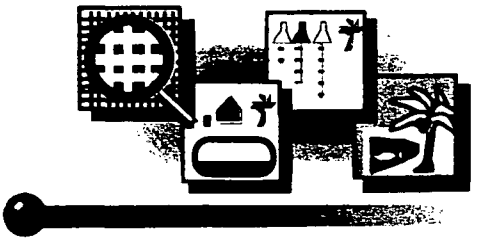
38413



UNDERGROUND STORAGE TANK CLOSURE

Former GRG Enterprises Site
115 Ahui Street
Honolulu, Hawaii

WMF
Hawaii

Experience-Based Environmental Solutions

UNDERGROUND STORAGE TANK CLOSURE

Location: **Former GRG Enterprises Site**
115 Ahui Street
Honolulu, Hawaii

Facility ID: 9-100212

Release ID: 99-0034

WMF Hawaii Job: NNI:Kewalo Basin UST

Date: November 23, 1998

Prepared For: Neil Nakai, Inc.
1640 Kahai Street
Honolulu, Hawaii 96819

Prepared by:

W. Mark Frazier
President/Hydrogeologist

EXECUTIVE SUMMARY

WMF Hawaii documented the closure (excavation, cleaning, removal and disposal) of four underground storage tanks (USTs) on October 22 and 23. 1998. Two tanks had contained gasoline, and two tanks had contained Diesel. The USTs usage was reportedly to support GRG Enterprises operations. The property is at 115 Ahui Street, Honolulu, Hawaii.

The two gasoline USTs were found to be generally free of corrosion and pitting, however, the two diesel USTs were found to be corroded and pitted, with numerous holes, some up to 1-foot in diameter, clustered along the surface water level at 6 feet below the ground surface.

Gross contamination as soil staining, strong petroleum olfactory odors and elevated PID levels were observed in the soils and waters surrounding the USTs. Groundwater was encountered at a depth of 6 feet below the ground surface with a layer of free product at less than 1/2-inch in thickness.

Because of the close proximity of the public to the elevated vapors and the presence of gross contamination excavated soils were placed back into the excavation, after samples were collected and the water surface was skimmed of free product.

Laboratory analysis of the closure samples indicated elevated levels of TPH–Diesel, over the DOH allowable TIER I levels, in the soils only. All water results, and the soils analyzed for gasoline and the constituents of concern (BTEX, PAH and lead) were non detect to below DOH levels.

The site subsurface appears to be impacted by a diesel release. Only the diesel tanks had significant holes in their walls. The soils are grossly contaminated and free product was observed on the water surface. However the lab analysis found only TPH as Diesel in soil over DOH allowable levels with minimal to no constituents of concern.

We recommend: further action regarding this UST site, conducting a release response Phase II site characterization investigation and removal of the impacted soils.

TABLE OF CONTENTS

1.0 INTRODUCTION/PURPOSE

Neil Nakai Inc. retained WMF Hawaii to document the closure of four underground storage tanks (USTs) on October 22 and 23. 1998. Two tanks had contained gasoline, and two tanks had contained Diesel. The USTs usage was reportedly to support GRG Enterprises operations. The property is at 115 Ahui Street, Honolulu, Hawaii.

The purpose of this investigation was to address and follow governing UST regulations as specified in 40 CFR, Section 280.72 entitled "Assessing the Site at Closure or Change in Service." Specific site closure activities and cleanup criteria adhered to were based on the above EPA regulations and the State of Hawaii Department of Health (DOH), Environmental Management Division's Technical Guidance Manual for Underground Storage Tank Closure and Release Response (revised September 1992). This UST closure report is intended to provide documentation and evidence to support aspects of the UST closure.

This report is also intended to document voluntary compliance by the UST system owner/operator with applicable State and Federal regulations. Therefore, this report must be maintained by the owner/operator for a minimum of three years. For information and liability reasons, we recommend that this report is kept even longer as a permanent record of the closure. In addition, we recommend that a copy of this report is provided to the DOH for review and comment.

This investigation is limited to the area surrounding the former UST system, referred to above and the contaminants associated with the UST system. The assessment of other contamination sources at the site is beyond the scope of this project. Our investigation was performed in accordance with sound engineering practices and accepted techniques.

2.0 BACKGROUND

2.1 Site Description

The site area is flat and situated at an elevation of approximately 10 feet above mean sea level. The site is on the waterfront of Kewalo Basin, situated on a small peninsula/projection of land, surrounded on three sides by the waters of the Harbor. The Harbor waters are 20 to 40 feet of the UST system/excavation. The State of Hawaii Underground Injection Control (UIC) Line lies above the site; therefore the groundwater in the area is considered not to be a source of potable water. A Vicinity Map of the area surrounding the site is provided at Appendix A Figure A-1.

2.2 Facility Information

The site is at 115 Ahui Street, Honolulu, Hawaii. The USTs were within the parking lot fronting a two story structure with the dispensers next to the waters edge. The tanks were reportedly used for fueling purposes, possibly for marine crafts.

According to Mr. Richard Yoneda, Project Engineer for the State of Hawaii, Department of Transportation-Harbors Division, the State of Hawaii Community Development Authority is the property owner. The State of Hawaii, Department of Transportation-Harbors Division manages the site.

The property was leased by GRG Enterprise Inc. The contact for GRG Enterprise Inc. is Rockne Freitas 115 Ahui Street, Honolulu, Hawaii 96813. The lease was terminated and the USTs then became the property of the State of Hawaii, Department of Transportation-Harbors Division.

It is Mr. Yonedas belief that the UST has not been used since 1997. The date of the tanks installation, inventory records, tank tightness testing and history is unknown.

On the day WMF Hawaii arrived, October 22, 1998 the tanks fill ports were unlocked. The USTs were covered and located under the asphalt parking lot in front of the two story structure. The fill pipe of the UST was recessed below the grade of the surrounding pavement with some soil staining. A site map of the area surrounding the UST is in Appendix A Figure A-2.

2.3 UST Information

Information on the UST is summarized on Table 1, below. Steel pipes (suction, return and vent) were attached to the USTs. The diesel tanks were slaved together then connected to the dispensers. The gas tanks were connected to the dispensers. Vent pipes were at the dispensers and along the building side.

Table 1
UST Information

UST ID	CAPACITY	MATERIAL	CONTENTS	AGE (Approx.)	DIMENSIONS (L x W)
A	6,000 gallons	Steel	Diesel	unknown	17' X 8'
B	1,000 gallons	Steel	Gasoline	unknown	8.8' X 6.2'
C	1,000 gallons	Steel	Gasoline	unknown	8.8' X 6.2'
D	6,000 gallons	Steel	Diesel	unknown	17' X 8'

3.0 OBSERVATIONS

3.1 UST Removal

WMF Hawaii's representative arrived on site October 22. 1998 and observed the excavation and removal of the UST, which concluded on October 23. 1998. A backhoe was used to excavate the USTs and an excavator with a shear attachment was used to remove the tanks and cut the piping into pieces.

The concrete surface and the soil above the UST and one side were excavated. Each UST was degassed, cut open and cleaned in place. Then the excavator lifted each UST from

the excavation by grabbing the tank walls. The top of the USTs was at 2.5 feet below the ground surface (bgs) and the bottom of the USTs was at approximately 8 to 8.7 feet bgs. Ground water was encountered at 6 foot bgs.

The two gasoline USTs were found to be generally free from corrosion and pitting, in the tank walls. The tank seams were also observed to be intact. The two diesel USTs were found to be corroded and pitted, with numerous holes. We observed holes in the tank walls from 1/2 to 1-inch diameter to 1-foot in diameter clustered along the apparent water level at 6 feet bgs .

Fuel lines were flushed and removed. The vent pipe and dispenser were removed. No remote fill pipe was observed at the site. Photographs of the facility and the UST closure activities are presented in Appendix B.

3.2 UST Excavation

The soil encountered was a silty coraline fill material underlain by a medium gray silty sand at 7 feet bgs. The soils are suspected to represent both tank fill materials and fill material related to the construction of the property on the waters front. A large concrete wall, possibly a structural support for the site area, was observed on the mauka side of the excavation from a depth of a few feet to the water surface at 6 feet bgs next to the ends of the tanks (see cross section AA' and DD' in figure A-3).

The final excavation was 28 feet long by 24 feet wide by approximately 9 feet deep. See Appendix A Figure A-3 and A-4 for a cross section of the USTs and excavation.

Soils were screened in the field throughout the excavation process. Gross contamination as soil staining, strong petroleum olfactory odors and elevated PID levels were observed in the soils and waters surrounding the USTs.

A photoionization detector (PID) was used to screen soils for the presence of hydrocarbon vapors. The soils surrounding the UST displayed strong olfactory odors and elevated PID readings at a 5-foot to 6-foot depth bgs. PID readings ranged from 51 ppm to a maximum of 147 ppm. Petroleum stained soils were observed at 5 to 6 feet bgs, the interval where water was observed. There was floating product, less than 1/2-inch thick observed on the water surface in the excavation.

Closure soil samples were attempted from each end of the USTs however the samples from UST A, and D mauka sides could not be collected. The cement wall and the presence of the overlying neighboring building prevented these soils to be collected.

The remaining samples were collected at either end of the tanks at approximately 5.5 to 6-feet below the ground surface and at a depth of 5 1/2- feet bgs, at the water interface.

3.3 UST Cleaning and Disposal

Phillips Services handled the cleaning and the disposal of the USTs and their contents. A lower explosive limit (LEL) meter was used to check that the USTs interiors were free

from dangerous levels of explosive vapor. Holes were cut in the sides of the USTs using a pneumatic demo cutting tool, thus allowing access to each USTs interior. Cleaning was conducted on site. The cleaning of the UST consisted of sucking fluids by a vac truck, scraping, washing and triple rinsing the tank interior. After cleaning each UST was removed from the excavation, loaded on a truck and transported from the site. The manifest and Disposal Certificate is attached in Appendix C.

3.4 Stockpiled Soil

Soils excavated during the UST closure were stockpiled next to the pit on the makai side. Because of the elevated vapors and stained soils, excavated materials were placed back into the excavation, after samples were collected and the water surface was skimmed of free product.

4.0 SAMPLING AND ANALYSIS

4.1 Sampling

Soil samples were collected from the ends of the UST as explained in section 3.2, at four locations. Free product, staining, olfactory odors and elevated PID readings were detected in the soil samples. The soil samples were collected for laboratory analysis to characterize the excavation and to document the UST closure.

Soil samples were placed in a precleaned brass or steel liner, with no head space and capped with Teflon tape and plastic end caps. The samples were labeled on site and immediately placed in a cooler with ice.

Groundwater samples were collected with containers provided by the analytical laboratory. For the water sample, four 40 ml vials were filled slowly and completely, such that a convex meniscus forms across the vial opening then tightly capped and placed on ice in a cooler.

The cooler containing the samples was then delivered to TEG-Pacific, an on-island laboratory for immediate chemical analysis. The samples were accompanied by proper chain of custody documentation.

4.2 Laboratory Analysis and Quality Assurance

Samples collected from the site were analyzed by the analytical laboratory TEG-Pacific in Honolulu, Hawaii. Table 2 provides a summary of the laboratory results for the samples. Complete laboratory results, and chain of custody documentation is presented in Appendix D.

The objective of our quality assurance/quality control program is to ensure that results are accurate, repeatable, and representative of the conditions being examined. To achieve this, steps are taken to eliminate cross contamination between samples, sample bias, and laboratory error. TEG-Pacifics quality assurance/quality control methods data,

including blanks, spikes, and surrogate recoveries are presented with the original laboratory reports in Appendix D

Table 2
ANALYTICAL RESULTS (in ppm)

Sample Number	Comments	Analytes					
		TPH-G	TPH-D	Benzene	Toluene	Ethylb.	Xylenes
10/23/98 - UST closure soil samples							
A-2	non-fill	--	**8,780**	nd	nd	0.252	1.68
B-1	fill	293	**14,800**	--	--	--	--
B-2	non-fill	nd*	--	--	--	--	--
C-1	fill	587	**9,420**	--	--	--	--
C-2	non-fill	302*	--	nd	0.157	0.089	0.834
D-1	fill	--	**15,000**	nd	nd	0.252	2.69
10/23/98 - Excavation water samples							
W-1		3.63	281	nd	nd	nd	0.0135
DOH TIER I Levels	***Soil***	***2,000***	***5,000***	***1.7***	***34***	***0.50***	***23***
DOH TIER I Levels	***Water***	***no stand.***	***no stand.***	***1.7***	***2.1***	***0.14***	***10***

Table 2 - continued
ANALYTICAL RESULTS (in ppm)

Sample Number	Comments	PAH Analytes				
		Bap	Acen	Flour.	Napth.	Total Lead
10/23/98 - UST closure soil samples						
C-2	non-fill	nd	nd	nd	nd	nd
D-1	fill	nd	nd	nd	nd	--
10/23/98 - Excavation water samples						
W1		nd	nd	nd	nd	
DOH TIER I Levels	***Soil***	***1***	***18***	***11***	***41***	***400***
DOH TIER I Levels	***Water***	***0.0002***	***0.32***	***0.13***	***0.2***	***0.0056***

– = Not analyzed.
ppm = Parts per million.
DOH = State of Hawaii Department of Health Tier 1 Action Levels.
Bold = Concentration above the DOH Tier 1 Action Level (non-drinking water area).
ND = Not detected, see complete lab report for detection levels.
* = Sample shows diesel patterns.

5.0 SUMMARY/CONCLUSION

WMF Hawaii documented the closure (excavation, cleaning, removal and disposal) of four underground storage tanks (USTs) on October 22 and 23. 1998. Two tanks had contained gasoline, and two tanks had contained Diesel. The USTs usage was reportedly to support GRG Enterprises operations. The property is at 115 Ahui Street, Honolulu, Hawaii.

The two gasoline USTs were found to be generally free of corrosion and pitting, however, the two diesel USTs were found to be corroded and pitted, with numerous holes, some up to 1-foot in diameter, clustered along the surface water level at 6 feet below the ground surface.

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Because of the close proximity of the public to the elevated vapors and the presence of gross contamination excavated soils were placed back into the excavation, after samples were collected and the water surface was skimmed of free product.

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The site subsurface appears to be impacted by a diesel release. Only the diesel tanks had significant holes in their walls. The soils are grossly contaminated and free product was observed on the water surface. However the lab analysis found only TPH as Diesel in soil over DOH allowable levels with minimal to no constituents of concern.

We recommend: further action regarding this UST site, conducting a release response Phase II site characterization investigation and removal of the impacted soils.

6.0 REFERENCES

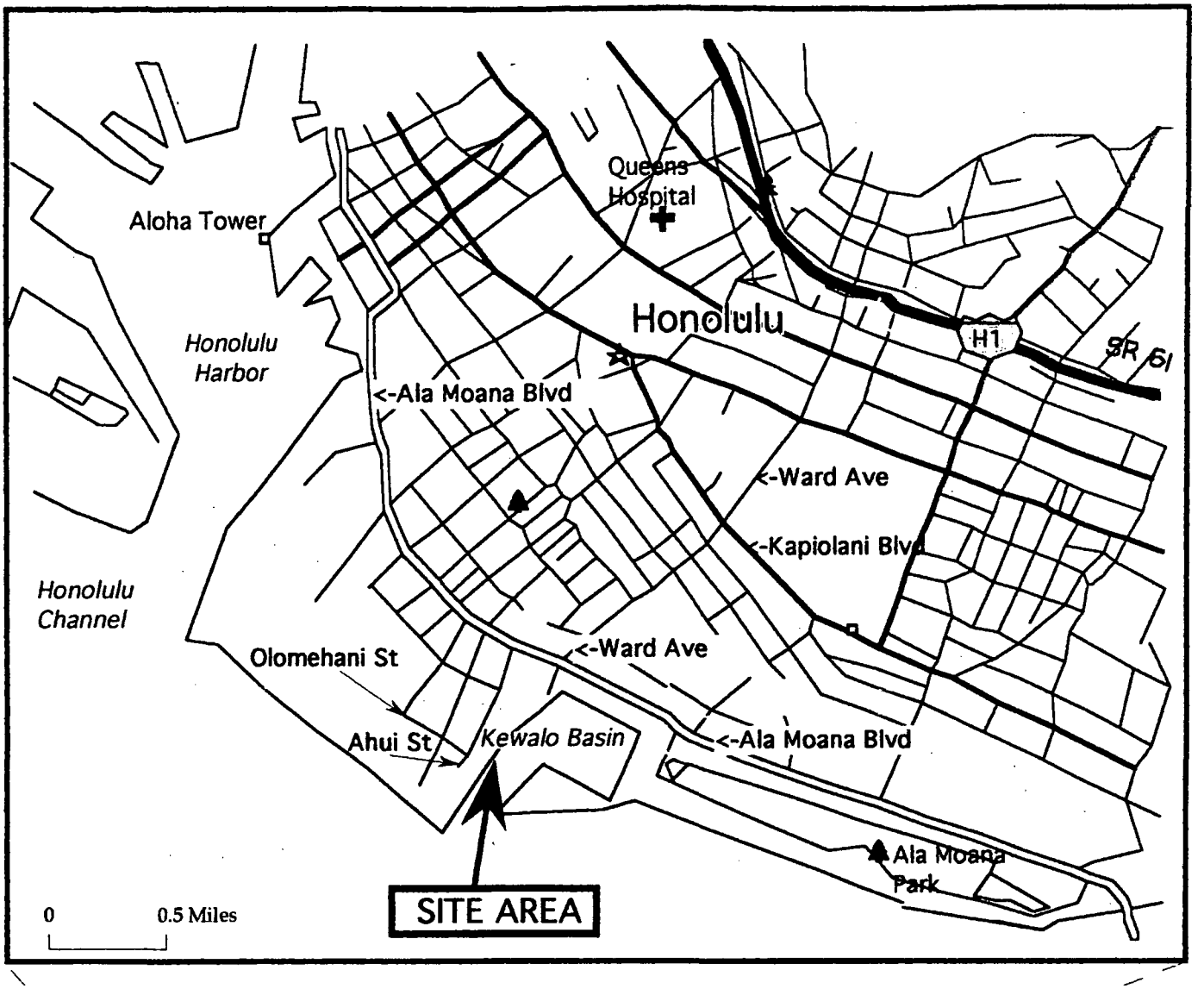
Code of Federal Regulations, 1988. Technical Standards and Corrective Action Requirements for Owners and Operators of Underground Storage tank. Title 40, Part 280.

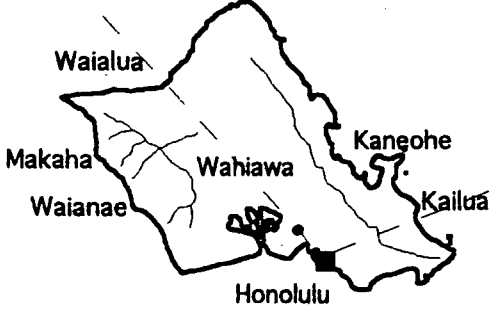
State of Hawaii, Department of Health, 1996. Risk-Based Corrective Action and Decision Making at Sites with Contaminated Soil and Groundwater.

State of Hawaii, Department of Health, 1992. Technical Guidance Manual for Underground Storage Tank Closure and Release Response, 1st edition, with September, 1992 revisions.

Appendix A

Figures



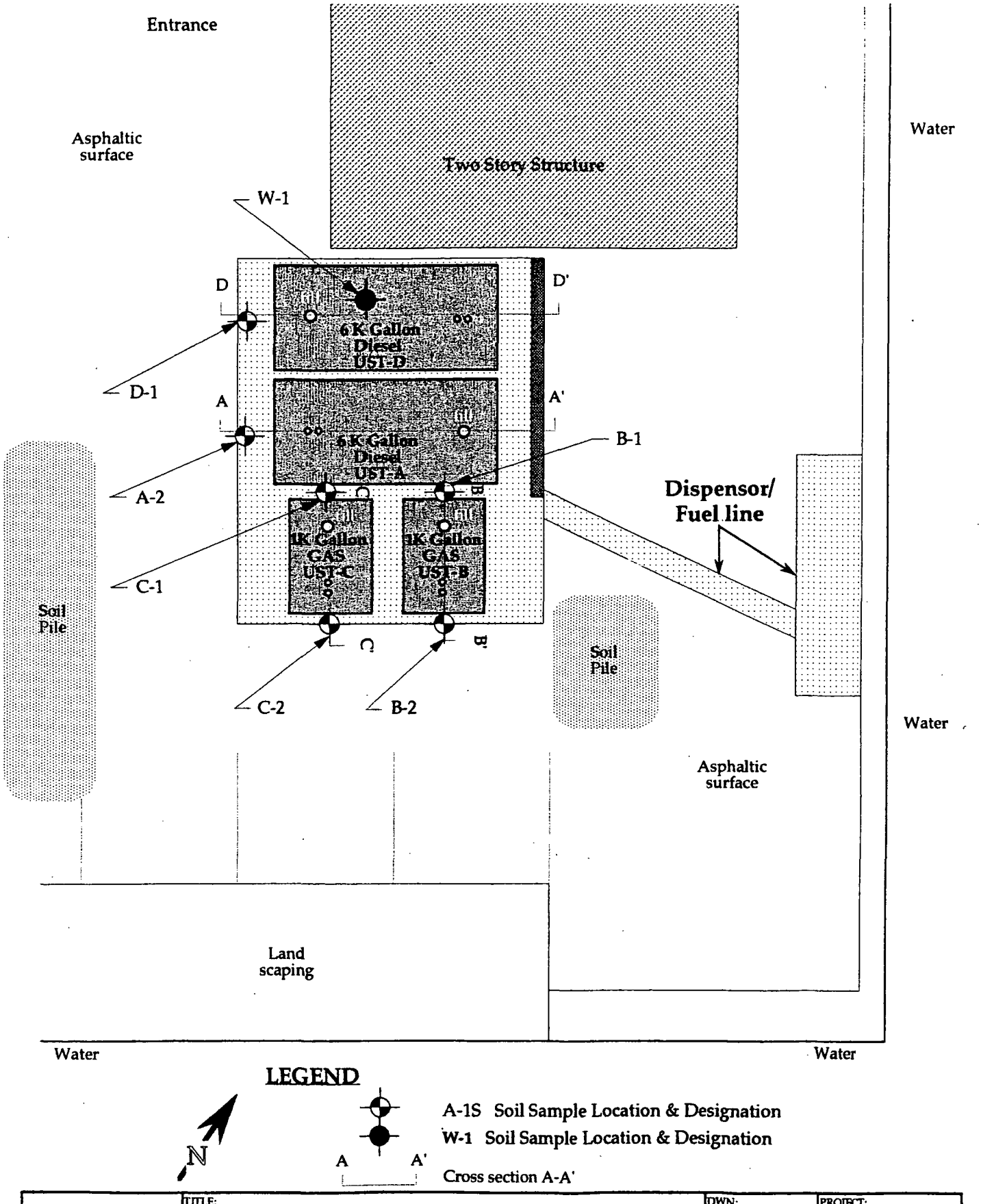


PROJECT SITE

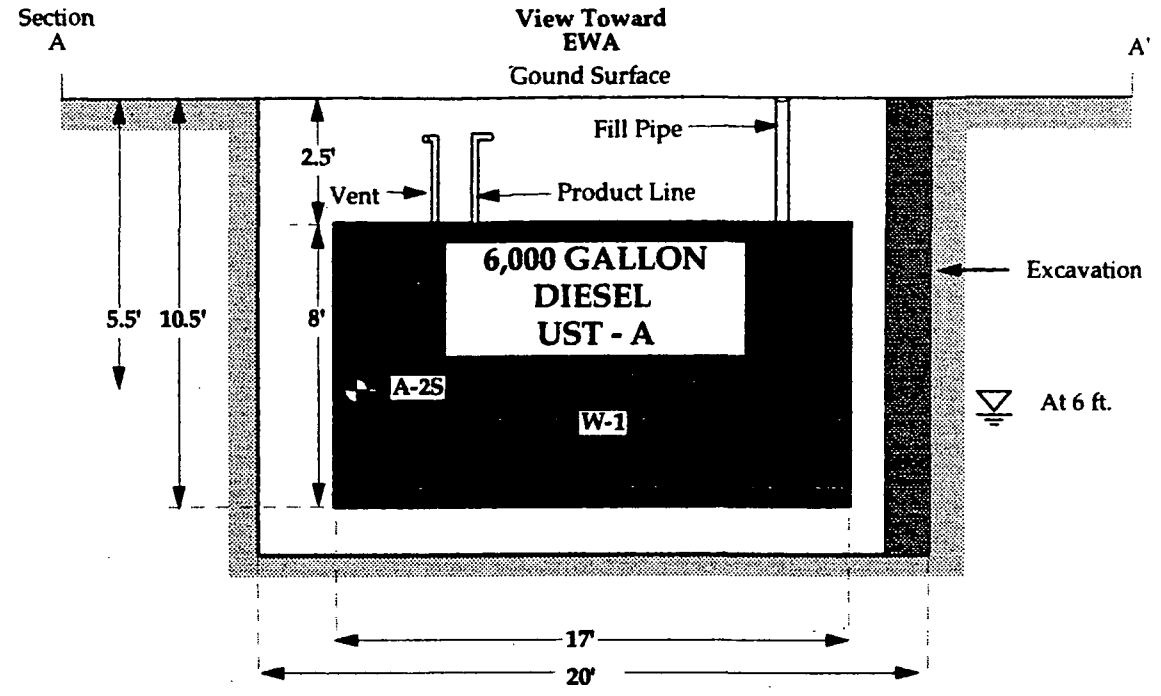
N

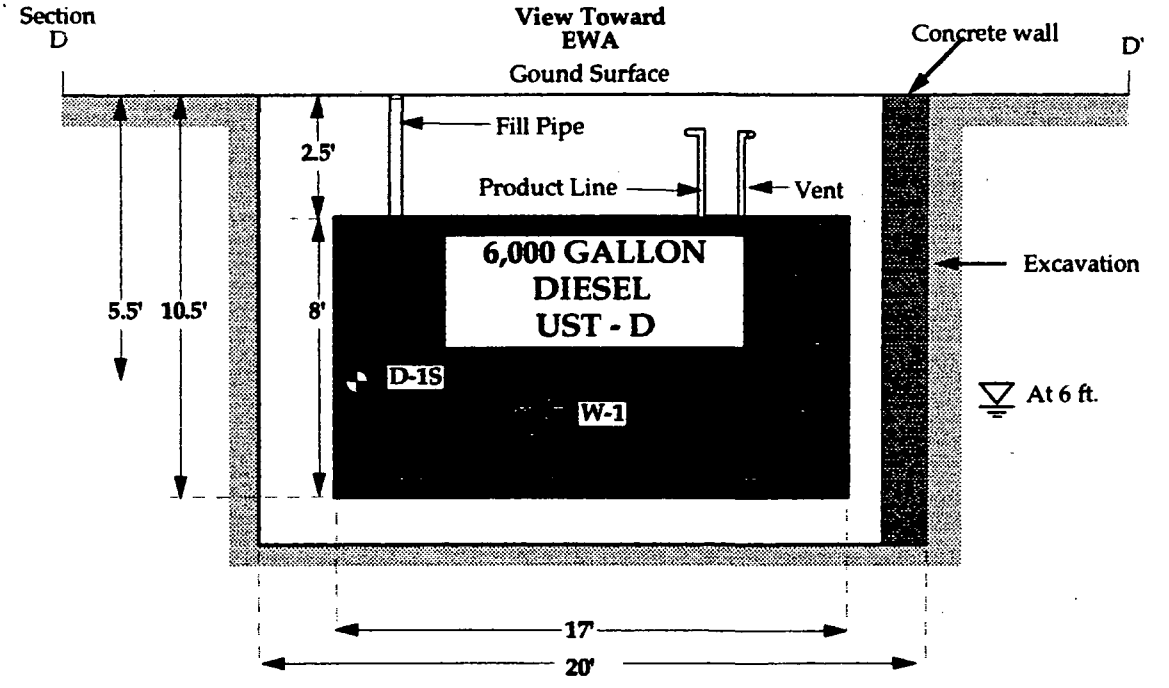
Source: Delorma Street Atlas CD ROM 1996

WMF Hawaii	TITLE: VICINITY MAP DOT - Kewalo Basin 115 Auhi Street Honolulu, Oahu, Hawaii	DWN: WMF SCALE: as shown DATE: 10/27/98	PROJECT NO: NNI:Kewalo UST FIGURE NO: A-1



WMF Hawaii	TITLE: SITE MAP DOT - Kewalo Basin 115 Ahui Street Honolulu, Oahu, Hawaii	DWN: WMF SCALE: 1" = 10' DATE: 10/26/98	PROJECT: NNI: Kewalo UST FIGURE NO: A-2





LEGEND

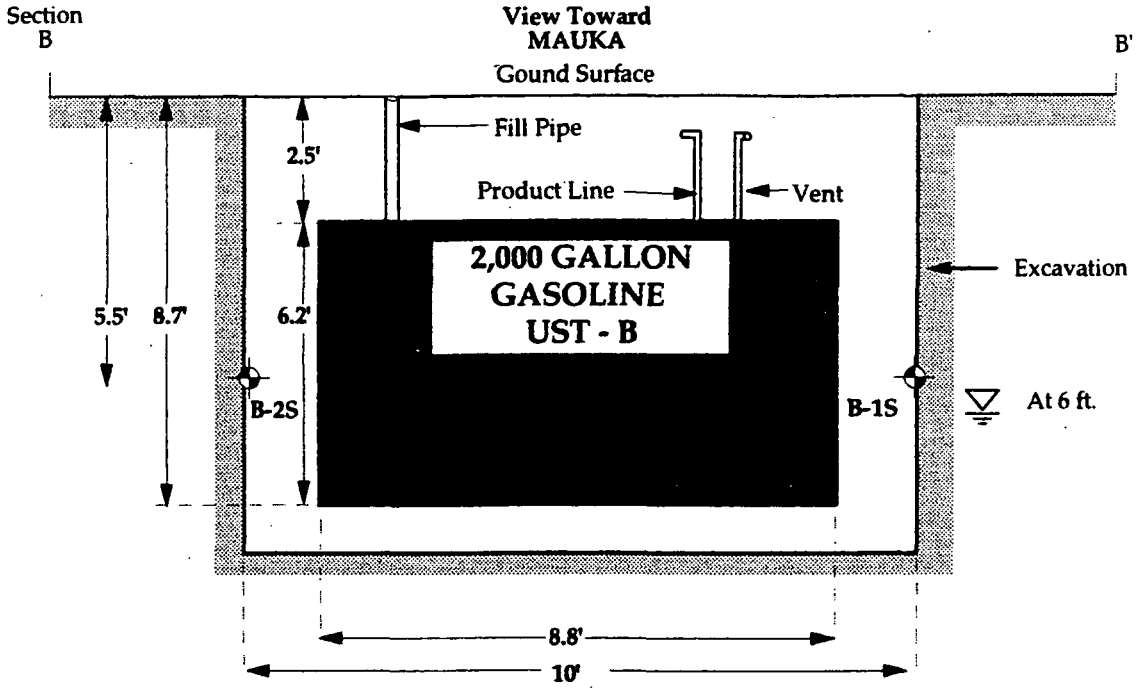
A-1S Soil Sample Location & Designation

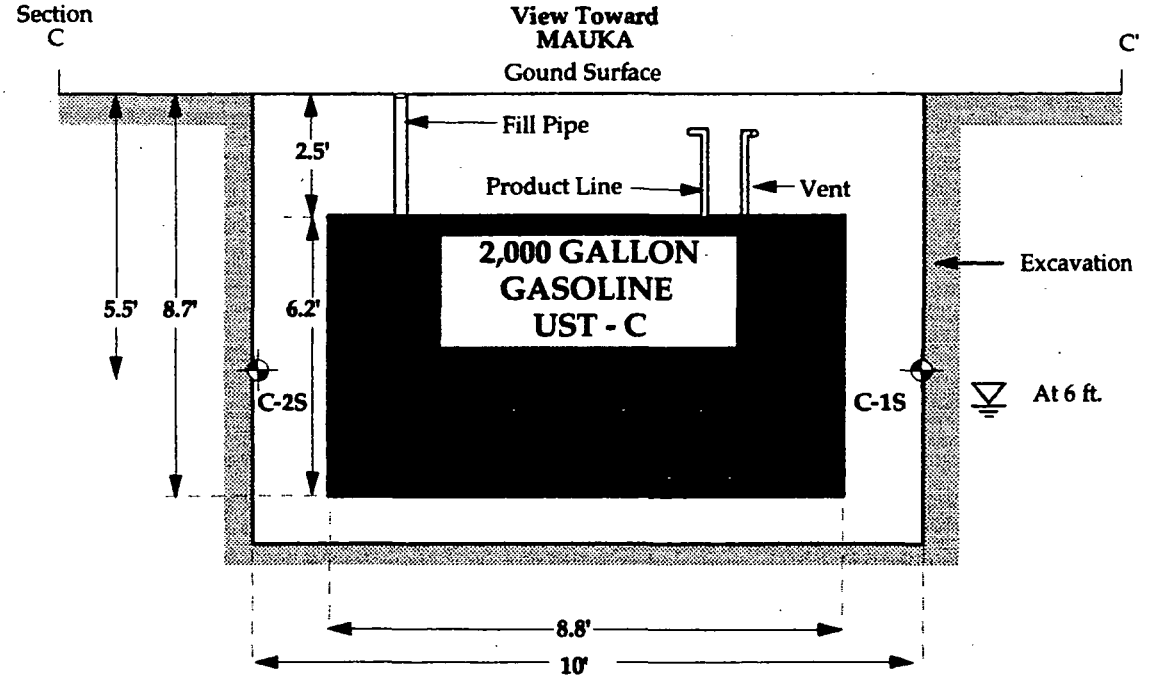
W-1 Soil Sample Location & Designation

First encountered water level

NOTE: Drawing is not to scale.
Distances are as shown on the diagram

WMF Hawaii	TITLE: X-SECTION AA' and DD" DOT - Kewalo Basin 115 Auhi Street Honolulu, Oahu, Hawaii	DWN: WMF SCALE: Not to scale DATE: 10/25/98	PROJECT: NNI: Kewalo UST FIGURE NO: A-3





LEGEND

A-1S Soil Sample Location & Designation

W-1 Soil Sample Location & Designation

First encountered water level

NOTE: Drawing is not to scale.
Distances are as shown on the diagram

WMF Hawaii	TITLE: X-SECTION BB' and CC'' DOT - Kewalo Basin 115 Auhi Street Honolulu, Oahu, Hawaii	DWN: WMF SCALE: Not to scale DATE: 10/25/98	PROJECT: NNI: Kewalo UST FIGURE NO: A-4

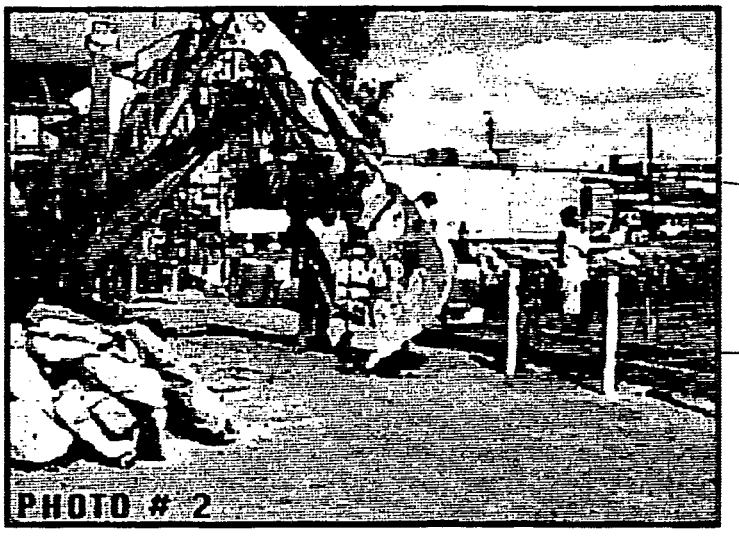
Appendix B

Photographs

Pictures shown below are taken during the October 22 and 23, 1998, site visit by W. Mark Frazier with a digital camera.

Looking Mauka. Breaking ground over the four USTs. Note the area is surrounded by water on three sides.

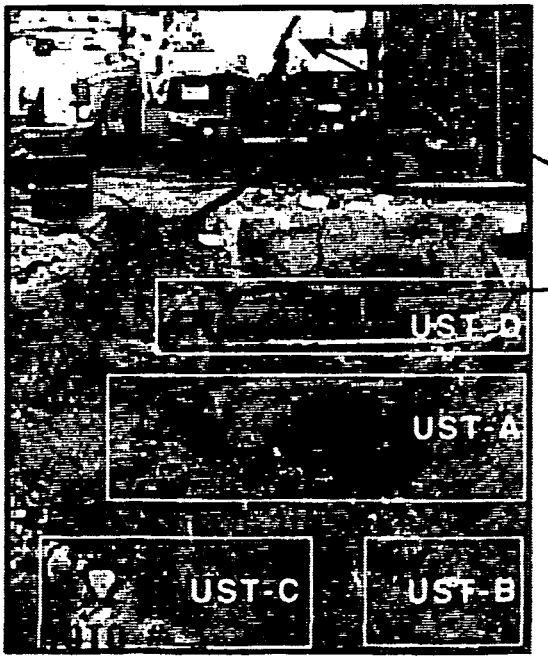
Location of dispensers.



Looking Ewa. Digging trench near dispensers.

Location of two story structure adjacent to the UST system.

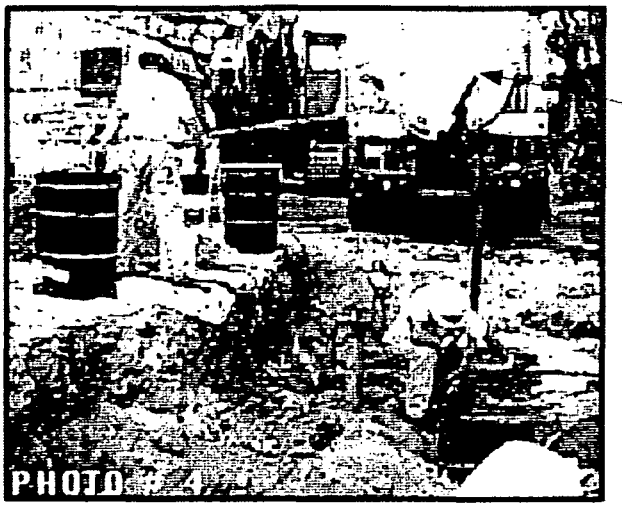
Location of dispensers.



Looking toward the house after the tanks are uncovered. The two 6,000 gallon tanks are at the top and the two 2,000 gallon tanks are at the bottom.

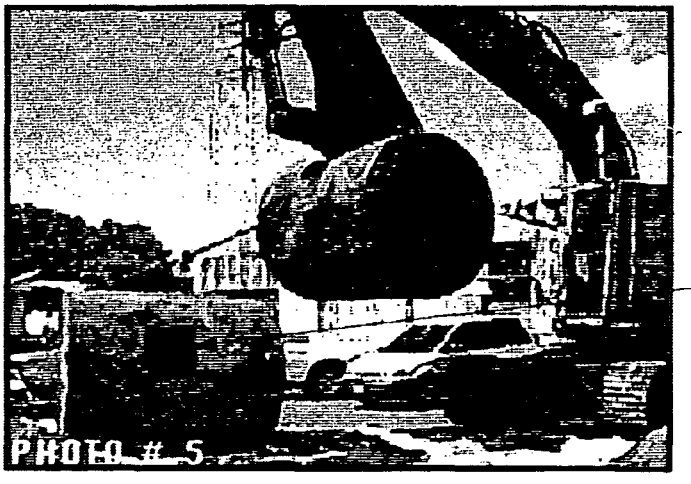
Pump truck pumping fluids from tank UST-D.

Pictures shown below are taken during the October 22 and 23, 1998, site visit by W. Mark Frazier with a digital camera.



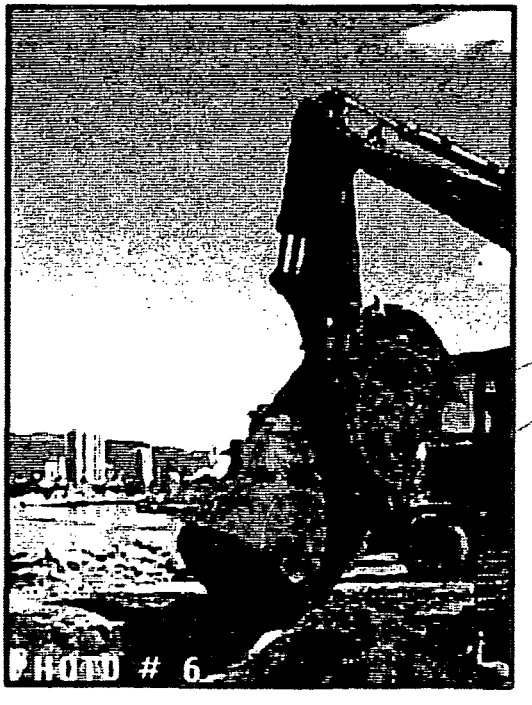
Looking Ewa, cleaning tanks.

Pump truck with hose.



Lifting one of the 2,000 gallon tanks.

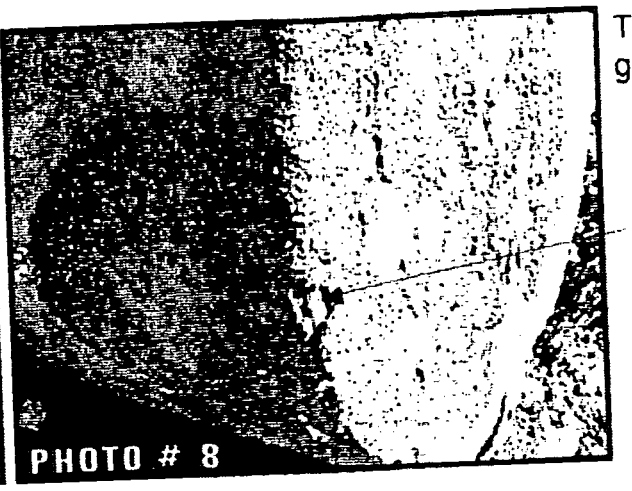
Man way cut in tank.



Lifting one of the 6,000 gallon tanks.

Note holes in side of tank

Pictures are taken during the October 22 and 23, 1998, site visit with a digital camera.



Two 2,000 gallon tanks.

Break in asphalt coating.

Two 6,000 gallon tanks with holes

Bottom of tank.

Looking at 6K tank with oily free product on the water surface.

Oily water surface.

WMF Hawaii Ph (808) 383-4146 Fax (808) 383-0299

Appendix C

Disposal Documents

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. | Manifest Document No. | 2. Page 1 of | WW002945

3. Generator's Name and Mailing Address: STATE OF HAWAII HAB DIV T/S 26077
C/O NEIL NAKAI REPSIRS
1640 KAHAI ST
HONOLULU HI 96819

4. Generator's Phone (808)848-1496 JOB # 6089-10

5. Transporter 1 Company Name	6. US EPA ID Number	A. Transporter's Phone
PHILIP SERVICE OF HAWAII LTD	HID980880884	808-682-3033
7. Transporter 2 Company Name	8. US EPA ID Number	B. Transporter's Phone

9. Designated Facility Name and Site Address: PHILIP SERVICE OF HAWAII LTD
91-410 KOMOHANA ST
KAPOLEI HAWAII 96707

10. US EPA ID Number

C. Facility's Phone: 808-682-3600

11. Waste Shipping Name and Description	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol
a. MATERIAL NOT REGULATED BY DOT WASH WATER	001	TT	5700	G
b.			100	SL
c.				
d.				

D. Additional Descriptions for Materials Listed Above: Hydro clin < 250ppm
High Solids - Wash water

E. Handling Codes for Wastes Listed Above:

15. Special Handling Instructions and Additional Information
24 HOUR EMERGENCY RESPONSE # 808-682-3033

16. GENERATOR'S CERTIFICATION: I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Printed/Typed Name	Signature	Month	Day	Year
RICHARD S. JONARD	Richard S Jonard	10	25	98

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
Gary Tisdale	Gary Tisdale	10	23	98

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year

19. Discrepancy Indication Space: 13 - 5,900 gals High solid - load filter press

20. Facility Owner or Operator: Certification of receipt of waste materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month	Day	Year
Joe Kealoha		10	23	98

ORIGINAL - RETURN TO GENERATOR

PSC
PHILIP SERVICES
CORP
Industrial Services Group
License # C20637
Western Region

CERTIFICATE OF DISPOSAL

As an authorized agent of **Philip Services of Hawaii, Ltd.**, I hereby certify that the (2)-6000 GAL DIESEL TANKS removed from D.O.T. REFUELING AT KEWALO has been properly cleaned, triple-rinsed, rendered unusable, and delivered to **Hawaii Metal Recycling Co.** for disposal in compliance with applicable Federal and State laws, rules and regulations.

By: Rick Russell Title: Field Supervisor Date: 10-23-98

I hereby certify as a corporate officer, owner, partner, or general manager of **Hawaii Metal Recycling Co.**, that the above described TANKS has been properly demolished and disposed of in compliance with applicable Federal and State laws, rules, and regulations.

Hawaii Metal Recycling Co.

By: J Kalla Title: WEIGHMASTER Date: 10/23/98

PHILIP SERVICES CORP.

Industrial Services Group
License# C20637
Western Region

CERTIFICATE OF DISPOSAL

As an authorized agent of **Philip Services of Hawaii, Ltd.**, I hereby certify that the (2) 3,000 GAL. GASOLINE TANKS removed from D.O.T. REFUELING AT KAWAILO has been properly cleaned, triple-rinsed, rendered unusable, and delivered to **Hawaii Metal Recycling Co.** for disposal in compliance with applicable Federal and State laws, rules and regulations.

By: [signature] Title: Field Sup. Date: 10-23-98

I hereby certify as a corporate officer, owner, partner, or general manager of **Hawaii Metal Recycling Co.**, that the above described TANKS has been properly demolished and disposed of in compliance with applicable Federal and State laws, rules, and regulations.

Hawaii Metal Recycling Co.

By: [signature] Title: Weighmaster Date: 10/23/98

Combining the Strengths of Philip Services Corp., Allwaste and Serv-Tech

91-127 Malakole Street • Kapolei, HI 96707 • (808) 682-3035 • Fax (808) 682-0097

Appendix D

Laboratory Reports

November 17, 1998

Mark Frazier
WMF Hawaii
2517 Akapea St.
Pearl City, HI 96782

SUBJECT: DATA REPORT – NNI: Kewalo UST

TEG Project #D81023E

Mr. Frazier:

Please find enclosed a data report for the samples analyzed from the above referenced project for WMF Hawaii. The samples were analyzed by TEG Pacific (CA Cert. #1887). All samples were received chilled and intact. TEG conducted the following tests:

- 5 analyses for TPH as gasoline by CA-LUFT 8015 mod.
- 5 analyses for TPH as diesel by CA-LUFT 8015 mod.
- 4 analyses for aromatic volatile organics by EPA 8020.
- 3 analyses for polynuclear aromatic hydrocarbons by EPA 8100.

The results of the analyses are summarized in the enclosed table. Applicable detection limits and QA/QC data are included on the table. Additionally, 2 samples were sent to EL Pacific Laboratories for the following analysis: Total Pb. These data are also included with this report.

Also enclosed is a brief description of the analytical procedures employed for the samples analyzed.

TEG appreciates the opportunity to have provided analytical services to WMF Hawaii on this project. If you have any further questions relating to the data or report, please do not hesitate to contact us.

Sincerely,

Christina B. Poma
General Office Manager
TEG, Pacific

teg

WMF Hawaii

NNI: Kewalo UST

TEG Project #D81023E

TPH ANALYSES OF SOILS

SAMPLE NUMBER	DATE ANALYZED	TPH-GAS C5-C12 (mg/kg)	TPH-DIESEL C12-C24 (mg/kg)	SURROGATE RECOVERY (%)
Blank	10/29/98	nd	nd	97%
A-2	10/29/98	-	8780	MI
B-1	10/29/98	293	14800	MI
B-2*	10/29/98	nd	-	109%
C-1	10/29/98	587	9420	MI
C-2*	10/29/98	302	-	MI
D-1	10/29/98	-	15000	MI
D-1 dup	10/29/98	-	15100	MI
DETECTION LIMITS		10	10	

ND INDICATES NOT DETECTED AT LISTED DETECTION LIMITS

MI INDICATES MATRIX INTERFERENCE

*- SAMPLE SHOWS DIESEL PATTERN

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE (2FBP): 65% TO 135%

QA/QC DATA - MATRIX SPIKE ANALYSES

Spike Added	500	500
Measured Conc.	376	540
% Recovery	75.2%	108.0%
Spike Added	500	500
Measured Conc.	341	545
% Recovery	68.2%	109.0%
RPD	9.8%	0.9%

ACCEPTABLE RECOVERY LIMITS: 65% TO 135%

CA-DOHS-ELAP CERTIFICATION #1887

ANALYSES PERFORMED BY: F. Tanguilig

DATA REVIEWED BY: Eric Hol

teg

WMF Hawaii

NNI: Kewalo UST

TEG Project #D81023E

BTEX ANALYSES OF SOILS

SAMPLE NUMBER	DATE ANALYZED	BENZENE (mg/kg)	TOLUENE (mg/kg)	ETHYLBENZENE (mg/kg)	XYLENES (mg/kg)	SURROGATE RECOVERY (%)
Blank	11/5/98	nd	nd	nd	nd	123%
A-2	11/5/98	nd	0.157	0.252	1.68	113%
C-2	11/5/98	nd	nd	0.089	0.834	113%
D-1	11/5/98	nd	nd	0.252	2.69	MI
D-1 DUP	11/5/98	nd	nd	0.111	0.946	113%
DETECTION LIMITS		0.050	0.050	0.050	0.050	

ND INDICATES NOT DETECTED AT LISTED DETECTION LIMITS

MI INDICATES MATRIX INTERFERENCE

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE (4-BFB): 65% TO 135%

QA/QC DATA - MATRIX SPIKE ANALYSES

Spike Added	1.000	1.000	1.000	3.000
Measured Conc.	0.891	0.947	0.919	2.783
% Recovery	89.1%	94.7%	91.9%	92.8%
Spike Added	1.000	1.000	1.000	3.000
Measured Conc.	0.999	1.068	0.952	2.960
% Recovery	99.9%	106.8%	95.2%	98.7%
RPD	11.4%	12.0%	3.5%	6.2%

ACCEPTABLE RECOVERY LIMITS: 65% TO 135%

CA-DOHS-ELAP CERTIFICATION #1887

ANALYSES PERFORMED BY: F. Tanguilig, K. Lovejoy

DATA REVIEWED BY: Eric Ho

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WMF Hawaii
NNI: Kewalo UST

TEG Project #D81023E

PAH ANALYSES OF SOILS

SAMPLE NUMBER	DATE ANALYZED	NAPHTHALENE (mg/kg)	ACENAPHTHENE (mg/kg)	FLUORANTHENE (mg/kg)	BENZO(a)PYRENE (mg/kg)	SURROGATE RECOVERY (%)
Blank	11/5/98	nd	nd	nd	nd	121%
A-2	11/5/98	nd	nd	nd	nd	DO
D-1	11/5/98	nd	nd	nd	nd	DO
D-1 DUP	11/5/98	nd	nd	nd	nd	DO
DETECTION LIMITS		1.00	1.00	1.00	1.00	

ND INDICATES NOT DETECTED AT LISTED DETECTION LIMITS

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE (2-FBP): 65% TO 135%
DO-SURROGATE SPIKE DILUTED OUT

QA/QC DATA - MATRIX SPIKE ANALYSES

Spike Added	10.00	10.00	10.00	10.00
Measured Conc.	10.13	10.45	9.44	10.05
% Recovery	101.3%	104.5%	94.4%	100.5%
Spike Added	10.00	10.00	10.00	10.00
Measured Conc.	9.79	9.90	9.78	10.85
% Recovery	97.9%	99.0%	97.8%	108.5%
RPD	3.4%	5.4%	3.5%	7.7%

ACCEPTABLE RECOVERY LIMITS: 65% TO 135%

CA-DOHS-ELAP CERTIFICATION #1887
ANALYSES PERFORMED BY: F. Tanguilig, K. Lovejoy
DATA REVIEWED BY: Eric Hol

WMF Hawaii
NNI: Kewalo UST

TEG Project #D81023E

TPH ANALYSES OF WATERS

SAMPLE NUMBER	DATE ANALYZED	TPH-GAS C5-C12 (mg/l)	TPH-DIESEL C12-C24 (mg/l)	SURROGATE RECOVERY (%)
Blank	10/29/98	nd	nd	99%
W-1	10/29/98	3.63	281	MI
W-1 Dup	10/29/98	5.15	278	MI
DETECTION LIMITS		0.50	0.50	

ND INDICATES NOT DETECTED AT LISTED DETECTION LIMITS

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE (2FBP): 65% TO 135%
MI-MATRIX INTERFERENCE

QA/QC DATA - MATRIX SPIKE ANALYSES

Spike Added	15.00	15.00
Measured Conc.	15.67	16.06
% Recovery	104.5%	107.1%
Spike Added	15.00	15.00
Measured Conc.	15.70	15.84
% Recovery	104.7%	105.6%
RPD	0.2%	1.4%

ACCEPTABLE RECOVERY LIMITS: 65% TO 135%

CA-DOHS-ELAP CERTIFICATION #1887
ANALYSES PERFORMED BY: F. Tanguilig
DATA REVIEWED BY: Eric Hol

teg

WMF Hawaii
NNI: Kewalo UST

TEG Project #D81023E

PAH ANALYSES OF WATERS

SAMPLE NUMBER	DATE ANALYZED	NAPHTHALENE (mg/l)	ACENAPHTHENE (mg/l)	FLUORANTHENE (mg/l)	BENZO(a)PYRENE (mg/l)	SURROGATE RECOVERY (%)
Blank	11/5/98	nd	nd	nd	nd	91%
W-1	11/5/98	nd	nd	nd	nd	DO
W-1 DUP	11/5/98	nd	nd	nd	nd	DO
DETECTION LIMITS		0.030	0.030	0.010	0.010	

ND INDICATES NOT DETECTED AT LISTED DETECTION LIMITS

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE (2-FBP): 65% TO 135%
DO-SURROGATE SPIKE DILUTED OUT
QA/QC DATA - MATRIX SPIKE ANALYSES

Spike Added	0.300	0.300	0.300	0.300
Measured Conc.	0.284	0.363	0.363	0.378
% Recovery	94.7%	121.0%	121.0%	126.0%
Spike Added	0.300	0.300	0.300	0.300
Measured Conc.	0.331	0.389	0.384	0.400
% Recovery	110.3%	129.7%	128.0%	133.3%
RPD	15.3%	6.9%	5.6%	5.7%

ACCEPTABLE RECOVERY LIMITS: 65% TO 135%

CA-DOHS-ELAP CERTIFICATION #1887
ANALYSES PERFORMED BY: F. Tanguilig, K. Lovejoy
DATA REVIEWED BY: Eric Hol

teg

WMF Hawaii
NNI: Kewalo UST

TEG Project #D81023E

BTEX ANALYSES OF WATERS

SAMPLE NUMBER	DATE ANALYZED	BENZENE (mg/l)	TOLUENE (mg/l)	ETHYLBENZENE (mg/l)	XYLENES (mg/l)	SURROGATE RECOVERY (%)
Blank	11/5/98	nd	nd	nd	nd	77%
W-1	11/5/98	nd	nd	nd	0.0135	MI
W-1 Dup	11/5/98	nd	nd	nd	0.0152	96%
DETECTION LIMITS		0.0005	0.0005	0.0005	0.0005	

ND INDICATES NOT DETECTED AT LISTED DETECTION LIMITS

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE (4BFB): 65% TO 135%
MI-MATRIX INTERFERENCE

QA/QC DATA - MATRIX SPIKE ANALYSES

Spike Added	0.030	0.030	0.030	0.090
Measured Conc.	0.032	0.034	0.032	0.092
% Recovery	106.0%	111.9%	106.0%	102.1%
Spike Added	0.030	0.030	0.030	0.090
Measured Conc.	0.033	0.033	0.032	0.092
% Recovery	111.3%	109.0%	107.0%	102.1%
RPD	4.9%	2.7%	1.0%	0.0%

ACCEPTABLE RECOVERY LIMITS: 65% TO 135%

CA-DOHS-ELAP CERTIFICATION #1887
ANALYSES PERFORMED BY: F. Tanguilig, K. Lovejoy
DATA REVIEWED BY: Eric Hol

teg

CHAIN-OF-CUSTODY RECORD

TURNAROUND TIME: 5-day

CLIENT: NAF Hawaii
ADDRESS: 2517 Alepa ST
PHONE: 383 4146 FAX: 383 0299
CLIENT PROJECT #: NNI: Kenalo USF PROJECT MANAGER: Mark

DATE: 10/23/98 PAGE 1 OF 1
TEG PROJECT #: D810736
LOCATION: NNI: Kenalo USF
COLLECTOR: Mark DATE OF COLLECTION: 10/23/98

Sample Number	Depth	Time	Sample Type	Container Type	8010 HVOC	8020 BTEX	8015 GASOLINE	8015 DIESEL	8015 OIL	418.1 TRPH	8080 PCB	8100 PAH	TOTAL LEAD	TOTAL CADMIUM	TOTAL CHROMIUM	FIELD NOTES	Total Number Of Containers	Laboratory Note Number
7-2			Soil	Ring	*		X				*						1	
3-1						X	X										1	
3-2						X											1	
-1						X	X										1	
-2					*	X						*					1	
7-1					*		X				*						1	
1-1			Matrix	(4) VOA (1) Semi	*	X	X				*	*					5	
						LAST				ENTRY								

RELINQUISHED BY (Signature) DATE/TIME RECEIVED BY (Signature) DATE/TIME
[signature] 10/23/98 4:40pm [signature] 10/23/98 1645
RELINQUISHED BY (Signature) DATE/TIME RECEIVED BY (Signature) DATE/TIME

SAMPLE DISPOSAL INSTRUCTIONS

SAMPLE RECEIPT	
TOTAL NUMBER OF CONTAINERS	11
CHAIN OF CUSTODY SEALS Y/N/NA	
SEALS INTACT? Y/N/NA	
RECEIVED GOOD COND./COLD	

LABORATORY NOTES:
* = 24 hr rush 11/5/98 NAF
# = 10 day 11/5/98 NAF

ANALYTICAL PROCEDURES

SAMPLE PREPARATION

Waters

Separate water aliquots are extracted for TPH and PAH analyses by liquid-liquid extraction with freon 113 and methylene chloride respectively using a modified EPA Method 3510. For volatile aromatics and chlorinated hydrocarbons (EPA 601 & 602), water samples are purged of volatiles in an SRI Instruments purge & trap following EPA Method 5030.

Soils

Soil samples are extracted with methanol for volatile chlorinated hydrocarbon compounds (EPA 8010), with freon 113 for volatile aromatic hydrocarbon compounds (EPA 8020) and fuel compounds (DOHS approved EPA 8015m), and with methylene chloride for PAHs (EPA 8100) by hand-shaking for 2 minutes and sonication for 10 minutes. PCBs are extracted by hand shaking with hexane followed by sonication.

GAS CHROMATOGRAPHY

Volatile Chlorinated Hydrocarbons

Water samples and soil extracts are purged in an SRI purge & trap, and backflushed into an SRI 8610 gas chromatograph equipped with megabore capillary columns and photoionization detector (PID) and Hall electrolytic conductivity detectors following EPA Methods 601/8010 and 602/8020.

Volatile Aromatic Hydrocarbons (BTEX), Semivolatile hydrocarbons (PAH) & Total Fuel Hydrocarbons (TPH)

An aliquot of the soil extract is injected on-column into an SRI 8610 gas chromatograph equipped with megabore capillary columns, photoionization (PID) and flame ionization detectors (FID).

PCBs

PCBs are analyzed using a megabore capillary column attached to a Shimadzu ECD per EPA protocols.

TOTAL RECOVERABLE HYDROCARBONS

Extracts are scrubbed with silica gel and measured on a BUCK 404 Infrared Analyzer following EPA 418.1 protocols.

Environmental Laboratory of the Pacific

950 Mapunapuna Street, Suite 100 Honolulu, Hawaii 96819
Telephone: (808)831-3090 Fax: (808)831-3098 E-mail: ELPacific@oceanic-labs.com

Laboratory Report

TEG-Pacific
1818 Kahai St.
Honolulu, HI 96819
Attention: Eric Hol

Client Project ID: D81023E
Matrix: Soil

Reported: Nov 17, 1998

QUALITY CONTROL DATA REPORT

Analyte:	Lead
QC Batch#:	ME110998 8050MDA
Analy. Method:	EPA 6010A
Prep. Method:	EPA 3050A
Analyst:	YKL
MS/MSD #:	98110315
Samp. Conc. (mg/Kg):	125
Prepared Date:	11/09/98
Analyzed Date:	11/09/98
Instrument I.D.#:	Trace-1
Conc. Spiked (mg/Kg):	100
Result (mg/Kg):	148
MS % Recovery:	23 †
Dup. Result (mg/Kg):	146
MSD % Recov.:	21 †
RPD:	1.4
RPD Limit:	0-20

LCS #:	LCS110998
Prepared Date:	11/09/98
Analyzed Date:	11/09/98
Instrument I.D.#:	Trace-1
Conc. Spiked (mg/Kg):	100
LCS Result (mg/Kg):	90
LCS % Recov.:	90

MS/MSD LCS Control Limits	80-120

E. L. PACIFIC

Aidan J. Scott
Project Manager

Please Note:
The LCS is a control sample of known, interferent-free matrix that is analyzed using the same reagents, preparation, and analytical methods employed for the samples. The matrix spike is an aliquot of sample fortified with known quantities of specific compounds and subjected to the entire analytical procedure. If the recovery of analytes from the matrix spike does not fall within specified control limits due to matrix interference, the LCS recovery is to be used to validate the batch.

** MS=Matrix Spike, MSD=MS Duplicate, RPD=Relative % Difference
† Matrix spike compound recoveries are outside method established limits due to matrix effects.

Environmental Laboratory of the Pacific
An Oceanic Analytical Laboratory
990 Maipunapuna Street, Suite 100 Honolulu, Hawaii 96819
Telephone: (808)831-8080 Fax: (808)831-3088 E-mail: ELPacific@oceanic-lana.com

Laboratory Report

TEG Pacific
1818 Kahai St.
Honolulu, HI 96819
Attention: Eric Hol

Client Project ID: DB1023E
Sample Matrix: Soil
Work Order #: 9811033

Sampled: Oct 23, 1998
Received: Nov 5, 1998
Reported: Nov 17, 1998

QC Batch Number: ME110998305OMDA

TOTAL METAL

Analyte	Reporting Limit mg/Kg	EPA Method	Date Prepared	Date Analyzed	Sample I.D. 98110211 C2
Lead	20	3050A/6010A	11/9/98	11/9/98	N.D.

Analytes reported as N.D. were not detected above the stated reporting limit.

E. L. PACIFIC

Aidan J. Scott
Project Manager

Environmental Laboratory of the Pacific
An Ecarma Analytical Laboratory
930 Mapunapuna Street, Suite 100 Honolulu, Hawaii 96819
Telephone: (808)831-3090 Fax: (808)831-3096 E-mail: ElPacific@hotmail.com

Laboratory Report

TEG-Pacific
1818 Kahai St.
Honolulu, HI 96819
Attention: Eric Ho

Client Project ID: D81023E
Matrix: Soil

Reported: Nov 17, 1998

QUALITY CONTROL DATA REPORT

Analyte:	Lead
QC Batch#:	ME110998
	3050MDA
Analy. Method:	EPA 6010A
Prep. Method:	EPA 3050A
Analyst:	TKL
MS/MSD #:	98110915
Samp. Conc. (mg/Kg):	125
Prepared Date:	11/09/98
Analyzed Date:	11/09/98
Instrument I.D.#:	Trace-1
Conc. Spiked (mg/Kg):	100
Result (mg/Kg):	148
MS % Recovery:	23 f
Dup. Result (mg/Kg):	146
MSD % Recov.:	21 f
RPD:	1.4
RPD Limit:	0-20

LCS #:	LCS110998
Prepared Date:	11/09/98
Analyzed Date:	11/09/98
Instrument I.D.#:	Trace-1
Conc. Spiked (mg/Kg):	100
LCS Result (mg/Kg):	90
LCS % Recov.:	90

MS/MSD	
LCS	80-120
Control Limits	

E. L. PACIFIC

Aidan J. Scott
Project Manager

Please Note:
The LCS is a control sample of known, interferent-free matrix that is analyzed using the same reagents, preparation, and analytical methods employed for the samples. The matrix spike is an aliquot of sample fortified with known quantities of specific compounds and subjected to the entire analytical procedure. If the recovery of analytes from the matrix spike does not fall within specified control limits due to matrix interference, the LCS recovery is to be used to validate the batch.
** MS=Matrix Spike, MSD=MS Duplicate, RPD=Relative % Difference
f Matrix spike compound recoveries are outside method established limits due to matrix effects.

98110933.teg <2>

ELP # 9811033 Loc #16

teg

TURNAROUND TIME: 10 day

CHAIN-OF-CUSTODY RECORD

CLIENT: TEG-Pacific
ADDRESS: 1818 KAHAI ST.
PHONE: 847-0067 FAX: 847-0067 0917
CLIENT PROJECT #: D81023E PROJECT MANAGER: Eric Hol

DATE: 11/05 PAGE 1 OF 1
TEG PROJECT #: D81023E
LOCATION:
COLLECTOR: DATE OF COLLECTION: 10/22/98

Sample Number	Depth	Time	Sample Type	Container Type	8010 HVOC	8020 BTEX	8015 GASOLINE	8015 DIESEL	8015 OIL	418.1 TRPH	8080 PCB	8100 PAH	TOTAL LEAD	TOTAL CADMIUM	TOTAL CHROMIUM	FIELD NOTES	Total Number Of Containers	Laboratory Note Number
C			Soil	4oz Jar									X			Lab # 9811021	1	
W			Water	4oz ~~Water~~									X			VOID	1	

LAST ENTRY

RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME
[signature]	11/5/98 11:40am	[signature]	11/5/98
RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME

SAMPLE DISPOSAL INSTRUCTIONS

☐ TEG DISPOSAL @ $2.00 each ☐ Return ☐ Pickup

SAMPLE RECEIPT

TOTAL NUMBER OF CONTAINERS	—
CHAIN OF CUSTODY SEALS Y/N/NA	—
SEALS INTACT? Y/N/NA	—
RECEIVED GOOD COND./COLD	— 15c
NOTES:	—

LABORATORY NOTES: