

U.S. OIL & REFINING CO.
3001 Marshall Avenue • Tacoma, WA 98421
Post Office Box 2255 • Tacoma, WA 98401
(206) 383-1651 • TWX: 9104412682

RECEIVED

JUL 15 1998
July 14, 1998

Department of Ecology
Industrial Section

Mr. Paul Skyllingstad
Washington Department of Ecology
Industrial Section
P.O. Box 47600
Olympia, WA 98504-7600

Subject: Excavation and Confirmation Sampling on Port of Tacoma Property Adjacent to
U.S. Oil's Pipelines and the Port of Tacoma Road Right-of-Way

Dear Mr. Skyllingstad,

The enclosed report, which was prepared by Dalton, Olmsted & Fuglevand, Inc., Environmental Consultants, summarizes soil excavation observations including confirming soil sampling and analytical results for the Port of Tacoma property adjacent to U.S. Oil's Port of Tacoma Road pipeline crossing. The purpose of this remediation was to remove an area containing elevated concentrations of petroleum hydrocarbons from Port of Tacoma property currently being developed as a Hyundai Terminal. Excavation and sampling activities commenced during the week of March 16, 1998 and resulted in approximately 300 yards of soil being removed and transported to U.S. Oil's containment cell located at the refinery. The excavation was subsequently backfilled and compacted to the level of the surrounding ground surface using clean imported pit-run sand and gravel. Confirmation sampling results indicated soil concentrations of residual petroleum hydrocarbons were near or below method reporting limits.

Please contact me at (253) 383-1651 if you have any additional questions.

Sincerely,

U.S. OIL & REFINING CO.

Ty J. Gaub

Ty J. Gaub
Environmental Manager

Enclosure

cc: AJC
GayLee B. Kilpatrick, Washington Department of Ecology
Frank Davidson, Port of Tacoma

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Circle:	
Air	Corr.
Water	Rpt
DW/RCRA	Int.
HWCU	Enf
SW	Eng.
USOR	
Company Name	

Dalton, Olmsted & Fuglevand, Inc. *Environmental Consultants*

11711 Northcreek Parkway S., Suite 101 • Bothell, Washington 98011
Telephone (425) 486-7905 (FAX 486-7651)

June 29, 1998

Ty Gaub
U.S. Oil & Refining Co.
3001 Marshall Avenue
P.O. Box 2255
Tacoma, WA 98401

Re: Excavation and Confirmation Sampling on Port of Tacoma Property Adjacent to
U.S. Oil & Refining Pipelines and Port of Tacoma Road Right of Way

Dear Ty:

This letter summarizes our observations of soil excavation and the results of confirmation soil sampling and analyses on Port of Tacoma property immediately northeast of U.S. Oil & Refining pipelines along Port of Tacoma Road. The purpose of the excavation and soil removal was to remediate an area of elevated petroleum compound concentrations in soil on Port of Tacoma property indicated by previous sampling [Dalton, Olmsted & Fuglevand, Inc.(DOF), 1997 - see references].

BACKGROUND

Geologic and Ground-Water Conditions Based on soil probes, test pits, roadway pipeline repair excavations, and nearby previously drilled borings (MW-USO-5S, and MW-USO-2S, Figure 1), the near-surface soils in the area consist of a dredged fill sand, on the order of seven to eight feet thick, overlying organic silt and clay deposits comprising a regional aquitard. The aquitard is generally eight to eleven feet thick, based on deeper borings drilled in the area. The aquitard separates the shallow ground-water zone from the lower ground-water zone. The upper zone is not influenced by tides whereas the lower ground-water zone is brackish and is influenced by the tides. Shallow-zone ground-water flow directions, based on previous work by U.S. Oil in the area, are toward the northeast (DOF, 1996).

The depth to ground water in the area during soil probing (January 1997) was estimated to be on the order of two to three feet below the ground surface, based on observed water and/or wet soil in the sampling device. Based on water levels measured in wells MW-USO-2S and -5S, the depth to water in the area ranges from about two feet or less up to five feet from the ground surface, depending on the season. During the test pit excavations made in July 1997, the water level was at a depth of about four feet from ground surface.

Previous Soil Sampling and Analysis. On January 23, 1997, a series of eleven shallow soil probes were advanced by Holt Drilling of Puyallup on both sides of Port of Tacoma Road and

on either side of the pipeline corridor in the locations shown on Figure 1. Based on the results of this work, elevated petroleum hydrocarbons compounds were found over a limited area on the Port of Tacoma Road right of way adjacent to the Port of Tacoma property.

On July 10, 1997, six test pits were excavated on the Port of Tacoma property adjacent to the U. S. Oil pipeline easement in the locations shown on Figure 2. The purpose of the test pits was to determine the northeastward extent of petroleum contamination found in soil probe P-9E, Figure 1, and in the Port of Tacoma Road excavations for water pipeline repairs made by the City of Tacoma Water Department on June 10 and 11, 1997. Soil samples were analyzed for WTPH-G and WTPH-D (extended). These results are summarized on Table 1.

The analyses indicated that gasoline-range and associated BTEX compounds were not detected above method reporting limits in any of the samples from the six test pits. WTPH-D (extended analyses of samples from the six test pits indicated that samples from five the of the six test pits were either not detected above method reporting limits or were near or below total petroleum hydrocarbon (TPH) levels of 200 mg/kg. In one sample from test pit, TP-1, TP-1 (0-4'), a diesel-range petroleum hydrocarbon concentration of 1050 mg/kg and a heavy oil-range concentration of 578 mg/kg was obtained. In an adjacent test pit, TP-3, a diesel-range concentration of in sample TP-3 (0-4'), 112 mg/kg and a heavy oil concentration of 93 mg/kg was obtained. These results suggested that the extent of elevated residual petroleum hydrocarbons in soil on the Port of Tacoma property in this area was limited.

SOIL EXCAVATION AND CONFIRMATION SAMPLING

On March 16, 1998, S&J Excavating was mobilized to the site area. Based on initial excavations near the previous test pit TP-1, ground water was found at about 2.5 feet below the ground surface with a zone of elevated residual petroleum hydrocarbons visually noted from about 3 to 5 feet below the ground surface. Terry Olmsted of DOF observed the excavation process and test pits, and obtained the confirmation soil samples.

Since ground water was encountered above the zone of visually impacted soils, in order to define the lateral extent of the petroleum hydrocarbon impacted soils, a series of test pits were excavated to a depth of 5 feet and visually observed for oily soil, odor, or sheen on the water surface. When a test pit was excavated where no visual indications of petroleum were observed, a confirmation sample was obtained from the zone from 3 to 5 feet. Test pits designated as C1 through C8, Figure 2, met the visual screening criteria and defined the extent of the area to be excavated.

A clean stainless steel spoon was used to collect each sample from the excavation wall over the depth interval noted on Table 1. Each sample was placed in a laboratory supplied container, labeled, and placed in a chilled cooler with ice. Standard chain of custody procedures were used.

The defined area was then excavated to a depth of approximately 5 feet and the soils were transported off site by S&J excavating. Approximately 300 cubic yards of soil were removed and transported to the U. S. Oil containment cell located at the refinery. The excavation was subsequently backfilled and compacted (using a vibratory plate compactor attached to the backhoe) to the level of the surrounding ground surface with clean imported pit-run sand and gravel.

CONFIRMATION SAMPLING RESULTS

Chromatograms from previous analyses of soil samples from test pits TP-1 through -6, Figure 2, indicated a diesel-range product. No gasoline-range hydrocarbons were detected in any of the soil samples collected on the Port of Tacoma property during the previous sampling and analysis events. For this reason, the confirmation soil samples were analyzed for diesel-range hydrocarbons by North Creek Analytical, Inc., using Washington State Method WTPH-D(extended). Acid wash/silica gel cleanup procedures were used to prepare samples for WTPH-D(extended) analyses to minimize the possibility of biogenic interferences. Results of the soil analyses are summarized on Table 1, and detailed laboratory data sheets are provided in Attachment A.

Analysis of samples from each of the confirmation sampling locations (C1 through C8, Figure 2) indicated soil concentrations of residual petroleum hydrocarbons near or below the method reporting limits of 10 mg/kg for diesel-range (C-12 to C-24) and 25 mg/kg for heavy-oil range (C-24 to C-40), with the highest concentration at 39 mg/kg (C-12 to C-24) well below the Washington State Model Toxics Control Act (MTCA) Method A cleanup level of 200 mg/kg. The excavation as described above, the excavation of soils was extended to each of the confirmation sampling locations as indicated on Figure 2.

REFERENCES

- Dalton, Olmsted & Fuglevand, Inc. (DOF), 1997, *Characterization of Soil Quality Conditions, U.S. Oil & Refining Pipelines, Port of Tacoma Road & Adjacent Port of Tacoma Property*, letter report to Ty Gaub, U. S Oil & Refining Co., October 1997.
- DOF, 1996, *Post Remediation Ground-Water Sampling Results, November 1993 to April 1996, N.E. Portion of Cascade Timber Log Sort Yard No. 3, Port of Tacoma, Washington,* report to U. S. Oil and Refining dated September 1996

Dalton, Olmsted & Fuglevand, Inc.

Ty Gaub - U.S. Oil & Refining Co.
June 29, 1998 Page 4

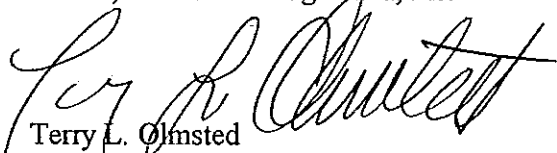
Closing

The services described in this report were performed consistent with generally accepted professional consulting principles and practices. No other warranty, express or implied, is made. These services were performed consistent with our agreement U.S. Oil & Refining Co. This report is solely for the use and information of our client unless otherwise noted. Any reliance on this report by a third party is at such party's sole risk.

Opinions and recommendations contained in this report apply to conditions existing when services were performed and are intended only for U.S. Oil & Refining Co. for the purposes, locations, time frames, and project parameters indicated. We are not responsible for the impacts of any changes in environmental standards, practices or regulations subsequent to performance of services. We do not warrant the accuracy of information supplied by others, nor the use of segregated portions of this report.

Sincerely,

Dalton, Olmsted & Fuglevand, Inc.


Terry L. Olmsted
Sr. Consulting Geologist

Attachments: Table 1. Summary of Test Pit and Confirmation Soil Samples and Analytical
 Results
 Figure 1. Site Location Map
 Figure 2. Excavation Area and Confirmation Sampling Locations
 ATTACHMENT A - NORTH CREEK ANALYTICAL DATA SHEETS

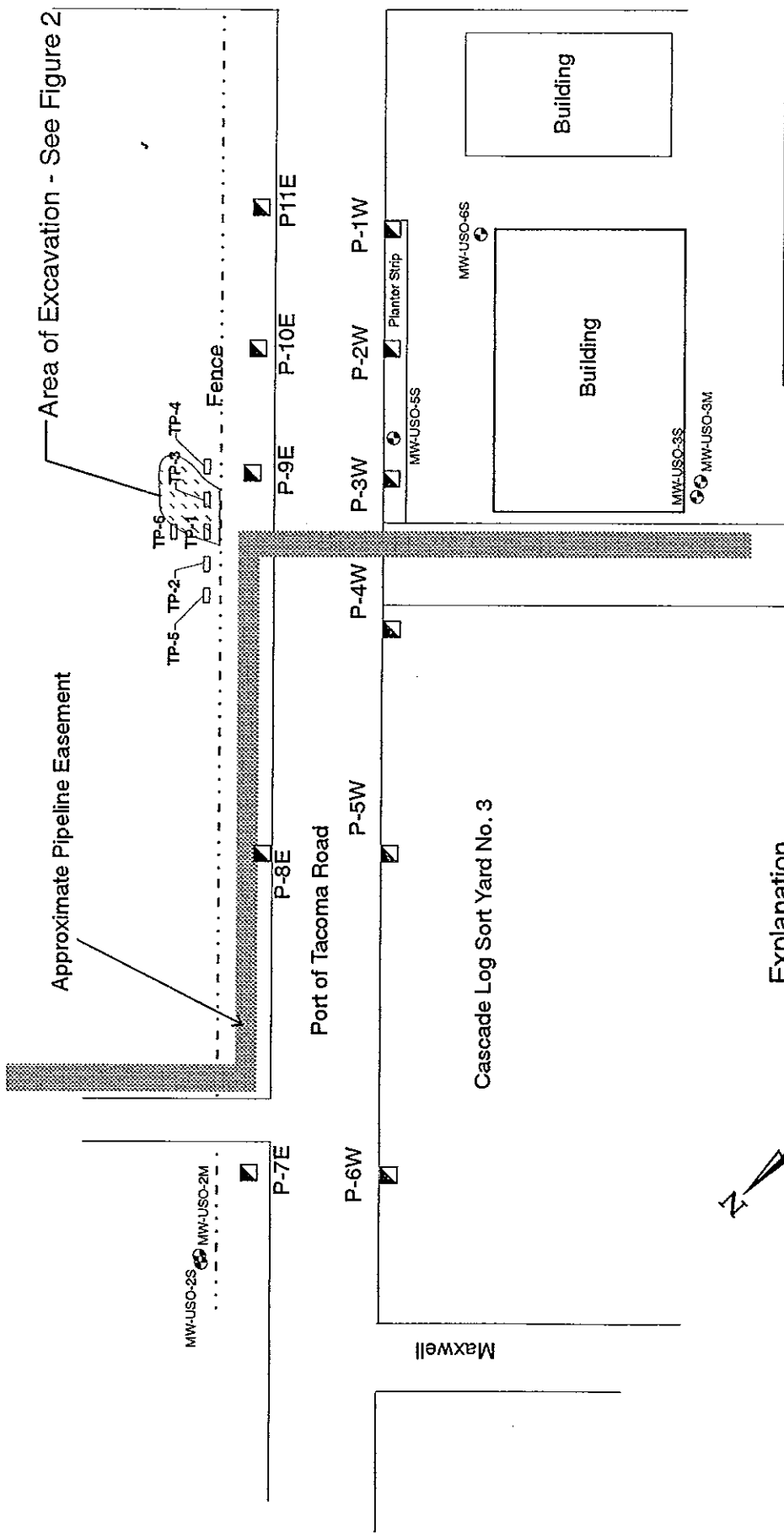
ATTACHMENT A
NORTH CREEK ANALYTICAL
LABORATORY DATA SHEETS

TABLE 1. SUMMARY OF TEST PIT AND CONFIRMATION SOIL SAMPLES AND ANALYTICAL RESULTS

U. S. Oil
Port of Tacoma Property, Tacoma, Washington

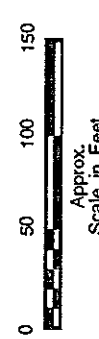
TEST PIT NO.	Spl.No.	Spl Depth (FL) From - To	Date Time	SOIL TYPE	Observed Odor - Sheen	Gasoline-Range Hydrocarbons and BTEX (WTPH-G & EPA 8020A) (mg/kg)					Diesel and Heavy Oil RangeHydrocarbons (WTPH-DX)	
						Gasoline(C-7-C12)	Benzene	Toluene	Ethylbenzene	Xylenes	Diesel (C-12-24)	Heavy Oil (C24-C40)
TP-1	TP-1(0-4')	0-4	7/10/97 082	SAND	Mod - None	<5.0	<0.05	<0.05	<0.05	<0.10	1050	578
	TP-1(4-5')	4-5	0825	SAND	Mod-Light	<5.0	<0.05	<0.05	<0.05	<0.10	47	45
TP-2	TP-2(0-4')	0-4	0840	SAND	None - None	<5.0	<0.05	<0.05	<0.05	<0.10	37	39
TP-3	TP-3(0-4')	0-4	0900	SAND	None - None	<5.0	<0.05	<0.05	<0.05	<0.10	112	93
TP-4	TP-4(0-4')	0-4	0915	SAND	None - None	<5.0	<0.05	<0.05	<0.05	<0.10	<10	<25
TP-5	TP-5(0-4')	0-4	0930	SAND	None - None	<5.0	<0.05	<0.05	<0.05	<0.10	<10	<25
TP-6	TP-6(0-3.5')	0-3.5	0945	SAND	None - None	<5.0	<0.05	<0.05	<0.05	<0.10	<10	<25
C-1	C1	3-5	3/16/98 091	SAND	None - None	NA	NA	NA	NA	NA	13	<25
C-2	C2	3-5	0940		None - None	NA	NA	NA	NA	NA	<10	<25
C-3	C3	3-5	0935		None - None	NA	NA	NA	NA	NA	<10	<25
C-4	C4	3-5	0925		None - None	NA	NA	NA	NA	NA	12	<25
C-5	C5	3-5	0955		None - None	NA	NA	NA	NA	NA	<10	<25
C-6	C6	3-5	1010		None - None	NA	NA	NA	NA	NA	<10	<25
C-7	C6	3-5	1025		None - None	NA	NA	NA	NA	NA	39	<25
C-8	C8	3-5	1040		None - None	NA	NA	NA	NA	NA	<10	<25

NA = Not Analyzed



Explanation

- Existing Monitor Well
- Soil Probe Location (January 1997)
- TP-5 □ Test Pit Location (July 1997)



U.S. Oil & Refining Co.
Tacoma, Washington

Site Location Map

Approx. Extent of Soil Excavation
and Backfill Area

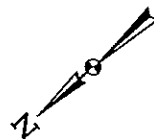
Confirmation Sampling Location
(Typical 8 places)

Previous Test Pit Locations
(Typical 6 places)

Fence

Approx. Location of U.S. Oil Pipeline Easement

Port of Tacoma Road



Approx. Scale in Feet

U.S. Oil & Refining
Port of Tacoma Property

Excavation Area and Confirmation Sampling Locations

USO-010-01 **FIGURE 2** April 1998
Dalton, Olmsted & Fuglevand, Inc.

ATTACHMENT A
NORTH CREEK ANALYTICAL
LABORATORY DATA SHEETS



NORTH CREEK ANALYTICAL

Environmental Laboratory Services

BOTHELL ■ (425) 481-9200 ■ FAX 485-2992
SPOKANE ■ (509) 924-9200 ■ FAX 924-9290
PORTLAND ■ (503) 906-9200 ■ FAX 906-9210

Dalton, Olmsted and Fuglevand
11711 Northcreek Pkwy S, Ste # D101
Bothell, WA 98011

Project: U.S. Oil - Port of Tacoma
Project Number: USO-008
Project Manager: Terry Olmsted

Sampled: 3/16/98
Received: 3/17/98
Reported: 3/23/98 09:45

ANALYTICAL REPORT FOR SAMPLES:

Sample Description	Laboratory Sample Number	Sample Matrix	Date Sampled
C1	B803364-01	Soil	3/16/98
C2	B803364-02	Soil	3/16/98
C3	B803364-03	Soil	3/16/98
C4	B803364-04	Soil	3/16/98
C5	B803364-05	Soil	3/16/98
C6	B803364-06	Soil	3/16/98
C7	B803364-07	Soil	3/16/98
C8	B803364-08	Soil	3/16/98

North Creek Analytical, Inc.

*The results in this report apply to the samples analyzed in accordance with the chain of custody document.
This analytical report must be reproduced in its entirety.*


Matthew Essig, Project Manager

18939 120th Avenue N.E., Suite 101, Bothell, WA 98011-9508
East 11115 Montgomery, Suite B, Spokane, WA 99206-4776
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NORTH CREEK ANALYTICAL

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Dalton, Olmsted and Fuglevand	Project: U.S. Oil - Port of Tacoma	Sampled: 3/16/98
11711 Northcreek Pkwy S, Ste # D101	Project Number: USO-008	Received: 3/17/98
Bothell, WA 98011	Project Manager: Terry Olmsted	Reported: 3/23/98 09:45

Diesel Hydrocarbons (C12-C24) and Heavy Oil (C24-C40) by WTPH-D (extended) with Silica Gel Clean-up North Creek Analytical - Bothell

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
C1				B803364-01			Soil	
Diesel Range Hydrocarbons	0380474	3/18/98	3/20/98		10.0	12.9	mg/kg dry	
Heavy Oil Range Hydrocarbons	"	"	"		25.0	ND	"	
Surrogate: 2-FBP	"	"	"	50.0-150		77.0	%	
C2				B803364-02			Soil	
Diesel Range Hydrocarbons	0380474	3/18/98	3/20/98		10.0	ND	mg/kg dry	
Heavy Oil Range Hydrocarbons	"	"	"		25.0	ND	"	
Surrogate: 2-FBP	"	"	"	50.0-150		78.7	%	
C3				B803364-03			Soil	
Diesel Range Hydrocarbons	0380474	3/18/98	3/20/98		10.0	ND	mg/kg dry	
Heavy Oil Range Hydrocarbons	"	"	"		25.0	ND	"	
Surrogate: 2-FBP	"	"	"	50.0-150		82.7	%	
C4				B803364-04			Soil	
Diesel Range Hydrocarbons	0380474	3/18/98	3/20/98		10.0	12.0	mg/kg dry	
Heavy Oil Range Hydrocarbons	"	"	"		25.0	ND	"	
Surrogate: 2-FBP	"	"	"	50.0-150		79.0	%	
C5				B803364-05			Soil	
Diesel Range Hydrocarbons	0380474	3/18/98	3/20/98		10.0	ND	mg/kg dry	
Heavy Oil Range Hydrocarbons	"	"	"		25.0	ND	"	
Surrogate: 2-FBP	"	"	"	50.0-150		75.4	%	
C6				B803364-06			Soil	
Diesel Range Hydrocarbons	0380474	3/18/98	3/20/98		10.0	ND	mg/kg dry	
Heavy Oil Range Hydrocarbons	"	"	"		25.0	ND	"	
Surrogate: 2-FBP	"	"	"	50.0-150		80.6	%	
C7				B803364-07			Soil	
Diesel Range Hydrocarbons	0380474	3/18/98	3/20/98		10.0	38.5	mg/kg dry	
Heavy Oil Range Hydrocarbons	"	"	"		25.0	ND	"	
Surrogate: 2-FBP	"	"	"	50.0-150		74.6	%	
C8				B803364-08			Soil	
Diesel Range Hydrocarbons	0380474	3/18/98	3/20/98		10.0	ND	mg/kg dry	
Heavy Oil Range Hydrocarbons	"	"	"		25.0	ND	"	
Surrogate: 2-FBP	"	"	"	50.0-150		78.7	%	

North Creek Analytical, Inc.

*Refer to end of report for text of notes and definitions.


Matthew Essig, Project Manager

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Dalton, Olmsted and Fuglevand
11711 Northcreek Pkwy S, Ste # D101
Bothell, WA 98011

Project: U.S. Oil - Port of Tacoma
Project Number: USO-008
Project Manager: Terry Olmsted

Sampled: 3/16/98
Received: 3/17/98
Reported: 3/23/98 09:45

Dry Weight Determination North Creek Analytical - Bothell

Sample Name	Lab ID	Matrix	Result	Units
C1	B803364-01	Soil	77.0	%
C2	B803364-02	Soil	75.6	%
C3	B803364-03	Soil	76.7	%
C4	B803364-04	Soil	77.3	%
C5	B803364-05	Soil	75.4	%
C6	B803364-06	Soil	74.1	%
C7	B803364-07	Soil	77.6	%
C8	B803364-08	Soil	75.5	%

North Creek Analytical, Inc.


Matthew Essig, Project Manager

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Project: U.S. Oil - Port of Tacoma
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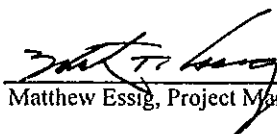
Sampled: 3/16/98
Received: 3/17/98
Reported: 3/23/98 09:45

**Diesel Hydrocarbons (C12-C24) and Heavy Oil (C24-C40) by WTPH-D (extended) with Silica Gel Clean-up/Quality Control
North Creek Analytical - Bothell**

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Reporting Limit Units	Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Batch: 0380474										
Blank										
Date Prepared: 3/18/98										
0380474-BLK1										
Extraction Method: EPA 3550B										
Diesel Range Hydrocarbons	3/20/98			ND	mg/kg dry	10.0				
Heavy Oil Range Hydrocarbons	"			ND	"	25.0				
Surrogate: 2-FBP	"	10.7		6.89	"	50.0-150	64.4			
LCS										
0380474-BS1										
Diesel Range Hydrocarbons	3/20/98	66.7		55.7	mg/kg dry	60.0-120	83.5			
Surrogate: 2-FBP	"	10.7		9.13	"	50.0-150	85.3			
Duplicate										
0380474-DUP1 B803364-07										
Diesel Range Hydrocarbons	3/20/98		38.5	50.9	mg/kg dry			56.0	27.7	
Surrogate: 2-FBP	"	13.8		11.7	"	50.0-150	84.8			

North Creek Analytical, Inc.

*Refer to end of report for text of notes and definitions.


Matthew Essig, Project Manager

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PORTLAND ■ (503) 906-9200 ■ FAX 906-9210

Dalton, Olmsted and Fuglevand	Project: U.S. Oil - Port of Tacoma	Sampled: 3/16/98
11711 Northcreek Pkwy S, Ste # D101	Project Number: USO-008	Received: 3/17/98
Bothell, WA 98011	Project Manager: Terry Olmsted	Reported: 3/23/98 09:45

Notes and Definitions

#	Note
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DET Analyte DETECTED

ND Analyte NOT DETECTED at or above the reporting limit

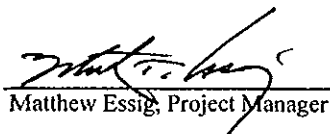
NR Not Reported

dry Sample results reported on a dry weight basis

Recov. Recovery

RPD Relative Percent Difference

North Creek Analytical, Inc.


Matthew Essig, Project Manager

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CHAIN OF CUSTODY REPORT

Work Order #

B803364

[illegible]