



February 28, 2003
Project 9077.15.01

PORTLAND, OREGON
SEATTLE, WASHINGTON
VANCOUVER, WASHINGTON

Dr. Mark Brearley
Unocal RRMC
P.O. Box 399
Edmonds, Washington 98020

Re: Results of Subsurface Soil Investigation Activities, Former Unocal Bulk Fuel Terminal #0082, Chelan, Washington

Dear Mark:

Maul Foster & Alongi, Inc. (MFA) has prepared this report to present the results of the subsurface soil investigation activities that were conducted in January 2003 at the above-referenced site. The purpose of the work was to determine if the remaining petroleum hydrocarbon-impacted soil exceeds the Model Toxics Control Act (MTCA) Method A cleanup levels.

Former Unocal Bulk Fuel Terminal #0082 is located at the intersection of Highway 97 and East Street in Chelan, Washington. The site is approximately 200 feet south of Lake Chelan. The location of the site is shown on Figure 1. The site is bounded to the north by Highway 97 and the Lady of the Lake ferry terminal; to the east and west by private residences; and to the south by a recreational area parking lot.

BACKGROUND

The Department of Ecology (Ecology) prepared a letter to Unocal, dated October 24, 2002, that summarized the results of their Voluntary Cleanup Program (VCP) review of the previous site investigation and remediation reports. The letter stated that residual contaminated soil at the site exceeds the MTCA Method A cleanup levels (Comment #1), and that the 2001 soil excavation activities did not remove the contaminated soil at five locations. The identified locations of the remaining contaminated soil included 1989 test pit TP-1 [at a depth of 11 feet below ground surface (bgs)], 1989 test pit TP-2 (at a depth of 5 feet bgs), 1995 test pit TP-4 (at a depth of 6 feet bgs), 1995 test pit TP-5 (at a depth of 13.5 feet bgs), and 1995 test pit TP-9 (at a depth of 10 feet bgs). The soil excavation and test pit locations are shown on Figure 2.

SOIL INVESTIGATION ACTIVITIES

To determine the current petroleum hydrocarbon concentrations in the remaining impacted soil, the soil investigation work consisted of drilling and sampling five soil borings (GP-1 through GP-5). The borings were advanced at the locations of previous test pits TP-1 (1989), TP-2 (1989), TP-4, TP-5, and TP-9. The soil boring locations are shown on Figure 2.

On January 9, 2003, four soil borings (GP-1 through GP-4) were drilled and sampled at the locations of previous test pits TP-5, TP-4, TP-1 (1989), and TP-2 (1989), respectively. Cascade Drilling, Inc. (Cascade) of Woodinville, Washington conducted the drilling activities under the direction of an MFA geologist. The borings were drilled by using hydraulic push-probe methods ("geoprobe"). Due to snow and loose surface soil conditions in the vicinity of previous test pit TP-9, that location was inaccessible to drilling with a geoprobe. To access the location of TP-9, Cascade mobilized a hollow-stem auger drilling rig to the site. On January 13, 2003, a soil boring (GP-5) was drilled and sampled at the location of previous test pit TP-9. Each soil boring was advanced to a depth of approximately 15 feet bgs, and soil samples were collected on a continuous basis by using a split-spoon sampler. After completion, each boring was abandoned with hydrated bentonite chips. Soil boring logs are attached.

MFA screened each of the soil samples for the presence of petroleum hydrocarbons by using visual appearance, odor, and a photoionization detector (PID). Hydrocarbon-like odors were not detected in any of the samples and the highest PID reading was only 3 parts per million. The soil samples collected from each boring, at the depths of the impacted soil in the previous test pits, were submitted to North Creek Analytical, Inc. (NCA) in Bothell, Washington, for analysis. To assess the soil conditions at the bottoms of 2001 soil excavations #2 and #3, additional soil samples from borings GP-4 and GP-2, respectively, were submitted to NCA for analysis. The soil samples collected from GP-1 at a depth of approximately 13.5 feet bgs (designated GP1-13.5-0103), from GP-2 at depths of approximately 6 and 13 feet bgs (designated GP2-6.0-0103 and GP2-13.0-0103, respectively), from GP-3 at a depth of approximately 11 feet bgs (designated GP3-11.0-0103), from GP-4 at depths of approximately 5 and 11 feet bgs (designated GP4-5.0-0103 and GP4-11.0-0103, respectively), and GP-5 at a depth of approximately 10 feet (designated GP5-10.0-0103) were submitted to NCA for analysis. The samples were analyzed for benzene, toluene, ethylbenzene, and total xylenes (BTEX) by EPA Method 8021B, for total petroleum hydrocarbons (TPH) as gasoline (TPH-G) by Ecology Method NWTPH-Gx, and for TPH as diesel (TPH-D) and TPH as oil (TPH-O) by Ecology Method NWTPH-Dx (after sulfuric acid/silica gel cleanup).

The sample analytical results showed that the samples from borings GP-1, GP-2, GP-3, and GP-5 contained TPH-D concentrations [15.0 to 87.8 milligrams per kilogram (mg/kg)] that were below the MTCA Method A cleanup level¹ (2,000 mg/kg). The samples from boring GP-4 did not contain TPH-D concentrations above the method reporting limit (MRL). The deep soil sample from GP-2 contained a TPH-O concentration (25.9 mg/kg) that was below the Method A cleanup level (2,000 mg/kg). The TPH-O concentrations in all of the other samples were below the MRL. BTEX and TPH-G were not detected at concentrations above the MRLs in any of the samples. The soil sample analytical results are presented in Table 1. Copies of the laboratory reports are attached.

CONCLUSIONS

In January 2003, MFA conducted a subsurface soil investigation at the site to determine if the remaining hydrocarbon-impacted soil exceeds the MTCA Method A cleanup levels. The investigation consisted of drilling and sampling five soil borings at the areas of contamination that were identified by Ecology. Based on the soil sample analytical results, the remaining hydrocarbon-impacted soil at the site does not exceed the Method A cleanup levels. Since the soil beneath the site contains hydrocarbon concentrations below the Method A cleanup levels, a "no further action" status is appropriate for the site.

If you have any questions, please call me at (425) 744-1489.

Sincerely,

Maul Foster & Alongi, Inc.



Michael D. Staton, R.G.
Principal Geologist

¹ Chapter 173-340 WAC, *Model Toxics Control Act Cleanup Regulations; Method A Cleanup Levels*.
Amended February 12, 2001.

Dr. Mark Brearley
February 28, 2003
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Project 9077.15.01

Attachments: Limitations
Table 1
Figures 1 and 2
Soil Boring Logs
Laboratory Reports

LIMITATIONS

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 with our client. 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.

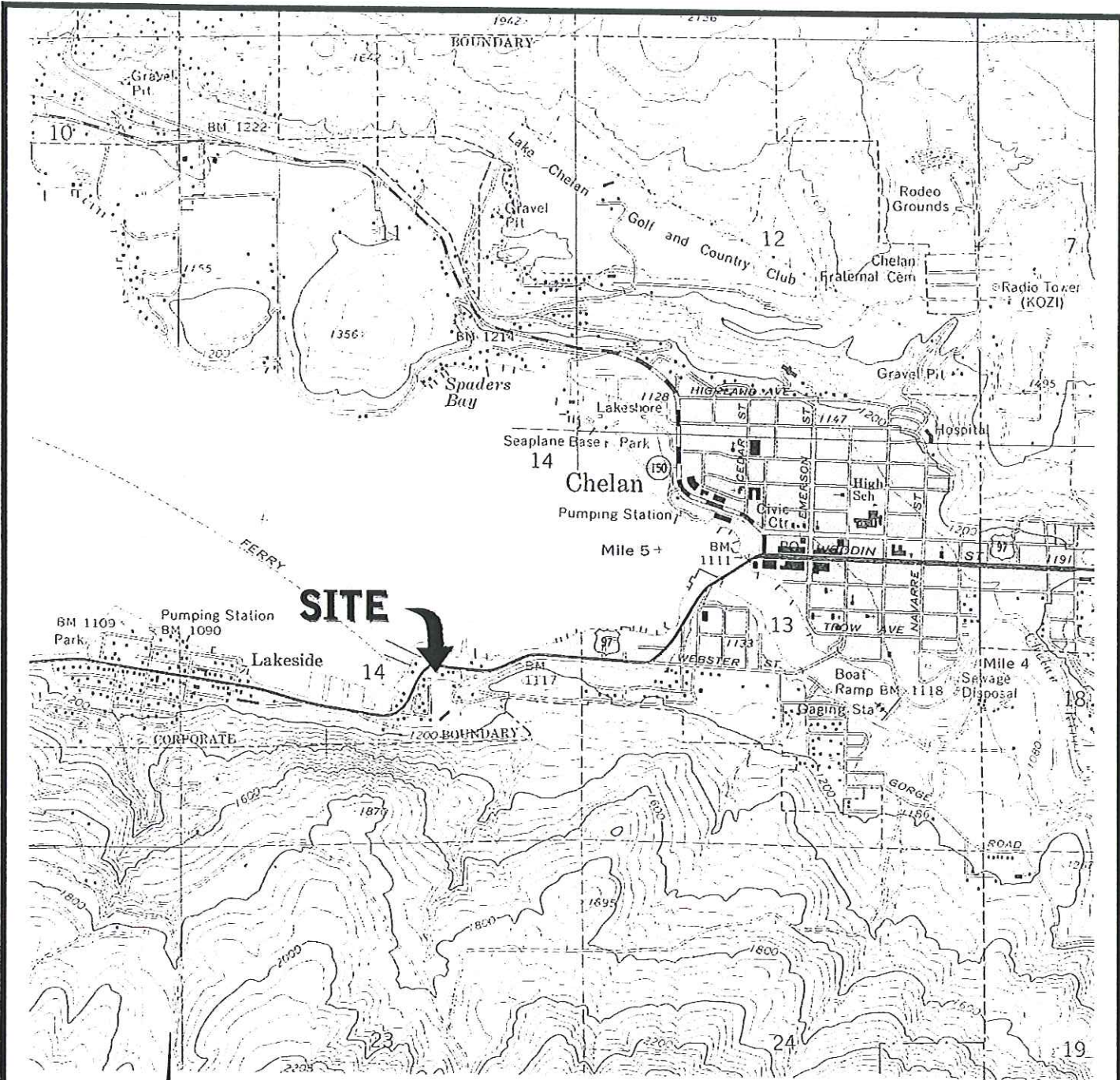
Opinions and recommendations contained in this report apply to conditions existing when services were performed and are intended only for the client, purposes, locations, time frames and project parameters indicated. We are not responsible for the impacts of any changes in environmental standards, practices or regulations subsequent to performance of services. We do not warrant the accuracy of information supplied by others, not the use of segregated portions of this report.

Table 1
Soil Sample Analytical Results
Former Bulk Terminal #0082
Chelan, Washington

Sample Name	Sample Location	Date Sampled	Approximate Sample Depth (feet)	Benzene ^a (mg/kg)	Toluene ^a (mg/kg)	Ethylbenzene ^a (mg/kg)	Xylenes ^a (mg/kg)	TPH-G ^b (mg/kg)	TPH-D ^c (mg/kg)	TPH-O ^c (mg/kg)
MTCA Method A Soil Cleanup Levels ^d										
GP1-13.5-0103 <i>same</i>	GP-1	01/09/03	13.5	<0.03	<0.05	<0.05	<0.1	<5.0	34.4	<25
GP2-6.0-0103 <i>same</i>	GP-2	01/09/03	6.0	<0.03	<0.05	<0.05	<0.1	<5.0	87.8	<25
GP2-13.0-0103 <i>same</i>	GP-2	01/09/03	13.0	<0.03	<0.05	<0.05	<0.1	<5.0	69.0	25.9
GP3-11.0-0103 <i>good</i>	GP-3	01/09/03	11.0	<0.03	<0.05	<0.05	<0.1	<5.0	15.0	<25
GP4-5.0-0103 <i>same</i>	GP-4	01/09/03	5.0	<0.03	<0.05	<0.05	<0.1	<5.0	<10	<25
GP4-11.0-0103 <i>good</i>	GP-4	01/09/03	11.0	<0.03	<0.05	<0.05	<0.1	<5.0	<10	<25
GP5-10.0-0103 <i>same</i>	GP-5	01/13/03	10.0	<0.03	<0.05	<0.05	<0.1	<5.0	46.6	<25

NOTES:
mg/kg = milligrams per kilogram.
^a Benzene, toluene, ethylbenzene, and total xylenes (BTX) by EPA Method 8021B.
^b TPH as gasoline (TPH-G) by Ecology Method NWTPH-Gx.
^c TPH as diesel and as oil (TPH-D and TPH-O, respectively) by Ecology Method NWTPH-Dx (after sulfuric acid/silica gel cleanup).
^d Chapter 173-340 WAC, "Model Toxics Control Act Cleanup Regulation; Method A Cleanup Levels." Amended February 12, 2001.

1
3
3
3
2
2
2



Base map prepared from USGS 7.5-minute quadrangle of Chelan, Washington (1987).

File: P:\9077.15.01\Site Location Map Last edited: 02/26/02 by: alaren

17171 Bothell Way NE, #264
Seattle, Washington 98155

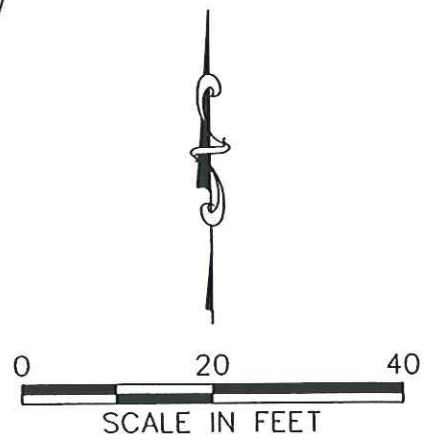
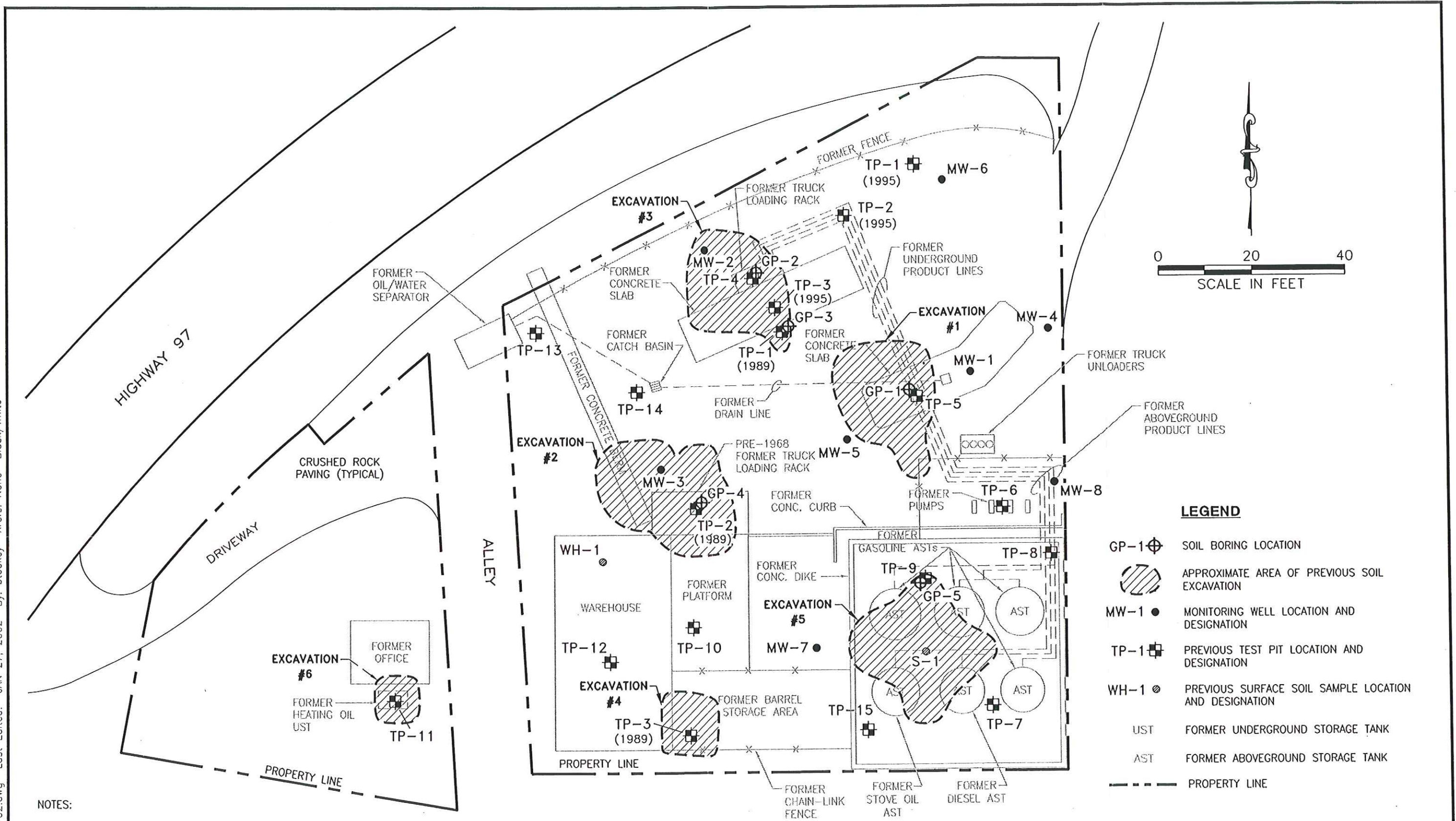
425.744.1489 P
425.744.0919 F

MAUL FOSTER ALONGI
ENVIRONMENTAL & ENGINEERING CONSULTANTS

DATE	02/02
DWN.	AL
APPR.	CL
REVIS.	
PROJECT NO.	9077.15.01

Figure 1
FORMER UNOCAL BULK FUEL
TERMINAL #0082
CHELAN, WASHINGTON
SITE LOCATION MAP

File: \\9077\15.01\009-02.dwg Last Edited: JAN 27, 2002 By: btookey Xrefs: None Black/White



LEGEND

- GP-1 ⊕ SOIL BORING LOCATION
- ⊗ APPROXIMATE AREA OF PREVIOUS SOIL EXCAVATION
- MW-1 ● MONITORING WELL LOCATION AND DESIGNATION
- TP-1 ⊕ PREVIOUS TEST PIT LOCATION AND DESIGNATION
- WH-1 ⊙ PREVIOUS SURFACE SOIL SAMPLE LOCATION AND DESIGNATION
- UST FORMER UNDERGROUND STORAGE TANK
- AST FORMER ABOVEGROUND STORAGE TANK
- PROPERTY LINE

NOTES:

1. THE LOCATIONS OF ALL FORMER SITE FEATURES ARE APPROXIMATE.
2. ALL FACILITIES WERE DEMOLISHED AND REMOVED IN NOVEMBER 1992.

BASE MAP REFERENCE: DRAWING ENTITLED "FORMER SITE FACILITIES AND EXPLORATIONS", BY GEOENGINEERS, DATED MAY 7, 1998.

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MAUL FOSTER ALONGI

DATE	11/02
DWN.	BDT
APPR.	<i>[Signature]</i>
REVIS.	
PROJECT NO.	9077.15.01

FIGURE 2
FORMER UNOCAL BULK FUEL TERMINAL #0082
CHELAN, WASHINGTON

SOIL BORING LOCATIONS

SOIL BORING LOGS

Maul Foster & Alongi, Inc.

Geologic Borehole Log/Well Construction

Project Number
9077.15.01

Well Number
GP-1

Sheet
1 of 1

Project Name **Former Unocal Bulk Fuel Terminal #0082**
 Project Location **Chelan, Washington**
 Start/End Date **1/9/03 to 1/9/03**
 Driller/Equipment **Cascade Drilling, Inc./Geoprobe**
 Geologist/Engineer **G. Sandberg**
 Sample Method **Split-spoon**

TOC Elevation (feet above MSL)
 Surface Elevation (feet above MSL)
 Northing
 Easting
 Hole Depth **15.0-feet**
 Outer Hole Diam **2-inch**

Depth (feet, BGS)	Well Details	Sample Data				PID (ppm)	Lithologic Column	Soil Description	
		Interval	Percent Recovery	Blow Counts	Type				
1			35%		SS	0		0 to 15.0 feet: GRAVELLY SAND (SP); medium orange brown; fine to medium; little medium to coarse gravel; damp; no hydrocarbon-like odors. @ 5.0 feet: few fine to medium gravel.	
2									
3									
4									
5				30%		SS			0
6									
7									
8				25%		SS			0
9									
10									
11				15%		SS			0
12									
13									
14				25%		SS			0
15									0

@ 15.0 feet: wet.
 Total Depth Drilled = 15.0 feet.
 Total Depth Sampled = 15.0 feet.

- NOTES:** (1) SS = 2-inch O.D. split-spoon sampler pushed 3 feet into undisturbed soil.
 (2) * = Sample submitted for laboratory analysis.
 (3) PID readings are in parts per million (ppm).
 (4) Boring backfilled with hydrated bentonite chips.

Water level at time of drilling.

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Maul Foster & Alongi, Inc.

Geologic Borehole Log/Well Construction

Project Number
9077.15.01

Well Number
GP-2

Sheet
1 of 1

Project Name **Former Unocal Bulk Fuel Terminal #0082**
 Project Location **Chelan, Washington**
 Start/End Date **1/9/03 to 1/9/03**
 Driller/Equipment **Cascade Drilling, Inc./Geoprobe**
 Geologist/Engineer **G. Sandberg**
 Sample Method **Split-spoon**

TOC Elevation (feet above MSL)
 Surface Elevation (feet above MSL)
 Northing
 Easting
 Hole Depth **15.0-feet**
 Outer Hole Diam **2-inch**

Depth (feet, BGS)	Well Details	Sample Data					Lithologic Column	Soil Description
		Interval	Percent Recovery	Blow Counts	Type	Name		
1								0 to 15.0 feet: GRAVELLY SAND (SP); light brown; fine to medium sand; little fine to medium gravel; damp; no hydrocarbon-like odors.
2			30%		SS		0	
3								
4			25%		SS		0	
5								@ 4.5 feet: granite cobble.
6						GP2-6.0-0103*		
7								
8			45%		SS		0	
9								@ 9.0 feet: fine to coarse sand.
10								
11			50%		SS		0	
12								
13								
14			40%		SS	GP2-13.0-0103*	0	
15								@ 15.0 feet: wet.

Total Depth Drilled = 15.0 feet.
 Total Depth Sampled = 15.0 feet.

- NOTES:** (1) SS = 2-inch O.D. split-spoon sampler pushed 3 feet into undisturbed soil.
 (2) * = Sample submitted for laboratory analysis.
 (3) PID readings are in parts per million (ppm).
 (4) Boring backfilled with hydrated bentonite chips.

Water level at time of drilling.

Maul Foster & Alongi, Inc.		Geologic Borehole Log/Well Construction							
		Project Number 9077.15.01	Well Number GP-3	Sheet 1 of 1					
Project Name		Former Unocal Bulk Fuel Terminal #0082		TOC Elevation (feet above MSL)					
Project Location		Chelan, Washington		Surface Elevation (feet above MSL)					
Start/End Date		1/9/03 to 1/9/03		Northing					
Driller/Equipment		Cascade Drilling, Inc./Geoprobe		Easting					
Geologist/Engineer		G. Sandberg		Hole Depth 15.0-feet					
Sample Method		Split-spoon		Outer Hole Diam 2-inch					
Depth (feet, BGS)	Well Details	Sample Data				PID (ppm)	Lithologic Column	Soil Description	
		Interval	Percent Recovery	Blow Counts	Type				Name
1			25%		SS			0 to 6.0 feet: SAND (SW); light brown; fine to coarse; trace fine to medium gravel; damp; no hydrocarbon-like odors.	
2						0			
3									
4									
5				0%		SS		0	
6									
7									
8				16%		SS		0	6.0 to 15.0 feet: GRAVELLY SAND (SP); light brown; fine to medium; little medium to coarse gravel; damp; no hydrocarbon-like odors.
9									@ 8.0 feet: granite cobbles.
10									
11				35%		SS		0	
12									
13									
14				5%		SS		0	
15									

Total Depth Drilled = 15.0 feet.
Total Depth Sampled = 15.0 feet.

- NOTES:** (1) SS = 2-inch O.D. split-spoon sampler pushed 3 feet into undisturbed soil.
(2) * = Sample submitted for laboratory analysis.
(3) PID readings are in parts per million (ppm).
(4) Boring backfilled with hydrated bentonite chips.

Maul Foster & Alongi, Inc.	Geologic Borehole Log/Well Construction		
	Project Number 9077.15.01	Well Number GP-4	Sheet 1 of 1

Project Name	Former Unocal Bulk Fuel Terminal #0082	TOC Elevation (feet above MSL)	
Project Location	Chelan, Washington	Surface Elevation (feet above MSL)	
Start/End Date	1/9/03 to 1/9/03	Northing	
Driller/Equipment	Cascade Drilling, Inc./Geoprobe	Easting	
Geologist/Engineer	G. Sandberg	Hole Depth	15.0-feet
Sample Method	Split-spoon	Outer Hole Diam	2-inch

Depth (feet, BGS)	Well Details	Sample Data				PID (ppm)	Lithologic Column	Soil Description	
		Interval	Percent Recovery	Blow Counts	Type				Name
1					SS			0 to 4.0 feet: SAND (SP); light brown; fine to medium; trace fine gravel; damp; no hydrocarbon-like odors.	
2			60%		SS	0			
3									
4				35%		SS	0		4.0 to 15.0 feet: GRAVELLY SAND (SW); light orange brown; fine to coarse; little fine gravel; damp; no hydrocarbon-like odors.
5									
6						GP4-5.0-0103*			
7									
8				0%		SS	0		@ 9.0 feet: granite cobbles.
9									
10									
11				60%		SS	0		@ 12.0 feet: dark brown.
12						GP4-11.0-0103*			
13							0		
14				80%		SS	2		
15							0		@ 15.0 feet: wet.

Total Depth Drilled = 15.0 feet.
Total Depth Sampled = 15.0 feet.

NOTES: (1) SS = 2-inch O.D. split-spoon sampler pushed 3 feet into undisturbed soil.
 (2) * = Sample submitted for laboratory analysis.
 (3) PID readings are in parts per million (ppm).
 (4) Boring backfilled with hydrated bentonite chips.

▽ Water level at time of drilling.

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Maul Foster & Alongi, Inc. **Geologic Borehole Log/Well Construction**

Project Number: **9077.15.01** Well Number: **GP-5** Sheet: **1 of 1**

Project Name: Former Unocal Bulk Fuel Terminal #0082	TOC Elevation (feet above MSL)
Project Location: Chelan, Washington	Surface Elevation (feet above MSL)
Start/End Date: 1/15/03 to 1/15/03	Northing
Driller/Equipment: Cascade Drilling, Inc./Geoprobe	Easting
Geologist/Engineer: E. Silver	Hole Depth: 15.0-feet
Sample Method: Split-spoon	Outer Hole Diam: 9-inch

Depth (feet, BGS)	Well Details	Interval	Percent Recovery	Blow Counts	Type	Name	PID (ppm)	Lithologic Column	Soil Description
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1	Well Details	0	50%	50/6	SS		0	Lithologic Column	0 to 3.5 feet: SAND (SP); medium brown; medium to coarse; few fine to medium gravel; damp; dense; no hydrocarbon-like odors.		
2				18							
3		65%	22	23	SS		0				
4			10	9	8	SS		0	Lithologic Column	3.5 to 15.0 feet: GRAVELLY SAND (SW); medium brown; medium grained; little fine gravel; medium dense to dense; damp; no hydrocarbon-like odors.	
5		100%	5	6	SS		0				
6		50%	8	8	SS		0				
7			6	9	8	SS		0			
8		33%	21	22	SS		0				
9		33%	10	10	SS		0				
10		60%	10	10	SS	GP5-10.0-0103*	0				
11			10	27	14		SS	0			
12		50%	12	6	11		SS	0			
13			25%	8	10	SS		0		Lithologic Column	@ 13.5 feet: wet.
14		38%	16				0				
15							0				

Total Depth Drilled = 15.0 feet.
Total Depth Sampled = 15.0 feet.

NOTES: (1) SS = 2-inch O.D. split-spoon sampler pushed 3 feet into undisturbed soil.
 (2) * = Sample submitted for laboratory analysis.
 (3) PID readings are in parts per million (ppm).
 (4) Boring backfilled with hydrated bentonite chips.

▽ Water level at time of drilling.

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LABORATORY REPORTS



Seattle 11720 North Creek Pkwy N, Suite 400, Bothell, WA 98011-8244
425.420.9200 fax 425.420.9210
Spokane East 11115 Montgomery, Suite B, Spokane, WA 99206-4776
509.924.9200 fax 509.924.9290
Portland 9405 SW Nimbus Avenue, Beaverton, OR 97008-7132
503.906.9200 fax 503.906.9210
Bend 20332 Empire Avenue, Suite F-1, Bend, OR 97701-5711
541.383.9310 fax 541.382.7588
Anchorage 3209 Denali Street, Anchorage, AK 99503
907.334.9338 fax 907.334.9339

Maul Foster & Alongi-Seattle
17171 Bothell Way NE #264
Seattle WA/USA, 98155

Project: Former Bulk Terminal #0082
Project Number: 9077.15.01
Project Manager: Carol Lybeer

Reported:
01/22/03 16:57

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
GP1-13.5-0103	B3A0186-01	Soil	01/09/03 10:35	01/10/03 16:00
GP2-6.0-0103	B3A0186-02	Soil	01/09/03 11:15	01/10/03 16:00
GP2-13.0-0103	B3A0186-03	Soil	01/09/03 11:35	01/10/03 16:00
GP3-11.0-0103	B3A0186-04	Soil	01/09/03 12:25	01/10/03 16:00
GP4-5.0-0103	B3A0186-05	Soil	01/09/03 13:55	01/10/03 16:00
GP4-11.0-0103	B3A0186-06	Soil	01/09/03 14:05	01/10/03 16:00

North Creek Analytical - Bothell

Jeff Gerdes, Project Manager

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.

North Creek Analytical, Inc.
Environmental Laboratory Network



Seattle 11720 North Creek Pkwy N, Suite 400, Bothell, WA 98011-8244
 425.420.9200 fax 425.420.9210
Spokane East 11115 Montgomery, Suite B, Spokane, WA 99206-4776
 509.924.9200 fax 509.924.9290
Portland 9405 SW Nimbus Avenue, Beaverton, OR 97008-7132
 503.906.9200 fax 503.906.9210
Bend 20332 Empire Avenue, Suite F-1, Bend, OR 97701-5711
 541.383.9310 fax 541.382.7588
Anchorage 3209 Denali Street, Anchorage, AK 99503
 907.334.9338 fax 907.334.9339

Maul Foster & Alongi-Seattle
 17171 Bothell Way NE #264
 Seattle WA/USA, 98155

Project: Former Bulk Terminal #0082
 Project Number: 9077.15.01
 Project Manager: Carol Lybeer

Reported:
 01/22/03 16:57

Volatile Petroleum Products and BTEX by NWTPH-Gx and EPA 8021B
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
GP1-13.5-0103 (B3A0186-01) Soil Sampled: 01/09/03 10:35 Received: 01/10/03 16:00									
Gasoline Range Hydrocarbons	ND	5.00	mg/kg dry	1	3A21001	01/21/03	01/21/03	NWTPH-Gx/8021B	
Benzene	ND	0.0300	"	"	"	"	"	"	
Toluene	ND	0.0500	"	"	"	"	"	"	
Ethylbenzene	ND	0.0500	"	"	"	"	"	"	
Xylenes (total)	ND	0.100	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	93.3 %	59-125			"	"	"	"	
Surrogate: 4-BFB (PID)	91.1 %	64-125			"	"	"	"	
GP2-6.0-0103 (B3A0186-02) Soil Sampled: 01/09/03 11:15 Received: 01/10/03 16:00									
Gasoline Range Hydrocarbons	ND	5.00	mg/kg dry	1	3A21001	01/21/03	01/21/03	NWTPH-Gx/8021B	
Benzene	ND	0.0300	"	"	"	"	"	"	
Toluene	ND	0.0500	"	"	"	"	"	"	
Ethylbenzene	ND	0.0500	"	"	"	"	"	"	
Xylenes (total)	ND	0.100	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	90.6 %	59-125			"	"	"	"	
Surrogate: 4-BFB (PID)	92.7 %	64-125			"	"	"	"	
GP2-13.0-0103 (B3A0186-03) Soil Sampled: 01/09/03 11:35 Received: 01/10/03 16:00									
Gasoline Range Hydrocarbons	ND	5.00	mg/kg dry	1	3A21001	01/21/03	01/21/03	NWTPH-Gx/8021B	
Benzene	ND	0.0300	"	"	"	"	"	"	
Toluene	ND	0.0500	"	"	"	"	"	"	
Ethylbenzene	ND	0.0500	"	"	"	"	"	"	
Xylenes (total)	ND	0.100	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	86.6 %	59-125			"	"	"	"	
Surrogate: 4-BFB (PID)	91.2 %	64-125			"	"	"	"	

North Creek Analytical - Bothell

Jeff Gerdes, Project Manager

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Maul Foster & Alongi-Seattle
 17171 Bothell Way NE #264
 Seattle WA/USA, 98155

Project: Former Bulk Terminal #0082
 Project Number: 9077.15.01
 Project Manager: Carol Lybeer

Reported:
 01/22/03 16:57

Volatile Petroleum Products and BTEX by NWTPH-Gx and EPA 8021B
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
GP3-11.0-0103 (B3A0186-04) Soil Sampled: 01/09/03 12:25 Received: 01/10/03 16:00									
Gasoline Range Hydrocarbons	ND	5.00	mg/kg dry	1	3A21001	01/21/03	01/21/03	NWTPH-Gx/8021B	
Benzene	ND	0.0300	"	"	"	"	"	"	
Toluene	ND	0.0500	"	"	"	"	"	"	
Ethylbenzene	ND	0.0500	"	"	"	"	"	"	
Xylenes (total)	ND	0.100	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	90.2 %	59-125							
Surrogate: 4-BFB (PID)	93.7 %	64-125							
GP4-5.0-0103 (B3A0186-05) Soil Sampled: 01/09/03 13:55 Received: 01/10/03 16:00									
Gasoline Range Hydrocarbons	ND	5.00	mg/kg dry	1	3A21001	01/21/03	01/21/03	NWTPH-Gx/8021B	
Benzene	ND	0.0300	"	"	"	"	"	"	
Toluene	ND	0.0500	"	"	"	"	"	"	
Ethylbenzene	ND	0.0500	"	"	"	"	"	"	
Xylenes (total)	ND	0.100	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	88.4 %	59-125							
Surrogate: 4-BFB (PID)	91.7 %	64-125							
GP4-11.0-0103 (B3A0186-06) Soil Sampled: 01/09/03 14:05 Received: 01/10/03 16:00									
Gasoline Range Hydrocarbons	ND	5.00	mg/kg dry	1	3A21001	01/21/03	01/21/03	NWTPH-Gx/8021B	
Benzene	ND	0.0300	"	"	"	"	"	"	
Toluene	ND	0.0500	"	"	"	"	"	"	
Ethylbenzene	ND	0.0500	"	"	"	"	"	"	
Xylenes (total)	ND	0.100	"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	80.8 %	59-125							
Surrogate: 4-BFB (PID)	90.8 %	64-125							

North Creek Analytical - Bothell

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Maul Foster & Alongi-Seattle 17171 Bothell Way NE #264 Seattle WA/USA, 98155	Project: Former Bulk Terminal #0082 Project Number: 9077.15.01 Project Manager: Carol Lybeer	Reported: 01/22/03 16:57
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Semivolatile Petroleum Products by NWTPH-Dx with Acid/Silica Gel Clean-up
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
GP1-13.5-0103 (B3A0186-01) Soil Sampled: 01/09/03 10:35 Received: 01/10/03 16:00									
Diesel Range Hydrocarbons	34.4	10.0	mg/kg dry	1	3A14018	01/14/03	01/16/03	NWTPH-Dx	
Lube Oil Range Hydrocarbons	ND	25.0	"	"	"	"	"	"	
Surrogate: 2-FBP	63.4 %	50-150			"	"	"	"	
Surrogate: Octacosane	85.5 %	50-150			"	"	"	"	
GP2-6.0-0103 (B3A0186-02) Soil Sampled: 01/09/03 11:15 Received: 01/10/03 16:00									
Diesel Range Hydrocarbons	87.8	10.0	mg/kg dry	1	3A14018	01/14/03	01/16/03	NWTPH-Dx	
Lube Oil Range Hydrocarbons	ND	25.0	"	"	"	"	"	"	
Surrogate: 2-FBP	54.9 %	50-150			"	"	"	"	
Surrogate: Octacosane	86.8 %	50-150			"	"	"	"	
GP2-13.0-0103 (B3A0186-03) Soil Sampled: 01/09/03 11:35 Received: 01/10/03 16:00									
Diesel Range Hydrocarbons	69.0	10.0	mg/kg dry	1	3A14018	01/14/03	01/16/03	NWTPH-Dx	
Lube Oil Range Hydrocarbons	25.9	25.0	"	"	"	"	"	"	
Surrogate: 2-FBP	56.2 %	50-150			"	"	"	"	
Surrogate: Octacosane	82.4 %	50-150			"	"	"	"	
GP3-11.0-0103 (B3A0186-04) Soil Sampled: 01/09/03 12:25 Received: 01/10/03 16:00									
Diesel Range Hydrocarbons	15.0	10.0	mg/kg dry	1	3A14018	01/14/03	01/16/03	NWTPH-Dx	
Lube Oil Range Hydrocarbons	ND	25.0	"	"	"	"	"	"	
Surrogate: 2-FBP	67.7 %	50-150			"	"	"	"	
Surrogate: Octacosane	79.5 %	50-150			"	"	"	"	
GP4-5.0-0103 (B3A0186-05) Soil Sampled: 01/09/03 13:55 Received: 01/10/03 16:00									
Diesel Range Hydrocarbons	ND	10.0	mg/kg dry	1	3A14018	01/14/03	01/16/03	NWTPH-Dx	
Lube Oil Range Hydrocarbons	ND	25.0	"	"	"	"	"	"	
Surrogate: 2-FBP	59.8 %	50-150			"	"	"	"	
Surrogate: Octacosane	80.1 %	50-150			"	"	"	"	

North Creek Analytical - Bothell

Jeff Gerdes, Project Manager

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Maul Foster & Alongi-Seattle
 17171 Bothell Way NE #264
 Seattle WA/USA, 98155

Project: Former Bulk Terminal #0082
 Project Number: 9077.15.01
 Project Manager: Carol Lybeer

Reported:
 01/22/03 16:57

Semivolatile Petroleum Products by NWTPH-Dx with Acid/Silica Gel Clean-up
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
GP4-11.0-0103 (B3A0186-06) Soil Sampled: 01/09/03 14:05 Received: 01/10/03 16:00									
Diesel Range Hydrocarbons	ND	10.0	mg/kg dry	1	3A14018	01/14/03	01/16/03	NWTPH-Dx	
Lube Oil Range Hydrocarbons	ND	25.0	"	"	"	"	"	"	
<i>Surrogate: 2-FBP</i>	66.0 %	50-150			"	"	"	"	
<i>Surrogate: Octacosane</i>	86.2 %	50-150			"	"	"	"	

North Creek Analytical - Bothell

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Maul Foster & Alongi-Seattle
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 Seattle WA/USA, 98155

Project: Former Bulk Terminal #0082
 Project Number: 9077.15.01
 Project Manager: Carol Lybeer

Reported:
 01/22/03 16:57

**Physical Parameters by APHA/ASTM/EPA Methods
 North Creek Analytical - Bothell**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
GP1-13.5-0103 (B3A0186-01) Soil Sampled: 01/09/03 10:35 Received: 01/10/03 16:00									
Dry Weight	96.2	1.00	%	1	3A13014	01/13/03	01/14/03	BSOPSP003R07	
GP2-6.0-0103 (B3A0186-02) Soil Sampled: 01/09/03 11:15 Received: 01/10/03 16:00									
Dry Weight	93.9	1.00	%	1	3A13014	01/13/03	01/14/03	BSOPSP003R07	
GP2-13.0-0103 (B3A0186-03) Soil Sampled: 01/09/03 11:35 Received: 01/10/03 16:00									
Dry Weight	92.6	1.00	%	1	3A13014	01/13/03	01/14/03	BSOPSP003R07	
GP3-11.0-0103 (B3A0186-04) Soil Sampled: 01/09/03 12:25 Received: 01/10/03 16:00									
Dry Weight	93.5	1.00	%	1	3A13014	01/13/03	01/14/03	BSOPSP003R07	
GP4-5.0-0103 (B3A0186-05) Soil Sampled: 01/09/03 13:55 Received: 01/10/03 16:00									
Dry Weight	95.0	1.00	%	1	3A13014	01/13/03	01/14/03	BSOPSP003R07	
GP4-11.0-0103 (B3A0186-06) Soil Sampled: 01/09/03 14:05 Received: 01/10/03 16:00									
Dry Weight	94.8	1.00	%	1	3A13014	01/13/03	01/14/03	BSOPSP003R07	

North Creek Analytical - Bothell

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Project: Former Bulk Terminal #0082
 Project Number: 9077.15.01
 Project Manager: Carol Lybeer

Reported:
 01/22/03 16:57

Volatile Petroleum Products and BTEX by NWTPH-Gx and EPA 8021B - Quality Control
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 3A21001: Prepared 01/21/03 Using EPA 5030B (P/T)

Blank (3A21001-BLK1)

Gasoline Range Hydrocarbons	ND	5.00	mg/kg							
Benzene	ND	0.0300	"							
Toluene	ND	0.0500	"							
Ethylbenzene	ND	0.0500	"							
Xylenes (total)	ND	0.100	"							
Surrogate: 4-BFB (FID)	3.70		"	4.00		92.5	59-125			
Surrogate: 4-BFB (PID)	3.71		"	4.00		92.8	64-125			

LCS (3A21001-BS1)

Gasoline Range Hydrocarbons	24.2	5.00	mg/kg	27.5		88.0	80-120			
Benzene	0.327	0.0300	"	0.365		89.6	80-120			
Toluene	1.77	0.0500	"	2.03		87.2	80-120			
Ethylbenzene	0.454	0.0500	"	0.470		96.6	80-120			
Xylenes (total)	2.14	0.100	"	2.36		90.7	80-120			
Surrogate: 4-BFB (FID)	3.82		"	4.00		95.5	59-125			
Surrogate: 4-BFB (PID)	3.69		"	4.00		92.2	64-125			

LCS Dup (3A21001-BSD1)

Gasoline Range Hydrocarbons	26.2	5.00	mg/kg	27.5		95.3	80-120	7.94	40	
Benzene	0.345	0.0300	"	0.365		94.5	80-120	5.36	40	
Toluene	1.88	0.0500	"	2.03		92.6	80-120	6.03	40	
Ethylbenzene	0.483	0.0500	"	0.470		103	80-120	6.19	40	
Xylenes (total)	2.28	0.100	"	2.36		96.6	80-120	6.33	40	
Surrogate: 4-BFB (FID)	3.96		"	4.00		99.0	59-125			
Surrogate: 4-BFB (PID)	3.69		"	4.00		92.2	64-125			

Matrix Spike (3A21001-MS1)

Source: B3A0186-01

Gasoline Range Hydrocarbons	23.7	5.00	mg/kg dry	28.6	0.448	81.3	53-120			
Benzene	0.348	0.0300	"	0.379	0.00533	90.4	71-119			
Toluene	1.90	0.0500	"	2.11	0.0109	89.5	57-108			
Ethylbenzene	0.484	0.0500	"	0.489	ND	99.0	72-114			
Xylenes (total)	2.27	0.100	"	2.46	0.0260	91.2	68-112			
Surrogate: 4-BFB (FID)	3.55		"	4.16		85.3	59-125			
Surrogate: 4-BFB (PID)	3.70		"	4.16		88.9	64-125			

North Creek Analytical - Bothell

Jeff Gerdes, Project Manager

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Maul Foster & Alongi-Seattle
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 Seattle WA/USA, 98155

Project: Former Bulk Terminal #0082
 Project Number: 9077.15.01
 Project Manager: Carol Lybeer

Reported:
 01/22/03 16:57

Volatile Petroleum Products and BTEX by NWTPH-Gx and EPA 8021B - Quality Control
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 3A21001: Prepared 01/21/03 Using EPA 5030B (P/T)

Matrix Spike Dup (3A21001-MSD1)

Source: B3A0186-01

Gasoline Range Hydrocarbons	25.9	5.00	mg/kg dry	28.6	0.448	89.0	53-120	8.87	40	
Benzene	0.342	0.0300	"	0.379	0.00533	88.8	71-119	1.74	40	
Toluene	1.87	0.0500	"	2.11	0.0109	88.1	57-108	1.59	40	
Ethylbenzene	0.476	0.0500	"	0.489	ND	97.3	72-114	1.67	40	
Xylenes (total)	2.25	0.100	"	2.46	0.0260	90.4	68-112	0.885	40	
Surrogate: 4-BFB (FID)	3.94		"	4.16		94.7	59-125			
Surrogate: 4-BFB (PID)	3.68		"	4.16		88.5	64-125			

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Reported:
 01/22/03 16:57

Semivolatile Petroleum Products by NWTPH-Dx with Acid/Silica Gel Clean-up - Quality Control
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 3A14018: Prepared 01/14/03 Using EPA 3550B

Blank (3A14018-BLK1)

Diesel Range Hydrocarbons	ND	10.0	mg/kg							
Lube Oil Range Hydrocarbons	ND	25.0	"							
Surrogate: 2-FBP	6.87		"	10.7		64.2	50-150			
Surrogate: Octacosane	8.26		"	10.7		77.2	50-150			

LCS (3A14018-BS1)

Diesel Range Hydrocarbons	55.0	10.0	mg/kg	66.7		82.5	59-109			
Surrogate: 2-FBP	8.18		"	10.7		76.4	50-150			

LCS Dup (3A14018-BSD1)

Diesel Range Hydrocarbons	56.0	10.0	mg/kg	66.7		84.0	59-109	1.80	50	
Surrogate: 2-FBP	8.39		"	10.7		78.4	50-150			

Duplicate (3A14018-DUP1)

Source: B3A0186-02

Diesel Range Hydrocarbons	129	10.0	mg/kg dry		87.8			38.0	50	
Lube Oil Range Hydrocarbons	ND	25.0	"		12.5			18.8	50	
Surrogate: 2-FBP	7.39		"	11.3		65.4	50-150			
Surrogate: Octacosane	8.98		"	11.3		79.5	50-150			

North Creek Analytical - Bothell

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Maul Foster & Alongi-Seattle 17171 Bothell Way NE #264 Seattle WA/USA, 98155	Project: Former Bulk Terminal #0082 Project Number: 9077.15.01 Project Manager: Carol Lybeer	Reported: 01/22/03 16:57
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Physical Parameters by APHA/ASTM/EPA Methods - Quality Control
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 3A13014: Prepared 01/13/03 Using Dry Weight

Blank (3A13014-BLK1)

Dry Weight	100	1.00	%							
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17171 Bothell Way NE #264
Seattle WA/USA, 98155

Project: Former Bulk Terminal #0082
Project Number: 9077.15.01
Project Manager: Carol Lybeer

Reported:
01/22/03 16:57

Notes and Definitions

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
RPD Relative Percent Difference

North Creek Analytical - Bothell

Jeff Gerdes, Project Manager

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 17171 Bothell Way NE #264
 Seattle WA/USA, 98155

Project: Former Bulk Terminal #0086
 Project Number: 9077.15.01
 Project Manager: Mike Staton

Reported:
 01/21/03 14:03

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
GP5-10.0-0103	B3A0249-01	Soil	01/13/03 12:05	01/14/03 10:55

North Creek Analytical - Bothell

Jeff Gerdes, Project Manager

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North Creek Analytical, Inc.
Environmental Laboratory Network



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Maul Foster & Alongi-Seattle
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Project: Former Bulk Terminal #0086
 Project Number: 9077.15.01
 Project Manager: Mike Staton

Reported:
 01/21/03 14:03

Semivolatile Petroleum Products by NWTPH-Dx with Acid/Silica Gel Clean-up
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
GP5-10.0-0103 (B3A0249-01) Soil Sampled: 01/13/03 12:05 Received: 01/14/03 10:55									
Diesel Range Hydrocarbons	46.6	10.0	mg/kg dry	1	3A17022	01/17/03	01/19/03	NWTPH-Dx	D-06
Lube Oil Range Hydrocarbons	ND	25.0	"	"	"	"	"	"	"
Surrogate: 2-FBP	65.0 %	50-150			"	"	"	"	
Surrogate: Octacosane	77.4 %	50-150			"	"	"	"	

North Creek Analytical - Bothell

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Project: Former Bulk Terminal #0086
 Project Number: 9077.15.01
 Project Manager: Mike Staton

Reported:
 01/21/03 14:03

Gasoline Hydrocarbons (C6-C12), BTEX, MTBE & Naphthalene by EPA 8015M and 8021B
North Creek Analytical - Bothell

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
GP5-10.0-0103 (B3A0249-01) Soil Sampled: 01/13/03 12:05 Received: 01/14/03 10:55										
Gasoline Range Hydrocarbons	ND	5.00		mg/kg dry	1	3A17026	01/17/03	01/17/03	NWTPH-Gx/8021B	
Benzene	ND	0.0300		"	"	"	"	"	"	
Toluene	ND	0.0500		"	"	"	"	"	"	
Ethylbenzene	ND	0.0500		"	"	"	"	"	"	
Xylenes (total)	ND	0.100		"	"	"	"	"	"	
Surrogate: 4-BFB (FID)	88.5 %	59-125				"	"	"	"	
Surrogate: 4-BFB (PID)	106 %	64-125				"	"	"	"	

North Creek Analytical - Bothell

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Project: Former Bulk Terminal #0086
 Project Number: 9077.15.01
 Project Manager: Mike Staton

Reported:
 01/21/03 14:03

Physical Parameters by APHA/ASTM/EPA Methods
North Creek Analytical - Bothell

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
GP5-10.0-0103 (B3A0249-01) Soil Sampled: 01/13/03 12:05 Received: 01/14/03 10:55										
Dry Weight	92.0	1.00		%	1	3A16033	01/16/03	01/17/03	BSOPSPL003R07	

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Project: Former Bulk Terminal #0086
 Project Number: 9077.15.01
 Project Manager: Mike Staton

Reported:
 01/21/03 14:03

Semivolatile Petroleum Products by NWTPH-Dx with Acid/Silica Gel Clean-up - Quality Control
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC Limits	RPD	RPD Limit	Notes
Batch 3A17022: Prepared 01/17/03 Using EPA 3550B									
Blank (3A17022-BLK1)									
Diesel Range Hydrocarbons	ND	10.0	mg/kg						
Lube Oil Range Hydrocarbons	ND	25.0	"						
Surrogate: 2-FBP	6.87		"	10.7		64.2 50-150			
Surrogate: Octacosane	7.68		"	10.7		71.8 50-150			
LCS (3A17022-BS1)									
Diesel Range Hydrocarbons	49.7	10.0	mg/kg	66.7		74.5 59-109			
Surrogate: 2-FBP	7.41		"	10.7		69.3 50-150			
LCS Dup (3A17022-BSD1)									
Diesel Range Hydrocarbons	53.6	10.0	mg/kg	66.7		80.4 59-109	7.55	50	
Surrogate: 2-FBP	7.77		"	10.7		72.6 50-150			
Duplicate (3A17022-DUP1) Source: B3A0249-01									
Diesel Range Hydrocarbons	45.6	10.0	mg/kg dry		46.6		2.17	50	D-06
Lube Oil Range Hydrocarbons	ND	25.0	"		16.1		2.52	50	
Surrogate: 2-FBP	7.71		"	11.6		66.5 50-150			
Surrogate: Octacosane	9.01		"	11.6		77.7 50-150			

North Creek Analytical - Bothell

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Project: Former Bulk Terminal #0086
 Project Number: 9077.15.01
 Project Manager: Mike Staton

Reported:
 01/21/03 14:03

Gasoline Hydrocarbons (C6-C12), BTEX, MTBE & Naphthalene by EPA 8015M and 8021B - Quality Control

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 3A17026: Prepared 01/17/03 Using EPA 5030B (P/T)										
Blank (3A17026-BLK1)										
Gasoline Range Hydrocarbons	ND	5.00	mg/kg							
Benzene	ND	0.0300	"							
Toluene	ND	0.0500	"							
Ethylbenzene	ND	0.0500	"							
Xylenes (total)	ND	0.100	"							
Surrogate: 4-BFB (FID)	4.35		"	4.00		109	59-125			
Surrogate: 4-BFB (PID)	4.79		"	4.00		120	64-125			
LCS (3A17026-BS1)										
Gasoline Range Hydrocarbons	27.8	5.00	mg/kg	27.5		101	80-120			
Surrogate: 4-BFB (FID)	4.30		"	4.00		108	59-125			
LCS (3A17026-BS2)										
Benzene	0.534	0.0300	mg/kg	0.500		107	80-120			
Toluene	0.533	0.0500	"	0.500		107	80-120			
Ethylbenzene	0.531	0.0500	"	0.490		108	80-120			
Xylenes (total)	1.63	0.100	"	1.50		109	80-120			
Surrogate: 4-BFB (PID)	4.45		"	4.00		111	64-125			
LCS Dup (3A17026-BSD1)										
Gasoline Range Hydrocarbons	29.0	5.00	mg/kg	27.5		105	80-120	4.23	40	
Surrogate: 4-BFB (FID)	4.43		"	4.00		111	59-125			
LCS Dup (3A17026-BSD2)										
Benzene	0.539	0.0300	mg/kg	0.500		108	80-120	0.932	40	
Toluene	0.535	0.0500	"	0.500		107	80-120	0.375	40	
Ethylbenzene	0.528	0.0500	"	0.490		108	80-120	0.567	40	
Xylenes (total)	1.63	0.100	"	1.50		109	80-120	0.00	40	
Surrogate: 4-BFB (PID)	4.47		"	4.00		112	64-125			

North Creek Analytical - Bothell

Jeff Gerdes, Project Manager

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Page 6 of 9



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Project: Former Bulk Terminal #0086
 Project Number: 9077.15.01
 Project Manager: Mike Staton

Reported:
 01/21/03 14:03

Gasoline Hydrocarbons (C6-C12), BTEX, MTBE & Naphthalene by EPA 8015M and 8021B - Quality Control
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD RPD	RPD Limit	Notes
Batch 3A17026: Prepared 01/17/03 Using EPA 5030B (P/T)										
Matrix Spike (3A17026-MS1)					Source: B3A0362-02					
Gasoline Range Hydrocarbons	26.7	5.00	mg/kg dry	29.7	1.51	84.8	53-120			
Surrogate: 4-BFB (FID)	4.14		"	4.32		95.8	59-125			
Matrix Spike (3A17026-MS2)					Source: B3A0249-01					
Benzene	0.541	0.0300	mg/kg dry	0.543	0.00715	98.3	71-119			
Toluene	0.540	0.0500	"	0.543	0.0169	96.3	57-108			
Ethylbenzene	0.539	0.0500	"	0.532	ND	101	72-114			
Xylenes (total)	1.68	0.100	"	1.63	0.0307	101	68-112			
Surrogate: 4-BFB (PID)	4.45		"	4.35		102	64-125			
Matrix Spike Dup (3A17026-MSD1)					Source: B3A0362-02					
Gasoline Range Hydrocarbons	24.7	5.00	mg/kg dry	29.7	1.51	78.1	53-120	7.78	40	
Surrogate: 4-BFB (FID)	3.97		"	4.32		91.9	59-125			
Matrix Spike Dup (3A17026-MSD2)					Source: B3A0249-01					
Benzene	0.539	0.0300	mg/kg dry	0.543	0.00715	97.9	71-119	0.370	40	
Toluene	0.536	0.0500	"	0.543	0.0169	95.6	57-108	0.743	40	
Ethylbenzene	0.537	0.0500	"	0.532	ND	101	72-114	0.372	40	
Xylenes (total)	1.66	0.100	"	1.63	0.0307	100	68-112	1.20	40	
Surrogate: 4-BFB (PID)	4.39		"	4.35		101	64-125			

North Creek Analytical - Bothell

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Project: Former Bulk Terminal #0086
 Project Number: 9077.15.01
 Project Manager: Mike Staton

Reported:
 01/21/03 14:03

Physical Parameters by APHA/ASTM/EPA Methods - Quality Control
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC		RPD		Notes
						%REC	Limits	RPD	Limit	

Batch 3A16033: Prepared 01/16/03 Using Dry Weight

Blank (3A16033-BLK1)

Dry Weight	100	1.00	%							
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North Creek Analytical - Bothell

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 Project Manager: Mike Staton

Reported:
 01/21/03 14:03

Notes and Definitions

- D-06 The sample chromatographic pattern does not resemble the fuel standard used for quantitation.
- 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
- RPD Relative Percent Difference

North Creek Analytical - Bothell

Jeff Gerdes, Project Manager

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 (503) 906-9200 FAX 503-906-9210
 (541) 383-9310 FAX 541-382-7588

CHAIN OF CUSTODY REPORT

Work Order #: **B7A0244**

CLIENT: Unocal RRM REPORT TO: Mike Staton ADDRESS: MFA 17171 Bothell Way NE, #264, Seattle WA 98155 PHONE: (425) 744-1489 FAX (425) 744-0919 PROJECT NAME: Former Unocal Terminal #6086 PROJECT NUMBER: 9077.15.01 SAMPLED BY: E. Silver		INVOICE TO: Mark Brecken, Unocal P.O. NUMBER:		TURNAROUND REQUEST in Business Days* Organic & Inorganic Analyses <input checked="" type="checkbox"/> 7 <input type="checkbox"/> 5 <input type="checkbox"/> 4 <input type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input type="checkbox"/> <1 STD. <input checked="" type="checkbox"/> 4 <input type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input type="checkbox"/> <1 Petroleum Hydrocarbon Analyses STD. <input checked="" type="checkbox"/> 4 <input type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input type="checkbox"/> <1 Please Specify OTHER	
REQUESTED ANALYSES BTEX 80218 TPH-G NUTPH-tx TPH-D20 NUTPH-DX after silica gel cleanup		RECEIVED BY: <i>[Signature]</i> PRINT NAME: <i>[Signature]</i> DATE: 1/14/03 TIME: 9:45		RECEIVED BY: <i>[Signature]</i> PRINT NAME: <i>[Signature]</i> DATE: 1/14/03 TIME: 10:55	
CLIENT SAMPLE IDENTIFICATION 1. 695-10.0-0103 1/13/03 / 1205 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15.		MATRIX (W, S, O) S 2		# OF CONT. 2	
SAMPLING DATE/TIME 1/13/03 / 1205		COMMENTS 01		NCA WO ID	
RELINQUISHED BY: Elisabeth Silver PRINT NAME: Elisabeth Silver FRM: MFA		RECEIVED BY: <i>[Signature]</i> PRINT NAME: <i>[Signature]</i> FRM: NCA		DATE: 1/14/03 TIME: 9:45	
RELINQUISHED BY: <i>[Signature]</i> PRINT NAME: <i>[Signature]</i> FRM: MFA		RECEIVED BY: <i>[Signature]</i> PRINT NAME: <i>[Signature]</i> FRM: NCA		DATE: 1/14/03 TIME: 10:55	
ADDITIONAL REMARKS:					
TEMP: 4.4				PAGE 4 OF 4	