Final
Fourth Quarter 2013 - Quarterly Groundwater Monitoring Report Outside Tunnel Wells

Red Hill Bulk Fuel Storage Facility
Joint Base Pearl Harbor-Hickam, Oahu, Hawaii

DOH Facility ID: 9-102271
DOH Release ID: 990051, 010011, and 020028

January 2014

Department of the Navy
Naval Facilities Engineering Command, Hawaii
400 Marshall Road
JBPHH, HI 96860-3139

Contract Number N62742-12-D-1853, CTO 0002

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Prepared for:

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Prepared under:

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FINAL
FOURTH QUARTER 2013 - QUARTERLY GROUNDWATER MONITORING REPORT
OUTSIDE TUNNEL WELLS
RED HILL BULK FUEL STORAGE FACILITY

Long-Term Groundwater and Soil Vapor Monitoring
Red Hill Bulk Fuel Storage Facility
Joint-Base Pearl Harbor-Hickam, Oahu, Hawaii

Prepared for:
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Contract Task Order: 0002

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ACRONYMS AND ABBREVIATIONS

ACRONYMS/ ABBREVIATIONS	DEFINITION/MEANING
%	percent
COPC	Contaminant of Potential Concern
DLNR	State of Hawaii Department of Land and Natural Resources
DOH	State of Hawaii Department of Health
DON	Department of the Navy
EAL	Environmental Action Level
EPA	Environmental Protection Agency
ESI	Environmental Science International
F-76	Marine Diesel Fuel
ID	Identification
JBPHH	Joint Base Pearl Harbor-Hickam
JP-5	Jet Fuel Propellant-5
JP-8	Jet Fuel Propellant-8
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection
LOQ	Limit of Quantitation
µg/L	micrograms per liter
MS	Matrix Spike
MSD	Matrix Spike Duplicate
NAVFAC	Naval Facilities Engineering Command
NAVSUP FLC	Naval Supply Systems Command Fleet Logistics Center
N.D.	Not Detected
PAH	Polycyclic Aromatic Hydrocarbons
PARCCS	Precision, Accuracy, Representativeness, Completeness, Comparability, and Sensitivity
pH	hydrogen activity
QC	Quality Control
RHSF	Red Hill Bulk Fuel Storage Facility
RPD	Relative Percent Difference
SAP	Sampling and Analysis Plan
TEC	The Environmental Company, Inc.
TPH-d	Total Petroleum Hydrocarbons as diesel
TPH-g	Total Petroleum Hydrocarbons as gasoline
U.S.	United States of America
UST	Underground Storage Tank
VOC	Volatile Organic Compounds
WP	Work Plan

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EXECUTIVE SUMMARY

This quarterly monitoring report presents the results of the fourth quarter 2013 groundwater sampling event conducted on October 23, 2013, at the outside tunnel wells of the Red Hill Bulk Fuel Storage Facility [RHSF], Joint Base Pearl Harbor-Hickam [JBPHH], Hawaii. The RHSF is located in Halawa Heights on the Island of Oahu. There are 18 active and 2 inactive underground storage tanks [USTs] located at the RHSF. The State of Hawaii Department of Health [DOH] Facility Identification [ID] number is 9-102271. The DOH Release ID numbers are 990051, 010011, and 020028.

The groundwater sampling was conducted as part of the long-term groundwater and soil vapor monitoring at the RHSF, under Naval Facilities Engineering Command [NAVFAC] Contract Number N62742-12-D-1853. The sampling was conducted in accordance with the approved Work Plan [WP]/Sampling and Analysis Plan [SAP] prepared by Environmental Science International [ESI].

On October 23, 2013, ESI personnel collected groundwater samples from two outside tunnel monitoring wells (wells HDMW2253-03 and OWDFMW01). A summary of the analytical results is provided below.

- **HDMW2253-03** – TPH-g (15 µg/L) and naphthalene (0.041 µg/L) were detected. The COPCs were not detected at concentrations above the DOH EALs.

- **OWDFMW01** – TPH-d (170 and 200 µg/L), TPH-g (17 and 14 µg/L), and acetone (44 and 38 µg/L) were detected in both the primary and duplicate samples. Benzene (0.17 µg/L) was only detected in the duplicate sample. TPH-d (170 and 200 µg/L) was detected at concentrations above the DOH EALs for both drinking water toxicity and gross contamination in the duplicate sample and for only gross contamination in the primary sample.

TPH-g was detected in the method and trip blanks at concentrations of 21 and 24 µg/L, respectively. Because of this, it is likely that the TPH-g concentrations detected in the groundwater samples are all biased high.

TPH-d was not detected in well HDMW2253-03 during this round of quarterly sampling. TPH-d concentrations last exceeded the DOH EALs for both drinking water toxicity and gross contamination in January 2013 (600 µg/L). Naphthalene was detected but remained at a low concentration, below the DOH EALs and consistent with historical results.

With the exception of TPH-d in well OWDFMW01, groundwater contaminant concentrations remained at low concentrations and did not change significantly, or were not detected. TPH-d concentrations detected during this round of sampling were above the DOH EALs for gross contamination (the TPH-d concentration in the duplicate sample was also above the drinking

water EAL), but decreased significantly from the last event, and were the lowest they have been since July 2012.

Based on the results of the assessment, continued groundwater monitoring at the RHSF is recommended. If the TPH-d concentrations significantly increase, the monitoring frequency should be increased to monthly, even though the two outside wells are not included in the RHSF Groundwater Protection Plan.

SECTION 1 – INTRODUCTION

This quarterly monitoring report presents the results of the fourth quarter 2013 groundwater sampling event conducted on October 23, 2013, at the outside tunnel wells of the RHSF, JBPHH, Hawaii. The RHSF is located in Halawa Heights on the Island of Oahu. The purpose of the sampling is to (1) assess the condition of groundwater beneath and in the vicinity of the RHSF with respect to chemical constituents associated with jet fuel propellant and marine diesel fuel, and (2) to ensure the Navy remains in compliance with DOH UST release response requirements as described in Hawaii Administrative Rules 11-281 Subchapter 7, Release Response Action (DOH, 2000). The DOH Facility ID number for the RHSF is 9-102271. The DOH Release ID numbers are 990051, 010011, and 020028.

The groundwater sampling was conducted as part of the long-term groundwater and soil vapor monitoring at the RHSF, under NAVFAC Contract Number N62742-12-D-1853. The sampling was conducted in accordance with the approved WP/SAP prepared by ESI (ESI, 2012).

1.1 SITE DESCRIPTION

The RHSF is located on federal government land (zoned F1- Military and Federal), located in Halawa Heights, approximately 2.5 miles northeast of Pearl Harbor (Figure 1). It is located on a low ridge on the western edge of the Koolau Mountain Range that divides Halawa Valley from Moanalua Valley. The RHSF is bordered on the north by Halawa Correctional Facility and private businesses, on the west by the United States of America [U.S.] Coast Guard reservation, on the south by residential neighborhoods, and on the east by Moanalua Valley. A quarry is located less than a quarter mile away to the northwest. The RHSF occupies 144 acres of land and the majority of the site is at an elevation of approximately 200 to 500 feet above mean sea level.

The RHSF contains 18 active and 2 inactive USTs, which are operated by Naval Supply Systems Command Fleet Logistics Center [NAVSUP FLC] Pearl Harbor (formerly Fleet and Industrial Supply Center). Each UST has a capacity of approximately 12.5 million gallons. The RHSF is located approximately 100 feet above the basal aquifer. The USTs contain Jet Fuel Propellant-5 [JP-5], Jet Fuel Propellant-8 [JP-8], and Marine Diesel Fuel [F-76]. The current status of each of the USTs is summarized in Table 1.1.

Two groundwater monitoring wells (well HDMW2253-03 and OWDFMW01) are located outside of the RHSF tunnel system (Figure 2). Well HDMW2253-03 is located at the Halawa Correctional Facility (outside the RHSF) and well OWDFMW01 is located at the Oily Waste Disposal Facility near Adit 3. Five groundwater monitoring wells (wells RHMW01, RHMW02, RHMW03, RHMW05, and RHMW2254-01) are located within the RHSF lower access tunnel. Monitoring data for the five wells located inside the tunnel are included in a separate report.

Monitoring wells RHMW01, RHMW02, RHMW03, and RHMW05 are located inside the underground tunnels. Monitoring well RHMW2254-01 is located inside the infiltration gallery of

the Department of the Navy [DON] Well 2254-01. DON Well 2254-01 is located approximately 2,400 feet downgradient of the USTs and provides approximately 24 percent [%] of the potable water to the Pearl Harbor System, which serves approximately 52,200 military customers. NAVFAC Public Works Department operates the infiltration gallery and DON Well 2254-01.

TABLE 1.1
Current Status of the USTs
Red Hill Bulk Fuel Storage Facility
April 2013 Quarterly Monitoring Report

Tank Identification	Fuel Type	Status	Capacity
F-1	None	Inactive	12.5 million gallons
F-2	JP-8	Active	12.5 million gallons
F-3	JP-8	Active	12.5 million gallons
F-4	JP-8	Active	12.5 million gallons
F-5	JP-8	Active	12.5 million gallons
F-6	JP-8	Active	12.5 million gallons
F-7	JP-5	Active	12.5 million gallons
F-8	JP-5	Active	12.5 million gallons
F-9	JP-5	Active	12.5 million gallons
F-10	JP-5	Active	12.5 million gallons
F-11	JP-5	Active	12.5 million gallons
F-12	JP-5	Active	12.5 million gallons
F-13	F-76	Active	12.5 million gallons
F-14	F-76	Active	12.5 million gallons
F-15	F-76	Active	12.5 million gallons
F-16	F-76	Active	12.5 million gallons
F-17	JP-5	Active	12.5 million gallons
F-18	JP-5	Active	12.5 million gallons
F-19	None	Inactive	12.5 million gallons
F-20	JP-5	Active	12.5 million gallons

F-76 Marine Diesel Fuel
JP-5 Jet Fuel Propellant-5
JP-8 Jet Fuel Propellant-8

1.2 PHYSICAL SETTINGS

Climatological conditions in the area of the RHSF consist of warm to moderate temperatures and low to moderate rainfall. The RHSF is leeward of the prevailing northeasterly trade winds. The average annual precipitation is approximately 40 inches, which occurs mainly between November and April (State of Hawaii Department of Land and Natural Resources [DLNR], 1986). Annual pan evaporation is approximately 75 inches (DLNR, 1985). Average temperatures range from the low 60's to high 80's (degrees Fahrenheit) (Atlas of Hawaii, 1983).

Oahu consists of the eroded remnants of two shield volcanoes, Waianae and Koolau. The RHSF is located on the southwest flank of the Koolau volcanic shield. Lavas erupted during the shield-building phase of the volcano belong to the *Koolau Volcanic Series* (Stearns and Vaksvik, 1935). Following formation of the Koolau shield, a long period of volcanic quiescence occurred, during which the shield was deeply eroded. Following this erosional period, eruptive activity resumed. Lavas and pyroclastic material erupted during this period belong to the *Honolulu Volcanic Series* (Stearns and Vaksvik, 1935).

In the immediate area of the RHSF, Koolau Volcanic Series lavas dominate, although there are consolidated and unconsolidated non-calcareous deposits in the vicinity that consist of alluvium generated during erosion of the Koolau volcanic shield. South-southwest of the Site, and in isolated exposures to the west, are pyroclastic deposits formed during eruptions from three Honolulu Volcanic Series vents, Salt Lake, Aliamanu, and Makalapa (Stearns and Vaksvik, 1935). Based on established geology and records of the drilled wells (Stearns and Vaksvik, 1938), the RHSF is underlain by Koolau Volcanic Series basalts. The area of the RHSF is classified as *Rock Land*, where 25 to 90% of the land surface is covered by exposed rock and there are only shallow soils (Foote, et al., 1972).

Groundwater in Hawaii exists in two principal types of aquifers. The first and most important type, in terms of drinking water resources, is the basal aquifer. The basal aquifer exists as a lens of fresh water floating on and displacing seawater within the pore spaces, fractures, and voids of the basalt that forms the underlying mass of each Hawaiian island. In parts of Oahu, groundwater in the basal aquifer is confined by the overlying caprock and is under pressure. Waters that flow freely to the surface from wells that tap the basal aquifer are referred to as *artesian*.

The second type of aquifer is the caprock aquifer, which consists of various kinds of unconfined and semi-confined groundwater. Commonly, the caprock consists of a thick sequence of nearly impermeable clays, coral, and basalt, which separates the caprock aquifer from the basal aquifer. The impermeable nature of these materials and the artesian nature of the basal aquifer severely restrict the downward migration of groundwater from the upper caprock aquifer. In the area of the RHSF, there is no discernible caprock.

Groundwater in the area of the RHSF is part of the *Waimalu Aquifer System* of the *Pearl Harbor Aquifer Sector.* The aquifer is classified as a basal, unconfined, flank-type; and is currently used as a drinking water source. The aquifer is considered fresh with less than 250 milligrams per liter of chloride and is considered an irreplaceable resource with a high vulnerability to contamination (Mink and Lau, 1990).

The nearest drinking water supply well is the DON Well 2254-01, located in the infiltration gallery within the RHSF. DON Well 2254-01 is located approximately 2,400 feet downgradient of the USTs (Figure 2).

1.3 BACKGROUND

The RHSF was constructed by the U.S. Government in the early 1940s. Twenty USTs and a series of tunnels were constructed to supply fuel to the Navy. The USTs were constructed of steel and they currently contain JP-5, JP-8, and F-76. Several tanks in the past have stored DON special fuel oil, DON distillate, aviation gasoline, and motor gasoline (Environet, 2010). The fueling system is a self-contained underground unit that was installed into native rock comprised primarily of basalt with some interbedded tuffs and breccias (Environet, 2010). Each

UST measures approximately 245 feet in height and 100 feet in diameter. The upper domes of the tanks lie at depths varying between 100 feet and 200 feet below ground surface.

In response to increasing concentrations of COPCs in the groundwater monitoring wells within the facility (specifically RHMW02) during the 2008 sampling events, quarterly groundwater monitoring was initiated in 2009 at the outside tunnel wells.

In 2009, groundwater samples were collected from wells RHMW04, OWDFMW01, and HDMW2253-03. Samples were collected in August and October 2009. None of the COPCs were detected at concentrations exceeding the gross contamination or drinking water toxicity DOH EALs.

In 2010, groundwater samples were collected from wells RHMW04, OWDFMW01, and HDMW2253-03. Samples were collected from well RHMW04 in January and April 2010. Samples were collected from well OWDFMW01 in January, April, and October 2010. Samples were collected from well HDMW2253-03 in January, April, July and October 2010. The COPCs concentrations exceeding DOH EALs are summarized below.

- **HDMW2253-03** – TPH-d was detected at a concentration above the gross contamination and drinking water toxicity DOH EAL in January 2010 (The Environmental Company, Inc. [TEC], 2010a).
- **OWDFMW01** – TPH-d was detected at a concentration above the gross contamination and drinking water toxicity DOH EALs in January and April 2010 (TEC, 2010a; TEC, 2010b).

In 2011, groundwater samples were collected from wells OWDFMW01 and HDMW2253-03. Samples were collected in January, April, July, and October 2011. None of the COPCs were detected at concentrations exceeding the gross contamination or drinking water toxicity DOH EALs.

In 2012, groundwater samples were collected from wells OWDFMW01 and HDMW2253-03. Samples were collected in January, April, July, and November 2012. TPH-d was detected at a concentration above the DOH EALs in samples collected from wells HDMW2253-03 and OWDFMW01 (Environet, 2012; ESI, 2013a). The COPCs concentrations exceeding DOH EALs are summarized below.

- **HDMW2253-03** – TPH-d was detected at a concentration above the DOH EALs for gross contamination and drinking water toxicity in April and November 2012.
- **OWDFMW01** – TPH-d was detected at a concentration above the DOH EALs for gross contamination and drinking water toxicity in April 2012.

In January 2013, groundwater samples were collected from wells OWDFMW01 and HDMW2253-03 (ESI 2013b). TPH-d was detected at a concentration above the DOH EALs in samples collected from wells HDMW2253-03 and OWDFMW01. The COPCs concentrations exceeding DOH EALs are summarized below.

- **HDMW2253-03** – TPH-d was detected at a concentration above the DOH EALs for gross contamination and drinking water toxicity in January 2013.
- **OWDFMW01** – TPH-d was detected at a concentration above the DOH EALs for gross contamination and drinking water toxicity in January 2013.

In April 2013, groundwater samples were collected from wells OWDFMW01 and HDMW2253-03 (ESI 2013c). TPH-d was detected at a concentration above the DOH EALs in samples collected from well OWDFMW01. The COPC concentrations exceeding DOH EALs are summarized below.

- **OWDFMW01** – TPH-d was detected at a concentration above the DOH EALs for gross contamination and drinking water toxicity in April 2013.

In July 2013, groundwater samples were collected from wells OWDFMW01 and HDMW2253-03 (ESI 2013d). TPH-d was detected at a concentration above the DOH EALs in samples collected from well OWDFMW01. The COPC concentrations exceeding DOH EALs are summarized below.

- **OWDFMW01** – TPH-d was detected at a concentration above the DOH EALs for gross contamination and drinking water toxicity in July 2013.

1.3.1 Previous Reports

The following groundwater monitoring reports were previously submitted to the DOH:

1. Groundwater Monitoring Report, August 2009 (submitted September 2009).
2. Groundwater Monitoring Report, October 2009 (submitted December 2009).
3. Groundwater Monitoring Report, January, 2010 (submitted April 2010).
4. Groundwater Monitoring Report, April 2010 (submitted May 2010).
5. Groundwater Monitoring Report, July 2010 (submitted August 2010).
6. Groundwater Monitoring Report, October 2010 (submitted December 2010).
7. Groundwater Monitoring Report, January 2011 (submitted March 2011).
8. Groundwater Monitoring Report, April 2011 (submitted June 2011).
9. Groundwater Monitoring Report, July 2011 (submitted September 2011).
10. Groundwater Monitoring Report, October 2011 (submitted December 2011).

11. Groundwater Monitoring Report, January 2012 (submitted March 2012).
12. Groundwater Monitoring Report, April 2012 (submitted July 2012).
13. Groundwater Monitoring Report, July 2012 (submitted August 2012).
14. Groundwater Monitoring Report, November 2012 (submitted January 2013).
15. Groundwater Monitoring Report, January 2013 (submitted April 2013).
16. Groundwater Monitoring Report, April 2013 (submitted July 2013).
17. Groundwater Monitoring Report, July 2013 (submitted September 2013).

SECTION 2 – GROUNDWATER SAMPLING

On October 23, 2013, ESI personnel collected groundwater samples from two monitoring wells (wells OWDFMW01 and HDMW2253-03). The samples were collected in accordance with DOH UST release response requirements and the RHSF Groundwater Protection Plan (TEC, 2008). Prior to purging and sampling, the depth to groundwater and the depth to the bottom of the wells were measured. Well OWDFMW01 was measured by ESI using a Geotech oil/water interface probe. Well HDMW2253-03 was measured by the DLNR using their Geotech oil/water interface probe. The measurements are included in the groundwater sampling logs. No measurable product, sheen, or petroleum hydrocarbon odor was observed in either well.

2.1 GROUNDWATER SAMPLING

Prior to collecting groundwater samples, disposable bailers were used to purge groundwater from the monitoring wells. Wells OWDFMW01 and HDMW2253-03 were purged at rates of 0.26 and 0.27 liters per minute, respectively.

Water quality parameters were monitored on a periodic basis during well purging. The water quality parameters that were measured included hydrogen activity [pH], temperature, conductivity, dissolved oxygen, and oxidation reduction potential. The water quality parameters were evaluated to demonstrate that the natural characteristics of the aquifer formation water were present within the monitoring well before collecting the sample. At least four readings were collected during the purging process. Purging was considered complete when at least three consecutive water quality measurements stabilized within approximately 10%. The readings were recorded on groundwater monitoring logs which are included in Appendix A. The field notes are included in Appendix B.

When the water quality parameters stabilized, groundwater samples were collected from the wells. The disposable bailers were used to collect the groundwater samples from the monitoring wells. For each monitoring well, the groundwater samples were collected no more than two hours after purging was completed to prevent groundwater interaction with the monitoring well casing and atmosphere. Samples collected for dissolved lead were filtered in the field using a peristaltic pump and a 0.45 micron filter.

2.2 ANALYTICAL RESULTS

The samples were analyzed for TPH-d using U.S. Environmental Protection Agency [EPA] Method 8015M, Total Petroleum Hydrocarbons as gasoline [TPH-g] and Volatile Organic Compounds [VOCs] using EPA Method 8260B, Polycyclic Aromatic Hydrocarbons [PAHs] using EPA Method 8270C SIM, and dissolved lead using EPA Method 6020. The analytical results are summarized below and in Table 2.1. A copy of the laboratory report is included in Appendix C.

- **HDMW2253-03** – TPH-g (15 µg/L) and naphthalene (0.041 µg/L) were detected. The COPCs were not detected at concentrations above the DOH EALs.

- **OWDFMW01** – TPH-d (170 and 200 µg/L), TPH-g (17 and 14 µg/L), and acetone (44 and 38 µg/L) were detected in both the primary and duplicate samples. Benzene (0.17 µg/L) was only detected in the duplicate sample. TPH-d (170 and 200 µg/L) was detected at concentrations above the DOH EALs for both drinking water toxicity and gross contamination in the duplicate sample and for only gross contamination in the primary sample.

TPH-g was detected in the method and trip blanks at concentrations of 21 and 24 µg/L, respectively. Because of this, it is likely that the TPH-g concentrations detected in the groundwater samples are all biased high.

2.2.1 Groundwater Contaminant Trends

Historical groundwater contaminant concentration trends of COPCs that exceed the DOH EALs are presented in Appendix D. A summary of groundwater contaminant trends is provided below.

- **HDMW2253-03** – TPH-d was not detected during this round of quarterly sampling. TPH-d concentrations last exceeded the DOH EALs for both drinking water toxicity and gross contamination in January 2013 (600 µg/L). Naphthalene was detected but remained at a low concentration, below the DOH EALs and consistent with historical results.

- **OWDFMW01** – With the exception of TPH-d, groundwater contaminant concentrations remained at low concentrations and did not change significantly, or were not detected. TPH-d concentrations detected during this round of sampling were above the DOH EALs for gross contamination (the TPH-d concentration in the duplicate sample was also above the drinking water EAL), but decreased significantly from the last event, and were the lowest they have been since July 2012.

2.3 WASTE DISPOSAL

The purged groundwater and decontamination water generated during sampling of the wells was stored in a 55-gallon drum along with the purged water and decontamination water from the inside tunnel wells. The drum was stored onsite at ADIT 3. On December 11, 2013, the drum of water was picked up by Pacific Commercial Services, LLC and disposed at Unitek Solvent Services, Inc. The waste disposal manifest is included in Appendix E.

TABLE 2.1
Analytical Results for Groundwater Sampling (October 23, 2013)
Red Hill Bulk Fuel Storage Facility
October 2013 Quarterly Monitoring Report

Method	Chemical	DOH EALs		OWDFMW01 (ES043)					OWDFMW01 (ES044) (Dup)					HDMW2253-03 (ES045)				
		Drinking Water Toxicity	Gross Contamination	Results	Q	LOQ	LOD	DL	Results	Q	LOQ	LOD	DL	Results	Q	LOQ	LOD	DL
EPA 8015B	TPH-d	190	100	**170**	HD	50	20	15	**200**	HD	50	20	15	N.D.	U	50	20	15
EPA 8260B	TPH-g	100	100	17	B,J	50	30	13	14	B,J	50	30	13	15	B,J	50	30	13
EPA 8270C SIM	Acenaphthene	370	20	N.D.	U	0.2	0.049	0.020	N.D.	U	0.2	0.049	0.020	N.D.	U	0.2	0.05	0.021
	Acenaphthylene	240	2,000	N.D.	U	0.2	0.049	0.018	N.D.	U	0.2	0.049	0.018	N.D.	U	0.2	0.05	0.018
	Anthracene	1,800	22	N.D.	U	0.2	0.049	0.034	N.D.	U	0.2	0.049	0.033	N.D.	U	0.2	0.05	0.034
	Benzo[a]anthracene	0.092	4.7	N.D.	U	0.2	0.049	0.023	N.D.	U	0.2	0.049	0.023	N.D.	U	0.2	0.05	0.024
	Benzo[g,h,i]perylene	1,500	0.13	N.D.	U	0.2	0.049	0.021	N.D.	U	0.2	0.049	0.021	N.D.	U	0.2	0.05	0.022
	Benzo[a]pyrene	0.2	0.81	N.D.	U	0.2	0.049	0.036	N.D.	U	0.2	0.049	0.036	N.D.	U	0.2	0.05	0.036
	Benzo[b]fluoranthene	0.092	0.75	N.D.	U	0.2	0.049	0.025	N.D.	U	0.2	0.049	0.024	N.D.	U	0.2	0.05	0.025
	Benzo[k]fluoranthene	0.92	0.4	N.D.	U	0.2	0.049	0.023	N.D.	U	0.2	0.049	0.023	N.D.	U	0.2	0.05	0.023
	Chrysene	9.2	1	N.D.	U	0.2	0.049	0.019	N.D.	U	0.2	0.049	0.019	N.D.	U	0.2	0.05	0.019
	Dibenzo[a,h]anthracene	0.0092	0.52	N.D.	U	0.2	0.049	0.026	N.D.	U	0.2	0.049	0.026	N.D.	U	0.2	0.05	0.027
	Fluoranthene	1,500	130	N.D.	U	0.2	0.049	0.027	N.D.	U	0.2	0.049	0.027	N.D.	U	0.2	0.05	0.027
	Fluorene	240	950	N.D.	U	0.2	0.049	0.024	N.D.	U	0.2	0.049	0.024	N.D.	U	0.2	0.05	0.024
	Indeno[1,2,3-cd]pyrene	0.092	0.095	N.D.	U	0.2	0.049	0.022	N.D.	U	0.2	0.049	0.022	N.D.	U	0.2	0.05	0.022
	1,-Methylnaphthalene	4.7	10	N.D.	U	0.2	0.049	0.028	N.D.	U	0.2	0.049	0.028	N.D.	U	0.2	0.05	0.028
	2,-Methylnaphthalene	24	10	N.D.	U	0.2	0.049	0.026	N.D.	U	0.2	0.049	0.026	N.D.	U	0.2	0.05	0.026
	Naphthalene	17	21	N.D.	U	0.2	0.049	0.023	N.D.	U	0.2	0.049	0.023	0.041	J	0.2	0.05	0.023
	Phenanthrene	240	410	N.D.	U	0.2	0.049	0.030	N.D.	U	0.2	0.049	0.030	N.D.	U	0.2	0.05	0.031
	Pyrene	180	68	N.D.	U	0.2	0.049	0.024	N.D.	U	0.2	0.049	0.024	N.D.	U	0.2	0.05	0.025
EPA 8260B	1,1,1-Trichloroethane	200	970	N.D.	U	5.0	0.5	0.30	N.D.	U	5.0	0.5	0.30	N.D.	U	5.0	0.5	0.30
	1,1,2-Trichloroethane	5	50,000	N.D.	U	1.0	0.5	0.38	N.D.	U	1.0	0.5	0.38	N.D.	U	1.0	0.5	0.38
	1,1-Dichloroethane	2.4	50,000	N.D.	U	5.0	0.5	0.28	N.D.	U	5.0	0.5	0.28	N.D.	U	5.0	0.5	0.28
	1,1-Dichloroethylene	7	1,500	N.D.	U	1.0	0.5	0.43	N.D.	U	1.0	0.5	0.43	N.D.	U	1.0	0.5	0.43
	1,2,3-Trichloropropane	0.6	50,000	N.D.	U	5.0	1.0	0.64	N.D.	U	5.0	1.0	0.64	N.D.	U	5.0	1.0	0.64
	1,2,4-Trichlorobenzene	70	3,000	N.D.	U	5.0	1.0	0.5	N.D.	U	5.0	1.0	0.5	N.D.	U	5.0	1.0	0.5
	1,2-Dibromo-3- chloropropane	0.04	10	N.D.	U	10	2.0	1.2	N.D.	U	10	2.0	1.2	N.D.	U	10	2.0	1.2
	1,2-Dibromoethane	0.04	50,000	N.D.	U	1.0	0.5	0.36	N.D.	U	1.0	0.5	0.36	N.D.	U	1.0	0.5	0.36
	1,2-Dichlorobenzene	600	10	N.D.	U	1.0	0.5	0.46	N.D.	U	1.0	0.5	0.46	N.D.	U	1.0	0.5	0.46
	1,2-Dichloroethane	0.15	7,000	N.D.	U	1.0	0.5	0.24	N.D.	U	1.0	0.5	0.24	N.D.	U	1.0	0.5	0.24
	1,2-Dichloropropane	5	10	N.D.	U	5.0	0.5	0.42	N.D.	U	5.0	0.5	0.42	N.D.	U	5.0	0.5	0.42
	1,3-Dichlorobenzene	180	5	N.D.	U	1.0	0.5	0.4	N.D.	U	1.0	0.5	0.4	N.D.	U	1.0	0.5	0.4
	1,3-Dichloropropene (total of cis/trans)	0.43	50,000	N.D.	U	1.0	0.5	0.25	N.D.	U	1.0	0.5	0.25	N.D.	U	1.0	0.5	0.25
	1,4-Dichlorobenzene	75	5	N.D.	U	1.0	0.5	0.43	N.D.	U	1.0	0.5	0.43	N.D.	U	1.0	0.5	0.43
	Acetone	22,000	20,000	44	ICH	20	10	6.0	38	ICH	20	10	6.0	N.D.	ICH	20	10	6.0
	Benzene	5	170	N.D.	U	1.0	0.5	0.14	0.17	J	1.0	0.5	0.14	N.D.	U	1.0	0.5	0.14
	Bromodichloromethane	0.12	50,000	N.D.	U	5.0	0.5	0.21	N.D.	U	5.0	0.5	0.21	N.D.	U	5.0	0.5	0.21
	Bromoform	80	510	N.D.	U	10	1.0	0.50	N.D.	U	10	1.0	0.50	N.D.	U	10	1.0	0.50
	Bromomethane	8.7	50,000	N.D.	U	20	5.0	3.9	N.D.	U	20	5.0	3.9	N.D.	U	20	5.0	3.9
	Carbon Tetrachloride	5	520	N.D.	U	1.0	0.5	0.23	N.D.	U	1.0	0.5	0.23	N.D.	U	1.0	0.5	0.23
	Chlorobenzene	100	50	N.D.	U	5.0	0.5	0.17	N.D.	U	5.0	0.5	0.17	N.D.	U	5.0	0.5	0.17
	Chloroethane	21,000	16	N.D.	U	10	5.0	2.3	N.D.	U	10	5.0	2.3	N.D.	U	10	5.0	2.3
	Chloroform	70	2,400	N.D.	U	5.0	0.5	0.46	N.D.	U	5.0	0.5	0.46	N.D.	U	5.0	0.5	0.46
	Chloromethane	1.8	50,000	N.D.	U, IJ	10	2.0	1.8	N.D.	U, IJ	10	2.0	1.8	N.D.	U, IJ	10	2.0	1.8
	cis-1,2-Dichloroethylene	70	50,000	N.D.	U	1.0	0.5	0.48	N.D.	U	1.0	0.5	0.48	N.D.	U	1.0	0.5	0.48
	Dibromochloromethane	0.16	50,000	N.D.	U	1.0	0.5	0.25	N.D.	U	1.0	0.5	0.25	N.D.	U	1.0	0.5	0.25
	Ethylbenzene	700	30	N.D.	U	1.0	0.5	0.14	N.D.	U	1.0	0.5	0.14	N.D.	U	1.0	0.5	0.14
	Hexachlorobutadiene	0.86	6	N.D.	U	1.0	0.5	0.32	N.D.	U	1.0	0.5	0.32	N.D.	U	1.0	0.5	0.32
	Methyl ethyl ketone (2-Butanone)	7,100	8,400	N.D.	U, ICH	10	5.0	2.2	N.D.	U, ICH	10	5.0	2.2	N.D.	U, ICH	10	5.0	2.2
	Methyl isobutyl ketone (4-Methyl-2-Pentanone)	2,000	1300	N.D.	U	10	5.0	4.4	N.D.	U	10	5.0	4.4	N.D.	U	10	5.0	4.4
	Methyl tert-butyl Ether	12	5	N.D.	U	1.0	0.5	0.31	N.D.	U	1.0	0.5	0.31	N.D.	U	1.0	0.5	0.31
	Methylene chloride	4.8	9,100	N.D.	U	5.0	1.0	0.64	N.D.	U	5.0	1.0	0.64	N.D.	U	5.0	1.0	0.64
	Styrene	100	10	N.D.	U	1.0	0.5	0.17	N.D.	U	1.0	0.5	0.17	N.D.	U	1.0	0.5	0.17
	Tetrachloroethane, 1,1,1,2-	0.52	50,000	N.D.	U	1.0	0.5	0.40	N.D.	U	1.0	0.5	0.40	N.D.	U	1.0	0.5	0.40
	Tetrachloroethane, 1,1,2,2-	0.067	500	N.D.	UJ	1.0	0.5	0.41	N.D.	UJ	1.0	0.5	0.41	N.D.	UJ	1.0	0.5	0.41
	Tetrachloroethylene	5	170	N.D.	U	5.0	0.5	0.39	N.D.	U	5.0	0.5	0.39	N.D.	U	5.0	0.5	0.39
	Toluene	1,000	40	N.D.	U	1.0	0.5	0.24	N.D.	U	1.0	0.5	0.24	N.D.	U	1.0	0.5	0.24
	trans-1,2- Dichloroethylene	100	260	N.D.	U	1.0	0.5	0.37	N.D.	U	1.0	0.5	0.37	N.D.	U	1.0	0.5	0.37
	Trichloroethylene	5	310	N.D.	U	1.0	0.5	0.37	N.D.	U	1.0	0.5	0.37	N.D.	U	1.0	0.5	0.37
	Vinyl chloride	2	3,400	N.D.	U	1.0	0.5	0.30	N.D.	U	1.0	0.5	0.30	N.D.	U	1.0	0.5	0.30
	Xylenes	10,000	20	N.D.	U	11	1.5	0.23	N.D.	U	11	1.5	0.23	N.D.	U	11	1.5	0.23
EPA 6020	Dissolved Lead	15	50,000	N.D.	U	1.0	0.2	0.0898	N.D.	U	1.0	0.2	0.0898	N.D.	U	1.0	0.2	0.0898

The data are in micrograms per liter (µg/L). Shaded values exceeded the DOH EALs.

B Analyte was present in the associated method blank.
DOH EALs DOH Tier 1 Environmental Action Levels for groundwater where groundwater is a current drinking water source and surface water is greater than 150 meters from the site (DOH, Fall 2011).
DL Detection Limit or Method Detection Limit (MDL)
EPA Environmental Protection Agency
HD The chromatographic pattern was inconsistent with the profile of the reference fuel standard.
ICH Initial calibration verification recovery is above the control limit for this analyte.
IJ Calibration verification recovery is below the control limit for this analyte.
J Analyte was detected at a concentration below the LOQ and above the DL. Reported value is estimated.
LOD Limit of Detection
LOQ Limit of Quantitation
N.D. Not Detected
Q Qualifiers
TPH-g Total Petroleum Hydrocarbons as gasoline
TPH-d Total Petroleum Hydrocarbons as diesel
U Undetected at DL and is reported as less than the LOD.

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SECTION 3 – DATA QUALITY ASSESSMENT

A data quality assessment, which consists of a review of the overall groundwater sample collection and analysis process, was performed in order to determine whether the analytical data generated meet the quality objectives for the project. The field Quality Control [QC] program consisted of standardized sample collection and management procedures, and the collection of field duplicate samples, matrix spike samples, and trip blank samples. The laboratory quality assurance program consisted of the use of standard analytical methods and the preparation and analyses of Matrix Spike [MS]/Matrix Spike Duplicate [MSD] samples, surrogate spikes, blanks, Laboratory Control Samples [LCS] and Laboratory Control Sample Duplicate [LCSD].

3.1 Data Validation and Assessment

The objective of data validation is to provide data of known quality for project decisions. Data quality is judged in terms of Precision, Accuracy, Representativeness, Completeness, Comparability, and Sensitivity [PARCCS]. A number of factors may affect the quality of data, including: sample collection methods, sample analysis methods, and adherence to established procedures for sample collection, preservation, management, shipment, and analysis.

Precision

Precision is defined as the reproducibility of replicate measurements. Precision is evaluated by Relative Percentage Difference [RPD] of field duplicates and laboratory LCS/LCSD or MS/MSD results. Field duplicate and MS/MSD samples were collected at a rate of approximately 10% of project samples. Field duplicates were sent to the laboratory along with the primary samples.

The RPDs of detected analytes for the primary and field duplicate samples (ES043 and ES044) are provided in Table 3.1. A precision of less than 50% for duplicate pairs is required by the DoN Project Procedures Manual to be considered acceptable (DoN 2007). For this monitoring event, the RPDs for duplicate sample pairs were all within the acceptable range except for benzene, which was detected in duplicate sample ES044, but not in primary sample ES043. In sample ES044, benzene was detected at a concentration below the limit of detection [LOD] and approximately one order of magnitude below the DOH EALs. The result has been flagged “J” for estimated, indicating a reduction in precision that is to be expected with the result so close to the LOD. Therefore, this slight reduction in precision is unlikely to affect data usability, and the data precision is considered acceptable based on the sample duplicated evaluation.

The RPD of the MS/MSD results for acetone and 1,1,2,2-tetrachloroethane were above the acceptable maximum of 20%, but below 50%, an RPD recommended in the NAVFAC Project Procedures Manual [DON 2007]. 1,1,2,2-Tetrachloroethane was not detected during this sampling event and when acetone was detected, it was at concentrations three orders of magnitude below the EALs. Therefore, this is unlikely to affect data usability.

Accuracy

Accuracy is defined as the degree of conformity of a measurement to a standard or true value. Accuracy is evaluated through measurement of the percent recovery of an analyte in a reference standard or spiked sample. Accuracy limits for surrogates, laboratory control spike, MS, and MSD samples are established by the individual laboratory. The acceptance criteria for accuracy are dependent on the analytical method and are based on historical laboratory data.

Results for TPH-d in samples ES043 and ES044 were flagged "HD." The laboratory indicated a mismatch between the calibration standard and the TPH-d chromatographic profile. Mismatches of this type are not uncommon. The chromatograms are not part of the standard laboratory package and were not reviewed by ESI.

All of the LCS and surrogate spike recoveries for analyzed constituents were within acceptable percent recovery limits. The MS and/or MSD recoveries were below the control limits for 1,1,2,2-tetrachloroethane and the associated sample results may be biased low. Sample results for 1,1,2,2-tetrachloroethane were flagged "UJ." 1,1,2,2-Tetrachloroethane was not detected in any of the groundwater samples. However the drinking water EAL for 1,1,2,2-Tetrachloroethane is below the respective LODs. Based on historical results and the results of other VOCs in the sample; it is not likely that 1,1,2,2-tetrachloroethane is present at concentrations above the DOH EALs.

The MS and/or MSD recoveries were above the control limits for acetone, tetrachloroethylene, and trichloroethylene, and the associated sample results may be biased high. None of the COPCs were detected at concentrations above the DOH EALs, so a potential high bias should not affect data usability.

All other MS/MSD recoveries were within acceptable recovery limits; therefore, the data accuracy for this monitoring event is considered acceptable.

Representativeness

Representativeness is the degree that data accurately and precisely represents a characteristic of a population, parameter variations at a sampling point, or an environmental condition. Representativeness was achieved by conducting sampling in compliance with the sample collection procedures described in the WP/SAP specifically written for this project (ESI, 2012).

Representativeness is also evaluated through the compliance with the sample holding time, sample preservation, and the analysis of blank samples, including method blank and trip blank samples. The sample holding time and sample preservation complied with the EPA criteria. For this sampling event, one trip blank was included in the cooler to assess contamination during sample transport for TPH-g and VOCs. TPH-g was detected in the trip blank (24 µg/L) and method blank (21 µg/L) at concentrations below the limit of detection [LOD]. TPH-g was detected in all field samples at concentrations below the DOH EALs. It is likely that TPH-g concentrations in the samples have been affected by laboratory contamination and are biased high; however, because the concentrations are all well below the DOH EALs, this is unlikely to

affect data usability. Therefore, the groundwater sample data are considered representative of the groundwater quality on site.

Completeness

Completeness is defined as the overall percentage of valid analytical results (including estimated results) compared to the total number of analytical results reported by the laboratory. No data were rejected for this project, and therefore the completeness goal for this project (90%) was successfully met.

Comparability

Comparability expresses the confidence with which one data set can be compared to another data set. Comparability can be related to accuracy and precision because these quantities are measures of data reliability. Data, with acceptable precision and accuracy, are considered comparable if collection techniques, analytical procedures, methods and reporting are equivalent. For this monitoring event, the samples were collected using approaches consistent with those in the previous events, and the same analytical methods/procedures were used to measure the concentration of COPCs. Therefore, the results are considered comparable within this data set and with the data collected from previous sampling events. The field and laboratory personnel followed standard operation procedures.

All TPH-g data through July 2010 was analyzed by EPA Method 8015; beginning in October 2010, EPA Method 8260B was used. There was no event where both methods were used, and so there is no way to directly compare the results using each method and determine if one method produces biased results. However, there is no reason to believe that using either method should bias the data, and the TPH-g data for all events should be comparable.

Between August 2009 and July 2010, naphthalene was analyzed for by both EPA Methods 8260B and 8270C, and both results were reported. Beginning in October 2010, only results using EPA Method 8270C were reported. Naphthalene was not detected in any well until November 2012, so comparability with older results should not be a concern. However, the low bias associated with EPA Method 8270C must be considered when making project decisions.

Sensitivity

The LOQs are established by the laboratory based on the LODs or instrument detection limits, historical data, and EPA limits established for the methods. The LOQs for samples may require adjustment due to matrix interference or if high levels of target analytes necessitate dilution before analysis. Matrix interference and sample dilutions have the effect of increasing the LOQs. Laboratory LODs and LOQs for several analytes differed from the LODs and LOQs in the WP/SAP because the laboratory updates them quarterly. LODs and LOQs for several analytes were greater than the DOH EALs (as stated in the WP/SAP) and therefore it is not possible to determine whether the analytes are present at concentrations greater than or equal to the DOH EALs. As suggested by the DOH Technical Guidance Manual, the project action level will be the LOQ for these analytes.

3.2 Data Assessment and Usability Conclusions

The PARCCS criteria were evaluated, and with a few exceptions, all criteria were met. These exceptions include the exceedances of recovery criteria for MS/MSDs for several VOCs and PAHs. Since the surrogate recoveries and the recoveries of the VOCs and PAHs in the LCS/LCSD are all within recovery criteria, the MS/MSD exceendaces are not considered to affect the usability of the data, but may indicate some matrix heterogeneity. The data assessment concludes that all data generated during this event are usable for their intended purpose.

TABLE 3.1
Quality Control Results for Groundwater Sampling (October 23, 2013)
Red Hill Bulk Fuel Storage Facility
October 2013 Quarterly Monitoring Report

Method	Chemical Constituent	DOH EALs		OWDFMW01 (ES043)					OWDFMW01 (ES044) (DUP)					RPD Duplicate (%)	ES Trip				
		Drinking Water Toxicity	Gross Contamination	Results	Q	LOQ	LOD	DL	Results	Q	LOQ	LOD	DL		Results	Q	LOQ	LOD	DL
EPA 8015B	TPH-d	190	100	**170**	HD	50	20	15	**200**	HD	50	20	15	16.22	-	-	-	-	-
EPA 8260B	TPH-g	100	100	17	B,J	50	30	13	14	B,J	50	30	13	19.35	24	B,J	50	30	13
EPA 8270C SIM	Acenaphthene	370	20	N.D.	U	0.2	0.049	0.020	N.D.	U	0.2	0.049	0.020	NA	-	-	-	-	-
	Acenaphthylene	240	2,000	N.D.	U	0.2	0.049	0.018	N.D.	U	0.2	0.049	0.018	NA	-	-	-	-	-
	Anthracene	1,800	22	N.D.	U	0.2	0.049	0.034	N.D.	U	0.2	0.049	0.033	NA	-	-	-	-	-
	Benzo[a]anthracene	0.092	4.7	N.D.	U	0.2	0.049	0.023	N.D.	U	0.2	0.049	0.023	NA	-	-	-	-	-
	Benzo[g,h,i]perylene	1,500	0.13	N.D.	U	0.2	0.049	0.021	N.D.	U	0.2	0.049	0.021	NA	-	-	-	-	-
	Benzo[a]pyrene	0.2	0.81	N.D.	U	0.2	0.049	0.036	N.D.	U	0.2	0.049	0.036	NA	-	-	-	-	-
	Benzo[b]fluoranthene	0.092	0.75	N.D.	U	0.2	0.049	0.025	N.D.	U	0.2	0.049	0.024	NA	-	-	-	-	-
	Benzo[k]fluoranthene	0.92	0.4	N.D.	U	0.2	0.049	0.023	N.D.	U	0.2	0.049	0.023	NA	-	-	-	-	-
	Chrysene	9.2	1	N.D.	U	0.2	0.049	0.019	N.D.	U	0.2	0.049	0.019	NA	-	-	-	-	-
	Dibenzo[a,h]anthracene	0.0092	0.52	N.D.	U	0.2	0.049	0.026	N.D.	U	0.2	0.049	0.026	NA	-	-	-	-	-
	Fluoranthene	1,500	130	N.D.	U	0.2	0.049	0.027	N.D.	U	0.2	0.049	0.027	NA	-	-	-	-	-
	Fluorene	240	950	N.D.	U	0.2	0.049	0.024	N.D.	U	0.2	0.049	0.024	NA	-	-	-	-	-
	Indeno[1,2,3-cd]pyrene	0.092	0.095	N.D.	U	0.2	0.049	0.022	N.D.	U	0.2	0.049	0.022	NA	-	-	-	-	-
	1,-Methylnaphthalene	4.7	10	N.D.	U	0.2	0.049	0.028	N.D.	U	0.2	0.049	0.028	NA	-	-	-	-	-
	2,-Methylnaphthalene	24	10	N.D.	U	0.2	0.049	0.026	N.D.	U	0.2	0.049	0.026	NA	-	-	-	-	-
	Naphthalene	17	21	N.D.	U	0.2	0.049	0.023	N.D.	U	0.2	0.049	0.023	NA	-	-	-	-	-
	Phenanthrene	240	410	N.D.	U	0.2	0.049	0.030	N.D.	U	0.2	0.049	0.030	NA	-	-	-	-	-
	Pyrene	180	68	N.D.	U	0.2	0.049	0.024	N.D.	U	0.2	0.049	0.024	NA	-	-	-	-	-
EPA 8260B	1,1,1-Trichloroethane	200	970	N.D.	U	5.0	0.5	0.30	N.D.	U	5.0	0.5	0.30	NA	N.D.	U	5.0	0.5	0.30
	1,1,2-Trichloroethane	5	50,000	N.D.	U	1.0	0.5	0.38	N.D.	U	1.0	0.5	0.38	NA	N.D.	U	1.0	0.5	0.38
	1,1-Dichloroethane	2.4	50,000	N.D.	U	5.0	0.5	0.28	N.D.	U	5.0	0.5	0.28	NA	N.D.	U	5.0	0.5	0.28
	1,1-Dichloroethylene	7	1,500	N.D.	U	1.0	0.5	0.43	N.D.	U	1.0	0.5	0.43	NA	N.D.	U	1.0	0.5	0.43
	1,2,3-Trichloropropane	0.6	50,000	N.D.	U	5.0	1.0	0.64	N.D.	U	5.0	1.0	0.64	NA	N.D.	U	5.0	1.0	0.64
	1,2,4-Trichlorobenzene	70	3,000	N.D.	U	5.0	1.0	0.5	N.D.	U	5.0	1.0	0.5	NA	N.D.	U	5.0	1.0	0.5
	1,2-Dibromo-3- chloropropane	0.04	10	N.D.	U	10	2.0	1.2	N.D.	U	10	2.0	1.2	NA	N.D.	U	10	2.0	1.2
	1,2-Dibromoethane	0.04	50,000	N.D.	U	1.0	0.5	0.36	N.D.	U	1.0	0.5	0.36	NA	N.D.	U	1.0	0.5	0.36
	1,2-Dichlorobenzene	600	10	N.D.	U	1.0	0.5	0.46	N.D.	U	1.0	0.5	0.46	NA	N.D.	U	1.0	0.5	0.46
	1,2-Dichloroethane	0.15	7,000	N.D.	U	1.0	0.5	0.24	N.D.	U	1.0	0.5	0.24	NA	N.D.	U	1.0	0.5	0.24
	1,2-Dichloropropane	5	10	N.D.	U	5.0	0.5	0.42	N.D.	U	5.0	0.5	0.42	NA	N.D.	U	5.0	0.5	0.42
	1,3-Dichlorobenzene	180	5	N.D.	U	1.0	0.5	0.4	N.D.	U	1.0	0.5	0.4	NA	N.D.	U	1.0	0.5	0.4
	1,3-Dichloropropene (total of cis/trans)	0.43	50,000	N.D.	U	1.0	0.5	0.25	N.D.	U	1.0	0.5	0.25	NA	N.D.	U	1.0	0.5	0.25
	1,4-Dichlorobenzene	75	5	N.D.	U	1.0	0.5	0.43	N.D.	U	1.0	0.5	0.43	NA	N.D.	U	1.0	0.5	0.43
	Acetone	22,000	20,000	44	ICH	20	10	6.0	38	ICH	20	10	6.0	14.63	N.D.	ICH	20	10	6.0
	Benzene	5	170	N.D.	U	1.0	0.5	0.14	0.17	J	1.0	0.5	0.14	NA	N.D.	U	1.0	0.5	0.14
	Bromodichloromethane	0.12	50,000	N.D.	U	5.0	0.5	0.21	N.D.	U	5.0	0.5	0.21	NA	N.D.	U	5.0	0.5	0.21
	Bromoform	80	510	N.D.	U	10	1.0	0.50	N.D.	U	10	1.0	0.50	NA	N.D.	U	10	1.0	0.50
	Bromomethane	8.7	50,000	N.D.	U	20	5.0	3.9	N.D.	U	20	5.0	3.9	NA	N.D.	U	20	5.0	3.9
	Carbon Tetrachloride	5	520	N.D.	U	1.0	0.5	0.23	N.D.	U	1.0	0.5	0.23	NA	N.D.	U	1.0	0.5	0.23
	Chlorobenzene	100	50	N.D.	U	5.0	0.5	0.17	N.D.	U	5.0	0.5	0.17	NA	N.D.	U	5.0	0.5	0.17
	Chloroethane	21,000	16	N.D.	U	10	5.0	2.3	N.D.	U	10	5.0	2.3	NA	N.D.	U	10	5.0	2.3
	Chloroform	70	2,400	N.D.	U	5.0	0.5	0.46	N.D.	U	5.0	0.5	0.46	NA	N.D.	U	5.0	0.5	0.46
	Chloromethane	1.8	50,000	N.D.	U, IJ	10	2.0	1.8	N.D.	U, IJ	10	2.0	1.8	NA	N.D.	U, IJ	10	2.0	1.8
	cis-1,2-Dichloroethylene	70	50,000	N.D.	U	1.0	0.5	0.48	N.D.	U	1.0	0.5	0.48	NA	N.D.	U	1.0	0.5	0.48
	Dibromochloromethane	0.16	50,000	N.D.	U	1.0	0.5	0.25	N.D.	U	1.0	0.5	0.25	NA	N.D.	U	1.0	0.5	0.25
	Ethylbenzene	700	30	N.D.	U	1.0	0.5	0.14	N.D.	U	1.0	0.5	0.14	NA	N.D.	U	1.0	0.5	0.14
	Hexachlorobutadiene	0.86	6	N.D.	U	1.0	0.5	0.32	N.D.	U	1.0	0.5	0.32	NA	N.D.	U	1.0	0.5	0.32
	Methyl ethyl ketone (2-Butanone)	7,100	8,400	N.D.	U, ICH	10	5.0	2.2	N.D.	U, ICH	10	5.0	2.2	NA	N.D.	U, ICH	10	5.0	2.2
	Methyl isobutyl ketone (4-Methyl-2-Pentanone)	2,000	1300	N.D.	U	10	5.0	4.4	N.D.	U	10	5.0	4.4	NA	N.D.	U	10	5.0	4.4
	Methyl tert-butyl Ether	12	5	N.D.	U	1.0	0.5	0.31	N.D.	U	1.0	0.5	0.31	NA	N.D.	U	1.0	0.5	0.31
	Methylene chloride	4.8	9,100	N.D.	U	5.0	1.0	0.64	N.D.	U	5.0	1.0	0.64	NA	N.D.	U	5.0	1.0	0.64
	Styrene	100	10	N.D.	U	1.0	0.5	0.17	N.D.	U	1.0	0.5	0.17	NA	N.D.	U	1.0	0.5	0.17
	Tetrachloroethane, 1,1,1,2-	0.52	50,000	N.D.	U	1.0	0.5	0.40	N.D.	U	1.0	0.5	0.40	NA	N.D.	U	1.0	0.5	0.40
	Tetrachloroethane, 1,1,2,2-	0.067	500	N.D.	U	1.0	0.5	0.41	N.D.	U	1.0	0.5	0.41	NA	N.D.	U	1.0	0.5	0.41
	Tetrachloroethylene	5	170	N.D.	U	5.0	0.5	0.39	N.D.	U	5.0	0.5	0.39	NA	N.D.	U	5.0	0.5	0.39
	Toluene	1,000	40	N.D.	U	1.0	0.5	0.24	N.D.	U	1.0	0.5	0.24	NA	N.D.	U	1.0	0.5	0.24
	trans-1,2- Dichloroethylene	100	260	N.D.	U	1.0	0.5	0.37	N.D.	U	1.0	0.5	0.37	NA	N.D.	U	1.0	0.5	0.37
	Trichloroethylene	5	310	N.D.	U	1.0	0.5	0.37	N.D.	U	1.0	0.5	0.37	NA	N.D.	U	1.0	0.5	0.37
	Vinyl chloride	2	3,400	N.D.	U	1.0	0.5	0.30	N.D.	U	1.0	0.5	0.30	NA	N.D.	U	1.0	0.5	0.30
	Xylenes	10,000	20	N.D.	U	11	1.5	0.23	N.D.	U	11	1.5	0.23	NA	N.D.	U	11	1.5	0.23
EPA 6020	Dissolved Lead	15	50,000	N.D.	U	1.0	0.2	0.0898	N.D.	U	1.0	0.2	0.0898	NA	-	-	-	-	-

The data are in micrograms per liter (µg/L). Shaded values exceeded the DOH EALs.

DOH EALs DOH Tier 1 Environmental Action Levels for groundwater where groundwater is a current drinking water source and surface water is greater than 150 meters from the site (DOH, Fall 2011).
DL Detection Limit or Method Detection Limit (MDL)
EPA Environmental Protection Agency
HD The chromatographic pattern was inconsistent with the profile of the reference fuel standard.
J Analyte was detected at a concentration below the LOQ and above the DL. Reported value is estimated.
LOD Limit of Detection
LOQ Limit of Quantitation
NA Both results for duplicate pair were non-detect, no RPD calculations
N.D. Not Detected
Q Qualifiers
TPH-g Total Petroleum Hydrocarbons as gasoline
TPH-d Total Petroleum Hydrocarbons as diesel
U Undetected at DL and is reported as less than the LOD.

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SECTION 4 – SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

This quarterly monitoring report presents the results of groundwater sampling conducted on October 23, 2013, at the RHSF, JBPHH, Hawaii. The RHSF is located in Halawa Heights on the Island of Oahu. The DOH Facility ID number for the RHSF is 9-102271. The DOH Release ID numbers are 990051, 010011, and 020028.

The groundwater sampling was conducted as part of the long-term groundwater and soil vapor monitoring at the RHSF, under NAVFAC Contract Number N62742-12-D-1853. The sampling was conducted in accordance with the approved WP/SAP prepared by ESI.

On October 23, 2013, ESI personnel collected groundwater samples from two monitoring wells (wells HDMW2253-03 and OWDFMW01). A summary of the analytical results is provided below.

- **HDMW2253-03** – TPH-g (15 µg/L) and naphthalene (0.041 µg/L) were detected. The COPCs were not detected at concentrations above the DOH EALs.

- **OWDFMW01** – TPH-d (170 and 200 µg/L), TPH-g (17 and 14 µg/L), and acetone (44 and 38 µg/L) were detected in both the primary and duplicate samples. Benzene (0.17 µg/L) was only detected in the duplicate sample. TPH-d (170 and 200 µg/L) was detected at concentrations above the DOH EALs for both drinking water toxicity and gross contamination in the duplicate sample and for only gross contamination in the primary sample.

TPH-g was detected in the method and trip blanks at concentrations of 21 and 24 µg/L, respectively. Because of this, it is likely that the TPH-g concentrations detected in the groundwater samples are all biased high.

Groundwater Contaminant Trends

Historical groundwater contaminant concentration trends of COPCs that exceeded the DOH EALs are presented in Appendix D. A summary of groundwater contaminant trends is provided below.

- **HDMW2253-03** – TPH-d was not detected during this round of quarterly sampling. TPH-d concentrations last exceeded the DOH EALs for both drinking water toxicity and gross contamination in January 2013 (600 µg/L). Naphthalene was detected but remained at a low concentration, below the DOH EALs and consistent with historical results.

- **OWDFMW01** – With the exception of TPH-d, groundwater contaminant concentrations remained at low concentrations and did not change significantly, or were not detected. TPH-d concentrations detected during this round of sampling were above the DOH EALs

for both drinking water toxicity and gross contamination, but decreased significantly from the last event, and were the lowest they have been since July 2012.

Conclusions and Recommendations

Since the wells were last sampled (July 2013), with the exception of TPH-d in well OWDFMW01, groundwater contaminant concentrations remained at low concentrations and did not change significantly, or were not detected. TPH-d concentrations decreased in well OWDFMW01, but remained above the DOH EALs for both drinking water toxicity and gross contamination. TPH-d concentrations in well OWDFMW01 decreased from 470 µg/L during the last round of sampling to 170 µg/L during this round. TPH-d was not detected in well HDMW2253-03 during this event and was last detected during April 2013 (45 µg/L).

Based on the results of the assessment, continued groundwater monitoring at the RHSF is recommended. If the TPH-d concentrations significantly increase, the monitoring frequency should be increased to monthly, even though the two outside wells are not included in the RHSF Groundwater Protection Plan.

SECTION 5 – FUTURE WORK

GROUNDWATER SAMPLING

Future work includes the first quarter 2014 groundwater monitoring which is scheduled for January 2014. It is anticipated that the quarterly groundwater monitoring status report will be submitted in March 2014.

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SECTION 6 – REFERENCES

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FIGURES

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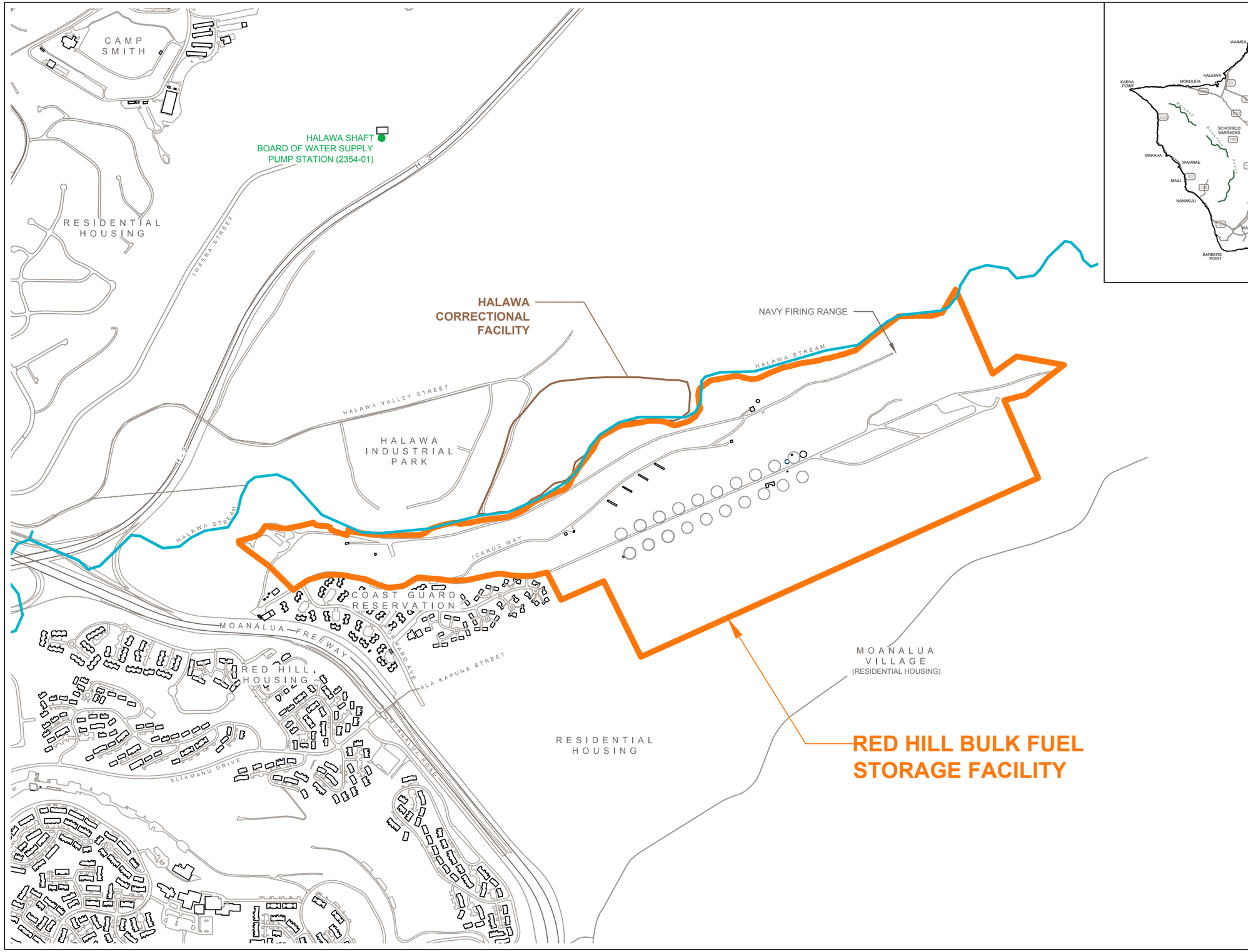

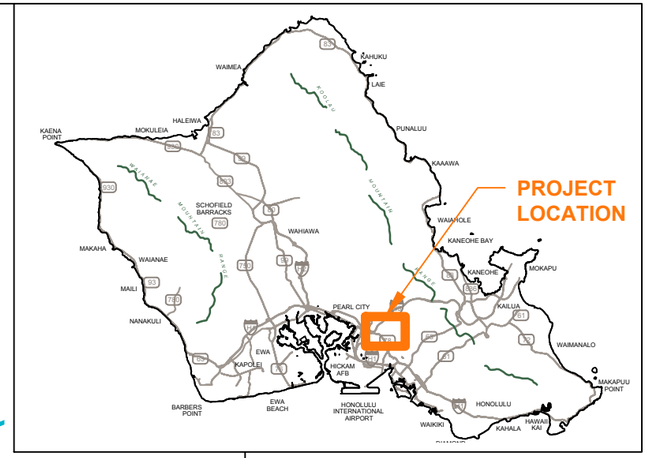

NOTES

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SOURCES

Pearl Harbor Base Map

Navy GIS files

NORTH

GRAPHIC SCALE

900 0 900

Scale in Feet

FIGURE 1

SITE LOCATION

GROUNDWATER MONITORING
RED HILL BULK FUEL STORAGE FACILITY
NAVAL SUPPLY SYSTEM COMMAND (NAVSUP)
FLEET LOGISTICS CENTER
JBPHH, OAHU, HAWAII

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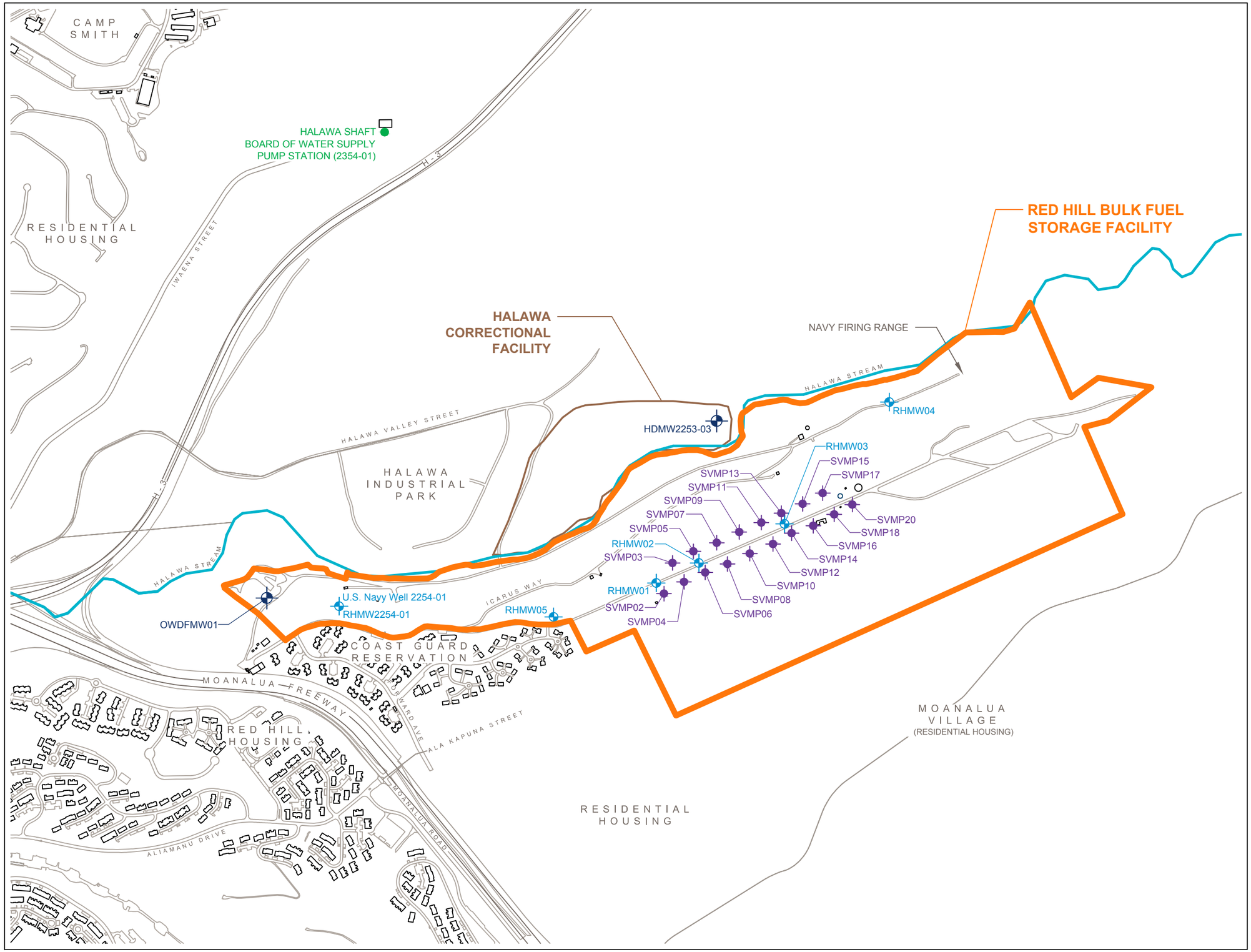

LEGEND

- RED HILL BULK FUEL STORAGE FACILITY
- HALAWA CORRECTIONAL FACILITY
- HALAWA STREAM
- BUILDING
- ROAD
- ABOVEGROUND STORAGE TANK
- WATER TANK
- SOIL VAPOR MONITORING POINT
- GROUNDWATER MONITORING WELL LOCATED INSIDE TUNNEL
- GROUNDWATER MONITORING WELL LOCATED OUTSIDE TUNNEL
- BOARD OF WATER SUPPLY PUMP STATION

NOTES

The accuracy of this document is limited to the quality and scale of the source information. This document is not a legal representation of an engineered survey.

SOURCES

Pearl Harbor Base Map

Navy GIS files

NORTH

GRAPHIC SCALE

1,200 0 1,200

Scale in Feet

FIGURE 2

SITE LAYOUT

GROUNDWATER MONITORING
RED HILL BULK FUEL STORAGE FACILITY
NAVAL SUPPLY SYSTEM COMMAND (NAVSUP)
FLEET LOGISTICS CENTER
JBPHH, OAHU, HAWAII

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APPENDIX A

Groundwater Sampling Logs

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Groundwater Sampling Log

Well ID: OWDFMW01 Location: Red Hill Bulk Fuel Storage Facility Project No.: 112066

Initial Water Level: 120.74 ft Date: 10/23/2013 Time: 710

Total Depth of Well: 145.10 ft Personnel Involved: Branden Ibara, Jeff Hattemer

Length of Saturated Zone: - Weather Conditions: Sunny, Hot

Volume of Water to be Removed: 5.0 L Method of Removal: Disposable Hand Bailer

Water Level After Purging: 121.96 ft Pumping Rate: 0.26 L/min

Well Purge Data:

Time	Volume Removed	pH	Conductivity (mS/cm)	DO (mg/l)	Temperature	Salinity	Redox (ORP) (mV)
712	0.0 L	9.69	3.042	1.45	23.41	-	-154.0
715	1.0 L	11.03	3.185	2.00	23.47	-	-170.8
720	2.0 L	11.12	3.230	2.04	23.51	-	-181.2
723	3.0 L	11.11	3.229	2.40	23.81	-	-180.0
727	4.0 L	11.18	3.249	2.27	23.84	-	-190.8
731	5.0 L	11.13	3.254	2.13	23.63	-	-179.4

Sample Withdrawal Method: Disposable Hand Bailer

Appearance of Sample:

Color: Clear

Turbidity: Low

Sediment: White Particles

Other: None

Laboratory Analysis Parameters and Preservatives: TPH-d - 8015; TPH-g, VOCs - 8260; PAHs - 8270c sim; lead - 6020

Number and Types of Sample Containers: 16 - 40ml VOAs, 6 - 1L amber jar, 4 - 500ml amber jar, 4 - 500ml HDPE

Sample Identification Numbers: ES034, ES034 MS/MSD [0745]; ES035 [0830]

Decontamination Procedures: Triple Rinsed

Notes: YSI did not have salinity parameter

Sampled by: Branden Ibara, Jeff Hattemer

Sampled Delivered to: Calscience Environmental Lab Transporters: FedEx

Date: 10/23/2013 Time: 1200

Capacity of Casing (Gallons/Linear Feet)

2"-0.16• 4"-0.65 • 8"-2.61 • 10"-4.08 • 12"-5.87

Groundwater Sampling Log

Well ID: HDMW2253-03 Location: Red Hill Bulk Fuel Storage Facility Project No.: 112066

Initial Water Level: - Date: 10/23/2013 Time: 900

Total Depth of Well: 1575 ft Personnel Involved: Branden Ibara, Jeff Hattemer

Length of Saturated Zone: - Weather Conditions: Sunny, Hot

Volume of Water to be Removed: - Method of Removal: Disposable Hand Bailer

Water Level After Purging: - Pumping Rate: 0.27 L/min

Well Purge Data:

Time	Volume Removed	pH	Conductivity (mS/cm)	DO (mg/l)	Temperature	Salinity	Redox (ORP) (mV)
906	0.0 L	8.07	0.576	3.23	23.02	-	-140.7
959	1.0 L	7.04	0.495	2.48	22.69	-	-147.4
1004	2.0 L	6.84	0.792	1.66	22.40	-	-149.6
1009	3.0 L	6.76	0.490	2.71	22.39	-	-128.3
1014	4.0 L	6.75	0.491	2.73	22.37	-	-131.2

Sample Withdrawal Method: Disposable Hand Bailer

Appearance of Sample:

Color: Tan

Turbidity: Low

Sediment: None

Other: None

Laboratory Analysis Parameters and Preservatives: TPH-d - 8015; TPH-g, VOCs - 8260; PAHs - 8270c sim; lead - 6020

Number and Types of Sample Containers: 6 - 40ml VOAs, 2 - 1L amber jar, 1 - 500ml amber jar, 1 - 250ml HDPE

Sample Identification Numbers: ES036 [0930]

Decontamination Procedures: Triple Rinsed

Notes: YSI did not have salinity parameter. Brake in bailing occurred between 0L and 1L because DLNR personal went back to office to retrieve reel to retrieve diver from well.

Sampled by: Branden Ibara, Jeff Hattemer

Sampled Delivered to: Calscience Environmental Lab Transporters: FedEx

Date: 10/23/2013 Time: 1200

Capacity of Casing (Gallons/Linear Feet)

2"-0.16• 4"-0.65 • 8"-2.61 • 10"-4.08 • 12"-5.87

APPENDIX B

Field Notes

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Location Red Hill Date 10/23/13

Project / Client NAVFAC

Purpose: Groundwater Sampling
Personnel: JH, BJ
0615 Meet @ office. Load ice.
0700 @ Red Hill well ow DFMW01.
0710 DTW = 120.74' bgs.
Safety meeting
0712 Begin hand bailing OWDFMW01.
0731 Bailed 5 liters
0745 Collected EL043; EL043MS/MSD
0830 Collected EL044.
0845 Meet DLNR @ Halawa.
0906 Start purge HDM 2253-03.
0908 Cord getting tangled on wire for diver. Robert goes back to office to pick up something to retrieve it.
0955 DLNR back onsite. Pull out diver and resume purging
1014 Done purging well. 4 L removed
Collected sample EB045 (0930 on COC).
1120 Drop off IDW and depart

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Location Red Hill Date 10/23/13

Project / Client NAVFAC

site to Fed Ex.
1200 Dropped off samples @ Fed Ex. Depart site.

JH
10/23/13

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APPENDIX C

Laboratory Reports

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Calscience Environmental Laboratories, Inc.

CALSCIENCE

WORK ORDER NUMBER: 13-10-1893

The difference is service

AIR | SOIL | WATER | MARINE CHEMISTRY

Analytical Report For

Client: Environmental Science International, Inc.

Client Project Name: Red Hill LTM 112066

Attention: Robert Chong
354 Uluniu Street, Suite 304
Kailua, HI 96734-2500

Approved for release on 10/31/2013 by:
Richard Villafania
Project Manager

ResultLink

Email your PM

Calscience Environmental Laboratories, Inc.

Contents

Client Project Name: Red Hill LTM 112066
Work Order Number: 13-10-1893

Calscience Environmental Laboratories, Inc.

Work Order Narrative

Work Order: 13-10-1893 Page 1 of 1

Condition Upon Receipt:

Samples were received under Chain of Custody (COC) on 10/25/13. They were assigned to Work Order 13-10-1893.

Unless otherwise noted on the Sample Receiving forms all samples were received in good condition and within the recommended EPA temperature criteria for the methods noted on the COC. The COC and Sample Receiving Documents are integral elements of the analytical report and are presented at the back of the report.

Holding Times:

All samples were analyzed within prescribed holding times (HT) and/or in accordance with the Calscience Sample Acceptance Policy unless otherwise noted in the analytical report and/or comprehensive case narrative, if required.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

Quality Control:

All quality control parameters (QC) were within established control limits except where noted in the QC summary forms or described further within this report.

Additional Comments:

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are always reported on a wet weight basis.

Subcontractor Information:

Unless otherwise noted below (or on the subcontract form), no samples were subcontracted.

Return to Contents

Calscience Environmental Laboratories, Inc.

Analytical Report

Environmental Science International, Inc.
354 Uluniu Street, Suite 304
Kailua, HI 96734-2500

Date Received: 10/25/13
Work Order: 13-10-1893
Preparation: EPA 3510C
Method: EPA 8015B (M)
Units: ug/L

Project: Red Hill LTM 112066

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
ES043	**13-10-1893-2-H**	**10/23/13 07:45**	**Aqueous**	**GC 46**	**10/28/13**	**10/29/13 08:31**	**131028B12**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.
- TPH as Diesel is quantified in the carbon range C10-C28.

Parameter	Result	DL	LOD	LOQ	DF	Qualifiers
TPH as Diesel	170	15	20	50	1	HD

Surrogate	Rec. (%)	Control Limits	Qualifiers
n-Octacosane	82	51-141	

ES044	**13-10-1893-3-H**	**10/23/13 08:30**	**Aqueous**	**GC 46**	**10/28/13**	**10/29/13 08:48**	**131028B12**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.
- TPH as Diesel is quantified in the carbon range C10-C28.

Parameter	Result	DL	LOD	LOQ	DF	Qualifiers
TPH as Diesel	200	15	20	50	1	HD

Surrogate	Rec. (%)	Control Limits	Qualifiers
n-Octacosane	90	51-141	

ES045	**13-10-1893-4-H**	**10/23/13 09:30**	**Aqueous**	**GC 46**	**10/28/13**	**10/29/13 09:05**	**131028B12**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.
- TPH as Diesel is quantified in the carbon range C10-C28.

Parameter	Result	DL	LOD	LOQ	DF	Qualifiers
TPH as Diesel	<20	15	20	50	1	U

Surrogate	Rec. (%)	Control Limits	Qualifiers
n-Octacosane	84	51-141	

Method Blank	**099-15-516-65**	**N/A**	**Aqueous**	**GC 46**	**10/28/13**	**10/29/13 06:36**	**131028B12**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	DL	LOD	LOQ	DF	Qualifiers
TPH as Diesel	<20	15	20	50	1	U

Surrogate	Rec. (%)	Control Limits	Qualifiers
n-Octacosane	77	51-141	

Return to Contents

Calscience Environmental Laboratories, Inc.

Analytical Report

Environmental Science International, Inc.
354 Uluniu Street, Suite 304
Kailua, HI 96734-2500

Project: Red Hill LTM 112066

Date Received: 10/25/13
Work Order: 13-10-1893
Preparation: EPA 3020A Total
Method: EPA 6020
Units: ug/L

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
ES043	**13-10-1893-2-G**	**10/23/13 07:45**	**Aqueous**	**ICP/MS 04**	**10/25/13**	**10/26/13 04:41**	**131025L03D**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	DL	LOD	LOQ	DF	Qualifiers
Lead	<0.200	0.0898	0.200	1.00	1	U

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
ES044	**13-10-1893-3-G**	**10/23/13 08:30**	**Aqueous**	**ICP/MS 04**	**10/25/13**	**10/26/13 04:44**	**131025L03D**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	DL	LOD	LOQ	DF	Qualifiers
Lead	<0.200	0.0898	0.200	1.00	1	U

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
ES045	**13-10-1893-4-G**	**10/23/13 09:30**	**Aqueous**	**ICP/MS 04**	**10/25/13**	**10/26/13 04:48**	**131025L03D**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	DL	LOD	LOQ	DF	Qualifiers
Lead	<0.200	0.0898	0.200	1.00	1	U

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-14-497-47**	**N/A**	**Aqueous**	**ICP/MS 04**	**10/25/13**	**10/26/13 04:08**	**131025L03D**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	DL	LOD	LOQ	DF	Qualifiers
Lead	<0.200	0.0898	0.200	1.00	1	U

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Calscience Environmental Laboratories, Inc.

Analytical Report

Environmental Science International, Inc.
354 Uluniu Street, Suite 304
Kailua, HI 96734-2500

Date Received: 10/25/13
Work Order: 13-10-1893
Preparation: EPA 3510C
Method: EPA 8270C SIM PAHs
Units: ug/L

Project: Red Hill LTM 112066

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
ES043	**13-10-1893-2-I**	**10/23/13 07:45**	**Aqueous**	**GC/MS AAA**	**10/25/13**	**10/28/13 15:42**	**131025L05**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	DL	LOD	LOQ	DF	Qualifiers
Naphthalene	<0.049	0.023	0.049	0.20	0.985	U
2-Methylnaphthalene	<0.049	0.026	0.049	0.20	0.985	U
1-Methylnaphthalene	<0.049	0.028	0.049	0.20	0.985	U
Acenaphthylene	<0.049	0.018	0.049	0.20	0.985	U
Acenaphthene	<0.049	0.020	0.049	0.20	0.985	U
Fluorene	<0.049	0.024	0.049	0.20	0.985	U
Phenanthrene	<0.049	0.030	0.049	0.20	0.985	U
Anthracene	<0.049	0.034	0.049	0.20	0.985	U
Fluoranthene	<0.049	0.027	0.049	0.20	0.985	U
Pyrene	<0.049	0.024	0.049	0.20	0.985	U
Benzo (a) Anthracene	<0.049	0.023	0.049	0.20	0.985	U
Chrysene	<0.049	0.019	0.049	0.20	0.985	U
Benzo (k) Fluoranthene	<0.049	0.023	0.049	0.20	0.985	U
Benzo (b) Fluoranthene	<0.049	0.025	0.049	0.20	0.985	U
Benzo (a) Pyrene	<0.049	0.036	0.049	0.20	0.985	U
Indeno (1,2,3-c,d) Pyrene	<0.049	0.022	0.049	0.20	0.985	U
Dibenz (a,h) Anthracene	<0.049	0.026	0.049	0.20	0.985	U
Benzo (g,h,i) Perylene	<0.049	0.021	0.049	0.20	0.985	U

Surrogate	Rec. (%)	Control Limits	Qualifiers
Nitrobenzene-d5	76	28-139	
2-Fluorobiphenyl	71	33-144	
p-Terphenyl-d14	85	23-160	

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Calscience Environmental Laboratories, Inc.

Analytical Report

Environmental Science International, Inc.
354 Uluniu Street, Suite 304
Kailua, HI 96734-2500

Date Received: 10/25/13
Work Order: 13-10-1893
Preparation: EPA 3510C
Method: EPA 8270C SIM PAHs
Units: ug/L

Project: Red Hill LTM 112066

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
ES044	**13-10-1893-3-I**	**10/23/13 08:30**	**Aqueous**	**GC/MS AAA**	**10/25/13**	**10/28/13 16:05**	**131025L05**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	DL	LOD	LOQ	DF	Qualifiers
Naphthalene	<0.049	0.023	0.049	0.20	0.98	U
2-Methylnaphthalene	<0.049	0.026	0.049	0.20	0.98	U
1-Methylnaphthalene	<0.049	0.028	0.049	0.20	0.98	U
Acenaphthylene	<0.049	0.018	0.049	0.20	0.98	U
Acenaphthene	<0.049	0.020	0.049	0.20	0.98	U
Fluorene	<0.049	0.024	0.049	0.20	0.98	U
Phenanthrene	<0.049	0.030	0.049	0.20	0.98	U
Anthracene	<0.049	0.033	0.049	0.20	0.98	U
Fluoranthene	<0.049	0.027	0.049	0.20	0.98	U
Pyrene	<0.049	0.024	0.049	0.20	0.98	U
Benzo (a) Anthracene	<0.049	0.023	0.049	0.20	0.98	U
Chrysene	<0.049	0.019	0.049	0.20	0.98	U
Benzo (k) Fluoranthene	<0.049	0.023	0.049	0.20	0.98	U
Benzo (b) Fluoranthene	<0.049	0.024	0.049	0.20	0.98	U
Benzo (a) Pyrene	<0.049	0.036	0.049	0.20	0.98	U
Indeno (1,2,3-c,d) Pyrene	<0.049	0.022	0.049	0.20	0.98	U
Dibenz (a,h) Anthracene	<0.049	0.026	0.049	0.20	0.98	U
Benzo (g,h,i) Perylene	<0.049	0.021	0.049	0.20	0.98	U

Surrogate	Rec. (%)	Control Limits	Qualifiers
Nitrobenzene-d5	77	28-139	
2-Fluorobiphenyl	71	33-144	
p-Terphenyl-d14	84	23-160	

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Calscience Environmental Laboratories, Inc.

Analytical Report

Environmental Science International, Inc.
354 Uluniu Street, Suite 304
Kailua, HI 96734-2500

Date Received: 10/25/13
Work Order: 13-10-1893
Preparation: EPA 3510C
Method: EPA 8270C SIM PAHs
Units: ug/L

Project: Red Hill LTM 112066

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
ES045	**13-10-1893-4-I**	**10/23/13 09:30**	**Aqueous**	**GC/MS AAA**	**10/25/13**	**10/28/13 16:28**	**131025L05**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	DL	LOD	LOQ	DF	Qualifiers
Naphthalene	0.041	0.023	0.050	0.20	1	J
2-Methylnaphthalene	<0.050	0.026	0.050	0.20	1	U
1-Methylnaphthalene	<0.050	0.028	0.050	0.20	1	U
Acenaphthylene	<0.050	0.018	0.050	0.20	1	U
Acenaphthene	<0.050	0.021	0.050	0.20	1	U
Fluorene	<0.050	0.024	0.050	0.20	1	U
Phenanthrene	<0.050	0.031	0.050	0.20	1	U
Anthracene	<0.050	0.034	0.050	0.20	1	U
Fluoranthene	<0.050	0.027	0.050	0.20	1	U
Pyrene	<0.050	0.025	0.050	0.20	1	U
Benzo (a) Anthracene	<0.050	0.024	0.050	0.20	1	U
Chrysene	<0.050	0.019	0.050	0.20	1	U
Benzo (k) Fluoranthene	<0.050	0.023	0.050	0.20	1	U
Benzo (b) Fluoranthene	<0.050	0.025	0.050	0.20	1	U
Benzo (a) Pyrene	<0.050	0.036	0.050	0.20	1	U
Indeno (1,2,3-c,d) Pyrene	<0.050	0.022	0.050	0.20	1	U
Dibenz (a,h) Anthracene	<0.050	0.027	0.050	0.20	1	U
Benzo (g,h,i) Perylene	<0.050	0.022	0.050	0.20	1	U

Surrogate	Rec. (%)	Control Limits	Qualifiers
Nitrobenzene-d5	80	28-139	
2-Fluorobiphenyl	74	33-144	
p-Terphenyl-d14	87	23-160	

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Calscience Environmental Laboratories, Inc.

Analytical Report

Environmental Science International, Inc.
354 Uluniu Street, Suite 304
Kailua, HI 96734-2500

Date Received: 10/25/13
Work Order: 13-10-1893
Preparation: EPA 3510C
Method: EPA 8270C SIM PAHs
Units: ug/L

Project: Red Hill LTM 112066

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-15-148-20**	**N/A**	**Aqueous**	**GC/MS AAA**	**10/25/13**	**10/28/13 14:08**	**131025L05**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	DL	LOD	LOQ	DF	Qualifiers
Naphthalene	<0.050	0.023	0.050	0.20	1	U
2-Methylnaphthalene	<0.050	0.026	0.050	0.20	1	U
1-Methylnaphthalene	<0.050	0.028	0.050	0.20	1	U
Acenaphthylene	<0.050	0.018	0.050	0.20	1	U
Acenaphthene	<0.050	0.021	0.050	0.20	1	U
Fluorene	<0.050	0.024	0.050	0.20	1	U
Phenanthrene	<0.050	0.031	0.050	0.20	1	U
Anthracene	<0.050	0.034	0.050	0.20	1	U
Fluoranthene	<0.050	0.027	0.050	0.20	1	U
Pyrene	<0.050	0.025	0.050	0.20	1	U
Benzo (a) Anthracene	<0.050	0.024	0.050	0.20	1	U
Chrysene	<0.050	0.019	0.050	0.20	1	U
Benzo (k) Fluoranthene	<0.050	0.023	0.050	0.20	1	U
Benzo (b) Fluoranthene	<0.050	0.025	0.050	0.20	1	U
Benzo (a) Pyrene	<0.050	0.036	0.050	0.20	1	U
Indeno (1,2,3-c,d) Pyrene	<0.050	0.022	0.050	0.20	1	U
Dibenz (a,h) Anthracene	<0.050	0.027	0.050	0.20	1	U
Benzo (g,h,i) Perylene	<0.050	0.022	0.050	0.20	1	U

Surrogate	Rec. (%)	Control Limits	Qualifiers
Nitrobenzene-d5	70	28-139	
2-Fluorobiphenyl	72	33-144	
p-Terphenyl-d14	79	23-160	

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Calscience Environmental Laboratories, Inc.

Analytical Report

Environmental Science International, Inc.
354 Uluniu Street, Suite 304
Kailua, HI 96734-2500

Date Received: 10/25/13
Work Order: 13-10-1893
Preparation: EPA 5030C
Method: GC/MS / EPA 8260B
Units: ug/L

Project: Red Hill LTM 112066

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
ES TRIP	**13-10-1893-1-A**	**10/23/13 07:00**	**Aqueous**	**GC/MS LL**	**10/26/13**	**10/26/13 19:13**	**131026L01**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	DL	LOD	LOQ	DF	Qualifiers
Acetone	<10	6.0	10	20	1	U,ICH
Benzene	<0.50	0.14	0.50	1.0	1	U
Bromodichloromethane	<0.50	0.21	0.50	5.0	1	U
Bromoform	<1.0	0.50	1.0	10	1	U
Bromomethane	<5.0	3.9	5.0	20	1	U
2-Butanone	<5.0	2.2	5.0	10	1	U,ICH
Carbon Tetrachloride	<0.50	0.23	0.50	1.0	1	U
Chlorobenzene	<0.50	0.17	0.50	5.0	1	U
Chloroethane	<5.0	2.3	5.0	10	1	U
Chloroform	<0.50	0.46	0.50	5.0	1	U
Chloromethane	<2.0	1.8	2.0	10	1	U,IJ
Dibromochloromethane	<0.50	0.25	0.50	1.0	1	U
1,2-Dibromo-3-Chloropropane	<2.0	1.2	2.0	10	1	U
1,2-Dibromoethane	<0.50	0.36	0.50	1.0	1	U
1,2-Dichlorobenzene	<0.50	0.46	0.50	1.0	1	U
1,3-Dichlorobenzene	<0.50	0.40	0.50	1.0	1	U
1,4-Dichlorobenzene	<0.50	0.43	0.50	1.0	1	U
1,1-Dichloroethane	<0.50	0.28	0.50	5.0	1	U
1,2-Dichloroethane	<0.50	0.24	0.50	1.0	1	U
1,1-Dichloroethene	<0.50	0.43	0.50	1.0	1	U
c-1,2-Dichloroethene	<0.50	0.48	0.50	1.0	1	U
t-1,2-Dichloroethene	<0.50	0.37	0.50	1.0	1	U
1,2-Dichloropropane	<0.50	0.42	0.50	5.0	1	U
c-1,3-Dichloropropene	<0.50	0.25	0.50	1.0	1	U
t-1,3-Dichloropropene	<0.50	0.25	0.50	1.0	1	U
Ethylbenzene	<0.50	0.14	0.50	1.0	1	U
Methylene Chloride	<1.0	0.64	1.0	5.0	1	U
4-Methyl-2-Pentanone	<5.0	4.4	5.0	10	1	U
Styrene	<0.50	0.17	0.50	1.0	1	U
1,1,1,2-Tetrachloroethane	<0.50	0.40	0.50	1.0	1	U
1,1,2,2-Tetrachloroethane	<0.50	0.41	0.50	1.0	1	U
Tetrachloroethene	<0.50	0.39	0.50	5.0	1	U
Toluene	<0.50	0.24	0.50	1.0	1	U
1,2,4-Trichlorobenzene	<1.0	0.50	1.0	5.0	1	U
1,1,1-Trichloroethane	<0.50	0.30	0.50	5.0	1	U
Hexachloro-1,3-Butadiene	<0.50	0.32	0.50	1.0	1	U

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Calscience Environmental Laboratories, Inc.

Analytical Report

Environmental Science International, Inc.
354 Uluniu Street, Suite 304
Kailua, HI 96734-2500

Date Received:	10/25/13
Work Order:	13-10-1893
Preparation:	EPA 5030C
Method:	GC/MS / EPA 8260B
Units:	ug/L

Project: Red Hill LTM 112066

Parameter	Result	DL	LOD	LOQ	DF	Qualifiers
1,1,2-Trichloroethane	<0.50	0.38	0.50	1.0	1	U
Trichloroethene	<0.50	0.37	0.50	1.0	1	U
1,2,3-Trichloropropane	<1.0	0.64	1.0	5.0	1	U
Vinyl Chloride	<0.50	0.30	0.50	1.0	1	U
p/m-Xylene	<1.0	0.30	1.0	10	1	U
o-Xylene	<0.50	0.23	0.50	1.0	1	U
Methyl-t-Butyl Ether (MTBE)	<0.50	0.31	0.50	1.0	1	U
Gasoline Range Organics	24	13	30	50	1	B,J

Surrogate	Rec. (%)	Control Limits	Qualifiers
Dibromofluoromethane	114	80-126	
1,2-Dichloroethane-d4	114	80-134	
Toluene-d8	97	80-120	
Toluene-d8-TPPH	98	88-112	
1,4-Bromofluorobenzene	89	80-120	

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Calscience Environmental Laboratories, Inc.

Analytical Report

Environmental Science International, Inc.
354 Uluniu Street, Suite 304
Kailua, HI 96734-2500

Date Received: 10/25/13
Work Order: 13-10-1893
Preparation: EPA 5030C
Method: GC/MS / EPA 8260B
Units: ug/L

Project: Red Hill LTM 112066

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
ES043	**13-10-1893-2-A**	**10/23/13 07:45**	**Aqueous**	**GC/MS LL**	**10/26/13**	**10/26/13 19:40**	**131026L01**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	DL	LOD	LOQ	DF	Qualifiers
Acetone	44	6.0	10	20	1	ICH
Benzene	<0.50	0.14	0.50	1.0	1	U
Bromodichloromethane	<0.50	0.21	0.50	5.0	1	U
Bromoform	<1.0	0.50	1.0	10	1	U
Bromomethane	<5.0	3.9	5.0	20	1	U
2-Butanone	<5.0	2.2	5.0	10	1	U,ICH
Carbon Tetrachloride	<0.50	0.23	0.50	1.0	1	U
Chlorobenzene	<0.50	0.17	0.50	5.0	1	U
Chloroethane	<5.0	2.3	5.0	10	1	U
Chloroform	<0.50	0.46	0.50	5.0	1	U
Chloromethane	<2.0	1.8	2.0	10	1	U,IJ
Dibromochloromethane	<0.50	0.25	0.50	1.0	1	U
1,2-Dibromo-3-Chloropropane	<2.0	1.2	2.0	10	1	U
1,2-Dibromoethane	<0.50	0.36	0.50	1.0	1	U
1,2-Dichlorobenzene	<0.50	0.46	0.50	1.0	1	U
1,3-Dichlorobenzene	<0.50	0.40	0.50	1.0	1	U
1,4-Dichlorobenzene	<0.50	0.43	0.50	1.0	1	U
1,1-Dichloroethane	<0.50	0.28	0.50	5.0	1	U
1,2-Dichloroethane	<0.50	0.24	0.50	1.0	1	U
1,1-Dichloroethene	<0.50	0.43	0.50	1.0	1	U
c-1,2-Dichloroethene	<0.50	0.48	0.50	1.0	1	U
t-1,2-Dichloroethene	<0.50	0.37	0.50	1.0	1	U
1,2-Dichloropropane	<0.50	0.42	0.50	5.0	1	U
c-1,3-Dichloropropene	<0.50	0.25	0.50	1.0	1	U
t-1,3-Dichloropropene	<0.50	0.25	0.50	1.0	1	U
Ethylbenzene	<0.50	0.14	0.50	1.0	1	U
Methylene Chloride	<1.0	0.64	1.0	5.0	1	U
4-Methyl-2-Pentanone	<5.0	4.4	5.0	10	1	U
Styrene	<0.50	0.17	0.50	1.0	1	U
1,1,1,2-Tetrachloroethane	<0.50	0.40	0.50	1.0	1	U
1,1,2,2-Tetrachloroethane	<0.50	0.41	0.50	1.0	1	U
Tetrachloroethene	<0.50	0.39	0.50	5.0	1	U
Toluene	<0.50	0.24	0.50	1.0	1	U
1,2,4-Trichlorobenzene	<1.0	0.50	1.0	5.0	1	U
1,1,1-Trichloroethane	<0.50	0.30	0.50	5.0	1	U
Hexachloro-1,3-Butadiene	<0.50	0.32	0.50	1.0	1	U

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Calscience Environmental Laboratories, Inc.

Analytical Report

Environmental Science International, Inc.
354 Uluniu Street, Suite 304
Kailua, HI 96734-2500

Date Received: 10/25/13
Work Order: 13-10-1893
Preparation: EPA 5030C
Method: GC/MS / EPA 8260B
Units: ug/L

Project: Red Hill LTM 112066

Parameter	Result	DL	LOD	LOQ	DF	Qualifiers
1,1,2-Trichloroethane	<0.50	0.38	0.50	1.0	1	U
Trichloroethene	<0.50	0.37	0.50	1.0	1	U
1,2,3-Trichloropropane	<1.0	0.64	1.0	5.0	1	U
Vinyl Chloride	<0.50	0.30	0.50	1.0	1	U
p/m-Xylene	<1.0	0.30	1.0	10	1	U
o-Xylene	<0.50	0.23	0.50	1.0	1	U
Methyl-t-Butyl Ether (MTBE)	<0.50	0.31	0.50	1.0	1	U
Gasoline Range Organics	17	13	30	50	1	B,J

Surrogate	Rec. (%)	Control Limits	Qualifiers
Dibromofluoromethane	100	80-126	
1,2-Dichloroethane-d4	104	80-134	
Toluene-d8	99	80-120	
Toluene-d8-TPPH	100	88-112	
1,4-Bromofluorobenzene	87	80-120	

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Calscience Environmental Laboratories, Inc.

Analytical Report

Environmental Science International, Inc.
354 Uluniu Street, Suite 304
Kailua, HI 96734-2500

Date Received: 10/25/13
Work Order: 13-10-1893
Preparation: EPA 5030C
Method: GC/MS / EPA 8260B
Units: ug/L

Project: Red Hill LTM 112066

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
ES044	**13-10-1893-3-A**	**10/23/13 08:30**	**Aqueous**	**GC/MS LL**	**10/26/13**	**10/26/13 21:28**	**131026L01**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	DL	LOD	LOQ	DF	Qualifiers
Acetone	38	6.0	10	20	1	ICH
Benzene	0.17	0.14	0.50	1.0	1	J
Bromodichloromethane	<0.50	0.21	0.50	5.0	1	U
Bromoform	<1.0	0.50	1.0	10	1	U
Bromomethane	<5.0	3.9	5.0	20	1	U
2-Butanone	<5.0	2.2	5.0	10	1	U,ICH
Carbon Tetrachloride	<0.50	0.23	0.50	1.0	1	U
Chlorobenzene	<0.50	0.17	0.50	5.0	1	U
Chloroethane	<5.0	2.3	5.0	10	1	U
Chloroform	<0.50	0.46	0.50	5.0	1	U
Chloromethane	<2.0	1.8	2.0	10	1	U,IJ
Dibromochloromethane	<0.50	0.25	0.50	1.0	1	U
1,2-Dibromo-3-Chloropropane	<2.0	1.2	2.0	10	1	U
1,2-Dibromoethane	<0.50	0.36	0.50	1.0	1	U
1,2-Dichlorobenzene	<0.50	0.46	0.50	1.0	1	U
1,3-Dichlorobenzene	<0.50	0.40	0.50	1.0	1	U
1,4-Dichlorobenzene	<0.50	0.43	0.50	1.0	1	U
1,1-Dichloroethane	<0.50	0.28	0.50	5.0	1	U
1,2-Dichloroethane	<0.50	0.24	0.50	1.0	1	U
1,1-Dichloroethene	<0.50	0.43	0.50	1.0	1	U
c-1,2-Dichloroethene	<0.50	0.48	0.50	1.0	1	U
t-1,2-Dichloroethene	<0.50	0.37	0.50	1.0	1	U
1,2-Dichloropropane	<0.50	0.42	0.50	5.0	1	U
c-1,3-Dichloropropene	<0.50	0.25	0.50	1.0	1	U
t-1,3-Dichloropropene	<0.50	0.25	0.50	1.0	1	U
Ethylbenzene	<0.50	0.14	0.50	1.0	1	U
Methylene Chloride	<1.0	0.64	1.0	5.0	1	U
4-Methyl-2-Pentanone	<5.0	4.4	5.0	10	1	U
Styrene	<0.50	0.17	0.50	1.0	1	U
1,1,1,2-Tetrachloroethane	<0.50	0.40	0.50	1.0	1	U
1,1,2,2-Tetrachloroethane	<0.50	0.41	0.50	1.0	1	U
Tetrachloroethene	<0.50	0.39	0.50	5.0	1	U
Toluene	<0.50	0.24	0.50	1.0	1	U
1,2,4-Trichlorobenzene	<1.0	0.50	1.0	5.0	1	U
1,1,1-Trichloroethane	<0.50	0.30	0.50	5.0	1	U
Hexachloro-1,3-Butadiene	<0.50	0.32	0.50	1.0	1	U

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Calscience Environmental Laboratories, Inc.

Analytical Report

Environmental Science International, Inc.
354 Uluniu Street, Suite 304
Kailua, HI 96734-2500

Date Received:	10/25/13
Work Order:	13-10-1893
Preparation:	EPA 5030C
Method:	GC/MS / EPA 8260B
Units:	ug/L

Project: Red Hill LTM 112066

Parameter	Result	DL	LOD	LOQ	DF	Qualifiers
1,1,2-Trichloroethane	<0.50	0.38	0.50	1.0	1	U
Trichloroethene	<0.50	0.37	0.50	1.0	1	U
1,2,3-Trichloropropane	<1.0	0.64	1.0	5.0	1	U
Vinyl Chloride	<0.50	0.30	0.50	1.0	1	U
p/m-Xylene	<1.0	0.30	1.0	10	1	U
o-Xylene	<0.50	0.23	0.50	1.0	1	U
Methyl-t-Butyl Ether (MTBE)	<0.50	0.31	0.50	1.0	1	U
Gasoline Range Organics	14	13	30	50	1	B,J

Surrogate	Rec. (%)	Control Limits	Qualifiers
Dibromofluoromethane	100	80-126	
1,2-Dichloroethane-d4	102	80-134	
Toluene-d8	96	80-120	
Toluene-d8-TPPH	97	88-112	
1,4-Bromofluorobenzene	86	80-120	

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Calscience Environmental Laboratories, Inc.

Analytical Report

Environmental Science International, Inc.
354 Uluniu Street, Suite 304
Kailua, HI 96734-2500

Date Received: 10/25/13
Work Order: 13-10-1893
Preparation: EPA 5030C
Method: GC/MS / EPA 8260B
Units: ug/L

Project: Red Hill LTM 112066

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
ES045	**13-10-1893-4-A**	**10/23/13 09:30**	**Aqueous**	**GC/MS LL**	**10/26/13**	**10/26/13 21:55**	**131026L01**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	DL	LOD	LOQ	DF	Qualifiers
Acetone	<10	6.0	10	20	1	U,ICH
Benzene	<0.50	0.14	0.50	1.0	1	U
Bromodichloromethane	<0.50	0.21	0.50	5.0	1	U
Bromoform	<1.0	0.50	1.0	10	1	U
Bromomethane	<5.0	3.9	5.0	20	1	U
2-Butanone	<5.0	2.2	5.0	10	1	U,ICH
Carbon Tetrachloride	<0.50	0.23	0.50	1.0	1	U
Chlorobenzene	<0.50	0.17	0.50	5.0	1	U
Chloroethane	<5.0	2.3	5.0	10	1	U
Chloroform	<0.50	0.46	0.50	5.0	1	U
Chloromethane	<2.0	1.8	2.0	10	1	U,IJ
Dibromochloromethane	<0.50	0.25	0.50	1.0	1	U
1,2-Dibromo-3-Chloropropane	<2.0	1.2	2.0	10	1	U
1,2-Dibromoethane	<0.50	0.36	0.50	1.0	1	U
1,2-Dichlorobenzene	<0.50	0.46	0.50	1.0	1	U
1,3-Dichlorobenzene	<0.50	0.40	0.50	1.0	1	U
1,4-Dichlorobenzene	<0.50	0.43	0.50	1.0	1	U
1,1-Dichloroethane	<0.50	0.28	0.50	5.0	1	U
1,2-Dichloroethane	<0.50	0.24	0.50	1.0	1	U
1,1-Dichloroethene	<0.50	0.43	0.50	1.0	1	U
c-1,2-Dichloroethene	<0.50	0.48	0.50	1.0	1	U
t-1,2-Dichloroethene	<0.50	0.37	0.50	1.0	1	U
1,2-Dichloropropane	<0.50	0.42	0.50	5.0	1	U
c-1,3-Dichloropropene	<0.50	0.25	0.50	1.0	1	U
t-1,3-Dichloropropene	<0.50	0.25	0.50	1.0	1	U
Ethylbenzene	<0.50	0.14	0.50	1.0	1	U
Methylene Chloride	<1.0	0.64	1.0	5.0	1	U
4-Methyl-2-Pentanone	<5.0	4.4	5.0	10	1	U
Styrene	<0.50	0.17	0.50	1.0	1	U
1,1,1,2-Tetrachloroethane	<0.50	0.40	0.50	1.0	1	U
1,1,2,2-Tetrachloroethane	<0.50	0.41	0.50	1.0	1	U
Tetrachloroethene	<0.50	0.39	0.50	5.0	1	U
Toluene	<0.50	0.24	0.50	1.0	1	U
1,2,4-Trichlorobenzene	<1.0	0.50	1.0	5.0	1	U
1,1,1-Trichloroethane	<0.50	0.30	0.50	5.0	1	U
Hexachloro-1,3-Butadiene	<0.50	0.32	0.50	1.0	1	U

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Calscience Environmental Laboratories, Inc.

Analytical Report

Environmental Science International, Inc.
354 Uluniu Street, Suite 304
Kailua, HI 96734-2500

Date Received: 10/25/13
Work Order: 13-10-1893
Preparation: EPA 5030C
Method: GC/MS / EPA 8260B
Units: ug/L

Project: Red Hill LTM 112066

Parameter	Result	DL	LOD	LOQ	DF	Qualifiers
1,1,2-Trichloroethane	<0.50	0.38	0.50	1.0	1	U
Trichloroethene	<0.50	0.37	0.50	1.0	1	U
1,2,3-Trichloropropane	<1.0	0.64	1.0	5.0	1	U
Vinyl Chloride	<0.50	0.30	0.50	1.0	1	U
p/m-Xylene	<1.0	0.30	1.0	10	1	U
o-Xylene	<0.50	0.23	0.50	1.0	1	U
Methyl-t-Butyl Ether (MTBE)	<0.50	0.31	0.50	1.0	1	U
Gasoline Range Organics	15	13	30	50	1	B,J

Surrogate	Rec. (%)	Control Limits	Qualifiers
Dibromofluoromethane	105	80-126	
1,2-Dichloroethane-d4	104	80-134	
Toluene-d8	98	80-120	
Toluene-d8-TPPH	98	88-112	
1,4-Bromofluorobenzene	87	80-120	

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Calscience Environmental Laboratories, Inc.

Analytical Report

Environmental Science International, Inc.
354 Uluniu Street, Suite 304
Kailua, HI 96734-2500

Date Received: 10/25/13
Work Order: 13-10-1893
Preparation: EPA 5030C
Method: GC/MS / EPA 8260B
Units: ug/L

Project: Red Hill LTM 112066

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-13-057-27**	**N/A**	**Aqueous**	**GC/MS LL**	**10/26/13**	**10/26/13 14:17**	**131026L01**

Comment(s): - Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	DL	LOD	LOQ	DF	Qualifiers
Acetone	<10	6.0	10	20	1	U
Benzene	<0.50	0.14	0.50	1.0	1	U
Bromodichloromethane	<0.50	0.21	0.50	5.0	1	U
Bromoform	<1.0	0.50	1.0	10	1	U
Bromomethane	<5.0	3.9	5.0	20	1	U
2-Butanone	<5.0	2.2	5.0	10	1	U
Carbon Tetrachloride	<0.50	0.23	0.50	1.0	1	U
Chlorobenzene	<0.50	0.17	0.50	5.0	1	U
Chloroethane	<5.0	2.3	5.0	10	1	U
Chloroform	<0.50	0.46	0.50	5.0	1	U
Chloromethane	<2.0	1.8	2.0	10	1	U
Dibromochloromethane	<0.50	0.25	0.50	1.0	1	U
1,2-Dibromo-3-Chloropropane	<2.0	1.2	2.0	10	1	U
1,2-Dibromoethane	<0.50	0.36	0.50	1.0	1	U
1,2-Dichlorobenzene	<0.50	0.46	0.50	1.0	1	U
1,3-Dichlorobenzene	<0.50	0.40	0.50	1.0	1	U
1,4-Dichlorobenzene	<0.50	0.43	0.50	1.0	1	U
1,1-Dichloroethane	<0.50	0.28	0.50	5.0	1	U
1,2-Dichloroethane	<0.50	0.24	0.50	1.0	1	U
1,1-Dichloroethene	<0.50	0.43	0.50	1.0	1	U
c-1,2-Dichloroethene	<0.50	0.48	0.50	1.0	1	U
t-1,2-Dichloroethene	<0.50	0.37	0.50	1.0	1	U
1,2-Dichloropropane	<0.50	0.42	0.50	5.0	1	U
c-1,3-Dichloropropene	<0.50	0.25	0.50	1.0	1	U
t-1,3-Dichloropropene	<0.50	0.25	0.50	1.0	1	U
Ethylbenzene	<0.50	0.14	0.50	1.0	1	U
Methylene Chloride	<1.0	0.64	1.0	5.0	1	U
4-Methyl-2-Pentanone	<5.0	4.4	5.0	10	1	U
Styrene	<0.50	0.17	0.50	1.0	1	U
1,1,1,2-Tetrachloroethane	<0.50	0.40	0.50	1.0	1	U
1,1,2,2-Tetrachloroethane	<0.50	0.41	0.50	1.0	1	U
Tetrachloroethene	<0.50	0.39	0.50	5.0	1	U
Toluene	<0.50	0.24	0.50	1.0	1	U
1,2,4-Trichlorobenzene	<1.0	0.50	1.0	5.0	1	U
1,1,1-Trichloroethane	<0.50	0.30	0.50	5.0	1	U
Hexachloro-1,3-Butadiene	<0.50	0.32	0.50	1.0	1	U

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Calscience Environmental Laboratories, Inc.

Analytical Report

Environmental Science International, Inc.
354 Uluniu Street, Suite 304
Kailua, HI 96734-2500

Date Received:	10/25/13
Work Order:	13-10-1893
Preparation:	EPA 5030C
Method:	GC/MS / EPA 8260B
Units:	ug/L

Project: Red Hill LTM 112066

Parameter	Result	DL	LOD	LOQ	DF	Qualifiers
1,1,2-Trichloroethane	<0.50	0.38	0.50	1.0	1	U
Trichloroethene	<0.50	0.37	0.50	1.0	1	U
1,2,3-Trichloropropane	<1.0	0.64	1.0	5.0	1	U
Vinyl Chloride	<0.50	0.30	0.50	1.0	1	U
p/m-Xylene	<1.0	0.30	1.0	10	1	U
o-Xylene	<0.50	0.23	0.50	1.0	1	U
Methyl-t-Butyl Ether (MTBE)	<0.50	0.31	0.50	1.0	1	U
Gasoline Range Organics	21	13	30	50	1	J

Surrogate	Rec. (%)	Control Limits	Qualifiers
Dibromofluoromethane	100	80-126	
1,2-Dichloroethane-d4	97	80-134	
Toluene-d8	98	80-120	
Toluene-d8-TPPH	98	88-112	
1,4-Bromofluorobenzene	90	80-120	

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Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

Environmental Science International, Inc.		Date Received:	10/25/13
354 Uluniu Street, Suite 304		Work Order:	13-10-1893
Kailua, HI 96734-2500		Preparation:	EPA 3510C
		Method:	EPA 8015B (M)
Project: Red Hill LTM 112066			Page 1 of 5

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
ES043	**Aqueous**	**GC 46**	**10/28/13**	**10/29/13 07:25**	**131028S12**

Parameter	Sample Conc.	Spike Added	MS Conc.	MS %Rec.	MSD Conc.	MSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
TPH as Diesel	167.4	4000	4384	105	4150	100	55-133	5	0-30	

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RPD: Relative Percent Difference. CL: Control Limits

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

Environmental Science International, Inc.		Date Received:	10/25/13
354 Uluniu Street, Suite 304		Work Order:	13-10-1893
Kailua, HI 96734-2500		Preparation:	EPA 3020A Total
		Method:	EPA 6020
Project: Red Hill LTM 112066			Page 2 of 5

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
ES043	**Aqueous**	**ICP/MS 04**	**10/25/13**	**10/26/13 04:18**	**131025S03**

Parameter	Sample Conc.	Spike Added	MS Conc.	MS %Rec.	MSD Conc.	MSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Lead	ND	100.0	105.0	105	110.0	110	80-120	5	0-20	

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RPD: Relative Percent Difference. CL: Control Limits

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

Environmental Science International, Inc.
354 Uluniu Street, Suite 304
Kailua, HI 96734-2500

Project: Red Hill LTM 112066

Date Received: 10/25/13
Work Order: 13-10-1893
Preparation: EPA 3510C
Method: EPA 8270C SIM PAHs

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
ES043	**Aqueous**	**GC/MS AAA**	**10/25/13**	**10/28/13 19:12**	**131025S05**

Parameter	Sample Conc.	Spike Added	MS Conc.	MS %Rec.	MSD Conc.	MSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Naphthalene	ND	2.000	1.660	83	1.636	82	21-133	1	0-25	
2-Methylnaphthalene	ND	2.000	1.801	90	1.739	87	21-140	3	0-25	
1-Methylnaphthalene	ND	2.000	1.618	81	1.576	79	20-140	3	0-25	
Acenaphthylene	ND	2.000	1.533	77	1.535	77	33-145	0	0-25	
Acenaphthene	ND	2.000	1.476	74	1.476	74	49-121	0	0-25	
Fluorene	ND	2.000	1.582	79	1.567	78	59-121	1	0-25	
Phenanthrene	ND	2.000	1.494	75	1.472	74	54-120	1	0-25	
Anthracene	ND	2.000	1.298	65	1.286	64	27-133	1	0-25	
Fluoranthene	ND	2.000	1.610	80	1.593	80	26-137	1	0-25	
Pyrene	ND	2.000	1.439	72	1.419	71	18-168	1	0-25	
Benzo (a) Anthracene	ND	2.000	1.511	76	1.480	74	33-143	2	0-25	
Chrysene	ND	2.000	1.327	66	1.307	65	17-168	1	0-25	
Benzo (k) Fluoranthene	ND	2.000	1.616	81	1.501	75	24-159	7	0-25	
Benzo (b) Fluoranthene	ND	2.000	1.470	73	1.542	77	24-159	5	0-25	
Benzo (a) Pyrene	ND	2.000	1.635	82	1.617	81	17-163	1	0-25	
Indeno (1,2,3-c,d) Pyrene	ND	2.000	1.584	79	1.570	79	10-171	1	0-25	
Dibenz (a,h) Anthracene	ND	2.000	1.375	69	1.362	68	10-219	1	0-25	
Benzo (g,h,i) Perylene	ND	2.000	1.142	57	1.122	56	10-227	2	0-25	

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RPD: Relative Percent Difference. CL: Control Limits

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

Environmental Science International, Inc.
354 Uluniu Street, Suite 304
Kailua, HI 96734-2500

Project: Red Hill LTM 112066

Date Received: 10/25/13
Work Order: 13-10-1893
Preparation: EPA 5030C
Method: GC/MS / EPA 8260B
Page 4 of 5

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
ES043	**Aqueous**	**GC/MS LL**	**10/26/13**	**10/26/13 20:07**	**131026S02**

Parameter	Sample Conc.	Spike Added	MS Conc.	MS %Rec.	MSD Conc.	MSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Acetone	43.53	50.00	145.0	203	204.7	322	40-140	34	0-20	3,4
Benzene	ND	50.00	47.54	95	43.23	86	80-120	9	0-20	
Bromodichloromethane	ND	50.00	46.88	94	43.41	87	75-120	8	0-20	
Bromoform	ND	50.00	49.11	98	45.86	92	70-130	7	0-20	
Bromomethane	ND	50.00	55.71	111	51.36	103	30-145	8	0-20	
2-Butanone	ND	50.00	57.88	116	53.08	106	30-150	9	0-20	
Carbon Tetrachloride	ND	50.00	49.98	100	45.05	90	65-140	10	0-20	
Chlorobenzene	ND	50.00	45.86	92	42.14	84	80-120	8	0-20	
Chloroethane	ND	50.00	47.66	95	43.21	86	60-135	10	0-20	
Chloroform	ND	50.00	50.13	100	45.55	91	65-135	10	0-20	
Chloromethane	ND	50.00	40.56	81	39.56	79	40-125	2	0-20	
Dibromochloromethane	ND	50.00	50.89	102	46.09	92	60-135	10	0-20	
1,2-Dibromo-3-Chloropropane	ND	50.00	43.97	88	41.13	82	50-130	7	0-20	
1,2-Dibromoethane	ND	50.00	50.40	101	45.04	90	80-120	11	0-20	
1,2-Dichlorobenzene	ND	50.00	48.30	97	43.80	88	70-120	10	0-20	
1,3-Dichlorobenzene	ND	50.00	46.19	92	42.52	85	75-125	8	0-20	
1,4-Dichlorobenzene	ND	50.00	46.72	93	43.18	86	75-125	8	0-20	
1,1-Dichloroethane	ND	50.00	52.67	105	47.29	95	70-135	11	0-20	
1,2-Dichloroethane	ND	50.00	49.82	100	46.41	93	70-130	7	0-20	
1,1-Dichloroethene	ND	50.00	50.09	100	46.19	92	70-130	8	0-20	
c-1,2-Dichloroethene	ND	50.00	48.26	97	44.60	89	70-125	8	0-20	
t-1,2-Dichloroethene	ND	50.00	49.15	98	45.06	90	60-140	9	0-20	
1,2-Dichloropropane	ND	50.00	47.03	94	42.92	86	75-125	9	0-20	
c-1,3-Dichloropropene	ND	50.00	53.83	108	49.65	99	70-130	8	0-20	
t-1,3-Dichloropropene	ND	50.00	42.46	85	39.53	79	55-140	7	0-20	
Ethylbenzene	ND	50.00	54.85	110	48.93	98	75-125	11	0-20	
Methylene Chloride	ND	50.00	53.29	107	47.71	95	55-140	11	0-20	
4-Methyl-2-Pentanone	ND	50.00	48.13	96	46.08	92	60-135	4	0-20	
Styrene	ND	50.00	51.22	102	46.90	94	65-135	9	0-20	
1,1,1,2-Tetrachloroethane	ND	50.00	50.13	100	44.77	90	80-130	11	0-20	
1,1,2,2-Tetrachloroethane	ND	50.00	1.149	2	0.9227	2	65-130	22	0-20	3,4
Tetrachloroethene	ND	50.00	86.60	173	78.03	156	45-150	10	0-20	3
Toluene	ND	50.00	53.04	106	47.64	95	75-120	11	0-20	
1,2,4-Trichlorobenzene	ND	50.00	47.77	96	45.07	90	65-135	6	0-20	
1,1,1-Trichloroethane	ND	50.00	51.58	103	45.76	92	65-130	12	0-20	
Hexachloro-1,3-Butadiene	ND	50.00	47.04	94	43.61	87	50-140	8	0-20	
1,1,2-Trichloroethane	ND	50.00	44.40	89	39.64	79	75-125	11	0-20	

RPD: Relative Percent Difference. CL: Control Limits

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Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

Environmental Science International, Inc.
354 Uluniu Street, Suite 304
Kailua, HI 96734-2500

Project: Red Hill LTM 112066

Date Received: 10/25/13
Work Order: 13-10-1893
Preparation: EPA 5030C
Method: GC/MS / EPA 8260B
Page 5 of 5

Parameter	Sample Conc.	Spike Added	MS Conc.	MS %Rec.	MSD Conc.	MSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Trichloroethene	ND	50.00	90.08	180	81.87	164	70-125	10	0-20	3
1,2,3-Trichloropropane	ND	50.00	50.56	101	44.91	90	75-125	12	0-20	
Vinyl Chloride	ND	50.00	46.70	93	43.16	86	50-145	8	0-20	
p/m-Xylene	ND	100.0	113.3	113	102.9	103	75-130	10	0-20	
o-Xylene	ND	50.00	55.89	112	50.75	101	80-120	10	0-20	
Methyl-t-Butyl Ether (MTBE)	ND	50.00	50.32	101	47.66	95	65-125	5	0-20	

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RPD: Relative Percent Difference. CL: Control Limits

Calscience Environmental Laboratories, Inc.

Quality Control - PDS/PDSD

Environmental Science International, Inc.		Date Received:	10/25/13
354 Uluniu Street, Suite 304		Work Order:	13-10-1893
Kailua, HI 96734-2500		Preparation:	EPA 3020A Total
		Method:	EPA 6020
Project: Red Hill LTM 112066			Page 1 of 1

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	PDS/PDSD Batch Number
ES043	**Aqueous**	**ICP/MS 04**	**10/25/13 00:00**	**10/26/13 04:31**	**131025S03**

Parameter	Sample Conc.	Spike Added	PDS Conc.	PDS %Rec.	%Rec. CL	Qualifiers
Lead	ND	100.0	105.8	106	75-125	

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RPD: Relative Percent Difference. CL: Control Limits

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCSD

Environmental Science International, Inc.
354 Uluniu Street, Suite 304
Kailua, HI 96734-2500

Project: Red Hill LTM 112066

Date Received: 10/25/13
Work Order: 13-10-1893
Preparation: EPA 3510C
Method: EPA 8015B (M)
Page 1 of 5

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-15-516-65	**Aqueous**	**GC 46**	**10/28/13**	**10/29/13 06:52**	**131028B12**

Parameter	Spike Added	LCS Conc.	LCS %Rec.	LCSD Conc.	LCSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
TPH as Diesel	4000	3785	95	3983	100	60-132	5	0-11	

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RPD: Relative Percent Difference. CL: Control Limits

Calscience Environmental Laboratories, Inc.

Quality Control - LCS

Environmental Science International, Inc.	Date Received:	10/25/13
354 Uluniu Street, Suite 304	Work Order:	13-10-1893
Kailua, HI 96734-2500	Preparation:	EPA 3020A Total
	Method:	EPA 6020
Project: Red Hill LTM 112066		Page 2 of 5

Quality Control Sample ID	Matrix	Instrument	Date Analyzed	LCS Batch Number
099-14-497-47	**Aqueous**	**ICP/MS 04**	**10/26/13 04:15**	**131025L03D**

Parameter	Spike Added	Conc. Recovered	LCS %Rec.	%Rec. CL	Qualifiers
Lead	100.0	100.8	101	80-120	

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RPD: Relative Percent Difference. CL: Control Limits

Calscience Environmental Laboratories, Inc.

Quality Control - LCS

Environmental Science International, Inc.
354 Uluniu Street, Suite 304
Kailua, HI 96734-2500

Project: Red Hill LTM 112066

Date Received: 10/25/13
Work Order: 13-10-1893
Preparation: EPA 3510C
Method: EPA 8270C SIM PAHs
Page 3 of 5

Quality Control Sample ID	Matrix	Instrument	Date Analyzed	LCS Batch Number
099-15-148-20	**Aqueous**	**GC/MS AAA**	**10/28/13 14:32**	**131025L05**

Parameter	Spike Added	Conc. Recovered	LCS %Rec.	%Rec. CL	Qualifiers
Naphthalene	2.000	1.639	82	21-133	
2-Methylnaphthalene	2.000	1.795	90	21-140	
1-Methylnaphthalene	2.000	1.668	83	20-140	
Acenaphthylene	2.000	1.507	75	33-145	
Acenaphthene	2.000	1.504	75	55-121	
Fluorene	2.000	1.553	78	59-121	
Phenanthrene	2.000	1.505	75	54-120	
Anthracene	2.000	1.380	69	27-133	
Fluoranthene	2.000	1.601	80	26-137	
Pyrene	2.000	1.482	74	45-129	
Benzo (a) Anthracene	2.000	1.486	74	33-143	
Chrysene	2.000	1.398	70	17-168	
Benzo (k) Fluoranthene	2.000	1.609	80	24-159	
Benzo (b) Fluoranthene	2.000	1.454	73	24-159	
Benzo (a) Pyrene	2.000	1.522	76	17-163	
Indeno (1,2,3-c,d) Pyrene	2.000	1.469	73	25-175	
Dibenz (a,h) Anthracene	2.000	1.259	63	25-175	
Benzo (g,h,i) Perylene	2.000	1.104	55	25-157	

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RPD: Relative Percent Difference. CL: Control Limits

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCSD

Environmental Science International, Inc.
354 Uluniu Street, Suite 304
Kailua, HI 96734-2500

Project: Red Hill LTM 112066

Date Received: 10/25/13
Work Order: 13-10-1893
Preparation: EPA 5030C
Method: GC/MS / EPA 8260B

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-13-057-27	**Aqueous**	**GC/MS LL**	**10/26/13**	**10/26/13 12:55**	**131026L01**

Parameter	Spike Added	LCS Conc.	LCS %Rec.	LCSD Conc.	LCSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Acetone	50.00	64.44	129	N/A	N/A	40-140	N/A	0-20	
Benzene	50.00	43.29	87	N/A	N/A	80-120	N/A	0-20	
Bromodichloromethane	50.00	43.40	87	N/A	N/A	75-120	N/A	0-20	
Bromoform	50.00	46.58	93	N/A	N/A	70-130	N/A	0-20	
Bromomethane	50.00	52.24	104	N/A	N/A	30-145	N/A	0-20	
2-Butanone	50.00	53.70	107	N/A	N/A	30-150	N/A	0-20	
Carbon Tetrachloride	50.00	44.68	89	N/A	N/A	65-140	N/A	0-20	
Chlorobenzene	50.00	41.74	83	N/A	N/A	80-120	N/A	0-20	
Chloroethane	50.00	42.64	85	N/A	N/A	60-135	N/A	0-20	
Chloroform	50.00	44.47	89	N/A	N/A	65-135	N/A	0-20	
Chloromethane	50.00	37.91	76	N/A	N/A	40-125	N/A	0-20	
Dibromochloromethane	50.00	45.85	92	N/A	N/A	60-135	N/A	0-20	
1,2-Dibromo-3-Chloropropane	50.00	47.48	95	N/A	N/A	50-130	N/A	0-20	
1,2-Dibromoethane	50.00	43.52	87	N/A	N/A	80-120	N/A	0-20	
1,2-Dichlorobenzene	50.00	43.54	87	N/A	N/A	70-120	N/A	0-20	
1,3-Dichlorobenzene	50.00	44.16	88	N/A	N/A	75-125	N/A	0-20	
1,4-Dichlorobenzene	50.00	44.28	89	N/A	N/A	75-125	N/A	0-20	
1,1-Dichloroethane	50.00	46.99	94	N/A	N/A	70-135	N/A	0-20	
1,2-Dichloroethane	50.00	43.84	88	N/A	N/A	70-130	N/A	0-20	
1,1-Dichloroethene	50.00	41.87	84	N/A	N/A	70-130	N/A	0-20	
c-1,2-Dichloroethene	50.00	45.17	90	N/A	N/A	70-125	N/A	0-20	
t-1,2-Dichloroethene	50.00	43.39	87	N/A	N/A	60-140	N/A	0-20	
1,2-Dichloropropane	50.00	43.00	86	N/A	N/A	75-125	N/A	0-20	
c-1,3-Dichloropropene	50.00	52.08	104	N/A	N/A	70-130	N/A	0-20	
t-1,3-Dichloropropene	50.00	40.53	81	N/A	N/A	55-140	N/A	0-20	
Ethylbenzene	50.00	49.12	98	N/A	N/A	75-125	N/A	0-20	
Methylene Chloride	50.00	46.60	93	N/A	N/A	55-140	N/A	0-20	
4-Methyl-2-Pentanone	50.00	48.20	96	N/A	N/A	60-135	N/A	0-20	
Styrene	50.00	45.75	92	N/A	N/A	65-135	N/A	0-20	
1,1,1,2-Tetrachloroethane	50.00	45.15	90	N/A	N/A	80-130	N/A	0-20	
1,1,2,2-Tetrachloroethane	50.00	42.63	85	N/A	N/A	65-130	N/A	0-20	
Tetrachloroethene	50.00	46.11	92	N/A	N/A	45-150	N/A	0-20	
Toluene	50.00	47.22	94	N/A	N/A	75-120	N/A	0-20	
1,2,4-Trichlorobenzene	50.00	48.26	97	N/A	N/A	65-135	N/A	0-20	
1,1,1-Trichloroethane	50.00	45.68	91	N/A	N/A	65-130	N/A	0-20	
Hexachloro-1,3-Butadiene	50.00	44.51	89	N/A	N/A	50-140	N/A	0-20	
1,1,2-Trichloroethane	50.00	45.53	91	N/A	N/A	75-125	N/A	0-20	

RPD: Relative Percent Difference. CL: Control Limits

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Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCSD

Environmental Science International, Inc.
354 Uluniu Street, Suite 304
Kailua, HI 96734-2500

Project: Red Hill LTM 112066

Date Received: 10/25/13
Work Order: 13-10-1893
Preparation: EPA 5030C
Method: GC/MS / EPA 8260B

Parameter	Spike Added	LCS Conc.	LCS %Rec.	LCSD Conc.	LCSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Trichloroethene	50.00	45.17	90	N/A	N/A	70-125	N/A	0-20	
1,2,3-Trichloropropane	50.00	43.40	87	N/A	N/A	75-125	N/A	0-20	
Vinyl Chloride	50.00	43.84	88	N/A	N/A	50-145	N/A	0-20	
p/m-Xylene	100.0	99.58	100	N/A	N/A	75-130	N/A	0-20	
o-Xylene	50.00	49.39	99	N/A	N/A	80-120	N/A	0-20	
Methyl-t-Butyl Ether (MTBE)	50.00	46.52	93	N/A	N/A	65-125	N/A	0-20	
Gasoline Range Organics	1000	1058	106	1093	109	80-120	3	0-20	

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RPD: Relative Percent Difference. CL: Control Limits

Calscience Environmental Laboratories, Inc.

Sample Analysis Summary Report

Work Order: 13-10-1893

Method	Extraction	Chemist ID	Instrument	Analytical Location
EPA 6020	EPA 3020A Total	598	ICP/MS 04	1
EPA 8015B (M)	EPA 3510C	847	GC 46	1
EPA 8270C SIM PAHs	EPA 3510C	773	GC/MS AAA	1
GC/MS / EPA 8260B	EPA 5030C	486	GC/MS LL	2

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Calscience Environmental Laboratories, Inc.

Glossary of Terms and Qualifiers

Work Order: 13-10-1893 Page 1 of 1

Qualifiers	Definition
*	See applicable analysis comment.
<	Less than the indicated value.
>	Greater than the indicated value.
1	Surrogate compound recovery was out of control due to a required sample dilution. Therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to suspected matrix interference. The associated LCS recovery was in control.
4	The MS/MSD RPD was out of control due to suspected matrix interference.
5	The PDS/PDSD or PES/PESD associated with this batch of samples was out of control due to suspected matrix interference.
6	Surrogate recovery below the acceptance limit.
7	Surrogate recovery above the acceptance limit.
B	Analyte was present in the associated method blank.
BU	Sample analyzed after holding time expired.
BV	Sample received after holding time expired.
DL	The Detection Limit (DL) is the smallest analyte concentration that can be demonstrated to be different from zero or a blank concentration at the 99% level of confidence.
E	Concentration exceeds the calibration range.
ET	Sample was extracted past end of recommended max. holding time.
HD	The chromatographic pattern was inconsistent with the profile of the reference fuel standard.
ICH	Initial calibration verification recovery is above the control limit for this analyte.
ICJ	Initial calibration verification recovery is below the control limit for this analyte.
IH	Calibration verification recovery is above the control limit for this analyte.
IJ	Calibration verification recovery is below the control limit for this analyte.
J	Analyte was detected at a concentration below the LOQ and above the DL. Reported value is estimated.
JA	Analyte positively identified but quantitation is an estimate.
LOD	The Limit of Detection (LOD) is the smallest amount or concentration of a substance that must be present in a sample in order to be detected at 99% confidence level.
LOQ	The Limit of Quantitation (LOQ) is the lowest concentration of a substance that produces a quantitative result within specified limits of precision and bias.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.
SG	The sample extract was subjected to Silica Gel treatment prior to analysis.
U	Undetected at Detection Limit (DL) and is reported as less than the Limit of Detection (LOD).
X	% Recovery and/or RPD out-of-range.
Z	Analyte presence was not confirmed by second column or GC/MS analysis.
	Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are reported on a wet weight basis.
	Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.
	A calculated total result (Example: Total Pesticides) is the summation of each component concentration and/or, if "J" flags are reported, estimated concentration. Component concentrations showing not detected (ND) are summed into the calculated total result as zero concentrations.

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Calscience Environmental Laboratories, Inc.

7440 Lincoln Way, Garden Grove, CA 92841-1427 • (714) 895-5494
Other CA office locations: Concord and San Luis Obispo
For courier service / sample drop off information,
contact sales@calscience.com or call us.

CHAIN OF CUSTODY RECORD

WO # / LAB USE ONLY: **13-10-1893**

Date: 10/23/13

Page: 1 of 1

LABORATORY CLIENT: Environmental Science International

ADDRESS: 354 Uluniu St. #304

CITY: Kailua STATE: Hi ZIP: 96734

TEL: 808-261-0740 E-MAIL: RCHONG@ESSCIENCE1.com; DFEHER@ESSCIENCE1.com

CLIENT PROJECT NAME / NUMBER: Reel Hill LTM 112066

P.O. NO.:

PROJECT CONTACT: Robert Chong

SAMPLER(S): (PRINT) BI, JH

TURNAROUND TIME: ☐ SAME DAY ☐ 24 HR ☐ 48 HR ☐ 72 HR ☒ STANDARD

☐ COELT EDF GLOBAL ID: LOG CODE:

SPECIAL INSTRUCTIONS:

REQUESTED ANALYSES

Please check box or fill in blank as needed.

LAB USE ONLY	SAMPLE ID	SAMPLING DATE	SAMPLING TIME	MATRIX	NO. OF CONT.	Unpreserved	Preserved	Field Filtered	TPH(g) GC/MS 8260	TPH(d) GC/FID 8015B	TPH ☐ C6-C36 ☐ C6-C44	TPH ____	BTEX / MTBE ☐ 8260 ☐ ____	VOCs (8260)	Oxygenates (8260)	Prep (5035) ☐ En Core ☐ Terra Core	SVOCs (8270)	Pesticides (8081)	PCBs (8082)	PAHs ~~8270~~ 8270 SIM	T22 Metals ☐ 6010/747X ☐ 6020/747X	Cr(VI) ☐ 7196 ☐ 7199 ☐ 218.6	Lead 6020			
1	ES TRIP	10/23/13	0700	Water	3		X		X				BTEX X	X												
2	ES0113	10/23/13	0745	Waters	10	X	X	X	X	X			X	X							X			X		
2	ES0113MS/MSD	10/23/13	~~0700~~ 0745	Waters	10	X	X	X	X	X				X							X			X		
3	ES0411	10/23/13	0830	Waters	10	X	X	X	X	X				X							X			X		
4	ES0415	10/23/13	0930	Waters	10	X	X	X	X	X				X							X			X		

Relinquished by: (Signature) Jeff Hattemer	Received by: (Signature/Affiliation)	Date: 10/23/13	Time: 1115
Relinquished by: (Signature)	Received by: (Signature/Affiliation)	Date:	Time:
Relinquished by: (Signature) (Fedex)	Received by: (Signature/Affiliation) Precy A. Ga	Date: 10/25/13	Time: 1015

DISTRIBUTION: White with final report, Green and Yellow to Client.
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11/01/12 Revision

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Form ID No. 1893

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Sender's Name Brinden Ibara
Phone 808 261-0710
Company Environmental Science International
Address 354 Uluniu St. Suite 304
Dept./Floor/Suite/Room
City Kailua State HI ZIP 96734

2 Your Internal Billing Reference

3 To
Recipient's Name Sam
Company Cal
Recipient's Address 7441
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4a Express Package Service — Packages up to 150 lbs. * To most locations
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4b Express Freight Service — Packages over 150 lbs. ** To most locations
7 [ ] FedEx 1Day Freight* — Next business day**
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* Call for Confirmation:

5 Packaging — * Declared value limit $500
6 [ ] FedEx Envelope*
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CALSCIENCE ENVIRONMENTAL LAB

7440 LINCOLN WAY

GARDEN GROVE, CA 928411427
UNITED STATES US

SHIP DATE: 23OCT13
ACTWGT: 57.4 LB
CAD: /POS1424
DIMS: 24x13x13 IN

BILL SENDER

TO SAMPLE CONTROL
CAL SCIENCE LABS
7440 LINCOLN WAY

GARDEN GROVE CA 92841
(714) 895-5494 REF:
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2 of 2
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FRI - 25 OCT AA
** 2DAY **

VZ APVA

92841
CA-US SNA

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Calscience Environmental Laboratories, Inc.

WORK ORDER #: 13-10-1893

SAMPLE RECEIPT FORM

Cooler 1 of 2

CLIENT: ESI DATE: 10/25/13

TEMPERATURE: Thermometer ID: SC2 (Criteria: 0.0 °C – 6.0 °C, not frozen except sediment/tissue)

Temperature 2.5 °C - 0.2 °C (CF) = 2.3 °C ☐ Blank ☑ Sample

☐ Sample(s) outside temperature criteria (PM/APM contacted by: _____).

☐ Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling.

☐ **Received at ambient temperature, placed on ice for transport by Courier.**

Ambient Temperature: ☐ Air ☐ Filter **Checked by:** 836

CUSTODY SEALS INTACT:

☑ Cooler ☐_____ ☐ No (Not Intact) ☐ Not Present ☐ N/A **Checked by:** 836

☐ Sample ☐_____ ☐ No (Not Intact) ☑ Not Present **Checked by:** 895

SAMPLE CONDITION:	Yes	No	N/A
Chain-Of-Custody (COC) document(s) received with samples	☑	☐	☐
COC document(s) received complete	☑	☐	☐
☐ Collection date/time, matrix, and/or # of containers logged in based on sample labels.			
☐ No analysis requested. ☐ Not relinquished. ☐ No date/time relinquished.			
Sampler's name indicated on COC	☑	☐	☐
Sample container label(s) consistent with COC	☑	☐	☐
Sample container(s) intact and good condition	☑	☐	☐
Proper containers and sufficient volume for analyses requested	☑	☐	☐
Analyses received within holding time	☑	☐	☐
Aqueous samples received within 15-minute holding time			
☐ pH ☐ Residual Chlorine ☐ Dissolved Sulfides ☐ Dissolved Oxygen	☐	☐	☑
Proper preservation noted on COC or sample container	☑	☐	☐
☑ Unpreserved vials received for Volatiles analysis			
Volatile analysis container(s) free of headspace	☑	☐	☐
Tedlar bag(s) free of condensation	☐	☐	☑

CONTAINER TYPE:

Solid: ☐4ozCGJ ☐8ozCGJ ☐16ozCGJ ☐Sleeve (_____) ☐EnCores® ☐TerraCores® ☐_____

Aqueous: ☑16VOA ☑3VOAh ☐VOA**na**$_2$ ☐125AGB ☐125AGB**h** ☐125AGB**p** ☑2 1AGB ☐1AGB**na**$_2$ ☐1AGB**s**

☐500AGB ☑500AGJ ☐500AGJ**s** ☐250AGB ☐250CGB ☐250CGB**s** ☐1PB ☐1PB**na** ☐500PB

☐250PB ☑250PB**n** ☐125PB ☐125PB**znna** ☐100PJ ☐100PJ**na**$_2$ ☐_____ ☐_____ ☐_____

Air: ☐Tedlar® ☐Canister **Other:** ☐_____ **Trip Blank Lot#:** 131007B **Labeled/Checked by:** 895

Container: **C:** Clear **A:** Amber **P:** Plastic **G:** Glass **J:** Jar **B:** Bottle **Z:** Ziploc/Resealable Bag **E:** Envelope **Reviewed by:** 836

Preservative: **h:** HCL **n:** HNO_3 **na**$_2$:$Na_2S_2O_3$ **na:** NaOH **p:** H_3PO_4 **s:** H_2SO_4 **u:** Ultra-pure **znna:** $ZnAc_2$+NaOH **f:** Filtered **Scanned by:** 830

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Calscience Environmental Laboratories, Inc.

WORK ORDER #: 13-10-1893

SAMPLE RECEIPT FORM

Cooler 2 of 2

CLIENT: ESI DATE: 10/25/13

TEMPERATURE: Thermometer ID: SC2 (Criteria: 0.0 °C – 6.0 °C, not frozen except sediment/tissue)

Temperature 2.8 °C - 0.2 °C (CF) = 2.6 °C ☐ Blank ☑ Sample

☐ Sample(s) outside temperature criteria (PM/APM contacted by: _____).

☐ Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling.

☐ **Received at ambient temperature, placed on ice for transport by Courier.**

Ambient Temperature: ☐ Air ☐ Filter **Checked by:** 836

CUSTODY SEALS INTACT:

☑ Cooler ☐_____ ☐ No (Not Intact) ☐ Not Present ☐ N/A **Checked by:** 836

☐ Sample ☐_____ ☐ No (Not Intact) ☑ Not Present **Checked by:** 895

SAMPLE CONDITION:	Yes	No	N/A
Chain-Of-Custody (COC) document(s) received with samples	☑	☐	☐
COC document(s) received complete	☑	☐	☐
☐ Collection date/time, matrix, and/or # of containers logged in based on sample labels.			
☐ No analysis requested. ☐ Not relinquished. ☐ No date/time relinquished.			
Sampler's name indicated on COC	☑	☐	☐
Sample container label(s) consistent with COC	☑	☐	☐
Sample container(s) intact and good condition	☑	☐	☐
Proper containers and sufficient volume for analyses requested	☑	☐	☐
Analyses received within holding time	☑	☐	☐
Aqueous samples received within 15-minute holding time			
☐ pH ☐ Residual Chlorine ☐ Dissolved Sulfides ☐ Dissolved Oxygen	☐	☐	☑
Proper preservation noted on COC or sample container	☑	☐	☐
☐ Unpreserved vials received for Volatiles analysis			
Volatile analysis container(s) free of headspace	☑	☐	☐
Tedlar bag(s) free of condensation	☐	☐	☑

CONTAINER TYPE:

Solid: ☐4ozCGJ ☐8ozCGJ ☐16ozCGJ ☐Sleeve (_____) ☐EnCores® ☐TerraCores® ☐_____

Aqueous: ☑10VOA ☐VOA**h** ☐VOA**na$_2$** ☐125AGB ☐125AGB**h** ☐125AGB**p** ☑4AGB ☐1AGB**na$_2$** ☐1AGB**s**

☐500AGB ☑3500AGJ ☐500AGJ**s** ☐250AGB ☐250CGB ☐250CGB**s** ☐1PB ☐1PB**na** ☐500PB

☐250PB ☑3250PB**n** ☐125PB ☐125PB**znna** ☐100PJ ☐100PJ**na$_2$** ☐_____ ☐_____ ☐_____

Air: ☐Tedlar® ☐Canister **Other:** ☐_____ **Trip Blank Lot#:**_____ **Labeled/Checked by:** 895

Container: **C:** Clear **A:** Amber **P:** Plastic **G:** Glass **J:** Jar **B:** Bottle **Z:** Ziploc/Resealable Bag **E:** Envelope **Reviewed by:** 836

Preservative: **h:** HCL **n:** HNO_3 **na$_2$:** $Na_2S_2O_3$ **na:** NaOH **p:** H_3PO_4 **s:** H_2SO_4 **u:** Ultra-pure **znna:** $ZnAc_2$+NaOH **f:** Filtered **Scanned by:** 836

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APPENDIX D

Historical Groundwater Exceedance Trends

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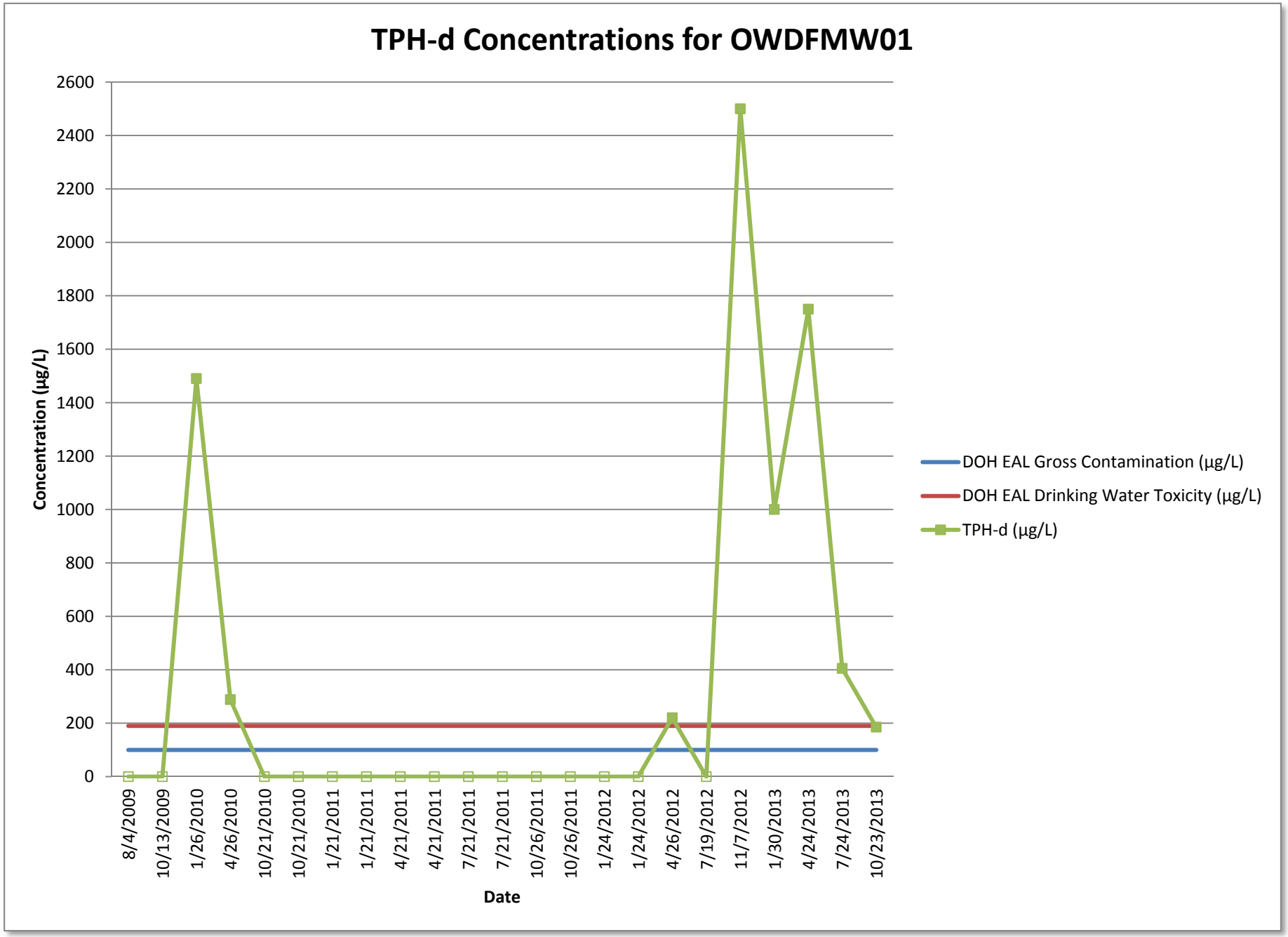

Data points for 10/21/2010 through 1/24/2012 and 11/07/2012 through 10/23/2013 are the average of the primary and duplicate samples.
Unfilled boxes indicate non-detections. Method detection limits are shown.

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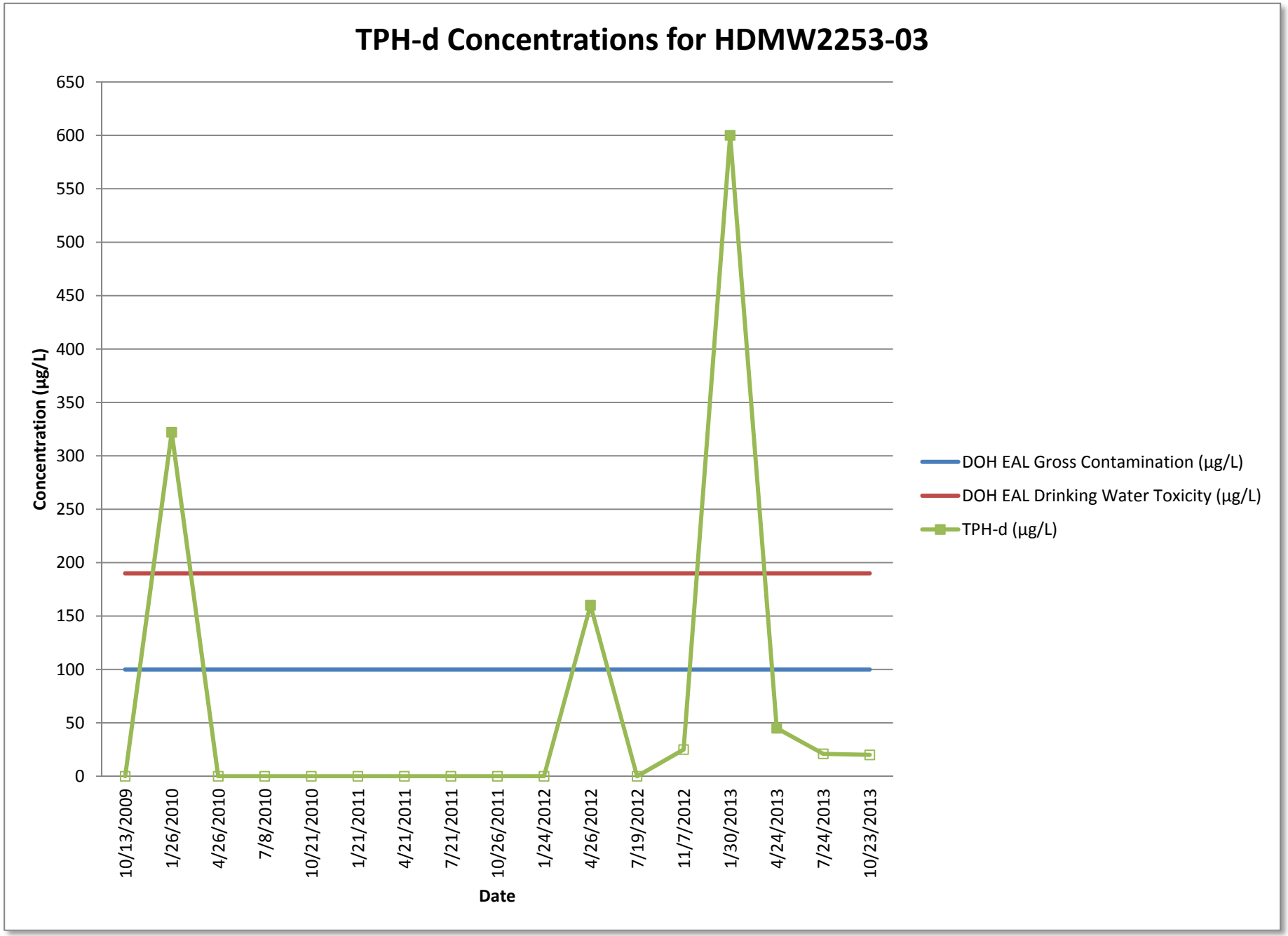

Unfilled boxes indicate non-detections. Method detection limits are shown.

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APPENDIX E

Waste Disposal Manifest

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6 12/11. . . .

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
	HIR 000 050 401	1	808-206-9989	000021584

5. Generator's Name and Mailing Address
COMNAVREG HAWAII, C/O NAVFAC HAWAII, CODE PRJ42
400 MARSHALL ROAD, ATTN: ESTRELITA HIGA
JBPHH, HI 96860-3139
Generator's Phone: 808-471-4216

Generator's Site Address (if different than mailing address)
HIC8553-05
RED HILL BULK FUEL STORAGE FACILITY
AIEA, HI 96701

6. Transporter 1 Company Name: PACIFIC COMMERCIAL SERVICES, LLC. 808-545-4599 — U.S. EPA ID Number: HIR000097824

7. Transporter 2 Company Name: UNITEK SOLVENT SERVICES, INC.-OAHU 808-682-8284 — U.S. EPA ID Number: HID982443715

8. Designated Facility Name and Site Address
UNITEK SOLVENT SERVICES, INC.
91-125 KAOMI LOOP
KAPOLEI, HI 96707
Facility's Phone: 808-682-8284
U.S. EPA ID Number: HID982443715

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	MATERIAL NOT REGULATED BY DOT (WELL PURGE AND DECONTAMINATION WATER)	001	DM	00020	G	NON-RCRA
2.						
3.						
4.	HQ300 PPM PH-6					

13. Special Handling Instructions and Additional Information
9b1: NR 2008 9b1: TOTAL HALOGEN: PPM 400

GENERATOR'S CERTIFICATION: I HEREBY DECLARE THAT THE CONTENTS OF THIS CONSIGNMENT ARE FULLY AND ACCURATELY DESCRIBED ABOVE BY PROPER SHIPPING NAME (WHERE APPLICABLE) AND ARE CLASSIFIED, PACKED, MARKED , AND LABELED AND ARE IN ALL RESPECTS IN PROPER CONDITION FOR TRANSPORT BY HIGHWAY ACCORDING TO APPLICABLE GOVERNMNET REGULATIONS. I FURTHER CERTIFY THAT IF THIS IS USED OIL IT IS SUBJECT TO REGULATION UNDER 40 CFR PART 279; THAT IT DOES NOT CONTAIN PCBS GREATER THAN OR EQUAL TO 2 PPM; AND THAT IT HAS NOT BEEN CONTAMINATED WITH CARBURATOR CLEANERS, BRAKE SPRAY, FREON, HALOGENATED SOLVENTS, OR OTHER HAZARDOUS MATERIALS AND/OR HAZARDOUS WASTES.

GENERATOR

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Scott Simmons for COMNAVREG — Signature: [signature] — Month 12 Day 11 Year 13

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Russell Castellano — Signature: [signature] — Month 12 Day 11 Year 13

Transporter 2 Printed/Typed Name: S. J. Lemaila — Signature: [signature] — Month 12 Day 18 Year 13

DESIGNATED FACILITY

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) U.S. EPA ID Number
Facility's Phone:

17c. Signature of Alternate Facility (or Generator) Month Day Year

PCS PROVIDED THE KIT
SEE CONSOLIDATED MANIFEST MW1342

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: R. ALHAMBRA — Signature: [signature] — Month 12 Day 19 Year 2013

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