

SDWB Sanitary Survey Form

Pre-Inspection

Date of Survey	April 4-5, 2017	PWS Type	Community
PWS ID No.	360	Source	Groundwater
Water System Name	Joint Base Pearl Harbor-Hickam	Consecutive From	Not Applicable
Water System Owner	U.S. Navy	Population Served	65,230
PWS Contact Person	Ravi Mohandie	No. of Service Connections	7,619
Phone		Average Daily Flow (MGD)	18.75
Email Address			

Persons Present During Sanitary Survey (provide name and affiliation)

1. Alain Carey, DOH	6. Dave Cain, NAVFAC
2. Kyle Teraoka, NAVFAC	7.
3. Ravi Mohandi, NAVFAC	8.
4. Flynn Garcia, NAVFAC	9.
5. Lynn Malinger, NAVFAC	10.

Compliance History

Violations Since Last Sanitary Survey			
Violation Type	Date	Description	Status
MCL	November 2015	TCR	Returned to compliance December 2015.

System Management and Operation

Annual Report or Similar Document Provided	No
CCR Database Storage and Compliance Status	Satisfactory
Is an Updated Emergency Response Plan Available per HAR 11-19-5 (County Only)	Not Applicable

Pumps, Pump Facilities, and Controls				
Source Name	Halawa Shaft	Waiawa Shaft	Red Hill Shaft	
Location	Halawa, Oahu	Waiawa, Oahu	Halawa, Oahu	
Source Type	Groundwater	Groundwater	Groundwater	
Source Infrastructure	Shaft	Shaft	Shaft	
USGS Number	3-2252-32	3-2258-10	3-2254-01	
Well Depth (ft)	99	182	210	
Pump Type	Line Shaft	Line Shaft	Line Shaft	
Rated Flow (gpm)	3,500	6,000	6,500	
TDH (ft)	196	182	186	
Pump lubrication	Water Lubed	Water Lubed	Water Lubed	
Condition of oil lubricating equipment	Not Applicable			
Pump in 100-Year Floodplain	No	No	No	
Pump site protected from runoff	Yes and well casing extends 12 in. or > above well/floor slab	Yes and well casing extends 12 in. or > above well/floor slab	Yes and well casing extends 12 in. or > above well/floor slab	
Well slab/floor material condition	Satisfactory	Satisfactory	Satisfactory	
Watertight seal for:				
Pump base plate/discharge head openings	Yes	Yes	Yes	
Airline tubing for water level measurements?	Yes	No	No	Shaft viewing manhole
Pump column vent hole/tubing?	N/A	N/A	N/A	
Pump-to-Waste vent elevated and screened/flappered?	Not Applicable	Not Applicable	Not Applicable	
Condition of Pump-to-Waste screen/flapper	N/A	N/A	N/A	
All ARVs are screened	Yes	N/A	No	
All ARVs are pointed downward	Yes	N/A	No	
Emergency power exists?	Yes and Exercised Regularly			
Emergency power test frequency	Quarterly			
Emergency power protected from vandalism or the elements?	Yes			
Identify cross-connections (submerged outlets, standing water, hose bib connections, etc.)	None	None	None	
Recent daily maintenance log entries attached (photo ok)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Remarks	2 pumps. 1 pump offline permanently. Shaft offline due to renovation.	4 pumps. Pump #1 replaced last year. Primary water source.	4 pumps. One ARV pointed up and screened. One ARV pointed down, no screen.	

Booster Pumps, Pump Facilities, and Controls				
Source Name	Red Hill Booster Pumps	Camp Smith Booster Pump	Moanalua Terrace Booster Pumps	Camp Smith Booster Pumps at Halawa Shaft
Location	Red Hill	Camp Smith	Moanalua Housing	Halawa Shaft
Pump Type	Submersible			
Rated Flow (gpm)	500	500	130	480
TDH (ft)	600	785	119	380
Pump lubrication	Water Lubed	Water Lubed	Water Lubed	Water Lubed
Pump in 100-Year Floodplain	No	No	No	No
Pump site protected from runoff	Yes and well casing extends 12 in. or > above well/floor slab	Yes and well casing extends 12 in. or > above well/floor slab	Yes and well casing extends 12 in. or > above well/floor slab	Yes and well casing extends 12 in. or > above well/floor slab
Well slab/floor material condition	Satisfactory	Satisfactory	Satisfactory	Satisfactory
Watertight seal for:				
Pump base plate/discharge head openings	Yes	Yes	Yes	Yes
All ARVs are screened	Yes	Yes	N/A	N/A
All ARVs are pointed downward	Yes	Yes	N/A	N/A
Emergency power exists?	Yes and Exercised Regularly			
Emergency power test frequency	Quarterly			
Emergency power protected from vandalism or the elements?	Yes			
Identify cross-connections (submerged outlets, standing water, hose bib connections, etc.)	None	None	None	None
Pumps From / To	Red Hill Shaft to Red Hill Tank	HBWS PWS 331 to Camp Smith	In-line booster	Halawa Shaft to Camp Smith
# of Pumps	2	2	2	2
Configuration (# online / # backup)	1/1	Emergency use only	1/1	1/1
Remarks	Pumps inside Red Hill Shaft	Emergency connection from BWS. Used last month.	Increases pressure within the housing area.	Offline due to site renovations.

Booster Pumps, Pump Facilities, and Controls				
Source Name	Manana Booster Pumps			
Location	Manana Housing			
Pump Type	Submersible			
Rated Flow (gpm)	1 & 2: 225, Fire: 1,500			
TDH (ft)	118			
Pump lubrication	Water Lubed			
Pump in 100-Year Floodplain	No			
Pump site protected from runoff	N/A			
Well slab/floor material condition	Satisfactory			
Watertight seal for:				
Pump base plate/discharge head openings	Yes			
All ARVs are screened	Yes			
All ARVs are pointed downward	No			
Emergency power exists?	Yes and Exercised Regularly			
Emergency power test frequency	Quarterly			
Emergency power protected from vandalism or the elements?	Yes			
Identify cross-connections (submerged outlets, standing water, hose bib connections, etc.)	None			
Pumps From / To	Waiawa Shaft to Manana housing area			
# of Pumps	3			
Configuration (# online / # backup)	2/1			
Remarks	2 ARVs pointing sideways			

Groundwater Source Protection				
Source(s) Name	Halawa Shaft	Waiawa Shaft	Red Hill Shaft	
Infrastructure immediately downstream	Distribution	Distribution	Distribution	
Emergency Spill Response Plan available?	Yes: Federal or Honolulu Fire Depts			
Source Site:				
In a 100-Year Flood Plain?	No			
Protected from runoff?	Yes			
Enclosed?	Yes			
Fenced and gated?	Yes			
Warning signs posted?	Yes	Yes	Yes	
Inappropriate chemicals stored?	No	No	No	
Chemical additions?	Yes, sodium hypochlorite			
Safety Data Sheets (SDS) onsite	Yes	Yes	Yes	
Potential Contaminating Activities	1. Transportation corridors	1. Utility stations/maintenance areas/motor pools 2. Light industrial area	1. Chemical/Petroleum storage 2. Recorded spills 3. Underground storage tanks	
Remarks				

Disinfection				
Name of Source being disinfected	Halawa Shaft	Waiawa Shaft	Red Hill Shaft	Camp Smith Booster
Disinfection method	Sodium hypochlorite	Sodium hypochlorite	Sodium hypochlorite	Sodium hypochlorite
Labeled chemical manufacturer's information	N/A			
Meets NSF 60	Yes	Yes	Yes	Yes
Equipment in enclosed structure	Yes			Yes
Material of enclosed structure	Concrete Masonry Unit	Concrete Masonry Unit	Concrete Masonry Unit	Wood
Warning signs present	Yes	Yes	Yes	Yes
Feed equipment type	Injector	Injector	Injector	Injector
Number of back-up units	1	1	1	0
Target residual at far ends of distribution system (ppm)	0.3-0.5			
Target residual at EPD point (ppm)	0.75-0.80			
How are feed adjustments made?	By flow	By flow	Monitored Water quality	By flow
No. of days chemicals are stored (60-90 days max, 30 days preferred)	N/A	1.5 weeks	5 days	0
Disinfectant feed point location	On discharge pipe in shaft	On discharge pipe in chlorine building	On discharge pipe in shaft	Next to booster pump building
Copy of daily log attached	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Preventative maintenance program	Yes			
Critical spare parts and repair kit on hand	Yes	Yes	Yes	Yes
Backup power available?	Yes, on site			Yes or No
Emergency response plan procedures onsite	Yes	Yes	Yes	Yes
Remarks	Not in service due to site renovation. Expected to return to service next month. No longer using onsite chlorine generation.		ChlorTec onsite chlorine generation	

FLUORIDE TREATMENT

Location:

Owner: U.S. Navy

Feed Equipment Type?

Purpose? U.S. Military facilities/residences are required to have fluoride in their drinking water.

NSF 60 chemicals used? Y

List brand: Solvay sodium fluoride

Dosage? 0.7-0.8 ppm

Unit Redundancy?

Chemical handling & storage

Proper chemical handling and safety equipment available? Y

Were chemicals stored in a separate room? N

Was adequate separation of different chemicals provided? Y

Were MSDS sheets available on site? Y

Miscellaneous

Are site boundaries appropriately fenced and gated? Y

Does appropriate warning or "keep out" signage exist? Y

Are all building doors appropriately signed (chlorine, etc.)? Y

Does site maintenance control vegetation & vector habitats? Y

Notes:

Fluoride residual about 0.7 ppm

Halawa Shaft- fluoride pump is blue

Red Hill Shaft- fluoridation located inside shaft next to shaft pumps

One fluoride mix tank has open holes on the cover – significant deficiency

Waiawa Shaft- Fluoride in room where chlorine injection is at.

Finished Water Storage				
Tank Name	Halawa S-1 (Makai)	Halawa S-2 (mauka)	S-325 (Camp Smith)	S-326 (Camp Smith)
Spillway elevation (ft)	178.5	178.5	850	850
Capacity (MG)	6.0	6.0	0.2	0.2
Material of construction	Steel	Steel	Concrete	Concrete
Exposure to unauthorized persons	Low Probability	Low Probability	Low Probability	Low Probability
Surrounding landscape	Grass	Grass	Grass	Grass
Site fenced	Yes	Yes	Yes	Yes
Warning signs	Yes	Yes	Yes	Yes
Gates locked	Yes	Yes	Yes	Yes
Cross-connection potential with onsite irrigation	No	No	No	No
Site drainage	Satisfactory	Satisfactory	Satisfactory	Satisfactory
Condition of tank exterior	Satisfactory	Satisfactory	Satisfactory	Satisfactory
Condition of access ladder	Satisfactory	Satisfactory	Satisfactory	Satisfactory
Vent insect screen	Unsatisfactory	Satisfactory	Satisfactory	Satisfactory
Tank access hatch	Satisfactory	Satisfactory	Satisfactory	Satisfactory
Visual water quality	Satisfactory	Satisfactory	Satisfactory	Satisfactory
Overflow hatch	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Level indicator cable opening	Satisfactory	Satisfactory	Satisfactory	Satisfactory
Overflow line screen/flapper	Satisfactory	Satisfactory	Satisfactory	Satisfactory
Washout drain line	Combined with overflow	Combined with overflow	Satisfactory	Satisfactory
O & M program	Yes	Yes	Yes	Yes
Frequency of inspection of tank roof and interior and exterior surfaces	At least annually	At least annually	At least annually	At least annually
Frequency of tank interior cleaning	At least every 5 years	At least every 5 years	At least every 5 years	At least every 5 years
Tank isolation by valving	Yes	Yes	Yes	Yes
Disinfection onsite	No	No	No	No
Remarks	Daylight seen between the vent and vent base flanges - SD	S-1 & S-2 on same site. Booster pumps belong to Aliamanu PWS.	S-325 & S-326 on same site. The number of vents and access hatches on the roof seem excessive. The vents are baffled (inadequate screening). The building on the tank has an access hatch and vent that seems	The number of vents and access hatches on the roof seem excessive. The vents are baffled (inadequate screening). The building on the tank has an access hatch and vent that seems adequate. On Aiea Loop Trail.

			adequate. On Aiea Loop Trail.	
--	--	--	-------------------------------	--

Finished Water Storage				
Tank Name	S-327 (Camp Smith)	Red Hill		
Spillway elevation (ft)	850	598		
Capacity (MG)	0.25	0.25		
Material of construction	Steel	Steel	Material	Material
Exposure to unauthorized persons	Low Probability	Low Probability	Choose an item.	Choose an item.
Surrounding landscape	Forest	Earth		
Site fenced	Yes	Yes	Yes or No	Yes or No
Warning signs	Yes	Yes	Yes or No	Yes or No
Gates locked	Yes	Yes	Yes or No	Yes or No
Cross-connection potential with onsite irrigation	No	No	Yes or No	Yes or No
Site drainage	Satisfactory	Satisfactory		
Condition of tank exterior	Satisfactory	Satisfactory		
Condition of access ladder	Satisfactory	Satisfactory		
Vent insect screen	Satisfactory	Unsatisfactory		
Tank access hatch	Satisfactory	Satisfactory		
Visual water quality	Satisfactory	Satisfactory		
Overflow hatch	Unsatisfactory	Not Applicable		
Level indicator cable opening	Satisfactory	Not Applicable		
Overflow line screen/flapper	Satisfactory	Satisfactory		
Washout drain line	Combined with overflow	Satisfactory		
O & M program	Yes	Yes	Yes or No	Yes or No
Frequency of inspection of tank roof and interior and exterior surfaces	At least annually	At least annually		
Frequency of tank interior cleaning	At least every 5 years	At least every 5 years		
Tank isolation by valving	Yes	Yes	Yes or No	Yes or No
Disinfection onsite	No	No	Yes or No	Yes or No
Remarks	The second access hatch furthest from ladder could not be opened due to broken lock—need to send photos. On Aiea Loop Trail.	New unapproved tank under construction on same site—need to submit plans. Vent doesn't have insect screen.		

Distribution and Transmission	
System pipe materials	1. Cast Iron 2. Ductile Iron 3. PVC
System pressure range (psi)	40-80
Method of isolation	Wells, pump stations and storage tanks are fenced and gates are locked. CCTV and badged entry systems are utilized.
Security measures	Backflow preventers secured
Installation and repair procedures for water mains	DSO files a discrepancy report to work leader. Report is forwarded to supervisor who approves work orders for materials and labor.
Flushing schedule and procedure	Program generated schedule every month.
Leak detection control program	Satisfactory
Corrosion control program	The S-1 and S-2 tanks have cathodic protection.
For all surface water, GWUDI, and non-county groundwater systems: Has there been any substantial modifications to the water system, as per HAR 11-20-30, since the last sanitary survey?	Yes. Construction plans, specifications, and/or other engineering documents will need to be submitted to DOH for approval.
Remarks	

Capacity Assessment

Technical	
<p>OPERATOR CERTIFICATION</p> <p>Each public water system (except transient, non-community) shall be under the responsible charge of an operator(s) holding a valid certification equal to or greater than the classification of the WTP or DS. Check whether the water system operators are certified. A backup certified operator is recommended.</p>	<p>✓ Operator Certification Form is attached</p> <p>✓ System has a backup certified operator</p> <p><input type="checkbox"/> The system does not have the required certified operators</p>
<p>ADEQUATE WATER SOURCES</p> <p>Discuss with manager whether the present water sources are adequate for the future (next 5 years).</p>	<p>Does the system have an emergency connections with other systems? Yes, with PWS 331</p> <p>Are the existing sources are of sufficient quantity and quality to meet future demand? ✓ Yes <input type="checkbox"/> No</p>
<p>POTENTIAL FOR CONTAMINATION OF THE WATER</p> <p>Inspect for pathways that could contaminate the finished water at the well site, storage tanks, or distribution system.</p>	<p>✓ Significant deficiencies were found during this sanitary survey</p> <p><input type="checkbox"/> No significant deficiencies were found during this sanitary survey</p>

<p>MONITORINIG PROGRAMS</p> <p>Check water quality monitoring performance.</p>	<p><u>Coliform Monitoring Program</u></p> <p>✓ Satisfactory <input type="checkbox"/> Unsatisfactory, explain:</p> <p><u>Lead and Copper Monitoring Program</u></p> <p>✓ Satisfactory <input type="checkbox"/> Unsatisfactory, explain:</p> <p><u>Phase II and Phase V Monitoring Program</u></p> <p>✓ Satisfactory <input type="checkbox"/> Unsatisfactory, explain:</p> <p><u>Chemical Monitoring</u></p> <p><input type="checkbox"/> Satisfactory <input type="checkbox"/> Unsatisfactory, explain:</p> <p>✓ SDWIS Water Quality Data from past 5 years is attached</p>
<p>BACKFLOW AND CROSS-CONNECTIONS</p> <p>Check whether backflow prevention devices are used if the water system serves hospitals, farms, golf courses, sewage treatment plants, or other activities that could cause a backflow of contamination into the drinking water.</p>	<p>Does the system have a cross connection control program or policy?</p> <p>✓ Yes <input type="checkbox"/> No, explain:</p> <p>Does the system have the appropriate cross-connection control devices installed?</p> <p>✓ Yes <input type="checkbox"/> No, explain:</p> <p>Are backflow preventers inspected annually?</p> <p>Choose an item.</p> <p>Air gaps at least 2 pipe diameters (1" min) above the overflow rim?</p> <p><input type="checkbox"/> Yes <input type="checkbox"/> No, explain:</p>

Managerial	
<p>ORGANIZATION AND MANAGEMENT CAPABILITY</p>	<p>Is there a clear plan of organization and control among the people responsible for the management and operation of the system? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No, explain:</p> <p>Is the system receiving the technical assistance and other support that is needed? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No, explain:</p>
<p>SYSTEM MAINTENANCE</p> <p>The overall condition of the water system infrastructure should be assessed.</p>	<p>Is the present maintenance level adequate for the water system? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>If no, explain:</p>
<p>EMERGENCY PLANS</p> <p>Check whether the water system has an emergency plan. The plan should include obtaining backup sources of water in drought situations, loss of a well pump or extended loss of electrical power.</p>	<p>Does the water system have an emergency plan? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>
<p>CORRECTION OF PROBLEMS</p> <p>The water system should have plans to correct obvious significant problems noted during the survey. The water system should also have corrected earlier identified significant problem(s) in a timely fashion.</p>	<p>List the significant deficiencies from the last sanitary survey and check the box if corrected.</p> <p>Camp Smith Tank S-327 <input checked="" type="checkbox"/> Vent screen bottom edge not secured to housing <input checked="" type="checkbox"/> Level indicator pipe uncapped</p> <p>Halawa Tank S-1 <input checked="" type="checkbox"/> Severe rusting of access hatch and curb</p> <p>Halawa Tank S-2 <input checked="" type="checkbox"/> Level indicator pipe uncapped</p> <p>Red Hill Tank <input checked="" type="checkbox"/> Level indicator pipe uncapped</p>

Financial	
<p>ADEQUATE FINANCIAL BUDGETS</p> <p>The annual budget should have sufficient income and cash reserves to pay annual operating expenses, unexpected significant repairs, and planned major work. A dedicated source of income should be identified.</p>	<p>Is there an annual budget? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No, explain:</p> <p>Are there sufficient funds to cover the necessary expenses for the water system to operate? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No, explain:</p>
<p>NORMAL OPERATION AND MAINTENANCE</p> <p>Discuss whether funding levels for operation and maintenance are sufficient.</p>	<p>Are there adequate funds for operation and maintenance? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>
<p>CAPITAL IMPROVEMENT PROJECTS</p> <p>A five year capital improvement plan enables the water system to plan for future needs.</p> <p>Facility improvements indicate management support of the water system's needs.</p>	<p>Is there a five year capital improvement budget? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Identify improvements to the water system and include the month and year the improvement was installed since the last sanitary survey:</p> <p>2016: Waiawa Shaft- replaced pump and motor #1. 2017: Halawa Shaft- replacing onsite chlorine generation w/ NaOCl Waiawa Shaft- replaced onsite chlorine generation w/ NaOCl</p> <p>If there were no capital improvements since the last sanitary survey, is the existing infrastructure adequate? <input type="checkbox"/> Yes <input type="checkbox"/> No</p>

Significant Deficiencies and Recommendations

Significant Deficiencies

1. Provide evidence of the latest testing of the backflow preventer between Camp Smith Booster Pump Station and the Board of Water Supply emergency connection. **COMPLETED**
2. Halawa Shaft:
 - a. confirm that the shaft viewing hatch has a gasket between the cover and the frame curb.
 - b. confirm that the opening into the shaft where the pump and motor was permanently removed from service is sealed.
3. Waiawa Shaft: confirm that the shaft viewing hatch has a gasket between the cover and the frame curb.
4. Red Hill Shaft
 - a. an ARV on the discharge pipe is pointed up and should be pointed down.
 - b. an ARV on the discharge pipe is pointed sideways and does not have an insect screen. ARV should be pointed down and covered with an insect screen.
 - c. the sodium fluoride container has open holes on top and should be sealed.
 - d. square baseplate on MP4's baseplate has a gap and should be sealed.
5. Manana Booster Pump Station: ARV pointing sideways and should be pointed down. **COMPLETED**
6. Halawa S-1 Tank: there are gaps between the flanges of the vent screen and the pedestal (daylight was seen through this gap).
7. S-325 Tank: vents on the tank are inadequately screened to prevent insects from entering the tank. The vents should be wrapped with an insect screen. **The photo submitted is of the wrong tank. Will send correct photo when completed.**
8. S-327 Tank: the second access hatch (not in front of the ladder) was unable to be opened. Please confirm the presence of a gasket between the hatch cover and frame curb. **COMPLETED**
9. Red Hill Tank:
 - a. an insect screen is missing from the vent.
 - b. HAR 11-20-30 requires all substantial modifications to a non-county public water system to be approved by the Department of Health prior to when the modifications are made. Please submit construction plans for the new tank being constructed at this site. **COMPLETED**

Recommendations

- 1. S-2 Tank: rusting on roof should be repaired.
- 2. S-1 Tank: vault pits should be cleared of vegetation and other debris.

ANALYTE_NAME	COLLECTED_ON	CONCENTF	UNIT_OF_MEASURE	MEASURED_MCL	MCL_UOM
1-2-DIBROMO-3-CHL	4/24/2012	0.014	UG/L	0.014	0.04 UG/L
ALKALINITY- TOTAL	7/30/2012	69	MG/L	69	
ALKALINITY- TOTAL	7/30/2012	190	MG/L	190	
ALKALINITY- TOTAL	7/30/2012	44	MG/L	44	
ARSENIC	7/30/2012	1.2	UG/L	1.2	10 UG/L
ARSENIC	7/30/2012	1.1	UG/L	1.1	10 UG/L
BARIUM	7/30/2012	5.1	UG/L	5.1	2 MG/L
BARIUM	7/30/2012	9.4	UG/L	9.4	2 MG/L
CALCIUM	7/30/2012	14	MG/L	14	
CALCIUM	7/30/2012	26	MG/L	26	
CALCIUM	7/30/2012	7.3	MG/L	7.3	
CHLORDANE	7/30/2012	0.12	UG/L	0.12	0.002 MG/L
CHLORIDE	7/30/2012	85	MG/L	85	
CHLORIDE	7/30/2012	450	MG/L	450	
CHLORIDE	7/30/2012	33	MG/L	33	
CHLOROFORM	7/30/2012	32	UG/L	32	1 UG/L
COLIFORM -TCR-	10/29/2014	1		1	
COLIFORM -TCR-	11/24/2015	1		1	
COLIFORM -TCR-	11/24/2015	1		1	
COLIFORM -TCR-	11/25/2015	1		1	
COLIFORM -TCR-	11/3/2015	1		1	
COLIFORM -TCR-	3/28/2016	1		1	
COLIFORM -TCR-	11/24/2015	1		1	
COLIFORM -TCR-	11/24/2015	1		1	
COLIFORM -TCR-	9/11/2012	1		1	
COLIFORM -TCR-	1/20/2015	1		1	
COLIFORM -TCR-	10/15/2014	1		1	
COPPER- FREE	7/30/2012	20	UG/L	20	
COPPER- FREE	7/12/2013	50	UG/L	50	
COPPER- FREE	7/15/2013	50	UG/L	50	
COPPER- FREE	7/21/2016	88	UG/L	88	
COPPER- FREE	7/18/2016	70	UG/L	70	
COPPER- FREE	7/12/2013	113	UG/L	113	

COPPER- FREE	7/21/2016	72 UG/L	72	
COPPER- FREE	7/13/2013	109 UG/L	109	
COPPER- FREE	9/16/2013	84 UG/L	84	
COPPER- FREE	7/18/2016	55 UG/L	55	
COPPER- FREE	7/20/2016	91 UG/L	91	
COPPER- FREE	9/16/2013	87 UG/L	87	
COPPER- FREE	7/12/2013	87 UG/L	87	
COPPER- FREE	7/21/2016	60 UG/L	60	
COPPER- FREE	7/12/2013	79 UG/L	79	
COPPER- FREE	7/12/2013	90 UG/L	90	
COPPER- FREE	7/21/2016	87 UG/L	87	
COPPER- FREE	7/18/2016	91 UG/L	91	
COPPER- FREE	9/16/2013	93 UG/L	93	
COPPER- FREE	7/18/2016	136 UG/L	136	
COPPER- FREE	7/14/2013	81 UG/L	81	
COPPER- FREE	7/15/2013	58 UG/L	58	
COPPER- FREE	7/15/2013	60 UG/L	60	
COPPER- FREE	7/16/2013	76 UG/L	76	
COPPER- FREE	7/12/2013	79 UG/L	79	
COPPER- FREE	7/11/2013	54 UG/L	54	
COPPER- FREE	7/20/2016	71 UG/L	71	
COPPER- FREE	7/15/2013	58 UG/L	58	
COPPER- FREE	7/11/2013	59 UG/L	59	
COPPER- FREE	7/30/2012	62 UG/L	62	
DIELDRIN	7/8/2014	0.02 UG/L	0.02	
DIELDRIN	7/8/2014	0.02 UG/L	0.02	
FLUORIDE	2/19/2013	0.52 MG/L	0.52	4 MG/L
FLUORIDE	7/30/2012	0.5 MG/L	0.5	4 MG/L
FLUORIDE	5/14/2015	0.2 MG/L	0.2	4 MG/L
FLUORIDE	6/4/2013	0.73 MG/L	0.73	4 MG/L
FLUORIDE	5/28/2014	0.48 MG/L	0.48	4 MG/L
FLUORIDE	7/30/2012	0.62 MG/L	0.62	4 MG/L
FLUORIDE	2/19/2013	0.64 MG/L	0.64	4 MG/L
FLUORIDE	6/4/2013	0.65 MG/L	0.65	4 MG/L

FLUORIDE	5/28/2014	0.46 MG/L	0.46	4 MG/L
FLUORIDE	5/14/2015	0.62 MG/L	0.62	4 MG/L
FLUORIDE	2/19/2013	0.5 MG/L	0.5	4 MG/L
FLUORIDE	6/4/2013	0.7 MG/L	0.7	4 MG/L
FLUORIDE	5/28/2014	0.58 MG/L	0.58	4 MG/L
FLUORIDE	5/18/2016	0.53 MG/L	0.53	4 MG/L
GROSS BETA PARTICI	4/17/2012	2.4 PCI/L	2.4	4 MREMY
NITRATE	2/19/2013	0.6 MG/L	0.6	10 MG/L
NITRATE	9/6/2012	2.5 MG/L	2.5	10 MG/L
NITRATE	5/14/2015	2.1 MG/L	2.1	10 MG/L
NITRATE	5/18/2016	1.6 MG/L	1.6	10 MG/L
NITRATE	6/4/2013	0.6 MG/L	0.6	10 MG/L
NITRATE	5/28/2014	1 MG/L	1	10 MG/L
NITRATE	9/6/2012	0.59 MG/L	0.59	10 MG/L
NITRATE	2/19/2013	0.58 MG/L	0.58	10 MG/L
NITRATE	6/4/2013	0.58 MG/L	0.58	10 MG/L
NITRATE	5/28/2014	0.58 MG/L	0.58	10 MG/L
NITRATE	5/14/2015	0.55 MG/L	0.55	10 MG/L
NITRATE	5/18/2016	0.64 MG/L	0.64	10 MG/L
NITRATE	9/5/2012	0.6 MG/L	0.6	10 MG/L
NITRATE	2/19/2013	0.59 MG/L	0.59	10 MG/L
NITRATE	6/4/2013	0.59 MG/L	0.59	10 MG/L
NITRATE	5/28/2014	0.58 MG/L	0.58	10 MG/L
NITRATE	5/14/2015	0.57 MG/L	0.57	10 MG/L
NITRATE	5/18/2016	0.54 MG/L	0.54	10 MG/L
NITRATE-NITRITE	2/19/2013	0.6 MG/L	0.6	10 MG/L
NITRATE-NITRITE	9/6/2012	2.5 MG/L	2.5	10 MG/L
NITRATE-NITRITE	5/14/2015	2.1 MG/L	2.1	10 MG/L
NITRATE-NITRITE	5/18/2016	1.6 MG/L	1.6	10 MG/L
NITRATE-NITRITE	6/4/2013	0.6 MG/L	0.6	10 MG/L
NITRATE-NITRITE	5/28/2014	1 MG/L	1	10 MG/L
NITRATE-NITRITE	2/19/2013	0.58 MG/L	0.58	10 MG/L
NITRATE-NITRITE	9/6/2012	0.59 MG/L	0.59	10 MG/L
NITRATE-NITRITE	6/4/2013	0.58 MG/L	0.58	10 MG/L

NITRATE-NITRITE	5/28/2014	0.58 MG/L	0.58	10 MG/L
NITRATE-NITRITE	5/14/2015	0.55 MG/L	0.55	10 MG/L
NITRATE-NITRITE	5/18/2016	0.64 MG/L	0.64	10 MG/L
NITRATE-NITRITE	2/19/2013	0.59 MG/L	0.59	10 MG/L
NITRATE-NITRITE	9/5/2012	0.6 MG/L	0.6	10 MG/L
NITRATE-NITRITE	6/4/2013	0.59 MG/L	0.59	10 MG/L
NITRATE-NITRITE	5/28/2014	0.58 MG/L	0.58	10 MG/L
NITRATE-NITRITE	5/14/2015	0.57 MG/L	0.57	10 MG/L
NITRATE-NITRITE	5/18/2016	0.54 MG/L	0.54	10 MG/L
SODIUM	7/30/2012	57 MG/L	57	
SODIUM	2/19/2013	27 MG/L	27	
SODIUM	5/28/2014	55 MG/L	55	
SODIUM	7/30/2012	330 MG/L	330	
SODIUM	5/28/2014	51 MG/L	51	
SODIUM	2/19/2013	57 MG/L	57	
SODIUM	7/30/2012	28 MG/L	28	
SODIUM	5/28/2014	26 MG/L	26	
SODIUM	2/19/2013	27 MG/L	27	
SULFATE	7/30/2012	16 MG/L	16	
SULFATE	5/14/2015	46 MG/L	46	
SULFATE	5/18/2016	44 MG/L	44	
SULFATE	5/28/2014	17 MG/L	17	
SULFATE	7/30/2012	18 MG/L	18	
SULFATE	2/19/2013	19 MG/L	19	
SULFATE	6/4/2013	18 MG/L	18	
SULFATE	5/28/2014	17 MG/L	17	
SULFATE	5/14/2015	18 MG/L	18	
SULFATE	5/18/2016	17 MG/L	17	
SULFATE	7/30/2012	4.9 MG/L	4.9	
TTHM	10/16/2012	1 UG/L	1	80 UG/L
TTHM	2/19/2013	2.3 UG/L	2.3	80 UG/L
TTHM	5/20/2013	1.8 UG/L	1.8	80 UG/L
TTHM	8/15/2013	2 UG/L	2	80 UG/L
TTHM	11/12/2013	1.5 UG/L	1.5	80 UG/L

TTHM	2/11/2014	1.2 UG/L	1.2	80 UG/L
TTHM	5/20/2014	1 UG/L	1	80 UG/L
TTHM	5/12/2015	1.2 UG/L	1.2	80 UG/L
TTHM	8/18/2015	1.5 UG/L	1.5	80 UG/L
TTHM	11/17/2015	4.1 UG/L	4.1	80 UG/L
TTHM	11/18/2014	2.3 UG/L	2.3	80 UG/L
TTHM	2/17/2015	0.9 UG/L	0.9	80 UG/L
TTHM	2/11/2014	1.3 UG/L	1.3	80 UG/L
TTHM	10/16/2012	1.4 UG/L	1.4	80 UG/L
TTHM	2/19/2013	2.8 UG/L	2.8	80 UG/L
TTHM	5/20/2013	2.6 UG/L	2.6	80 UG/L
TTHM	8/15/2013	2.9 UG/L	2.9	80 UG/L
TTHM	11/12/2013	3.1 UG/L	3.1	80 UG/L
TTHM	2/11/2014	4.9 UG/L	4.9	80 UG/L
TTHM	5/20/2014	2.4 UG/L	2.4	80 UG/L
TTHM	5/12/2015	1.5 UG/L	1.5	80 UG/L
TTHM	8/18/2015	2.5 UG/L	2.5	80 UG/L
TTHM	11/17/2015	5.9 UG/L	5.9	80 UG/L
TTHM	2/17/2016	1.7 UG/L	1.7	80 UG/L
TTHM	2/14/2017	8.6 UG/L	8.6	80 UG/L
TTHM	8/12/2014	3.2 UG/L	3.2	80 UG/L
TTHM	11/18/2014	4.4 UG/L	4.4	80 UG/L
TTHM	2/17/2015	2.8 UG/L	2.8	80 UG/L
TTHM	10/16/2012	2.5 UG/L	2.5	80 UG/L
TTHM	2/19/2013	5 UG/L	5	80 UG/L
TTHM	5/20/2013	3.5 UG/L	3.5	80 UG/L
TTHM	8/15/2013	4.4 UG/L	4.4	80 UG/L
TTHM	11/12/2013	1.4 UG/L	1.4	80 UG/L
TTHM	2/11/2014	2.1 UG/L	2.1	80 UG/L
TTHM	5/20/2014	4.5 UG/L	4.5	80 UG/L
TTHM	5/12/2015	0.8 UG/L	0.8	80 UG/L
TTHM	8/18/2015	7.1 UG/L	7.1	80 UG/L
TTHM	11/17/2015	14.9 UG/L	14.9	80 UG/L
TTHM	2/17/2016	4.1 UG/L	4.1	80 UG/L

TTHM	2/14/2017	2.2 UG/L	2.2	80 UG/L
TTHM	8/12/2014	16.6 UG/L	16.6	80 UG/L
TTHM	11/18/2014	11.7 UG/L	11.7	80 UG/L
TTHM	2/17/2015	6.7 UG/L	6.7	80 UG/L
TTHM	7/30/2012	35 UG/L	35	80 UG/L

Water Treatment Plant Classification

- ☐ Class 1 - Slow sand filtration; chemical addition, such as for chlorination, fluoridation, pH control, or corrosion control; granular activated carbon filtration; or packed aeration towers or air stripping towers
- ☐ Class 2 - Membrane filtration; cartridge filtration; or desalting (including distillation, electrodialysis, and reverse osmosis)
- ☐ Class 3 - Diatomaceous earth filtration, or package plants with diatomaceous earth filtration
- ☐ Class 4 - Conventional treatment; direct filtration; or package treatment plants with conventional treatment or direct filtration

Note: Chlorination and/or fluoridation facilities only can be operated by either certified WTPOs or DSOs.

Distribution System Classification

- ☐ Class 1 - Serves water systems with a population of 1,500 or less persons
- ☐ Class 2 - Serves water systems with a population of 1,501 to 15,000 persons
- ☐ Class 3 - Serves water systems with a population of 15,001 to 50,000 persons
- ☒ Class 4 - Serves water systems with a population of over 50,000 persons

Name	Cert #	Exp
WTPO(s) in Responsible Charge		

Name	Cert #	Exp
DSO(s) in Responsible Charge		
Cain	David M.	D4-005 11/30/2017
Nehl	Leonard J.	D4-048 11/30/2018

Other WTPO(s) operating the system

Other DSO(s) operating the system			
Gamboa	Anthony	D4-077	11/30/2017
Garcia	Flynn	D4-114	11/30/2017
Paulino	Alfred	D1-311	11/30/2018
Vogt	Eric	D1-313	11/30/2018

Due January 29, 2016

☐ Changes noted

OR

☐ No changes

by Mail: Hawaii Department of Health

by Email: jodi.yamami@doh.hawaii.gov

by Fax: 808-586-4351

Safe Drinking Water Branch

919 Ala Moana Blvd., Room 308

Honolulu, HI 96814

Sanitary Survey

Joint Base Pearl Harbor-Hickam

PWS 360

April 4-5, 2017



Halawa Shaft site



Halawa Shaft site



Halawa Shaft site



Halawa Shaft site



Halawa Shaft site (booster pumps for Camp Smith)



Halawa Shaft site



Halawa Shaft site



Halawa Shaft site



Halawa Shaft site



Halawa Shaft site



Red Hill Shaft site



Red Hill Shaft site



Red Hill Shaft site



Red Hill Shaft site



Red Hill Shaft site



Red Hill Shaft site



Red Hill Shaft site



Red Hill Shaft site



Red Hill Shaft site



Red Hill Shaft site (Red Hill Booster Pumps)



Red Hill Shaft site



Red Hill Shaft site



Red Hill Tank. Unapproved tank (white) under construction.



S-325 and S-326 Tank site



S-326 Tank



S-325 Tank



S-325 Tank



S-325 Tank



S-325 Tank



S-326 Tank



S-326 Tank



S-326 Tank



S-326 Tank



S-327 Tank



Camp Smith Booster Pump Station



Camp Smith Booster Pump Station



Camp Smith Booster Pump Station



Camp Smith Booster Pump Station

Camp Smith Emergency Booster System Log

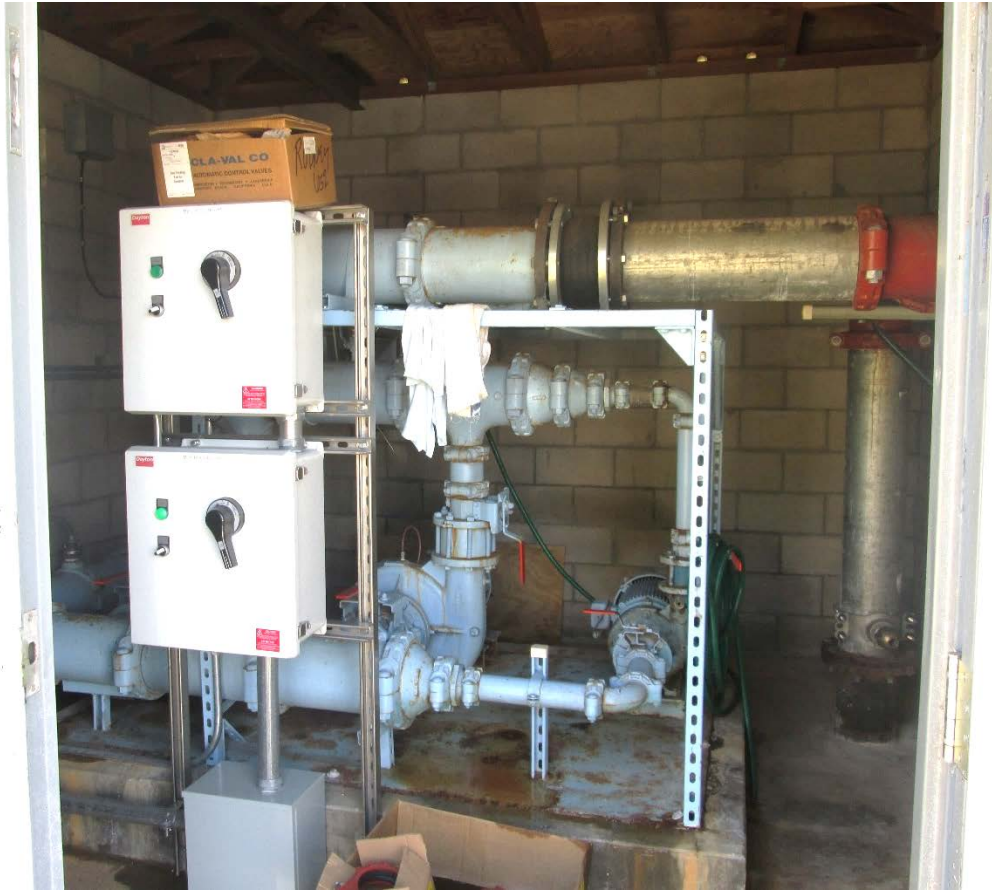
DATE	TIME	BSTR PUMP RUN HOURS	SUCTION PSI	DISC. PSI	SYSTEM PSI	CL2 PUMP STROKE	CL2 PUMP SPEED	CL2 RESIDUAL	CL2 TANK LEVEL	OPERATOR	NOTES
10/17/17	1700	2.85	20	340	80			40	3/4	AL	12" WATER BREAK
10/17/17	0810	2.91	20	400	?						
	0810	2.92	27	400	?						
	1010	2.93	28	400	?						
	1110	2.94	28	400	?						
	1243	2.95	28	470	?						
10/17	1400	2.97	20	340	140						
	1400	2.99	18	340	140						
	1700	3.00	28	420	400						
	1750	3.01	28	340	?	12" OUTSIDE FENCE AREA				2.00	SEVERED FENCE POST

NOTES:

Camp Smith Booster Pump Station



Moanalua Terrace Booster Pump Station



Moanalua Terrace Booster Pump Station



Moanalua Terrace Booster Pump Station



Moanalua Terrace Booster Pump Station



S-2 Tank



S-2 Tank



S-2 Tank



S-2 Tank



S-2 Tank



S-2 Tank



S-2 Tank



S-1 Tank



S-1 Tank



S-1 Tank



S-1 Tank



Manana Booster Pump Station



Manana Booster Pump Station



Waiawa Shaft site



Waiawa Shaft site



Waiawa Shaft site



Waiawa Shaft site



Waiawa Shaft site



Waiawa Shaft site



Waiawa Shaft site



Waiawa Shaft site



Waiawa Shaft site



Waiawa Shaft site

Significant Deficiencies



Halawa Shaft: confirm that the shaft viewing hatch has a gasket between the cover and the frame curb.



Halawa Shaft: confirm that the opening into the shaft where the pump and motor was permanently removed from service is sealed.



Waiawa Shaft: confirm that the shaft viewing hatch has a gasket between the cover and the frame curb.



Red Hill Shaft: an ARV on the discharge pipe is pointed sideways and does not have an insect screen. ARV should be pointed down and covered with an insect screen.



Red Hill Shaft: an ARV on the discharge pipe is pointed up and should be pointed down.



Red Hill Shaft: square baseplate on MP4's baseplate has a gap and should be sealed.



Red Hill Shaft: the sodium fluoride container has open holes on top and should be sealed.



Red Hill Tank: an insect screen is missing from the vent.



Manana Booster Pump Station: ARV pointing sideways and should be pointed down.



Halawa S-1 Tank: there are gaps between the flanges of the vent screen and the pedestal (daylight was seen through this gap)

From: Teraoka, Kyle Y CIV NAVFAC HI, OPHP611
To: [Carey, Alain](#)
Cc: [Mohandie, Ravi K CIV NAVFAC HI, EV1](#); [Kawamura, Randy A CIV OPHP6, OPHP61](#)
Subject: RE: Sanitary Survey PWS No. 360 Pearl Harbor - Response to DOH
Date: Tuesday, September 5, 2017 2:00:54 PM
Attachments: [Sanitary Survey JBPHH 2017 Addressed Deficiencies.docx](#)

Alain,

Hi! I've added a photo to item 9. There is a black "plastic plug" in place at the center of the top of the vent on the Red Hill Tank, that can be seen in the added photo. This may have been hard to make out on the wide view photo of the vent top. Thank you!

Kyle

-----Original Message-----

From: Teraoka, Kyle Y CIV NAVFAC HI, OPHP611
Sent: Friday, September 01, 2017 1:19 PM
To: Carey, Alain <Alain.Carey@doh.hawaii.gov> (Alain.Carey@doh.hawaii.gov)
Cc: Mohandie, Ravi K CIV NAVFAC HI, EV1; Kawamura, Randy A CIV OPHP6, OPHP61
Subject: FW: Sanitary Survey PWS No. 360 Pearl Harbor - Response to DOH

Alain,

Hi! I've updated the photos for items 6 and 9. The original photo for item 6 showed a vent from Tank S-2, instead of Tank S-1. Additional photos were added to item 9 to show that the vent was indeed from the Red Hill Tank. Please let me know if you have any additional questions or concerns. Thank you!

Kyle

-----Original Message-----

From: Teraoka, Kyle Y CIV NAVFAC HI, OPHP611
Sent: Friday, September 01, 2017 9:47 AM
To: 'Carey, Alain'
Cc: Mohandie, Ravi K CIV NAVFAC HI, EV1; Kawamura, Randy A CIV OPHP6, OPHP61
Subject: RE: Sanitary Survey PWS No. 360 Pearl Harbor - Response to DOH

Alain,

Hi! I have someone going out to check on those two items, and to take better pictures. Will forward to you when they report back to me. Thank you!

Kyle

-----Original Message-----

From: Carey, Alain [<mailto:Alain.Carey@doh.hawaii.gov>]
Sent: Friday, September 01, 2017 9:18 AM
To: Teraoka, Kyle Y CIV NAVFAC HI, OPHP611
Cc: Mohandie, Ravi K CIV NAVFAC HI, EV1; Kawamura, Randy A CIV OPHP6, OPHP61
Subject: [Non-DoD Source] RE: Sanitary Survey PWS No. 360 Pearl Harbor - Response to DOH

Kyle,

Thank you for the follow up documentation. I have a couple of questions/comments:

1. For item 6 in your Excel file, the screened vent shown in the photo doesn't appear to be the vent for Halawa S-1 Tank. The vent for S-1 is octagonal shaped, not round, and is placed at the center of the roof.
2. For item 9 in your Excel file, can you confirm that the photo is the Red Hill Tank (the existing tank next to the new tank that was under construction at the time of the survey). The screen and the vent in the photo appears to be old, whereas, the Red Hill tank's vent was relatively new.

Thanks,
Alain

-----Original Message-----

From: Teraoka, Kyle Y CIV NAVFAC HI, OPHP611 [<mailto:kyle.teraoka@navy.mil>]

Sent: Thursday, August 31, 2017 2:00 PM

To: Carey, Alain <Alain.Carey@doh.hawaii.gov>

Cc: Mohandie, Ravi K CIV NAVFAC HI, EV1 <ravi.mohandie@navy.mil>; Kawamura, Randy A CIV OPHP6, OPHP61 <randy.kawamura@navy.mil>

Subject: Sanitary Survey PWS No. 360 Pearl Harbor - Response to DOH

Alain,

Hi! Please find attached NAVFAC HI documentation of corrected deficiencies found during the 2017 Sanitary Survey of Joint Base Pearl Harbor - Hickam. Attached is a pdf of the response that is being mailed to DOH. Also attached are the table of deficiencies, and photographs of the corrected deficiencies, which are part of the response to DOH, but may be hard to see in the pdf. Please contact me if you have any questions or concerns. Thank you!
Kyle.

Kyle Teraoka, P.E.
Water Commodity Engineer
NAVFAC Hawaii OPC61
Utilities & Energy Management Division
Potable Water Branch
ph: (808) 473-3160
cell: (808) 330-0276
fax: (808) 473-1545
email: kyle.teraoka@navy.mil

From: Teraoka, Kyle Y CIV NAVFAC HI, OPHP611
To: [Carey, Alain](#)
Cc: [Mohandie, Ravi K CIV NAVFAC HI, EV1](#); [Kawamura, Randy A CIV OPHP6, OPHP61](#)
Subject: Sanitary Survey PWS No. 360 Pearl Harbor - Response to DOH
Date: Thursday, August 31, 2017 2:00:31 PM
Attachments: [JBPHH 2017 Sanitary Survey Response to DOH.pdf](#)
[Sanitary Survey Pearl Harbor 2017 Deficiencies.xls](#)
[Sanitary Survey JBPHH 2017 Addressed Deficiencies.docx](#)

Alain,

Hi! Please find attached NAVFAC HI documentation of corrected deficiencies found during the 2017 Sanitary Survey of Joint Base Pearl Harbor - Hickam. Attached is a pdf of the response that is being mailed to DOH. Also attached are the table of deficiencies, and photographs of the corrected deficiencies, which are part of the response to DOH, but may be hard to see in the pdf. Please contact me if you have any questions or concerns. Thank you!
Kyle.

Kyle Teraoka, P.E.
Water Commodity Engineer
NAVFAC Hawaii OPC61
Utilities & Energy Management Division
Potable Water Branch
ph: (808) 473-3160
cell: (808) 330-0276
fax: (808) 473-1545
email: kyle.teraoka@navy.mil

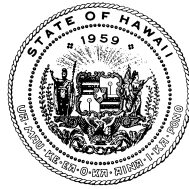
From: Teraoka, Kyle Y CIV NAVFAC HI, OPHP611
To: [Carey, Alain](#)
Cc: [Mohandje, Ravi K CIV NAVFAC HI, EV1](#); [Rego, Rodney W CIV NAVFAC HI, OPHP611](#); [Kawamura, Randy A CIV OPHP6, OPHP61](#)
Subject: Sanitary Survey PWS No. 360 Pearl Harbor - Response to Findings
Date: Tuesday, June 06, 2017 11:22:36 AM
Attachments: [Sanitary Survey Pearl Harbor 2017 Deficiencies.xls](#)
[CS BWS BFP Cert 1 of 2.pdf](#)
[CS BWS BFP Cert 2 of 2.pdf](#)
[Sanitary Survey JBPHH 2017 Addressed Deficiencies.docx](#)

Alain,

Hi! Following up on our conversation yesterday regarding the Sanitary Survey for JBPHH, attached is a spreadsheet listing the deficiencies found, status, and the timeline we will meet to address "incomplete" deficiencies. Also attached is documentation in regards to the items that are listed as "complete" on the spreadsheet. Please let me know if you have any questions or concerns. Thank you!

Kyle

Kyle Teraoka, P.E.
Water Commodity Engineer
NAVFAC Hawaii OPC61
Utilities & Energy Management Division
Potable Water Branch
ph: (808) 473-3160
cell: (808) 330-0276
fax: (808) 473-1545
email: kyle.teraoka@navy.mil



STATE OF HAWAII
DEPARTMENT OF HEALTH
SAFE DRINKING WATER BRANCH
919 ALA MOANA BLVD., ROOM 308
HONOLULU, HI 96814-4920

In reply, please refer to:
File: SDWB
360M0517.docx

May 2, 2017

Commander, Navy Region Hawaii
Attn: Code N45, Aaron Poentis
Regional Environmental Department
850 Ticonderoga St., Suite 110
JBPHH, HI 96860-5101
[via aaron.poentis@navy.mil only]

Dear Mr. Poentis:

SUBJECT: REPORT OF SANITARY SURVEY
PUBLIC WATER SYSTEM NO. 360 PEARL HARBOR

Thank you for the assistance and information provided during the sanitary survey inspection of the Pearl Harbor water system conducted on April 4-5, 2017.

My staff appreciated the assistance provided by Messrs. Ravi Mohandie, Kyle Teraoka, Flynn Garcia, and Dave Cain and Ms. Lynn Malingier.

A sanitary survey of a public water system is a periodic review of the system's facilities, operation and maintenance practices, and records to assure that proper conditions, policies, and practices are in effect for that water system. Maintaining of minimum standards of operation and maintenance is the responsibility of the operator.

As of December 1, 2009, systems must comply with the sanitary survey requirements of the Ground Water Rule (GWR). The Rule requires ground water systems with an identified "**significant deficiency**" to consult with the State on a corrective action plan and schedule of completion within 30 days of receiving written notice of the deficiency. The system must complete the corrective actions or be in compliance with the agreed upon corrective action plan and completion schedule within 120 days of receiving written notice of the deficiency. The following is a list of significant deficiencies found:

1. Provide evidence of the latest testing of the backflow preventer between Camp Smith Booster Pump Station and the Board of Water Supply emergency connection.

2. Halawa Shaft:
 - a. provide photo documentation that the shaft viewing hatch has a gasket between the cover and the frame curb.
 - b. provide photo documentation that the opening into the shaft where the pump and motor was permanently removed from service is sealed.
3. Waiawa Shaft: provide photo documentation that the shaft viewing hatch has a gasket between the cover and the frame curb.
4. Red Hill Shaft
 - a. an ARV on the discharge pipe is pointed up and should be pointed down.
 - b. an ARV on the discharge pipe is pointed sideways and does not have an insect screen. ARV should be pointed down and covered with an insect screen.
 - c. the sodium fluoride container has open holes on top and should be sealed.
 - d. square baseplate on MP4's baseplate has a gap and should be sealed.
5. Manana Booster Pump Station: ARV pointing sideways and should be pointed down.
6. Halawa S-1 Tank: there are gaps between the flanges of the vent screen and the pedestal (daylight was seen through this gap).
7. S-325 Tank: vents on the tank are inadequately screened to prevent insects from entering the tank. The vents should be wrapped with an insect screen.
8. S-327 Tank: the second access hatch (not in front of the ladder) was unable to be opened. Please confirm the presence of a gasket between the hatch cover and frame curb.
9. Red Hill Tank:
 - a. an insect screen is missing from the vent.
 - b. HAR 11-20-30 requires all substantial modifications to a non-county public water system to be approved by the Department of Health prior to when the modifications are made. **Please submit construction plans for the new tank being constructed at this site.**

As of January 1, 2014, photo documentation of all corrected significant deficiencies is required. The Safe Drinking Water Branch (SDWB) reserves the right to conduct follow up inspections as necessary.

Commander, Navy Region Hawaii
Attn: Code N45, Aaron Poentis
May 2, 2017
Page 3

The Department of Health (DOH) also requests that the system review the list of “recommendations” (non-significant deficiencies) below and provide written acknowledgement that they will address them in a timely manner, to the extent that resources and operations will allow. We strongly encourage the system to address “recommendations” as you would significant deficiencies to avoid related problems in the future. The DOH will be using the list of significant deficiencies and recommendations as a reference and benchmark for measuring system progress in future sanitary surveys.

The following are the recommendations:

1. S-1 Tank: vault pits should be cleared of vegetation and other debris.
2. S-2 Tank: rusting on roof should be repaired.

If there are any questions, please call Mr. Alain Carey of the SDWB Engineering Section at 586-4258.

Sincerely,



JOANNA L. SETO, P.E., CHIEF
Safe Drinking Water Branch

AC:cw

c: Ravi Mohandie, NAVFAC Hawaii [via ravi.mohandie@navy.mil only]