



King County
Department of Construction & Facility Management
General Government Capital Improvement Program

UNDERGROUND STORAGE TANK SITE ASSESSMENT AND INTERIM CLEANUP REPORT

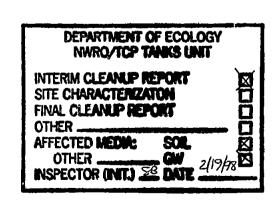
FORMER KING COUNTY SHOPS SITE, MAPLE VALLEY, WASHINGTON

Prepared by

King County Department of Construction and Facility Management

King County Administration Building 500 Fourth Avenue, Room 320 Seattle, Washington 98104

February 1998



FEB 1 1 1998
DEPT. OF ECOLOGY



King County
Department of Construction & Facility Management
General Government Capital Improvement Program

Satellite Office at Union Bank of California Building, Room 860 900 Fourth Avenue, Box 82 Seattle. Washington 98164

February 9, 1998

Mr. Joe Hickey Washington State Department of Ecology 3190 160th Southeast Bellevue, Washington 98008-5452

Re:

UST Site Assessment and Interim Cleanup Report,

Former King County Shops Site, Maple Valley, Washington

Dear Joe:

Enclosed is a copy of the report documenting removal of three underground storage tanks and associated petroleum contaminated soil from a former King County shop site in Maple Valley, Washington. The three tanks included two tanks used for vehicle fueling (one gasoline and one diesel), and one tank used to store heating oil for a boiler. King County sold the property in 1985 and the tanks were not registered with Ecology. It is not known when the tanks were last used. Results of the tank removal and cleanup activities are summarized in the Executive Summary at the beginning of the report.

If you have any questions regarding the report or the site, please contact me at (206) 296-1706 or Elizabeth Hill at (206) 296-1414.

Sincerely

Joe Hicker

Project Manager

cc:

Department of Ecology Toxics Cleanup Program

P.O. Box 47655

Olympia, Washington 98504-7655

			LUST #:
Inspector Str			Site name: King County Shops Site County/city: Maple Valley / Kin
Site address: 1887 = Mudo Va	New Rd, Maple	Valley	County/city: Maple Valley / Rin
Site address: 18825 Mexple Vo UST #: Depth	to GW: 8-10	Media affected:	,
ERTS #: Free pi	oduct:	⊠GW ⊠Soil	Date received: 2/11/98
LUST#:	M North	Extent of contar	n. known:
C 2-19-98		□ Yes 💆 No	
Project status:	9		Report status:
Cleanup started	Monitoring		interim
Awaiting cleanup	NFA		final
Reported cleaned up	Unknown		
Remediation method:Aeration/Vapor extractionAir stripping/Air spargingBiological treatmentCarbon absorptionChemical destruction	The state of the s		Soil washingSolidification/StabilizationSolvent extractionThermal desorptionVitrificationOther
Comments: A thin sheen	of product	on GW	detected during UST
removal. GW	investigas	tion plann	ed for "rear Future".
· A total of 323			
· Cedar fiver los	rated appro	x. 200 4	to N.
· Xylenes detected	above MTCA	A standards	(Tank I dispunser A)



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EXECUTIVE SUMMARY

Three underground fuel storage tanks were removed from the former King County Shops site in Maple Valley, Washington between August 25 and 27, 1997. The tanks included a 1,500 gallon tank and a 4,500 gallon tank, both used for vehicle fueling, and a 5,000 gallon tank used to store heating oil. All three tanks had been out of service for a number of years and the vehicle fueling tanks were not registered with the Department of Ecology.

During removal of the three tanks, petroleum contaminated soils were encountered, apparently the result of piping leakage. No corrosion holes or cracks were observed in any of the tanks. Contaminated soils were excavated from each tank area and numerous soil samples were collected. A total of 323 tons of contaminated soil were removed from the site. Results of soil samples indicate most of the contaminated soils associated with the tanks were removed, except for an area beneath a vehicle fueling dispenser island. Removal of the contaminated soil beneath the dispenser island was not possible during this work because it would have required demolishing or shoring a large canopy structure covering the area.

Soil contamination at each tank location appeared to extend vertically to groundwater. Groundwater was encountered at depths ranging from 8 to 10 feet. A petroleum-like sheen was observed on groundwater at both tank excavation areas. While most of the contaminated soil associated with the tanks appears to have been removed from the site, planning is underway for an investigation of groundwater quality that will include installing and sampling one or more monitoring wells near each tank area. Results of future investigations will be forwarded to the Department of Ecology.

1. INTRODUCTION

This report presents a summary of the underground storage tank removal and associated soil cleanup activities performed at the former King County Shops site, located near Maple Valley, Washington. The site has also been referred to as the Old Maple Valley Facilities. This report has been prepared in general accordance with reporting requirements under Washington State Underground Storage Tank Regulations (Chapter 173-360 Washington Administrative Code [WAC]) and the Model Toxics Control Act Cleanup Regulation (Chapter 173-340 WAC).

PROJECT BACKGROUND

The former King County Shops site is located at 18825 Southeast Maple Valley Road in Maple Valley, Washington (Figure 1). King County acquired the site from the Pacific Coast Coal Company for use as a maintenance facility and owned the site until 1985, when it was sold to a private owner. The site was sold again in 1990 to the current owner, Mr. Richard Schroeder. Since 1985, the site has been leased to a variety of tenants and businesses. Sunset Materials, Inc. currently leases most of the site for a landscaping materials business.

SITE DESCRIPTION

The site is situated on an approximately 40-acre parcel (Figure 2). Several buildings are located on the property including a main shop and office structure that was part of the original coal mining operations. In addition to the main shop and office are several other storage buildings and covered areas. A smaller single bay truck garage was constructed sometime following King County's acquisition of the property. These facilities are used by the existing tenants for equipment maintenance. Two temporary construction trailers are also located at the site and are used as office space for tenants.

Site topography ranges from steep, north-facing wooded areas in the south portion of the site to relative flat lying areas in the middle and north areas. Site drainage is generally toward the Cedar River, located approximately 200 feet to the north.

UST SYSTEM DESCRIPTION

Three underground tanks used for storing petroleum were located at the site. These included an 1,100 gallon tank used for storing gasoline and diesel (tank 1), a 4,500 gallon tank used for storing diesel (tank 2), and a 5,000 gallon tank used to store heating oil for a boiler (tank 3). Tanks 1 and 2 were used for vehicle fueling, and were located on the south side of the garage building. Buried piping connected the tanks to dispensers under a canopy covering on the east side of the garage building. Tank 3 was located approximately 25 feet north of the boiler room in the main shop and office building. Buried piping installed in a concrete vault connected tank 3 to the boiler.

The ages of the tanks are uncertain. However, tanks 1 and 2 were likely installed concurrent with construction of the garage building sometime after King County acquired the site. The heating oil tank may be older. It is not known when the tanks were last used. None of the three tanks were registered with the Department of Ecology.

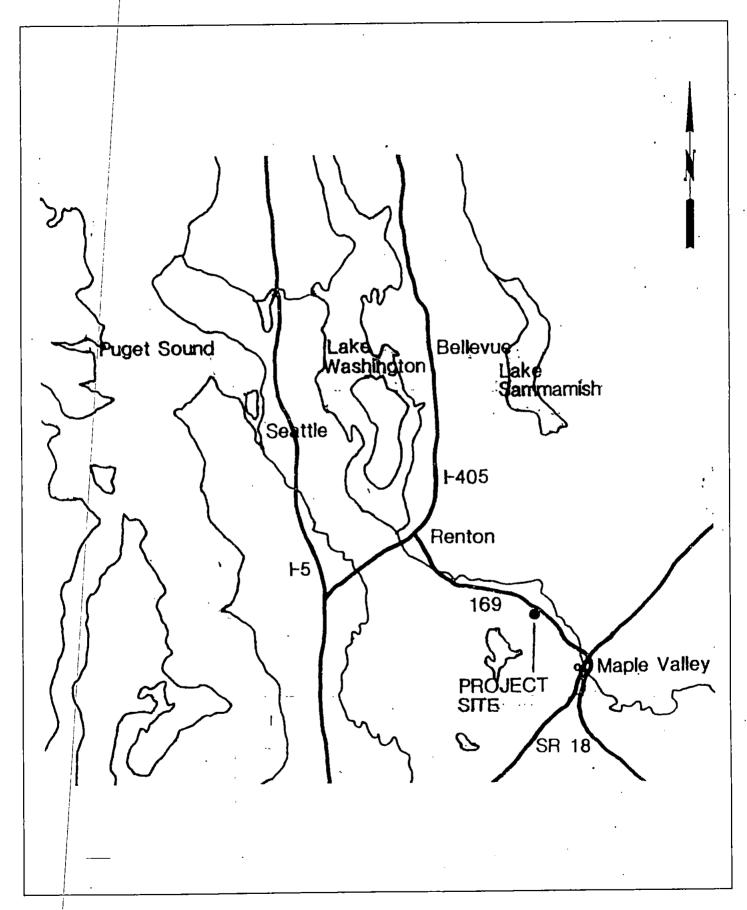


Figure 1. Site Location.

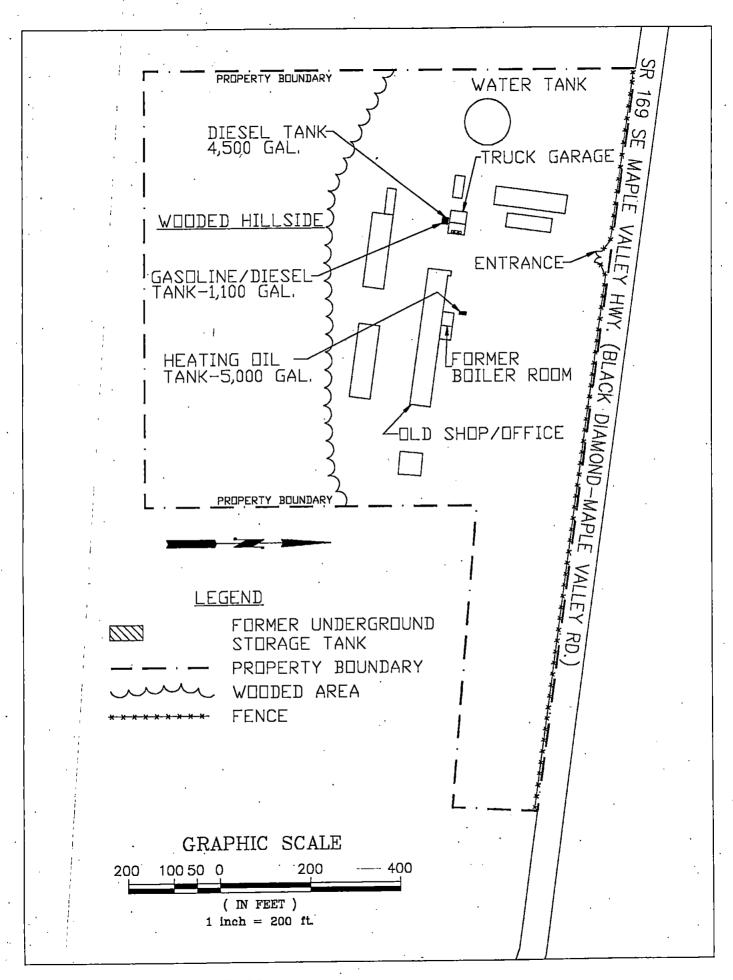


FIGURE 2: SITE PLAN

2: SITE CHARACTERIZATION AND INTERIM CLEANUP ACTIONS

TANK REMOVAL

The three tanks and associated piping were removed between August 25 and September 4, 1997 by Foss Environmental Services (Foss) under contract to King County. Prior to removal of the tanks, residual product was removed and the tanks were inerted using dry ice. The tanks were then rinsed, cut open, and cleaned onsite prior to being taken to Seattle Iron and Metals, Inc. for recycling. A representative from the King County Fire Marshal's Office inspected and approved all tanks prior to removal and cutting activities. Cutting activities were also supervised by a marine chemist.

Tank cleaning rinse water was contained in an onsite tanker provided by Foss and taken to Emerald Petroleum Services for treatment and disposal. All tanks were observed to be in fair to good condition with some rust and scale but no visible corrosion holes or cracks. Tank piping appeared to be in good condition although some leakage at threaded joint locations was apparent. Tank and cleaning water disposal documents are included in Appendix A.

SOIL SAMPLING AND REMEDIATION

General

Following removal of the tanks, soil samples were collected in accordance with site assessment requirements from the sidewalls and bottom of each tank excavation, in addition to locations beneath piping and dispensers. Samples were field screened for indications of contamination using a mobile gas chromatograph provided by Onsite Analytical, Inc. When results of field screening indicated contaminated soils were present, additional soil was removed and more samples were collected. When field screening results indicated clean soil boundaries had been reached, duplicate sample were submitted to an analytical laboratory for testing to confirm the field screening results. Laboratory certificates for all samples tested are included in Appendix B.

Results of field screening samples indicated levels of petroleum hydrocarbons in excess of respective MTCA Method A cleanup levels in soils at one or more locations near each tank. Field observations indicate groundwater may also have been affected at both tank locations as indicated by the presence of a thin sheen on groundwater encountered in tank excavations. However, no groundwater samples have been collected and planning is underway for a groundwater investigation to be completed in the near future. Other than the thin sheen noted, no indications of measurable thicknesses of floating product were observed.

Selection of Cleanup Standards

The MTCA Method A Cleanup Levels for residential soil were selected as cleanup standards for this project. These are:

- 100 mg/Kg for gasoline-range petroleum hydrocarbons;
- 200 mg/Kg for diesel-range petroleum hydrocarbons; and
- 200 mg/Kg for other (heavier) range hydrocarbons.
- 0.5 mg/Kg for benzene
- 40 mg/Kg for toluene
- 20 mg/Kg for ethylbenzene
- 20 mg/Kg xylenes (total)
- 250 mg/Kg lead (total)

The cleanup levels were selected based on the routine nature of the cleanup activities performed and the relatively few contaminants present.

Remedial Actions

Remedial actions at the site included excavation and removal of contaminated soil, collecting and analyzing confirmation samples to determine the limits of excavation, and placing clean backfill material to restore excavated areas to original grades. An exception to this was contaminated soil beneath the dispensers for tanks 1 and 2. Contaminated soil was not removed from this area since removal would have required demolition or extensive shoring of the canopy and support structure covering the dispenser fuel island. These measures were beyond the scope and resources available at this time. A structural engineering report concerning soil removal near the building and canopy footings is included in Appendix C of this report.

A total of 323 tons of contaminated soil was removed from the site and taken to TPS Technologies, a permitted petroleum contaminated soil recycling facility located in Tacoma. Soil disposal documentation is included in Appendix A. Excavation and sampling activities for each tank are described in the following sections.

Sampling and Soil Removal - Tanks 1 & 2

Site assessment soil samples were collected from the tank 1 and tank 2 excavation on August 28, 1997. Piping area samples were collected September 4, 1997, and samples were collected from beneath the fuel dispensers September 5, 1997. Sample results for tanks 1 and 2 soil samples are summarized in Table 1. Sample locations are shown in Figure 3.

Table 1. Analytical results of soil samples - Tanks 1 and 2.

		Diesel	-range	Heavy-range	Gasolin	e-range			=						
•		hydroc	arbons	hydrocarbons	hydroc	arbons	Ben			iene	-	enzene		5 - I Otal	- Lead -
Sample	Date	(mg/	Kg)	(mg/Kg)	(mg	/Kg)	(mg	/Kg)	(mg	/Kg)	(mg	/Kg)	(mg	/Kg)	(mg/Kg
		<u>Field</u>	<u>Lab¹</u>	<u>Field</u>	<u>Field</u>	<u>Lab²</u>	<u>Field</u>	Lab ³	<u>Field</u>	<u>Lab³</u>	<u>Field</u>	Lab ³	<u>Field</u>	<u>Lab³</u>	Lab4
Tanks 1&2 Samples				-											
T2-WSW-1	08/28/97	<25	<27	<50	<5.0	<5.5	<0.05	< 0.055	< 0.05	<0.055	<0.05	<0.055	< 0.10	< 0.11	<5.5
Γ1-WSW-1	08/28/97	<25	81	<50	<5.0	<6.0	< 0.05	< 0.060	< 0.05	< 0.060	< 0.05	<0.060	< 0.10	< 0.12	42
T1-SSW-1	08/28/97	<25	<30	<50	<5.0	<6.0	< 0.05	< 0.060	< 0.05	< 0.060	< 0.05	< 0.060	< 0.10	0.063	7.6
T1-ESW-1	08/28/97	370	-	<50	140	-	< 0.05	-	< 0.05	-	0.073	-	0.44	-	-
T2-ESW-1	08/28/97	<25	<32	<50	15	14	< 0.05	<0.064	< 0.05	< 0.064	< 0.05	<0.064	< 0.10	<0.128	<6.4
T1-Bottom-1	08/28/97	4,100	-	130	150	-	< 0.25	-	< 0.25	-	< 0.25	-	< 0.50	-	-
T2-Bottom-1	08/28/97	130	-	<50	39	-	< 0.25	-	<0.25	-	< 0.25	-	< 0.50	-	-
T2-NSW-1	09/04/97	<25	<29	· <50	<5.0	<5.8	<0.05	<0.058	<0.05	<0.058	<0.05	<0.058	<0.10	<0.116	16
Piping Samples:															
T2-Piping-NSW-1	09/04/97	<25	<30	-	<5.0	<6.0	< 0.05	< 0.060	< 0.05	< 0.060	< 0.05	< 0.060	< 0.10	< 0.120	<6.0
T2-Piping-1	09/04/97	<25	<30	-	<5.0	<6.1	< 0.05	< 0.061	< 0.05	< 0.061	< 0.05	< 0.061	< 0.10	< 0.122	<6.1
Γ1-PP-1	09/04/97	13400		-	1400	-	< 0.25	-	< 0.25	-	1.8	-	5.0	-	-
Γ1-Piping-SSW-1	09/04/97	390		-	133	-	< 0.050	-	< 0.050	-	0.062	-	0.18	-	-
T1/2-Piping-ESW-1	09/04/97	<25	<32	-	<5.0	<6.3	< 0.05	< 0.063	< 0.05	< 0.063	< 0.05	< 0.063	< 0.10	< 0.126	<6.3
T1-Piping-2	09/05/97	2,300		-	88	_	< 0.25	-	< 0.25	-	< 0.25	-	<0.5	-	-
T1-Piping-SSW-2	09/05/97	143	130	· -	7.1	<29	< 0.05	< 0.29	< 0.05	< 0.29	< 0.05	< 0.29	< 0.10	<0.58	<5.7
T1-Piping-3	09/05/97	51	64	_	<5.0	<28	< 0.05	<0.28	< 0.05	<0.28	< 0.05	< 0.28	< 0.10	< 0.56	<5.6
T1-Bottom-2	09/05/97	<25	<33	-	<5.0	<6.6	< 0.05	< 0.066	< 0.05	< 0.066	< 0.05	<0.066	< 0.10	< 0.132	<6.6
T1-Piping-4	09/05/97	300	410	-	10	<6.7	<0.05	<0.067	<0.05	<0.067	<0.05	<0.067	<0.10	< 0.134	<6.7
Dispenser Samples			•											7	
T1-Dispenser A	09/05/97	-	7,800	-	-	990	-	0.35	-	1.5	-	5.5	-	(28.2)	<6.0
T1-Dispenser B	09/05/97	-	<28	-	-	<5.6	-	< 0.056	-	0.21	-	< 0.056	-	0.283	16
T2-Dispenser	09/05/97	-	1,500	· -		93	-	<0.057		<0.057		< 0.057	-	0.25	<5.7
MTCA Method A				•											No.
Cleanup Level		2	00	200	1	00	6	0.5		40		20		20	250

Table 1 (Continued)

Sample	Date	•	-range arbons /Kg)	Heavy-range hydrocarbons (mg/Kg)	hydrod	e-range arbons /Kg)		zene /Kg)		iene /Kg)	•	enzene /Kg)	•	s - Total /Kg)	Lead (mg/Kg)
		<u>Field</u>	<u>Lab¹</u>	<u>Field</u>	<u>Field</u>	<u>Lab²</u>	<u>Field</u>	<u>Lab³</u>	<u>Field</u>	<u>Lab³</u>	<u>Field</u>	<u>Lab³</u>	<u>Field</u>	Lab3	<u>Lab⁴</u>
Stockpile Samples: T1/T2 Comp. Stock. T1 T2 SP	09/04/97 08/28/97	930	- 610	- -	140 -	- 120	<0.05 -	<0.28	<0.05 -	- <0.28	<0.05	- <0.28	0.33	0.38	41
MTCA Method A Cleanup Level		2	00	200	. 1	00		.5	4			20	2	20	250

Notes:

< Indicates analyte not detected above given detection limit.</p>
Boldface type indicates sample result exceeds MTCA Method A cleanup level.

^{1.} Ecology Method NWTPH-D.

^{2.} Ecology Method NWTPH-G.

^{3.} EPA Method 8020.

^{4.} EPA Method 6010.

⁻ Not tested.

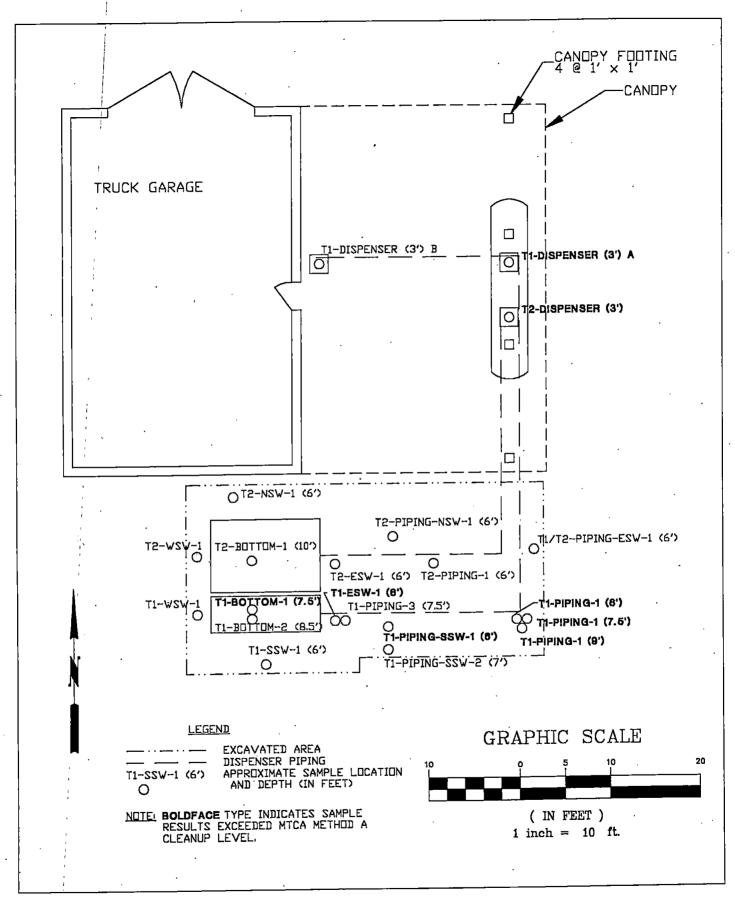


FIGURE 3: TANK 1 AND 2 SAMPLE LOCATIONS

Field screening results of the samples from the tank area excavation indicated gasoline and diesel range hydrocarbons were detected at levels exceeding MTCA method A cleanup levels for soil in samples from the bottom and east sidewall of tank 1 (samples T1-Bottom-1 and T1-ESW-1, Table 1). Results of field screening and laboratory samples from the remaining excavation sidewalls indicated petroleum hydrocarbons, BTEX, and lead were either not detected or were present at concentrations below respective cleanup levels.

Piping between tanks T1 and T2 and the dispenser island was removed on September 4, 1997. During excavation and removal of the piping, petroleum odors and staining were observed in soils adjacent to piping, particularly the piping for tank 1. Following removal of the piping, visibly effected soils were removed and soil samples were collected at five locations and field screened for petroleum hydrocarbons. Results of field screening indicated gasoline and diesel-range petroleum hydrocarbons at levels exceeding respective MTCA method A cleanup levels at two locations along the tank 1 piping run (samples T1-PP-1 and T1-Piping-SSW-1). Results of other sample locations along the piping runs indicated petroleum hydrocarbons either were not detected or were present only at concentrations below cleanup levels.

On September 5, 1997, additional soil was removed from the bottom and sidewalls of the excavation near tank 1 and the piping areas where petroleum hydrocarbons were present in field screening samples. Following removal of the additional soil, samples were again collected and field screened for petroleum hydrocarbons. Results of the additional samples indicated petroleum hydrocarbons were either not detected or only present at concentrations below cleanup levels in samples from the tank excavation and south sidewalls of the piping areas (samples T1-Bottom-2, T1-Piping-3, and T1-Piping-SSW-2). However, diesel range petroleum hydrocarbons were present in excess of the MTCA method A cleanup level in a sample collected from the southeast corner of the excavation (sample T1-piping-2). The sample was collected beneath the location of a former piping swing-joint connection that was found to be loose during removal of the piping.

Additional soil was removed from the southeast corner of the excavation later on September 5 and another sample was collected from beneath the former piping swing-joint connection (sample T1-Piping-4). Soil in this area was excavated to a depth of approximately nine feet. Groundwater was present in the excavation at a depth of between seven and eight feet. Field screening and laboratory results of sample T1-piping-4, collected at a depth of approximately nine feet, indicated diesel range petroleum hydrocarbons present a level of 300 mg/Kg. The laboratory results of the split sample from this location indicated diesel range petroleum hydrocarbons present at level of 410 mg/Kg (method WTPH-D).

Although both the field screening and laboratory results for sample T1-piping-4 are above the MTCA method A cleanup level for petroleum hydrocarbons in soil of 200 mg/Kg, the sample results are believed to be much higher than are actually present in the soil. This is because of the large quantity of oversize material, including gravel and cobble sized

grains, that were present in the sample matrix but discarded prior to placing the sample material into jars. The oversize (and discarded) material was estimated to comprise more than one-half the sample matrix. Therefore, the actual concentration of petroleum hydrocarbons in the soil, when corrected for the weight of the oversized material, is estimated to be one-half or less of the value reported.

Sampling and Soil Removal - Tank 3

Tank 3 was removed August 25, 1997. During excavation of the tank, petroleum odors and staining were observed in soils above the tank near where the piping from the boiler room entered the tank. Soil samples were collected from the tank 3 area on August 25 and 26, 1997 following removal of the tank. Sample results are summarized in Table 2 and locations are shown in Figure 4.

Table 2. Analytical results of soil samples - Tank 3.

Table 2. Analytical	results of soil				
			-range	Heavy-range	Lead
1		hydroc		hydrocarbons	
Sample	Date	(mg	/Kg)	(mg/Kg)	(mg/Kg)
			- 41		T -1-2
		<u>Field</u>	<u>Lab¹</u>	<u>Field</u>	Lab^2
T3-E1A	08/25/97	270	-	52	-
T3-N1-A	08/25/97	<25	-	<50	-
T3-E1B	08/26/97	290	-	91	-
T3-N1B	08/26/97	64	-	68	-
T3-ESW-8'A	08/26/97	180	-	570	- .
T3-WSW-6'A	08/26/97	120	-	370	-
T3-ESW-8'B	08/26/97	<25	<27	<50	-
T3-WSW-8'	08/26/97	<25	<27	<50	-
T3-NSW-8'	08/26/97	<25	<27	<50	
T3-SSW-8'	08/26/97	<25	<26	<50	-
T3-pipe run 3'	08/26/97	<25	<29	<50	-
10 pipo tam s	••••				
SPC-1 (stockpile)	8/26/97	140	280	270	18
SPD-1 (stockpile)	8/26/97	320	420	490	9.5
bi i (stoorpro)					
MTCA Method A	-				
Cleanup Level		2	00	200	250

Notes:

^{1.} Ecology Method NWTPH-D.

^{2.}EPA Method 6010.

⁻ Not tested.

< Indicates analyte not detected above given detection limit.

Boldface type indicates sample result exceeds MTCA Method A cleanup level.

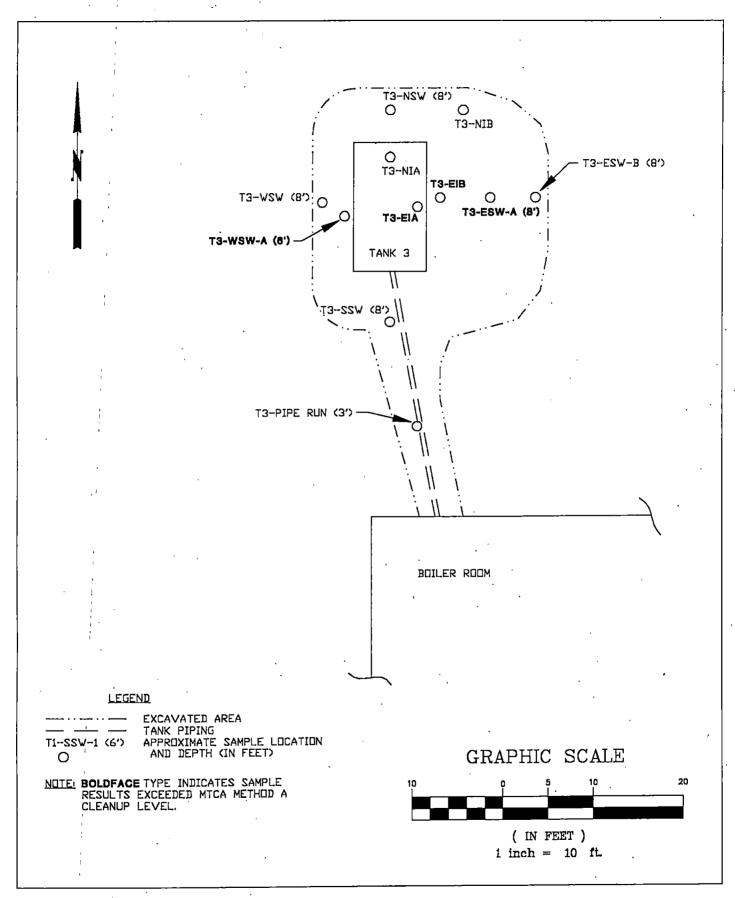


FIGURE 4: TANK 3 SAMPLE LOCATIONS

As the results indicate, diesel and/or heavy-range petroleum hydrocarbons were detected at levels in excess of the MTCA Method A cleanup level in samples along the east and west sidewalls of the tank excavation (samples T3-E1A, T3-E1B, T3-ESW-8'A, and T3-WSW-6'A). Petroleum hydrocarbons were not detected at levels above the detection limit in samples collected from the north or south sidewalls of the excavation (samples T3-NSW-8', T3-SSW-8'), or below the piping between the tank and the boiler room (T3-pipe run 3').

Additional soil was excavated from the east and west sidewalls of the tank 3 excavation and additional samples were collected. Results of the follow-up samples (samples T3-WSW-8', T3-ESW-8'B) indicated petroleum hydrocarbons were not present at levels above the detection limits.

No soil samples were collected from the bottom of the tank 3 excavation. Soils near the bottom consisted almost entirely of gravel and cobbles with only minimal finer-grained material. Groundwater was present in the gravel and cobble layer at a depth of approximately 10 feet. A thin petroleum-like sheen was observed on the surface of groundwater in the bottom of the excavation, indicating groundwater may have been impacted by leakage from the former tank or piping. No samples of the water were collected. However, a follow-up investigation is planned of groundwater quality near tank 3 that will include installing one or more groundwater monitoring wells.

3. SAMPLING AND ANALYSIS

Soil samples collected during site assessment and cleanup activities were handled in general accordance with the *King County UST Removal Old Maple Valley Facility - Sampling and Analysis Plan* prepared by Foss Environmental Services. Sampling activities are described in the following sections.

SAMPLE COLLECTION

Soil samples were collected using stainless steel hand tools including spoons, bowls, and a hand auger. In cases where sample depths exceeded four feet in excavation areas, soil was retrieved using excavation equipment and samples were collected from the bucket of the excavator. Care was taken to avoid soil in contact with the sides of the bucket and every attempt was made to collect samples representative of surrounding soil conditions.

Samples scheduled for diesel and heavier-range petroleum hydrocarbon analysis (and lead) were thoroughly mixed in a bowl prior to filling sample containers. Samples scheduled for gasoline-range and volatile aromatic hydrocarbons were placed immediately into sample containers and securely capped to minimize loss of volatile fractions. All samples were labeled with a unique identification and the time, date, and samplers initials, and placed into a chilled cooler for storage. Sampling activities were recorded in a field notebook and entered on a chain-of-custody form.

SAMPLE ANALYSIS

All samples were collected in duplicate. Initially, samples were analyzed in the field using a mobile gas chromatograph provided by Onsite Analytical, Inc. When field screening results indicated petroleum hydrocarbons were below cleanup levels, the corresponding set of duplicate samples were submitted to Onsite's analytical laboratory for testing, including Washington Total Petroleum Hydrocarbon (WTPH) Methods. Laboratory analytical methods and parameters are listed below.

Parameter	Analytical Method
Gasoline Range Petroleum Hydrocarbons	NWTPH-G
Volatile Aromatic Hydrocarbons	EPA Method 8020
Diesel Range Petroleum Hydrocarbons	NWTPH-D
Lead	EPA Method 6010

DECONTAMINATION

Following collection of individual samples, sampling utensils were thoroughly cleaned. Cleaning procedures included the following steps:

- Rinse in tap water to remove bulk soil particles
- Scrub in Alconox detergent
- Triple rinse in tap water

APPENDIX A

Waste Disposal Receipts (Soil, Water, Tanks)

	Date of Sulpmont	Responsible	for Trees		rdous Soi	**	-253		ENIES A	
	I Consended Alimai and D'	Consul	tent	Transpor	ter Truck #	to so the	Facility #: A03	Given by TPS 01392	C	Load 001
	Constator's Name and Bi KING COUNTY. 500 FOURTH	The state of the s	The Asset of the Control	2	(206		t -1706	Generator	's US RPAID	
	ROOM 320	•			JOE 1	Cuntace:	R			
	SEATTLE, WA Consultant's Name and Bi	lling Address.	·	USA			-0186	Customer :	WCOUNT NUM	ber with TPS:
16	LOPE ENAISON	MENTAL			Consulta;	768	: -1434			
	7440 W. MARG				Person to VYRL	Contact: NAUM	NN			
	SEATTLE, WA		_	ISA	FAX#: (206)	767-	3460	Customer A	ccount Numb	er with TPS:
 	Generation Site (Transport OLD MAPLE VA	LLEY FACIL	ITIES		Site Phone	H;		BTEX Levels		
<u> </u>	18825 SE MAP	LE VALLEY	HIGHWAY		Person to	ontact:		TPH Levels	·	
The sering and the se	MAPLE VALLEY	Wa. 0000	. 110	· Sa	FAX#:			AVG.	-	
	Designated Facility (Transpo	ort to): (name & address	;)		Facility Ph	one #:		Levels Facility Parm	iit Numbers	
2	PS Technolog 2800 - 104th	Street Co	urt South	Г	(206) : Person to C	ontact:		,		
: 1	akewood, WA	_	Renee							
Ī	MISPORIES Name and Mail	_	(206); Transporter							
- F '	CES ENVIRONN 440 W. MARGI		(206) 75:-1434 Transporter 5 DOT No.				o.: ·			
1	EATTLE, WA 9			<u>[Y</u>	YRL N	AMUA	M	Transporter's	DOT No.:	
-	Description of Soil	Moisture Content	US		206)		•	Sp. St. Marks	Ant Nntiper	with TPS:
	Sand D Organic D	0 - 10%	Contaminated by:	Approx.	Qty: D	scription	of Delivery	Gross Weight	Tare Weight	Net Weight
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L	Clay Q Other Q	10 - 20% D	Diesel Q Other Q			N:	ET TONS			28.05
<u></u>	<u>• </u>	•			<u> </u>					
Shi ani	enerator's and/or consult test completed and certifi y way.	ant's certification: If ed by mefus for the (We certify that the Generation Site sho	soil refere	nced herein and nothin	t is taken Ig has bee	entirely from I n added or do	hose soils desc ne lo such soil	ribed in the S that toould a	oil Data lter it in
	nt or Type Name:	Génerator 🚨	Consultant C		re and date:			·		Day Your
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Wii	opur off-wading, adding	to, subtracting from	ly that this soil is . or in any way dela	being dire Nying delit	ctly transp very to suc	orted from h site.	n the General	ion Site to the	Designated	Facility
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Ost	regancies:			/		11.	~		1/ /	
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Recy	ycling Facility certifies the	receipt of the soil cove	red by this manifest	except as n	nojed above			<u></u>	•	
	OF Type Name: NEE AVELING	CSM		Signature			11/		7/	

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			Hazardous!	5oils_	cind	. , , , , , ,	A. Jaj. 1.	ija er	1,	: '
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KING COUNTY	g Address:	. ;	1528	intor's Phone 296	-1706		Generator's U	5 EPA ID	No.	
500 FOURTH AV	ENUE			n to Contact:	ER.					
ROOM 320 Seattle, wa 9	8104	.∿. บร	FAX			- 	SKINCE	ouat Nús	sber With	TPS:
Consultant's Name and Billin	ng Address:		Cons	sultant's Phone	÷ #:	-			· ·	-
FOSS ENVIRONM		NUTH	نتنا	n to Contact: NAUM			.	<u> </u>		
CEARMIN MA C	0100 0441	"	FAX	<u> </u>			Custonier Acc	ount Nur	nber with	TPS:
SEATTLE, WA 9	1	ນຣ	1\2	16) 767	-3460		100135	58 '	· ·	•
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MAPLE VALLEY,	WA 00000	, <u>jy</u> uş	SA FAX	Vi. ·	•		AVG. Levels	· !		
Designated Facility (Transport			Facil (20	ity Phone #: 06) 584-	8430	.	Pacifity Permit	Number	8 ,	•
2800 - 104th	• •	rt South	Person	on to Contact:	lino		 .	· 1		
Lakewood, WA	99444-6766	บร	PAX		 	_				
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<u> </u>	7440 W.	MARGI	nal way s	אָדעכ	•	Person to Sonua	MANN	_	 -		·	
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	TPS Tech	nologi	to): (nanie & address) LBB · Inc.			Facility Phone #: (206) 584-		ŀI	acility Permi	t Numbers		
	2800 - 1 	Ø4th S	Street Cou	rt South	.	Person to Contact: Renee Ave	lino					
	Lakewood, WA 98444-6766			Ų		PAX+: (206)594-8309						
ſ	FDSS ENV	IRONNE	INTAL .			(206) 768-1434			ransporter's l	US EPA ID No	ur .	
I	440 W. MARGINAL WAY SO."				<u> </u>	Person to Contact VYRL NAUMANN		· : I	Transporter's DOT No.:			
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F	SEATTLE,					(206) 767	-3460	Č	#PD\$\$E	wnt Number	with TP\$:	
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1 1	500 FOURTH AV	'ENUE		•	Person to Contac		 -		
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	7440 W. MARGI	NAL WAY SOU	JTH		FTRL" NA		 		
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ı	Transporter Name and Maille FOSS ENVIRONM			. * .	Transporter's Pho (206) 76	me#: 8-1434	Transporter's I	US EPA ID No	2.5
	7440 W. MARGI	NAL WAY SO.		:	Person to Contact VYRL NAU		Transporter a I	DOT No.	
	SEATTLE, WA 9	8108	· · · · · · · · · · · ·	JSA	(206) 75		^C SPDSSE	Pert Number	with TPS:
-	Description of Soil	. Moisture Content	Conteminated I	by: Approx	. City: Descri	ption of Delivery	Gross Weight	Tare Weight	Net Welg
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\$. \$.		KING COUNTY	Address:		•	620E01	296-1706	Generator's US BPA ID No.			•
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301 ,		Consultant's Name and Billin	g Address: ENTAL	· · · · · · · · · · · · · · · · · · ·		Consultant	* Phone *: 768-1434				
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12541 -	1	7440 W. MARCA	Hal. Way so	• 7 1 3.	. •• - • • • • • • • • • • • • • • • • •	Person to C	ontact: IAUMANN	Transponer's	OT No.		
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	E	RENEE AVELINO	- CSM			40	CCALLU	bbu	1/2		
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		Chaultant			_	ter Truck #: Facility #: AO3		Given by TPS: 01392	some to the least	207	
	•	Generator's Name and Billing Address: KING COUNTY			(2	erator's Phone 26) 296	#: -1706	Generator's	US BPA ID N	a.	
	l.	ROOM 320					Person to Contact: JOE HICKER				
\$ AN		SEATTLE, WA 98104 Consultant's Name and Billing Address:		· L	USA		26) 296	- •	Customer Account Number with T 3KINCOU		
		FOSS ENVIRONMENTAL 7440 W. MARGINAL WAY SOUTH				(2	iultant's Phone 36) 768	-1434	·		
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in came		MAPLE VALLEY			SA '	FAX	h • · ·		AVG. Levels		
3 20		Designated Facility (Transport to): (name & address) TPS Technologies Inc.				Facil (20	ty Phone #: 6) 584 – 8	3430	Facility Permit Numbers		
	: 1	2800 - 104th Street Court South				Person to Contact Renee Avelino			•		
Gemerator		Lakewood, WA 98444-6766 USA			(206) 584-8309						
je G	Г	Transporter Name and Mailing Address: FOSS ENVIRONMENTAL					poster's Phone 6) 768-	1434	Transporter's US EPA ID No.:		
		7440 W. MARGINAL WAY SO.				Person to Contact: VYRL NAUMANN			Transporter's DOT No.:		
**:	Š	SEATTLE, WA 98108 USA			720	6) 767-	3460	Carpines Separat Number with Tra-			
	ŀ	Description of Soil	Moisture Content	Contaminated by	: Appro	x. Qty:	Descriptio	n of Delivery	Gross Weight	Tare Weight	Net Weight
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to of thipment	Responsible for P	ayment: Trans	sporter Truck 6:		Given by TP9: 01352		Load 6			
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500 FOURTH AVI	enue			o Contact: HICKER		!				
rodh 320 Seattle, wa 9	RÍG4	USA	FAX#:	296-0186	Customer Account	nt Number w	rith TPS:			
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old maple val 18825 se mapl			Person	to Contact:	TPH Levels		<u> </u>			
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MAPLE VALLEY, Designated Facility (Transpor			Facility	Phone #:	Facility Permit	Numbers				
TPS Technolog 2800 - 104th		rt South		to Contact: Se Avelino			2.1			
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Lakewood, WA		us.	·	3) 584-8309 orter's Phone #:	Transporter's U	S EPA ID No				
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THE RESERVE OF THE PROPERTY OF		KING COUNTY			•	628	18.1., 528E	#: -17 0 6		Generator's U	S EPA ID No.		
	1	ROOM 320	1HUE				Person to Contact: JOE HICKER					:	100
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		Consultant's Name and Billing				Cons (20	ultant's Phone 768	#1434					
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		Generation Site (Transport from DLD MAPLE VALL	m): (name & uddress) EY FACILI	TIES	,	Site F	hone #:		,	BTEX Levels			
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	Consultant	MAPLE VALLEY,	WA 00000	บร	SA .	FAX#	: •	•		AVG. Levels		•	
	_	Designated Facility (Transport				Facility Phone #: (253) 584-8430				Facility Permit	Numbers "		
	-	2800 - 104th Street Court South				Person to Contact: Rence Avelino							
3	srator	Lakewood, WA 98444~6766 USA				FAX#: (253)584-8309				e Mari			12
	Gen	Transporter Name and Mailing Address: FOSS ENVIRONMENTAL					Transporter's Phone #: (206) 768-1434			Transporter's US EPA ID No.:			
3 4 4 5 2 4 5 1 .		7440 W. MARGIN	IAL WAY SO	•	,		n to Contact:	ANN		Transporter's I	OOT No.:		
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KING COUNTY Billing	•	(20)	(206) 295-1706		. Generator's US BPA ID No.					
500 FOURTH AT	/ENUE	· · · · · · · · · · · · · · · · · · ·		Person	to Contact	<u> </u>	1			
ROOM 320	-	. 444	 .	JOE HICKER (206) 296-0186			Customer Account Number with TPS:			
SEATTLE, VA S	•	US	BA ,							
Consultant's Name and Billi FOSS ENVIRONE	Mental	— .,	•	Consul (20	tant's Phone 5) 768	# -1434				
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18825 SE MAPI		•		Person	to Contact:		TPH Levels AVG. Levels			
MAPLE VALLEY,	WA 00000	. Us	BA	PAX#:	 					
Designated Facility (Transpo	ort to): (nome & address)				Facility Phone #: (253) 584-8430			Pacility Permit Numbers		
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					FAX#: (253)584-8309			 		
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FOSS ENVIRONMENTAL 7440 W. MARGINAL WAY SO.					768	-1434				
/446 4. UWEGI	ř• ·		Person to Contact: YYRL NAUMANN			Transporter's DOT No.:				
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Ctay O Other O Send O Organic O Clay O Other O List any exception to theme listed Generator's and for consul	0-10% Q 10-20% D 20% over D above:	Gas C Diesel C Other C	rown abo	ferenced poe and s	nothing has	en entirely from	those soils desc	that would a	Soil Data	
Clay O Other O Sand O Organic O Clay O Other O List any exception to theme listed Generator's and for consul Sheet completed and certif any way. Print or Type Name: X. Transporter's certification	0-10% Q 10-20% Q 20% over Q above: ltant's certification: I fied by me/us for the Generator Q 1: I/We acknowledge	Gaz Diesel DO Other DO	Sign describes	nature and a	nothing has date: and certify	en entirely from been added or do that such soil is	those soils descone to such soil	Month C	Soil Data Ilter it in Day Yea	
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Clay O Other O Sand O Organic O Clay O Other O List any exception to thema listed Generator's andfor consult Sheet completed and certification or Type Name: Transporter's certification condition as when receive without off loading, adding rent of the Name:	0-10% Q 10-20% Q 20% over Q above: Itant's certification: I fied by me/us for the Generator Q 1: I/We acknowledge ed. I/We further cert ig to, subtracting from	Gas Diesel Dother Dothe	Sign describer is being delaying d	nature and a nature and ad above directly	nothing has date: and certify transported to such site.	en entirely from been added or do that such soil is from the Genero	those soils descone to such soil	Month C	ioil Data ilter it in Day Yea	
Clay O Other O Sand O Organic O Clay O Other O List any exception to thema listed Generator's andfor consult Sheet completed and certification or Type Name: Transporter's certification condition as when receive without off loading, adding rent of the Name:	0-10% Q 10-20% Q 20% over Q above: Itant's certification: I fied by melus for the Generator Q 1: I/We acknowledge ed. I/We further cert	Gas Diesel Dother Dothe	Sign describer is being delaying d	nature and a database directly delivery	nothing has date: and certify transported to such site.	en entirely from been added or do that such soil is from the Genero	those soils descone to such soil	Month C	Soil Data Ilter it in Day Yea	
Clay O Other O Send O Organic O Clay O Other O List any exception to toma listed Generator's and/or consul Sheet completed and certif any way. Print or Type Name: X. Transporter's certification condition as when receive without off-loading, addin Print or Type Name:	0-10% Q 10-20% Q 20% over Q above: Itant's certification: I fied by me/us for the Generator Q 1: I/We acknowledge ed. I/We further cert ig to, subtracting from	Gas Diesel Dother Dothe	Sign describer is being delaying d	nature and a database directly delivery	nothing has date: and certify transported to such site.	en entirely from been added or do that such soil is from the Genero	those soils descone to such soil	Month C	Soil Data Ilter it in Day Yea	
Sand D Organic D Clay D Other D List any cocception to thema listed Generator's and for consult Sheet completed and certification and thema condition as when receive without off-loading, adding Print of Type Name: Discrepancies	0-10% 0 10-20% 0 20% over 0 above: Itant's certification: I fied by melus for the Generator 0 I'We acknowledge ed. I/We further cert ag to, subtracting from	Gas Diesel Dother Diesel Consultant Consulta	describer s being d elaying d	nature and above directly lelivery actuse and	and certify transported to such site.	en entirely from been added or do that such soil is from the Genero	those soils descone to such soil	Month C	Soil Data ilter it in Day Yes	
Clay O Other O Send O Organic O Clay O Other O List any exception to toma listed Generator's and/or consul Sheet completed and certif any way. Print or Type Name: X. Transporter's certification condition as when receive without off-loading, addin Print or Type Name:	0-10% 0 10-20% 0 20% over 0 above: Itant's certification: I fied by melus for the Generator 0 I'We acknowledge ed. I/We further cert ag to, subtracting from	Gas Diesel Dother Diesel Consultant Consulta	Sign describes is being d elaying d Sten	nature and above directly lelivery actuse and	and certify transported to such site.	en entirely from been added or do that such soil is from the Genero	those soils descone to such soil	Month C	Soil Data ilter it in Day Yes	

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APPENDIX B

Laboratory Certificates (Onsite Analytical, Inc.)



August 28, 1997

Jerry Olson Foss Environmental 7440 West Marginal Way S. Seattle, WA 98108

Re:

Analytical Data for Project 71350 Laboratory Reference No. 9708-128

Dear Jerry:

Enclosed are the analytical results and associated quality control data for samples submitted on August 27, 1997.

The standard policy of OnSite Environmental Inc., is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

Andy Bay

Project Chemist

Enclosures

Date of Report: August 28, 1997 Samples Submitted: August 27, 1997 Lab Traveler: 08-128 Project: 71350

NWTPH-Dx

Date Extracted:

8-27-97

Date Analyzed:

8-27-97

Matrix:

Soil

Units:

mg/Kg (ppm)

Client ID:	T3-W/SW 8'	T3-N/SW 8'	T3-E/SW(2) 8'	T3-S/SW 8'	T3- Pipe Run-3
Lab ID:	08-128-01	08-128-02	08-128-03	08-128-04	08-128-05
Dilution Factor:	1.0	1.0	1.0	1.0	1.0
Diesel Fuel C12-C24:	ND	ND	ND ,	ND	ND
PQL:	27	27	27	26	29
Surrogate Recovery:	113%	117%	122%	83%	83%

Date of Report: August 28, 1997 Samples Submitted: August 27, 1997 Lab Traveler: 08-128 Project: 71350

NWTPH-Dx METHOD BLANK QUALITY CONTROL

Date Extracted:

8-27-97

Date Analyzed:

8-27-97

Matrix:

Soil

Units:

mg/Kg (ppm)

Lab ID:

MB0827S1

Dilution Factor:

1.0

Diesel Fuel C12-C24:

ND

PQL:

25

Surrogate Recovery:

89%

Date of Report: August 28, 1997 Samples Submitted: August 27, 1997

Lab Traveler: 08-128 Project: 71350

NWTPH-Dx DUPLICATE QUALITY CONTROL

Date Extracted:

8-26-97

Date Analyzed:

8-27-97

Matrix:

Soil

Units:

mg/Kg (ppm)

Lab ID:

08-126-01

08-126-01 DUP

Diesel Fuel C12-C24:

ΝD

ND

PQL:

25 ·

25

RPD:

NA

Surrogate Recovery:

83%

80%

Date of Report: August 28, 1997 Samples Submitted: August 27, 1997 Lab Traveler: 08-128

Project: 71350

NWTPH-Dx SB/SBD QUALITY CONTROL

Date Extracted: 8-26-97 Date Analyzed: 8-27-97

Matrix: Soil

Units: mg/Kg (ppm)

Spike Level: 100 ppm

Lab ID: SB0826S2 SB0826S2 DUP Diesel Fuel C12-C24: 91.3 87.4 PQL: 25 25

Percent Recovery: 91

RPD:

Surrogate Recovery: .102%

Date of Report: August 28, 1997 Samples Submitted: August 27, 1997 Lab Traveler: 08-128 Project: 71350

T3 Pipe Run 3'

Date Analyzed: 8-27-97

	% MOISTURE	•
Client ID	Lab ID	% Moisture
T3-W/SW 8'	08-128-1	6.0
T3-N/SW 8'	08-128-2	8.0
T3-E/SW (2) 8'	08-128-3	7.0
T3-S/SW 8'	08-128-4	4.0

08-128-5



DATA QUALIFIERS AND ABBREVIATIONS

·
A - Due to high sample concentration, amount spiked insufficient for meaningful MS/MSD data recovery.
B - The analyte indicated was also found in the blank sample.
C - The duplicate RPD outside control limits due to analyte concentration within five times the quantitation limit.
D - Data from 1: dilution.
E - Value reported exceeds the quantitation range. Value is an estimate.
F - Surrogate recovery data not available due to the high concentration in the sample.
G - Insufficient sample quantity for duplicate analysis.
J - The value reported was below the practical quantitation limit. The value is an estimate.
 K - Sample duplicate RPD outside control limits due to sample inhomogeniety. Sample re-extracted and re-analyzed with similar results.
L - Quantitated from C7-C34 as diesel fuel #2.
M - Predominantly range hydrocarbons present in the sample.
N - Hydrocarbons in the gasoline range (C7-toluene) present in the sample. N1 - Hydrocarbons in the gasoline range (C7-toluene) present in the sample which are elevating the dies result.
O - Hydrocarbons in the heavy oil range (>C24) present in the sample. O1 - Hydrocarbons in the heavy oil range (>C24) present in the sample which are elevating the diesel result.
R - Hydrocarbons outside defined gasoline range present in the sample.
S - Surrogate recovery data not available due to the necessary dilution of the sample.
T - The sample chromatogram is not similar to a typical
U - Matrix Spike/Matrix Spike Duplicate RPD outside control limits due to matrix effects.
V - Matrix Spike/Matrix Spike Duplicate recoveries outside control limits due to matrix effects.
Z - Interferences were present which prevented the quantitation of the analyte below the detection limit reported.
ND - Not Detected
MRL- Method Reporting Limit
PQL - Practical Quantitation



September 2, 1997

Jerry Olson Foss Environmental 7440 West Marginal Way S. Seattle, WA 98108

Re: Analytical Data for Project 71350

Laboratory Reference No. 9708-149

Dear Jerry:

Enclosed are the analytical results and associated quality control data for samples submitted on August 29, 1997.

The standard policy of OnSite Environmental Inc., is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

Andy Bay Project Chemist

Enclosures

NWTPH-G/BTEX

Date Extracted: Date Analyzed:

8-29-97 8-30-97

Matrix: Soil

Units: mg/Kg (ppm)

Lab ID: Client ID:

08-149-1 T2-WSW-1 08-149-2 T1-WSW-1

Dilution Factor

50

50

Silution dotor				7-7		
	Result	Flags	PQL	Result	Flags	PQL
Benzene	ND		0.055	ND	,	0.060
Toluene	ND		0.055	ND		0.060
Ethyl Benzene	ND		0.055	ND .		0.060
m,p-Xylene	ND		0.055	ND		0.060
o-Xylene	ND		0.055	ND		0.060
TPH-Gas	ND		5.5	ND	: 	6.0
Surrogate Recovery: Fluorobenzene	80%			74%		

NWTPH-G/B/TEX

8-29-97 Date Extracted: 8-30-97 Date Analyzed:

Matrix: Soil

Units: mg/Kg (ppm)

Fluorobenzene

Lab ID: 08-149-5 08-149-3 T1-SSW-1 T2-ESW-1 Client ID:

Dilution Factor - 50

	Result	Flags	PQL	Result	Flags	PQL
Benzene	ND	, ·	0.060	ND		0.064
Toluene	ND		0.060	ND		0.064
Ethyl Benzene	ND		0.060	ND		0.064
m,p-Xylene	0.063		0.060	ND		0.064
o-Xylene	ND		0.060	ND		0.064
TPH-Gas	ND		6.0	14		6.4
Surrogate Recovery:						

NWTPH-G/BTEX

Date Extracted: 8-29-97 Date Analyzed: 8-30-97

Matrix: Soil

Units: mg/Kg (ppm)

Surrogate Recovery: Fluorobenzene

Lab ID: Client ID:	08-149-7 T1 T2 SP			08-149-11 T2-NSW-1		
Dilution Factor	250	1		50		
	Result	Flags	PQL	Result	Flags	PQL
Benzene	ND		0.28	ND		0.058
Toluene	ND		0.28	ND		0:058
Ethyl Benzene	``ND		0.28	ND ND		0.058
m,p-Xylene	0.38		0.28	ND		0.058
o-Xylene	ND		0.28	ND		0.058
TPH-Gas	120		28	ND		5.8

NWTPH-G/BTEX METHOD BLANK QUALITY CONTROL

Date Extracted:

8-29-97

Date Analyzed:

8-30-97

Matrix: Soil

Units: mg/Kg (ppm)

Lab ID:

MB0829S2

Dilution Factor

_,50

• • •	Result	Flags	PQL
Benzene	ND	•	0.050
Toluene	ND		0.050
Ethyl Benzene	ND		0.050
m,p-Xylene	ND		0.050
o-Xylene	ND	-	0.050
TPH-Gas	ND		5.0
Surrogate Recovery:	80%		,

NWTPH-G/BTEX DUPLICATE QUALITY CONTROL

Date Extracted:

8-29-97

Date Analyzed:

8-30-97

Matrix: Soil

Units: mg/Kg (ppm)

Lab ID	08-049-1 Original	08-049-1 Duplicate	RPD
Dilution Factor	50	50	
Benzene	ND	ND	NA
Toluene	ND	ND	NA
Ethyl Benzene	ND	NĎ	NA
m,p-Xylene	ND	ND	NA
o-Xylene	ND	ND	ΝA
TPH-Gas	ND	ND	NA
Surrogate Recovery: Fluorobenzene	80%	83%	

NWTPH-G/BTEX MS/MSD QUALITY CONTROL

Date Extracted:

8-29-97

Date Analyzed:

8-30-97

Matrix: Soil

Units: mg/Kg (ppm)

Lab ID spiked @ 1 ppm	08-049-1 MS	Percent Recovery	08-049-1 MSD	Percent Recovery	
Dilution Factor	50		50		RPD
Benzene	0.800	80	0.810	81	1.2
Toluene	0.820	82	0.830	83	1.2
Ethyl Benzene	0.815	82	0.820	82	0.61
m,p-Xylene	0.845	85	0.855	86	1.2
o-Xylene	0.800	80	0.835	84	4.3

Surrogate	Recov	er	y:

Fluorobenzene

NWTPH-Dx

Date Extracted: Date Analyzed:

8-29-97 8-29-97

Matrix:

Soil

Units:

mg/Kg (ppm)

Client ID:	T2-WSW-1	T1-WSW-1	T1-SSW-1	T2-ESW-1
Lab ID:	08-149-01	08-149-02	08-149-03	08-149-05
Dilution Factor:	1.0	1.0	1.0	1.0
Diesel Fuel C12-C24:	ND	81	ND	ND
PQL:	27	30	30	32
Surrogate Recovery:	84%	137%	90%	112%
o-Terphenyl				

`Flags'

NWTPH-Dx

Date Extracted:

8-29-97

Date Analyzed:

8-29-97

Matrix:

Soil

Units:

mg/Kg (ppm)

•	/	· · · · · · · · · · · · · · · · · · ·		
Client ID:	T1 T2 SP	SPC1	SPD1	T2-NSW-1
Lab ID:	08-149-07	08-149-08	08-149-09	08-149-11
Dilution Factor:	1.0	5.0	5.0	1 0
Diesel Fuel C12-C24:	610	280	420	ND
PQL:	28	150	140	29
Surrogate Recovery:	118%	<u> </u>	<u></u>	139%
o-Terphenyl	<u>-</u> ,			

Date of Report: September 2, 1997 Samples Submitted: August 29, 1997

Lab Traveler: 08-149 Project: 71350

NWTPH-Dx METHOD BLANK QUALITY CONTROL

Date Extracted:

8-29-97

Date Analyzed:

8-29-97

Matrix:

Soil

Units:

mg/Kg (ppm)

Lab ID:

MB0829S1

Dilution Factor:

1.0

Diesel Fuel C12-C24:

ND

PQL:

25

Surrogate Recovery:

135%

Project: 71350

NWTPH-Dx **DUPLICATE QUALITY CONTROL**

8-29-97 Date Extracted: Date Analyzed: 8-29-97

Matrix: Soil

mg/Kg (ppm) Units: 1

08-149-05 DUP Lab ID: 08-149-05

Diesel Fuel C12-C24: ND ND

25 -25 PQL:

NA RPD;

112% 119% Surrogate Recovery:

Project: 71350

NWTPH-Dx **DUPLICATE QUALITY CONTROL**

Date Extracted: 8-29-97 Date Analyzed: 8-29-97

Soil . Matrix:

mg/Kg (ppm) Units:

08-145-09 08-145-09 DUP Lab ID:

Diesel Fuel C12-C24: ·ND ND

: 25 PQL: 25

RPD: NA

Surrogate Recovery: 95%

NWTPH-Dx SB/SBD QUALITY CONTROL

8-29-97 Date Extracted: Date Analyzed: 8-29-97

Soil Matrix:

mg/Kg (ppm). Units:

Spike Level: 100 ppm

Lab ID:	SB0829S1	SB0829S1 DUF
Diesel Fuel C12-C24:	92.4	101
PQL:	25	25
Percent Recovery:	92	101
RPD:	8.9	

o-Terphenyl

Surrogate Recovery:

EPA 6010 TOTAL LEAD

Date Extracted: 08-29-97 Date Analyzed: 08-29-97

Soil Matrix:

Units: mg/kg (ppm)

	7	•	 Dilution		
Client ID		Lab ID	Factor	Result	PQL
T1 T2 SP		08-149-7	50	41	5.7

EPA 6010 TOTAL LEAD METHOD BLANK QUALITY CONTROL

Date Extracted: 08-29-97 08-29-97 Date Analyzed:

Matrix:

mg/kg (ppm) Units:

Soil

MB0829S1 Lab ID:

Dilution Factor Method PQL Analyte · Result 6010 50 ND 5.0 Lead

EPA 6010 TOTAL LEAD DUPLICATE QUALITY CONTROL

Date Extracted: 08-21&24-97 Date Analyzed: 08-22,24,28-97

Matrix:

Soil

Units:

mg/kg (ppm)

Lab ID:

08-079-16

Analyte	Dilution	Sample Result	Duplicate Result	RPD	Flags	PQL ,
Lead	 1.0	5.15	, ND	NA		5.0

EPA 6010 TOTAL LEAD MS/MSD QUALITY CONTROL

Date Extracted: 08-21&24-97 Date Analyzed: 08-22,24,28-97

Matrix:

Soil

Units:

mg/kg (ppm)

Lab ID:

08-079-16

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD
Lead	250	209	82	210	82	0.49

1 -

Date of Report: September 2, 1997 Samples Submitted: August 29, 1997 Lab Traveler: 08-149 Project: 71350

Date Analyzed: 8-29-97

% MOISTURE

Client ID	Lab ID	% Moisture
T2-WSW-1	08-149-1	9.0
T1-WSW-1	08-149-2	. 16
T1-SSW-1	08-149-3	17
T2-ESW-1	08-149-5	. 22
T1 T2 SP.	08-149-7	12
SPC1	08-149-8	16
SPD1	08-149-9	12
T2-NSW-1	08-149-11	14



DATA QUALIFIERS AND ABBREVIATIONS

A - Due to high sample concentration, amount spiked insufficient for meaningful MS/MSD data recovery.
B - The analyte indicated was also found in the blank sample.
C - The duplicate RPD outside control limits due to analyte concentration within five times the quantitatio limit.
D - Data from 1: dilution.
E - Value reported exceeds the quantitation range. Value is an estimate.
F - Surrogate recovery data not available due to the high concentration in the sample.
G - Insufficient sample quantity for duplicate analysis.
J - The value reported was below the practical quantitation limit. The value is an estimate.
K - Sample duplicate RPD outside control limits due to sample inhomogeniety. Sample re-extracted and re-analyzed with similar results.
L - Quantitated from C7-C34 as diesel fuel #2.
M - Predominantly range hydrocarbons present in the sample.
N - Hydrocarbons in the gasoline range (C7-toluene) present in the sample. N1 - Hydrocarbons in the gasoline range (C7-toluene) present in the sample which are elevating the dies result.
O - Hydrocarbons in the heavy oil range (>C24) present in the sample. O1 - Hydrocarbons in the heavy oil range (>C24) present in the sample which are elevating the diesel result.
R - Hydrocarbons outside defined gasoline range present in the sample.
S - Surrogate recovery data not available due to the necessary dilution of the sample.
T - The sample chromatogram is not similar to a typical
U - Matrix Spike/Matrix Spike Duplicate RPD outside control limits due to matrix effects.
V - Matrix Spike/Matrix Spike Duplicate recoveries outside control limits due to matrix effects.
Z - Interferences were present which prevented the quantitation of the analyte below the detection limit reported. ND - Not Detected
MRL - Method Reporting Limit PQL - Practical Quantitation
t, all 1 Indian administration



September 10, 1997

Vyrl Naumann Foss Environmental 7440 West Marginal Way S. Seattle, WA 98108

Re: Analytical Data for Project 71350 Laboratory Reference No. 9709-037

Dear Vyrl:

Enclosed are the analytical results and associated quality control data for samples submitted on September 9, 1997.

The standard policy of OnSite Environmental Inc., is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

*Sincerely,

Andy Bay Project Chemist

Enclosures

Date Extracted: 9-08-97 Date Analyzed: 9-08-97

Matrix: Soil

Units: mg/Kg (ppm)

Lab ID: T1-PIPING-3 Client ID: T1-PIPING-SSW-2

, 250 Dilution Factor

Result Flags	PQL Re	sult Fla	ngs PQL
YBenzene ND	0.29 ND		0.28
Toluene ND	0.29 ND		0.28
Ethyl Berizene ND	0.29 ND	h L	0.28
m,p-Xylene ND	0.29 ND		0.28
o-Xylene ND	0.29 ND		0.28
TP.H-Gas ND	29 ND		28
Surfogate Pecovene			

✓Surrogate Recovery:

Fluorobenzene

9-08-97 Date Extracted: Date Analyzed: 9-08-97

Matrix: Soil

Units: mg/Kg (ppm)

09-037-3 Lab ID: T1-PIPING-4 Client ID: T1-BOTTOM-2

Dilution Factor **5**0.

	Result	Flags	PQL,	Resi	ult	Flags	PQL -
Benzene	ND		0.066	ND			0.067
Toluene	ND		0.066	ND			0.067
Ethyl Benzene	ND		0.066	ND			0.067
m,p-Xylene	ND		0.066	ND			0.067
o-Xylene	ND		0.066	ND			0.067
TPH-Gas	ND		6.6	15			6.7

Surrogate Recovery:

Fluorobenzene

Project: 71350

NWTPH-G/BTEX METHOD BLANK QUALITY CONTROL

9-08-97 Date Extracted: 9-08-97 Date Analyzed:

Matrix: Soil

Units: mg/Kg (ppm)

MB0908S1 Lab ID:

Dilution Factor 50 ...

PQL Result Flags 0.050 Benzene ND

0.050 Toluene ND

0.050 ND Ethyl Benzene

0.050 ΝĎ m,p-Xylene

0.050 o-Xylene ND

5.0 TPH-Gas ND

Surrogate Recovery: Fluorobenzene

107%

NWTPH-G/BTEX **DUPLICATE QUALITY CONTROL**

9-08-97 Date Extracted: Date Analyzed: 9-08-97

Matrix: Soil .

Units: mg/Kg (ppm)

Lab ID	09-035-1 Original	09-035-1 Duplicate	RPD
Dilution Factor	50	50	
Benzene	ND.	ND	NA
Toluene	ND	ND	NA
Ethyl Benzene	ND	ND	NA.
m,p-Xylene	ND	ND	NA
o-Xylene	ND	ND	NA
TPH-Gas	ND	ND	NA
Surrogate Recovery:	104%	100%	

NWTPH-G/BTEX MS/MSD QUALITY CONTROL

9-07-97 Date Extracted: 9-07&08-97 Date Analyzed:

Matrix: Soil

Units: mg/Kg (ppm)

Lab ID	09-026-4		09-026-4	
spiked @ 1 ppm	MS	Percent	MSD Percent	
Dilution Factor	50	Recovery	Récovery 50	RPD
Benzene	1.07	107	1.09	1.9
Toluene	1.09	109	1.12	3.2
Ethyl Benzene	1.08	108	1.10	1.8
m,p-Xyléne	1.10	110	1,14	3.1
o-Xylene	1.10	110	1.13	2.2

Surrogate Recovery:

Fluorobenzene .106%

Date Extracted: Date Analyzed:

9-08-97 9-08-97

Matrix:

Soil

Units:

o-Terphenyl

mg/Kg (ppm)

Client ID: T1-	PIPING-SSW-2	T1-PIPING-3	T1-BOTTOM-2	T1-PIPING-
Lab.ID:	09-037-01	09-037-02	09-037-03	09-037-04
Dilution Factor:	1.0	1.0	1.0	1.0
Diesel Fuel C12-C24:	130	64	ND	410
PQL	29	28	33	33
Surrogate Recovery:	81%	98%	83%	130%

Project: 71350

NWTPH-Dx METHOD BLANK QUALITY CONTROL

9-08-97 Date Extracted: Date Analyzed: 9-08-97

Soil Matrix:

mg/Kg (ppm) Units:

MB0908S1 Lab ID:

Dilution Factor:

Diesel Fuel C12-C24: ND

25 PQL:

90% Surrogate Recovery:

NWTPH-Dx **DUPLICATE QUALITY CONTROL**

Date	Extracted:	•	9-05-97
	Analyzed:	` . ·	9-05-97

Matrix: Soil

mg/Kg (ppm) Units:

Lab ID: 09-023-03 09-023-03 DUP

Diesel Fuel C12-C24: ND ND

PQL: 25 25

RPD: NA:

Surrogate Recovery: 100%

Date of Report: September 10, 1997 Samples Submitted: September 9, 1997

Lab Traveler: 09-037 Project: 71350

> NWTPH-Dx SB/SBD QUALITY CONTROL

Date Extracted: 9-05-97 Date Analyzed: 9-05-97

Matrix: Soil

Units: mg/Kg (ppm)

Spike Level: 100 ppm

Lab ID: SB0905S1 SB0905S1 DUP

Diesel Fuel C12-C24: 81.6 80.1

PQL; 25

Percent Recovery: 82

RPD: 1.9.

Surrogate Recovery: 93%_ 97%

EPA 6010 TOTAL LEAD

Date Extracted:

09-08-97

Date Analyzed:

09-08-97

Matrix:

Soil

Units:

mg/kg (ppm)

Client ID	. Lab ID	**************************************	Dilution Factor	Result	PQL
√ TI-PIPING-SSW-2	09-037-1		50	ND	5.7
√ TI-PIPING-3	09-037-2		50	ND	5.6
/ TI-BOTTOM-2	09-037-3		50	ND	6.6
TI-PIPING-4	09-037-4		50	ND	6.7

EPA 6010 TOTAL LEAD METHOD BLANK QUALITY CONTROL

Date Extracted: 09-08-97 Date Analyzed: 09-08-97

Soil Matrix:

Units: mg/kg (ppm)

MB0908S1 Lab ID:

$\mathcal{H}_{i,\mathbf{q}}^{i}$ ($\mathcal{H}_{i,\mathbf{q}}^{i}$) $\mathcal{H}_{i,\mathbf{q}}^{i}$ ($\mathcal{H}_{i,\mathbf{q}}^{i}$		Dilution		
Analyte	Method	Factor	Result	PQL
Lead	6010	50	ND	5.0

EPA 6010 TOTAL LEAD DUPLICATE QUALITY CONTROL

Date Extracted: 09-03-97 Date Analyzed: 09-03-97

Matrix:

Soil

Units:

mg/kg (ppm)

Lab ID:

08-123-1

	Sample	Duplicate			
Analyte	Dilution Result	Result RF	D P	-lags	PQL
					\$ 18 G
Lead	1.0 ND	ND N	Α	. 13	5.0

EPA 6010 TOTAL LEAD MS/MSD QUALITY CONTROL

Date Extracted: 09-03-97 Date Analyzed: 09-03-97

Matrix: Soil

Units: mg/kg (ppm)

Lab ID; 08-123-1

		Spike	Pe	rcent	Percent	
,	Analyte	Level	MS Rec	overy MSD	Recovery	RPD
	Lead	250	207	83 202	81	2.2

Date Analyzed: 9-08-97

% MOISTURE

Client ID	Lab ID	% Moisture
T1-PIPING-SSW-2	09-037-1	13
T1-PIPING-3	09-037-2	10
T ₁ -BOTTOM-2	. 09-037-3	24
T1-PIPING-4	09-037-4	25



DATA QUALIFIERS AND ABBREVIATIONS

A - Due to high sample concentration, amount spiked insufficient for meaningful MS/MSD data recovery.
B - The analyte indicated was also found in the blank sample.
C - The duplicate RPD outside control limits due to analyte concentration within five times the quantitatio limit.
D - Data from 1: dilution.
E - Value reported exceeds the quantitation range. Value is an estimate.
F - Surrogate recovery data not available due to the high concentration in the sample.
G - Insufficient sample quantity for duplicate analysis.
J - The value reported was below the practical quantitation limit. The value is an estimate.
K - Sample duplicate RPD outside control limits due to sample inhomogeniety. Sample re-extracted and re-analyzed with similar results.
L - Quantitated from C7-C34 as diesel fuel #2.
M Predominantly range hydrocarbons present in the sample.
N - Hydrocarbons in the gasoline range (C7-toluene) present in the sample. N1 - Hydrocarbons in the gasoline range (C7-toluene) present in the sample which are elevating the dies result.
OFlydrocarbons in the heavy oil range (>C24) present in the sample. O1 - Hydrocarbons in the heavy oil range (>C24) present in the sample which are elevating the diesel result.
R - Hydrocarbons outside defined gasoline range present in the sample.
S - Surrogate recovery data not available due to the necessary dilution of the sample.
T - The sample chromatogram is not similar to a typical
U - Matrix Spike/Matrix Spike Duplicate RPD outside control limits due to matrix effects.
V - Matrix Spike/Matrix Spike Duplicate récoveries outside control limits due to matrix effects.
Z - Interferences were present which prevented the quantitation of the analyte below the detection limit reported.
ND - Not Detected
MRL - Method Reporting Limit
PQL - Practical Quantitation

Chain Of Custody

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Project Manager:				(oth	ner)	WTPH-HCID	WTPH-G/BTEX	H-D	МТРН-418.1	Volatiles by 8240/624	Volatiles by 8260	Chlorinated Volatiles Semivolatiles by 827	PAHs by 8270/625	PCB's by 8080/608	Total RCRA Metals (8)	TCLP Metals	N						·	% Moisture
Lab ID Sample Identification		Date Sampled	Time Sampled	Matrix	#of Cont.	WTP	+	WTPH-D	WTP	Volat	Volat		PAHS	PCB	Total	고 고	PR							Wc.
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T1-PPN6-SSW-Z T1-PIPING-3 T1-BOTOM-Z
T1-PPN6-SW-Z

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A. T. C.

RELINQUISHED BY



September 11, 1997

Jerry Olson Foss Environmental 7440 West Marginal Way S. Seattle, WA 98108

Re.

Analytical Data for Project 71350 Laboratory Reference No. 9708-149

Dear Jerry:

Enclosed are the analytical results and associated quality control data for samples submitted on August 29, 1997.

The standard policy of OnSite Environmental Inc.; is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely;

Andy Bay Project Chemist

Enclosures

Date of Report: September 11, 1997 Samples Submitted: August 29, 1997 Lab Traveler: 08-149 Project: 71350

EPA 6010 TOTAL LEAD

Date Extracted: 09-08-97 Date Analyzed: 09-09-97

Matrix:

Soil

Units:

mg/kg (ppm)

Client ID	l ab ID	Dilution Factor	Result	PQL
Client ID	Lab ID	racioi	, Kesuit	FQL
√ T2-WSW-2	08-149-1	50	ND.	5.5
√ T1-WSW-1	. 08-149-2	.50	42	6.0
T1-SSW-1	08-149-3	50	7.6	6.0
√ T2-ESW-1	08-149-5	50	ND	6.4
√ SPC1	08-149-8	50	18	6.0
SPD1	08-149-9	50	9.5	5.7.
✓. T2-NSW-1	08-149-11	50	16	5.8

Date of Report: September 11, 1997 Samples Submitted: August 29, 1997 Lab Traveler: 08-149 Project: 71350

EPA 6010 TOTAL LEAD METHOD BLANK QUALITY CONTROL

09-08-97 Date Extracted: Date Analyzed: 09-08-97

Matrix: Soil

Units: mg/kg (ppm)

MB0908S1 Lab ID:

		Dilution		
Analyte	Method	Factor	Result	PQL
	医内部性性直线的 多家			4.5
Lead	6010	50	ND	5.0

Date of Report: September 11, 1997 Samples Submitted: August 29, 1997 Lab Traveler: 08-149 Project: 71350

EPA 6010 TOTAL LEAD DUPLICATE QUALITY CONTROL

Date Extracted: 09-04-97 Date Analyzed: 09-08-97.

Matrix:

Soil

Units:

mg/kg (ppm)

Lab ID:

09-008-2

Sample Analyte Dilution Result	Duplicate Result	RPD	Flags	PQL
Lead 50 5.45	ND	NA		5.0

Date of Report: September 11, 1997. Samples Submitted: August 29, 1997 Lab Traveler: 08-149 Project: 71350

EPA 6010 TOTAL LEAD MS/MSD QUALITY CONTROL

Date Extracted: 09-08-97 Date Analyzed: 09-08-97

Matrix:

Soil

Units:

mg/kg (ppm)

Lab ID:

09-008-2

	Spike	Percent	
Analyte	Level	MS Recovery MSD Recovery	RPD
Lead	250	200 78 207 81	3.8



DATA QUALIFIERS AND ABBREVIATIONS

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B - The analyte indicated was also found in the blank sample.
C - The duplicate RPD outside control limits due to analyte concentration within five times the quantitation limit.
D - Data from 1: dilution.
E - Value reported exceeds the quantitation range. Value is an estimate.
F ₇ Surrogate recovery data not available due to the high concentration in the sample.
G - Insufficient sample quantity for duplicate analysis.
JThe value reported was below the practical quantitation limit. The value is an estimate.
K - Sample duplicate RPD outside control limits due to sample inhomogeniety. Sample re-extracted and re-analyzed with similar results.
L - Quantitated from C7-C34 as diesel fuel #2.
M - Predominantlyrange hydrocarbons present in the sample.
N - Hydrocarbons in the gasoline range (C7-toluene) present in the sample. N1 - Hydrocarbons in the gasoline range (C7-toluene) present in the sample which are elevating the die result.
OHydrocarbons in the heavy oil range (>C24) present in the sample, O.Hydrocarbons in the heavy oil range (>C24) present in the sample which are elevating the diesel result.
R - Hydrocarbons outside defined gasoline range present in the sample
S - Surrogate recovery data not available due to the necessary dilution of the sample.
T - The sample chromatogram is not similar to a typical
U - Matrix Spike/Matrix Spike Duplicate RPD outside control limits due to matrix effects.
V - Matrix Spike/Matrix Spike Duplicate recoveries outside control limits due to matrix effects.
Z - Interferences were present which prevented the quantitation of the analyte below the detection limit reported.
ND - Not Defected
MRL - Method Reporting Limit
PQL - Practical Quantitation

Chain Of Custody

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REVIEWED BY

Fax: (206) 885-4603 • Phone: (206) 883-388 Project Name: 4924 NE 31st Circle RELINQUISHED BY Project Manager. Project No. ō 12-NSW-772 12 - KOTON -5701 12-ESW-T1-WSW-IN-BOTTOM-T1-555-1 1852ř Sample Identification 40 Hedmond, WA 98052 TIME TIME S DATE 8269 13.82.8 8-79-5 Sampled Sampled FIRM FIRM RECEIVED BY Standard ☐ 48 Hours 24 Hours Same Day Matrix Requested #of Cont. WTPH-HCID WTPH-G/BTEX WTPH-D Volatiles by 8260 Chlorinated Volatiles by 8 Semivolatiles by 8 PAHs by 8270/625 Laboratory No. 4 to 8 b 184 PCB's by 8080/608 8 È 8X 8 8 TCLP Metals Dr WHICKTY % Moisture





September 11, 1997

Vyrl Naumann Foss Environmental 7440 West Marginal Way S. Seattle, WA 98108

Re:

Analytical Data for Project Maple Valley Laboratory Reference No. 9709-023

Dear Vyrl:

Enclosed are the analytical results and associated quality control data for samples submitted on September 5, 1997.

The standard policy of OnSite Environmental Inc., is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data; or need additional information, please feel free to call me.

Sincerely

Andy Bay

Project Chemist:

Enclosures

Date Extracted: 9-06-97 9-06-97 Date Analyzed:

Matrix: Soil

Units: mg/Kg (ppm)

09-023-1 09-023-2 Lab ID:

T1/2-PIPING-ESW-1 T2-PIPING-1 Client ID:

Dilution Factor

	Result	Flags	PQL	Result	Flags	PQL
Benzene	ND		0.063	ND		0.061
Toluene	ND		0.063	ND		0.061
Éthyl Benzene	ND		0.063	ND		0.061
m,p-Xylene	. ND		0.063	ND		0.061
o-Xylene	ND		0,063	ŃD		0.061
TPH-Gas	ND		6.3	ND		6.1
Surrogate Recovery:	92%			101%		

Project: Maple Valley

Date Extracted: 9-06-97 Date Analyzed: 9-06-97

Matrix: Soil.

Units: mg/Kg (ppm)

Lab ID: 09-023-3 Client ID: T2-PP-NSW-1.

Dilution Factor

	Result Flags	PQL
Benzene	ND	0.060
Toluene	ND	0.060
Ethyl Benzene	ND	0.060
m,p-Xylene	ND	0.060
o-Xylene	ND	0.060
TPH-Gas	ND	6.0

/Surrogate Recovery:

Fluorobenzene

Date of Report: September 11, 1997 Samples Submitted: September 5, 1997

Lab Traveler: 09-023 Project: Maple Valley

NWTPH-G/BTEX METHOD BLANK QUALITY CONTROL

Date Extracted: 9-06-97

Date Analyzed: 9-06-97

Matrix: Soil

Units: mg/Kg (ppm)

Lab ID: MB0906S1

Dilution Factor 50

PQL' Flags Result ND 0.050 Benzene 0.050 ND Toluene ND Ethyl Benzene 0.050 0:050 ND: m,p-Xylene o-Xylene 0.050 ND TPH-Gas 5.0 ND

Surrogate Recovery:

Fluorobenzene 117%

NWTPH-G/BTEX DUPLICATE QUALITY CONTROL

9-06-97 Date Extracted: 9-06-97 Date Analyzed:

Matrix: Soil

Units: mg/Kg (ppm)

Lab ID	09-021-2 Original	09-021-2 Duplicate	RPD	Flag
Dilution Factor	50	50		
Benzene	ND	ND	NA	
Toluene	ND	ND	NA	
Ethyl Benzene	ND	ND	, NA	
m,p-Xylene	0.0900	0.0560	47	C
o-Xylene	ND	ND	ŅΑ	
TPH-Gas	29.3	29.8	1.8	
Surrogate Recovery:	110%	116%		

NWTPH-G/BTEX MS/MSD QUALITY CONTROL

9-04-97 Date Extracted: 9-07-97 Date Analyzed:

Matrix: Soil

Units: mg/Kg (ppm)

Lab ID spiked @ 1 ppm	09-018-4 MS	Percent Recovery	09-018-4 MSD	Percent Recovery	
Dilution Factor	50		50		RPD
Benzene	0.995	100	1.09	109	8.7
Toluene	1.01	101	1:10	110	9.0
Ethyl Benzène	0.980	98	1.08	108	9.7
m,p-Xylene	1.02	102	1.11	111	8.5
o-Xylene	1.06	106	1.13	113	5.9

Surrogate Recovery: `Fluorobenzene

Project: Maple Valley

NWTPH-Dx

Date Extracted: 9-05-97 Date Analyzed: 9-05-97

Matrix: Soil

mg/Kg (ppm) Units:

.T1/2-Piping-ESW-1 T2-Piping-1 Client ID: T2-PP-NSW-1 09-023-02 Lab ID: 09-023-01 09-023-03 Dilution Factor: 1.0 1.0

Diesel Fuel C12-C24: ND ND ND: PQL:-32 30 30

Surrogate Recovery: 100% 74%

o-Terphenyl

Project: Maple Valley

METHOD BLANK QUALITY CONTROL

Date Extracted: 9-05-97 9-05-97 Date Analyzed:

Soil . Matrix:

mg/Kg (ppm) Units:

MB0905S1 Lab ID:

Dilution Factor: 1.0

Diesel Fuel C12-C24. ND

PQL: 25

Surrogate Recovery: 117%

o-Terphenyl

NWTPH-Dx DUPLICATE QUALITY CONTROL

Date Extracted: Date Analyzed:	9-05-97 9-05-97	
Matrix:	Soil	
Units:	mg/Kg (ppm)	
_ab ID:	09-010-04	09-010-04 DU
Diesel Fuel C12-C24:	1500	1810
PQL:	.130	130
RPD:	19	
Surrogate Recovery:		<u>-</u>
o-Terphenyl Flaαs:	S	S

Date of Report: September 11, 1997 Samples Submitted: September 5, 1997

Lab Traveler: 09-023 Project: Maple Valley

NWTPH-Dx SB/SBD QUALITY CONTROL

Date Extracted: 9-05-97

Date Analyzed: 9-05-97

Matrix: Soil

Units: mg/Kg (ppm)

Spike Level: 100 ppm

Lab ID: SB0905S1 SB0905S1 DUP

Diesel Fuel C12-C24: 81.6 80.1

PQL: 25

Percent Recovery: 82

RPD: 1.90

Surrogate Recovery: 93% 97%

o-Terphenyl

EPA 6010 TOTAL LEAD

Date Extracted:

09-08-97

Date Analyzed:

09-08-97

Matrix:

Soil

Units:

mg/kg (ppm)

	Dilution
Client ID Lab ID	Factor Result PQL
T1/2-PIPING-ESW-1 09-023-1	50 ND 6.3
T2-PIPING-1 09-023-2	50 ND 6.1
T2-PP-NSW-1 09-023-3	50 ND 6.0 🗸

EPA 6010 TOTAL LEAD METHOD BLANK QUALITY CONTROL

Date Extracted: 09-08-97 09-08-97 Date Analyzed:

Matrix: Soil

Units: mg/kg (ppm)

MB0908S1 Lab ID:

	Dilution	
Analyte	Method Factor Result	PQL
Lead	6010 50 ND	5.0

EPA 6010 TOTAL LEAD DUPLICATE QUALITY CONTROL

Date Extracted: 09-04-97 Date Analyzed: . 09-08-97

Matrix: Soil

Units: mg/kg (ppm)

Lab ID: 09-008-2

		Duplicate			
Analyte Dilution	Result	Result	RPD	Flags	PQL
Lead 50	5.45	ND.	NA		5.0

Project: Maple Valley

EPA 6010 TOTAL LEAD MS/MSD QUALITY CONTROL

Date Extracted: 09-08-97 Date Analyzed: 09-08-97

Matrix: Soil

mg/kg (ppm) Units:

Lab ID: 09-008-2

	Spike	Percent	Percent		
Analyte	Level	MS Recovery MSD	Recovery	RPD	Flags
Lead	250	200 78 207	81	3.8	

Date Analyzed: 9-05-97

Client ID	Lab ID	% Moisture
T1/2-PIPING-ESW-1	09-023-1	21、
T2-PIPING-1	09-023-2	18
T2-PP-NSW-1	09-023-3	17



DATA QUALIFIERS AND ABBREVIATIONS

A - Due to high sample concentration, amount spiked insufficient for meaningful MS/MSD data recovery.
B - The analyte indicated was also found in the blank sample.
C - The duplicate RPD outside control limits due to analyte concentration within five times the quantitatio limit.
D - Data from 1: dilution.
E - Value reported exceeds the quantitation range. Value is an estimate.
F - Surrogate recovery data not available due to the high concentration in the sample.
G - Insufficient sample quantity for duplicate analysis.
J - The value reported was below the practical quantitation limit. The value is an estimate.
K - Sample duplicate RPD outside control limits due to sample inhomogeniety. Sample re-extracted and re-analyzed with similar results.
L - Quantitated from C7-C34 as diesel fuel #2.
M - Predominantly range hydrocarbons present in the sample.
N - Hydrocarbons in the gasoline range (C7-toluene) present in the sample. N1 - Hydrocarbons in the gasoline range (C7-toluene) present in the sample which are elevating the diesersult.
O - Hydrocarbons in the heavy oil range (>C24) present in the sample. O1 - Hydrocarbons in the heavy oil range (>C24) present in the sample which are elevating the diesel result.
R - Hydrocarbons outside defined gasoline range present in the sample.
S - Surrogate recovery data not available due to the necessary dilution of the sample.
T - The sample chromatogram is not similar to a typical
U - Matrix Spike/Matrix Spike Duplicate RPD outside control limits due to matrix effects.
V - Matrix Spike/Matrix Spike Duplicate recoveries outside control limits due to matrix effects.
Z - Interferences were present which prevented the quantitation of the analyte below the detection limit reported.
ND - Not Detected
MRL - Method Reporting Limit
PQL - Practical Quantitation

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September 12, 1997

Vyrl Naumann Foss Environmental 7440 West Marginal Way S. Seattle, WA 98108

Re: Analytical Data for Project 71350 Laboratory Reference No. 9709-043

Dear Vyrl:

Enclosed are the analytical results and associated quality control data for samples submitted on September 9, 1997.

The standard policy of OnSite Environmental Inc., is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

Karl P. Hornyik Lab Manager

Enclosures

Date Extracted: Date Analyzed:

Matrix: Soil

Units: mg/Kg (ppm)

Lab ID: Client ID: 09-043-2 09-043-1

T1-DISPENSER-A T1-DISPENSER-B

50 🕮 🖖 Dilution Factor

	Result	Flags	PQL	Result Flags	PQL
Benzène	0.35		0.30	ND	0.056
Toluene	1.5		0.30	0.21	0.056
Ethyl Benzene	5.5		0.30	ND	0.056
m,p-Xylene	25		0.30	0.22	0.056
o-Xylene	3.2		0.30	0.063	0.056
TPH-Gas	990		30	ND	5.6
Surrogate-Recovery:					

Fluorobenzene.

NWTPH-G/BTEX

Date Extracted: Date Analyzed: 9-10-97 9-11-97

Matrix: Soil

Units: mg/Kg (ppm)

09-043-3 Lab ID;

T2-DISPENSER Client ID:

Dilution Factor

	Result	Flags	PQL
Benzene	ND		0.057
Toluene	ND		0.057
Ethyl Benzene	ND		0.057
m,p-Xylene	0.18		0.057
o-Xylene	0.070		0.057
"ТРН-Gas	93		5.7
Surrogate Recovery: Fluorobenzene	94%		

NWTPH-G/BTEX METHOD BLANK QUALITY CONTROL

Date Extracted: 9-10-97 9-10-97 Date Analyzed:

Matrix: Soil Units: mg/Kg (ppm)

Lab ID: MB0910S1

Dilution Factor

	Result	Flags	PQL
Benzene	ND		0.050
Toluene	ND		0.050
Ethyl Benzene	ND		0.050
m;p-Xylene	ND		0.050
o-Xylene	ND		0.050
ŢPH-Gas	ND		5.0
Surrogate Recovery:			

Fluorobenzene

NWTPH-G/BTEX DUPLICATE QUALITY CONTROL

Date Extracted: 9-10-97 Date Analyzed:

Matrix: Soil

Units: mg/Kg (ppm)

Lab ID	09-050-1 Original	09-050-1 Duplicate	RPD
Dilution Factor	50	50	
Benzene	ND	ND	NA
Toluene	ND	ND	NA
Ethyl Benzene	ND	ND	NA:
m,p-Xylene	ND	, ND	NA .
o-Xylene	ND	ND	NA
TPH-Gas	ND	ND	NA
Surrogate Recovery:	104%	106%	

NWTPH-G/BTEX **MS/MSD QUALITY CONTROL**

Date Extracted: 9-10-97 9-11-97 Date Analyzed:

Matrix: Soil

Units: mg/Kg (ppm)

,Lab ID	09-050-1		09-050-1		
spiked @ 1 ppm	MS	Percent	MSD	Percent	
		Recovery		Recovery	
Dilution Factor	50		50		RPD
Benzene	0.970	97	1.01	101	3.5
Toluene	0.990	99	1.03	103	4.0
Ethyl Benzene	1.00	100	1.04	104	3.9
m,p-Xylene	1.01	101	1.05	105	3.9
o-Xylene	0.985	99	1.02	102	3.5

Surrogate Recovery:

Fluorobenzene - 108% 104%

Date Extracted:
Date Analyzed: 9-10-97

Matrix: Soil

mg/Kg (ppm) Units:

Client ID:	T1-DISPENSER-A	T1-DISPENSER-B	T2-DISPENSER
Lab ID:	.09-043-01	09-043-02	09-043-03
Dilution Factor:	5.0	1.0	1.0
Diesel Fuel C12-C24:	78 <u>0</u> 0	ND	1500
PQL:	150	28	28
Surrogate Recovery:		85%	

Flags

o-Terphenyl

Project: 71350

NWTPH-Dx METHOD BLANK QUALITY CONTROL

Date Extracted: 9-09-97 Date Analyzed: 9-10-97

Soil Matrix:

Units: mg/Kg (ppm)

: MB0909S1 Lab ID:

Dilution Factor: ··· 1.0°

Diesel Fuel C12-C24: ND

25 PQL:

95% Surrogate Recovery:

√o-Terphenyl

Lab Traveler: 09-043 Project: 71350

NWTPH-DX
DUPLICATE QUALITY CONTROL

Date Extracted:

9-09-97

Date Analyzed:

9-10-97

Matrix:

Soil

Units:

mg/Kg (ppm)

Lab ID:

09-043-02

09-043-02 DUP

Diesel Fuel C12-C24:

ND

ND

PQL:

25

25

RPD:

NA.

Surrogate Recovery:

85%.

115%

o-Terphenyl

Project: 71350

NWTPH-Dx SB/SBD QUALITY CONTROL

Date Extracted: 9-09-97 9-10-97 Date Analyzed:

Matrix: 'Soil

Units: mg/Kg (ppm)

100 ppm Spike Level:

SB0909S1 DUP SB0909S1 Lab ID:

97.2 Diesel Fuel C12-C24: 92.3

25 PQL: -25

92 Percent Recovery:

5.2 RPD:

108% Surrogate Recovery: .117%

o-Terphenyl

EPA 6010 TOTAL LEAD

Date Extracted: 09-09-97 Date Analyzed: 09-09-97

Matrix: Soil

Units: mg/kg (ppm)

Client ID Lab ID	Dilution Factor	Result	PQL
TI-DISPENSÉR-A 09-043-1	50	ND	6.0
TI-DISPENSER-B 09-043-2	50	16	5.6
T2-DISPENSER 09-043-3	50	ND	5.7

EPA 6010 TOTAL LEAD METHOD BLANK QUALITY CONTROL

09-09-97 Date Extracted: 09-09-97 Date Analyzed:

Soil Matrix:

mg/kg (ppm) Units:

MB0909S1 Lab ID:

		· .	Dilution		
Analyte	Method		Factor	Resul	t PQL
	6.				
Lead	6010		50	ŊD	5.0

Project: 71350

EPA 6010 TOTAL LEAD DUPLICATE QUALITY CONTROL

Date Extracted: 09-09-97 Date Analyzed: 09-09-97

Soil Matrix:

mg/kg (ppm) Units:

09-035-1 Lab ID:

· 1.		Sample	Duplicate	· 有一种 电影火		
Analyte	Dilution	Result	Result	RPD	Flags	PQL
Lead	50	5.45	ND	NA .		÷5∶0

Lab Traveler: 09-043 Project: 71350

EPA 6010 TOTAL LEAD MS/MSD QUALITY CONTROL

Date Extracted: 09-09-97. Date Analyzed: 09-09-97.

Matrix: Soil

Units: mg/kg (ppm)

Lab ID: 09-035-1

Spike	Percent Percent
Analyte	MS Recovery MSD Recovery RPI
Lead 250	182 70 178 69 2.0

Date Analyzed: 9-09-97

Client ID	Lab ID	% Moisture
T1-DISPENSER-A	09-043-1	16
T1-DISPENSER-B	09-043-2	10
T2-DISPENSER	09-043-3	12



DATA QUALIFIERS AND ABBREVIATIONS

OnSite Environmental Inc.

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Fax: (206) 885-4603 • Phone:	(206) 883-388	I ☐Same Day		624		
Company: FOSS		☐ 24 Hours		8240/8260/624 25		
Project No: 71350		48 Hours				
Project Name:		Standard	$\ \ _{\mathbf{x}} \ $	8240/62/ 8260 Volatiles s by 827	/625 //608	2
Project Manager:		(other)	WTPH-HCID WTPH-G/BTE WTPH-D	WTPH-418.1 Volatiles by 8240/ Volatiles by 8260 Chlorinated Volati	808 808 808 14 N	lomal. I
ab ID Sample Identification	Date Sampled	Time #of Sampled Matrix Cont.	мтрн мтрн мтрн	Vola Sem	Par Iga Iga F	0
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2 71-05PENSE?-9	3 1		XX			X
3 TZ-DEPENSES			XX			X
3						
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September 12, 1997

Vyrl Naumann Foss Environmental 7440 West Marginal Way S. Seattle, WA 98108

Re:

Analytical Data for Project 71350 Laboratory Reference No. 9709-043

Dear Vyrl:

Enclosed are the analytical results and associated quality control data for samples submitted on September 9, 1997.

The standard policy of OnSite Environmental Inc., is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

Karl P. Hornyik Lab Manager

Enclosures



DATA QUALIFIERS AND ABBREVIATIONS

A - Due to high sample concentration, amount spiked insufficient for meaningful MS/MSD data recovery.
B - The analyte indicated was also found in the blank sample.
C - The duplicate RPD outside control limits due to analyte concentration within five times the quantitation limit.
D - Data from 1: dilution.
E - Value reported exceeds the quantitation range. Value is an estimate.
F - Surrogate recovery data not available due to the high concentration in the sample.
G - Insufficient sample quantity for duplicate analysis.
J - The value reported was below the practical quantitation limit. The value is an estimate.
K - Sample duplicate RPD outside control limits due to sample inhomogeniety. Sample re-extracted and re-analyzed with similar results.
L - Quantitated from C7-C34 as diesel fuel #2.
M - Predominantly range hydrocarbons present in the sample.
N - Hydrocarbons in the gasoline range (C7-toluene) present in the sample. N1 - Hydrocarbons in the gasoline range (C7-toluene) present in the sample which are elevating the diesel result.
O - Hydrocarbons in the heavy oil range (>C24) present in the sample. O1 - Hydrocarbons in the heavy oil range (>C24) present in the sample which are elevating the diesel result.
R - Hydrocarbons outside defined gasoline range present in the sample.
S - Surrogate recovery data not available due to the necessary dilution of the sample.
T - The sample chromatogram is not similar to a typical
U - Matrix Spike/Matrix Spike Duplicate RPD outside control limits due to matrix effects.
V - Matrix Spike/Matrix Spike Duplicate recoveries outside control limits due to matrix effects.
Z - Interferences were present which prevented the quantitation of the analyte below the detection limit reported.
ND - Not Detected
MRL - Method Reporting Limit
PQL - Practical Quantitation

Date Analyzed: 9-09-97

% MOISTURE

Client ID	Lab ID		% Moisture
T1-DISPENSER-A	09-043-1		16
T1-DISPENSER-B	09-043-2	1	10
T2-DISPENSER	09-043-3		12

Date: 9/16/97 Time: 11:10:40 AM

Date of Report: September 12, 1997 Samples Submitted: September 9, 1997

Lab Traveler: 09-043 Project: 71350

EPA 6010 TOTAL LEAD MS/MSD QUALITY CONTROL

Date Extracted: 09-09-97 Date Analyzed: 09-09-97

Matrix:

Soil

Units:

mg/kg (ppm)

Lab ID:

09-035-1

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD
Lead	250	182	70	178	69	2.0

Lab Traveler: 09-043 Project: 71350

EPA 6010 TOTAL LEAD DUPLICATE QUALITY CONTROL

Date Extracted: 09-09-97 Date Analyzed: 09-09-97

Matrix:

Soil

Units:

mg/kg (ppm)

Lab, ID:

09-035-1

Sample Duplicate
Analyte Dilution Result Result RPD Flags PQL
Lead 50 5.45 ND NA 5.0

Lab Traveler: 09-043 Project: 71350

EPA 6010 TOTAL LEAD METHOD BLANK QUALITY CONTROL

Date Extracted:

09-09-97

Date Analyzed:

09-09-97

Matrix:

Soil

Units:

mg/kg (ppm)

Lab ID:

MB0909S1

	·	Dilution		
Analyte	Method	Factor	Result	PQL
Lead	6010	50	ND .	5.0

Lab Traveler: 09-043 Project: 71350

EPA 6010 TOTAL LEAD

Date Extracted:

09-09-97

Date Analyzed:

09-09-97

Matrix:

Soil

Units:

mg/kg (ppm)

ļ·		Dilution		1
Client ID	Lab ID	Factor	Result	PQL
TI-DISPENSER-A	09-043-1	50	ND	6.0
TI-DISPENSER-B	09-043-2	50	16	5.6
T2-DISPENSER	09-043-3	50	ND	5.7

Lab Traveler: 09-043 Project: 71350

NWTPH-Dx SB/SBD QUALITY CONTROL

Date Extracted:

9-09-97

Date Analyzed:

9-10-97

Matrix:

Soil

Units:

mg/Kg (ppm)

Spike Level:

o-Terphenyl

100 ppm

Lab ID:	SB0909S1	SB0909S1 DUP
Diesel Fuel C12-C24:	92.3	97.2
PQL:	25	25
Percent Recovery:	. 92	97
RPD:	5.2	
Surrogate Recovery:	117%	108%

Lab Traveler: 09-043 Project: 71350

NWTPH-DX DUPLICATE QUALITY CONTROL

Date Extracted:

9-09-97

Date Analyzed:

9-10-97

Matrix:

Soil

Units:

mg/Kg (ppm)

Lab ID:

09-043-02

09-043-02 DUP

Diesel Fuel C12-C24:

ND

ND

PQL:

25

25

RPD:

NΑ

Surrogate Recovery:

85%

115%

o-Terphenyl

Lab Traveler: 09-043 Project: 71350

NWTPH-Dx METHOD BLANK QUALITY CONTROL

Date Extracted:

9-09-97

Date Analyzed:

9-10-97

Matrix:

Soil

Units:

mg/Kg (ppm)

Lab ID:

MB0909S1

Dilution Factor:

1.0

Diesel Fuel C12-C24:

ND

PQL:

25

Surrogate Recovery:

95%

o-Terphenyl

Lab Traveler: 09-043 Project: 71350

NWTPH-G/BTEX

Date Extracted:

9-10-97

Date Analyzed:

9-11-97

Matrix: Soil

Units: mg/Kg (ppm)

Lab ID:

09-043-3

Client ID:

T2-DISPENSER

Dilution Factor

50

	Result	Flags	PQL
Benzene	ND .		0.057
Toluene	ND		0.057
Ethyl Benzene	ND		0.057
m,p-Xylene	0.18		0.057
o-Xylene	0.070		0.057
TPH-Gas	93		5.7-

Surrogate Recovery:

Fluorobenzene

94%

Project: 71350

NWTPH-G/BTEX

Date Extracted:

9-10-97

Date Analyzed:

9-11-97

Matrix: Soil

Units: mg/Kg (ppm)

Lab ID:

09-043-1

09-043-2

Client ID:

T1-DISPENSER-A

T1-DISPENSER-B

Dilution Factor

250

50

	Result	Flags	PQL	Result	Flags	PQL
Benzene	0.35		0.30	ND		0.056
Toluene	1.5		0.30	0.21		0.056
Ethyl Benzene	5.5		0.30	ND		0.056
m,p-Xylene	25		0.30	0.22		0.056
o-Xylene .	3.2		0.30	0.063		0.056
TPH-Gas	990	-	30	ND		5.6
Surrogate Recovery: Fluorobenzene		s		106%		

Lab Traveler: 09-043 Project: 71350

NWTPH-Dx

Date Extracted:

9-09-97

Date Analyzed:

9-10-97

Matrix:

Soil

Units:

Flags

mg/Kg (ppm)

Client ID:	T1-DISPENSER-A	T1-DISPENSER-B	T2-DISPENSER
Lab ID:	09-043-01	09-043-02	09-043-03
Dilution Factor:	5.0	1.0	1.0
1			
Diesel Fuel C12-C24:	7800	ND	1500
PQL:	150	28	28
Súrrogate Recovery: ; o-Terphenyl		85%	

S

Lab Traveler: 09-043 Project: 71350

NWTPH-G/BTEX MS/MSD QUALITY CONTROL

Date Extracted:

9-10-97

Date Analyzed:

9-11-97

Matrix: Soil

Units: mg/Kg (ppm)

Lab ID spiked @ 1 ppm	09-050-1 MS	Percent Recovery	09-050-1 ∤ MSD	Percent Recovery	
Dilution Factor	50	,,,,,,,	50	,	RPD
Benzene	0.970	97	1.01	101	3.5
Toluene	0.990	99	1.03	103	4.0
Ethyl Benzene	1.00	100	1.04	104	3.9
m,p-Xylene	1.01	101	1.05	105	3.9
o-Xylene	0.985	99	1.02	102	3.5

Surrogate Recovery:

Fluorobenzene

104%

108%

Lab Traveler: 09-043 Project: 71350

NWTPH-G/BTEX DUPLICATE QUALITY CONTROL

Date Extracted:

9-10-97

Date Analyzed:

9-11-97

Matrix: Soil

Units: mg/Kg (ppm)

Lab ID	09-050-1	09-050-1	200
1	Original	Duplicate	RPD
Dilution Factor	50	50	
Benzene	ND	ND	NA
Toluene	NÖ	ND	NA
Ethyl Benzene	ND	ND	NA
m _į p-Xylene	ND	ND	NA
o-Xylene	ND	ND .	NA
TPH-Gas	ND	ND	NA
Surrogate Recovery: Fluorobenzene	104%	106%	

Lab Traveler: 09-043 Project: 71350

NWTPH-G/BTEX METHOD BLANK QUALITY CONTROL

Date Extracted:

9-10-97

Date Analyzed:

9-10-97

Matrix: Soil

Units: mg/Kg (ppm)

Lab ID:

MB0910S1

Dilution Factor

50

	Result	Flags	PQL
Benzene	ND		0.050
Toluene	ND		0.050
Ethyl Benzene	ND		0.050
m,p-Xylene	ND		0.050
o-Xylene	ND		0.050
TPH-Gas	ND		5.0
Surrogate Recovery:			

Fluorobenzene

138%

APPENDIX C

Structural Assessment Report (RSP EQE)





Project Data

TO

King County Facilities Management

DATE

May 30, 1996

Division ·

PROJECT

Maple Valley Tank Removal

18825 SE Maple Valley Highway

500 4th Ave., Room 320

PROJECT NO 9344501-21

Seattle, WA 98104

E. Ann Ferrese, PE

ATTN

Karen Heidergott

Memorandum

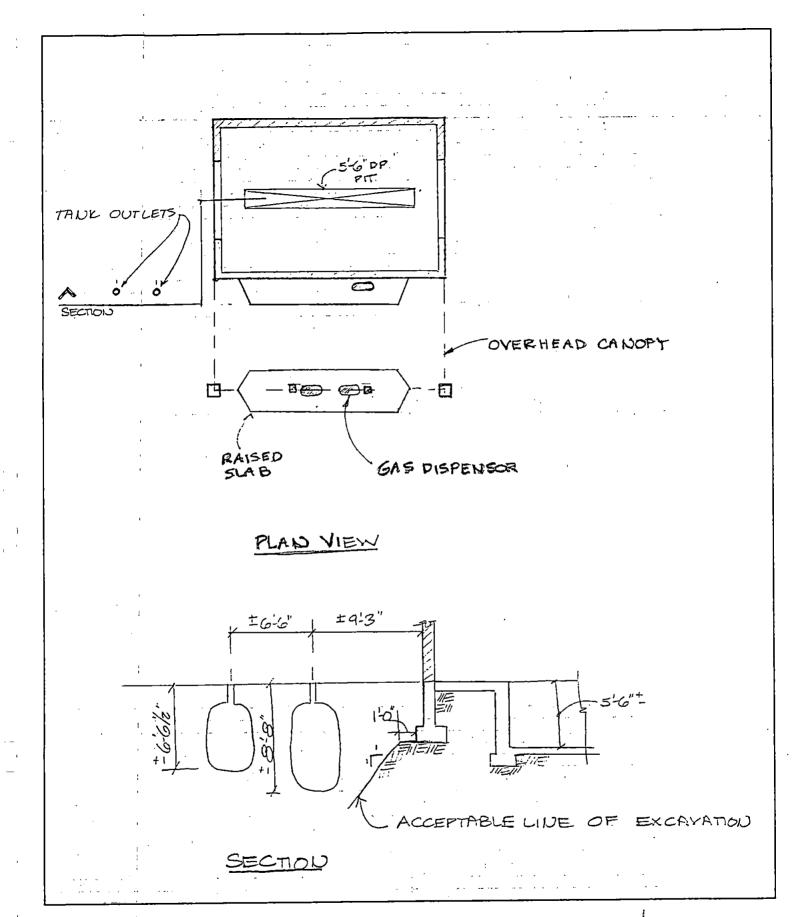
RE: Maple Valley Tank Removal: Utility Building

At your request, we have completed a brief review of the Utility Building at the Maple Valley Site. The purpose of this review was to make a determination of the impact the removal of two underground fuel tanks would have to the building. Our review consisted of a brief site visit to visually assess the structural configuration of the building and the proximity of the underground fuel tanks to the structure. No specific analysis of the building was performed as part of our work.

Based on engineering judgment and knowledge of how similar buildings are constructed, we recommend the following:

- 1. Soil may be removed down to the bottom of the utility building wall footings to a distance of 1"-0" horizontally from the edge of the footing. From that point the soil may be removed at a slope of 1to- 1 sloping downward away from the building. (see the attached sketch)
- 2. Sawcut the slab under the drive-through canopy where required for pipe removal. No jack
- hammering adjacent to the building can be allowed.

 The raised slab under the gas dispensers at the west side of the drive-through canopy is required for support of the canopy columns and should not be removed.
- Please note that the depth and configuration of the foundations is unknown and must be verified in the field.



An EQE International Cor	mpany 1411 4th Avenue Building, Su	ite 500 Seattle, Washington
MAPLE	VALLEY	
project		
client		

101 Phone 206.624.8687, Fax 206.624.8268

5.20-9 6
date rsp no.
design sheet