



PACIFIC ENVIRONMENTAL GROUP, INC.

AN COMPANY

UAST #471259
Unocal #6380
Whatcom/Bellingham

RECEIVED
OCT 13 1998
DEPT. OF ECOLOGY

October 9, 1998
Project 504-018.1A

Mr. Tim Johnson
Tosco Refining & Marketing Co.
3977 Leary Way NW
Seattle, Washington 98107

Re: Environmental Investigation
→ Tosco-Unocal Service Station #6380
200 South 36th Street
Bellingham, Washington

DEPARTMENT OF ECOLOGY NWRO/TCP TANKS UNIT	
INTERIM CLEANUP REPORT	<input checked="" type="checkbox"/>
SITE CHARACTERIZATION	<input checked="" type="checkbox"/>
FINAL CLEANUP REPORT	<input type="checkbox"/>
OTHER _____	<input type="checkbox"/>
AFFECTED MEDIA: SOIL	<input checked="" type="checkbox"/>
OTHER _____ GW	<input type="checkbox"/>
INSPECTOR (INIT.) <u>SB</u>	DATE <u>11/12/98</u>

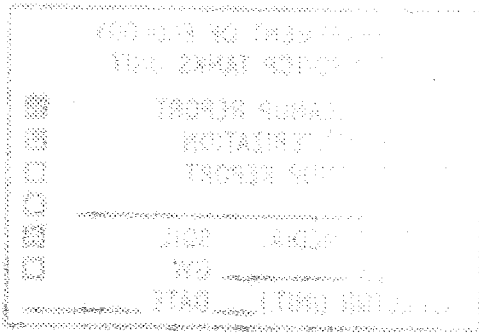
ENTERED 12/4/98

Dear Mr. Johnson:

This letter presents the results of an environmental investigation conducted by Pacific Environmental Group, Inc. (PEG) at Unocal Service Station 6308, located at the address referenced above (Figure 1). The purpose of this investigation was to assess and document soil quality with respect to petroleum hydrocarbons at the site during the removal of the heating oil and waste oil underground storage tanks (USTs) that were located adjacent to the service station building.

The scope of work for the environmental investigation was performed on August 18, 1998 and consisted of the following tasks:

- Field screen the soil stockpiled from the heating oil/waste oil tank excavation and the dispenser islands using a photo-ionization detector (PID).
- Observe and document the removal of two 500-gallon steel underground storage tanks (UST).
- Collect soil samples from the UST excavation and the two soil stockpiles.
- Submit soil samples and appropriate documentation to a Tosco approved laboratory for analysis.



ENTERED

LUST #: 471259
Site name: Urocal #6308
County/city: Whatcom/Bellingham

Inspector SB
Site address: 200 S. 36th St, Bellingham
UST #: _____
ERTS #: N
LUST #: _____

Depth to GW: -
Free product: -
GW flow: -

Media affected:
 GW Soil
Extent of contam. known:
 Yes No

Report date: 10/9/98
Date received: 10/13/98

Project status:

Cleanup started
 Awaiting cleanup
 Reported cleaned up

Report status:

interim
 final

Remediation method:

Aeration/Vapor extraction
 Air stripping/Air sparging
 Biological treatment
 Carbon absorption
 Chemical destruction
 Incineration
 Off-site containment/Landfill
 On-site containment/Landfill
 Physical separation
 Reuse/Recycling
 Soil washing
 Solidification/Stabilization
 Solvent extraction
 Thermal desorption
 Vitrification
 Other

Comments:

- Approx. ~~25~~^{25 yd³} PCS sent for treatment.
- PCS remains in heating oil and waste oil tank cavity at an undocumented depth.
- No statements about gw.

SITE DESCRIPTION

Unocal Service Station 6380 is located at 200 South 36th Street in Bellingham, Washington. The area surrounding the site is primarily retail. The gasoline USTs are located in a common excavation in the northwest corner of the site. The dispenser islands are located in the east central portion of the site. The heating oil and waste oil USTs were located on the west side of the station building.

DISPENSER ISLAND SOIL STOCKPILE

Approximately eight cubic yards of soil was excavated from the area of the gasoline dispenser islands and stockpiled on site (SP1). The stockpile was generated during construction modifications to the product dispenser islands. The excavated material consisted primarily of brown sand. PEG screened the soil with a PID on August 18, 1998 and collected one soil sample designated SP1. There were no odors detected in the soil and PID readings in the material did not exceed background levels.

TANK REMOVAL OPERATIONS

Removal of the heating oil and waste oil USTs was performed by SME Corporation (SME) of Tacoma, Washington on August 18, 1998. Both USTs were 500-gallon steel tanks. Prior to removal of the USTs, Marine Vacuum Service (Mar Vac) of Seattle, Washington triple washed and rinsed the tank, and SME placed dry ice into the tank in order to render the UST inert. Written documentation of the tank cleaning and the Tank Disposal Certification is included in Attachment A. A copy of the Washington State Department of Ecology (Ecology) "Underground Storage Tank - Site Check/Site Assessment Checklist" is included in Attachment A.

Holes were observed on both the waste oil tank and the heating oil tank. The USTs were disposed by Mar Vac. The disposal receipt and hazardous waste manifest are included in Attachment A.

UST EXCAVATION

The excavated material consisted of brown and gray sand as fill material, and organic soil. The USTs were underlain by a clay layer. Hydrocarbon odors and visual indications of hydrocarbons were detected in soil within the UST excavation and stockpile. Soil within the excavation that exhibited the highest concentrations of hydrocarbons was removed from the excavation using a backhoe. Following the additional excavation of soil, four sidewall soil samples and two bottom soil samples were collected from the UST excavation by PEG on August 18, 1998. The sample locations were based on Washington State Department of Ecology guidelines.

Approximately 25 cubic yards of material excavated during the UST removal activities was temporarily stockpiled adjacent to the excavation, and covered by visqueen. The final dimensions of the UST excavation were approximately 10 feet by 20 feet by 10 feet deep. The soil sample locations are shown on Figure 1. Soil sampling and PID field screening methodology is presented in Attachment B.

ANALYTICAL PARAMETERS

Soil samples were analyzed for one or more of the following parameters:

<u>PARAMETER</u>	<u>METHOD</u>
Total Petroleum Hydrocarbons as gasoline (TPH-gasoline)	Washington Method TPH-Gasoline
TPH-diesel and oil	Washington Method TPH-Diesel plus extended
Pesticides and PCBs	EPA Methods 8081A and 8082
Halogenated Volatile Organics	EPA Method 8021B
RCRA Metals	EPA 6000/7000 Series Methods

The soil samples were analyzed by North Creek Analytical, Inc., of Bothell, Washington.

SOIL ANALYTICAL RESULTS

Soil sample analytical results are presented in Tables 1 and 2. Laboratory methods, analytical reports, and chain-of-custody documentation are contained in Attachment C.

CONCLUSIONS

Concentrations of TPH-gasoline and BTEX compounds were not detected above laboratory reporting limits in Stockpile SP1 (generated from the dispenser islands). The approximately eight cubic yards of soil in Stockpile SP1 was used as backfill material in the heating oil/waste oil excavation.

Detected concentrations of TPH-diesel in the soil samples collected from beneath the former waste oil tank, the south and east sidewalls of the excavation, and Stockpile SP2 exceeded Washington State Model Toxics Control Act (MTCA) Method A cleanup

Tosco 6380 Bellingham

October 9, 1998

Page 4

levels. Detected concentrations of TPH-oil in the soil samples collected from the south and east sidewalls of the excavation also exceeded MTCA Method A cleanup levels.

A total of 37.79 tons of soil was hauled to TPS for treatment by thermal desorption. The soil "Customer Job Report" is included in Attachment A.

PEG appreciates this opportunity to be of continuing service. If you have any questions regarding the contents of this report, please call.

Sincerely,

Pacific Environmental Group, Inc.



Matthew Miller
Project Geologist



Eric Larsen
Senior Geologist

Attachments: Table 1 - Soil Analytical Results
Table 2 - Soil Analytical Results
Figure 1 - Site Map
Attachment A - Underground Storage Tank and Waste Disposal Documents
Attachment B - Investigative Procedures
Attachment C - Laboratory Analytical Methods and Reports
Chain-of-Custody Documentation

cc: Mr. Steve Bremer, Department of Ecology

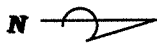
TABLE 1
SOIL ANALYTICAL RESULTS
Sample Date - August 18, 1998
Tosco 6380 - 200 South 36th Street
Bellingham, Washington

Sample I.D.	Location	Depth (feet)	TPH-							Pesticides &		Halogenated
			Gasoline (ppm)	Benzene (ppm)	Toluene (ppm)	Ethylbenzene (ppm)	Xylenes (ppm)	TPH-Diesel (ppm)	TPH-Oil (ppm)	PCBs (ppm)	Volatiles (ppm)	
NSW-6	North Sidewall	6	NA	NA	NA	NA	NA	29.4	ND	NA	NA	
SSW-6	South Sidewall	6	NA	NA	NA	NA	NA	5,500	1,780	NA	NA	
ESW-6	East Sidewall	6	NA	NA	NA	NA	NA	4,910	277	NA	NA	
WSW-6	West Sidewall	6	NA	NA	NA	NA	NA	182	29.4	NA	NA	
WOT-10	Bottom Sample (Waste Oil Tank)	10	NA	NA	NA	NA	NA	446	40.3	ND	ND	
HOT-10	Bottom Sample (Heating Oil Tank)	10	NA	NA	NA	NA	NA	42.2	ND	NA	NA	
SP1	Gasoline-Stockpile	-	ND	ND	ND	ND	ND	NA	NA	NA	NA	
SP2	Waste Oil Stockpile	-	NA	NA	NA	NA	NA	520	191	ND	ND	
MTCA Method A Cleanup Levels:			100	5	40	30	20	200	200	1.0	0.5	
Laboratory Reporting Limits:			5.00	0.0500	0.0500	0.0500	0.100	10-110	25-275	0.0005-0.050	0.050-0.50	
Concentrations in ppm (mg/kg) ND = Not detected at the laboratory reporting limits NA = Not Analyzed Sample locations are shown on Figure 1 Certified Analytical Results are attached TPH as Gasoline - Analysis by Washington Method WTPH-G BTEX Compounds - Analysis by EPA Method 8021B TPH as Diesel and Heavy Oil - Analysis by Washington Method WTPH-D + Extended Pesticides & PCBs - Analysis by EPA Methods 8081A and 8082 Halogenated Volatiles - Analysis by EPA Method 8021B (modified)												

TABLE 2
SOIL ANALYTICAL RESULTS
Sample Date - August 18, 1998

Tosco 6380
 200 South 36th Street
 Bellingham, Washington

Sample I.D.	Location	Depth (feet)	Arsenic (ppm)	Barium (ppm)	Cadmium (ppm)	Chromium (ppm)	Lead (ppm)	Mercury (ppm)	Selenium (ppm)	Silver (ppm)
WOT-10	Bottom	10	3.60	104	ND	39.4	3.69	ND	ND	ND
SP2	Waste Oil Stockpile	-	2.89	86.9	ND	36.6	7.84	ND	ND	ND
MTCA Method A Cleanup Levels:		-	20.0	-	2.0	100.0	250.0	1.0	-	-
Laboratory Reporting Limits:		-	0.500	5.00	0.500	0.500	0.500	0.100	0.500	0.500
Concentrations in ppm (mg/kg) ND = Not detected at the laboratory reporting limits Sample locations are shown on Figure 1 Certified Analytical Results are attached RCRA Metals - Analysis by EPA 6000/7000 Series Methods										



LANDSCAPING

GRAVEL AREA

FORMER WASTE OIL AND HEATING OIL TANKS

WSW-6

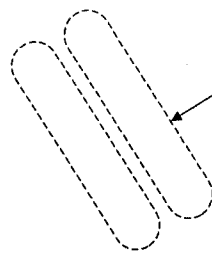
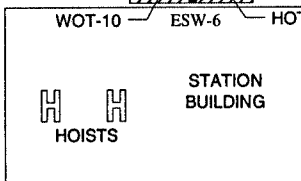
NSW-6

SSW-6

WOT-10

ESW-6

HOT-10

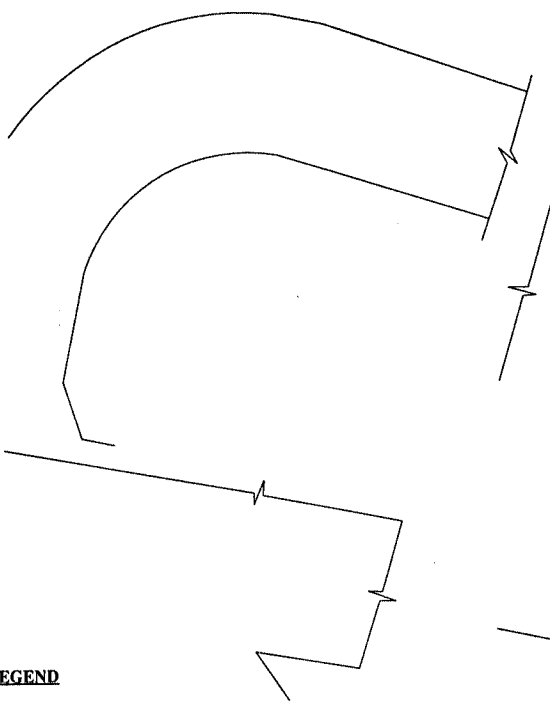
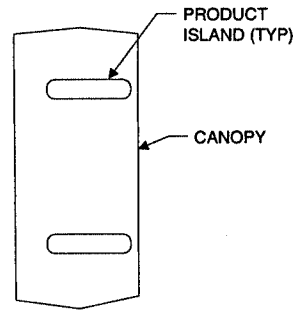


UNDERGROUND FUEL STORAGE TANKS (TYP)

TIRE STORAGE

SIDEWALK

BYRON STREET

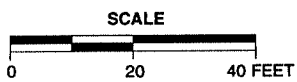


LEGEND

SSW-6 • SOIL SAMPLE LOCATION AND DESIGNATION

 APPROXIMATE LIMIT OF EXCAVATION

36th STREET



PACIFIC ENVIRONMENTAL GROUP, INC.

TITLE:		SITE MAP	
PREPARED FOR:		TOSCO SERVICE STATION 6380 200 South 36th Street Bellingham, Washington	
DATE: 9/30/98	PROJECT: 504-018.1B	FIGURE: 1	

ATTACHMENT A

**UNDERGROUND STORAGE TANK AND WASTE DISPOSAL
DOCUMENTS**

504-018-1A

Soil Master (c)

TPS Technologies, Inc.

Customer Job Report

Gross & Tare Weight Codes: M=Manual; S=Scale; T=Trk File

Job Number	Name	SiteAddress	SiteCity	State	ZipCode
A03 -- 01932	TOSCO FACILITY # UNOCA	200 SOUTH 36th ST.	BELLINGHAM	WA	00000

Load #	Date & Time Out	Transporter #	Truck & Trailer Number	Gross (lb)	Tare (lb)	Net (lb)	Net Wt (tons)
1	08/21/98 00:00	3JLACON	SHANE	48,720M	24,480M	24,240	12.12
2	08/21/98 00:00	3JLACON	GEORGE	89,800M	38,460M	51,340	25.67
0	08/21/98 12:48	3JLACON		0	0	0	0.00

Completed Loads	Manifests Received	Completed Weight	Estimated Weight	TOTAL Net Wt:
100.00%	2	58.10%	65.00(tons)	37.79(tons)

[SM-RPT9]



UNDERGROUND STORAGE TANK Site Check/Site Assessment Checklist

For Office Use Only	
Owner #	_____
Site #	_____

INSTRUCTIONS:

When a release has **not** been confirmed and reported, this Site Check/Site Assessment Checklist must be completed and signed by a person registered with the Department of Ecology. **The results of the site check or site assessment must be included with this checklist.** This form must be submitted to Ecology at the address shown below within 30 days after completion of the site check/site assessment.

SITE INFORMATION: Include the Ecology site ID number if the tanks are registered with Ecology. This number may be found on the tank owner's invoice or tank permit.

TANK INFORMATION: Please list all the tanks for which the site check and site assessment is being conducted. Use the tank ID number if available, and indicate tank capacity and substance stored.

REASON FOR CONDUCTING SITE CHECK/SITE ASSESSMENT: Please check the appropriate item.

CHECKLIST: Please initial each item in the appropriate box.

SITE ASSESSOR INFORMATION: This form must be signed by the registered site assessor who is responsible for conducting the site check/site assessment.

Underground Storage Tank Section Department of Ecology P. O. Box 47655 Olympia, WA 98504-7655
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SITE INFORMATION

Site ID Number (on invoice or available from Ecology if the tanks are registered): 8394

Site/Business Name: Unocal Service Station #6380

Site Address: 200 South 36th Street Telephone: ()

Street

Bellingham, WA

City State ZIP-Code

TANK INFORMATION

Tank ID No.	Tank Capacity	Substance Stored
<u>4</u>	<u>500 Gallons</u>	<u>Waste Oil</u>
_____	<u>500 Gallons</u>	<u>Heating Oil</u>
_____	_____	_____
_____	_____	_____

REASON FOR CONDUCTING SITE CHECK/SITE ASSESSMENT

Check one:

- Investigate suspected release due to on-site environmental contamination.
- Investigate suspected release due to off-site environmental contamination.
- Extend temporary closure of UST system for more than 12 months.
- UST system undergoing change-in-service.
- UST system permanently closed-in-place.
- UST system permanently closed with tank removed.
- Abandoned tank containing product.
- Required by Ecology or delegated agency for UST system closed before 12/22/88.
- Other (describe): _____

CHECKLIST

Each item of the following checklist shall be initialed by the person registered with the Department of Ecology whose signature appears below.


	YES	NO
1. The location of the UST site is shown on the vicinity map.	X	
2. A brief summary of information obtained during the site inspection is provided. (see Section 3.2 in the Site Assessment Guidance)	X	
3. A summary of UST system data is provided. (see Section 3.1)		X
4. The soils characteristics at the UST site are described. (see Section 5.2)	X	
5. Is there apparent groundwater in the tank excavation?		X
6. A brief description of the surrounding land is provided. (see Section 3.1)	X	
7. Information has been provided indicating the number and types of samples collected, methods used to collect and analyze the samples, and the name and address of the laboratory used to perform the analyses.	X	
8. A sketch or sketches showing the following items is provided:		
- location and ID number for all field samples collected	X	
- groundwater samples distinguished from soil samples (if applicable)		
- samples collected from stockpiled excavated soil	X	
- tank and piping locations and limits of excavation pit	X	
- adjacent structures and streets	X	
- approximate locations of any on-site and nearby utilities		X
9. If sampling procedures different from those specified in the guidance were used, has justification for using these alternative sampling procedures been provided? (see Section 3.4)		
10. A table is provided showing laboratory results for each sample collected including: sample ID number, constituents analyzed for and corresponding concentration, analytical method and detection limit for that method.	X	
11. Any factors that may have compromised the quality of the data or validity of the results are described.		
12. The results of this site check/site assessment indicate that a confirmed release of regulated substance has occurred.	X	

SITE ASSESSOR INFORMATION

Matthew Miller PERSON REGISTERED WITH ECOLOGY PEG/IT Corp. FIRM AFFILIATED WITH
 BUSINESS ADDRESS: 4020 148th Ave. NE Suite B TELEPHONE: (425) 869-5099
Redmond, WA 98052
 CITY STATE ZIP+CODE

I hereby certify that I have been in responsible charge of performing the site check/site assessment described above. Persons submitting false information are subject to penalties under Chapter 173-360 WAC.

10/02/98
Date


Signature of Person Registered with Ecology

P.O. # 3048

98-137-B
Tank yank
x-tra

BILL OF LADING
PRODUCT TRANSPORT MANIFEST
MARINE VACUUM SERVICE INC.
24 HOUR EMERGENCY PHONE NUMBER (206) 762-0240

TRUCK NUMBER 25 DATE 8-14-98

ENTERED

TO DESTINATION FROM SHIPPER
 NAME Marine Vacuum Service NAME S.M.E.
 STREET 1576 S. Jackson St. STREET 200 S. 36th St.
 CITY/STATE Seattle Wa. 98148 CITY/STATE Bellingham Wa

QUANTITY	PROPER SHIPPING NAME	UN (PLACARD) NUMBER
<u>325 gal</u>	<u>Non Hazardous waste water</u>	<u>n/a</u>
SLUDGE		

SHIPPER M. Clemente S.M.E. DATE 8-14-98 DRIVER [Signature] DATE 8-14-98

NOTE: pump & triple rinsed 1.500 gal water & 1.500 gal heating oil

PG 1 - M.V.S. PG 2 - DESTINATION PG 3 - SHIPPER
Job # 98-18-063

Manne Vacuum Service, Inc.
P O Box 24263
Seattle, WA 98124
(206) 762-0240

TANK DISPOSAL

REPORTED BY: Ken
DATE: 9-20-98
BILLED TO: SME
TANK OWNER: Tasco
LOCATION: Bellingham
TANK NO: _____

QUANTITY	SIZE	COST	SLUDGE GAL.
2	500		
1	500	1000	

TOTAL SLUDGE: _____ RATE: _____ PRICE: _____
SUB TOTAL: _____
SALES TAX: _____
TOTAL: _____

DRIVERS SIGNATURE: Lenny Anderson

ATTACHMENT B
INVESTIGATIVE PROCEDURES

ATTACHMENT B

Soil Sampling Procedures

Soil samples for chemical analysis were collected directly from the backhoe bucket by scraping aside approximately six inches of soil and then collecting newly exposed material in laboratory-supplied glass jars with Teflon[®] lined lids. Each sample was affixed with a waterproof label showing project identification, sample designation, approximate depth, date, and the sampler's initials. The samples were placed on ice for transport to the laboratory accompanied by chain-of-custody documentation shown in Attachment B.

Organic Vapor Screening

Soil samples were screened in the field for ionizable organic compounds using a Thermo Environmental Instruments Model 580B photo-ionization detector with a 10 eV light source. The test procedure involved collecting a discrete soil sample from the excavation or stockpiles, and placing it in a resealable bag. The bag was allowed to warm to ambient temperature for approximately twenty minutes, then the bag was pierced and the head-space within the bag was tested for total organic vapor, measured in parts per million, (ppm; volume/volume). The detection limit of the instrument ranges from 0.1 ppm to 2,000 ppm. It should be noted that the PID measurements are considered semi-quantitative data since the instrument detects all organic compounds with ionization potentials less than 10 electron volts (eV).

ATTACHMENT C
LABORATORY ANALYTICAL METHODS AND REPORTS
CHAIN-OF-CUSTODY DOCUMENTATION

ATTACHMENT C

Laboratory Analytical Methods

Analysis for TPH-gasoline was performed according to Washington Method WTPH-G. Benzene, toluene, ethyl benzene, and xylenes analysis was performed in accordance with EPA Method 8021B. A methanol solvent extraction was used for the TPH analysis with final detection by gas chromatography using a flame-ionization detector. A headspace or purge and trap technique was utilized for BTEX analysis. Final detection was by gas chromatography using a photoionization detector. Analysis for TPH-diesel and TPH-oil was performed according to Washington Method WTPH-D plus extended.

Analysis for Pesticides and PCBs was performed according to EPA Methods 8081A and 8082. Analysis for Halogenated Volatile Organics was performed according to EPA Method 8021B. Analysis for the eight RCRA metals was performed according to EPA 6000/7000 series methods.



NORTH CREEK ANALYTICAL

Environmental Laboratory Services

BOTHELL ■ (425) 420-9200 ■ FAX 420-9210
 SPOKANE ■ (509) 924-9200 ■ FAX 924-9290
 PORTLAND ■ (503) 906-9200 ■ FAX 906-9210

Pacific Environmental Group 4020 148th Ave NE, Ste B Redmond, WA 98052	Project: UNOCAL Station #6380 Project Number: 504-018.1A Project Manager: Matt Miller	Sampled: 8/18/98 Received: 8/20/98 Reported: 9/22/98 10:48
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ANALYTICAL REPORT FOR SAMPLES:

Sample Description	Laboratory Sample Number	Sample Matrix	Date Sampled
WOT-10	B808351-01	Soil	8/18/98
HOT-10	B808351-02	Soil	8/18/98
WSW-6	B808351-03	Soil	8/18/98
ESW-6	B808351-04	Soil	8/18/98
SSW-6	B808351-05	Soil	8/18/98
NSW-6	B808351-06	Soil	8/18/98

North Creek Analytical - Bothell


 Kirk Gendron, 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.*

18939 120th Avenue N.E., Suite 101, Bothell, WA 98011-9508
 East 11115 Montgomery, Suite B, Spokane, WA 99206-4776
 9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132



NORTH CREEK ANALYTICAL

Environmental Laboratory Services

BOTHELL ■ (425) 420-9200 ■ FAX 420-9210
 SPOKANE ■ (509) 924-9200 ■ FAX 924-9290
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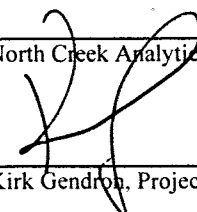
Pacific Environmental Group 4020 148th Ave NE, Ste B Redmond, WA 98052	Project: UNOCAL Station #6380 Project Number: 504-018.1A Project Manager: Matt Miller	Sampled: 8/18/98 Received: 8/20/98 Reported: 9/22/98 10:48
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Diesel Hydrocarbons (C12-C24) and Heavy Oil (C24-C40) by WTPH-D (extended) North Creek Analytical - Bothell

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
WOT-10				B808351-01		Soil		
Diesel Range Hydrocarbons	0880575	8/21/98	8/21/98		10.0	446	mg/kg dry	
Heavy Oil Range Hydrocarbons	"	"	"		25.0	40.3	"	
Surrogate: 2-FBP	"	"	"	50.0-150		91.0	%	
HOT-10				B808351-02		Soil		
Diesel Range Hydrocarbons	0880575	8/21/98	8/21/98		10.0	42.2	mg/kg dry	
Heavy Oil Range Hydrocarbons	"	"	"		25.0	ND	"	
Surrogate: 2-FBP	"	"	"	50.0-150		102	%	
WSW-6				B808351-03		Soil		
Diesel Range Hydrocarbons	0880575	8/21/98	8/21/98		10.0	182	mg/kg dry	
Heavy Oil Range Hydrocarbons	"	"	"		25.0	29.4	"	
Surrogate: 2-FBP	"	"	"	50.0-150		98.4	%	
ESW-6				B808351-04		Soil		
Diesel Range Hydrocarbons	0880575	8/21/98	8/21/98		50.0	4910	mg/kg dry	
Heavy Oil Range Hydrocarbons	"	"	"		125	277	"	
Surrogate: 2-FBP	"	"	"	50.0-150		103	%	
SSW-6				B808351-05		Soil		
Diesel Range Hydrocarbons	0880575	8/21/98	8/21/98		50.0	5500	mg/kg dry	
Heavy Oil Range Hydrocarbons	"	"	"		125	1780	"	
Surrogate: 2-FBP	"	"	"	50.0-150		87.9	%	
NSW-6				B808351-06		Soil		
Diesel Range Hydrocarbons	0880575	8/21/98	8/21/98		10.0	29.4	mg/kg dry	
Heavy Oil Range Hydrocarbons	"	"	"		25.0	ND	"	
Surrogate: 2-FBP	"	"	"	50.0-150		104	%	

North Creek Analytical - Bothell

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


Kirk Gendron, Project Manager

18939 120th Avenue N.E., Suite 101, Bothell, WA 98011-9508
 East 11115 Montgomery, Suite B, Spokane, WA 99206-4776
 9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132



NORTH CREEK ANALYTICAL

Environmental Laboratory Services

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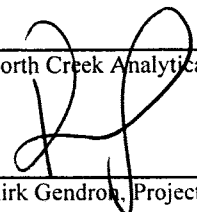
Pacific Environmental Group 4020 148th Ave NE, Ste B Redmond, WA 98052	Project: UNOCAL Station #6380 Project Number: 504-018.1A Project Manager: Matt Miller	Sampled: 8/18/98 Received: 8/20/98 Reported: 9/22/98 10:48
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Total Metals by EPA 6000/7000 Series Methods North Creek Analytical - Bothell

Analyte	Batch Number	Date Prepared	Date Analyzed	Specific Method	Reporting Limit	Result	Units	Notes*
WOT-10				B808351-01			Soil	
Arsenic	0880913	8/31/98	9/1/98	EPA 6020	0.500	3.60	mg/kg dry	
Barium	"	"	"	EPA 6020	5.00	104	"	
Cadmium	"	"	"	EPA 6020	0.500	ND	"	
Chromium	"	"	"	EPA 6020	0.500	39.4	"	
Lead	"	"	"	EPA 6020	0.500	3.69	"	
Selenium	"	"	"	EPA 6020	0.500	ND	"	
Silver	"	"	"	EPA 6020	0.500	ND	"	
Mercury	0880765	8/26/98	8/27/98	EPA 7471A	0.100	ND	"	

North Creek Analytical - Bothell

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


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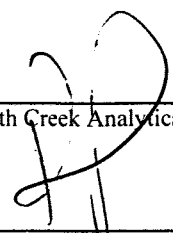
Pacific Environmental Group 4020 148th Ave NE, Ste B Redmond, WA 98052	Project: UNOCAL Station #6380 Project Number: 504-018.1A Project Manager: Matt Miller	Sampled: 8/18/98 Received: 8/20/98 Reported: 9/22/98 10:48
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**Halogenated Volatile Organics by EPA Method 8021B (modified)
North Creek Analytical - Bothell**

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
WOT-10				B808351-01			Soil	
Bromodichloromethane	0880770	8/26/98	8/26/98		0.0500	ND	mg/kg dry	
Bromoform	"	"	"		0.0500	ND	"	
Bromomethane	"	"	"		0.0500	ND	"	
Carbon tetrachloride	"	"	"		0.0500	ND	"	
Chlorobenzene	"	"	"		0.0500	ND	"	
Chloroethane	"	"	"		0.0500	ND	"	
Chloroform	"	"	"		0.0500	ND	"	
Chloromethane	"	"	"		0.0500	ND	"	
Dibromochloromethane	"	"	"		0.0500	ND	"	
1,2-Dichlorobenzene	"	"	"		0.0500	ND	"	
1,3-Dichlorobenzene	"	"	"		0.0500	ND	"	
1,4-Dichlorobenzene	"	"	"		0.0500	ND	"	
1,1-Dichloroethane	"	"	"		0.0500	ND	"	
1,2-Dichloroethane	"	"	"		0.0500	ND	"	
1,1-Dichloroethene	"	"	"		0.0500	ND	"	
cis-1,2-Dichloroethene	"	"	"		0.0500	ND	"	
trans-1,2-Dichloroethene	"	"	"		0.0500	ND	"	
1,2-Dichloropropane	"	"	"		0.0500	ND	"	
cis-1,3-Dichloropropene	"	"	"		0.0500	ND	"	
trans-1,3-Dichloropropene	"	"	"		0.0500	ND	"	
Methylene chloride	"	"	"		0.500	ND	"	
1,1,2,2-Tetrachloroethane	"	"	"		0.0500	ND	"	
Tetrachloroethene	"	"	"		0.0500	ND	"	
1,1,1-Trichloroethane	"	"	"		0.0500	ND	"	
1,1,2-Trichloroethane	"	"	"		0.0500	ND	"	
Trichloroethene	"	"	"		0.0500	ND	"	
Trichlorofluoromethane	"	"	"		0.0500	ND	"	
Vinyl chloride	"	"	"		0.0500	ND	"	
Surrogate: 4-BFB (ELCD)	"	"	"	50.0-150		97.5	%	

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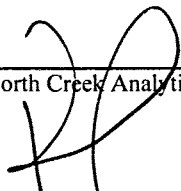
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Organochlorine Pesticides and PCBs by EPA Method 8081A and 8082
North Creek Analytical - Bothell

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
WOT-10				B808351-01			Soil	
Aldrin	0880571	8/21/98	8/25/98		1.00	ND	ug/kg dry	
alpha-BHC	"	"	"		0.500	ND	"	
beta-BHC	"	"	"		0.900	ND	"	
delta-BHC	"	"	"		0.600	ND	"	
gamma-BHC (Lindane)	"	"	"		1.00	ND	"	
Chlordane (tech)	"	"	"		1.00	ND	"	
alpha-Chlordane	"	"	"		0.800	ND	"	
gamma-Chlordane	"	"	"		0.700	ND	"	
4,4'-DDD	"	"	"		1.00	ND	"	
4,4'-DDE	"	"	"		1.00	ND	"	
4,4'-DDT	"	"	"		1.00	ND	"	
Dieldrin	"	"	"		2.00	ND	"	
Endosulfan I	"	"	"		1.00	ND	"	
Endosulfan II	"	"	"		2.00	ND	"	
Endosulfan sulfate	"	"	"		1.00	ND	"	
Endrin	"	"	"		2.00	ND	"	
Endrin aldehyde	"	"	"		2.00	ND	"	
Heptachlor	"	"	"		1.00	ND	"	
Heptachlor epoxide	"	"	"		1.00	ND	"	
Methoxychlor	"	"	"		4.00	ND	"	
Toxaphene	"	"	"		50.0	ND	"	
Aroclor 1016	"	"	"		50.0	ND	"	
Aroclor 1221	"	"	"		50.0	ND	"	
Aroclor 1232	"	"	"		50.0	ND	"	
Aroclor 1242	"	"	"		50.0	ND	"	
Aroclor 1248	"	"	"		50.0	ND	"	
Aroclor 1254	"	"	"		50.0	ND	"	
Aroclor 1260	"	"	"		50.0	ND	"	
Aroclor 1262	"	"	"		50.0	ND	"	
Aroclor 1268	"	"	"		50.0	ND	"	
Surrogate: TCX	"	"	"	40.0-130		102	%	

North Creek Analytical - Bothell

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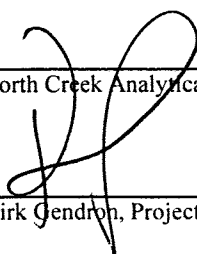
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**Dry Weight Determination
North Creek Analytical - Bothell**

Sample Name	Lab ID	Matrix	Result	Units
WOT-10	B808351-01	Soil	82.5	%
HOT-10	B808351-02	Soil	83.5	%
WSW-6	B808351-03	Soil	85.7	%
ESW-6	B808351-04	Soil	89.7	%
SSW-6	B808351-05	Soil	88.4	%
NSW-6	B808351-06	Soil	72.9	%

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Diesel Hydrocarbons (C12-C24) and Heavy Oil (C24-C40) by WTPH-D (extended)/Quality Control North Creek Analytical - Bothell

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Reporting Limit Units	Recov. %	RPD Limit	RPD %	Notes*
Batch: 0880575			Date Prepared: 8/21/98		Extraction Method: EPA 3550B				
Blank			0880575-BLK1						
Diesel Range Hydrocarbons	8/21/98			ND	mg/kg dry	10.0			
Heavy Oil Range Hydrocarbons	"			ND	"	25.0			
Surrogate: 2-FBP	"	11.0		10.5	"	50.0-150	95.5		
LCS			0880575-BS1						
Diesel Range Hydrocarbons	8/21/98	66.7		63.6	mg/kg dry	60.0-140	95.4		
Surrogate: 2-FBP	"	11.0		10.8	"	50.0-150	98.2		
Duplicate			0880575-DUP1 B808372-01						
Diesel Range Hydrocarbons	8/21/98		ND	ND	mg/kg dry			50.0	
Heavy Oil Range Hydrocarbons	"		ND	ND	"			50.0	
Surrogate: 2-FBP	"	11.8		10.9	"	50.0-150	92.4		
Duplicate			0880575-DUP2 B808351-06						
Diesel Range Hydrocarbons	8/21/98		29.4	10.3	mg/kg dry			50.0	96.2
Heavy Oil Range Hydrocarbons	"		ND	ND	"			50.0	
Surrogate: 2-FBP	"	15.0		14.4	"	50.0-150	96.0		

North Creek Analytical - Bothell

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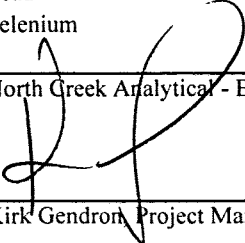
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Total Metals by EPA 6000/7000 Series Methods/Quality Control North Creek Analytical - Bothell

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Reporting Limit Units	Recov. %	RPD Limit	RPD %	Notes*
Batch: 0880765			Date Prepared: 8/26/98		Extraction Method: EPA 7471A				
Blank			0880765-BLK1						
Mercury	8/27/98			ND	mg/kg dry	0.100			
LCS			0880765-BS3						
Mercury	8/27/98	1.75		1.75	mg/kg dry	80.0-120	100		
Matrix Spike			0880765-MS1 B808383-05						
Mercury	8/27/98	1.16	ND	0.511	mg/kg dry	80.0-120	44.1		2
Matrix Spike Dup			0880765-MSD1 B808383-05						
Mercury	8/27/98	1.18	ND	0.518	mg/kg dry	80.0-120	43.9	20.0	0.455 2
Batch: 0880913			Date Prepared: 8/31/98		Extraction Method: EPA 3050B				
Blank			0880913-BLK1						
Arsenic	9/1/98			ND	mg/kg dry	0.500			
Barium	"			ND	"	5.00			
Cadmium	"			ND	"	0.500			
Chromium	"			ND	"	0.500			
Lead	"			ND	"	0.500			
Selenium	"			ND	"	0.500			
Silver	"			ND	"	0.500			
LCS			0880913-BS1						
Arsenic	9/1/98	25.0		21.5	mg/kg dry	70.0-130	86.0		
Barium	"	25.0		23.9	"	80.0-120	95.6		
Cadmium	"	25.0		21.6	"	70.0-130	86.4		
Chromium	"	25.0		23.3	"	80.0-120	93.2		
Lead	"	25.0		27.1	"	80.0-120	108		
Selenium	"	25.0		20.8	"	70.0-130	83.2		
Silver	"	25.0		21.0	"	80.0-120	84.0		
Duplicate			0880913-DUP1 B808391-26						
Arsenic	9/1/98		29.2	46.6	mg/kg dry		20.0	45.9	3
Barium	"		59.7	90.6	"		20.0	41.1	3
Cadmium	"		ND	0.536	"		20.0		4
Chromium	"		17.9	21.5	"		20.0	18.3	
Lead	"		32.9	53.1	"		20.0	47.0	3
Selenium	"		ND	ND	"		20.0		

North Creek Analytical - Bothell

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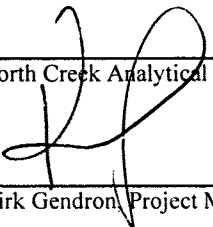
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Total Metals by EPA 6000/7000 Series Methods/Quality Control North Creek Analytical - Bothell

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
<u>Duplicate (continued)</u>										
	<u>0880913-DUP1</u>		<u>B808391-26</u>							
Silver	9/1/98		ND	ND	mg/kg dry			20.0		
<u>Matrix Spike</u>										
	<u>0880913-MS1</u>		<u>B808391-26</u>							
Arsenic	9/1/98	24.4	29.2	66.4	mg/kg dry	70.0-130	152			3
Barium	"	24.4	59.7	112	"	70.0-130	NR			3
Cadmium	"	24.4	ND	21.5	"	70.0-130	88.1			
Chromium	"	24.4	17.9	40.8	"	70.0-130	93.9			
Lead	"	24.4	32.9	65.9	"	70.0-130	135			3
Selenium	"	24.4	ND	18.9	"	70.0-130	77.5			
Silver	"	24.4	ND	15.7	"	70.0-130	64.3			3
<u>Matrix Spike</u>										
	<u>0880913-MS2</u>		<u>B808391-26</u>							
Arsenic	9/1/98	498	29.2	539	mg/kg dry	70.0-130	102			
Barium	"	498	59.7	608	"	70.0-130	110			
Lead	"	498	32.9	582	"	70.0-130	110			
Silver	"	498	ND	493	"	70.0-130	99.0			

North Creek Analytical - Bothell

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Halogenated Volatile Organics by EPA Method 8021B (modified)/Quality Control North Creek Analytical - Bothell

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Reporting Limit Units	Recov. Limits	RPD %	RPD Limit	RPD %	Notes*
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Batch: 0880770

Date Prepared: 8/26/98

Extraction Method: EPA 5030B [MeOH]

Blank

0880770-BLK1

Bromodichloromethane	8/26/98			ND	mg/kg dry	0.0500				
Bromoform	"			ND	"	0.0500				
Bromomethane	"			ND	"	0.0500				
Carbon tetrachloride	"			ND	"	0.0500				
Chlorobenzene	"			ND	"	0.0500				
Chloroethane	"			ND	"	0.0500				
Chloroform	"			ND	"	0.0500				
Chloromethane	"			ND	"	0.0500				
Dibromochloromethane	"			ND	"	0.0500				
1,2-Dichlorobenzene	"			ND	"	0.0500				
1,3-Dichlorobenzene	"			ND	"	0.0500				
1,4-Dichlorobenzene	"			ND	"	0.0500				
1,1-Dichloroethane	"			ND	"	0.0500				
1,2-Dichloroethane	"			ND	"	0.0500				
1,1-Dichloroethene	"			ND	"	0.0500				
cis-1,2-Dichloroethene	"			ND	"	0.0500				
trans-1,2-Dichloroethene	"			ND	"	0.0500				
1,2-Dichloropropane	"			ND	"	0.0500				
cis-1,3-Dichloropropene	"			ND	"	0.0500				
trans-1,3-Dichloropropene	"			ND	"	0.0500				
Methylene chloride	"			ND	"	0.500				
1,1,2,2-Tetrachloroethane	"			ND	"	0.0500				
Tetrachloroethene	"			ND	"	0.0500				
1,1,1-Trichloroethane	"			ND	"	0.0500				
1,1,2-Trichloroethane	"			ND	"	0.0500				
Trichloroethene	"			ND	"	0.0500				
Trichlorofluoromethane	"			ND	"	0.0500				
Vinyl chloride	"			ND	"	0.0500				
Surrogate: 4-BFB (ELCD)	"	2.00		2.10	"	50.0-150		105		

LCS

0880770-BS1

Chlorobenzene	8/26/98	1.00		0.921	mg/kg dry	60.0-140		92.1		
1,1-Dichloroethene	"	1.00		0.957	"	60.0-140		95.7		
Trichloroethene	"	1.00		0.966	"	60.0-140		96.6		
Surrogate: 4-BFB (ELCD)	"	2.00		2.00	"	50.0-150		100		

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Halogenated Volatile Organics by EPA Method 8021B (modified)/Quality Control North Creek Analytical - Bothell

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Reporting Limit Units	Recov. %	RPD Limit	RPD %	Notes*
Matrix Spike		0880770-MS1	B808454-03						
Chlorobenzene	8/26/98	1.19	ND	1.01	mg/kg dry	60.0-140	84.9		
1,1-Dichloroethene	"	1.19	ND	1.02	"	60.0-140	85.7		
Trichloroethene	"	1.19	ND	1.05	"	60.0-140	88.2		
Surrogate: 4-BFB (ELCD)	"	2.38		2.13	"	50.0-150	89.5		
Matrix Spike Dup		0880770-MSD1	B808454-03						
Chlorobenzene	8/26/98	1.19	ND	1.01	mg/kg dry	60.0-140	84.9	30.0	0
1,1-Dichloroethene	"	1.19	ND	0.945	"	60.0-140	79.4	30.0	7.63
Trichloroethene	"	1.19	ND	1.01	"	60.0-140	84.9	30.0	3.81
Surrogate: 4-BFB (ELCD)	"	2.38		2.15	"	50.0-150	90.3		

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Organochlorine Pesticides and PCBs by EPA Method 8081A and 8082/Quality Control North Creek Analytical - Bothell

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Reporting Limit Units	Recov. %	RPD Limit	RPD %	Notes*
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Batch: 0880571

Date Prepared: 8/21/98

Extraction Method: EPA 3550B

Blank

0880571-BLK1

Aldrin	8/25/98			ND	ug/kg dry	1.00			
alpha-BHC	"			ND	"	0.500			
beta-BHC	"			ND	"	0.900			
delta-BHC	"			ND	"	0.600			
gamma-BHC (Lindane)	"			ND	"	1.00			
Chlordane (tech)	"			ND	"	1.00			
alpha-Chlordane	"			ND	"	0.800			
gamma-Chlordane	"			ND	"	0.700			
4,4'-DDD	"			ND	"	1.00			
4,4'-DDE	"			ND	"	1.00			
4,4'-DDT	"			ND	"	1.00			
Dieldrin	"			ND	"	2.00			
Endosulfan I	"			ND	"	1.00			
Endosulfan II	"			ND	"	2.00			
Endosulfan sulfate	"			ND	"	1.00			
Endrin	"			ND	"	2.00			
Endrin aldehyde	"			ND	"	2.00			
Heptachlor	"			ND	"	1.00			
Heptachlor epoxide	"			ND	"	1.00			
Methoxychlor	"			ND	"	4.00			
Toxaphene	"			ND	"	50.0			
Aroclor 1016	"			ND	"	50.0			
Aroclor 1221	"			ND	"	50.0			
Aroclor 1232	"			ND	"	50.0			
Aroclor 1242	"			ND	"	50.0			
Aroclor 1248	"			ND	"	50.0			
Aroclor 1254	"			ND	"	50.0			
Aroclor 1260	"			ND	"	50.0			
Aroclor 1262	"			ND	"	50.0			
Aroclor 1268	"			ND	"	50.0			
Surrogate: TCX	"	6.67		7.21	"	40.0-130	108		

LCS

0880571-BS1

Aldrin	8/25/98	8.33		7.75	ug/kg dry	35.0-138	93.0		
gamma-BHC (Lindane)	"	8.33		8.93	"	44.0-137	107		
Heptachlor	"	8.33		6.39	"	40.0-146	76.7		
Aroclor 1260	"	333		324	"	28.0-132	97.3		

North Creek Analytical - Bothell

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

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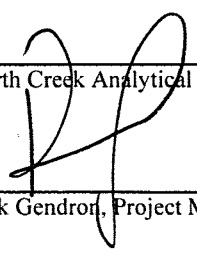
Pacific Environmental Group 4020 148th Ave NE, Ste B Redmond, WA 98052	Project: UNOCAL Station #6380 Project Number: 504-018.1A Project Manager: Matt Miller	Sampled: 8/18/98 Received: 8/20/98 Reported: 9/22/98 10:48
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Organochlorine Pesticides and PCBs by EPA Method 8081A and 8082/Quality Control North Creek Analytical - Bothell

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
LCS (continued)										
0880571-BS1										
Surrogate: TCX	8/25/98	6.67		7.47	ug/kg dry	40.0-130	112			
Matrix Spike										
0880571-MS1 B808351-01										
Aldrin	8/25/98	10.1	ND	8.13	ug/kg dry	35.0-138	80.5			
gamma-BHC (Lindane)	"	10.1	ND	8.02	"	44.0-137	79.4			
Heptachlor	"	10.1	ND	7.26	"	40.0-146	71.9			
Aroclor 1260	"	404	ND	393	"	44.0-123	97.3			
Surrogate: TCX	"	8.08		8.03	"	40.0-130	99.4			
Matrix Spike Dup										
0880571-MSD1 B808351-01										
Aldrin	8/25/98	10.1	ND	8.34	ug/kg dry	35.0-138	82.6	33.0	2.58	
gamma-BHC (Lindane)	"	10.1	ND	8.26	"	44.0-137	81.8	35.0	2.98	
Heptachlor	"	10.1	ND	7.69	"	40.0-146	76.1	32.0	5.68	
Aroclor 1260	"	404	ND	404	"	44.0-123	100	23.0	2.74	
Surrogate: TCX	"	8.08		8.32	"	40.0-130	103			

North Creek Analytical - Bothell

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


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Pacific Environmental Group 4020 148th Ave NE, Ste B Redmond, WA 98052	Project: UNOCAL Station #6380 Project Number: 504-018.1A Project Manager: Matt Miller	Sampled: 8/18/98 Received: 8/20/98 Reported: 9/22/98 10:48
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Notes and Definitions

#	Note
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- 1 Analyses are not controlled on RPD values from sample concentrations less than 10 times the reporting limit.
- 2 Multiple analyses indicate the percent recovery is outside the control limits due to a matrix effect.
- 3 Visual examination indicates the RPD and/or matrix spike recovery is outside the control limit due to a non-homogeneous sample matrix.
- 4 Analyses are not controlled on RPD values from sample concentrations less than 5 times the reporting limit.
- 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 - Bothell

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 15055 S.W. Sequoia Parkway, Suite 110, Portland, OR 97224-7155 (503) 624-9800 FAX 684-37.

CHAIN OF CUSTODY REPORT

B808351

CLIENT: Pacific Environmental Group				REPORT TO: Matt Miller P.E.G.				SAME DAY RUSH (+150%)	
ADDRESS: 4020 148th ave NE, #B Redmond, Wa				BILLING TO: TOSCO				NEXT BUSINESS DAY RUSH (+100%)	
PHONE: (425) 869-5099 FAX: 869-5639				P.O. NUMBER: 7763802511-260-				2 BUSINESS DAY RUSH (+80%)	
PROJECT NAME: UNOCAL Station # 6380				NEA QUOTE #: 48103001000-256380				3 BUSINESS DAY RUSH (+60%)	
PROJECT NUMBER: 504-018-1A				Analysis Request: Diesel Ext. EPA 8081-82 HVOC 80108 RCRA METALS 6010-7000				5 BUSINESS DAY RUSH (+40%)	
SAMPLED BY: Alan Starr								10 BUSINESS DAY STANDARD (LIST PRICE) (L)	
SAMPLE IDENTIFICATION: (NUMBER OR DESCRIPTION)	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CONT.					COMMENTS & PRESERVATIVES USED	NORTH CREEK SAMPLE NUMBER
1. WOT-10	8/18/98 1400	S	1	X	X	X	X		B808351-01
2. HOT-10	1415	S	1	X					-02
3. ESW-6	1430	S	1	X					-03
4. WSW-6	1445	S	1	X					-04
5. SSW-6	1500	S	1	X					-05
6. NSW-6	8/18/98 1515	S	1	X					-06
7.									
8.									
9.									
10.									
RELINQUISHED BY: Alan Starr			DATE: 8/20/98		RECEIVED BY: Cathy Nichols			DATE: 8/20/98	
FIRM: P.E.G.			TIME:		FIRM: N/A			TIME: 11:20	
RELINQUISHED BY: Cathy Nichols NCA			DATE: 8/20/98		RECEIVED BY: S. Wideen			DATE: 8/20/98	
FIRM: NCA			TIME: 12:00		FIRM: NCA			TIME: 12:00	
ADDITIONAL REMARKS: Please switch the sample designations for ESW and WSW and re-issue the analytical report. Designations were inadvertently labeled wrong in the									MM OF



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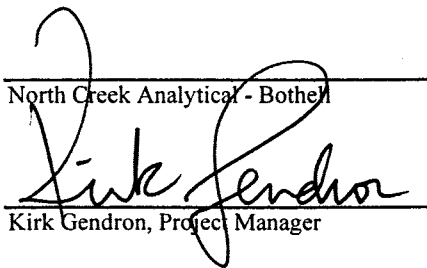
Project: UNOCAL Station #6380
Project Number: 504-018.1A
Project Manager: Matt Miller

Sampled: 8/18/98
Received: 8/19/98
Reported: 8/25/98 16:01

ANALYTICAL REPORT FOR SAMPLES:

Sample Description	Laboratory Sample Number	Sample Matrix	Date Sampled
SP-1	B808316-01	Soil	8/18/98
SP-2	B808316-02	Soil	8/18/98

North Creek Analytical - Bothell


Kirk Gendron, Project Manager

*The results in this report apply to the samples analyzed in accordance with the chain of custody document.
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Project: UNOCAL Station #6380
 Project Number: 504-018.1A
 Project Manager: Matt Miller

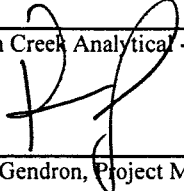
Sampled: 8/18/98
 Received: 8/19/98
 Reported: 8/25/98 16:01

**Gasoline Hydrocarbons (Toluene to Dodecane) and BTEX by WTPH-G and EPA 8021B
 North Creek Analytical - Bothell**

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
SP-1				B808316-01			Soil	
Gasoline Range Hydrocarbons	0880509	8/19/98	8/19/98		5.00	ND	mg/kg dry	
Benzene	"	"	"		0.0500	ND	"	
Toluene	"	"	"		0.0500	ND	"	
Ethylbenzene	"	"	"		0.0500	ND	"	
Xylenes (total)	"	"	"		0.100	ND	"	
Surrogate: 4-BFB (FID)	"	"	"	50.0-150		101	%	
Surrogate: 4-BFB (PID)	"	"	"	50.0-150		102	"	

North Creek Analytical - Bothell

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


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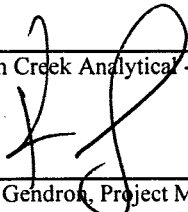
Pacific Environmental Group 4020 148th Ave NE, Ste B Redmond, WA 98052	Project: UNOCAL Station #6380 Project Number: 504-018.1A Project Manager: Matt Miller	Sampled: 8/18/98 Received: 8/19/98 Reported: 8/25/98 16:01
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**Diesel Hydrocarbons (C12-C24) and Heavy Oil (C24-C40) by WTPH-D (extended)
 North Creek Analytical - Bothell**

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
SP-2				B808316-02			Soil	
Diesel Range Hydrocarbons	0880506	8/19/98	8/20/98		10.0	520	mg/kg dry	
Heavy Oil Range Hydrocarbons	"	"	"		25.0	191	"	
Surrogate: 2-FBP	"	"	"	50.0-150		110	%	

North Creek Analytical - Bothell

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Pacific Environmental Group 4020 148th Ave NE, Ste B Redmond, WA 98052	Project: UNOCAL Station #6380 Project Number: 504-018.1A Project Manager: Matt Miller	Sampled: 8/18/98 Received: 8/19/98 Reported: 8/25/98 16:01
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**Total Metals by EPA 6000/7000 Series Methods
 North Creek Analytical - Bothell**

Analyte	Batch Number	Date Prepared	Date Analyzed	Specific Method	Reporting Limit	Result	Units	Notes*
SP-2				B808316-02			Soil	
Arsenic	0880520	8/20/98	8/20/98	EPA 6020	0.500	2.89	mg/kg dry	
Barium	"	"	"	EPA 6020	5.00	86.9	"	
Cadmium	"	"	"	EPA 6020	0.500	ND	"	
Chromium	"	"	"	EPA 6020	0.500	36.6	"	
Lead	"	"	"	EPA 6020	0.500	7.84	"	
Selenium	"	"	"	EPA 6020	0.500	ND	"	
Silver	"	"	"	EPA 6020	0.500	ND	"	
Mercury	0880524	8/19/98	"	EPA 7471A	0.100	ND	"	

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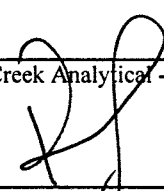
Pacific Environmental Group 4020 148th Ave NE, Ste B Redmond, WA 98052	Project: UNOCAL Station #6380 Project Number: 504-018.1A Project Manager: Matt Miller	Sampled: 8/18/98 Received: 8/19/98 Reported: 8/25/98 16:01
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Halogenated Volatile Organics by EPA Method 8021B (modified)
North Creek Analytical - Bothell

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
SP-2				B808316-02			Soil	
Bromodichloromethane	0880511	8/19/98	8/20/98		0.0500	ND	mg/kg dry	
Bromoform	"	"	"		0.0500	ND	"	
Bromomethane	"	"	"		0.0500	ND	"	
Carbon tetrachloride	"	"	"		0.0500	ND	"	
Chlorobenzene	"	"	"		0.0500	ND	"	
Chloroethane	"	"	"		0.0500	ND	"	
Chloroform	"	"	"		0.0500	ND	"	
Chloromethane	"	"	"		0.0500	ND	"	
Dibromochloromethane	"	"	"		0.0500	ND	"	
1,2-Dichlorobenzene	"	"	"		0.0500	ND	"	
1,3-Dichlorobenzene	"	"	"		0.0500	ND	"	
1,4-Dichlorobenzene	"	"	"		0.0500	ND	"	
1,1-Dichloroethane	"	"	"		0.0500	ND	"	
1,2-Dichloroethane	"	"	"		0.0500	ND	"	
1,1-Dichloroethene	"	"	"		0.0500	ND	"	
cis-1,2-Dichloroethene	"	"	"		0.0500	ND	"	
trans-1,2-Dichloroethene	"	"	"		0.0500	ND	"	
1,2-Dichloropropane	"	"	"		0.0500	ND	"	
cis-1,3-Dichloropropene	"	"	"		0.0500	ND	"	
trans-1,3-Dichloropropene	"	"	"		0.0500	ND	"	
Methylene chloride	"	"	"		0.500	ND	"	
1,1,2,2-Tetrachloroethane	"	"	"		0.0500	ND	"	
Tetrachloroethene	"	"	"		0.0500	ND	"	
1,1,1-Trichloroethane	"	"	"		0.0500	ND	"	
1,1,2-Trichloroethane	"	"	"		0.0500	ND	"	
Trichloroethene	"	"	"		0.0500	ND	"	
Trichlorofluoromethane	"	"	"		0.0500	ND	"	
Vinyl chloride	"	"	"		0.0500	ND	"	
Surrogate: 4-BFB (ELCD)	"	"	"	50.0-150		91.8	%	

North Creek Analytical - Bothell

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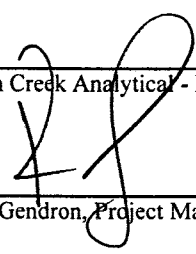
Pacific Environmental Group 4020 148th Ave NE, Ste B Redmond, WA 98052	Project: UNOCAL Station #6380 Project Number: 504-018.1A Project Manager: Matt Miller	Sampled: 8/18/98 Received: 8/19/98 Reported: 8/25/98 16:01
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**Organochlorine Pesticides and PCBs by EPA Method 8081A and 8082
 North Creek Analytical - Bothell**

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
SP-2				B808316-02			Soil	
Aldrin	0880507	8/19/98	8/20/98		1.00	ND	ug/kg dry	
alpha-BHC	"	"	"		0.500	ND	"	
beta-BHC	"	"	"		0.900	ND	"	
delta-BHC	"	"	"		0.600	ND	"	
gamma-BHC (Lindane)	"	"	"		1.00	ND	"	
Chlordane (tech)	"	"	"		1.00	ND	"	
alpha-Chlordane	"	"	"		0.800	ND	"	
gamma-Chlordane	"	"	"		0.700	ND	"	
4,4'-DDD	"	"	"		1.00	ND	"	
4,4'-DDE	"	"	"		1.00	ND	"	
4,4'-DDT	"	"	"		1.00	ND	"	
Dieldrin	"	"	"		2.00	ND	"	
Endosulfan I	"	"	"		1.00	ND	"	
Endosulfan II	"	"	"		2.00	ND	"	
Endosulfan sulfate	"	"	"		1.00	ND	"	
Endrin	"	"	"		2.00	ND	"	
Endrin aldehyde	"	"	"		2.00	ND	"	
Heptachlor	"	"	"		1.00	ND	"	
Heptachlor epoxide	"	"	"		1.00	ND	"	
Methoxychlor	"	"	"		4.00	ND	"	
Toxaphene	"	"	"		50.0	ND	"	
Aroclor 1016	"	"	"		50.0	ND	"	
Aroclor 1221	"	"	"		50.0	ND	"	
Aroclor 1232	"	"	"		50.0	ND	"	
Aroclor 1242	"	"	"		50.0	ND	"	
Aroclor 1248	"	"	"		50.0	ND	"	
Aroclor 1254	"	"	"		50.0	ND	"	
Aroclor 1260	"	"	"		50.0	ND	"	
Aroclor 1262	"	"	"		50.0	ND	"	
Aroclor 1268	"	"	"		50.0	ND	"	
Surrogate: TCX	"	"	"	40.0-130		55.0	%	

North Creek Analytical - Bothell

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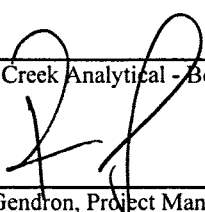
Project: UNOCAL Station #6380
 Project Number: 504-018.1A
 Project Manager: Matt Miller

Sampled: 8/18/98
 Received: 8/19/98
 Reported: 8/25/98 16:01

**Dry Weight Determination
 North Creek Analytical - Bothell**

Sample Name	Lab ID	Matrix	Result	Units
SP-1	B808316-01	Soil	74.8	%
SP-2	B808316-02	Soil	71.6	%

North Creek Analytical - Bothell


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Pacific Environmental Group 4020 148th Ave NE, Ste B Redmond, WA 98052	Project: UNOCAL Station #6380 Project Number: 504-018.1A Project Manager: Matt Miller	Sampled: 8/18/98 Received: 8/19/98 Reported: 8/25/98 16:01
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Gasoline Hydrocarbons (Toluene to Dodecane) and BTEX by WTPH-G and EPA 8021B/Quality Control North Creek Analytical - Bothell

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Reporting Limit Units	Recov. %	RPD Limit	RPD %	Notes*
Batch: 0880509			Date Prepared: 8/19/98		Extraction Method: EPA 5030B (MeOH)				
Blank			0880509-BLK1						
Methyl tert-butyl ether	8/19/98			ND	mg/kg dry	1.00			
Gasoline Range Hydrocarbons	"			ND	"	5.00			
Benzene	"			ND	"	0.0500			
Toluene	"			ND	"	0.0500			
Ethylbenzene	"			ND	"	0.0500			
Xylenes (total)	"			ND	"	0.100			
Surrogate: 4-BFB (FID)	"	4.00		4.08	"	50.0-150	102		
Surrogate: 4-BFB (PID)	"	4.00		4.19	"	50.0-150	105		
LCS			0880509-BS1						
Gasoline Range Hydrocarbons	8/19/98	25.0		29.2	mg/kg dry	70.0-130	117		
Surrogate: 4-BFB (FID)	"	4.00		4.09	"	50.0-150	102		
Duplicate			0880509-DUP2 B808316-01						
Gasoline Range Hydrocarbons	8/20/98		ND	ND	mg/kg dry			50.0	
Surrogate: 4-BFB (FID)	"	5.35		5.15	"	50.0-150	96.3		
Matrix Spike			0880509-MS1 B808314-03						
Benzene	8/20/98	0.751	ND	0.612	mg/kg dry	60.0-140	81.5		
Toluene	"	0.751	ND	0.624	"	60.0-140	83.1		
Ethylbenzene	"	0.751	ND	0.625	"	60.0-140	83.2		
Xylenes (total)	"	2.25	ND	1.88	"	60.0-140	83.6		
Surrogate: 4-BFB (PID)	"	6.01		5.68	"	50.0-150	94.5		
Matrix Spike Dup			0880509-MSD1 B808314-03						
Benzene	8/20/98	0.751	ND	0.624	mg/kg dry	60.0-140	83.1	20.0	1.94
Toluene	"	0.751	ND	0.657	"	60.0-140	87.5	20.0	5.16
Ethylbenzene	"	0.751	ND	0.657	"	60.0-140	87.5	20.0	5.04
Xylenes (total)	"	2.25	ND	1.98	"	60.0-140	88.0	20.0	5.13
Surrogate: 4-BFB (PID)	"	6.01		5.90	"	50.0-150	98.2		

North Creek Analytical - Bothell

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Kirk Gendron, Project Manager

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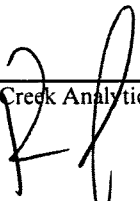
Pacific Environmental Group 4020 148th Ave NE, Ste B Redmond, WA 98052	Project: UNOCAL Station #6380 Project Number: 504-018.1A Project Manager: Matt Miller	Sampled: 8/18/98 Received: 8/19/98 Reported: 8/25/98 16:01
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Diesel Hydrocarbons (C12-C24) and Heavy Oil (C24-C40) by WTPH-D (extended)/Quality Control North Creek Analytical - Bothell

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Batch: 0880506			Date Prepared: 8/19/98			Extraction Method: EPA 3550B				
Blank			0880506-BLK1							
Diesel Range Hydrocarbons	8/20/98			ND	mg/kg dry	10.0				
Heavy Oil Range Hydrocarbons	"			ND	"	25.0				
Surrogate: 2-FBP	"	11.0		10.1	"	50.0-150	91.8			
LCS			0880506-BS1							
Diesel Range Hydrocarbons	8/20/98	66.7		63.0	mg/kg dry	60.0-140	94.5			
Surrogate: 2-FBP	"	11.0		9.85	"	50.0-150	89.5			
Duplicate			0880506-DUP1 B808316-02							
Diesel Range Hydrocarbons	8/20/98		520	400	mg/kg dry			50.0	26.1	
Heavy Oil Range Hydrocarbons	"		191	150	"			50.0	24.0	
Surrogate: 2-FBP	"	15.3		16.4	"	50.0-150	107			

North Creek Analytical - Bothell

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Pacific Environmental Group 4020 148th Ave NE, Ste B Redmond, WA 98052	Project: UNOCAL Station #6380 Project Number: 504-018.1A Project Manager: Matt Miller	Sampled: 8/18/98 Received: 8/19/98 Reported: 8/25/98 16:01
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Total Metals by EPA 6000/7000 Series Methods/Quality Control North Creek Analytical - Bothell

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Reporting Limit Units	Recov. %	RPD Limit	RPD %	Notes*
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Batch: 0880520	Date Prepared: 8/20/98	Extraction Method: EPA 3050B							
Blank	0880520-BLK1								
Arsenic	8/20/98			ND	mg/kg dry	0.500			
Barium	"			ND	"	5.00			
Cadmium	"			ND	"	0.500			
Chromium	"			ND	"	0.500			
Lead	"			ND	"	0.500			
Selenium	"			ND	"	0.500			
Silver	"			ND	"	0.500			

LCS	0880520-BS2								
Arsenic	8/20/98	25.0		21.0	mg/kg dry	70.0-130	84.0		
Barium	"	25.0		23.4	"	80.0-120	93.6		
Cadmium	"	25.0		20.9	"	70.0-130	83.6		
Chromium	"	25.0		22.8	"	80.0-120	91.2		
Lead	"	25.0		24.1	"	80.0-120	96.4		
Selenium	"	25.0		19.4	"	70.0-130	77.6		
Silver	"	25.0		22.4	"	80.0-120	89.6		

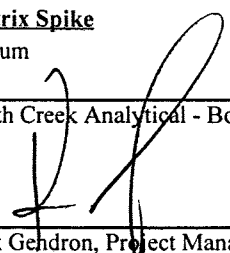
Duplicate	0880520-DUP1		B808316-02						
Arsenic	8/20/98		2.89	3.01	mg/kg dry			20.0	4.07
Barium	"		86.9	83.2	"			20.0	4.35
Cadmium	"		ND	ND	"			20.0	
Chromium	"		36.6	46.3	"			20.0	23.4
Lead	"		7.84	8.63	"			20.0	9.59
Selenium	"		ND	ND	"			20.0	
Silver	"		ND	ND	"			20.0	

Matrix Spike	0880520-MS1		B808316-02						
Arsenic	8/20/98	23.4	2.89	21.6	mg/kg dry	70.0-130	80.0		
Barium	"	23.4	86.9	99.0	"	70.0-130	51.7		2
Cadmium	"	23.4	ND	19.1	"	70.0-130	81.6		
Chromium	"	23.4	36.6	56.7	"	70.0-130	85.9		
Lead	"	23.4	7.84	32.0	"	70.0-130	103		
Selenium	"	23.4	ND	17.1	"	70.0-130	73.1		
Silver	"	23.4	ND	18.8	"	70.0-130	80.3		

Matrix Spike	0880520-MS2		B808316-02						
Barium	8/20/98	472	86.9	581	mg/kg dry	70.0-130	105		3

North Creek Analytical - Bothell

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


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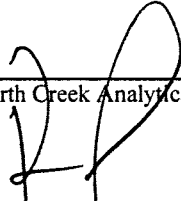
Pacific Environmental Group 4020 148th Ave NE, Ste B Redmond, WA 98052	Project: UNOCAL Station #6380 Project Number: 504-018.1A Project Manager: Matt Miller	Sampled: 8/18/98 Received: 8/19/98 Reported: 8/25/98 16:01
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Total Metals by EPA 6000/7000 Series Methods/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: 0880524	Date Prepared: 8/19/98			Extraction Method: EPA 7471A						
Blank	0880524-BLK1									
Mercury	8/20/98			ND	mg/kg dry	0.100				
LCS	0880524-BS1									
Mercury	8/20/98	1.34		2.02	mg/kg dry	80.0-120	151			4
Matrix Spike	0880524-MS1		B808204-03							
Mercury	8/20/98	0.736	ND	0.855	mg/kg dry	80.0-120	116			
Matrix Spike Dup	0880524-MSD1		B808204-03							
Mercury	8/20/98	0.689	ND	0.814	mg/kg dry	80.0-120	118	20.0	1.71	

North Creek Analytical - Bothell

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Pacific Environmental Group
 4020 148th Ave NE, Ste B
 Redmond, WA 98052

Project: UNOCAL Station #6380
 Project Number: 504-018.1A
 Project Manager: Matt Miller

Sampled: 8/18/98
 Received: 8/19/98
 Reported: 8/25/98 16:01

Halogenated Volatile Organics by EPA Method 8021B (modified)/Quality Control North Creek Analytical - Bothell

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Reporting Limit Units	Recov. %	RPD Limit	RPD %	Notes*
Batch: 0880511			Date Prepared: 8/19/98		Extraction Method: EPA 5030B [MeOH]				
Blank			0880511-BLK1						
Bromodichloromethane	8/19/98			ND	mg/kg dry	0.0500			
Bromoform	"			ND	"	0.0500			
Bromomethane	"			ND	"	0.0500			
Carbon tetrachloride	"			ND	"	0.0500			
Chlorobenzene	"			ND	"	0.0500			
Chloroethane	"			ND	"	0.0500			
Chloroform	"			ND	"	0.0500			
Chloromethane	"			ND	"	0.0500			
Dibromochloromethane	"			ND	"	0.0500			
1,2-Dichlorobenzene	"			ND	"	0.0500			
1,3-Dichlorobenzene	"			ND	"	0.0500			
1,4-Dichlorobenzene	"			ND	"	0.0500			
1,1-Dichloroethane	"			ND	"	0.0500			
1,2-Dichloroethane	"			ND	"	0.0500			
1,1-Dichloroethene	"			ND	"	0.0500			
cis-1,2-Dichloroethene	"			ND	"	0.0500			
trans-1,2-Dichloroethene	"			ND	"	0.0500			
1,2-Dichloropropane	"			ND	"	0.0500			
cis-1,3-Dichloropropene	"			ND	"	0.0500			
trans-1,3-Dichloropropene	"			ND	"	0.0500			
Methylene chloride	"			0.514	"	0.500			5
1,1,2,2-Tetrachloroethane	"			ND	"	0.0500			
Tetrachloroethene	"			ND	"	0.0500			
1,1,1-Trichloroethane	"			ND	"	0.0500			
1,1,2-Trichloroethane	"			ND	"	0.0500			
Trichloroethene	"			ND	"	0.0500			
Trichlorofluoromethane	"			ND	"	0.0500			
Vinyl chloride	"			ND	"	0.0500			
<i>Surrogate: 4-BFB (ELCD)</i>	"	2.00		1.99	"	50.0-150	99.5		
LCS			0880511-BS1						
Chlorobenzene	8/19/98	1.00		0.889	mg/kg dry	60.0-140	88.9		
1,1-Dichloroethene	"	1.00		0.679	"	60.0-140	67.9		
Trichloroethene	"	1.00		0.843	"	60.0-140	84.3		
<i>Surrogate: 4-BFB (ELCD)</i>	"	2.00		1.82	"	50.0-150	91.0		

North Creek Analytical - Bothell

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

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Pacific Environmental Group 4020 148th Ave NE, Ste B Redmond, WA 98052	Project: UNOCAL Station #6380 Project Number: 504-018.1A Project Manager: Matt Miller	Sampled: 8/18/98 Received: 8/19/98 Reported: 8/25/98 16:01
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**Halogenated Volatile Organics by EPA Method 8021B (modified)/Quality Control
 North Creek Analytical - Bothell**

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Matrix Spike		0880511-MS1	B808290-01							
Chlorobenzene	8/19/98	1.34	ND	1.06	mg/kg dry	60.0-140	79.1			
1,1-Dichloroethene	"	1.34	ND	0.766	"	60.0-140	57.2			2
Trichloroethene	"	1.34	ND	1.01	"	60.0-140	75.4			
Surrogate: 4-BFB (ELCD)	"	2.68		2.37	"	50.0-150	88.4			
Matrix Spike Dup		0880511-MSD1	B808290-01							
Chlorobenzene	8/19/98	1.34	ND	1.18	mg/kg dry	60.0-140	88.1	30.0	10.8	
1,1-Dichloroethene	"	1.34	ND	0.805	"	60.0-140	60.1	30.0	4.94	
Trichloroethene	"	1.34	ND	0.987	"	60.0-140	73.7	30.0	2.28	
Surrogate: 4-BFB (ELCD)	"	2.68		2.44	"	50.0-150	91.0			

North Creek Analytical - Bothell

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Pacific Environmental Group 4020 148th Ave NE, Ste B Redmond, WA 98052	Project: UNOCAL Station #6380 Project Number: 504-018.1A Project Manager: Matt Miller	Sampled: 8/18/98 Received: 8/19/98 Reported: 8/25/98 16:01
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Organochlorine Pesticides and PCBs by EPA Method 8081A and 8082/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: 0880507			Date Prepared: 8/19/98			Extraction Method: EPA 3550B				
Blank			0880507-BLK1							
Aldrin	8/20/98			ND	ug/kg dry	1.00				
alpha-BHC	"			ND	"	0.500				
beta-BHC	"			ND	"	0.900				
delta-BHC	"			ND	"	0.600				
gamma-BHC (Lindane)	"			ND	"	1.00				
Chlordane (tech)	"			ND	"	1.00				
alpha-Chlordane	"			ND	"	0.800				
gamma-Chlordane	"			ND	"	0.700				
4,4'-DDD	"			ND	"	1.00				
4,4'-DDE	"			ND	"	1.00				
4,4'-DDT	"			ND	"	1.00				
Dieldrin	"			ND	"	2.00				
Endosulfan I	"			ND	"	1.00				
Endosulfan II	"			ND	"	2.00				
Endosulfan sulfate	"			ND	"	1.00				
Endrin	"			ND	"	2.00				
Endrin aldehyde	"			ND	"	2.00				
Heptachlor	"			ND	"	1.00				
Heptachlor epoxide	"			ND	"	1.00				
Methoxychlor	"			ND	"	4.00				
Toxaphene	"			ND	"	50.0				
Aroclor 1016	"			ND	"	50.0				
Aroclor 1221	"			ND	"	50.0				
Aroclor 1232	"			ND	"	50.0				
Aroclor 1242	"			ND	"	50.0				
Aroclor 1248	"			ND	"	50.0				
Aroclor 1254	"			ND	"	50.0				
Aroclor 1260	"			ND	"	50.0				
Aroclor 1262	"			ND	"	50.0				
Aroclor 1268	"			ND	"	50.0				
Surrogate: TCX	"	6.67		2.98	"	40.0-130	44.7			
LCS			0880507-BS1							
Aldrin	8/20/98	8.33		5.64	ug/kg dry	35.0-138	67.7			
gamma-BHC (Lindane)	"	8.33		6.44	"	44.0-137	77.3			
Heptachlor	"	8.33		6.48	"	40.0-146	77.8			
Aroclor 1260	"	333		252	"	28.0-132	75.7			

North Creek Analytical - Bothell

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Pacific Environmental Group 4020 148th Ave NE, Ste B Redmond, WA 98052	Project: UNOCAL Station #6380 Project Number: 504-018.1A Project Manager: Matt Miller	Sampled: 8/18/98 Received: 8/19/98 Reported: 8/25/98 16:01
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Organochlorine Pesticides and PCBs by EPA Method 8081A and 8082/Quality Control
North Creek Analytical - Bothell

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
LCS (continued)		0880507-BS1								
Surrogate: TCX	8/20/98	6.67		4.64	ug/kg dry	40.0-130	69.6			
Matrix Spike		0880507-MS1		B808325-05						
Aldrin	8/20/98	8.33	ND	7.75	ug/kg	35.0-138	93.0			
gamma-BHC (Lindane)	"	8.33	ND	4.34	"	44.0-137	52.1			
Heptachlor	"	8.33	ND	5.33	"	40.0-146	64.0			
Aroclor 1260	"	333	ND	224	"	44.0-123	67.3			
Surrogate: TCX	"	6.67		3.07	"	40.0-130	46.0			
Matrix Spike Dup		0880507-MSD1		B808325-05						
Aldrin	8/20/98	8.33	ND	8.09	ug/kg	35.0-138	97.1	33.0	4.31	
gamma-BHC (Lindane)	"	8.33	ND	6.60	"	44.0-137	79.2	35.0	41.3	1
Heptachlor	"	8.33	ND	7.37	"	40.0-146	88.5	32.0	32.1	1
Aroclor 1260	"	333	ND	236	"	44.0-123	70.9	23.0	5.21	
Surrogate: TCX	"	6.67		3.17	"	40.0-130	47.5			

North Creek Analytical - Bothell

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Pacific Environmental Group
4020 148th Ave NE, Ste B
Redmond, WA 98052

Project: UNOCAL Station #6380
Project Number: 504-018.1A
Project Manager: Matt Miller

Sampled: 8/18/98
Received: 8/19/98
Reported: 8/25/98 16:01

Notes and Definitions

#	Note
1	The RPD value for this QC sample is above the established control limit. Review of associated QC indicates the high RPD does not represent an out-of-control condition for the batch.
2	The spike recovery for this QC sample is outside of established control limits. Review of associated batch QC indicates the recovery for this analyte does not represent an out-of-control condition for the batch.
3	Post-digestion Matrix Spike.
4	The spike recovery for this QC sample was outside the laboratory's default control limits but within the vendor's published acceptance criteria.
5	Suspected laboratory contaminant.
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 - Bothell

Kirk Gendron, Project Manager

Quantitation Report

Data File : C:\HPCHEM\4\DATA\H19030.D\FID1A.CH
Acq On : 19 Aug 1998 9:50 pm
Sample : b808316-01
Misc : 100 uL
IntFile : SURR.E

Vial: 30
Operator: la
Inst : GC #8
Multiplr: 1.00

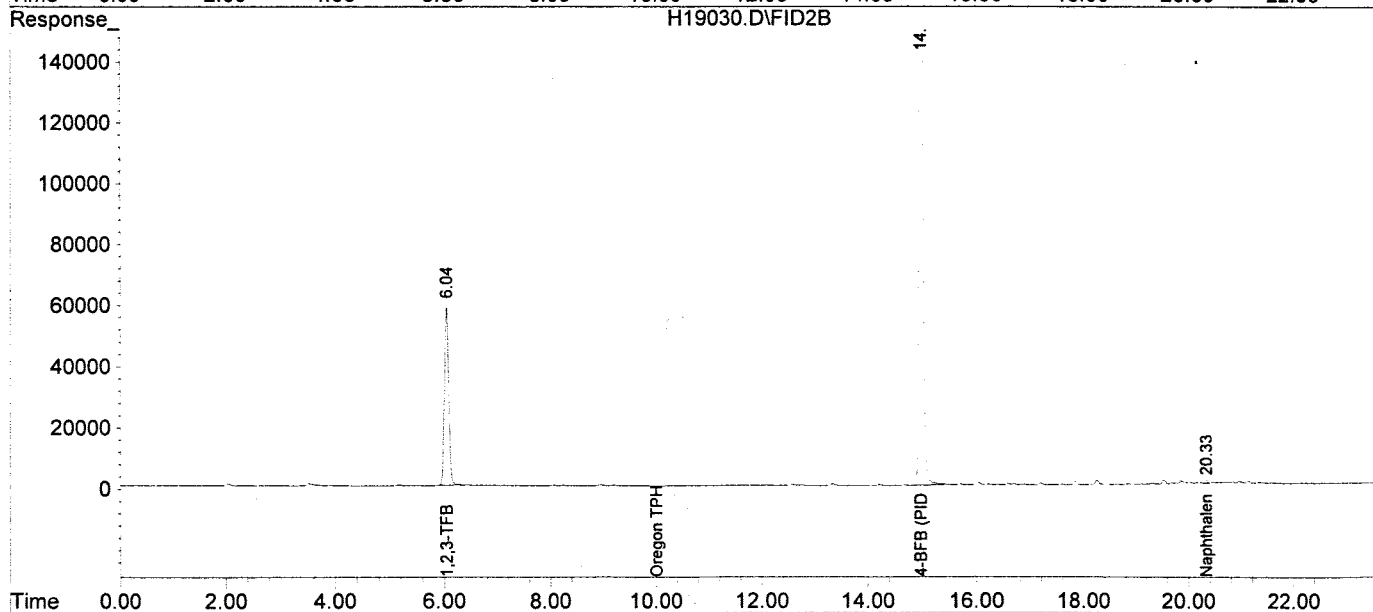
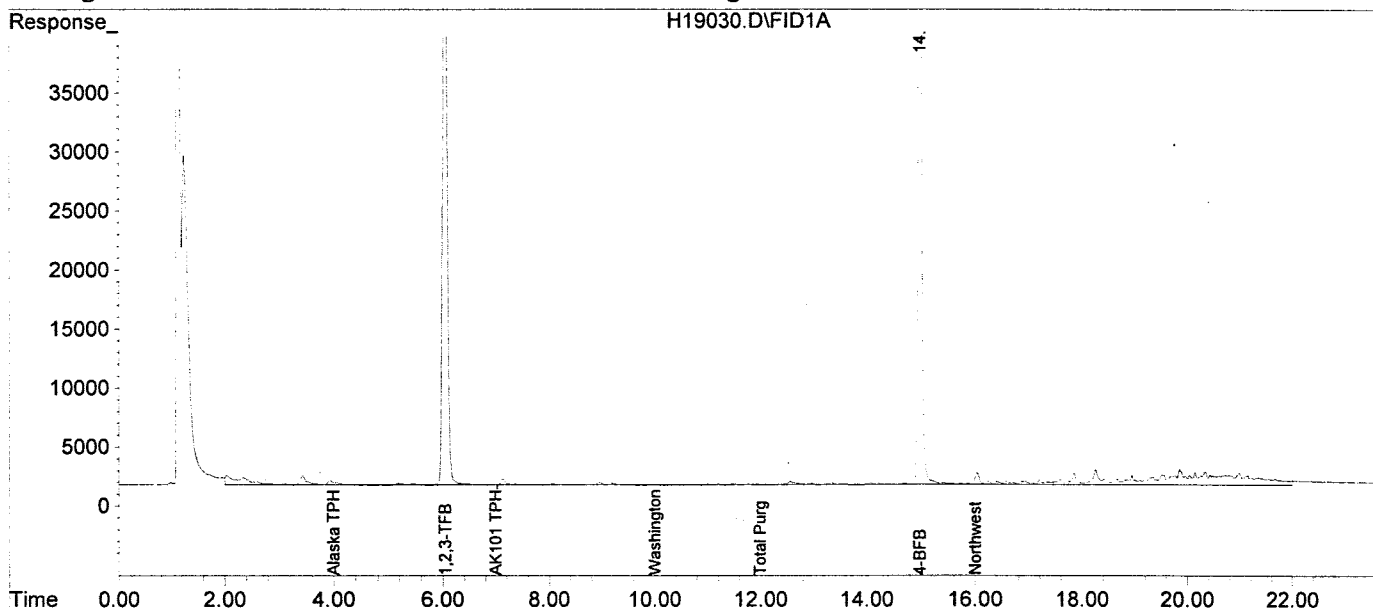
Data File : C:\HPCHEM\4\DATA\H19030.D\FID2B.CH
Acq On : 19 Aug 98 9:50 pm
Sample : b808316-01
Misc : 100 uL
IntFile : SURR2.E

Vial: 30
Operator: la
Inst : GC #8
Multiplr: 1.00

Quant Time: Aug 20 6:30 1998 Quant Results File: TPHG.RES

Quant Method : C:\HPCHEM\4\METHODS\TPHG.M (Chemstation Integrator)
Title : TPH-G Water Method
Last Update : Tue Aug 18 10:40:41 1998
Response via : Multiple Level Calibration
DataAcq Meth : TPHG.M

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



Quantitation Report

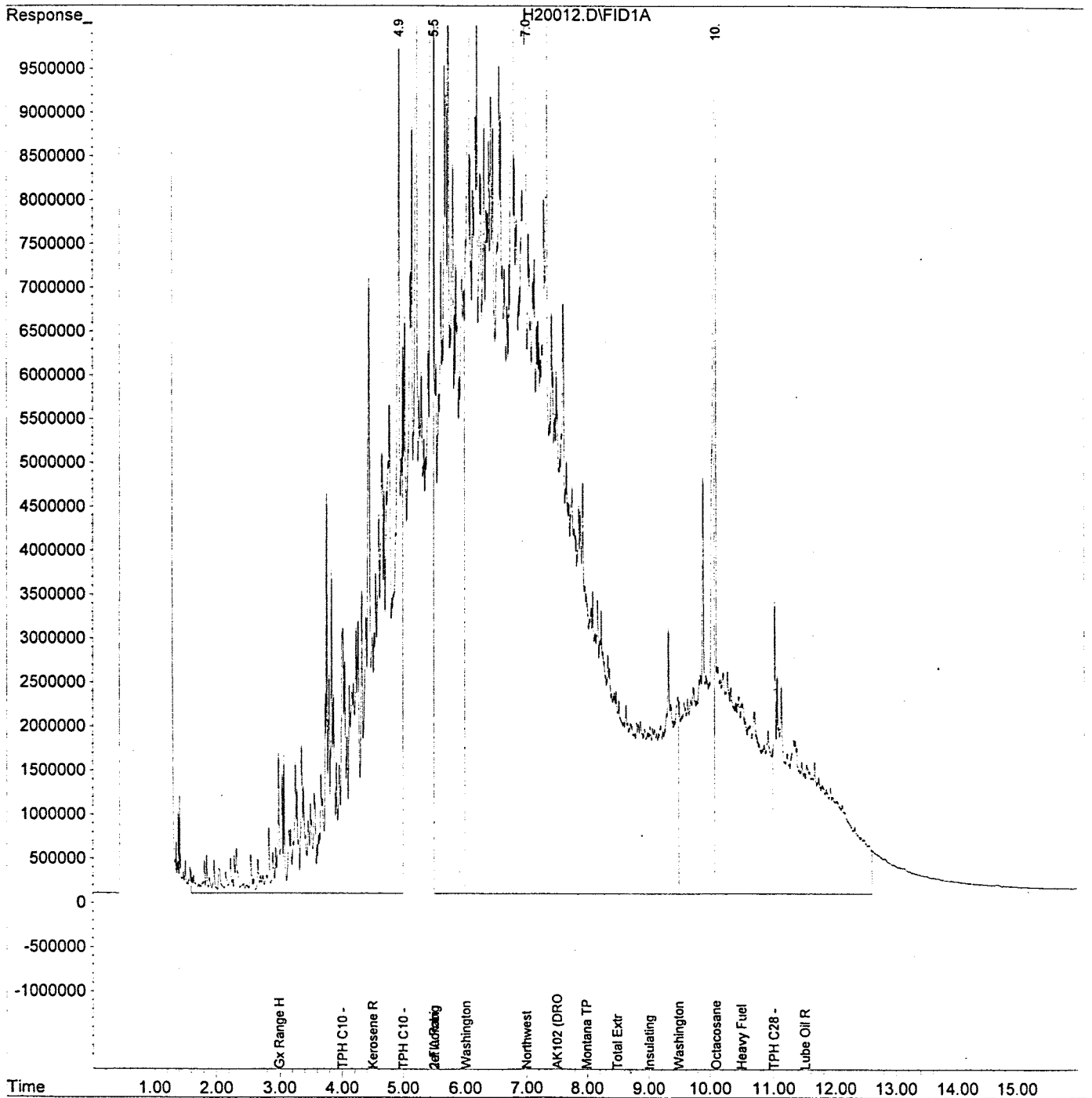
Data File : C:\HPCHEM\4\DATA\H20012.D
Acq On : 8-20-98 9:48:36 AM
Sample : b808316-02
Misc : s
IntFile : SURR.E
Quant Time: Aug 20 10:11 1998

Vial: 9
Operator: kj
Inst : GC #7
Multiplr: 1.00

Quant Results File: TPHD.RES

Quant Method : C:\HPCHEM\4\METHODS\TPHD.M (Chemstation Integrator)
Title : TPH-D Front Method
Last Update : Wed Aug 19 10:01:16 1998
Response via : Multiple Level Calibration
DataAcq Meth : TPHD.M

Volume Inj. :
Signal Phase :
Signal Info :





18939 120th Avenue N.E., Suite 101, Bothell, WA 98011-9508 (206) 481-9200 FAX 485-2992
 East 11115 Montgomery, Suite B, Spokane, WA 98206-4779 (509) 924-9200 FAX 924-9290
 15055 S.W. Sequoia Parkway, Suite 110, Portland, OR 97224-7155 (503) 624-9800 FAX 684-3782

CHAIN OF CUSTODY REPORT

B808316

CLIENT: <i>Pacific Environmental Group</i>				REPORT TO:				SAME DAY RUSH (+150%)	
ADDRESS: <i>4020 148th ave NE #B Redmond, Wa 98253</i>				BILLING TO: <i>TOSCO</i>				NEXT BUSINESS DAY RUSH (+100%) <input checked="" type="checkbox"/>	
PHONE: <i>(425) 869 5099</i> FAX: <i>869 5639</i>				P.O. NUMBER: <i>7763902511-260-</i>				2 BUSINESS DAY RUSH (+80%)	
PROJECT NAME: <i>Unocal Station # 6380</i>				NEA QUOTE #: <i>48103001000-256380</i>				3 BUSINESS DAY RUSH (+60%)	
PROJECT NUMBER: <i>504-018.1A</i>				Analysis Request: <i>WTPH-GIBTEX</i> <i>DIESEL EXT.</i> <i>EPA 8061/8082</i> <i>HVOC 8010B</i> <i>TOTAL METALS</i> <i>6010-7020</i> <i>ECR 8</i>				5 BUSINESS DAY RUSH (+40%)	
SAMPLED BY: <i>Alan Starr</i>								10 BUSINESS DAY STANDARD (LIST PRICE)	
SAMPLE IDENTIFICATION: (NUMBER OR DESCRIPTION)		SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CONT.	COMMENTS & PRESERVATIVES USED		NORTH CREEK SAMPLE NUMBER		
1. <i>SP-1</i>		<i>8/18/98 955</i>	<i>S</i>	<i>1</i>	<i>X XXXXXX</i>		<i>B808316-01</i>		
2. <i>SP-2</i>		<i>8/18/98 1520</i>	<i>S</i>	<i>1</i>	<i>X X X X</i>		<i>-02</i>		
3.									
4.					<i>Rf 8-19-98</i>				
5.									
6.									
7.									
8.									
9.									
10.									
RELINQUISHED BY: <i>Alan Starr</i>			DATE: <i>8/19/98</i>	RECEIVED BY: <i>Dana</i>			DATE: <i>8/19/98</i>		
FIRM: <i>P.E.G.</i>			TIME: <i>0815</i>	FIRM: <i>NCA-B</i>			TIME: <i>0815</i>		
RELINQUISHED BY:			DATE:	RECEIVED BY:			DATE:		
FIRM:			TIME:	FIRM:			TIME: <i>14.0</i>		
ADDITIONAL REMARKS:							PAGE <i>1</i> OF <i>1</i>		