1-2
Date Collected:				9/9/2005	4/10/2019	9/9/2005	9/9/2005	9/12/2005	9/12/2005	9/12/2005	9/12/2005	3/11/2003	3/11/2003	3/11/2003	3/11/2003
Metals (mg/kg)															
Aluminum	7429-90-5	50	g	NA	**8940**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	7440-36-0	0.27	c	< 2.2	**1.4 J**	< 2.2	< 2.1	< 2.2	< 2.2	< 2.1	**3.2**	< 2.2	**3.2**	< 7.4	< 2.3
Arsenic	7440-38-2	18	d	4.2	5.3	4.4	2.8	4.8	5.6	9	5.5	5.3	6.2	3.6	5.2
Barium	7440-39-3	330	b	70	83.1	69	45	69	110	280	120	120	110	220	100
Beryllium	7440-41-7	21	c	< 0.67	0.42	< 0.65	< 0.62	< 0.65	< 0.65	< 0.64	< 0.64	< 0.67	< 0.69	< 0.72	< 0.69
Cadmium	7440-43-9	0.36	c	< 0.67	**1.2**	< 0.65	< 0.62	< 0.65	< 0.65	**0.7**	< 0.64	< 0.67	< 0.69	< 0.72	< 0.69
Calcium	7440-70-2	NA	NA	NA	26700	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	7440-47-3	0.4	e	**14**	**19.8**	**19**	**9.6**	**23**	**25**	**23**	**23**	**23**	**26**	**21**	**28**
Cobalt	7440-48-4	13	b	NA	5.4 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	7440-50-8	28	a	**1400**	**75.1**	**31**	**34**	28	**41**	**52**	**55**	**38**	**190**	22	**43**
Cyanide	57-12-5	0.9	h	NA	0.45	NA	NA	NA	NA	NA	NA	< 0.28	< 0.29	0.9	0.72
Iron	7439-89-6	200	f	NA	**14400**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	7439-92-1	11	a	**130**	**248**	**250**	**73**	**150**	**220**	**1100**	**430**	**230**	**970**	**250**	**170**
Magnesium	7439-95-4	NA	NA	NA	7550	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	7439-96-5	220	d	NA	200	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	7439-97-6	0.1	e	**0.5**	**0.48**	**0.8**	**0.13**	< 0.09	**0.47**	**0.36**	**0.2**	**0.58**	**1.2**	**0.71**	**0.41**
Nickel	7440-02-0	38	d	12	19.7	14	14	17	17	15	17	18	19	10	15
Potassium	7440-09-7	NA	NA	NA	1230	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	7782-49-2	0.52	d	< 2	< 2.5	**2.6**	**2.3**	**2.6**	**2.2**	< 1.9	**2.6**	< 2	< 2.1	< 2.2	< 2.1
Silver	7440-22-4	4.2	a	< 2.8	< 0.62	< 2.7	< 2.6	< 2.7	< 2.7	< 2.7	< 2.7	< 2.8	< 2.9	< 3	< 2.9
Sodium	7440-23-5	NA	NA	NA	187 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	7440-62-2	2	d	NA	**37.0**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	7440-66-6	46	a	**130**	**234**	**86**	**63**	**89**	**180**	**510**	**380**	**130**	**190**	**250**	**130**
Pesticides (mg/kg)															
4,4-DDD	72-54-8	0.758	i	< 0.0056	< 0.00076	< 0.0054	< 0.0052	< 0.0054	< 0.0054	< 0.027	< 0.027	0.011	0.057	< 0.004	0.047
4,4-DDE	72-55-9	0.596	i	< 0.0056	0.0165 J	< 0.0054	< 0.0052	< 0.0054	< 0.0054	0.055	< 0.027	0.002	0.012	< 0.004	< 0.0038
4,4-DDT	50-29-3	0.021	c	< 0.0056	**0.0347 JN**	**0.027**	< 0.0052	< 0.0054	**0.026**	< 0.027	< 0.027	0.0052	0.012	< 0.004	**0.073**
Aldrin	309-00-2	0.0025	h	< 0.0056	< 0.00076	< 0.0054	< 0.0052	< 0.0054	< 0.0054	< 0.027	< 0.027	< 0.0037	< 0.0038	< 0.004	< 0.0038
Beta-BHC	319-85-7	0.001	h	< 0.0056	< 0.00076	< 0.0054	< 0.0052	< 0.0054	< 0.0054	< 0.027	< 0.027	< 0.0037	< 0.0038	< 0.004	< 0.0038
Chlordane	57-74-9	0.224	i	< 0.011	NA	0.056	0.053	< 0.011	< 0.011	**4.5 E**	**0.29**	< 0.0075	< 0.0038	< 0.008	< 0.0077
Dieldrin	60-57-1	0.0049	c	< 0.0056	< 0.00076	< 0.0054	< 0.0052	**0.014**	< 0.0054	< 0.027	< 0.027	< 0.0037	**0.01**	< 0.004	< 0.0038
Endosulfan I	959-98-8	0.119	i	< 0.0056	< 0.00076	< 0.0054	< 0.0052	< 0.0054	< 0.0054	< 0.027	< 0.027	< 0.0037	< 0.0038	< 0.004	0.012
Endosulfan II	33213-65-9	0.119	i	< 0.0056	< 0.00076	< 0.0054	< 0.0052	< 0.0054	< 0.0054	< 0.027	< 0.027	< 0.0037	< 0.0038	< 0.004	< 0.0038
Endosulfan sulfate	1031-07-8	0.0358	i	< 0.0056	< 0.00076	< 0.0054	< 0.0052	< 0.0054	< 0.0054	< 0.027	< 0.027	< 0.0037	< 0.0038	< 0.004	**0.04**
Endrin	72-20-8	0.001	h	< 0.0056	< 0.00076	< 0.0054	< 0.0052	< 0.0054	< 0.0054	< 0.027	< 0.027	< 0.0037	< 0.0038	< 0.004	< 0.0038
Endrin aldehyde	7421-93-4	0.0105	i	< 0.0056	**0.0388**	< 0.0054	< 0.0052	< 0.0054	< 0.0054	< 0.027	< 0.027	< 0.0037	< 0.0038	**0.034**	**0.058**
Endrin ketone	53494-70-5	0.001	h	< 0.0056	**0.0091**	< 0.0054	< 0.0052	< 0.0054	< 0.0054	< 0.027	< 0.027	< 0.0037	< 0.0038	< 0.004	< 0.0038
Heptachlor epoxide	1024-57-3	0.152	i	< 0.0056	0.0069 JN	< 0.0054	< 0.0052	< 0.0054	< 0.0054	< 0.027	< 0.027	< 0.0037	< 0.0038	< 0.004	0.012
Methoxychlor	72-43-5	0.0199	i	< 0.0056	< 0.0015	< 0.0054	< 0.0052	< 0.0054	< 0.0054	< 0.027	< 0.027	< 0.0037	< 0.0038	< 0.004	< 0.0038
Toxaphene	8001-35-2	0.119	i	< 0.028	< 0.019	< 0.027	< 0.026	< 0.027	< 0.027	< 0.13	< 0.13	< 0.019	< 0.019	< 0.02	< 0.019
trans-chlordane	5103-74-2	0.0043	NA	NA	< 0.00076	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Location ID:		Ecological		PCTP-73	PCTP-73R	PCTP-74	PCTP-75	PCTP-76	PCTP-77	PCTP-78	PCTP-79	PSSTP-01A	PSSTP-02A	PSSTP-03A	PSSTP-04A
Sample Depth (ft):	CAS	Soil Screening		0.5	0-0.5	0.5	0.5	0.5	0.5	0.5	0.5	1-2	1-2	1-2	1-2
Date Collected:	Number	Benchmark [1,2]		9/9/2005	4/10/2019	9/9/2005	9/9/2005	9/12/2005	9/12/2005	9/12/2005	9/12/2005	3/11/2003	3/11/2003	3/11/2003	3/11/2003
Polychlorinated Biphenyls (mg/kg)															
Aroclor 1242	53469-21-9	NA	NA	< 0.56	< 0.038	< 0.027	< 0.026	< 0.027	< 0.027	< 0.027	< 0.027	< 0.019	< 0.019	0.12	0.12
Aroclor 1248	12672-29-6	NA	NA	< 0.56	< 0.038	< 0.027	< 0.026	< 0.027	0.053	< 0.027	< 0.027	< 0.019	< 0.019	< 0.02	< 0.02
Aroclor 1254	11097-69-1	40	g	7.9	0.932	< 0.027	< 0.026	< 0.027	< 0.027	< 0.027	< 0.027	0.08	< 0.019	< 0.02	0.49
Aroclor 1260	11096-82-5	NA	NA	< 0.56	< 0.038	< 0.027	0.055	0.37	0.39	< 0.027	0.27	< 0.019	0.43	0.094	< 0.02
Aroclor 1262	37324-23-5	40	g	NA	< 0.038	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Aroclor PCBs	1336-36-3	0.02	h	**7.9**	**0.932**	< 0.027	**0.055**	**0.37**	**0.443**	< 0.027	**0.27**	**0.08**	**0.43**	**0.214**	**0.61**
Volatile Organic Compounds (mg/kg)															
Acetone	67-64-1	2.5	i	< 0.0038	< 0.012	< 0.0058	< 0.0055	< 0.0057	< 0.0037	< 0.0036	< 0.0036	< 0.022	< 0.023	< 0.024	< 0.023
Benzene	71-43-2	0.05	h	< 0.00027	< 0.00061	< 0.00055	< 0.00053	< 0.00055	< 0.00026	< 0.00026	< 0.00026	0.0059	0.0082 B	< 0.0012	< 0.0011 UB
Carbon Disulfide	75-15-0	0.0941	i	< 0.00057	< 0.0025	< 0.00071	< 0.00067	< 0.0007	< 0.00055	< 0.00054	< 0.00054	< 0.056	< 0.0057	< 0.006	< 0.0057
Cyclohexane	110-82-7	0.1	h	NA	< 0.0025	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichloromethane	75-09-2	2	h	0.01 B	< 0.0061	0.0048 B	0.0034 B	0.013 B	0.01 B	0.011 B	0.009 B	0.0072 B	0.0082 B	0.0097 B	0.0076 B
Ethylbenzene	100-41-4	0.05	h	< 0.00075	< 0.0012	< 0.00081	< 0.00077	< 0.0008	< 0.00073	< 0.00072	< 0.00072	< 11	< 0.0011	< 0.0012	< 0.0011
Isopropylbenzene	98-82-8	NA	NA	NA	< 0.0025	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
m&p-Xylenes	ARC-mpXyl	0.05	h	< 0.0009	< 0.0012	< 0.0012	< 0.0011	< 0.0012	< 0.00087	< 0.00086	< 0.00086	NA	NA	NA	NA
Methyl Acetate	79-20-9	2.4	k	NA	< 0.0061	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylcyclohexane	108-87-2	1160	j	NA	< 0.0025	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
o,p-Xylene	136777-61-2	0.05	h	< 0.00019	NA	< 0.00051	< 0.00048	< 0.0005	< 0.00019	< 0.00019	< 0.00019	NA	NA	NA	NA
o-Xylene	95-47-6	0.05	h	NA	< 0.0012	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene (Monomer)	100-42-5	0.1	h	< 0.00017	< 0.0025	< 0.00067	< 0.00064	< 0.00067	< 0.00016	< 0.00016	< 0.00016	NA	NA	NA	NA
Toluene	108-88-3	0.05	h	< 0.0002	< 0.0012	< 0.00082	< 0.00078	< 0.00081	< 0.0002	< 0.00019	< 0.00019	0.0015	< 0.0011	< 0.0012	< 0.0011
Total Xylenes	1330-20-7	0.05	h	NA	< 0.0012	NA	NA	NA	NA	NA	NA	0	0	0	0
Semi-Volatile Organic Compounds (mg/kg)															
1,1-Biphenyl	92-52-4	60	g	NA	0.0131 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	105-67-9	0.01	i	< 0.051	< 0.21	< 0.031	< 0.029	< 0.03	< 0.3	< 0.03	< 0.15	< 0.37	< 1.9	< 2	< 19
2-Methylnaphthalene	91-57-6	3.24	b	0.06	0.0404 J	< 0.062	0.12	0.097	0.91	0.044 J	< 0.14	0.22 J	< 1.9	0.35 J	**3.7 J**
2-Methylphenol	95-48-7	0.5	h	< 0.18	< 0.085	< 0.14	< 0.13	< 0.13	< 1.3	< 0.13	< 0.51	NA	NA	NA	NA
3-Methylphenol, 4-Methylphenol	65794-96-9	0.5	h	NA	< 0.085	NA	NA	NA	NA	NA	NA	< 0.37	< 1.9	< 2	< 19
4-Methylphenol	106-44-5	0.5	h	< 0.2	NA	< 0.13	< 0.13	< 0.13	< 1.3	< 0.13	< 0.56	NA	NA	NA	NA
4-Nitroaniline	100-01-6	21.9	i	NA	< 0.21	NA	NA	NA	NA	NA	NA	< 0.37	< 1.9	< 2	< 19
Acenaphthene	83-32-9	20	b	0.077	0.0445	0.27	0.058	0.26	2	0.24	0.29	0.47	< 1.9	1.2 J	12 J
Acenaphthylene	208-96-8	29	b	0.079	0.137	0.082	0.12	< 0.0054	0.8	0.086	0.12	0.17 J	< 1.9	1.48 J	< 19
Acetophenone	98-86-2	300	i	NA	< 0.21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	120-12-7	0.1	b	**0.31**	**0.226**	**1.2**	**0.16**	**0.55**	**4.3**	**0.51**	**0.69**	**1.2**	**0.7 J**	**3.3**	**23**
Benz(a)anthracene	56-55-3	0.25	b	**1.1**	**0.742**	**2.9**	**0.66**	**1.1**	**7.8**	**1.7**	**2.5**	**2.8**	**5.9**	**7.6**	**45**
Benzaldehyde	100-52-7	470	k	NA	0.0489 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	50-32-8	0.1	b	**1.1**	**0.742**	**2.4**	**0.61**	**0.77**	**6.7**	**1.7**	**2.6**	**2.3**	**4.6**	**5.9**	**35**
Benzo(b)fluoranthene	205-99-2	18	b	1.5	0.981	3.4	1.2	0.94	8.9	2.2	3.3	3.8	7.4	7.3	**42**
Benzo(g,h,i)perylene	191-24-2	7.5	b	0.87	0.507	1.3	0.41	0.38	3.6	1	2.1	0.52	1.4 J	3.3	**12 J**
Benzo(k)fluoranthene	207-08-9	2.4	b	0.62	0.341	1	0.36	0.27	**3.2**	0.73	1	1.2	**2.6**	**2.9**	**18 J**

Location ID:		Ecological		PCTP-73	PCTP-73R	PCTP-74	PCTP-75	PCTP-76	PCTP-77	PCTP-78	PCTP-79	PSSTP-01A	PSSTP-02A	PSSTP-03A	PSSTP-04A
Sample Depth (ft):	CAS	Soil Screening		0.5	0-0.5	0.5	0.5	0.5	0.5	0.5	0.5	1-2	1-2	1-2	1-2
Date Collected:	Number	Benchmark [1,2]		9/9/2005	4/10/2019	9/9/2005	9/9/2005	9/12/2005	9/12/2005	9/12/2005	9/12/2005	3/11/2003	3/11/2003	3/11/2003	3/11/2003
Semi-Volatile Organic Compounds (mg/kg) (cont'd)															
bis(2-Ethylhexyl)phthalate	117-81-7	0.925	i	**1.2**	0.182	0.13	0.13	< 0.023	< 0.23	0.13	< 0.096	< 0.37	< 1.9	0.79 J	< 19
Butyl benzyl phthalate	85-68-7	0.239	i	< 0.015	0.0846 J	< 0.0098	< 0.0093	< 0.0097	< 0.097	0.19	< 0.043	< 0.37	< 1.9	< 2	< 19
Carbazole	86-74-8	NA	b	0.11	0.0768 J	0.18	0.06	0.17	1.3	0.23	0.36	0.47	0.45 J	1.2	10 J
Chrysene	218-01-9	4.73	b	1.1	0.741	2.7	0.76	1.1	**7.5**	1.7	2.7	2.8	**5.6**	**5.6**	**37**
Dibenz(a,h)anthracene	53-70-3	18	b	0.33	0.137	0.42	0.14	0.14	1.2	0.31	0.57	0.23 J	0.56 J	1 J	6 J
Dibenzofuran	132-64-9	19	j	0.089	0.0403 J	0.12	0.088	0.13	1.7	0.1	0.18	0.38	< 1.9	0.75 J	7.6 J
Diethyl phthalate	84-66-2	24.8	g	< 0.01	< 0.085	< 0.0085	< 0.0081	< 0.0084	< 0.084	< 0.0083	< 0.029	NA	NA	NA	NA
Di-n-butyl phthalate	84-74-2	0.15	g	< 0.0083	< 0.085	< 0.0073	< 0.007	< 0.0073	< 0.073	0.041	< 0.024	**0.18 J**	< 1.9	< 2	< 19
Di-n-octyl phthalate	117-84-0	709	i	< 0.0087	< 0.085	< 0.012	< 0.012	< 0.012	< 0.12	< 0.012	< 0.025	< 0.37	< 1.9	< 2	< 19
Fluoranthene	206-44-0	0.1	b	**1.7**	**1.34**	**6.7**	**1.1**	**1.8**	**17**	**3.1**	**4.8**	**4.7**	**9.6**	**16**	**86**
Fluorene	86-73-7	29	b	0.094	0.0577	0.31	0.07	0.2	2.3	0.2	0.26	0.69	< 1.9	1.3 J	13 J
Indeno(1,2,3-cd)pyrene	193-39-5	5.9	b	0.73	0.525	1.2	0.38	0.34	3.3	0.92	1.7	0.61	1.7 J	3.4	**16 J**
Naphthalene	91-20-3	0.0994	b	**0.14**	0.0552	0.071	**0.27**	0.084	**1.6**	0.064	< 0.025	**0.36 J**	< 1.9	**0.5 J**	**9 J**
Phenanthrene	85-01-8	0.1	b	**1.2**	**0.732**	**3.5**	**0.54**	**2.5**	**16**	**2.2**	**3.7**	**3.8**	**2.3**	**12**	**85**
Phenol	108-95-2	0.05	h	< 0.056	< 0.085	< 0.06	< 0.057	< 0.059	< 0.59	< 0.059	< 0.16	**1.5**	< 1.4	< 1.5	**1.7**
Pyrene	129-00-0	0.1	b	**2.2**	**1.26**	**5.4**	**1.2**	**2.3**	**13**	**3.5**	**5.5**	**5.2**	**8.2**	**14**	**99**
Total PAHs	ARC-TPAH	1	h	**6.48**	NA	**14.02**	**4.11**	**4.66**	**38.6**	**9.26**	**14.37**	NA	NA	NA	NA

Location ID:				PSSTP-04R	PSSTP-05A	PSSTP-06A	PSSTP-07A	PSSTP-07R	PSSTP-08A	PSSTP-09A	PSSTP-10A	PSSTP-10R	PSSTP-11A
Sample Depth (ft):	CAS Number	Ecological Soil Screening Benchmark [1,2]		1-2	1-2	1-2	1-2	0.5-2	1-2	1-2	1-2	1-2	1-2
Date Collected:				4/11/2019	3/11/2003	3/11/2003	3/11/2003	4/18/2019	3/11/2003	3/12/2003	3/12/2003	4/16/2019	3/12/2003
Metals (mg/kg)													
Aluminum	7429-90-5	50	g	**13500**	NA	NA	NA	**11100 [7460]**	NA	NA	NA	**5430 J**	NA
Antimony	7440-36-0	0.27	c	< 2.3	**4.3**	< 2.5	< 2.5	< 2.6 UJ [< 2.4 UJ]	**6.6**	**2.7**	< 2.3	**0.56 J**	< 2.3
Arsenic	7440-38-2	18	d	5.8	15	4	4.4	6.6 [6.9]	12	6.7	10	7.9	< 2.3
Barium	7440-39-3	330	b	80.1	55	36	320	110 [146]	230	95	68	42.5	96
Beryllium	7440-41-7	21	c	0.64	< 0.71	< 0.76	< 0.75	0.52 [0.37]	0.78	0.96	< 0.68	0.40	< 0.68
Cadmium	7440-43-9	0.36	c	**0.38 J**	< 0.71	< 0.76	**0.95**	**0.39 J [0.74]**	**2.4**	< 0.78	< 0.68	0.32 J	< 0.68
Calcium	7440-70-2	NA	NA	21200	NA	NA	NA	22400 [27600]	NA	NA	NA	519 J	NA
Chromium	7440-47-3	0.4	e	**23.8**	**15**	< 6.3	**11**	**18.0 [20.0]**	**32**	**68**	**12**	**19.5 J**	< 5.7
Cobalt	7440-48-4	13	b	7.2	NA	NA	NA	5.3 J [5.0 J]	NA	NA	NA	5.2 J	NA
Copper	7440-50-8	28	a	**49.3**	**99**	**32**	20	**17.7 [28.1]**	**250**	**51**	**54**	**63.1**	20
Cyanide	57-12-5	0.9	h	0.23 J	**13**	**4.1**	0.35	0.33 J [0.37 J]	**2**	0.85	< 0.28	< 0.27 UJ	0.53
Iron	7439-89-6	200	f	**19700**	NA	NA	NA	**17000 [16000]**	NA	NA	NA	**13300**	NA
Lead	7439-92-1	11	a	**523**	**150**	**41**	**340**	**158 J [201 J]**	**930**	**85**	**100**	**153**	**52**
Magnesium	7439-95-4	NA	NA	9490	NA	NA	NA	4540 J [4260 J]	NA	NA	NA	1540	NA
Manganese	7439-96-5	220	d	**286**	NA	NA	NA	**316 J [297 J]**	NA	NA	NA	202 J	NA
Mercury	7439-97-6	0.1	e	**0.71**	**0.4**	**0.15**	**0.37**	**0.19 J [0.23 J]**	**2.1**	**0.24**	**0.18**	**0.24 J**	**0.13**
Nickel	7440-02-0	38	d	14.9	27	6.6	< 6.2	11.1 [11.6]	25	14	12	10	5.8
Potassium	7440-09-7	NA	NA	1560	NA	NA	NA	978 J [895 J]	NA	NA	NA	798 J	NA
Selenium	7782-49-2	0.52	d	< 2.3	< 2.1	< 2.3	< 2.2	< 2.6 [< 2.4]	< 2.2	< 2.3	< 2	< 2.3	< 2
Silver	7440-22-4	4.2	a	< 0.57	< 2.9	< 3.2	< 3.1	< 0.65 [< 0.60]	< 3.1	< 3.2	< 2.8	< 0.58	< 2.8
Sodium	7440-23-5	NA	NA	121 J	NA	NA	NA	121 J [118 J]	NA	NA	NA	< 1200	NA
Vanadium	7440-62-2	2	d	**32.9**	NA	NA	NA	**18.0 [15.3]**	NA	NA	NA	**12.5**	NA
Zinc	7440-66-6	46	a	**126**	**200**	39	**380**	**127 [164]**	**820**	**310**	**120**	**99.8 J**	31
Pesticides (mg/kg)													
4,4-DDD	72-54-8	0.758	i	< 0.00074	< 0.0039	< 0.0042	< 0.0043	0.0025 [0.0016]	< 0.0041	< 0.0043	< 0.0038	< 0.00073	< 0.0038
4,4-DDE	72-55-9	0.596	i	< 0.00074	0.027	< 0.0042	< 0.0043	< 0.00080 [< 0.00072]	< 0.0041	< 0.0043	< 0.0038	< 0.00073 UJ	< 0.0038
4,4-DDT	50-29-3	0.021	c	**0.0414 J**	**0.098**	0.021	< 0.0043	0.0076 [0.0049]	**0.025**	< 0.0043	0.017	< 0.00073	< 0.0038
Aldrin	309-00-2	0.0025	h	**0.0152 JN**	< 0.0039	< 0.0042	< 0.0043	< 0.00080 [< 0.00072]	< 0.0041	< 0.0043	< 0.0038	< 0.00073	< 0.0038
Beta-BHC	319-85-7	0.001	h	< 0.00074	**0.012**	< 0.0042	< 0.0043	< 0.00080 [< 0.00072]	< 0.0041	< 0.0043	< 0.0038	< 0.00073	< 0.0038
Chlordane	57-74-9	0.224	i	NA	< 0.0078	< 0.0084	0.067	NA [NA]	< 0.0082	0.025	< 0.0076	NA	< 0.0076
Dieldrin	60-57-1	0.0049	c	**0.0176**	< 0.0039	< 0.0042	< 0.0043	< 0.00080 [< 0.00072]	< 0.0041	< 0.0043	< 0.0038	< 0.00073	< 0.0038
Endosulfan I	959-98-8	0.119	i	< 0.00074	< 0.0039	< 0.0042	< 0.0043	< 0.00080 [< 0.00072]	< 0.0041	< 0.0043	< 0.0038	< 0.00073	< 0.0038
Endosulfan II	33213-65-9	0.119	i	< 0.00074	0.04	< 0.0042	< 0.0043	< 0.00080 [< 0.00072]	< 0.0041	< 0.0043	< 0.0038	< 0.00073	< 0.0038
Endosulfan sulfate	1031-07-8	0.0358	i	< 0.00074	0.0083	< 0.0042	< 0.0043	< 0.00080 [< 0.00072]	< 0.0041	< 0.0043	< 0.0038	< 0.00073	< 0.0038
Endrin	72-20-8	0.001	h	< 0.00074	< 0.0039	< 0.0042	< 0.0043	< 0.00080 [< 0.00072]	< 0.0041	< 0.0043	< 0.0038	< 0.00073	< 0.0038
Endrin aldehyde	7421-93-4	0.0105	i	**0.0179 JN**	< 0.0039	< 0.0042	< 0.0043	< 0.00080 [< 0.00072]	< 0.0041	**0.02**	< 0.0038	< 0.00073	< 0.0038
Endrin ketone	53494-70-5	0.001	h	< 0.00074	< 0.0039	< 0.0042	< 0.0043	< 0.00080 [< 0.00072]	< 0.0041	< 0.0043	< 0.0038	< 0.00073	< 0.0038
Heptachlor epoxide	1024-57-3	0.152	i	0.0111 JN	< 0.0039	< 0.0042	< 0.0043	0.0012 J [0.00099]	< 0.0041	< 0.0043	< 0.0038	< 0.00073	< 0.0038
Methoxychlor	72-43-5	0.0199	i	< 0.0015	< 0.0039	< 0.0042	< 0.0043	< 0.0016 [< 0.0014]	< 0.0041	< 0.0043	< 0.0038	< 0.0015	< 0.0038
Toxaphene	8001-35-2	0.119	i	< 0.018	0.02 HD	< 0.021	< 0.042	< 0.02 [< 0.018]	< 0.021	< 0.022	< 0.019	< 0.018	< 0.019
trans-chlordane	5103-74-2	0.0043	NA	< 0.00074	NA	NA	NA	0.0015 JN [0.0012 J]	NA	NA	NA	< 0.00073 UJ	NA

Location ID:		Ecological		PSSTP-04R	PSSTP-05A	PSSTP-06A	PSSTP-07A	PSSTP-07R	PSSTP-08A	PSSTP-09A	PSSTP-10A	PSSTP-10R	PSSTP-11A
Sample Depth (ft):	CAS	Soil Screening		1-2	1-2	1-2	1-2	0.5-2	1-2	1-2	1-2	1-2	1-2
Date Collected:	Number	Benchmark [1,2]		4/11/2019	3/11/2003	3/11/2003	3/11/2003	4/18/2019	3/11/2003	3/12/2003	3/12/2003	4/16/2019	3/12/2003
Polychlorinated Biphenyls (mg/kg)													
Aroclor 1242	53469-21-9	NA	NA	< 0.037	< 0.02	< 0.021	< 0.021	< 0.04 [< 0.036]	< 0.021	< 0.022	< 0.019	< 0.037	< 0.019
Aroclor 1248	12672-29-6	NA	NA	< 0.037	< 0.02	< 0.021	< 0.021	< 0.04 [< 0.036]	< 0.021	< 0.022	< 0.019	< 0.037	< 0.019
Aroclor 1254	11097-69-1	40	g	1.27 J	< 0.02	< 0.021	< 0.021	< 0.04 [0.0610]	< 0.021	< 0.022	< 0.019	< 0.037	< 0.019
Aroclor 1260	11096-82-5	NA	NA	< 0.037	0.83	0.11	0.18	< 0.04 [< 0.036]	0.12	0.05	< 0.019	< 0.037	< 0.019
Aroclor 1262	37324-23-5	40	g	< 0.037	NA	NA	NA	< 0.04 [< 0.036]	NA	NA	NA	< 0.037	NA
Total Aroclor PCBs	1336-36-3	0.02	h	**1.27 J**	**0.83**	**0.11**	**0.18**	**< 0.04 [0.0610]**	**0.12**	**0.05**	< 0.019	< 0.037	< 0.019
Volatile Organic Compounds (mg/kg)													
Acetone	67-64-1	2.5	i	0.0232	< 0.024	< 0.025	< 0.025	< 0.01 [0.0095 J]	< 0.025	< 0.026	< 0.023	0.394	< 0.023
Benzene	71-43-2	0.05	h	< 0.00052	< 0.12	< 0.0013	< 0.0012	0.00089 J [0.0034 J]	< 0.0012	< 0.0013	< 0.0011	< 0.00063	< 0.0011
Carbon Disulfide	75-15-0	0.0941	i	< 0.0021	0.0061	< 0.0063	< 0.0062	< 0.0021 [< 0.0023]	< 0.0062	< 0.0065	< 0.0057	< 0.0025	< 0.0057
Cyclohexane	110-82-7	0.1	h	< 0.0021	NA	NA	NA	< 0.0021 [< 0.0023]	NA	NA	NA	< 0.0025	NA
Dichloromethane	75-09-2	2	h	< 0.0052	0.067 B	0.0046 JB	0.0099 B	< 0.0052 [< 0.0057]	0.0057 JB	0.0041 JB	0.0036 JB	< 0.0063	0.0046 JB
Ethylbenzene	100-41-4	0.05	h	< 0.0010	< 0.0012	< 0.0013	< 0.0012	< 0.0010 [< 0.0011]	< 0.012	< 0.0013	< 0.0011	< 0.0013	< 0.0011
Isopropylbenzene	98-82-8	NA	NA	< 0.0021	NA	NA	NA	< 0.0021 [< 0.0023]	NA	NA	NA	< 0.0025	NA
m&p-Xylenes	ARC-mpXyl	0.05	h	< 0.0010	NA	NA	NA	< 0.0010 [< 0.0011]	NA	NA	NA	< 0.0013	NA
Methyl Acetate	79-20-9	2.4	k	< 0.0052	NA	NA	NA	< 0.0052 [< 0.0057]	NA	NA	NA	0.0061 J	NA
Methylcyclohexane	108-87-2	1160	j	< 0.0021	NA	NA	NA	< 0.0021 [< 0.0023]	NA	NA	NA	< 0.0025	NA
o,p-Xylene	136777-61-2	0.05	h	NA	NA	NA	NA	NA [NA]	NA	NA	NA	NA	NA
o-Xylene	95-47-6	0.05	h	< 0.0010	NA	NA	NA	< 0.0010 [< 0.0011]	NA	NA	NA	< 0.0013	NA
Styrene (Monomer)	100-42-5	0.1	h	< 0.0021	NA	NA	NA	< 0.0021 [< 0.0023]	NA	NA	NA	< 0.0025	NA
Toluene	108-88-3	0.05	h	< 0.0010	0.0013	< 0.0013	< 0.0012	< 0.0010 [< 0.0011]	< 0.0012	< 0.0013	< 0.0011	< 0.0013	< 0.0011
Total Xylenes	1330-20-7	0.05	h	< 0.0010	0.0067 B	0	0	< 0.0010 [< 0.0011]	0	0	0	< 0.0013	0
Semi-Volatile Organic Compounds (mg/kg)													
1,1-Biphenyl	92-52-4	60	g	0.0462 J	NA	NA	NA	0.0107 J [0.0085 J]	NA	NA	NA	0.0132 J	NA
2,4-Dimethylphenol	105-67-9	0.01	i	< 0.19	< 7.8	< 1.9	< 4.2	< 0.21 [< 0.19]	< 4.1	< 0.43	< 0.38	< 0.18	< 0.38
2-Methylnaphthalene	91-57-6	3.24	b	0.0951	1.4	0.054 J	< 4.2	0.0195 J [0.0151 J]	0.86 J	< 0.43	< 0.38	0.0273 J	0.06 J
2-Methylphenol	95-48-7	0.5	h	< 0.075	NA	NA	NA	< 0.083 [< 0.075]	NA	NA	NA	< 0.074	NA
3-Methylphenol, 4-Methylphenol	65794-96-9	0.5	h	< 0.075	< 7.8	< 0.42	< 4.2	< 0.083 [< 0.075]	< 4.1	< 0.43	< 0.38	< 0.074	< 0.38
4-Methylphenol	106-44-5	0.5	h	NA	NA	NA	NA	NA [NA]	NA	NA	NA	NA	NA
4-Nitroaniline	100-01-6	21.9	i	< 0.19	< 7.8	< 1.9	< 4.2	< 0.21 [< 0.19]	< 4.1	0.17 J	< 0.38	< 0.18	< 0.38
Acenaphthene	83-32-9	20	b	0.348	< 7.8	< 0.42	1.2 J	0.125 [0.0906]	1.1 J	0.56 J	< 0.38	0.0284 J	< 0.38
Acenaphthylene	208-96-8	29	b	0.229	8.1	0.28 J	< 4.2	0.0720 [0.0886]	6.6	< 0.43	< 0.38	0.266	0.51
Acetophenone	98-86-2	300	i	< 0.19	NA	NA	NA	< 0.21 [< 0.19]	NA	NA	NA	< 0.18	NA
Anthracene	120-12-7	0.1	b	**0.871**	**9.9**	**0.33 J**	**3.6 J**	**0.321 [0.346]**	**7.4**	**0.16 J**	< 0.38	**0.608**	**0.83**
Benz(a)anthracene	56-55-3	0.25	b	**2.79**	**21**	**1.8**	**6.4**	**0.939 [0.983]**	**15**	**0.41 J**	0.17 J	**1.76**	**3.7**
Benzaldehyde	100-52-7	470	k	< 0.19	NA	NA	NA	0.0221 J [0.0177 J]	NA	NA	NA	< 0.18	NA
Benzo(a)pyrene	50-32-8	0.1	b	**2.37**	**18**	**1.5**	**5**	**0.979 [0.987]**	**10**	**0.37 J**	**0.14 J**	**1.31**	**2.3**
Benzo(b)fluoranthene	205-99-2	18	b	2.85	**23**	2.7	7	1.21 [1.21]	15	0.6	0.22 J	1.97	3.5
Benzo(g,h,i)perylene	191-24-2	7.5	b	1.35 J	**7.8 J**	0.08 J	1.8 J	0.626 [0.558]	3.9 J	0.1 J	0.1 J	0.909	1
Benzo(k)fluoranthene	207-08-9	2.4	b	1.01	**11**	0.95	2.1 J	0.481 [0.401]	**3.8 J**	0.26 J	0.089 J	0.781	1.6

Location ID: / Sample Depth (ft): / Date Collected:	CAS Number	Ecological Soil Screening Benchmark [1,2]		PSSTP-04R 1-2 4/11/2019	PSSTP-05A 1-2 3/11/2003	PSSTP-06A 1-2 3/11/2003	PSSTP-07A 1-2 3/11/2003	PSSTP-07R 0.5-2 4/18/2019	PSSTP-08A 1-2 3/11/2003	PSSTP-09A 1-2 3/12/2003	PSSTP-10A 1-2 3/12/2003	PSSTP-10R 1-2 4/16/2019	PSSTP-11A 1-2 3/12/2003
Semi-Volatile Organic Compounds (mg/kg) (cont'd)													
bis(2-Ethylhexyl)phthalate	117-81-7	0.925	i	< 0.075	< 7.8	0.082 J	0.64 J	0.191 [0.11]	< 4.1	**1.7 B**	< 0.38	< 0.074	< 0.38
Butyl benzyl phthalate	85-68-7	0.239	i	< 0.075	< 7.8	< 0.42	**0.46 J**	< 0.083 [< 0.075]	< 4.1	< 0.43	< 0.38	< 0.074	< 0.38
Carbazole	86-74-8	NA	b	0.344	3.1 J	0.087 J	1.8 J	0.139 [0.102]	2.4 J	0.061 J	< 0.38	0.218	0.17 J
Chrysene	218-01-9	4.73	b	2.59	**20**	1.5	**6.6**	0.847 [0.907]	**10**	0.37 J	0.21 J	1.72	3.4
Dibenz(a,h)anthracene	53-70-3	18	b	0.421	2.6 J	0.36 J	0.66 J	0.132 [0.135]	1.7 J	< 0.43	< 0.38	0.354	0.46
Dibenzofuran	132-64-9	19	j	0.316	3.4 J	0.057 J	0.8 J	0.0676 J [0.0596 J]	6.1	< 0.43	< 0.38	0.115	0.25 J
Diethyl phthalate	84-66-2	24.8	g	< 0.075	NA	NA	NA	< 0.083 [< 0.075]	NA	NA	NA	< 0.074	NA
Di-n-butyl phthalate	84-74-2	0.15	g	< 0.075	< 7.8	0.053 JB	**0.42 JB**	**0.343 [0.294]**	< 4.1	0.044 JB	< 0.38	< 0.074	< 0.38
Di-n-octyl phthalate	117-84-0	709	i	< 0.075	< 7.8	< 0.42	< 4.2	< 0.083 [< 0.075]	< 4.1	< 0.43	< 0.38	< 0.074	< 0.38
Fluoranthene	206-44-0	0.1	b	**5.45 D**	**49**	**2.8**	**15**	**1.71 [1.82]**	**27**	**0.76**	**0.31 J**	**3.21**	**5.6**
Fluorene	86-73-7	29	b	0.472	5.5 J	0.069 J	1.4 J	0.136 [0.128]	8.8	0.048 J	< 0.38	0.203	0.31 J
Indeno(1,2,3-cd)pyrene	193-39-5	5.9	b	1.27 J	**7.5 J**	1	1.7 J	0.66 [0.633]	3.7 J	0.093 J	0.095 J	1.03	1.1
Naphthalene	91-20-3	0.0994	b	**0.16**	**2.5 J**	**0.23 J**	**0.48 J**	0.0321 J [0.0192 J]	**4.7**	< 0.43	< 0.38	0.0813	**0.11 J**
Phenanthrene	85-01-8	0.1	b	**4.19 D**	**38**	**1.2**	**12**	**1.2 [1.21]**	**14**	**0.61**	**0.15 J**	**2.25**	**2.6**
Phenol	108-95-2	0.05	h	< 0.075	< 1.5	< 0.42	< 1.6	< 0.083 [< 0.075]	< 1.5	< 0.43	< 0.38	< 0.074	**1.7**
Pyrene	129-00-0	0.1	b	**4.33 D**	**41**	**3.2**	**13**	**1.59 [1.68]**	**23**	**0.99**	**0.26 J**	**2.56**	**4.7**
Total PAHs	ARC-TPAH	1	h	NA	NA	NA	NA	NA [NA]	NA	NA	NA	NA	NA

Location ID:		Ecological		PSSTP-12A	PSSTP-13A	PSSTP-14A	PSSTP-15A	PSSTP-16A	PSSTP-17A	PSSTP-18A	PSSTP-19A	PSSTP-20A	PSSTP-21A	PSSTP-22A
Sample Depth (ft):	CAS	Soil Screening		1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2
Date Collected:	Number	Benchmark [1,2]		3/12/2003	3/12/2003	3/12/2003	3/12/2003	3/12/2003	3/12/2003	3/12/2003	3/12/2003	3/13/2003	3/13/2003	3/13/2003
Metals (mg/kg)														
Aluminum	7429-90-5	50	g	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	7440-36-0	0.27	c	**5.4**	< 2.2	< 2.9	< 2.4	< 2.4	**2.7**	< 2.4	< 2.4	< 2.3	**2.7**	**2.7**
Arsenic	7440-38-2	18	d	**100**	3.6	< 2.9	6.1	6	7.4	6.3	6.8	**47**	5.5	16
Barium	7440-39-3	330	b	88	17	36	180	120	150	97	72	65	60	120
Beryllium	7440-41-7	21	c	0.76	< 0.67	< 0.86	< 0.73	< 0.73	1.7	< 0.71	< 0.72	< 0.7	< 0.76	0.88
Cadmium	7440-43-9	0.36	c	**1.2**	< 0.67	< 0.86	< 0.73	< 0.73	< 0.72	< 0.71	< 0.72	< 0.7	< 0.76	< 0.7
Calcium	7440-70-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	7440-47-3	0.4	e	**20**	**9.2**	< 7.1	**24**	**23**	**24**	**24**	**19**	**9.8**	**12**	**22**
Cobalt	7440-48-4	13	b	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	7440-50-8	28	a	**150**	7.6	25	**34**	**55**	**100**	**31**	**48**	**57**	**70**	**61**
Cyanide	57-12-5	0.9	h	**2.8**	< 0.28	< 0.36	< 0.3	0.68	< 0.3	0.29	< 0.3	**2.3**	**2.2**	**5.5**
Iron	7439-89-6	200	f	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	7439-92-1	11	a	**310**	**13**	**58**	**380**	**280**	**270**	**180**	**200**	**240**	**130**	**190**
Magnesium	7439-95-4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	7439-96-5	220	d	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	7439-97-6	0.1	e	**0.6**	< 0.94	**0.17**	**0.7**	**0.63**	**0.53**	**0.54**	**0.6**	**0.41**	**0.37**	**8.1**
Nickel	7440-02-0	38	d	30	7.5	< 7.1	13	18	17	14	14	14	14	13
Potassium	7440-09-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	7782-49-2	0.52	d	< 2.2	< 2	< 2.6	< 2.2	< 2.2	< 2.2	< 2.1	< 2.2	< 2.1	< 2.3	< 2.1
Silver	7440-22-4	4.2	a	< 3	< 2.8	< 3.6	< 3	< 3	< 3	< 2.9	< 3	< 2.9	< 3.2	< 2.9
Sodium	7440-23-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	7440-62-2	2	d	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	7440-66-6	46	a	**430**	32	< 14	**200**	**260**	**570**	**130**	**110**	**240**	**170**	**95**
Pesticides (mg/kg)														
4,4-DDD	72-54-8	0.758	i	< 0.04	< 0.0037	< 0.0048	< 0.0041	< 0.02	< 0.04	< 0.0039	< 0.004	< 0.0039	< 0.0042	< 0.0039
4,4-DDE	72-55-9	0.596	i	< 0.04	< 0.0037	< 0.0048	< 0.0041	< 0.02	< 0.04	< 0.0039	< 0.004	< 0.0039	< 0.0042	< 0.0039
4,4-DDT	50-29-3	0.021	c	**0.48**	< 0.0037	< 0.0048	< 0.0041	< 0.02	< 0.04	0.013	0.018	0.01	**0.045**	**0.053**
Aldrin	309-00-2	0.0025	h	< 0.04	< 0.0037	< 0.0048	**0.0074**	< 0.02	< 0.04	< 0.0039	< 0.004	< 0.0039	< 0.0042	< 0.0039
Beta-BHC	319-85-7	0.001	h	< 0.04	< 0.0037	< 0.0048	< 0.0041	< 0.02	< 0.04	< 0.0039	< 0.004	< 0.0039	< 0.0042	< 0.0039
Chlordane	57-74-9	0.224	i	< 0.08	< 0.0075	< 0.0095	< 0.0081	0.16	**0.45**	0.083	< 0.08	< 0.0078	< 0.0084	< 0.0078
Dieldrin	60-57-1	0.0049	c	< 0.04	< 0.0037	< 0.0048	**0.046**	**0.024**	**0.18**	**0.026**	< 0.004	< 0.0039	< 0.0042	< 0.0039
Endosulfan I	959-98-8	0.119	i	< 0.04	< 0.0037	< 0.0048	< 0.0041	< 0.02	< 0.04	< 0.0039	< 0.004	< 0.0039	< 0.0042	< 0.0039
Endosulfan II	33213-65-9	0.119	i	< 0.04	< 0.0037	< 0.0048	< 0.0041	< 0.02	< 0.04	< 0.0039	< 0.004	< 0.0039	< 0.0042	0.016
Endosulfan sulfate	1031-07-8	0.0358	i	< 0.04	< 0.0037	< 0.0048	< 0.0041	< 0.02	< 0.04	< 0.0039	< 0.004	< 0.0039	< 0.0042	**0.088**
Endrin	72-20-8	0.001	h	< 0.04	< 0.0037	< 0.0048	< 0.0041	< 0.02	< 0.04	< 0.0039	< 0.004	< 0.0039	< 0.0042	< 0.0039
Endrin aldehyde	7421-93-4	0.0105	i	< 0.04	< 0.0037	< 0.0048	< 0.0041	< 0.02	< 0.04	< 0.0039	< 0.004	< 0.0039	< 0.0042	< 0.0039
Endrin ketone	53494-70-5	0.001	h	< 0.04	< 0.0037	< 0.0048	< 0.0041	< 0.02	< 0.04	< 0.0039	< 0.004	< 0.0039	< 0.0042	< 0.0039
Heptachlor epoxide	1024-57-3	0.152	i	< 0.04	< 0.0037	< 0.0048	< 0.0041	< 0.02	< 0.04	< 0.0039	< 0.004	< 0.0039	< 0.0042	< 0.0039
Methoxychlor	72-43-5	0.0199	i	< 0.04	< 0.0037	< 0.0048	< 0.0041	< 0.02	< 0.04	< 0.0039	< 0.004	< 0.0039	< 0.0042	< 0.0039
Toxaphene	8001-35-2	0.119	i	< 0.2	< 0.019	< 0.024	< 0.02	< 0.1	< 0.2	< 0.02	< 0.02	< 0.019	< 0.021	< 0.019
trans-chlordane	5103-74-2	0.0043	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Location ID: / Sample Depth (ft): / Date Collected:	CAS Number	Ecological Soil Screening Benchmark [1,2]		PSSTP-12A 1-2 3/12/2003	PSSTP-13A 1-2 3/12/2003	PSSTP-14A 1-2 3/12/2003	PSSTP-15A 1-2 3/12/2003	PSSTP-16A 1-2 3/12/2003	PSSTP-17A 1-2 3/12/2003	PSSTP-18A 1-2 3/12/2003	PSSTP-19A 1-2 3/12/2003	PSSTP-20A 1-2 3/13/2003	PSSTP-21A 1-2 3/13/2003	PSSTP-22A 1-2 3/13/2003
Polychlorinated Biphenyls (mg/kg)														
Aroclor 1242	53469-21-9	NA	NA	< 0.02	< 0.019	< 0.024	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.019	< 0.021	< 0.019
Aroclor 1248	12672-29-6	NA	NA	0.098	< 0.019	< 0.024	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.019	< 0.021	< 0.019
Aroclor 1254	11097-69-1	40	g	< 0.02	< 0.019	< 0.024	0.096	< 0.02	0.25	< 0.02	< 0.02	0.11	< 0.021	< 0.019
Aroclor 1260	11096-82-5	NA	NA	0.32	< 0.019	< 0.024	< 0.02	0.63	< 0.02	0.12	0.23	< 0.019	0.25	< 0.019
Aroclor 1262	37324-23-5	40	g	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Aroclor PCBs	1336-36-3	0.02	h	**0.418**	< 0.019	< 0.024	**0.096**	**0.63**	**0.25**	**0.12**	**0.23**	**0.11**	**0.25**	< 0.019
Volatile Organic Compounds (mg/kg)														
Acetone	67-64-1	2.5	i	< 0.024	< 0.022	< 0.029	< 0.024	< 0.024	< 0.024	< 0.024	< 0.024	< 0.023	< 0.025	< 2.9
Benzene	71-43-2	0.05	h	< 0.0012	< 0.0011	< 0.0014	< 0.0012	< 0.0012	< 0.012	< 0.0012	< 0.0012	< 0.0012	< 0.0013	**0.68**
Carbon Disulfide	75-15-0	0.0941	i	< 0.006	0.0012 J	< 0.0071	< 0.0061	< 0.0061	< 0.006	< 0.0059	< 0.006	< 0.0058	< 0.0063	< 0.73
Cyclohexane	110-82-7	0.1	h	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichloromethane	75-09-2	2	h	< 0.006	0.0035 JB	< 0.0071	0.002 JB	0.0021 JB	0.0021 JB	< 0.0059	< 0.006	0.0072 B	0.0052 JB	0.28 J
Ethylbenzene	100-41-4	0.05	h	< 0.0012	< 0	< 0.0014	< 0.0012	< 0.0012	< 0.0012	< 0.0012	< 0.0012	< 0.0012	< 0.0013	< 0.15
Isopropylbenzene	98-82-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
m&p-Xylenes	ARC-mpXyl	0.05	h	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl Acetate	79-20-9	2.4	k	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylcyclohexane	108-87-2	1160	j	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
o,p-Xylene	136777-61-2	0.05	h	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
o-Xylene	95-47-6	0.05	h	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene (Monomer)	100-42-5	0.1	h	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	108-88-3	0.05	h	< 0.0012	< 0.0011	< 0.0014	< 0.0012	< 0.0012	< 0.0012	< 0.0012	< 0.0012	< 0.0012	< 0.0013	**0.9**
Total Xylenes	1330-20-7	0.05	h	0	0	0	0	0	0	0 JB	0	0	0	**1.22**
Semi-Volatile Organic Compounds (mg/kg)														
1,1-Biphenyl	92-52-4	60	g	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	105-67-9	0.01	i	< 8	< 0.37	< 0.48	< 0.41	< 0.41	< 0.4	< 0.39	< 0.4	< 0.39	< 0.42	< 19
2-Methylnaphthalene	91-57-6	3.24	b	1.9 J	< 0.37	< 0.48	0.35 J	0.051 J	0.14 J	0.076 J	< 0.4	0.092 J	0.82	**11 J**
2-Methylphenol	95-48-7	0.5	h	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3-Methylphenol, 4-Methylphenol	65794-96-9	0.5	h	< 8	< 0.37	< 0.48	< 0.41	< 0.41	< 0.4	< 0.39	< 0.4	< 0.39	< 0.42	< 19
4-Methylphenol	106-44-5	0.5	h	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	100-01-6	21.9	i	< 8	< 0.37	< 0.48	< 0.41	< 0.41	< 0.4	< 0.39	< 0.4	< 0.39	< 0.42	< 19
Acenaphthene	83-32-9	20	b	1.8 J	0.045 J	< 0.48	0.64	0.2 J	0.24 J	0.21 J	0.1 J	0.16 J	0.25 J	2.7 J
Acenaphthylene	208-96-8	29	b	11	< 0.37	0.11 J	0.075 J	0.073 J	0.074 J	0.21 J	< 0.4	0.18 J	0.93	8.5 J
Acetophenone	98-86-2	300	i	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	120-12-7	0.1	b	**12**	**0.27 J**	0.079 J	**1.2**	**0.53**	**0.54 J**	**0.8**	**0.35 J**	**0.46**	**1.1**	**39**
Benz(a)anthracene	56-55-3	0.25	b	**50**	**1.4**	**1.5**	**2.8**	**1.5**	**1.3**	**1.9**	**0.31 J**	**1.7**	**4.3**	**81**
Benzaldehyde	100-52-7	470	k	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	50-32-8	0.1	b	**41**	**1.2**	**1.9**	**2.4**	**1.3**	**1**	**1.5**	**0.5**	**1.5**	**3.7**	**53**
Benzo(b)fluoranthene	205-99-2	18	b	**67**	1.5	4.3	4	2.1	1.7	2.6	0.099 J	2.4	7.1	**82**
Benzo(g,h,i)perylene	191-24-2	7.5	b	**13**	0.73	1.3	0.75	0.39 J	0.36 J	0.42	0.14 J	0.55	1.3	**27**
Benzo(k)fluoranthene	207-08-9	2.4	b	**20**	0.54	1.3	1.6	0.62	0.58	0.77	< 0.4	0.83	**2.9**	**35**

Location ID:		Ecological		PSSTP-12A	PSSTP-13A	PSSTP-14A	PSSTP-15A	PSSTP-16A	PSSTP-17A	PSSTP-18A	PSSTP-19A	PSSTP-20A	PSSTP-21A	PSSTP-22A
Sample Depth (ft):	CAS	Soil Screening		1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2
Date Collected:	Number	Benchmark [1,2]		3/12/2003	3/12/2003	3/12/2003	3/12/2003	3/12/2003	3/12/2003	3/12/2003	3/12/2003	3/13/2003	3/13/2003	3/13/2003
Semi-Volatile Organic Compounds (mg/kg) (cont'd)														
bis(2-Ethylhexyl)phthalate	117-81-7	0.925	i	< 8	< 0.37	< 0.48	< 0.41	< 0.41	< 0.4	< 0.39	< 0.4	< 0.39	< 0.42	< 19
Butyl benzyl phthalate	85-68-7	0.239	i	< 8	< 0.37	< 0.48	< 0.41	< 0.41	0.045 J	0.053 J	< 0.4	< 0.39	< 0.42	< 19
Carbazole	86-74-8	NA	b	3.6 J	0.12 J	< 0.48	0.7	0.25 J	0.23 J	0.37 J	0.043 J	0.24 J	0.5	11 J
Chrysene	218-01-9	4.73	b	**56**	1.6	2	2.9	1.6	1.3	1.8	0.38 J	1.8	**4.8**	**75**
Dibenz(a,h)anthracene	53-70-3	18	b	5.1 J	0.21 J	0.5	0.3 J	0.15 J	0.14 J	0.17 J	< 0.4	0.23 J	0.53	11 J
Dibenzofuran	132-64-9	19	j	2.9 J	0.1 J	< 0.48	0.48	0.12 J	0.19 J	0.17 J	< 0.4	0.11 J	0.54	**22**
Diethyl phthalate	84-66-2	24.8	g	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-butyl phthalate	84-74-2	0.15	g	< 8	< 0.37	< 0.48	0.06 J	< 0.41	0.11 J	0.049 J	< 0.4	0.045 J	0.14 J	< 19
Di-n-octyl phthalate	117-84-0	709	i	< 8	< 0.37	< 0.48	0.076 J	< 0.41	0.047 J	< 0.39	< 0.4	< 0.39	< 0.42	< 19
Fluoranthene	206-44-0	0.1	b	**100**	**3.3**	**1.2**	**4.8**	**3**	**2.4**	**3.6**	**0.66**	**3**	**6.2**	**160**
Fluorene	86-73-7	29	b	8.1	0.19 J	< 0.48	0.59	0.22 J	0.23 J	0.32 J	< 0.4	0.18 J	0.43	**30**
Indeno(1,2,3-cd)pyrene	193-39-5	5.9	b	**13**	0.66	1.4	0.83	0.44	0.41	0.48	0.12 J	0.61	1.5	**29**
Naphthalene	91-20-3	0.0994	b	**3.5 J**	< 0.37	**0.11 J**	**1.9**	0.08 J	**0.77**	**0.17 J**	< 0.4	**0.16 J**	**1.7**	**21**
Phenanthrene	85-01-8	0.1	b	**86**	**1.2**	**0.31 J**	**4**	**2.2**	**1.9**	**2.6**	**0.39 J**	**1.8**	**4.1**	**140**
Phenol	108-95-2	0.05	h	< 1.5	< 0.37	< 0.48	< 0.41	< 0.41	< 0.4	< 0.39	< 0.4	< 0.39	**1.6**	**1.7**
Pyrene	129-00-0	0.1	b	**120**	**3.1**	**0.99**	**4.6**	**2.7**	**2.2**	**3.3**	**0.58**	**2.7**	**6.3**	**130**
Total PAHs	ARC-TPAH	1	h	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Location ID:		Ecological		PSSTP-22R	PSSTP-23A	PSSTP-24A	PSSTP-25A	PSSTP-26A	PSSTP-27A	PSSTP-28A	PSSTP-29A	PSSTP-30A	S-113	S-113B
Sample Depth (ft):	CAS	Soil Screening		0.5-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2	0-1	1-3
Date Collected:	Number	Benchmark [1,2]		4/24/2019	3/13/2003	3/13/2003	3/13/2003	3/13/2003	3/13/2003	3/13/2003	3/13/2003	3/13/2003	4/23/2019	4/24/2019
Metals (mg/kg)														
Aluminum	7429-90-5	50	g	**12300 J**	NA	NA	NA	NA	NA	NA	NA	NA	**3340 J**	**8490 J**
Antimony	7440-36-0	0.27	c	**2.2 J**	< 2.4	**3.7**	**2.8**	< 2.4	**2.8**	**3.3**	**2.3**	**16**	**4.9 J**	**2.5 J**
Arsenic	7440-38-2	18	d	13.5	10	13	12	5.2	11	**54**	**20**	**170**	10.7	10.9
Barium	7440-39-3	330	b	286 J	66	53	43	**380**	97	260	120	**340**	154 J	275 J
Beryllium	7440-41-7	21	c	0.91	8.1	< 0.72	< 0.73	< 0.73	< 0.7	< 0.69	< 0.67	0.79	0.24	0.65
Cadmium	7440-43-9	0.36	c	**1.0**	< 0.71	< 0.72	**1.4**	< 0.73	< 0.7	< 0.69	< 0.67	< 0.79	**0.40 J**	**0.40 J**
Calcium	7440-70-2	NA	NA	15800 J	NA	NA	NA	NA	NA	NA	NA	NA	1620 J	6740 J
Chromium	7440-47-3	0.4	e	**28.4**	**25**	**10**	**31**	**15**	**26**	**11**	**27**	**31**	**27.1**	**38.6**
Cobalt	7440-48-4	13	b	10.6	NA	NA	NA	NA	NA	NA	NA	NA	2.9 J	4.6 J
Copper	7440-50-8	28	a	**549**	24	**55**	**96**	27	**62**	**57**	**56**	**190**	**80.2**	**183**
Cyanide	57-12-5	0.9	h	**8.1 J**	< 0.3	**1.3**	**2.6**	0.46	< 0.29	**0.91**	< 0.28	0.64	**125 J**	**9.8 J**
Iron	7439-89-6	200	f	**34900**	NA	NA	NA	NA	NA	NA	NA	NA	**19500**	**21700**
Lead	7439-92-1	11	a	**1130**	**21**	**69**	**91**	**1000**	**150**	**960**	**560**	**1600**	**460**	**445**
Magnesium	7439-95-4	NA	NA	6530 J	NA	NA	NA	NA	NA	NA	NA	NA	602 J	2050 J
Manganese	7439-96-5	220	d	**1050**	NA	NA	NA	NA	NA	NA	NA	NA	112	147
Mercury	7439-97-6	0.1	e	**0.17 J**	**0.17**	< 0.1	**0.19**	**0.9**	**0.22**	**0.35**	**0.44**	**1.2**	**0.50 J**	**0.30 J**
Nickel	7440-02-0	38	d	35.2	**39**	11	33	9.4	16	30	18	33	8.3	18.8
Potassium	7440-09-7	NA	NA	2550	NA	NA	NA	NA	NA	NA	NA	NA	1010 J	857 J
Selenium	7782-49-2	0.52	d	< 4.9	< 2.1	**2.7**	< 2.2	< 2.2	< 2.1	< 2.1	< 2	< 2.4	**2.1 J**	**1.8 J**
Silver	7440-22-4	4.2	a	0.73 J	< 3	< 3	< 3	< 2.3	< 2.9	< 2.9	< 2.8	< 3.3	< 0.60	< 0.65
Sodium	7440-23-5	NA	NA	229 J	NA	NA	NA	NA	NA	NA	NA	NA	244 J	< 1300
Vanadium	7440-62-2	2	d	**38.7**	NA	NA	NA	NA	NA	NA	NA	NA	**13.7**	**32.6**
Zinc	7440-66-6	46	a	**438 J**	**61**	37	**540**	**560**	**180**	**370**	**260**	**590**	**98.4 J**	**173 J**
Pesticides (mg/kg)														
4,4-DDD	72-54-8	0.758	i	0.0306 J	< 0.004	< 0.004	< 0.0041	< 0.041	0.067	0.011	< 0.0037	0.086	NA	NA
4,4-DDE	72-55-9	0.596	i	< 0.00075	< 0.004	< 0.004	< 0.0041	< 0.041	< 0.0039	< 0.038	< 0.0037	0.021	NA	NA
4,4-DDT	50-29-3	0.021	c	< 0.00075	< 0.004	< 0.004	< 0.0041	< 0.041	**0.044**	< 0.038	0.02	**0.098**	NA	NA
Aldrin	309-00-2	0.0025	h	< 0.00075	< 0.004	< 0.004	< 0.0041	< 0.041	< 0.0039	< 0.038	< 0.0037	< 0.0044	NA	NA
Beta-BHC	319-85-7	0.001	h	< 0.00075	< 0.004	< 0.004	< 0.0041	< 0.041	< 0.0039	< 0.038	< 0.0037	< 0.0044	NA	NA
Chlordane	57-74-9	0.224	i	NA	< 0.0079	< 0.008	< 0.0081	**0.52**	< 0.0078	0.016	< 0.0075	< 0.0088	NA	NA
Dieldrin	60-57-1	0.0049	c	< 0.00075	< 0.004	< 0.004	< 0.0041	< 0.041	< 0.0039	< 0.038	< 0.0037	**0.016**	NA	NA
Endosulfan I	959-98-8	0.119	i	< 0.00075	< 0.004	< 0.004	< 0.0041	< 0.041	< 0.0039	< 0.038	< 0.0037	< 0.0044	NA	NA
Endosulfan II	33213-65-9	0.119	i	< 0.00075	< 0.004	< 0.004	< 0.0041	< 0.041	< 0.0039	< 0.038	< 0.0037	< 0.0044	NA	NA
Endosulfan sulfate	1031-07-8	0.0358	i	< 0.00075	< 0.004	< 0.004	< 0.0041	< 0.041	< 0.0039	0.02	< 0.0037	**0.039**	NA	NA
Endrin	72-20-8	0.001	h	< 0.00075	< 0.004	< 0.004	< 0.0041	< 0.041	< 0.0039	**0.0057**	< 0.0037	**0.015**	NA	NA
Endrin aldehyde	7421-93-4	0.0105	i	< 0.00075	< 0.004	0.0071	< 0.0041	**0.32**	< 0.0039	< 0.038	< 0.0037	< 0.0044	NA	NA
Endrin ketone	53494-70-5	0.001	h	< 0.00075	< 0.004	< 0.004	< 0.0041	< 0.041	< 0.0039	< 0.038	< 0.0037	< 0.0044	NA	NA
Heptachlor epoxide	1024-57-3	0.152	i	< 0.00075	< 0.004	< 0.004	< 0.0041	< 0.041	< 0.0039	< 0.038	< 0.0037	< 0.0044	NA	NA
Methoxychlor	72-43-5	0.0199	i	< 0.0015	< 0.004	< 0.004	< 0.0041	< 0.041	< 0.0039	0.014	< 0.0037	< 0.0044	NA	NA
Toxaphene	8001-35-2	0.119	i	< 0.019	< 0.02	< 0.02	< 0.02	< 0.2	< 0.019	< 19	< 0.019	< 0.022	NA	NA
trans-chlordane	5103-74-2	0.0043	NA	< 0.00075	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Location ID:		Ecological		PSSTP-22R	PSSTP-23A	PSSTP-24A	PSSTP-25A	PSSTP-26A	PSSTP-27A	PSSTP-28A	PSSTP-29A	PSSTP-30A	S-113	S-113B
Sample Depth (ft):	CAS Number	Soil Screening Benchmark [1,2]		0.5-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2	0-1	1-3
Date Collected:				4/24/2019	3/13/2003	3/13/2003	3/13/2003	3/13/2003	3/13/2003	3/13/2003	3/13/2003	3/13/2003	4/23/2019	4/24/2019
Polychlorinated Biphenyls (mg/kg)														
Aroclor 1242	53469-21-9	NA	NA	< 0.037	< 0.02	< 0.02	< 0.02	< 0.02	< 0.097	< 0.019	< 0.019	< 0.023	NA	NA
Aroclor 1248	12672-29-6	NA	NA	< 0.037	< 0.02	< 0.02	< 0.02	< 0.02	< 0.097	< 0.019	< 0.019	< 0.023	NA	NA
Aroclor 1254	11097-69-1	40	g	< 0.037	< 0.02	< 0.02	< 0.02	< 0.02	< 0.097	< 0.019	< 0.019	< 0.023	NA	NA
Aroclor 1260	11096-82-5	NA	NA	< 0.037	< 0.02	< 0.02	0.081	0.092	0.2	< 0.019	0.077	< 0.023	NA	NA
Aroclor 1262	37324-23-5	40	g	< 0.037	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Aroclor PCBs	1336-36-3	0.02	h	< 0.037	< 0.02	< 0.02	**0.081**	**0.092**	**0.2**	< 0.019	**0.077**	< 0.023	NA	NA
Volatile Organic Compounds (mg/kg)														
Acetone	67-64-1	2.5	i	< 0.013	< 0.024	< 0.024	< 0.024	< 0.024	< 0.023	< 0.11	< 0.022	< 0.026	< 0.016	< 2.5
Benzene	71-43-2	0.05	h	0.0010	< 0.0012	< 0.0012	< 0.0012	< 0.012	< 0.0012	< 0.0057	< 0.0011	< 0.0013	< 0.00082	**0.935**
Carbon Disulfide	75-15-0	0.0941	i	0.0012 J	< 0.006	< 0.006	< 0.0061	< 0.0061	< 0.0058	< 0.029	< 0.0056	< 0.0066	< 0.0033	< 0.5
Cyclohexane	110-82-7	0.1	h	< 0.0026	NA	NA	NA	NA	NA	NA	NA	NA	< 0.0033	< 0.5
Dichloromethane	75-09-2	2	h	< 0.0064	0.0095 B	0.0053 JB	0.0056 JB	0.0091 B	0.0035 JB	0.035 B	0.0043 JB	< 0.0046 UJB	< 0.0082	< 1.3
Ethylbenzene	100-41-4	0.05	h	< 0.0013	< 0.0012	< 0.0012	< 0.0012	< 0.0012	< 0.0012	0.0095	< 0.0011	< 0.0013	< 0.0016	< 0.25
Isopropylbenzene	98-82-8	NA	NA	< 0.0026	NA	NA	NA	NA	NA	NA	NA	NA	< 0.0033	< 0.5
m&p-Xylenes	ARC-mpXyl	0.05	h	0.0029	NA	NA	NA	NA	NA	NA	NA	NA	< 0.0016	**0.29**
Methyl Acetate	79-20-9	2.4	k	< 0.0064 UJ	NA	NA	NA	NA	NA	NA	NA	NA	< 0.0082	< 1.3
Methylcyclohexane	108-87-2	1160	j	< 0.0026	NA	NA	NA	NA	NA	NA	NA	NA	< 0.0033	< 0.5
o,p-Xylene	136777-61-2	0.05	h	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
o-Xylene	95-47-6	0.05	h	0.00085 J	NA	NA	NA	NA	NA	NA	NA	NA	< 0.0016	< 0.25
Styrene (Monomer)	100-42-5	0.1	h	< 0.0026	NA	NA	NA	NA	NA	NA	NA	NA	< 0.0033	< 0.5
Toluene	108-88-3	0.05	h	0.0016	< 0.0012	< 0.0012	< 0.0012	< 0.0012	< 0.0012	0.012	< 0.0011	< 0.0013	< 0.0016	**0.546**
Total Xylenes	1330-20-7	0.05	h	0.0038	0	0	0	0	0	0.048	0	0	< 0.0016	**0.29**
Semi-Volatile Organic Compounds (mg/kg)														
1,1-Biphenyl	92-52-4	60	g	1.99	NA	NA	NA	NA	NA	NA	NA	NA	1.2	0.177 J
2,4-Dimethylphenol	105-67-9	0.01	i	**0.181 J**	< 0.4	< 1.2	< 8.1	< 1.2	< 19	< 7.7	< 1.1	< 1.3	**0.158 J**	< 0.4
2-Methylnaphthalene	91-57-6	3.24	b	**10.9 D**	< 0.4	0.24 J	< 8.1	0.35 J	2 J	**17**	0.5 J	**4.8**	2.99	0.522 J
2-Methylphenol	95-48-7	0.5	h	0.0797 J	NA	NA	NA	NA	NA	NA	NA	NA	0.195	< 0.16
3-Methylphenol, 4-Methylphenol	65794-96-9	0.5	h	0.304	< 0.4	< 1.2	< 8.1	< 1.2	< 19	< 7.7	< 1.1	< 1.3	**0.61**	< 0.16
4-Methylphenol	106-44-5	0.5	h	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	100-01-6	21.9	i	< 0.4	< 0.4	< 1.2	< 8.1	< 1.2	< 19	< 7.7	< 1.1	< 1.3	< 0.41	< 0.4
Acenaphthene	83-32-9	20	b	1.98	< 0.4	< 1.2	< 8.1	1.1 J	8.8 J	8.7	1.1	0.29 J	1.98	0.817 J
Acenaphthylene	208-96-8	29	b	17.7 D	< 0.4	0.83 J	1.3 J	0.32 J	3.2 J	< 7.7	0.35 J	0.4 J	**32.3 D**	16.9 D
Acetophenone	98-86-2	300	i	0.0245 J	NA	NA	NA	NA	NA	NA	NA	NA	0.128 J	< 0.4
Anthracene	120-12-7	0.1	b	**31.1 D**	< 0.4	**4.7**	**3.4 J**	**2.5**	**31**	**7 J**	**2.8**	**0.44 J**	**52.7 D**	**24 D**
Benz(a)anthracene	56-55-3	0.25	b	**58 D**	0.19 J	**11**	**18**	**6**	**51**	**7 J**	**4.7**	**1.1 J**	**101 D**	**65.9 D**
Benzaldehyde	100-52-7	470	k	< 0.4	NA	NA	NA	NA	NA	NA	NA	NA	< 0.41	< 0.4
Benzo(a)pyrene	50-32-8	0.1	b	**48.6 D**	**0.16 J**	**6.6**	**14**	**5.4**	**42**	**3.4 J**	**3.4**	**1.1 J**	**82.9 D**	**55.2 D**
Benzo(b)fluoranthene	205-99-2	18	b	**71.4 D**	0.24 J	11	**29**	8.3	**67**	3.4 J	5.2	2.6	**107 D**	**76.6 D**
Benzo(g,h,i)perylene	191-24-2	7.5	b	**31 D**	0.099 J	2.5	< 8.1	1.7	**11 J**	1.4 J	0.95 J	0.59 J	**53.1 D**	**31.1 D**
Benzo(k)fluoranthene	207-08-9	2.4	b	**6.68**	0.074 J	**4.4**	**8 J**	**2.7**	**21**	0.97 J	1.2	0.68 J	**43 D**	**23.1 D**

Location ID:		Ecological		PSSTP-22R	PSSTP-23A	PSSTP-24A	PSSTP-25A	PSSTP-26A	PSSTP-27A	PSSTP-28A	PSSTP-29A	PSSTP-30A	S-113	S-113B
Sample Depth (ft):	CAS	Soil Screening		0.5-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2	0-1	1-3
Date Collected:	Number	Benchmark [1,2]		4/24/2019	3/13/2003	3/13/2003	3/13/2003	3/13/2003	3/13/2003	3/13/2003	3/13/2003	3/13/2003	4/23/2019	4/24/2019
Semi-Volatile Organic Compounds (mg/kg) (cont'd)														
bis(2-Ethylhexyl)phthalate	117-81-7	0.925	i	< 0.16	< 0.4	< 1.2	< 8.1	0.87 J	< 19	< 7.7	0.13 J	< 1.3	< 0.16	< 0.16
Butyl benzyl phthalate	85-68-7	0.239	i	< 0.16	< 0.4	< 1.2	< 8.1	< 1.2	< 19	< 7.7	< 1.1	< 1.3	< 0.16	< 0.16
Carbazole	86-74-8	NA	b	9.74 D	< 0.4	1.3	1.5 J	1.2	4.5 J	< 7.7	1.1 J	0.3 J	9.79 D	1.82 J
Chrysene	218-01-9	4.73	b	**52.3 D**	0.18 J	**12**	**23**	**5.7**	**47**	**6.7 J**	4.1	2.2	**90.9 D**	**57 D**
Dibenz(a,h)anthracene	53-70-3	18	b	6.44	< 0.4	1.1 J	3.4 J	0.6 J	3.2 J	< 7.7	0.35 J	0.17 J	17.1 D	9.6 D
Dibenzofuran	132-64-9	19	j	18.1 D	< 0.4	0.42 J	0.97 J	0.65 J	5.8 J	3.4 J	1 J	0.59 J	10.2 D	2.81 J
Diethyl phthalate	84-66-2	24.8	g	< 0.16	NA	NA	NA	NA	NA	NA	NA	NA	< 0.16	< 0.16
Di-n-butyl phthalate	84-74-2	0.15	g	< 0.16	0.063 J	< 1.2	< 8.1	< 1.2	< 19	< 7.7	< 1.1	0.15 J	< 0.16	< 0.16
Di-n-octyl phthalate	117-84-0	709	i	< 0.16	< 0.4	< 1.2	< 8.1	< 1.2	< 19	< 7.7	< 1.1	< 1.3	< 0.16	< 0.16
Fluoranthene	206-44-0	0.1	b	**139 D**	**0.33 J**	**16**	**34**	**11**	**120**	**4 J**	**9.1**	**1.8**	**266 D**	**179 D**
Fluorene	86-73-7	29	b	18.9 D	< 0.4	0.71 J	< 8.1	1.2 J	12 J	11	1.5	0.55 J	22.3 D	11 D
Indeno(1,2,3-cd)pyrene	193-39-5	5.9	b	**35.3 D**	0.09 J	2.7	**8.5**	1.7	**11 J**	0.87 J	1 J	0.56 J	**49.6 D**	**36.4 D**
Naphthalene	91-20-3	0.0994	b	**18.5 D**	< 0.4	**0.66 J**	**1.8 J**	**0.77 J**	< 19	**7.9**	**0.63 J**	**2.4**	**7.76**	**1.08 J**
Phenanthrene	85-01-8	0.1	b	**122 D**	0.047 J	**6.7**	**16**	**8.6**	**110**	**13**	**11**	**2.5**	**183 D**	**63.4 D**
Phenol	108-95-2	0.05	h	**0.212**	**1.6**	< 1.2	**2**	< 1.2	< 1.5	**2.5**	< 1.1	< 1.3	**0.646**	< 0.16
Pyrene	129-00-0	0.1	b	**107 D**	**0.27 J**	**13**	**25**	**12**	**130**	**26**	**8.9**	**2.2**	**187 D**	**133 D**
Total PAHs	ARC-TPAH	1	h	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Location ID:		Ecological		S-119	S-120	S-121	S-122	S-138		S-139		S-140		S-151	S-163
Sample Depth (ft):	CAS	Soil Screening		0-1	0-1	0-1	0-1	0-0.5	0.5-2	0-0.5	0.5-2	0-0.5	0.5-2	0.5-2	0.5-2
Date Collected:	Number	Benchmark [1,2]		4/12/2019	4/24/2019	4/12/2019	4/12/2019	4/5/2019	4/5/2019	4/10/2019	4/10/2019	4/10/2019	4/10/2019	4/25/2019	9/19/2019
Metals (mg/kg)															
Aluminum	7429-90-5	50	g	**6540**	**5780 J**	**5600**	**4670**	NA	NA	NA	NA	NA	NA	**6750**	**11400**
Antimony	7440-36-0	0.27	c	< 2.7	**2.3 J**	< 2.7	< 2.3	NA	NA	NA	NA	NA	NA	**0.87 J**	< 2.2
Arsenic	7440-38-2	18	d	**57.4**	**105**	**69.3**	**75.0**	NA	NA	NA	NA	NA	NA	6.9	7.6
Barium	7440-39-3	330	b	92.8	249 J	106	67.5	NA	NA	NA	NA	NA	NA	84.3	217
Beryllium	7440-41-7	21	c	0.68	0.59	0.88	0.52	NA	NA	NA	NA	NA	NA	0.75	1.2
Cadmium	7440-43-9	0.36	c	**1.8**	**2.7**	**1.8**	**1.1**	NA	NA	NA	NA	NA	NA	0.31 J	< 0.54
Calcium	7440-70-2	NA	NA	4320	2650 J	9920	2290	NA	NA	NA	NA	NA	NA	17500 J	41400
Chromium	7440-47-3	0.4	e	**19.3**	**15.2**	**21.0**	**16.1**	NA	NA	NA	NA	NA	NA	**16.7**	**17.4**
Cobalt	7440-48-4	13	b	6.8	5.6 J	< 6.9	< 5.8	NA	NA	NA	NA	NA	NA	3.3 J	< 5.4
Copper	7440-50-8	28	a	**132**	**134**	**135**	**102**	NA	NA	NA	NA	NA	NA	25.5	20.7
Cyanide	57-12-5	0.9	h	**1.6**	**1.4 J**	0.68	**0.95**	NA	NA	NA	NA	NA	NA	0.72 J	**0.96**
Iron	7439-89-6	200	f	**14600**	**17200**	**11300**	**14200**	NA	NA	NA	NA	NA	NA	**11600**	**10300**
Lead	7439-92-1	11	a	**253**	**329**	**241**	**359**	NA	NA	NA	NA	NA	NA	**102 J**	**34.5**
Magnesium	7439-95-4	NA	NA	1730	1100 J	2760	1120	NA	NA	NA	NA	NA	NA	3890	15400
Manganese	7439-96-5	220	d	**303**	**229**	**266**	**245**	NA	NA	NA	NA	NA	NA	**350 J**	**1710**
Mercury	7439-97-6	0.1	e	**0.21**	**0.29 J**	**0.12**	**0.24**	NA	NA	NA	NA	NA	NA	**0.12 J**	< 0.035
Nickel	7440-02-0	38	d	23.4	18.7	25.2	13.8	NA	NA	NA	NA	NA	NA	9.4	8.6
Potassium	7440-09-7	NA	NA	< 1300	651 J	< 1400	< 1200	NA	NA	NA	NA	NA	NA	853 J	1980
Selenium	7782-49-2	0.52	d	< 2.7	< 2.4	< 2.7	< 2.3	NA	NA	NA	NA	NA	NA	**0.74 J**	< 2.2
Silver	7440-22-4	4.2	a	< 0.67	< 0.60	< 0.69	< 0.58	NA	NA	NA	NA	NA	NA	< 0.55	< 0.54
Sodium	7440-23-5	NA	NA	< 1300	< 1200	< 1400	< 1200	NA	NA	NA	NA	NA	NA	273 J	< 1100
Vanadium	7440-62-2	2	d	**22.5**	**19.5**	**24.7**	**21.6**	NA	NA	NA	NA	NA	NA	**13.7**	**41.3**
Zinc	7440-66-6	46	a	**362**	**774**	**355**	**247**	NA	NA	NA	NA	NA	NA	**49.0**	25.2
Pesticides (mg/kg)															
4,4-DDD	72-54-8	0.758	i	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4-DDE	72-55-9	0.596	i	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4-DDT	50-29-3	0.021	c	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aldrin	309-00-2	0.0025	h	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Beta-BHC	319-85-7	0.001	h	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlordane	57-74-9	0.224	i	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin	60-57-1	0.0049	c	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan I	959-98-8	0.119	i	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan II	33213-65-9	0.119	i	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endosulfan sulfate	1031-07-8	0.0358	i	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin	72-20-8	0.001	h	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin aldehyde	7421-93-4	0.0105	i	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin ketone	53494-70-5	0.001	h	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor epoxide	1024-57-3	0.152	i	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methoxychlor	72-43-5	0.0199	i	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toxaphene	8001-35-2	0.119	i	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-chlordane	5103-74-2	0.0043	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Location ID:		Ecological		S-119	S-120	S-121	S-122	S-138		S-139		S-140		S-151	S-163
Sample Depth (ft):	CAS	Soil Screening		0-1	0-1	0-1	0-1	0-0.5	0.5-2	0-0.5	0.5-2	0-0.5	0.5-2	0.5-2	0.5-2
Date Collected:	Number	Benchmark [1,2]		4/12/2019	4/24/2019	4/12/2019	4/12/2019	4/5/2019	4/5/2019	4/10/2019	4/10/2019	4/10/2019	4/10/2019	4/25/2019	9/19/2019
Polychlorinated Biphenyls (mg/kg)															
Aroclor 1242	53469-21-9	NA	NA	NA	NA	NA	NA	< 0.036	< 0.034	< 0.036	< 0.035	< 0.041	< 0.038	NA	NA
Aroclor 1248	12672-29-6	NA	NA	NA	NA	NA	NA	< 0.036	< 0.034	< 0.036	< 0.035	< 0.041	< 0.038	NA	NA
Aroclor 1254	11097-69-1	40	g	NA	NA	NA	NA	0.159	0.426	0.406	0.171	0.0256 J	< 0.038	NA	NA
Aroclor 1260	11096-82-5	NA	NA	NA	NA	NA	NA	< 0.036	< 0.034	< 0.036	< 0.035	< 0.041	< 0.038	NA	NA
Aroclor 1262	37324-23-5	40	g	NA	NA	NA	NA	< 0.036	< 0.034	< 0.036	< 0.035	< 0.041	< 0.038	NA	NA
Total Aroclor PCBs	1336-36-3	0.02	h	NA	NA	NA	NA	**0.159**	**0.426**	**0.406**	**0.171**	**0.0256 J**	< 0.038	NA	NA
Volatile Organic Compounds (mg/kg)															
Acetone	67-64-1	2.5	i	0.0428	< 0.028	< 0.023	< 0.011	NA	NA	NA	NA	NA	NA	< 2.8	< 1.7
Benzene	71-43-2	0.05	h	< 0.00097	< 0.0014	< 0.0012	< 0.00055	NA	NA	NA	NA	NA	NA	< 0.14	< 0.087
Carbon Disulfide	75-15-0	0.0941	i	< 0.0039	< 0.0055	< 0.0047	< 0.0022	NA	NA	NA	NA	NA	NA	< 0.57	< 0.35
Cyclohexane	110-82-7	0.1	h	< 0.0039	< 0.0055	< 0.0047	< 0.0022	NA	NA	NA	NA	NA	NA	< 0.57	**0.158 J**
Dichloromethane	75-09-2	2	h	< 0.0097	< 0.014	< 0.012	< 0.0055	NA	NA	NA	NA	NA	NA	< 1.4	< 0.87
Ethylbenzene	100-41-4	0.05	h	< 0.0019	< 0.0028	< 0.0023	< 0.0011	NA	NA	NA	NA	NA	NA	< 0.28	< 0.17
Isopropylbenzene	98-82-8	NA	NA	< 0.0039	< 0.0055	< 0.0047	< 0.0022	NA	NA	NA	NA	NA	NA	< 0.57	< 0.35
m&p-Xylenes	ARC-mpXyl	0.05	h	< 0.0019	< 0.0028	< 0.0023	< 0.0011	NA	NA	NA	NA	NA	NA	< 0.28	**0.286**
Methyl Acetate	79-20-9	2.4	k	0.0039 J	< 0.014	< 0.012	< 0.0055	NA	NA	NA	NA	NA	NA	< 1.4	< 0.87
Methylcyclohexane	108-87-2	1160	j	< 0.0039	< 0.0055	< 0.0047	< 0.0022	NA	NA	NA	NA	NA	NA	< 0.57	0.409
o,p-Xylene	136777-61-2	0.05	h	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
o-Xylene	95-47-6	0.05	h	< 0.0019	< 0.0028	< 0.0023	< 0.0011	NA	NA	NA	NA	NA	NA	< 0.28	**0.161 J**
Styrene (Monomer)	100-42-5	0.1	h	< 0.0039	< 0.0055	< 0.0047	< 0.0022	NA	NA	NA	NA	NA	NA	< 0.57	< 0.35
Toluene	108-88-3	0.05	h	< 0.0019	< 0.0028	< 0.0023	< 0.0011	NA	NA	NA	NA	NA	NA	< 0.28	**0.311**
Total Xylenes	1330-20-7	0.05	h	< 0.0019	< 0.0028	< 0.0023	< 0.0011	NA	NA	NA	NA	NA	NA	< 0.28	**0.447**
Semi-Volatile Organic Compounds (mg/kg)															
1,1-Biphenyl	92-52-4	60	g	0.0202 J	0.0109 J	0.0090 J	0.0088 J	NA	NA	NA	NA	NA	NA	NA	3.19
2,4-Dimethylphenol	105-67-9	0.01	i	< 0.21	< 0.19	< 0.22	< 0.2	NA	NA	NA	NA	NA	NA	< 0.37	< 0.94
2-Methylnaphthalene	91-57-6	3.24	b	0.0629	0.0360 J	0.0209 J	0.0226 J	NA	NA	NA	NA	NA	NA	**22.1 D**	**15.3**
2-Methylphenol	95-48-7	0.5	h	< 0.086	< 0.074	< 0.089	< 0.079	NA	NA	NA	NA	NA	NA	< 0.15	0.131 J
3-Methylphenol, 4-Methylphenol	65794-96-9	0.5	h	< 0.086	< 0.074	< 0.089	< 0.079	NA	NA	NA	NA	NA	NA	0.119 J	0.485
4-Methylphenol	106-44-5	0.5	h	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	100-01-6	21.9	i	< 0.21	< 0.19	< 0.22	< 0.2	NA	NA	NA	NA	NA	NA	< 0.37	< 0.94
Acenaphthene	83-32-9	20	b	0.0451	0.0228 J	< 0.044	0.0155 J	NA	NA	NA	NA	NA	NA	5.08	2.96
Acenaphthylene	208-96-8	29	b	0.494	0.115	0.0828	0.109	NA	NA	NA	NA	NA	NA	**40.3 D**	**36 D**
Acetophenone	98-86-2	300	i	< 0.21	< 0.19	< 0.22	< 0.2	NA	NA	NA	NA	NA	NA	NA	< 0.94
Anthracene	120-12-7	0.1	b	**0.63**	**0.122**	**0.102**	**0.126**	NA	NA	NA	NA	NA	NA	**78.8 D**	**85.4 D**
Benz(a)anthracene	56-55-3	0.25	b	**1.96**	**0.417 J**	**0.484**	**0.631**	NA	NA	NA	NA	NA	NA	**93.1 D**	**201 D**
Benzaldehyde	100-52-7	470	k	0.212	0.0111 J	0.0123 J	0.0206 J	NA	NA	NA	NA	NA	NA	NA	< 0.94
Benzo(a)pyrene	50-32-8	0.1	b	**2.26**	**0.516 J**	**0.821**	**0.848**	NA	NA	NA	NA	NA	NA	**86.4 D**	**156 D**
Benzo(b)fluoranthene	205-99-2	18	b	2.81	0.638	0.821	1.01	NA	NA	NA	NA	NA	NA	**101 D**	**218 D**
Benzo(g,h,i)perylene	191-24-2	7.5	b	1.48	0.407 J	0.663	0.598	NA	NA	NA	NA	NA	NA	**64.7 D**	**79.6 D**
Benzo(k)fluoranthene	207-08-9	2.4	b	0.891	0.253	0.29	0.307	NA	NA	NA	NA	NA	NA	**40.3 D**	**66.1 D**

Location ID:				S-119	S-120	S-121	S-122	S-138		S-139		S-140		S-151	S-163
Sample Depth (ft):	CAS Number	Ecological Soil Screening Benchmark [1,2]		0-1	0-1	0-1	0-1	0-0.5	0.5-2	0-0.5	0.5-2	0-0.5	0.5-2	0.5-2	0.5-2
Date Collected:				4/12/2019	4/24/2019	4/12/2019	4/12/2019	4/5/2019	4/5/2019	4/10/2019	4/10/2019	4/10/2019	4/10/2019	4/25/2019	9/19/2019
Semi-Volatile Organic Compounds (mg/kg) (cont'd)															
bis(2-Ethylhexyl)phthalate	117-81-7	0.925	i	0.181	0.0397 J	0.0786 J	0.0546 J	NA	NA	NA	NA	NA	NA	< 0.15	< 0.37
Butyl benzyl phthalate	85-68-7	0.239	i	< 0.086	< 0.074	< 0.089	< 0.079	NA	NA	NA	NA	NA	NA	< 0.15	< 0.37
Carbazole	86-74-8	NA	b	0.14	0.0420 J	0.0282 J	0.0396 J	NA	NA	NA	NA	NA	NA	29.4 D	10.2
Chrysene	218-01-9	4.73	b	1.81	0.443	0.507	0.663	NA	NA	NA	NA	NA	NA	**77 D**	**174 D**
Dibenz(a,h)anthracene	53-70-3	18	b	0.349	0.0964	0.117	0.137	NA	NA	NA	NA	NA	NA	16.4 D	**23.8 D**
Dibenzofuran	132-64-9	19	j	0.0873	0.0364 J	< 0.089	0.0199 J	NA	NA	NA	NA	NA	NA	**52.6 D**	**42 D**
Diethyl phthalate	84-66-2	24.8	g	< 0.086	< 0.074	< 0.089	< 0.079	NA	NA	NA	NA	NA	NA	< 0.15	< 0.37
Di-n-butyl phthalate	84-74-2	0.15	g	0.0187 J	< 0.074	< 0.089	< 0.079	NA	NA	NA	NA	NA	NA	< 0.15	< 0.37
Di-n-octyl phthalate	117-84-0	709	i	< 0.086	< 0.074	< 0.089	< 0.079	NA	NA	NA	NA	NA	NA	< 0.15	< 0.37
Fluoranthene	206-44-0	0.1	b	**3.36**	**0.772 J**	**0.616**	**1.01**	NA	NA	NA	NA	NA	NA	**305 D**	**477 D**
Fluorene	86-73-7	29	b	0.187	0.0544	0.0204 J	0.0275 J	NA	NA	NA	NA	NA	NA	**91.9 D**	**69.3 D**
Indeno(1,2,3-cd)pyrene	193-39-5	5.9	b	1.41	0.406 J	0.604	0.557	NA	NA	NA	NA	NA	NA	**56.9 D**	**95.1 D**
Naphthalene	91-20-3	0.0994	b	**0.127**	**0.114**	0.0591	0.0505	NA	NA	NA	NA	NA	NA	**100 D**	**37.2 D**
Phenanthrene	85-01-8	0.1	b	**1.74**	**0.574 J**	**0.312**	**0.468**	NA	NA	NA	NA	NA	NA	**354 D**	**324 D**
Phenol	108-95-2	0.05	h	< 0.086	< 0.074	< 0.089	< 0.079	NA	NA	NA	NA	NA	NA	**0.0928 J**	**0.404**
Pyrene	129-00-0	0.1	b	**3.26**	**0.713 J**	**0.789**	**1.15**	NA	NA	NA	NA	NA	NA	**227 D**	**353 D**
Total PAHs	ARC-TPAH	1	h	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:

1. The relevant ecological screening benchmarks (ESBs) are selected based on the following hierarchy system:
    1. EcoSSLs
    2. ORNL benchmarks
    3. EPA Region 4
    4. EPA Region 5
    5. ECOTOX
    6. PubChem
2. Letter denotes which ESB was selected for each analyte:
    a. Eco-SSL Avian Soil Screening Benchmark
    b. Eco-SSL Inverts Soil Screening Benchmark
    c. Eco-SSL Mammalian Soil Screening Benchmark
    d. Eco-SSL Plants Soil Screening Benchmark
    e. ORNL Invertebrates Soil Screening Benchmark
    f. ORNL Microbes Soil Screening Benchmark
    g. ORNL Plants Screening Benchmark
    h. EPA R4 Soil Screening Benchmark
    i. EPA R5 ESL Soil Screening Benchmark
    j. PubChem
    k. ECOTOX
3. See reference section below for the ESBs used.
4. CAS = Chemical Abstract Service.
5. COPEC = Consituent of Potential Ecological Concern
6. mg/kg = Milligrams per kilogram
7. NA = Not applicable
8. PAH = Polycyclic Aromatic Hydrocarbon
9. PCB = Polychlorinated biphenyl

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Appendix O-1
Ecological Screening Benchmark Comparisons - Summary and Hazard Quotients

Remedial Investigation Report
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Analyte	CAS Number	Relevant Ecological Soil Criteria[1,2]		Detection Frequency	Range of Detections	Criteria Exceedance Frequency	Act 2 COPEC?	Retain as COPEC?	Range of Hazard Quotients
Metals (mg/kg)									
Aluminum	7429-90-5	50	g	19/19 (100%)	1140 - 13500	19/19 (100%)	No	**Yes**	22.8 - 270
Antimony	7440-36-0	0.27	c	47/104 (45.2%)	0.56 - 20.6	47/104 (45.2%)	No	**Yes**	2.1 - 76.3
Arsenic	7440-38-2	18	d	98/104 (94.2%)	2.4 - 170	34/104 (32.7%)	Yes	**Yes**	0.13 - 9.4
Barium	7440-39-3	330	b	100/104 (96.2%)	7.1 - 780	8/104 (7.7%)	Yes	**Yes**	0.022 - 2.4
Beryllium	7440-41-7	21	c	38/104 (36.5%)	0.24 - 8.1	0/104 (0%)	Yes	No	0.011 - 0.39
Cadmium	7440-43-9	0.36	c	42/104 (40.4%)	0.1 - 4.1	39/104 (37.5%)	Yes	**Yes**	0.28 - 11.4
Calcium	7440-70-2	NA	NA	19/19 (100%)	430 - 41400	0/19 (0%)	No	No	NA - NA
Chromium	7440-47-3	0.4	e	93/104 (89.4%)	1.6 - 162	93/104 (89.4%)	Yes	**Yes**	4.0 - 405
Cobalt	7440-48-4	13	b	16/19 (84.2%)	0.6 - 56.7	1/19 (5.3%)	Yes	**Yes**	0.046 - 4.4
Copper	7440-50-8	28	a	103/104 (99%)	6.7 - 1400	79/104 (76%)	Yes	**Yes**	0.24 - 50.0
Cyanide	57-12-5	0.9	h	36/49 (73.5%)	0.14 - 125	20/49 (40.8%)	Yes	**Yes**	0.16 - 139
Iron	7439-89-6	200	f	19/19 (100%)	3720 - 93300	19/19 (100%)	Yes	**Yes**	18.6 - 467
Lead	7439-92-1	11	a	102/104 (98.1%)	6.9 - 14000	98/104 (94.2%)	Yes	**Yes**	0.63 - 1,270
Magnesium	7439-95-4	NA	NA	19/19 (100%)	297 - 15400	0/19 (0%)	No	No	NA - NA
Manganese	7439-96-5	220	d	19/19 (100%)	11.1 - 1710	13/19 (68.4%)	Yes	**Yes**	0.050 - 7.8
Mercury	7439-97-6	0.1	e	84/104 (80.8%)	0.03 - 17	82/104 (78.8%)	Yes	**Yes**	0.30 - 170
Nickel	7440-02-0	38	d	95/104 (91.3%)	1.6 - 243	10/104 (9.6%)	Yes	**Yes**	0.042 - 6.4
Potassium	7440-09-7	NA	NA	16/19 (84.2%)	462 - 2550	0/19 (0%)	No	No	NA - NA
Selenium	7782-49-2	0.52	d	37/104 (35.6%)	0.74 - 6.4	37/104 (35.6%)	Yes	**Yes**	1.4 - 12.3
Silver	7440-22-4	4.2	a	4/104 (3.9%)	0.22 - 2.4	0/104 (0%)	No	No	0.052 - 0.57
Sodium	7440-23-5	NA	NA	10/19 (52.6%)	119.5 - 665	0/19 (0%)	No	No	NA - NA
Vanadium	7440-62-2	2	d	19/19 (100%)	4.1 - 41.3	19/19 (100%)	Yes	**Yes**	2.1 - 20.7
Zinc	7440-66-6	46	a	102/104 (98.1%)	7.9 - 6300	88/104 (84.6%)	Yes	**Yes**	0.17 - 137
Pesticides (mg/kg)									
4,4-DDD	72-54-8	0.758	i	15/93 (16.1%)	0.00205 - 0.086	0/93 (0%)	Yes	No	0.0027 - 0.11
4,4-DDE	72-55-9	0.596	i	23/93 (24.7%)	0.002 - 0.15	0/93 (0%)	Yes	No	0.0034 - 0.25
4,4-DDT	50-29-3	0.021	c	42/93 (45.2%)	0.0052 - 0.48	28/93 (30.1%)	Yes	**Yes**	0.25 - 22.9
Aldrin	309-00-2	0.0025	h	2/93 (2.2%)	0.0074 - 0.0152	2/93 (2.2%)	Yes	**Yes**	3.0 - 6.1
Beta-BHC	319-85-7	0.001	h	1/93 (1.1%)	0.012 - 0.012	1/93 (1.1%)	No	**Yes**	12.0 - 12.0
Chlordane	57-74-9	0.224	i	17/82 (20.7%)	0.016 - 4.5	4/82 (4.9%)	Yes	**Yes**	0.071 - 20.1
Dieldrin	60-57-1	0.0049	c	12/93 (12.9%)	0.0043 - 0.18	11/93 (11.8%)	Yes	**Yes**	0.88 - 36.7
Endosulfan I	959-98-8	0.119	i	1/93 (1.1%)	0.012 - 0.012	0/93 (0%)	Yes	No	0.10 - 0.10
Endosulfan II	33213-65-9	0.119	i	3/93 (3.2%)	0.016 - 0.04	0/93 (0%)	Yes	No	0.13 - 0.34
Endosulfan sulfate	1031-07-8	0.0358	i	6/93 (6.5%)	0.0083 - 0.088	3/93 (3.2%)	Yes	**Yes**	0.23 - 2.5
Endrin	72-20-8	0.001	h	2/93 (2.2%)	0.0057 - 0.015	2/93 (2.2%)	Yes	**Yes**	5.7 - 15.0
Endrin aldehyde	7421-93-4	0.0105	i	7/93 (7.5%)	0.0071 - 0.32	6/93 (6.5%)	No	**Yes**	0.68 - 30.5
Endrin ketone	53494-70-5	0.001	h	1/93 (1.1%)	0.0091 - 0.0091	1/93 (1.1%)	No	**Yes**	9.1 - 9.1
Heptachlor epoxide	1024-57-3	0.152	i	5/93 (5.4%)	0.001095 - 0.012	0/93 (0%)	No	No	0.0072 - 0.079
Methoxychlor	72-43-5	0.0199	i	1/93 (1.1%)	0.014 - 0.014	0/93 (0%)	Yes	No	0.70 - 0.70
Toxaphene	8001-35-2	0.119	i	1/93 (1.1%)	0.02 - 0.02	0/93 (0%)	Yes	No	0.17 - 0.17
trans-chlordane	5103-74-2	0.0043	NA	2/11 (18.2%)	0.00059 - 0.00135	0/11 (0%)	No	No	0.14 - 0.31
Polychlorinated Biphenyls (mg/kg)									
Aroclor 1242	53469-21-9	NA	NA	2/101 (2%)	0.12 - 0.12	0/101 (0%)	No	No	NA - NA
Aroclor 1248	12672-29-6	NA	NA	6/101 (5.9%)	0.053 - 1.7	0/101 (0%)	No	No	NA - NA
Aroclor 1254	11097-69-1	40	g	22/101 (21.8%)	0.0256 - 7.9	0/101 (0%)	No	No	0.00064 - 0.20
Aroclor 1260	11096-82-5	NA	NA	44/101 (43.6%)	0.046 - 1	0/101 (0%)	No	No	NA - NA
Aroclor 1262	37324-23-5	40	g	1/17 (5.9%)	0.2925 - 0.2925	0/17 (0%)	No	No	0.0073 - 0.0073
Total Aroclor PCBs	1336-36-3	0.02	h	68/101 (67.3%)	0.0256 - 7.9	68/101 (67.3%)	Yes	**Yes**	1.3 - 395
Volatile Organic Compounds (mg/kg)									
Acetone	67-64-1	2.5	i	16/103 (15.5%)	0.0087 - 0.394	0/103 (0%)	No	No	0.0035 - 0.16
Benzene	71-43-2	0.05	h	9/103 (8.7%)	0.001 - 29	4/103 (3.9%)	Yes	**Yes**	0.020 - 580
Carbon Disulfide	75-15-0	0.0941	i	3/103 (2.9%)	0.0012 - 0.0061	0/103 (0%)	No	No	0.013 - 0.065
Cyclohexane	110-82-7	0.1	h	2/18 (11.1%)	0.158 - 4.89	2/18 (11.1%)	No	**Yes**	1.6 - 48.9
Dichloromethane	75-09-2	2	h	79/103 (76.7%)	0.002 - 0.28	0/103 (0%)	No	No	0.0010 - 0.44
Ethylbenzene	100-41-4	0.05	h	3/103 (2.9%)	0.0083 - 12.3	1/103 (0.97%)	Yes	**Yes**	0.17 - 246
Isopropylbenzene	98-82-8	NA	NA	1/18 (5.6%)	0.943 - 0.943	0/18 (0%)	No	No	NA - NA
m&p-Xylenes	ARC-mpXyl	0.05	h	6/73 (8.2%)	0.0029 - 51.9	5/73 (6.8%)	No	**Yes**	0.058 - 1,040
Methyl Acetate	79-20-9	2.4	k	2/18 (11.1%)	0.0039 - 0.0061	0/18 (0%)	No	No	0.0016 - 0.0025
Methylcyclohexane	108-87-2	1160	j	2/18 (11.1%)	0.409 - 8.78	0/18 (0%)	No	No	0.00035 - 0.0076
o,p-Xylene	136777-61-2	0.05	h	2/55 (3.6%)	0.1 - 2.2	2/55 (3.6%)	Yes	**Yes**	2.0 - 44.0
o-Xylene	95-47-6	0.05	h	3/18 (16.7%)	0.00085 - 19.1	2/18 (11.1%)	Yes	**Yes**	0.017 - 382
Styrene (Monomer)	100-42-5	0.1	h	1/73 (1.4%)	2.4 - 2.4	1/73 (1.4%)	No	**Yes**	24.0 - 24.0
Toluene	108-88-3	0.05	h	10/103 (9.7%)	0.0013 - 53.4	5/103 (4.9%)	Yes	**Yes**	0.026 - 1,070
Total Xylenes	1330-20-7	0.05	h	34/48 (70.8%)	0.29 - 71	4/48 (8.3%)	No	**Yes**	5.8 - 1,420

Analyte	CAS Number	Relevant Ecological Soil Criteria[1,2]		Detection Frequency	Range of Detections	Criteria Exceedance Frequency	Act 2 COPEC?	Retain as COPEC?	Range of Hazard Quotients
Semi-Volatile Organic Compounds (mg/kg)									
1,1-Biphenyl	92-52-4	60	g	16/18 (88.9%)	0.0088 - 6.43	0/18 (0%)	No	No	0.00015 - 0.11
2,4-Dimethylphenol	105-67-9	0.01	i	2/104 (1.9%)	0.158 - 0.181	2/104 (1.9%)	No	**Yes**	15.8 - 18.1
2-Methylnaphthalene	91-57-6	3.24	b	81/104 (77.9%)	0.0173 - 1300	13/104 (12.5%)	No	**Yes**	0.0053 - 401
2-Methylphenol	95-48-7	0.5	h	3/74 (4.1%)	0.0797 - 0.195	0/74 (0%)	No	No	0.16 - 0.39
3-Methylphenol, 4-Methylphenol	65794-96-9	0.5	h	5/49 (10.2%)	0.037 - 0.61	1/49 (2%)	No	**Yes**	0.074 - 1.2
4-Methylphenol	106-44-5	0.5	h	1/55 (1.8%)	180 - 180	1/55 (1.8%)	No	**Yes**	360 - 360
4-Nitroaniline	100-01-6	21.9	i	1/49 (2%)	0.17 - 0.17	0/49 (0%)	No	No	0.0078 - 0.0078
Acenaphthene	83-32-9	20	b	73/104 (70.2%)	0.0155 - 180	3/104 (2.9%)	No	**Yes**	0.00078 - 9.0
Acenaphthylene	208-96-8	29	b	81/104 (77.9%)	0.035 - 2000	6/104 (5.8%)	No	**Yes**	0.0012 - 69.0
Acetophenone	98-86-2	300	i	3/18 (16.7%)	0.0245 - 0.128	0/18 (0%)	No	No	0.000082 - 0.0031
Anthracene	120-12-7	0.1	b	91/104 (87.5%)	0.044 - 1800	88/104 (84.6%)	No	**Yes**	0.44 - 18,000
Benzo(a)anthracene	56-55-3	0.25	b	102/104 (98.1%)	0.0283 - 1800	91/104 (87.5%)	Yes	**Yes**	0.11 - 7,200
Benzaldehyde	100-52-7	470	k	7/18 (38.9%)	0.0111 - 0.212	0/18 (0%)	No	No	0.000024 - 0.00045
Benzo(a)pyrene	50-32-8	0.1	b	102/104 (98.1%)	0.0339 - 1300	97/104 (93.3%)	No	**Yes**	0.34 - 13,000
Benzo(b)fluoranthene	205-99-2	18	b	104/104 (100%)	0.0478 - 1600	17/104 (16.3%)	No	**Yes**	0.0027 - 88.9
Benzo(g,h,i)perylene	191-24-2	7.5	b	99/104 (95.2%)	0.0281 - 850	20/104 (19.2%)	No	**Yes**	0.0037 - 113
Benzo(k)fluoranthene	207-08-9	2.4	b	97/104 (93.3%)	0.046 - 690	32/104 (30.8%)	No	**Yes**	0.019 - 288
bis(2-Ethylhexyl)phthalate	117-81-7	0.925	i	56/104 (53.8%)	0.0385 - 1.7	4/104 (3.8%)	No	**Yes**	0.042 - 1.8
Butyl benzyl phthalate	85-68-7	0.239	i	13/104 (12.5%)	0.045 - 0.7	5/104 (4.8%)	No	**Yes**	0.19 - 2.9
Carbazole	86-74-8	NA	b	85/104 (81.7%)	0.0116 - 970	0/104 (0%)	No	No	NA - NA
Chrysene	218-01-9	4.73	b	103/104 (99%)	0.0272 - 1500	35/104 (33.7%)	Yes	**Yes**	0.0058 - 317
Semi-Volatile Organic Compounds (mg/kg) (continued)									
Dibenz(a,h)anthracene	53-70-3	18	b	91/104 (87.5%)	0.0326 - 270	3/104 (2.9%)	Yes	**Yes**	0.0018 - 15.0
Dibenzofuran	132-64-9	19	j	87/104 (83.7%)	0.0199 - 1600	7/104 (6.7%)	No	**Yes**	0.0010 - 84.2
Diethyl phthalate	84-66-2	24.8	g	3/74 (4.1%)	0.041 - 0.064	0/74 (0%)	Yes	No	0.0017 - 0.0026
Di-n-butyl phthalate	84-74-2	0.15	g	30/104 (28.8%)	0.0187 - 0.42	5/104 (4.8%)	Yes	**Yes**	0.12 - 2.8
Di-n-octyl phthalate	117-84-0	709	i	2/104 (1.9%)	0.047 - 0.076	0/104 (0%)	Yes	No	0.000066 - 0.00011
Fluoranthene	206-44-0	0.1	b	104/104 (100%)	0.0452 - 3800	98/104 (94.2%)	No	**Yes**	0.45 - 38,000
Fluorene	86-73-7	29	b	81/104 (77.9%)	0.0204 - 2600	8/104 (7.7%)	No	**Yes**	0.00070 - 89.7
Indeno(1,2,3-cd)pyrene	193-39-5	5.9	b	99/104 (95.2%)	0.0286 - 750	24/104 (23.1%)	Yes	**Yes**	0.0048 - 127
Naphthalene	91-20-3	0.0994	b	86/104 (82.7%)	0.02565 - 6000	72/104 (69.2%)	No	**Yes**	0.26 - 60,400
Phenanthrene	85-01-8	0.1	b	101/104 (97.1%)	0.0215 - 7700	97/104 (93.3%)	Yes	**Yes**	0.22 - 77,000
Phenol	108-95-2	0.05	h	14/104 (13.5%)	0.0364 - 210	14/104 (13.5%)	No	**Yes**	0.73 - 4,200
Pyrene	129-00-0	0.1	b	103/104 (99%)	0.0413 - 4400	99/104 (95.2%)	Yes	**Yes**	0.41 - 44,000
Total PAHs	ARC-TPAH	1	h	55/55 (100%)	0.056 - 7910	48/55 (87.3%)	Yes	**Yes**	0.056 - 7,910

Notes:

1. The relevant ecological screening benchmarks (ESBs) are selected based on the following hierarchy system:
   1. EcoSSLs 2. ORNL benchmarks 3. EPA Region 4 4. EPA Region 5 5. ECOTOX 6. PubChem
2. Letter denotes which ESB was selected for each analyte:
   a. Eco-SSL Avian Soil Screening Benchmark
   b. Eco-SSL Inverts Soil Screening Benchmark
   c. Eco-SSL Mammalian Soil Screening Benchmark
   d. Eco-SSL Plants Soil Screening Benchmark
   e. ORNL Invertebrates Soil Screening Benchmark
   f. ORNL Microbes Soil Screening Benchmark
   g. ORNL Plants Screening Benchmark
   h. EPA R4 Soil
   i. EPA R5 ESL Soil Screening Benchmark
   j. PubChem
   k. ECOTOX
3. See reference section below for the ESBs used.
4. CAS = Chemical Abstract Service.
5. COPEC = Consituent of Potential Ecological Concern
6. mg/kg = Milligrams per kilogram
7. NA = Not applicable
8. PAH = Polycyclic Aromatic Hydrocarbon
9. PCB = Polychlorinated Biphenyl

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APPENDIX P

Human Health Risk Assessment Railroad Right-of-Way

Philadelphia Coke Company

HUMAN HEALTH RISK ASSESSMENT RAILROAD RIGHT-OF-WAY

Former Philadelphia Coke Plant
Philadelphia, Pennsylvania
PADEP eFACTS Site ID #833593
& Facilities ID #609978
USEPA ID #PAD000427906

May 2022

HUMAN HEALTH RISK ASSESSMENT RAILROAD RIGHT-OF-WAY

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Appendix A Surface Soil Analytical Data and USEPA Industrial Soil Regional Screening Levels

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ACRONYMS AND ABBREVIATIONS

ABS_d	dermal absorption efficiency
Act 2	Land Recycling Act
Arcadis	Arcadis U.S., Inc.
bgs	below ground surface
CalEPA	California Environmental Protection Agency
CDC	Centers for Disease Control and Prevention
COC	constituents of concern
cPAHs	carcinogenic polycyclic aromatic hydrocarbons
CSF	cancer slope factor
CSFo	cancer slope factor – oral toxicity
CSM	Conceptual Site Model
ELCR	excess lifetime cancer risk
EPC	exposure point concentrations
FRA	Federal Railroad Administration
HASP	health and safety plan
HHRA	human health risk assessment
HQ	hazard quotient
IRIS	Integrated Risk Information System
IUR	inhalation unit risk
mg/kg	milligrams per kilogram
MOA	mode of action
OSHA	Occupational Safety and Health Administration
OSWER	Office of Solid Waste and Emergency Response
PA Code	Pennsylvania Code
PADEP	Pennsylvania Department of Environmental Protection

PAH	polycyclic aromatic hydrocarbons
PPE	personal protective equipment
PWD	Philadelphia Water Department
RAGS	Risk Assessment Guidance for Superfund
RBC	risk-based concentration
RCRA	Resource Conservation and Recovery Act
RfC	reference concentration (oral or adjusted)
RfD	reference dose (oral or adjusted)
RI	Remedial Investigation
RIR	Remedial Investigation Report
RPF	relative potency factor
RSL	regional screening level
SSA	skin surface area
SVOC	semi-volatile organic compound
UCL	upper confidence limit
USEPA	United States Environmental Protection Agency
VOC	volatile organic compound

EXECUTIVE SUMMARY

This Human Health Risk Assessment (HHRA) was prepared to evaluate potential future exposure of human receptors to constituents of concern (COC) identified in the railroad right-of-way (RR ROW) at the former Philadelphia Coke Plant (the Site). The HHRA was prepared in accordance with the Pennsylvania Department of Environmental Protection (PADEP) Land Recycling and Environmental Remediation Standards Act (Act 2) which is codified in 25 Pennsylvania Code (PA Code) Chapter 250. This HHRA was conducted consistent with the PADEP Land Recycling Program Technical Guidance Manual (PADEP 2021). This focused HHRA is intended to provide supporting information to the Remedial Investigation Report (RIR) and aid in the decision-making process for this portion of the Site.

The Site is located in in the City of Philadelphia and is surrounded by industrial, commercial and mixed residential properties. The Site was used as a manufactured gas plant in the mid-1920s and coking facility from 1929 to 1982. Use of the Site for manufacturing ended in 1989.

Human Health Risk Assessment

The existing ground surface at the RR ROW will not be improved as per an easement that must permit the continuous operation of the Philadelphia Beltway Railroad, although this portion of the railway is currently inactive. Surface soil analytical results from the RR ROW area were compared to the United States Environmental Protection Agency industrial soil Regional Screening Levels (RSLs) for soil. Based on comparison with the Industrial Soil RSLs, COCs identified for the HHRA are benzene, several potentially carcinogenic polycyclic aromatic hydrocarbons, arsenic, chromium, and Aroclor 1260.

The HHRA exposure assessment includes a conceptual site model (CSM) for current and probable future scenarios. The CSM identifies source, release and transport mechanisms, and environmental media that currently show or may show the presence of COCs in the future. Exposure pathways and routes to potentially exposed human populations are identified. The receptor populations with complete or potentially complete pathways to surface soil under current and future anticipated scenarios include outdoor workers and adolescent trespassers. The CSM and exposure evaluation consider the remedial actions described in the Cleanup Plan that will eliminate future exposure pathways

A toxicity assessment was performed following PADEP recommended hierarchy. Cumulative risk and hazards for COC surface soil exposure to future outdoor workers and adolescent trespassers were estimated. All estimated risks and hazards were less than the PADEP target cancer risk of $1x10^{-4}$ and non-cancer hazard of 1. **Current and future anticipated surface soil exposure to receptors of the RR ROW are estimated to be at acceptable levels. The RR ROW does not pose unacceptable risks to human health under current and probable future conditions.**

1 INTRODUCTION

This report summarizes the human health risk assessment (HHRA) for the railroad right-of-way (RR ROW) at the former Philadelphia Coke Plant located in the Bridesburg Borough of Philadelphia, Pennsylvania (the Site). The existing ground surface in the RR ROW will be unimproved per an easement that must permit the continuous operation of the Philadelphia Beltway Railroad, although the use of the rail line is currently inactive. Therefore, potentially complete exposure pathways will remain at the RR ROW, and this document addresses those pathways. The remedy proposed for the overall Site outside of the RR ROW will address potentially complete future exposure pathways by pathway elimination using engineering and institutional controls, as described in the Remedial Investigation Report (RIR) and Cleanup Plan. The HHRA is intended to provide supporting information to the RIR and aid in the decision-making processes used in the Cleanup Plan for the Site. This HHRA was prepared in accordance with the Land Recycling and Environmental Remediation Standards Act (Act 2) guidance (Pennsylvania Department of Environmental Protection [PADEP] 2021) which is codified in 25 Pennsylvania Code (PA Code) Chapter 250.

1.1 Report Organization

The site location, history, description, and characterization are presented in Section 1. The human health risk assessment is provided as Section 2. References are provided in Section 3.

The HHRA is organized to present introductory information in Sections 2 and 2.1. Section 2.2 identifies the constituents of concern (COCs) based on comparison of RR ROW soil data to United States Environmental Protection Agency (USEPA) Regional Screening Levels (RSLs). Section 2.3 presents an exposure assessment including a conceptual site model (CSM) identifying the current and future potentially exposed populations, exposure pathways, and assumptions (including exposure parameters and exposure point concentrations). Section 2.4 identifies the toxicity values used to evaluate the magnitude or likelihood of adverse health effects. Section 2.5 and Section 2.6 summarize the approach to risk characterization and the results, respectively. Conclusions from the HHRA are presented in Section 2.7.

1.2 Site Location

The Site is located at 4501 Richmond Street between Orthodox Street and Buckius Street as shown on Figure 1. The Site is approximately 63 acres in size and is currently unoccupied. The area in the vicinity of the RR ROW contains commercial and industrial properties consisting of a bus depot, small marina, and car impoundment. To the west is the upland portions of the Site. To the south (along Orthodox Street) and to the north (along Buckius Street) are commercial and industrial properties. To the east is the Delaware River.

The area evaluated in this HHRA is the Philadelphia Beltway RR ROW which is an approximate 1.5-acre narrow strip of land in the eastern portion of the Site, running roughly north-south through the former fuel blending area. The RR ROW is depicted in Figures 1-1 and 1-2.

Figure 1-1: Photograph of the RR ROW (May 2021)

1.3 Site History

The Site was used as a manufactured gas plant in the mid-1920s and coking facility from 1929 to 1982. Use of the Site for manufacturing ended in 1989. Following the 1989 termination of operations, the Site underwent extensive Resource Conservation and Recovery Act (RCRA) closure actions and USEPA issued a Certificate of Completion in 1994. No outstanding closure responsibilities associated with the RCRA Corrective Action remain and the Site has not been occupied since 1991. Based on 1920 Sanborn Fire Insurance Maps, the Philadelphia Beltway RR was installed before the Site was developed for manufacturing operations.

Based on available aerial photographs, the tracks within the RR ROW were in use until at least 1995 and provided rail service to commercial and industrial business north of the Site along the Delaware River. The historical aerial photographs appear to indicate that some of the RR tracks further north were removed between 2010 and 2012, leaving only a spur to access the properties to the properties immediately to the north of the Site.

1.4 Site Description and Characterization

At the RR ROW, the ground surface is primarily comprised of compact ballast and gravel materials with sparse to densely populated vegetation with increasing distance from the center of the tracks. The 2019 wetland delineation activities identified a sparsely vegetated ditch with wetland hydrology and a gravel substrate adjacent to the railroad tracks (RIR, Arcadis 2022). A photograph showing the vegetated railroad ditch is shown as Figure 1-2.

Soil from the RR ROW area was sampled during the two phases of a Site-wide Remedial Investigation (RI; 2003-2006 and 2018-2019). Soil material was collected below RR gravel/ballast, from approximately 0.5 feet below ground surface (bgs) to 2 feet bgs.

The COCs identified in the RR ROW are discussed in Section 2.2.

Figure 1-2: Photograph of Vegetated Railroad Ditch (March 2019)

2 HUMAN HEALTH RISK ASSESSMENT

The potentially complete exposure pathways are outdoor workers, unauthorized trespassers, and utility workers accessing the RR ROW. The Federal Railroad Administration prohibits trespassing on railroad property, anywhere other than a designated pedestrian or roadway crossings. Both authorized worker and unauthorized trespasser receptors may be exposed to surface soils (0-2 feet bgs) in the RR ROW area. It is assumed that utility or construction workers involved in subsurface improvement activities for the RR ROW (e.g., future trenching for installation of electrical service, communications cables, storm water drainage features, etc., if needed) would adhere to safe work practices outlined in the Health and Safety Plan (HASP) prepared for the Site, which is included in the Post-Remediation Care Plan.

2.1 Objectives of Human Health Risk Assessment

The primary objective of this streamlined HHRA is to estimate carcinogenic and non-carcinogenic risks and hazards from exposure to the COCs. To complete this objective, surface soil COCs are identified and evaluated for the potentially complete human health exposure pathways to surface soil in the RR ROW.

2.2 Identification of COCs for Surface Soil

Surface soil samples were collected from 10 locations within the RR ROW area and analyzed for select VOCs, SVOCs, inorganics, pesticides, and polychlorinated biphenyls. Surface soil samples were collected from below RR gravel/ballast to 2 feet bgs (0.5-2 feet bgs).

COCs in surface soils are determined by comparison to the USEPA Regional Screening Levels (RSLs) for Industrial Soil target cancer risk of 1×10^{-6}, and target hazard quotient of 0.1 following PADEP (2021) guidance for the site-specific standard. Constituents are identified as COCs if the maximum detected concentration exceeds the RSL. If an RSL is not available for a constituent, then an available surrogate value is used. If no RSL or surrogate RSL is identified for a detected constituent, but at least one toxicity value is available (see Section 2.4), then that constituent is identified as a COC and carried through the risk assessment. For chromium, only total chromium data was available for the soil data (i.e., no speciation). Therefore, the chromium data was conservatively assumed to be the more toxic hexavalent chromium. The surface soil data for detected constituents compared to the applicable RSLs are presented in Appendix A Table 1 and summarized in Table 1.

The approach to the assessment of lead is different than all other constituents because there currently are no toxicity data for lead that allow a standard quantification of potential risks and hazards associated with lead exposure. The USEPA RSL user guide (2021b) states that soil lead levels less than 400 milligrams per kilogram (mg/kg) are generally safe for residential use and 800 mg/kg for commercial/industrial use. Although two detected lead concentrations; 986 mg/kg from sample PCSB-41R(0.5-2), and 930 mg/kg from sample PCSB-41(0.5) exceed the industrial soil RSL of 800 mg/kg; the average concentration of 317 mg/kg is less than both residential and industrial soil RSLs. Therefore, lead is not identified as a COC for the RR ROW.

The COCs for this HHRA include benzene, benz(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, carbazole (since no screening level is available), dibenzo(a,h)anthracene, indeno(1,2,3-cd)pyrene, naphthalene, arsenic, chromium, and Aroclor 1260.

2.3 Exposure Assessment

The exposure assessment discusses potentially complete human exposure pathways under the current and intended future use of the RR ROW. Exposure assessment is the process of measuring or estimating the intensity, frequency, and duration of human exposure to substances present in the environment. A complete exposure pathway is composed of the following four elements (USEPA 1989):

- A source and mechanism of constituent release.
- Retention or transport media.
- A potential contact point with an affected medium.
- An exposure route (i.e., ingestion, dermal contact, inhalation) at the contact point.

Together, these elements are used to evaluate potential exposure to COCs under current and reasonably foreseeable future conditions. If any of the elements are, or will be missing, the exposure pathway is incomplete, and there is no potential for exposure or health risks. This is the premise behind the “pathway elimination” strategy. The exposure assessment is a critical component of the risk assessment process, as it describes the presumed contact between COCs and potential receptors. The following sections present the CSM for the HHRA, detailing potential receptors and exposure pathways, the methods used to calculate the exposure point concentrations (EPCs), and the methods used to estimate intake.

In accordance with the USEPA exposure assessment and risk characterization guidance (USEPA 1992, 1995), doses and risks were calculated for the reasonable maximum exposure (RME) scenario. The RME scenario describes individuals at the upper end of the population distribution (greater than 90th percentile but not above the distribution). In accordance with RAGS (USEPA 1989, 2001), tables were prepared summarizing the values used for the RME daily intake calculations for future-use scenarios and surface soil.

2.3.1 Conceptual Site Model

This section presents the CSM which has been prepared in accordance with the PA Code Title 25, Chapter 250.404 and follows USEPA (1989) guidance. The potential exposure pathways have been identified based on observations from the RI and are described in the following subsections. The identified COCs and assessment of potential exposure pathways to human receptors presented below serve as supporting information within the decision-making process for the evaluation and implementation of remedial alternatives presented in the Cleanup Plan.

The CSM outlines potential source areas, release and transport mechanisms, environmental media that currently show or may show the presence of COCs in the future, possible exposure pathways to potentially exposed human populations, and potential exposure routes. It considers current site conditions and surrounding land use, as well as the most likely future conditions and land use, specific to the RR ROW area (i.e., commercial and/or industrial land use).

Figure 3 contains a graphic illustration of the CSM for the current and future exposure scenarios in the RR ROW. As shown in the figure, the primary exposure source for the human health evaluation of this HHRA is onsite surface soil (defined as 0 to 2 feet bgs). Table 2 includes information on potential pathways and assumptions for future RR ROW receptors.

Current and future exposure routes to groundwater at the Site, including the RR ROW, are incomplete. An Environmental Covenant will prohibit site groundwater use for any purpose. The Environmental Covenant will also restrict site property use to non-residential use and require the HASP to be followed when completing intrusive work within the RR ROW. With groundwater use prohibited by the Environmental Covenant and personal protective equipment required by the HASP for the future utility worker performing intrusive work, there will be no future complete exposure pathway to groundwater at the RR ROW.

2.3.2 Potential Receptors

Potentially exposed receptors were considered under current and probable future use of the RR ROW. This HHRA assumes that future use of the RR ROW will remain the same as current use following site redevelopment. Therefore, within the RR ROW, potential receptor populations include trespassers, outdoor workers, and utility workers. The summary and rationale of current and potential future exposure pathways is included in Table 2.

2.3.2.1 Current Soil Exposure Pathways

Current incomplete and complete exposure pathways via direct contact with soil for incidental ingestion, direct dermal contact, and/or inhalation of windblown particulates (fugitive dusts) or COCs volatilized from soils include:

- Trespassers who may encounter surface soil.
- Outdoor workers (such as lawn maintenance personnel) who may encounter surface soil during non-intrusive maintenance work.
- Utility workers who may be exposed to COCs in surface (and subsurface) soil via incidental ingestion, dermal contact, and the inhalation of VOCs and/or particulates in windblown soil or soil vapor released during intrusive work.

Site-wide conditions such as perimeter chain-link security fencing and groundcover are considered in evaluating exposure pathways. The RR ROW ground surface is mostly compacted ballast and gravel which limit the ability of surface soils to be eroded or mobilized and encountered by human receptors. Additionally, the RR ROW area is enclosed in the site-wide perimeter fencing to deter trespassers. Chain-link access gates are positioned where the RR tracks cross the property boundaries, and FRA regulations prohibit unauthorized individuals from accessing railroad tracks. However, there is still potential for access by the adolescent trespasser. Additionally, a few times a year, outdoor maintenance workers mow herbaceous vegetation and young woody plants to an approximate height of 6 inches or higher. Therefore, current complete exposure pathways exist for the adolescent trespasser and outdoor maintenance worker.

There are no active underground utilities below or near the RR ROW. Therefore, there is not a complete pathway for the utility worker under current conditions.

2.3.2.2 Future Soil Exposure Pathways

Future complete exposure pathways are anticipated via direct contact with soils for incidental ingestion, dermal contact, and/or inhalation of fugitive dusts or COCs volatilized from soils along the RR ROW include:

- Outdoor workers (such as lawn maintenance personnel) who may encounter surface soil during non-intrusive maintenance work.
- Trespassers who may encounter surface soil.
- Utility workers who may be exposed to COCs in surface (and subsurface) soil via incidental ingestion, dermal contact, and the inhalation of VOCs and/or particulates in windblown soil or soil vapor released during intrusive work.

Site-wide, excluding the RR ROW, all potentially complete future exposure pathways will be eliminated as discussed in the Cleanup Plan. Outdoor maintenance workers are expected to access the Site and cross the RR at designated locations on a more frequent basis in the future after most of the Site is redeveloped. Unauthorized RR ROW access and trespassing in the future cannot be ruled out. Therefore, future complete exposure pathways exist for the outdoor maintenance worker and adolescent trespasser.

A former stormwater discharge pipe is underneath and perpendicular to the RR tracks. Although this stormwater pipe is not in use, it may be slip-lined or demolished, removed, and replaced to convey stormwater from the capped and redeveloped Site to the Delaware River. If excavation were required to access and retrofit the stormwater pipe, it would be performed in accordance with the project-specific HASP to eliminate the exposure pathways. The HASP requires utility workers to be: (1) trained as required by occupational safety and health administration (OSHA) Regulation in 29 CFR 1910.120 (HAZWOPER); (2) medically cleared to work at the Site; and (3) medically monitored as per OSHA at 29 CFR 1910.120(f). Any utility workers that may have the potential to contact subsurface soil greater than 2 feet bgs must use personal protective equipment to mitigate soil exposure pathways.

2.3.2.3 Current and Potential Groundwater Exposure Pathways

There is no current groundwater use at the Site. Therefore, the current exposure pathway for groundwater as tap water or industrial water is incomplete. In the future, as part of the redevelopment of the Site, institutional controls will be established that prohibit groundwater use.

There are no groundwater seeps at the RR ROW, so there is no current pathway to groundwater exposure, unless intrusive work is performed below the water table. The depth to groundwater in the vicinity of the RR ROW groundwater ranges from approximately 5 to 9 feet bgs. Only the exposure scenario for the future utility worker is potentially complete. However, as discussed in Subsection 2.3.2.2, future subsurface intrusive activities, if any, will be performed under the HASP. Therefore, no future exposure pathways via direct contact with groundwater for incidental ingestion, dermal contact, and/or inhalation of COCs volatilized from groundwater are evaluated in this HHRA.

2.3.3 Exposure Assumptions

The equations used to evaluate future receptor exposures to surface soil are presented in Table 3 and are used to calculate excess lifetime cancer risk (ELCR) and hazard quotient (HQ) for non-cancer effects. ELCR and HQ are derived based on the most likely exposure routes (ingestion, dermal absorption, and inhalation) and site-specific exposure parameter assumptions. The magnitude of exposure can be estimated by combining EPCs with exposure parameters to calculate a daily dose for each COC. The following sections discuss how EPCs were determined and identify exposure parameters for each receptor identified in Subsection 2.3.2.

2.3.3.1 Exposure Point Concentrations

The EPC is the representative concentration of a constituent in an environmental medium that is potentially contacted by the receptor and is defined by the USEPA as “the arithmetic average of the concentration that is contacted over the exposure period” (USEPA 1989). Either the upper confidence limit (UCL) or the maximum concentration was used to identify the EPCs.

Upper Confidence Limit

The UCL was most frequently used to identify representative concentrations for the COCs. The UCL is a calculated mean that represents with 95% confidence that the true arithmetic mean will be less than the UCL. The high level of confidence (i.e., 95%) is used to compensate for the uncertainty involved in representing site conditions with a finite number of samples. The 95% UCLs were calculated, using the latest ProUCL software available from the USEPA (USEPA 2016). The ProUCL outputs are provided in Appendix B. The 95% UCLs were selected using the output from the ProUCL software unless a greater than 95% UCL was recommended by the software, in which case the 95% UCL using the same method was selected. When ProUCL Version 5.1 (USEPA 2015) recommended two or more 95% UCLs, the relative percent difference (RPD) was used to compare the 95% UCL values: If RPD < 5%, the higher 95% UCL was conservatively selected, but if the RPD ≥ 5%, the estimate that best represented the data set was selected based on the most appropriate 95% UCL method. If the calculated 95% UCL was greater than the maximum detected concentration, the maximum detected concentration was identified as the EPC, which is consistent with USEPA methodology (USEPA 2002a).

Maximum Concentration

If fewer than eight samples and/or less than five detections were available for a constituent in a specific data set, the maximum concentration was identified as the EPC.

The calculated 95% UCLs and selected EPCs are presented in Table 4.

2.3.3.2 Exposure Parameters

The exposure assumptions used in the risk calculations are presented in Table 5 and are summarized by receptor below. In general, default USEPA and/or PADEP exposure parameters were used in the risk assessment (USEPA 2011, 2014, PADEP 2021).

Adult outdoor workers have the potential to be exposed to surface soils through incidental ingestion, dermal contact, or inhalation at the railroad ROW. The body weight for the adult worker is 80 kilograms which is the USEPA default from the Update of Standard Default Exposure Factors (2014). The selected

soil ingestion rate is 50 mg/day, which is the PADEP default non-residential worker ingestion rate (2021). This is appropriate considering that the railroad ROW is small and the worker would be expected to spend at least half of the day in areas other than the railroad ROW. The fraction ingested from the railroad ROW is assumed to be 100 percent. Outdoor workers are assumed to visit the RR ROW once per week at 50 days per year, which is about once per week year-round. The assumed exposed skin surface area (SSA) is 3,527 cm^2, which is the default for adults and includes head, hands, and forearms (USEPA 2014). The adult worker soil-to-skin adherence rate (SAR), 0.12 milligram per square centimeter per day, from USEPA (2014) is used. The exposure time used in inhalation exposure equations is 4 hours per day, or one half of the workday and is based on professional judgment.

Adolescents aged 12 to 21 have the potential to be exposed to surface soils through incidental ingestion, dermal contact, or inhalation at the railroad ROW. The body weight for the adolescent trespasser is 65 pounds, which is the weighted average of the mean recommended values for body weight by age group from the USEPA Exposure Factors Handbook (2011). The selected soil ingestion rate is 50 mg/day, which is the central tendency soil ingestion rate for 6 to <21 years (USEPA 2011); and the fraction ingested from the RR ROW is assumed to be 100 percent. Trespassers are assumed to visit the railroad ROW at a frequency of 50 days per year, which is about once per week year-round. The assumed exposed SAA is 6,032 centimeters squared (cm^2), which is the default for adults and includes head, forearms, hands, and lower legs; this is conservative because the actual SSA for younger adolescents would be less than adults (USEPA 2014). Using this SSA, a trespasser wears shorts and short-sleeved shirts year-round, as they might wear during the warmer months, but certainly not in cooler months. The adult resident 0.07 milligram per square centimeter per day SAR from USEPA (2014) is used. The exposure time selected for inhalation exposure equations is 2 hours per day and is based on professional judgment.

Additional factors are required for the evaluation of the inhalation route. General approaches for the derivation of these factors are included in the *Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites* (USEPA 2002). Particulate Emission Factor calculations for wind-blown fugitive dust are included in Table 6. Volatilization factors derived following USEPA 2002, are shown in Table 7.

2.4 Toxicity Assessment

The toxicity assessment describes the relationship between the administered and/or the absorbed dose of a regulated substance and the magnitude or likelihood of adverse health effects (USEPA 1989). For systemic toxicants, or regulated substances that give rise to toxic endpoints other than cancer and gene mutations (called noncarcinogenic effects), the toxicity assessment process determines a threshold value below which adverse noncarcinogenic effects are not expected in the general population, including sensitive subgroups. For regulated substances that are known or suspected to cause cancer, the toxicity assessment defines the relationship between the dose of the regulated substance or agent and the probability of induction of carcinogenic effects.

The toxicity assessment discusses the two general categories of toxic effects (noncarcinogenic and carcinogenic) and constituent-specific toxicity values used to calculate potential risks for these two types of toxic effects. Toxicity values used in the calculations and their sources are presented in Table 8, Table 9, Table 10, and Table 11. Toxicity values for potential noncarcinogenic and carcinogenic effects were

obtained by accessing the toxicity information contained in the current USEPA RSL tables (USEPA 2021b). Toxicity values were obtained following PADEP recommended hierarchy (2021); specifically, toxicity factors were pulled from the USEPA RSL tables and were verified by checking the USEPA Integrated Risk Information System (IRIS; USEPA 2021a) and California Environmental Protection Agency (CalEPA) Toxicity Criteria Database (CalEPA 2021) as well as the sources in the recommended PADEP hierarchy.

2.4.1 Noncarcinogenic Effects

The potential for noncarcinogenic effects is estimated by comparing a calculated exposure dose with a toxicity reference dose. For a given regulated substance, the dose or concentration that elicits no adverse effect when evaluating the most sensitive response in the most sensitive species is referred to as the “no observed adverse effect level.” This level is used to establish noncancer toxicity values, called reference doses (RfDs) for evaluating oral exposures and reference concentrations (RfCs) for evaluating inhalation exposures. The RfD and RfC values represent daily exposure levels that are not expected to cause adverse noncarcinogenic health effects. Table 8 and Table 9 present the available RfDs and RfCs for COCs.

2.4.2 Carcinogenic Effects

Cancer induction in humans and animals by constituents proceeds through a complex series of reactions and processes. Carcinogenic constituents may produce tumors at the point of application or contact, or they may produce tumors in other tissues after they have been distributed throughout the body. Some constituents are associated only with one or two tumor types, while others may cause tumors at many different sites.

In deriving cancer slope factors (CSFs), USEPA generally relies on a conservative approach. This approach involves extrapolating from either the lowest dose or point of departure from laboratory animal data using a mathematical model that plots a line through the zero point, and based on the slope of this dose-response line, assigns a risk level for increasingly smaller doses of a particular compound. While constructing the linear extrapolation from animal or human data, USEPA uses values that are based on a 95% UCL of the dose/response slope. Therefore, any risk estimates derived from the model are based on values higher than those reported in the underlying studies and are not the most likely estimates generated by applying the mathematical model to the actual study data. The UCL for the slope of this line is called the CSF.

CSFs are derived from the conservative assumption that any dose level has a possibility of causing cancer. The cumulative dose, regardless of the particular exposure period, determines the risk. To evaluate inhalation exposures, inhalation unit risks (IURs) that relate cancer potency to a constituent concentration in air are used (USEPA 2009). Table 10 and Table 11 present the CSF and IUR for each constituent considered to be a carcinogen. Relative potency factors (RPFs) have been applied to the available toxicity values for benzo(a)pyrene and for other carcinogenic PAHs (cPAHs) in IRIS and subsequently presented in Table 10 and Table 11.

USEPA has evaluated cancer risks from early-life exposure as compared to those from exposures occurring later in life. Some constituents cause cancer by a mutagenic mode of action (MOA) and for

those constituents, lifestage differences in both exposure and dose-response are considered (USEPA 2005). In supplemental guidance (USEPA 2005), USEPA recommends that when carcinogens, such as cPAHs, have a mutagenic MOA and appropriate chemical-specific data are not available on susceptibility from early life exposures, then it is appropriate to apply a default safety factor called an age-dependent adjustment factor (ADAF) to risk calculations when evaluating cancer risk associated with exposure for children 0 to 16 years old. For ages 2 to 16 years, the ADAF is 3. For this risk assessment, the COCs benz(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(a,h)anthracene, indeno(1,2,3-cd)pyrene, and chromium (assumed to be hexavalent chromium) are classified by USEPA as mutagenic. An ADAF of 3 was applied to the ELCR calculations for cPAHs in the trespasser scenario for ages 12 to 16. The ADAF used is the average for the adolescent age range, where an ADAF of 3 is used for each year from age 12 to 16, and an ADAF of 1 is used for each year from age 16 to 21. The approximate average ADAF of 1.9 (for the adolescent age range) is used as presented in Table 5.

2.4.3 Dermal Toxicity Values

The USEPA has not yet developed toxicity values specific to dermal exposure. For this reason, the oral toxicity values (RfDo and CSFo) and the fraction absorbed dermally from soil, also known as the dermal absorption efficiency (ABS_d) were used to derive adjusted toxicity values (RfDa and CSFa) (adjusted to dermal dose) for use in assessing dermal exposure (USEPA 1989, 2004):

Table 12 and Table 13 both includes the dermal calculations which incorporate the ABS_d into the calculations, the dermal route equations are also presented in Table 3.

2.5 Risk Characterization Approach

Risk characterization involves estimating the magnitude of the potential adverse health effects of the hazardous constituents under study and making summary judgments about the nature of any identified health threat to the defined receptor populations. It combines the results of the dose-response (toxicity) and exposure assessments.

A distinction is made between non-carcinogenic and carcinogenic endpoints, and two general criteria are used to describe risk: the HQ for non-carcinogenic effects and the ELCR for constituents evaluated as human carcinogens. Cancer risks and non-cancer hazards were calculated for each receptor for each potentially complete exposure pathway. Calculations were based on a combination of site-specific assumptions and default exposure parameters to the extent applicable.

2.5.1 Non-Cancer Hazard Quotient

Estimated doses were averaged over the expected exposure period to evaluate non-carcinogenic effects. The HQ is the ratio of the estimated dose and the RfD. An HQ greater than 1 indicates that the estimated dose for that constituent exceeds the RfD. This ratio does not provide the probability of an adverse effect. Although an HQ less than 1 indicates that health effects are not likely to occur, an HQ that exceeds 1 does not imply that health effects will occur, but that health effects are possible.

The sum of the HQs is the hazard index (HI). A limitation with the HI approach is the assumption of dose additivity. It does not account for effects on different target organs or different mechanisms of actions. Consequently, the summing of HIs for several constituents that are not expected to induce the same type

of effects or that do not act by the same mechanism may overestimate the potential for toxic effects (USEPA 1989). Consistent with USEPA risk assessment guidelines for chemical mixtures, if the total HI for an exposure scenario exceeds 1, it is incumbent on a risk assessor to segregate HQs by target organ/critical effect (USEPA 1989). Therefore, if the calculated HI exceeds 1 as a consequence of summing several HQs for constituents not expected to induce the same type of effects or that do not act by the same mechanism, the HIs were segregated by effect and mechanism of action to derive separate HIs for each target-organ/critical-effect group (USEPA 1989).

2.5.2 Excess Lifetime Cancer Risk

The ELCR is an estimate of the potential increased risk of cancer that results from lifetime exposure, at specified average daily dosages, to constituents detected in media at a site. Estimated doses or intakes for each constituent were averaged over the hypothesized lifetime of 70 years. It is assumed that a large dose received over a short period is equivalent to a smaller dose received over a longer period, as long as the total doses are equal. The ELCR is calculated as the product of the daily dose and the CSF. The risk estimate is considered to be an upper-bound estimate; therefore, it is likely that the true risk is far less than that predicted by the model.

2.6 Risk Characterization Results

The following sections discuss the risk characterization results for the outdoor worker and adolescent trespasser. For non-cancer effects, COCs were identified as constituents contributing to a target organ-specific HI greater than 1. In the context of the site-specific standard, PADEP states potential excess upper-bound lifetime risk from known or suspected carcinogens is acceptable if it falls within the target risk range of 1×10^{-4} to 1×10^{-6}, the cumulative excess risk may not be greater than as set forth in 25 Pa. Code § 250.402(b)(1) (2021). COCs were identified as constituents with an ELCR greater than 1×10^{-4}.

2.6.1 Site Outdoor Worker

Future site outdoor workers may be exposed to COCs in surface soil in the RR ROW. The HI associated with hypothetical future site outdoor worker exposure to RR ROW surface soil equals 0.09 and is less than the target HI of 1. The ELCR associated with hypothetical future site worker exposure to RR ROW surface soil equals 1×10^{-5}, which is within PADEP's cumulative ELCR range of 1×10^{-4} to 1×10^{-6}.

2.6.2 Adolescent Trespasser

Future adolescent trespassers may be exposed to COCs in surface soil in the RR ROW. The HI associated with hypothetical future adolescent trespasser exposure to RR ROW surface soil equals 0.08 and is less than the target HI of 1. The ELCR associated with hypothetical future adolescent trespasser exposure to RR ROW surface soil equals 7×10^{-6}, which is within PADEP's cumulative ELCR range of 1×10^{-4} to 1×10^{-6}.

2.6.3 Discussion of Uncertainties

Risk assessment inherently involves the use of assumptions, judgments, and incomplete data to varying degrees that may contribute to decision uncertainty in either direction. Considering the uncertainties

associated with components of the risk assessment process provides a meaningful interpretation and thorough understanding of the potential for human health risk.

A basic assumption underlying this risk assessment is that the surface soil data adequately characterize environmental conditions to which potential receptors are exposed. Sources of uncertainty associated with environmental sampling can be reduced through a well-designed sampling plan, use of appropriate data collection techniques, and implementation of quality assurance and quality control measures. As discussed in Section 3.1.7 of the RIR, the data used in the RIR meet quality assurance and quality control requirements for collection and analysis. In addition, the Supplemental RI data underwent Tier 2 validation for each sample delivery group. The RR ROW dataset is small (only 10 samples for the area) but sample locations were biased toward more impacted areas. Additionally, the RR ROW dataset consists of data for soil collected below cover material consisting of approximately 6-inches of compact gravel and ballast (i.e., coarse material lacking in fines in which COCs could be absorbed). The existing vegetation and compact gravel and ballast reduce the potential for human exposure to the impacted soil underneath. Therefore, the potential for risks related to the RR ROW may be overestimated.

Uncertainty is inherent in the selection of COCs for the risk assessment. Eliminating regulated substances in the COC screening process can lead to lower estimates of potential health effects than inclusion of all analytes. However, the RSLs used to identify COCs are derived using conservative exposure assumptions and peer-reviewed toxicity values. Due to the conservative nature of risk-based screening levels, the possibility of overlooking a regulated substance that significantly contributes to an individual's total risk is considered very minimal.

For this HHRA conservative assumptions were made to assign surrogates for constituents with no available RSLs and/or toxicity values. Hexavalent chromium RSLs and toxicity values were used for the data assessment of total chromium since speciated chromium data were not available. There is no history of hexavalent chromium use or evidence of presence at the Site, therefore, the risk from exposure to chromium is likely overestimated.

The selection of exposure point concentrations of 95% UCL or maximum detected concentration for COCs (and average mean detected concentration for lead) is meant to be a conservative estimate on the mean concentration within the exposure area.

There is uncertainty associated with the exposure assessment, particularly in the assumptions and exposure factors used to characterize hypothetical future exposure. Exposure frequency, exposure time and skin surface area exposed for dermal contact are all parameters that are based on professional judgement. Chemical specific values such as volatilization factors and dermal absorption fractions are based on laboratory studies and chemical constants. Given that these exposure frequencies constituent-specific values are conservative and may overestimate actual exposures, associated risks and hazards for these receptor groups may also be overestimated.

There are uncertainties in the toxicity values used to estimate ELCR and HQs. In most cases, toxicity values are derived by extrapolating from laboratory animal data to humans. Laboratory animals may be exposed to massively high doses of particular regulated substances over an entire lifetime. As such, these studies do not represent realistic environmental exposures. In addition, humans are different than laboratory animals. Many, if not most, animals used for laboratory studies are genetically designed to be more sensitive than humans to specific compounds. In addition, the effects shown by animals in the high-

dose studies are often very different than effects reported by humans in parallel epidemiological studies. This is because a specific regulated substance may have a different mechanism of action in laboratory animals than it does in humans. Uncertainty factors are applied in the toxicity value calculation to avoid underestimating the potential for adverse human health effects. The combined effect is that the potential for adverse health effects in humans is likely to be over-estimated.

2.7 Conclusions

As discussed in detail in the RIR and Cleanup Plan for the Site, exposure to surface soil at the RR ROW will be the only potentially complete future exposure pathway remaining after implementation of the Cleanup Plan and site redevelopment. There is no identified unacceptable risk associated with current and probable future adolescent trespasser or adult outdoor worker receptors exposed to surface soil at the railroad ROW**. Based on the HHRA findings the RR ROW does not pose unacceptable risks to human health under current and probable future conditions and further assessment of surface soil is not warranted.**

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TABLES

Table 1
Selection of Constituents of Concern for Surface Soil
Railroad Right of Way
Former Philadelphia Coke Plant Site
Philadelphia, Pennsylvania

Constituent [a]	Frequency of Detection (FOD)			Reporting Limits			Detected Concentrations			Location of Maximum Concentration (Depth Interval) [b]	Industrial Soil Regional Screening Level [c]	Selected as Constituent of Concern [d]	
	Number of Detects	/ Samples	% FOD	Minimum (mg/kg)	-	Maximum (mg/kg)	Minimum (mg/kg)	-	Maximum (mg/kg)		(mg/kg)	(YES, no)	Rationale
Volatile Organic Compounds													
Acetone	4	/ 10	40	5.6E-03	-	2.8E+00	1.8E-02	-	3.0E-01	PCSB-48(0.5)	1.1E+05	no	BSL
Benzene	1	/ 10	10	5.3E-04	-	1.4E-01	6.3E+00	-	6.3E+00	PCSB-41R(0.5-2)	5.1E+00	**YES**	ASL
Cyclohexane	1	/ 2	50	5.70E-01	-	5.70E-01	4.89E+00	-	4.89E+00	PCSB-41R(0.5-2)	2.7E+03	no	BSL
Dichloromethane	8	/ 10	80	7.0E-01	-	1.4E+00	2.3E-03	-	7.0E-02	PCSB-48(0.5)	3.2E+02	no	BSL
Ethylbenzene	1	/ 10	10	7.8E-04	-	2.8E-01	1.2E+01	-	1.2E+01	PCSB-41R(0.5-2)	2.5E+01	no	BSL
Isopropylbenzene	1	/ 2	50	5.7E-01	-	5.7E-01	9.4E-01	-	9.4E-01	PCSB-41R(0.5-2)	9.9E+02	no	BSL
m&p-Xylenes	1	/ 10	10	1.1E-03	-	2.8E-01	5.2E+01	-	5.2E+01	PCSB-41R(0.5-2)	2.4E+02	no	BSL
o-Xylene	1	/ 2	50	2.8E-01	-	2.8E-01	1.9E+01	-	1.9E+01	PCSB-41R(0.5-2)	2.8E+02	no	BSL
Toluene	1	/ 10	10	7.90E-04	-	2.80E-01	5.34E+01	-	5.34E+01	PCSB-41R(0.5-2)	4.7E+03	no	BSL
Total Xylenes	1	/ 2	50	2.8E-01	-	2.8E-01	7.1E+01	-	7.1E+01	PCSB-41R(0.5-2)	2.5E+02	no	BSL
Semi-Volatile Organic Compounds													
1,1-Biphenyl	1	/ 1	100	–	-	–	6.43E+00	-	6.43E+00	PCSB-41R(0.5-2)	2.0E+01	no	BSL
2-Methylnaphthalene	8	/ 10	80	5.9E-02	-	6.0E-02	1.1E-01	-	2.3E+01	PCSB-41R(0.5-2)	3.0E+02	no	BSL
3-Methylphenol, 4-Methylphenol	1	/ 2	50	8.1E-02	-	8.1E-02	1.2E-01	-	1.2E-01	S-151(0.5-2)	4.1E+03	no	BSL
Acenaphthene	6	/ 10	60	5.7E-03	-	4.4E-02	5.7E-02	-	6.6E+01	PCSB-41R(0.5-2)	4.5E+03	no	BSL
Acenaphthene	6	/ 10	60	5.7E-03	-	4.4E-02	5.7E-02	-	6.6E+01	PCSB-41R(0.5-2)	4.5E+03	no	BSL
Anthracene	8	/ 10	80	6.90E-03	-	2.70E-02	4.40E-02	-	7.88E+01	S-151(0.5-2)	2.3E+04	no	BSL
Benz(a)anthracene	10	/ 10	100	–	-	–	5.2E-02	-	9.3E+01	S-151(0.5-2)	2.1E+01	**YES**	ASL
Benzo(a)pyrene	10	/ 10	100	–	-	–	5.90E-02	-	8.64E+01	S-151(0.5-2)	2.1E+00	**YES**	ASL
Benzo(b)fluoranthene	10	/ 10	100	–	-	–	6.90E-02	-	1.01E+02	S-151(0.5-2)	2.1E+01	**YES**	ASL
Benzo(g,h,i)perylene	10	/ 10	100	–	-	–	1.30E-01	-	2.27E+02	S-151(0.5-2)	2.3E+03	no	BSL
Benzo(k)fluoranthene	9	/ 10	90	1.20E-02	-	1.20E-02	6.60E-02	-	4.03E+01	S-151(0.5-2)	2.1E+02	no	BSL
bis(2-Ethylhexyl)phthalate	7	/ 10	70	2.2E-02	-	1.5E-01	3.9E-02	-	5.5E-01	PCSB-37(0.5)	1.6E+02	no	BSL
Carbazole	6	/ 10	60	6.7E-03	-	5.4E-02	3.5E-02	-	2.9E+01	S-151(0.5-2)	NA	**YES**	NSL
Chrysene	10	/ 10	100	–	-	–	6.50E-02	-	7.70E+01	S-151(0.5-2)	2.1E+03	no	BSL
Dibenz(a,h)anthracene	8	/ 10	80	6.4E-03	-	6.4E-03	1.3E-01	-	1.6E+01	S-151(0.5-2)	2.1E+00	**YES**	ASL
Dibenzofuran	7	/ 10	70	4.5E-02	-	1.3E-01	7.4E-02	-	5.3E+01	S-151(0.5-2)	1.2E+02	no	BSL
Di-n-butyl phthalate	3	/ 10	30	7.00E-03	-	1.50E-01	7.90E-02	-	3.10E-01	PCSB-37(0.5)	8.2E+03	no	BSL
Fluoranthene	10	/ 10	100	–	-	–	9.8E-02	-	3.1E+02	S-151(0.5-2)	3.0E+03	no	BSL
Fluorene	5	/ 10	50	8.3E-03	-	2.7E-02	5.3E-02	-	9.2E+01	S-151(0.5-2)	3.0E+03	no	BSL
Indeno(1,2,3-cd)pyrene	10	/ 10	100	–	-	–	3.7E-02	-	5.7E+01	S-151(0.5-2)	2.1E+01	**YES**	ASL
Naphthalene	7	/ 10	70	3.4E-03	-	2.4E-02	1.7E-01	-	1.0E+02	S-151(0.5-2)	8.6E+00	**YES**	ASL
Benzo(g,h,i)perylene	10	/ 10	100	–	-	–	1.3E-01	-	2.3E+02	S-151(0.5-2)	2.3E+03	no	BSL
Phenol	1	/ 10	10	5.70E-02	-	2.80E-01	9.28E-02	-	9.28E-02	S-151(0.5-2)	2.5E+04	no	BSL
Benzo(g,h,i)perylene	10	/ 10	100	–	-	–	1.3E-01	-	2.3E+02	S-151(0.5-2)	2.3E+03	no	BSL

Table 1
Selection of Constituents of Concern for Surface Soil
Railroad Right of Way
Former Philadelphia Coke Plant Site
Philadelphia, Pennsylvania

Constituent [a]	Frequency of Detection (FOD)			Reporting Limits			Detected Concentrations			Location of Maximum Concentration (Depth Interval) [b]	Industrial Soil Regional Screening Level [c]	Selected as Constituent of Concern [d]	
	Number of Detects	/ Samples	% FOD	Minimum (mg/kg)	-	Maximum (mg/kg)	Minimum (mg/kg)	-	Maximum (mg/kg)		(mg/kg)	(YES, no)	Rationale
Metals													
Aluminum	2	/ 2	100	–	-	–	6.8E+03	-	7.6E+03	PCSB-41R(0.5-2)	1.1E+05	no	BSL
Antimony	6	/ 10	60	2.1E+00	-	2.3E+00	8.7E-01	-	2.1E+01	PCSB-41R(0.5-2)	4.7E+01	no	BSL
Arsenic	10	/ 10	100	–	-	–	4.20E+00	-	1.00E+02	PCSB-47(0.5)	3.0E+00	**YES**	ASL
Barium	10	/ 10	100	–	-	–	3.1E+01	-	1.8E+02	PCSB-41R(0.5-2)	2.2E+04	no	BSL
Beryllium	3	/ 10	30	6.20E-01	-	6.80E-01	6.80E-01	-	9.10E-01	PCSB-41R(0.5-2)	2.3E+02	no	BSL
Cadmium	6	/ 10	60	6.2E-01	-	6.8E-01	3.1E-01	-	3.6E+00	PCSB-37(0.5)	1.0E+01	no	BSL
Calcium	2	/ 2	100	–	-	–	1.2E+04	-	1.8E+04	S-151(0.5-2)	NA	no	ENUT
Chromium [e]	9	/ 10	90	5.7E+00	-	5.7E+00	1.6E+01	-	1.1E+02	PCSB-37(0.5)	6.3E+00	**YES**	ASL
Cobalt	2	/ 2	100	–	-	–	3.3E+00	-	7.8E+00	PCSB-41R(0.5-2)	3.5E+01	no	BSL
Copper	10	/ 10	100	–	-	–	1.4E+01	-	6.1E+02	PCSB-37(0.5)	4.7E+03	no	BSL
Cyanide	2	/ 2	100	–	-	–	5.3E-01	-	7.2E-01	S-151(0.5-2)	1.5E+01	no	BSL
Iron	2	/ 2	100	–	-	–	1.2E+04	-	2.8E+04	PCSB-41R(0.5-2)	8.2E+04	no	BSL
Lead [f]	10	/ 10	100	–	-	–	6.9E+00	-	9.9E+02	PCSB-41R(0.5-2)	8.0E+02	no	BSL
Magnesium	2	/ 2	100	–	-	–	3.9E+03	-	4.6E+03	PCSB-41R(0.5-2)	NA	no	ENUT
Manganese	2	/ 2	100	–	-	–	3.5E+02	-	5.5E+02	PCSB-41R(0.5-2)	2.6E+03	no	BSL
Mercury	9	/ 10	90	9.5E-02	-	9.5E-02	1.2E-01	-	1.6E+00	PCSB-41(0.5)	4.6E+00	no	BSL
Nickel	10	/ 10	100	–	-	–	7.6E+00	-	9.7E+01	PCSB-37(0.5)	2.2E+03	no	BSL
Potassium	2	/ 2	100	–	-	–	8.5E+02	-	1.1E+03	PCSB-41R(0.5-2)	NA	no	ENUT
Selenium	5	/ 10	50	1.9E+00	-	4.8E+00	7.4E-01	-	3.3E+00	PCSB-41(0.5)	5.8E+02	no	BSL
Sodium	2	/ 2	100	–	-	–	2.1E+02	-	2.7E+02	S-151(0.5-2)	NA	no	ENUT
Vanadium	2	/ 2	100	–	-	–	1.4E+01	-	3.2E+01	PCSB-41R(0.5-2)	5.8E+02	no	BSL
Zinc	10	/ 10	100	–	-	–	1.5E+01	-	5.4E+02	PCSB-37(0.5)	3.5E+04	no	BSL
Pesticides													
4,4-DDD	4	/ 9	44	5.2E-03	-	5.7E-03	4.4E-03	-	8.5E-02	PCSB-41(0.5)	2.5E+00	no	BSL
4,4-DDE	6	/ 9	67	5.2E-03	-	5.4E-03	5.4E-03	-	1.5E-01	PCSB-41(0.5)	9.3E+00	no	BSL
4,4-DDT	5	/ 9	56	5.2E-03	-	5.7E-03	5.6E-03	-	1.7E-01	PCSB-37(0.5)	8.5E+00	no	BSL
Chlordane	1	/ 8	13	1.0E-02	-	1.1E-02	4.7E-02	-	4.7E-02	PCSB-51(0.5)	5.0E+01	no	BSL
Dieldrin	1	/ 9	11	7.9E-04	-	5.7E-03	9.5E-02	-	9.5E-02	PCSB-37(0.5)	1.4E-01	no	BSL
Endosulfan II	1	/ 9	11	7.9E-04	-	5.7E-03	1.6E-02	-	1.6E-02	PCSB-37(0.5)	7.0E+02	no	BSL

Table 1
Selection of Constituents of Concern for Surface Soil
Railroad Right of Way
Former Philadelphia Coke Plant Site
Philadelphia, Pennsylvania

Constituent [a]	Frequency of Detection (FOD)			Reporting Limits			Detected Concentrations			Location of Maximum Concentration (Depth Interval) [b]	Industrial Soil Regional Screening Level [c]	Selected as Constituent of Concern [d]	
	Number of Detects	/	Samples	% FOD	Minimum (mg/kg)	Maximum (mg/kg)	Minimum (mg/kg)	-	Maximum (mg/kg)		(mg/kg)	(YES, no)	Rationale
Polychlorinated Biphenyls													
Aroclor 1248	1	/	9	11	2.6E-02	3.9E-02	1.0E-01	-	1.0E-01	PCSB-41(0.5)	9.4E-01	no	BSL
Aroclor 1254	1	/	9	11	2.6E-02	3.9E-02	3.4E-01	-	3.4E-01	PCSB-47(0.5)	9.7E-01	no	BSL
Aroclor 1260	6	/	9	67	2.60E-02	3.90E-02	4.60E-02	-	1.00E+00	PCSB-37(0.5)	9.9E-01	**YES**	ASL

Notes:
[a] Only detected constituents are presented.
[b] Depth interval is presented in feet below ground surface.
[c] Screening levels are the United States Environmental Protection Agency (USEPA) Industrial Soil Regional Screening Levels (RSL) ("&RSL&"), and are based on a target cancer risk of 1×10^{-6} and a target non-cancer hazard of 0.1 (to account for additive effects).
[d] A constituent with a maximum detected concentration above the screening level (ASL) was identified as a COC. A constituent with a maximum detected concentration below the screening level (BSL) was not identified as a COC.
[e] For chromium, the hexavalent chromium RSL is used as a surrogate for total chromium for COC selection.
[f] For lead, the arithmetic average of detected concentrations (317 mg/kg) is compared to the RSL for COC selection.

Abbreviations:

–	Not applicable.	COC	Constituent of concern.
%	Percent.	FOD	Frequency of detection.
ave	average	mg/kg	Milligram per kilogram.

Table 2
Potential Exposure Pathways
Railroad Right of Way
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	Pathway Eliminated?	Potential Exposure Pathway and Assumptions
Current and Future	Soil	Surface Soil	Railroad Right-of-Way	Trespasser	Adolescent	Ingestion	No	Exposed surface soil may be contacted in the event that an unauthorized person accesses the area; there are no future plans for the installation of perimeter fencing.
						Dermal Contact	No	
						Inhalation	No	
		Surface Soil	Railroad Right-of-Way	Outdoor Worker	Adult	Ingestion	No	Under the redevelopment scenario, future site workers performing outdoor maintenance work may be exposed to surface soil in the railroad right-of-way, even if only passing through to access other site areas.
						Dermal Contact	No	
						Inhalation	No	
		Surface Soil	Railroad Right-of-Way	Recreational User	NA	Ingestion	-	The railroad right-of-way is not planned for recreational use. Under the current/future scenario any recreational users engaging in passive recreation would be trespassing and evaluated under the trespasser scenario.
						Dermal Contact	-	
						Inhalation	-	
		Surface Soil	Hypothetical Workplace	Indoor Worker	Adult	Ingestion	Yes	There are no occupied or unoccupied buildings, or redevelopment plans to construct buildings in the railroad right-of-way in the future.
						Dermal Contact	Yes	
						Inhalation	Yes	
		Surface Soil	Hypothetical Residence	Resident	Adult/Child	Ingestion	Yes	The railroad right-of-way is currently zone as commercial/industrial use, the probably future usage is consistent with current. Any off-site resident access of the railroad right-of-way would be evaluated under the trespasser scenario.
						Dermal Contact	Yes	
						Inhalation	Yes	
		Surface & Subsurface Soil	Hypothetical Excavation/Trench	Utility Worker	Adult	Ingestion	Yes	Exposure route is complete for utility workers installing subsurface utilities (e.g., stormwater piping, electrical, communication). However, there are no active utilities in the RR ROW, and any work that has the potential to disturb subsurface soil and groundwater will be performed in accordance with the project-specific HASP, as outlined in HHRA Subsection 2.3.2.2.
						Dermal Contact	Yes	
						Inhalation	Yes	
	Groundwater	Shallow Groundwater	Hypothetical Excavation/Trench	Utility Worker	Adult	Ingestion	Yes	Exposure route is complete for utility workers installing subsurface utilities (e.g., stormwater piping, electrical, communication). However, there are no active utilities in the RR ROW, and any work that has the potential to disturb subsurface soil and groundwater will be performed in accordance with the project-specific HASP, as outlined in HHRA Subsection 2.3.2.2.
						Dermal Contact	Yes	
						Inhalation	Yes	
		Tapwater	Hypothetical Workplace	Indoor Worker	Adult/Child	Ingestion	Yes	In the future, an environmental covenant will prohibit groundwater use; therefore, no potable water wells may be installed at the Site once the covenant is in-place.
						Dermal Contact	Yes	
						Inhalation	Yes	
			Hypothetical Residence	Resident	Adult	Ingestion	Yes	
						Dermal Contact	Yes	
						Inhalation	Yes	
		Indoor Air	Workplace	Indoor Worker	Adult	Inhalation	Yes	An existing easement agreement dictates that continuous operation of the railroad must be permitted, therefore it is unlikely that buildings could be constructed at the railroad right-of-way.
			Hypothetical Residence	Resident	Adult/Child	Inhalation	Yes	

Notes:
1. Site-wide potentially complete pathways from the conceptual site model are included in this table. Only the Railroad Right-of-Way receptors apply to this human health risk assessment.

Table 3
Risk and Hazard Equations for Site Worker and Trespasser Exposure to Soil
Railroad Right of Way
Former Philadelphia Coke Plant Site
Philadelphia, Pennsylvania

Route-Specific Risk/Hazard Equations:

Oral: $ELCR_o$ *or* $HQ_o = \frac{EPCs \times RBF \times ADAF \times FI \times IRs \times EF \times ED}{(10^6\ mg/kg) \times BW \times (AT_C\ or\ AT_{NC}) \times ([1/CSF_o]\ or\ RfD_o)}$

Dermal: $ELCR_d$ *or* $HQ_d = \frac{EPCs \times ADAF \times SSAs \times SAR \times ABSd \times EF \times ED}{(10^6\ mg/kg) \times BW \times (AT_C\ or\ AT_{NC}) \times ([1/CSF_d]\ or\ RfD_d)}$

Inhalation: $ELCR_i$ *or* $HQ_i = \frac{EPCs \times ADAF \times ET \times CF1 \times EF \times ED}{(VF\text{-}sl) \times (AT_C\ or\ AT_{NC}) \times ([1/IUR \times 10^{-3}\ mg/\mu g]\ or\ RfC)}$

$VF\text{-}sl = \frac{Q/C_{vol} \times [3.14 \times D_A \times T]^{1/2}}{2 \times \rho_b \times D_A \times (10{,}000\ cm^2/m^2)}$ — used for volatiles

$PEF_{wind} = \frac{Q/C_{wind} \times (3{,}600\ sec/hr)}{RPF \times (1\text{-}V) \times (U_m/U_t)^3 \times F(x)}$ — used for non-volatiles

$D_A = \frac{[(\theta_{as}^{10/3} \times D_{air} \times Ho) + (\theta_{ws}^{10/3} \times D_{wat})] / \theta_T^2}{(\rho_b \times Koc \times Foc) + \theta_{ws} + (\theta_{as} \times Ho)}$

TOTAL CANCER RISK: $ELCR = ELCR_o + ELCR_d + ELCR_i$

TOTAL NON-CANCER HAZARD: $HI = HQ_o + HQ_d + HQ_i$

Variable Definitions:

θ_{as}	Air-filled porosity of the soil (unitless) (Table 7).
θ_T	Total soil porosity (unitless) (Table 7).
θ_{ws}	Water-filled porosity of the soil (unitless) (Table 7).
ρ_b	Dry soil bulk density (g/cm³) (Table 7).
ABSd	Dermal absorption efficiency (unitless).
ADAF	Age-Dependent Adjustment Factor for evaluation of risk from constituents with a mutagenicity mode of action (Table 5).
AT_C	Averaging time for cancer effects (days) (Table 5).
AT_{NC}	Averaging time for non-cancer effects (days) (Table 5).
BW	Body weight (kg) (Table 5).
CF	Conversion factor 0.042 day/hour.
C_{sat}	Constituent saturation limit in soil (mg/kg) (Table 7).
CSF	Cancer slope factor for oral (CSFo) or dermal (adjusted to an absorbed dose, CSFa) exposure (kg-day/mg [inverse mg/kg/day]) (Table 10).
D_A	Apparent diffusivity in soil (cm²/sec) (Table 7).
D_{air}	Constituent diffusivity in air (cm²/sec) (Table 7).
D_{wat}	Constituent diffusivity in water (cm²/sec) (Table 7).
ED	Exposure duration (years) (Table 5).
EF	Exposure frequency (days/year) (Table 5).
ELCR	Excess lifetime cancer risk (unitless) from the following pathways: oral ($_o$), dermal ($_d$), and inhalation ($_i$).
EPCs	Exposure point concentration in soil (mg/kg) (Table 4)
ET	Exposure time (hrs/day) (Table 5).
FI	Fraction ingested from area of concern (unitless) (Table 5).
Foc	Fraction organic carbon in the soil (unitless) (Table 7).
HI	Hazard index for non-cancer effects (unitless); sum of the HQs.
Ho	Dimensionless Henry's law constant (unitless); calculated as Ho = H / RT (Table 7).
HQ	Hazard quotient for non-cancer effects (unitless) from the following pathways: oral ($_o$), dermal ($_d$), and inhalation ($_i$).
IRs	Ingestion rate of soil (mg/day) (Table 5).
IUR	Inhalation unit risk (m³/mg) (Table 11).
Koc	Organic carbon partition coefficient (cm³/g = mL/g = L/kg) (Table 7).
PEF_{wind}	Particulate emission factor due to wind (m³/kg) (Table 6).
Q/C_{vol}	Volatile emission flux per unit concentration [(g/m²/sec)/(kg/m³)] (Table 7).
Q/C_{wind}	Particulate emission flux per unit concentration [(g/m²/sec)/(kg/m³)] (Table 6).
RBF	Relative bioavailability factor; constituent specific; default of 100% (i.e., 1) unless otherwise indicated (unitless). RBF for arsenic in soil was set at 60% (i.e., 0.6) consistent with USEPA recommendations (USEPA 2021b).
RfC	Reference concentration (mg/m³) (Table 9).
RfD	Reference dose for oral (RfDo) and dermal (adjusted to an absorbed dose, RfDa), exposure (mg/kg/day) (Table 8).
RPF	Respirable particle fraction (0.036 g/m²/hr) (Table 6).
SAR	Soil-to-skin adherence rate (mg/cm²/day) (Table 5).
SSAs	Exposed skin surface area for soil contact (cm²) (Table 5).
T	Exposure interval (sec) (Table 7).
VF-sl	Soil volatilization factor (m³/kg) (Table 7).
x	Intermediate value in the calculation of PEF; x = 0.886 × (Ut/Um) (Table 6).

Abbreviations:

cm²	Square centimeter.	m²	Square meter.
g	Gram.	m³	Cubic meter.
hr	Hour.	mg	Milligram.
kg	Kilogram.	µg	Microgram.
m	Meter.	sec	Second.

Table 4
Exposure Point Concentrations - Surface Soil
Railroad Right of Way
Former Philadelphia Coke Plant Site
Philadelphia, Pennsylvania

Constituent of Concern	Detected Concentrations		Exposure Point Concentration [a]			
	Arithmetic Mean (mg/kg)	Maximum (mg/kg)	Selected Value (mg/kg)	Statistic		Rationale
Volatile Organic Compounds						
Benzene	6.32E+00	6.32E+00	6.32E+00	max		UCL cannot be calculated
Semi-Volatile Organic Compounds						
Benz(a)anthracene	1.25E+01	6.15E+01	6.15E+01	UCL	95% Adjusted Gamma UCL	UCL < max
Benzo(a)pyrene	1.13E+01	5.48E+01	5.48E+01	UCL	95% Adjusted Gamma UCL	UCL < max
Benzo(b)fluoranthene	1.36E+01	6.26E+01	6.26E+01	UCL	95% Adjusted Gamma UCL	UCL < max
Carbazole	6.60E+00	2.94E+01	2.94E+01	max		UCL > max
Dibenz(a,h)anthracene	2.88E+00	1.48E+01	1.48E+01	UCL	Gamma Adjusted KM-UCL	UCL < max
Indeno(1,2,3-cd)pyrene	7.63E+00	3.56E+01	3.56E+01	UCL	95% Adjusted Gamma UCL	UCL < max
Naphthalene	1.69E+01	1.00E+02	1.00E+02	max		UCL > max
Metals						
Arsenic	1.99E+01	4.27E+01	4.27E+01	UCL	95% H-UCL	UCL < max
Chromium	3.76E+01	6.94E+01	6.94E+01	UCL	95% KM Adjusted Gamma UCL	UCL < max
Polychlorinated Biphenyls						
Aroclor 1260	2.69E-01	3.93E-01	3.93E-01	UCL	95% KM (t) UCL	UCL < max

Notes:

max Maximum.
mg/kg Milligram per kilogram.
UCL Upper confidence limit.

[a] The exposure point concentration (EPC) was the lower value of either the 95 percent (%) UCL or the maximum concentration, where the UCL was incalculable.

The UCLs were calculated using ProUCL version 5.1.00 (USEPA 2016b). The UCL used is the one recommended by ProUCL, unless a greater than 95% UCL was recommended, in which case the 95% UCL was selected.

Table 5
Receptor Exposure Parameters
Railroad Right of Way
Former Philadelphia Coke Plant Site
Philadelphia, Pennsylvania

Parameter	Symbol	Units	Outdoor Site Worker		Adolescent Trespasser	
			Value	[ref]	(12 to 21 years)	[ref]
General Factors						
Averaging Time (cancer)	ATc	days	25,550	[1,2,a]	25,550	[1,2,a]
Averaging Time (non-cancer)	ATnc	days	9,125	[1,2,a]	3,285	[1,2,a]
Body Weight	BW	kg	80	[1,2]	65	[3,b]
Exposure Frequency	EF	days/year	50	PJ [c]	50	PJ [d]
Exposure Duration	ED	years	25	[1,2]	9	PJ
Age-Dependent Adjustment Factor	ADAF	unitless	–		1.9	[4,e]
Conversion Factor	CF1	day/hour	0.042		0.042	
Conversion Factor	CF2	mg/kg	1E+06		1E+06	
Conversion Factor	CF3	µg/mg	1E+03		1E+03	
Conversion Factor	CF4	mg/µg	1E-03		1E-03	
Soil - Ingestion (Oral)						
Incidental Soil Ingestion Rate	IRs	mg/day	50	[5,f]	50	[3,g]
Fraction Ingested from Source	FI	unitless	1		1	
Soil - Dermal Contact						
Exposed Skin Surface Area	SSAs	cm^2	3,527	[2,h]	6,032	[2,i]
Soil-to-Skin Adherence Rate	SAR	$mg/cm^2/day$	0.12	[2]	0.07	[2,3]
Soil - Inhalation						
Exposure Time	ET	hour/day	4	PJ [c]	2	PJ

Table 5
Receptor Exposure Parameters
Railroad Right of Way
Former Philadelphia Coke Plant Site
Philadelphia, Pennsylvania

Notes:

[a] The averaging time for cancer risk is the expected lifespan of 70 years, expressed in days. The averaging time for non-cancer hazard is the total exposure duration (ED), expressed in days.

[b] The body weight for an adolescent trespasser is the weighted average of 65 lbs for ages 11 to <16 years and 71.6 lbs for ages 16 to <21 years (Table 8-1).

[c] The exposure frequency for an onsite worker was set at 50 days per year, assuming site visits one day per week regardless of weather, for approximately 4 hours a day, or one half of a workday.

[d] The exposure frequency for an adolescent trespasser was set at 50 days per year, assuming one day per week regardless of weather.

[e] The age-dependent adjustment factor is the average for the adolescent age range (years 12-16 = 3, years 16-21 = 1)

[f] The incidental soil ingestion rate for the on-site worker was set at 50 mg/day, the PADEP non-residential worker default.

[g] The incidental soil ingestion rate for the trespasser was set at the central tendency soil ingestion rate for 6 to <21 years.

[h] The skin surface area (SSA) for the site worker is set at the default for adult worker exposure and includes head, hands, and forearms.

[i] The skin surface area (SSA) for the adolescent trespasser is set at the default for adult resident exposure and includes head, forearms, hands, and lower legs.

Abbreviations:

cm^2 Square centimeters.
kg Kilogram.
mg Milligram.
µg Microgram.

References [ref]:

[1] USEPA 1989
[2] USEPA 2014
[3] USEPA 2011
[4] USEPA 2005
[5] PADEP 2021
PJ Professional judgment.

Table 6
Soil Particulate Emission Factors
Railroad Right of Way
Former Philadelphia Coke Plant Site
Philadelphia, Pennsylvania

Particulate Emission Factor:				
PEF_{wind}	=	9.96E+09	m^3/kg	Particulate emission factor (m^3/kg) due to wind under passive conditions; site-specific using USEPA (2002) equation.

Particulate Emission Factor for Wind-Blown Fugitive Dust for Commercial/Industrial and Residential Scenarios

$$PEF_{wind} = Q/C_{wind} \times \left[\frac{3600}{0.036 \times (1-V) \times \left(\frac{U_m}{U_t} \right)^3 \times F(x)} \right]$$

Input Parameters:				
F(x)	=	0.0759	unitless	Function of x; $F(x) = 0.18 \times (8x^3 + 12x) \times \exp(-x^2)$ (USEPA 2002 default).
Q/Cwind	=	93.77	$(g/m^2/sec)/(kg/m^3)$	Wind-related particulate emission flux per unit concentration (USEPA 2002 default).
RPF	=	0.036	$g/m^2/hour$	Respirable particle fraction (USEPA 2002 default).
U_m	=	4.16	m/sec	Mean annual wind speed for Philadelphia, PA (NOAA 2018).
U_t	=	11.32	m/sec	Equivalent threshold value of windspeed at 7 meters (USEPA 2002 default).
V	=	0.75	unitless	Fraction vegetative cover (USEPA 2002 default).
x	=	2.411	unitless	Function of U_t/U_m; $x = 0.886 \times (U_t/U_m)$ (USEPA 2002 default).

Abbreviations:

g	Gram.	m^3	Cubic meter.
kg	Kilogram.	PEF_{wind}	Particulate emission factor due to wind (m^3/kg).
km	Kilometer.	sec	Second.
NOAA	National Oceanic and Atmospheric Administration.	USEPA	United States Environmental Protection Agency.
m^2	Square meter.		

Table 7
Soil Volatilization Factors
Railroad Right of Way
Former Philadelphia Coke Plant Site
Philadelphia, Pennsylvania

Constituent	Constituent Specific Physical Parameters [a]									
	Molecular Weight (MW) (g/mol)	Melting Point (Tm) (°C)	Henry's Law Constant at 25°C (H) (atm-m³/mol)	Diffusivity in Air (D_{air}) (cm²/sec)	Diffusivity in Water (D_{wat}) (cm²/sec)	Partition Coefficient (Koc) (mL/g)	Solubility in Water (S) (mg/L)	Enthalpy of vaporization at boiling point, (ΔH_v) (cal/mol)	Normal Boiling Point (Tb) (K)	Critical Temperature (Tc) (K)
Volatile Organic Compounds										
Benzene	7.8E+01	5.5E+00	5.6E-03	9.0E-02	1.0E-05	1.5E+02	1.8E+03	7.3E+03	3.5E+02	5.6E+02
Semi-Volatile Organic Compounds										
Benz(a)anthracene	2.3E+02	8.4E+01	1.2E-05	2.6E-02	6.7E-06	1.8E+05	9.4E-03	1.6E+04	7.1E+02	9.8E+02
Benzo(a)pyrene	2.5E+02	1.8E+02	4.6E-07	2.5E-02	6.6E-06	5.9E+05	1.6E-03	NV	NV	NV
Benzo(b)fluoranthene	2.5E+02	1.7E+02	6.6E-07	2.5E-02	6.4E-06	6.0E+05	1.5E-03	NV	NV	NV
Carbazole	NA	NA	NV	NV	NV	NV	NV	NA	NA	NA
Dibenz(a,h)anthracene	2.8E+02	2.7E+02	1.4E-07	2.4E-02	6.0E-06	1.9E+06	2.5E-03	NV	NV	NV
Indeno(1,2,3-cd)pyrene	2.8E+02	1.6E+02	3.5E-07	2.5E-02	6.4E-06	2.0E+06	1.9E-04	NV	NV	NV
Naphthalene	1.3E+02	8.0E+01	4.4E-04	6.0E-02	8.4E-06	1.5E+03	3.1E+01	1.0E+04	4.9E+02	7.5E+02
Metals										
Arsenic	7.5E+01	2.7E+02	NV	NV	NV	NV	NV	NV	NV	NV
Chromium	5.2E+01	1.9E+03	NV	NV	NV	NV	NV	NV	NV	NV
Polychlorinated Biphenyls										
Aroclor 1260	4.0E+02	1.6E+02	3.4E-04	2.2E-02	5.6E-06	3.5E+05	1.4E-02	NA	6.9E+02	9.9E+02

Input Parameters:

Soil =	SL	sandy loam	Soil type (site-specific).
Ts =	15.6	°C	Average soil temperature (PADEP 2021a) (site-specific).
Ts =	289	K	Temperature in Kelvin.
Foc =	0.002	unitless	Fraction organic carbon (USEPA 2002 default).
ρ_b =	1.62	g/cm³	Soil dry bulk density for sandy clay (USEPA 2017).
θ_T =	0.387	unitless	Total soil porosity for sandy clay (USEPA 2017).
θ_{as} =	0.284	unitless	Air-filled soil porosity [= θ_T - θ_{ws}].
θ_{ws} =	0.103	unitless	Water-filled soil porosity for sandy clay (USEPA 2017).
Q/C_{vol} =	68.18	(g/m²/sec)/(kg/m³)	Volatilization flux per unit concentration under passive conditions (USEPA 2002 default).
Q/C_{sa} =	14.31	(g/m²/sec)/(kg/m³)	Volatilization flux per unit concentration under soil invasive conditions (USEPA 2002 default).
Ttres =	2.8E+08	second	Exposure interval for a trespasser scenario (based on 9 years).
Twrkr =	7.9E+08	second	Exposure interval for a commercial and industrial scenario (based on 25 years).
F_D=	0.187	unitless	Dispersion Correction Factor (site-specific).

Notes:

[a] Constituent-specific parameters were obtained from the Chemical Specific Parameters Table from the Regional Screening Level Table (USEPA 2021b).
[b] Enthalpy of vaporization and Henry's Law Constant were adjusted for soil temperature based on USEPA recommended methods (USEPA 2001).
[c] Csat and VF calculated using equations from USEPA 2002. See Table 3 and Table .

Abbreviations:

°C	Degress Celsius.	g/mol	Gram per mole.	mg/kg	Milligram per kilogram.
atm-m³/mol	Atmosphere per cubic meter per mole.	g/m²/sec	Gram per meter squared per second.	mg/L	Milligram per liter.
cal/mol	Calorie per mol.	K	Kelvin.	mL/g	Milliliter per gram.
cm²/sec	Centimer squared per second.	kg/m³	Kilogram per cubic meter.	NV	No Value
g/cm²	Gram per cubic centimeter.	m³/kg	Cubic meter per kilogram.		

Table 7
Soil Volatilization Factors
Railroad Right of Way
Former Philadelphia Coke Plant Site
Philadelphia, Pennsylvania

Constituent	Enthalpy of vaporization at at soil temp. [b] (ΔH_v) (cal/mol)	Henry's Law Constant at soil temp. [b] (Ho) (unitless)	Saturation Limit in Soil [c] (Csat) (mg/kg)	Apparent Diffusivity (D_A) (cm^2/sec)	Soil Volatilization Factor [b] Passive (VF-sl) (m^3/kg)	Soil Volatilization Factor [b] Soil Invasive ($VF\text{-}sl_{cons}$) (m^3/kg)
Volatile Organic Compounds						
Benzene	8.1E+03	1.5E-01	6.8E+02	2.2E-03	1.3E+03	3.0E+02
Semi-Volatile Organic Compounds						
Benz(a)anthracene	2.4E+04	1.4E-04	NA	6.8E-10	2.4E+06	5.4E+05
Benzo(a)pyrene	NV	NV	NV	NV	NV	NV
Benzo(b)fluoranthene	NV	NV	NV	NV	NV	NV
Carbazole	NA	NA	NA	NA	NA	NA
Dibenz(a,h)anthracene	NV	NV	NV	NV	NV	NV
Indeno(1,2,3-cd)pyrene	NV	NV	NV	NV	NV	NV
Naphthalene	1.3E+04	9.1E-03	NA	1.1E-05	1.9E+04	4.3E+03
Metals						
Arsenic	NV	NV	NV	NV	NV	NV
Chromium	NV	NV	NV	NV	NV	NV
Polychlorinated Biphenyls						
Aroclor 1260	NA	NA	NA	NV	NV	NV

Table 8
Non-Carcinogenic Toxicity Values for Oral and Dermal Exposure
Railroad Right of Way
Former Philadelphia Coke Plant Site
Philadelphia, Pennsylvania

Constituent	Oral RfD (mg/kg/day) [a] Chronic	[ref]	Adjustment Factor [b]	Dermal RfD (mg/kg/day) Chronic	RfD Target Site/ Critical Effect	Confidence Level/ Uncertainty Factor
Volatile Organic Compounds						
Benzene	4.0E-03	IRIS	1	4.0E-03	Blood	Medium / 300
Semi-Volatile Organic Compounds						
Benz(a)anthracene	NA		1	NA	NA	NA
Benzo(a)pyrene	3.0E-04	IRIS	1	3.0E-04	Developmental	Medium / 300
Benzo(b)fluoranthene	NA		1	NA	NA	NA
Carbazole	NA		NA	NA	NA	NA
Dibenz(a,h)anthracene	NA		1	NA	NA	NA
Indeno(1,2,3-cd)pyrene	NA		1	NA	NA	NA
Naphthalene	2.0E-02	IRIS	1	2.0E-02	Body weight	Low / 3000
Metals						
Arsenic	3.0E-04	IRIS	1	3.0E-04	Skin and blood	Medium / 3
Chromium	3.0E-03	IRIS	0.025	7.5E-05	NA	Low / 300
Polychlorinated Biphenyls						
Aroclor 1260	NA		1	NA	NA	NA

Notes:
[a] Toxicity values were obtained following PADEP recommended hierarchy (2021a).
[b] The oral-to-dermal adjustment factor (oral absorption efficiency) as used to calculate the dermal reference dose (RfD) values (USEPA 2004).
RfD (dermal) = RfD (oral) × Adjustment Factor (oral absorption efficiency).

Abbreviations:

mg/kg/day	Milligram per kilogram per day.
NA	Not available or applicable.
RfD	Reference dose.

References [ref]:

IRIS	USEPA, Integrated Risk Information System (IRIS) (USEPA 2021a).

Table 9
Non-Carcinogenic Toxicity Values for Inhalation Exposure
Railroad Right of Way
Former Philadelphia Coke Plant Site
Philadelphia, Pennsylvania

Constituent	Inhalation RfC (mg/m^3) [a]		RfC	
	Chronic	[ref]	Target Site/ Critical Effect	Confidence Level/ Uncertainty Factor
Volatile Organic Compounds				
Benzene	3.0E-02	IRIS	Blood	Medium / 300
Semi-Volatile Organic Compounds				
Benz(a)anthracene	NA		NA	NA
Benzo(a)pyrene	2.0E-06	IRIS	Developmental	Low/medium / 3000
Benzo(b)fluoranthene	NA		NA	NA
Carbazole	NA		NA	NA
Dibenz(a,h)anthracene	NA		NA	NA
Indeno(1,2,3-cd)pyrene	NA		NA	NA
Naphthalene	3.0E-03	IRIS	Nervous, Respiratory	Medium / 3000
Metals				
Arsenic	1.5E-05	Cal EPA	NA	NA
Chromium	1.0E-04	IRIS	Lungs	Medium / 300
Polychlorinated Biphenyls				
Aroclor 1260	NA		NA	NA

Note:
[a] Toxicity values were obtained following PADEP recommended hierarchy (2019a).
Abbreviations:

mg/m^3	Milligram per cubic meter.
NA	Not available or not applicable.
RfC	Reference concentration.

References [ref]:

Cal EPA	Cal EPA, Toxicity Criteria database (Cal EPA 2021).
IRIS	United States Environmental Protection Agency (USEPA), Integrated Risk Information System (IRIS) (USEPA 2021a).

Table 10
Carcinogenic Toxicity Values for Oral and Dermal Exposure
Railroad Right of Way
Former Philadelphia Coke Plant Site
Philadelphia, Pennsylvania

Constituent	Oral CSF [a] (mg/kg/day)$^{-1}$	[ref]	Adjustment Factor [b]	Dermal CSF (mg/kg/day)$^{-1}$	Mutagen	Tumor Site	Weight of Evidence Classification [c]
Volatile Organic Compounds							
Benzene	5.5E-02	IRIS	1	5.5E-02		Blood	A
Semi-Volatile Organic Compounds							
Benz(a)anthracene	1.0E-01	IRIS	1	1.0E-01	M	NA	B2
Benzo(a)pyrene	1.0E+00	IRIS	1	1.0E+00	M	Gastrointestinal	A
Benzo(b)fluoranthene	1.0E-01	IRIS	1	1.0E-01	M	NA	B2
Carbazole	2.0E-02	HEAST	1	2.0E-02		Liver	B2
Dibenz(a,h)anthracene	1.0E+00	IRIS	1	1.0E+00	M	NA	B2
Indeno(1,2,3-cd)pyrene	1.0E-01	IRIS	1	1.0E-01	M	NA	B2
Naphthalene	1.2E-01	Cal EPA	1	1.2E-01		NA	C
Metals							
Arsenic	1.5E+00	IRIS	1	1.5E+00		Skin	A
Chromium	5.0E-01	Cal EPA	0.025	2.0E+01	M	NA	A
Polychlorinated Biphenyls							
Aroclor 1260	2.0E+00	IRIS	1	2.0E+00		Liver	B2

Notes:
[a] Toxicity values were obtained following PADEP recommended hierarchy (2019a).
[b] The oral-to-dermal adjustment factor (oral absorption efficiency) as used to calculate the dermal CSFd values (USEPA 2004).
CSF (dermal) = CSF (oral) / Adjustment Factor (oral absorption efficiency)
[c] The USEPA 1986 hierarchal cancer classification system and the more recent (USEPA 2005) narrative system were used.
The most up-to-date classification is presented for each constituent.
1986 A: Human carcinogen (sufficient evidence of carcinogenicity in humans).
B: Probable human carcinogen.
B1 - Limited evidence of carcinogenicity in humans.
B2 - Sufficient evidence of carcinogenicity in animals with inadequate or lack of evidence in humans.
C: Possible human carcinogen (limited evidence of carcinogenicity in animals and inadequate or lack of human data).
D: Not classifiable as to human carcinogenicity (inadequate or no evidence).

Abbreviations:
CSF Cancer slope factor.
(mg/kg/day)$^{-1}$ Inverse milligram per kilogram per day (risk per unit dose).
M mutagenic mode of action.
NA Not available or not applicable.

References [ref]:
Cal EPA California Environmental Protection Agency (Cal EPA), Toxicity Criteria Database (Cal EPA 2021).
HEAST USEPA, Health Effects Summary Table (HEAST) (USEPA 2011b).
IRIS United States Environmental Protection Agency (USEPA), Integrated Risk Information System (IRIS) (USEPA 2021a).

Table 11
Carcinogenic Toxicity Values for Inhalation Exposure
Railroad Right of Way
Former Philadelphia Coke Plant Site
Philadelphia, Pennsylvania

Constituent	Inhalation Unit Risk (IUR) [a] $(\mu g/m^3)^{-1}$	[ref]	Mutagen	Tumor Site	Weight of Evidence Classification [b]
Volatile Organic Compounds					
Benzene	7.80E-06	IRIS		Blood	A
Semi-Volatile Organic Compounds					
Benz(a)anthracene	6.00E-05	IRIS	M	NA	B2
Benzo(a)pyrene	6.00E-04	IRIS	M	Gastrointestinal, Respiratory	A
Benzo(b)fluoranthene	6.00E-05	IRIS	M	NA	B2
Carbazole	NA			NA	B2
Dibenz(a,h)anthracene	6.00E-04	IRIS	M	NA	B2
Indeno(1,2,3-cd)pyrene	6.00E-05	IRIS	M	NA	B2
Naphthalene	3.40E-05	Cal EPA		NA	C
Metals					
Arsenic	4.30E-03	IRIS		Lung	A
Chromium	8.40E-02	IRIS	M	Lung	A
Polychlorinated Biphenyls					
Aroclor 1260	5.71E-04	IRIS		Liver	B2

Notes:
[a] Toxicity values were obtained following PADEP recommended hierarchy (2019a).
[b] The USEPA 1986 hierarchal cancer classification system and the more recent (USEPA 2005) narrative system were used.
The most up-to-date classification is presented for each constituent.
1986 A: Human carcinogen (sufficient evidence of carcinogenicity in humans).
B: Probable human carcinogen.
B1 - limited evidence of carcinogenicity in humans.
B2 - sufficient evidence of carcinogenicity in animals with inadequate or lack of evidence in humans.
C: Possible human carcinogen (limited evidence of carcinogenicity in animals and inadequate or lack of human data).
D: Not classifiable as to human carcinogenicity (inadequate or no evidence).

Abbreviations:
$(\mu g/m^3)^{-1}$ Inverse microgram per cubic meter.
M mutagenic mode of action.
NA Not available or not applicable.

References [ref]:
Cal EPA California Environmental Protection Agency (Cal EPA), Toxicity Criteria Database (Cal EPA 2021).
IRIS United States Environmental Protection Agency (USEPA), Integrated Risk Information System (IRIS; USEPA 2021a).

Table 12
Risk and Hazard Calculations for a Hypothetical Future Site Worker for Exposure to Surface Soil
Railroad Right of Way
Former Philadelphia Coke Plant Site
Philadelphia, Pennsylvania

Constituent [a]	EPCs [b] (mg/kg)		ABSd [c]	RBF [d]	PEF/VF [e] (m^3/kg)		CANCER RISK: Route-Specific Risk Oral ELCRo	Dermal ELCRd	Inhalation ELCRi	Calculated Risk ELCR	Percent Total ELCR	NON-CANCER HAZARD: Route-Specific Hazard Oral HQo	Dermal HQd	Inhalation HQi	Calculated Hazard HI	Percent Total HI
Volatile Organic Compounds																
Benzene	6.32E+00	max	0	1	6.80E+02	V	1.1E-08	NA	5.9E-07	6.0E-07	6%	1.4E-04	NA	7.1E-03	7.2E-03	13%
Semi-Volatile Organic Compounds																
Benz(a)anthracene	6.15E+01	UCL	0.13	1	9.96E+09	P	1.9E-07	2.1E-07	3.0E-12	3.9E-07	4%	NA	NA	NA	–	
Benzo(a)pyrene	5.48E+01	UCL	0.13	1	9.96E+09	P	1.7E-06	1.8E-06	2.7E-11	3.5E-06	36%	1.6E-02	1.7E-02	6.3E-05	3.3E-02	62%
Benzo(b)fluoranthene	6.26E+01	UCL	0.13	1	9.96E+09	P	1.9E-07	2.1E-07	3.1E-12	4.0E-07	4%	NA	NA	NA	–	
Dibenz(a,h)anthracene	1.48E+01	UCL	0.13	1	9.96E+09	P	4.5E-07	5.0E-07	7.3E-12	9.5E-07	10%	NA	NA	NA	–	
Indeno(1,2,3-cd)pyrene	3.56E+01	UCL	0.13	1	9.96E+09	P	1.1E-07	1.2E-07	1.7E-12	2.3E-07	2%	NA	NA	NA	–	
Naphthalene	1.00E+02	max	0.13	1	9.96E+09	P	3.7E-07	4.0E-07	2.8E-12	7.7E-07	8%	4.3E-04	4.7E-04	7.6E-08	9.0E-04	2%
Metals																
Arsenic	4.27E+01	UCL	0.03	0.6	9.96E+09	P	1.2E-06	5.0E-07	1.5E-10	1.7E-06	17%	7.3E-03	3.1E-03	6.5E-06	1.0E-02	19%
Chromium	6.94E+01	UCL	0	1	9.96E+09	P	1.1E-06	NA	4.8E-09	1.1E-06	11%	2.0E-03	NA	1.6E-06	2.0E-03	4%
Polychlorinated Biphenyls																
Aroclor 1260	3.93E-01	UCL	0.14	1	9.96E+09	P	2.4E-08	2.8E-08	1.8E-13	5.3E-08	<1%	NA	NA	NA	–	
Total Risk or Hazard							Total ELCR			1E-05	100%	Total HI			0.05	100%

Notes:
[a] Only detected constituents of concern are presented.
[b] The UCLs were calculated using United States Environmental Protection Agency (USEPA) ProUCL version 5.1.00 ("&ProUCL&"). See Table 3.
EPCs marked with "max" are based on the maximum detected concentration.
[c] Dermal absorption efficiency (ABSd) for uptake of constituents from a soil matrix (unitless) (USEPA 2021b).
[d] Relative bioavailability factor is constituent-specific; default of 100% (i.e., 1) unless otherwise indicated (unitless).
RBF for arsenic in soil was set at 60% (i.e., 0.6) consistent with USEPA recommendations (USEPA 2021b).
[e] The volatilization factor for soil ([VF] identified with [V]), is derived in Table 7, while the particulate emission factor ([PEF] identified with [P]), is derived on Table 6.

Abbreviations:

–	Not applicable.	HI	Hazard index (sum of the HQs).	µg	Microgram.
%	Percent.	HQ	Hazard quotient.	mg	Milligram.
cm^2	Square centimeter.	hr	Hour.	NA	Toxicity value not available or not applicable.
CSF	Cancer slope factor.	IUR	Inhalation unit risk.	RfC	Reference concentration.
ELCR	Excess lifetime cancer risk.	kg	Kilogram.	RfD	Reference dose.
EPCs	Exposure point concentration in soil.	m^3	Cubic meter.		

Table 12
Risk and Hazard Calculations for a Hypothetical Future Site Worker for Exposure to Surface Soil
Railroad Right of Way
Former Philadelphia Coke Plant Site
Philadelphia, Pennsylvania

Equations:
Equations are presented in Table 3, and summarized below.
Exposure parameters are presented in Table 5.
Constituent-specific toxicity values (CSF, IUR, RfC, RfD) are presented in Table 8 through Table 11.

ELCRo = (EPCs × RBF × FI × IRs × EF × ED × CSFo) / (1,000,000 mg/kg × BW × ATc)
ELCRd = (EPCs × SSAs × SAR × ABSd × EF × ED × CSFa) / (1,000,000 mg/kg × BW × ATc)
ELCRi = (EPCs × ET × CF × EF × ED × IUR × 1000 µg/mg) / ([PEF or VF] × ATc)

HQo = (EPCs × RBF × FI × IRs × EF × ED) / (1,000,000 mg/kg × BW × ATnc × RfDo)
HQd = (EPCs × SSAs × SAR × ABSd × EF × ED) / (1,000,000 mg/kg × BW × ATnc × RfDa)
HQi = (EPCs × ET × CF × EF × ED) / ([PEF or VF] × ATnc × RfC)

Variable	Acronym	Value	Unit	Source
Averaging time, cancer	ATc	25,550	days	See Table 5
Averaging time, non-cancer	ATnc	9,125	days	See Table 5
Body weight	BW	80	kg	See Table 5
Exposure time	ET	4	hrs/day	See Table 5
Exposure frequency	EF	50	days/year	See Table 5
Exposure duration	ED	25	years	See Table 5
Conversion factor (days/hr)	CF1	0.042	days/hr	See Table 5
Fraction ingested from site	FI	1	unitless	See Table 5
Ingestion rate of soil	IRs	50	mg/day	See Table 5
Relative bioavailability factor	RBF	100 for most; 60 for arsenic	percent	See Table 5
Soil-to-skin adherence rate	SAR	0.12	mg/cm²/day	See Table 5
Skin surface area for soil contact	SSAs	3,527	cm²	See Table 5

Table 13
Risk and Hazard Calculations for a Hypothetical Future Adolescent Trespasser for Exposure to Surface Soil
Railroad Right of Way
Former Philadelphia Coke Plant Site
Philadelphia, Pennsylvania

Constituent [a]	EPCs [b] (mg/kg)		ABSd [c]	RBF [d]	PEF [e] (m^3/kg)		CANCER RISK: Route-Specific Risk Oral ELCRo	Dermal ELCRd	Inhalation ELCRi	Calculated Risk ELCR	Percent Total ELCR	NON-CANCER HAZARD: Route-Specific Hazard Oral HQo	Dermal HQd	Inhalation HQi	Calculated Hazard HI	Percent Total HI
Volatile Organic Compounds																
Benzene	6.32E+00	max	0	1	6.80E+02	V	4.7E-09	NA	1.1E-07	1.1E-07	2%	1.7E-04	NA	3.5E-03	3.7E-03	6%
Semi-Volatile Organic Compounds																
Benz(a)anthracene	6.15E+01	UCL	0.13	1	9.96E+09	P	1.6E-07	1.7E-07	1.0E-12	3.3E-07	5%	NA	NA	NA	–	
Benzo(a)pyrene	5.48E+01	UCL	0.13	1	9.96E+09	P	1.4E-06	1.5E-06	9.2E-12	3.0E-06	44%	1.9E-02	2.1E-02	3.1E-05	4.0E-02	67%
Benzo(b)fluoranthene	6.26E+01	UCL	0.13	1	9.96E+09	P	1.6E-07	1.8E-07	1.1E-12	3.4E-07	5%	NA	NA	NA	–	
Dibenz(a,h)anthracene	1.48E+01	UCL	0.13	1	9.96E+09	P	3.8E-07	4.2E-07	2.5E-12	8.0E-07	12%	NA	NA	NA	–	
Indeno(1,2,3-cd)pyrene	3.56E+01	UCL	0.13	1	9.96E+09	P	9.2E-08	1.0E-07	6.0E-13	1.9E-07	3%	NA	NA	NA	–	
Naphthalene	1.00E+02	max	0.13	1	9.96E+09	P	1.6E-07	1.8E-07	5.0E-13	3.4E-07	5%	5.3E-04	5.8E-04	3.8E-08	1.1E-03	2%
Metals																
Arsenic	4.27E+01	UCL	0.03	0.6	9.96E+09	P	5.2E-07	2.2E-07	2.7E-11	7.4E-07	11%	9.0E-03	3.8E-03	3.3E-06	1.3E-02	21%
Chromium	6.94E+01	UCL	0	1	9.96E+09	P	8.9E-07	NA	1.6E-09	8.9E-07	13%	2.4E-03	NA	8.0E-07	2.4E-03	4%
Polychlorinated Biphenyls																
Aroclor 1260	3.93E-01	UCL	0.14	1	9.96E+09	P	1.1E-08	1.3E-08	3.3E-14	2.3E-08	<1%	NA	NA	NA	–	
Total Risk or Hazard							Total ELCR			7E-06	100%	Total HI			0.06	100%

Notes:

[a] Only detected constituents of concern are presented.
[b] The UCLs were calculated using United States Environmental Protection Agency (USEPA) ProUCL version 5.1.00 (USEPA 2016b). See Table 3.
[c] Dermal absorption efficiency (ABSd) for uptake of constituents from a soil matrix (unitless) (USEPA 2021b).
[d] Relative bioavailability factor is constituent-specific; default of 100% (i.e., 1) unless otherwise indicated (unitless).
RBF for arsenic in soil was set at 60% (i.e., 0.6) consistent with USEPA recommendations (USEPA 2021b).
[e] The volatilization factor for soil ([VF] identified with [V]), is derived in Table 7, while the particulate emission factor ([PEF] identified with [P]), is derived on Table 6.

Abbreviations:

–	Not applicable.	HI	Hazard index (sum of the HQs).	µg	Microgram.
%	Percent.	HQ	Hazard quotient.	mg	Milligram.
cm^2	Square centimeter.	hr	Hour.	NA	Toxicity value not available or not applicable.
CSF	Cancer slope factor.	IUR	Inhalation unit risk.	RfC	Reference concentration.
ELCR	Excess lifetime cancer risk.	kg	Kilogram.	RfD	Reference dose.
EPCs	Exposure point concentration in soil.	m^3	Cubic meter.		

Table 13
Risk and Hazard Calculations for a Hypothetical Future Adolescent Trespasser for Exposure to Surface Soil
Railroad Right of Way
Former Philadelphia Coke Plant Site
Philadelphia, Pennsylvania

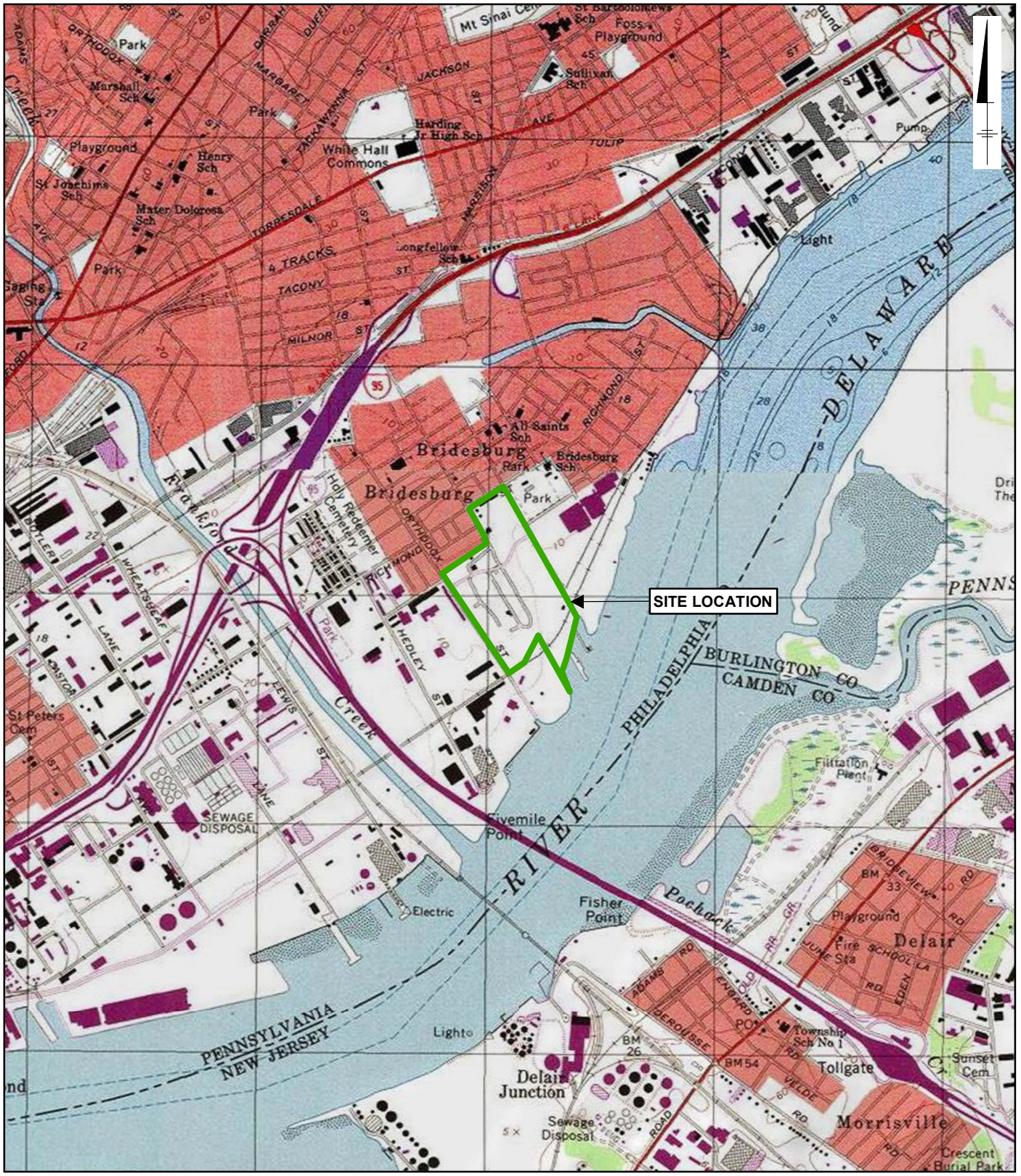
Equations:
Equations are presented in Table 3, and summarized below.
Exposure parameters are presented in Table 5.
Constituent-specific toxicity values (CSF, IUR, RfC, RfD) are presented in Table 8 through Table 11.

ELCRo = (EPCs × RBF × ADAF × FI × IRs × EF × ED × CSFo) / (1,000,000 mg/kg × BW × ATc)
ELCRd = (EPCs × ADAF × SSAs × SAR × ABSd × EF × ED × CSFa) / (1,000,000 mg/kg × BW × ATc)
ELCRi = (EPCs × ADAF × ET × CF × EF × ED × IUR × 1000 µg/mg) / ([PEF] × ATc)

HQo = (EPCs × RBF × FI × IRs × EF × ED) / (1,000,000 mg/kg × BW × ATnc × RfDo)
HQd = (EPCs × SSAs × SAR × ABSd × EF × ED) / (1,000,000 mg/kg × BW × ATnc × RfDa)
HQi = (EPCs × ET × CF × EF × ED) / ([PEF] × ATnc × RfC)

Variable	Acronym	Value	Unit	Source
Averaging time, cancer	ATc	25,550	days	See Table 5
Averaging time, non-cancer	ATnc	3,285	days	See Table 5
Body weight	BW	65	kg	See Table 5
Exposure time	ET	2	hrs/day	See Table 5
Exposure frequency	EF	50	days/year	See Table 5
Exposure duration	ED	9	years	See Table 5
Conversion factor (days/hr)	CF1	0.042	days/hr	See Table 5
Fraction ingested from site	FI	1	unitless	See Table 5
Ingestion rate of soil	IRs	50	mg/day	See Table 5
Relative bioavailability factor	RBF	100 for most; 60 for arsenic	percent	See Table 5
Age-Dependent Adjustment Factor	ADAF	1.9 for mutagens	unitless	See Table 5
Soil-to-skin adherence rate	SAR	0.07	mg/cm²/day	See Table 5
Skin surface area for soil contact	SSAs	6,032	cm²	See Table 5

FIGURES



NOTE:

1. USGS TOPOGRAPHIC MAP PROVIDED BY ESRI.

0 2,000 4,000 Feet

GRAPHIC SCALE

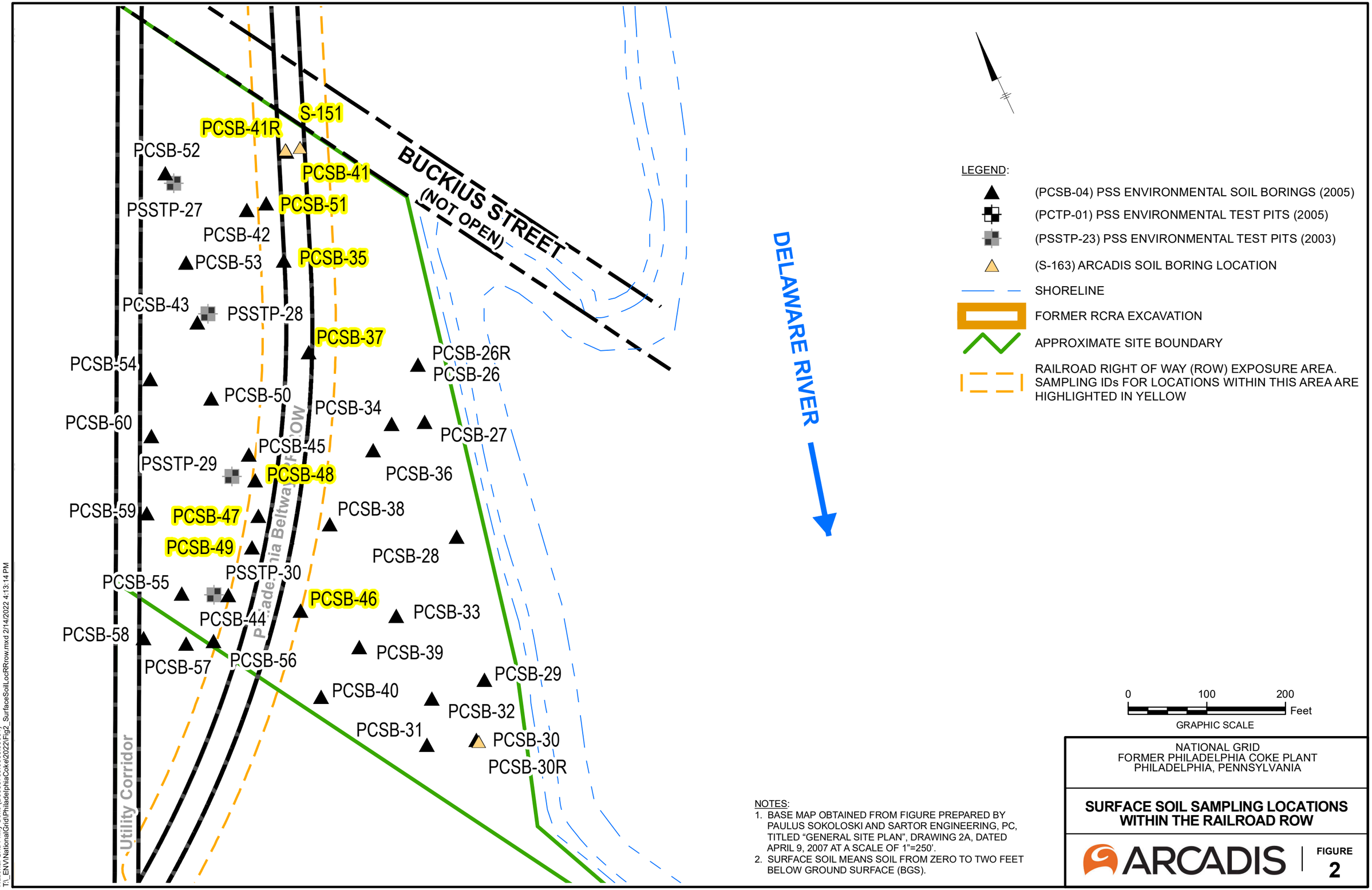
NATIONAL GRID
FORMER PHILADELPHIA COKE PLANT
PHILADELPHIA, PENNSYLVANIA

SITE LOCATION MAP

ARCADIS

FIGURE 1

City: Syr Div/Group: IM/DV Created By: K. Sinsabaugh Last Saved By: akens
National Grid Philly Coke (B0036790.0000.00001)
Z:\GISProjects_ENV\NationalGrid\PhiladelphiaCoke\2019\Risk Assessment Report\Fig1_SiteLocationMap.mxd 1/29/2020 7:51:07 AM



NOTES:
1. BASE MAP OBTAINED FROM FIGURE PREPARED BY PAULUS SOKOLOSKI AND SARTOR ENGINEERING, PC, TITLED "GENERAL SITE PLAN", DRAWING 2A, DATED APRIL 9, 2007 AT A SCALE OF 1"=250'.
2. SURFACE SOIL MEANS SOIL FROM ZERO TO TWO FEET BELOW GROUND SURFACE (BGS).

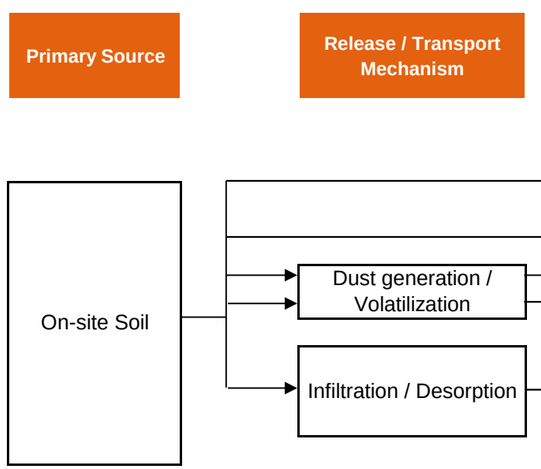
NATIONAL GRID
FORMER PHILADELPHIA COKE PLANT
PHILADELPHIA, PENNSYLVANIA

SURFACE SOIL SAMPLING LOCATIONS WITHIN THE RAILROAD ROW

ARCADIS

FIGURE 2

City: Syr Div/Group: IM/DV Created By: K. Sinsabaugh Last Saved By: AKENS
National Grid Philly Coke (B0036790.0000.00001)
T:_ENV\NationalGrid\PhiladelphiaCoke\2022\Fig2_SurfaceSoilLocRRrow.mxd 2/14/2022 4:13:14 PM



Primary Source	Release / Transport Mechanism	Secondary Source	Release / Transport Mechanism	Exposure Medium	Exposure Route	Current and Probable Future Exposure Scenarios: Trespasser	Outdoor Worker	Resident	Utility Worker	Indoor Worker
On-site Soil				Surface Soil	Ingestion	● [a]	● [b]	○ [c]	● [d]	○ [e]
					Dermal Contact	● [a]	● [b]	○ [c]	● [d]	--
				Subsurface Soil	Ingestion	--	--	--	● [d]	--
					Dermal Contact	--	--	--	● [d]	--
	Dust generation / Volatilization			Outdoor Air	Inhalation	● [a]	● [b]	○ [c]	● [d]	--
				Indoor Air	Inhalation	--	--	○ [c]	--	○ [e]
	Infiltration / Desorption	Groundwater		Groundwater	Ingestion	--	--	○ [c,f]	● [d]	○ [f]
					Dermal Contact	--	--	○ [c,f]	● [d]	○ [f]
					Inhalation	--	--	○ [c,f]	● [d]	○ [f]
			Volatilization	Indoor Air	Inhalation	--	--	○ [c]	○ [e]	○ [e]

Legend:

● = Complete Exposure Pathway.

◐ = Potentially Complete Exposure Pathway.

○ = Incomplete Exposure Pathway.

-- = Not applicable.

NOTES:

Exposure pathway completeness is evaluated based on current and probable future use of the railroad right-of-way (RR ROW).

[a] Exposure route is complete for trespassers accessing the RR ROW without authorization (including recreational use).

[b] Exposure route is complete for outdoor workers conducting grounds/maintence work in the RR ROW.

[c] Exposure route is incomplete because the RR ROW is currently and will be zoned for non-residential use in the future, any unauthorized access is evaluated under trespasser scenario.

[d] Exposure route is complete for utility workers installing subsurface utilities (e.g., stormwater piping, electrical, communication). However, there are no active utilities in the RR ROW, and any work that has the potential to disturb subsurface soil and groundwater will be performed in accordance with the project-specific HASP, as outlined in HHRA Subsection 2.3.2.2.

[e] Exposure route is incomplete due to an easement that must permit continuous operation of the railroad, there are no current buildings or probable future building plans in the RR ROW.

[f] Exposure route will be incomplete due to an Environmental Covenant that will prohibit onsite groundwater use.

FORMER PHILADELPHIA COKE PLANT SITE
PHILADELPHIA, PENNSYLVANIA

CONCEPTUAL SITE MODEL
RAILROAD RIGHT-OF-WAY

ARCADIS

FIGURE
3

APPENDIX A

Surface Soil Analytical Data and USEPA Industrial Soil Regional Screening Levels

Appendix A Table 1
Surface Soil Analytical Data and Industrial Regional Screening Levels
Railroad Right of Way
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID:		USEPA RSL		PCSB-35	PCSB-37	PCSB-41	PCSB-41R	PCSB-46	PCSB-47	PCSB-48	PCSB-49	PCSB-51	S-151
Sample Depth (ft):	CAS	Industrial		0.5	0.5	0.5	0.5-2	0.5	0.5	0.5	0.5	0.5	0.5-2
Date Collected:	Number	Soil	key	8/2/2005	8/3/2005	7/28/2005	4/22/2019	7/27/2005	8/3/2005	8/3/2005	8/3/2005	8/3/2005	4/25/2019
Volatile Organic Compounds													
Acetone	67-64-1	110,000	nm	0.018	< 0.0059	< 0.0058	< 1.4	< 0.006	0.036	0.3	0.019	< 0.0056	< 2.8
Benzene	71-43-2	5	c**	< 0.00053	< 0.00057	< 0.00055	**6.32**	< 0.00058	< 0.00055	< 0.0027	< 0.00053	< 0.00054	< 0.14
Cyclohexane	110-82-7	2,700	ns	NA	NA	NA	4.89	NA	NA	NA	NA	NA	< 0.57
Dichloromethane	75-09-2	320	n	0.011 B	0.0023 B	0.011 B	< 0.7	0.015 B	0.008 B	0.07 B	0.01 B	0.0026 B	< 1.4
Ethylbenzene	100-41-4	25	c*	< 0.00078	< 0.00083	< 0.00081	12.3	< 0.00085	< 0.00081	< 0.0039	< 0.00078	< 0.00079	< 0.28
Isopropylbenzene	98-82-8	990	ns	NA	NA	NA	0.943	NA	NA	NA	NA	NA	< 0.57
m&p-Xylenes	179601-23-1	240	n	< 0.0011	< 0.0012	< 0.0012	51.9	< 0.0013	< 0.0012	< 0.0058	< 0.0011	< 0.0012	< 0.28
o-Xylene	95-47-6	280	n	NA	NA	NA	19.1	NA	NA	NA	NA	NA	< 0.28
Toluene	108-88-3	4,700	ns	< 0.00079	< 0.00084	< 0.00082	53.4 D	< 0.00086	< 0.00082	< 0.004	< 0.00079	< 0.00079	< 0.28
Total Xylenes	1330-20-7	250	n	NA	NA	NA	71	NA	NA	NA	NA	NA	< 0.28
Semi-Volatile Organic Compounds													
1,1-Biphenyl	92-52-4	20	n	NA	NA	NA	6.43 D	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	91-57-6	300	n	0.11 J	3.8	0.47	22.8 D	1.3	0.18	< 0.06	< 0.059	0.33	22.1 D
3-Methylphenol, 4-Methylphenol	65794-96-9	1,600	n	NA	NA	NA	< 0.081	NA	NA	NA	NA	NA	0.119 J
Acenaphthene	83-32-9	4,500	n	< 0.043	0.81	0.3	66.2 DJ	0.082	0.057	< 0.0058	< 0.0057	< 0.044	5.08
Acenaphthylene	208-96-8	4,500	n	< 0.024	< 0.026	1.3	1.15	0.14	0.087	< 0.0053	0.035	0.4	40.3 D
Anthracene	120-12-7	23,000	n	< 0.027	0.58	1.3	28.1 D	0.13	0.13	< 0.0069	0.044	0.59	78.8 D
Benz(a)anthracene	56-55-3	21	c	0.58	1.2	7.6	19.4 D	0.48	0.54	0.052	0.14	2.2	**93.1 D**
Benzo(a)pyrene	50-32-8	2	c*	0.61	1.4	**7.5**	**14.4 D**	0.3	0.53	0.059	0.15	2	**86.4 D**
Benzo(b)fluoranthene	205-99-2	21	c	0.88	1.7	10	17.8 D	0.67	0.79	0.069	0.2	2.9	**101 D**
Benzo(g,h,i)perylene	191-24-2	NA	NA	0.53	1.8	7.1	8.46 D	0.33	0.43	0.055	0.19	2	64.7 D
Benzo(k)fluoranthene	207-08-9	210	c	0.25	0.67	2.5	6.97 D	0.21	0.27	< 0.012	0.066	1	40.3 D
bis(2-Ethylhexyl)phthalate	117-81-7	160	c*	0.12	0.55	0.26	< 0.081	0.23	0.059	< 0.022	0.039	0.15	< 0.15
Carbazole	86-74-8	86	c*	< 0.031	< 0.033	< 0.054	9.89 D	0.085	0.068	< 0.0067	0.035	0.13	29.4 D
Chrysene	218-01-9	2,100	c	0.7	1.8	7.1	17.7 D	0.76	0.6	0.065	0.16	2.2	77 D
Dibenz(a,h)anthracene	53-70-3	2	c	0.17	0.55	**2.3**	**2.69**	0.15	0.13	< 0.0064	< 0.0064	0.63	**16.4 D**
Dibenzofuran	132-64-9	120	n	< 0.13	0.84	0.22 J	32.5 D	0.55	0.074	< 0.045	< 0.045	0.25	52.6 D
Di-n-butyl phthalate	84-74-2	8,200	n	< 0.023	0.31	< 0.041	< 0.081	0.079	< 0.0073	< 0.0071	< 0.007	0.14 B	< 0.15
Fluoranthene	206-44-0	3,000	n	1.2	2	15	97.9 D	0.74	1	0.098	0.26	4.1	305 D
Fluorene	86-73-7	3,000	n	< 0.026	1.4	0.23	48.5 D	< 0.0096	0.053	< 0.0084	< 0.0083	< 0.027	91.9 D
Indeno(1,2,3-cd)pyrene	193-39-5	21	c	0.45	1.2	6.2	9.14 D	0.29	0.36	0.037	0.11	1.6	**56.9 D**
Naphthalene	91-20-3	9	c**	< 0.024	2.1	0.59	**14.1 D**	0.86	0.17	< 0.0034	< 0.0034	0.36	**100 D**
Phenanthrene	85-01-8	2,300	n	0.54	2.9	4.4	158 D	1.4	0.63	0.067	0.17	2.1	354 D
Phenol	108-95-2	25,000	n	< 0.16	< 0.17	< 0.28	< 0.081	< 0.058	< 0.06	< 0.058	< 0.057	< 0.16	0.0928 J
Pyrene	129-00-0	2,300	n	0.76	2	11	61.6 D	0.54	0.95	0.13	0.26	3.3	227 D

Appendix A Table 1
Surface Soil Analytical Data and Industrial Regional Screening Levels
Railroad Right of Way
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID:	CAS Number	USEPA RSL		PCSB-35	PCSB-37	PCSB-41	PCSB-41R	PCSB-46	PCSB-47	PCSB-48	PCSB-49	PCSB-51	S-151
Sample Depth (ft):		Industrial Soil	key	0.5	0.5	0.5	0.5-2	0.5	0.5	0.5	0.5	0.5	0.5-2
Date Collected:				8/2/2005	8/3/2005	7/28/2005	4/22/2019	7/27/2005	8/3/2005	8/3/2005	8/3/2005	8/3/2005	4/25/2019
Metals													
Aluminum	7429-90-5	110,000	nm	NA	NA	NA	7590	NA	NA	NA	NA	NA	6750
Antimony	7440-36-0	47	n	< 2.1	8.7	14	20.6	< 2.3	2.6	< 2.1	< 2.1	3.8	0.87 J
Arsenic	7440-38-2	3	c*R	**13**	**20**	**13**	**19.5**	**7.3**	**100**	**4.2**	**7.2**	**8.2**	**6.9**
Barium	7440-39-3	22,000	n	63	74	88	175	31	73	31	46	73	84.3
Beryllium	7440-41-7	230	n	< 0.62	< 0.67	0.68	0.91	< 0.68	< 0.65	< 0.63	< 0.62	< 0.63	0.75
Cadmium	7440-43-9	10	n	0.92	3.6	2.5	1.4	< 0.68	< 0.65	< 0.63	< 0.62	1.1	0.31 J
Calcium	7440-70-2			NA	NA	NA	11500	NA	NA	NA	NA	NA	17500 J
Chromium	7440-47-3	6.3	c*	**24**	**110**	**59**	**26.0**	< 5.7	**26**	**16**	**18**	**43**	**16.7**
Cobalt	7440-48-4	35	n	NA	NA	NA	7.8	NA	NA	NA	NA	NA	3.3 J
Copper	7440-50-8	4,700	n	51	610	120	193	14	76	20	23	150	25.5
Cyanide	57-12-5	15	n	NA	NA	NA	0.53	NA	NA	NA	NA	NA	0.72 J
Iron	7439-89-6	82,000	n	NA	NA	NA	28300	NA	NA	NA	NA	NA	11600
Lead	7439-92-1	800	G	130	420	**930**	**986**	6.9	260	110	50	180	102 J
Magnesium	7439-95-4			NA	NA	NA	4570	NA	NA	NA	NA	NA	3890
Manganese	7439-96-5	2,600	n	NA	NA	NA	552	NA	NA	NA	NA	NA	350 J
Mercury	7439-97-6	5	ns	0.27	0.47	1.6	0.34 J	< 0.095	0.25	0.12	0.19	0.24	0.12 J
Nickel	7440-02-0	2,200	n	18	97	39	38.4	7.6	26	13	26	25	9.4
Potassium	7440-09-7			NA	NA	NA	1120 J	NA	NA	NA	NA	NA	853 J
Selenium	7782-49-2	580	n	< 1.9	2.4	3.3	< 4.8	2.3	2	< 1.9	< 1.9	< 1.9	0.74 J
Sodium	7440-23-5			NA	NA	NA	208 J	NA	NA	NA	NA	NA	273 J
Vanadium	7440-62-2	580	n	NA	NA	NA	32.1	NA	NA	NA	NA	NA	13.7
Zinc	7440-66-6	35,000	n	140	540	290	530	15	220	51	93	260	49.0
Pesticides													
4,4-DDD	72-54-8	3	n	0.012	< 0.0056	0.085	0.0044 JN	< 0.0057	< 0.0054	< 0.0053	< 0.0052	0.04	NA
4,4-DDE	72-55-9	9	c**	0.017	0.026	0.15	0.0054	0.014	< 0.0054	< 0.0053	< 0.0052	0.02	NA
4,4-DDT	50-29-3	9	c**	< 0.0052	0.17	0.1	0.0056	< 0.0057	< 0.0054	< 0.0053	0.011	0.05	NA
Chlordane	57-74-9	50	n	< 0.01	< 0.011	< 0.011	NA	< 0.011	< 0.011	< 0.011	< 0.01	0.047	NA
Dieldrin	60-57-1	0.1	c*	< 0.0052	0.095	< 0.0054	< 0.00079	< 0.0057	< 0.0054	< 0.0053	< 0.0052	< 0.0053	NA
Endosulfan II	33213-65-9	490	n	< 0.0052	0.016	< 0.0054	< 0.00079	< 0.0057	< 0.0054	< 0.0053	< 0.0052	< 0.0053	NA

Appendix A Table 1
Surface Soil Analytical Data and Industrial Regional Screening Levels
Railroad Right of Way
National Grid Former Philadelphia Coke Plant
Philadelphia, Pennsylvania

Location ID: / Sample Depth (ft): / Date Collected:	CAS Number	USEPA RSL Industrial Soil	key	PCSB-35 0.5 8/2/2005	PCSB-37 0.5 8/3/2005	PCSB-41 0.5 7/28/2005	PCSB-41R 0.5-2 4/22/2019	PCSB-46 0.5 7/27/2005	PCSB-47 0.5 8/3/2005	PCSB-48 0.5 8/3/2005	PCSB-49 0.5 8/3/2005	PCSB-51 0.5 8/3/2005	S-151 0.5-2 4/25/2019
Polychlorinated Biphenyls													
Aroclor 1248	12672-29-6	1	c	< 0.026	< 0.028	0.1	< 0.039	< 0.028	< 0.027	< 0.026	< 0.026	< 0.026	NA
Aroclor 1254	11097-69-1	1	c**	< 0.026	< 0.028	< 0.027	< 0.039	< 0.028	0.34	< 0.026	< 0.026	< 0.026	NA
Aroclor 1260	11096-82-5	1	c	0.066	**1**	0.33	< 0.039	0.046	< 0.027	< 0.026	0.053	0.12	NA

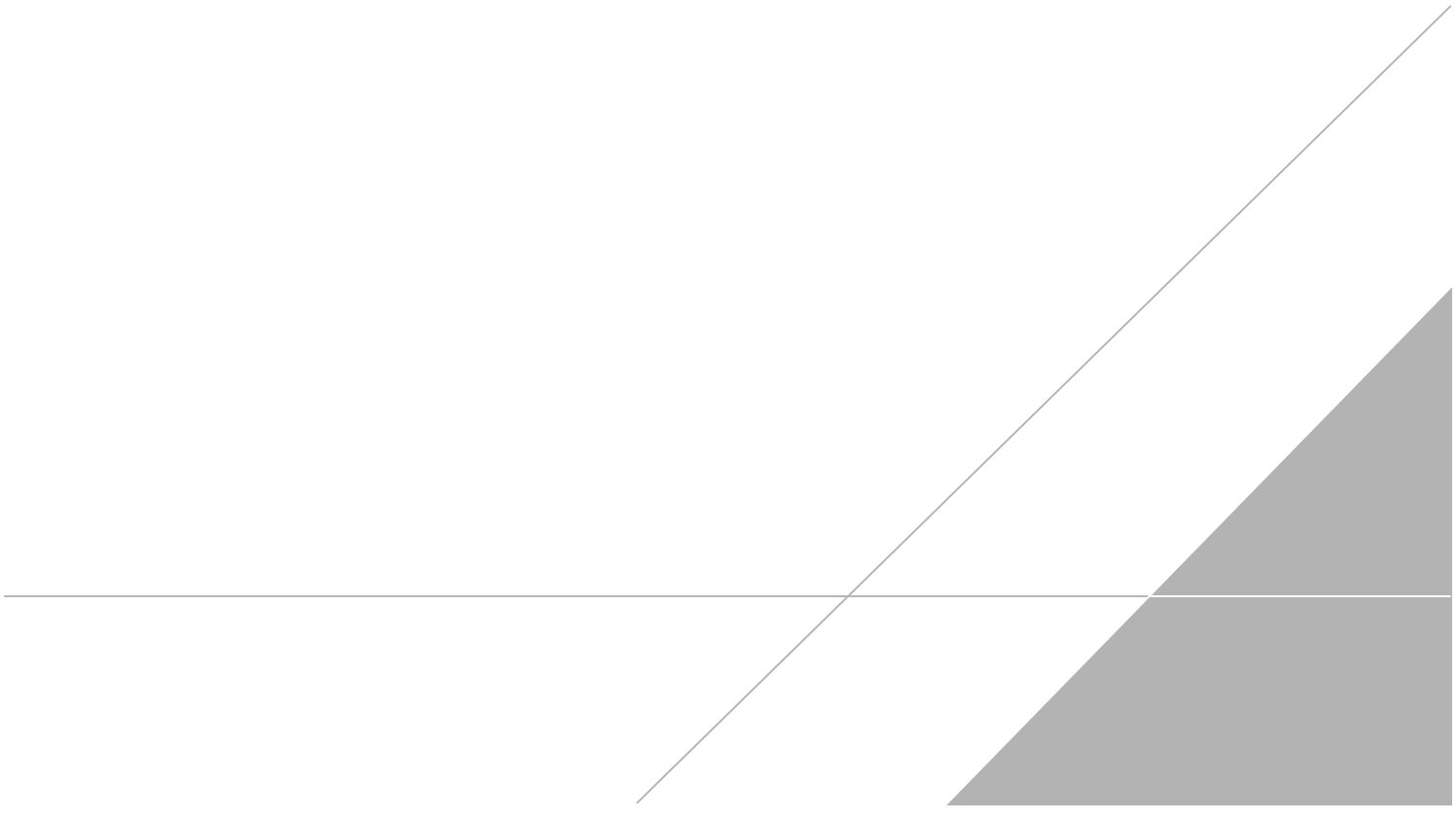
Notes:
Only compounds detected in one or more samples are shown in this table.
1. Industrial RSLs obtained from USEPA Regional Screening Levels - November 2021 available at: <https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables>
   Key: c = cancer; m = ceiling limit exceeded; n = noncancer; R = relative bioavailability factor (RBA) applied; s = Csat exceeded;
   * = where: n SL < 100X c SL; and ** = where n SL < 10X c SL;
2. Exceedances of the Industrial RSLs are bold and shaded.
3. Surrogate values were used for constituents that did not have a industrial RSLs as follows:
   m-xylene for m&p-Xylenes; 4-methylphenol for 3-Methylphenol, 4-Methylphenol; acenaphthene for acenaphthylene; pyrene for phenanthrene,
   chromium VI for total chromium; manganese (non-diet) used for manganese; chlordane for trans-chlordane; endosulfan sulfate for endosulfan II.
4. There are no screening levels for essential nutrients calcium, magnesium, potassium and sodium.
5. All concentrations are in units of mg/kg

Abbreviations:
mg/kg = milligrams per kilogram.
NA = Not available, not analyzed.

Data Qualifier Definitions:
B = Analyte is an estimated value between the instrument detection limit and the Reporting Limit.
D = Concentration is based on a diluted sample analysis.
J = Analyte is an estimated value.

APPENDIX B

ProUCL Outputs



UCL Statistics for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	ProUCL 5.12/14/2022 12:05:50 PM
From File	WorkSheet.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Result (aroclor 1260)

General Statistics

Total Number of Observations	9	Number of Distinct Observations	9
Number of Detects	6	Number of Non-Detects	3
Number of Distinct Detects	6	Number of Distinct Non-Detects	3
Minimum Detect	0.046	Minimum Non-Detect	0.026
Maximum Detect	1	Maximum Non-Detect	0.039
Variance Detects	0.14	Percent Non-Detects	33.33%
Mean Detects	0.269	SD Detects	0.374
Median Detects	0.093	CV Detects	1.388
Skewness Detects	2.058	Kurtosis Detects	4.248
Mean of Logged Detects	-1.994	SD of Logged Detects	1.214

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.694	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.788	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.322	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.325	Detected Data appear Normal at 5% Significance Level

Detected Data appear Approximate Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	0.188	KM Standard Error of Mean	0.11
KM SD	0.301	95% KM (BCA) UCL	0.366
95% KM (t) UCL	0.393	95% KM (Percentile Bootstrap) UCL	0.369
95% KM (z) UCL	0.369	95% KM Bootstrap t UCL	1.572
90% KM Chebyshev UCL	0.518	95% KM Chebyshev UCL	0.667
97.5% KM Chebyshev UCL	0.875	99% KM Chebyshev UCL	1.282

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.568	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.718	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.278	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.342	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only			
k hat (MLE)	0.862	k star (bias corrected MLE)	0.542
Theta hat (MLE)	0.312	Theta star (bias corrected MLE)	0.496
nu hat (MLE)	10.35	nu star (bias corrected)	6.508
Mean (detects)	0.269		
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)			
For such situations, GROS method may yield incorrect values of UCLs and BTVs			
This is especially true when the sample size is small.			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	0.183
Maximum	1	Median	0.053
SD	0.323	CV	1.765
k hat (MLE)	0.539	k star (bias corrected MLE)	0.433
Theta hat (MLE)	0.339	Theta star (bias corrected MLE)	0.422
nu hat (MLE)	9.702	nu star (bias corrected)	7.802
Adjusted Level of Significance (β)	0.0231		
Approximate Chi Square Value (7.80, α)	2.621	Adjusted Chi Square Value (7.80, β)	2.032
95% Gamma Approximate UCL (use when n>=50)	0.544	95% Gamma Adjusted UCL (use when n<50)	0.702
Estimates of Gamma Parameters using KM Estimates			
Mean (KM)	0.188	SD (KM)	0.301
Variance (KM)	0.0907	SE of Mean (KM)	0.11
k hat (KM)	0.39	k star (KM)	0.334
nu hat (KM)	7.024	nu star (KM)	6.016
theta hat (KM)	0.482	theta star (KM)	0.563
80% gamma percentile (KM)	0.295	90% gamma percentile (KM)	0.547
95% gamma percentile (KM)	0.831	99% gamma percentile (KM)	1.559
Gamma Kaplan-Meier (KM) Statistics			
Approximate Chi Square Value (6.02, α)	1.648	Adjusted Chi Square Value (6.02, β)	1.214
95% Gamma Approximate KM-UCL (use when n>=50)	0.687	95% Gamma Adjusted KM-UCL (use when n<50)	0.932
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.88	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.788	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.225	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.325	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			

Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.181	Mean in Log Scale	-3.044
SD in Original Scale	0.323	SD in Log Scale	1.845
95% t UCL (assumes normality of ROS data)	0.382	95% Percentile Bootstrap UCL	0.38
95% BCA Bootstrap UCL	0.466	95% Bootstrap t UCL	1.362
95% H-UCL (Log ROS)	8.315		
Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution			
KM Mean (logged)	-2.546	KM Geo Mean	0.0784
KM SD (logged)	1.195	95% Critical H Value (KM-Log)	3.688
KM Standard Error of Mean (logged)	0.436	95% H-UCL (KM -Log)	0.76
KM SD (logged)	1.195	95% Critical H Value (KM-Log)	3.688
KM Standard Error of Mean (logged)	0.436		
DL/2 Statistics			
DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	0.185	Mean in Log Scale	-2.728
SD in Original Scale	0.321	SD in Log Scale	1.464
95% t UCL (Assumes normality)	0.384	95% H-Stat UCL	1.819
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Approximate Normal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	0.393		
When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test			
When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL			
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			

Result (arsenic)

General Statistics			
Total Number of Observations	10	Number of Distinct Observations	9
		Number of Missing Observations	0
Minimum	4.2	Mean	19.93
Maximum	100	Median	10.6
SD	28.64	Std. Error of Mean	9.058
Coefficient of Variation	1.437	Skewness	2.96

Normal GOF Test			
Shapiro Wilk Test Statistic	0.534	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.842	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.399	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.262	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	36.53	95% Adjusted-CLT UCL (Chen-1995)	43.89
		95% Modified-t UCL (Johnson-1978)	37.95
Gamma GOF Test			
A-D Test Statistic	1.068	**Anderson-Darling Gamma GOF Test**	
5% A-D Critical Value	0.745	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.277	**Kolmogorov-Smirnov Gamma GOF Test**	
5% K-S Critical Value	0.273	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	1.183	k star (bias corrected MLE)	0.895
Theta hat (MLE)	16.85	Theta star (bias corrected MLE)	22.27
nu hat (MLE)	23.66	nu star (bias corrected)	17.9
MLE Mean (bias corrected)	19.93	MLE Sd (bias corrected)	21.07
		Approximate Chi Square Value (0.05)	9.316
Adjusted Level of Significance	0.0267	Adjusted Chi Square Value	8.261
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	38.29	95% Adjusted Gamma UCL (use when n<50)	43.18
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.866	**Shapiro Wilk Lognormal GOF Test**	
5% Shapiro Wilk Critical Value	0.842	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.193	**Lilliefors Lognormal GOF Test**	
5% Lilliefors Critical Value	0.262	Data appear Lognormal at 5% Significance Level	
Data appear Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	1.435	Mean of logged Data	2.513
Maximum of Logged Data	4.605	SD of logged Data	0.886
Assuming Lognormal Distribution			
95% H-UCL	42.68	90% Chebyshev (MVUE) UCL	32.62
95% Chebyshev (MVUE) UCL	39.51	97.5% Chebyshev (MVUE) UCL	49.09
99% Chebyshev (MVUE) UCL	67.9		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			

Nonparametric Distribution Free UCLs			
95% CLT UCL	34.83	95% Jackknife UCL	36.53
95% Standard Bootstrap UCL	33.89	95% Bootstrap-t UCL	87.27
95% Hall's Bootstrap UCL	90.24	95% Percentile Bootstrap UCL	37.43
95% BCA Bootstrap UCL	48.02		
90% Chebyshev(Mean, Sd) UCL	47.1	95% Chebyshev(Mean, Sd) UCL	59.41
97.5% Chebyshev(Mean, Sd) UCL	76.5	99% Chebyshev(Mean, Sd) UCL	110.1
Suggested UCL to Use			
95% H-UCL	42.68		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
ProUCL computes and outputs H-statistic based UCLs for historical reasons only.			
H-statistic often results in unstable (both high and low) values of UCL95 as shown in examples in the Technical Guide.			
It is therefore recommended to avoid the use of H-statistic based 95% UCLs.			
Use of nonparametric methods are preferred to compute UCL95 for skewed data sets which do not follow a gamma distribution.			
Result (benz(a)anthracene)			
General Statistics			
Total Number of Observations	10	Number of Distinct Observations	10
		Number of Missing Observations	0
Minimum	0.052	Mean	12.53
Maximum	93.1	Median	0.89
SD	28.94	Std. Error of Mean	9.152
Coefficient of Variation	2.31	Skewness	2.931
Normal GOF Test			
Shapiro Wilk Test Statistic	0.502	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.842	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.368	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.262	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	29.31	95% Adjusted-CLT UCL (Chen-1995)	36.65
		95% Modified-t UCL (Johnson-1978)	30.72
Gamma GOF Test			
A-D Test Statistic	0.743	**Anderson-Darling Gamma GOF Test**	
5% A-D Critical Value	0.811	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.258	**Kolmogorov-Smirnov Gamma GOF Test**	
5% K-S Critical Value	0.287	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			

Gamma Statistics			
k hat (MLE)	0.316	k star (bias corrected MLE)	0.288
Theta hat (MLE)	39.59	Theta star (bias corrected MLE)	43.47
nu hat (MLE)	6.329	nu star (bias corrected)	5.764
MLE Mean (bias corrected)	12.53	MLE Sd (bias corrected)	23.34
		Approximate Chi Square Value (0.05)	1.52
Adjusted Level of Significance	0.0267	Adjusted Chi Square Value	1.175
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50)	47.5	95% Adjusted Gamma UCL (use when n<50)	61.45
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.968	**Shapiro Wilk Lognormal GOF Test**	
5% Shapiro Wilk Critical Value	0.842	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.156	**Lilliefors Lognormal GOF Test**	
5% Lilliefors Critical Value	0.262	Data appear Lognormal at 5% Significance Level	
Data appear Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	-2.957	Mean of logged Data	0.368
Maximum of Logged Data	4.534	SD of logged Data	2.275
Assuming Lognormal Distribution			
95% H-UCL	1912	90% Chebyshev (MVUE) UCL	33.22
95% Chebyshev (MVUE) UCL	43.5	97.5% Chebyshev (MVUE) UCL	57.76
99% Chebyshev (MVUE) UCL	85.79		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	27.58	95% Jackknife UCL	29.31
95% Standard Bootstrap UCL	27.45	95% Bootstrap-t UCL	153.7
95% Hall's Bootstrap UCL	146.6	95% Percentile Bootstrap UCL	28.92
95% BCA Bootstrap UCL	40.17		
90% Chebyshev(Mean, Sd) UCL	39.99	95% Chebyshev(Mean, Sd) UCL	52.42
97.5% Chebyshev(Mean, Sd) UCL	69.69	99% Chebyshev(Mean, Sd) UCL	103.6
Suggested UCL to Use			
95% Adjusted Gamma UCL	61.45		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			

Result (benzo(a)pyrene)			
General Statistics			
Total Number of Observations	10	Number of Distinct Observations	10
		Number of Missing Observations	0
Minimum	0.059	Mean	11.33
Maximum	86.4	Median	1.005
SD	26.77	Std. Error of Mean	8.466
Coefficient of Variation	2.362	Skewness	3
Normal GOF Test			
Shapiro Wilk Test Statistic	0.486	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.842	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.357	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.262	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	26.85	95% Adjusted-CLT UCL (Chen-1995)	33.84
		95% Modified-t UCL (Johnson-1978)	28.19
Gamma GOF Test			
A-D Test Statistic	0.731	**Anderson-Darling Gamma GOF Test**	
5% A-D Critical Value	0.81	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.262	**Kolmogorov-Smirnov Gamma GOF Test**	
5% K-S Critical Value	0.287	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	0.322	k star (bias corrected MLE)	0.292
Theta hat (MLE)	35.2	Theta star (bias corrected MLE)	38.81
nu hat (MLE)	6.44	nu star (bias corrected)	5.841
MLE Mean (bias corrected)	11.33	MLE Sd (bias corrected)	20.97
		Approximate Chi Square Value (0.05)	1.559
Adjusted Level of Significance	0.0267	Adjusted Chi Square Value	1.208
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50)	42.46	95% Adjusted Gamma UCL (use when n<50)	54.8
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.973	**Shapiro Wilk Lognormal GOF Test**	
5% Shapiro Wilk Critical Value	0.842	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.142	**Lilliefors Lognormal GOF Test**	
5% Lilliefors Critical Value	0.262	Data appear Lognormal at 5% Significance Level	
Data appear Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	-2.83	Mean of logged Data	0.311
Maximum of Logged Data	4.459	SD of logged Data	2.221

Assuming Lognormal Distribution			
95% H-UCL	1299	90% Chebyshev (MVUE) UCL	28.55
95% Chebyshev (MVUE) UCL	37.33	97.5% Chebyshev (MVUE) UCL	49.52
99% Chebyshev (MVUE) UCL	73.47		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	25.26	95% Jackknife UCL	26.85
95% Standard Bootstrap UCL	24.48	95% Bootstrap-t UCL	129.9
95% Hall's Bootstrap UCL	115.2	95% Percentile Bootstrap UCL	27.66
95% BCA Bootstrap UCL	35.88		
90% Chebyshev(Mean, Sd) UCL	36.73	95% Chebyshev(Mean, Sd) UCL	48.24
97.5% Chebyshev(Mean, Sd) UCL	64.2	99% Chebyshev(Mean, Sd) UCL	95.57
Suggested UCL to Use			
95% Adjusted Gamma UCL	54.8		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
Result (benzo(b)fluoranthene)			
General Statistics			
Total Number of Observations	10	Number of Distinct Observations	10
		Number of Missing Observations	0
Minimum	0.069	Mean	13.6
Maximum	101	Median	1.29
SD	31.24	Std. Error of Mean	9.878
Coefficient of Variation	2.297	Skewness	2.978
Normal GOF Test			
Shapiro Wilk Test Statistic	0.496	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.842	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.347	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.262	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	31.71	95% Adjusted-CLT UCL (Chen-1995)	39.79
		95% Modified-t UCL (Johnson-1978)	33.26

Gamma GOF Test			
A-D Test Statistic	0.693	**Anderson-Darling Gamma GOF Test**	
5% A-D Critical Value	0.806	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.25	**Kolmogorov-Smirnov Gamma GOF Test**	
5% K-S Critical Value	0.286	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	0.342	k star (bias corrected MLE)	0.306
Theta hat (MLE)	39.8	Theta star (bias corrected MLE)	44.47
nu hat (MLE)	6.834	nu star (bias corrected)	6.117
MLE Mean (bias corrected)	13.6	MLE Sd (bias corrected)	24.59
		Approximate Chi Square Value (0.05)	1.7
Adjusted Level of Significance	0.0267	Adjusted Chi Square Value	1.328
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50)	48.94	95% Adjusted Gamma UCL (use when n<50)	62.64
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.977	**Shapiro Wilk Lognormal GOF Test**	
5% Shapiro Wilk Critical Value	0.842	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.138	**Lilliefors Lognormal GOF Test**	
5% Lilliefors Critical Value	0.262	Data appear Lognormal at 5% Significance Level	
Data appear Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	-2.674	Mean of logged Data	0.635
Maximum of Logged Data	4.615	SD of logged Data	2.167
Assuming Lognormal Distribution			
95% H-UCL	1302	90% Chebyshev (MVUE) UCL	35.92
95% Chebyshev (MVUE) UCL	46.9	97.5% Chebyshev (MVUE) UCL	62.15
99% Chebyshev (MVUE) UCL	92.1		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	29.85	95% Jackknife UCL	31.71
95% Standard Bootstrap UCL	28.86	95% Bootstrap-t UCL	136.6
95% Hall's Bootstrap UCL	124.4	95% Percentile Bootstrap UCL	32.47
95% BCA Bootstrap UCL	42.33		
90% Chebyshev(Mean, Sd) UCL	43.23	95% Chebyshev(Mean, Sd) UCL	56.66
97.5% Chebyshev(Mean, Sd) UCL	75.29	99% Chebyshev(Mean, Sd) UCL	111.9

Suggested UCL to Use			
95% Adjusted Gamma UCL	62.64		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Result (carbazole)

General Statistics			
Total Number of Observations	10	Number of Distinct Observations	10
Number of Detects	6	Number of Non-Detects	4
Number of Distinct Detects	6	Number of Distinct Non-Detects	4
Minimum Detect	0.035	Minimum Non-Detect	0.0067
Maximum Detect	29.4	Maximum Non-Detect	0.054
Variance Detects	140.1	Percent Non-Detects	40%
Mean Detects	6.601	SD Detects	11.84
Median Detects	0.108	CV Detects	1.793
Skewness Detects	1.949	Kurtosis Detects	3.641
Mean of Logged Detects	-0.812	SD of Logged Detects	2.878

Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.669	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.788	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.374	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.325	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
KM Mean	3.964	KM Standard Error of Mean	3.108
KM SD	8.972	95% KM (BCA) UCL	9.825
95% KM (t) UCL	9.662	95% KM (Percentile Bootstrap) UCL	8.883
95% KM (z) UCL	9.077	95% KM Bootstrap t UCL	864.1
90% KM Chebyshev UCL	13.29	95% KM Chebyshev UCL	17.51
97.5% KM Chebyshev UCL	23.37	99% KM Chebyshev UCL	34.89

Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	0.781	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.78	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.388	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.36	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		

Gamma Statistics on Detected Data Only			
k hat (MLE)	0.261	k star (bias corrected MLE)	0.242
Theta hat (MLE)	25.27	Theta star (bias corrected MLE)	27.31
nu hat (MLE)	3.135	nu star (bias corrected)	2.901
Mean (detects)	6.601		
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)			
For such situations, GROS method may yield incorrect values of UCLs and BTVs			
This is especially true when the sample size is small.			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	3.965
Maximum	29.4	Median	0.0515
SD	9.458	CV	2.385
k hat (MLE)	0.199	k star (bias corrected MLE)	0.206
Theta hat (MLE)	19.95	Theta star (bias corrected MLE)	19.27
nu hat (MLE)	3.975	nu star (bias corrected)	4.116
Adjusted Level of Significance (β)	0.0267		
Approximate Chi Square Value (4.12, α)	0.768	Adjusted Chi Square Value (4.12, β)	0.555
95% Gamma Approximate UCL (use when n>=50)	21.25	95% Gamma Adjusted UCL (use when n<50)	29.4
Estimates of Gamma Parameters using KM Estimates			
Mean (KM)	3.964	SD (KM)	8.972
Variance (KM)	80.51	SE of Mean (KM)	3.108
k hat (KM)	0.195	k star (KM)	0.203
nu hat (KM)	3.904	nu star (KM)	4.066
theta hat (KM)	20.31	theta star (KM)	19.5
80% gamma percentile (KM)	5.268	90% gamma percentile (KM)	11.99
95% gamma percentile (KM)	20.34	99% gamma percentile (KM)	43.26
Gamma Kaplan-Meier (KM) Statistics			
Approximate Chi Square Value (4.07, α)	0.748	Adjusted Chi Square Value (4.07, β)	0.539
95% Gamma Approximate KM-UCL (use when n>=50)	21.55	95% Gamma Adjusted KM-UCL (use when n<50)	29.89
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.802	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.788	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.332	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.325	Detected Data Not Lognormal at 5% Significance Level	
Detected Data appear Approximate Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	3.961	Mean in Log Scale	-3.55
SD in Original Scale	9.459	SD in Log Scale	4.145
95% t UCL (assumes normality of ROS data)	9.444	95% Percentile Bootstrap UCL	8.895
95% BCA Bootstrap UCL	10.84	95% Bootstrap t UCL	833.8
95% H-UCL (Log ROS)	4.355E+8		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution			
KM Mean (logged)	-2.448	KM Geo Mean	0.0864
KM SD (logged)	2.867	95% Critical H Value (KM-Log)	7.533
KM Standard Error of Mean (logged)	0.997	95% H-UCL (KM -Log)	7059
KM SD (logged)	2.867	95% Critical H Value (KM-Log)	7.533
KM Standard Error of Mean (logged)	0.997		

DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	3.967	Mean in Log Scale	-2.246
SD in Original Scale	9.457	SD in Log Scale	2.881
95% t UCL (Assumes normality)	9.449	95% H-Stat UCL	9602

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Approximate Lognormal Distributed at 5% Significance Level

Suggested UCL to Use

99% KM (Chebyshev) UCL	34.89		

Warning: Recommended UCL exceeds the maximum observation

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Result (chromium)

General Statistics

Total Number of Observations	10	Number of Distinct Observations	9
Number of Detects	9	Number of Non-Detects	1
Number of Distinct Detects	8	Number of Distinct Non-Detects	1
Minimum Detect	16	Minimum Non-Detect	5.7
Maximum Detect	110	Maximum Non-Detect	5.7
Variance Detects	933.8	Percent Non-Detects	10%
Mean Detects	37.63	SD Detects	30.56
Median Detects	26	CV Detects	0.812
Skewness Detects	2.007	Kurtosis Detects	4.111
Mean of Logged Detects	3.412	SD of Logged Detects	0.648

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.737	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.829	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.315	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.274	Detected Data Not Normal at 5% Significance Level	

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
KM Mean	34.44	KM Standard Error of Mean	9.714
KM SD	28.96	95% KM (BCA) UCL	52.27
95% KM (t) UCL	52.25	95% KM (Percentile Bootstrap) UCL	49.77
95% KM (z) UCL	50.42	95% KM Bootstrap t UCL	73.46
90% KM Chebyshev UCL	63.58	95% KM Chebyshev UCL	76.78
97.5% KM Chebyshev UCL	95.11	99% KM Chebyshev UCL	131.1
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.648	**Anderson-Darling GOF Test**	
5% A-D Critical Value	0.728	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.295	**Kolmogorov-Smirnov GOF**	
5% K-S Critical Value	0.282	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected data follow Appr. Gamma Distribution at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	2.474	k star (bias corrected MLE)	1.724
Theta hat (MLE)	15.21	Theta star (bias corrected MLE)	21.83
nu hat (MLE)	44.54	nu star (bias corrected)	31.03
Mean (detects)	37.63		
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)			
For such situations, GROS method may yield incorrect values of UCLs and BTVs			
This is especially true when the sample size is small.			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	33.87
Maximum	110	Median	25
SD	31.17	CV	0.92
k hat (MLE)	0.667	k star (bias corrected MLE)	0.534
Theta hat (MLE)	50.76	Theta star (bias corrected MLE)	63.46
nu hat (MLE)	13.34	nu star (bias corrected)	10.67
Adjusted Level of Significance (β)	0.0267		
Approximate Chi Square Value (10.67, α)	4.368	Adjusted Chi Square Value (10.67, β)	3.693
95% Gamma Approximate UCL (use when n>=50)	82.78	95% Gamma Adjusted UCL (use when n<50)	97.91
Estimates of Gamma Parameters using KM Estimates			
Mean (KM)	34.44	SD (KM)	28.96
Variance (KM)	838.8	SE of Mean (KM)	9.714
k hat (KM)	1.414	k star (KM)	1.056
nu hat (KM)	28.28	nu star (KM)	21.13
theta hat (KM)	24.36	theta star (KM)	32.6
80% gamma percentile (KM)	55.17	90% gamma percentile (KM)	78.23
95% gamma percentile (KM)	101.2	99% gamma percentile (KM)	154.3
Gamma Kaplan-Meier (KM) Statistics			
Approximate Chi Square Value (21.13, α)	11.69	Adjusted Chi Square Value (21.13, β)	10.49
95% Gamma Approximate KM-UCL (use when n>=50)	62.26	95% Gamma Adjusted KM-UCL (use when n<50)	69.39

Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.884	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.829	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.261	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.274	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	34.51	Mean in Log Scale	3.256
SD in Original Scale	30.46	SD in Log Scale	0.786
95% t UCL (assumes normality of ROS data)	52.16	95% Percentile Bootstrap UCL	50.14
95% BCA Bootstrap UCL	56.7	95% Bootstrap t UCL	74.87
95% H-UCL (Log ROS)	71.35		
Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution			
KM Mean (logged)	3.245	KM Geo Mean	25.67
KM SD (logged)	0.767	95% Critical H Value (KM-Log)	2.649
KM Standard Error of Mean (logged)	0.257	95% H-UCL (KM -Log)	67.79
KM SD (logged)	0.767	95% Critical H Value (KM-Log)	2.649
KM Standard Error of Mean (logged)	0.257		
DL/2 Statistics			
DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	34.16	Mean in Log Scale	3.176
SD in Original Scale	30.84	SD in Log Scale	0.966
95% t UCL (Assumes normality)	52.03	95% H-Stat UCL	101.4
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Approximate Gamma Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM Adjusted Gamma UCL	69.39	95% GROS Adjusted Gamma UCL	97.91
When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test			
When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL			
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			

Result (dibenz(a,h)anthracene)			
General Statistics			
Total Number of Observations	10	Number of Distinct Observations	9
Number of Detects	8	Number of Non-Detects	2
Number of Distinct Detects	8	Number of Distinct Non-Detects	1
Minimum Detect	0.13	Minimum Non-Detect	0.0064
Maximum Detect	16.4	Maximum Non-Detect	0.0064
Variance Detects	30.86	Percent Non-Detects	20%
Mean Detects	2.878	SD Detects	5.555
Median Detects	0.59	CV Detects	1.931
Skewness Detects	2.653	Kurtosis Detects	7.218
Mean of Logged Detects	-0.269	SD of Logged Detects	1.707
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.563	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.818	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.388	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.283	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
KM Mean	2.303	KM Standard Error of Mean	1.618
KM SD	4.788	95% KM (BCA) UCL	5.076
95% KM (t) UCL	5.27	95% KM (Percentile Bootstrap) UCL	5.328
95% KM (z) UCL	4.965	95% KM Bootstrap t UCL	15.84
90% KM Chebyshev UCL	7.159	95% KM Chebyshev UCL	9.358
97.5% KM Chebyshev UCL	12.41	99% KM Chebyshev UCL	18.41
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.646	**Anderson-Darling GOF Test**	
5% A-D Critical Value	0.766	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.256	**Kolmogorov-Smirnov GOF**	
5% K-S Critical Value	0.31	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.482	k star (bias corrected MLE)	0.385
Theta hat (MLE)	5.971	Theta star (bias corrected MLE)	7.483
nu hat (MLE)	7.711	nu star (bias corrected)	6.153
Mean (detects)	2.878		

Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)			
For such situations, GROS method may yield incorrect values of UCLs and BTVs			
This is especially true when the sample size is small.			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	2.304
Maximum	16.4	Median	0.36
SD	5.046	CV	2.19
k hat (MLE)	0.342	k star (bias corrected MLE)	0.306
Theta hat (MLE)	6.728	Theta star (bias corrected MLE)	7.52
nu hat (MLE)	6.849	nu star (bias corrected)	6.128
Adjusted Level of Significance (β)	0.0267		
Approximate Chi Square Value (6.13, α)	1.705	Adjusted Chi Square Value (6.13, β)	1.333
95% Gamma Approximate UCL (use when n>=50)	8.278	95% Gamma Adjusted UCL (use when n<50)	10.59
Estimates of Gamma Parameters using KM Estimates			
Mean (KM)	2.303	SD (KM)	4.788
Variance (KM)	22.92	SE of Mean (KM)	1.618
k hat (KM)	0.231	k star (KM)	0.229
nu hat (KM)	4.629	nu star (KM)	4.574
theta hat (KM)	9.951	theta star (KM)	10.07
80% gamma percentile (KM)	3.232	90% gamma percentile (KM)	6.949
95% gamma percentile (KM)	11.44	99% gamma percentile (KM)	23.56
Gamma Kaplan-Meier (KM) Statistics			
Approximate Chi Square Value (4.57, α)	0.961	Adjusted Chi Square Value (4.57, β)	0.71
95% Gamma Approximate KM-UCL (use when n>=50)	10.97	95% Gamma Adjusted KM-UCL (use when n<50)	14.84
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.908	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.818	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.186	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.283	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	2.305	Mean in Log Scale	-1.108
SD in Original Scale	5.046	SD in Log Scale	2.335
95% t UCL (assumes normality of ROS data)	5.23	95% Percentile Bootstrap UCL	5.304
95% BCA Bootstrap UCL	6.971	95% Bootstrap t UCL	15.87
95% H-UCL (Log ROS)	634.8		
Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution			
KM Mean (logged)	-1.225	KM Geo Mean	0.294
KM SD (logged)	2.387	95% Critical H Value (KM-Log)	6.342
KM Standard Error of Mean (logged)	0.807	95% H-UCL (KM -Log)	789.5
KM SD (logged)	2.387	95% Critical H Value (KM-Log)	6.342
KM Standard Error of Mean (logged)	0.807		

DL/2 Statistics			
DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	2.303	Mean in Log Scale	-1.364
SD in Original Scale	5.047	SD in Log Scale	2.756
95% t UCL (Assumes normality)	5.228	95% H-Stat UCL	8959
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Gamma Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM Bootstrap t UCL	15.84	Adjusted KM-UCL (use when k<=1 and 15 < n < 50 but k<=1)	14.84
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
Result (indeno(1,2,3-cd)pyrene)			
General Statistics			
Total Number of Observations	10	Number of Distinct Observations	10
		Number of Missing Observations	0
Minimum	0.037	Mean	7.629
Maximum	56.9	Median	0.825
SD	17.58	Std. Error of Mean	5.56
Coefficient of Variation	2.305	Skewness	2.993
Normal GOF Test			
Shapiro Wilk Test Statistic	0.493	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.842	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.366	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.262	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	17.82	95% Adjusted-CLT UCL (Chen-1995)	22.4
		95% Modified-t UCL (Johnson-1978)	18.7
Gamma GOF Test			
A-D Test Statistic	0.662	**Anderson-Darling Gamma GOF Test**	
5% A-D Critical Value	0.807	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.248	**Kolmogorov-Smirnov Gamma GOF Test**	
5% K-S Critical Value	0.287	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			

Gamma Statistics			
k hat (MLE)	0.336	k star (bias corrected MLE)	0.302
Theta hat (MLE)	22.71	Theta star (bias corrected MLE)	25.28
nu hat (MLE)	6.719	nu star (bias corrected)	6.037
MLE Mean (bias corrected)	7.629	MLE Sd (bias corrected)	13.89
		Approximate Chi Square Value (0.05)	1.659
Adjusted Level of Significance	0.0267	Adjusted Chi Square Value	1.293
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50)	27.77	95% Adjusted Gamma UCL (use when n<50)	35.62
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.978	**Shapiro Wilk Lognormal GOF Test**	
5% Shapiro Wilk Critical Value	0.842	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.144	**Lilliefors Lognormal GOF Test**	
5% Lilliefors Critical Value	0.262	Data appear Lognormal at 5% Significance Level	
Data appear Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	-3.297	Mean of logged Data	0.0169
Maximum of Logged Data	4.041	SD of logged Data	2.205
Assuming Lognormal Distribution			
95% H-UCL	881	90% Chebyshev (MVUE) UCL	20.7
95% Chebyshev (MVUE) UCL	27.06	97.5% Chebyshev (MVUE) UCL	35.88
99% Chebyshev (MVUE) UCL	53.22		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	16.77	95% Jackknife UCL	17.82
95% Standard Bootstrap UCL	16.3	95% Bootstrap-t UCL	69.56
95% Hall's Bootstrap UCL	63.25	95% Percentile Bootstrap UCL	18.08
95% BCA Bootstrap UCL	23.96		
90% Chebyshev(Mean, Sd) UCL	24.31	95% Chebyshev(Mean, Sd) UCL	31.86
97.5% Chebyshev(Mean, Sd) UCL	42.35	99% Chebyshev(Mean, Sd) UCL	62.95
Suggested UCL to Use			
95% Adjusted Gamma UCL	35.62		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			

Result (lead)			
General Statistics			
Total Number of Observations	10	Number of Distinct Observations	10
		Number of Missing Observations	0
Minimum	6.9	Mean	317.5
Maximum	986	Median	155
SD	357.1	Std. Error of Mean	112.9
Coefficient of Variation	1.125	Skewness	1.38
Normal GOF Test			
Shapiro Wilk Test Statistic	0.77	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.842	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.264	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.262	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	524.5	95% Adjusted-CLT UCL (Chen-1995)	555.9
		95% Modified-t UCL (Johnson-1978)	532.7
Gamma GOF Test			
A-D Test Statistic	0.284	**Anderson-Darling Gamma GOF Test**	
5% A-D Critical Value	0.754	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.137	**Kolmogorov-Smirnov Gamma GOF Test**	
5% K-S Critical Value	0.275	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	0.837	k star (bias corrected MLE)	0.653
Theta hat (MLE)	379.1	Theta star (bias corrected MLE)	486.3
nu hat (MLE)	16.75	nu star (bias corrected)	13.06
MLE Mean (bias corrected)	317.5	MLE Sd (bias corrected)	392.9
		Approximate Chi Square Value (0.05)	5.931
Adjusted Level of Significance	0.0267	Adjusted Chi Square Value	5.121
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50)	698.9	95% Adjusted Gamma UCL (use when n<50)	809.6
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.932	**Shapiro Wilk Lognormal GOF Test**	
5% Shapiro Wilk Critical Value	0.842	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.184	**Lilliefors Lognormal GOF Test**	
5% Lilliefors Critical Value	0.262	Data appear Lognormal at 5% Significance Level	
Data appear Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	1.932	Mean of logged Data	5.056
Maximum of Logged Data	6.894	SD of logged Data	1.461

Assuming Lognormal Distribution			
95% H-UCL	3384	90% Chebyshev (MVUE) UCL	941.5
95% Chebyshev (MVUE) UCL	1195	97.5% Chebyshev (MVUE) UCL	1547
99% Chebyshev (MVUE) UCL	2238		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	503.2	95% Jackknife UCL	524.5
95% Standard Bootstrap UCL	495.7	95% Bootstrap-t UCL	791.5
95% Hall's Bootstrap UCL	1364	95% Percentile Bootstrap UCL	514.2
95% BCA Bootstrap UCL	543.1		
90% Chebyshev(Mean, Sd) UCL	656.2	95% Chebyshev(Mean, Sd) UCL	809.7
97.5% Chebyshev(Mean, Sd) UCL	1023	99% Chebyshev(Mean, Sd) UCL	1441
Suggested UCL to Use			
95% Adjusted Gamma UCL	809.6		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
Result (naphthalene)			
General Statistics			
Total Number of Observations	10	Number of Distinct Observations	9
Number of Detects	7	Number of Non-Detects	3
Number of Distinct Detects	7	Number of Distinct Non-Detects	2
Minimum Detect	0.17	Minimum Non-Detect	0.0034
Maximum Detect	100	Maximum Non-Detect	0.024
Variance Detects	1368	Percent Non-Detects	30%
Mean Detects	16.88	SD Detects	36.99
Median Detects	0.86	CV Detects	2.191
Skewness Detects	2.551	Kurtosis Detects	6.582
Mean of Logged Detects	0.646	SD of Logged Detects	2.248
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.54	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.803	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.387	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.304	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
KM Mean	11.82	KM Standard Error of Mean	10.14
KM SD	29.68	95% KM (BCA) UCL	30.25
95% KM (t) UCL	30.4	95% KM (Percentile Bootstrap) UCL	30.46
95% KM (z) UCL	28.49	95% KM Bootstrap t UCL	554.4
90% KM Chebyshev UCL	42.23	95% KM Chebyshev UCL	56
97.5% KM Chebyshev UCL	75.12	99% KM Chebyshev UCL	112.7
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.744	**Anderson-Darling GOF Test**	
5% A-D Critical Value	0.782	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.315	**Kolmogorov-Smirnov GOF**	
5% K-S Critical Value	0.335	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.314	k star (bias corrected MLE)	0.275
Theta hat (MLE)	53.78	Theta star (bias corrected MLE)	61.48
nu hat (MLE)	4.395	nu star (bias corrected)	3.845
Mean (detects)	16.88		
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)			
For such situations, GROS method may yield incorrect values of UCLs and BTVs			
This is especially true when the sample size is small.			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	11.82
Maximum	100	Median	0.475
SD	31.28	CV	2.646
k hat (MLE)	0.214	k star (bias corrected MLE)	0.217
Theta hat (MLE)	55.19	Theta star (bias corrected MLE)	54.58
nu hat (MLE)	4.284	nu star (bias corrected)	4.332
Adjusted Level of Significance (β)	0.0267		
Approximate Chi Square Value (4.33, α)	0.857	Adjusted Chi Square Value (4.33, β)	0.626
95% Gamma Approximate UCL (use when n>=50)	59.75	95% Gamma Adjusted UCL (use when n<50)	81.79
Estimates of Gamma Parameters using KM Estimates			
Mean (KM)	11.82	SD (KM)	29.68
Variance (KM)	880.8	SE of Mean (KM)	10.14
k hat (KM)	0.159	k star (KM)	0.178
nu hat (KM)	3.172	nu star (KM)	3.554
theta hat (KM)	74.52	theta star (KM)	66.52
80% gamma percentile (KM)	14.54	90% gamma percentile (KM)	35.62
95% gamma percentile (KM)	62.72	99% gamma percentile (KM)	138.8
Gamma Kaplan-Meier (KM) Statistics			
Approximate Chi Square Value (3.55, α)	0.554	Adjusted Chi Square Value (3.55, β)	0.389
95% Gamma Approximate KM-UCL (use when n>=50)	75.84	95% Gamma Adjusted KM-UCL (use when n<50)	108.1

Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.914	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.803	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.21	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.304	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	11.82	Mean in Log Scale	-1.077
SD in Original Scale	31.28	SD in Log Scale	3.35
95% t UCL (assumes normality of ROS data)	29.95	95% Percentile Bootstrap UCL	30.57
95% BCA Bootstrap UCL	42.93	95% Bootstrap t UCL	563.1
95% H-UCL (Log ROS)	1619955		
Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution			
KM Mean (logged)	-1.253	KM Geo Mean	0.286
KM SD (logged)	3.383	95% Critical H Value (KM-Log)	8.824
KM Standard Error of Mean (logged)	1.156	95% H-UCL (KM -Log)	1833833
KM SD (logged)	3.383	95% Critical H Value (KM-Log)	8.824
KM Standard Error of Mean (logged)	1.156		
DL/2 Statistics			
DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	11.82	Mean in Log Scale	-1.266
SD in Original Scale	31.28	SD in Log Scale	3.623
95% t UCL (Assumes normality)	29.95	95% H-Stat UCL	17566053
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Gamma Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM Bootstrap t UCL	554.4	Adjusted KM-UCL (use when k<=1 and 15 < n < 50 but k<=1)	108.1
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			

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APPENDIX Q

Vapor Barrier Specification (Basis of Design, but Subject to Change)

VAPORBLOCK® PLUS™ VBP20

UNDER-SLAB VAPOR / GAS BARRIER

RAVEN

PRODUCT DESCRIPTION

VaporBlock® Plus™ is a seven-layer co-extruded barrier made using high quality virgin-grade polyethylene and EVOH resins to provide unmatched impact strength as well as superior resistance to gas and moisture transmission. VaporBlock® Plus™ 20 is more than 100 times less permeable than typical high-performance polyethylene vapor retarders against Methane, Radon, and other harmful VOCs. Tested and verified for unsurpassed protection against BTEX, HS, TCE, PCE, methane, radon, other toxic chemicals and odors.

VaporBlock® Plus™ 20 multi-layer gas barrier is manufactured with the latest EVOH barrier technology to mitigate hazardous vapor intrusion from damaging indoor air quality, and the safety and health of building occupants. VBP20 is one of the most effective underslab gas barriers in the building industry today far exceeding ASTM E-1745 (Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill Under Concrete Slabs) Class A, B and C requirements. Available in a 20 (Class A) mil thicknesses designed to meet the most stringent requirements. VaporBlock® Plus™ 20 is produced within the strict guidelines of our ISO 9001 Certified Management System.

PRODUCT USE

VaporBlock® Plus™ 20 resists gas and moisture migration into the building envelop when properly installed to provide protection from toxic/harmful chemicals. It can be installed as part of a passive or active control system extending across the entire building including floors, walls and crawl spaces. When installed as a passive system it is recommended to also include a ventilated system with sump(s) that could be converted to an active control system with properly designed ventilation fans.

VaporBlock® Plus™ 20 works to protect your flooring and other moisture-sensitive furnishings in the building's interior from moisture and water vapor migration, greatly reducing condensation, mold and degradation.

SIZE & PACKAGING

VaporBlock® Plus™ 20 is available in 10' x 150' rolls to maximize coverage. All rolls are folded on heavy-duty cores for ease in handling and installation. Other custom sizes with factory welded seams are available based on minimum volume requirements. Installation instructions and ASTM E-1745 classifications accompany each roll.

Under-Slab Vapor/Gas Retarder

PRODUCT	PART #
VaporBlock® Plus™ 20	VBP20

APPLICATIONS

- Radon Barrier
- Methane Barrier
- VOC Barrier
- Brownfields Barrier
- Vapor Intrusion Barrier
- Under-Slab Vapor Retarder
- Foundation Wall Vapor Retarder

VaporBlock® Plus™
UNDERSLAB VAPOR RETARDER / GAS BARRIER

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VAPORBLOCK® PLUS™ VBP20

UNDER-SLAB VAPOR / GAS BARRIER

PROPERTIES	TEST METHOD	VAPORBLOCK® PLUS™ 20 IMPERIAL	VAPORBLOCK® PLUS™ 20 METRIC
Appearance		White/Gold	
Thickness, Nominal		20 mil	0.51 mm
Weight		102 lbs/MSF	498 g/m^2
Classification	ASTM E 1745	CLASS A, B & C	
[3] Tensile Strength	ASTM E 154 Section 9 (D-882)	58 lbf	102 N
Impact Resistance	ASTM D 1709	2600 g	
Permeance (new material)	ASTM E 154 Section 7 ASTM E 96 Procedure B	0.0098 Perms grains/(ft^2·hr·in·Hg)	0.0064 Perms g/(24hr·m^2·mm Hg)
Permeance (after conditioning) (same measurement as above permeance)	ASTM E 154 Section 8, E96 Section 11, E96 Section 12, E96 Section 13, E96	0.0079 0.0079 0.0097 0.0113	0.0052 0.0052 0.0064 0.0074
WVTR	ASTM E 96 Procedure B	0.0040 grains/hr-ft^2	0.0028 gm/hr-m^2
Benzene Permeance	See Note [6]	1.13 x 10^{-10} m^2/sec or 3.62 x 10^{-13} m/s	
Toluene Permeance	See Note [6]	1.57 x 10^{-10} m^2/sec or 1.46 x 10^{-13} m/s	
Ethylbenzene Permeance	See Note [6]	1.23 x 10^{-10} m^2/sec or 3.34 x 10^{-14} m/s	
M & P-Xylenes Permeance	See Note [6]	1.17 x 10^{-10} m^2/sec or 3.81 x 10^{-14} m/s	
O-Xylene Permeance	See Note [6]	1.10 x 10^{-10} m^2/sec or 3.43 x 10^{-14} m/s	
Hydrogen Sulfide	See Note [9]	1.92E^{-09} m/s	
Trichloroethylene (TCE)	See Note [6]	7.66 x 10^{-11} m^2/sec or 1.05 x 10^{-14} m/s	
Perchloroethylene (PCE)	See Note [6]	7.22 x 10^{-11} m^2/sec or 1.04 x 10^{-14} m/s	
Radon Diffusion Coeffiecient	K124/02/95	< 1.1 x 10^{-13} m^2/s	
Methane Permeance	ASTM D 1434	3.68E^{-12} m/s Gas Transmission Rate (GTR): 0.32 mL/m^2•day•atm	
Maximum Static Use Temperature		180° F	82° C
Minimum Static Use Temperature		- 70° F	- 57° C

[3] Tests are an average of machine and transverse directions.
[5] Raven Industries performs seam testing at 20" per minute.
[6] Aqueous Phase Film Permeance.
Permeation of Volatile Organic Compounds through EVOH Thin Film Membranes and Coextruded LLDPE/EVOH/LLDPE Geomembranes, McWatters and Rowe, Journal of Geotechnical and Geoenvironmental Engineering© ASCE/ September 2015. (Permeation is the Permeation Coefficient adjusted to actual film thickness - calculated at 1 kg/m^3.) The study used to determine PCE and TCE is titled: Evaluation of diffusion of PCE & TCE through high performance geomembranes by Di Battista and Rowe, Queens University 8 Feb 2018.
[9] The study used to determine diffusion coefficients is titled: Hydrogen Sulfide (H_2S) Transport through Simulated Interim Covers with Conventional and Co-Extruded Ethylene-Vinyl Alcohol (EVOH) Geomembranes.

VaporBlock® Plus™ Placement

All instructions on architectural or structural drawings should be reviewed and followed.

Detailed installation instructions accompany each roll of VaporBlock® Plus™ and can also be located at www.ravenefd.com.

ASTM E-1643 also provides general installation information for vapor retarders.

VaporBlock® Plus™ UNDERSLAB VAPOR RETARDER / GAS BARRIER

VaporBlock® Plus™ is a seven-layer co-extruded barrier made using high quality virgin-grade polyethylene and EVOH resins to provide unmatched impact strength as well as superior resistance to gas and moisture transmission.

Scan QR Code to download current technical data sheets via the Raven website.

Note: To the best of our knowledge, unless otherwise stated, these are typical property values and are intended as guides only, not as specification limits. Chemical resistance, odor transmission, longevity as well as other performance criteria is not implied or given and actual testing must be performed for applicability in specific applications and/or conditions. RAVEN INDUSTRIES MAKES NO WARRANTIES AS TO THE FITNESS FOR A SPECIFIC USE OR MERCHANTABILITY OF PRODUCTS REFERRED TO, no guarantee of satisfactory results from reliance upon contained information or recommendations and disclaims all liability for resulting loss or damage. Limited Warranty available at www.RavenEFD.com

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