Revised Final
Fourth Quarter 2012 - 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 2013

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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REVISED FINAL
FOURTH QUARTER 2012 - 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 Number: N62742-12-D-1853
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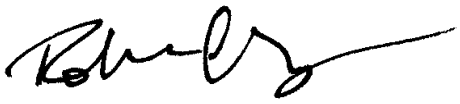

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ACRONYMS AND ABBREVIATIONS

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 2012 groundwater sampling event conducted on November 7, 2012, 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 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 November 7, 2012, Environmental Science International [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** – Total Petroleum Hydrocarbons as diesel [TPH-d] (25 micrograms per Liter [µg/L]) and Total Petroleum Hydrocarbons as gasoline [TPH-g] (15 µg/L) were detected. None of the chemical constituents analyzed for were detected at concentrations above the DOH Environmental Action Levels [EALs].

- **OWDFMW01** – TPH-d (2,500 µg/L), TPH-g (17 µg/L), naphthalene (0.025 µg/L), and benzene (0.38 µg/L) were detected. TPH-d was detected at concentrations above the DOH EALs for both drinking water toxicity and gross contamination.

Since the wells were last sampled (July 2012), 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 increased substantially in well OWDFMW01. This was the highest TPH-d concentration detected since quarterly groundwater monitoring was initiated in 2009. TPH-d concentrations increased from non-detect (less than 80.8 µg/L) during the last round of sampling to 2,500 µg/L during this round of sampling.

Based on the results of the assessment, we recommend continuing the groundwater monitoring program at the RHSF. If TPH-d concentrations in well OWDFMW01 continue to increase, we recommend increasing monitoring frequency to monthly even though well OWDFMW01 is not included in the RHSF Groundwater Protection Plan.

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SECTION 1 – INTRODUCTION

This quarterly monitoring report presents the results of the fourth quarter 2012 groundwater sampling event conducted on November 7, 2012, 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 Underground Storage Tank [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
Quarterly Groundwater Monitoring Reporting – Outside Tunnel Wells
Red Hill Bulk Fuel Storage Facility

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.

Shallow 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 a depth varying between 100 feet and 200 feet below ground surface.

In response to increasing concentrations of Contaminant of Potential Concerns [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, and July 2012. TPH-d was detected at a concentration above the DOH EALs in samples collected from wells HDMW2253-03 and OWDFMW01 (Environet, 2012). 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 April 2012.
- **OWDFMW01** – TPH-d was detected at a concentration above the gross contamination and drinking water toxicity DOH EAL in April 2012.

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).

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SECTION 2 – GROUNDWATER SAMPLING

On November 7, 2012, 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). Generally, the depth to groundwater in the wells is measured using an oil/water interface probe prior to sampling; however, the Solinst 122 oil/water interface probe that was provide as part of the contract was not long enough to measure the depth to groundwater in well OWDFMW01. Thus, the depth to water in well OWDFMW01 was not measured. The DLNR measured the depth to water and depth to bottom of well HDMW2253-03 using their Geotech oil/water interface probe. The measurements are included in the groundwater sampling log. No measurable product 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. The wells were purged at a rate of 0.22 and 0.38 liters per minute.

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, 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-d (25 µg/L) and TPH-g (15 µg/L) were detected. None of the chemical constituents analyzed for were detected at concentrations above the gross contamination or drinking water toxicity DOH EALs.

- **OWDFMW01** – TPH-d (2,500 µg/L), TPH-g (17 µg/L), naphthalene (0.025 µg/L), and benzene (0.38 µg/L) were detected. TPH-d was detected at concentrations above the DOH EALs for both drinking water toxicity and gross contamination.

2.2.1 Groundwater Contaminant Trends

- **HDMW2253-03** – Both TPH-d and TPH-g were detected; however, both were detected at low concentrations. TPH-g had not been detected in previous sampling events. TPH-d concentrations detected during this round of quarterly sampling were consistent with historical data.

- **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 the highest concentrations detected since quarterly groundwater monitoring was initiated in 2009. TPH-d concentrations increase from non-detect (less than 80.8 µg/L) during the last round of sampling to 2,500 µg/L during this round of sampling.

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 10, 2012, 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 D.

TABLE 2.1
Analytical Results for Groundwater Sampling (November 7, 2012)
Red Hill Bulk Fuel Storage Facility
November 2012 Quarterly Status Report

Chemical Constituent	OWDFMW01 (ES007)	OWDFMW01 (ES008) (Dup)	HDMW2253-03 (ES009)	LOD	DOH EALs	
					Drinking Water Toxicity	Gross Contamination
TPH-d	**2,500**	**2,500**	25	20	190	100
TPH-g	N.D.	17	15	30	100	100
Naphthalene	0.035	0.025	N.D.	0.05	17	21
Benzene	0.49	0.38	N.D.	0.5	5	170

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

DOH EALs DOH 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).
LOD Limit of Detection
N.D. Not Detected
TPH-d Total Petroleum Hydrocarbons as diesel
TPH-g Total Petroleum Hydrocarbons as gasoline

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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, method 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 its 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.

For this monitoring event, the RPDs for MS/MSD and LCS/LCSD pairs were all within the acceptable range. The RPDs of detected analytes for the primary and field duplicate samples (ES007 and ES008) are provided in Table 3.1. All RPDs for the three analytes detected in both samples were less than 50% (as recommended in the NAVFAC Project Procedures Manual (DON 2007)), although three of the detects (TPH-g, naphthalene, and benzene) were below the Limit of Detection [LOD], and thus qualified as estimated (J flag). The fourth analyte, TPH-d was detected above the DOH EAL, and with excellent precision (RPD = 0%). Therefore the data precision is considered acceptable.

Accuracy

Accuracy is defined as the degree of agreement of a measurement to an accepted reference 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.

All of the LCS and surrogate spike recoveries for analyzed constituents were within acceptable percent recovery limits. The MS or MSD recoveries for several VOCs were outside of control

limits (high recoveries for 1,1-Dichloroethylene, acetone, tetrachloroethylene, and trans-1,2-dichloroethylene, and low recoveries for 1,1,2-Trichloroethane and for 1,1,2,2-Tetrachloroethane). All other MS and 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 Work Plan 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 was exceeded for TPH-g and VOCs for both samples due to laboratory error, and therefore these results are qualified as estimated because a low bias is possible. The sample holding time for TPH-d, PAHs, and lead and sample preservation complied with the EPA criteria. For this sampling event, one trip blank was collected to determine blank contribution during sample transport for TPH-g and VOCs. There was no detection of VOCs in the trip blank. TPH-g was detected in the method blank below the LOD. 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 analytical laboratory. No data were rejected for this project, and therefore the completeness goal for this project (90%), was successfully met. Successful completion of data acquisition can only be accomplished if both the field and laboratory portions of the project are performed according to the procedures described in the Work Plan (ESI, 2012).

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.

Sensitivity

The Limits of Quantitation [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 Work Plan [WP]/Sampling And Analysis Plan [SAP] because the laboratory updates them quarterly. LODs and LOQs for several analytes were greater than the EALs (as stated in the WP/SAP) and therefore it is not possible to determine whether the analytes are present at the EAL. As suggested by the DOH Technical Guidance Manual, the project action level will be the LOD 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 analysis of VOCs outside of the recommended hold time. Since the surrogate recoveries and the recoveries of the VOCs 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 or inconsistencies due to the missed hold time. There is the possibility of a low bias in VOC results due to hold time exceedance, and therefore, this data should be considered estimated, and carefully examined in relation to data in previous and future GW monitoring events. Since the data are consistent with data from previous events, it appears that the effect of this QC exceedance is not substantial, and the data is usable. The data assessment concludes that all data generated during this event are usable for the intended use for project decisions.

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TABLE 3.1
Quality Control Results for Groundwater Sampling (November 7, 2012)
Red Hill Bulk Fuel Storage Facility
November 2012 Quarterly Status Report

Method	Chemical Constituent	DOH EALs		OWDFM01 (ES007)					OWDFMW01 (ES008)					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	**2,500**	HD	50	20	15	**2,500**	HD	50	20	15	0	-	-	-	-	-
EPA 8260B	TPH-g	100	100	N.D.	BU,B	50	30	13	17	BU,U	50	30	13	0	17	U	200	100	44
EPA 8270C SIM (PAHs)	Naphthalene	17	21	0.035	J	2	0.05	0.23	0.025	J	2	0.05	0.23	33.33	-	-	-	-	-
EPA 8260B (VOCs)	Benzene	5	170	0.49	BU,J	1	0.5	0.14	0.38	BU,J	1	0.5	0.14	25.29	n.d.	BU,U	1	0.5	0.14
EPA 6020	Lead	15	50,000	N.D.	U	1	0.2	0.0898	N.D.	U	1	0.2	0.0898	0	-	-	-	-	-

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

-	Not Analyzed
B	Analyte was present in the associated method blank.
BU	Sample analyzed after holding time expired.
DL	Detection Limit.
DOH EALs	DOH 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).
HD	The chromatic 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.
N.D.	Not Detected
Q	Qualifier.
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 November 7, 2012, 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 November 7, 2012, 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-d (25 µg/L) and TPH-g (15 µg/L) were detected. None of the chemical constituents analyzed for were detected at concentrations above the DOH EALs.

- **OWDFMW01** – TPH-d (2,500 µg/L), TPH-g (17 µg/L), naphthalene (0.025 µg/L), and benzene (0.38 µg/L) were detected. TPH-d was detected at concentrations above the DOH EALs for both drinking water toxicity and gross contamination.

Groundwater Contaminant Trends

- **HDMW2253-03** – Both TPH-d and TPH-g were detected; however, both were detected at low concentrations. TPH-g had not been detected in previous sampling events. TPH-d concentrations detected during this round of quarterly sampling were consistent with historical data.

- **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 the highest concentrations detected since quarterly groundwater monitoring was initiated in 2009. TPH-d concentrations increase from non-detect (less than 80.8 µg/L) during the last round of sampling to 2,500 µg/L during this round of sampling.

Conclusions and Recommendations

Since the wells were last sampled (July 2012), with the exception of TPH-d, groundwater contaminant concentrations in wells HDMW2253-03 and OWDFMW01 remained at low concentrations and did not change significantly, or were not detected. TPH-d concentrations increased substantially in well OWDFMW01.

Based on the results of the assessment, we recommend continuing the groundwater monitoring program at the RHSF. If TPH-d concentrations in well OWDFMW01 continue to increase, we recommend increasing monitoring frequency to monthly even though well OWDFMW01 is not included in the RHSF Groundwater Protection Plan.

A copy of this report will be submitted to the DOH and a copy will be kept on file at NAVFAC.

SECTION 5 – FUTURE WORK

GROUNDWATER SAMPLING

Future work includes the first quarter 2013 groundwater monitoring in January 2013. It is anticipated that the quarterly groundwater monitoring status report will be submitted in February 2013.

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SECTION 6 – REFERENCES

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TEC, 2010b, Quarterly Groundwater Monitoring Report – Outside (Non-Tunnel) Wells, Prepared for Navy Region Hawaii, Pearl Harbor, Hawaii, May 2010.

FIGURES

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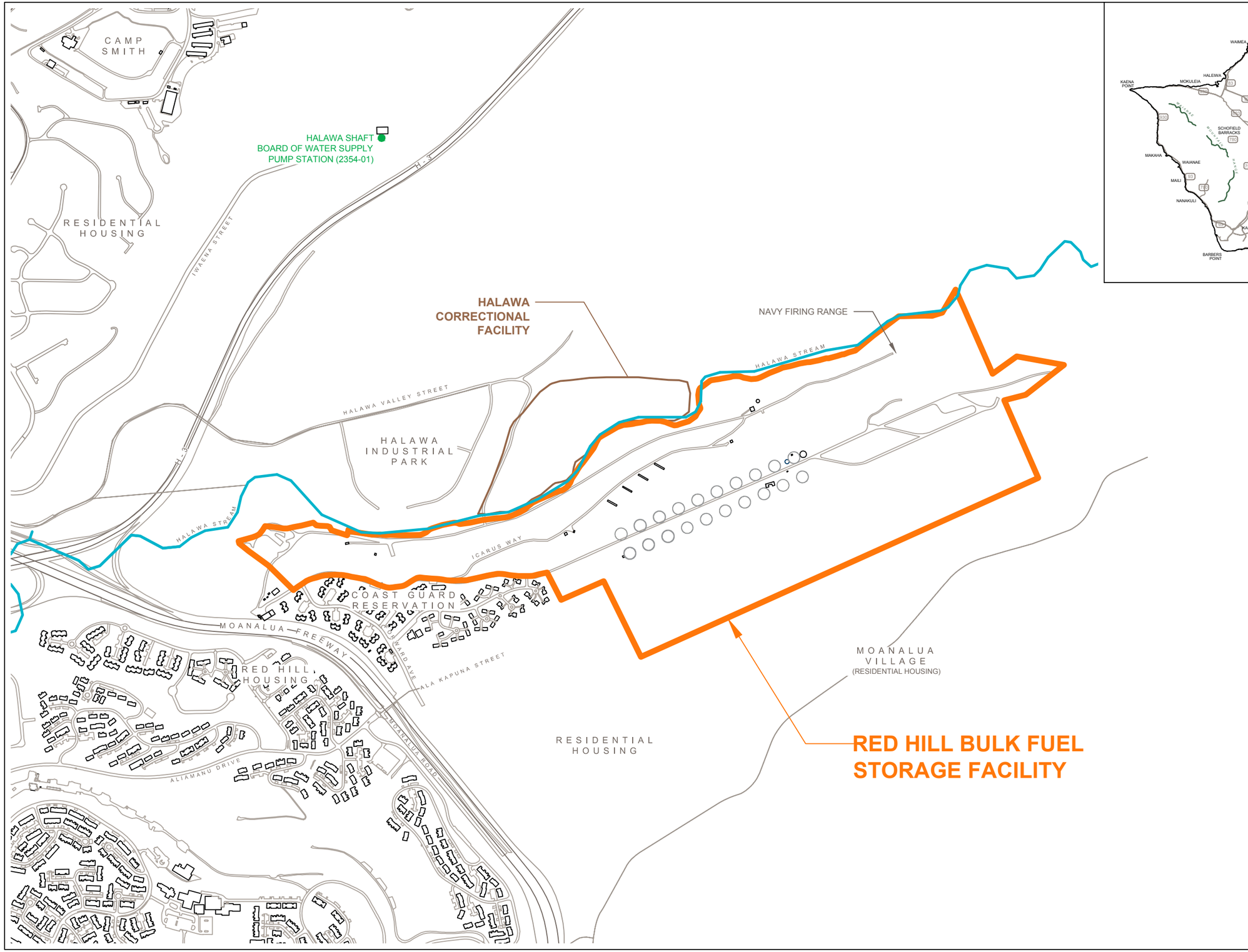

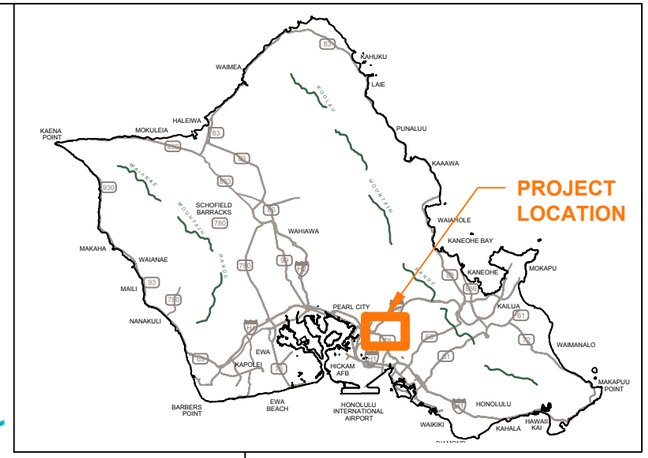

NOTES

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

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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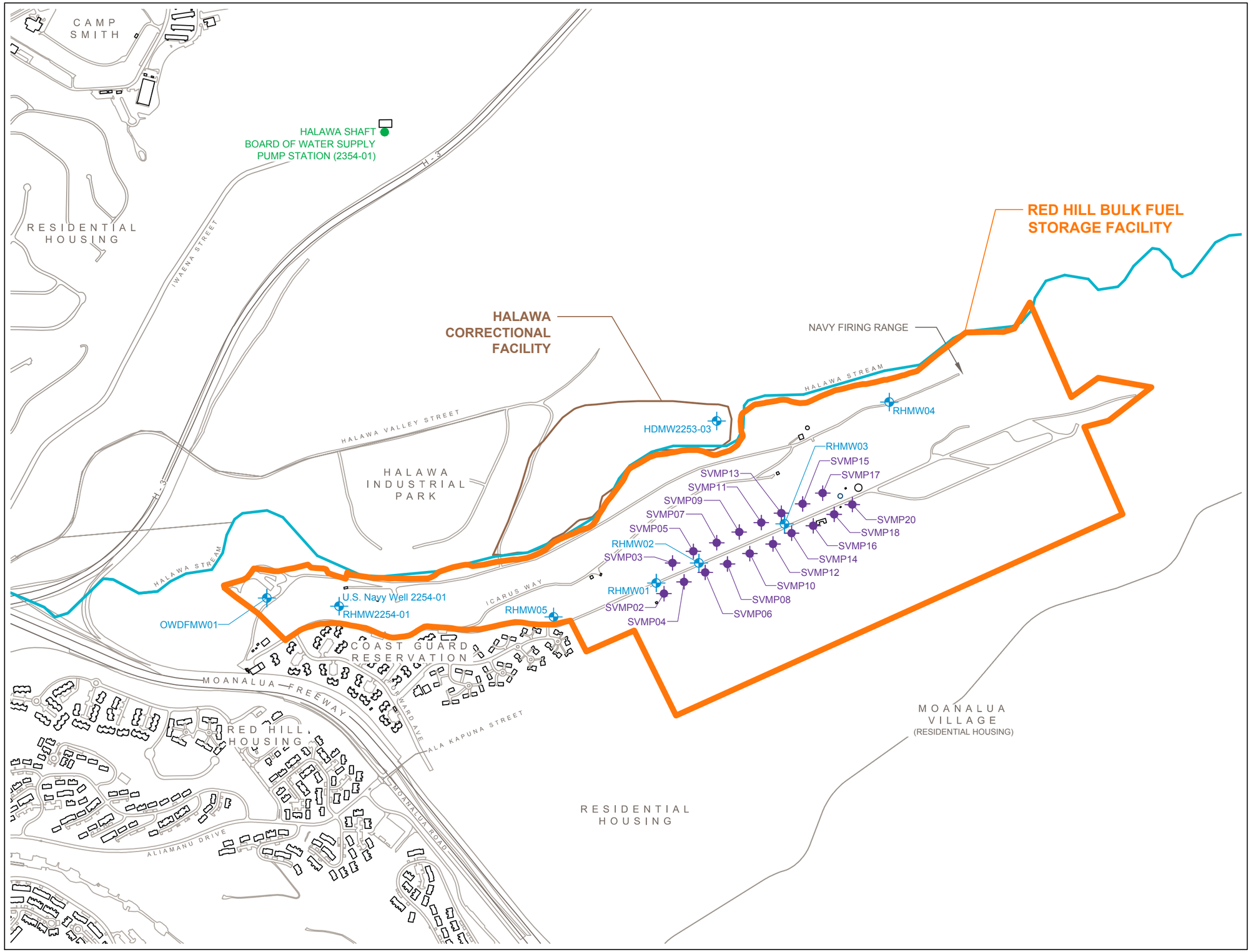

LEGEND

- 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
- 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: - Date: 11/7/2012 Time: 800

Total Depth of Well: - Personnel Involved: Justin Lam, Branden Ibara

Length of Saturated Zone: - Weather Conditions: Windy, Partly Cloudy

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

Water Level After Purging: - Pumping Rate: 0.35 L/min

Well Purge Data:

Time	Volume Removed	pH	Conductivity (mS/cm)	DO (mg/l)	Temperature	Salinity	Redox (ORP) (mV)
810	0	12.30	3.235	5.25	24.81	1.68	-164.3
820	2	12.52	3.262	5.60	24.19	1.70	-185.4
824	4	12.50	3.285	5.05	23.97	1.72	-185.4
829	6	12.67	3.289	5.00	24.13	1.72	-186.4
832	8	12.75	3.323	5.03	24.19	1.74	-187.6

Sample Withdrawal Method: Disposable Bailer

Appearance of Sample:

Color: Clear

Turbidity: Low

Sediment: Slight

Other:

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

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

Sample Identification Numbers: ES007 [0830], ES008 (Dup) [0900], ES008 MS/MSD [0900]

Decontamination Procedures: Triple Rinsed

Notes:

Sampled by: Justin Lam, Branden Ibara

Sampled Delivered to: Calscience Environmental Lab Transporters: FedEx

Date: Time:

Capacity of Casing (Gallons/Linear Feet)

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

re

Groundwater Sampling Log

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

Initial Water Level: 208.2 ft Date: 11/7/2012 Time: 1115

Total Depth of Well: 1575 ft Personnel Involved: Justin Lam, Branden Ibara

Length of Saturated Zone: - Weather Conditions: Sunny

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

Water Level After Purging: - Pumping Rate: 0.22 L/min

Well Purge Data:

Time	Volume Removed	pH	Conductivity (mS/cm)	DO (mg/l)	Temperature	Salinity	Redox (ORP) (mV)
1118	0	9.25	0.492	1.50	22.99	0.24	-217.5
1123	1	8.96	0.477	1.43	22.59	0.23	-195.7
1127	2	8.95	0.475	1.53	22.45	0.23	-179.0
1132	3	8.93	0.474	1.33	22.4	0.23	-178.7
1136	4	8.93	0.474	1.35	22.44	0.23	-173.0

Sample Withdrawal Method: Disposable Bailer

Appearance of Sample:

Color: Clear

Turbidity: Low

Sediment: Slight

Other:

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

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

Sample Identification Numbers: ES009 [1200]

Decontamination Procedures: Triple Rinsed

Notes:

Sampled by: Justin Lam, Branden Ibara

Sampled Delivered to: Calscience Environmental Lab Transporters: FedEx

Date: Time:

Capacity of Casing (Gallons/Linear Feet)

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

re

APPENDIX B

Field Notes

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Location Red Hill Date 11/7/12

Project / Client 112066 NAVFAC

purpose: groundwater sampling outside wells

personnel: JL, BI

weather: sunny, light NE wind

740: ESI get to Red Hill.

742: arrive at adit #3. safety ~~the~~ meeting JL 11/7/12

745: prep equipment.

755: OWDFMW01 head space: ~~0~~ 33 ppb. JL 11/7/12

830: begin sampling OWDFMW01.

845: problems w/ string for bailer.

920: finish sampling OWDFMW01.

925: meet DLNR at Halawa Correctional facility.

930: get ~~to~~ to HDMW2253-03.

935: ~~gau~~ JL 11/7/12 DLNR gauge well. DTW: 208.195 = 208.20

945: DLNR going to send down the conductivity/temp probe.

~~950~~: Probe not working. need to re calibrate the probe.

Location Red Hill Date 11/7/12

Project / Client 112066 NAVFAC

1020: DLNR lower probes to bottom of the well. bottom of well at approximately 15.75' bgs.

1915: begin purging HDMW2253-03.

1200: sample HDMW2253-03

1215: leave Halawa Correctional.

~~1242~~ JL 11/7/12 go to Red Hill pack samples, put gw and decon water in the drum at adit 3

1245: leave Red Hill go to Fedex. meet Domos.

1300: get to Fed ex.

1315: meet Domos at Fed ex.

11/7/12

JL

Location Red Hill Date 12/10/12

Project / Client NAVFAC 112066

purpose: IDW disposal
personnel: JL, JN
weather: sunny, light trade winds

827: ESJ arrive at RHSF gate
830: ESI arrive at RHSF adit #3 safety meeting
835: load ~~up~~ drums on to truck
840: Leave RHSF meet PCS in front of Halawa Correctional Facility.
855: Estra Higa arrive at RHSF.
~~Estra~~ signed manifest.
905: ESI leave site.

12/10/12 JL

Location Date

Project / Client

APPENDIX C

Laboratory Reports

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Calscience Environmental Laboratories, Inc.

CALSCIENCE

WORK ORDER NUMBER: 12-11-0711

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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 11/19/2012 by:
Richard Villafania
Project Manager

ResultLink

Email your PM

Calscience Environmental Laboratories, Inc. (Calscience) certifies that the test results provided in this report meet all NELAC requirements for parameters for which accreditation is required or available. Any exceptions to NELAC requirements are noted in the case narrative. The original report of subcontracted analyses, if any, is attached to this report. The results in this report are limited to the sample(s) tested and any reproduction thereof must be made in its entirety. The client or recipient of this report is specifically prohibited from making material changes to said report and, to the extent that such changes are made, Calscience is not responsible, legally or otherwise. The client or recipient agrees to indemnify Calscience for any defense to any litigation which may arise.

Calscience Environmental Laboratories, Inc.

Contents

Client Project Name: Red Hill LTM 112066
Work Order Number: 12-11-0711

Calscience Environmental Laboratories, Inc.

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ACCREDITED IN ACCORDANCE WITH nelac

Client:	Environmental Science International, Inc. 354 Uluniu Street, Suite 304 Kailua, HI 96734-2500	Work Order:	12-11-0711
		Project Name:	Red Hill LTM 112066
Attn:	Robert Chong	Received:	11/09/12 10:30

ANALYTICAL REPORT

12-11-0711-1 Client ID: ES007 Matrix: Aqueous Units: ug/L Sampled: 11/07/12 08:30

EPA 6020 ICP/MS Metals Extraction: EPA 3020A Total

Analyte	Result	Qual.	DL	LOD	LOQ	Dilution Factor	Preparation Date/Time	Analysis Date/Time	Batch
Lead	<0.200	U	0.0898	0.200	1.00	1	11/12/12 00:00	11/13/12 13:12	121112L03D

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

12-11-0711-2 Client ID: ES008 Matrix: Aqueous Units: ug/L Sampled: 11/07/12 09:00

EPA 6020 ICP/MS Metals Extraction: EPA 3020A Total

Analyte	Result	Qual.	DL	LOD	LOQ	Dilution Factor	Preparation Date/Time	Analysis Date/Time	Batch
Lead	<0.200	U	0.0898	0.200	1.00	1	11/12/12 00:00	11/13/12 13:09	121112L03D

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

12-11-0711-3 Client ID: ES009 Matrix: Aqueous Units: ug/L Sampled: 11/07/12 12:00

EPA 6020 ICP/MS Metals Extraction: EPA 3020A Total

Analyte	Result	Qual.	DL	LOD	LOQ	Dilution Factor	Preparation Date/Time	Analysis Date/Time	Batch
Lead	<0.200	U	0.0898	0.200	1.00	1	11/12/12 00:00	11/13/12 13:15	121112L03D

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

099-14-497-7 Client ID: Method Blank Matrix: Aqueous Units: ug/L Sampled: 11/14/12 11:47

EPA 6020 ICP/MS Metals Extraction: EPA 3020A Total

Analyte	Result	Qual.	DL	LOD	LOQ	Dilution Factor	Preparation Date/Time	Analysis Date/Time	Batch
Lead	<0.200	U	0.0898	0.200	1.00	1	11/12/12 00:00	11/13/12 12:30	121112L03D

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

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Client:	Environmental Science International, Inc. 354 Uluniu Street, Suite 304 Kailua, HI 96734-2500	Work Order:	12-11-0711
		Project Name:	Red Hill LTM 112066
Attn:	Robert Chong	Received:	11/09/12 10:30

ANALYTICAL REPORT

12-11-0711-1 Client ID: ES007 Matrix: Aqueous Units: ug/L Sampled: 11/07/12 08:30

EPA 8015B (M) TPH Diesel Extraction: EPA 3510C

Analyte	Result	Qual.	DL	LOD	LOQ	Dilution Factor	Preparation Date/Time	Analysis Date/Time	Batch
TPH as Diesel	2500	HD	15	20	50	1	11/12/12 00:00	11/16/12 13:45	121112B06

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

12-11-0711-2 Client ID: ES008 Matrix: Aqueous Units: ug/L Sampled: 11/07/12 09:00

EPA 8015B (M) TPH Diesel Extraction: EPA 3510C

Analyte	Result	Qual.	DL	LOD	LOQ	Dilution Factor	Preparation Date/Time	Analysis Date/Time	Batch
TPH as Diesel	2500	HD	15	20	50	1	11/12/12 00:00	11/16/12 14:00	121112B06

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

12-11-0711-3 Client ID: ES009 Matrix: Aqueous Units: ug/L Sampled: 11/07/12 12:00

EPA 8015B (M) TPH Diesel Extraction: EPA 3510C

Analyte	Result	Qual.	DL	LOD	LOQ	Dilution Factor	Preparation Date/Time	Analysis Date/Time	Batch
TPH as Diesel	25	HD,J	15	20	50	1	11/12/12 00:00	11/16/12 14:15	121112B06

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

099-15-516-14 Client ID: Method Blank Matrix: Aqueous Units: ug/L Sampled: 11/16/12 15:12

EPA 8015B (M) TPH Diesel Extraction: EPA 3510C

Analyte	Result	Qual.	DL	LOD	LOQ	Dilution Factor	Preparation Date/Time	Analysis Date/Time	Batch
TPH as Diesel	<20	U	15	20	50	1	11/12/12 00:00	11/12/12 16:53	121112B06

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

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Client:	Environmental Science International, Inc. 354 Uluniu Street, Suite 304 Kailua, HI 96734-2500	Work Order: Project Name:	12-11-0711 Red Hill LTM 112066
Attn:	Robert Chong	Received:	11/09/12 10:30

ANALYTICAL REPORT

12-11-0711-1 Client ID: ES007 Matrix: Aqueous Units: ug/L Sampled: 11/07/12 08:30

EPA 8270C SIM PAHs Extraction: EPA 3510C

Analyte	Result	Qual.	DL	LOD	LOQ	Dilution Factor	Preparation Date/Time	Analysis Date/Time	Batch
Naphthalene	0.035	J	0.023	0.050	0.20	1	11/13/12 00:00	11/14/12 16:54	121113L08
2-Methylnaphthalene	<0.050	U	0.026	0.050	0.20	1	11/13/12 00:00	11/14/12 16:54	121113L08
1-Methylnaphthalene	<0.050	U	0.028	0.050	0.20	1	11/13/12 00:00	11/14/12 16:54	121113L08
Acenaphthylene	<0.050	U	0.018	0.050	0.20	1	11/13/12 00:00	11/14/12 16:54	121113L08
Acenaphthene	<0.050	U	0.021	0.050	0.20	1	11/13/12 00:00	11/14/12 16:54	121113L08
Fluorene	<0.050	U	0.024	0.050	0.20	1	11/13/12 00:00	11/14/12 16:54	121113L08
Phenanthrene	<0.050	U	0.031	0.050	0.20	1	11/13/12 00:00	11/14/12 16:54	121113L08
Anthracene	<0.050	U	0.034	0.050	0.20	1	11/13/12 00:00	11/14/12 16:54	121113L08
Fluoranthene	<0.050	U	0.027	0.050	0.20	1	11/13/12 00:00	11/14/12 16:54	121113L08
Pyrene	<0.050	U	0.025	0.050	0.20	1	11/13/12 00:00	11/14/12 16:54	121113L08
Benzo (a) Anthracene	<0.050	U	0.024	0.050	0.20	1	11/13/12 00:00	11/14/12 16:54	121113L08
Chrysene	<0.050	U	0.019	0.050	0.20	1	11/13/12 00:00	11/14/12 16:54	121113L08
Benzo (k) Fluoranthene	<0.050	U	0.023	0.050	0.20	1	11/13/12 00:00	11/14/12 16:54	121113L08
Benzo (b) Fluoranthene	<0.050	U	0.025	0.050	0.20	1	11/13/12 00:00	11/14/12 16:54	121113L08
Benzo (a) Pyrene	<0.050	U	0.036	0.050	0.20	1	11/13/12 00:00	11/14/12 16:54	121113L08
Indeno (1,2,3-c,d) Pyrene	<0.050	U	0.022	0.050	0.20	1	11/13/12 00:00	11/14/12 16:54	121113L08
Dibenz (a,h) Anthracene	<0.050	U	0.027	0.050	0.20	1	11/13/12 00:00	11/14/12 16:54	121113L08
Benzo (g,h,i) Perylene	<0.050	U	0.022	0.050	0.20	1	11/13/12 00:00	11/14/12 16:54	121113L08

Surr: Nitrobenzene-d5 (28-139%)	*93%*	*11/13/12 00:00*	*11/14/12 16:54*	*121113L08*
Surr: 2-Fluorobiphenyl (33-144%)	*71%*	*11/13/12 00:00*	*11/14/12 16:54*	*121113L08*
Surr: p-Terphenyl-d14 (23-160%)	*108%*	*11/13/12 00:00*	*11/14/12 16:54*	*121113L08*

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

Return to Contents

Calscience Environmental Laboratories, Inc.

The difference is service

ACCREDITED IN ACCORDANCE WITH nelac

Client:	Environmental Science International, Inc.	Work Order:	12-11-0711
	354 Uluniu Street, Suite 304	Project Name:	Red Hill LTM 112066
	Kailua, HI 96734-2500		
Attn:	Robert Chong	Received:	11/09/12 10:30

ANALYTICAL REPORT

12-11-0711-2 Client ID: ES008 Matrix: Aqueous Units: ug/L Sampled: 11/07/12 09:00

EPA 8270C SIM PAHs Extraction: EPA 3510C

Analyte	Result	Qual.	DL	LOD	LOQ	Dilution Factor	Preparation Date/Time	Analysis Date/Time	Batch
Naphthalene	0.025	J	0.023	0.050	0.20	1	11/13/12 00:00	11/14/12 17:21	121113L08
2-Methylnaphthalene	<0.050	U	0.026	0.050	0.20	1	11/13/12 00:00	11/14/12 17:21	121113L08
1-Methylnaphthalene	<0.050	U	0.028	0.050	0.20	1	11/13/12 00:00	11/14/12 17:21	121113L08
Acenaphthylene	<0.050	U	0.018	0.050	0.20	1	11/13/12 00:00	11/14/12 17:21	121113L08
Acenaphthene	<0.050	U	0.021	0.050	0.20	1	11/13/12 00:00	11/14/12 17:21	121113L08
Fluorene	<0.050	U	0.024	0.050	0.20	1	11/13/12 00:00	11/14/12 17:21	121113L08
Phenanthrene	<0.050	U	0.031	0.050	0.20	1	11/13/12 00:00	11/14/12 17:21	121113L08
Anthracene	<0.050	U	0.034	0.050	0.20	1	11/13/12 00:00	11/14/12 17:21	121113L08
Fluoranthene	<0.050	U	0.027	0.050	0.20	1	11/13/12 00:00	11/14/12 17:21	121113L08
Pyrene	<0.050	U	0.025	0.050	0.20	1	11/13/12 00:00	11/14/12 17:21	121113L08
Benzo (a) Anthracene	<0.050	U	0.024	0.050	0.20	1	11/13/12 00:00	11/14/12 17:21	121113L08
Chrysene	<0.050	U	0.019	0.050	0.20	1	11/13/12 00:00	11/14/12 17:21	121113L08
Benzo (k) Fluoranthene	<0.050	U	0.023	0.050	0.20	1	11/13/12 00:00	11/14/12 17:21	121113L08
Benzo (b) Fluoranthene	<0.050	U	0.025	0.050	0.20	1	11/13/12 00:00	11/14/12 17:21	121113L08
Benzo (a) Pyrene	<0.050	U	0.036	0.050	0.20	1	11/13/12 00:00	11/14/12 17:21	121113L08
Indeno (1,2,3-c,d) Pyrene	<0.050	U	0.022	0.050	0.20	1	11/13/12 00:00	11/14/12 17:21	121113L08
Dibenz (a,h) Anthracene	<0.050	U	0.027	0.050	0.20	1	11/13/12 00:00	11/14/12 17:21	121113L08
Benzo (g,h,i) Perylene	<0.050	U	0.022	0.050	0.20	1	11/13/12 00:00	11/14/12 17:21	121113L08

Surr: Nitrobenzene-d5 (28-139%)	*86%*	*11/13/12 00:00*	*11/14/12 17:21*	*121113L08*
Surr: 2-Fluorobiphenyl (33-144%)	*73%*	*11/13/12 00:00*	*11/14/12 17:21*	*121113L08*
Surr: p-Terphenyl-d14 (23-160%)	*99%*	*11/13/12 00:00*	*11/14/12 17:21*	*121113L08*

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

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ACCREDITED IN ACCORDANCE WITH nelac

Client:	Environmental Science International, Inc.	Work Order:	12-11-0711
	354 Uluniu Street, Suite 304	Project Name:	Red Hill LTM 112066
	Kailua, HI 96734-2500		
Attn:	Robert Chong	Received:	11/09/12 10:30

ANALYTICAL REPORT

12-11-0711-3 Client ID: ES009 Matrix: Aqueous Units: ug/L Sampled: 11/07/12 12:00

EPA 8270C SIM PAHs Extraction: EPA 3510C

Analyte	Result	Qual.	DL	LOD	LOQ	Dilution Factor	Preparation Date/Time	Analysis Date/Time	Batch
Naphthalene	<0.050	U	0.023	0.050	0.20	1	11/13/12 00:00	11/14/12 17:48	121113L08
2-Methylnaphthalene	<0.050	U	0.026	0.050	0.20	1	11/13/12 00:00	11/14/12 17:48	121113L08
1-Methylnaphthalene	<0.050	U	0.028	0.050	0.20	1	11/13/12 00:00	11/14/12 17:48	121113L08
Acenaphthylene	<0.050	U	0.018	0.050	0.20	1	11/13/12 00:00	11/14/12 17:48	121113L08
Acenaphthene	<0.050	U	0.021	0.050	0.20	1	11/13/12 00:00	11/14/12 17:48	121113L08
Fluorene	<0.050	U	0.024	0.050	0.20	1	11/13/12 00:00	11/14/12 17:48	121113L08
Phenanthrene	<0.050	U	0.031	0.050	0.20	1	11/13/12 00:00	11/14/12 17:48	121113L08
Anthracene	<0.050	U	0.034	0.050	0.20	1	11/13/12 00:00	11/14/12 17:48	121113L08
Fluoranthene	<0.050	U	0.027	0.050	0.20	1	11/13/12 00:00	11/14/12 17:48	121113L08
Pyrene	<0.050	U	0.025	0.050	0.20	1	11/13/12 00:00	11/14/12 17:48	121113L08
Benzo (a) Anthracene	<0.050	U	0.024	0.050	0.20	1	11/13/12 00:00	11/14/12 17:48	121113L08
Chrysene	<0.050	U	0.019	0.050	0.20	1	11/13/12 00:00	11/14/12 17:48	121113L08
Benzo (k) Fluoranthene	<0.050	U	0.023	0.050	0.20	1	11/13/12 00:00	11/14/12 17:48	121113L08
Benzo (b) Fluoranthene	<0.050	U	0.025	0.050	0.20	1	11/13/12 00:00	11/14/12 17:48	121113L08
Benzo (a) Pyrene	<0.050	U	0.036	0.050	0.20	1	11/13/12 00:00	11/14/12 17:48	121113L08
Indeno (1,2,3-c,d) Pyrene	<0.050	U	0.022	0.050	0.20	1	11/13/12 00:00	11/14/12 17:48	121113L08
Dibenz (a,h) Anthracene	<0.050	U	0.027	0.050	0.20	1	11/13/12 00:00	11/14/12 17:48	121113L08
Benzo (g,h,i) Perylene	<0.050	U	0.022	0.050	0.20	1	11/13/12 00:00	11/14/12 17:48	121113L08

Surr: Nitrobenzene-d5 (28-139%)	*96%*						*11/13/12 00:00*	*11/14/12 17:48*	*121113L08*
Surr: 2-Fluorobiphenyl (33-144%)	*88%*						*11/13/12 00:00*	*11/14/12 17:48*	*121113L08*
Surr: p-Terphenyl-d14 (23-160%)	*106%*						*11/13/12 00:00*	*11/14/12 17:48*	*121113L08*

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

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Client:	Environmental Science International, Inc.	Work Order:	099-15-148
	354 Uluniu Street, Suite 304	Project Name:	Red Hill LTM 112066
	Kailua, HI 96734-2500		
Attn:	Robert Chong	Received:	11/09/12 10:30

ANALYTICAL REPORT

099-15-148-4 Client ID: Method Blank Matrix: Aqueous Units: ug/L Sampled: 11/14/12 14:27

EPA 8270C SIM PAHs Extraction: EPA 3510C

Analyte	Result	Qual.	DL	LOD	LOQ	Dilution Factor	Preparation Date/Time	Analysis Date/Time	Batch
Naphthalene	<0.050	U	0.023	0.050	0.20	1	11/13/12 00:00	11/14/12 16:28	121113L08
2-Methylnaphthalene	<0.050	U	0.026	0.050	0.20	1	11/13/12 00:00	11/14/12 16:28	121113L08
1-Methylnaphthalene	<0.050	U	0.028	0.050	0.20	1	11/13/12 00:00	11/14/12 16:28	121113L08
Acenaphthylene	<0.050	U	0.018	0.050	0.20	1	11/13/12 00:00	11/14/12 16:28	121113L08
Acenaphthene	<0.050	U	0.021	0.050	0.20	1	11/13/12 00:00	11/14/12 16:28	121113L08
Fluorene	<0.050	U	0.024	0.050	0.20	1	11/13/12 00:00	11/14/12 16:28	121113L08
Phenanthrene	<0.050	U	0.031	0.050	0.20	1	11/13/12 00:00	11/14/12 16:28	121113L08
Anthracene	<0.050	U	0.034	0.050	0.20	1	11/13/12 00:00	11/14/12 16:28	121113L08
Fluoranthene	<0.050	U	0.027	0.050	0.20	1	11/13/12 00:00	11/14/12 16:28	121113L08
Pyrene	<0.050	U	0.025	0.050	0.20	1	11/13/12 00:00	11/14/12 16:28	121113L08
Benzo (a) Anthracene	<0.050	U	0.024	0.050	0.20	1	11/13/12 00:00	11/14/12 16:28	121113L08
Chrysene	<0.050	U	0.019	0.050	0.20	1	11/13/12 00:00	11/14/12 16:28	121113L08
Benzo (k) Fluoranthene	<0.050	U	0.023	0.050	0.20	1	11/13/12 00:00	11/14/12 16:28	121113L08
Benzo (b) Fluoranthene	<0.050	U	0.025	0.050	0.20	1	11/13/12 00:00	11/14/12 16:28	121113L08
Benzo (a) Pyrene	<0.050	U	0.036	0.050	0.20	1	11/13/12 00:00	11/14/12 16:28	121113L08
Indeno (1,2,3-c,d) Pyrene	<0.050	U	0.022	0.050	0.20	1	11/13/12 00:00	11/14/12 16:28	121113L08
Dibenz (a,h) Anthracene	<0.050	U	0.027	0.050	0.20	1	11/13/12 00:00	11/14/12 16:28	121113L08
Benzo (g,h,i) Perylene	<0.050	U	0.022	0.050	0.20	1	11/13/12 00:00	11/14/12 16:28	121113L08

Surr: Nitrobenzene-d5 (28-139%)	*99%*						*11/13/12 00:00*	*11/14/12 16:28*	*121113L08*
Surr: 2-Fluorobiphenyl (33-144%)	*95%*						*11/13/12 00:00*	*11/14/12 16:28*	*121113L08*
Surr: p-Terphenyl-d14 (23-160%)	*107%*						*11/13/12 00:00*	*11/14/12 16:28*	*121113L08*

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

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ACCREDITED IN ACCORDANCE WITH nelac

Client:	Environmental Science International, Inc.	Work Order:	12-11-0711
	354 Uluniu Street, Suite 304	Project Name:	Red Hill LTM 112066
	Kailua, HI 96734-2500		
Attn:	Robert Chong	Received:	11/09/12 10:30

ANALYTICAL REPORT

12-11-0711-1 Client ID: ES007 Matrix: Aqueous Units: ug/L Sampled: 11/07/12 08:30

GC/MS GRO/EPA 8260B Volatile Organics Extraction: EPA 5030C

Analyte	Result	Qual.	DL	LOD	LOQ	Dilution Factor	Preparation Date/Time	Analysis Date/Time	Batch
Acetone	<10	BU,U	10	10	20	1	11/16/12 00:00	11/17/12 06:52	121116L02
Benzene	0.49	BU,J	0.14	0.50	1.0	1	11/16/12 00:00	11/17/12 06:52	121116L02
Bromodichloromethane	<0.50	BU,J	0.21	0.50	5.0	1	11/16/12 00:00	11/17/12 06:52	121116L02
Bromoform	<1.0	BU,U	0.50	1.0	10	1	11/16/12 00:00	11/17/12 06:52	121116L02
Bromomethane	<5.0	BU,U	3.9	5.0	20	1	11/16/12 00:00	11/17/12 06:52	121116L02
2-Butanone	<5.0	BU,U	2.2	5.0	10	1	11/16/12 00:00	11/17/12 06:52	121116L02
Carbon Tetrachloride	<0.50	BU,U	0.23	0.50	1.0	1	11/16/12 00:00	11/17/12 06:52	121116L02
Chlorobenzene	<0.50	BU,U	0.17	0.50	5.0	1	11/16/12 00:00	11/17/12 06:52	121116L02
Chloroethane	<5.0	BU,U	2.3	5.0	10	1	11/16/12 00:00	11/17/12 06:52	121116L02
Chloroform	<0.50	BU,U	0.46	0.50	5.0	1	11/16/12 00:00	11/17/12 06:52	121116L02
Chloromethane	<5.0	BU,U	1.8	5.0	10	1	11/16/12 00:00	11/17/12 06:52	121116L02
Dibromochloromethane	<0.50	BU,U	0.25	0.50	1.0	1	11/16/12 00:00	11/17/12 06:52	121116L02
1,2-Dibromo-3-Chloropropane	<5.0	BU,U	1.2	5.0	10	1	11/16/12 00:00	11/17/12 06:52	121116L02
1,2-Dibromoethane	<0.50	BU,U	0.36	0.50	1.0	1	11/16/12 00:00	11/17/12 06:52	121116L02
1,2-Dichlorobenzene	<0.50	BU,U	0.46	0.50	1.0	1	11/16/12 00:00	11/17/12 06:52	121116L02
1,3-Dichlorobenzene	<0.50	BU,U	0.40	0.50	1.0	1	11/16/12 00:00	11/17/12 06:52	121116L02
1,4-Dichlorobenzene	<0.50	BU,U	0.43	0.50	1.0	1	11/16/12 00:00	11/17/12 06:52	121116L02
1,1-Dichloroethane	<0.50	BU,U	0.28	0.50	5.0	1	11/16/12 00:00	11/17/12 06:52	121116L02
1,2-Dichloroethane	<0.50	BU,U	0.24	0.50	1.0	1	11/16/12 00:00	11/17/12 06:52	121116L02
1,1-Dichloroethene	<0.50	BU,U	0.43	0.50	1.0	1	11/16/12 00:00	11/17/12 06:52	121116L02
c-1,2-Dichloroethene	<0.50	BU,U	0.48	0.50	1.0	1	11/16/12 00:00	11/17/12 06:52	121116L02
t-1,2-Dichloroethene	<0.50	BU,U	0.37	0.50	1.0	1	11/16/12 00:00	11/17/12 06:52	121116L02
1,2-Dichloropropane	<0.50	BU,U	0.42	0.50	5.0	1	11/16/12 00:00	11/17/12 06:52	121116L02
c-1,3-Dichloropropene	<0.50	BU,U	0.25	0.50	1.0	1	11/16/12 00:00	11/17/12 06:52	121116L02
t-1,3-Dichloropropene	<0.50	BU,U	0.25	0.50	1.0	1	11/16/12 00:00	11/17/12 06:52	121116L02
Ethylbenzene	<0.50	BU,U	0.14	0.50	1.0	1	11/16/12 00:00	11/17/12 06:52	121116L02
Methylene Chloride	<1.0	BU,U	0.64	1.0	5.0	1	11/16/12 00:00	11/17/12 06:52	121116L02
4-Methyl-2-Pentanone	<5.0	BU,U	4.4	5.0	10	1	11/16/12 00:00	11/17/12 06:52	121116L02
Styrene	<0.50	BU,U	0.17	0.50	1.0	1	11/16/12 00:00	11/17/12 06:52	121116L02
1,1,1,2-Tetrachloroethane	<0.50	BU,U	0.40	0.50	1.0	1	11/16/12 00:00	11/17/12 06:52	121116L02
1,1,2,2-Tetrachloroethane	<0.50	BU,U	0.41	0.50	1.0	1	11/16/12 00:00	11/17/12 06:52	121116L02
Tetrachloroethene	<0.50	BU,U	0.39	0.50	5.0	1	11/16/12 00:00	11/17/12 06:52	121116L02
Toluene	<0.50	BU,U	0.24	0.50	1.0	1	11/16/12 00:00	11/17/12 06:52	121116L02
1,2,4-Trichlorobenzene	<1.0	BU,U	0.50	1.0	5.0	1	11/16/12 00:00	11/17/12 06:52	121116L02
1,1,1-Trichloroethane	<0.50	BU,U	0.30	0.50	5.0	1	11/16/12 00:00	11/17/12 06:52	121116L02
Hexachloro-1,3-Butadiene	<0.50	BU,U	0.32	0.50	1.0	1	11/16/12 00:00	11/17/12 06:52	121116L02
1,1,2-Trichloroethane	<0.50	BU,U	0.38	0.50	1.0	1	11/16/12 00:00	11/17/12 06:52	121116L02
Trichloroethene	<0.50	BU,U	0.37	0.50	1.0	1	11/16/12 00:00	11/17/12 06:52	121116L02

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Client:	Environmental Science International, Inc.	Work Order:	12-11-0711
	354 Uluniu Street, Suite 304	Project Name:	Red Hill LTM 112066
	Kailua, HI 96734-2500		
Attn:	Robert Chong	Received:	11/09/12 10:30

ANALYTICAL REPORT

12-11-0711-1 Client ID: ES007 Matrix: Aqueous Units: ug/L Sampled: 11/07/12 08:30

GC/MS GRO/EPA 8260B Volatile Organics Extraction: EPA 5030C

Analyte	Result	Qual.	DL	LOD	LOQ	Dilution Factor	Preparation Date/Time	Analysis Date/Time	Batch
1,2,3-Trichloropropane	<1.0	BU,U	0.64	1.0	5.0	1	11/16/12 00:00	11/17/12 06:52	121116L02
Vinyl Chloride	<0.50	BU,U	0.30	0.50	1.0	1	11/16/12 00:00	11/17/12 06:52	121116L02
p/m-Xylene	<1.0	BU,U	0.30	1.0	10	1	11/16/12 00:00	11/17/12 06:52	121116L02
o-Xylene	<0.50	BU,U	0.23	0.50	1.0	1	11/16/12 00:00	11/17/12 06:52	121116L02
Methyl-t-Butyl Ether (MTBE)	<0.50	BU,U	0.31	0.50	1.0	1	11/16/12 00:00	11/17/12 06:52	121116L02
Gasoline Range Organics	<30	BU,U	13	30	50	1	11/16/12 00:00	11/17/12 06:52	121116L02

Surr: Dibromofluoromethane (80-126%)	*95%*						*11/16/12 00:00*	*11/17/12 06:52*	*121116L02*
Surr: 1,2-Dichloroethane-d4 (80-134%)	*115%*						*11/16/12 00:00*	*11/17/12 06:52*	*121116L02*
Surr: Toluene-d8 (80-120%)	*98%*						*11/16/12 00:00*	*11/17/12 06:52*	*121116L02*
Surr: Toluene-d8-TPPH (88-112%)	*100%*						*11/16/12 00:00*	*11/17/12 06:52*	*121116L02*
Surr: 1,4-Bromofluorobenzene (80-120%)	*91%*						*11/16/12 00:00*	*11/17/12 06:52*	*121116L02*

-Sample analyzed outside recommended holding time.
-Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

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Client:	Environmental Science International, Inc.	Work Order:	12-11-0711
	354 Uluniu Street, Suite 304	Project Name:	Red Hill LTM 112066
	Kailua, HI 96734-2500		
Attn:	Robert Chong	Received:	11/09/12 10:30

ANALYTICAL REPORT

12-11-0711-2 Client ID: ES008 Matrix: Aqueous Units: ug/L Sampled: 11/07/12 09:00

GC/MS GRO/EPA 8260B Volatile Organics Extraction: EPA 5030C

Analyte	Result	Qual.	DL	LOD	LOQ	Dilution Factor	Preparation Date/Time	Analysis Date/Time	Batch
Acetone	<10	BU,U	10	10	20	1	11/16/12 00:00	11/17/12 06:24	121116L02
Benzene	0.38	BU,J	0.14	0.50	1.0	1	11/16/12 00:00	11/17/12 06:24	121116L02
Bromodichloromethane	<0.50	BU,U	0.21	0.50	5.0	1	11/16/12 00:00	11/17/12 06:24	121116L02
Bromoform	<1.0	BU,U	0.50	1.0	10	1	11/16/12 00:00	11/17/12 06:24	121116L02
Bromomethane	<5.0	BU,U	3.9	5.0	20	1	11/16/12 00:00	11/17/12 06:24	121116L02
2-Butanone	<5.0	BU,U	2.2	5.0	10	1	11/16/12 00:00	11/17/12 06:24	121116L02
Carbon Tetrachloride	<0.50	BU,U	0.23	0.50	1.0	1	11/16/12 00:00	11/17/12 06:24	121116L02
Chlorobenzene	<0.50	BU,U	0.17	0.50	5.0	1	11/16/12 00:00	11/17/12 06:24	121116L02
Chloroethane	<5.0	BU,U	2.3	5.0	10	1	11/16/12 00:00	11/17/12 06:24	121116L02
Chloroform	<0.50	BU,U	0.46	0.50	5.0	1	11/16/12 00:00	11/17/12 06:24	121116L02
Chloromethane	<5.0	BU,U	1.8	5.0	10	1	11/16/12 00:00	11/17/12 06:24	121116L02
Dibromochloromethane	<0.50	BU,U	0.25	0.50	1.0	1	11/16/12 00:00	11/17/12 06:24	121116L02
1,2-Dibromo-3-Chloropropane	<5.0	BU,U	1.2	5.0	10	1	11/16/12 00:00	11/17/12 06:24	121116L02
1,2-Dibromoethane	<0.50	BU,U	0.36	0.50	1.0	1	11/16/12 00:00	11/17/12 06:24	121116L02
1,2-Dichlorobenzene	<0.50	BU,U	0.46	0.50	1.0	1	11/16/12 00:00	11/17/12 06:24	121116L02
1,3-Dichlorobenzene	<0.50	BU,U	0.40	0.50	1.0	1	11/16/12 00:00	11/17/12 06:24	121116L02
1,4-Dichlorobenzene	<0.50	BU,U	0.43	0.50	1.0	1	11/16/12 00:00	11/17/12 06:24	121116L02
1,1-Dichloroethane	<0.50	BU,U	0.28	0.50	5.0	1	11/16/12 00:00	11/17/12 06:24	121116L02
1,2-Dichloroethane	<0.50	BU,U	0.24	0.50	1.0	1	11/16/12 00:00	11/17/12 06:24	121116L02
1,1-Dichloroethene	<0.50	BU,U	0.43	0.50	1.0	1	11/16/12 00:00	11/17/12 06:24	121116L02
c-1,2-Dichloroethene	<0.50	BU,U	0.48	0.50	1.0	1	11/16/12 00:00	11/17/12 06:24	121116L02
t-1,2-Dichloroethene	<0.50	BU,U	0.37	0.50	1.0	1	11/16/12 00:00	11/17/12 06:24	121116L02
1,2-Dichloropropane	<0.50	BU,U	0.42	0.50	5.0	1	11/16/12 00:00	11/17/12 06:24	121116L02
c-1,3-Dichloropropene	<0.50	BU,U	0.25	0.50	1.0	1	11/16/12 00:00	11/17/12 06:24	121116L02
t-1,3-Dichloropropene	<0.50	BU,U	0.25	0.50	1.0	1	11/16/12 00:00	11/17/12 06:24	121116L02
Ethylbenzene	<0.50	BU,U	0.14	0.50	1.0	1	11/16/12 00:00	11/17/12 06:24	121116L02
Methylene Chloride	<1.0	BU,U	0.64	1.0	5.0	1	11/16/12 00:00	11/17/12 06:24	121116L02
4-Methyl-2-Pentanone	<5.0	BU,U	4.4	5.0	10	1	11/16/12 00:00	11/17/12 06:24	121116L02
Styrene	<0.50	BU,U	0.17	0.50	1.0	1	11/16/12 00:00	11/17/12 06:24	121116L02
1,1,1,2-Tetrachloroethane	<0.50	BU,U	0.40	0.50	1.0	1	11/16/12 00:00	11/17/12 06:24	121116L02
1,1,2,2-Tetrachloroethane	<0.50	BU,U	0.41	0.50	1.0	1	11/16/12 00:00	11/17/12 06:24	121116L02
Tetrachloroethene	<0.50	BU,U	0.39	0.50	5.0	1	11/16/12 00:00	11/17/12 06:24	121116L02
Toluene	<0.50	BU,U	0.24	0.50	1.0	1	11/16/12 00:00	11/17/12 06:24	121116L02
1,2,4-Trichlorobenzene	<1.0	BU,U	0.50	1.0	5.0	1	11/16/12 00:00	11/17/12 06:24	121116L02
1,1,1-Trichloroethane	<0.50	BU,U	0.30	0.50	5.0	1	11/16/12 00:00	11/17/12 06:24	121116L02
Hexachloro-1,3-Butadiene	<0.50	BU,U	0.32	0.50	1.0	1	11/16/12 00:00	11/17/12 06:24	121116L02
1,1,2-Trichloroethane	<0.50	BU,U	0.38	0.50	1.0	1	11/16/12 00:00	11/17/12 06:24	121116L02
Trichloroethene	<0.50	BU,U	0.37	0.50	1.0	1	11/16/12 00:00	11/17/12 06:24	121116L02

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Client:	Environmental Science International, Inc.	Work Order:	12-11-0711
	354 Uluniu Street, Suite 304	Project Name:	Red Hill LTM 112066
	Kailua, HI 96734-2500		
Attn:	Robert Chong	Received:	11/09/12 10:30

ANALYTICAL REPORT

12-11-0711-2 Client ID: ES008 Matrix: Aqueous Units: ug/L Sampled: 11/07/12 09:00

GC/MS GRO/EPA 8260B Volatile Organics Extraction: EPA 5030C

Analyte	Result	Qual.	DL	LOD	LOQ	Dilution Factor	Preparation Date/Time	Analysis Date/Time	Batch
1,2,3-Trichloropropane	<1.0	BU,U	0.64	1.0	5.0	1	11/16/12 00:00	11/17/12 06:24	121116L02
Vinyl Chloride	<0.50	BU,U	0.30	0.50	1.0	1	11/16/12 00:00	11/17/12 06:24	121116L02
p/m-Xylene	<1.0	BU,U	0.30	1.0	10	1	11/16/12 00:00	11/17/12 06:24	121116L02
o-Xylene	<0.50	BU,U	0.23	0.50	1.0	1	11/16/12 00:00	11/17/12 06:24	121116L02
Methyl-t-Butyl Ether (MTBE)	<0.50	BU,U	0.31	0.50	1.0	1	11/16/12 00:00	11/17/12 06:24	121116L02
Gasoline Range Organics	17	BU,B,	13	30	50	1	11/16/12 00:00	11/17/12 06:24	121116L02
Surr: Dibromofluoromethane (80-126%)	*92%*						*11/16/12 00:00*	*11/17/12 06:24*	*121116L02*
Surr: 1,2-Dichloroethane-d4 (80-134%)	*109%*						*11/16/12 00:00*	*11/17/12 06:24*	*121116L02*
Surr: Toluene-d8 (80-120%)	*96%*						*11/16/12 00:00*	*11/17/12 06:24*	*121116L02*
Surr: Toluene-d8-TPPH (88-112%)	*99%*						*11/16/12 00:00*	*11/17/12 06:24*	*121116L02*
Surr: 1,4-Bromofluorobenzene (80-120%)	*95%*						*11/16/12 00:00*	*11/17/12 06:24*	*121116L02*

-Sample analyzed outside recommended holding time.
-Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

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Client:	Environmental Science International, Inc.	Work Order:	12-11-0711
	354 Uluniu Street, Suite 304	Project Name:	Red Hill LTM 112066
	Kailua, HI 96734-2500		
Attn:	Robert Chong	Received:	11/09/12 10:30

ANALYTICAL REPORT

12-11-0711-3 Client ID: ES009 Matrix: Aqueous Units: ug/L Sampled: 11/07/12 12:00

GC/MS GRO/EPA 8260B Volatile Organics Extraction: EPA 5030C

Analyte	Result	Qual.	DL	LOD	LOQ	Dilution Factor	Preparation Date/Time	Analysis Date/Time	Batch
Acetone	<10	BU,U	10	10	20	1	11/16/12 00:00	11/17/12 07:21	121116L02
Benzene	<0.50	BU,U	0.14	0.50	1.0	1	11/16/12 00:00	11/17/12 07:21	121116L02
Bromodichloromethane	<0.50	BU,U	0.21	0.50	5.0	1	11/16/12 00:00	11/17/12 07:21	121116L02
Bromoform	<1.0	BU,U	0.50	1.0	10	1	11/16/12 00:00	11/17/12 07:21	121116L02
Bromomethane	<5.0	BU,U	3.9	5.0	20	1	11/16/12 00:00	11/17/12 07:21	121116L02
2-Butanone	<5.0	BU,U	2.2	5.0	10	1	11/16/12 00:00	11/17/12 07:21	121116L02
Carbon Tetrachloride	<0.50	BU,U	0.23	0.50	1.0	1	11/16/12 00:00	11/17/12 07:21	121116L02
Chlorobenzene	<0.50	BU,U	0.17	0.50	5.0	1	11/16/12 00:00	11/17/12 07:21	121116L02
Chloroethane	<5.0	BU,U	2.3	5.0	10	1	11/16/12 00:00	11/17/12 07:21	121116L02
Chloroform	<0.50	BU,U	0.46	0.50	5.0	1	11/16/12 00:00	11/17/12 07:21	121116L02
Chloromethane	<5.0	BU,U	1.8	5.0	10	1	11/16/12 00:00	11/17/12 07:21	121116L02
Dibromochloromethane	<0.50	BU,U	0.25	0.50	1.0	1	11/16/12 00:00	11/17/12 07:21	121116L02
1,2-Dibromo-3-Chloropropane	<5.0	BU,U	1.2	5.0	10	1	11/16/12 00:00	11/17/12 07:21	121116L02
1,2-Dibromoethane	<0.50	BU,U	0.36	0.50	1.0	1	11/16/12 00:00	11/17/12 07:21	121116L02
1,2-Dichlorobenzene	<0.50	BU,U	0.46	0.50	1.0	1	11/16/12 00:00	11/17/12 07:21	121116L02
1,3-Dichlorobenzene	<0.50	BU,U	0.40	0.50	1.0	1	11/16/12 00:00	11/17/12 07:21	121116L02
1,4-Dichlorobenzene	<0.50	BU,U	0.43	0.50	1.0	1	11/16/12 00:00	11/17/12 07:21	121116L02
1,1-Dichloroethane	<0.50	BU,U	0.28	0.50	5.0	1	11/16/12 00:00	11/17/12 07:21	121116L02
1,2-Dichloroethane	<0.50	BU,U	0.24	0.50	1.0	1	11/16/12 00:00	11/17/12 07:21	121116L02
1,1-Dichloroethene	<0.50	BU,U	0.43	0.50	1.0	1	11/16/12 00:00	11/17/12 07:21	121116L02
c-1,2-Dichloroethene	<0.50	BU,U	0.48	0.50	1.0	1	11/16/12 00:00	11/17/12 07:21	121116L02
t-1,2-Dichloroethene	<0.50	BU,U	0.37	0.50	1.0	1	11/16/12 00:00	11/17/12 07:21	121116L02
1,2-Dichloropropane	<0.50	BU,U	0.42	0.50	5.0	1	11/16/12 00:00	11/17/12 07:21	121116L02
c-1,3-Dichloropropene	<0.50	BU,U	0.25	0.50	1.0	1	11/16/12 00:00	11/17/12 07:21	121116L02
t-1,3-Dichloropropene	<0.50	BU,U	0.25	0.50	1.0	1	11/16/12 00:00	11/17/12 07:21	121116L02
Ethylbenzene	<0.50	BU,U	0.14	0.50	1.0	1	11/16/12 00:00	11/17/12 07:21	121116L02
Methylene Chloride	<1.0	BU,U	0.64	1.0	5.0	1	11/16/12 00:00	11/17/12 07:21	121116L02
4-Methyl-2-Pentanone	<5.0	BU,U	4.4	5.0	10	1	11/16/12 00:00	11/17/12 07:21	121116L02
Styrene	<0.50	BU,U	0.17	0.50	1.0	1	11/16/12 00:00	11/17/12 07:21	121116L02
1,1,1,2-Tetrachloroethane	<0.50	BU,U	0.40	0.50	1.0	1	11/16/12 00:00	11/17/12 07:21	121116L02
1,1,2,2-Tetrachloroethane	<0.50	BU,U	0.41	0.50	1.0	1	11/16/12 00:00	11/17/12 07:21	121116L02
Tetrachloroethene	<0.50	BU,U	0.39	0.50	5.0	1	11/16/12 00:00	11/17/12 07:21	121116L02
Toluene	<0.50	BU,U	0.24	0.50	1.0	1	11/16/12 00:00	11/17/12 07:21	121116L02
1,2,4-Trichlorobenzene	<1.0	BU,U	0.50	1.0	5.0	1	11/16/12 00:00	11/17/12 07:21	121116L02
1,1,1-Trichloroethane	<0.50	BU,U	0.30	0.50	5.0	1	11/16/12 00:00	11/17/12 07:21	121116L02
Hexachloro-1,3-Butadiene	<0.50	BU,U	0.32	0.50	1.0	1	11/16/12 00:00	11/17/12 07:21	121116L02
1,1,2-Trichloroethane	<0.50	BU,U	0.38	0.50	1.0	1	11/16/12 00:00	11/17/12 07:21	121116L02
Trichloroethene	<0.50	BU,U	0.37	0.50	1.0	1	11/16/12 00:00	11/17/12 07:21	121116L02

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Client:	Environmental Science International, Inc.	Work Order:	12-11-0711
	354 Uluniu Street, Suite 304	Project Name:	Red Hill LTM 112066
	Kailua, HI 96734-2500		
Attn:	Robert Chong	Received:	11/09/12 10:30

ANALYTICAL REPORT

12-11-0711-3 Client ID: ES009 Matrix: Aqueous Units: ug/L Sampled: 11/07/12 12:00

GC/MS GRO/EPA 8260B Volatile Organics Extraction: EPA 5030C

Analyte	Result	Qual.	DL	LOD	LOQ	Dilution Factor	Preparation Date/Time	Analysis Date/Time	Batch
1,2,3-Trichloropropane	<1.0	BU,U	0.64	1.0	5.0	1	11/16/12 00:00	11/17/12 07:21	121116L02
Vinyl Chloride	<0.50	BU,U	0.30	0.50	1.0	1	11/16/12 00:00	11/17/12 07:21	121116L02
p/m-Xylene	<1.0	BU,U	0.30	1.0	10	1	11/16/12 00:00	11/17/12 07:21	121116L02
o-Xylene	<0.50	BU,U	0.23	0.50	1.0	1	11/16/12 00:00	11/17/12 07:21	121116L02
Methyl-t-Butyl Ether (MTBE)	<0.50	BU,U	0.31	0.50	1.0	1	11/16/12 00:00	11/17/12 07:21	121116L02
Gasoline Range Organics	15	BU,B,	13	30	50	1	11/16/12 00:00	11/17/12 07:21	121116L02

Surr: Dibromofluoromethane (80-126%)	*110%*						*11/16/12 00:00*	*11/17/12 07:21*	*121116L02*
Surr: 1,2-Dichloroethane-d4 (80-134%)	*113%*						*11/16/12 00:00*	*11/17/12 07:21*	*121116L02*
Surr: Toluene-d8 (80-120%)	*96%*						*11/16/12 00:00*	*11/17/12 07:21*	*121116L02*
Surr: Toluene-d8-TPPH (88-112%)	*99%*						*11/16/12 00:00*	*11/17/12 07:21*	*121116L02*
Surr: 1,4-Bromofluorobenzene (80-120%)	*95%*						*11/16/12 00:00*	*11/17/12 07:21*	*121116L02*

-Sample analyzed outside recommended holding time.
-Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

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Client:	Environmental Science International, Inc.	Work Order:	12-11-0711
	354 Uluniu Street, Suite 304	Project Name:	Red Hill LTM 112066
	Kailua, HI 96734-2500		
Attn:	Robert Chong	Received:	11/09/12 10:30

ANALYTICAL REPORT

12-11-0711-4 Client ID: ES TRIP Matrix: Aqueous Units: ug/L Sampled: 11/07/12 08:00

GC/MS GRO/EPA 8260B Volatile Organics Extraction: EPA 5030C

Analyte	Result	Qual.	DL	LOD	LOQ	Dilution Factor	Preparation Date/Time	Analysis Date/Time	Batch
Acetone	<10	BU,U	10	10	20	1	11/16/12 00:00	11/17/12 05:56	121116L02
Benzene	<0.50	BU,U	0.14	0.50	1.0	1	11/16/12 00:00	11/17/12 05:56	121116L02
Bromodichloromethane	<0.50	BU,U	0.21	0.50	5.0	1	11/16/12 00:00	11/17/12 05:56	121116L02
Bromoform	<1.0	BU,U	0.50	1.0	10	1	11/16/12 00:00	11/17/12 05:56	121116L02
Bromomethane	<5.0	BU,U	3.9	5.0	20	1	11/16/12 00:00	11/17/12 05:56	121116L02
2-Butanone	<5.0	BU,U	2.2	5.0	10	1	11/16/12 00:00	11/17/12 05:56	121116L02
Carbon Tetrachloride	<0.50	BU,U	0.23	0.50	1.0	1	11/16/12 00:00	11/17/12 05:56	121116L02
Chlorobenzene	<0.50	BU,U	0.17	0.50	5.0	1	11/16/12 00:00	11/17/12 05:56	121116L02
Chloroethane	<5.0	BU,U	2.3	5.0	10	1	11/16/12 00:00	11/17/12 05:56	121116L02
Chloroform	<0.50	BU,U	0.46	0.50	5.0	1	11/16/12 00:00	11/17/12 05:56	121116L02
Chloromethane	<5.0	BU,U	1.8	5.0	10	1	11/16/12 00:00	11/17/12 05:56	121116L02
Dibromochloromethane	<0.50	BU,U	0.25	0.50	1.0	1	11/16/12 00:00	11/17/12 05:56	121116L02
1,2-Dibromo-3-Chloropropane	<5.0	BU,U	1.2	5.0	10	1	11/16/12 00:00	11/17/12 05:56	121116L02
1,2-Dibromoethane	<0.50	BU,U	0.36	0.50	1.0	1	11/16/12 00:00	11/17/12 05:56	121116L02
1,2-Dichlorobenzene	<0.50	BU,U	0.46	0.50	1.0	1	11/16/12 00:00	11/17/12 05:56	121116L02
1,3-Dichlorobenzene	<0.50	BU,U	0.40	0.50	1.0	1	11/16/12 00:00	11/17/12 05:56	121116L02
1,4-Dichlorobenzene	<0.50	BU,U	0.43	0.50	1.0	1	11/16/12 00:00	11/17/12 05:56	121116L02
1,1-Dichloroethane	<0.50	BU,U	0.28	0.50	5.0	1	11/16/12 00:00	11/17/12 05:56	121116L02
1,2-Dichloroethane	<0.50	BU,U	0.24	0.50	1.0	1	11/16/12 00:00	11/17/12 05:56	121116L02
1,1-Dichloroethene	<0.50	BU,U	0.43	0.50	1.0	1	11/16/12 00:00	11/17/12 05:56	121116L02
c-1,2-Dichloroethene	<0.50	BU,U	0.48	0.50	1.0	1	11/16/12 00:00	11/17/12 05:56	121116L02
t-1,2-Dichloroethene	<0.50	BU,U	0.37	0.50	1.0	1	11/16/12 00:00	11/17/12 05:56	121116L02
1,2-Dichloropropane	<0.50	BU,U	0.42	0.50	5.0	1	11/16/12 00:00	11/17/12 05:56	121116L02
c-1,3-Dichloropropene	<0.50	BU,U	0.25	0.50	1.0	1	11/16/12 00:00	11/17/12 05:56	121116L02
t-1,3-Dichloropropene	<0.50	BU,U	0.25	0.50	1.0	1	11/16/12 00:00	11/17/12 05:56	121116L02
Ethylbenzene	<0.50	BU,U	0.14	0.50	1.0	1	11/16/12 00:00	11/17/12 05:56	121116L02
Methylene Chloride	<1.0	BU,U	0.64	1.0	5.0	1	11/16/12 00:00	11/17/12 05:56	121116L02
4-Methyl-2-Pentanone	<5.0	BU,U	4.4	5.0	10	1	11/16/12 00:00	11/17/12 05:56	121116L02
Styrene	<0.50	BU,U	0.17	0.50	1.0	1	11/16/12 00:00	11/17/12 05:56	121116L02
1,1,1,2-Tetrachloroethane	<0.50	BU,U	0.40	0.50	1.0	1	11/16/12 00:00	11/17/12 05:56	121116L02
1,1,2,2-Tetrachloroethane	<0.50	BU,U	0.41	0.50	1.0	1	11/16/12 00:00	11/17/12 05:56	121116L02
Tetrachloroethene	<0.50	BU,U	0.39	0.50	5.0	1	11/16/12 00:00	11/17/12 05:56	121116L02
Toluene	<0.50	BU,U	0.24	0.50	1.0	1	11/16/12 00:00	11/17/12 05:56	121116L02
1,2,4-Trichlorobenzene	<1.0	BU,U	0.50	1.0	5.0	1	11/16/12 00:00	11/17/12 05:56	121116L02
1,1,1-Trichloroethane	<0.50	BU,U	0.30	0.50	5.0	1	11/16/12 00:00	11/17/12 05:56	121116L02
Hexachloro-1,3-Butadiene	<0.50	BU,U	0.32	0.50	1.0	1	11/16/12 00:00	11/17/12 05:56	121116L02
1,1,2-Trichloroethane	<0.50	BU,U	0.38	0.50	1.0	1	11/16/12 00:00	11/17/12 05:56	121116L02
Trichloroethene	<0.50	BU,U	0.37	0.50	1.0	1	11/16/12 00:00	11/17/12 05:56	121116L02

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Client:	Environmental Science International, Inc.	Work Order:	12-11-0711
	354 Uluniu Street, Suite 304	Project Name:	Red Hill LTM 112066
	Kailua, HI 96734-2500		
Attn:	Robert Chong	Received:	11/09/12 10:30

ANALYTICAL REPORT

12-11-0711-4 Client ID: ES TRIP Matrix: Aqueous Units: ug/L Sampled: 11/07/12 08:00

GC/MS GRO/EPA 8260B Volatile Organics Extraction: EPA 5030C

Analyte	Result	Qual.	DL	LOD	LOQ	Dilution Factor	Preparation Date/Time	Analysis Date/Time	Batch
1,2,3-Trichloropropane	<1.0	BU,U	0.64	1.0	5.0	1	11/16/12 00:00	11/17/12 05:56	121116L02
Vinyl Chloride	<0.50	BU,U	0.30	0.50	1.0	1	11/16/12 00:00	11/17/12 05:56	121116L02
p/m-Xylene	<1.0	BU,U	0.30	1.0	10	1	11/16/12 00:00	11/17/12 05:56	121116L02
o-Xylene	<0.50	BU,U	0.23	0.50	1.0	1	11/16/12 00:00	11/17/12 05:56	121116L02
Methyl-t-Butyl Ether (MTBE)	<0.50	BU,U	0.31	0.50	1.0	1	11/16/12 00:00	11/17/12 05:56	121116L02
Gasoline Range Organics	17	BU,B,	13	30	50	1	11/16/12 00:00	11/17/12 05:56	121116L02

Surr: Dibromofluoromethane (80-126%)	*108%*						*11/16/12 00:00*	*11/17/12 05:56*	*121116L02*
Surr: 1,2-Dichloroethane-d4 (80-134%)	*111%*						*11/16/12 00:00*	*11/17/12 05:56*	*121116L02*
Surr: Toluene-d8 (80-120%)	*93%*						*11/16/12 00:00*	*11/17/12 05:56*	*121116L02*
Surr: Toluene-d8-TPPH (88-112%)	*94%*						*11/16/12 00:00*	*11/17/12 05:56*	*121116L02*
Surr: 1,4-Bromofluorobenzene (80-120%)	*94%*						*11/16/12 00:00*	*11/17/12 05:56*	*121116L02*

-Sample analyzed outside recommended holding time.
-Results were evaluated to the MDL (DL), concentrations

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Calscience Environmental Laboratories, Inc.

The difference is service

ACCREDITED IN ACCORDANCE WITH nelac

Client:	Environmental Science International, Inc.	Work Order:	099-13-057
	354 Uluniu Street, Suite 304	Project Name:	Red Hill LTM 112066
	Kailua, HI 96734-2500		
Attn:	Robert Chong	Received:	11/09/12 10:30

ANALYTICAL REPORT

099-13-057-2 **Client ID: Method Blank** **Matrix: Aqueous** **Units: ug/L** **Sampled: 11/17/12 08:53**

GC/MS GRO/EPA 8260B Volatile Organics **Extraction: EPA 5030C**

Analyte	Result	Qual.	DL	LOD	LOQ	Dilution Factor	Preparation Date/Time	Analysis Date/Time	Batch
Acetone	<10	U	10	10	20	1	11/16/12 00:00	11/17/12 05:27	121116L02
Benzene	<0.50	U	0.14	0.50	1.0	1	11/16/12 00:00	11/17/12 05:27	121116L02
Bromodichloromethane	<0.50	U	0.21	0.50	5.0	1	11/16/12 00:00	11/17/12 05:27	121116L02
Bromoform	<1.0	U	0.50	1.0	10	1	11/16/12 00:00	11/17/12 05:27	121116L02
Bromomethane	<5.0	U	3.9	5.0	20	1	11/16/12 00:00	11/17/12 05:27	121116L02
2-Butanone	<5.0	U	2.2	5.0	10	1	11/16/12 00:00	11/17/12 05:27	121116L02
Carbon Tetrachloride	<0.50	U	0.23	0.50	1.0	1	11/16/12 00:00	11/17/12 05:27	121116L02
Chlorobenzene	<0.50	U	0.17	0.50	5.0	1	11/16/12 00:00	11/17/12 05:27	121116L02
Chloroethane	<5.0	U	2.3	5.0	10	1	11/16/12 00:00	11/17/12 05:27	121116L02
Chloroform	<0.50	U	0.46	0.50	5.0	1	11/16/12 00:00	11/17/12 05:27	121116L02
Chloromethane	<5.0	U	1.8	5.0	10	1	11/16/12 00:00	11/17/12 05:27	121116L02
Dibromochloromethane	<0.50	U	0.25	0.50	1.0	1	11/16/12 00:00	11/17/12 05:27	121116L02
1,2-Dibromo-3-Chloropropane	<5.0	U	1.2	5.0	10	1	11/16/12 00:00	11/17/12 05:27	121116L02
1,2-Dibromoethane	<0.50	U	0.36	0.50	1.0	1	11/16/12 00:00	11/17/12 05:27	121116L02
1,2-Dichlorobenzene	<0.50	U	0.46	0.50	1.0	1	11/16/12 00:00	11/17/12 05:27	121116L02
1,3-Dichlorobenzene	<0.50	U	0.40	0.50	1.0	1	11/16/12 00:00	11/17/12 05:27	121116L02
1,4-Dichlorobenzene	<0.50	U	0.43	0.50	1.0	1	11/16/12 00:00	11/17/12 05:27	121116L02
1,1-Dichloroethane	<0.50	U	0.28	0.50	5.0	1	11/16/12 00:00	11/17/12 05:27	121116L02
1,2-Dichloroethane	<0.50	U	0.24	0.50	1.0	1	11/16/12 00:00	11/17/12 05:27	121116L02
1,1-Dichloroethene	<0.50	U	0.43	0.50	1.0	1	11/16/12 00:00	11/17/12 05:27	121116L02
c-1,2-Dichloroethene	<0.50	U	0.48	0.50	1.0	1	11/16/12 00:00	11/17/12 05:27	121116L02
t-1,2-Dichloroethene	<0.50	U	0.37	0.50	1.0	1	11/16/12 00:00	11/17/12 05:27	121116L02
1,2-Dichloropropane	<0.50	U	0.42	0.50	5.0	1	11/16/12 00:00	11/17/12 05:27	121116L02
c-1,3-Dichloropropene	<0.50	U	0.25	0.50	1.0	1	11/16/12 00:00	11/17/12 05:27	121116L02
t-1,3-Dichloropropene	<0.50	U	0.25	0.50	1.0	1	11/16/12 00:00	11/17/12 05:27	121116L02
Ethylbenzene	<0.50	U	0.14	0.50	1.0	1	11/16/12 00:00	11/17/12 05:27	121116L02
Methylene Chloride	<1.0	U	0.64	1.0	5.0	1	11/16/12 00:00	11/17/12 05:27	121116L02
4-Methyl-2-Pentanone	<5.0	U	4.4	5.0	10	1	11/16/12 00:00	11/17/12 05:27	121116L02
Styrene	<0.50	U	0.17	0.50	1.0	1	11/16/12 00:00	11/17/12 05:27	121116L02
1,1,1,2-Tetrachloroethane	<0.50	U	0.40	0.50	1.0	1	11/16/12 00:00	11/17/12 05:27	121116L02
1,1,2,2-Tetrachloroethane	<0.50	U	0.41	0.50	1.0	1	11/16/12 00:00	11/17/12 05:27	121116L02
Tetrachloroethene	<0.50	U	0.39	0.50	5.0	1	11/16/12 00:00	11/17/12 05:27	121116L02
Toluene	<0.50	U	0.24	0.50	1.0	1	11/16/12 00:00	11/17/12 05:27	121116L02
1,2,4-Trichlorobenzene	<1.0	U	0.50	1.0	5.0	1	11/16/12 00:00	11/17/12 05:27	121116L02
1,1,1-Trichloroethane	<0.50	U	0.30	0.50	5.0	1	11/16/12 00:00	11/17/12 05:27	121116L02
Hexachloro-1,3-Butadiene	<0.50	U	0.32	0.50	1.0	1	11/16/12 00:00	11/17/12 05:27	121116L02
1,1,2-Trichloroethane	<0.50	U	0.38	0.50	1.0	1	11/16/12 00:00	11/17/12 05:27	121116L02
Trichloroethene	<0.50	U	0.37	0.50	1.0	1	11/16/12 00:00	11/17/12 05:27	121116L02

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Calscience Environmental Laboratories, Inc.

The difference is service

ACCREDITED IN ACCORDANCE WITH nelac

Client:	Environmental Science International, Inc.	Work Order:	099-13-057
	354 Uluniu Street, Suite 304	Project Name:	Red Hill LTM 112066
	Kailua, HI 96734-2500		
Attn:	Robert Chong	Received:	11/09/12 10:30

ANALYTICAL REPORT

099-13-057-2 Client ID: Method Blank Matrix: Aqueous Units: ug/L Sampled: 11/17/12 08:53

GC/MS GRO/EPA 8260B Volatile Organics Extraction: EPA 5030C

Analyte	Result	Qual.	DL	LOD	LOQ	Dilution Factor	Preparation Date/Time	Analysis Date/Time	Batch
1,2,3-Trichloropropane	<1.0	U	0.64	1.0	5.0	1	11/16/12 00:00	11/17/12 05:27	121116L02
Vinyl Chloride	<0.50	U	0.30	0.50	1.0	1	11/16/12 00:00	11/17/12 05:27	121116L02
p/m-Xylene	<1.0	U	0.30	1.0	10	1	11/16/12 00:00	11/17/12 05:27	121116L02
o-Xylene	<0.50	U	0.23	0.50	1.0	1	11/16/12 00:00	11/17/12 05:27	121116L02
Methyl-t-Butyl Ether (MTBE)	<0.50	U	0.31	0.50	1.0	1	11/16/12 00:00	11/17/12 05:27	121116L02
Gasoline Range Organics	17	J	13	30	50	1	11/16/12 00:00	11/17/12 05:27	121116L02

Surr: Dibromofluoromethane (80-126%)	*103%*						*11/16/12 00:00*	*11/17/12 05:27*	*121116L02*
Surr: 1,2-Dichloroethane-d4 (80-134%)	*105%*						*11/16/12 00:00*	*11/17/12 05:27*	*121116L02*
Surr: Toluene-d8 (80-120%)	*96%*						*11/16/12 00:00*	*11/17/12 05:27*	*121116L02*
Surr: Toluene-d8-TPPH (88-112%)	*99%*						*11/16/12 00:00*	*11/17/12 05:27*	*121116L02*
Surr: 1,4-Bromofluorobenzene (80-120%)	*94%*						*11/16/12 00:00*	*11/17/12 05:27*	*121116L02*

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

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12-11-0711 CASE NARRATIVE

Due to laboratory error, the Volatiles analyses by EPA Method 8260B were performed outside the analytical holding time for all samples and flagged with a “BU” qualifier. The samples were collected in unpreserved 40ml vials with a holding time of seven days.

Corrective measures have been implemented in the laboratory to address this issue. A copy of the Corrective Action Report for this event will be sent to Environmental Science International upon completion.

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Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

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

Date Received: 11/09/12
Work Order No: 12-11-0711
Preparation: EPA 3020A Total
Method: EPA 6020

Project Red Hill LTM 112066

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
ES008	**Aqueous**	**ICP/MS 03**	**11/12/12**	**11/13/12**	**121112S03**

Parameter	SAMPLE CONC	SPIKE ADDED	MS CONC	MS %REC	MSD CONC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Lead	ND	100.0	106.9	107	111.2	111	80-120	4	0-20	

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RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - PDS / PDSD

ACCREDITED IN ACCORDANCE WITH nelac

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

Date Received 11/09/12
Work Order No: 12-11-0711
Preparation: EPA 3020A Total
Method: EPA 6020

Project: Red Hill LTM 112066

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	PDS / PDSD Batch Number
ES008	**Aqueous**	**ICP/MS 03**	**11/12/12**	**11/13/12**	**121112S03**

Analysis Comment: * - Analyzed 11/14/2012 2:34:37 PM

Parameter	SAMPLE CONC	SPIKE ADDED	PDS CONC	PDS %REC	PDSD CONC	PDSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Lead	ND	100.0	111.1	111	109.4	109	75-125	2	0-20	

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RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

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

Date Received: 11/09/12
Work Order No: 12-11-0711
Preparation: EPA 3510C
Method: EPA 8015B (M)

Project Red Hill LTM 112066

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
ES008	**Aqueous**	**GC 46**	**11/12/12**	**11/16/12**	**121112S06A**

Parameter	SAMPLE CONC	SPIKE ADDED	MS CONC	MS %REC	MSD CONC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
TPH as Diesel	2451	4000	6803	109	6026	89	55-133	12	0-30	

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RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

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

Date Received: 11/09/12
Work Order No: 12-11-0711
Preparation: EPA 3510C
Method: EPA 8270C SIM PAHs

Project Red Hill LTM 112066

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
ES008	**Aqueous**	**GC/MS AAA**	**11/13/12**	**11/14/12**	**121113S08**

Parameter	SAMPLE CONC	SPIKE ADDED	MS CONC	MS %REC	MSD CONC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Naphthalene	ND	2.000	1.261	63	1.257	63	21-133	0	0-25	
2-Methylnaphthalene	ND	2.000	1.334	67	1.337	67	21-140	0	0-25	
1-Methylnaphthalene	ND	2.000	1.514	76	1.482	74	20-140	2	0-25	
Acenaphthylene	ND	2.000	1.689	84	1.680	84	33-145	1	0-25	
Acenaphthene	ND	2.000	1.578	79	1.574	79	49-121	0	0-25	
Fluorene	ND	2.000	1.909	95	1.862	93	59-121	2	0-25	
Phenanthrene	ND	2.000	2.047	102	2.043	102	54-120	0	0-25	
Anthracene	ND	2.000	1.389	69	1.394	70	27-133	0	0-25	
Fluoranthene	ND	2.000	2.092	105	2.104	105	26-137	1	0-25	
Pyrene	ND	2.000	2.311	116	2.290	114	18-168	1	0-25	
Benzo (a) Anthracene	ND	2.000	2.445	122	2.453	123	33-143	0	0-25	
Chrysene	ND	2.000	2.293	115	2.303	115	17-168	0	0-25	
Benzo (k) Fluoranthene	ND	2.000	2.445	122	2.422	121	24-159	1	0-25	
Benzo (b) Fluoranthene	ND	2.000	2.428	121	2.430	121	24-159	0	0-25	
Benzo (a) Pyrene	ND	2.000	2.204	110	2.180	109	17-163	1	0-25	
Indeno (1,2,3-c,d) Pyrene	ND	2.000	2.211	111	2.220	111	10-171	0	0-25	
Dibenz (a,h) Anthracene	ND	2.000	2.028	101	1.999	100	10-219	1	0-25	
Benzo (g,h,i) Perylene	ND	2.000	2.071	104	2.043	102	10-227	1	0-25	

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RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

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

Date Received: 11/09/12
Work Order No: 12-11-0711
Preparation: EPA 5030C
Method: GC/MS / EPA 8260B

Project Red Hill LTM 112066

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
ES008	**Aqueous**	**GC/MS LL**	**11/16/12**	**11/17/12**	**121116S02**

Parameter	SAMPLE CONC	SPIKE ADDED	MS CONC	MS %REC	MSD CONC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Acetone	ND	50.00	102.8	206	105.5	211	40-140	3	0-20	3
Benzene	ND	50.00	44.26	89	46.46	93	80-120	5	0-20	
Bromodichloromethane	ND	50.00	47.41	95	49.16	98	75-120	4	0-20	
Bromoform	ND	50.00	48.28	97	52.31	105	70-130	8	0-20	
Bromomethane	ND	50.00	70.31	141	58.92	118	30-145	18	0-20	
2-Butanone	ND	50.00	52.22	104	49.51	99	30-150	5	0-20	
Carbon Tetrachloride	ND	50.00	53.53	107	56.71	113	65-140	6	0-20	
Chlorobenzene	ND	50.00	47.39	95	47.73	95	80-120	1	0-20	
Chloroethane	ND	50.00	56.47	113	58.78	118	60-135	4	0-20	
Chloroform	ND	50.00	51.56	103	52.80	106	65-135	2	0-20	
Chloromethane	ND	50.00	56.57	113	60.99	122	40-125	8	0-20	
Dibromochloromethane	ND	50.00	48.92	98	49.89	100	60-135	2	0-20	
1,2-Dibromo-3-Chloropropane	ND	50.00	32.13	64	31.59	63	50-130	2	0-20	
1,2-Dibromoethane	ND	50.00	49.09	98	49.81	100	80-120	1	0-20	
1,2-Dichlorobenzene	ND	50.00	44.81	90	46.68	93	70-120	4	0-20	
1,3-Dichlorobenzene	ND	50.00	42.65	85	44.86	90	75-125	5	0-20	
1,4-Dichlorobenzene	ND	50.00	41.74	83	43.33	87	75-125	4	0-20	
1,1-Dichloroethane	ND	50.00	44.63	89	46.88	94	70-135	5	0-20	
1,2-Dichloroethane	ND	50.00	52.01	104	52.94	106	70-130	2	0-20	
1,1-Dichloroethene	ND	50.00	66.12	132	74.53	149	70-130	12	0-20	3
c-1,2-Dichloroethene	ND	50.00	45.63	91	48.90	98	70-125	7	0-20	
t-1,2-Dichloroethene	ND	50.00	44.61	89	45.81	92	60-140	3	0-20	
1,2-Dichloropropane	ND	50.00	45.47	91	46.60	93	75-125	2	0-20	
c-1,3-Dichloropropene	ND	50.00	39.69	79	39.87	80	70-130	0	0-20	
t-1,3-Dichloropropene	ND	50.00	41.91	84	42.38	85	55-140	1	0-20	
Ethylbenzene	ND	50.00	49.55	99	49.91	100	75-125	1	0-20	
Methylene Chloride	ND	50.00	47.41	95	49.09	98	55-140	3	0-20	
4-Methyl-2-Pentanone	ND	50.00	42.72	85	43.64	87	60-135	2	0-20	
Styrene	ND	50.00	45.06	90	45.89	92	65-135	2	0-20	
1,1,1,2-Tetrachloroethane	ND	50.00	51.13	102	50.93	102	80-130	0	0-20	
1,1,2,2-Tetrachloroethane	ND	50.00	1.098	2	0.9609	2	65-130	13	0-20	3

RPD - Relative Percent Difference , CL - Control Limit

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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

Date Received: 11/09/12
Work Order No: 12-11-0711
Preparation: EPA 5030C
Method: GC/MS / EPA 8260B

Project Red Hill LTM 112066

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
ES008	**Aqueous**	**GC/MS LL**	**11/16/12**	**11/17/12**	**121116S02**

Parameter	SAMPLE CONC	SPIKE ADDED	MS CONC	MS %REC	MSD CONC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Tetrachloroethene	ND	50.00	90.31	181	89.72	179	45-150	1	0-20	3
Toluene	ND	50.00	46.52	93	46.07	92	75-120	1	0-20	
1,2,4-Trichlorobenzene	ND	50.00	36.49	73	37.98	76	65-135	4	0-20	
1,1,1-Trichloroethane	ND	50.00	51.25	103	52.91	106	65-130	3	0-20	
Hexachloro-1,3-Butadiene	ND	50.00	45.54	91	47.37	95	50-140	4	0-20	
1,1,2-Trichloroethane	ND	50.00	34.50	69	32.85	66	75-125	5	0-20	3
Trichloroethene	ND	50.00	87.71	175	90.23	180	70-125	3	0-20	3
1,2,3-Trichloropropane	ND	50.00	47.08	94	47.91	96	75-125	2	0-20	
Vinyl Chloride	ND	50.00	60.39	121	63.10	126	50-145	4	0-20	
p/m-Xylene	ND	100.0	103.9	104	103.2	103	75-130	1	0-20	
o-Xylene	ND	50.00	51.77	104	51.80	104	80-120	0	0-20	
Methyl-t-Butyl Ether (MTBE)	ND	50.00	45.75	92	47.79	96	65-125	4	0-20	

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RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

Environmental Science International, Inc.	Date Received:	N/A
354 Uluniu Street, Suite 304	Work Order No:	12-11-0711
Kailua, HI 96734-2500	Preparation:	EPA 3020A Total
	Method:	EPA 6020

Project: Red Hill LTM 112066

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-14-497-7	**Aqueous**	**ICP/MS 03**	**11/12/12**	**11/13/12**	**121112L03D**

Parameter	SPIKE ADDED	LCS CONC	LCS %REC	LCSD CONC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Lead	100.0	103.0	103	101.6	102	80-120	1	0-20	

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RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

Environmental Science International, Inc.		Date Received:	N/A
354 Uluniu Street, Suite 304		Work Order No:	12-11-0711
Kailua, HI 96734-2500		Preparation:	EPA 3510C
		Method:	EPA 8015B (M)

Project: Red Hill LTM 112066

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-15-516-14	**Aqueous**	**GC 46**	**11/12/12**	**11/12/12**	**121112B06**

Parameter	SPIKE ADDED	LCS CONC	LCS %REC	LCSD CONC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
TPH as Diesel	4000	3654	91	3496	87	60-132	4	0-11	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

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

Date Received: N/A
Work Order No: 12-11-0711
Preparation: EPA 3510C
Method: EPA 8270C SIM PAHs

Project: Red Hill LTM 112066

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-15-148-4	**Aqueous**	**GC/MS AAA**	**11/13/12**	**11/14/12**	**121113L08**

Parameter	SPIKE ADDED	LCS CONC	LCS %REC	LCSD CONC	LCSD %REC	%REC CL	ME_CL	RPD	RPD CL	Qualifiers
Naphthalene	2.000	1.985	99	1.980	99	21-133	2-152	0	0-25	
2-Methylnaphthalene	2.000	2.110	106	2.099	105	21-140	1-160	1	0-25	
1-Methylnaphthalene	2.000	2.201	110	2.247	112	20-140	0-160	2	0-25	
Acenaphthylene	2.000	1.874	94	1.891	95	33-145	14-164	1	0-25	
Acenaphthene	2.000	1.873	94	1.889	94	55-121	44-132	1	0-25	
Fluorene	2.000	2.037	102	2.011	101	59-121	49-131	1	0-25	
Phenanthrene	2.000	2.051	103	2.064	103	54-120	43-131	1	0-25	
Anthracene	2.000	1.384	69	1.375	69	27-133	9-151	1	0-25	
Fluoranthene	2.000	2.071	104	2.077	104	26-137	8-156	0	0-25	
Pyrene	2.000	2.243	112	2.254	113	45-129	31-143	0	0-25	
Benzo (a) Anthracene	2.000	2.367	118	2.359	118	33-143	15-161	0	0-25	
Chrysene	2.000	2.270	114	2.289	114	17-168	0-193	1	0-25	
Benzo (k) Fluoranthene	2.000	2.328	116	2.456	123	24-159	2-182	5	0-25	
Benzo (b) Fluoranthene	2.000	2.353	118	2.351	118	24-159	2-182	0	0-25	
Benzo (a) Pyrene	2.000	2.125	106	2.128	106	17-163	0-187	0	0-25	
Indeno (1,2,3-c,d) Pyrene	2.000	2.179	109	2.173	109	25-175	0-200	0	0-25	
Dibenz (a,h) Anthracene	2.000	1.868	93	1.823	91	25-175	0-200	2	0-25	
Benzo (g,h,i) Perylene	2.000	2.013	101	2.001	100	25-157	3-179	1	0-25	

Total number of LCS compounds : 18
Total number of ME compounds : 0
Total number of ME compounds allowed : 1
LCS ME CL validation result : Pass

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

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

Date Received: N/A
Work Order No: 12-11-0711
Preparation: EPA 5030C
Method: GC/MS / EPA 8260B

Project: Red Hill LTM 112066

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-13-057-2	**Aqueous**	**GC/MS LL**	**11/16/12**	**11/17/12**	**121116L02**

Parameter	SPIKE ADDED	LCS CONC	LCS %REC	LCSD CONC	LCSD %REC	%REC CL	ME_CL	RPD	RPD CL	Qualifiers
Acetone	50.00	49.42	99	43.03	86	40-140	23-157	14	0-20	
Benzene	50.00	47.19	94	45.41	91	80-120	73-127	4	0-20	
Bromodichloromethane	50.00	53.93	108	52.48	105	75-120	68-128	3	0-20	
Bromoform	50.00	52.81	106	53.02	106	70-130	60-140	0	0-20	
Bromomethane	50.00	57.19	114	53.51	107	30-145	11-164	7	0-20	
2-Butanone	50.00	40.34	81	38.81	78	30-150	10-170	4	0-20	
Carbon Tetrachloride	50.00	56.47	113	53.73	107	65-140	52-152	5	0-20	
Chlorobenzene	50.00	48.83	98	47.57	95	80-120	73-127	3	0-20	
Chloroethane	50.00	56.95	114	56.29	113	60-135	48-148	1	0-20	
Chloroform	50.00	51.54	103	49.79	100	65-135	53-147	3	0-20	
Chloromethane	50.00	53.73	107	51.31	103	40-125	26-139	5	0-20	
Dibromochloromethane	50.00	53.34	107	52.11	104	60-135	48-148	2	0-20	
1,2-Dibromo-3-Chloropropane	50.00	46.20	92	45.23	90	50-130	37-143	2	0-20	
1,2-Dibromoethane	50.00	49.00	98	47.02	94	80-120	73-127	4	0-20	
1,2-Dichlorobenzene	50.00	48.43	97	46.36	93	70-120	62-128	4	0-20	
1,3-Dichlorobenzene	50.00	47.36	95	45.70	91	75-125	67-133	4	0-20	
1,4-Dichlorobenzene	50.00	46.24	92	43.83	88	75-125	67-133	5	0-20	
1,1-Dichloroethane	50.00	46.75	93	45.34	91	70-135	59-146	3	0-20	
1,2-Dichloroethane	50.00	52.45	105	52.51	105	70-130	60-140	0	0-20	
1,1-Dichloroethene	50.00	49.64	99	47.70	95	70-130	60-140	4	0-20	
c-1,2-Dichloroethene	50.00	48.44	97	47.62	95	70-125	61-134	2	0-20	
t-1,2-Dichloroethene	50.00	46.38	93	45.54	91	60-140	47-153	2	0-20	
1,2-Dichloropropane	50.00	47.80	96	45.69	91	75-125	67-133	5	0-20	
c-1,3-Dichloropropene	50.00	43.92	88	42.56	85	70-130	60-140	3	0-20	
t-1,3-Dichloropropene	50.00	44.53	89	43.56	87	55-140	41-154	2	0-20	
Ethylbenzene	50.00	51.56	103	47.89	96	75-125	67-133	7	0-20	
Methylene Chloride	50.00	48.98	98	49.04	98	55-140	41-154	0	0-20	
4-Methyl-2-Pentanone	50.00	44.95	90	43.44	87	60-135	48-148	3	0-20	
Styrene	50.00	47.64	95	45.66	91	65-135	53-147	4	0-20	
1,1,1,2-Tetrachloroethane	50.00	55.00	110	50.29	101	80-130	72-138	9	0-20	
1,1,2,2-Tetrachloroethane	50.00	43.70	87	42.43	85	65-130	54-141	3	0-20	
Tetrachloroethene	50.00	52.46	105	50.63	101	45-150	28-168	4	0-20	

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RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

Environmental Science International, Inc.		Date Received:	N/A
354 Uluniu Street, Suite 304		Work Order No:	12-11-0711
Kailua, HI 96734-2500		Preparation:	EPA 5030C
		Method:	GC/MS / EPA 8260B

Project: Red Hill LTM 112066

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-13-057-2	**Aqueous**	**GC/MS LL**	**11/16/12**	**11/17/12**	**121116L02**

Parameter	SPIKE ADDED	LCS CONC	LCS %REC	LCSD CONC	LCSD %REC	%REC CL	ME_CL	RPD	RPD CL	Qualifiers
Toluene	50.00	49.56	99	47.16	94	75-120	68-128	5	0-20	
1,2,4-Trichlorobenzene	50.00	42.59	85	41.27	83	65-135	53-147	3	0-20	
1,1,1-Trichloroethane	50.00	53.94	108	51.45	103	65-130	54-141	5	0-20	
Hexachloro-1,3-Butadiene	50.00	50.36	101	47.63	95	50-140	35-155	6	0-20	
1,1,2-Trichloroethane	50.00	46.81	94	44.11	88	75-125	67-133	6	0-20	
Trichloroethene	50.00	50.73	101	47.40	95	70-125	61-134	7	0-20	
1,2,3-Trichloropropane	50.00	48.06	96	46.09	92	75-125	67-133	4	0-20	
Vinyl Chloride	50.00	60.33	121	58.24	116	50-145	34-161	4	0-20	
p/m-Xylene	100.0	107.4	107	103.9	104	75-130	66-139	3	0-20	
o-Xylene	50.00	53.23	106	51.93	104	80-120	73-127	2	0-20	
Methyl-t-Butyl Ether (MTBE)	50.00	46.32	93	45.97	92	65-125	55-135	1	0-20	
Gasoline Range Organics	1000	1091	109	1000	100	80-120	73-127	9	0-20	

Total number of LCS compounds : 44
Total number of ME compounds : 0
Total number of ME compounds allowed : 2
LCS ME CL validation result : Pass

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RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Glossary of Terms and Qualifiers

Work Order Number: 12-11-0711

Qualifier	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 matrix interference. The associated LCS and/or LCSD was in control and, therefore, the sample data was reported without further clarification.
4	The MS/MSD RPD was out of control due to matrix interference. The LCS/LCSD RPD was in control and, therefore, the sample data was reported without further clarification.
5	The PDS/PDSD or PES/PESD associated with this batch of samples was out of control due to a matrix interference effect. The associated batch LCS/LCSD was in control and, hence, the associated sample data was reported without further clarification.
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.
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 calibrtn. verif. recov. above method CL for this analyte.
ICJ	Initial calibrtn. verif. recov. below method CL for this analyte.
IH	Calibrtn. verif. recov. below method CL for this analyte.
IJ	Calibrtn. verif. recov. above method CL for this analyte.
J	Analyte was detected at a concentration below the LOQ and above the DL. Reported value is estimated.
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.
MPN - Most Probable Number

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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: **12-11-0711**

Date 11/7/12

Page 1 of 1

LABORATORY CLIENT: Environmental Science International

ADDRESS: 354 Uluniu St. Suite 304

CITY: Kailua STATE: Hawaii ZIP: 96734

TEL: 808-261-0740 E-MAIL: RCHONG@esciencei.com

CLIENT PROJECT NAME / NUMBER: Red Hill LTM / 112066

P.O. NO.:

PROJECT CONTACT: Robert Chong

SAMPLER(S): (PRINT) BI, JL

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

☐ COELT EDF GLOBAL ID: LOG CODE:

SPECIAL INSTRUCTIONS:

REQUESTED ANALYSES

LAB USE ONLY	SAMPLE ID	SAMPLING DATE	SAMPLING TIME	MATRIX	NO. OF CONT.	Unpreserved	Preserved	Field Filtered	TPH (g) or GRO (8015B) 8260	TPH (d) or DRO or (C6-C36) or (C6-C44) (8015B)	TPH ( )	BTEX / MTBE (8260) or ( )	VOCs (8260)	Oxygenates (8260)	En Core / Terra Core Prep (5035)	SVOCs (8270)	Pesticides (8081)	PCBs (8082)	PNAs (8310) or (8270) SIM	T22 Metals (6010B/747X)	Cr(VI) [7196 or 7199 or 218.6]	lead (6020)				
1	ES 007	11/7/12	0830	water	10	X	X	X	X	X			X						X			X				
2	ES 008	11/7/12	0900	water	10	X	X	X	X	X			X						X			X				
3	ES 008 MS/MSD	11/7/12	0900	water	10	X	X	X	X	X			X						X			X				
4	ES 009	11/7/12	1100	water	10	X	X	X	X	X			X						X			X				
	ES Trip	11/7/12	800	water	3		X		X				X													

Relinquished by: (Signature)	Received by: (Signature/Affiliation)	Date: 11/7/12	Time: 13:30
Relinquished by: (Signature)	Received by: (Signature/Affiliation)	Date:	Time:
Relinquished by: (Signature)	Received by: (Signature/Affiliation) FEDEX	Date: 11/9/12	Time: 10:30

DISTRIBUTION: White with final report, Green and Yellow to Client.

Please note that pages 1 and 2 of 2 of our T/Cs are printed on the reverse side of the Green and Yellow copies respectively.

01/01/12 Revision

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0711

ORIGIN ID: HNLA

UNITED STATES US

TO SAMPLE CONTROL
CALSCIENCE
7440 LINCOLN WAY

GARDEN GROVE CA 9
(714) 895-5494 REF:
INV:
PO:

TRK# 0215 8704 7942 2454

VZ APVA

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RECIPIENT: PEEL HERE

FedEx Express US Airbill

FedEx Tracking Number 8704 7942 2454

Form ID No.

1 From This portion can be removed for Recipient's records.

Date 11/7/2012 FedEx Tracking Number 870479422454

Sender's Name DOMONKOS FEHÉR Phone 808 232-1261

Company ESI

Address 354 Uluniu St. #304

City Kailua State HI ZIP 96734 Dept./Floor/Suite/Room

2 Your Internal Billing Reference

3 To

Recipient's Name SAMPLE CONTROL Phone 714 895-5494

Company SALSCIENCE ENVIRON

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City GARDEN GROVE State CA ZIP 92841-1427

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4b Express

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11.09
2454

Calscience Environmental Laboratories, Inc.

WORK ORDER #: 12-11-0711

SAMPLE RECEIPT FORM

Cooler 1 of 1

CLIENT: ENV'L. SCIENCE INT'L. DATE: 11/09/12

TEMPERATURE: Thermometer ID: SC4 (Criteria: 0.0 °C – 6.0 °C, not frozen)

Temperature 2.9 °C - 0.3 °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 Initial: JN

CUSTODY SEALS INTACT:

☑ Cooler ☐_____ ☐ No (Not Intact) ☐ Not Present ☐ N/A Initial: JN

☑ Sample ☐_____ ☐ No (Not Intact) ☐ Not Present Initial: TS

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	☑	☐	☐
pH / Res. Chlorine / Diss. Sulfide / Diss. Oxygen received within 24 hours	☐	☐	☑
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® ☐_____

Water: ☑VOA (6) ~~☑VOAh~~ TS 11/9/12 ☐VOA**na**$_2$ ☐125AGB ☐125AGB**h** ☐125AGB**p** ☑1AGB (2) ☐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#:** 121022D **Labeled/Checked by:** TS

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

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:** _____

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APPENDIX D

Waste Disposal Manifest

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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	000019367

GENERATOR

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)
HIC8553-01
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: H I R 0 0 0 0 9 7 8 2 4

7. Transporter 2 Company Name: UNITEK SOLVENT SERVICES, INC.-OAHU 808-682-8284
U.S. EPA ID Number: H I D 9 8 2 4 4 3 7 1 5

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: H I D 9 8 2 4 4 3 7 1 5

	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	00025	G	NON-RCRA
2.						
3.						
4.	Hg : see manifest # 19377					

13. Special Handling Instructions and Additional Information
9bT: NR 2008 9b1: TOTAL HALOGEN: HydroClave <100ppm LC

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.

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: Estrelita Higa
Signature: Estrelita Higa
Month: 12 Day: 10 Year: 12

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: Mark Chang
Signature:
Month: 12 Day: 10 Year: 12

Transporter 2 Printed/Typed Name: Mark Chang NO
Signature: Mark Chang
Month: 12 Day: 10 Year: 12

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

SEE CONSOLIDATED MANIFEST NW12-07

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

Printed/Typed Name: R. ALHAMBRA
Signature:
Month: 12 Day: 13 Year: 2012

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