

Final
Environmental Hazard Evaluation (EHE)

Waiawa Unit Training Equipment Site (UTES)
Hawaii Army National Guard Installation
Pearl City, Oahu, Hawaii

Submitted to:
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List of Acronyms and Abbreviations

§	Section
°F	degrees Fahrenheit
µg/L	micrograms per liter
AMEC	AMEC Environment & Infrastructure, Inc.
amsl	above mean sea level
AOPC	areas of potential concern
ARAR	Applicable or Relevant and Appropriate Requirement
Army	United States Army
ARNG	Army National Guard
AST	aboveground storage tank
bgs	below ground surface
BMP	Best Management Practice
BTEX	benzene, toluene, ethylbenzene, and total xylenes
C/I	commercial/industrial land use
CCH	City and County of Honolulu
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System
COPC	contaminant of potential concern
CSM	Conceptual Site Model
DD	Decision Document
DERP	Defense Environmental Restoration Program
DLNR	State of Hawaii Department of Land and Natural Resources
DoA	Department of the Army
DoD	Department of Defense
DOH	State of Hawaii Department of Health
DoN	Department of the Navy
DRO	diesel range organics
EAL	Environmental Action Level
EHE	Environmental Hazard Evaluation
EHMP	Environmental Hazard Management Plan
EPA	United States Environmental Protection Agency
FFS	Focused Feasibility Study
ft	feet
GRO	gasoline range organics
HAR	Hawaii Administrative Rules
HEER	Hazard Evaluation and Emergency Response
HIARNG	Hawaii Army National Guard

HVOC	halogenated volatile organic compound
IC	institutional control
ID	Identification
IRP	Installation Restoration Program
LUC	land use control
MATES	Mobilization and Training Equipment Site
MDL	method detection limit
MFR	Memorandum for Record
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MH	manhole
MtBE	methyl-tert-butyl ether
NASD	Naval Aviation Supply Depot
Navy	Department of the Navy
NFA	No Further Action
NGB	State of Hawaii Department of Defense, Army Directorate National Guard Bureau
NR	Not Reported
OWS	oil-water separator
PA	Preliminary Assessment
PAH	polynuclear aromatic hydrocarbon
PCB	polychlorinated biphenyl
POL	petroleum, oil, and lubricant
PP	Proposed Plan
ppm	parts per million
RA	remedial action
RAR	Remedial Action Report
RCRA	Resource Conservation and Recovery Act
RI	Remedial Investigation
RL	reporting limit
ROD	Record of Decision
RRO	residual range organics
SI	Site Investigation
SPCCP	Spill Prevention, Control, and Countermeasures Plan
SVOC	semi-volatile organic compound
TCE	trichloroethylene
TCLP	toxicity characteristic leaching procedure
TPH	total petroleum hydrocarbons
TRPH	total residual petroleum hydrocarbons
UIC	Underground Injection Control
US	United States

USACE	United States Army Corps of Engineers
USACHPPM	U.S. Army Center for Health Promotion and Preventive Medicine
USDA	United States Department of Agriculture
USGS	United States Geological Survey
UST	underground storage tank
UTES	Waiawa Unit Training Equipment Site
VOC	volatile organic compound

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Section 1 Introduction, Purpose, and Background

1.1 Introduction

This Environmental Hazard Evaluation (EHE) document was prepared for the Waiawa Unit Training Equipment Site (UTES) within the Hawaii Army National Guard (HIARNG) site located at 96-1176 Waihona Street, Pearl City, Oahu, Hawaii. The primary objective of the EHE is to evaluate potential environmental hazards resulting from contaminated soil and groundwater associated with documented releases at the site. Additional objectives of the EHE are to provide a summary of available historical environmental data linking site investigations (SIs) and response actions and to identify contaminants of potential concern (COPCs) and potential environmental hazards at the site.

This EHE was prepared in accordance with the Hawaii State Contingency Plan (Hawaii Administrative Rules [HAR] Section [§]11-451, HAR §11-281) and the following State of Hawaii Department of Health (DOH) guidance documents:

- *Technical Guidance Manual for the Implementation of the Hawaii State Contingency Plan, Interim Final, November 2008 and Updates Fall 2021* (DOH Hazard Evaluation and Emergency Response [HEER] Office 2008 and updates)
- *Evaluation of Environmental Hazards at Sites with Contaminated Soil and Groundwater, Volume 1: User's Guide, Hawai'i Edition, Fall 2017* (DOH HEER Office 2017)
- *Evaluation of Environmental Hazards at Sites with Contaminated Soil and Groundwater, Volume 2: Background Documentation for the Development of Tier 1 Environmental Action Levels, Appendix 1: Detailed Lookup Tables and Appendices 2-9, Fall 2017* (DOH HEER Office 2017)

1.2 Background

1.2.1 Site Description

The installation occupies a 19.217-acre portion of the former 210.6-acre, United States (U.S.) Department of the Navy (Navy)-owned Naval Aviation Supply Depot (NASD) Waiawa Gulch within Pearl City Industrial Park. The UTES occupies a three-acre portion of the HIARNG Waiawa Gulch site. Figure 1-1 in Appendix A shows the site vicinity and location.

The UTES is used for vehicle maintenance and repair, refueling, and washing and includes two shop buildings, a grease and inspection rack, a loading rack, two aboveground storage tanks (ASTs) for diesel fuel and gasoline storage, a four-vehicle wash rack system with an oil-water separator (OWS), and a hazardous materials storage shed. The remainder of the installation consists of two vehicle storage warehouses (Buildings 27 and 28), a vehicle storage building (former Building 63 now Building 23317), and two storage sheds (Buildings 30 and 30A). The building locations are shown in Figure 1-2 and 1-3, included in Appendix A. A chain-link fence surrounds the installation and is secured 24 hours a day; however, the fence is not aligned along the property boundary and a portion of the installation property on the Waiawa Stream side is located outside of the fence.

The surface of the UTES is relatively flat; however, the elevation at the UTES ranges from approximately 55 feet (ft) above mean sea level (amsl) at the highest point on the north end of the installation to 40 ft amsl at its lowest point on the southwest end of the UTES, adjacent to Waiawa Stream. With the exception of

landscaped areas along the UTES perimeter and the former wash rack and hazardous materials storage area, approximately 90 percent of the maintenance facility is paved by asphalt/concrete pavement and occupied by buildings.

The UTES is bordered to the northeast by Hawaiian Steam, Inc. (a storage tank cleaning business); to the west by Waiawa Stream and Honolulu Recycling Company (an automotive salvage yard); and Waihona Street to the east (refer to Figure 1-2 in Appendix A). The installation is currently being encroached upon by the adjacent property owner, an auto salvage company (Honolulu Recycling Company at 96-1268 Waihona Street, Tax Map Key [1] 9-6-004: Parcel 018), located immediately to the northwest.

1.2.1.1 Climate

The climate in Waiawa Gulch is warm and relatively dry. Rainfall in the area varies from approximately 3 inches per month during the winter, to less than 1-inch per month during the summer. The average daily minimum and maximum temperatures in January are 63- and 81-degrees Fahrenheit (°F), respectively, and the average daily minimum and maximum temperatures in August are 71°F and 89°F, respectively. The mean annual temperature is approximately 81°F (Western Regional Climate Center 2021).

1.2.1.2 Geology and Soils

The two major volcanic mountain ranges forming the island of Oahu are the Waianae Range in the west and the much younger Koolau Range in the east. Both ranges are the eroded remnants of the large, elongated Waianae and Koolau Shield Volcanoes. After a long period of erosion, volcanic activity resumed with the Honolulu Volcanic Series and its eruption created tuff rings and cinder and spatter cones. The eruptions produced by these features tended to be discrete, explosive events that produced volumes of ash that blanketed older sloping Koolau basalt base rock.

On the central and eastern side of Oahu, the underlying base rock extrusive volcanic layers are lava flows from the Koolau Volcano. Layers of aa flows, pahoehoe flows, and clinker boundaries can be found in the subsurface (Macdonald, Abbott and Peterson 1983). Geology beneath the facility is older alluvium formed from the deposition of eroded materials (Sherrod, et al. 2007).

According to the U.S. Department of Agriculture (USDA), the majority of the installation lies on soil consisting of fill materials originating from dredging or hauled in from nearby areas (FL). Fill was likely placed over alluvial soil deposited from the Waiawa Stream sometime prior to development in 1943 and is composed of silty clay and sandy clay. Soils classified as Kawaihapai stony clay loam (KlaB) underlie a small area of the southeast end of the UTES and consist of well-drained soils in drainage ways and on alluvial fans on the coastal plains on Oahu. The Kawaihapai stony clay loam soils formed in alluvium derived from basic igneous rock in humid uplands. Soil in the stream bed and along the stream side of the facility is classified as Kawaihapai stony clay loam and consists of dry, stiff, silty clays that exhibit low permeability (Soil Survey Staff, NRCS USDA 2021). The steep slopes on both sides of Waiawa Stream are outcrops of basalt of the flank lava flow.

Soils encountered during the 1994 removal of an on-site dry well consisted of a stiff-dry silty clay matrix with abundant pebbles, cobbles, and boulders up to four ft in diameter (Rittenhouse-Zeman & Associates, Inc. 1994).

Soils encountered in a majority of the soil borings advanced in December 2006 consisted of sandy clay ranging in color from dark yellowish brown to dark brown and grey-brown with sporadic traces of medium grained gravel and pebbles interbedded in places with dark brown clay with some pebbles (U.S. Army Corps of Engineers [USACE] 2008).

1.2.1.3 Hydrogeology

The basal aquifer that underlies the installation is part of the Pearl Harbor Aquifer, the most productive aquifer in the State. As such, multiple industrial, agricultural, and domestic wells are located directly downgradient of the facility. Municipal water supply wells are located both east and west of the facility within four miles.

Drinking water at the installation is resourced from public drinking water wells that are located crossgradient approximately 0.75 mile west of the facility.

The State of Hawaii Department of Land and Natural Resources (DLNR) registered wells located within 0.5 mile of the subject property are listed in Table 1-1.

Table 1-1: Wells within ½-mile

Well Owner/ Operator	Well Name	Well Number	Construction Date	Well type	Well Depth
Kamehameha Schools (former Oahu Sugar Company Wells)	Waipahu WP6A 6B USGS-212436157590101	3-2459-01 W239-A	1999	Unused	704
	Waipahu WP6A 6B USGS-212436157590101	3-2459-02 W239-B	1999	Unused	582
	Waipahu WP6A 6B USGS-212436157590103	3-2459-03 W239-C	1999	Unused	739
	Waipahu WP6A 6B USGS-212436157590104	3-2459-04 W239-D	1999	Unused	706
	Waipahu WP6A 6B USGS-212436157590105	3-2459-05 W239-E	1999	Unused	600
	Waipahu WP6A 6B USGS-212436157590106	3-2459-06 W239-F	1999	Unused	700
	Waipahu WP6A 6B USGS-212436157590107	3-2459-07 W239-G	1999	Unused	590
	Waipahu WP6A 6B USGS-212436157590108	3-2459-08 W239-H	1999	Unused	577
	Waipahu WP6A 6B USGS-212436157590109	3-2459-09 W239-I	1999	Unused	707
	Waipahu WP6A 6B USGS-212436157590100	3-2459-10 W239-J	1999	Unused	700
	Waipahu WP6A 6B USGS-212436157590101	3-2459-11 W239-K	NR	Unused	NR
	Waipahu WP6A 6B USGS-212436157590102	3-2459-12 W239-L	NR	Unused	NR
	Waipahu WP6A 6B USGS-212436157590103	3-2459-13 W239-M	NR	Unused	700
	Waipahu WP6A 6B USGS-212436157590104	3-2459-14 W239-N	NR	Unused	700

Notes: NR = Not Reported; USGS = U.S. Geological Survey; In 1995, the Kamehameha Schools wells 3-2459-001 through -014 were reported too brackish for irrigation use.

The basal groundwater originates as rainwater falling in higher drainage basins to the north and northeast of the facility and generally migrates seaward towards Pearl Harbor (Macdonald, Abbott and Peterson 1983). The basal aquifer can be divided into three zones: upper, middle, and lower. The upper basal aquifer consists of a mixture of rainfall recharge, irrigation return, and subsurface inflow (Department of the Navy [DoN] 1990). The hydrologic and geologic classification of the upper aquifer in the Waiawa aquifer system (Aquifer Code 3-02-02-111, Status Code 11111) describes the aquifer as a basal, unconfined aquifer located in horizontally extensive flank basalt lava flows. The groundwater status for the upper aquifer is classified

as the following: a currently used drinking water source that is ecologically important; fresh water (salinity less than 250 milligrams per liter [mg/L] chloride); irreplaceable in uniqueness; and highly vulnerable to contamination (Water Resources Research Center 1990).

The Waiawa Shaft water well site is located 0.5 mile upgradient from the facility, and Manana Shaft and two unnamed wells are located downgradient in Pearl City and owned by the Honolulu Board of Water Supply. The Waiaiwa Shaft (3-2258-01 through 009) is a former Superfund site (U.S. Environmental Protection Agency [EPA] Identification [ID]: HI7170090016). The Waiawa Shaft, also known as Waiawa Pump Station, was constructed in 1951 and is the primary water source for the U.S. Navy.

1.2.1.4 Groundwater at the UTES

Groundwater elevations measured in the three on-site groundwater monitoring wells installed in 2001 indicated that the groundwater flow gradient was to the northwest toward Waiawa Gulch (HIARNG 2002).

During December 2006 and January 2007 remedial investigation activities capillary fringe soils and/or groundwater were encountered in 15 of the 21 soil borings advanced in at the UTES at depths ranging from 15.5 to 17.2 ft below ground surface (bgs). Obvious contamination (e.g., odor, staining, sheen) was not observed in the soil and/or groundwater encountered during drilling (USACE 2008). The depth to groundwater was measured in the wells at the UTES in January 2007 (USACE 2008) and ranged from 10.1 ft below the measuring point at monitoring well MW-B7 to 19.07 below the measuring point at well MW-B6. A spotty silver-colored sheen was observed in the initial purge water at MW-B3, located by the grease rack; however, petroleum product sheens and suspect chemical odors were not encountered during groundwater sampling activities.

In March 2011, during the first round of semi-annual groundwater monitoring, AMEC Environment & Infrastructure, Inc. (AMEC) (State of Hawaii Department of Defense [DoD], Army Directorate National Guard Bureau [NGB] 2012a) found that two of the first three wells installed at the site were dry (MW-B6 and MW-B7) possibly due to silt and sediment intrusion; therefore, two new wells (MW-B36 and MW-B37) were installed to further evaluate downgradient groundwater conditions. Depth to groundwater measured in March 2011 ranged from 13.55 ft bgs at MW-8W to 21.40 ft bgs at MW-B36.

The depth to groundwater was also measured in August 2011 during the second semi-annual groundwater monitoring event. Depth to groundwater ranged from 14.4 ft bgs at MW-8W to 17.4 ft bgs at wells MW-B36 and MW-B37. August 2011 groundwater elevations are shown on Figure 1-3 in Appendix A. Based on data collected from the eight functioning monitoring wells in August 2011, groundwater flow direction was west-northwest toward Waiawa Stream.

Former wells installed at the site are summarized in Table 1-2.

Table 1-2: Monitoring Well Information

Well No.	GW Level (ft bgs)	Well Casing Diameter (inch)	Well Depth (ft)	Water Column (ft)	Notes
2001					
MW-B3	13.25	2	29.5	Not Reported	
MW-B6	21.68	2	30	Not Reported	
MW-B7	24.72	2	30	Not Reported	
2006					
MW-B3	16.14	2	28.8	12.7	
MW-B6	16.49	2	24.55	8.1	
MW-B7	18.95	2	28.74	9.8	
MW-8W	13.75	2	23.61	9.8	
MW-9W	16.31	2	25.9	9.2	Remained moderately turbid to the eye
MW-10W	15.61	2	24.55	8.9	
MW-11W	16.14	2	24.25	7.4	
MW-12W	16.49	2	24.55	8	
August 2011					
MW-B3	16.7	2	29.5	Not Reported	
MW-B6	Well is out of commission.				
MW-B7	Well is out of commission and replaced with MW-37B.				
MW-8W	14.4	2	23.4	Not Reported	
MW-9W	15.3	2	26	Not Reported	
MW-10W	15.4	2	25.55	Not Reported	
MW-11W	24.4	2	24.25	Not Reported	
MW-12W	16.6	2	24.55	Not Reported	
MW-B36	17.4	2	24.9	Not Reported	
MW-B37	17.4	2	26.2	Not Reported	

Note: bgs = below ground surface ft = feet MW = monitoring well
*Wells were purged dry

1.2.1.5 Surface Water

The installation is located in the Waiawa sub-watershed of the main Pearl Harbor Watershed, which consists of Waiawa Stream and its tributaries. Waiawa Stream, an intermittent stream with very little or no flow for most of the time, partially borders the installation along the southwestern boundary.

At the installation stormwater sheet flows over paved areas into catch basins or infiltrates through vegetated buffers. The City and County of Honolulu (CCH) has an easement to operate a storm sewer with a 66-inch-diameter outfall that receives runoff from the HIARNG installation and industrial properties located directly across Waihona Street (Figure 1-4 in Appendix A). The outfall drains directly into Waiawa Stream (Figure 1-5 in Appendix A). Historically, two additional drainage pipes owned and operated by HIARNG had outfalls that drained to the adjacent stream bank; one 6-inch-diameter outfall (formerly connected to the OWS at the new wash rack and closed [grouted] in 2017), and one 12-inch-diameter outfall (formerly connected to the old wash rack and decommissioned in 2011) (Figure 1-7 in Appendix A). The Waiawa Stream has flooded infrequently during heavy rains and at times has overflowed its banks inundating the UTES up to Waihona Street (Weston Solutions, Inc. 2010). The most recent Waiawa Stream flooding event occurred in March 2021.

In 2001, groundwater elevation measured in MW-B3, the approximate center of the UTES, was approximately 30 ft amsl. Groundwater elevations measured in groundwater monitoring wells MW-B6 and

MW-B7, located adjacent to the Waiawa Stream bank, were approximately 20 ft amsl; roughly 10 ft lower than the groundwater elevation in MW-B3. Adjacent to the UTES, the Waiawa Gulch streambed is at an elevation of 40 and 45 ft amsl. Therefore, in the vicinity of the UTES, it is likely that Waiawa Stream recharges the basal groundwater rather than the groundwater discharging to Waiawa Stream (HIARNG 2002). Surface water can enter an aquifer only as fast as water within the aquifer moves away from the recharge zone. Because recharge zones are the water intake for extensive underground reservoirs, they can easily be a source of groundwater contamination.

In 2001, two sediment samples were collected from the Waiawa Gulch streambed (*Up Stream Soil* and *Down Stream Soil*) and analyzed for total petroleum hydrocarbons (TPH), pesticides, polychlorinated biphenyls (PCBs), and Resource Conservation and Recovery Act (RCRA) metals. The samples were upstream of the installation and downstream of the UTES. TPH as heavy oil and the metals barium, chromium, and lead were detected in the *Up Stream Soil* sample. TPH as heavy oil, and the metals barium, chromium, lead, and mercury were detected in the *Down Stream Soil* sample (HIARNG 2002). It is possible that these and other dissolved contaminants infiltrate through the streambed and migrate to the basal groundwater beneath the UTES with the stream recharge. It is also possible that dissolved contaminants associated with 1) storm water runoff discharging to the stream from industrial properties adjacent to the stream and/or via the 66-inch-diameter outfall, 2) historical petroleum-contaminated effluent discharges to the streambank from the 6- and 12-inch-diameter outfalls, and/or 3) historical inland releases to soil and groundwater adjacent to and near Waiawa Gulch (e.g., breaks reported in the 6- and 12-inch-diameter outfall pipes, dry well) flow as recharge water from the stream to the groundwater beneath the UTES site (on-site sources).

1.3 Historic Land Use

Prior to HIARNG use, the UTES portion of the installation was owned and operated by the Navy as a military vehicle and equipment maintenance and storage facility from 1943 to 1951 when Navy operations at the site ended and the land was transferred to the U.S. Army (Army). HIARNG acquired NASD Waiawa Gulch from the Army in 1961 for use as a Mobilization and Training Equipment Site (MATES). In 2000, the MATES was converted to the UTES. Activities at the former MATES, now UTES, include(d) vehicle maintenance, repair, refueling, washing, lube and inspection, and associated hazardous/regulated substance and waste storage.

The UTES has undergone numerous assessments, investigations, and removal/closure actions, beginning in 1993 with a Preliminary Assessment (PA) (NGB 1993) through the present with this EHE. Potential sources of contamination were identified, and COPCs were identified in surface and subsurface soil, groundwater, and sediment samples at the UTES, in some cases, at levels exceeding published DOH Environmental Action Levels (EALs) in place at the time.

The UTES is anticipated to remain in industrial/commercial use; however, if the site is utilized for residential purposes in the future, potential environmental hazards should be re-evaluated.

Section 2 Environmental and Regulatory Actions

The following sections briefly summarize the initial "release" discovery and the subsequent actions completed to properly close the site under Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and Executive Order 12580, as required by the Defense Environmental Restoration Program (DERP), and in accordance with DOH requirements.

2.1 Initial Discovery

In 1993 a PA of the installation was completed to characterize the site and determine the need for further action (NGB 1993). The PA evaluated site activities, quantities of hazardous substances present, and potential pathways by which contamination could affect public health and the environment. Based on the PA findings, environmental investigation and removal/closure activities were initiated at the MATES in 1994, and completed at the UTES in 2017.

The PA identified four *environmentally significant operations* that may have negatively impacted site media, including storage of petroleum, oil, and lubricants (POL) and hazardous materials (i.e., use of a wash rack and a dry well system; and underground storage tanks [USTs]).

Although there were no documented releases of contaminants to soil or water, the PA identified concerns associated with the dry well system, as the collection point for surface flow from rain events, and the potential that past or present spills discharged directly to Waiawa Stream via the storm drainage system.

The PA also identified *historical practices of concern*, including neutralization and disposal of battery acid to the storm drain system, operation of the wash rack without an OWS in place, general use of the grease racks, and no secondary containment of waste products stored on the concrete pad in the wash rack area (NGB 1993).

2.2 Environmental Actions Undertaken at the MATES/UTES

The Army National Guard (ARNG) has been managing the DERP at the installation in accordance with CERCLA and Executive Order 12580 since 1994. The UTES has undergone numerous voluntary environmental actions, including assessments, UST and dry well removals/closures, upgrades/replacement/repair of wash racks, SIs, remedial investigations (RIs)/actions (RAs), and groundwater monitoring.

The overall conclusion of these actions is that a "plume" was not present at the site and the chemicals detected were not a human health or migration concern. The detected chemicals included select petroleum hydrocarbons, metals, and polynuclear aromatic hydrocarbons (PAHs).

In January 1995, URS Consultants, Inc., on EPA's behalf and based on the 1993 PA, identified the installation as a potential hazardous waste site and it was entered into the Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) and assigned EPA ID Number HI0001004076 (EPA 1995).

2.3 Regulatory Site Closure Actions

In October 2016, USACE prepared a Focused Feasibility Study (FFS) for the UTES (USACE 2016), that provided a brief description of the site, summarized the results of past environmental investigations, developed a list of COPCs, evaluated exposure conditions, identified Applicable or Relevant and Appropriate Requirements (ARARs), described action alternatives, analyzed the alternatives against evaluation criteria, and compared the alternatives relative to each other. The FFS describes the *site* as the installation, including the UTES.

The FFS identified DOH EALs as an ARAR for the UTES and compared data from the completed investigations against DOH commercial/industrial land use (C/I) EALs to develop a list of COPCs to evaluate the exposure scenario at the site. The evaluation showed that there are no complete exposure pathways to the isolated subsurface soil and groundwater at the UTES.

The FFS established three action alternatives for the UTES: 1) No Action; 2) Well Closure and Drain Pipe Grouting; and 3) Well Closure, Drain Pipe Grouting, and Long-Term Management.

DOH reviewed the FFS and in December 22, 2016, Mr. Steve Mow, with the DOH HEER Office, provided HIARNG with a letter accepting the preferred alternative selection. Mr. Mow requested submittal of a Decision Document (DD) with HIARNGs preferred alternative.

From 2016 to 2017, HIARNG completed a Supplemental RA with the intended goal of completing the actions stated in Alternative 2 of the FFS. The action included a geophysical survey to identify underground utilities, abandonment of the eight groundwater monitoring wells installed during the previous groundwater investigations, and abandonment of the downgradient 30-ft section of the 6-inch-diameter effluent line from the HIARNG wash rack to Waiawa Stream.

On June 29, 2017, HIARNG submitted *Final Draft Remedial Action Report* (RAR) (HIARNG 2017) to Mr. Mow, with the DOH HEER Office, with a cover letter stating that the preferred alternative (Alternative 2) had been chosen and completed as presented in the FFS and RAR. HIARNG requested that DOH review the RAR and inform them of any questions or concerns with the document so they could proceed with project close-out.

The RAR summarized the work performed by USACE and HIARNG (authorized under the DERP Installation Restoration Program [IRP]) for the former MATES/UTES and determined, via the CERCLA process, the potential for environmental impact upon the UTES resulted from the previous occupation of the area by and from activities of the Navy.

The HIARNG (2017) concluded:

1. The interim soil removal and supplemental RAs were performed to eliminate all possible pathways for contaminant transport of COPCs from the UTES to Waiawa Stream and achieved RA cleanup goals established for residential land use specified in Alternative 2 (the preferred alternative).
2. In accordance with the CERCLA process, a Proposed Plan (PP) and DD were prepared and the alternative methodologies were implemented to bring the site to closure. For the UTES project, RA objectives established in the FFS were achieved during the 2015 RA and subsequent Supplemental RA 2016-2017.

HIARNG recommended that, based on the work performed to date and assuming the preferred alternative (Alternative 2) was accepted, "*No Further Action*" (NFA) was recommended for this site.

On January 1, 2018, HIARNG received a letter from Mr. Mow stating that the DOH HEER Office had reviewed HIARNG's June 29, 2017 letter request and determined that an *NFA with Institutional Controls (ICs)* determination is appropriate for the site. The only IC for the site is that it remains in its current usage as a commercial/industrial property. Should the land use change to a more sensitive usage (e.g., residential, day care center), further investigation and a potential response action may be required (DOH 2018).

In 2018, HIARNG issued *Memorandum for Record* (MFR), *Subject: Hawaii Army National Guard (HIARNG) Commitment to Maintain the HIARNG Waiawa Gulch Unit Training and Equipment Site (UTES) Installation Designated Land Use as Commercial/Industrial* (HIARNG 2018a) to ensure that the required IC (commercial/industrial property use limitation) is complied with and stated that ARNG will verify that the Waiawa Gulch property remains in its current usage by conducting a check of the status of the Waiawa Gulch property every 5 years to confirm continued usage of the subject property.

In July 2019, HIARNG submitted its draft final PP to the DOH HEER Office for review (DOH HEER Office 2019).

In an October 11, 2019, letter to HIARNG, Mr. Sven Linstrom with the DOH HEER Office provided comments on the UTES draft final PP and concluded the following:

- The appropriate action is "Alternative 2 - Well Closure and Drain Pipe Grouting," with the understanding that non-CERCLA-waste POL contamination in soil and groundwater across the site will be further evaluated and managed under an Environmental Hazard Management Plan (EHMP) to be prepared in coordination with, and approved by, the DOH HEER Office.
- Since NFA is required, once the Final DD is prepared, HIARNG may then immediately prepare a RA Completion Report to close-out the CERCLA conditions at the site.
- In order to prepare an accurate Conceptual Site Model (CSM) and EHE for the EHMP, additional soil and groundwater sample data may need to be collected.

In November 2019, USACE released HIARNG's final *Proposed Plan for Waiawa Gulch UTES, Island of Oahu, Hawaii* (USACE 2019) that identified the preferred alternative (Alternative 2) to address contamination at the UTES and provided the rationale for the selection. The alternatives discussed in the PP are the same as those proposed in the FFS. Under Alternative 2 in the PP, the wash rack drain line would be sealed to prevent the potential discharge of contaminants that may be contained within storm water overflow from the wash rack diverter system. In addition, the on-site monitoring wells would be decommissioned to eliminate potential pathways to the groundwater and subsurface soils.

In April 2020, USACE issued HIARNG's *Final Record of Decision* (ROD), Waiawa Unit Training Equipment Site, Island of Oahu, Hawaii (USACE 2020) which stated:

- The selected remedy (well closure and drain pipe grouting) closes this site under CERCLA with the only remaining COPC as TPH as residual range organics (RRO) (RRO is inclusive of oil range organics, motor oil range organics, and lubricant range organics), which is not regulated under CERCLA but regulated under Hawaii State laws and regulations. The ARNG will continue monitoring this site under Hawaii State laws and regulations.

- Future land use controls (LUCs) will be implemented over the UTES site to limit land use to Commercial/Industrial as directed by the letter provided by the DOH HEER Office (DOH 2018). The LUCs will be included in the Base Master Plan.
- No fencing or warning signs will be installed at the site because all exposure areas will be usable under its current usage. However, land use restrictions will still apply because concentrations of TPH-RRO in subsurface soil above the residential land use (*herein referred to as Tier 1*) EALs remain at the site.
- Land use inspections will be conducted annually, or as determined necessary by the ARNG, to verify that LUCs are implemented properly and the site remains safe for current exposure scenarios/receptors.
- Five Year Reviews are not required.
- LUCs applicability and boundaries may be revisited by DOH at their discretion and changes will be made, as necessary.

On June 23, 2020, Mr. Lindstrom with the DOH HEER Office indicated:

- The TPH-RRO data requires additional review to ensure it is complete and the site is adequately characterized.
- Additional groundwater samples may be required for delineation.
- An EHE, based on sufficient site characterization, is required prior to preparation of an EHMP.

Section 3 Target Analytes and Screening Levels

3.1 Target Analytes

The UTES is a non-CERCLA petroleum-contaminated site that has undergone numerous voluntary environmental actions. Target COPCs identified for soil and groundwater at the UTES site include TPH as gasoline range organics (GRO), TPH as diesel range organics (DRO), and TPH-RRO.

Associated target analytes (initial COPCs) for soil and groundwater include the following:

- GRO - TPH, benzene, toluene, ethylbenzene, and total xylenes (BTEX), naphthalene, methyl-tert-butyl ether (MtBE), and appropriate additives and breakdown products (e.g., lead)
- DRO - TPH, BTEX, naphthalene, and methylnaphthalenes (1- and 2-)
- RRO - TPH, BTEX, chlorinated solvent compounds, naphthalene, 18 priority pollutant PAHs, PCBs, and heavy metals (lead, cadmium, and chromium)

3.2 Screening Levels

Historical sample results are screened against the following DOH EALs:

- DOH Tier 1 EALs for sites that are within 150 meters of a surface water body and where groundwater is a current or potential drinking water source (i.e., the most restrictive DOH EALs) (DOH HEER Office 2017).
- DOH C/I EALs for sites that are within 150 meters of a surface water body and where groundwater is a current or potential drinking water source (DOH HEER Office 2017). The C/I EALs were selected as site-specific action levels based on the current and future industrial use of the site as a vehicle maintenance facility.

Analytical results for soil and groundwater samples collected from the site were initially compared to Tier 1 EALs (i.e., sites less than 150 meters from the nearest surface water, with unrestricted land use, and where groundwater is a drinking water resource). The parameters used for the initial Tier 1 assessment, however, are not representative of conditions at the site, which is currently used for commercial/industrial purposes and land use is presumed to continue as commercial/industrial in the future. Therefore, to further evaluate the site, soil and groundwater data were compared to applicable site-specific DOH EALs.

Prior to the start of the previous investigations the COPC reporting limits (RLs) and method detection limits (MDLs) were assumed to have been agreed upon by all stakeholders (USACE, DOH, and the laboratory). In some cases, particularly for semi-volatile organic compounds (SVOCs) and some metals, the following applied to the data:

- If the EAL was less than the RL, then the concentration of the analyte was reported with respect to the MDL (DOH HEER Office 2006).
- If the analyte was detected at a concentration greater than the RL, the DOH HEER Office considered the data as *quantitative* (DOH HEER Office 2006).

- If the analyte was detected at a concentration less than the MDL, or between the MDL and the RL, the DOH HEER Office considered the data as a *qualitative* indicator of the presence or absence of the analyte (DOH HEER Office 2006).
- If the analyte was detected at a concentration greater than the EAL but less than the RL, the DOH HEER Office made a determination as to whether additional analyses were necessary to attain quantitative concentration data on the analyte or whether the qualitative data was sufficient for site characterization purposes (DOH HEER Office 2006).

It is understood that not all analytes could be analyzed to concentrations below EALs. Therefore, *the reported results where the RLs exceed DOH EALs are not further discussed in this report*.

EAL Surfer Summary Reports (Appendix B) were used to identify potential environmental hazards based on-site-specific conditions. The soil vapor screening measurements (methane only) were compared to the applicable lower explosive limit.

3.3 Contamination at the Site

Sections 4 through 7 provide an evaluation of soil and groundwater sample results from the 1997 (U.S. Army Center for Health Promotion and Preventive Medicine [USACHPPM] 1997), 2001 (HIARNG 2002), 2006 (USACE 2008), and August 2011 (AMEC 2012) investigations screened against DOH EALs. Evaluation results are used to identify 1) potential contaminant sources currently impacting soil and/or groundwater beneath the UTES and 2) COPCs that may remain in site soil and/or groundwater at concentrations that pose risks to human health and the environment.

For clarity and continuity, the following sections evaluate the most recent COPC detections identified during previous environmental investigations as "representative" data to characterize soil and/or groundwater in source-specific areas of potential concern (AOPCs) identified at the UTES, as listed below, and shown on Figure 3-1 in Appendix A:

- Fuel storage (*herein referred to as the Fuel Storage AOPC*);
- Old wash rack, dry well, and 12-Inch-diamater outfall (*herein referred to as the Old Wash Rack AOPC*);
- New wash rack system inch-diameter outfall, and septic tank (*herein referred to as the New Wash Rack AOPC*); and
- Grease and inspection rack (*herein referred to as the Grease Rack AOPC*).

Soil and groundwater sample results are summarized by AOPC (including analytes with RLs that exceed DOH EALs) in Tables C1 and C2, respectively, in Appendix C.

During the March 2011 semi-annual sampling event (NGB 2012b), two additional wells were installed to replace two of the oldest wells that had gone dry (MW B6 and MW B7). The July 2011 semi-annual sampling report was not available for review; therefore, soil sample results are not available for either of the two new wells (MW-36B and MW-37B) and groundwater sample results are not available for any of the eight wells sampled in March 2011 (NGB 2012b). Soil sample analyses from the 1997, 2001, and 2006 investigations are listed for each sample in Tables 4-1, 5-1, 6-1, and 7-1; soil sample results compared to DOH EALs are summarized in Table C1 in Appendix C.

The 2006 and August 2011 groundwater samples were collected using a low-flow pump. Groundwater samples were analyzed for TPH (TPH-GRO, TPH-DRO, and TPH-RRO) (2001, 2006, and 2011), full range of volatile organic compounds (VOCs) (2001, 2006, and 2011), select VOCs chloroform and trichloroethylene (TCE) (2006), PAHs (2006), SVOCs (2011), the metals arsenic, cadmium, chromium, nickel, silver, zinc, and mercury (2006 and 2011), the metal lead (2001, 2006, and 2011), and the metals barium and selenium (2006).

Groundwater samples collected from groundwater monitoring wells are considered representative of groundwater in the shallow aquifer located directly beneath the site at the time the samples were collected. Groundwater sample results from the 1997, 2001, 2006, and 2011 investigations exceeding DOH EALs are included in Tables 4-2, 4-3, 4-4, and 4-4. Groundwater sample results compared to DOH EALs are summarized in Table C2 in Appendix C. Groundwater sample exceedances are shown on Figures 3-2 and 3-3 in Appendix A.

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Section 4 Storage Tank Area of Potential Concern

4.1 History of Use and Previous Investigations

Building 23 was built by the Navy in 1943 (Department of the Army [DoA] 1987). The former gasoline station was located in front of the southeast end of Building 22 (Figure 3-1, included in Appendix A) and likely included two steel USTs; one 1,200-gallon No. 2 diesel fuel tank and one 5,000-gallon motor fuel tank (NGB 1993), associated pipes and fittings, and a concrete slab (DoA 1987). The gasoline station building was "razed" sometime before 1951 (NGB 2020); however, there is no reference to the USTs being removed from the ground (DoA 1987 and HIARNG 2002). Former Building 23 was likely rebuilt by the HIARNG sometime around 1963 (DoN 1963) and two steel USTs (one 1,200-gallon No. 2 diesel fuel and one 5,000-gallon motor fuel) were installed by HIARNG in 1964 (NGB 1993).

In 1987, the two USTs were located at the UTES using geophysical instrumentation, integrity tested, and then removed from the ground (HIARNG 2002). Environmental samples were not collected; however, *obvious evidence of contamination was not observed in the soil during UST removal activities*. The old USTs were replaced with a new UST system consisting of two 3,000-gallon fiberglass USTs (one motor fuel and one No. 2 diesel fuel). The new USTs were outfitted with a float system to gauge liquid levels and available capacity and a new dispensing station was built. The motor fuel pump and diesel fuel pump were built on separate islands consisting of raised concrete platforms with corrugated steel roofs (NGB 1993).

In April 1997, the two 3,000-gallon USTs were removed and replaced with the current fueling system, which includes two ASTs; a 3,000-gallon capacity diesel AST and a 500-gallon capacity diesel AST. No evidence of a release was identified during UST closure activities. TPH-GRO and TPH-DRO were not detected in the soil samples at concentrations greater than the laboratory MDLs and groundwater was not encountered according to the *Site Assessment Report for Underground Storage Tank Closure* (NGB 1993).

During 1997 UST closure activities, a concrete structure was encountered while excavating a utility trench from the south corner of Building 22 eastward of the new UST system location (Figure 3-1 in Appendix A). The concrete structure, likely associated with the Navy's former sewerage system, consisted of two vaults (Vault 1 and 2) with a 6-inch-thick reinforced-concrete top and 8-inch-thick reinforced-concrete walls. The structure was covered with about 3 ft of fill and pavement (USACHPPM 1997). The water and sediment in the vaults were tested for one or more of the following: TPH-GRO, TPH-DRO, total residual petroleum hydrocarbons (TRPH), cadmium, chromium, and lead, none of which (except for TRPH in the sediment) were detected at levels above DOH EALs (USACHPPM 1997). TRPH was detected at a concentration of 760 milligrams per kilogram (mg/kg). None of the tested analytes were detected in the water sample at concentrations above the laboratory method RLs. The water was pumped into Manhole MH-3 (referred to as the "Mystery Manhole"), which is connected to a septic tank (HIARNG 1978). One soil sample (*B-1/B-1A*) was collected from soil on the northeast side of the structure (Figure 3-1 in Appendix A) and analyzed for TPH-GRO, TPH-RRO, and TRPH: the depth of the sample was not reported. TRPH was detected at a concentration of 600 mg/kg; exceeding the most restrictive DOH EAL of 500 mg/kg. The two vaults were left in place, filled with clean material, and the new fueling facility was constructed (USACHPPM 1997).

4.2 Soil Sample Results and Groundwater Observations During Drilling

Soil sample results associated with the Fuel Storage AOPC are summarized in Table 4-1. During the **1997** investigation (USACHPPM 1997), the **2001** subsurface SI (HIARNG 2002), and the **2006** RI (USACE 2008), 20 soil samples were collected from 12 soil borings advanced within, downgradient, upgradient, and crossgradient of the Fuel Storage AOPC (Figure 3-1 in Appendix A). Soil sample depths ranged from 5.5 to 17.5 ft bgs.

No evidence of obvious contamination was observed in any of the soil borings drilled within and in the vicinity of the Fuel Storage AOPC or in groundwater when encountered.

Table 4-1: Soil Sample Summary, Storage Tank Area of Potential Concern

Sample	Sample Year	Location	Depth Interval (ft bgs)	Tested COPCs	COPCs > DOH EALs	Final Boring Depth *Groundwater Encountered*
AOPC						
B-1/B-1A	1997	Northeast side of vaults	Unknown	TPH-GRO, TPH-RRO, and TRPH	TRPH	Unknown
B-1-12'	2001	Adjacent to former USTs	12	TPH-GRO, TPH-DRO, TPH-RRO, VOCs, and Pb	None	12 ft bgs *None*
11W-2-5 *11W-5-4*	2006	West corner of AST facility	5.5 - 6 17 - 17.5[1]	TPH-GRO, TPH-DRO, TPH-RRO, VOCs, PAHs, and RCRA 8 metals plus, nickel and zinc	None	24 ft bgs *No obvious contamination*
DOWNGRADIENT						
25B-2-4 *25B-1-1*	2006	Southwest corner of loading ramp	6 - 6.5 14 - 14.5	TPH-GRO, TPH-DRO, TPH-RRO, VOCs, PAHs, and RCRA 8 metals plus nickel and zinc	None	15.5 ft bgs *No obvious contamination*
23B-1-1 *23B-3-2*	2006	West of the grease and inspection rack	5.5 - 6 15 - 15.5		None	16 ft bgs *No obvious contamination*
UPGRADIENT						
10W-2-4 *10W-2-2*	2006	East corner of UTES	15 - 15.5 15.5 - 16	TPH-GRO, TPH-DRO, TPH-RRO, VOCs, PAHs, RCRA 8 metals plus nickel and zinc	None	25 ft bgs *No obvious contamination*
CROSSGRADIENT						
B-2-12'	2001	Adjacent to the catch basin where neutralized battery acid was dumped	12	TPH-GRO, TPH-DRO, TPH-RRO, VOCs, and lead	None	12 ft bgs *None*
24B-2-4 *24B-4-4*	2006		6 - 6.5 15 - 15.5	TPH-GRO, TPH-DRO, TPH-RRO, VOCs, PAHs, and RCRA 8 metals plus nickel and zinc	None	16 ft bgs *No obvious contamination*
B-3-12'	2001	Adjacent to the north end of the grease rack	12	TPH-GRO, TPH-DRO, TPH-RRO, VOCs, and lead	None	12 ft bgs *None*
26B-2-4 *26B-5-1*	2006	Southwest of AST facility	6 - 6.5 16.5 - 17	TPH-GRO, TPH-DRO, TPH-RRO, VOCs, PAHs, and RCRA 8 metals plus nickel and zinc	None	16.8 ft bgs *None*

Sample	Sample Year	Location	Depth Interval (ft bgs)	Tested COPCs	COPCs > DOH EALs	Final Boring Depth *Groundwater Encountered*
12W-1-1 *12W-2-4*	2006	West of AST facility	6 - 6.5 15 - 15.5	TPH-GRO, TPH-DRO, TPH-RRO, VOCs, PAHs, and RCRA 8 metals plus nickel and zinc	None	25 ft bgs *No obvious contamination*
27B-2-5 *27B-5-2*	2006	South corner of UTES	5.5 - 6 17 - 17.5		None	18 ft bgs *None*

Note: > = greater than
bgs = below ground surface
DRO = diesel range organics
GRO = gasoline range organics
RRO = residual range organics
UTES = Waiawa Unit Training Equipment Site
AOPC = Area of Potential Concern
COPC = contaminant of potential concern
EAL = environmental action level
PAH = polynuclear aromatic hydrocarbons
TPH = total petroleum hydrocarbons
VOC = volatile organic compound
AST = above ground storage tank
DOH = State of Hawaii Department of Health
ft = feet
RCRA = Resource Conservation and Recovery Act
TRPH = total recoverable petroleum hydrocarbons
TRPH = Tested analyte detected at concentrations > the DOH EAL.
17 - 17.5[1] = 2006 soil sample collected approximately 1.3 ft below final groundwater level

With the exception of TRPH, none of the tested analytes were detected in soil at levels exceeding the most restrictive DOH EALs. It is possible that the TRPH concentration identified in the soil sample adjacent to the vaults (assumed to be part of the old Navy sewer system) included organic materials from sewage rather than petroleum-related contaminants.

4.3 Groundwater Sample Results

Table 4-2 summarizes the groundwater monitoring well locations relative to the Fuel Storage AOPC, groundwater flow direction, and COPC exceedances. Two groundwater monitoring wells were installed in the vicinity of this AOPC in 2006, one well within the AOPC (MW-11W) and one upgradient well (MW-10W) (Figure 3-1, included in Appendix A). Groundwater monitoring well MW-12W is located crossgradient to the southwest of the AOPC (USACE 2008).

All the reported COPC concentrations in groundwater are flagged with a "J" qualifier, which indicates that the reported detection is below the laboratory MDL but above the instrument RL and is an estimated value.

Three COPCs were identified in groundwater in the vicinity of the Fuel Storage AOPC at concentrations exceeding DOH EALs.

- In 2006, a benzo(a)anthracene exceedance was detected in MW-11W. Benzo(a)anthracene was not included as a COPC in the 2011 groundwater monitoring events (NGB 2012a). No obvious contamination was noted in groundwater encountered in downgradient soil borings 25B and 23B, located approximately 140 and 258 ft, respectively, to the west of well MW-11W (Figure 3-2 in Appendix A).
- In 2011, a benzo(a)pyrene exceedance was detected in well MW-11W (Figure 3-2 in Appendix A).
- In 2006, a selenium exceedance was detected in upgradient well MW-10W located approximately 135 ft northeast of MW-11W. Selenium was not included as a COPC in the 2011 groundwater monitoring events (NGB 2012a) (Figure 3-3 in Appendix A).
- In 2006, a benzo(a)anthracene exceedance was detected in crossgradient well MW-12W, located approximately 219 ft southwest of MW-11W. Benzo(a)anthracene was not included as a COPC in the 2011 groundwater monitoring events (NGB 2012a).

Table 4-2: Groundwater Sample Exceedances, Storage Tank Area of Potential Concern

COPC Levels ≥ DOH EALs	AOPC		Upgradient		Crossgradient		DOH EALs (µg/L)
	MW-11W		MW-10W		MW-12W	MW-12W	
	2006[2]	2011[1]	2006[2]	2011[1]	2006[2]	2011[1]	
	Dec	Aug	Dec	Aug	Dec	Aug	
Benzo(a)anthracene	0.053 J	NA	ND	NA	0.048 J	NA	0.027
Benzo(a)pyrene	ND	0.83 J	0.098 J	ND	0.067 J	ND	0.06
Selenium	ND	NA	7.3 J	NA	ND	NA	5

Notes: > = greater than
µg/L = micrograms per liter
COPC = contaminant of potential concern
AOPC = area of potential concern
MW = monitoring well
DOH = State of Hawaii Department of Health
EAL = Environmental Action Level
ND = not detected
VOC = volatile organic compound
[1]NGB 2012
[2] USACE 2008
[J] = Detection reported below the laboratory method detection limit but above the instrument reporting level, estimated value.
*Benzo(a)anthracene was run as a VOC in 2011 and was a non-detect (NGB 2012a).
NA = not analyzed as COPC concentrations did not exceed the DOH EALs in place at the time; therefore, were determined not to be a significant contribution to impacts at the UTES (NGB 2012a).
Bold font = Analyte exceeded the DOH EALs both DOH Tier 1 and commercial/industrial land use [C/I] EALs); however, subsequent sample results did not exceed DOH EALs.
Red font = Most recent detected concentration exceeds DOH EALs (both DOH Tier 1 and C/I EALs); this concentration will be used in the Environmental Hazard Evaluation to evaluate potential environmental hazards and associated risk.

Based on the groundwater flow direction measured in 2011 (NGB 2012a), groundwater generally flows toward the southwest through the Fuel Storage AOPC from upgradient groundwater monitoring well MW-10W eventually turning in a northwesterly direction toward the adjacent property. Groundwater flows in a northeasterly direction toward crossgradient well MW-12W from Waihona Street. There are no wells located downgradient of MW-11W (Figure 1-3 in Appendix A).

4.4 Soil and Groundwater Sample Representativeness

Soil sample results from the 1997, 2001, and 2006 investigations are not considered to be representative of a release within the Fuel Storage AOPC.

Based on the most recent groundwater sample results summarized in Table 4-2:

- **Benzo(a)anthracene and benzo(a)pyrene** contamination detected in well MW-11W as late as 2006 and 2011, respectively, is limited to a small area (estimated to be less than 629 square ft area) of the Fuel Storage AOPC between the abandoned concrete tanks and the current AST pad at a depth of approximately 16.5 ft bgs (Figure 3-2 in Appendix A). These groundwater sample results are considered to be *representative of a release* at the time the samples were collected 11 to 16 years ago.

  All potential sources of groundwater contamination in this AOPC were removed, current operation of the fuel storage facility is managed in accordance with the UTES SPCC Plan, and there are no reported releases from the facility.

  Although it is likely that natural attenuation has reduced the contaminant concentrations to levels below DOH EALs, benzo(a)anthracene and benzo(a)pyrene are retained for further evaluation.

- Benzo(a)anthracene contamination was detected in crossgradient well MW-12W (Figure 3-2 in Appendix A) as late as 2006 at a depth of approximately 16.6 ft bgs. Benzo(a)anthracene was not included as a COPC during the 2011 groundwater monitoring events.

  A potential on-site source for this contamination was not identified. Based on the assumed northwesterly groundwater flow direction from Waihona Street toward MW-12W and Building 21, it is likely the contamination is from an off-site source, possibly from an old release based on the lack of additional contaminants in the groundwater. This groundwater sample result is considered to be *representative of an off-site release migrating onto the site* at the time the sample was collected 16 years ago.

  It is possible that the off-site source of contamination has been addressed or has been discontinued and contamination in the groundwater has naturally attenuated reducing the benzo(a)anthracene concentration to a level below the DOH EAL; however, benzo(a)anthracene is retained for further evaluation.

- Selenium was detected in groundwater in upgradient well MW-10W in 2006 at an estimated concentration exceeding the DOH Tier 1 EAL (Figure 3-3 in Appendix A). It was also "present" in a majority of the soil samples collected and analyzed for metals in 2006 site-wide. Selenium is a naturally occurring metal in Hawaiian soils and is not typically associated with petroleum contamination. This groundwater sample result is not considered to be *representative of a release* and is not retained for further evaluation in this EHE.

Benzo(a)anthracene and benzo(a)pyrene results within the Fuel Storage AOPC are retained for further evaluation in this EHE.

4.5 Evaluation of Potential Sources of Contamination

Four potential Fuel Storage AOPC sources of contamination were evaluated: 1) current and former fuel storage and dispensing, 2) the Navy sewerage system, 3) the Navy drainage system, and 4) off-site migration.

4.5.1 Current and Former Fuel Storage and Dispensing

The Fuel Storage AOPC includes the location of the former Navy gasoline station and UST system (former Building 23), the former HIARNG UST system, and the current HIARNG AST fuel storage system, all of which were reportedly installed and operated in the same location (Figure 4-1 in Appendix A). The existing ASTs at the UTES facility are used for dispensing diesel fuel for ground vehicles being serviced and supported by UTES.

Based on the review of environmental reports, plans, and correspondence, the following is concluded:

- There are no reports of petroleum releases from former Navy and HIARNG fuel storage systems at the site and current fuel storage and dispensing is managed in accordance with the facility Spill Prevention, Control, and Countermeasures Plan (SPCCP) (HIARNG 2018b).
- Observations of soil conditions noted during investigative drilling up to depths of 17.5 ft bgs and soil sample results reported for samples collected within and in the vicinity of the Fuel Storage

AOPC do not indicate that a petroleum release has occurred from the identified fuel storage/dispensing systems.

- With the exception of selenium, all the reported COPC concentrations in groundwater in the vicinity of the Fuel Storage AOPC are flagged with a "J" qualifier, which indicates that the COPC was detected; however, the actual concentration reported was an estimated value.
- Residual levels of benzo(a)anthracene and/or benzo(a)pyrene in groundwater monitoring wells MW-11 within Fuel Storage AOPC and crossgradient well MW-12 do not indicate that a petroleum release occurred from the identified fuel storage/dispensing systems, since only the groundwater is impacted in and in the vicinity of this AOPC.

Conclusion: Current and former fuel storage and dispensing activities are not considered to be a source of petroleum contamination within and in the vicinity of the Fuel Storage AOPC.

4.5.2 Navy Sanitary Sewer System

The Navy's Sanitary Sewer System was constructed in 1943 and was disconnected and abandoned in place around 1975 when the site was connected to the CCH public sewer system. The former sewer system collected wastewater from four Navy buildings along Waihona Street (Figure 1-4 in Appendix A), a former latrine and storage building (Building 16), the existing vehicle maintenance shop (Building 22) located on the UTES, a former unidentified building, and an administrative office (Building 17) located on the adjacent HIARNG Armory. Wastewater flowed from the buildings through up to 1,300 lineal ft of 6-inch-diameter cast iron pipe and five manholes to the septic tank in the northwest corner of the UTES, and from the septic tank to Waiawa Stream approximately 300 ft to the northwest (Figure 1-4 in Appendix A). Portions of the former sewer system lie within and in the vicinity of the Fuel Storage AOPC, including 4- and 6-inch-diameter cast iron pipes, and one manhole, MH-3, also referred to as the "Mystery Manhole" (Figure 3-1 in Appendix A) It is possible that two concrete vaults, discovered east of the former USTs, were also part of the sewer system.

Based on the review of environmental reports, plans, and correspondence, the following is concluded:

- With the exception of selenium, all the reported COPC concentrations in groundwater in the vicinity of the Fuel Storage AOPC are flagged with a "J" qualifier, which indicates that the COPC was detected; however, the actual concentration reported was an estimated value.
- It is possible that residual petroleum contamination in groundwater within and in the vicinity of the Fuel Storage AOPC is associated with releases of petroleum-contaminated wastewater from the cast iron sewer pipes connected to the latrines historically used by vehicle and equipment maintenance personnel. The Navy sewer system was used from 1943 until around 1975, approximately 32 years, before it was abandoned, and the installation was connected to the public sewer system. Historical releases of petroleum-contaminated wastewater from sewer pipes in the vicinity of the latrines used by maintenance personnel are considered to be a potential source of residual petroleum contamination in groundwater within and in the vicinity of the Fuel Storage AOPC.

Conclusion: The Navy sewer system is no longer in use and the installation is connected to the public sewer system. The potential source of contamination has been removed and natural attenuation of the residual petroleum contamination has likely diminished the concentrations to levels below DOH Tier 1 EALs.

4.5.3 Navy Drainage System

The Navy Drainage System was constructed in 1944 along Waihona Street and was designed to capture and discharge storm water runoff for a large portion of the former Navy storage facility (with the exception of the UTES area) to Waiawa Stream (Figure 1-5 in Appendix A). The system consisted of close to 3,000 lineal ft of concrete pipe (ranging in size from 8 to 30 inches in diameter) and 14 catch basins. The installation has a topographic high in the northeast corner (where historically the storage of most of the vehicles was located) and all storm water runoff east of the UTES naturally flowed to the southwest and emptied into a catch basin (CB-9), which then drained directly into Waiawa Stream. Storm water runoff within the UTES drains to the north. For some unknown reason, Building 22 (the maintenance shop) was connected directly to the Navy drainage system on the southeast side of the building. Sometime in the mid- to late 1970s the HIARNG Armory was constructed and portions of the old Navy drainage system along Waihona Street and the outfall to Waiawa Stream were upgraded. The date CCH ownership of the drainage system occurred is not known. The 1997 SI report (USACHPPM 1997) stated that there may be breaks in the storm drainpipes, and if present, pipe breaks represent conduits to the subsurface for contaminants present in surface runoff flowing through the system.

Based on the review of environmental reports, plans, and correspondence, the following is concluded:

- Portions of the existing drainage system along Waihona Street were installed over 78 years ago and the condition of the concrete pipes is unknown. The current storm water drainage system is considered to be a potential source of petroleum contamination in groundwater within and in the vicinity of the Fuel Storage AOPC.

Conclusion: Portions of the former Navy drainage system remain in use by the CCH and the condition of the concrete pipes is not known. The potential source of contamination remains and may be negatively impacting groundwater within and in the vicinity of the Fuel Storage AOPC.

4.5.4 Potential Migration from an Off-Site Source

An unknown volume of diesel fuel (used to fuel a boiler) was released to soil and possibly to groundwater at the former Haleiwa Poi factory site located at 96-1217 Waihona Street and upgradient of the UTES (Figure 1-2 in Appendix A). One 1,000-gallon diesel UST (Facility Identification Number 9-200003) was removed from the ground and permanently closed in 1989. A release was not observed during closure activities; however, a site assessment was not completed and in 2011 a Phase II Environmental Site Assessment was completed to evaluate the presence/absence and nature of contamination at the site. Basalt was encountered in the vicinity of the UST at depths ranging from 7 to 9.9 ft bgs. TPH-DRO was identified in two samples collected at the soil/basalt interface at depths of 7 and 9 ft bgs at concentrations ranging from 270 to 520 mg/kg, exceeding the DOH Tier 1 EAL of 220 mg/kg. Groundwater flow direction at this site is generally from northeast to southwest. Groundwater contamination was not investigated due to the presence of basalt at relatively shallow depths beneath the site. The release was issued an *NFA* status

with ICs in August 2011. An EHMP is in place at this site to manage residual contamination remaining beneath the site (Central Planet Repair, LLC 2011).

Based on the review of environmental reports, plans, and correspondence, the following is concluded:

- The volume of diesel fuel released to the ground was not determined. It is possible that the petroleum reached groundwater via fractured basalt and migrated with groundwater downgradient to the UTES.

Conclusion: The impact of the off-site petroleum release to groundwater was not investigated. The potential source of contamination remains and may be negatively impacting groundwater within and in the vicinity of the Fuel Storage AOPC.

Section 5 Old Wash Rack Area of Potential Concern

5.1 History of Use and Previous Investigations

5.1.1 Old Wash Rack and POL Storage

The old wash rack was likely installed in 1978 when new Building 21 was constructed, and several appurtenances were installed. The old wash rack drain was connected to the 12-inch-diameter outfall and contaminated effluent was discharged to Waiawa Stream until 1994, when the new wash rack system (including an OWS) was installed southeast of the old wash rack. At that time the old wash rack was upgraded, likely with a new drain and a 6-inch-diameter pipe connecting it to the new OWS (see Figure 3-4 in Appendix A).

Historically, POL was stored on the old wash rack pad and in two small buildings located adjacent to the old wash rack. In 2001, the old wash rack was described as "closed" and was being used for scrap metal storage. As of 2001, no significant POL releases had been reported and no environmental impacts were identified for this former POL storage area (HIARNG 2002).

A 2006 subsurface pipeline connection survey (USACE 2008) presented evidence indicating that the upgraded wash rack (Building 22D) was connected to the new OWS via a 6-inch-diameter pipe and the OWS was in connection with the 6-inch-diameter pipe that led to the outfall at Waiawa Stream. Thus, effluent from washing operations at the upgraded wash rack (Building 22D) and/or storm water runoff generated during periods of heavy rainfall were allowed to flow through a bypass at the OWS and discharge to the stream via the 6-inch-diameter outfall. The 6-inch-diameter line connection between the old wash rack and new wash rack was decommissioned in 2011.

5.1.2 Outfall Pipe

The 12-inch-diameter outfall pipe was connected to the old wash rack drain. The 2006 RI determined that the pipe composition changed from metal to concrete 21 ft from the outfall end of the pipe and that the concrete portion had collapsed (USACE 2008). However, the inside of the pipe was dry and there was no evidence of recent discharges. The RI did not document evidence indicating that the 12-inch-diameter pipe or the septic tank had negatively impacted the site or the stream; however, removal of the outfall pipe was recommended to mitigate a potential transport pathway.

In 2011, a camera survey of the 12-inch-diameter pipe indicated a break approximately 14.4 ft from the outfall end of the pipe. The outfall pipe was decommissioned in August 2011 (NGB 2012a). It is possible that contaminated effluent from historical use may have impacted groundwater in the vicinity of the two breaks. Figure 3-1 in Appendix A shows the decommissioned pipe location.

5.1.3 Dry Well

The main function of the dry well was to collect sediment from the old wash rack while water and probable oil wastes were discharged via a 12-inch-diameter pipe to Waiawa Stream. The dry well was abandoned in 1992 and closed in 1993 under the purview of the Underground Injection Control (UIC) program under DOH oversight (Rittenhouse-Zeman & Associates, Inc. 1994). The 1993 PA (NGB 1993) may be referring to the dry well as a "grease pit" (Figure 1-5 in Appendix A); however, the dry well was reportedly used as a

catch basin for rainwater runoff and, infrequently, for wash rinsate from vehicle steam cleaning (Rittenhouse-Zeman & Associates, Inc. 1994).

The dry well consisted of three concrete rings, each 7 ft in diameter and 3.5 ft tall, stacked on a concrete base. Each ring had two slots to allow water to flow outward into the surrounding soil. At the time of closure activities, the dry well was almost filled to the top with soil and the soil had filled every hole in the concrete rings (Rittenhouse-Zeman & Associates, Inc. 1994).

Water was standing in the space above the soil, below the lid. No organic vapors were detected with an organic vapor analyzer. Water samples were collected and analyzed for toxicity characteristic leaching procedure (TCLP) herbicides, RCRA 8 metals, PCBs, pesticides, VOCs, and SVOCs. Only methoxychlor, an insecticide used against a wide range of pests, was detected at a level that exceeded the DOH action level at the time. Trace levels of the pesticide endosulfan sulfate and the SVOC di-n-butylphthalate were also detected in the effluent sample (Rittenhouse-Zeman & Associates, Inc. 1994).

Soil from inside the dry well and the area immediately surrounding the concrete rings was initially excavated to a depth of 12 ft bgs. Headspace measurements were taken at periodic depths and excavation continued until the readings were less than 50 parts per million (ppm) throughout the excavation. Obviously contaminated soil (determined using visual/olfactory observations) was placed in a remediation area adjacent to the excavation (Rittenhouse-Zeman & Associates, Inc. 1994).

A petroleum odor was first noted at a depth of 5.6 ft bgs on the west wall. The highest headspace readings were 100 ppm (detected on the south wall of the excavation at 6 ft bgs) and 162.3 ppm (detected on the east wall of the excavation at 10.9 ft bgs). The reading at 19 ft bgs at the bottom of the excavation was 62 ppm on the south wall exceeding the action level of 50 ppm. Final dimensions of the dry well excavation were 15 ft by 15 ft and 19 ft deep. The excavation walls and bottom were not sampled for laboratory analysis and groundwater was not encountered. The excavation remained open until it was backfilled with clean fill from an off-site source on March 8, 1994 (Rittenhouse-Zeman & Associates, Inc. 1994).

The contaminated soil was remediated on-site in two treatment cells (Beds A and B) for approximately one and three months, respectively. In December 1993, one sample was collected from Bed A (A-1, A-2, and A-3) and analyzed for TPH-GRO (Sample A-1 only) and TPH-RRO; BTEX; halogenated VOCs (HVOCs), and PAHs, none of which were detected at concentrations exceeding the most restrictive DOH EALs. Three random samples were collected from Bed B (B-1, B-2, and B-3) and analyzed for TPH-RRO: two of the three samples were also analyzed for the full list of TCLP contaminants.

Soil sampling results are listed in Table C1 in Appendix C. Only "minute" amounts of methoxychlor were detected. With DOH concurrence, the soil was reused on-site (location unknown) as backfill under HIARNG direction.

5.2 Soil Sample Results and Groundwater Observations During Drilling

Soil sample results associated with the Old Wash Rack AOPC are summarized in Table 5-1. During the 2001 subsurface SI (HIARNG 2002) and the 2006 RI (USACE 2008), 20 soil samples were collected from 10 soil borings advanced within, downgradient, and upgradient of the Old Wash Rack AOPC to depths up to 18 ft bgs (Figure 3-1, included in Appendix A). None of the tested analytes were detected in soil at levels

exceeding the most restrictive DOH EALs. With the exception of soil boring 8W, no evidence of obvious contamination was observed in any of the soil borings drilled within and in the vicinity of the Old Wash Rack AOPC or in groundwater when encountered. A faint petroleum odor was observed in soil at depths of 5 and 10 ft bgs in boring 8W, located crossgradient to and east of the UTES, adjacent to a catchment basin that receives storm water from the adjacent HIARNG Armory site.

Table 5-1: Soil Sample Summary, Old Wash Rack Area of Potential Concern

Sample	Sample Year	Location	Depth Interval (ft bgs)	Tested COPCs	COPCs > DOH EALs	Final Boring Depth *Groundwater Encountered*
AOPC						
B-5-6' *B-5-12'*	2001	Adjacent to the old wash rack used as a former waste storage location	5 - 6 6 - 12	TPH-GRO, TPH-DRO, TPH-RRO, VOCs, and lead	None	12 ft bgs *None*
B-7-6' *B-7-12'*	2001	Adjacent to the former dry well	5 - 6 7 - 12			12 ft bgs *None*
28B-1-1	2006	Northwest of the former dry well	5 - 5.5	TPH-GRO, TPH-DRO, TPH-RRO, VOCs, PAHs, and RCRA 8 metals plus, nickel and zinc	None	5.5 ft bgs *None*
14B-1-1 *14B-4-1*	2006	East of the old wash rack	5 - 5.5 17.5 - 18			17 ft bgs *No obvious contamination*
9W-1-2 *9W-4-2*	2006	West of the old wash rack	9 - 9.5 17.5 -18			26 ft bgs *No obvious contamination*
DOWNGRADIENT						
15B-1-1 *15B-4-1*	2006	Southwest of the AOPC	5 - 5.5 17.5 - 18	TPH-GRO, TPH-DRO, TPH-RRO, VOCs, PAHs (all except sample 16B), SVOCs (16B only), PCBs (16B only), and RCRA 8 metals plus nickel and zinc	None	15 ft bgs *None*
16B-1-1 *16B-2-1* *16B-4-2*	2006	Southwest corner of the UTES	*5 - 5.5* 10 - 10.5 17.5 - 18			17.2 ft bgs *No obvious contamination*
17B-1-1 *17B-3-2*	2006	South of the AOPC	5 - 5.5 14.5 - 15			15.5 ft bgs *No obvious contamination*
UPGRADIENT						
13B-2-4 *13B-4-1*	2006	Northeast of the AOPC	5 - 5.5 15 - 15.5	TPH-GRO, TPH-DRO, TPH-RRO, VOCs, PAHs, and RCRA 8 metals plus nickel and zinc	None	15.5 ft bgs *No obvious contamination*
8W-1-1 *8W-3-3*	2006		5 - 5.5 15.25 - 15.75			24 ft bgs *No obvious contamination*

Note: > = greater than
AOPC = Area of Potential Concern
bgs = below ground surface
COPC = contaminant of potential concern
DOH = State of Hawaii Department of Health
DRO = diesel range organics
EAL = environmental action level
ft = feet
GRO = gasoline range organics
PAH = polynuclear aromatic hydrocarbons
RCRA = Resource Conservation and Recovery Act
RRO = residual range organics
SVOC = semi-volatile organic compound
TPH = total petroleum hydrocarbons
TRPH = total recoverable petroleum hydrocarbons
UTES = Waiawa Unit Training Equipment Site
VOC = volatile organic compound
TRPH = Tested analyte detected at concentrations > the DOH EAL.
17 17.5[1] = 2006 soil sample collected approximately 1.3 ft below final groundwater level

5.3 Groundwater Sample Results

Table 5-2 summarizes the groundwater monitoring well locations relative to the Old Wash Rack AOPC, groundwater flow direction, and COPC exceedances. Three groundwater monitoring wells were installed within this AOPC: MW-B7, MW-B37, and MW-9W. Groundwater monitoring well MW-8W is located crossgradient to and northeast of the AOPC (USACE 2008) (Figure 3-1 in Appendix A).

All but one of the reported COPC concentrations in groundwater (nickel in MW-B7) are flagged with a "J" qualifier, which indicates that the reported detection is below the laboratory MDL but above the instrument RL and is an estimated value.

Four COPCs were identified in groundwater within the Old Wash Rack AOPC at concentrations exceeding DOH EALs.

- In 2006, benzo(a)anthracene and benzo(a)pyrene exceedances were detected in MW-B7 within the AOPC. This well ran dry and was not sampled during the 2011 monitoring events (NGB 2012a) (Figure 3-2 in Appendix A).
- In 2006, a nickel exceedance was detected in well MW-B7. In 2011 metals were detected in groundwater in all eight of the wells; however, a nickel exceedance was detected only in MW-37B located within the AOPC (Figure 3-3 in Appendix A).
- In 2006, a selenium exceedance was detected in well MW-9W. Selenium was not included as a COPC in the 2011 groundwater monitoring events (NGB 2012a) (Figure 3-3 in Appendix A).

Table 5-2: Groundwater Sample Exceedances, Old Wash Rack Area of Potential Concern

COPC Levels ≥ DOH EALs	AOPC					Crossgradient		DOH EALs (µg/L)
	MW-B7**		MW-37B	MW-9W		MW-8W		
	2001[1]	2006[2]	2011[1]	2006[2]	2011[1]	2006[2]	2011[1]	
		Dec	Dec	Dec	Aug	Dec	Aug	
Benzo(a)anthracene*	NA	0.039 J	NA	ND	NA	ND	NA	0.027
Benzo(a)pyrene*	NA	0.093 J	ND	0.1	ND	ND	ND	0.06
Nickel	NA	19.6	5.8 J	ND	ND	ND	3 J	5
Selenium	NA	ND	NA	10 J	NA	ND	NA	5

Notes: > = greater than; µg/L = micrograms per liter; AOPC = area of potential concern
COPC = contaminants of potential concern; DOH = State of Hawaii Department of Health; EAL = Environmental Action Level
MW = monitoring well; ND = not detected
[1] NGB 2012a; [2] USACE 2008
NA = not analyzed as COPC concentrations did not exceed the DOH EALs in place at the time; therefore, were determined to not be a significant contribution to impacts at the Waiawa Unit Training Equipment Site (NGB 2012a)
J = Detection reported below the laboratory method detection limit but above the instrument reporting level, estimated value.
E = Analyte value above quantitation range.
*Analyte was run as a polynuclear aromatic hydrocarbon in 2006 and semi-volatile organic compounds in 2011.
** Well MW-B7 was replaced with Well MW-37B; therefore, exceedances in 2006 on MW-B7 are superseded by concentrations in MW-37B in 2011
Bold font = Analyte exceeded the DOH EALs (both DOH Tier 1 and Site-specific commercial/industrial [C/I] EALs); however, subsequent sample results did not exceed DOH EALs.
Red font = Most recent detected concentration exceeds DOH EALs (both DOH Tier 1 and C/I EALs); this concentration will be used in the Environmental Hazard Evaluation to evaluate potential environmental hazards and associated risk.

Based on the groundwater flow direction measured in 2011 (NGB 2012a), groundwater generally flows in a westerly direction through the Old Wash Rack AOPC from wells MW-B7 and MW-9W toward well MW-37B and the Waiawa Gulch (Figure 1-3 in Appendix A).

5.4 Soil and Groundwater Sample Representativeness

Soil sample results from the 2001 and 2006 investigations are not considered to be representative of a release within the Old Wash Rack AOPC.

Based on the most recent groundwater sample results summarized in Table 5-2:

- Benzo(a)anthracene and benzo(a)pyrene contamination detected in well MW-B7 in 2006 is limited to a small area of the Old Wash Rack AOPC parallel to Waiawa Gulch at a depth of approximately 20.07 ft bgs (Figure 3-2 in Appendix A). These groundwater sample results are considered to be *representative of a release* at the time the samples were collected 16 years ago.

  All potential sources of groundwater contamination in this AOPC were removed.

  Although it is likely that natural attenuation has reduced the contaminant concentrations to levels below DOH EALs, benzo(a)anthracene and benzo(a)pyrene are retained for further evaluation.
- Nickel was detected in groundwater from wells MW-B7 and MW-37B in 2006 and 2011, respectively (Figure 3-3 in Appendix A). It was also detected in a majority of the soil samples collected and analyzed for metals in 2006 site-wide. Nickel is a naturally occurring metal in Hawaiian soils and is not typically associated with petroleum contamination. These groundwater sample results are not considered to be representative of a release and are not retained for further evaluation in this EHE.
- Selenium was detected in groundwater in well MW-9W in 2006 at an estimated concentration exceeding the DOH Tier 1 EAL (Figure 3-3 in Appendix A). It was also "present" in a majority of the soil samples collected and analyzed for metals in 2006 site-wide. Selenium is a naturally occurring metal in Hawaiian soils and is not typically associated with petroleum contamination. This groundwater sample result is not considered to be *representative of a release* and is not retained for further evaluation in this EHE.

Benzo(a)anthracene and benzo(a)pyrene results within the Old Wash Rack AOPC are retained for further evaluation in this EHE.

5.5 Evaluation of Potential Sources of Contamination

Three potential sources of contamination were evaluated for the Old Wash Rack AOPC: 1) the former wash rack and POL storage, 2) the 12-inch-diameter outfall pipe, and 3) the dry well.

5.5.1 Old Wash Rack and POL Storage

Collection and discharge of contaminated effluent from the old wash rack likely ended in 1994, when the old wash rack was upgraded and connected to the OWS at the new wash rack via a 6-inch-diameter pipe. Use of the old wash rack for POL storage was reportedly discontinued in 2001 when the facility was closed.

Based on the review of environmental reports, plans, and correspondence, the following is concluded:

- Observations of soil conditions noted during investigative drilling up to depths of 18 ft bgs, and soil sample results reported for samples collected within and in the vicinity of the Old Wash Rack AOPC do not indicate a that a petroleum release associated with historical old wash rack operations

and/or POL storage has occurred. There are no reports of releases of POL at the old wash rack facility.

- POL storage at the UTES is managed in accordance with the facility SPCCP (HIARNG 2018b).
- With the exception of metals, all the reported COPC concentrations in groundwater within and in the vicinity of the Old Wash Rack AOPC are flagged with a "J" qualifier, which indicates that the COPC was detected; however, the actual concentration reported was an estimated value.
- Residual levels of benzo(a)anthracene and benzo(a)pyrene detected in groundwater monitoring well MW-B7 within Old Wash Rack AOPC in 2006 do not indicate that a petroleum release associated with historical old wash rack operations and/or POL storage has occurred since only groundwater is impacted.

Conclusion: Historical old wash rack operations and/or POL storage are not considered to be a source of petroleum contamination within and in the vicinity of the Old Wash Rack AOPC.

5.5.2 Outfall Pipe

Discharge of contaminated effluent from the old wash rack to the Waiawa Stream bank and to the ground at the 12-inch-diameter outfall pipe likely ended in 1994 when the old wash rack was upgraded and connected to the OWS at the new wash rack via a 6-inch-diameter pipe.

Based on the review of environmental reports, plans, and correspondence, the following is concluded:

- Observations of soil conditions noted during investigative drilling up to depths of 18 ft bgs, and soil sample results reported for samples collected within and in the vicinity of the old wash rack do not indicate that a petroleum release has occurred.

Conclusion: The 12-inch -diameter outfall pipe is not considered to be a source of petroleum contamination within and in the vicinity of the Old Wash Rack AOPC.

5.5.3 Dry Well

The dry well was closed in 1993 and contaminated soil from the dry well was removed to a depth of 15 ft bgs, remediated, and placed back in the dry well excavation with DOH approval.

Based on the review of environmental reports, plans, and correspondence, the following is concluded:

- Observations of soil conditions noted during investigative drilling up to depths of 18 ft bgs and soil sample results reported for samples collected within and in the vicinity of the Old Wash Rack AOPC do not indicate a that a petroleum release associated with the old wash rack has occurred.
- Contaminated soil was removed from the dry well to a depth of 15 ft bgs. Groundwater was not encountered at the bottom of the dry well indicating that contaminant migration within the dry well did not reach groundwater.

Conclusion: The closed dry well is not considered to be a source of petroleum contamination within and in the vicinity of the Old Wash Rack AOPC.

Section 6 New Wash Rack Area of Potential Concern

The New Wash Rack AOPC includes the four-vehicle wash rack and OWS, the 6-inch-diameter outfall pipe, the adjacent septic tank, and the POL and waste product storage area.

6.1 History of Use and Previous Investigations

6.1.1 New Wash Rack and POL Storage

The new wash rack was installed in 1978 with an oil trap (Figure 1-5 in Appendix A) and was connected to the CCH municipal sanitary sewer system in February 1978. HIARNG received a CCH Industrial Wastewater Discharge certificate (Certificate 425) permitting discharge to their system. Wash water and storm water flowed to the oil trap in the wash pad—which would often become plugged with dirt and sediment and required periodic cleaning—and was disposed in Waiawa Stream (NGB 1993).

During the 1993 site inspection, open storage of 55-gallon drums of POL and waste products were observed on a concrete pad on the west side of the new wash rack. The materials included lubricants of various viscosities, solvent, and waste diesel fuel. Although the materials were stored in a containment structure with a spill kit and fire extinguisher, there was a potential for a spill to reach the surrounding soil and/or Waiawa Stream (NGB 1993).

In 1994, the new wash rack was upgraded and a new OWS replaced the old oil trap. At this time, the old wash pad drain was also connected to the OWS via a 6-inch-diameter pipe (Figure 3-1 in Appendix A). This also may have been the time when the new wash rack was connected to the 6-inch-diameter outfall pipe.

In 2001, HIARNG vehicles were being cleaned at the new wash rack that passed wastewater runoff through the OWS prior to discharging to Waiawa Gulch. No environmental impacts associated with the old wash rack (Building 22D) were identified (HIARNG 2002).

The 2006 RI presented evidence indicating that the old wash rack (Building 22D) was connected to the new OWS via a 6-inch-diameter pipe (Figure 3-4 in Appendix A) and that the OWS was in connection with the 6-inch-diameter outfall pipe daylighting at Waiawa Stream (USACE 2008): thus, effluent from washing operations at the old wash rack (Building 22D) and/or storm water runoff generated during periods of heavy rainfall were allowed to flow through a bypass at the OWS and discharge to the stream via the 6-inch-diameter outfall. The 6-inch-diameter drain line connecting the old and new wash racks was not disconnected consequently wash and rain water from both the new and old wash racks partially discharged to Waiawa Stream via the 6-inch-diameter outfall until 2011, when the connecting line was abandoned (NGB 2012a).

During the 2006 subsurface pipe survey (USACE 2008) roots were observed protruding from a pipe joint approximately 11 ft from the outfall end of the pipe. It is possible that historical releases of contaminated effluent may have impacted soil and groundwater in the vicinity of the breach.

6.1.2 Septic Tank (Former Navy Sewer System)

Additional subsurface structures within and in the vicinity of the New Wash Rack AOPC include portions of the Navy Sewer System, constructed in 1943 (Figure 1-4 in Appendix A). The 6-inch-diameter cast iron

sewer pipe runs north from MH-2, located at the southwest corner of the UTES, to the septic tank, located at the northwest corner of the UTES parallel to the west side of the new wash rack.

The septic tank, located adjacent to the POL storage area on the new wash rack (Figure 3-1 in Appendix A), was considered a potential recipient of any spills that may have occurred before secondary containment and spill prevention measures were present. There was also concern that the septic tank may have been historically used for disposal of liquid wastes generated at the site (NGB 1993). During a visual inspection from the surface in 1993 it was determined that the concrete septic tank was divided by a 2- or 3-ft thick concrete wall; half contained standing water with a slight film and the other half was a dry gravel bed. Effluent in the septic tank was sampled in 1994 and did not contain petroleum-related contaminants, PCBs, or metals. At the time the sample was collected, approximately 1-ft of runoff rainwater had collected in the septic tank and an inch of sediment that was not sampled and analyzed covered the bottom. Since the original purpose of the two septic tank chambers was not determined at the time, no action was taken to close them.

The 2006 RI included a subsurface pipeline connection survey to verify that the septic tank was not connected to the 6- or 12-inch-diameter outfall pipes. A pipe was observed leading from the stream side of the tank, which is likely the 6-inch pipe shown on the 1963 drainage and sewerage plan that runs west through the adjacent property toward the stream (Figure 1-4, included in Appendix A). The stream bank was searched for any septic tank outfall pipes, but none were located. It is not known if the search included the adjacent property to the west (USACE 2008).

6.1.3 Outfall Pipe

The 2006 RI (USACE 2008) presented evidence indicating that contaminated storm water runoff and effluent generated during vehicle wash activities was discharged to Waiawa Stream via the 6-inch-diameter outfall pipe until the outfall pipe was abandoned in 2011 (Figure 1-5 in Appendix A). Additionally, a break was identified approximately 11 ft from the outfall end of the pipe. It is possible that contaminated effluent may have impacted groundwater in the vicinity of the break. The RI recommended abandonment of the outfall pipe (USACE 2008). In 2011, an interim removal action was completed that consisted of filling the 6-inch-diameter outflow pipe with an impermeable and inert grout (NGB 2012a).

6.2 Soil Sample Results and Groundwater Observations During Drilling

Soil sample results associated with the New Wash Rack AOPC are summarized in Table 6-1 below and in Table C1 in Appendix C. During the 2001 subsurface SI (HIARNG 2002) and the 2006 RI (USACE 2008), 22 soil samples were collected from 11 soil borings advanced within, downgradient, and upgradient of the New Wash Rack AOPC (Figure 3-1 in Appendix A). Results from the 2001 and 2006 investigations were used to identify potential contaminant sources and evaluate whether environmental hazards associated with contaminated soil are present. No evidence of obvious contamination was observed in any of the soil borings drilled in and in the vicinity of the New Wash Rack AOPC or in groundwater when encountered.

During the March 2011 semi-annual sampling event two additional wells were installed to replace two of the oldest wells that had gone dry (MW-B6 and MW-B7). New monitoring well MW-36B was installed in this AOPC northwest (downgradient) of the OWS and monitoring well MW-37B was installed north (crossgradient) of the AOPC (Figure 3-1 in Appendix A). The July 2011 semi-annual sampling report was not

available for review; however, the **April 2012** semi-annual sampling report stated that TPH-DRO and TPH-RRO were detected in soil during the March 2011 installation of monitoring well MW-36B at approximately 15 ft bgs (groundwater was encountered at a depth of 21.4 ft bgs). No other contaminants were mentioned indicating an old release possibly associated with the former wash rack sump and/or oil trap (NGB 2012b).

Table 6-1: Soil Sample Summary, New Wash Rack Area of Potential Concern

Sample	Sample Year	Location	Depth Interval (ft bgs)	Tested COPCs	COPCs > DOH EALs	Final Boring Depth *Groundwater Encountered*
AOPC						
B-4-12'	2001	Adjacent to the new wash rack	12	TPH-GRO, TPH-DRO, TPH-RRO, VOCs, and lead	None	12 ft bgs *None*
B-6-12'	2001	Adjacent to the septic tank; west of the 6-inch-diameter outfall pipe break				12 ft bgs *None*
16B-1-1 *16B-2-1* *16B-4-2*	2006	West of the 6-inch-diameter pipe break	*5 - 5.5* *10 - 10.5* *17.5 - 18*	TPH-GRO, TPH-DRO, TPH-RRO, VOCs, PAHs (all except samples 16B and 18B-2-1), SVOCs (samples 16B and 18B-5-3 only), PCBs (samples 16B and 18B-1-1, 18B-2-1, and 18B5-3 only), and RCRA 8 metals plus, nickel and zinc (18B-1-1 not analyzed for metals)	None	17.2 ft bgs *No obvious contamination*
18B-1-1 *18B-2-1* *18B 2-6* *18B 5-3*	2006	Northwest of the OWS	5 - 5.5 10 - 10.5 5 - 5.5 17.75 - 18.25			19.25 ft bgs *No obvious contamination*
21B-1-1 *21B-2-2* *21B-3-1*	2006	Southeast of the OWS	5 - 5.5 9.5 - 10 15 - 15.5			17 ft bgs *No obvious contamination*
MW-36B	2011	Northwest of the OWS	15	At least TPH-DRO and TPH-RRO	*Detected*	Unknown
UPGRADIENT						
15B-1-1 *15B-4-1*	2006	East of the 6-inch-diameter pipe break	5 - 5.5 17.5 - 18	TPH-GRO, TPH-DRO, TPH-RRO, VOCs, PAHs, and RCRA 8 metals plus, nickel and zinc	None	18 ft bgs *None*
17B-1-1 *17B-3-2*	2006	East of the AOPC	5 - 5.5 14.5 - 15			15.5 ft bgs *No obvious contamination*
			9 - 9.5 17.5 - 18			
14B-1-1 *14B-4-1*	2006		5 - 5.5 17.5 - 18			17 ft bgs *No obvious contamination*
20B-1-1 *20B-4-1*	2006	Southeast of the AOPC	5 - 5.5 16.5 - 17			17 ft bgs *None*

Sample	Sample Year	Location	Depth Interval (ft bgs)	Tested COPCs	COPCs > DOH EALs	Final Boring Depth *Groundwater Encountered*
B-3-12'	2001	Adjacent to the grease rack	12	TPH-GRO, TPH-DRO, TPH-RRO, VOCs, and lead	None	12 ft bgs *None*

Note: > = greater than
AOPC = Area of Potential Concern
bgs = below ground surface
COPC = contaminant of potential concern
DOH = State of Hawaii Department of Health
DRO = diesel range organics
EAL = environmental action level
ft = feet
GRO = gasoline range organics
OWS = oil-water separator
PAH = polynuclear aromatic hydrocarbons
PCB = polychlorinated biphenyl
RCRA = Resource Conservation and Recovery Act
RRO = residual range organics
SVOC = semi-volatile organic compound
TPH = total petroleum hydrocarbons
TRPH = total recoverable petroleum hydrocarbons
UTES = Waiawa Unit Training Equipment Site
VOC = volatile organic compound
TRPH = Tested analyte detected at concentrations > the DOH EAL.
17 17.5[1] = 2006 soil sample collected approximately 1.3 ft below final groundwater level

6.3 Groundwater Sample Results

Table 6-2 summarizes the groundwater monitoring well locations relative to the New Wash Rack AOPC, groundwater flow direction, and COPC exceedances. Three groundwater monitoring wells were installed in the vicinity of this AOPC; two within the AOPC (MW-B6 and MW-36B) and one upgradient well (MW-B3) (Figure 3-1 in Appendix A).

All but one of the reported COPC concentrations in groundwater (nickel in the 2006 MW-B6 sample) are flagged with a "J" qualifier, which indicates that the reported detection is below the laboratory MDL but above the instrument RL and is an estimated value.

Five COPCs were identified in groundwater in the vicinity of the New Wash Rack AOPC at concentrations exceeding DOH EALs:

- In 2011, TPH-DRO and TPH-RRO exceedances were detected in MW-36B within the AOPC with the concentrations increasing slightly during the August 2011 monitoring event. TPH-DRO and TPH-RRO were not detected in upgradient monitoring well MW-3B at concentrations above DOH EALs during the August 2011 monitoring event indicating the constituents present in monitoring well MW-36B are isolated and cannot be attributed to a groundwater contamination plume (Figure 3-2 in Appendix A). Changes in contaminant concentrations may be associated with changes in the seasonal groundwater elevation. Detected TPH-DRO and TPH-RRO concentrations in groundwater are likely directly associated with the isolated TPH-DRO and TPH-RRO detected in soil at approximately 15 ft bgs during monitoring well MW-36B installation (NGB 2012a).
- In 2006, a benzo(a)pyrene exceedance was detected in well MW-B6 within the AOPC (Figure 3-2 in Appendix A).
- In 2011, metals were detected in groundwater in all eight of the wells; however, mercury exceedances were detected in well MW-36B within the AOPC and in upgradient well MW-3B (Figure 3-3 in Appendix A).
- A nickel exceedance was detected in well MW-B6 in 2006 and in MW 36B in 2011 (Figure 3-3 in Appendix A).

Table 6-2: Groundwater Sample Exceedances, New Wash Rack Area of Potential Concern

COPC Levels > DOH EALs	AOPC			Upgradient			DOH Tier 1 and C/I DOH EALs (µg/L)
	MW-B6		MW-36B	MW-B3			
	2001[1]	2006[2]	2011 [1]	2001[1]	2006 [2]	2011 [1]	
		Dec	Aug		Dec	Aug	
TPH-DRO	900	270 J	1,690 J	ND	ND	ND	400
TPH-RRO	ND	470 J	1,070 J*	ND	ND	ND	500
Benzo(a)pyrene*	NA	0.11 J	ND	NA	ND	ND	0.06
Mercury	NA	ND	0.05 J	NA	0.09 J	0.1 J	0.025
Nickel	NA	9.38	8.8 J	NA	ND	ND	5

Notes: > = greater than
µg/L = micrograms per liter
AOPC = area of potential concern
COPC = contaminants of potential concern
DOH = State of Hawaii Department of Health
DRO = diesel range organics
EAL = Environmental Action Level
MW = monitoring well
ND = not detected
RRO = residual range organics
TPH = total petroleum hydrocarbons
[1] NGB 2012a
[2] USACE 2008
NA = not analyzed as COPC concentrations did not exceed the DOH EALs in place at the time; therefore, were determined to not be a significant contribution to impacts at the Waiawa Unit Training Equipment Site (NGB 2012a)
J = Detection reported below the laboratory method detection limit but above the instrument reporting level, estimated value.
*Analyte was run as a polynuclear aromatic hydrocarbon in 2006 and semi-volatile organic compounds in 2011.
Bold font = Analyte exceeded the DOH EALs (both DOH Tier 1 and Site-specific commercial/industrial [C/I] EALs); however, subsequent sample results did not exceed DOH EALs.
Red font = Most recent detected concentration exceeds DOH EALs (both DOH Tier 1 and C/I EALs); this concentration will be used in the Environmental Hazard Evaluation to evaluate potential environmental hazards and associated risk.

Based on the groundwater flow direction measured in 2011 (NGB 2012a), groundwater generally flows in a northwesterly direction toward the new wash rack from upgradient well MW-3B and flows to the west from MW-B6 and MW-36B towards the adjacent property (Figure 1-3 in Appendix A). TPH-DRO and TPH-RRO were not detected at upgradient monitoring well MW-3B at concentrations above DOH EALs indicating the constituents present in well MW-36B are isolated and cannot be attributed to a groundwater contamination plume.

6.4 Soil and Groundwater Sample Representativeness

With the exception of the soil sample collected at a depth of 15 ft bgs from MW-36 during the March 2011 investigation, soil sample results from the 2001, 2006, and 2011 investigations are not representative of a significant release within the New Wash Rack AOPC. The soil sample collected from MW-36B during the March 2011 investigation is likely representative of a historical upgradient release.

Based on the most recent groundwater sample results summarized in Table 6-2:

- **TPH-DRO and TPH-RRO** contamination detected in 2011 in well MW-36B within the AOPC is limited to a small area of the New Wash Rack AOPC parallel to the stream at a depth of approximately 17.4 ft bgs (Figure 3-2 in Appendix A). These groundwater sample results are considered to be *representative of a release* at the time the sample was collected 11 years ago.

  All potential sources of groundwater contamination in this AOPC were removed.

  Although it is likely that natural attenuation has reduced the contaminant concentrations to levels below DOH EALs, TPH-DRO and TPH-RRO are retained for further evaluation.

- **Benzo(a)pyrene** contamination was detected in 2006 in well MW-B6 within the AOPC is limited to a small area of the New Wash Rack AOPC parallel to the stream at a depth of approximately 19.31

ft bgs (Figure 3-2 in Appendix A). This groundwater sample result is considered to be *representative of a release* at the time the samples were collected 16 years ago.

All potential sources of groundwater contamination in this AOPC were removed.

Although it is likely that natural attenuation has reduced the contaminant concentrations to levels below DOH EALs, benzo(a)pyrene is retained for further evaluation.

- Mercury was detected in groundwater in well MW-36B within the AOPC and upgradient well MW-B3 in 2011 at estimated concentrations exceeding the DOH Tier 1 EAL (Figure 3-3 in Appendix A). It was also detected in a majority of the soil samples collected site-wide and analyzed for metals in 2006. Mercury is a naturally occurring metal in Hawaiian soils and is not typically associated with petroleum contamination. This groundwater sample result is not considered to be *representative of a release* and is not retained for further evaluation in this EHE.

- Nickel was detected in groundwater from wells MW-B6 and MW-36B within the AOPC in 2006 and 2011 (Figure 3-3, included in Appendix A). It was also detected in a majority of the soil samples collected and analyzed for metals in 2006 site-wide. Nickel is a naturally occurring metal in Hawaiian soils and is not typically associated with petroleum contamination. These groundwater sample results are not considered to be *representative of a release* and are not retained for further evaluation in this EHE.

- Selenium was detected in groundwater in well MW-9W in 2006 at an estimated concentration exceeding the DOH Tier 1 EAL (Figure 3-3 in Appendix A). It was also "present" in a majority of the soil samples collected and analyzed for metals in 2006 site-wide. Selenium is a naturally occurring metal in Hawaiian soils and is not typically associated with petroleum contamination. This groundwater sample result is not considered to be *representative of a release* and is not retained for further evaluation in this EHE.

TPH-DRO, TPH-RRO, and benzo(a)pyrene results within the New Wash Rack AOPC are retained for further evaluation in this EHE.

6.5 Evaluation of Potential Sources of Contamination

Three potential sources of contamination were evaluated for the New Wash Rack AOPC: 1) the new wash rack, 2) the 6-inch-diameter outfall, and 3) the former Navy sewer system.

6.5.1 New Wash Rack and POL Storage

The new wash rack operated with an oil trap from 1978 to 1994 when the facility was upgraded with an OWS. For 16 years, contaminated sediment-laden wash water and storm water flowed into and plugged the oil trap, and periodic cleaning was required. POL was historically stored on the west end of the new wash rack pad.

Based on the review of environmental reports, plans, and correspondence, the following is concluded:

- With the exception of one soil sample collected from boring MW-36B, observations of soil conditions noted during investigative drilling up to depths of 18.2 ft bgs and soil sample results reported for samples collected within and in the vicinity of the New Wash Rack AOPC do not

indicate a that a significant petroleum release associated with historical new wash rack operations and/or POL storage has occurred. There are no reports of releases of POL at the new wash rack facility. However, TPH-DRO and TPH-RRO were reportedly detected in the soil sample collected from MW-36B at a depth 15 ft bgs, indicating that a release had occurred. No additional analytes were reportedly detected in soil indicating that the release was likely an old one. There is insufficient information available to identify the potential source of contamination in soil.

- With the exception of metals, all of the reported COPC concentrations in groundwater within and in the vicinity of the New Wash Rack AOPC are flagged with a "J" qualifier, which indicates that the COPC was detected; however, the actual concentration reported was an estimated value.
- Estimated levels of TPH-DRO and TPH-RRO were detected in groundwater monitoring well MW-36B within the New Wash Rack AOPC in 2011 indicating that a petroleum release potentially associated with new wash rack operations and/or POL storage had occurred since soil and groundwater are both impacted. No additional analytes were detected in groundwater indicating that the release was likely an old one. There is insufficient information available to identify the potential source of the contamination in groundwater.
- Benzo(a)pyrene was detected in groundwater monitoring well MW-B6 within the New Wash Rack AOPC in 2006. Groundwater monitoring well MW-B6 is crossgradient to well MW-B36 so it is unlikely that the benzo(a)pyrene detection is associated with the MW-36B release.

Conclusion: TPH-DRO and TPH-RRO concentrations detected in soil and groundwater at well MW-36B are likely indicative of an old petroleum release associated with the new wash rack, which was likely addressed during periodic system upgrades. New wash rack operations and/or POL storage are not considered to be a continuing source of petroleum contamination within and in the vicinity of the New Wash Rack AOPC.

6.5.2 Outfall Pipe

Discharge of contaminated effluent from the new wash rack to the Waiawa Stream bank and to the ground at the break in the 6-inch-diameter outfall pipe ended in 2011, when the outfall pipe was closed.

Based on the review of environmental reports, plans, and correspondence, the following is concluded:

- Observations of soil conditions noted during investigative drilling up to a depth of 18 ft bgs and soil sample results reported for samples collected in the vicinity of the outfall pipe break do not indicate a that a petroleum release has occurred from the pipe.
- Observations of groundwater encountered during investigative drilling in the vicinity of the outfall pipe break do not indicate a that a petroleum release has occurred from the pipe.
- Benzo(a)pyrene detected in groundwater monitoring well does not indicate that a petroleum release occurred from the outfall pipe break since only the groundwater is impacted in the vicinity of the pipe.

Conclusion: The 6-inch-diameter outfall pipe is not considered to be a source of petroleum contamination within and in the vicinity of the New Wash Rack AOPC.

6.5.3 Former Navy Sewer System

The 6-inch-diameter cast iron sewer pipe, installed in 1943 as part of the former Navy sewer system, runs north from MH-2, located at the southwest corner of the UTES, to the septic tank, located at the northwest corner of the UTES parallel to the west side of the new wash rack (Figure 3-1 in Appendix A).

Based on the review of environmental reports, plans, and correspondence, the following is concluded:

- It is possible that residual petroleum contamination in groundwater within and in the vicinity of the new wash rack is associated with releases of petroleum-contaminated wastewater from the cast iron sewer pipes connected to the latrines historically used by vehicle and equipment maintenance personnel. The Navy sewer system was used from 1943 until around 1975 before it was abandoned, and the installation was connected to the CCH public sewer system. Historical releases of petroleum-contaminated wastewater from sewer pipes in the vicinity of the latrines used by maintenance personnel are considered to be a potential source of residual petroleum contamination in groundwater within and in the vicinity of the New Wash Rack AOPC.

Conclusion: The Navy sewer system is no longer in use and the installation is connected to the public sewer system. The potential source of contamination has been removed and natural attenuation of residual petroleum contamination has likely diminished concentrations to levels below DOH Tier 1 EALs.

Section 7 Grease Rack Area of Potential Concern

The grease rack is an aboveground structure located on the west side of Building 22 and was likely constructed by HIARNG around 1968. It is located adjacent to a concrete loading ramp and includes the grease rack structure and a storm water catch basin.

7.1 History of Use and Previous Investigations

Historic battery acid disposal practices at the MATES battery shop located in Building 22 reportedly involved the draining of acid, neutralization, and disposal by draining to the storm water drain located adjacent to the east side of the grease rack (USACHPPM 1997). This storm drain was installed by CCH sometime prior to 1997 when the storm drain system in Waiawa Gulch was upgraded (Figure 3-5 in Appendix A). The storm drain empties directly into Waiawa Stream via a 66-inch-diameter outfall (Figures 1-5 in Appendix A).

In 1997 three sediment samples were collected; *S-1* from the catch basin located adjacent to the grease rack, *S-2* from a catch basin 150 ft to the south, "downstream" of the catch basin where *S-1* was collected, and *S-7,* a background sample collected from the top of the stream bank 100 ft north of the 66-inch-diameter outfall (Figure 3-1 in Appendix A). The samples were analyzed for six Target Analyte List metals (arsenic, cadmium, chromium, lead, nickel, and zinc). Lead was detected at a concentration of 478 mg/kg in the primary sample (*S-1)* collected from the catch basin and 657 mg/kg in the duplicate sample (*D-1*), which exceeded the DOH Tier 1 EAL of 200 mg/kg.

While the lead contamination in the catch basin at the grease rack may have been from past disposal of neutralized battery electrolyte, it did not appear to be moving through the storm drain system to contaminate the bank of Waiawa Stream (USACHPPM 1997). None of the remaining metals were detected at concentrations significantly higher than background levels detected in sediment sample *S-7*.

In 2001, the grease rack was described as well-maintained with no visible POL product or staining. The structure was reportedly seldomly used as most lubrication activities were conducted in the maintenance bays (HIARNG 2002).

7.2 Soil Sample Results and Groundwater Encountered During Drilling

Soil sample results associated with the Grease Rack AOPC are summarized in Table 7-1. During the 2001 subsurface SI (HIARNG 2002) and the 2006 RI (USACE 2008) a total of 22 soil samples were collected from 11 soil borings advanced within, downgradient, upgradient, and crossgradient of the Grease Rack AOPC (Figure 3-1 in Appendix A). No evidence of obvious contamination was observed in any of the soil borings drilled in and in the vicinity of the Grease Rack AOPC or in groundwater when encountered.

Table 7-1: Soil Sample Summary, Grease Rack Area of Potential Concern

Sample	Date Sampled	Location	Depth Interval (ft bgs)	Tested COPCs	COPCs > DOH EALs	Final Boring Depth *Groundwater Encountered*
AOPC						
B-2-12'	2001	Adjacent to the catch basin where neutralized battery acid was dumped	12	TPH-GRO, TPH-DRO, TPH-RRO, VOCs, and lead	None	12 ft bgs *None*
24B-2-4 *24B-4-4*	2006		6 - 6.5 15 - 15.5	TPH-GRO, TPH-DRO, TPH-RRO, VOCs, PAHs, and RCRA 8 metals plus nickel and zinc	None	16 ft bgs *No obvious contamination*
B-3-12'	2001	Adjacent to the north end of the grease rack	12	TPH-GRO, TPH-DRO, TPH-RRO, VOCs, and lead	None	12 ft bgs *None*
DOWNGRADIENT						
25B-2-4 *25B-1-1*	2006	Southwest corner of the loading ramp	6 - 6.5 14 - 14.5	TPH-GRO, TPH-DRO, TPH-RRO, VOCs, PAHs, and RCRA 8 metals plus nickel and zinc	None	15.5 ft bgs *No obvious contamination*
23B-1-1 *23B-3-2*	2006	West of the grease and inspection rack	5.5 - 6 15 - 15.5			16 ft bgs *No obvious contamination*
21B-1-1 *21B-2-2* *21B-3-1*	2006	Southeast of the OWS	5 - 5.5 9.5 - 10 15 - 15.5			17 ft bgs *No obvious contamination*
18B-1-1 *18B-2-1* *18B 2-6* *18B 5-3*	2006	Northwest of the OWS	5 - 5.5 10 - 10.5 5 - 5.5 17.75 - 18.25	TPH-GRO, TPH-DRO, TPH-RRO, (except sample 18B-1-1), VOCs, PAHs (except sample 18B-1-1), SVOCs (except sample 18B-2-6), PCBs (except 18B-2-6), and RCRA 8 metals plus nickel and zinc (except 18B-1-1)		19.25 ft bgs *No obvious contamination*
UPGRADIENT						
B-1-12'	2001	Northeast corner of the AST facility	12	TPH-GRO, TPH-DRO, TPH-RRO, VOCs, and lead	None	12 ft bgs *None*
22B-1-1 *22B-4-1*	2006	West side of Building 22	5 - 5.5 16.5 - 17	TPH-GRO, TPH-DRO, TPH-RRO, VOCs, PAHs, and RCRA 8 metals plus nickel and zinc	None	17 ft bgs *None*
11W-2-5 *11W-5-4*	2006	West corner of the AST facility	5.5 - 6 17 - 17.5			24 ft bgs *No obvious contamination*
10W-2-4 *10W-2-2*	2006	East corner of the UTES	15 - 15.5 15.5 - 16			25 ft bgs *No obvious contamination*

Note: > = greater than
AOPC = Area of Potential Concern
AST = above ground storage tank
bgs = below ground surface
COPC = contaminant of potential concern
DOH = State of Hawaii Department of Health
DRO = diesel range organics
EAL = environmental action level
ft = feet
GRO = gasoline range organics
OWS = oil-water separator
PAH = polynuclear aromatic hydrocarbons
PCB = polychlorinated biphenyl
RCRA = Resource Conservation and Recovery Act
RRO = residual range organics
SVOC = semi-volatile organic compound
TPH = total petroleum hydrocarbons
TRPH = total recoverable petroleum hydrocarbons
UTES = Waiawa Unit Training Equipment Site
VOC = volatile organic compound
TRPH = Tested analyte detected at concentrations > the DOH EAL.
17 17.5[1] = 2006 soil sample collected approximately 1.3 ft below final groundwater level

7.3 Groundwater Sample Results

Table 7-2 summarizes the groundwater monitoring well locations relative to the Grease Rack AOPC, groundwater flow direction, and COPC exceedances. Four groundwater monitoring wells were installed in the vicinity of the Grease Rack AOPC, i.e., one within the AOPC (MW-B3), one downgradient well (MW-36B), and two crossgradient wells (MW-10W and MW-11W) (Figure 3-1 in Appendix A).

Six COPCs were identified in groundwater in the vicinity of the Grease Rack AOPC at concentrations exceeding DOH EALs.

- In 2011, TPH-DRO and TPH-RRO exceedances were detected in downgradient well MW-36B (NGB 2012a) (Figure 3-2 in Appendix A).
- In 2011, benzo(a)anthracene and benzo(a)pyrene exceedances were detected in crossgradient well MW-11W (NGB 2012a) (Figure 3-2 in Appendix A).
- In 2011, metals were detected in groundwater in all eight of the wells; however, mercury exceedances were detected in well MW-B3 within the AOPC and in downgradient well MW-36B (NGB 2012a) (Figure 3-3 in Appendix A).
- In 2011, a nickel exceedance was detected in downgradient MW 36B located within the AOPC (NGB 2012a) (Figure 3-3 in Appendix A).
- In 2006, a selenium exceedance was detected in crossgradient well MW-10W. Selenium was not included as a COPC in the 2011 groundwater monitoring events (NGB 2012a) (Figure 3-3 in Appendix A).

Table 7-2: Groundwater Sample Exceedances, Grease Rack Area of Potential Concern

Well Location	Down- gradient	AOPC			Crossgradient				DOH EALs (µg/L)
COPC Levels > DOH EALs	MW-36B	MW-B3			MW-11W		MW-10W		
	2011[1]	2001[1]	2006[2]	2011[1]	2006[2]	2011[1]	2006[2]	2011[1]	
TPH-DRO	1,690 J	500	ND	ND	ND	ND	ND	ND	400
TPH-RRO	1,070 J*	ND	ND	ND	110 J	ND	390 J	ND	500
Benzo(a)anthracene	NA	NA	ND	NA	0.053 J	NA	ND	NA	0.027
Benzo(a)pyrene	NA	NA	ND	ND	ND	0.83 J	0.098 J	ND	0.06
Mercury	0.05 J	NA	0.09 J	0.1 J	0.07 J	ND	0.04 J	ND	0.025
Nickel	8.8 J	NA	ND	ND	ND	3.7 J	ND	ND	5
Selenium	NA	NA	ND	NA	ND	NA	7.3 J	NA	5

Notes: > = greater than; µg/L = micrograms per liter; AOPC = area of potential concern
COPC = contaminants of potential concern; DOH = State of Hawaii Department of Health; DRO = diesel range organics
EAL = Environmental Action Level; MW = monitoring well; ND = not detected
RRO = residual range organics; TPH = total petroleum hydrocarbons; [1] NGB 2012a; [2] USACE 2008
NA = not analyzed as COPC concentrations did not exceed the DOH EALs in place at the time; therefore, were determined to not be a significant contribution to impacts at the Waiawa Unit Training Equipment Site (NGB 2012a)
J = Detection reported below the laboratory method detection limit but above the instrument reporting level, estimated value.
*Analyte was run as a polynuclear aromatic hydrocarbon in 2006 and semi-volatile organic compounds in 2011.
Bold font = Analyte exceeded the DOH EALs (both DOH Tier 1 and Site-specific commercial/industrial [C/I] EALs); however, subsequent sample results did not exceed DOH EALs.
Red font = Most recent detected concentration exceeds DOH EALs (both Tier 1 and C/I EALs); this concentration will be used in the Environmental Hazard Evaluation to evaluate potential environmental hazards and associated risk.

Based on the groundwater flow direction measured in 2011 (NGB 2012a), groundwater generally flows in a westerly direction through the Grease Rack AOPC towards the New Wash Rack AOPC (Figure 1-3 in Appendix A).

7.4 Soil and Groundwater Sample Representativeness

Soil sample results from the 2001 and 2006 investigations are not representative of a release within the Grease Rack AOPC.

Based on the most recent groundwater sample results summarized in Table 7-2:

- TPH-DRO and TPH-RRO contamination detected in 2011 in downgradient well MW-36B is limited to a small area of the New Wash Rack AOPC parallel to the stream at a depth of approximately 17.4 ft bgs (Figure 3-2 in Appendix A). These groundwater sample results are considered to be *representative of a release* at the time the samples were collected 11 years ago.

  All potential sources of groundwater contamination in this AOPC were removed.

  Although it is likely that natural attenuation has reduced the contaminant concentrations to levels below DOH EALs, TPH-DRO and TPH-RRO are retained for further evaluation.

- Benzo(a)anthracene and benzo(a)pyrene contamination detected in 2006 and 2011, respectively, in upgradient well MW-11W is limited to a small area of the New Wash Rack AOPC parallel to Waiawa Stream at a depth of approximately 16.5 ft bgs (Figure 3-2 in Appendix A). This groundwater sample result is considered to be *representative of a release* at the time the samples were collected 16 and 11 years ago, respectively.

  All potential sources of groundwater contamination in this AOPC were removed.

  Although it is likely that natural attenuation has reduced the contaminant concentrations to levels below DOH EALs, benzo(a)anthracene and benzo(a)pyrene are retained for further evaluation.

- Mercury was detected in downgradient well MW-36B and well MW-B3 within the AOPC in 2011 at estimated concentrations exceeding the DOH Tier 1 EAL. It was also detected in a majority of the soil samples collected and analyzed for metals in 2006 site-wide. Mercury is a naturally occurring metal in Hawaiian soils and is not typically associated with petroleum contamination (Figure 3-3 in Appendix A). These groundwater sample results are not considered to be *representative of a release* and are not retained for further evaluation in this EHE.

- Nickel was detected in downgradient well MW-36B in 2011. It was also detected in a majority of the soil samples collected site-wide and analyzed for metals in 2006. Nickel is a naturally occurring metal in Hawaiian soils and is not typically associated with petroleum contamination (Figure 3-3 in Appendix A). This groundwater sample result is not considered to be *representative of a release* and is not retained for further evaluation in this EHE.

- Selenium was detected in crossgradient well MW-10W in 2006 at an estimated concentration exceeding the DOH Tier 1 EAL. It was also "present" in a majority of the soil samples collected site-wide and analyzed for metals in 2006. This groundwater sample result is not considered to be *representative of a release* and is not retained for further evaluation in this EHE.

TPH-DRO, TPH-RRO, benzo(a)anthracene, and benzo(a)pyrene results within the Grease Rack AOPC are retained for further evaluation in this EHE.

7.5 Evaluation of Potential Sources of Contamination

Grease Rack AOPC potential sources of contamination were evaluated, and none were identified.

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Section 8 Environmental Hazard Evaluation

8.1 Magnitude and Extent of Remaining Contamination

8.1.1 Contaminated Soil

With the exception of TPH-DRO and TPH-RRO-contaminated soil encountered at 15 ft bgs at the MW-36B location, soil contamination was not identified at the UTES site. TPH-DRO and TPH-RRO were reportedly detected in soil at 15 ft bgs during the March 2011 installation of monitoring well MW 36B approximately 6.4 ft above the recorded groundwater level of 21.4 ft bgs (NGB 2012b). Soil sample results were not provided, and no other contaminants were reportedly identified, which likely indicates this was an old release (possibly associated with the former wash rack sump and/or oil trap). Soil contamination was not reported in downgradient soil borings 16B and 18B, both drilled in 2006 to an approximate depth of 18 ft bgs, or in upgradient boring 17B drilled in 2006 to a depth of 15 ft bgs (USACE 2008) indicating that the contamination is an isolated occurrence. Groundwater was encountered at a depth of 21.4 ft bgs during the March 2011 installation and sampling of MW-36B, and at 17.40 ft bgs during the August 2011 sampling event (NGB 2012b).

Long-term management of TPH-contaminated soil was not considered since the likely source(s) of the contamination has(have) been removed, the soils are located deeper than 9.8 ft bgs (3 meters), potential migration pathways have been managed, and the majority of the site is paved. The contaminated soil is unlikely to be excavated or exposed at the surface during normal operations or utility upgrades. Subsurface activities below this depth are likely to be closely supervised by the property owner under ICs established at the site.

8.1.2 Contaminated Groundwater

COPCs identified in groundwater at concentrations exceeding site-specific EALs include: TPH-DRO, TPH-RRO, benzo(a)anthracene, and benzo(a)pyrene. There are no known petroleum sources at the UTES located upgradient of the Fuel Storage AOPC; however, groundwater encountered on the south side of the site shows evidence of residual contamination. Potential off-site sources of COPCs detected in wells located on the south side of the site in the vicinity of Waihona Street, could be migrating in groundwater from upgradient off-site sources and/or could be in petroleum-contaminated effluent released to the site via broken storm drainage pipes. There is no evidence of a plume or of COPC migration from the UTES towards Waiawa Stream. However, it is likely that the shallow aquifer beneath the UTES is receiving contaminated recharge water from the Waiawa Stream streambed. The effects of natural attenuation, including bacterial activity, volatilization, dissolution, and adsorption will continue to act on the concentrations present in groundwater. Natural attenuation will continue to reduce constituent concentrations and mobility. No regularly occupied residences or sensitive environments are located on the UTES (Weston Solutions, Inc. 2010).

COPCs detected in wells located on the northwest side of the site are likely associated with historical releases from the wash rack systems. It is also possible that dissolved contaminants in recharge water from the stream are negatively impacting the north side of the site to some degree since the Waiawa Stream streambed is known to be contaminated. Concentrations of dissolved-phase COPCs have decreased over time and it is likely that residual levels, if present in groundwater, do not pose a risk to human health or the

environment. The impacts to aquatic habitats environmental hazard associated with petroleum-impacted groundwater was not retained because the UTES is considered to be a recharge zone, where it is more likely that contaminated recharge water is impacting groundwater beneath the UTES.

Groundwater monitoring at the site demonstrated that a contaminant plume is not present and the isolated areas of contamination are located in the upper aquifer within the recharge zone. Surface water can enter an aquifer only as fast as water within the aquifer moves away from the recharge zone. As this area is relatively arid with only 30 inches of rain per year (Giambelluca, et. al., 2013) and the paved nature (poorly permeable land surface) of the site, the amount of downward flow is significantly reduced. The reduced flow slows the amount of downward flow through potentially contaminated soil and increases evapotranspiration prior to recharging of the aquifer.

8.2 Data Gap Analysis

Current data gaps for the UTES include the following:

- Portions of the former Navy drainage system remain in use by the CCH (including the 66-inch-diameter outfall pipe) and the condition of the concrete pipes is not known.
- Impacts of off-site petroleum releases to groundwater were not investigated.
- During the 2006 monitoring event benzo(a)anthracene and benzo(a)pyrene were analyzed as a PAH using EPA Method 8270-selected ion monitoring (SIM) while in 2011 monitoring event benzo(a)anthracene was not included as an analyte and benzo(a)pyrene was analyzed as an SVOC using EPA Method 8270C. The SIM analysis increases analytical sensitivity of the compound. Laboratories often compare SIM data to full scan reference spectra to confirm component identification in samples. Because SIM and full scan data are not the same and will not give the same abundances, comparing the SIM data to full scan reference data is not appropriate.
- Soil and groundwater sample results were not available for any of the eight wells installed and sampled in March 2011.
- Groundwater sampling at the site has not been conducted since August 2011, and for some analytes since 2006, the COPC detections were used for this EHE as “representative” data to characterize soil and/or groundwater in source-specific AOPCs although it is likely that natural attenuation has reduced the contaminant concentrations.
- Groundwater samples collected from groundwater monitoring wells are considered representative of groundwater in the shallow aquifer located directly beneath the site at the time the samples were collected.
- Subslab or soil vapor samples have not been collected at the site, thus, the presence/absence of potentially petroleum-impacted subslab vapor/soil vapor at the site has not been evaluated.
- Analytical results for soil and groundwater samples collected from the site were initially compared to Tier 1 EALs (i.e., sites less than 150 meters from the nearest surface water, with unrestricted land use, and where groundwater is a drinking water resource). The parameters used for the initial Tier 1 assessment; however, are not representative of conditions at the site, which is currently used for commercial/industrial purposes and land use is presumed to continue as

commercial/industrial in the future. Therefore, to further evaluate the site, soil and groundwater data were compared to applicable site-specific DOH EALs.

It is anticipated that, over time, new data may be obtained to address existing data gaps; as this occurs, the CSM and EHE for the site should be updated based on the new data.

8.3 Potential Environmental Hazards

The initial COPCs for the UTES were identified as those contaminants with concentrations exceeding the most restrictive Tier 1 EALs and site-specific C/I EALs, as based on the previous investigations summarized in Sections 4 through 7.

8.3.1 Soil - Potential Environmental Hazards

Potential environmental hazards for contaminated soil are not retained for further evaluation as detected COPC concentrations either do not exceed DOH Tier 1 and/or C/I EALs, are not ubiquitous at the AOPCs evaluated, or are naturally occurring.

8.3.2 Groundwater - Potential Environmental Hazards

Four COPCs were identified in the shallow groundwater aquifer beneath the UTES at concentrations that exceed site-specific DOH EALs; TPH-DRO, TPH-RRO, benzo(a)anthracene, and benzo(a)pyrene. All of the COPC results were "J" flagged, indicating the analyte is present in the sample; however, the result is an estimated value. TPH-DRO and TPH-RRO (MW-36B) and benzo(a)pyrene (MW-11W) were each detected in one of the eight monitoring wells sampled in August 2011, the remainder of the COPCs were last detected in 2006. Table 8-1 summarizes the findings for COPCs that are retained for further consideration.

Table 8-1: Groundwater Contaminants of Potential Concern Retained for Further Evaluation

COPC	Associated AOPCs	Monitoring Well (Date)	Depth to Ground-water (ft bgs)	Highest Detected Concentration (µg/L)	DOH C/I EAL (µg/L)
TPH-DRO	New Wash Rack	MW-36B (8-2011)	17.4	1,690 J	400
TPH-RRO	New Wash Rack	MW 36B (8-2011)		1,070 J*	500
Benzo(a)anthracene	Fuel Storage	MW 11W (2006*)	16.5	0.053 J	0.027
	Crossgradient of Fuel Storage	MW 12W (2006*)	16.6		
	Old Wash Rack	MW B7 (12-2006)	18.95		
Benzo(a)pyrene	Fuel Storage	MW 11W (8-2011)	16.5	0.83 J	0.06
	Old Wash Rack	MW B7 (12-2006)	18.95		
	New Wash Rack	MW B6 (12-2006)	19		

Note: µg/L = micrograms per liter; AOPC = area of potential concern; C/I = construction/industrial
COPC = contaminant of potential concern; DOH = State of Hawaii Department of Health; DRO = diesel range organics
EAL = Environmental Action Level; RRO = residual range organics; TPH = total petroleum hydrocarbons
J = Detection reported below the laboratory method detection limit but above the instrument reporting level, estimated value.
Red font = DOH Tier 1 and Commercial/Industrial land use EALs were exceeded.

Table 8-2 screens the COPCs to potential groundwater environmental hazard EALs. Drinking water toxicity, vapor intrusion to indoor air, aquatic ecotoxicity, and gross contamination environmental hazards associated with contaminated groundwater are evaluated in the following sections.

8.3.2.1 Drinking Water Toxicity Environmental Hazard

Groundwater data collected from the most recent groundwater monitoring events (2006 and August 2011) were screened against drinking water toxicity EALs. Based on data presented in Table 8-2, there is a potential impact to drinking water associated with residual contamination in the groundwater (TPH-DRO, benzo(a)anthracene, and benzo(a)pyrene) in the vicinity of monitoring wells MW-36B, MW-B6, MW-B7, MW-11W, and MW-12W. Thus, drinking water toxicity is further evaluated as a potential hazard. In summary:

- The known release sources (former fuel storage USTs, wash racks, dry well, outfalls, etc.) and the majority of the contaminated soil have been removed, historic mismanagement of petroleum and hazardous substances has been discontinued, and the facility SPCCP and Best Management Practices (BMPs) are implemented at the site.
- The most recent groundwater sampling events were conducted in 2006 and August 2011 and the results likely do not represent current on-site residual concentrations.
- Weathering (i.e., in situ degradation) has removed the lighter, more soluble portions of the middle- or heavy-distillate contamination in the groundwater.
- The monitoring wells at the UTES were located within upper basal aquifer that consists of a mixture of rainfall recharge, irrigation return, and subsurface inflow and not within the deeper drinking water aquifer. Therefore, the drinking water is not potentially threatened by contamination in the vicinity of the monitoring wells at the UTES.

8.3.2.2 Vapor Emissions to Indoor Air

Volatile groundwater COPCs (TPH-GRO or VOCs) were not identified in groundwater at a concentration greater than the applicable DOH EALs in the most recent groundwater monitoring events (2006 and August 2011). In general, groundwater COPCs identified at a concentration greater than applicable DOH EALs during the most recent groundwater monitoring events are associated with middle- or heavy-distillate fuels. Vapor intrusion is not further assessed as a potential hazard at the site for the following reasons:

- The known release sources (former fuel storage USTs, wash racks, dry well, outfalls, etc.) and the majority of the contaminated soil have been removed, historic mismanagement of petroleum and hazardous substances has been discontinued, and the facility SPCCP and BMPs are implemented at the site.
- The most recent groundwater sampling events were conducted in 2006 and 2011 and the results likely do not represent current on-site residual concentrations.
- Weathering (i.e., in situ degradation) has removed the lighter, more soluble portions of middle- or heavy-distillate contamination in the groundwater. Laboratory analysis did not indicate concentrations of naphthalene or methylnaphthalenes in the vicinity of the fuel storage area.
- Residual contaminants in groundwater, if present, are not located in the vicinity of buildings or other structures.

Table 8-2: Summary of Retained Groundwater Analytical Results

Sample Identification (Year Collected)	Depth to Ground water (ft bgs)	Associated AOPC	TPH (µg/L)									PAHs/SVOCs (µg/L)									
			DRO		DWT	AE	GC	RRO		DWT	AE	GC	Benzo(a) anthracene		DWT	AE	GC	Benzo(a) pyrene		DWT	AE	GC
MW-B3 (12-2006/8-2011)	16.7	Grease Rack	ND					ND					ND*					ND				
MW-B6 (12-2006)	19.00	New Wash Rack	270	J				470	J				ND*					0.11	J		✓	
MW-B7 (12-2006)*/ MW-37B 8-(8-2011)	18.95 17.4	Old Wash Rack	24	J				ND					0.039*	J	✓	✓		ND				
MW-9W (12-2006*/8-2011)	15.3	Old Wash Rack	ND					ND					ND*					ND				
MW-10W (12-2006*/8-2011)	15.4	Upgradient of Fuel Storage	ND					ND					ND*					ND				
MW-11W (2006*/8-2011)	16.5	Fuel Storage	ND					ND					0.053*	J	✓	✓		0.83	J	✓	✓	✓
MW-12W (2006*/8-2011)	16.6	Crossgradient of Fuel Storage	ND					ND					0.048*	J	✓	✓		ND				
MW-36B (8-2011)	17.4	New Wash Rack	1,690	J	✓	✓	✓	1,070	J		✓	✓	NA					ND				
DOH Tier 1 EAL			**400**					**500**					**0.027**					**0.06**				
DOH C/I EAL			**400**					**500**					**0.027**					**0.06**				
DOH C/I Environmental Hazard					**400**	**640**	**500**			**2400**	**640**	**500**			**0.029**	**0.027**	**4.7**			**0.2**	**0.06**	**0.8**
Freshwater Chronic Habitat Goals			**640**					**640**					**4.7**					**0.06**				
Freshwater Aquatic Habitat Goals			**2500**					**2500**					**300**					**300**				

Notes: µg/L = micrograms per liter
AE = Aquatic Ecotoxicity Hazard for C/I land use scenario
AOPC = Area of Potential Concern
DOH = State of Hawaii Department of Health
C/I = commercial/industrial land use
DRO = diesel range organics
DWT = Drinking Water Toxicity Hazard for C/I land use scenario
EAL = Environmental Action Level
GC = Gross Contamination Hazard for C/I land use scenario
MW = monitoring well
ND = not detected
PAH = polynuclear aromatic hydrocarbons
SVOC = semi-volatile organic compound
Tier 1 = unrestricted land use scenario
TPH = total petroleum hydrocarbons
NA = not analyzed as contaminant of potential concern as concentrations did not exceed the DOH EALs in place at the time; therefore, were determined to not be a significant contribution to impacts at the Waiawa Unit Training Equipment Site (NGB 2012a).
✓ = indicates concentration of analyte brought forward exceeds the DOH C/I Environmental Hazard Levels.
*Freshwater Acute Aquatic Habitat Goal from Table D-4c of the Tier 1 EALs Surfer Program
Bold font = Analyte exceeded the DOH EALs (both DOH Tier 1 and C/I EALs); however, subsequent sample results did not exceed DOH EALs.
Red font = DOH EALs (both DOH Tier 1 and C/I EALs) are exceeded.
Red font = Most recent detected concentration detected exceeds DOH EALs (both DOH Tier 1 and C/I EALs) as well as the Freshwater Chronic Habitat Goals.
Red font = Most recent detected concentration detected exceeds DOH EALs (both DOH Tier 1 and C/I EALs) as well as the Freshwater Aquatic Habitat Goals.

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8.3.2.3 Aquatic Ecotoxicity

Groundwater data collected from the most recent groundwater monitoring events (2006 and August 2011) were screened against aquatic ecotoxicity EALs. The site-specific evaluation of the potential threat to aquatic receptors is focused on plume mobility, groundwater migration to surface water, and the long-term persistence of contaminants in groundwater. Based on data presented in Table 8-2, there is a potential impact to aquatic habitats associated with TPH-DRO, TPH-RRO, benzo(a)anthracene, and benzo(a)pyrene detected in groundwater in the vicinity of monitoring wells (MW-36B, MW-B7, and MW-B6). The four COPCs were detected at concentrations above the freshwater chronic habitat goals for TPH-DRO, TPH-RRO, and benzo(a)pyrene, but below the freshwater aquatic habitat goals. Thus, aquatic ecotoxicity is further evaluated as a potential hazard. In summary:

- There are no identified sensitive environments on the UTES (Weston Solutions, Inc. 2010). As identified in the 2010 PA, the closest sensitive environment downstream is located 5 miles south where the Waiawa Stream enters Pearl Harbor (Weston Solutions, Inc. 2010). The mouth of the Waiawa Stream is the sole water source for the Waiawa Unit of the Pearl Harbor National Wildlife Refuge, a freshwater marsh. The Waiawa Stream is an intermittent stream and based on the Hawaii Revised Statues criteria, is not considered to be a surface water body and a release to surface water cannot be documented (Weston Solutions, Inc. 2010).
- The Waiawa Stream is not known to be used for recreational activity nor is the stream frequently accessed for daily industrial operations. The stream banks are very steep and difficult to access.
- Based on the previous voluntary environmental actions (including assessment, UST and dry well removals/closures, upgrades/replacement/repair of wash racks, SIs, RIs/RAs, and groundwater monitoring) it has been determined that petroleum contaminant detections are isolated and are not indicative of a greater plume that is migrating beneath the site.
- Waiawa Stream is an intermittent stream with very little or no flow for most of the year with the presence of aquatic fauna, if any, limited to when there is surface flow. Intermittent streams will usually have baseflow during the rainy and dry seasons and infrequent baseflow during the rest of the year.
- The shallow groundwater aquifer in the vicinity of the UTES is a recharge zone and may periodically receive water that infiltrates through the Waiawa Stream streambed (Section 1.2.1.5). Groundwater generally flows toward the west-northwest, somewhat parallel to Waiawa Stream on the north side of the UTES, likely lengthening the path of contaminant migration from the site to the stream.
    - The highest magnitude of petroleum contamination detected in groundwater (TPH-DRO and TPH-RRO, only) is centered around monitoring well MW-36B, located approximately 150 ft crossgradient of Waiawa Stream.
    - Benzo(a)anthracene and benzo(a)pyrene in groundwater samples collected from monitoring wells MW-11W and MW-12W, located at least 390 ft crossgradient of Waiawa Stream, are unlikely to negatively impact aquatic habitats, if any, at the stream.
- The known release sources (former fuel storage USTs, wash racks, dry well, outfalls, etc.) and the majority of the contaminated soil have been removed, historic mismanagement of petroleum and

hazardous substances has been discontinued, and the facility SPCCP and BMPs are implemented at the site.

- The most recent groundwater sampling events were conducted in 2006 and 2011 and the results likely do not represent current on-site residual concentrations.
- Weathering (i.e., in situ degradation) has removed the lighter, more soluble portions of the middle- or heavy-distillate contamination in the groundwater and the residual petroleum contaminants detected in 2006 and 2011 are expected to have further attenuated over the past 11 to 16 years.

8.3.2.4 Gross Contamination

Groundwater data collected from the most recent groundwater monitoring events (2006 and August 2011) were screened against gross contamination EALs. Based on data presented in Table 8-2,, there is a potential impact from gross contamination associated with TPH-DRO, TPH-RRO, and benzo(a)pyrene in groundwater in the vicinity of monitoring wells (MW 36B and MW-11W). Thus, gross contamination is further evaluated as a potential hazard. In summary:

- The known release sources (former fuel storage USTs, wash racks, dry well, outfalls, etc.) and the majority of the contaminated soil have been removed, historic mismanagement of petroleum and hazardous substances has been discontinued, and the facility SPCCP and BMPs are implemented at the site.
- With the exception of groundwater monitoring well MW-B3, obvious groundwater contamination (i.e., sheens, odors, etc.) was not observed during any of the groundwater sampling events conducted at the site. In 2006, a spotty silver colored sheen was observed in the initial purge water at MW B3 located by the grease rack; however, petroleum product sheens and suspect chemical odors were not encountered during groundwater sampling activities.
- The most recent groundwater sampling events were conducted in 2006 and 2011 and the results likely do not represent current on-site residual concentrations.
- Weathering (i.e., in situ degradation) has removed the lighter, more soluble portions of the middle- or heavy-distillate contamination in the groundwater and the residual petroleum contaminants detected in 2006 and 2011 are expected to have further attenuated over the past 10 to 16 years.
- The groundwater table beneath the UTES is located deeper than 9.8 ft bgs (3 meters). The contaminated groundwater is unlikely to be excavated or exposed at the surface during normal operations or utility upgrades. Subsurface activities below this depth are likely to be closely supervised by the property owner under ICs established at the site.

8.3.3 Potential Environmental Hazard Screening Findings

Based on the evaluations of each of the identified potential environmental hazards associated with contaminated groundwater at the UTES, three of the four environmental hazards are retained for further evaluation, drinking water toxicity, aquatic ecotoxicity, and gross contamination.

Section 9 Conceptual Site Model

A CSM is a comprehensive representation of site environmental conditions with respect to recognized or potential environmental hazards. The CSM summarizes primary sources (releases associated with the current/former wash racks on-site and/or off-site petroleum releases), primary release mechanisms (spills/leaks from on-site and/or off-site petroleum USTs, ASTs, and outfall pipes), secondary sources impacted by petroleum releases (soil and groundwater), and potential environmental hazards associated with petroleum-impacted media. Furthermore, the environmental hazards are assessed by exposure type, secondary release mechanism, exposure route, and potential receptors (site workers and customers, residents of adjacent residential properties, and construction workers) under current and future scenarios.

9.1 Exposure Setting

The UTES encompasses approximately 19.217 acres in a light industrial area of Waiawa Gulch. Current land use for the site is industrial (training, vehicle maintenance, and storage). According to the boring logs included in the 2008 RI report the groundwater monitoring wells were placed in clay-rich, caprock sediment (USACE 2008). The UTES is located mauka (inland) of the UIC line within the Primary Urban Center Watershed and the shallow groundwater aquifer beneath the site is considered a current or potential source of drinking water. Groundwater generally flows in a west-northwesterly direction toward Waiawa Stream, with likely seasonal variations. The shallow aquifer in the vicinity of the UTES is considered to be a recharge zone where contaminated surface water flows from the Waiawa Stream bed to waters beneath the UTES. The known sources of contamination were removed from the site from 1997 through 2011. Groundwater is impacted in isolated areas of the site by COPCs including TPH-DRO, TPH-RRO, benzo(a)anthracene, and benzo(a)pyrene. Groundwater was last monitored in 2006 for wells MW-B6 and MW-B7, and in 2011 for the remainder of the wells, and is not likely to be representative of current levels of contamination at the site due to natural attenuation. Current use of the UTES is not anticipated to change.

9.2 Current and Future Receptors

Table 9-1 describes current and future receptors at the UTES based on the site's current and foreseeable future land use and the potential media that each receptor may be exposed to. Ecological receptors are omitted from the table because no sensitive ecological habitats or threatened/endangered species are present at the site and are not anticipated to be present in the future presuming the industrial/commercial land use remains unchanged.

Table 9-1: Current and Future On-Site Receptors

Receptor	Description
Current Receptors	
Occupational workers (i.e., non-intrusive workers)	Occupational workers are expected to be present on-site for 40 hours per week and are not anticipated to be exposed to any on-site environmental matrix hazards.
Hypothetical Future Receptors	
Occupational workers (i.e., non-intrusive workers)	Future occupational workers are retained for evaluation in this EHE as the site is anticipated to remain in commercial/industrial use. Occupational workers are expected to be present on-site for 40 hours per week and are not anticipated to be exposed to any on-site environmental matrix hazards.
Construction workers (i.e., intrusive workers)	Construction workers would be present on-site if the site is developed in the future. These receptors are expected to be present on-site for at least 8 hours per day during construction; however, they would be on-site for significantly less amount of time than residential receptors (days or months compared to years). If additional buildings are constructed or if significant earthwork is conducted (i.e., as part of underground utility maintenance), construction workers may be exposed to potentially fuel-impacted groundwater.

Note: VOC = volatile organic compounds EHE = Environmental Hazard Evaluation

9.3 Summarized Conceptual Site Model

The CSM presented in Table 9-2 is based on the default CSM presented in the Technical Guidance Manual (DOH HEER Office 2008 and updates) and includes the following environmental hazards on which the DOH Tier 1 EALs are based (DOH HEER Office 2017):

- *Soil*: No environmental hazards.
- *Groundwater*: No environmental hazards.
- *Soil vapor*: No environmental hazards.

Each potential environmental hazard is evaluated in the CSM based on-site-specific exposure settings and receptors previously discussed in Sections 4 through 7. The CSM specifies whether each environmental hazard is applicable under current or hypothetical future site conditions. This information is used to form the conclusions of this EHE (Section 10), which evaluates media-specific COPCs concentrations against detailed hazard-specific EALs.

Table 9-2: Conceptual Site Model

Primary Source	Primary Release Mechanism	Secondary Sources	Potential Environmental Hazards[1]	Potential Hazard Under Current or Future Site Conditions[2]		
				Current	Future	Comments
Releases related to former activities including USTs, AST, OWS, grease pit, automotive maintenance	Spills, leaks, improper disposal	Soil	Direct exposure	No	No	The overlying surface soil is not significantly impacted and is not a factor in contamination by direct exposure.
			VI into buildings	No	No	The overlying surface soil is not significantly impacted and is not a factor in VI into on-site buildings.
			Terrestrial ecotoxicity	No	No	The overlying surface soil is not significantly impacted therefore does not pose a terrestrial ecotoxicity threat given the site's current industrial/commercial land use.
			Leaching	No	No	The overlying surface soil is not significantly impacted and is not a factor in contaminant migration to groundwater.
			Gross contamination	No	No	The overlying surface soil is not significantly impacted and is not a factor in the migration of the groundwater contamination.
		Groundwater	Drinking water (toxicity)	No	No	Groundwater at the site is a current drinking water source, Monitoring wells are located within the upper aquifer within the recharge zone at approximately 13 to 21 ft bgs and not within the deeper drinking water aquifer. A "plume" was not identified at the site. All known sources and potential preferential pathways have been closed.
			VI into buildings	No	No	The site currently includes several buildings housing occupational workers. All buildings are slab-on-grade construction. No vapor monitoring has been conducted at the site.
			Gross contamination	No	No	Potential future construction workers (i.e., intrusive workers) are not likely to be exposed to potentially impacted groundwater, located at depths greater than 9.8 ft bgs (3 meters). No obvious contamination was observed during any of the groundwater sampling events.
			Aquatic ecotoxicity	No	No	No significant aquatic ecological habitats are currently located on-site and are not expected on-site in the future. The shallow aquifer in vicinity of the UTES is likely a recharge zone and receives water that infiltrates through the adjacent Waiawa Stream streambed. The potential pathways from the UTES to the stream via pipelines have been eliminated. A "plume" was not identified at the site.

Primary Source	Primary Release Mechanism	Secondary Sources	Potential Environmental Hazards[1]	Potential Hazard Under Current or Future Site Conditions[2]		
				Current	Future	Comments
		Soil vapor	VI into buildings	No	No	The site currently includes various buildings (occupational workers). All buildings are slab-on-grade construction. No vapor monitoring has been conducted at the site. None of the areas with residual contamination are located near occupied structures.

Notes: UST = underground storage tank AST = aboveground storage tank OWS = oil-water separator Ft = feet
bgs = below ground surface MW = monitoring well VI = vapor intrusion UTES = Unit Training Equipment Site

[1]The environmental hazards evaluated in this Conceptual Site Model (CSM) are based on the default hazards that the 2017 State of Hawaii Department of Health (DOH) Tier 1 Environmental Action Levels (EALs) utilize.

[2]The evaluation as to whether the hazards are applicable to the site under current or future conditions is based on the current and future receptors at the site; however, it does not account for contaminants of potential concern (COPC) concentrations because the screening of COPC concentrations was conducted as part of the Environmental Hazard Evaluation in Section 5.

Section 10 Conclusions and Recommendations

Environmental investigations have been conducted at the UTES since 1993 in response to historical activities of concern identified during initial site assessments and subsequent findings. Voluntary environmental actions at the site included UST removals and closures, a dry well closure, soil removal, PAs, SIs, RIs, and groundwater monitoring. Soil and groundwater samples have been collected at the UTES to characterize the nature, extent, and magnitude of surface and subsurface contamination.

This EHE included an updated evaluation of the site-specific CSM and potential environmental hazards based on the results of previous sampling compared to current DOH Tier 1 and C/I EALs. Additional groundwater sampling would be needed to evaluate current contamination levels and to determine if the site is being negatively impacted by sources not previously identified. Based on the environmental data, report conclusions, exposure analysis, CSM, there are no final COPCs at this site that would warrant additional investigation or remediation.

The following conclusions are based on the evaluation of potential environmental hazards associated with petroleum contamination identified in soil and groundwater at the UTES:

1. Soil contamination was not identified at the UTES, with the exception of TPH-contaminated soil identified in *MW-36B* at a depth of 15 ft bgs (2011) in the New Wash Rack AOPC, and soil sample *B-1/B-1A* (depth unknown, collected in 1997) on the northeast side of the closed concrete structures within the Fuel Storage AOPC. Long-term management of TPH-contaminated soil was not considered since the likely sources of the contamination are isolated and have been removed, potential migration pathways have been managed, the soils are located deeper than 9.8 ft bgs (3 meters), the majority of the site is paved, and at a minimum, 10 years of natural attenuation has occurred, resulting in decreased contaminant concentrations. Contaminated soil is unlikely to be excavated or exposed at the surface during normal operations or utility upgrades. Subsurface activities below this depth are likely to be closely supervised by the property owner under ICs established at the site.

2. Environmental hazards associated with contaminated soil vapor were not evaluated, since samples were not collected during any of the previous investigations. However, the soil vapor emissions to indoor air environmental hazard is considered incomplete because there are no known sources or indications of the presence of COPCs beneath or in the vicinity of occupied buildings at the UTES.

3. Potential environmental hazards associated with contaminated groundwater were not identified in this EHE as no plume or migration of COPCs was supported by the data. Groundwater monitoring was performed at the UTES in 2001, 2006, and 2011, and several COPCs were identified in isolated areas of the site at concentrations greater than site-specific EALs; however, all known sources of contamination have been removed and current petroleum storage and handling activities are managed with a SPCCP and BMPs. COPCs have decreased over time, and it is likely that residual levels, if present in groundwater, do not pose a risk to human health or the environment.

4. As the source(s) of contamination has(have) been removed, the impacted soils are located deeper than 9.8 ft bgs (3 meters), potential migration pathways have been managed, and the majority of the site is paved. The contaminated soil is unlikely to be excavated or exposed at the surface during

normal operations or utility upgrades. Subsurface activities below this depth are likely to be closely supervised by the property owner under ICs established at the site. The EHE may be updated, as necessary, if conditions at the project area change creating new exposure pathways or if data indicate that new or additional pathways could potentially be complete.

10.1 Current Remedy in Place

Pursuant to HRS 128-D and HAR 11-451, future LUCs have been implemented over the UTES site to limit land use to Commercial/Industrial due to TPH-RRO remaining in soil at the site.

No fencing or warning signs are required at the site as all exposure areas will be usable under its current usage.

Land use inspections will be conducted annually or as determined necessary by ARNG to verify that LUCs are implemented properly, and the site remains safe for current exposure scenarios/receptors. Five Year Reviews are not required under HRS 128-D and HAR 11-451. LUCs applicability and boundaries may be revisited by DOH at its discretion and changes will be made, as necessary.

10.2 Amended Remedy

This EHE includes an evaluation of the site-specific CSM and potential environmental hazards based on current site conditions and the DOH Tier 1 EALs. The EHE concludes that potential environmental hazards at the site require the continued implementation of ICs to minimize exposure to current and hypothetical receptors.

In general, the remedy for the site is still considered appropriate; however, HIARNG recommends the following amendments to the remedy:

- Administrative controls will be maintained and will prohibit unauthorized excavation, groundwater withdrawal, and the development of aquatic habitats. No adjustment to the current site boundary is recommended at this time.

Section 11 References

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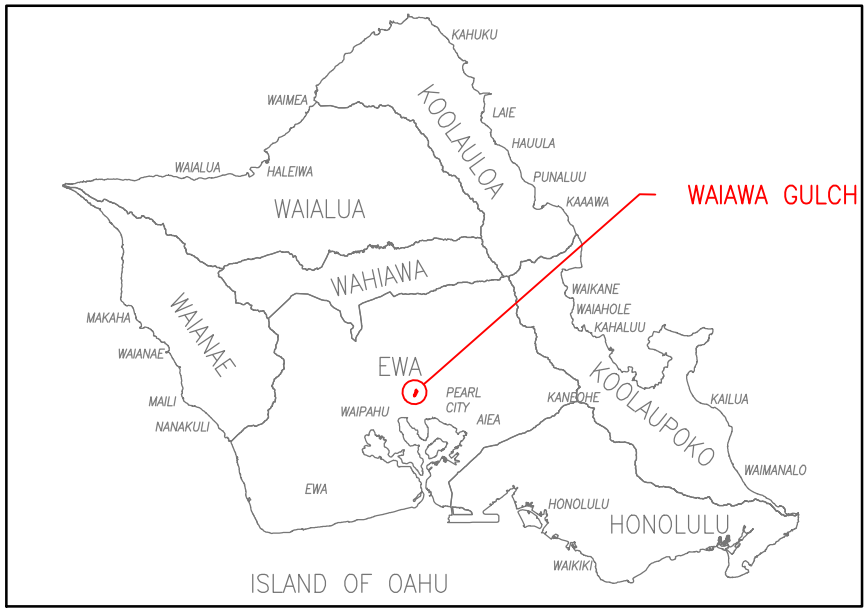
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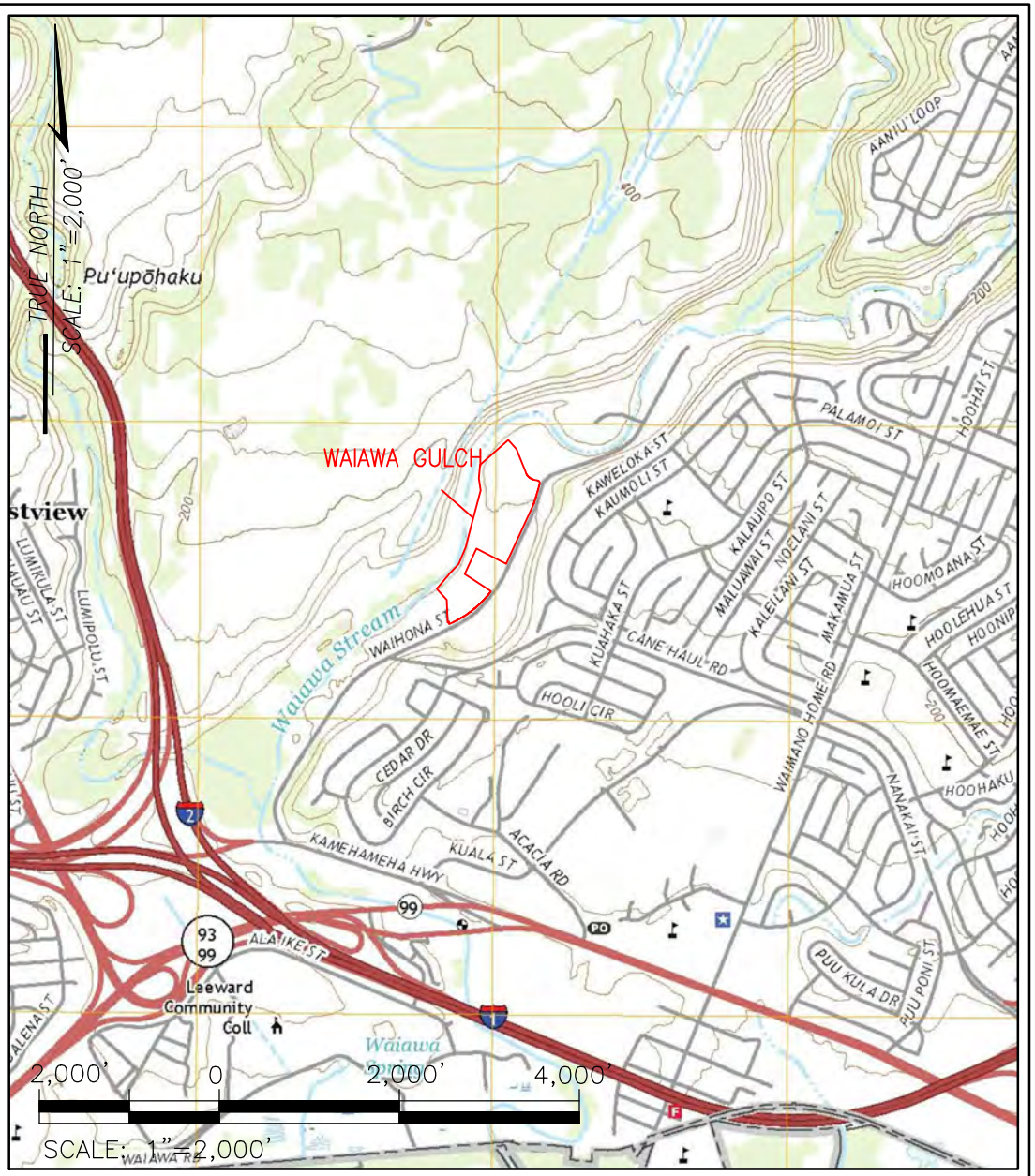
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Appendix A

Figures







	DATE: SEP 2022	PROJECT TITLE: WAIAWA UNIT TRAINING EQUIPMENT SITE (UTES) HAWAII ARMY NATIONAL GUARD INSTALLATION PEARL CITY, OAHU, HAWAII
	FIGURE TITLE: SITE VICINITY AND LOCATION MAP	FIGURE NO.: 1-1

REFERENCES: STATE OF HAWAII 2021, USGS 2017, AND GOOGLE EARTH 2020

TRUE NORTH
SCALE: 1"=200'

LEGEND:
- WAIAWA INSTALLATION BOUNDARY
- WAIAWA UTES BOUNDARY
- FORMER STRUCTURES
- STORMWATER LINES
- STREAM (PERENNIAL)

NOTES: LOCATIONS ARE APPROXIMATE

HONOLULU RECYCLING COMPANY
96-1268 WAIHONA STREET
(1) 9-6-004: 008

HAWAIIAN STEAM, INC
96-1272 WAIHONA STREET
(1) 9-6-008: 026

96-1217 WAIHONA ST
(1) 9-6-007: 015

94-1490 KA UKA BLVD
(1) 9-6-004024

FORMER BLDG 65
FORMER BLDG 13
FORMER BLDG 25
BLDG 30 AND 30A
BLDG 28
BLDG 27
FORMER BLDG 63
FORMER OPEN STORAGE
BLDG 22
FORMER BLDG 21
BLDG 21
22D
22A
22C
22B
23
16
12-INCH OUTFALL
6-INCH OUTFALL
6-INCH OUTFALL
CATCH BASIN

WAIAWA STREAM
WAIHONA STREET

200' 0 200' 400'
SCALE: 1"=200'

REFERENCES: GOOGLE EARTH 2013

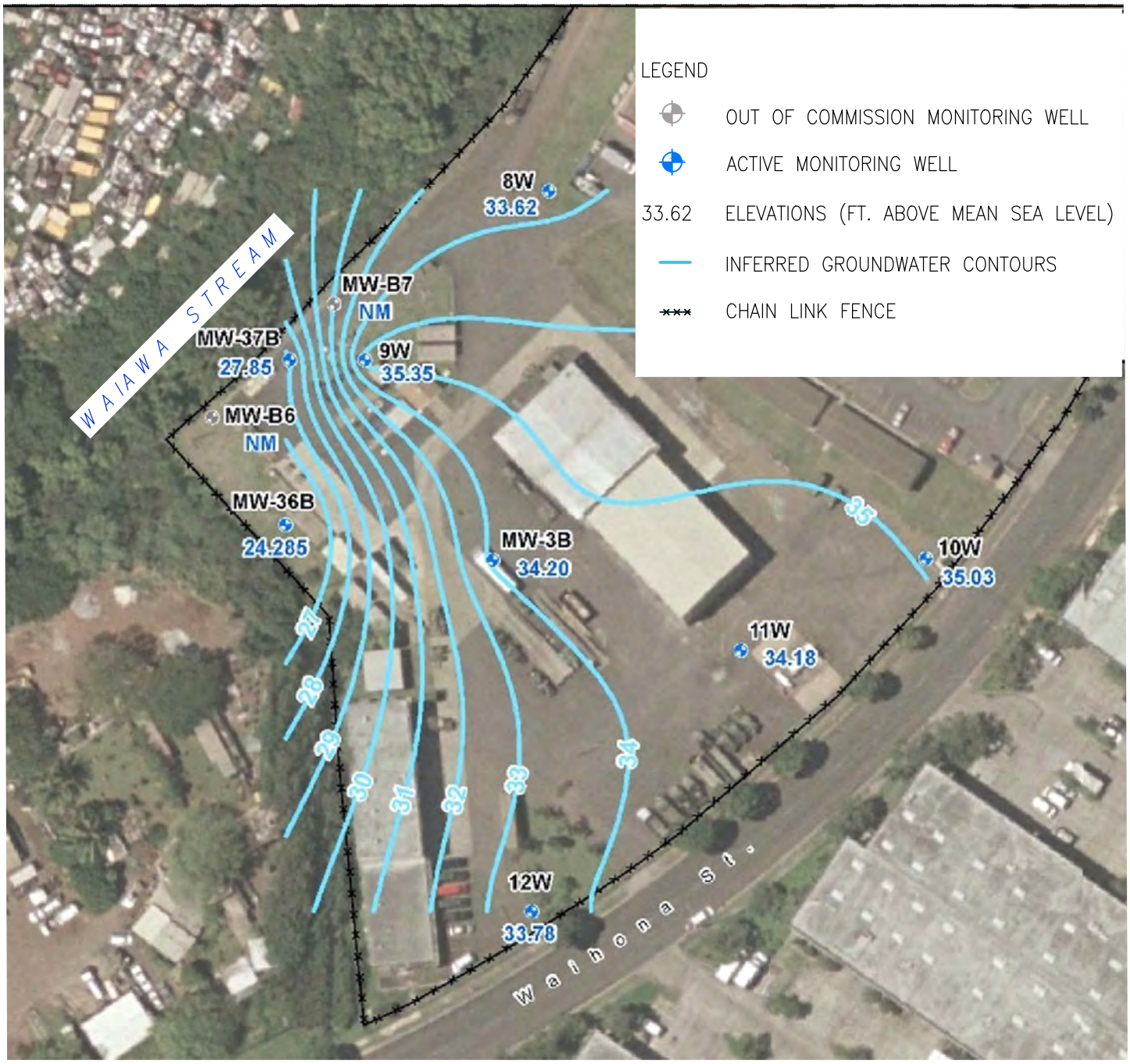
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PROJECT TITLE:
WAIAWA UNIT TRAINING EQUIPMENT SITE (UTES)
HAWAII ARMY NATIONAL GUARD INSTALLATION
PEARL CITY, OAHU, HAWAII

FIGURE TITLE:
BUILDING LOCATIONS AND ADJACENT PROPERTIES

DATE:
SEP 2022

FIGURE NO.:
1-2



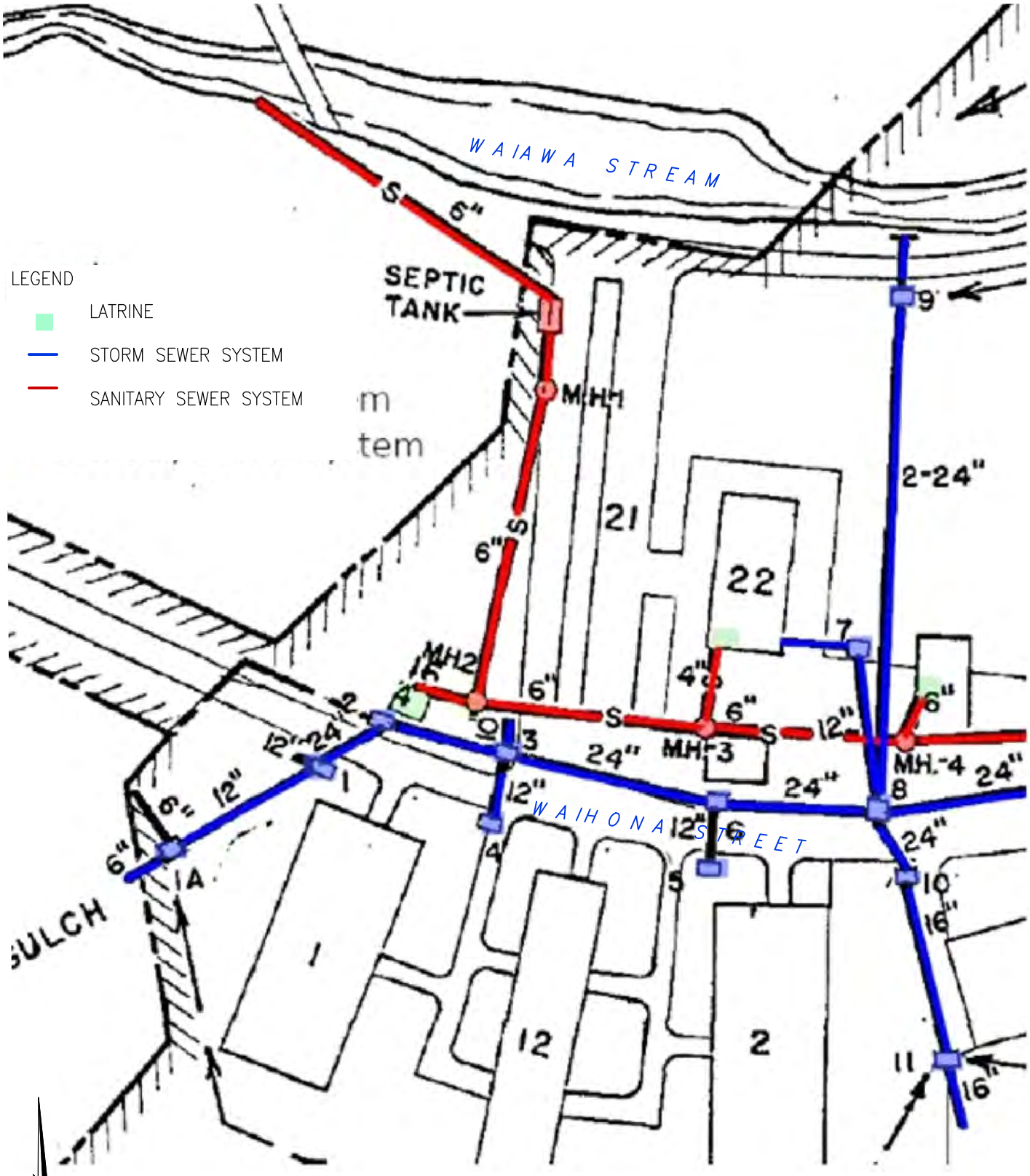
TRUE NORTH
SCALE: 1"=100'

100' 0 100' 200'

SCALE: 1"=100'

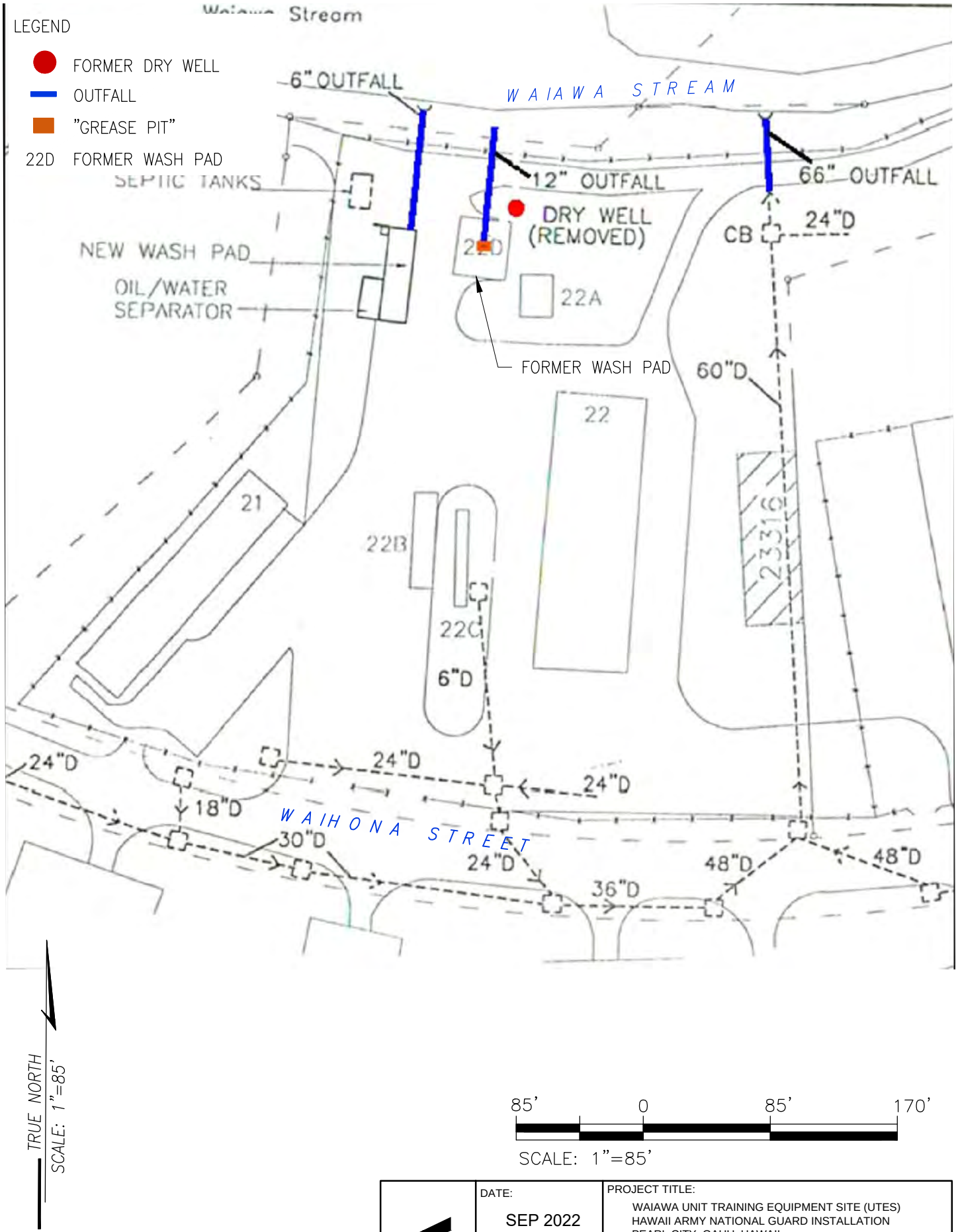
	DATE: SEP 2022	PROJECT TITLE: WAIAWA UNIT TRAINING EQUIPMENT SITE (UTES) HAWAII ARMY NATIONAL GUARD INSTALLATION PEARL CITY, OAHU, HAWAII
	FIGURE TITLE: GROUNDWATER ELEVATION AT THE UTES IN 2011	FIGURE NO.: 1-3

REFERENCES: NGB 2012a



REFERENCES: HIARNG 1963

	DATE: SEP 2022	PROJECT TITLE: WAIAWA UNIT TRAINING EQUIPMENT SITE (UTES) HAWAII ARMY NATIONAL GUARD INSTALLATION PEARL CITY, OAHU, HAWAII
	FIGURE TITLE: 1963 DRAINAGE AND SEWERAGE PLAN *Does not reflect current conditions	FIGURE NO.: 1-4



REFERENCES: USACHPPM 1997

	DATE: SEP 2022	PROJECT TITLE: WAIAWA UNIT TRAINING EQUIPMENT SITE (UTES) HAWAII ARMY NATIONAL GUARD INSTALLATION PEARL CITY, OAHU, HAWAII
	FIGURE TITLE: OUTFALL LOCATIONS *Does not reflect current conditions	FIGURE NO.: 1-5

LEGEND:
- PROPERTY BOUNDARY
- SOIL BORING SAMPLING LOCATION
- BORING CONVERTED TO GROUNDWATER MONITORING WELL
- STORAGE TANK AREA OF POTENTIAL CONCERN
- OLD WASH RACK AREA OF POTENTIAL CONCERN
- NEW WASH RACK AREA OF POTENTIAL CONCERN
- GREASE RACK AREA OF POTENTIAL CONCERN

70' 0 70' 140'
SCALE: 1"=70'

66-INCH OUTFALL
28S
29S
WAIAWA STREAM
MW-8W
OLD WASH RACK AREA OF POTENTIAL CONCERN
30S
13B
12-INCH OUTFALL (DECOMMISSIONED)
31S
MW-B7 (OUT OF SERVICE)
14B
DRY WELL SOIL REMOVAL IN 1994 TO 19 FT BGS
UTES BOUNDARY
32S
28B
FORMER DRY WELL
SOIL REMOVAL 10-12 CUBIC YARDS (2000)
SOIL REMOVAL (2015)
15B
19B
6-INCH OUTFALL
33S
MW-37B
MW-9W
35S
OLD WASH RACK
22A
34S
16B
MW-B6 (OUT OF SERVICE)
BLDG 22
20B
22B
17B
MW-10W
NEW WASH RACK AREA OF POTENTIAL CONCERN
18B
21B
MW-36B
OWS
MW-B3
22C
24B
B-1/B-1A SEDIMENT
22B
MW-11W
23
STORAGE TANK AREA OF POTENTIAL CONCERN
23B
GREASE RACK AREA OF POTENTIAL CONCERN
S-2 SEDIMENT
25B
MH-3 SEDIMENT
BLDG 21
26B
MW-12W
WAIHONA STREET
27B
TRUE NORTH
SCALE: 1" = 70'

NOTES:
(1) LOCATIONS ARE BASED ON AVAILABLE ENVIRONMENTAL SAMPLING REPORTS AND ARE APPROXIMATE (HIARNG 2002 AND USACE 2002)
(2) GOOGLE EARTH, 2020

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PROJECT TITLE:
WAIAWA UNIT TRAINING EQUIPMENT SITE (UTES)
HAWAII ARMY NATIONAL GUARD INSTALLATION
PEARL CITY, OAHU, HAWAII

FIGURE TITLE:
AREAS OF POTENTIAL CONCERN AND SAMPLE AND MONITORING WELL LOCATIONS

DATE: SEP 2022

FIGURE NO.: 3-1

LEGEND:
- PROPERTY BOUNDARY
- SOIL BORING SAMPLING LOCATION
- BORING CONVERTED TO GROUNDWATER MONITORING WELL
- STORAGE TANK AREA OF POTENTIAL CONCERN
- OLD WASH RACK AREA OF POTENTIAL CONCERN
- NEW WASH RACK AREA OF POTENTIAL CONCERN
- GREASE RACK AREA OF POTENTIAL CONCERN

70' 0 70' 140'
SCALE: 1"=70'

66-INCH OUTFALL
28S
29S
WAIAWA STREAM
OLD WASH RACK AREA OF POTENTIAL CONCERN
30S
MW-8W
13B
UTES BOUNDARY
12-INCH OUTFALL (DECOMMISSIONED)
31S
MW-B7 (OUT OF SERVICE)
14B
DRY WELL SOIL REMOVAL IN 1994 TO 19 FT BGS
32S
28B
FORMER DRY WELL
SOIL REMOVAL 10-12 CUBIC YARDS (2000)
SOIL REMOVAL (2015)
6-INCH OUTFALL
33S
15B
MW-37B
19B
35S
MW-9W
22
OLD WASH RACK
22A
34S
16B
MW-B6 (OUT OF SERVICE)
BLDG 22
20B
22B
17B
NEW WASH RACK AREA OF POTENTIAL CONCERN
18B
21B
MW-36B
OWS
MW-10W
MW-B3
22C
24B
B-1/B-1A SEDIMENT
22B
MW-11W
23
STORAGE TANK AREA OF POTENTIAL CONCERN
23B
25B
S-2 SEDIMENT
MH-3 SEDIMENT
GREASE RACK AREA OF POTENTIAL CONCERN
26B
BLDG 21
MW-12W
WAIHONA STREET
27B
TRUE NORTH
SCALE:1"=70'

SAMPLE ID	YEAR	ANALYTE	CONCENTRATION
MW-B7/MW-37B	2006	BENZO(A)ANTHRACENE	0.039[J]

SAMPLE ID	YEAR	ANALYTE	CONCENTRATION
MW-B6	2006	BENZO(A)PYRENE	0.1[J]

SAMPLE ID	YEAR	ANALYTE	CONCENTRATION
MW-36B	2011	TPH-DRO	1,690[J]

SAMPLE ID	YEAR	ANALYTE	CONCENTRATION
MW-11W	2006	BENZO(A)ANTHRACENE	0.053[J]
	2011	BENZO(A)PYRENE	0.83[J]

SAMPLE ID	YEAR	ANALYTE	CONCENTRATION
MW-12W	2006	BENZO(A)ANTHRACENE	0.048[J]

NOTES:
(1) LOCATIONS ARE BASED ON AVAILABLE ENVIRONMENTAL SAMPLING REPORTS AND AREA APPROXIMATE (HIARNG 2002 AND USACE 2002)
(2) GOOGLE EARTH, 2022

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PROJECT TITLE:
WAIAWA UNIT TRAINING EQUIPMENT SITE (UTES)
HAWAII ARMY NATIONAL GUARD INSTALLATION
PEARL CITY, OAHU, HAWAII

FIGURE TITLE:
GROUNDWATER TOTAL PETROLEUM HYDROCARBONS AND POLYNUCLEAR AROMATIC HYDROCARBON EXCEEDANCES

DATE: SEP 2022

FIGURE NO.: 3-2

LEGEND:
- PROPERTY BOUNDARY
- SOIL BORING SAMPLING LOCATION
- BORING CONVERTED TO GROUNDWATER MONITORING WELL
- STORAGE TANK AREA OF POTENTIAL CONCERN
- OLD WASH RACK AREA OF POTENTIAL CONCERN
- NEW WASH RACK AREA OF POTENTIAL CONCERN
- GREASE RACK AREA OF POTENTIAL CONCERN

70' 0 70' 140'
SCALE: 1"=70'

66-INCH OUTFALL
28S
29S
WAIAWA STREAM
OLD WASH RACK AREA OF POTENTIAL CONCERN
30S
MW-8W
13B
UTES BOUNDARY
12-INCH OUTFALL (DECOMMISSIONED)
31S
MW-B7 (OUT OF SERVICE)
14B
DRY WELL SOIL REMOVAL IN 1994 TO 19 FT BGS
32S
28B
FORMER DRY WELL
SOIL REMOVAL 10-12 CUBIC YARDS (2000)
SOIL REMOVAL (2015)
6-INCH OUTFALL
33S
15B
MW-37B
19B
35S
MW-9W
22
OLD WASH RACK
22A
34S
BLDG 22
MW-B6 (OUT OF SERVICE)
16B
20B
22B
17B
18B
21B
NEW WASH RACK AREA OF POTENTIAL CONCERN
MW-36B
OWS
MW-B3
MW-10W
22C
24B
B-1/B-1A SEDIMENT
22B
MW-11W
23
23B
25B
S-2 SEDIMENT
MH-3 SEDIMENT
STORAGE TANK AREA OF POTENTIAL CONCERN
GREASE RACK AREA OF POTENTIAL CONCERN
BLDG 21
26B
MW-12W
WAIHONA STREET
27B
TRUE NORTH
SCALE:1"=70'

SAMPLE ID	YEAR	ANALYTE	CONCENTRATION
MW-B7/MW-37B	2011	NICKEL	5.8[J]

SAMPLE ID	YEAR	ANALYTE	CONCENTRATION
MW-9W	2006	SELENIUM	10[J]

SAMPLE ID	YEAR	ANALYTE	CONCENTRATION
MW-B6	2006	NICKEL	9.38

SAMPLE ID	YEAR	ANALYTE	CONCENTRATION
MW-36B	2011	MERCURY	0.05[J]
		NICKEL	8.8[J]

SAMPLE ID	YEAR	ANALYTE	CONCENTRATION
MW-B3	2011	MERCURY	0.1[J]

SAMPLE ID	YEAR	ANALYTE	CONCENTRATION
MW-10W	2006	SELENIUM	7.3[J]

NOTES:
(1) LOCATIONS ARE BASED ON AVAILABLE ENVIRONMENTAL SAMPLING REPORTS AND AREA APPROXIMATE (HIARNG 2002 AND USACE 2002)
(2) GOOGLE EARTH, 2022

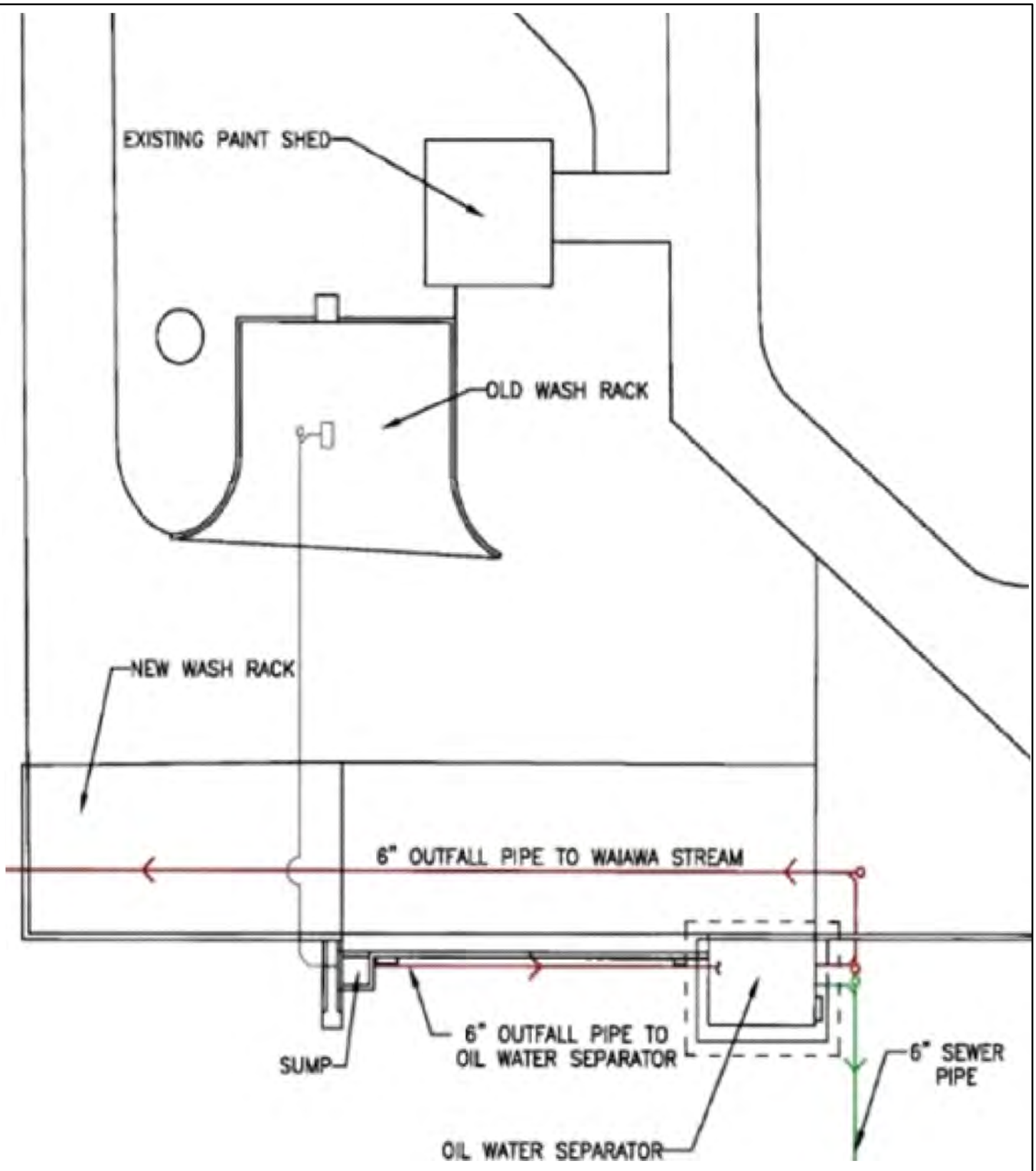
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PROJECT TITLE:
WAIAWA UNIT TRAINING EQUIPMENT SITE (UTES)
HAWAII ARMY NATIONAL GUARD INSTALLATION
PEARL CITY, OAHU, HAWAII

FIGURE TITLE:
GROUNDWATER METAL EXCEEDANCES

DATE: SEP 2022

FIGURE NO.: 3-3



TRUE NORTH
NOT TO SCALE

NOT TO SCALE

	DATE: SEP 2022	PROJECT TITLE: WAIAWA UNIT TRAINING EQUIPMENT SITE (UTES) HAWAII ARMY NATIONAL GUARD INSTALLATION PEARL CITY, OAHU, HAWAII
	FIGURE TITLE: 1993 SITE PLAN SHOWING 6" OUTFALL PIPE CONNECTIONS *Does not reflect current conditions	FIGURE NO.: 3-4

REFERENCES: USACE 2008

Appendix B

Surfer Summary Reports

[1]Tier 1 EAL SURFER SUMMARY REPORT
Hawai'i DOH (Fall 2017)

Site Name:	NASD Waiawa Gulch
Site Address:	96-1176 Waihona Street Pearl City, Hawaii, Oahu, Hawaii TMK: (1) 9-6-004: Parcel 015
Site ID Number:	
Date of EAL Search:	07/01/22

Selected Site Scenario	
Land Use:	Commercial/ Industrial Only
Groundwater Utility:	Drinking Water Resource
Distance To Nearest Surface Water Body:	< 150m

Selected Chemical of Concern:	**TPH (middle distillates)**

Input Site Concentrations	
Soil (mg/kg):	-
Groundwater (ug/L):	1690
Soil Vapor (ug/m^3):	-

Soil Environmental Hazards	**Units**	**Tier 1 Action Level**	**[2]Potential Hazard?**	**[3]Referenced Table**
Direct Exposure:	mg/kg	6.8E+02	-	Table I-2
Vapor Emissions To Indoor Air:	mg/kg	(Use soil gas)	-	Table C-1b
Terrestrial Ecotoxicity:	mg/kg	site-specific	-	Table L
Gross Contamination:	mg/kg	6.8E+02	-	Table F-2
Leaching (threat to groundwater):	mg/kg	9.4E+02	-	Table E-1
Background:	mg/kg	-		
Final Soil Tier 1 EAL:	**mg/kg**	**6.8E+02**		
	Basis:	**Direct Exposure**		

Groundwater Environmental Hazards	**Units**	**Tier 1 Action Level**	**[2]Potential Hazard?**	**[3]Referenced Table**
Drinking Water (Toxicity):	ug/L	4.0E+02	Yes	Table D-1a
Vapor Emissions To Indoor Air:	ug/L	(Use soil gas)	-	Table C-1a
Aquatic Ecotoxicity:	ug/L	6.4E+02	Yes	Table D-4a
Gross Contamination:	ug/L	5.0E+02	Yes	Table G-1
Final Groundwater Tier 1 EAL:	**ug/L**	**4.0E+02**		
	Basis:	**Drinking Water Toxicity**		

Other Tier 1 EALs:	**Units**	**EAL**	**[2]Potential Hazard?**	**[3]Referenced Table**
Shallow Soil Vapor:	ug/m^3	2.2E+06	-	Table C-2
Indoor Air:	ug/m^3	5.5E+02	-	Table C-3

Notes:

1. Include Surfer Summary Report in appendices of *Environmental Hazard Evaluation* (EHE) for contaminants that exceed Tier 1 EALs (refer to Chapter 3 of main text).
2. Environmental hazard could exist of concentration of contaminant exceeds action level.
3. Referenced tables presented in Appendix 1 of EHE guidance document.

HDOH 2017, Evaluation of Environmental Hazards at Sites with Contaminated Soil and Groundwater (Fall 2017): Hawai'i Department of Health, Hazard Evaluation and Emergency Response, http://hawaii.gov/health/environmental/hazard/index.html

[1]Tier 1 EAL SURFER SUMMARY REPORT
Hawai'i DOH (Fall 2017)

Site Name:	NASD Waiawa Gulch
Site Address:	96-1176 Waihona Street Pearl City, Hawaii, Oahu, Hawaii TMK: (1) 9-6-004: Parcel 015
Site ID Number:	
Date of EAL Search:	07/01/22

Selected Site Scenario	
Land Use:	Commercial/ Industrial Only
Groundwater Utility:	Drinking Water Resource
Distance To Nearest Surface Water Body:	< 150m

Selected Chemical of Concern:	**TPH (residual fuels)**

Input Site Concentrations	
Soil (mg/kg):	-
Groundwater (ug/L):	1070
Soil Vapor (ug/m^3):	-

Soil Environmental Hazards	**Units**	**Tier 1 Action Level**	**[2]Potential Hazard?**	**[3]Referenced Table**
Direct Exposure:	mg/kg	1.2E+05	-	Table I-2
Vapor Emissions To Indoor Air:	mg/kg	-	-	Table C-1b
Terrestrial Ecotoxicity:	mg/kg	site-specific	-	Table L
Gross Contamination:	mg/kg	2.5E+03	-	Table F-2
Leaching (threat to groundwater):	mg/kg	1.0E+03	-	Table E-1
Background:	mg/kg	-		
Final Soil Tier 1 EAL:	**mg/kg**	**1.0E+03**		
	Basis:	**Leaching**		

Groundwater Environmental Hazards	**Units**	**Tier 1 Action Level**	**[2]Potential Hazard?**	**[3]Referenced Table**
Drinking Water (Toxicity):	ug/L	2.4E+03	No	Table D-1a
Vapor Emissions To Indoor Air:	ug/L	-	-	Table C-1a
Aquatic Ecotoxicity:	ug/L	6.4E+02	Yes	Table D-4a
Gross Contamination:	ug/L	5.0E+02	Yes	Table G-1
Final Groundwater Tier 1 EAL:	**ug/L**	**5.0E+02**		
	Basis:	**Gross Contamination**		

Other Tier 1 EALs:	**Units**	**EAL**	**[2]Potential Hazard?**	**[3]Referenced Table**
Shallow Soil Vapor:	ug/m^3	-	-	Table C-2
Indoor Air:	ug/m^3	-	-	Table C-3

Notes:

1. Include Surfer Summary Report in appendices of *Environmental Hazard Evaluation* (EHE) for contaminants that exceed Tier 1 EALs (refer to Chapter 3 of main text).
2. Environmental hazard could exist of concentration of contaminant exceeds action level.
3. Referenced tables presented in Appendix 1 of EHE guidance document.

HDOH 2017, Evaluation of Environmental Hazards at Sites with Contaminated Soil and Groundwater (Fall 2017): Hawai'i Department of Health, Hazard Evaluation and Emergency Response, http://hawaii.gov/health/environmental/hazard/index.html

[1]Tier 1 EAL SURFER SUMMARY REPORT
Hawai'i DOH (Fall 2017)

Site Name: NASD Waiawa Gulch
Site Address: 96-1176 Waihona Street
Pearl City, Hawaii, Oahu, Hawaii
TMK: (1) 9-6-004: Parcel 015
Site ID Number:
Date of EAL Search: 07/01/22

Selected Site Scenario	
Land Use:	Commercial/ Industrial Only
Groundwater Utility:	Drinking Water Resource
Distance To Nearest Surface Water Body:	< 150m

Selected Chemical of Concern: **BENZO(a)ANTHRACENE**

Input Site Concentrations	
Soil (mg/kg):	-
Groundwater (ug/L):	0.053
Soil Vapor (ug/m^3):	-

Soil Environmental Hazards	Units	Tier 1 Action Level	[2]Potential Hazard?	[3]Referenced Table
Direct Exposure:	mg/kg	1.8E+02	-	Table I-2
Vapor Emissions To Indoor Air:	mg/kg	-	-	Table C-1b
Terrestrial Ecotoxicity:	mg/kg	site-specific	-	Table L
Gross Contamination:	mg/kg	1.0E+03	-	Table F-2
Leaching (threat to groundwater):	mg/kg	1.0E+01	-	Table E-1
Background:	mg/kg	-		
Final Soil Tier 1 EAL:	**mg/kg**	**1.0E+01**		
	Basis:	**Leaching**		

Groundwater Environmental Hazards	Units	Tier 1 Action Level	[2]Potential Hazard?	[3]Referenced Table
Drinking Water (Toxicity):	ug/L	2.9E-02	Yes	Table D-1a
Vapor Emissions To Indoor Air:	ug/L	-	-	Table C-1a
Aquatic Ecotoxicity:	ug/L	2.7E-02	Yes	Table D-4a
Gross Contamination:	ug/L	4.7E+00	No	Table G-1
Final Groundwater Tier 1 EAL:	**ug/L**	**2.7E-02**		
	Basis:	**Aquatic Ecotoxicity**		

Other Tier 1 EALs:	Units	EAL	[2]Potential Hazard?	[3]Referenced Table
Shallow Soil Vapor:	ug/m^3	8.2E+03	-	Table C-2
Indoor Air:	ug/m^3	2.0E+00	-	Table C-3

Notes:

1. Include Surfer Summary Report in appendices of *Environmental Hazard Evaluation* (EHE) for contaminants that exceed Tier 1 EALs (refer to Chapter 3 of main text).
2. Environmental hazard could exist of concentration of contaminant exceeds action level.
3. Referenced tables presented in Appendix 1 of EHE guidance document.

HDOH 2017, Evaluation of Environmental Hazards at Sites with Contaminated Soil and Groundwater (Fall 2017): Hawai'i Department of Health, Hazard Evaluation and Emergency Response, http://hawaii.gov/health/environmental/hazard/index.html

[1]Tier 1 EAL SURFER SUMMARY REPORT
Hawai'i DOH (Fall 2017)

Site Name:	NASD Waiawa Gulch
Site Address:	96-1176 Waihona Street Pearl City, Hawaii, Oahu, Hawaii TMK: (1) 9-6-004: Parcel 015
Site ID Number:	
Date of EAL Search:	07/01/22

Selected Site Scenario	
Land Use:	Commercial/ Industrial Only
Groundwater Utility:	Drinking Water Resource
Distance To Nearest Surface Water Body:	< 150m

Selected Chemical of Concern:	**BENZO(a)PYRENE**

Input Site Concentrations	
Soil (mg/kg):	-
Groundwater (ug/L):	0.83
Soil Vapor (ug/m^3):	-

Soil Environmental Hazards	**Units**	**Tier 1 Action Level**	**[2]Potential Hazard?**	**[3]Referenced Table**
Direct Exposure:	mg/kg	1.5E+01	-	Table I-2
Vapor Emissions To Indoor Air:	mg/kg	-	-	Table C-1b
Terrestrial Ecotoxicity:	mg/kg	site-specific	-	Table L
Gross Contamination:	mg/kg	1.0E+03	-	Table F-2
Leaching (threat to groundwater):	mg/kg	5.9E+00	-	Table E-1
Background:	mg/kg	-		
Final Soil Tier 1 EAL:	**mg/kg**	**5.9E+00**		
	Basis:	**Leaching**		

Groundwater Environmental Hazards	**Units**	**Tier 1 Action Level**	**[2]Potential Hazard?**	**[3]Referenced Table**
Drinking Water (Toxicity):	ug/L	2.0E-01	Yes	Table D-1a
Vapor Emissions To Indoor Air:	ug/L	-	-	Table C-1a
Aquatic Ecotoxicity:	ug/L	6.0E-02	Yes	Table D-4a
Gross Contamination:	ug/L	8.0E-01	Yes	Table G-1
Final Groundwater Tier 1 EAL:	**ug/L**	**6.0E-02**		
	Basis:	**Aquatic Ecotoxicity**		

Other Tier 1 EALs:	**Units**	**EAL**	**[2]Potential Hazard?**	**[3]Referenced Table**
Shallow Soil Vapor:	ug/m^3	-	-	Table C-2
Indoor Air:	ug/m^3	-	-	Table C-3

Notes:

1. Include Surfer Summary Report in appendices of *Environmental Hazard Evaluation* (EHE) for contaminants that exceed Tier 1 EALs (refer to Chapter 3 of main text).
2. Environmental hazard could exist of concentration of contaminant exceeds action level.
3. Referenced tables presented in Appendix 1 of EHE guidance document.

HDOH 2017, Evaluation of Environmental Hazards at Sites with Contaminated Soil and Groundwater (Fall 2017): Hawai'i Department of Health, Hazard Evaluation and Emergency Response, http://hawaii.gov/health/environmental/hazard/index.html

Appendix C

Laboratory Summary Tables

Table C1: Soil Sample Analytical Summary Table

Area of Potential Concern	HDOH Tier 1 EALs (mg/kg)	HDOH C/I EALs (mg/kg)	Fuel Storage Area of Potential Concern																			
Location Relative to AOPC			AOPC							Downgradient						Upgradient		Crossgradient				
Location Description			NE side of /Former UST	MH-3 Bottom	MH-3 North Pipe	Catch Basin	Adjacent to Former UST	West Corner of AST Facility		Southwest Corner of Loading Ramp		Southwest Corner of AST Facility		West of the Grease and Inspection Rack		East Corner of UTES		South Corner of UTES		West of AST Facility	
Year			1997	1997	1997	1997	2002	2006	2006	2006	2006	2006	2006	2006	2006	2006	2006	2006	2006	2006	2006	2006
Sample ID			B-1/B-1A	Field Number 4 (Sediment)	Field Number 4A (Sediment)	S-2 (Sediment)	B-1-12'	BH11W-2-5	BH11W-5-4	25B-2-4	25B-1-1	BH26-2-4	BH26-5-1	23B-1-1	23B-3-2	10W-2-4	10W-2-2	27B-2-5	27B-5-2	BH12W-2-4	12W-1-1
Depth (ft bgs)			Unknown				1-12	5.5-6	17-17.5	6-6.5	14-14.5	6-6.5	16.5-17	5.5-6	15-15.5	15-15.5	15.5-16	5.5-6	17-17.5	6-6.5	15-15.5
Total Petroleum Hydrocarbons (TPH) (mg/kg)																						
GRO [C5-C12]	**100**	**500**	4.5	---	---	---	ND<10	0.11J	0.072J	0.1J	0.072J	0.079J	0.066J	0.12J	0.092J	0.11J	0.061J	0.071J	0.074J	0.073J	0.056J
DRO [C10-C28]	**220**	**680**	ND<10	---	---	---	ND<10	ND<3.9	ND<3.7	ND<3.8	ND<3.9	4.9J	ND<3.8	7.19	7.02	9.19	ND<3.9	19.7	4J	8.59	ND<3.9
RRO [C28-C40]	**500**	**1,000**	---	---	---	---	ND<10	7.7J	6.7J	ND<6.7	ND<6.7	10J	6.7J	24.7	25.4	63.9	ND<6.7	119	7.6J	8.2J	ND<6.7
MBTEX (mg/kg)																						
Methyl tert-butyl ether	**0.028**	**0.028**	---	---	---	---	ND	ND<0.0048	ND<0.0048	ND<0.0048	ND<0.0048	ND<0.0048	ND<0.0048	ND<0.0048	ND<0.0048	ND<0.0048	ND<0.0048	ND<0.0048	ND<0.0048	ND<0.0048	ND<0.0048
Benzene	**0.3**	**0.3**	---	---	---	---	ND	ND<0.0034	ND<0.0034	ND<0.22	ND<0.22	ND<0.22	ND<0.22	ND<0.0034	ND<0.0034	ND<0.0034	ND<0.0034	ND<0.22	ND<0.22	ND<0.0034	ND<0.0034
Toluene	**0.78**	**0.78**	---	---	---	---	ND	ND<0.0063	ND<0.0063	ND<0.0063	ND<0.0063	ND<0.0063	ND<0.0063	0.00031J	ND<0.0063	ND<0.0063	ND<0.0063	ND<0.0063	ND<0.0063	ND<0.0063	ND<0.0063
Ethylbenzene	**0.9**	**0.9**	---	---	---	---	ND	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	0.0003J	ND<0.0012	ND<0.0012
Xylenes, total	**1.4**	**1.4**	---	---	---	---	ND	0.0011J	ND<0.0049	ND<0.0049	ND<0.0049	ND<0.0049	ND<0.0049	ND<0.049	ND<0.049	ND<0.0049	ND<0.0049	ND<0.0049	0.00063J	ND<0.0049	ND<0.0049
Volatile Organic Compounds (VOCs) (mg/kg)																						
1,1,1,2-Tetrachloroethane	**0.018**	**0.018**	---	---	---	---	ND	ND<0.00059	ND<0.00059	ND<0.00059	ND<0.00059	ND<0.00059	ND<0.00059	ND<0.00059	ND<0.00059	ND<0.00059	ND<0.00059	ND<0.00059	ND<0.00059	ND<0.00059	ND<0.00059
1,1,1-Trichloroethane	**1.2**	**1.2**	---	---	---	---	ND	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015
1,1,2,2-Tetrachloroethane	**0.0014**	**0.0014**	---	---	---	---	ND	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.00099	ND<0.00099	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002
1,1,2-Trichloroethane	**0.0089**	**0.062**	---	---	---	---	ND	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013	0.00046J	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013
1,1-Dichloroethane	**0.11**	**0.11**	---	---	---	---	ND	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011
1,1-Dichloroethene	**1.2**	**1.2**	---	---	---	---	ND	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011
1,2,3-Trichloropropane	**0.005**	**0.013**	---	---	---	---	ND	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0023	ND<0.0023	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0023	ND<0.0023
1,2,4-Trichlorobenzene	**0.18**	**1.4**	---	---	---	---	ND	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	0.00028J	ND<0.0015	ND<0.0015
1,2-Dibromo-3-Chloropropane	**0.00081**	**0.00081**	---	---	---	---	ND	ND<0.004	ND<0.004	ND<0.004	ND<0.004	ND<0.004	ND<0.004	ND<0.004	ND<0.004	ND<0.004	ND<0.004	ND<0.004	ND<0.004	ND<0.004	ND<0.004
1,2-Dibromoethane (EDB)	**0.00042**	**0.00042**	---	---	---	---	ND	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015
1,2-Dichlorobenzene	**0.75**	**0.75**	---	---	---	---	ND	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011
1,2-Dichloroethane	**0.023**	**0.07**	---	---	---	---	ND	ND<0.0021	ND<0.0021	ND<0.0021	ND<0.0021	ND<0.0021	ND<0.0021	ND<0.0021	ND<0.0021	ND<0.0021	ND<0.0021	ND<0.0021	ND<0.0021	ND<0.0021	ND<0.0021
1,2-Dichloropropane	**0.14**	**0.14**	---	---	---	---	ND	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013
1,3-Dichlorobenzene	**0.57**	**0.57**	---	---	---	---	ND	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	0.0003J	ND<0.0012	ND<0.0012
1,4-Dichlorobenzene	**0.055**	**0.39**	---	---	---	---	ND	ND<0.001	ND<0.001	ND<0.001	ND<0.001	ND<0.001	ND<0.001	ND<0.001	ND<0.001	ND<0.001	ND<0.001	ND<0.001	0.0003J	ND<0.001	ND<0.001
2-Butanone (MEK)	**6.2**	**6.2**	---	---	---	---	ND	0.0054J	ND<0.032	0.0044J	ND<0.032	ND<0.032	ND<0.032	ND<0.032	ND<0.032	ND<0.032	ND<0.032	ND<0.032	ND<0.032	ND<0.032	ND<0.032
4-Methyl-2-pentanone (MIBK)	**0.5**	**0.5**	---	---	---	---	ND	ND<0.025	ND<0.025	ND<0.025	ND<0.025	ND<0.025	ND<0.025	ND<0.025	ND<0.025	ND<0.025	ND<0.025	ND<0.025	ND<0.025	ND<0.025	ND<0.025
Acetone	**1**	**1**	---	---	---	---	0.038	0.026J	0.0096J	0.028J	ND<0.025	ND<0.025	ND<0.025	0.012J	0.0076J	ND<0.025	ND<0.025	ND<0.025	ND<0.025	ND<0.025	ND<0.025
Bromodichloromethane	**0.0025**	**0.0025**	---	---	---	---	ND	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0034	ND<0.0034	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015
Bromoform	**0.69**	**0.69**	---	---	---	---	ND	ND<0.0017	ND<0.0017	ND<0.0017	ND<0.0017	ND<0.0017	ND<0.0017	ND<0.0017	ND<0.0017	ND<0.0017	ND<0.0017	ND<0.0017	ND<0.0017	ND<0.0017	ND<0.0017
Bromomethane	**0.22**	**0.36**	---	---	---	---	ND	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015
Carbon tetrachloride	**0.1**	**0.73**	---	---	---	---	ND	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015
Chlorobenzene	**1.5**	**1.5**	---	---	---	---	ND	ND<0.00069	ND<0.00069	ND<0.00069	ND<0.00069	ND<0.00069	ND<0.00069	ND<0.00069	ND<0.00069	ND<0.00069	ND<0.00069	ND<0.00069	ND<0.00069	ND<0.00069	ND<0.00069
Chloroethane	**1.2**	**1.2**	---	---	---	---	ND	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016
Chloroform	**0.026**	**0.19**	---	---	---	---	0.018	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013	0.0055J	0.0041J	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013
Chloromethane	**4**	**11**	---	---	---	---	ND	ND<0.0014	ND<0.0014	ND<0.0014	ND<0.0014	ND<0.0014	ND<0.0014	ND<0.0014	ND<0.0014	ND<0.0014	ND<0.0014	ND<0.0014	ND<0.0014	ND<0.0014	ND<0.0014
cis-1,2-Dichloroethene	**0.36**	**2.2**	---	---	---	---	ND	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016
Dibromochloromethane	**0.0094**	**0.0094**	---	---	---	---	ND	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.011	ND<0.011	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012
Hexachlorobutadiene	**0.041**	**0.041**	---	---	---	---	ND	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002
Methylene Chloride	**0.12**	**0.12**	---	---	---	---	ND	0.00069J	0.00077J	0.00065J	0.0011J	0.00058J	0.00056J	0.0009J	0.0014J	ND<0.0029	ND<0.0029	0.00072J	0.00062J	ND<0.0029	ND<0.0029
Naphthalene	**3.1**	**3.1**	---	---	---	---	ND	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002	0.00059J	0.00034J	ND<0.002	ND<0.002
Styrene	**0.91**	**0.91**	---	---	---	---	ND	ND<0.00062	ND<0.00062	ND<0.00062	ND<0.00062	ND<0.00062	ND<0.00062	ND<0.00062	ND<0.00062	ND<0.00062	ND<0.00062	ND<0.00062	ND<0.00062	ND<0.00062	ND<0.00062
Tetrachloroethene	**0.1**	**0.64**	---	---	---	---	ND	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016
trans-1,2-Dichloroethene	**3.6**	**6.5**	---	---	---	---	ND	ND<0.001	ND<0.001	ND<0.001	ND<0.001	ND<0.001	ND<0.001	ND<0.001	ND<0.001	ND<0.001	ND<0.001	ND<0.001	ND<0.001	ND<0.001	ND<0.001
Trichloroethene	**0.089**	**0.36**	---	---	---	---	ND	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016
Vinyl chloride	**0.036**	**0.35**	---	---	---	---	ND	ND<0.0014	ND<0.0014	ND<0.0014	ND<0.0014	ND<0.0014	ND<0.0014	ND<0.0014	ND<0.0014	ND<0.0014	ND<0.0014	ND<0.0014	ND<0.0014	ND<0.039	ND<0.039
Polynuclear Aromatic Hydrocarbons (PAHs) (mg/kg)																						
Acenaphthene	**120**	**120**	---	---	---	---	---	ND<0.076	ND<0.076	0.0029J	ND<0.076	ND<0.076	ND<0.076	0.0043J	0.0042J	0.0037J	ND<0.076	ND<0.076	ND<0.076	ND<0.076	ND<0.076
Acenaphthylene	**5.5**	**5.5**	---	---	---	---	---	ND<0.066	ND<0.066	0.002J	ND<0.066	ND<0.066	ND<0.066	ND<0.066	ND<0.066	0.0027J	ND<0.066	ND<0.066	ND<0.066	ND<0.066	ND<0.066
Anthracene	**4.2**	**4.2**	---	---	---	---	---	0.00078J	0.00082J	0.0023J	0.00054J	0.00064J	0.0007J	0.0013J	0.0013J	0.003J	ND<0.052	ND<0.052	0.00067J	ND<0.052	0.00049J
Benzo(a)anthracene	**10**	**10**	---	---	---	---	---	0.0028J	0.0024J	0.0023J	0.0023J	0.0032J	0.0036J	0.0082	ND<0.036	0.0033J	ND<0.036	0.0042J	0.003J	0.0028J	ND<0.036
Benzo(a)pyrene	**3.6**	**5.9**	---	---	---	---	---	ND<0.034	0.00029J	ND<0.034	ND<0.034	0.00032J	0.00035J	0.023	0.0013J	0.00066J	ND<0.034	0.00054J	0.00043J	ND<0.034	ND<0.034
Benzo(b)fluoranthene	**11**	**68**	---	---	---	---	---	ND<0.041	ND<0.041	ND<0.041	ND<0.041	ND<0.041	ND<0.041	0.017	ND<0.041	ND<0.041	ND<0.041	ND<0.041	ND<0.041	ND<0.041	ND<0.041
Benzo(g,h,i)perylene	**35**	**35**	---	---	---	---	---	ND<0.09	0.0015J	ND<0.09	ND<0.09	0.0011J	ND<0.09	0.0262	ND<0.09	ND<0.09	ND<0.09	0.0032J	ND<0.09	0.0016J	ND<0.09
Benzo(k)fluoranthene	**39**	**39**	---	---	---	---	---	ND<0.049	ND<0.049	ND<0.049	ND<0.049	ND<0.049	ND<0.049	0.0115	ND<0.049	ND<0.049	ND<0.049	ND<0.049	ND<0.049	ND<0.049	ND<0.049
Chrysene	**30**	**30**	---	---	---	---	---	0.0032J	0.0026J	0.0026J	0.003J	0.0026J	0.0035J	0.0105	0.0035J	0.0037J	ND<0.028	0.0035J	0.0031J	ND<0.028	ND<0.028
Dibenz(a,h)anthracene	**1.1**	**18**	---	---	---	---	---	ND<0.086	ND<0.086	ND<0.086	ND<0.086	ND<0.086	ND<0.086	ND<0.086	ND<0.086	ND<0.086	ND<0.086	ND<0.086	ND<0.086	ND<0.086	ND<0.086

Table C1: Soil Sample Analytical Summary Table

Area of Potential Concern	HDOH Tier 1 EALs (mg/kg)	HDOH C/I EALs (mg/kg)	Fuel Storage Area of Potential Concern																			
Location Relative to AOPC			AOPC							Downgradient						Upgradient		Crossgradient				
Location Description			NE side of /Former UST	MH-3 Bottom	MH-3 North Pipe	Catch Basin	Adjacent to Former UST	West Corner of AST Facility		Southwest Corner of Loading Ramp		Southwest Corner of AST Facility		West of the Grease and Inspection Rack		East Corner of UTES		South Corner of UTES		West of AST Facility	
Year			1997	1997	1997	1997	2002	2006	2006	2006	2006	2006	2006	2006	2006	2006	2006	2006	2006	2006	2006	2006
Sample ID			B-1/B-1A	Field Number 4 (Sediment)	Field Number 4A (Sediment)	S-2 (Sediment)	B-1-12'	BH11W-2-5	BH11W-5-4	25B-2-4	25B-1-1	BH26-2-4	BH26-5-1	23B-1-1	23B-3-2	10W-2-4	10W-2-2	27B-2-5	27B-5-2	BH12W-2-4	12W-1-1
Depth (ft bgs)			Unknown				1-12	5.5-6	17-17.5	6-6.5	14-14.5	6-6.5	16.5-17	5.5-6	15-15.5	15-15.5	15.5-16	5.5-6	17-17.5	6-6.5	15-15.5
Fluoranthene	**87**	**87**	---	---	---	---	---	ND<0.071	ND<0.071	ND<0.071	ND<0.071	0.00066J	0.00054J	0.0148	ND<0.071	0.00066J	ND<0.071	0.00056J	ND<0.071	ND<0.071	ND<0.071
Fluorene	**93**	**93**	---	---	---	---	---	ND<0.078	ND<0.078	ND<0.078	ND<0.078	ND<0.078	ND<0.078	ND<0.078	ND<0.078	ND<0.078	ND<0.078	ND<0.078	ND<0.078	ND<0.078	ND<0.078
Indeno(1,2,3-cd)pyrene	**11**	**31**	---	---	---	---	---	ND<0.087	0.0015J	ND<0.087	0.0013J	ND<0.087	ND<0.087	0.0164	ND<0.087	ND<0.087	ND<0.087	ND<0.087	ND<0.087	ND<0.087	ND<0.087
Naphthalene	**3.1**	**3.1**	---	---	---	---	---	ND<0.078	ND<0.078	ND<0.078	ND<0.078	ND<0.078	ND<0.078	ND<0.078	ND<0.078	ND<0.078	ND<0.078	0.00095J	ND<0.078	ND<0.078	ND<0.078
Phenanthrene	**69**	**69**	---	---	---	---	---	0.00077J	0.0008J	ND<0.048	0.00051J	0.00063J	0.00069J	0.0043J	0.0013J	ND<0.048	0.00046J	0.0013J	0.00066J	0.00077J	0.00047J
Pyrene	**44**	**44**	---	---	---	---	---	ND<0.099	ND<0.099	0.00058J	ND<0.099	0.00053J	0.0005J	0.0148J	0.0048J	0.003J	ND<0.099	0.00045J	ND<0.099	ND<0.099	ND<0.099
Semi-Volatile Organic Compounds (SVOCs) (mg/kg) (SW-846 8270C)																						
1,2,4-Trichlorobenzene	**0.18**	**1.4**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1,2-Dichlorobenzene	**1.1**	**1.1**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1,3-Dichlorobenzene	**2.5**	**2.5**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1,4-Dichlorobenzene	**0.055**	**0.4**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2,3,4,6-Tetrachlorophenol	**0.056**	**0.056**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2,4,5-Trichlorophenol	**0.5**	**0.5**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2,4,6-Trichlorophenol	**0.31**	**0.31**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2,4-Dichlorophenol	**0.073**	**0.073**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2,4-Dimethylphenol	**9.8**	**9.8**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2,4-Dinitrophenol	**1.1**	**1.1**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2,4-Dinitrotoluene	**0.87**	**0.87**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2,6-Dinitrotoluene	**0.87**	**0.87**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2-Chlorophenol	**0.12**	**0.12**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2-Methylnaphthalene	**1.9**	**1.9**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
3-3'-Dichlorobenzidine	**1.2**	**2.4**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Acenaphthene	**120**	**120**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Acenaphthylene	**5.5**	**5.5**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Anthracene	**4.2**	**4.2**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Benzo(a)anthracene	**10**	**10**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Benzo(a)pyrene	**3.6**	**5.9**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Benzo(b)fluoranthene	**11**	**68**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Benzo(g,h,i)perylene	**35**	**35**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Benzo(k)fluoranthene	**39**	**39**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Bis(2-chloroethyl)ether	**0.004**	**0.004**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Bis(2-ethylhexyl)phthalate	**37**	**140**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Chrysene	**30**	**30**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Dibenzo(a,h)anthracene	**1.1**	**18**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Diethyl phthalate	**3.7**	**3.7**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Dimethyl phthalate	**26**	**26**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Fluoranthene	**87**	**87**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Fluorene	**93**	**93**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Hexachlorobenzene	**0.22**	**0.23**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Hexachlorobutadiene	**0.061**	**0.61**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Hexachloroethane	**0.68**	**0.68**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Indeno(1,2,3-cd)pyrene	**11**	**31**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Isophorone	**10**	**10**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Naphalene	**3.1**	**3.1**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Nitrobenzene	**5.6**	**14**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Pentachlorophenol	**0.78**	**0.78**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Phenanthrene	**69**	**69**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Phenol	**1.8**	**1.8**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Pyrene	**44**	**44**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Polychlorinated Biphenyls (PCBs) (mg/kg) (SW-846 8082)																						
PCBs, Total	**1.2**	**8.6**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Metals (mg/kg) (SW-846 3050B/6020B/6010B/7471A)																						
Arsenic	**24**	**95**	3.77	---	---	3.77	---	4.99	4.7J	6.09	5.71	5.5	4.2J	0.87J	0.83J	5.63	5.12	4.7J	5.11	5.31	5.08
Barium	**1,000**	**2,500**	---	---	---	---	---	99.8	71.8	113	18	73.6	57.9	67.5	213	55.9	58	235	46.4	43.5	96.2
Cadmium	**14**	**72**	**20.6**	---	---	**20.6**	---	11.4	7.33	9.2	10.5	9.67	7.5	1.6J	3.39	6.67	2.86	12.6	8.09	8.88	9.69
Chromium	**1,100**	**1,100**	284	---	---	284	---	**219	183	195	180	210	152	123	205	170	84.7	**246	191	194	176
Lead	**200**	**800**	166	---	---	166	ND<5	4.9J	1.3J	2.7J	1.3J	5.1J	2.7J	29.5	ND<0.018	0.81J	ND<0.018	6.4J	2.7J	3.1J	4.9J
Mercury	**4.7**	**61**	**265**	---	---	**265**	---	0.0032J	0.003J	0.0672	0.0016J	0.0015J	0.014J	0.042	0.03	0.0339	ND<0.074	0.0873	0.017J	0.0032J	0.0258
Nickel	**410**	**740**	---	---	---	---	---	125	111	115	129	106	93.9	85.8	333	125	97.3	103	91.1	113	82.5
Selenium	**78**	**1,000**	---	---	---	---	---	2.8J	3.3J	3.2J	2.4J	2.8J	2.1J	0.38J	0.84J	3.2J	3.1J	3.2J	2.5J	3.1J	2.4J
Silver	**78**	**1,000**	**476**	---	---	**476**	---	ND<0.16	ND<0.16	ND<0.16	ND<0.16	ND<0.16	ND<0.16	ND<0.16	ND<0.16	ND<0.16	ND<0.16	ND<0.16	ND<0.16	ND<0.16	ND<0.16
Zinc	**1,000**	**2,500**	---	---	---	---	---	119	67.5	62	61.6	67.7	56.9	96.4	216	62.5	28.9	124	72.7	52.7	88.6

Table C1: Soil Sample Analytical Summary Table

Area of Potential Concern	HDOH Tier 1 EALs (mg/kg)	HDOH C/I EALs (mg/kg)	Old Wash Rack Area of Potential Concern																	
Location Relative to AOPC			N/A						AOPC									Downgradient		
Location Description			Soil Bed A			Soil Bed B			Adjacent to the Old Wash Rack Used as a Former Waste Storage Location		Adjacent to the Former Dry Well		Northwest of the Former Dry Well	East of the Old Wash Rack		West of the Old Wash Rack		Adjacent to the Old Septic Tank and West of the 6" Outfall Pipe Break	Southwest of the AOPC	
Year			1993	1993	1993	1993	1993	1993	2002	2002	2002	2002	2006	2006	2006	2006	2006	2002	2006	2006
Sample ID			A-1	A-2	A-3	B-1	B-2	B-3	B-5-6'	B-5-12'	B-7-6'	B-7-12'	28B-1-1	14B-1-1	14B-4-1	9W-1-2	9W-4-2	B-6-12'	15B-1-1	15B-4-1
Depth (ft bgs)									5-6	5-12	5-6	7-12	5-5.5	5-5.5	17.5-18	9-9.5	17.5-18	6-12	5-5.5	17.5-18
Total Petroleum Hydrocarbons (TPH) (mg/kg)																				
GRO [C5-C12]	**100**	**500**	1	---	---	---	---	---	ND<10	12	ND<10	ND<10	0.0068J	0.095J	0.09J	0.12J	0.13J	ND<10	0.057J	0.071J
DRO [C10-C28]	**220**	**680**	---	---	---	---	---	---	ND<10	51	ND<10	ND<10	ND<3.9	ND<3.9	ND<3.9	ND<3.5	ND<3.7	ND<10	ND<3.6	ND<3.8
RRO [C28-C40]	**500**	**1,000**	ND<50	ND<50	ND<50	ND<50	ND<50	ND<50	ND<10	16	ND<10	ND<10	ND<6.7	ND<6.7	ND<6.7	ND<6.7	ND<6.7	ND<10	ND<6.7	ND<6.7
MBTEX (mg/kg)																				
Methyl tert-butyl ether	**0.028**	**0.028**	---	---	---	---	---	---	ND	ND	ND	ND	ND<0.0048	ND<0.0048	ND<0.0048	ND<0.0048	ND<0.0048	ND	ND<0.0048	ND<0.0048
Benzene	**0.3**	**0.3**	ND<0.005	---	---	---	---	---	ND	ND	ND	ND	ND<0.22	ND<0.0034	0.00046J	ND<0.0034	ND<0.0034	ND	ND<0.0034	ND<0.0034
Toluene	**0.78**	**0.78**	ND<0.005	---	---	---	---	---	ND	ND	ND	ND	ND<0.0063	0.0011J	ND<0.0063	ND<0.0063	ND<0.0063	ND	ND<0.0063	ND<0.0063
Ethylbenzene	**0.9**	**0.9**	0.01	---	---	---	---	---	ND	ND	ND	ND	ND<0.0012	0.00054J	ND<0.0012	ND<0.0012	ND<0.0012	ND	ND<0.0012	ND<0.0012
Xylenes, total	**1.4**	**1.4**	0.009	---	---	---	---	---	ND	ND	ND	ND	ND<0.0049	0.0013J	ND<0.0049	0.00092J	ND<0.0049	ND	ND<0.0049	ND<0.0049
Volatile Organic Compounds (VOCs) (mg/kg)																				
1,1,1,2-Tetrachloroethane	**0.018**	**0.018**	ND<0.005	---	---	---	---	---	ND	ND	ND	ND	ND<0.00059	ND<0.00059	ND<0.00059	ND<0.00059	ND<0.00059	ND	ND<0.00059	ND<0.00059
1,1,1-Trichloroethane	**1.2**	**1.2**	ND<0.005	---	---	---	---	---	ND	ND	ND	ND	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND	ND<0.0015	ND<0.0015
1,1,2,2-Tetrachloroethane	**0.0014**	**0.0014**	ND<0.005	---	---	---	---	---	ND	ND	ND	ND	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND	ND<0.002	ND<0.002
1,1,2-Trichloroethane	**0.0089**	**0.062**	---	---	---	---	---	---	ND	ND	ND	ND	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013	ND	ND<0.0013	ND<0.0013
1,1-Dichloroethane	**0.11**	**0.11**	ND<0.005	---	---	---	---	---	ND	ND	ND	ND	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND	ND<0.0011	ND<0.0011
1,1-Dichloroethene	**1.2**	**1.2**	ND<0.005	---	---	---	---	---	ND	ND	ND	ND	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND	ND<0.0011	ND<0.0011
1,2,3-Trichloropropane	**0.005**	**0.013**	---	---	---	---	---	---	ND	ND	ND	ND	ND<0.0015	ND<0.0023	ND<0.0023	ND<0.0015	ND<0.0015	ND	ND<0.0023	ND<0.0023
1,2,4-Trichlorobenzene	**0.18**	**1.4**	---	---	---	---	---	---	ND	ND	ND	ND	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND	ND<0.0015	ND<0.0015
1,2-Dibromo-3-Chloropropane	**0.00081**	**0.00081**	---	---	---	---	---	---	ND	ND	ND	ND	ND<0.004	ND<0.004	ND<0.004	ND<0.004	ND<0.004	ND	ND<0.004	ND<0.004
1,2-Dibromoethane (EDB)	**0.00042**	**0.00042**	ND<0.005	---	---	---	---	---	ND	ND	ND	ND	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND	ND<0.0015	ND<0.0015
1,2-Dichlorobenzene	**0.75**	**0.75**	ND<0.005	---	---	---	---	---	ND	ND	ND	ND	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND	ND<0.0011	ND<0.0011
1,2-Dichloroethane	**0.023**	**0.07**	ND<0.005	---	---	---	---	---	ND	ND	ND	ND	ND<0.0021	ND<0.0021	ND<0.0021	ND<0.0021	ND<0.0021	ND	ND<0.0021	ND<0.0021
1,2-Dichloropropane	**0.14**	**0.14**	ND<0.005	---	---	---	---	---	ND	ND	ND	ND	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013	ND	ND<0.0013	ND<0.0013
1,3-Dichlorobenzene	**0.57**	**0.57**	ND<0.005	---	---	---	---	---	ND	ND	ND	ND	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND	ND<0.0012	ND<0.0012
1,4-Dichlorobenzene	**0.055**	**0.39**	ND<0.005	---	---	---	---	---	ND	ND	ND	ND	ND<0.001	0.00029J	ND<0.001	ND<0.001	ND<0.001	ND	ND<0.001	ND<0.001
2-Butanone (MEK)	**6.2**	**6.2**	---	---	---	---	---	---	ND	ND	ND	ND	ND<0.032	0.0055J	ND<0.032	ND<0.032	0.0021J	ND	ND<0.032	ND<0.032
4-Methyl-2-pentanone (MIBK)	**0.5**	**0.5**	---	---	---	---	---	---	ND	ND	ND	ND	ND<0.025	ND<0.025	ND<0.025	ND<0.025	ND<0.025	ND	ND<0.025	ND<0.025
Acetone	**1**	**1**	---	---	---	---	---	---	ND	ND	ND	ND	0.00078J	0.019J	0.018J	ND<0.025	0.0075J	ND	ND<0.025	0.012J
Bromodichloromethane	**0.0025**	**0.0025**	ND<0.005	---	---	---	---	---	ND	ND	ND	ND	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND	ND<0.0015	ND<0.0015
Bromoform	**0.69**	**0.69**	ND<0.005	---	---	---	---	---	ND	ND	ND	ND	ND<0.0017	ND<0.0017	ND<0.0017	ND<0.0017	ND<0.0017	ND	ND<0.0017	ND<0.0017
Bromomethane	**0.22**	**0.36**	ND<0.005	---	---	---	---	---	ND	ND	ND	ND	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND	ND<0.0015	ND<0.0015
Carbon tetrachloride	**0.1**	**0.73**	ND<0.005	---	---	---	---	---	ND	ND	ND	ND	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND	ND<0.0015	ND<0.0015
Chlorobenzene	**1.5**	**1.5**	ND<0.005	---	---	---	---	---	ND	ND	ND	ND	ND<0.00069	ND<0.00069	ND<0.00069	ND<0.00069	ND<0.00069	ND	ND<0.00069	ND<0.00069
Chloroethane	**1.2**	**1.2**	ND<0.005	---	---	---	---	---	ND	ND	ND	ND	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND	ND<0.0016	ND<0.0016
Chloroform	**0.026**	**0.19**	ND<0.005	---	---	---	---	---	0.006	ND	0.006	ND	0.000093J	0.0013J	0.0027J	0.0212	0.0129	0.007	ND<0.0013	0.0049J
Chloromethane	**4**	**11**	---	---	---	---	---	---	ND	ND	ND	ND	ND<0.0014	ND<0.0014	ND<0.0014	ND<0.0014	ND<0.0014	ND	ND<0.0014	ND<0.0014
cis-1,2-Dichloroethene	**0.36**	**2.2**	ND<0.005	---	---	---	---	---	ND	ND	ND	ND	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND	ND<0.0016	ND<0.0016
Dibromochloromethane	**0.0094**	**0.0094**	ND<0.005	---	---	---	---	---	ND	ND	ND	ND	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND	ND<0.0012	ND<0.0012
Hexachlorobutadiene	**0.041**	**0.041**	---	---	---	---	---	---	ND	ND	ND	ND	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND	ND<0.002	ND<0.002
Methylene Chloride	**0.12**	**0.12**	---	---	---	---	---	---	ND	ND	ND	ND	ND<0.0029	ND<0.0029	0.014J	ND<0.0029	ND<0.0029	ND	0.00086J	ND<0.0029
Naphthalene	**3.1**	**3.1**	---	---	---	---	---	---	ND	ND	ND	ND	ND<0.002	0.0013J	ND<0.002	0.00074J	0.00046J	ND	0.00032J	ND<0.002
Styrene	**0.91**	**0.91**	---	---	---	---	---	---	ND	ND	ND	ND	ND<0.00062	ND<0.00062	ND<0.00062	ND<0.00062	ND<0.00062	ND	ND<0.00062	ND<0.00062
Tetrachloroethene	**0.1**	**0.64**	ND<0.005	---	---	---	---	---	ND	ND	ND	ND	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND	ND<0.0016	ND<0.0016
trans-1,2-Dichloroethene	**3.6**	**6.5**	---	---	---	---	---	---	ND	ND	ND	ND	ND<0.001	ND<0.001	ND<0.001	ND<0.001	ND<0.001	ND	ND<0.001	ND<0.001
Trichloroethene	**0.089**	**0.36**	ND<0.005	---	---	---	---	---	ND	ND	ND	ND	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND	ND<0.0016	ND<0.0016
Vinyl chloride	**0.036**	**0.35**	ND<0.01	---	---	---	---	---	ND	ND	ND	ND	ND<0.0014	ND<0.039	ND<0.039	ND<0.0014	ND<0.0014	ND	ND<0.039	ND<0.039
Polynuclear Aromatic Hydrocarbons (PAHs) (mg/kg)																				
Acenaphthene	**120**	**120**	ND<0.05	---	---	---	---	---	---	---	---	---	0.0043J	0.0042J	0.0042J	0.0041J	0.0041J	---	ND<0.076	0.0041J
Acenaphthylene	**5.5**	**5.5**	ND<0.05	---	---	---	---	---	---	---	---	---	ND<0.066	ND<0.066	ND<0.066	ND<0.066	ND<0.066	---	ND<0.066	ND<0.066
Anthracene	**4.2**	**4.2**	0.049	---	---	---	---	---	---	---	---	---	0.00066J	0.0023J	0.0022J	0.0019J	0.0022J	---	0.00062J	0.0016J
Benzo(a)anthracene	**10**	**10**	0.48	---	---	---	---	---	---	---	---	---	ND<0.036	ND<0.036	ND<0.036	ND<0.036	ND<0.036	---	0.0027J	ND<0.036
Benzo(a)pyrene	**3.6**	**5.9**	0.53	---	---	---	---	---	---	---	---	---	0.0017J	ND<0.034	ND<0.034	ND<0.034	ND<0.034	---	0.00059J	ND<0.034
Benzo(b)fluoranthene	**11**	**68**	0.55	---	---	---	---	---	---	---	---	---	ND<0.041	ND<0.041	ND<0.041	ND<0.041	ND<0.041	---	ND<0.041	ND<0.041
Benzo(g,h,i)perylene	**35**	**35**	0.53	---	---	---	---	---	---	---	---	---	ND<0.09	ND<0.09	ND<0.09	ND<0.09	ND<0.09	---	0.0014J	ND<0.09
Benzo(k)fluoranthene	**39**	**39**	0.28	---	---	---	---	---	---	---	---	---	ND<0.049	ND<0.049	ND<0.049	ND<0.049	ND<0.049	---	ND<0.049	ND<0.049
Chrysene	**30**	**30**	0.32	---	---	---	---	---	---	---	---	---	0.0046J	0.0033J	0.0032J	0.0035J	0.0034J	---	ND<0.028	0.0044J
Dibenz(a,h)anthracene	**1.1**	**18**	0.035	---	---	---	---	---	---	---	---	---	ND<0.086	ND<0.086	ND<0.086	ND<0.086	ND<0.086	---	0.0017J	ND<0.086

Table C1: Soil Sample Analytical Summary Table

Area of Potential Concern	HDOH Tier 1 EALs (mg/kg)	HDOH C/I EALs (mg/kg)	Old Wash Rack Area of Potential Concern																		
Location Relative to AOPC			N/A						AOPC									Downgradient			
Location Description			Soil Bed A			Soil Bed B			Adjacent to the Old Wash Rack Used as a Former Waste Storage Location		Adjacent to the Former Dry Well		Northwest of the Former Dry Well	East of the Old Wash Rack		West of the Old Wash Rack		Adjacent to the Old Septic Tank and West of the 6" Outfall Pipe Break	Southwest of the AOPC	
Year			1993	1993	1993	1993	1993	1993	2002	2002	2002	2002	2006	2006	2006	2006	2006	2002	2006	2006
Sample ID			A-1	A-2	A-3	B-1	B-2	B-3	B-5-6'	B-5-12'	B-7-6'	B-7-12'	28B-1-1	14B-1-1	14B-4-1	9W-1-2	9W-4-2	B-6-12'	15B-1-1	15B-4-1
Depth (ft bgs)									5-6	5-12	5-6	7-12	5-5.5	5-5.5	17.5-18	9-9.5	17.5-18	6-12	5-5.5	17.5-18
Fluoranthene	**87**	**87**	0.99	---	---	---	---	---	---	---	---	---	0.00066J	ND<0.071	ND<0.071	ND<0.071	ND<0.071	---	ND<0.071	ND<0.071
Fluorene	**93**	**93**	0.01	---	---	---	---	---	---	---	---	---	ND<0.078	ND<0.078	ND<0.078	ND<0.078	ND<0.078	---	ND<0.078	ND<0.078
Indeno(1,2,3-cd)pyrene	**11**	**31**	0.8	---	---	---	---	---	---	---	---	---	ND<0.087	ND<0.087	ND<0.087	ND<0.087	ND<0.087	---	0.0014J	ND<0.087
Naphthalene	**3.1**	**3.1**	ND<0.05	---	---	---	---	---	---	---	---	---	ND<0.078	ND<0.078	ND<0.078	ND<0.078	ND<0.078	---	ND<0.078	ND<0.078
Phenanthrene	**69**	**69**	0.32	---	---	---	---	---	---	---	---	---	0.0017J	0.00065J	0.0016J	0.00063J	0.0016J	---	0.00059J	0.0016J
Pyrene	**44**	**44**	0.86	---	---	---	---	---	---	---	---	---	0.00066J	0.0059J	0.0058J	0.0053J	0.0056J	---	ND<0.099	0.00063J
Semi-Volatile Organic Compounds (SVOCs) (mg/kg) (SW-846 8270C)																				
1,2,4-Trichlorobenzene	**0.18**	**1.4**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1,2-Dichlorobenzene	**1.1**	**1.1**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1,3-Dichlorobenzene	**2.5**	**2.5**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1,4-Dichlorobenzene	**0.055**	**0.4**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2,3,4,6-Tetrachlorophenol	**0.056**	**0.056**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2,4,5-Trichlorophenol	**0.5**	**0.5**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2,4,6-Trichlorophenol	**0.31**	**0.31**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2,4-Dichlorophenol	**0.073**	**0.073**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2,4-Dimethylphenol	**9.8**	**9.8**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2,4-Dinitrophenol	**1.1**	**1.1**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2,4-Dinitrotoluene	**0.87**	**0.87**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2,6-Dinitrotoluene	**0.87**	**0.87**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2-Chlorophenol	**0.12**	**0.12**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2-Methylnaphthalene	**1.9**	**1.9**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
3-3'-Dichlorobenzidine	**1.2**	**2.4**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Acenaphthene	**120**	**120**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Acenaphthylene	**5.5**	**5.5**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Anthracene	**4.2**	**4.2**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Benzo(a)anthracene	**10**	**10**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Benzo(a)pyrene	**3.6**	**5.9**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Benzo(b)fluoranthene	**11**	**68**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Benzo(g,h,i)perylene	**35**	**35**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Benzo(k)fluoranthene	**39**	**39**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Bis(2-chloroethyl)ether	**0.004**	**0.004**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Bis(2-ethylhexyl)phthalate	**37**	**140**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Chrysene	**30**	**30**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Dibenzo(a,h)anthracene	**1.1**	**18**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Diethyl phthalate	**3.7**	**3.7**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Dimethyl phthalate	**26**	**26**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Fluoranthene	**87**	**87**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Fluorene	**93**	**93**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Hexachlorobenzene	**0.22**	**0.23**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Hexachlorobutadiene	**0.061**	**0.61**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Hexachloroethane	**0.68**	**0.68**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Indeno(1,2,3-cd)pyrene	**11**	**31**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Isophorone	**10**	**10**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Naphalene	**3.1**	**3.1**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Nitrobenzene	**5.6**	**14**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Pentachlorophenol	**0.78**	**0.78**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Phenanthrene	**69**	**69**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Phenol	**1.8**	**1.8**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Pyrene	**44**	**44**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Polychlorinated Biphenyls (PCBs) (mg/kg) (SW-846 8082)																				
PCBs, Total	**1.2**	**8.6**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Metals (mg/kg) (SW-846 3050B/6020B/6010B/7471A)																				
Arsenic	**24**	**95**	---	---	---	---	---	---	---	---	---	---	0.57J	0.19J	0.27J	ND<0.27	0.2J	---	5.29	0.4J
Barium	**1,000**	**2,500**	---	---	---	---	---	---	---	---	---	---	69	65.8	63	5.3J	11.1	---	65.8	73.2
Cadmium	**14**	**72**	---	---	---	---	---	---	---	---	---	---	10.6	12.9	9.09	ND<0.014	8.52	---	7.89	8.92
Chromium	**1,100**	**1,100**	---	---	---	---	---	---	---	---	---	---	190	196	199	1.5J	**221	---	207	**305
Lead	**200**	**800**	---	---	---	---	---	---	9	17	8	8	6.6J	6.3J	3.9J	0.34J	5.3J	21	3.2J	5.2J
Mercury	**4.7**	**61**	---	---	---	---	---	---	---	---	---	---	0.02	0.067	0.021	0.033	0.021	---	0.073	ND<0.074
Nickel	**410**	**740**	---	---	---	---	---	---	---	---	---	---	147	142	101	1.2J	106	---	133	149
Selenium	**78**	**1,000**	---	---	---	---	---	---	---	---	---	---	0.59J	0.53J	0.21J	0.62J	0.33J	---	3.2J	0.38J
Silver	**78**	**1,000**	---	---	---	---	---	---	---	---	---	---	ND<0.16	ND<0.16	ND<0.16	0.58J	ND<0.16	---	ND<0.16	ND<0.16
Zinc	**1,000**	**2,500**	---	---	---	---	---	---	---	---	---	---	70.6	70.3	68.2	26.9	43.7	---	64	70.9

Table C1: Soil Sample Analytical Summary Table

Area of Potential Concern	HDOH Tier 1 EALs (mg/kg)	HDOH C/I EALs (mg/kg)	Old Wash Rack Area of Potential Concern									New Wash Rack Area of Potential Concern								
Location Relative to AOPC			Downgradient					Upgradient				AOPC								
Location Description			Southwest Corner of the UTES			South of the AOPC		Northeast of the AOPC		Northeast of the AOPC		Adjacent to the New Wash Rack	Adjacent to the Septic Tank and West of the 6" Outfall Pipe Break	West of the 6" Pipe Break			Northwest of the OWS			
Year			2006	2006	2006	2006	2006	2006	2006	2006	2006	2002	2002	2006	2006	2006	2006	2006	2006	2006
Sample ID			16B-1-1	16B-2-1	16B-4-2	17B-1-1	17B-3-2	13B-2-4	13B-4-1	8W-1-1	8W-3-3	B-4-12'	B-6-12'	16B-1-1	16B-2-1	16B-4-2	18B-1-1	18B-2-1	18B-2-6	18B-5-3
Depth (ft bgs)			5-5.5	10-10.5	17.5-18	5-5.5	14.5-15	5-5.5	15-15.5	5-5.5	15.25-15.75	4-12	6-12	5-5.5	10-10.5	17.5-18	5-5.5	10-10.5	5-5.5	17.75-18.25
Total Petroleum Hydrocarbons (TPH) (mg/kg)																				
GRO [C5-C12]	**100**	**500**	0.072J	0.078J	0.08J	0.056J	0.065J	0.066J	0.078J	0.062J	0.065J	ND<10	ND<10	0.072J	0.078J	0.08J	--	0.08J	0.077J	0.08J
DRO [C10-C28]	**220**	**680**	6.98	12.2	ND<3.8	ND<3.8	ND<3.8	ND<3.5	ND<3.6	9.67	ND<3.8	ND<10	ND<10	6.98	12.2	ND<3.8	--	ND<3.8	ND<3.9	ND<3.9
RRO [C28-C40]	**500**	**1,000**	17J	23.6	ND<6.7	ND<6.7	ND<6.7	ND<6.7	ND<6.7	83.3	7.8J	ND<10	ND<10	17J	23.6	ND<6.7	--	ND<6.7	ND<6.7	ND<6.7
MBTEX (mg/kg)																				
Methyl tert-butyl ether	**0.028**	**0.028**	ND<0.0048	ND<0.0048	ND<0.0048	ND<0.0048	ND<0.0048	ND<0.0048	ND<0.0048	ND<0.0048	ND<0.0048	ND	ND	ND<0.0048	ND<0.0048	ND<0.0048	--	ND<0.0048	ND<0.0048	ND<0.0048
Benzene	**0.3**	**0.3**	ND<0.0034	ND<0.0034	ND<0.0034	ND<0.0034	ND<0.0034	ND<0.0034	ND<0.0034	ND<0.0034	ND<0.0034	ND	ND	ND<0.0034	ND<0.0034	ND<0.0034	--	ND<0.0034	ND<0.0034	ND<0.0034
Toluene	**0.78**	**0.78**	ND<0.0063	ND<0.0063	ND<0.0063	ND<0.0063	ND<0.0063	ND<0.0063	ND<0.0063	0.0003J	ND<0.0063	ND	ND	ND<0.0063	ND<0.0063	ND<0.0063	--	ND<0.0063	ND<0.0063	ND<0.0063
Ethylbenzene	**0.9**	**0.9**	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND	ND	ND<0.0012	ND<0.0012	ND<0.0012	--	ND<0.0012	ND<0.0012	ND<0.0012
Xylenes, total	**1.4**	**1.4**	ND<0.0009	ND<0.0009	ND<0.0009	ND<0.0009	ND<0.0009	ND<0.0049	ND<0.0049	ND<0.0049	ND<0.0049	ND	ND	ND<0.0009	ND<0.0009	ND<0.0009	--	ND<0.0009	ND<0.0009	ND<0.0009
Volatile Organic Compounds (VOCs) (mg/kg)																				
1,1,1,2-Tetrachloroethane	**0.018**	**0.018**	ND<0.00059	ND<0.00059	ND<0.00059	ND<0.00059	ND<0.00059	ND<0.00059	ND<0.00059	ND<0.00059	ND<0.00059	ND	ND	ND<0.00059	ND<0.00059	ND<0.00059	--	ND<0.00059	ND<0.00059	ND<0.00059
1,1,1-Trichloroethane	**1.2**	**1.2**	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND	ND	ND<0.0015	ND<0.0015	ND<0.0015	--	ND<0.0015	ND<0.0015	ND<0.0015
1,1,2,2-Tetrachloroethane	**0.0014**	**0.0014**	ND<0.00099	ND<0.00099	ND<0.00099	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND	ND	ND<0.00099	ND<0.00099	ND<0.00099	--	ND<0.00099	ND<0.002	ND<0.00099
1,1,2-Trichloroethane	**0.0089**	**0.062**	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013	ND	ND	ND<0.0013	ND<0.0013	ND<0.0013	--	ND<0.0013	ND<0.0013	ND<0.0013
1,1-Dichloroethane	**0.11**	**0.11**	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND	ND	ND<0.0011	ND<0.0011	ND<0.0011	--	ND<0.0011	ND<0.0011	ND<0.0011
1,1-Dichloroethene	**1.2**	**1.2**	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND	ND	ND<0.0011	ND<0.0011	ND<0.0011	--	ND<0.0011	ND<0.0011	ND<0.0011
1,2,3-Trichloropropane	**0.005**	**0.013**	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0023	ND<0.0023	ND<0.0023	ND<0.0023	ND<0.0015	ND<0.0015	ND	ND	ND<0.0015	ND<0.0015	ND<0.0015	--	ND<0.0015	ND<0.0023	ND<0.0015
1,2,4-Trichlorobenzene	**0.18**	**1.4**	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND	ND	ND<0.0015	ND<0.0015	ND<0.0015	--	ND<0.0015	ND<0.0015	ND<0.0015
1,2-Dibromo-3-Chloropropane	**0.00081**	**0.00081**	ND<0.004	ND<0.004	ND<0.004	ND<0.004	ND<0.004	ND<0.004	ND<0.004	ND<0.004	ND<0.004	ND	ND	ND<0.004	ND<0.004	ND<0.004	--	ND<0.004	ND<0.004	ND<0.004
1,2-Dibromoethane (EDB)	**0.00042**	**0.00042**	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND	ND	ND<0.0015	ND<0.0015	ND<0.0015	--	ND<0.0015	ND<0.0015	ND<0.0015
1,2-Dichlorobenzene	**0.75**	**0.75**	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND	ND	ND<0.0011	ND<0.0011	ND<0.0011	--	ND<0.0011	ND<0.0011	ND<0.0011
1,2-Dichloroethane	**0.023**	**0.07**	ND<0.0021	ND<0.0021	ND<0.0021	ND<0.0021	ND<0.0021	ND<0.0021	ND<0.0021	ND<0.0021	ND<0.0021	ND	ND	ND<0.0021	ND<0.0021	ND<0.0021	--	ND<0.0021	ND<0.0021	ND<0.0021
1,2-Dichloropropane	**0.14**	**0.14**	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013	ND	ND	ND<0.0013	ND<0.0013	ND<0.0013	--	ND<0.0013	ND<0.0013	ND<0.0013
1,3-Dichlorobenzene	**0.57**	**0.57**	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND	ND	ND<0.0012	ND<0.0012	ND<0.0012	--	ND<0.0012	ND<0.0012	ND<0.0012
1,4-Dichlorobenzene	**0.055**	**0.39**	ND<0.001	ND<0.001	ND<0.001	ND<0.065	ND<0.065	ND<0.001	ND<0.001	ND<0.001	ND<0.001	ND	ND	ND<0.001	ND<0.001	ND<0.001	--	ND<0.001	ND<0.065	ND<0.001
2-Butanone (MEK)	**6.2**	**6.2**	ND<0.032	ND<0.032	ND<0.032	ND<0.032	ND<0.032	ND<0.032	0.01J	ND<0.032	ND<0.032	ND	ND	ND<0.032	ND<0.032	ND<0.032	--	ND<0.032	ND<0.032	ND<0.032
4-Methyl-2-pentanone (MIBK)	**0.5**	**0.5**	ND<0.025	ND<0.025	ND<0.025	ND<0.025	ND<0.025	ND<0.025	ND<0.025	ND<0.025	ND<0.025	ND	ND	ND<0.025	ND<0.025	ND<0.025	--	ND<0.025	ND<0.025	ND<0.025
Acetone	**1**	**1**	ND<0.025	ND<0.025	ND<0.025	ND<0.025	0.0065J	ND<0.025	ND<0.025	0.008J	0.007J	ND	ND	ND<0.025	ND<0.025	ND<0.025	--	ND<0.025	ND<0.025	ND<0.025
Bromodichloromethane	**0.0025**	**0.0025**	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND	ND	ND<0.0015	ND<0.0015	ND<0.0015	--	ND<0.0015	ND<0.0015	ND<0.0015
Bromoform	**0.69**	**0.69**	ND<0.0017	ND<0.0017	ND<0.0017	ND<0.0017	ND<0.0017	ND<0.0017	ND<0.0017	ND<0.0017	ND<0.0017	ND	ND	ND<0.0017	ND<0.0017	ND<0.0017	--	ND<0.0017	ND<0.0017	ND<0.0017
Bromomethane	**0.22**	**0.36**	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND	ND	ND<0.0015	ND<0.0015	ND<0.0015	--	ND<0.0015	ND<0.0015	ND<0.0015
Carbon tetrachloride	**0.1**	**0.73**	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND	ND	ND<0.0015	ND<0.0015	ND<0.0015	--	ND<0.0015	ND<0.0015	ND<0.0015
Chlorobenzene	**1.5**	**1.5**	ND<0.00069	ND<0.00069	ND<0.00069	ND<0.00069	ND<0.00069	ND<0.00069	ND<0.00069	ND<0.00069	ND<0.00069	ND	ND	ND<0.00069	ND<0.00069	ND<0.00069	--	ND<0.00069	ND<0.00069	ND<0.00069
Chloroethane	**1.2**	**1.2**	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND	ND	ND<0.0016	ND<0.0016	ND<0.0016	--	ND<0.0016	ND<0.0016	ND<0.0016
Chloroform	**0.026**	**0.19**	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013	0.0037J	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013	ND	0.007	ND<0.0013	ND<0.0013	ND<0.0013	--	ND<0.0013	ND<0.0013	ND<0.0013
Chloromethane	**4**	**11**	ND<0.0014	ND<0.0014	ND<0.0014	ND<0.0014	ND<0.0014	ND<0.0014	ND<0.0014	ND<0.0014	ND<0.0014	ND	ND	ND<0.0014	ND<0.0014	ND<0.0014	--	ND<0.0014	ND<0.0014	ND<0.0014
cis-1,2-Dichloroethene	**0.36**	**2.2**	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND	ND	ND<0.0016	ND<0.0016	ND<0.0016	--	ND<0.0016	ND<0.0016	ND<0.0016
Dibromochloromethane	**0.0094**	**0.0094**	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND	ND	ND<0.0012	ND<0.0012	ND<0.0012	--	ND<0.0012	ND<0.0012	ND<0.0012
Hexachlorobutadiene	**0.041**	**0.041**	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND	ND	ND<0.002	ND<0.002	ND<0.002	--	ND<0.002	ND<0.002	ND<0.002
Methylene Chloride	**0.12**	**0.12**	0.00096J	0.0011J	0.00095J	0.0011J	0.0011J	ND<0.0029	ND<0.0029	0.0006J	0.0008J	ND	ND	0.00096J	0.0011J	0.00095J	--	0.00084J	0.00078J	0.0012J
Naphthalene	**3.1**	**3.1**	ND<0.002	ND<0.002	ND<0.002	0.0003J	ND<0.002	ND<0.002	ND<0.002	0.0005J	0.0003J	ND	ND	ND<0.002	ND<0.002	ND<0.002	--	ND<0.002	ND<0.002	ND<0.002
Styrene	**0.91**	**0.91**	ND<0.00062	ND<0.00062	ND<0.00062	ND<0.00062	ND<0.00062	ND<0.00062	ND<0.00062	ND<0.00062	ND<0.00062	ND	ND	ND<0.00062	ND<0.00062	ND<0.00062	--	ND<0.00062	ND<0.00062	ND<0.00062
Tetrachloroethene	**0.1**	**0.64**	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND	ND	ND<0.0016	ND<0.0016	ND<0.0016	--	ND<0.0016	ND<0.0016	ND<0.0016
trans-1,2-Dichloroethene	**3.6**	**6.5**	ND<0.001	ND<0.001	ND<0.001	ND<0.001	ND<0.001	ND<0.001	ND<0.001	ND<0.001	ND<0.001	ND	ND	ND<0.001	ND<0.001	ND<0.001	--	ND<0.001	ND<0.001	ND<0.001
Trichloroethene	**0.089**	**0.36**	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND	ND	ND<0.0016	ND<0.0016	ND<0.0016	--	ND<0.0016	ND<0.0016	ND<0.0016
Vinyl chloride	**0.036**	**0.35**	ND<0.0014	ND<0.0014	ND<0.0014	ND<0.0014	ND<0.0014	ND<0.039	ND<0.039	ND<0.0014	ND<0.0014	ND	ND	ND<0.0014	ND<0.0014	ND<0.0014	--	ND<0.0014	ND<0.0014	ND<0.0014
Polynuclear Aromatic Hydrocarbons (PAHs) (mg/kg)																				
Acenaphthene	**120**	**120**	--	--	--	ND<0.076	0.0042J	ND<0.076	ND<0.076	0.043J	0.004J	---	---	--	--	--	--	--	ND<0.076	ND<0.076
Acenaphthylene	**5.5**	**5.5**	--	--	--	ND<0.066	ND<0.066	ND<0.066	ND<0.066	ND<0.066	ND<0.066	---	---	--	--	--	--	--	ND<0.066	ND<0.066
Anthracene	**4.2**	**4.2**	--	--	--	0.0006J	0.0013J	0.0008J	ND<0.052	0.039J	0.0034J	---	---	--	--	--	--	--	0.00067J	0.00053J
Benzo(a)anthracene	**10**	**10**	--	--	--	0.0025J	ND<0.036	ND<0.036	ND<0.036	0.016J	ND<0.036	---	---	--	--	--	--	--	0.0035J	0.0029J
Benzo(a)pyrene	**3.6**	**5.9**	--	--	--	0.00027J	ND<0.034	ND<0.034	ND<0.034	0.03J	0.0022J	---	---	--	--	--	--	--	0.00032J	ND<0.034
Benzo(b)fluoranthene	**11**	**68**	--	--	--	ND<0.041	ND<0.041	ND<0.041	ND<0.041	ND<0.041	ND<0.041	---	---	--	--	--	--	--	ND<0.041	ND<0.041
Benzo(g,h,i)perylene	**35**	**35**	--	--	--	ND<0.09	ND<0.09	ND<0.09	ND<0.09	0.02J	0.00093J	---	---	--	--	--	--	--	ND<0.09	ND<0.09
Benzo(k)fluoranthene	**39**	**39**	--	--	--	ND<0.049	ND<0.049	ND<0.049	ND<0.049	ND<0.049	ND<0.049	---	---	--	--	--	--	--	ND<0.049	ND<0.049
Chrysene	**30**	**30**	--	--	--	0.003J	0.0039J	0.0034J	0.0032J	0.046J	0.0056J	---	---	--	--	--	--	--	0.0031J	ND<0.028
Dibenz(a,h)anthracene	**1.1**	**18**	--	--	--	ND<0.086	ND<0.086	ND<0.086	ND<0.086	ND<0.086	ND<0.086	---	---	--	--	--	--	--	ND<0.086	ND<0.086

Table C1: Soil Sample Analytical Summary Table

Area of Potential Concern	HDOH Tier 1 EALs (mg/kg)	HDOH C/I EALs (mg/kg)	Old Wash Rack Area of Potential Concern									New Wash Rack Area of Potential Concern								
Location Relative to AOPC			Downgradient					Upgradient				AOPC								
Location Description			Southwest Corner of the UTES			South of the AOPC		Northeast of the AOPC		Northeast of the AOPC		Adjacent to the New Wash Rack	Adjacent to the Septic Tank and West of the 6" Outfall Pipe Break	West of the 6" Pipe Break			Northwest of the OWS			
Year			2006	2006	2006	2006	2006	2006	2006	2006	2006	2002	2002	2006	2006	2006	2006	2006	2006	2006
Sample ID			16B-1-1	16B-2-1	16B-4-2	17B-1-1	17B-3-2	13B-2-4	13B-4-1	8W-1-1	8W-3-3	B-4-12'	B-6-12'	16B-1-1	16B-2-1	16B-4-2	18B-1-1	18B-2-1	18B-2-6	18B-5-3
Depth (ft bgs)			5-5.5	10-10.5	17.5-18	5-5.5	14.5-15	5-5.5	15-15.5	5-5.5	15.25-15.75	4-12	6-12	5-5.5	10-10.5	17.5-18	5-5.5	10-10.5	5-5.5	17.75-18.25
Fluoranthene	**87**	**87**	--	--	--	ND<0.071	ND<0.071	ND<0.071	ND<0.071	0.02J	0.0012J	---	---	--	--	--	--	--	ND<0.071	ND<0.071
Fluorene	**93**	**93**	--	--	--	ND<0.078	ND<0.078	ND<0.078	ND<0.078	ND<0.078	ND<0.078	---	---	--	--	--	--	--	ND<0.078	ND<0.078
Indeno(1,2,3-cd)pyrene	**11**	**31**	--	--	--	ND<0.087	ND<0.087	ND<0.087	ND<0.087	ND<0.087	ND<0.087	---	---	--	--	--	--	--	ND<0.087	ND<0.087
Naphthalene	**3.1**	**3.1**	--	--	--	ND<0.078	ND<0.078	ND<0.078	ND<0.078	ND<0.078	ND<0.078	---	---	--	--	--	--	--	ND<0.078	ND<0.078
Phenanthrene	**69**	**69**	--	--	--	0.00057J	0.0013J	0.00079J	0.00055J	0.026J	0.0031J	---	---	--	--	--	--	--	0.00066J	0.0005J
Pyrene	**44**	**44**	--	--	--	0.0015J	0.0048J	ND<0.099	ND<0.099	0.03J	0.0025J	---	---	--	--	--	--	--	0.00027J	ND<0.099
Semi-Volatile Organic Compounds (SVOCs) (mg/kg) (SW-846 8270C)																				
1,2,4-Trichlorobenzene	**0.18**	**1.4**	ND<0.086	ND<0.086	ND<0.086	---	---	---	---	---	---	---	---	ND<0.086	ND<0.086	ND<0.086	ND<0.086	ND<0.086	---	ND<0.086
1,2-Dichlorobenzene	**1.1**	**1.1**	ND<0.083	ND<0.083	ND<0.083	---	---	---	---	---	---	---	---	ND<0.083	ND<0.083	ND<0.083	ND<0.083	ND<0.083	---	ND<0.083
1,3-Dichlorobenzene	**2.5**	**2.5**	ND<0.21	ND<0.21	ND<0.21	---	---	---	---	---	---	---	---	ND<0.21	ND<0.21	ND<0.21	ND<0.21	ND<0.21	---	ND<0.21
1,4-Dichlorobenzene	**0.055**	**0.4**	ND<0.2	ND<0.2	ND<0.2	---	---	---	---	---	---	---	---	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	---	ND<0.2
2,3,4,6-Tetrachlorophenol	**0.056**	**0.056**	ND<0.082	ND<0.082	ND<0.082	---	---	---	---	---	---	---	---	ND<0.082	ND<0.082	ND<0.082	ND<0.082	ND<0.082	---	ND<0.082
2,4,5-Trichlorophenol	**0.5**	**0.5**	ND<0.065	ND<0.065	ND<0.065	---	---	---	---	---	---	---	---	ND<0.065	ND<0.065	ND<0.065	ND<0.065	ND<0.065	---	ND<0.065
2,4,6-Trichlorophenol	**0.31**	**0.31**	ND<0.07	ND<0.07	ND<0.07	---	---	---	---	---	---	---	---	ND<0.07	ND<0.07	ND<0.07	ND<0.07	ND<0.07	---	ND<0.07
2,4-Dichlorophenol	**0.073**	**0.073**	ND<0.067	ND<0.067	ND<0.067	---	---	---	---	---	---	---	---	ND<0.067	ND<0.067	ND<0.067	ND<0.067	ND<0.067	---	ND<0.067
2,4-Dimethylphenol	**9.8**	**9.8**	ND<0.095	ND<0.095	ND<0.095	---	---	---	---	---	---	---	---	ND<0.095	ND<0.095	ND<0.095	ND<0.095	ND<0.095	---	ND<0.095
2,4-Dinitrophenol	**1.1**	**1.1**	ND<0.13	ND<0.13	ND<0.13	---	---	---	---	---	---	---	---	ND<0.13	ND<0.13	ND<0.13	ND<0.13	ND<0.13	---	ND<0.13
2,4-Dinitrotoluene	**0.87**	**0.87**	ND<0.076	ND<0.076	ND<0.076	---	---	---	---	---	---	---	---	ND<0.076	ND<0.076	ND<0.076	ND<0.076	ND<0.076	---	ND<0.076
2,6-Dinitrotoluene	**0.87**	**0.87**	ND<0.083	ND<0.083	ND<0.083	---	---	---	---	---	---	---	---	ND<0.083	ND<0.083	ND<0.083	ND<0.083	ND<0.083	---	ND<0.083
2-Chlorophenol	**0.12**	**0.12**	ND<0.079	ND<0.079	ND<0.079	---	---	---	---	---	---	---	---	ND<0.079	ND<0.079	ND<0.079	ND<0.079	ND<0.079	---	ND<0.079
2-Methylnaphthalene	**1.9**	**1.9**	ND<0.066	ND<0.066	ND<0.066	---	---	---	---	---	---	---	---	ND<0.066	ND<0.066	ND<0.066	ND<0.066	ND<0.066	---	ND<0.066
3-3'-Dichlorobenzidine	**1.2**	**2.4**	ND<0.15	ND<0.15	ND<0.15	---	---	---	---	---	---	---	---	ND<0.15	ND<0.15	ND<0.15	ND<0.048	ND<0.15	---	ND<0.15
Acenaphthene	**120**	**120**	ND<0.076	ND<0.076	ND<0.076	---	---	---	---	---	---	---	---	ND<0.076	ND<0.076	ND<0.076	ND<0.076	ND<0.076	---	ND<0.076
Acenaphthylene	**5.5**	**5.5**	ND<0.066	ND<0.066	ND<0.066	---	---	---	---	---	---	---	---	ND<0.066	ND<0.066	ND<0.066	ND<0.066	ND<0.066	---	ND<0.066
Anthracene	**4.2**	**4.2**	ND<0.052	ND<0.052	ND<0.052	---	---	---	---	---	---	---	---	ND<0.052	ND<0.052	ND<0.052	ND<0.052	ND<0.052	---	ND<0.052
Benzo(a)anthracene	**10**	**10**	ND<0.036	ND<0.036	ND<0.036	---	---	---	---	---	---	---	---	ND<0.036	ND<0.036	ND<0.036	ND<0.036	ND<0.036	---	ND<0.036
Benzo(a)pyrene	**3.6**	**5.9**	ND<0.034	ND<0.034	ND<0.034	---	---	---	---	---	---	---	---	ND<0.034	ND<0.034	ND<0.034	ND<0.034	ND<0.034	---	ND<0.034
Benzo(b)fluoranthene	**11**	**68**	ND<0.041	ND<0.041	ND<0.041	---	---	---	---	---	---	---	---	ND<0.041	ND<0.041	ND<0.041	ND<0.041	ND<0.041	---	ND<0.041
Benzo(g,h,i)perylene	**35**	**35**	ND<0.09	ND<0.09	ND<0.09	---	---	---	---	---	---	---	---	ND<0.09	ND<0.09	ND<0.09	ND<0.09	ND<0.09	---	ND<0.09
Benzo(k)fluoranthene	**39**	**39**	ND<0.049	ND<0.049	ND<0.049	---	---	---	---	---	---	---	---	ND<0.049	ND<0.049	ND<0.049	ND<0.049	ND<0.049	---	ND<0.049
Bis(2-chloroethyl)ether	**0.004**	**0.004**	ND<0.072	ND<0.072	ND<0.072	---	---	---	---	---	---	---	---	ND<0.072	ND<0.072	ND<0.072	ND<0.072	ND<0.072	---	ND<0.072
Bis(2-ethylhexyl)phthalate	**37**	**140**	ND<0.045	0.1J	ND<0.045	---	---	---	---	---	---	---	---	ND<0.045	0.1J	ND<0.045	ND<0.044	ND<0.045	---	ND<0.044
Chrysene	**30**	**30**	ND<0.028	ND<0.028	ND<0.028	---	---	---	---	---	---	---	---	ND<0.028	ND<0.028	ND<0.028	ND<0.028	ND<0.028	---	ND<0.028
Dibenzo(a,h)anthracene	**1.1**	**18**	ND<0.05	ND<0.05	ND<0.05	---	---	---	---	---	---	---	---	ND<0.05	ND<0.05	ND<0.05	ND<0.05	ND<0.05	---	ND<0.05
Diethyl phthalate	**3.7**	**3.7**	ND<0.076	ND<0.076	ND<0.076	---	---	---	---	---	---	---	---	ND<0.076	ND<0.076	ND<0.076	ND<0.076	ND<0.076	---	ND<0.076
Dimethyl phthalate	**26**	**26**	ND<0.075	ND<0.075	ND<0.075	---	---	---	---	---	---	---	---	ND<0.075	ND<0.075	ND<0.075	ND<0.075	ND<0.075	---	ND<0.075
Fluoranthene	**87**	**87**	ND<0.071	ND<0.071	ND<0.071	---	---	---	---	---	---	---	---	ND<0.071	ND<0.071	ND<0.071	ND<0.071	ND<0.071	---	ND<0.071
Fluorene	**93**	**93**	ND<0.078	ND<0.078	ND<0.078	---	---	---	---	---	---	---	---	ND<0.078	ND<0.078	ND<0.078	ND<0.078	ND<0.078	---	ND<0.078
Hexachlorobenzene	**0.22**	**0.23**	ND<0.058	ND<0.058	ND<0.058	---	---	---	---	---	---	---	---	ND<0.058	ND<0.058	ND<0.058	ND<0.058	ND<0.058	---	ND<0.058
Hexachlorobutadiene	**0.061**	**0.61**	ND<0.094	ND<0.094	ND<0.094	---	---	---	---	---	---	---	---	ND<0.094	ND<0.094	ND<0.094	ND<0.094	ND<0.094	---	ND<0.094
Hexachloroethane	**0.68**	**0.68**	ND<0.094	ND<0.094	ND<0.094	---	---	---	---	---	---	---	---	ND<0.094	ND<0.094	ND<0.094	ND<0.094	ND<0.094	---	ND<0.094
Indeno(1,2,3-cd)pyrene	**11**	**31**	ND<0.087	ND<0.087	ND<0.087	---	---	---	---	---	---	---	---	ND<0.087	ND<0.087	ND<0.087	ND<0.087	ND<0.087	---	ND<0.087
Isophorone	**10**	**10**	ND<0.065	ND<0.065	ND<0.065	---	---	---	---	---	---	---	---	ND<0.065	ND<0.065	ND<0.065	ND<0.065	ND<0.065	---	ND<0.065
Naphalene	**3.1**	**3.1**	ND<0.078	ND<0.078	ND<0.078	---	---	---	---	---	---	---	---	ND<0.078	ND<0.078	ND<0.078	ND<0.078	ND<0.078	---	ND<0.078
Nitrobenzene	**5.6**	**14**	ND<0.069	ND<0.069	ND<0.069	---	---	---	---	---	---	---	---	ND<0.069	ND<0.069	ND<0.069	ND<0.069	ND<0.069	---	ND<0.069
Pentachlorophenol	**0.78**	**0.78**	ND<0.053	ND<0.052	ND<0.053	---	---	---	---	---	---	---	---	ND<0.053	ND<0.052	ND<0.053	ND<0.04	ND<0.053	---	ND<0.054
Phenanthrene	**69**	**69**	ND<0.048	ND<0.048	ND<0.048	---	---	---	---	---	---	---	---	ND<0.048	ND<0.048	ND<0.048	ND<0.048	ND<0.048	---	ND<0.048
Phenol	**1.8**	**1.8**	ND<0.061	ND<0.061	ND<0.061	---	---	---	---	---	---	---	---	ND<0.061	ND<0.061	ND<0.061	ND<0.061	ND<0.061	---	ND<0.061
Pyrene	**44**	**44**	ND<0.099	ND<0.099	ND<0.099	---	---	---	---	---	---	---	---	ND<0.099	ND<0.099	ND<0.099	ND<0.099	ND<0.099	---	ND<0.099
Polychlorinated Biphenyls (PCBs) (mg/kg) (SW-846 8082)																				
PCBs, Total	**1.2**	**8.6**	ND<0.02	ND<0.02	ND<0.02	---	---	---	---	---	---	---	---	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.02	---	ND<0.02
Metals (mg/kg) (SW-846 3050B/6020B/6010B/7471A)																				
Arsenic	**24**	**95**	6.63	4J	5.71	4.2J	0.77J	5.92	5.66	2J	2.9J	---	---	6.63	4J	5.71	--	4.73	6.42	6.11
Barium	**1,000**	**2,500**	86.6	20.9	85.5	45.7	166	68.2	71.9	89.5	83.5	---	---	86.6	20.9	85.5	--	13.7	101	32.2
Cadmium	**14**	**72**	7.79	5.29	11.1	6.67	5.45	9.06	4.97	3.01	6.02	---	---	7.79	5.29	11.1	--	4.95	10.3	9.36
Chromium	**1,100**	**1,100**	189	135	**320	202	196	**216	159	87.4	155	---	---	189	135	**320	--	191	**292	**296
Lead	**200**	**800**	0.24J	1.5J	1.4J	2.8J	2.8J	2.9J	ND<0.018	2.7J	2.5J	7	21	0.24J	1.5J	1.4J	--	ND<0.018	1.4J	0.61J
Mercury	**4.7**	**61**	0.0274	0.013J	0.010J	0.016J	0.18	0.0231	0.014J	0.04	0.024	---	---	0.0274	0.013J	0.010J	--	0.0097J	0.016J	0.0046J
Nickel	**410**	**740**	135	68.6	134	107	221	111	112	159	102	---	---	135	68.6	134	--	58.4	159	118
Selenium	**78**	**1,000**	3.8J	2.2J	3.4J	2.8J	0.19J	3.6J	3.3J	1.2J	2.4J	---	---	3.8J	2.2J	3.4J	--	3.9J	3.6J	2.8J
Silver	**78**	**1,000**	ND<0.16	ND<0.16	ND<0.16	ND<0.16	ND<0.16	ND<0.16	ND<0.16	ND<0.16	ND<0.16	---	---	ND<0.16	ND<0.16	ND<0.16	--	ND<0.16	ND<0.16	ND<0.16
Zinc	**1,000**	**2,500**	65.5	50.9	67.6	51.4	49.1	56.4	46.4	45	50.8	---	---	65.5	50.9	67.6	--	83.6	94.1	75.4

Table C1: Soil Sample Analytical Summary Table

Area of Potential Concern	HDOH Tier 1 EALs (mg/kg)	HDOH C/I EALs (mg/kg)	New Wash Rack Area of Potential Concern																	Grease Rack Area of		
Location Relative to AOPC			AOPC			Upgradient														AOPC		
Location Description			Southeast of the OWS			East of the 6" Pipe Break		East of the AOPC						Southeast of the AOPC		Adjacent to the Grease Rack	Adjacent to the Former Dry Well			Adjacent to the Catch Basin where Neutralized Battery Acid was Dumped		
Year			2006	2006	2006	2006	2006	2006	2006	2006	2006	2006	2006	2006	2006	2002	2002	2002	2002	2006	2006	
Sample ID			21B-1-1	21B-2-2	21B-3-1	15B-1-1	15B-4-1	17B-1-1	17B-3-2	9W-1-2	9W-4-2	14B-1-1	14B-4-1	20B-1-1	20B-4-1	B-3-12'	B-7-6'	B-7-12'	B-2-12'	24B-2-4	24B-4-2	
Depth (ft bgs)			5-5.5	9.5-10	15-15.5	5-5.5	17.5-18	5-5.5	14.5-15	9-9.5	17.5-18	5-5.5	17.5-18	5-5.5	16.5-17	3-12	5-6	7-12	2-12	6-6.5	15-15.5	
Total Petroleum Hydrocarbons (TPH) (mg/kg)																						
GRO [C5-C12]	**100**	**500**	0.19J	0.085J	0.083J	0.057J	0.071J	0.056J	0.065J	0.12J	0.13J	0.095J	0.09J	0.069J	0.066J	ND<10	ND<10	ND<10	ND<10	0.13J	0.073J	
DRO [C10-C28]	**220**	**680**	4.4J	ND<3.9	ND<3.9	ND<3.6	ND<3.8	ND<3.8	ND<3.8	ND<3.5	ND<3.7	ND<3.9	ND<3.9	ND<3.6	4.3J	ND<10	ND<10	ND<10	ND<10	ND<3.9	ND<3.8	
RRO [C28-C40]	**500**	**1,000**	30.5	ND<6.7	ND<6.7	ND<6.7	ND<6.7	ND<6.7	ND<6.7	ND<6.7	ND<6.7	ND<6.7	ND<6.7	7.4J	8.9J	ND<10	ND<10	ND<10	ND<10	ND<6.7	ND<6.7	
MBTEX (mg/kg)																						
Methyl tert-butyl ether	**0.028**	**0.028**	ND<0.0048	ND<0.0048	ND<0.0048	ND<0.0048	ND<0.0048	ND<0.0048	ND<0.0048	ND<0.0048	ND<0.0048	ND<0.0048	ND<0.0048	ND<0.0048	ND<0.0048	ND	ND	ND	ND	ND<0.0048	ND<0.0048	
Benzene	**0.3**	**0.3**	ND<0.0034	ND<0.0034	ND<0.0034	ND<0.0034	ND<0.0034	ND<0.0034	ND<0.0034	ND<0.0034	ND<0.0034	ND<0.0034	0.00046J	ND<0.0034	ND<0.0034	ND	ND	ND	ND	ND<0.0034	ND<0.0034	
Toluene	**0.78**	**0.78**	0.00054J	ND<0.0063	ND<0.0063	ND<0.0063	ND<0.0063	ND<0.0063	ND<0.0063	ND<0.0063	ND<0.0063	0.0011J	ND<0.0063	ND<0.0063	ND<0.0063	ND	ND	ND	ND	ND<0.0063	ND<0.0063	
Ethylbenzene	**0.9**	**0.9**	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	0.00054J	ND<0.0012	ND<0.0012	ND<0.0012	ND	ND	ND	ND	ND<0.0012	ND<0.0012	
Xylenes, total	**1.4**	**1.4**	0.00097J	ND<0.049	ND<0.049	ND<0.0049	ND<0.0049	ND<0.0009	ND<0.0009	0.00092J	ND<0.0049	0.0013J	ND<0.0049	ND<0.0009	ND<0.0009	ND	ND	ND	ND	ND<0.049	ND<0.049	
Volatile Organic Compounds (VOCs) (mg/kg)																						
1,1,1,2-Tetrachloroethane	**0.018**	**0.018**	ND<0.00059	ND<0.00059	ND<0.00059	ND<0.00059	ND<0.00059	ND<0.00059	ND<0.00059	ND<0.00059	ND<0.00059	ND<0.00059	ND<0.00059	ND<0.00059	ND<0.00059	ND	ND	ND	ND	ND<0.00059	ND<0.00059	
1,1,1-Trichloroethane	**1.2**	**1.2**	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND	ND	ND	ND	ND<0.0015	ND<0.0015	
1,1,2,2-Tetrachloroethane	**0.0014**	**0.0014**	ND<0.002	ND<0.00099	ND<0.00099	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND	ND	ND	ND	ND<0.00099	ND<0.00099	
1,1,2-Trichloroethane	**0.0089**	**0.062**	ND<0.0013	0.00052J	0.00055J	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013	ND	ND	ND	ND	ND<0.0013	0.00043J	
1,1-Dichloroethane	**0.11**	**0.11**	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND	ND	ND	ND	ND<0.0011	ND<0.0011	
1,1-Dichloroethene	**1.2**	**1.2**	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND	ND	ND	ND	ND<0.0011	ND<0.0011	
1,2,3-Trichloropropane	**0.005**	**0.013**	ND<0.0023	ND<0.0023	ND<0.0023	ND<0.0023	ND<0.0023	ND<0.0023	ND<0.0023	ND<0.0015	ND<0.0015	ND<0.0023	ND<0.0023	ND<0.0023	ND<0.0023	ND	ND	ND	ND	ND<0.0023	ND<0.0023	
1,2,4-Trichlorobenzene	**0.18**	**1.4**	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	0.00032J	ND	ND	ND	ND	ND<0.0015	ND<0.0015	
1,2-Dibromo-3-Chloropropane	**0.00081**	**0.00081**	ND<0.004	ND<0.004	ND<0.004	ND<0.004	ND<0.004	ND<0.004	ND<0.004	ND<0.004	ND<0.004	ND<0.004	ND<0.004	ND<0.004	ND<0.004	ND	ND	ND	ND	ND<0.004	ND<0.004	
1,2-Dibromoethane (EDB)	**0.00042**	**0.00042**	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND	ND	ND	ND	ND<0.0015	ND<0.0015	
1,2-Dichlorobenzene	**0.75**	**0.75**	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND	ND	ND	ND	ND<0.0011	ND<0.0011	
1,2-Dichloroethane	**0.023**	**0.07**	ND<0.0021	ND<0.0021	ND<0.0021	ND<0.0021	ND<0.0021	ND<0.0021	ND<0.0021	ND<0.0021	ND<0.0021	ND<0.0021	ND<0.0021	ND<0.0021	ND<0.0021	ND	ND	ND	ND	ND<0.0021	ND<0.0021	
1,2-Dichloropropane	**0.14**	**0.14**	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013	ND	ND	ND	ND	ND<0.0013	ND<0.0013	
1,3-Dichlorobenzene	**0.57**	**0.57**	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND	ND	ND	ND	ND<0.0012	ND<0.0012	
1,4-Dichlorobenzene	**0.055**	**0.39**	ND<0.065	ND<0.001	ND<0.001	ND<0.001	ND<0.001	ND<0.065	ND<0.065	ND<0.001	ND<0.001	0.00029J	ND<0.001	ND<0.065	ND<0.065	ND	ND	ND	ND	ND<0.001	ND<0.001	
2-Butanone (MEK)	**6.2**	**6.2**	ND<0.0032	ND<0.032	ND<0.032	ND<0.032	ND<0.032	ND<0.032	ND<0.032	ND<0.032	ND<0.032	0.0021J	0.0055J	ND<0.032	0.0067J	ND<0.0032	ND	ND	ND	0.0059J	ND<0.032	
4-Methyl-2-pentanone (MIBK)	**0.5**	**0.5**	ND<0.025	ND<0.025	ND<0.025	ND<0.025	ND<0.025	ND<0.025	ND<0.025	ND<0.025	ND<0.025	ND<0.025	ND<0.025	ND<0.025	ND<0.025	ND	ND	ND	ND	ND<0.025	ND<0.025	
Acetone	**1**	**1**	0.011J	ND<0.025	ND<0.025	ND<0.025	0.012J	ND<0.025	0.0065J	ND<0.025	0.0075J	0.019J	0.018J	ND<0.025	ND<0.025	ND	ND	ND	ND	0.035J	0.0071J	
Bromodichloromethane	**0.0025**	**0.0025**	ND<0.0015	ND<0.0034	ND<0.0034	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND	ND	ND	ND	ND<0.0034	ND<0.0034	
Bromoform	**0.69**	**0.69**	ND<0.0017	ND<0.0017	ND<0.0017	ND<0.0017	ND<0.0017	ND<0.0017	ND<0.0017	ND<0.0017	ND<0.0017	ND<0.0017	ND<0.0017	ND<0.0017	ND<0.0017	ND	ND	ND	ND	ND<0.0017	ND<0.0017	
Bromomethane	**0.22**	**0.36**	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND	ND	ND	ND	ND<0.0015	ND<0.0015	
Carbon tetrachloride	**0.1**	**0.73**	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND	ND	ND	ND	ND<0.0015	ND<0.0015	
Chlorobenzene	**1.5**	**1.5**	ND<0.00069	ND<0.00069	ND<0.00069	ND<0.00069	ND<0.00069	ND<0.00069	ND<0.00069	ND<0.00069	ND<0.00069	ND<0.00069	ND<0.00069	ND<0.00069	ND<0.00069	ND	ND	ND	ND	ND<0.00069	ND<0.00069	
Chloroethane	**1.2**	**1.2**	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND	ND	ND	ND	ND<0.0016	ND<0.0016	
Chloroform	**0.026**	**0.19**	0.0044J	0.0062J	0.0050J	ND<0.0013	0.0049J	ND<0.0013	0.0037J	0.0212	0.0129	0.0013J	0.0027J	ND<0.0013	ND<0.0013	ND	0.006	ND	0.006	ND<0.0013	0.0037J	
Chloromethane	**4**	**11**	ND<0.0014	ND<0.0014	ND<0.0014	ND<0.0014	ND<0.0014	ND<0.0014	ND<0.0014	ND<0.0014	ND<0.0014	ND<0.0014	ND<0.0014	ND<0.0014	ND<0.0014	ND	ND	ND	ND	ND<0.0014	ND<0.0014	
cis-1,2-Dichloroethene	**0.36**	**2.2**	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND	ND	ND	ND	ND<0.0016	ND<0.0016	
Dibromochloromethane	**0.0094**	**0.0094**	ND<0.0012	ND<0.011	ND<0.011	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND	ND	ND	ND	ND<0.011	ND<0.011	
Hexachlorobutadiene	**0.041**	**0.041**	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND	ND	ND	ND	ND<0.002	ND<0.002	
Methylene Chloride	**0.12**	**0.12**	0.0017J	0.00094J	0.0011J	0.00086J	ND<0.0029	0.0011J	0.0011J	ND<0.0029	ND<0.0029	ND<0.0029	0.014J	ND<0.0029	ND<0.0029	ND	ND	ND	ND	0.00065J	0.001J	
Naphthalene	**3.1**	**3.1**	ND<0.002	ND<0.002	ND<0.002	0.00032J	ND<0.002	0.0003J	ND<0.002	0.00074J	0.00046J	0.0013J	ND<0.002	ND<0.002	0.001J	ND	ND	ND	ND	ND<0.002	ND<0.002	
Styrene	**0.91**	**0.91**	ND<0.00062	ND<0.00062	ND<0.00062	ND<0.00062	ND<0.00062	ND<0.00062	ND<0.00062	ND<0.00062	ND<0.00062	ND<0.00062	ND<0.00062	ND<0.00062	ND<0.00062	ND	ND	ND	ND	ND<0.00062	ND<0.00062	
Tetrachloroethene	**0.1**	**0.64**	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND	ND	ND	ND	ND<0.0016	ND<0.0016	
trans-1,2-Dichloroethene	**3.6**	**6.5**	ND<0.001	ND<0.001	ND<0.001	ND<0.001	ND<0.001	ND<0.001	ND<0.001	ND<0.001	ND<0.001	ND<0.001	ND<0.001	ND<0.001	ND<0.001	ND	ND	ND	ND	ND<0.001	ND<0.001	
Trichloroethene	**0.089**	**0.36**	0.00068J	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND	ND	ND	ND	ND<0.0016	ND<0.0016	
Vinyl chloride	**0.036**	**0.35**	ND<0.0014	ND<0.0014	ND<0.0014	ND<0.039	ND<0.039	ND<0.0014	ND<0.0014	ND<0.0014	ND<0.0014	ND<0.039	ND<0.039	ND<0.0014	ND<0.0014	ND	ND	ND	ND	ND<0.0014	ND<0.0014	
Polynuclear Aromatic Hydrocarbons (PAHs) (mg/kg)																						
Acenaphthene	**120**	**120**	0.004J	0.0043J	0.0042J	ND<0.076	0.0041J	ND<0.076	0.0042J	0.0041J	0.0041J	0.0042J	0.0042J	ND<0.076	ND<0.076	---	---	---	---	0.0032J	0.0041J	
Acenaphthylene	**5.5**	**5.5**	ND<0.066	ND<0.066	ND<0.066	ND<0.066	ND<0.066	ND<0.066	ND<0.066	ND<0.066	ND<0.066	ND<0.066	ND<0.066	ND<0.066	ND<0.066	---	---	---	---	0.0019J	ND<0.066	
Anthracene	**4.2**	**4.2**	0.0016J	0.0013J	0.0013J	0.00062J	0.0016J	0.0006J	0.0013J	0.0019J	0.0022J	0.0023J	0.0022J	0.0034J	ND<0.052	---	---	---	---	0.0022J	0.0013J	
Benzo(a)anthracene	**10**	**10**	ND<0.036	ND<0.036	ND<0.036	0.0027J	ND<0.036	0.0025J	ND<0.036	ND<0.036	ND<0.036	ND<0.036	ND<0.036	0.018J	0.0011J	---	---	---	---	0.0025J	ND<0.036	
Benzo(a)pyrene	**3.6**	**5.9**	0.0022J	ND<0.034	ND<0.034	0.00059J	ND<0.034	0.00027J	ND<0.034	ND<0.034	ND<0.034	ND<0.034	ND<0.034	0.0098J	0.0023J	---	---	---	---	0.00032J	ND<0.034	
Benzo(b)fluoranthene	**11**	**68**	ND<0.041	ND<0.041	ND<0.041	ND<0.041	ND<0.041	ND<0.041	ND<0.041	ND<0.041	ND<0.041	ND<0.041	ND<0.041	ND<0.041	ND<0.041	---	---	---	---	ND<0.041	ND<0.041	
Benzo(g,h,i)perylene	**35**	**35**	ND<0.09	ND<0.09	ND<0.09	0.0014J	ND<0.09	ND<0.09	ND<0.09	ND<0.09	ND<0.09	ND<0.09	ND<0.09	0.0078J	0.0019J	---	---	---	---	ND<0.09	ND<0.09	
Benzo(k)fluoranthene	**39**	**39**	ND<0.049	ND<0.049	ND<0.049	ND<0.049	ND<0.049	ND<0.049	ND<0.049	ND<0.049	ND<0.049	ND<0.049	ND<0.049	ND<0.049	ND<0.049	---	---	---	---	ND<0.049	ND<0.049	
Chrysene	**30**	**30**	0.0044J	0.0036J	0.0036J	ND<0.028	0.0044J	0.003J	0.0039J	0.0035J	0.0034J	0.0033J	0.0032J	0.0065J	0.0015J	---	---	---	---	0.0028J	0.0035J	
Dibenz(a,h)anthracene	**1.1**	**18**	ND<0.086	ND<0.086	ND<0.086	0.0017J	ND<0.086	ND<0.086	ND<0.086	ND<0.086	ND<0.086	ND<0.086	ND<0.086	ND<0.086	0.0022J	---	---	---	---	ND<0.086	ND<0.086	

Table C1: Soil Sample Analytical Summary Table

Area of Potential Concern	HDOH Tier 1 EALs (mg/kg)	HDOH C/I EALs (mg/kg)	New Wash Rack Area of Potential Concern																Grease Rack Area of		
Location Relative to AOPC			AOPC			Upgradient													AOPC		
Location Description			Southeast of the OWS			East of the 6" Pipe Break		East of the AOPC						Southeast of the AOPC		Adjacent to the Grease Rack	Adjacent to the Former Dry Well		Adjacent to the Catch Basin where Neutralized Battery Acid was Dumped		
Year			2006	2006	2006	2006	2006	2006	2006	2006	2006	2006	2006	2006	2006	2002	2002	2002	2002	2006	2006
Sample ID			21B-1-1	21B-2-2	21B-3-1	15B-1-1	15B-4-1	17B-1-1	17B-3-2	9W-1-2	9W-4-2	14B-1-1	14B-4-1	20B-1-1	20B-4-1	B-3-12'	B-7-6'	B-7-12'	B-2-12'	24B-2-4	24B-4-2
Depth (ft bgs)			5-5.5	9.5-10	15-15.5	5-5.5	17.5-18	5-5.5	14.5-15	9-9.5	17.5-18	5-5.5	17.5-18	5-5.5	16.5-17	3-12	5-6	7-12	2-12	6-6.5	15-15.5
Fluoranthene	**87**	**87**	0.00062J	ND<0.071	ND<0.071	ND<0.071	ND<0.071	ND<0.071	ND<0.071	ND<0.071	ND<0.071	ND<0.071	ND<0.071	0.0064J	0.0013J	---	---	---	---	ND<0.071	ND<0.071
Fluorene	**93**	**93**	ND<0.078	ND<0.078	ND<0.078	ND<0.078	ND<0.078	ND<0.078	ND<0.078	ND<0.078	ND<0.078	ND<0.078	ND<0.078	ND<0.078	ND<0.078	---	---	---	---	ND<0.078	ND<0.078
Indeno(1,2,3-cd)pyrene	**11**	**31**	ND<0.087	ND<0.087	ND<0.087	0.0014J	ND<0.087	ND<0.087	ND<0.087	ND<0.087	ND<0.087	ND<0.087	ND<0.087	ND<0.087	0.0015J	---	---	---	---	ND<0.087	ND<0.087
Naphthalene	**3.1**	**3.1**	ND<0.078	ND<0.078	ND<0.078	ND<0.078	ND<0.078	ND<0.078	ND<0.078	ND<0.078	ND<0.078	ND<0.078	ND<0.078	ND<0.078	ND<0.078	---	---	---	---	ND<0.078	ND<0.078
Phenanthrene	**69**	**69**	0.0016J	0.0031J	0.0013J	0.00059J	0.0016J	0.00057J	0.0013J	0.00063J	0.0016J	0.00065J	0.0016J	0.0033J	0.001J	---	---	---	---	ND<0.048	0.0013J
Pyrene	**44**	**44**	0.00062J	0.005J	0.0049J	ND<0.099	0.00063J	0.0015J	0.0048J	0.0053J	0.0056J	0.0059J	0.0058J	0.0046J	0.0017J	---	---	---	---	0.0025J	0.0051J
Semi-Volatile Organic Compounds (SVOCs) (mg/kg) (SW-846 8270C)																					
1,2,4-Trichlorobenzene	**0.18**	**1.4**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1,2-Dichlorobenzene	**1.1**	**1.1**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1,3-Dichlorobenzene	**2.5**	**2.5**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1,4-Dichlorobenzene	**0.055**	**0.4**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2,3,4,6-Tetrachlorophenol	**0.056**	**0.056**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2,4,5-Trichlorophenol	**0.5**	**0.5**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2,4,6-Trichlorophenol	**0.31**	**0.31**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2,4-Dichlorophenol	**0.073**	**0.073**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2,4-Dimethylphenol	**9.8**	**9.8**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2,4-Dinitrophenol	**1.1**	**1.1**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2,4-Dinitrotoluene	**0.87**	**0.87**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2,6-Dinitrotoluene	**0.87**	**0.87**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2-Chlorophenol	**0.12**	**0.12**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2-Methylnaphthalene	**1.9**	**1.9**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
3-3'-Dichlorobenzidine	**1.2**	**2.4**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Acenaphthene	**120**	**120**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Acenaphthylene	**5.5**	**5.5**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Anthracene	**4.2**	**4.2**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Benzo(a)anthracene	**10**	**10**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Benzo(a)pyrene	**3.6**	**5.9**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Benzo(b)fluoranthene	**11**	**68**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Benzo(g,h,i)perylene	**35**	**35**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Benzo(k)fluoranthene	**39**	**39**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Bis(2-chloroethyl)ether	**0.004**	**0.004**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Bis(2-ethylhexyl)phthalate	**37**	**140**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Chrysene	**30**	**30**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Dibenzo(a,h)anthracene	**1.1**	**18**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Diethyl phthalate	**3.7**	**3.7**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Dimethyl phthalate	**26**	**26**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Fluoranthene	**87**	**87**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Fluorene	**93**	**93**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Hexachlorobenzene	**0.22**	**0.23**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Hexachlorobutadiene	**0.061**	**0.61**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Hexachloroethane	**0.68**	**0.68**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Indeno(1,2,3-cd)pyrene	**11**	**31**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Isophorone	**10**	**10**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Naphalene	**3.1**	**3.1**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Nitrobenzene	**5.6**	**14**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Pentachlorophenol	**0.78**	**0.78**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Phenanthrene	**69**	**69**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Phenol	**1.8**	**1.8**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Pyrene	**44**	**44**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Polychlorinated Biphenyls (PCBs) (mg/kg) (SW-846 8082)																					
PCBs, Total	**1.2**	**8.6**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Metals (mg/kg) (SW-846 3050B/6020B/6010B/7471A)																					
Arsenic	**24**	**95**	0.95J	0.99J	1.4J	5.29	0.4J	4.2J	0.77J	ND<0.27	0.2J	0.19J	0.27J	4.88	4.56	---	---	---	---	5.02J	0.76J
Barium	**1,000**	**2,500**	30	135	8.7J	65.8	73.2	45.7	166	5.3J	11.1	65.8	63	81.6	48.2	---	---	---	---	64.6	76.7
Cadmium	**14**	**72**	0.28J	3.52	1J	7.89	8.92	6.67	5.45	ND<0.014	8.52	12.9	9.09	7.51	6.65	---	---	---	---	8.16	1.7J
Chromium	**1,100**	**1,100**	156	**267	**238	207	**305	202	196	1.5J	**221	196	199	159	160	---	---	---	---	176	137
Lead	**200**	**800**	ND<0.018	ND<0.018	ND<0.018	3.2J	5.2J	2.8J	2.8J		5.3J	6.3J	3.9J	2.8J	2.6J	12	8	8	12	2.8J	ND<0.018
Mercury	**4.7**	**61**	0.026	ND<0.074	ND<0.074	0.073	ND<0.074	0.016J	0.18	0.033	0.021	0.067	0.021	0.0312	0.0194	---	---	---	---	0.0517	ND<0.074
Nickel	**410**	**740**	152	178	252	133	149	107	221	1.2J	106	142	101	125	80.6	---	---	---	---	106	135
Selenium	**78**	**1,000**	0.35J	0.33J	0.12J	3.2J	0.38J	2.8J	0.19J	0.62J	0.33J	0.53J	0.21J	2.7J	2.4J	---	---	---	---	2.9J	0.18J
Silver	**78**	**1,000**	ND<0.16	ND<0.16	ND<0.16	ND<0.16	ND<0.16	ND<0.16	ND<0.16	0.58J	ND<0.16	ND<0.16	ND<0.16	ND<0.16	ND<0.16	---	---	---	---	ND<0.16	ND<0.16
Zinc	**1,000**	**2,500**	108	91.3	68.6	64	70.9	51.4	49.1	26.9	43.7	70.3	68.2	60.7	64.9	---	---	---	---	57.7	64.7

Table C1: Soil Sample Analytical Summary Table

Area of Potential Concern	HDOH Tier 1 EALs (mg/kg)	HDOH C/I EALs (mg/kg)	Grease Rack Area of Potential Concern																		
Location Relative to AOPC			AOPC	Downgradient												Upgradient						
Location Description			Adjacent to the North End of the Grease Rack	Southwest Corner of Loading Ramp		West of the Grease and Inspection Rack		Southeast of the OWS			Northwest of the OWS				Northeast Corner of the AST Facility	West Side of Building 22		West Corner of AST Facility		East Corner of UTES	
Year			2002	2006	2006	2006	2006	2006	2006	2006	2006	2006	2006	2006	2002	2006	2006	2006	2006	2006	2006
Sample ID			B-3-12'	25B-2-4	25B-1-1	23B-1-1	23B-3-2	21B-1-1	21B-2-2	21B-3-1	18B-1-1	18B-2-1	18B-2-6	18B-5-3	B-1-12'	22B-1-1	22B-4-1	BH11W-2-5	BH11W-5-4	10W-2-4	10W-2-2
Depth (ft bgs)			3-12	6-6.5	14-14.5	5.5-6	15-15.5	5-5.5	9.5-10	15-15.5	5-5.5	10-10.5	5-5.5	17.75-18.25	1-12	5-5.5	16.5-17	5.5-6	17-17.5	15-15.5	15.5-16
Total Petroleum Hydrocarbons (TPH) (mg/kg)																					
GRO [C5-C12]	**100**	**500**	ND<10	0.1J	0.072J	0.12J	0.092J	0.19J	0.085J	0.083J	--	0.08J	0.077J	0.08J	ND<10	0.18J	0.079J	0.11J	0.072J	0.11J	0.061J
DRO [C10-C28]	**220**	**680**	ND<10	ND<3.8	ND<3.9	7.19	7.02	4.4J	ND<3.9	ND<3.9	--	ND<3.8	ND<3.9	ND<3.9	ND<10	ND<3.9	ND<3.8	ND<3.9	ND<3.7	9.19	ND<3.9
RRO [C28-C40]	**500**	**1,000**	ND<10	ND<6.7	ND<6.7	24.7	25.4	30.5	ND<6.7	ND<6.7	--	ND<6.7	ND<6.7	ND<6.7	ND<10	ND<6.7	ND<6.7	7.7J	6.7J	63.9	ND<6.7
MBTEX (mg/kg)																					
Methyl tert-butyl ether	**0.028**	**0.028**	ND	ND<0.0048	ND<0.0048	ND<0.0048	ND<0.0048	ND<0.0048	ND<0.0048	ND<0.0048	--	ND<0.0048	ND<0.0048	ND<0.0048	ND	ND<0.0048	ND<0.0048	ND<0.0048	ND<0.0048	ND<0.0048	ND<0.0048
Benzene	**0.3**	**0.3**	ND	ND<0.22	ND<0.22	ND<0.0034	ND<0.0034	ND<0.0034	ND<0.0034	ND<0.0034	--	ND<0.0034	ND<0.0034	ND<0.0034	ND	0.0012J	ND<0.0034	ND<0.0034	ND<0.0034	ND<0.0034	ND<0.0034
Toluene	**0.78**	**0.78**	ND	ND<0.0063	ND<0.0063	0.00031J	ND<0.0063	0.00054J	ND<0.0063	ND<0.0063	--	ND<0.0063	ND<0.0063	ND<0.0063	ND	0.0019J	ND<0.0063	ND<0.0063	ND<0.0063	ND<0.0063	ND<0.0063
Ethylbenzene	**0.9**	**0.9**	ND	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	--	ND<0.0012	ND<0.0012	ND<0.0012	ND	0.00042J	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012
Xylenes, total	**1.4**	**1.4**	ND	ND<0.0049	ND<0.0049	ND<0.049	ND<0.049	0.00097J	ND<0.049	ND<0.049	--	ND<0.0009	ND<0.0009	ND<0.0009	ND	0.0013J	ND<0.049	0.0011J	ND<0.0049	ND<0.0049	ND<0.0049
Volatile Organic Compounds (VOCs) (mg/kg)																					
1,1,1,2-Tetrachloroethane	**0.018**	**0.018**	ND	ND<0.00059	ND<0.00059	ND<0.00059	ND<0.00059	ND<0.00059	ND<0.00059	ND<0.00059	--	ND<0.00059	ND<0.00059	ND<0.00059	ND	ND<0.00059	ND<0.00059	ND<0.00059	ND<0.00059	ND<0.00059	ND<0.00059
1,1,1-Trichloroethane	**1.2**	**1.2**	ND	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	--	ND<0.0015	ND<0.0015	ND<0.0015	ND	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015
1,1,2,2-Tetrachloroethane	**0.0014**	**0.0014**	ND	ND<0.002	ND<0.002	ND<0.00099	ND<0.00099	ND<0.002	ND<0.00099	ND<0.00099	--	ND<0.00099	ND<0.002	ND<0.00099	ND	ND<0.00099	ND<0.00099	ND<0.002	ND<0.002	ND<0.002	ND<0.002
1,1,2-Trichloroethane	**0.0089**	**0.062**	ND	ND<0.0013	ND<0.0013	0.00046J	ND<0.0013	ND<0.0013	0.00052J	0.00055J	--	ND<0.0013	ND<0.0013	ND<0.0013	ND	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013
1,1-Dichloroethane	**0.11**	**0.11**	ND	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	--	ND<0.0011	ND<0.0011	ND<0.0011	ND	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011
1,1-Dichloroethene	**1.2**	**1.2**	ND	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	--	ND<0.0011	ND<0.0011	ND<0.0011	ND	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011
1,2,3-Trichloropropane	**0.005**	**0.013**	ND	ND<0.0015	ND<0.0015	ND<0.0023	ND<0.0023	ND<0.0023	ND<0.0023	ND<0.0023	--	ND<0.0015	ND<0.0023	ND<0.0015	ND	ND<0.0023	ND<0.0023	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015
1,2,4-Trichlorobenzene	**0.18**	**1.4**	ND	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	--	ND<0.0015	ND<0.0015	ND<0.0015	ND	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015
1,2-Dibromo-3-Chloropropane	**0.00081**	**0.00081**	ND	ND<0.004	ND<0.004	ND<0.004	ND<0.004	ND<0.004	ND<0.004	ND<0.004	--	ND<0.004	ND<0.004	ND<0.004	ND	ND<0.004	ND<0.004	ND<0.004	ND<0.004	ND<0.004	ND<0.004
1,2-Dibromoethane (EDB)	**0.00042**	**0.00042**	ND	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	--	ND<0.0015	ND<0.0015	ND<0.0015	ND	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015
1,2-Dichlorobenzene	**0.75**	**0.75**	ND	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	--	ND<0.0011	ND<0.0011	ND<0.0011	ND	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011
1,2-Dichloroethane	**0.023**	**0.07**	ND	ND<0.0021	ND<0.0021	ND<0.0021	ND<0.0021	ND<0.0021	ND<0.0021	ND<0.0021	--	ND<0.0021	ND<0.0021	ND<0.0021	ND	ND<0.0021	ND<0.0021	ND<0.0021	ND<0.0021	ND<0.0021	ND<0.0021
1,2-Dichloropropane	**0.14**	**0.14**	ND	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013	--	ND<0.0013	ND<0.0013	ND<0.0013	ND	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013
1,3-Dichlorobenzene	**0.57**	**0.57**	ND	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	--	ND<0.0012	ND<0.0012	ND<0.0012	ND	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012
1,4-Dichlorobenzene	**0.055**	**0.39**	ND	ND<0.001	ND<0.001	ND<0.001	ND<0.001	ND<0.065	ND<0.001	ND<0.001	--	ND<0.001	ND<0.065	ND<0.001	ND	ND<0.001	ND<0.001	ND<0.001	ND<0.001	ND<0.001	ND<0.001
2-Butanone (MEK)	**6.2**	**6.2**	ND	0.0044J	ND<0.032	ND<0.032	ND<0.032	ND<0.0032	ND<0.032	ND<0.032	--	ND<0.032	ND<0.032	ND<0.032	ND	0.015J	ND<0.032	0.0054J	ND<0.032	ND<0.032	ND<0.032
4-Methyl-2-pentanone (MIBK)	**0.5**	**0.5**	ND	ND<0.025	ND<0.025	ND<0.025	ND<0.025	ND<0.025	ND<0.025	ND<0.025	--	ND<0.025	ND<0.025	ND<0.025	ND	ND<0.025	ND<0.025	ND<0.025	ND<0.025	ND<0.025	ND<0.025
Acetone	**1**	**1**	ND	0.028J	ND<0.025	0.012J	0.0076J	0.011J	ND<0.025	ND<0.025	--	ND<0.025	ND<0.025	ND<0.025	0.038	0.0696	ND<0.025	0.026J	0.0096J	ND<0.025	ND<0.025
Bromodichloromethane	**0.0025**	**0.0025**	ND	ND<0.0015	ND<0.0015	ND<0.0034	ND<0.0034	ND<0.0015	ND<0.0034	ND<0.0034	--	ND<0.0015	ND<0.0015	ND<0.0015	ND	ND<0.0034	ND<0.0034	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015
Bromoform	**0.69**	**0.69**	ND	ND<0.0017	ND<0.0017	ND<0.0017	ND<0.0017	ND<0.0017	ND<0.0017	ND<0.0017	--	ND<0.0017	ND<0.0017	ND<0.0017	ND	ND<0.0017	ND<0.0017	ND<0.0017	ND<0.0017	ND<0.0017	ND<0.0017
Bromomethane	**0.22**	**0.36**	ND	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	--	ND<0.0015	ND<0.0015	ND<0.0015	ND	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015
Carbon tetrachloride	**0.1**	**0.73**	ND	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	--	ND<0.0015	ND<0.0015	ND<0.0015	ND	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015
Chlorobenzene	**1.5**	**1.5**	ND	ND<0.00069	ND<0.00069	ND<0.00069	ND<0.00069	ND<0.00069	ND<0.00069	ND<0.00069	--	ND<0.00069	ND<0.00069	ND<0.00069	ND	ND<0.00069	ND<0.00069	ND<0.00069	ND<0.00069	ND<0.00069	ND<0.00069
Chloroethane	**1.2**	**1.2**	ND	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	--	ND<0.0016	ND<0.0016	ND<0.0016	ND	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016
Chloroform	**0.026**	**0.19**	ND	ND<0.0013	ND<0.0013	0.0055J	0.0041J	0.0044J	0.0062J	0.0050J	--	ND<0.0013	ND<0.0013	ND<0.0013	0.018	0.0038J	0.0033J	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013
Chloromethane	**4**	**11**	ND	ND<0.0014	ND<0.0014	ND<0.0014	ND<0.0014	ND<0.0014	ND<0.0014	ND<0.0014	--	ND<0.0014	ND<0.0014	ND<0.0014	ND	ND<0.0014	ND<0.0014	ND<0.0014	ND<0.0014	ND<0.0014	ND<0.0014
cis-1,2-Dichloroethene	**0.36**	**2.2**	ND	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	--	ND<0.0016	ND<0.0016	ND<0.0016	ND	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016
Dibromochloromethane	**0.0094**	**0.0094**	ND	ND<0.0012	ND<0.0012	ND<0.011	ND<0.011	ND<0.0012	ND<0.011	ND<0.011	--	ND<0.0012	ND<0.0012	ND<0.0012	ND	ND<0.011	ND<0.011	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012
Hexachlorobutadiene	**0.041**	**0.041**	ND	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002	--	ND<0.002	ND<0.002	ND<0.002	ND	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002
Methylene Chloride	**0.12**	**0.12**	ND	0.00065J	0.0011J	0.0009J	0.0014J	0.0017J	0.00094J	0.0011J	--	0.00084J	0.00078J	0.0012J	ND	ND<0.029	ND<0.029	0.00069J	0.00077J	ND<0.0029	ND<0.0029
Naphthalene	**3.1**	**3.1**	ND	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002	--	ND<0.002	ND<0.002	ND<0.002	ND	0.0011J	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002
Styrene	**0.91**	**0.91**	ND	ND<0.00062	ND<0.00062	ND<0.00062	ND<0.00062	ND<0.00062	ND<0.00062	ND<0.00062	--	ND<0.00062	ND<0.00062	ND<0.00062	ND	ND<0.00062	ND<0.00062	ND<0.00062	ND<0.00062	ND<0.00062	ND<0.00062
Tetrachloroethene	**0.1**	**0.64**	ND	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	--	ND<0.0016	ND<0.0016	ND<0.0016	ND	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016
trans-1,2-Dichloroethene	**3.6**	**6.5**	ND	ND<0.001	ND<0.001	ND<0.001	ND<0.001	ND<0.001	ND<0.001	ND<0.001	--	ND<0.001	ND<0.001	ND<0.001	ND	ND<0.001	ND<0.001	ND<0.001	ND<0.001	ND<0.001	ND<0.001
Trichloroethene	**0.089**	**0.36**	ND	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	0.00068J	ND<0.0016	ND<0.0016	--	ND<0.0016	ND<0.0016	ND<0.0016	ND	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016
Vinyl chloride	**0.036**	**0.35**	ND	ND<0.0014	ND<0.0014	ND<0.0014	ND<0.0014	ND<0.0014	ND<0.0014	ND<0.0014	--	ND<0.0014	ND<0.0014	ND<0.0014	ND	ND<0.0014	ND<0.0014	ND<0.0014	ND<0.0014	ND<0.0014	ND<0.0014
Polynuclear Aromatic Hydrocarbons (PAHs) (mg/kg)																					
Acenaphthene	**120**	**120**	---	0.0029J	ND<0.076	0.0043J	0.0042J	0.004J	0.0043J	0.0042J	--	--	ND<0.076	ND<0.076	---	0.0041J	0.0038J	ND<0.076	ND<0.076	0.0037J	ND<0.076
Acenaphthylene	**5.5**	**5.5**	---	0.002J	ND<0.066	ND<0.066	ND<0.066	ND<0.066	ND<0.066	ND<0.066	--	--	ND<0.066	ND<0.066	---	ND<0.066	ND<0.066	ND<0.066	ND<0.066	0.0027J	ND<0.066
Anthracene	**4.2**	**4.2**	---	0.0023J	0.00054J	0.0013J	0.0013J	0.0016J	0.0013J	0.0013J	--	--	0.00067J	0.00053J	---	0.0019J	0.0019J	0.00078J	0.00082J	0.003J	ND<0.052
Benzo(a)anthracene	**10**	**10**	---	0.0023J	0.0023J	0.0082	ND<0.036	ND<0.036	ND<0.036	ND<0.036	--	--	0.0035J	0.0029J	---	ND<0.036	ND<0.036	0.0028J	0.0024J	0.0033J	ND<0.036
Benzo(a)pyrene	**3.6**	**5.9**	---	ND<0.034	ND<0.034	0.023	0.0013J	0.0022J	ND<0.034	ND<0.034	--	--	0.00032J	ND<0.034	---	ND<0.034	ND<0.034	ND<0.034	0.00029J	0.00066J	ND<0.034
Benzo(b)fluoranthene	**11**	**68**	---	ND<0.041	ND<0.041	0.017	ND<0.041	ND<0.041	ND<0.041	ND<0.041	--	--	ND<0.041	ND<0.041	---	ND<0.041	ND<0.041	ND<0.041	ND<0.041	ND<0.041	ND<0.041
Benzo(g,h,i)perylene	**35**	**35**	---	ND<0.09	ND<0.09	0.0262	ND<0.09	ND<0.09	ND<0.09	ND<0.09	--	--	ND<0.09	ND<0.09	---	ND<0.09	ND<0.09	ND<0.09	0.0015J	ND<0.09	ND<0.09
Benzo(k)fluoranthene	**39**	**39**	---	ND<0.049	ND<0.049	0.0115	ND<0.049	ND<0.049	ND<0.049	ND<0.049	--	--	ND<0.049	ND<0.049	---	ND<0.049	ND<0.049	ND<0.049	ND<0.049	ND<0.049	ND<0.049
Chrysene	**30**	**30**	---	0.0026J	0.003J	0.0105	0.0035J	0.0044J	0.0036J	0.0036J	--	--	0.0031J	ND<0.028	---	0.0032J	0.0032J	0.0032J	0.0026J	0.0037J	ND<0.028
Dibenz(a,h)anthracene	**1.1**	**18**	---	ND<0.086	ND<0.086	ND<0.086	ND<0.086	ND<0.086	ND<0.086	ND<0.086	--	--	ND<0.086	ND<0.086	---	ND<0.086	ND<0.086	ND<0.086	ND<0.086	ND<0.086	ND<0.086

Table C1: Soil Sample Analytical Summary Table

Area of Potential Concern	HDOH Tier 1 EALs (mg/kg)	HDOH C/I EALs (mg/kg)	Grease Rack Area of Potential Concern																		
Location Relative to AOPC			AOPC	Downgradient												Upgradient						
Location Description			Adjacent to the North End of the Grease Rack	Southwest Corner of Loading Ramp		West of the Grease and Inspection Rack		Southeast of the OWS			Northwest of the OWS					Northeast Corner of the AST Facility	West Side of Building 22		West Corner of AST Facility		East Corner of UTES	
Year			2002	2006	2006	2006	2006	2006	2006	2006	2006	2006	2006	2006		2002	2006	2006	2006	2006	2006	2006
Sample ID			B-3-12'	25B-2-4	25B-1-1	23B-1-1	23B-3-2	21B-1-1	21B-2-2	21B-3-1	18B-1-1	18B-2-1	18B-2-6	18B-5-3		B-1-12'	22B-1-1	22B-4-1	BH11W-2-5	BH11W-5-4	10W-2-4	10W-2-2
Depth (ft bgs)			3-12	6-6.5	14-14.5	5.5-6	15-15.5	5-5.5	9.5-10	15-15.5	5-5.5	10-10.5	5-5.5	17.75-18.25		1-12	5-5.5	16.5-17	5.5-6	17-17.5	15-15.5	15.5-16
Fluoranthene	**87**	**87**	---	ND<0.071	ND<0.071	0.0148	ND<0.071	0.00062J	ND<0.071	ND<0.071	--	--	ND<0.071	ND<0.071		---	ND<0.071	ND<0.071	ND<0.071	ND<0.071	0.00066J	ND<0.071
Fluorene	**93**	**93**	---	ND<0.078	ND<0.078	ND<0.078	ND<0.078	ND<0.078	ND<0.078	ND<0.078	--	--	ND<0.078	ND<0.078		---	ND<0.078	ND<0.078	ND<0.078	ND<0.078	ND<0.078	ND<0.078
Indeno(1,2,3-cd)pyrene	**11**	**31**	---	ND<0.087	0.0013J	0.0164	ND<0.087	ND<0.087	ND<0.087	ND<0.087	--	--	ND<0.087	ND<0.087		---	ND<0.087	ND<0.087	ND<0.087	0.0015J	ND<0.087	ND<0.087
Naphthalene	**3.1**	**3.1**	---	ND<0.078	ND<0.078	ND<0.078	ND<0.078	ND<0.078	ND<0.078	ND<0.078	--	--	ND<0.078	ND<0.078		---	ND<0.078	ND<0.078	ND<0.078	ND<0.078	ND<0.078	ND<0.078
Phenanthrene	**69**	**69**	---	ND<0.048	0.00051J	0.0043J	0.0013J	0.0016J	0.0031J	0.0013J	--	--	0.00066J	0.0005J		---	0.0013J	0.00063J	0.00077J	0.0008J	ND<0.048	0.00046J
Pyrene	**44**	**44**	---	0.00058J	ND<0.099	0.0148J	0.0048J	0.00062J	0.005J	0.0049J	--	--	0.00027J	ND<0.099		---	0.0054J	0.0054J	ND<0.099	ND<0.099	0.003J	ND<0.099
Semi-Volatile Organic Compounds (SVOCs) (mg/kg) (SW-846 8270C)																						
1,2,4-Trichlorobenzene	**0.18**	**1.4**	---	---	---	---	---	---	---	---	ND<0.086	ND<0.086	---	ND<0.086		---	---	---	---	---	---	---
1,2-Dichlorobenzene	**1.1**	**1.1**	---	---	---	---	---	---	---	---	ND<0.083	ND<0.083	---	ND<0.083		---	---	---	---	---	---	---
1,3-Dichlorobenzene	**2.5**	**2.5**	---	---	---	---	---	---	---	---	ND<0.21	ND<0.21	---	ND<0.21		---	---	---	---	---	---	---
1,4-Dichlorobenzene	**0.055**	**0.4**	---	---	---	---	---	---	---	---	ND<0.2	ND<0.2	---	ND<0.2		---	---	---	---	---	---	---
2,3,4,6-Tetrachlorophenol	**0.056**	**0.056**	---	---	---	---	---	---	---	---	ND<0.082	ND<0.082	---	ND<0.082		---	---	---	---	---	---	---
2,4,5-Trichlorophenol	**0.5**	**0.5**	---	---	---	---	---	---	---	---	ND<0.065	ND<0.065	---	ND<0.065		---	---	---	---	---	---	---
2,4,6-Trichlorophenol	**0.31**	**0.31**	---	---	---	---	---	---	---	---	ND<0.07	ND<0.07	---	ND<0.07		---	---	---	---	---	---	---
2,4-Dichlorophenol	**0.073**	**0.073**	---	---	---	---	---	---	---	---	ND<0.067	ND<0.067	---	ND<0.067		---	---	---	---	---	---	---
2,4-Dimethylphenol	**9.8**	**9.8**	---	---	---	---	---	---	---	---	ND<0.095	ND<0.095	---	ND<0.095		---	---	---	---	---	---	---
2,4-Dinitrophenol	**1.1**	**1.1**	---	---	---	---	---	---	---	---	ND<0.13	ND<0.13	---	ND<0.13		---	---	---	---	---	---	---
2,4-Dinitrotoluene	**0.87**	**0.87**	---	---	---	---	---	---	---	---	ND<0.076	ND<0.076	---	ND<0.076		---	---	---	---	---	---	---
2,6-Dinitrotoluene	**0.87**	**0.87**	---	---	---	---	---	---	---	---	ND<0.083	ND<0.083	---	ND<0.083		---	---	---	---	---	---	---
2-Chlorophenol	**0.12**	**0.12**	---	---	---	---	---	---	---	---	ND<0.079	ND<0.079	---	ND<0.079		---	---	---	---	---	---	---
2-Methylnaphthalene	**1.9**	**1.9**	---	---	---	---	---	---	---	---	ND<0.066	ND<0.066	---	ND<0.066		---	---	---	---	---	---	---
3-3'-Dichlorobenzidine	**1.2**	**2.4**	---	---	---	---	---	---	---	---	ND<0.048	ND<0.15	---	ND<0.15		---	---	---	---	---	---	---
Acenaphthene	**120**	**120**	---	---	---	---	---	---	---	---	ND<0.076	ND<0.076	---	ND<0.076		---	---	---	---	---	---	---
Acenaphthylene	**5.5**	**5.5**	---	---	---	---	---	---	---	---	ND<0.066	ND<0.066	---	ND<0.066		---	---	---	---	---	---	---
Anthracene	**4.2**	**4.2**	---	---	---	---	---	---	---	---	ND<0.052	ND<0.052	---	ND<0.052		---	---	---	---	---	---	---
Benzo(a)anthracene	**10**	**10**	---	---	---	---	---	---	---	---	ND<0.036	ND<0.036	---	ND<0.036		---	---	---	---	---	---	---
Benzo(a)pyrene	**3.6**	**5.9**	---	---	---	---	---	---	---	---	ND<0.034	ND<0.034	---	ND<0.034		---	---	---	---	---	---	---
Benzo(b)fluoranthene	**11**	**68**	---	---	---	---	---	---	---	---	ND<0.041	ND<0.041	---	ND<0.041		---	---	---	---	---	---	---
Benzo(g,h,i)perylene	**35**	**35**	---	---	---	---	---	---	---	---	ND<0.09	ND<0.09	---	ND<0.09		---	---	---	---	---	---	---
Benzo(k)fluoranthene	**39**	**39**	---	---	---	---	---	---	---	---	ND<0.049	ND<0.049	---	ND<0.049		---	---	---	---	---	---	---
Bis(2-chloroethyl)ether	**0.004**	**0.004**	---	---	---	---	---	---	---	---	ND<0.072	ND<0.072	---	ND<0.072		---	---	---	---	---	---	---
Bis(2-ethylhexyl)phthalate	**37**	**140**	---	---	---	---	---	---	---	---	ND<0.044	ND<0.045	---	ND<0.044		---	---	---	---	---	---	---
Chrysene	**30**	**30**	---	---	---	---	---	---	---	---	ND<0.028	ND<0.028	---	ND<0.028		---	---	---	---	---	---	---
Dibenzo(a,h)anthracene	**1.1**	**18**	---	---	---	---	---	---	---	---	ND<0.05	ND<0.05	---	ND<0.05		---	---	---	---	---	---	---
Diethyl phthalate	**3.7**	**3.7**	---	---	---	---	---	---	---	---	ND<0.076	ND<0.076	---	ND<0.076		---	---	---	---	---	---	---
Dimethyl phthalate	**26**	**26**	---	---	---	---	---	---	---	---	ND<0.075	ND<0.075	---	ND<0.075		---	---	---	---	---	---	---
Fluoranthene	**87**	**87**	---	---	---	---	---	---	---	---	ND<0.071	ND<0.071	---	ND<0.071		---	---	---	---	---	---	---
Fluorene	**93**	**93**	---	---	---	---	---	---	---	---	ND<0.078	ND<0.078	---	ND<0.078		---	---	---	---	---	---	---
Hexachlorobenzene	**0.22**	**0.23**	---	---	---	---	---	---	---	---	ND<0.058	ND<0.058	---	ND<0.058		---	---	---	---	---	---	---
Hexachlorobutadiene	**0.061**	**0.61**	---	---	---	---	---	---	---	---	ND<0.094	ND<0.094	---	ND<0.094		---	---	---	---	---	---	---
Hexachloroethane	**0.68**	**0.68**	---	---	---	---	---	---	---	---	ND<0.094	ND<0.094	---	ND<0.094		---	---	---	---	---	---	---
Indeno(1,2,3-cd)pyrene	**11**	**31**	---	---	---	---	---	---	---	---	ND<0.087	ND<0.087	---	ND<0.087		---	---	---	---	---	---	---
Isophorone	**10**	**10**	---	---	---	---	---	---	---	---	ND<0.065	ND<0.065	---	ND<0.065		---	---	---	---	---	---	---
Naphalene	**3.1**	**3.1**	---	---	---	---	---	---	---	---	ND<0.078	ND<0.078	---	ND<0.078		---	---	---	---	---	---	---
Nitrobenzene	**5.6**	**14**	---	---	---	---	---	---	---	---	ND<0.069	ND<0.069	---	ND<0.069		---	---	---	---	---	---	---
Pentachlorophenol	**0.78**	**0.78**	---	---	---	---	---	---	---	---	ND<0.04	ND<0.053	---	ND<0.054		---	---	---	---	---	---	---
Phenanthrene	**69**	**69**	---	---	---	---	---	---	---	---	ND<0.048	ND<0.048	---	ND<0.048		---	---	---	---	---	---	---
Phenol	**1.8**	**1.8**	---	---	---	---	---	---	---	---	ND<0.061	ND<0.061	---	ND<0.061		---	---	---	---	---	---	---
Pyrene	**44**	**44**	---	---	---	---	---	---	---	---	ND<0.099	ND<0.099	---	ND<0.099		---	---	---	---	---	---	---
Polychlorinated Biphenyls (PCBs) (mg/kg) (SW-846 8082)																						
PCBs, Total	**1.2**	**8.6**	---	---	---	---	---	---	---	---	ND<0.02	ND<0.02	---	ND<0.02		---	---	---	---	---	---	---
Metals (mg/kg) (SW-846 3050B/6020B/6010B/7471A)																						
Arsenic	**24**	**95**	---	6.09	5.71	0.87J	0.83J	0.95J	0.99J	1.4J	--	4.73	6.42	6.11		---	0.29J	ND<5	4.99	4.7J	5.63	5.12
Barium	**1,000**	**2,500**	---	113	18	67.5	213	30	135	8.7J	--	13.7	101	32.2		---	77.1	144	99.8	71.8	55.9	58
Cadmium	**14**	**72**	---	9.2	10.5	1.6J	3.39	0.28J	3.52	1J	--	4.95	10.3	9.36		---	11.6	10.6	11.4	7.33	6.67	2.86
Chromium	**1,100**	**1,100**	---	195	180	123	205	156	**267	**238	--	191	**292	**296		---	176	160	**219	183	170	84.7
Lead	**200**	**800**	12	2.7J	1.3J	29.5	ND<0.018	ND<0.018	ND<0.018	ND<0.018	--	ND<0.018	1.4J	0.61J		ND<5	5.5J	4.9J	4.9J	1.3J	0.81J	ND<0.018
Mercury	**4.7**	**61**	---	0.0672	0.0016J	0.042	0.03	0.026	ND<0.074	ND<0.074	--	0.0097J	0.016J	0.0046J		---	0.042	ND<0.074	0.0032J	0.003J	0.0339	ND<0.074
Nickel	**410**	**740**	---	115	129	85.8	333	152	178	252	--	58.4	159	118		---	97.4	153	125	111	125	97.3
Selenium	**78**	**1,000**	---	3.2J	2.4J	0.38J	0.84J	0.35J	0.33J	0.12J	--	3.9J	3.6J	2.8J		---	0.47J	0.33J	2.8J	3.3J	3.2J	3.1J
Silver	**78**	**1,000**	---	ND<0.16	ND<0.16	ND<0.16	ND<0.16	ND<0.16	ND<0.16	ND<0.16	--	ND<0.16	ND<0.16	ND<0.16		---	ND<0.16	ND<0.16	ND<0.16	ND<0.16	ND<0.16	ND<0.16
Zinc	**1,000**	**2,500**	---	62	61.6	96.4	216	108	91.3	68.6	--	83.6	94.1	75.4		---	79.8	60.2	119	67.5	62.5	28.9

Table C1: Soil Sample Analytical Summary Table

Area of Potential Concern	HDOH Tier 1 EALs (mg/kg)	HDOH C/I EALs (mg/kg)	Other Soil Samples																		
Location Relative to AOPC			19B		Waiawa Stream Bank		Waiawa Stream Bank		Waiawa Stream Bank		Waiawa Stream Bank		Waiawa Stream Bank		Waiawa Stream Bank		Waiawa Stream Bank		Waiawa Stream Bank	Fence Line Composite Samples	
Location Description					Upstream of 66" Outfall		Front and Below 66" outfall		Midway between 12 and 66" Outfalls		Downsteam of 66" Outfall		Midway of the 6 and 12-inch Outfalls		Downstream of the 12" Outfall		Downstream of 6" Outfall		On side of 6" Outfall		
Year			2006	2006	2006	2006	2006	2006	2006	2006	2006	2006	2006	2006	2006	2006	2006	2006	2006	2002	2002
Sample ID			19B-1-2	19B-4-1	28S-1	28S-2	29S-1	29S-2	30S-1	30S-2	31S-1	31S-2	32S-1	32S-2	33S-1	33S-2	34S-1	34S-2	35S-1	Fenceline-1	Fenceline-2
Depth (ft bgs)			4.5-5	16.5-17	0-0.5	0.5-2	0-0.5	0.5-2	0-0.5	0.5-2	0-0.5	0.5-2	0-0.5	0.5-2	0-0.5	0.5-2	0-0.5	0.5-2	3.2	0-0.5	0-0.5
Total Petroleum Hydrocarbons (TPH) (mg/kg)																					
GRO [C5-C12]	**100**	**500**	0.071J	0.064J	ND<0.6	ND<0.6	ND<0.53	ND<0.55	ND<0.71	ND<0.63	ND<0.61	ND<0.56	ND<0.55	ND<0.55	ND<0.57	ND<0.54	ND<0.55	ND<0.61	0.080J	---	---
DRO [C10-C28]	**220**	**680**	17.6	ND<3.8	8.23	ND<3.9	20.9	ND<3.6	ND<3.9	ND<3.9	396	48.6	8.09	ND<3.8	134	14.8	38.4	49.9	9.03	105	130H
RRO [C28-C40]	**500**	**1,000**	48.8	8.1J	46.4	ND	42.6	12	ND	ND	2,290	147	32.6	15	365	34.9	200	306	39.5	---	---
MBTEX (mg/kg)																					
Methyl tert-butyl ether	**0.028**	**0.028**	ND<0.0048	ND<0.0048	ND<0.0048	ND<0.0048	ND<0.0048	ND<0.0048	ND<0.0048	ND<0.0048	ND<0.0048	ND<0.0048	ND<0.0048	ND<0.0048	ND<0.0048	ND<0.0048	ND<0.0048	ND<0.0048	ND<0.0048	---	---
Benzene	**0.3**	**0.3**	ND<0.0034	ND<0.0034	ND<0.0034	ND<0.0034	ND<0.0034	ND<0.0034	ND<0.0034	ND<0.0034	ND<0.0034	ND<0.0034	ND<0.0034	ND<0.0034	ND<0.0034	ND<0.0034	ND<0.0034	ND<0.0034	ND<0.0034	---	---
Toluene	**0.78**	**0.78**	ND<0.0063	ND<0.0063	ND<0.0063	ND<0.0063	ND<0.0063	ND<0.0063	ND<0.0063	ND<0.0063	ND<0.0063	ND<0.0063	ND<0.0063	ND<0.0063	ND<0.0063	ND<0.0063	0.00048J	0.00048J	ND<0.0063	---	---
Ethylbenzene	**0.9**	**0.9**	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	---	---
Xylenes, total	**1.4**	**1.4**	ND<0.0009	ND<0.0009	ND<0.0009	ND<0.0009	ND<0.0009	ND<0.0009	ND<0.0009	ND<0.0009	ND<0.0009	ND<0.0009	ND<0.0049	ND<0.0049	ND<0.0049	ND<0.0049	0.00065J	ND<0.0049	ND<0.0049	---	---
Volatile Organic Compounds (VOCs) (mg/kg)																					
1,1,1,2-Tetrachloroethane	**0.018**	**0.018**	ND<0.00059	ND<0.00059	ND<0.00059	ND<0.00059	ND<0.00059	ND<0.00059	ND<0.00059	ND<0.00059	ND<0.00059	ND<0.00059	ND<0.00059	ND<0.00059	ND<0.00059	ND<0.00059	ND<0.00059	ND<0.00059	ND<0.00059	---	---
1,1,1-Trichloroethane	**1.2**	**1.2**	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	---	---
1,1,2,2-Tetrachloroethane	**0.0014**	**0.0014**	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002	---	---
1,1,2-Trichloroethane	**0.0089**	**0.062**	ND<0.0013	ND<0.0013	ND<0.0013	0.01J	ND<0.0013	ND<0.0013	ND<0.0013	0.0099J	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013	0.0084J	0.01J	ND<0.0013	---	---
1,1-Dichloroethane	**0.11**	**0.11**	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	---	---
1,1-Dichloroethene	**1.2**	**1.2**	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	---	---
1,2,3-Trichloropropane	**0.005**	**0.013**	ND<0.0023	ND<0.0023	ND<0.0023	ND<0.0023	ND<0.0023	ND<0.0023	ND<0.0023	ND<0.0023	ND<0.0023	ND<0.0023	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	---	---
1,2,4-Trichlorobenzene	**0.18**	**1.4**	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	---	---
1,2-Dibromo-3-Chloropropane	**0.00081**	**0.00081**	ND<0.004	ND<0.004	ND<0.004	ND<0.004	ND<0.004	ND<0.004	ND<0.004	ND<0.004	ND<0.004	ND<0.004	ND<0.004	ND<0.004	ND<0.004	ND<0.004	ND<0.004	ND<0.004	ND<0.004	---	---
1,2-Dibromoethane (EDB)	**0.00042**	**0.00042**	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	---	ND<0.0015	ND<0.0015	ND<0.0015	---	---
1,2-Dichlorobenzene	**0.75**	**0.75**	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.0011	ND<0.011	ND<0.011	ND<0.011	ND<0.011	ND<0.011	ND<0.011	ND<0.011	---	---
1,2-Dichloroethane	**0.023**	**0.07**	ND<0.0021	ND<0.0021	ND<0.0021	ND<0.0021	ND<0.0021	ND<0.0021	ND<0.0021	ND<0.0021	ND<0.0021	ND<0.0021	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013	---	---
1,2-Dichloropropane	**0.14**	**0.14**	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	---	---
1,3-Dichlorobenzene	**0.57**	**0.57**	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.001	ND<0.001	ND<0.001	ND<0.001	ND<0.001	ND<0.001	ND<0.001	---	---
1,4-Dichlorobenzene	**0.055**	**0.39**	ND<0.065	ND<0.065	ND<0.001	ND<0.001	ND<0.001	ND<0.001	ND<0.001	ND<0.001	ND<0.001	ND<0.001	ND<0.001	ND<0.001	ND<0.001	ND<0.001	ND<0.001	ND<0.001	ND<0.001	---	---
2-Butanone (MEK)	**6.2**	**6.2**	0.011J	0.0044J	ND<0.032	ND<0.032	ND<0.032	ND<0.032	ND<0.032	ND<0.032	ND<0.032	ND<0.032	ND<0.0032	ND<0.0032	ND<0.0032	ND<0.0032	ND<0.0032	ND<0.0032	ND<0.0032	---	---
4-Methyl-2-pentanone (MIBK)	**0.5**	**0.5**	ND<0.025	ND<0.025	ND<0.025	ND<0.025	ND<0.025	ND<0.025	ND<0.025	ND<0.025	ND<0.025	ND<0.025	ND<0.025	ND<0.025	ND<0.025	ND<0.025	ND<0.025	ND<0.025	ND<0.025	---	---
Acetone	**1**	**1**	ND<0.025	ND<0.025	0.012J	ND<0.025	ND<0.025	ND<0.025	ND<0.025	ND<0.025	N0.0088J	ND<0.025	0.014J	0.012J	0.0086J	ND<0.025	0.0068J	0.017J	ND<0.025	---	---
Bromodichloromethane	**0.0025**	**0.0025**	ND<0.0015	ND<0.0015	ND<0.015	ND<0.015	ND<0.015	ND<0.015	ND<0.015	ND<0.015	ND<0.015	ND<0.015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	---	---
Bromoform	**0.69**	**0.69**	ND<0.0017	ND<0.0017	ND<0.0017	ND<0.0017	ND<0.0017	ND<0.0017	ND<0.0017	ND<0.0017	ND<0.0017	ND<0.0017	ND<0.0017	0.00052J	ND<0.0017	ND<0.0017	ND<0.0017	ND<0.0017	ND<0.0017	---	---
Bromomethane	**0.22**	**0.36**	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	---	---
Carbon tetrachloride	**0.1**	**0.73**	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	ND<0.0015	---	---
Chlorobenzene	**1.5**	**1.5**	ND<0.00069	ND<0.00069	ND<0.00069	ND<0.00069	ND<0.00069	ND<0.00069	ND<0.00069	ND<0.00069	ND<0.00069	ND<0.00069	ND<0.00069	ND<0.00069	ND<0.00069	ND<0.00069	ND<0.00069	ND<0.00069	ND<0.00069	---	---
Chloroethane	**1.2**	**1.2**	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	---	---
Chloroform	**0.026**	**0.19**	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013	ND<0.0013	---	---
Chloromethane	**4**	**11**	ND<0.0014	ND<0.0014	ND<0.0014	ND<0.0014	ND<0.0014	ND<0.0014	ND<0.0014	ND<0.0014	ND<0.0014	ND<0.0014	ND<0.0014	ND<0.0014	ND<0.0014	ND<0.0014	ND<0.0014	ND<0.0014	ND<0.0014	---	---
cis-1,2-Dichloroethene	**0.36**	**2.2**	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	---	---
Dibromochloromethane	**0.0094**	**0.0094**	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	ND<0.0012	---	---
Hexachlorobutadiene	**0.041**	**0.041**	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002	---	---
Methylene Chloride	**0.12**	**0.12**	0.00051J	ND<0.0029	ND<0.0029	ND<0.0029	ND<0.0029	ND<0.0029	ND<0.0029	ND<0.0029	ND<0.0029	ND<0.0029	ND<0.0029	ND<0.0029	ND<0.0029	ND<0.0029	ND<0.0029	ND<0.0029	0.0018J	---	---
Naphthalene	**3.1**	**3.1**	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002	ND<0.002	0.0024J	---	---
Styrene	**0.91**	**0.91**	ND<0.00062	ND<0.00062	ND<0.00062	ND<0.00062	ND<0.00062	ND<0.00062	ND<0.00062	ND<0.00062	ND<0.00062	ND<0.00062	ND<0.00062	ND<0.00062	ND<0.00062	ND<0.00062	ND<0.00062	ND<0.00062	ND<0.00062	---	---
Tetrachloroethene	**0.1**	**0.64**	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	---	---
trans-1,2-Dichloroethene	**3.6**	**6.5**	ND<0.001	ND<0.001	ND<0.001	ND<0.001	ND<0.001	ND<0.001	ND<0.001	ND<0.001	ND<0.001	ND<0.001	ND<0.001	ND<0.001	ND<0.001	ND<0.001	ND<0.001	ND<0.001	ND<0.001	---	---
Trichloroethene	**0.089**	**0.36**	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	ND<0.0016	---	---
Vinyl chloride	**0.036**	**0.35**	ND<0.0014	ND<0.0014	ND<0.0014	ND<0.0014	ND<0.0014	ND<0.0014	ND<0.0014	ND<0.0014	ND<0.0014	ND<0.0014	ND<0.0014	ND<0.0014	ND<0.0014	ND<0.0014	ND<0.0014	ND<0.0014	ND<0.0014	---	---
Polynuclear Aromatic Hydrocarbons (PAHs) (mg/kg)																					
Acenaphthene	**120**	**120**	ND<0.076	ND<0.076	0.021J	0.0039J	0.02J	0.018J	0.0039J	0.0043J	0.019J	0.019J	0.00088J	ND<0.076	0.021J	ND<0.076	0.023J	ND<0.13	0.0044J	---	---
Acenaphthylene	**5.5**	**5.5**	ND<0.066	ND<0.066	ND	ND	0.0033J	0.0061J	ND	ND	ND	ND	0.00702	ND	0.0079J	ND	0.013J	ND	0.00094J	---	---
Anthracene	**4.2**	**4.2**	ND<0.052	ND<0.052	0.0049J	0.00033J	0.0017J	0.0015J	0.00033J	0.00033J	0.003J	0.0064J	0.00848	ND<0.052	0.0047J	ND<0.052	0.032J	0.22J	0.0019J	---	---
Benzo(a)anthracene	**10**	**10**	0.02J	0.0019J	0.015J	0.0033J	0.018J	0.014J	0.0042J	0.0030J	0.01J	0.014J	0.0442	ND<0.036	0.019J	ND<0.036	0.167	0.34J	0.0153	---	---
Benzo(a)pyrene	**3.6**	**5.9**	0.0374	0.0019J	0.026J	ND<0.034	ND<0.034	ND<0.034	ND<0.034	ND<0.034	ND<0.034	ND<0.034	0.0512	ND<0.056	ND<0.034	ND<0.056	0.211*	0.42J	0.0275	---	---
Benzo(b)fluoranthene	**11**	**68**	ND<0.041	ND<0.041	ND<0.041	ND<0.041	ND<0.041	ND<0.041	ND<0.041	ND<0.041	ND<0.041	ND<0.041	0.0406	ND<0.062	ND<0.041	ND<0.062	0.199	0.4J	0.0219	---	---
Benzo(g,h,i)perylene	**35**	**35**	0.047	ND<0.09	ND<0.09	ND<0.09	ND<0.09	ND<0.09	ND<0.09	ND<0.09	ND<0.09	ND<0.09	ND<0.09	ND<0.09	ND<0.09	ND<0.09	ND<0.09	0.35J	0.0147	---	---
Benzo(k)fluoranthene	**39**	**39**	0.0349	ND<0.049	0.021J	ND<0.049	ND<0.049	ND<0.049	ND<0.049	ND<0.049	0.024J	ND<0.049	0.0515	ND<0.049	ND<0.049	ND<0.049	0.19	0.42J	0.0122	---	---
Chrysene	**30**	**30**	0.027J	ND<0.028	0.023J	0.0039J	0.021J	0.021J	0.0016J	0.0040J	0.019J	0.024J	0.0579	ND<0.033	0.027J	ND<0.033	0.23	0.38J	0.0166	---	---
Dibenz(a,h)anthracene	**1.1**	**18**	ND<0.086	ND<0.086	ND<0.086	ND<0.086	ND<0.086	ND<0.086	ND<0.086	ND<0.086	ND<0.086	ND<0.086	ND<0.086	ND<0.086	ND<0.086	ND<0.086	ND<0.086	ND<0.23	ND<0.086	---	---

Table C1: Soil Sample Analytical Summary Table

Area of Potential Concern	HDOH Tier 1 EALs (mg/kg)	HDOH C/I EALs (mg/kg)	Other Soil Samples																		
Location Relative to AOPC			19B		Waiawa Stream Bank		Waiawa Stream Bank		Waiawa Stream Bank		Waiawa Stream Bank		Waiawa Stream Bank		Waiawa Stream Bank		Waiawa Stream Bank		Waiawa Stream Bank		Fence Line Composite Samples	
Location Description					Upstream of 66" Outfall		Front and Below 66" outfall		Midway between 12 and 66" Outfalls		Downsteam of 66" Outfall		Midway of the 6 and 12-inch Outfalls		Downstream of the 12" Outfall		Downstream of 6" Outfall		On side of 6" Outfall			
Year			2006	2006	2006	2006	2006	2006	2006	2006	2006	2006	2006	2006	2006	2006	2006	2006	2006	2002	2002
Sample ID			19B-1-2	19B-4-1	28S-1	28S-2	29S-1	29S-2	30S-1	30S-2	31S-1	31S-2	32S-1	32S-2	33S-1	33S-2	34S-1	34S-2	35S-1	Fenceline-1	Fenceline-2
Depth (ft bgs)			4.5-5	16.5-17	0-0.5	0.5-2	0-0.5	0.5-2	0-0.5	0.5-2	0-0.5	0.5-2	0-0.5	0.5-2	0-0.5	0.5-2	0-0.5	0.5-2	3.2	0-0.5	0-0.5
Fluoranthene	**87**	**87**	0.029J	ND<0.071	0.031	0.00065J	0.0099J	ND<0.071	0.0029J	ND<0.071	0.0478	0.0064J	0.112	ND<0.071	0.0079J	ND<0.071	0.341	0.41J	0.0319	---	---
Fluorene	**93**	**93**	ND<0.078	ND<0.078	0.0066J	ND<0.078	0.0083J	0.0061J	0.00098J	0.00099J	0.009J	0.0096J	0.0053J	ND<0.078	0.016J	ND<0.078	0.024J	ND<0.14	ND<0.078	---	---
Indeno(1,2,3-cd)pyrene	**11**	**31**	0.0374	0.0015J	ND<0.087	ND<0.087	ND<0.087	ND<0.087	ND<0.087	ND<0.087	ND<0.087	ND<0.087	ND<0.087	ND<0.087	ND<0.087	ND<0.087	ND<0.087	0.27J	0.016	---	---
Naphthalene	**3.1**	**3.1**	ND<0.078	ND<0.078	ND<0.078	ND<0.078	ND<0.078	ND<0.078	ND<0.078	ND<0.078	ND<0.078	ND<0.078	0.0012J	ND<0.078	ND<0.078	ND<0.078	0.0064J	ND<0.15	ND<0.078	---	---
Phenanthrene	**69**	**69**	0.0076J	0.0007J	0.0016J	0.00098J	ND<0.048	0.003J	0.0026J	0.00099J	0.0015J	0.0064J	0.0699	ND<0.048	0.0016J	ND<0.048	0.141	0.22J	0.0103	---	---
Pyrene	**44**	**44**	0.021J	0.00050J	0.026J	0.00033J	0.0099J	0.0015J	0.0026J	0.00033J	0.025J	0.0032J	0.093	ND<0.099	0.0079J	ND<0.099	0.26	0.56J	0.0194	---	---
Semi-Volatile Organic Compounds (SVOCs) (mg/kg) (SW-846 8270C)																					
1,2,4-Trichlorobenzene	**0.18**	**1.4**	---	---	---	---	---	---	---	---	---	---	---	ND<0.086	---	ND<0.086	---	ND<0.13	ND<0.086	---	---
1,2-Dichlorobenzene	**1.1**	**1.1**	---	---	---	---	---	---	---	---	---	---	---	ND<0.083	---	ND<0.083	---	ND<0.14	ND<0.083	---	---
1,3-Dichlorobenzene	**2.5**	**2.5**	---	---	---	---	---	---	---	---	---	---	---	ND<0.21	---	ND<0.21	---	ND<0.19	ND<0.21	---	---
1,4-Dichlorobenzene	**0.055**	**0.4**	---	---	---	---	---	---	---	---	---	---	---	ND<0.2	---	ND<0.2	---	ND<0.21	ND<0.2	---	---
2,3,4,6-Tetrachlorophenol	**0.056**	**0.056**	---	---	---	---	---	---	---	---	---	---	---	ND<0.082	---	ND<0.082	---	ND<0.15	ND<0.082	---	---
2,4,5-Trichlorophenol	**0.5**	**0.5**	---	---	---	---	---	---	---	---	---	---	---	ND<0.065	---	ND<0.065	---	ND<0.17	ND<0.065	---	---
2,4,6-Trichlorophenol	**0.31**	**0.31**	---	---	---	---	---	---	---	---	---	---	---	ND<0.07	---	ND<0.07	---	ND<0.13	ND<0.07	---	---
2,4-Dichlorophenol	**0.073**	**0.073**	---	---	---	---	---	---	---	---	---	---	---	ND<0.067	---	ND<0.067	---	ND<0.14	ND<0.067	---	---
2,4-Dimethylphenol	**9.8**	**9.8**	---	---	---	---	---	---	---	---	---	---	---	ND<0.095	---	ND<0.095	---	ND<0.31	ND<0.095	---	---
2,4-Dinitrophenol	**1.1**	**1.1**	---	---	---	---	---	---	---	---	---	---	---	ND<0.13	---	ND<0.13	---	ND<0.39	ND<0.13	---	---
2,4-Dinitrotoluene	**0.87**	**0.87**	---	---	---	---	---	---	---	---	---	---	---	ND<0.076	---	ND<0.076	---	ND<0.18	ND<0.076	---	---
2,6-Dinitrotoluene	**0.87**	**0.87**	---	---	---	---	---	---	---	---	---	---	---	ND<0.083	---	ND<0.083	---	ND<0.17	ND<0.083	---	---
2-Chlorophenol	**0.12**	**0.12**	---	---	---	---	---	---	---	---	---	---	---	ND<0.079	---	ND<0.079	---	ND<0.11	ND<0.079	---	---
2-Methylnaphthalene	**1.9**	**1.9**	---	---	---	---	---	---	---	---	---	---	---	ND<0.066	---	ND<0.066	---	ND<0.15	ND<0.066	---	---
3-3'-Dichlorobenzidine	**1.2**	**2.4**	---	---	---	---	---	---	---	---	---	---	---	ND<0.15	---	ND<0.15	---	ND<0.76	ND<0.048	---	---
Acenaphthene	**120**	**120**	---	---	---	---	---	---	---	---	---	---	---	ND<0.076	---	ND<0.076	---	ND<0.13	ND<0.076	---	---
Acenaphthylene	**5.5**	**5.5**	---	---	---	---	---	---	---	---	---	---	---	ND<0.066	---	ND<0.066	---	ND<0.18	ND<0.066	---	---
Anthracene	**4.2**	**4.2**	---	---	---	---	---	---	---	---	---	---	---	ND<0.052	---	ND<0.052	---	0.22J	ND<0.052	---	---
Benzo(a)anthracene	**10**	**10**	---	---	---	---	---	---	---	---	---	---	---	ND<0.036	---	ND<0.036	---	0.34J	ND<0.036	---	---
Benzo(a)pyrene	**3.6**	**5.9**	---	---	---	---	---	---	---	---	---	---	---	ND<0.056	---	ND<0.056	---	0.42J	ND<0.034	---	---
Benzo(b)fluoranthene	**11**	**68**	---	---	---	---	---	---	---	---	---	---	---	ND<0.062	---	ND<0.062	---	0.4J	ND<0.041	---	---
Benzo(g,h,i)perylene	**35**	**35**	---	---	---	---	---	---	---	---	---	---	---	ND<0.09	---	ND<0.09	---	0.35J	ND<0.09	---	---
Benzo(k)fluoranthene	**39**	**39**	---	---	---	---	---	---	---	---	---	---	---	ND<0.049	---	ND<0.049	---	0.43J	ND<0.049	---	---
Bis(2-chloroethyl)ether	**0.004**	**0.004**	---	---	---	---	---	---	---	---	---	---	---	ND<0.072	---	ND<0.072	---	ND<0.24	ND<0.072	---	---
Bis(2-ethylhexyl)phthalate	**37**	**140**	---	---	---	---	---	---	---	---	---	---	---	ND<0.046	---	ND<0.046	---	ND<0.23	ND<0.044	---	---
Chrysene	**30**	**30**	---	---	---	---	---	---	---	---	---	---	---	ND<0.033	---	ND<0.033	---	0.38J	ND<0.033	---	---
Dibenzo(a,h)anthracene	**1.1**	**18**	---	---	---	---	---	---	---	---	---	---	---	ND<0.05	---	ND<0.05	---	ND<0.23	ND<0.05	---	---
Diethyl phthalate	**3.7**	**3.7**	---	---	---	---	---	---	---	---	---	---	---	ND<0.076	---	ND<0.076	---	ND<0.19	ND<0.076	---	---
Dimethyl phthalate	**26**	**26**	---	---	---	---	---	---	---	---	---	---	---	ND<0.075	---	ND<0.075	---	ND<0.18	ND<0.075	---	---
Fluoranthene	**87**	**87**	---	---	---	---	---	---	---	---	---	---	---	ND<0.071	---	ND<0.071	---	0.41J	ND<0.071	---	---
Fluorene	**93**	**93**	---	---	---	---	---	---	---	---	---	---	---	ND<0.078	---	ND<0.078	---	ND<0.14	ND<0.078	---	---
Hexachlorobenzene	**0.22**	**0.23**	---	---	---	---	---	---	---	---	---	---	---	ND<0.058	---	ND<0.058	---	ND<0.2	ND<0.058	---	---
Hexachlorobutadiene	**0.061**	**0.61**	---	---	---	---	---	---	---	---	---	---	---	ND<0.094	---	ND<0.094	---	ND<0.11	ND<0.094	---	---
Hexachloroethane	**0.68**	**0.68**	---	---	---	---	---	---	---	---	---	---	---	ND<0.066	---	ND<0.066	---	ND<0.19	ND<0.066	---	---
Indeno(1,2,3-cd)pyrene	**11**	**31**	---	---	---	---	---	---	---	---	---	---	---	ND<0.087	---	ND<0.087	---	0.27J	ND<0.087	---	---
Isophorone	**10**	**10**	---	---	---	---	---	---	---	---	---	---	---	ND<0.065	---	ND<0.065	---	ND<0.15	ND<0.065	---	---
Naphalene	**3.1**	**3.1**	---	---	---	---	---	---	---	---	---	---	---	ND<0.078	---	ND<0.078	---	ND<0.15	ND<0.078	---	---
Nitrobenzene	**5.6**	**14**	---	---	---	---	---	---	---	---	---	---	---	ND<0.069	---	ND<0.069	---	ND<0.19	ND<0.069	---	---
Pentachlorophenol	**0.78**	**0.78**	---	---	---	---	---	---	---	---	---	---	---	ND<0.054	---	ND<0.054	---	ND<0.27	ND<0.04	---	---
Phenanthrene	**69**	**69**	---	---	---	---	---	---	---	---	---	---	---	ND<0.048	---	ND<0.048	---	0.22J	ND<0.048	---	---
Phenol	**1.8**	**1.8**	---	---	---	---	---	---	---	---	---	---	---	ND<0.061	---	ND<0.061	---	ND<0.14	ND<0.061	---	---
Pyrene	**44**	**44**	---	---	---	---	---	---	---	---	---	---	---	ND<0.099	---	ND<0.099	---	0.56J	ND<0.099	---	---
Polychlorinated Biphenyls (PCBs) (mg/kg) (SW-846 8082)																					
PCBs, Total	**1.2**	**8.6**	---	---	ND<0.21	---	ND<0.21	---	ND<0.21	---	ND<0.21	---	0.00083J	ND<0.02	ND<0.021	0.0052J	0.013J	ND<0.021	ND<0.02	ND<2	ND<5
Metals (mg/kg) (SW-846 3050B/6020B/6010B/7471A)																					
Arsenic	**24**	**95**	4.38	5.32	ND<0.27	ND<0.27	ND<0.27	ND<0.27	ND<0.27	ND<0.27	ND<0.27	ND<0.27	ND<0.27	ND<0.27	ND<0.27	ND<0.27	ND<0.27	ND<0.27	1.7J	---	---
Barium	**1,000**	**2,500**	82.9	103	55.2	46.6	47.9	38.4	68.2	52.8	82.4	66.2	88.1	83.6	69.8	91.3	87.1	74.8	42.7	150	97
Cadmium	**14**	**72**	6.56	8.17	2.58	2.26	2.01	0.87J	2	1.3J	3.52	1.4	3.42	2.65	6.36	4.17	4.52	3.52	2.13	2	ND<1
Chromium	**1,100**	**1,100**	150	168	138	139	125	118	112	142	174	159	179	193	126	180	165	171	75.1	160	100
Lead	**200**	**800**	3.7J	3.3J	17.1	13	19.5	10.4	12.5	13.7	33	16.1	17.4	13	121	31.4	63.9	62.7	9.1J	75	48
Mercury	**4.7**	**61**	0.021	0.0358	0.0569	0.0333	0.0782	0.014J	0.0262	0.0258	0.0522	0.0197	0.109	0.0243	0.0545	0.016J	0.095	0.0873	0.02	ND<0.05	ND<0.05
Nickel	**410**	**740**	94.2	104	87.1	96.5	75.1	60	114	135	93.5	138	95.6	101	75.4	110	94.8	87.7	42.7	---	---
Selenium	**78**	**1,000**	2.8J	3.1J	0.5J	1.7J	1.4J	1.7J	0.8J	1.8J	0.26J	2.7J	0.74J	0.74J	0.6J	0.34J	ND<0.015	0.59J	0.74J	---	---
Silver	**78**	**1,000**	ND<0.16	ND<0.16	0.31J	ND<0.16	0.4J	0.3J	0.46J	ND<0.16	0.9J	0.16J	0.78J	0.64J	0.51J	0.74J	0.7J	0.48J	ND<0.16	---	---
Zinc	**1,000**	**2,500**	53.3	64.7	50.9	44.8	109	47	50.2	34.4	61.8	33.1	63.2	59.6	176	79.2	106	112	41.9	---	---

Table C1: Soil Sample Analytical Summary Table

Area of Potential Concern	HDOH Tier 1 EALs (mg/kg)	HDOH C/I EALs (mg/kg)	Other Soil Samples			All Other Soil/Sediment Samples						
Location Relative to AOPC						Outfalls	Outfalls	Outfalls	Outfalls	Outfalls	Outfalls	Outfalls
Location Description			Fence Line Composite Samples			66-inch Outfall	12-inch Outfall	6-inch Outfall	6"	6"	66"	66"
Year			2002	2002	2002	1997	1997	1997	2013	2015	2013	2015
Sample ID			Fenceline-3	Fenceline-4	Fenceline-5	S-4	S-5	S-6	6" Outfall	6" Outfall		
Depth (ft bgs)			0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0.08-0.16	0-0.25	0-0.25	0-0.25	0-0.25
Total Petroleum Hydrocarbons (TPH) (mg/kg)												
GRO [C5-C12]	**100**	**500**	---	---	---	---	---	---	---	---	---	---
DRO [C10-C28]	**220**	**680**	97	57	28H	---	ND<10	**14,000**	167*BD	**240**BD	56BD	56BD
RRO [C28-C40]	**500**	**1,000**	---	---	---	---	---	**75,000**	**767***D	**1,100D**	190D	190D
MBTEX (mg/kg)												
Methyl tert-butyl ether	**0.028**	**0.028**	---	---	---	---	---	---	---	---	---	---
Benzene	**0.3**	**0.3**	---	---	---	---	---	---	---	---	---	---
Toluene	**0.78**	**0.78**	---	---	---	---	---	---	---	---	---	---
Ethylbenzene	**0.9**	**0.9**	---	---	---	---	---	---	---	---	---	---
Xylenes, total	**1.4**	**1.4**	---	---	---	---	---	---	---	---	---	---
Volatile Organic Compounds (VOCs) (mg/kg)												
1,1,1,2-Tetrachloroethane	**0.018**	**0.018**	---	---	---	---	---	---	---	---	---	---
1,1,1-Trichloroethane	**1.2**	**1.2**	---	---	---	---	---	---	---	---	---	---
1,1,2,2-Tetrachloroethane	**0.0014**	**0.0014**	---	---	---	---	---	---	---	---	---	---
1,1,2-Trichloroethane	**0.0089**	**0.062**	---	---	---	---	---	---	---	---	---	---
1,1-Dichloroethane	**0.11**	**0.11**	---	---	---	---	---	---	---	---	---	---
1,1-Dichloroethene	**1.2**	**1.2**	---	---	---	---	---	---	---	---	---	---
1,2,3-Trichloropropane	**0.005**	**0.013**	---	---	---	---	---	---	---	---	---	---
1,2,4-Trichlorobenzene	**0.18**	**1.4**	---	---	---	---	---	---	---	---	---	---
1,2-Dibromo-3-Chloropropane	**0.00081**	**0.00081**	---	---	---	---	---	---	---	---	---	---
1,2-Dibromoethane (EDB)	**0.00042**	**0.00042**	---	---	---	---	---	---	---	---	---	---
1,2-Dichlorobenzene	**0.75**	**0.75**	---	---	---	---	---	---	---	---	---	---
1,2-Dichloroethane	**0.023**	**0.07**	---	---	---	---	---	---	---	---	---	---
1,2-Dichloropropane	**0.14**	**0.14**	---	---	---	---	---	---	---	---	---	---
1,3-Dichlorobenzene	**0.57**	**0.57**	---	---	---	---	---	---	---	---	---	---
1,4-Dichlorobenzene	**0.055**	**0.39**	---	---	---	---	---	---	---	---	---	---
2-Butanone (MEK)	**6.2**	**6.2**	---	---	---	---	---	---	---	---	---	---
4-Methyl-2-pentanone (MIBK)	**0.5**	**0.5**	---	---	---	---	---	---	---	---	---	---
Acetone	**1**	**1**	---	---	---	---	---	---	---	---	---	---
Bromodichloromethane	**0.0025**	**0.0025**	---	---	---	---	---	---	---	---	---	---
Bromoform	**0.69**	**0.69**	---	---	---	---	---	---	---	---	---	---
Bromomethane	**0.22**	**0.36**	---	---	---	---	---	---	---	---	---	---
Carbon tetrachloride	**0.1**	**0.73**	---	---	---	---	---	---	---	---	---	---
Chlorobenzene	**1.5**	**1.5**	---	---	---	---	---	---	---	---	---	---
Chloroethane	**1.2**	**1.2**	---	---	---	---	---	---	---	---	---	---
Chloroform	**0.026**	**0.19**	---	---	---	---	---	---	---	---	---	---
Chloromethane	**4**	**11**	---	---	---	---	---	---	---	---	---	---
cis-1,2-Dichloroethene	**0.36**	**2.2**	---	---	---	---	---	---	---	---	---	---
Dibromochloromethane	**0.0094**	**0.0094**	---	---	---	---	---	---	---	---	---	---
Hexachlorobutadiene	**0.041**	**0.041**	---	---	---	---	---	---	---	---	---	---
Methylene Chloride	**0.12**	**0.12**	---	---	---	---	---	---	---	---	---	---
Naphthalene	**3.1**	**3.1**	---	---	---	---	---	---	---	---	---	---
Styrene	**0.91**	**0.91**	---	---	---	---	---	---	---	---	---	---
Tetrachloroethene	**0.1**	**0.64**	---	---	---	---	---	---	---	---	---	---
trans-1,2-Dichloroethene	**3.6**	**6.5**	---	---	---	---	---	---	---	---	---	---
Trichloroethene	**0.089**	**0.36**	---	---	---	---	---	---	---	---	---	---
Vinyl chloride	**0.036**	**0.35**	---	---	---	---	---	---	---	---	---	---
Polynuclear Aromatic Hydrocarbons (PAHs) (mg/kg)												
Acenaphthene	**120**	**120**	---	---	---	---	---	---	---	---	---	---
Acenaphthylene	**5.5**	**5.5**	---	---	---	---	---	---	---	---	---	---
Anthracene	**4.2**	**4.2**	---	---	---	---	---	---	---	---	---	---
Benzo(a)anthracene	**10**	**10**	---	---	---	---	---	---	---	---	---	---
Benzo(a)pyrene	**3.6**	**5.9**	---	---	---	---	---	---	---	---	---	---
Benzo(b)fluoranthene	**11**	**68**	---	---	---	---	---	---	---	---	---	---
Benzo(g,h,i)perylene	**35**	**35**	---	---	---	---	---	---	---	---	---	---
Benzo(k)fluoranthene	**39**	**39**	---	---	---	---	---	---	---	---	---	---
Chrysene	**30**	**30**	---	---	---	---	---	---	---	---	---	---
Dibenz(a,h)anthracene	**1.1**	**18**	---	---	---	---	---	---	---	---	---	---

Table C1: Soil Sample Analytical Summary Table

Area of Potential Concern	HDOH Tier 1 EALs (mg/kg)	HDOH C/I EALs (mg/kg)	Other Soil Samples			All Other Soil/Sediment Samples						
Location Relative to AOPC			Fence Line Composite Samples			Outfalls	Outfalls	Outfalls	Outfalls	Outfalls	Outfalls	Outfalls
Location Description						66-inch Outfall	12-inch Outfall	6-inch Outfall	6"	6"	66"	66"
Year			2002	2002	2002	1997	1997	1997	2013	2015	2013	2015
Sample ID			Fenceline-3	Fenceline-4	Fenceline-5	S-4	S-5	S-6	6" Outfall	6" Outfall		
Depth (ft bgs)			0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0.08-0.16	0-0.25	0-0.25	0-0.25	0-0.25
Fluoranthene	**87**	**87**	---	---	---	---	---	---	---	---	---	---
Fluorene	**93**	**93**	---	---	---	---	---	---	---	---	---	---
Indeno(1,2,3-cd)pyrene	**11**	**31**	---	---	---	---	---	---	---	---	---	---
Naphthalene	**3.1**	**3.1**	---	---	---	---	---	---	---	---	---	---
Phenanthrene	**69**	**69**	---	---	---	---	---	---	---	---	---	---
Pyrene	**44**	**44**	---	---	---	---	---	---	---	---	---	---
Semi-Volatile Organic Compounds (SVOCs) (mg/kg) (SW-846 8270C)												
1,2,4-Trichlorobenzene	**0.18**	**1.4**	---	---	---	---	---	---	---	---	---	---
1,2-Dichlorobenzene	**1.1**	**1.1**	---	---	---	---	---	---	---	---	---	---
1,3-Dichlorobenzene	**2.5**	**2.5**	---	---	---	---	---	---	---	---	---	---
1,4-Dichlorobenzene	**0.055**	**0.4**	---	---	---	---	---	---	---	---	---	---
2,3,4,6-Tetrachlorophenol	**0.056**	**0.056**	---	---	---	---	---	---	---	---	---	---
2,4,5-Trichlorophenol	**0.5**	**0.5**	---	---	---	---	---	---	---	---	---	---
2,4,6-Trichlorophenol	**0.31**	**0.31**	---	---	---	---	---	---	---	---	---	---
2,4-Dichlorophenol	**0.073**	**0.073**	---	---	---	---	---	---	---	---	---	---
2,4-Dimethylphenol	**9.8**	**9.8**	---	---	---	---	---	---	---	---	---	---
2,4-Dinitrophenol	**1.1**	**1.1**	---	---	---	---	---	---	---	---	---	---
2,4-Dinitrotoluene	**0.87**	**0.87**	---	---	---	---	---	---	---	---	---	---
2,6-Dinitrotoluene	**0.87**	**0.87**	---	---	---	---	---	---	---	---	---	---
2-Chlorophenol	**0.12**	**0.12**	---	---	---	---	---	---	---	---	---	---
2-Methylnaphthalene	**1.9**	**1.9**	---	---	---	---	---	---	---	---	---	---
3-3'-Dichlorobenzidine	**1.2**	**2.4**	---	---	---	---	---	---	---	---	---	---
Acenaphthene	**120**	**120**	---	---	---	---	---	---	ND<1.7	ND<1.7	ND<1.7	ND<1.7
Acenaphthylene	**5.5**	**5.5**	---	---	---	---	---	---	ND<1.7Q	ND<1.7Q	ND<1.7Q	ND<1.7Q
Anthracene	**4.2**	**4.2**	---	---	---	---	---	---	ND<1.7Q	ND<1.7Q	ND<1.7Q	ND<1.7Q
Benzo(a)anthracene	**10**	**10**	---	---	---	---	---	---	ND<1.7Q	ND<1.7Q	ND<1.7Q	ND<1.7Q
Benzo(a)pyrene	**3.6**	**5.9**	---	---	---	---	---	---	ND<1.7Q	ND<1.7Q	ND<1.7Q	ND<1.7Q
Benzo(b)fluoranthene	**11**	**68**	---	---	---	---	---	---	ND<1.7Q	ND<1.7Q	ND<1.7Q	ND<1.7Q
Benzo(g,h,i)perylene	**35**	**35**	---	---	---	---	---	---	ND<1.7	ND<1.7	ND<1.7	ND<1.7
Benzo(k)fluoranthene	**39**	**39**	---	---	---	---	---	---	ND<1.7	ND<1.7	ND<1.7	ND<1.7
Bis(2-chloroethyl)ether	**0.004**	**0.004**	---	---	---	---	---	---	---	---	---	---
Bis(2-ethylhexyl)phthalate	**37**	**140**	---	---	---	---	---	---	---	---	---	---
Chrysene	**30**	**30**	---	---	---	---	---	---	ND<1.7Q	ND<1.7Q	ND<1.7Q	ND<1.7Q
Dibenzo(a,h)anthracene	**1.1**	**18**	---	---	---	---	---	---	ND<1.7	ND<1.7	ND<1.7	ND<1.7
Diethyl phthalate	**3.7**	**3.7**	---	---	---	---	---	---	---	---	---	---
Dimethyl phthalate	**26**	**26**	---	---	---	---	---	---	---	---	---	---
Fluoranthene	**87**	**87**	---	---	---	---	---	---	ND<1.7	ND<1.7	ND<1.7	ND<1.7
Fluorene	**93**	**93**	---	---	---	---	---	---	ND<1.7	ND<1.7	ND<1.7	ND<1.7
Hexachlorobenzene	**0.22**	**0.23**	---	---	---	---	---	---	---	---	---	---
Hexachlorobutadiene	**0.061**	**0.61**	---	---	---	---	---	---	---	---	---	---
Hexachloroethane	**0.68**	**0.68**	---	---	---	---	---	---	---	---	---	---
Indeno(1,2,3-cd)pyrene	**11**	**31**	---	---	---	---	---	---	ND<1.7	ND<1.7	ND<1.7	ND<1.7
Isophorone	**10**	**10**	---	---	---	---	---	---	---	---	---	---
Naphalene	**3.1**	**3.1**	---	---	---	---	---	---	ND<1.7	ND<1.7	ND<1.7	ND<1.7
Nitrobenzene	**5.6**	**14**	---	---	---	---	---	---	---	---	---	---
Pentachlorophenol	**0.78**	**0.78**	---	---	---	---	---	---	---	---	---	---
Phenanthrene	**69**	**69**	---	---	---	---	---	---	ND<1.7	ND<1.7	ND<1.7	ND<1.7
Phenol	**1.8**	**1.8**	---	---	---	---	---	---	ND<1.7	ND<1.7	ND<1.7	ND<1.7
Pyrene	**44**	**44**	---	---	---	---	---	---	---	---	---	---
Polychlorinated Biphenyls (PCBs) (mg/kg) (SW-846 8082)												
PCBs, Total	**1.2**	**8.6**	ND<2	ND<2	ND<1	---	---	---	ND<0.0097	ND<0.0097	ND<0.01	ND<0.01
Metals (mg/kg) (SW-846 3050B/6020B/6010B/7471A)												
Arsenic	**24**	**95**	---	---	---	3.66	---	7.1	3.2*	3.9	1.3J	1.3J
Barium	**1,000**	**2,500**	100	72	110	---	---	---	84.3*	89	80	80
Cadmium	**14**	**72**	ND<1	1	1	**14.2**	---	**35.3**	1.8*	2.8	0.21	0.21
Chromium	**1,100**	**1,100**	120	180	210	264	---	262	167*	150	160	160
Lead	**200**	**800**	40	33	35	38	---	**4,371**	**587***	**560**	12	12
Mercury	**4.7**	**61**	ND<0.05	0.06	ND<0.06	---	---	---	0.079*	0.063	0.043	0.043
Nickel	**410**	**740**	---	---	---	287	---	151	120*	110	130	130
Selenium	**78**	**1,000**	---	---	---	---	---	---	ND<1.2	ND<1.2	ND<1.3	ND<1.3
Silver	**78**	**1,000**	---	---	---	---	---	---	0.27*	0.27	0.39	0.39
Zinc	**1,000**	**2,500**	---	---	---	522	---	**1,098**	140*	140	130	130

Notes:

Blue font indicates the analyte concentration exceeds the HDOH Unrestricted Land Use EAL (herein referred to as Tier 1 EAL).

Red font indicates the analyte concentration exceeds the HDOH Tier 1 and Commercial/Industrial (C/I) EALs.

TCLP - toxicity characteristic leaching procedure

ND = The sample is not detected above the laboratory detection limit

ND = The sample specific detection limit does not support the regulatory requirement

mg/kg = milligrams per kilogram

J = Results is less than the reporting limit but greater than or equal to the method detection limit and the concentration is an approximate value

H = The holding time for this test is immediately following sample collection

E = Analyte out of calibration range

NA - Not analyzed; NS - No Standard; NA* - Not analyzed due to insufficient volume of sample

** = Sample concentration is below Hawaii's background level of 500 mg/kg.

*Average concentration of primary, duplicate and triplicate reported.

Table C2: Groundwater Sample Analytical Summary Table

Area of Potential Concern	HDOH Tier 1 EALs (µg/L)	HDOH C/I EALs (µg/L)	Fuel Storage Area of Potential Concern						Old Wash Rack Area of Potential Concern							New Wash Rack Area of Potential Concern					
Location Relative to AOPC			AOPC		Upgradient		Crossgradient		AOPC					Crossgradient		AOPC			Upgradient		
Analyte			2006 EI	2011-9 AMEC	2006 EI	2011-9 AMEC	2006 EI	2011-9 AMEC	2001 e²M	2006 EI	2011-9 AMEC	2006 EI	2011-9 AMEC	2006 EI	2011-9 AMEC	2001 e²M	2006 EI	2011-9 AMEC	2001 e²M	2006 EI	2011-9 AMEC
			MW-11W		MW-10W		MW-12W		MW-B7 (MW-7)		MW-37B	MW-9W		MW-8W		MW-B6 (MW-6)		MW-36B	MW-B3 (MW-3)		
Total Petroleum Hydrocarbons (TPH) (EPA METHODS 5030B/3520C/8015B) (µg/L)																					
GRO [C5-C12]	**300**	**300**	ND	ND<15	ND	ND<15	ND	ND<15	ND	ND	ND<15	ND	ND<15	140J	ND<15	ND	ND	ND	ND	140J	ND<15
DRO [C10-C28]	**400**	**400**	ND<220	ND<79.8	ND<240	ND<78.9	ND<230	ND<81.5	**700**	ND<220	24J	ND<220	ND<82.4	ND<220	ND<82.4	**900**	270J	**1,690J**	**500**	ND<210	ND<78.9
RRO [C28-C40]	**500**	**500**	110J	ND<532J	390J	ND<526J	120J	ND<543J	ND	ND	ND<758	300J	ND<549	130J	ND<549J	ND	470J	**1,070J**	ND	ND	ND<526
Volatile Organic Compounds (VOCs) (EPA METHODS 5030B/8260B) (µg/L)																					
1,1,1,2-Tetrachloroethane	**0.61**	**0.61**	ND	ND<0.1	ND	ND<0.1	ND	ND<0.1	---	ND	ND<0.1	ND	ND<0.1	ND	ND<0.1	---	ND	---	---	ND	ND<0.1
1,1,1-Trichloroethane	**11**	**11**	ND	ND<0.19	ND	ND<0.19	ND	ND<0.19	---	ND	ND<0.19	ND	ND<0.19	ND	ND<0.19	---	ND	---	---	ND	ND<0.19
1,1,2,2-Tetrachloroethane	**200**	**200**	ND	ND<0.09	ND	ND<0.09	ND	ND<0.09	---	ND	ND<0.09	ND	ND<0.09	ND	ND<0.09	---	ND	---	---	ND	ND<0.09
1,1,2-Trichloroethane	**110**	**730**	ND<0.23	ND<0.31	ND<0.23	ND<0.31	ND<0.23	ND<0.31	---	0.71J	ND<0.31	ND<0.23	ND<0.31	ND<0.23	ND<0.31	---	0.33J	---	---	ND<0.23	ND<0.31
1,1-Dichloroethane	**47**	**47**	ND<0.23	ND<0.1	ND<0.23	ND<0.1	ND<0.23	ND<0.1	---	ND<0.23	ND<0.1	ND<0.23	ND<0.1	ND<0.23	ND<0.1	---	ND<0.23	---	---	ND<0.23	ND<0.1
1,1-Dichloroethene	**25**	**25**	ND	ND<0.14	ND	ND<0.14	ND	ND<0.14	---	0.18J	ND<0.14	ND	ND<0.14	ND	ND<0.14	---	ND	---	---	ND	ND<0.14
1,2,3-Trichloropropane	**14**	**14**	ND<0.96	ND<0.13	ND<0.96	ND<0.13	ND<0.96	ND<0.13	---	ND<0.96	ND<0.13	ND<0.96	ND<0.13	ND<0.96	ND<0.13	---	ND<0.96	---	---	ND<0.96	ND<0.13
1,2,4-Trichlorobenzene	**110**	**110**	ND	ND<0.1	ND	ND<0.1	ND	ND<0.1	---	ND	ND<0.1	ND	ND<0.1	ND	ND<0.1	---	ND	---	---	ND	ND<0.1
1,2-Dibromo-3-chloropropane	**0.04**	**0.04**	ND	ND<0.32	ND	ND<0.32	ND	ND<0.32	---	ND	ND<0.32	ND	ND<0.32	ND	ND<0.32	---	ND	---	---	ND	ND<0.32
1,2-Dibromoethane	**19**	**160**	ND	ND<0.22	ND	ND<0.22	ND	ND<0.22	---	ND	ND<0.22	ND	ND<0.22	ND	ND<0.22	---	ND	---	---	ND	ND<0.22
1,2-Dichlorobenzene	**14**	**14**	ND	ND<0.14	ND	ND<0.14	ND	ND<0.14	---	ND	ND<0.14	ND	ND<0.14	ND	ND<0.14	---	ND	---	---	ND	ND<0.14
1,2-Dichloroethane	**180**	**910**	ND	ND<0.22	ND	ND<0.22	ND	ND<0.22	---	ND	ND<0.22	ND	ND<0.22	ND	ND<0.22	---	ND	---	---	ND	ND<0.22
1,2-Dichloropropane	**100**	**100**	ND	ND<0.15	ND	ND<0.15	ND	ND<0.15	---	0.6J	ND<0.15	ND	ND<0.15	ND	ND<0.15	---	ND	---	---	ND	ND<0.15
1,3-Dichlorobenzene	**22**	**22**	ND	ND<0.11	ND	ND<0.11	ND	ND<0.11	---	ND	ND<0.11	ND	ND<0.11	ND	ND<0.11	---	ND	---	---	ND	ND<0.11
1,4-Dichlorobenzene	**9.4**	**9.4**	ND	ND<0.13	ND	ND<0.13	ND	ND<0.13	---	ND	ND<0.13	ND	ND<0.13	ND	ND<0.13	---	ND	---	---	ND	ND<0.13
2-Butanone (MEK)	**5,600**	**5,600**	3.1J	ND<0.35	ND	ND<0.4	ND	ND<0.35	---	20J	ND<0.35	ND	ND<0.35	ND	ND<0.35	---	12J	0.49J	---	ND	ND<0.35
Acetone	**1,500**	**1,500**	13J	4J	4.4J	3.4J	5.5J	3J	---	21J	3.3J	7.5J	5.7J	4.9J	2.6J	---	13J	ND<4.9	---	5.5J	2.3J
Benzene	**71**	**71**	ND<0.2	ND<0.13	ND<0.2	ND<0.13	ND<0.2	ND<0.13	---	0.33J	ND<0.13	ND<0.2	ND<0.13	ND<0.2	ND<0.13	---	ND<0.2	---	---	ND<0.2	ND<0.13
Bromodichloromethane	**110**	**340**	ND	ND<0.14	ND	ND<0.14	ND	ND<0.14	---	ND	ND<0.14	ND	ND<0.14	ND	ND<0.14	---	ND	---	---	ND	ND<0.14
Bromoform	**0.0023**	**0.0023**	ND	ND<0.1	ND	ND<0.1	ND	ND<0.1	---	ND	ND<0.1	ND	ND<0.1	ND	ND<0.1	---	ND	---	---	ND	ND<0.1
Bromomethane	**16**	**16**	ND<0.37	ND<0.29	ND<0.37	ND<0.29	ND<0.37	ND<0.29	---	ND<0.37	ND<0.29	ND<0.37	ND<0.29	ND<0.37	ND<0.29	---	ND<0.37	---	---	ND<0.37	ND<0.29
Carbon tetrachloride	**9.8**	**9.8**	ND	ND<0.15	ND	ND<0.15	ND	ND<0.15	---	ND	ND<0.15	ND	ND<0.15	ND	ND<0.15	---	ND	---	---	ND	ND<0.15
Chlorobenzene	**25**	**25**	ND	ND<0.12	ND	ND<0.12	ND	ND<0.12	---	ND	ND<0.12	ND	ND<0.12	ND	ND<0.12	---	ND	---	---	ND	ND<0.12
Chloroethane	**160**	**160**	ND	ND<0.34	ND	ND<0.34	ND	ND<0.34	---	ND	ND<0.34	ND	ND<0.34	ND	ND<0.34	---	ND	---	---	ND	ND<0.34
Chloroform	**28**	**28**	ND	ND<0.12	ND	ND<0.12	ND	ND<0.12	4	0.2J	ND<0.12	ND	ND<0.12	ND	ND<0.12	ND<1	ND	---	ND<1	ND	ND<0.12
Chloromethane	**190**	**190**	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	---	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	---	ND<0.25	---	---	ND<0.25	ND<0.25
cis-1,2-Dichloroethene	**620**	**620**	ND	ND<0.1	ND	ND<0.1	ND	ND<0.1	---	2.6J	ND<0.1	ND	ND<0.1	ND	ND<0.1	---	ND	---	---	ND	ND<0.1
Dibromochloromethane	**34**	**34**	ND	ND<0.13	ND	ND<0.13	ND	ND<0.13	---	ND	ND<0.13	ND	ND<0.13	ND	ND<0.13	---	ND	---	---	ND	ND<0.13
Ethylbenzene	**7.3**	**7.3**	ND	ND<0.1	ND	ND<0.1	ND	ND<0.1	---	2.4J	ND<0.1	ND	ND<0.1	ND	ND<0.1	---	1.2J	---	---	0.2J	ND<0.1
Hexachlorobutadiene	**0.3**	**0.3**	ND	ND<0.22	ND	ND<0.22	ND	ND<0.22	---	ND	ND<0.22	ND	ND<0.22	ND	ND<0.22	---	ND	---	---	ND	ND<0.22
Methylene Chloride	**5**	**5**	**12.3**	ND<0.35	4.7J	ND<0.35	2.9J	ND<0.35	---	ND<0.28	ND<0.35	**59.5**	ND<0.35	**5.92**	ND<0.35	---	ND<0.28	ND	---	3.3J	ND<0.35
Methy-tert-butyl ether	**730**	**730**	ND	ND<0.19	ND	ND<0.19	ND	ND<0.19	---	ND	ND<0.19	ND	ND<0.19	ND	ND<0.19	---	ND	---	---	ND	ND<0.19
Naphthalene	**12**	**12**	ND	ND<0.15	ND	ND<0.15	ND	ND<0.15	---	6.84	ND<0.15	0.82J	ND<0.15	0.33J	ND<0.15	---	1.5J	---	---	0.79J	ND<0.15
Styrene	**32**	**32**	ND	ND<0.15	ND	ND<0.15	ND	ND<0.15	---	ND	ND<0.15	ND	ND<0.15	ND	ND<0.15	---	ND	---	---	ND	ND<0.15
Tetrachloroethene (PCE)	**53**	**53**	ND<0.26	ND<0.1	ND<0.26	ND<0.2	ND<0.26	ND<0.1	---	ND<0.26	ND<0.1	ND<0.26	ND<0.1	ND<0.26	ND<0.1	---	ND<0.26	ND<0.1	---	ND<0.26	ND<0.1
Toluene	**9.8**	**9.8**	ND	ND<0.25	ND	ND<0.25	ND	ND<0.25	---	6.41	ND<0.25	ND	ND<0.25	0.2J	ND<0.25	---	3J	---	---	0.38J	ND<0.25
Total, Xylenes	**13**	**13**	ND	ND<0.1	ND	ND<0.1	ND	ND<0.1	---	3.7J	ND<0.1	ND	ND<0.1	ND	ND<0.1	---	1.74J	---	---	0.33J	ND<0.1
trans-1,2-Dichloroethene	**560**	**560**	ND	ND<0.11	ND	ND<0.11	ND	ND<0.11	---	ND	ND<0.11	ND	ND<0.11	ND	ND<0.11	---	ND	---	---	ND	ND<0.11
Trichloroethylene (TCE)	**5**	**5**	ND<0.27	ND<0.13	ND<0.4	ND<0.13	ND<0.27	ND<0.13	**240**	**147**E	0.35J	ND<0.27	ND<0.13	ND<0.27	ND<0.13	**22**	2.8J	1.5	ND<5	ND<0.27	ND<0.13

Table C2: Groundwater Sample Analytical Summary Table

Area of Potential Concern			Fuel Storage Area of Potential Concern						Old Wash Rack Area of Potential Concern							New Wash Rack Area of Potential Concern					
Location Relative to AOPC	HDOH Tier 1 EALs (µg/L)	HDOH C/I EALs (µg/L)	AOPC		Upgradient		Crossgradient		AOPC					Crossgradient		AOPC			Upgradient		
Analyte			2006 EI	2011-9 AMEC	2006 EI	2011-9 AMEC	2006 EI	2011-9 AMEC	2001 e²M	2006 EI	2011-9 AMEC	2006 EI	2011-9 AMEC	2006 EI	2011-9 AMEC	2001 e²M	2006 EI	2011-9 AMEC	2001 e²M	2006 EI	2011-9 AMEC
			MW-11W		MW-10W		MW-12W		MW-B7 (MW-7)		MW-37B	MW-9W		MW-8W		MW-B6 (MW-6)		MW-36B	MW-B3 (MW-3)		
Vinyl chloride	**18**	**610**	ND<0.29	ND<0.22	ND<0.29	ND<0.22	ND<0.29	ND<0.22	---	ND<0.29	ND<0.22	ND<0.29	ND<0.22	ND<0.29	ND<0.22	---	ND<0.29	---	---	ND<0.29	ND<0.22
Polynuclear Aromatic Hydrocarbons (Polynuclear Aromatic Hydrocarbons (PAHs)) (EPA METHODS 3520C/8270C-SIM) (µg/L)																					
Acenaphthene	**15**	**15**	ND	---	ND	---	ND	---	---	ND	---	ND	---	ND	---	---	ND	---	---	ND	---
Acenaphthylene	**13**	**13**	ND	---	ND	---	ND	---	---	ND	---	ND	---	ND	---	---	ND	---	---	ND	---
Anthracene	**0.02**	**0.02**	ND	---	ND	---	ND	---	---	ND	---	ND	---	ND	---	---	ND	---	---	ND	---
Benzo(a)anthracene	**0.027**	**0.027**	0.053J	---	ND	---	0.048J	---	---	0.039J	---	ND	---	ND	---	---	ND	---	---	ND	---
Benzo(a)pyrene	**0.06**	**0.06**	ND	---	0.098J	---	0.067J	---	---	0.093J	---	0.1	---	ND	---	---	0.11J	---	---	ND	---
Benzo(g,h,i)perylene	**0.13**	**0.13**	ND	---	ND	---	ND	---	---	ND	---	0.065	---	ND	---	---	ND	---	---	0.059J	---
Benzo(k)fluoranthene	**0.4**	**0.4**	ND	---	ND	---	0.072J	---	---	ND	---	ND	---	ND	---	---	ND	---	---	ND	---
Chrysene	**1**	**1**	ND	---	ND	---	ND	---	---	ND	---	ND	---	ND	---	---	ND	---	---	ND	---
Dibenz(a,h)anthracene	**0.8**	**0.8**	ND	---	ND	---	ND	---	---	ND	---	ND	---	ND	---	---	ND	---	---	ND	---
Fluoranthene	**0.8**	**0.8**	ND	---	ND	---	ND	---	---	ND	---	ND	---	ND	---	---	ND	---	---	ND	---
Fluorene	**3.9**	**3.9**	ND	---	ND	---	ND	---	---	ND	---	ND	---	ND	---	---	ND	---	---	ND	---
Indeno(1,2,3-cd)pyrene	**0.095**	**0.095**	ND	---	ND	---	ND	---	---	ND	---	ND	---	0.056J	---	---	ND	---	---	0.077J	---
Naphthalene	**12**	**12**	ND	---	ND	---	0.059	---	---	ND	---	ND	---	0.048J	---	---	ND	---	---	0.05J	---
Phenanthrene	**2.3**	**2.3**	ND	---	0.036J	---	ND	---	---	ND	---	ND	---	ND	---	---	ND	---	---	ND	---
Pyrene	**4.6**	**4.6**	ND	---	ND	---	ND	---	---	ND	---	ND	---	ND	---	---	ND	---	---	ND	---
Semi-Volatile Organic Compounds (µg/L) (SW-846 8270C)																					
1,2,4-Trichlorobenzene	**70**	**70**	---	ND<1.5	---	ND<1.5	---	ND<1.5	---	---	ND<1.5	---	ND<1.5	---	ND<1.5	---	---	---	---	---	ND<1.5
1,2-Dichlorobenzene	**10**	**10**	---	ND<1.6	---	ND<1.6	---	ND<1.6	---	---	ND<1.6	---	ND<1.6	---	ND<1.6	---	---	---	---	---	ND<1.6
1,3-Dichlorobenzene	**5**	**5**	---	ND<1.6	---	ND<1.6	---	ND<1.6	---	---	ND<1.6	---	ND<1.6	---	ND<1.6	---	---	---	---	---	ND<1.6
1,4-Dichlorobenzene	**5**	**5**	---	ND<1.5	---	ND<1.5	---	ND<1.5	---	---	ND<1.5	---	ND<1.5	---	ND<1.5	---	---	---	---	---	ND<1.5
2,4,5-Trichlorophenol	**1.9**	**1.9**	---	ND<2.2	---	ND<2.1	---	ND<2.1	---	---	ND<2.2	---	ND<2.2	---	ND<2.2	---	---	---	---	---	ND<2.1
2,4,6-Trichlorophenol	**4.9**	**4.9**	---	ND<2.2	---	ND<2.1	---	ND<2.1	---	---	ND<2.2	---	ND<2.2	---	ND<2.2	---	ND<2	---	---	---	ND<2.1
2,4-Dichlorophenol	**0.3**	**0.3**	---	ND<2.8	---	ND<2.7	---	ND<2.8	---	---	ND<2.9	---	ND<2.8	---	ND<2.8	---	ND<1.7	---	---	---	ND<2.7
2,4-Dimethylphenol	**120**	**120**	---	ND<2.4	---	ND<2.3	---	ND<2.3	---	---	ND<2.4	---	ND<2.4	---	ND<2.4	---	ND<7.9	---	---	---	ND<2.3
2,4-Dinitrophenol	**14**	**14**	---	ND<22	---	ND<21	---	ND<21	---	---	ND<22	---	ND<22	---	ND<22	---	ND<7.5	---	---	---	ND<21
2,4-Dinitrotoluene	**0.25**	**0.25**	---	ND<2.2	---	ND<2.1	---	ND<2.1	---	---	ND<2.2	---	ND<2.2	---	ND<2.2	---	ND<2.2	---	---	---	ND<2.1
2,6-Dichlorophenol	**NS**	**NS**	---	ND<2	---	ND<2	---	ND<2	---	---	ND<2	---	ND<2	---	ND<2	---	---	---	---	---	ND<2
2,6-Dinitrotoluene	**0.052**	**0.052**	---	ND<2.2	---	ND<2.1	---	ND<2.1	---	---	ND<2.2	---	ND<2.2	---	ND<2.2	---	ND<1.9	---	---	---	ND<2.1
2-Chlorophenol	**0.18**	**0.18**	---	ND<1.7	---	ND<1.7	---	ND<1.7	---	---	ND<1.8	---	ND<1.7	---	ND<1.7	---	---	---	---	---	ND<1.7
2-Methylnaphthalene	**2.1**	**2.1**	---	ND<1.6	---	ND<1.6	---	ND<1.6	---	---	ND<1.6	---	ND<1.6	---	ND<1.6	---	---	---	---	---	ND<1.6
3,3'-Dichlorobenzidine	**0.17**	**0.17**	---	ND<1	---	ND<1	---	ND<1	---	---	ND<1.1	---	ND<1	---	ND<1	---	ND<1.3	---	---	---	ND<1
Acenaphthene	**15**	**15**	---	ND<1.2	---	ND<1.2	---	ND<1.2	---	---	ND<1.2	---	ND<1.2	---	ND<1.2	---	---	---	---	---	ND<1.2
Acenaphthylene	**13**	**13**	---	ND<1.2	---	ND<1.2	---	ND<1.2	---	---	ND<1.2	---	ND<1.2	---	ND<1.2	---	---	---	---	---	ND<1.2
Anthracene	**0.02**	**0.02**	---	ND<1.1	---	ND<1	---	ND<1.1	---	---	ND<1.1	---	ND<1.1	---	ND<1.1	---	---	---	---	---	ND<1
Benzo(a)anthracene	**0.027**	**0.027**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Benzo(a)pyrene	**0.06**	**0.06**	---	0.83J	---	ND<0.71	---	ND<0.72	---	---	ND<0.75	---	ND<0.74	---	ND<0.74	---	---	ND<0.76	---	---	ND<0.71
Benzo(b)fluoranthene	**0.22**	**0.22**	---	ND<1.3	---	ND<1.3	---	ND<1.3	---	---	ND<1.3	---	ND<1.4	---	ND<1.3	---	---	---	---	---	ND<1.3
Benzo(g,h,i)perylene	**0.13**	**0.13**	---	ND<1.5	---	ND<1.5	---	ND<1.5	---	---	ND<1.5	---	ND<1.6	---	ND<1.5	---	---	---	---	---	ND<1.5
Benzo(k)fluoranthene	**0.4**	**0.4**	---	ND<1	---	ND<1	---	ND<1	---	---	ND<1.1	---	ND<1.1	---	ND<1	---	---	---	---	---	ND<1
bis(2-Chloroethyl)ether	**0.37**	**0.37**	---	ND<1.6	---	ND<1.6	---	ND<1.6	---	---	ND<1.6	---	ND<1.6	---	ND<1.6	---	---	---	---	---	ND<1.6
bis(2-Ethylhexyl)phthalate	**3**	**3**	---	1.2J	---	ND<1	---	ND<1.1	---	---	ND<1.1	---	1.4J	---	ND<1.1	---	ND<9.5	ND<1.5	---	---	ND<1
Chrysene	**1**	**1**	---	ND<0.66	---	ND<0.64	---	ND<0.65	---	---	ND<0.67	---	ND<0.66	---	ND<0.66	---	---	---	---	---	ND<0.64

Table C2: Groundwater Sample Analytical Summary Table

Area of Potential Concern			Fuel Storage Area of Potential Concern						Old Wash Rack Area of Potential Concern							New Wash Rack Area of Potential Concern					
Location Relative to AOPC	HDOH Tier 1 EALs (µg/L)	HDOH C/I EALs (µg/L)	AOPC		Upgradient		Crossgradient		AOPC					Crossgradient		AOPC			Upgradient		
Analyte			2006 EI	2011-9 AMEC	2006 EI	2011-9 AMEC	2006 EI	2011-9 AMEC	2001 e²M	2006 EI	2011-9 AMEC	2006 EI	2011-9 AMEC	2006 EI	2011-9 AMEC	2001 e²M	2006 EI	2011-9 AMEC	2001 e²M	2006 EI	2011-9 AMEC
			MW-11W		MW-10W		MW-12W		MW-B7 (MW-7)	MW-37B		MW-9W		MW-8W		MW-B6 (MW-6)		MW-36B	MW-B3 (MW-3)		
Dibenz(a,h)anthracene	**0.8**	**0.8**	---	ND<2.2	---	ND<2.1	---	ND<2.1	---	---	ND<2.2	---	ND<2.2	---	ND<2.2	---	---	---	---	---	ND<2.1
Diethyl phthalate	**210**	**210**	---	ND<1	---	2.8J	---	ND<0.99	---	---	ND<1	---	ND<1	---	ND<1	---	ND<1.9	ND<1	---	---	ND<0.98
Dimethyl phthalate	**1,100**	**1,100**	---	ND<0.95	---	ND<0.92	---	ND<0.93	---	---	ND<0.97	---	ND<0.96	---	ND<0.95	---	ND<1.5	---	---	---	ND<0.92
Fluoranthene	**0.8**	**0.8**	---	ND<0.7	---	ND<0.68	---	ND<0.69	---	ND	ND<0.72	---	ND<0.71	---	ND<0.7	---	ND	---	---	---	ND<0.68
Fluorene	**3.9**	**3.9**	---	ND<1	---	ND<0.98	---	ND<0.99	---	ND	ND<1	---	ND<1	---	ND<1	---	ND	---	---	---	ND<0.98
Hexachlorobenzene	**0.0003**	**0.0003**	---	ND<1.5	---	ND<1.5	---	ND<1.5	---	---	ND<1.5	---	ND<1.5	---	ND<1.5	---	ND<1.2	---	---	---	ND<1.5
Hexachlorobutadiene	**0.063**	**0.063**	---	ND<1.4	---	ND<1.4	---	ND<1.4	---	---	ND<1.4	---	ND<1.4	---	ND<1.4	---	---	---	---	---	ND<1.4
Hexachlorocyclopentadiene	**0.2**	**0.2**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	ND<7	---	---	---	---
Hexachloroethane	**0.4**	**0.4**	---	ND<1.5	---	ND<1.5	---	ND<1.5	---	---	ND<1.5	---	ND<1.5	---	ND<1.5	---	ND<4.8	---	---	---	ND<1.5
Indeno(1,2,3-cd)pyrene	**0.095**	**0.095**	---	ND<3.7	---	ND<3.6	---	ND<3.6	---	ND	ND<3.7	---	ND<3.7	---	ND<3.7	---	ND	---	---	---	ND<3.6
Isophorone	**82**	**82**	---	ND<1.1	---	ND<1	---	ND<1.1	---	---	ND<1.1	---	ND<1	---	ND<1.1	---	---	---	---	---	ND<1
Naphthalene	**12**	**12**	---	ND<1.4	---	ND<1.4	---	ND<1.4	---	ND	ND<1.4	---	ND<1.4	---	ND<1.4	---	ND	---	---	---	ND<1.4
Nitrobenzene	**0.14**	**0.14**	---	ND<1.7	---	ND<1.7	---	ND<1.7	---	---	ND<1.8	---	ND<1.7	---	ND<1.7	---	---	---	---	---	ND<1.7
Pentachlorophenol	**1**	**1**	---	ND<2.2	---	ND<2.1	---	ND<2.1	---	---	ND<2.2	---	ND<2.2	---	ND<2.2	---	ND<3.1	---	---	---	ND<2.1
Phenanthrene	**2.3**	**2.3**	---	ND<1.1	---	ND<1	---	ND<1.1	---	---	ND<1.1	---	ND<1.1	---	ND<1.1	---	ND<1.3	---	---	---	ND<1
Phenol	**58**	**58**	---	ND<1.2	---	ND<1.2	---	ND<1.2	---	---	ND<1.2	---	ND<1.2	---	ND<1.2	---	---	---	---	---	ND<1.2
Pyrene	**4.6**	**4.6**	---	ND<1.5	---	ND<1.5	---	ND<1.5	---	ND	ND<1.5	---	ND<1.5	---	ND<1.5	---	ND	---	---	---	ND<1.5
Polychlorinated biphenyl (Polychlorinated Biphenyls (PCBs)) (µg/L)																					
PCBs, Total	**0.014**	**0.014**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	ND<0.42	---	---	---	---
Dissolved Metals (µg/L)																					
Arsenic (As)	**10**	**10**	ND	ND<12	ND	ND<12	ND	ND<12	---	5.5J	ND<12	ND	ND<12	ND	ND<12	---	ND	---	---	ND	ND<12
Barium (Ba)	**220**	**220**	22	---	3.4	---	11.9	---	---	86.6	---	10.5	---	12.1	---	---	20.7	---	---	5.16	---
Cadmium (Cd)	**3**	**3**	ND	ND<0.5	ND	ND<0.5	ND	ND<0.05	---	ND	ND<0.5	ND	ND<0.5	ND	ND<0.5	---	ND	---	---	ND	ND<0.5
Chromium (Cr)	**11**	**11**	ND	ND<1.2	3.4J	2.3J	ND	ND<1.2	---	ND<3.2	6.2J	5.37	2.1J	ND<3.2	2.7J	---	3.7J	7.5J	---	ND<3.2	ND<1.2
Lead (Pb)	**5.6**	**5.6**	ND	ND<2.5	ND<4.1	ND<2.5	ND	ND<2.5	3 Total	ND<4.1	ND<2.5	ND<4.1	ND<2.5	ND<4.1	ND<2.5	16 Total	ND<4.1	ND	5 Total	ND<4.1	ND<2.5
Nickel (Ni)	**5**	**5**	ND	3.7J	ND	ND<2.4	ND	ND<2.4	---	19.6	5.8J	ND	ND<2.4	ND	3J	---	9.38	8.8J	---	ND	ND<2.4
Selenium (Se)	**5**	**5**	ND	---	7.3J	---	ND	---	---	ND	---	10J	---	ND	---	---	ND	---	---	ND	---
Silver (Ag)	**0.1**	**0.1**	ND	ND<0.84	ND<2.1	ND<0.84	ND	ND<0.84	---	ND<2.1	ND<0.84	ND<2.1	ND<0.84	ND<2.1	ND<0.84	---	ND<2.1	ND	---	ND<2.1	ND<0.84
Zinc (Zn)	**22**	**22**	4.5J	ND<3	ND	ND<3	ND	ND<20	---	3.5J	6.4JB	ND	ND<3	ND	3.1JB	---	6.7J	---	---	ND	ND<3
Mercury (Hg)	**0.025**	**0.025**	0.07J	ND<0.04	0.04J	ND<0.04	0.05J	0.02J	---	0.05J	ND<0.04	0.04J	ND<0.04	0.050J	ND<0.04	---	ND	0.05J	---	0.09J	0.1J

Table C2: Groundwater Sample Analytical Summary Table

Area of Potential Concern	HDOH Tier 1 EALs (µg/L)	HDOH C/I EALs (µg/L)	Grease Rack Area of Potential Concern							
Location Relative to AOPC			Downgradient	AOPC			Crossgradient			
Analyte			2011-9 AMEC	2001 e^2M	2006 EI	2011-9 AMEC	2006 EI	2011-9 AMEC	2006 EI	2011-9 AMEC
			MW-36B	MW-B3 (MW-3)			MW-11W		MW-10W	
Total Petroleum Hydrocarbons (TPH) (EPA METHODS 5030B/3520C/8015B) (µg/L)										
GRO [C5-C12]	**300**	**300**	ND	ND	140J	ND<15	ND	ND<15	ND	ND<15
DRO [C10-C28]	**400**	**400**	1,690J	500	ND<210	ND<78.9	ND<220	ND<79.8	ND<240	ND<78.9
RRO [C28-C40]	**500**	**500**	1,070J	ND	ND	ND<526	110J	ND<532J	390J	ND<526J
Volatile Organic Compounds (VOCs) (EPA METHODS 5030B/8260B) (µg/L)										
1,1,1,2-Tetrachloroethane	**0.61**	**0.61**	---	---	ND	ND<0.1	ND	ND<0.1	ND	ND<0.1
1,1,1-Trichloroethane	**11**	**11**	---	---	ND	ND<0.19	ND	ND<0.19	ND	ND<0.19
1,1,2,2-Tetrachloroethane	**200**	**200**	---	---	ND	ND<0.09	ND	ND<0.09	ND	ND<0.09
1,1,2-Trichloroethane	**110**	**730**	---	---	ND<0.23	ND<0.31	ND<0.23	ND<0.31	ND<0.23	ND<0.31
1,1-Dichloroethane	**47**	**47**	---	---	ND<0.23	ND<0.1	ND<0.23	ND<0.1	ND<0.23	ND<0.1
1,1-Dichloroethene	**25**	**25**	---	---	ND	ND<0.14	ND	ND<0.14	ND	ND<0.14
1,2,3-Trichloropropane	**14**	**14**	---	---	ND<0.96	ND<0.13	ND<0.96	ND<0.13	ND<0.96	ND<0.13
1,2,4-Trichlorobenzene	**110**	**110**	---	---	ND	ND<0.1	ND	ND<0.1	ND	ND<0.1
1,2-Dibromo-3-chloropropane	**0.04**	**0.04**	---	---	ND	ND<0.32	ND	ND<0.32	ND	ND<0.32
1,2-Dibromoethane	**19**	**160**	---	---	ND	ND<0.22	ND	ND<0.22	ND	ND<0.22
1,2-Dichlorobenzene	**14**	**14**	---	---	ND	ND<0.14	ND	ND<0.14	ND	ND<0.14
1,2-Dichloroethane	**180**	**910**	---	---	ND	ND<0.22	ND	ND<0.22	ND	ND<0.22
1,2-Dichloropropane	**100**	**100**	---	---	ND	ND<0.15	ND	ND<0.15	ND	ND<0.15
1,3-Dichlorobenzene	**22**	**22**	---	---	ND	ND<0.11	ND	ND<0.11	ND	ND<0.11
1,4-Dichlorobenzene	**9.4**	**9.4**	---	---	ND	ND<0.13	ND	ND<0.13	ND	ND<0.13
2-Butanone (MEK)	**5,600**	**5,600**	0.49J	---	ND	ND<0.35	3.1J	ND<0.35	ND	ND<0.4
Acetone	**1,500**	**1,500**	ND<4.9	---	5.5J	2.3J	13J	4J	4.4J	3.4J
Benzene	**71**	**71**	---	---	ND<0.2	ND<0.13	ND<0.2	ND<0.13	ND<0.2	ND<0.13
Bromodichloromethane	**110**	**340**	---	---	ND	ND<0.14	ND	ND<0.14	ND	ND<0.14
Bromoform	**0.0023**	**0.0023**	---	---	ND	ND<0.1	ND	ND<0.1	ND	ND<0.1
Bromomethane	**16**	**16**	---	---	ND<0.37	ND<0.29	ND<0.37	ND<0.29	ND<0.37	ND<0.29
Carbon tetrachloride	**9.8**	**9.8**	---	---	ND	ND<0.15	ND	ND<0.15	ND	ND<0.15
Chlorobenzene	**25**	**25**	---	---	ND	ND<0.12	ND	ND<0.12	ND	ND<0.12
Chloroethane	**160**	**160**	---	---	ND	ND<0.34	ND	ND<0.34	ND	ND<0.34
Chloroform	**28**	**28**	---	ND<1	ND	ND<0.12	ND	ND<0.12	ND	ND<0.12
Chloromethane	**190**	**190**	---	---	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25	ND<0.25
cis-1,2-Dichloroethene	**620**	**620**	---	---	ND	ND<0.1	ND	ND<0.1	ND	ND<0.1
Dibromochloromethane	**34**	**34**	---	---	ND	ND<0.13	ND	ND<0.13	ND	ND<0.13
Ethylbenzene	**7.3**	**7.3**	---	---	0.2J	ND<0.1	ND	ND<0.1	ND	ND<0.1
Hexachlorobutadiene	**0.3**	**0.3**	---	---	ND	ND<0.22	ND	ND<0.22	ND	ND<0.22
Methylene Chloride	**5**	**5**	ND	---	3.3J	ND<0.35	12.3	ND<0.35	4.7J	ND<0.35
Methy-tert-butyl ether	**730**	**730**	---	---	ND	ND<0.19	ND	ND<0.19	ND	ND<0.19
Naphthalene	**12**	**12**	---	---	0.79J	ND<0.15	ND	ND<0.15	ND	ND<0.15
Styrene	**32**	**32**	---	---	ND	ND<0.15	ND	ND<0.15	ND	ND<0.15
Tetrachloroethene (PCE)	**53**	**53**	ND<0.1	---	ND<0.26	ND<0.1	ND<0.26	ND<0.1	ND<0.26	ND<0.2
Toluene	**9.8**	**9.8**	---	---	0.38J	ND<0.25	ND	ND<0.25	ND	ND<0.25
Total, Xylenes	**13**	**13**	---	---	0.33J	ND<0.1	ND	ND<0.1	ND	ND<0.1
trans-1,2-Dichloroethene	**560**	**560**	---	---	ND	ND<0.11	ND	ND<0.11	ND	ND<0.11
Trichloroethylene (TCE)	**5**	**5**	1.5	ND<5	ND<0.27	ND<0.13	ND<0.27	ND<0.13	ND<0.4	ND<0.13

Table C2: Groundwater Sample Analytical Summary Table

Area of Potential Concern	HDOH Tier 1 EALs (µg/L)	HDOH C/I EALs (µg/L)	Grease Rack Area of Potential Concern							
Location Relative to AOPC			Downgradient	AOPC			Crossgradient			
Analyte			2011-9 AMEC	2001 e^2M	2006 EI	2011-9 AMEC	2006 EI	2011-9 AMEC	2006 EI	2011-9 AMEC
			MW-36B	MW-B3 (MW-3)			MW-11W		MW-10W	
Vinyl chloride	**18**	**610**	---	---	ND<0.29	ND<0.22	ND<0.29	ND<0.22	ND<0.29	ND<0.22
Polynuclear Aromatic Hydrocarbons (Polynuclear Aromatic Hydrocarbons (PAHs)) (EPA METHODS 3520C/8270C-SIM) (µg/L)										
Acenaphthene	**15**	**15**	---	---	ND	---	ND	---	ND	---
Acenaphthylene	**13**	**13**	---	---	ND	---	ND	---	ND	---
Anthracene	**0.02**	**0.02**	---	---	ND	---	ND	---	ND	---
Benzo(a)anthracene	**0.027**	**0.027**	---	---	ND	---	**0.053**J	---	ND	---
Benzo(a)pyrene	**0.06**	**0.06**	---	---	ND	---	ND	---	**0.098**J	---
Benzo(g,h,i)perylene	**0.13**	**0.13**	---	---	0.059J	---	ND	---	ND	---
Benzo(k)fluoranthene	**0.4**	**0.4**	---	---	ND	---	ND	---	ND	---
Chrysene	**1**	**1**	---	---	ND	---	ND	---	ND	---
Dibenz(a,h)anthracene	**0.8**	**0.8**	---	---	ND	---	ND	---	ND	---
Fluoranthene	**0.8**	**0.8**	---	---	ND	---	ND	---	ND	---
Fluorene	**3.9**	**3.9**	---	---	ND	---	ND	---	ND	---
Indeno(1,2,3-cd)pyrene	**0.095**	**0.095**	---	---	0.077J	---	ND	---	ND	---
Naphthalene	**12**	**12**	---	---	0.05J	---	ND	---	ND	---
Phenanthrene	**2.3**	**2.3**	---	---	ND	---	ND	---	0.036J	---
Pyrene	**4.6**	**4.6**	---	---	ND	---	ND	---	ND	---
Semi-Volatile Organic Compounds (µg/L) (SW-846 8270C)										
1,2,4-Trichlorobenzene	**70**	**70**	---	---	---	ND<1.5	---	ND<1.5	---	ND<1.5
1,2-Dichlorobenzene	**10**	**10**	---	---	---	ND<1.6	---	ND<1.6	---	ND<1.6
1,3-Dichlorobenzene	**5**	**5**	---	---	---	ND<1.6	---	ND<1.6	---	ND<1.6
1,4-Dichlorobenzene	**5**	**5**	---	---	---	ND<1.5	---	ND<1.5	---	ND<1.5
2,4,5-Trichlorophenol	**1.9**	**1.9**	---	---	---	ND<2.1	---	ND<2.2	---	ND<2.1
2,4,6-Trichlorophenol	**4.9**	**4.9**	---	---	---	ND<2.1	---	ND<2.2	---	ND<2.1
2,4-Dichlorophenol	**0.3**	**0.3**	---	---	---	ND<2.7	---	ND<2.8	---	ND<2.7
2,4-Dimethylphenol	**120**	**120**	---	---	---	ND<2.3	---	ND<2.4	---	ND<2.3
2,4-Dinitrophenol	**14**	**14**	---	---	---	ND<21	---	ND<22	---	ND<21
2,4-Dinitrotoluene	**0.25**	**0.25**	---	---	---	ND<2.1	---	ND<2.2	---	ND<2.1
2,6-Dichlorophenol	**NS**	**NS**	---	---	---	ND<2	---	ND<2	---	ND<2
2,6-Dinitrotoluene	**0.052**	**0.052**	---	---	---	ND<2.1	---	ND<2.2	---	ND<2.1
2-Chlorophenol	**0.18**	**0.18**	---	---	---	ND<1.7	---	ND<1.7	---	ND<1.7
2-Methylnaphthalene	**2.1**	**2.1**	---	---	---	ND<1.6	---	ND<1.6	---	ND<1.6
3,3'-Dichlorobenzidine	**0.17**	**0.17**	---	---	---	ND<1	---	ND<1	---	ND<1
Acenaphthene	**15**	**15**	---	---	---	ND<1.2	---	ND<1.2	---	ND<1.2
Acenaphthylene	**13**	**13**	---	---	---	ND<1.2	---	ND<1.2	---	ND<1.2
Anthracene	**0.02**	**0.02**	---	---	---	ND<1	---	ND<1.1	---	ND<1
Benzo(a)anthracene	**0.027**	**0.027**	---	---	---	---	---	---	---	---
Benzo(a)pyrene	**0.06**	**0.06**	ND<0.76	---	---	ND<0.71	---	**0.83**J	---	ND<0.71
Benzo(b)fluoranthene	**0.22**	**0.22**	---	---	---	ND<1.3	---	ND<1.3	---	ND<1.3
Benzo(g,h,i)perylene	**0.13**	**0.13**	---	---	---	ND<1.5	---	ND<1.5	---	ND<1.5
Benzo(k)fluoranthene	**0.4**	**0.4**	---	---	---	ND<1	---	ND<1	---	ND<1
bis(2-Chloroethyl)ether	**0.37**	**0.37**	---	---	---	ND<1.6	---	ND<1.6	---	ND<1.6
bis(2-Ethylhexyl)phthalate	**3**	**3**	ND<1.5	---	---	ND<1	---	1.2J	---	ND<1
Chrysene	**1**	**1**	---	---	---	ND<0.64	---	ND<0.66	---	ND<0.64

Table C2: Groundwater Sample Analytical Summary Table

Area of Potential Concern	HDOH Tier 1 EALs (µg/L)	HDOH C/I EALs (µg/L)	Grease Rack Area of Potential Concern							
Location Relative to AOPC			Downgradient	AOPC			Crossgradient			
Analyte			2011-9 AMEC	2001 e²M	2006 EI	2011-9 AMEC	2006 EI	2011-9 AMEC	2006 EI	2011-9 AMEC
			MW-36B	MW-B3 (MW-3)			MW-11W		MW-10W	
Dibenz(a,h)anthracene	**0.8**	**0.8**	---	---	---	ND<2.1	---	ND<2.2	---	ND<2.1
Diethyl phthalate	**210**	**210**	ND<1	---	---	ND<0.98	---	ND<1	---	2.8J
Dimethyl phthalate	**1,100**	**1,100**	---	---	---	ND<0.92	---	ND<0.95	---	ND<0.92
Fluoranthene	**0.8**	**0.8**	---	---	ND	ND<0.68	ND	ND<0.7	ND	ND<0.68
Fluorene	**3.9**	**3.9**	---	---	ND	ND<0.98	ND	ND<1	ND	ND<0.98
Hexachlorobenzene	**0.0003**	**0.0003**	---	---	---	ND<1.5	---	ND<1.5	---	ND<1.5
Hexachlorobutadiene	**0.063**	**0.063**	---	---	---	ND<1.4	---	ND<1.4	---	ND<1.4
Hexachlorocyclopentadiene	**0.2**	**0.2**	---	---	---	---	---	---	---	---
Hexachloroethane	**0.4**	**0.4**	---	---	---	ND<1.5	---	ND<1.5	---	ND<1.5
Indeno(1,2,3-cd)pyrene	**0.095**	**0.095**	---	---	0.077J	ND<3.6	ND	ND<3.7	ND	ND<3.6
Isophorone	**82**	**82**	---	---	---	ND<1	---	ND<1.1	---	ND<1
Naphthalene	**12**	**12**	---	---	0.05J	ND<1.4	ND	ND<1.4	ND	ND<1.4
Nitrobenzene	**0.14**	**0.14**	---	---	---	ND<1.7	---	ND<1.7	---	ND<1.7
Pentachlorophenol	**1**	**1**	---	---	---	ND<2.1	---	ND<2.2	---	ND<2.1
Phenanthrene	**2.3**	**2.3**	---	---	---	ND<1	ND	ND<1.1	0.036J	ND<1
Phenol	**58**	**58**	---	---	---	ND<1.2	---	ND<1.2	---	ND<1.2
Pyrene	**4.6**	**4.6**	---	---	ND	ND<1.5	ND	ND<1.5	ND	ND<1.5
Polychlorinated biphenyl (Polychlorinated Biphenyls (PCBs)) (µg/L)										
PCBs, Total	**0.014**	**0.014**	---	---	---	---	---	---	---	---
Dissolved Metals (µg/L)										
Arsenic (As)	**10**	**10**	---	---	ND	ND<12	ND	ND<12	ND	ND<12
Barium (Ba)	**220**	**220**	---	---	5.16	---	22	---	3.4	---
Cadmium (Cd)	**3**	**3**	---	---	ND	ND<0.5	ND	ND<0.5	ND	ND<0.5
Chromium (Cr)	**11**	**11**	7.5J	---	ND<3.2	ND<1.2	ND	ND<1.2	3.4J	2.3J
Lead (Pb)	**5.6**	**5.6**	ND	5 Total	ND<4.1	ND<2.5	ND	ND<2.5	ND<4.1	ND<2.5
Nickel (Ni)	**5**	**5**	8.8J	---	ND	ND<2.4	ND	3.7J	ND	ND<2.4
Selenium (Se)	**5**	**5**	---	---	ND	---	ND	---	7.3J	---
Silver (Ag)	**0.1**	**0.1**	ND	---	ND<2.1	ND<0.84	ND	ND<0.84	ND<2.1	ND<0.84
Zinc (Zn)	**22**	**22**	---	---	ND	ND<3	4.5J	ND<3	ND	ND<3
Mercury (Hg)	**0.025**	**0.025**	0.05J	---	0.09J	0.1J	0.07J	ND<0.04	0.04J	ND<0.04

HDOH Environmental Action Levels (EALs) for sites where groundwater IS a current or potential source of drinking water and the site is less than 150 meters to a surface water body (HDOH Fall 2017).

Blue font indicates the HDOH Tier 1 Unrestricted (Residential) land use EAL exceeded.

Red font indicates that HDOH Residential and Commercial/Industrial (C/I) land use EALs exceeded.

Most recent analysis for groundwater.

NA - Not analyzed; NS - No Standard