

HONOLULU AUTHORITY for RAPID TRANSPORTATION

August 17, 2015

Ms. Lynn Bailey  
Hazard Evaluation and Emergency Response Office  
Department of Health  
State of Hawaii  
919 Ala Moana Boulevard, Room 206  
Honolulu, Hawaii 96814

RECEIVED  
DEPARTMENT OF HEALTH  
2015 AUG 20 P 2:34  
HEER OFFICE

Dear Ms. Bailey:

Subject: Surface Soil Sampling Adjacent to Waipahu High School

In response to community health concerns regarding construction-related dust, the Honolulu Authority for Rapid Transportation (HART) recently collected and analyzed soil samples in the construction area adjacent to Waipahu High School.

Surface soil samples from the Maintenance and Storage Facility and the West Oahu/Farrington Highway Guideway construction sites were collected and analyzed to evaluate if any chemicals are present at levels that might be harmful if blown as dust toward neighboring properties. The enclosed technical memorandum discusses the sampling methodology and the full study results.

The results show that the chemicals detected in the surface soil were below Tier 1 Soil Environmental Action Levels for Direct Exposure unrestricted use. HART will continue to manage construction activities in accordance with the Maintenance and Storage Facility Environmental Hazard Evaluation/Environmental Hazard Management Plan (EHE/EHMP) as well as the project-wide Programmatic EHE/EHMP.

HART plans to provide this information to the Waipahu High School and other interested community members. If you have any further questions about this study, please do not hesitate to contact Mr. Ryan Tam at 768-6189 or [rtam1@honolulu.gov](mailto:rtam1@honolulu.gov).

Sincerely,



Elizabeth Scanlon  
Director of Planning, Permitting, and Right-of-Way

Enclosure

 **SCANNED**

115409. -



# Surface Soil Sampling Results for Construction Areas Adjacent to Waipahu High School

PREPARED FOR: Honolulu Authority for Rapid Transportation  
PREPARED BY: CH2M Hill  
DATE: August 7, 2015  
REVISION NO.: 0

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## Introduction and Purpose

In response to community health concerns regarding construction-related dust, the Honolulu Authority for Rapid Transportation (HART) requested that CH2M collect and analyze soil samples within the Rail Operations Center (ROC) and West Oahu Farrington Highway (WOFH) construction areas (referred to hereon as the "Site") adjacent to Waipahu High School. Surface soil samples from the site were analyzed to determine if any chemicals are present at levels that might be harmful if blown as dust toward neighboring properties.

## Background

The Site is bordered on the north by Farrington Highway, on the east by Leeward Community College, on the south by vacant land and watercress farms, and on the west by Waipahu High School (see Figure 1). When typical trade winds are blowing, the wind blows from the east and northeast to the west and to the southwest.

Before 2009, the Site was owned by the U.S. Navy and it was known as the Ewa Junction Fuel Drumming Facility (EJFDF). The EJFDF was built in 1943 as a station for fuel drumming and transportation. Fuel stored in large underground storage tanks (USTs) was pumped into steel drums, loaded onto trucks, and taken to ships for further transport. The EJFDF was originally made up of 24 structures and along with related tanks, pipelines and truck loading facilities. The Site has not been used since the early 1970s.

The Site has a well-documented history of fuel-related contamination. In March 1971, trespassers started a fuel pump at one of the two USTs on the property, releasing approximately 315,000 gallons of gasoline onto the ground. The spill was discovered the next day and the Navy began cleanup immediately. During those cleanup efforts, 32,000 to 47,000 gallons of gasoline were recovered or evaporated from the ground surface. The remaining fuel seeped into the ground. The Army constructed barriers to keep the fuel that seeped into the ground from going any farther or from reaching the watercress farms south of the property. More than 100,000 gallons were recovered during the first year of cleanup efforts.

A Phase II Remedial Investigation (Department of the Navy, 2000), started in 1998, proved that the fuel spill had not reached the farm area and would not be likely to affect it in the future. Fuel levels found in groundwater in 1998 and 1999 were lower than the levels that the HDOH Hazard Evaluation and

Emergency Response (HEER) considers safe. Therefore, on March 8, 2002, the HDOH HEER office issued a letter stating no further action was required in reference to the 315,000 gallon spill.

In 2005, the Agency for Toxic Substances and Disease Registry of the U.S. Department of Health and Human Services Public Health Service also reviewed the Site and also found that there are no harm to human health resulting from the 1971 release.

In a 1998 Memorandum of Agreement pursuant to the Hawaiian Home Lands Recovery Act of 1995, the Navy agreed to transfer ownership of the EJFDF to the Department of Hawaiian Home Lands (DHHL) for housing construction. An Environmental Assessment (Disposal of the Ewa Drum Property) was done by the Navy in June 2005 to evaluate the property transfer. The assessment did not find hazards to human health or the environment. However, in order to prevent hazardous and regulated materials from accidentally entering the groundwater, the report suggested the transfer include a restriction on extraction or penetration of groundwater.

The remaining USTs were removed at the end of 2005, and the HDOH issued a "No Further Action" (NFA) letter on August 27, 2007, for the removed storage tanks. In March 2009, Naval Facilities Engineering Command concluded that no further action or restrictions were needed at the Site before the Navy transferred ownership of the Site. HART entered into a license agreement with DHHL to use and eventually acquire the Site in October 2014.

An Environmental Hazard Evaluation and Environmental Hazard Management Plan (EHE-EHMP) was prepared for the Site (HART, July 2012) that includes rules for managing contaminated soil that may be found during construction. HART began construction on the Site in September 2013.

## Sampling Methodology

Surface soil samples were collected using Incremental sampling (IS) methods which is a State of Hawaii Department of Health (HDOH) approved method designed to reduce sampling error and provide more representative results (HDOH, Summer 2008, updated March 2009). The site was divided into ten (10) areas for sampling that are referred to as decision units (DUs). Within each of these DUs, 100 subsamples were collected from the upper 3 inches of soil because that depth is most likely to be disturbed and likely to form into dust. A total of 1,000 sub-samples were collected to represent the entire construction area. Samples were shipped to, and analyzed by, an accredited laboratory for a variety of chemicals including:

- Volatile Organic Compounds and Total Petroleum Hydrocarbon (TPH) - Gasoline by EPA Method SW8260B
- TPH-Diesel and TPH-Oil by EPA Method SW8015B
- Polycyclic Aromatic Hydrocarbons (PAHs) by EPA Method SW8270SIM
- Pesticides/Polychlorinated Biphenyls (PCBs) by EPA Method SW8081/SW8082
- Herbicides by EPA Method SW8151
- Metals (Resource Conservation Recovery Act [RCRA] 8 metals) by EPA Method SW6010, SW6010B, and SW7470B

## Results and Discussion

Soil samples were collected on June 22-23, 2015 and analyzed by Accutest Laboratory in San Jose, California. Table 1 shows a summary of the results. Table 2 shows a summary of the levels of chemicals that were detected with comparison to levels considered to be harmful (HDOH, Fall 2011).

TPH-Diesel, TPH-Oil, PAHs, and metals were detected in all DUs. Herbicides were detected in five DUs and PCBs were detected in four DUs. Pesticides were not detected in any of the DUs. None of the chemicals were detected at concentrations above the Direct Exposure Tier 1 Environmental Action Levels, which is the level HDOH considers safe if exposure occurs by accidentally eating, coming in contact with, or breathing in the soil. This means that the chemicals detected in the samples are below levels considered to be harmful to human health and therefore considered by HDOH to be adequate for residential housing, schools, medical facilities, day-care centers, parks and other sensitive uses (HDOH, Fall 2011).

## Conclusions

Soil samples from the Site were analyzed to determine whether chemicals were present at levels that could be harmful to human health if they were to be blown outside of the work areas. The results show that the chemicals detected in the soil are considered to be at safe levels, and much lower than levels that would potentially cause harm to human health whether the soil was incidentally ingested, in contact with skin, or inhaled via dust or vapor.

Even though chemicals in the soil are low, however, construction work area dust control will continue to be implemented in order to minimize aggravation of existing allergies and other health-related issues associated with dust.

## References

- Department of the Navy, 2000, Phase II Remedial Investigation, Ewa Junction Fuel Drumming Facility, Fleet and Industrial Supply Center (FISC), Pearl Harbor, O'ahu, Hawai'i. Prepared for Department of the Navy, Commander, Pacific Division Naval Facilities Engineering Command, Pearl Harbor, Hawai'i. Prepared by Earth Tech, Inc.
- Environmental Science International, Inc. "Phase I Environmental Site Assessment, Proposed MSF Yard, Former Navy Drum Site, Waipahu, Hawaii," TMK No. (1) 9-4-008:010, October 15, 2009.
- Honolulu Authority for Rapid Transportation (HART). Programmatic Environmental Hazard Evaluation and Environmental Hazard Management Plan, Revision 1. July 2014.
- HDOH. Evaluation of Environmental Hazards at Sites with Contaminated Soil and Groundwater. Summer 2008 updated March 2009.
- HDOH, "Screening for Environmental Hazards at Sites with Contaminated Soil and Groundwater," Fall 2011 and updates. All volumes and appendices available at:  
<http://hawaii.gov/health/environmental/hazard/eal2005.html>.



Decision Unit



Area not surveyed: No surface soil samples could be collected from paved or gravel surfaces, or within or under existing buildings and temporary structures.



**Figure 1**  
**Surface Soil Sampling for Rail Operations Center and West Oahu Farrington Highway Construction Area Adjacent to Waipahu High School**  
 Honolulu Rail Transit Project

**Table 1. Summary of Soil Sample Results**

Surface Soil Sampling Results for Rail Operations Center and West Oahu Farrington Highway Area Adjacent to Waipahu High School  
Honolulu Rail Transit Project

Decision Unit	Sample ID	Depth Interval (feet below ground surface)	TPH-Diesel	TPH-Oil	PAHs	PCBs	Pesticides	Herbicides	RCRA 8 Metals
MSF 1	MSF-DU001A-0615	0-0.25	<	<	<	<	ND	<	<
MSF 2	MSF-DU002A-0615	0-0.25	<	<	<	ND	ND	<	<
MSF 3	MSF-DU003A-0615	0-0.25	<	<	<	<	ND	<	<
MSF 4	MSF-DU004A-0615	0-0.25	<	<	<	ND	ND	<	<
MSF 5	MSF-DU005A-0615	0-0.25	<	<	<	ND	ND	ND	<
MSF 6	MSF-DU006A-0615	0-0.25	<	<	<	ND	ND	ND	<
MSF 7	MSF-DU007A-0615	0-0.25	<	<	<	ND	ND	ND	<
WOFH DU1	WOFH-WHS-DU001A-0615	0-0.25	<	<	<	<	ND	<	<
WOFH DU2	WOFH-WHS-DU003A-0615	0-0.25	<	<	<	ND	ND	ND	<
WOFH DU3	WOFH-WHS-DU003A-0615	0-0.25	<	<	<	<	ND	ND	<

Table Notes:

< = indicates results were detected below the applicable HDOH Tier 1 Environmental Action Levels (EALs)

ND = analyte not detected

PAHs = polycyclic aromatic hydrocarbons

PCBs = polychlorinated biphenyls

RCRA = Resource Conservation and Recovery Act

TPH = Total Petroleum Hydrocarbon

Reference: HDOH, "Screening for Environmental Hazards at Sites with Contaminated Soil and Groundwater," Fall 2011. All volumes and appendices available at: <http://hawaii.gov/health/environmental/hazard/eal2005.html>.

TABLE 2

Chemicals Detected in Soil

Surface Soil Sampling Results for Rail Operations Center and West Oahu Farrington Highway Area Adjacent to Waipahu High School

Honolulu Rail Transit Project

Client Sample ID:		HI EAL Soil	MSF-DU001A-0615	MSF-DU002A-0615	MSF-DU003A-0615	MSF-DU004A-0615	MSF-DU005A-0615	MSF-DU006A-0615	MSF-DU007A-0615	WOFH-WHS-DU001A-0615	WOFH-WHS-DU002A-0615	WOFH-WHS-DU003A-0615
Decision Unit (DU)		Table I-1:	MSF01	MSF02	MSF03	MSF04	MSF05	MSF06	MSF07	WOFH-WHS01	WOFH-WHS02	WOFH-WHS03
Date Sampled:		Direct Exposure	6/22/2015	6/22/2015	6/22/2015	6/22/2015	6/22/2015	6/22/2015	6/22/2015	6/23/2015	6/23/2015	6/23/2015
Matrix:		Unrestricted	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Depth:		11/2011) <sup>2</sup>	0 - 0.25 ft bgs	0 - 0.25 ft bgs	0 - 0.25 ft bgs	0 - 0.25 ft bgs	0 - 0.25 ft bgs	0 - 0.25 ft bgs	0 - 0.25 ft bgs	0 - 0.25 ft bgs	0 - 0.25 ft bgs	0 - 0.25 ft bgs
<b>GC/MS Polycyclic Aromatic Hydrocarbons [PAHs] (SW846 8270C BY SIM)</b>												
Benzo(a)anthracene	µg/kg	1500	2.6 J	2.9 J	1.9 J	4.5	13.4 J	22	5.9 J	22.2	15.1 J	ND (53)
Benzo(a)pyrene	µg/kg	150	1.8 J	2.6 J	1.3 J	2.9 J	12.9 J	19.5	4.5 J	16.1 J	9.0 J	ND (36)
Benzo(b)fluoranthene	µg/kg	1500	2.8 J	4.1	2.2 J	4.9	16.6	22	6.8 J	17.8 J	29.0 J	ND (42)
Benzo(g,h,i)perylene	µg/kg	460000	2.1 J	2.8 J	1.7 J	2.6 J	26.9	21.3	7.5 J	20.8	13.5 J	60.5 J
Benzo(k)fluoranthene	µg/kg	15000	2.0 J	2.9 J	1.5 J	3.5 J	14.2	21.4	ND (4.2)	13.7 J	13.4 J	ND (48)
Chrysene	µg/kg	150000	3.4 J	4.2	3.3 J	9.2	31.2	33.3	16.4 J	34.1	50.2	87.1 J
Dibenzo(a,h)anthracene	µg/kg	150	ND (1.0)	ND (0.99)	ND (1.0)	ND (1.0)	5.1 J	6.7 J	ND (5.1)	5.1 J	ND (10)	ND (59)
Fluoranthene	µg/kg	460000	6.3 J	5.2 J	4.3 J	11.1 J	35.2 J	28.9 J	11.2 J	37.4 J	84.0 J	ND (110)
Indeno(1,2,3-cd)pyrene	µg/kg	1500	1.8 J	2.9 J	1.7 J	2.7 J	18.5	20.3	ND (4.5)	18.2	12.0 J	ND (53)
Phenanthrene	µg/kg	440000	2.2 J	ND (1.8)	1.9 J	4.5 J	12.3 J	13.4 J	ND (9.0)	16.0 J	24.5 J	ND (110)
Pyrene	µg/kg	340000	5.1 J	4.5 J	4.1 J	10.8 J	43.4 J	28.8 J	12.6 J	41.6 J	58.0 J	ND (110)
<b>GC Total Petroleum Hydrocarbons [TPH] (SW846 8015B M)</b>												
TPH-Diesel	mg/kg	500	9.77	15.9	12	14	59.1	51.8	53.2	73.3	60.6	177
TPH-Oil	mg/kg	9400	32.5	44.5	38	39.3	308	298	275	349	263	1160
<b>GC Polychlorinated biphenyls [PCBs] (SW846 8082)</b>												
Aroclor 1260	µg/kg	1100	11.1 J	ND (7.1)	9.6 J	ND (7.3)	ND (7.1)	ND (7.2)	ND (7.2)	9.0 J	ND (7.2)	8.2 J
<b>GC Herbicides (SW846 8151A)</b>												
Dichloroprop	µg/kg	-	ND (16)	ND (16)	45.5	ND (16)	ND (16)	ND (16)	ND (17)	17.6 J <sup>a</sup>	ND (17)	ND (16)
2,4-DB	µg/kg	-	25.2 J <sup>a</sup>	29.8 J <sup>a</sup>	ND (9.2)	17.2 J <sup>a</sup>	ND (9.2)	ND (9.4)	ND (9.7)	28.6 J <sup>a</sup>	ND (9.7)	ND (9.4)
Pentachlorophenol	µg/kg	890	ND (1.3)	ND (1.3)	ND (1.3)	ND (1.3)	ND (1.3)	ND (1.3)	ND (1.4)	26.1	ND (1.4)	ND (1.3)
<b>RCRA Metals Analysis</b>												
Arsenic	mg/kg	23	0.89 J	0.62 J	0.68 J	0.56 U	0.55 U	0.55 U	0.28 U	1.8 J	0.55 U	0.54 U
Barium	mg/kg	3100	104	112	88.5	79.4	104	114	118	114	123	90.6
Cadmium	mg/kg	14	0.26 J	0.18 J	0.26 J	0.21 J	0.21 J	0.16 J	0.14 J	0.35 J	0.17 J	0.21 J
Chromium	mg/kg	-	254	242	247	235	254	254	164	227	244	218
Lead	mg/kg	200	5.3 J	5.8 J	5.6 J	4.4 J	4.8 J	6.8	5	61.4	18.9	8.8
Mercury	mg/kg	4.7	0.024 J	0.020 J	0.024 J	0.028 J	0.019 J	0.018 J	0.017 J	0.059	0.029 J	0.020 J
Selenium	mg/kg	78	1.5 J	2.0 J	1.5 J	1.3 J	1.3 J	1.7 J	1.0 J	1.6 J	2.1 J	1.0 U
Silver	mg/kg	78	0.66 J	0.62 J	0.60 J	0.66 J	0.73 J	0.77 J	0.29 J	0.72 J	0.65 J	0.66 J
<b>General Chemistry</b>												
Moisture, Percent	%	-	6.7	6.3	6.4	8.7	7.4	7	8.2	7.4	7.9	5.2

Notes:

<sup>a</sup> Primary and confirmation results differ by more than 40%. Lower value reported due to possible coelution.

J = The analyte was positively identified; the quantitation is an estimation

<sup>2</sup> HDOH Tier 1 Environmental Action Levels are for direct exposure unrestricted land use scenario (HDOH, summer 2008 and subsequent updates) based on assumed residential exposure scenario.

Based on assumed residential exposure scenario.

Considered adequate for residential housing, schools, medical facilities, day-care centers, parks and other sensitive uses.

HITS ONLY. Only parameters detected in at least one sample are shown.

- No EAL developed for this parameter.

Acronyms:

µg/kg = micrograms per kilogram

bgs = below ground surface

ft = feet

GC = gas chromatography

mg/kg = milligrams per kilogram

MS = mass spectrometry

ND = not detected (the analyte is below the method detection limit indicated in parenthesis)

RCRA = Resource Conservation and Recovery Act

TPH-D = total petroleum hydrocarbons, diesel-range organics (C10-C28)

TPH-O = total petroleum hydrocarbons, oil-range organics (>C28-C40)