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Department of Ecology
Industrial Section

June 17, 2004

Mr. Mark Dirkx
WDOE – Industrial Section
P.O. Box 47600
Olympia, WA 98504-7600

Dear Mr. Dirkx,

Re: Puget Sound Refinery - RCRA Facility Investigation (RFI) and Interim Measures (SWMU 11) - EPA/Ecology ID# WAD 00927 6197

Please find attached, a Groundwater Monitoring and Sampling Report for the 2nd quarter of 2004 for Puget Sound Refinery (RCRA Facility Permit Number WAD009276197, SWMU 11).

PSR appreciates Ecology's ongoing assistance regarding the remediation of the site. Questions or comments regarding this matter may be directed to Mr. Brian Rhodes at (360) 293-1761.

Sincerely,

Mark J. Koslicki
Manager – Health, Safety and Environment

BDR/br

cc: Paul Skyllingstad
Dept. of Ecology

Enclosure

storage\2004\rfi\swmu11\0504_May_samp

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Puget Sound Refinery

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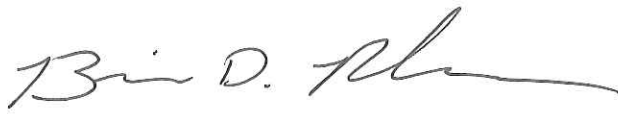
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NPDES	Permit	
WET-Tox	Enf	
DW/RCRA	Eng	
Clean Up	Sub	
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HWP2		

**GROUNDWATER MONITORING AND SAMPLING REPORT
FOR THE SECOND QUARTER OF 2004
PUGET SOUND REFINERY
SWMU 11**

Prepared by

Puget Sound Refinery
Anacortes, Washington

June 2004

A handwritten signature in black ink, appearing to read "Brian D. Rhodes", is written over a horizontal line.

Written By:

Brian D. Rhodes, WA P.G. #2156

Staff Engineer

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1.0 INTRODUCTION

This report summarizes remedial activities completed during the Second quarter of 2004 at Puget Sound Refinery, RCRA/RFI Solid Waste Management Unit 11. This report includes recent groundwater monitoring and sampling data collected during May of 2004.

Puget Sound Refinery is located near the city of Anacortes in Washington State (Figure 1 -Site Vicinity Map). SWMU 11 is a surface impoundment (the West Impounding Basin) located in the southwest corner of the facility tank farm (Figure 2). During the fall of 1990, hydrocarbons which were thought to be associated with the unit were discovered during RFI investigative procedures (see "RFI Workplan Amendment and Project Update" - June 1991).

During April of 1992, a report entitled "Workplan for Conducting SWMU 11 Phase II RFI Activities" was submitted to EPA. The report provided details of the design and proposed installation of a light non-aqueous phase liquid (LNAPL) recovery system. The installation of the LNAPL/groundwater recovery system was recommended by EPA (EPA/Ecology ID# WAD 00927-6197) in a letter dated May 21, 1992. An "Implementation of Interim Measures Report" was submitted to EPA during February of 1993 that described the installation and start up of the LNAPL/groundwater recovery system at the site. Since the start up of the LNAPL/groundwater recovery system, groundwater monitoring has occurred on a quarterly basis and groundwater sampling has been conducted every six months. More recently, EPA has delegated oversight of the SWMU 11 project to the Department of Ecology.

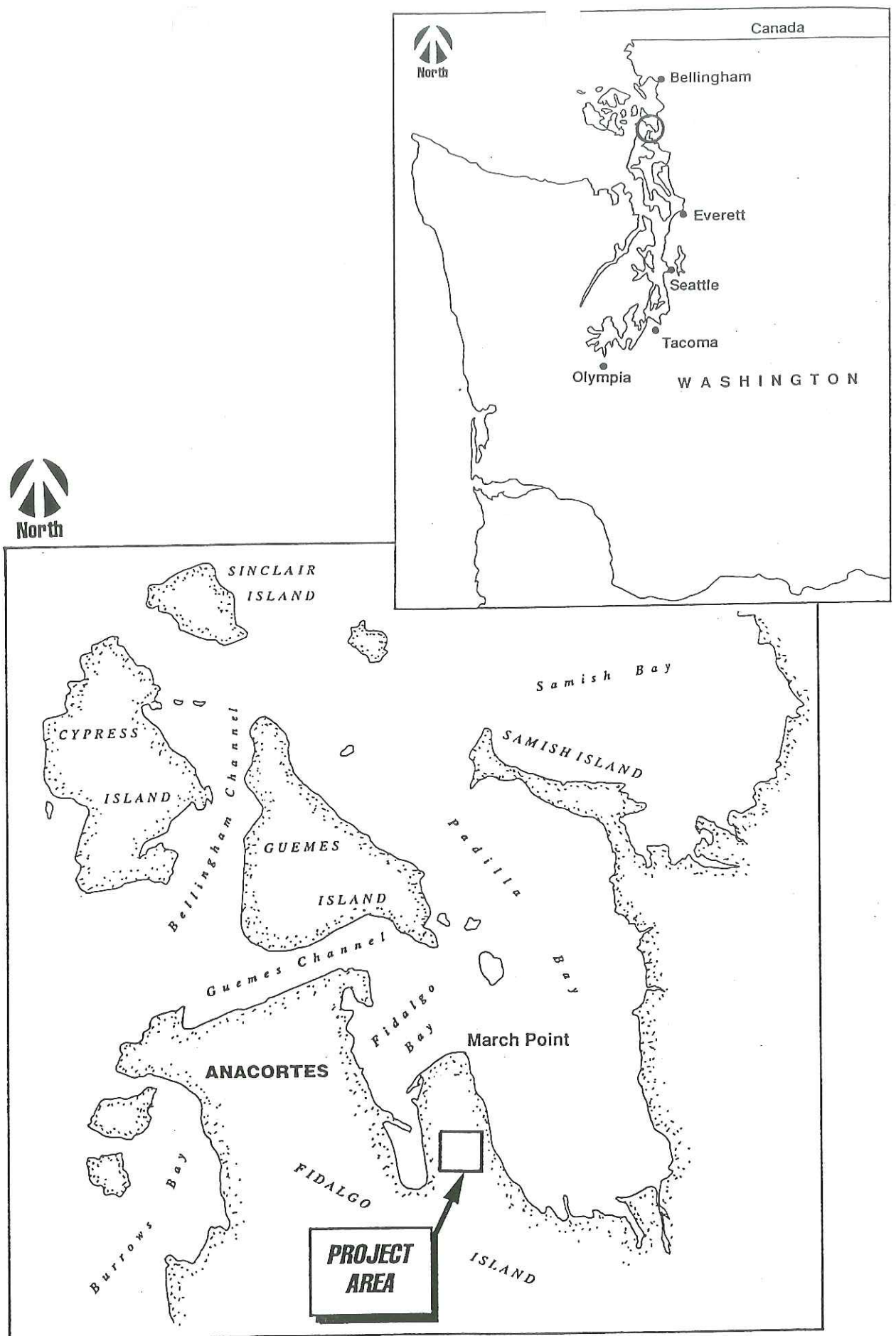
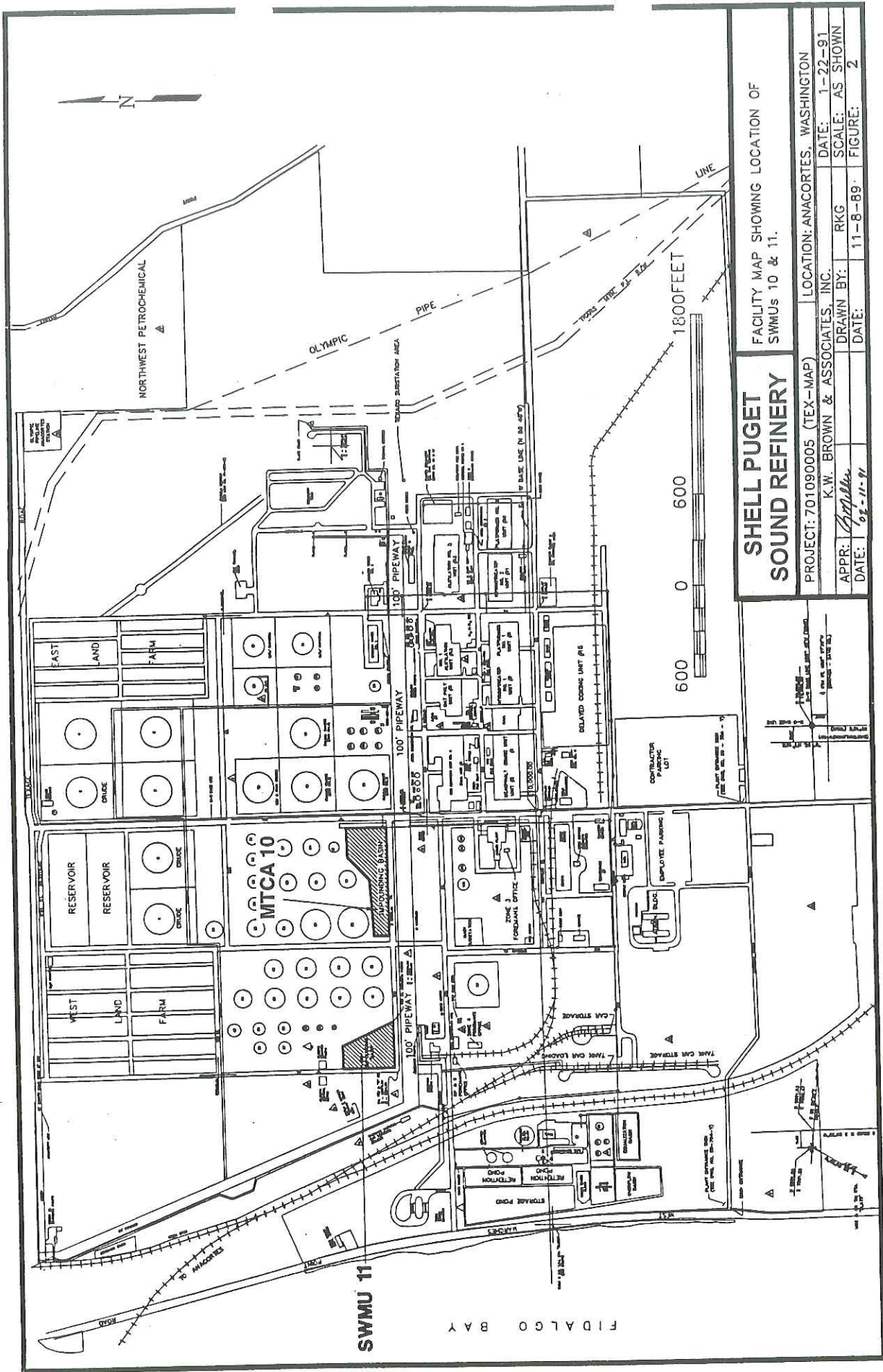


Figure 1. Vicinity map of Shell Puget Sound Refinery



SHELL PUGET SOUND REFINERY

FACILITY MAP SHOWING LOCATION OF
SWMUs 10 & 11.

PROJECT: 701090005 (TEX-MAP)	LOCATION: ANACORTES, WASHINGTON
APP: K.W. BROWN & ASSOCIATES, INC.	DATE: 1-22-91
DRAWN BY: RKG	SCALE: AS SHOWN
DATE: 11-8-89	FIGURE: 2

2.0 FIELD WORK

2.1 GROUNDWATER SURFACE AND FREE PRODUCT MEASUREMENTS

Groundwater surface level measurements were collected from fourteen wells on April 8th, 2004. A layer of LNAPL (Light Non-Aqueous Phase Liquid) was observed in potentiometric well P-21. Well MW-62 was dry. Groundwater/product recovery pumps are located in wells MW-59 and MW-64. A summary of field monitoring data is included as Table 1.

Water level surface measurements were conducted using a Solinst Model 101 water level meter with alarm and stainless steel probe. Floating free product thickness measurements were conducted with a Keck Model KIR-89 Oil-Water Interface Meter. In an attempt to minimize the potential for cross-well contamination, the probe and tape for each meter was thoroughly cleaned with alconox (or equivalent) and decontaminated with distilled water following its introduction into each well. Well measurements were generally conducted in sequence from the least to the most contaminated well based on prior sampling data.

2.1.2 GROUNDWATER GRADIENT, DIRECTION AND FLOWRATE

Recent monitoring data indicates that the local groundwater gradient is generally to the west-southwest that is consistent with historic potentiometric surface data (Texaco - "1994 Annual Report").

TABLE 1 - WATER LEVEL/LNAPL FIELD MEASUREMENT DATA - SWMU 11 (04-03-04)											
*ALL UNITS IN FEET OR CUBIC FEET UNLESS OTHERWISE LABELLED											
WELL No.	DTW (FT)	DEPTH TO PRODUCT	TOT DEPTH (FT)	H2O SURF ELEV.	APP LNAPL THICKNESS	PVC MARK ELEV.	WELL DIA (FT)	WATER VOL IN WELL (Gal.)	BAILER VOL. (Gal.)	No. BAILS For 3 volumes	PURGE H2O VOLUME (Gal.)
MW-59	NS	NS	39.90	N/A	N/A	113.74	0.33	NS	NS	LNAPL	N/A
MW-60	32.78	N/A	54.40	75.19	N/A	107.97	0.33	14.110	1.359	31.15	42.33
MW-61	34.46	N/A	39.42	74.54	N/A	109.00	0.33	3.173	1.359	7.01	9.52
MW-62	Dry	N/A	25.64	DRY	DRY	108.22	0.33	NS	1.359	DRY	DRY
MW-63	31.60	N/A	40.67	78.18	N/A	109.78	0.33	5.803	1.359	LNAPL	17.41
MW-64	NS	NS	43.66	N/A	N/A	111.48	0.33	NS	1.359	LNAPL	NS
MW-65	28.14	N/A	41.37	92.27	N/A	120.41	0.33	8.464	1.359	18.69	25.39
MW-91	22.08	N/A	40.77	99.45	N/A	121.53	0.17	3.173	0.254	37.48	9.52
MW-92	31.18	N/A	36.77	87.22	N/A	118.40	0.17	0.949	0.254	11.21	2.85
MW-93	32.76	N/A	41.27	77.77	N/A	110.53	0.17	1.445	0.254	17.07	4.33
MW-94	36.12	N/A	39.60	72.54	N/A	108.66	0.17	0.591	0.254	6.98	1.77
MW-95	32.90	N/A	40.92	76.84	N/A	109.74	0.17	1.362	0.254	16.08	4.09
MW-96	31.84	N/A	40.41	79.68	N/A	111.52	0.17	1.455	0.254	17.19	4.37
MW-97	27.68	N/A	40.71	87.16	N/A	114.84	0.17	2.212	0.254	26.13	6.64
MW-98	31.5	N/A	35.54	72.60	N/A	104.10	0.17	0.686	0.254	NS	NS
P21	34.24	31.20	36	80.55	3.04	114.79	0.17	N/A	0.254	N/A	N/A
MW-118	31.62	N/A	83	76.40	N/A	108.02	0.17	8.724	0.254	103.04	26.17

2.2 FREE PRODUCT/GROUNDWATER RECOVERY

Table 2 is a compilation of historical floating free product (LNAPL) thickness measurements for wells in which free product has been historically observed (MW-59, MW-63, MW-64 and P-21). Product recovery pump sensors on wells MW-59 and MW-64 are set to remove any LNAPL layer until only a trace remains. In the eighteen months from 5/92 to 7/93, measured LNAPL levels in well MW-59 were reduced from 11.56' to a trace. Since 7/93 the product recovery system continues to remove free product from the recovery wells when it appears. LNAPL was not observed in Well MW-63 during the quarter. Due to the relatively slow apparent velocity of groundwater movement in soils in the vicinity of SWMU 11 (Texaco - 1994 Annual Report), Puget Sound Refinery intends to continue operation of the recovery systems in Wells MW-59 and MW-64 to allow for further slow migration of hydrocarbons into the recovery wells from surrounding soils. No floating free product has been observed to date in any wells around SWMU 11 other than those mentioned above.

The recovery systems pump groundwater and/or product intermittently based on groundwater recharge rates and the presence of free product in recovery wells as determined by sensors in the wells. Quantities of product and groundwater recovered by the systems through March of 2004 are shown in Figures 4 and 5. To date a total of approximately 233,384 Gallons of groundwater and 20,691 gallons of free product have been recovered at the site.

TABLE 2 - SWMU 11

FREE-PRODUCT THICKNESS MEASUREMENTS (FEET)

	WELL No. NUMBER	DATE MEASURED	DEPTH TO PRODUCT (FT)	DEPTH TO WATER (FT)	APPARENT THICKNESS (FT)
	MW-59	5/22/91	30.34	39.27	8.93
		12/11/91	28.53	39.27	10.74
		5/14/92	28.56	40.12	11.56
		10/01/92	31.09	37.81	6.72
		10/20/92	31.77	33.28	1.51*
		07/19/93	ND	32.33***	TRACE***
		5/16/94	35.56	35.57	0.01***
		7/22/98	30.30	33.91	3.61***
		7/30/01	35.30	34.65	0.65***
	MW-63	5/22/91	29.77	29.87	0.10
		12/11/91	26.37	26.38	0.01
		12/03/92	31.18	31.24	0.06**
		5/6/93	30.44	30.44	SHEEN
		5/16/94	31.83	32.60	0.77
		5/3/95	ND	32.02	ND
		11/18/96	32.25	32.38	0.13
		5/22/97	29.56	29.41	0.15
		5/15/98	ND	29.43	ND
		5/5/99	ND	29.27	ND
		5/8/00	ND	29.55	ND
		11/6/01	ND	32.21	ND
		10/22/02	ND	31.10	ND
		5/12/03	ND	31.54	ND
		4/8/04	ND	31.60	ND
	MW-64	5/22/91	30.34	31.07	0.73
		12/11/91	29.14	29.63	0.49
		10/01/92	31.62	32.24	0.62
		7/19/93	ND	32.83	TRACE***
		5/16/94	ND	34.61'	ND***
		7/22/98	33.96	34.03	TRACE***
		7/30/01	ND	32.22	ND***

ND = None Detected; * Measured following free product (LNAPL) bailing event on 6-19-92;

** Measured just prior to installation of passive LNAPL recovery system;

*** Measured when pumps were temporarily removed from wells

TABLE 2 Continued - SWMU 11					
FREE-PRODUCT THICKNESS MEASUREMENTS (FEET)					
	WELL No. NUMBER	DATE MEASURED	DEPTH TO PRODUCT (FT)	DEPTH TO WATER (FT)	APPARENT THICKNESS (FT)
	P-21	5/16/94	33.83	34.12	0.29
		5/3/95	34.20	34.40	0.20
		11/18/96	33.20	36	2.8
		5/22/97	30.25	36	5.75
		5/15/98	29.98	33.48	3.5
		5/5/99	29.66	32.37	2.71
		5/8/00	29.92	34.36	4.44
		7/6/01	31.74	33.84	2.10
		10/22/02	32.50	34.76	2.26
		5/12/03	31.31	32.78	1.47
		4/8/04	31.20	34.24	3.04

FIGURE 4

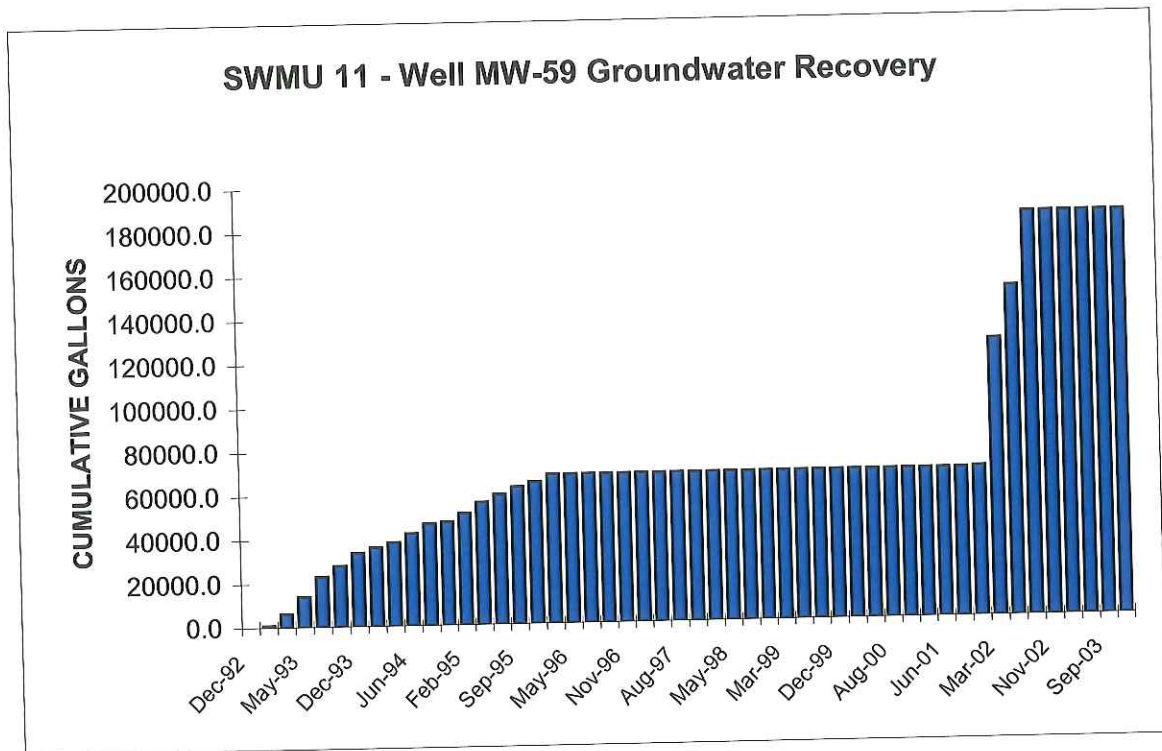
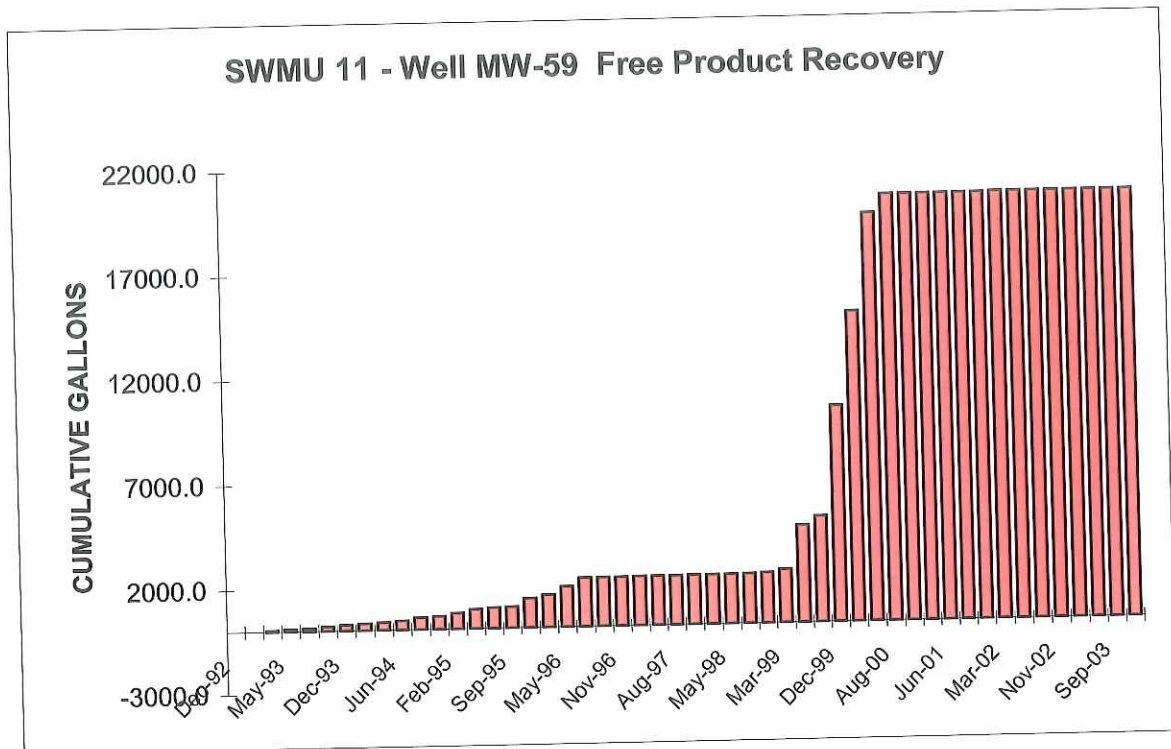
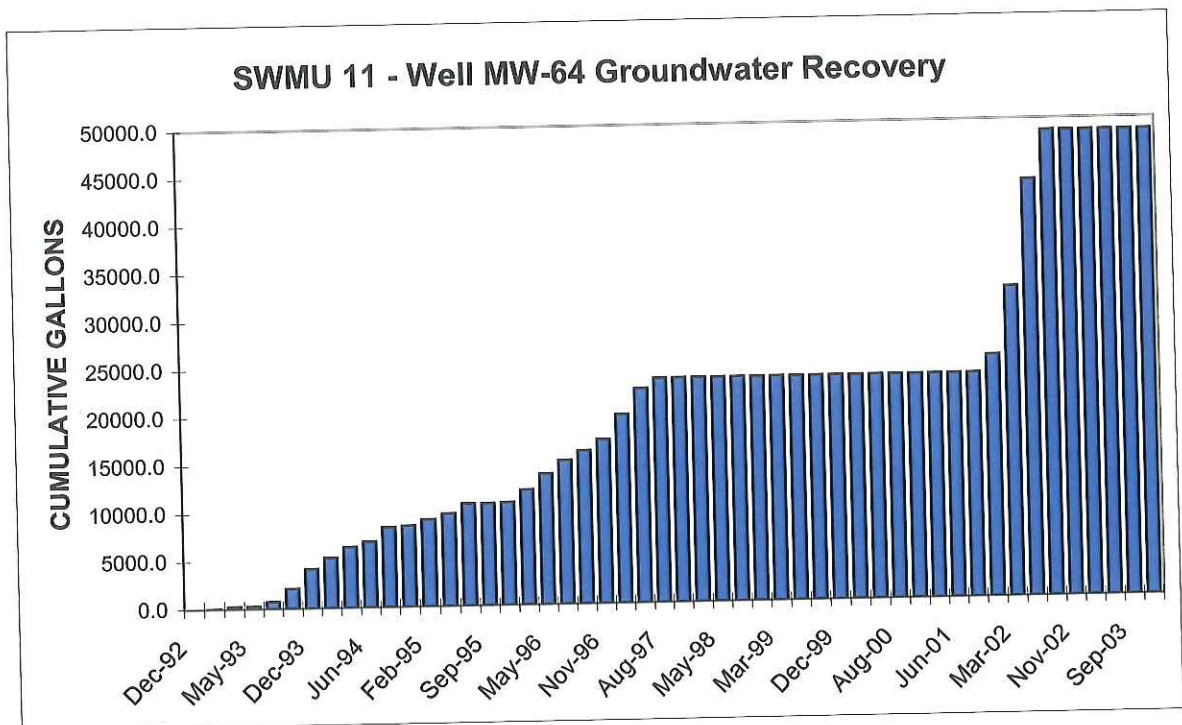
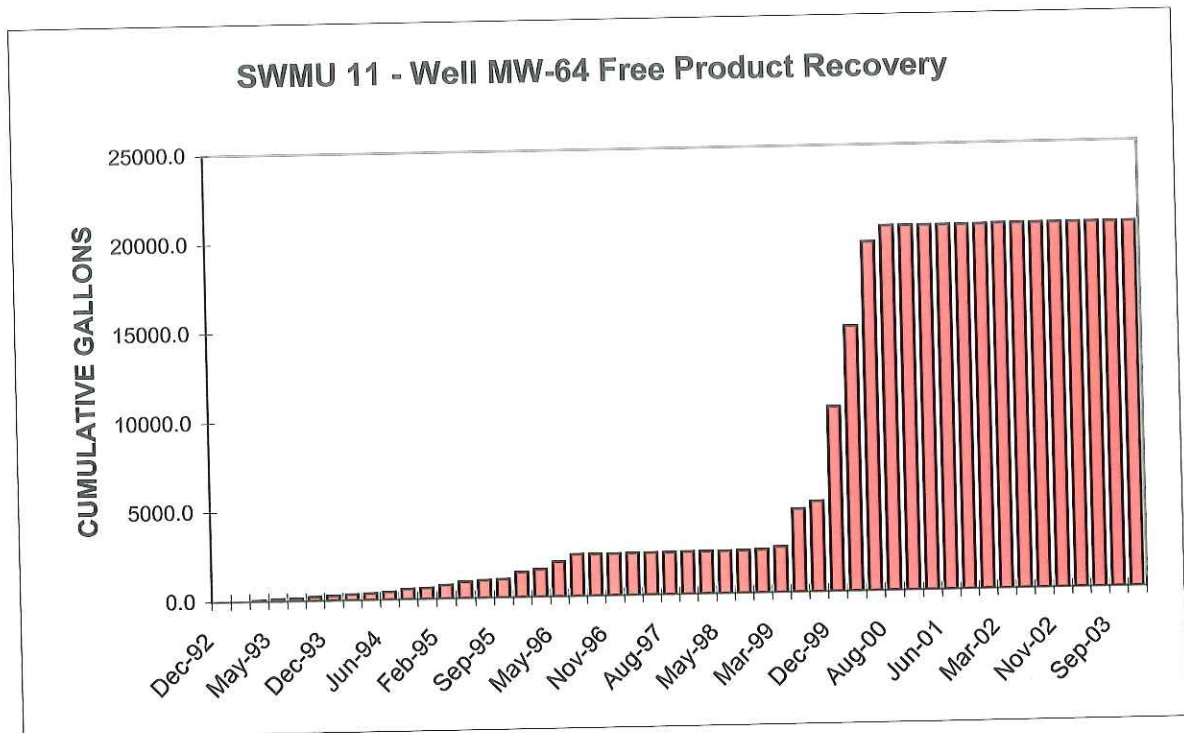


FIGURE 5



In previous reports, It was noted that neither recovery well had shown any activity during the first half of 2001. As a result, both pumps were pulled from the wells on July 30th, 2001 for maintenance and adjustments relative to the groundwater hydrocarbon surface. Once the pumps were removed from the wells, no free product was discovered in well MW-64 and 0.65 feet of free product was discovered in well MW-59. Both pumps were cleaned and new parts ordered to rebuild the pumps. Following maintenance activities, MW-64 recovered significant quantities of groundwater.

In addition to the automated free product/groundwater recovery system, Puget Sound Refinery has also installed a passive, wick type adsorbent pad in well MW-63. Since no hydrocarbon has been found in MW-63 recently, the wick was not utilized during the quarter.

Historically, free product has been detected in Potentiometric Well P-21. The pumping system at well MW-59 appears to have created a capture zone with drawdown which encompasses well P-21 based on potentiometric surface data gathered in November 2001. Historically, the groundwater gradient and flow direction has not varied significantly.

2.3 SAMPLE COLLECTION

On May 18th, 2004, groundwater samples were collected from twelve (12) wells in the vicinity of SWMU 11 including wells MW-60, MW-61, MW-63, MW-65, and MW-91 through MW-98. In addition, two check samples consisting of a travel blank of distilled water and a duplicate of well MW-60 (labeled MW-100) were prepared and analyzed along with groundwater samples for quality control purposes. Well MW-62 was dry or had insufficient recharge after purging and therefore could not be sampled. Wells MW-59 and MW-64 were not sampled due to access limitations as a result of pumping systems in the wells. The original alleged source of hydrocarbons, the shipping basin, was cleaned and lined in early 1992. Each well was purged or bailed dry with a dedicated bailer prior to sampling. The volumes of water contained in each well is shown in Table 1 (Water

Level/LNAPL Field Measurement Data). Conductivity and pH measurements were conducted in conjunction with the well purging procedure. Samples were collected using a disposable (VOSS) bailer that was dedicated to each well. Following collection, samples were placed in an ice chest with blue ice and immediately shipped to a State Certified Laboratory.

3.0 ANALYTICAL RESULTS

The groundwater samples from all twelve (12) of the above mentioned wells plus the sample blank and duplicate were analyzed for 'Skinner List' Volatiles, 'Skinner List' Semi-volatiles, 'Skinner List' Metals and Northwest Total Petroleum Hydrocarbons as diesel (NWTPHd). In addition, 2-methylnaphthalene and 1,1,1-trichloroethane were included as analytes since they were the only constituents which are not on the 'Skinner List' which were detected during historic sampling rounds and were not qualified as laboratory contaminants. Table 3 includes a comprehensive list of skinner analytes (with the exception of TPH) that were submitted for analysis during this sampling event. Tables 4 through 7 are a compilation of the findings from the laboratory analyses. Actual laboratory reports and chain of custody are included in Appendix A.

TABLE 3 - SWMU 11 GROUNDWATER SAMPLING ANALYTES

Based on 2/93 Interim Measures Report

(ie: Skinner List + selected analytes in italics)

METALS

Antimony
Arsenic
Barium
Beryllium
Cadmium
Chromium
Cobalt
Lead
Mercury
Nickel
Selenium
Silver
Vanadium
Zinc
Copper

VOLATILE ORGANICS

EPA Method 8240

Benzene
Carbon Disulfide
Chlorobenzene
Chloroform
1,2-Dibromoethane
1,2-Dichloroethane
1,4-Dioxane
Methyl ethyl ketone
Styrene
Ethyl Benzene
Toluene
*1,1,1-trichloroethane**
*trichloroethene**
Xylenes
 M-Xylene
 O&P Xylene

SEMI-VOLATILES ORGANICS

(EPA Method 8270)

Anthracene
Benz(a)anthracene
Benzo(b)fluoranthene
Benzenethiol
Benzo(k)fluoranthene
Benzo(a)pyrene
Bis(2-ethylhexyl) phthalate
Butyl benzyl phthalate
Chrysene
Cresols (methylphenols)
 O-Cresol
 M&P Cresol
Dibenz(a,h)anthracene
2,4-Dimethylphenol
2,4-Dinitrophenol
Di-n-butyl phthalate
Dichlorobenzenes
 O-Dichlorobenzene
 M-Dichlorobenzene
 P-Dichlorobenzene
Diethyl phthalate
7,12-Dimethylbenz(a)anthracene
Dimethyl phthalate
Di-n-octyl phthalate
Fluoranthene
Indene
Methy chrysene
1-Methylnaphthalene
*2-Methylnaphthalene**
Naphthalene
4-Nitrophenol
Phenanthrene
Phenol
Pyrene
Pyridine
Quinoline

*Not from skinner list

SWMU 11 Well Sampling Event																
Apr-04																
pH and Conductivity																
Parameter	Well Numbers										P-21	SB	100	Comments		
	59	60	61	62	63	64	65	91	92	93					94	95
pH Mean		7.1	7.2		7.2		7.2	7.1	7.1	7.0	7.1	7.1	7.0	7.2	7.2	
Conductivity		1080	910		890		810	780	790	820	820	910	840	820	1030	
(mhos 10-3)																

[illegible]

05May_04_SAMP.xls

[illegible]

[illegible]

ANALYTICAL

Analytes	59	60	61	62	63	64	65	91	92	93	94	95	96	97	98	P-21	SB	60 dup	Reporting Limit	Comments
Antimony		ND	ND		ND		ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND	0.001	
Arsenic		0.010	0.006		0.003		0.006	0.002	0.008	0.031	0.003	0.005	0.018	0.001	0.001		ND	0.009	0.001	
Barium		0.540	0.070		0.045		0.034	0.042	0.021	ND	0.044	0.027	0.030	0.023	0.028		ND	0.513	0.010	
Beryllium		ND	ND		ND		ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND	0.001	
Cadmium		ND	0.001		ND		ND	ND	ND	ND	ND	ND	ND	ND	0.002		ND	ND	0.001	
Chromium		0.002	ND		ND		ND	ND	ND	ND	ND	ND	ND	0.001	0.001		ND	0.002	0.001	
Cobalt		ND	ND		ND		ND	ND	ND	ND	0.002	0.003	0.014	ND	ND		ND	ND	0.001	
Copper		0.001	0.002		ND		ND	0.001	ND	ND	ND	0.002	ND	0.001	0.002		0.001	0.002	0.001	
Lead		ND	ND		ND		ND	ND	ND	0.006	ND	ND	ND	ND	ND		ND	ND	0.001	
Mercury		ND	ND		ND		ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND	0.001	
Nickel		0.004	0.009		0.003		0.005	0.007	0.005	0.002	0.014	0.018	0.012	0.004	0.007		ND	0.004	0.001	
Selenium		0.005	0.002		ND		0.005	0.001	0.001	ND	ND	ND	ND	ND	0.002		ND	0.005	0.001	
Silver		ND	ND		ND		ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND	0.001	
Vanadium		ND	0.004		ND		0.008	0.010	0.003	ND	0.003	0.003	ND	0.003	0.006		ND	ND	0.001	

3.1 'SKINNER LIST' VOLATILE ORGANICS

No volatile organics were detected in groundwater above reporting limits for wells MW-93 through MW-98. Table 4 summarizes the levels of selected volatile organics above PQL's found in other wells at the site. Additional full results are also provided in the laboratory analytical reports in Appendix A.

3.2 'SKINNER LIST' SEMI-VOLATILE ORGANICS

2,4-Dimethylphenol was detected in wells MW-60 and MW-61. Bis(2-ethylhexyl)phthalate was detected in wells MW-63, MW-65, MW-91, MW-95 and MW-98. Historic anomalous appearances of Bis (2-ethylhexyl) indicate that they are likely the result of laboratory contamination. Bis (2-ethylhexyl) phthalate is a ubiquitous plasticizer and is a common 'ghost' chemical associated with sample contamination from plastics. Table 5 summarizes the levels of selected semi-volatile organics, which were detected above Practical Quantitative Limits in the vicinity of SWMU 11.

3.3 TOTAL EXTRACTABLE HYDROCARBONS

During this sampling round, a Total Extractable Hydrocarbon as diesel (WTPH-d) analysis was completed for each well where a sample was collected in addition to the analytes listed on Table 3. For petroleum related sites, TPH is useful as a non-specific screening tool which indicates the general nature and location of a hydrocarbon plume. Table 6 depicts the results of the analytical testing for TPH.

3.4 SKINNER METALS

Skinner metals that were detected in the groundwater at SWMU 11 are summarized in Table 7.

4.0 PLANNED ACTIVITIES

A dual pump hydrocarbon recovery system consisting of a water table depression pump and free product recovery pump (Workplan for Conducting SWMU 11 Phase II RFI Activities - April 1992) has been operating in wells MW-59 and MW-64 since December of 1992. A passive product recovery system has been periodically installed in well MW-63 since the middle of 1992. Potentiometric well P-21 is occasionally bailed to remove free product in addition to that recovered by nearby recovery well MW-59. The operation and monitoring of the LNAPL/groundwater recovery systems will continue through 2004/2005. Data regarding the progress of remedial activities at the site will be collected quarterly or as warranted by significant findings at the site.

APPENDIX A
LABORATORY REPORTS
CHAIN OF CUSTODY FORM
May 18, 2004 SAMPLING ROUND



Seattle 11720 Creek Pkwy N, Suite 400, Bothell, WA 98011-8244
425.420.9200 fax 425.420.9210
Spokane 11922 E. 1st Avenue, Spokane Valley, WA 99206-5302
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 2000 W. International Airport Road, Suite A10, Anchorage, AK 99502-1119
907.563.9200 fax 907.563.9210

Shell Puget Sound Refinery
8505 South Texas Road
Anacortes, WA 98221

Project: SWMU 11 Sampling
Project Number: 4550237616
Project Manager: Brian Rhodes

Reported:
06/07/04 16:03

Semivolatile Petroleum Products by NWTPH-Dx (w/o Acid/Silica Gel Clean-up)
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
92 (B4E0548-01) Water Sampled: 05/18/04 12:00 Received: 05/21/04 09:25									
Diesel Range Hydrocarbons	0.571	0.250	mg/l	1	4E25012	05/25/04	05/26/04	NWTPH-Dx	
Lube Oil Range Hydrocarbons	ND	0.500	"	"	"	"	"	"	
Surrogate: 2-FBP	94.6 %	50-150			"	"	"	"	
Surrogate: Octacosane	104 %	50-150			"	"	"	"	
91 (B4E0548-02) Water Sampled: 05/18/04 12:00 Received: 05/21/04 09:25									
Diesel Range Hydrocarbons	0.280	0.250	mg/l	1	4E25012	05/25/04	05/26/04	NWTPH-Dx	
Lube Oil Range Hydrocarbons	ND	0.500	"	"	"	"	"	"	
Surrogate: 2-FBP	86.8 %	50-150			"	"	"	"	
Surrogate: Octacosane	104 %	50-150			"	"	"	"	
93 (B4E0548-03) Water Sampled: 05/18/04 12:00 Received: 05/21/04 09:25									
Diesel Range Hydrocarbons	0.479	0.250	mg/l	1	4E25012	05/25/04	05/26/04	NWTPH-Dx	
Lube Oil Range Hydrocarbons	ND	0.500	"	"	"	"	"	"	
Surrogate: 2-FBP	85.5 %	50-150			"	"	"	"	
Surrogate: Octacosane	101 %	50-150			"	"	"	"	
60 (B4E0548-04) Water Sampled: 05/18/04 12:00 Received: 05/21/04 09:25									
Diesel Range Hydrocarbons	9.38	1.25	mg/l	5	4E25012	05/25/04	05/26/04	NWTPH-Dx	
Lube Oil Range Hydrocarbons	1.33	0.500	"	1	"	"	05/26/04	"	
Surrogate: 2-FBP	94.6 %	50-150			"	"	"	"	
Surrogate: Octacosane	105 %	50-150			"	"	"	"	
61 (B4E0548-05) Water Sampled: 05/18/04 12:00 Received: 05/21/04 09:25									
Diesel Range Hydrocarbons	10.9	1.25	mg/l	5	4E25012	05/25/04	05/26/04	NWTPH-Dx	
Lube Oil Range Hydrocarbons	1.31	0.500	"	1	"	"	05/26/04	"	
Surrogate: 2-FBP	108 %	50-150			"	"	"	"	
Surrogate: Octacosane	108 %	50-150			"	"	"	"	

North Creek Analytical - Bothell

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Jeanne Garthwaite

Jeanne Garthwaite, Project Manager

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07 June 2004

Brian Rhodes
Shell Puget Sound Refinery
8505 South Texas Road
Anacortes, WA 98221
RE: SWMU 11 Sampling

Enclosed are the results of analyses for samples received by the laboratory on 05/21/04 09:25. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jeanne Garthwaite
Project Manager



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CASE NARRATIVE for B4E0548

Client: Shell Puget Sound Refinery
Project Manager: Brian Rhodes
Project Name: SWMU 11
Project Number: 4550237616

1.0 DESCRIPTION OF CASE

Fourteen water samples were received in a single shipment as documented on the associated chain-of-custody. The scheduled analyses for these samples included: Diesel Range Hydrocarbons by NWTPH-Dx, Total Metals by EPA 6020/7470A, Volatile Organic Compounds (Texaco Skinner List) by EPA 8260B, Semivolatile Organic Compounds (Texaco Skinner List) by EPA 8270C

2.0 COMMENTS ON SAMPLE RECEIPT

The samples were received in the Bothell laboratory on May 21, 2004. The cooler temperature was documented at 4.8 ° Celsius upon receipt in the laboratory. All sample containers were received in good condition.

3.0 COMMENTS ON PREPARATION AND ANALYSIS

Diesel Range Hydrocarbons by NWTPH-Dx

No anomalies were associated with sample preparation and analysis. All quality control measures were within acceptable ranges.

Total Metals by EPA 6020/7470A


No anomalies were associated with sample preparation and analysis. All quality control measures were within acceptable ranges.

Volatile Organic Compounds (Texaco Skinner List) by EPA 8260B

No additional anomalies, discrepancies, or issues were associated with sample preparation, analysis and quality control other than those already qualified in the data and described in the Notes and Definitions page at the end of this report.

Semivolatile Organic Compounds by EPA 8270C

The sample identified as 98 had low surrogate recovery for three acid surrogates, 2-FP, Phenol-d6 and 2,4,6-TBP. The sample identified as 95 had low surrogate recovery for two acid surrogates, 2-FP and Phenol-d6. The samples were re-analyzed with the same results occurring. We did not receive any extra sample volume for re-extraction.


Jeanne Garthwaite
Project Manager
North Creek Analytical

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Shell Puget Sound Refinery
8505 South Texas Road
Anacortes, WA 98221

Project: SWMU 11 Sampling
Project Number: 4550237616
Project Manager: Brian Rhodes

Reported:
06/07/04 16:03

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
92	B4E0548-01	Water	05/18/04 12:00	05/21/04 09:25
91	B4E0548-02	Water	05/18/04 12:00	05/21/04 09:25
93	B4E0548-03	Water	05/18/04 12:00	05/21/04 09:25
60	B4E0548-04	Water	05/18/04 12:00	05/21/04 09:25
61	B4E0548-05	Water	05/18/04 12:00	05/21/04 09:25
94	B4E0548-06	Water	05/18/04 12:00	05/21/04 09:25
98	B4E0548-07	Water	05/18/04 12:00	05/21/04 09:25
95	B4E0548-08	Water	05/18/04 12:00	05/21/04 09:25
96	B4E0548-09	Water	05/18/04 12:00	05/21/04 09:25
97	B4E0548-10	Water	05/18/04 12:00	05/21/04 09:25
63	B4E0548-11	Water	05/18/04 12:00	05/21/04 09:25
65	B4E0548-12	Water	05/18/04 12:00	05/21/04 09:25
100	B4E0548-13	Water	05/18/04 12:00	05/21/04 09:25
BLANK	B4E0548-14	Water	05/18/04 12:00	05/21/04 09:25
TRIP BLANK	B4E0548-15	Water	05/20/04 12:00	05/21/04 09:25

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Shell Puget Sound Refinery
8505 South Texas Road
Anacortes, WA 98221

Project: SWMU 11 Sampling
Project Number: 4550237616
Project Manager: Brian Rhodes

Reported:
06/07/04 16:03

Semivolatile Petroleum Products by NWTPH-Dx (w/o Acid/Silica Gel Clean-up)

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
94 (B4E0548-06) Water Sampled: 05/18/04 12:00 Received: 05/21/04 09:25									
Diesel Range Hydrocarbons	0.411	0.250	mg/l	1	4E25012	05/25/04	05/26/04	NWTPH-Dx	
Lube Oil Range Hydrocarbons	ND	0.500	"	"	"	"	"	"	
Surrogate: 2-FBP	101 %	50-150			"	"	"	"	
Surrogate: Octacosane	102 %	50-150			"	"	"	"	
95 (B4E0548-08) Water Sampled: 05/18/04 12:00 Received: 05/21/04 09:25									
Diesel Range Hydrocarbons	ND	0.250	mg/l	1	4E25012	05/25/04	05/26/04	NWTPH-Dx	
Lube Oil Range Hydrocarbons	ND	0.500	"	"	"	"	"	"	
Surrogate: 2-FBP	88.9 %	50-150			"	"	"	"	
Surrogate: Octacosane	102 %	50-150			"	"	"	"	
96 (B4E0548-09) Water Sampled: 05/18/04 12:00 Received: 05/21/04 09:25									
Diesel Range Hydrocarbons	ND	0.250	mg/l	1	4E25012	05/25/04	05/26/04	NWTPH-Dx	
Lube Oil Range Hydrocarbons	ND	0.500	"	"	"	"	"	"	
Surrogate: 2-FBP	86.5 %	50-150			"	"	"	"	
Surrogate: Octacosane	86.2 %	50-150			"	"	"	"	
97 (B4E0548-10) Water Sampled: 05/18/04 12:00 Received: 05/21/04 09:25									
Diesel Range Hydrocarbons	ND	0.250	mg/l	1	4E25012	05/25/04	05/26/04	NWTPH-Dx	
Lube Oil Range Hydrocarbons	ND	0.500	"	"	"	"	"	"	
Surrogate: 2-FBP	85.7 %	50-150			"	"	"	"	
Surrogate: Octacosane	94.9 %	50-150			"	"	"	"	
63 (B4E0548-11) Water Sampled: 05/18/04 12:00 Received: 05/21/04 09:25									
Diesel Range Hydrocarbons	23.4	2.50	mg/l	10	4E25012	05/25/04	05/26/04	NWTPH-Dx	
Lube Oil Range Hydrocarbons	ND	5.00	"	"	"	"	"	"	
Surrogate: 2-FBP	93.3 %	50-150			"	"	"	"	
Surrogate: Octacosane	81.5 %	50-150			"	"	"	"	

North Creek Analytical - Bothell

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Jeanne Garthwaite

Jeanne Garthwaite, Project Manager

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Shell Puget Sound Refinery
8505 South Texas Road
Anacortes, WA 98221

Project: SWMU 11 Sampling
Project Number: 4550237616
Project Manager: Brian Rhodes

Reported:
06/07/04 16:03

Semivolatile Petroleum Products by NWTPH-Dx (w/o Acid/Silica Gel Clean-up)
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
65 (B4E0548-12) Water Sampled: 05/18/04 12:00 Received: 05/21/04 09:25									
Diesel Range Hydrocarbons	0.274	0.250	mg/l	1	4E25012	05/25/04	05/26/04	NWTPH-Dx	
Lube Oil Range Hydrocarbons	ND	0.500	"	"	"	"	"	"	
Surrogate: 2-FBP	83.4 %	50-150			"	"	"	"	
Surrogate: Octacosane	94.2 %	50-150			"	"	"	"	
100 (B4E0548-13) Water Sampled: 05/18/04 12:00 Received: 05/21/04 09:25									
Diesel Range Hydrocarbons	7.64	0.500	mg/l	2	4E25012	05/25/04	05/26/04	NWTPH-Dx	
Lube Oil Range Hydrocarbons	1.06	0.500	"	1	"	"	05/26/04	"	
Surrogate: 2-FBP	101 %	50-150			"	"	"	"	
Surrogate: Octacosane	89.9 %	50-150			"	"	"	"	
BLANK (B4E0548-14) Water Sampled: 05/18/04 12:00 Received: 05/21/04 09:25									
Diesel Range Hydrocarbons	ND	0.250	mg/l	1	4E25012	05/25/04	05/26/04	NWTPH-Dx	
Lube Oil Range Hydrocarbons	ND	0.500	"	"	"	"	"	"	
Surrogate: 2-FBP	75.2 %	50-150			"	"	"	"	
Surrogate: Octacosane	90.9 %	50-150			"	"	"	"	

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Jeanne Garthwaite, Project Manager

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Shell Puget Sound Refinery
8505 South Texas Road
Anacortes, WA 98221

Project: SWMU 11 Sampling
Project Number: 4550237616
Project Manager: Brian Rhodes

Reported:
06/07/04 16:03

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

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
92 (B4E0548-01) Water Sampled: 05/18/04 12:00 Received: 05/21/04 09:25									
Silver	ND	0.00100	mg/l	1	4E25025	05/25/04	05/26/04	EPA 6020	
Arsenic	0.00783	0.00100	"	"	"	"	"	"	
Barium	0.0207	0.0100	"	"	"	"	"	"	
Beryllium	ND	0.00100	"	"	"	"	"	"	
Cadmium	ND	0.00100	"	"	"	"	"	"	
Cobalt	ND	0.00100	"	"	"	"	"	"	
Chromium	ND	0.00100	"	"	"	"	"	"	
Copper	ND	0.00100	"	"	"	"	"	"	
Mercury	ND	0.000200	"	"	4E24045	05/24/04	06/01/04	EPA 7470A	
Nickel	0.00524	0.00100	"	"	4E25025	05/25/04	05/26/04	EPA 6020	
Lead	ND	0.00100	"	"	"	"	"	"	
Antimony	ND	0.00300	"	"	"	"	"	"	
Selenium	0.00144	0.00100	"	"	"	"	"	"	
Vanadium	0.00271	0.00100	"	"	"	"	"	"	
91 (B4E0548-02) Water Sampled: 05/18/04 12:00 Received: 05/21/04 09:25									
Silver	ND	0.00100	mg/l	1	4E25025	05/25/04	05/26/04	EPA 6020	
Arsenic	0.00212	0.00100	"	"	"	"	"	"	
Barium	0.0421	0.0100	"	"	"	"	"	"	
Beryllium	ND	0.00100	"	"	"	"	"	"	
Cadmium	ND	0.00100	"	"	"	"	"	"	
Cobalt	ND	0.00100	"	"	"	"	"	"	
Chromium	ND	0.00100	"	"	"	"	"	"	
Copper	0.00126	0.00100	"	"	"	"	"	"	
Mercury	ND	0.000200	"	"	4E24045	05/24/04	06/01/04	EPA 7470A	
Nickel	0.00676	0.00100	"	"	4E25025	05/25/04	05/26/04	EPA 6020	
Lead	ND	0.00100	"	"	"	"	"	"	
Antimony	ND	0.00300	"	"	"	"	"	"	
Selenium	0.00103	0.00100	"	"	"	"	"	"	
Vanadium	0.00969	0.00100	"	"	"	"	"	"	

North Creek Analytical - Bothell

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Shell Puget Sound Refinery
8505 South Texas Road
Anacortes, WA 98221

Project: SWMU 11 Sampling
Project Number: 4550237616
Project Manager: Brian Rhodes

Reported:
06/07/04 16:03

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

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
93 (B4E0548-03) Water Sampled: 05/18/04 12:00 Received: 05/21/04 09:25									
Silver	ND	0.00100	mg/l	1	4E25025	05/25/04	05/26/04	EPA 6020	
Arsenic	0.0307	0.00100	"	"	"	"	"	"	
Barium	ND	0.0100	"	"	"	"	"	"	
Beryllium	ND	0.00100	"	"	"	"	"	"	
Cadmium	ND	0.00100	"	"	"	"	"	"	
Cobalt	ND	0.00100	"	"	"	"	"	"	
Chromium	ND	0.00100	"	"	"	"	"	"	
Copper	ND	0.00100	"	"	"	"	"	"	
Mercury	ND	0.000200	"	"	4E24045	05/24/04	06/01/04	EPA 7470A	
Nickel	0.00220	0.00100	"	"	4E25025	05/25/04	05/26/04	EPA 6020	
Lead	ND	0.00100	"	"	"	"	"	"	
Antimony	ND	0.00300	"	"	"	"	"	"	
Selenium	ND	0.00100	"	"	"	"	"	"	
Vanadium	ND	0.00100	"	"	"	"	"	"	
60 (B4E0548-04) Water Sampled: 05/18/04 12:00 Received: 05/21/04 09:25									
Silver	ND	0.00100	mg/l	1	4E25025	05/25/04	05/26/04	EPA 6020	
Arsenic	0.00960	0.00100	"	"	"	"	"	"	
Barium	0.540	0.0200	"	2	"	"	05/27/04	"	
Beryllium	ND	0.00100	"	1	"	"	05/26/04	"	
Cadmium	ND	0.00100	"	"	"	"	"	"	
Cobalt	ND	0.00100	"	"	"	"	"	"	
Chromium	0.00249	0.00100	"	"	"	"	"	"	
Copper	0.00142	0.00100	"	"	"	"	"	"	
Mercury	ND	0.000200	"	"	4E24045	05/24/04	06/01/04	EPA 7470A	
Nickel	0.00385	0.00100	"	"	4E25025	05/25/04	05/26/04	EPA 6020	
Lead	ND	0.00100	"	"	"	"	"	"	
Antimony	ND	0.00300	"	"	"	"	"	"	
Selenium	0.00482	0.00100	"	"	"	"	"	"	
Vanadium	ND	0.00100	"	"	"	"	"	"	

North Creek Analytical - Bothell

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Jeanne Garthwaite

Jeanne Garthwaite, Project Manager

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Shell Puget Sound Refinery
 8505 South Texas Road
 Anacortes, WA 98221

Project: SWMU 11 Sampling
 Project Number: 4550237616
 Project Manager: Brian Rhodes

Reported:
 06/07/04 16:03

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

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
61 (B4E0548-05) Water Sampled: 05/18/04 12:00 Received: 05/21/04 09:25									
Silver	ND	0.00100	mg/l	1	4E25025	05/25/04	05/26/04	EPA 6020	
Arsenic	0.00568	0.00100	"	"	"	"	"	"	
Barium	0.0342	0.0100	"	"	"	"	"	"	
Beryllium	ND	0.00100	"	"	"	"	"	"	
Cadmium	0.00140	0.00100	"	"	"	"	"	"	
Cobalt	ND	0.00100	"	"	"	"	"	"	
Chromium	ND	0.00100	"	"	"	"	"	"	
Copper	0.00234	0.00100	"	"	"	"	"	"	
Mercury	ND	0.000200	"	"	4E24045	05/24/04	06/01/04	EPA 7470A	
Nickel	0.00900	0.00100	"	"	4E25025	05/25/04	05/26/04	EPA 6020	
Lead	ND	0.00100	"	"	"	"	"	"	
Antimony	ND	0.00300	"	"	"	"	"	"	
Selenium	0.00194	0.00100	"	"	"	"	"	"	
Vanadium	0.00396	0.00100	"	"	"	"	"	"	
94 (B4E0548-06) Water Sampled: 05/18/04 12:00 Received: 05/21/04 09:25									
Silver	ND	0.00100	mg/l	1	4E25025	05/25/04	05/26/04	EPA 6020	
Arsenic	0.00268	0.00100	"	"	"	"	"	"	
Barium	0.0438	0.0100	"	"	"	"	"	"	
Beryllium	ND	0.00100	"	"	"	"	"	"	
Cadmium	ND	0.00100	"	"	"	"	"	"	
Cobalt	0.00227	0.00100	"	"	"	"	"	"	
Chromium	ND	0.00100	"	"	"	"	"	"	
Copper	ND	0.00100	"	"	"	"	"	"	
Mercury	ND	0.000200	"	"	4E24045	05/24/04	06/01/04	EPA 7470A	
Nickel	0.0143	0.00100	"	"	4E25025	05/25/04	05/26/04	EPA 6020	
Lead	ND	0.00100	"	"	"	"	"	"	
Antimony	ND	0.00300	"	"	"	"	"	"	
Selenium	ND	0.00100	"	"	"	"	"	"	
Vanadium	0.00270	0.00100	"	"	"	"	"	"	

North Creek Analytical - Bothell

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Jeanne Garthwaite, Project Manager

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Shell Puget Sound Refinery
8505 South Texas Road
Anacortes, WA 98221

Project: SWMU 11 Sampling
Project Number: 4550237616
Project Manager: Brian Rhodes

Reported:
06/07/04 16:03

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

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
98 (B4E0548-07) Water Sampled: 05/18/04 12:00 Received: 05/21/04 09:25									
Silver	ND	0.00100	mg/l	1	4E25025	05/25/04	05/26/04	EPA 6020	
Arsenic	0.00142	0.00100	"	"	"	"	"	"	
Barium	0.0282	0.0100	"	"	"	"	"	"	
Beryllium	ND	0.00100	"	"	"	"	"	"	
Cadmium	0.00152	0.00100	"	"	"	"	"	"	
Cobalt	ND	0.00100	"	"	"	"	"	"	
Chromium	0.00101	0.00100	"	"	"	"	"	"	
Copper	0.00230	0.00100	"	"	"	"	"	"	
Mercury	ND	0.000200	"	"	4E24045	05/24/04	06/01/04	EPA 7470A	
Nickel	0.00717	0.00100	"	"	4E25025	05/25/04	05/26/04	EPA 6020	
Lead	ND	0.00100	"	"	"	"	"	"	
Antimony	ND	0.00300	"	"	"	"	"	"	
Selenium	0.00186	0.00100	"	"	"	"	"	"	
Vanadium	0.00596	0.00100	"	"	"	"	"	"	
95 (B4E0548-08) Water Sampled: 05/18/04 12:00 Received: 05/21/04 09:25									
Silver	ND	0.00100	mg/l	1	4E25025	05/25/04	05/26/04	EPA 6020	
Arsenic	0.00522	0.00100	"	"	"	"	"	"	
Barium	0.0272	0.0100	"	"	"	"	"	"	
Beryllium	ND	0.00100	"	"	"	"	"	"	
Cadmium	ND	0.00100	"	"	"	"	"	"	
Cobalt	0.00306	0.00100	"	"	"	"	"	"	
Chromium	ND	0.00100	"	"	"	"	"	"	
Copper	0.00161	0.00100	"	"	"	"	"	"	
Mercury	ND	0.000200	"	"	4E24045	05/24/04	06/01/04	EPA 7470A	
Nickel	0.0181	0.00100	"	"	4E25025	05/25/04	05/26/04	EPA 6020	
Lead	ND	0.00100	"	"	"	"	"	"	
Antimony	ND	0.00300	"	"	"	"	"	"	
Selenium	ND	0.00100	"	"	"	"	"	"	
Vanadium	0.00318	0.00100	"	"	"	"	"	"	

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Jeanne Garthwaite, Project Manager

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Shell Puget Sound Refinery
8505 South Texas Road
Anacortes, WA 98221

Project: SWMU 11 Sampling
Project Number: 4550237616
Project Manager: Brian Rhodes

Reported:
06/07/04 16:03

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

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
96 (B4E0548-09) Water Sampled: 05/18/04 12:00 Received: 05/21/04 09:25									
Silver	ND	0.00100	mg/l	1	4E25025	05/25/04	05/26/04	EPA 6020	
Arsenic	0.0181	0.00100	"	"	"	"	"	"	
Barium	0.0299	0.0100	"	"	"	"	"	"	
Beryllium	ND	0.00100	"	"	"	"	"	"	
Cadmium	ND	0.00100	"	"	"	"	"	"	
Cobalt	0.0143	0.00100	"	"	"	"	"	"	
Chromium	ND	0.00100	"	"	"	"	"	"	
Copper	ND	0.00100	"	"	"	"	"	"	
Mercury	ND	0.000200	"	"	4E24045	05/24/04	06/01/04	EPA 7470A	
Nickel	0.0118	0.00100	"	"	4E25025	05/25/04	05/26/04	EPA 6020	
Lead	ND	0.00100	"	"	"	"	"	"	
Antimony	ND	0.00300	"	"	"	"	"	"	
Selenium	ND	0.00100	"	"	"	"	"	"	
Vanadium	ND	0.00100	"	"	"	"	"	"	
97 (B4E0548-10) Water Sampled: 05/18/04 12:00 Received: 05/21/04 09:25									
Silver	ND	0.00100	mg/l	1	4E25025	05/25/04	05/26/04	EPA 6020	
Arsenic	0.00131	0.00100	"	"	"	"	"	"	
Barium	0.0230	0.0100	"	"	"	"	"	"	
Beryllium	ND	0.00100	"	"	"	"	"	"	
Cadmium	ND	0.00100	"	"	"	"	"	"	
Cobalt	ND	0.00100	"	"	"	"	"	"	
Chromium	0.00101	0.00100	"	"	"	"	"	"	
Copper	0.00100	0.00100	"	"	"	"	"	"	
Mercury	ND	0.000200	"	"	4E24045	05/24/04	06/01/04	EPA 7470A	
Nickel	0.00386	0.00100	"	"	4E25025	05/25/04	05/26/04	EPA 6020	
Lead	ND	0.00100	"	"	"	"	"	"	
Antimony	ND	0.00300	"	"	"	"	"	"	
Selenium	ND	0.00100	"	"	"	"	"	"	
Vanadium	0.00336	0.00100	"	"	"	"	"	"	

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Shell Puget Sound Refinery
8505 South Texas Road
Anacortes, WA 98221

Project: SWMU 11 Sampling
Project Number: 4550237616
Project Manager: Brian Rhodes

Reported:
06/07/04 16:03

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

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
63 (B4E0548-11) Water Sampled: 05/18/04 12:00 Received: 05/21/04 09:25									
Silver	ND	0.00100	mg/l	1	4E25025	05/25/04	05/26/04	EPA 6020	
Arsenic	0.00321	0.00100	"	"	"	"	"	"	
Barium	0.0445	0.0100	"	"	"	"	"	"	
Beryllium	ND	0.00100	"	"	"	"	"	"	
Cadmium	ND	0.00100	"	"	"	"	"	"	
Cobalt	ND	0.00100	"	"	"	"	"	"	
Chromium	ND	0.00100	"	"	"	"	"	"	
Copper	ND	0.00100	"	"	"	"	"	"	
Mercury	ND	0.000200	"	"	4E24045	05/24/04	06/01/04	EPA 7470A	
Nickel	0.00280	0.00100	"	"	4E25025	05/25/04	05/26/04	EPA 6020	
Lead	ND	0.00100	"	"	"	"	"	"	
Antimony	ND	0.00300	"	"	"	"	"	"	
Selenium	ND	0.00100	"	"	"	"	"	"	
Vanadium	ND	0.00100	"	"	"	"	"	"	
65 (B4E0548-12) Water Sampled: 05/18/04 12:00 Received: 05/21/04 09:25									
Silver	ND	0.00100	mg/l	1	4E25025	05/25/04	05/26/04	EPA 6020	
Arsenic	0.00618	0.00100	"	"	"	"	"	"	
Barium	0.0338	0.0100	"	"	"	"	"	"	
Beryllium	ND	0.00100	"	"	"	"	"	"	
Cadmium	ND	0.00100	"	"	"	"	"	"	
Cobalt	ND	0.00100	"	"	"	"	"	"	
Chromium	ND	0.00100	"	"	"	"	"	"	
Copper	ND	0.00100	"	"	"	"	"	"	
Mercury	ND	0.000200	"	"	4E24045	05/24/04	06/01/04	EPA 7470A	
Nickel	0.00457	0.00100	"	"	4E25025	05/25/04	05/26/04	EPA 6020	
Lead	ND	0.00100	"	"	"	"	"	"	
Antimony	ND	0.00300	"	"	"	"	"	"	
Selenium	0.00482	0.00100	"	"	"	"	"	"	
Vanadium	0.00818	0.00100	"	"	"	"	"	"	

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Shell Puget Sound Refinery
8505 South Texas Road
Anacortes, WA 98221

Project: SWMU 11 Sampling
Project Number: 4550237616
Project Manager: Brian Rhodes

Reported:
06/07/04 16:03

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

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
100 (B4E0548-13) Water Sampled: 05/18/04 12:00 Received: 05/21/04 09:25									
Silver	ND	0.00100	mg/l	1	4E25025	05/25/04	05/26/04	EPA 6020	
Arsenic	0.00915	0.00100	"	"	"	"	"	"	
Barium	0.513	0.0200	"	2	"	"	05/27/04	"	
Beryllium	ND	0.00100	"	1	"	"	05/26/04	"	
Cadmium	ND	0.00100	"	"	"	"	"	"	
Cobalt	ND	0.00100	"	"	"	"	"	"	
Chromium	0.00240	0.00100	"	"	"	"	"	"	
Copper	0.00180	0.00100	"	"	"	"	"	"	
Mercury	ND	0.000200	"	"	4E24045	05/24/04	06/01/04	EPA 7470A	
Nickel	0.00406	0.00100	"	"	4E25025	05/25/04	05/26/04	EPA 6020	
Lead	ND	0.00100	"	"	"	"	"	"	
Antimony	ND	0.00300	"	"	"	"	"	"	
Selenium	0.00482	0.00100	"	"	"	"	"	"	
Vanadium	ND	0.00100	"	"	"	"	"	"	
BLANK (B4E0548-14) Water Sampled: 05/18/04 12:00 Received: 05/21/04 09:25									
Silver	ND	0.00100	mg/l	1	4E25025	05/25/04	05/26/04	EPA 6020	
Arsenic	ND	0.00100	"	"	"	"	"	"	
Barium	ND	0.0100	"	"	"	"	"	"	
Beryllium	ND	0.00100	"	"	"	"	"	"	
Cadmium	ND	0.00100	"	"	"	"	"	"	
Cobalt	ND	0.00100	"	"	"	"	"	"	
Chromium	ND	0.00100	"	"	"	"	"	"	
Copper	0.00105	0.00100	"	"	"	"	"	"	
Mercury	ND	0.000200	"	"	4E24045	05/24/04	06/01/04	EPA 7470A	
Nickel	ND	0.00100	"	"	4E25025	05/25/04	05/26/04	EPA 6020	
Lead	ND	0.00100	"	"	"	"	"	"	
Antimony	ND	0.00300	"	"	"	"	"	"	
Selenium	ND	0.00100	"	"	"	"	"	"	
Vanadium	ND	0.00100	"	"	"	"	"	"	

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Shell Puget Sound Refinery
8505 South Texas Road
Anacortes, WA 98221

Project: SWMU 11 Sampling
Project Number: 4550237616
Project Manager: Brian Rhodes

Reported:
06/07/04 16:03

Volatile Organic Compounds (Modified Skinner List) by EPA Method 8260B
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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92 (B4E0548-01) Water Sampled: 05/18/04 12:00 Received: 05/21/04 09:25

1,2-Dichloroethane	53.4	2.00	ug/l	2	4E27042	05/27/04	05/27/04	EPA 8260B	
Surrogate: 1,2-DCA-d4	95.0 %	70-130			"	"	"	"	
Surrogate: Toluene-d8	100 %	70-130			"	"	"	"	
Surrogate: 4-BFB	101 %	70-130			"	"	"	"	

92 (B4E0548-01RE1) Water Sampled: 05/18/04 12:00 Received: 05/21/04 09:25

Acetone	ND	25.0	ug/l	1	4E28033	05/28/04	05/28/04	EPA 8260B	
Benzene	ND	1.00	"	"	"	"	"	"	
2-Butanone	ND	10.0	"	"	"	"	"	"	
n-Butylbenzene	ND	1.00	"	"	"	"	"	"	
Carbon disulfide	ND	1.00	"	"	"	"	"	"	
Chlorobenzene	ND	1.00	"	"	"	"	"	"	
Chloroform	ND	1.00	"	"	"	"	"	"	
1,2-Dibromoethane	ND	1.00	"	"	"	"	"	"	
1,2-Dichloroethane	50.3	1.00	"	"	"	"	"	"	E
Ethylbenzene	ND	1.00	"	"	"	"	"	"	
p-Isopropyltoluene	ND	1.00	"	"	"	"	"	"	
n-Propylbenzene	ND	1.00	"	"	"	"	"	"	
Styrene	ND	1.00	"	"	"	"	"	"	
Toluene	ND	1.00	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	1.00	"	"	"	"	"	"	
Trichloroethene	ND	1.00	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.00	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.00	"	"	"	"	"	"	
o-Xylene	ND	1.00	"	"	"	"	"	"	
m,p-Xylene	ND	2.00	"	"	"	"	"	"	
Surrogate: 1,2-DCA-d4	84.5 %	70-130			"	"	"	"	
Surrogate: Toluene-d8	97.5 %	70-130			"	"	"	"	
Surrogate: 4-BFB	100 %	70-130			"	"	"	"	

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Shell Puget Sound Refinery
8505 South Texas Road
Anacortes, WA 98221

Project: SWMU 11 Sampling
Project Number: 4550237616
Project Manager: Brian Rhodes

Reported:
06/07/04 16:03

Volatile Organic Compounds (Modified Skinner List) by EPA Method 8260B
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
91 (B4E0548-02) Water Sampled: 05/18/04 12:00 Received: 05/21/04 09:25									
Acetone	ND	25.0	ug/l	1	4E26016	05/26/04	05/26/04	EPA 8260B	
Benzene	ND	1.00	"	"	"	"	"	"	
2-Butanone	ND	10.0	"	"	"	"	"	"	
n-Butylbenzene	ND	1.00	"	"	"	"	"	"	
Carbon disulfide	ND	1.00	"	"	"	"	"	"	
Chlorobenzene	ND	1.00	"	"	"	"	"	"	
Chloroform	ND	1.00	"	"	"	"	"	"	
1,2-Dibromoethane	ND	1.00	"	"	"	"	"	"	
1,2-Dichloroethane	ND	1.00	"	"	"	"	"	"	
Ethylbenzene	ND	1.00	"	"	"	"	"	"	
p-Isopropyltoluene	ND	1.00	"	"	"	"	"	"	
n-Propylbenzene	ND	1.00	"	"	"	"	"	"	
Styrene	ND	1.00	"	"	"	"	"	"	
Toluene	ND	1.00	"	"	"	"	"	"	
1,1,1-Trichloroethane	16.9	1.00	"	"	"	"	"	"	
Trichloroethene	ND	1.00	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.00	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.00	"	"	"	"	"	"	
o-Xylene	ND	1.00	"	"	"	"	"	"	
m,p-Xylene	ND	2.00	"	"	"	"	"	"	
Surrogate: 1,2-DCA-d4	89.0 %	70-130			"	"	"	"	
Surrogate: Toluene-d8	100 %	70-130			"	"	"	"	
Surrogate: 4-BFB	99.0 %	70-130			"	"	"	"	

93 (B4E0548-03) Water Sampled: 05/18/04 12:00 Received: 05/21/04 09:25

Acetone	ND	25.0	ug/l	1	4E26016	05/26/04	05/26/04	EPA 8260B	
Benzene	ND	1.00	"	"	"	"	"	"	
2-Butanone	ND	10.0	"	"	"	"	"	"	
n-Butylbenzene	ND	1.00	"	"	"	"	"	"	
Carbon disulfide	ND	1.00	"	"	"	"	"	"	
Chlorobenzene	ND	1.00	"	"	"	"	"	"	
Chloroform	ND	1.00	"	"	"	"	"	"	
1,2-Dibromoethane	ND	1.00	"	"	"	"	"	"	
1,2-Dichloroethane	ND	1.00	"	"	"	"	"	"	
Ethylbenzene	ND	1.00	"	"	"	"	"	"	

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907.563.9200 fax 907.563.9210

Shell Puget Sound Refinery
8505 South Texas Road
Anacortes, WA 98221

Project: SWMU 11 Sampling
Project Number: 4550237616
Project Manager: Brian Rhodes

Reported:
06/07/04 16:03

Volatile Organic Compounds (Modified Skinner List) by EPA Method 8260B
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
93 (B4E0548-03) Water Sampled: 05/18/04 12:00 Received: 05/21/04 09:25									
p-Isopropyltoluene	ND	1.00	ug/l	1	4E26016	05/26/04	05/26/04	"	
n-Propylbenzene	ND	1.00	"	"	"	"	"	"	
Styrene	ND	1.00	"	"	"	"	"	"	
Toluene	ND	1.00	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	1.00	"	"	"	"	"	"	
Trichloroethene	ND	1.00	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.00	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.00	"	"	"	"	"	"	
o-Xylene	ND	1.00	"	"	"	"	"	"	
m,p-Xylene	ND	2.00	"	"	"	"	"	"	
Surrogate: 1,2-DCA-d4	90.0 %	70-130			"	"	"	"	
Surrogate: Toluene-d8	98.5 %	70-130			"	"	"	"	
Surrogate: 4-BFB	101 %	70-130			"	"	"	"	
60 (B4E0548-04) Water Sampled: 05/18/04 12:00 Received: 05/21/04 09:25									
Acetone	ND	25.0	ug/l	1	4E28033	05/28/04	05/28/04	EPA 8260B	
Benzene	39.2	1.00	"	"	"	"	"	"	
2-Butanone	ND	10.0	"	"	"	"	"	"	
n-Butylbenzene	ND	1.00	"	"	"	"	"	"	
Carbon disulfide	ND	1.00	"	"	"	"	"	"	
Chlorobenzene	ND	1.00	"	"	"	"	"	"	
Chloroform	ND	1.00	"	"	"	"	"	"	
1,2-Dibromoethane	ND	1.00	"	"	"	"	"	"	
1,2-Dichloroethane	ND	1.00	"	"	"	"	"	"	
Ethylbenzene	ND	1.00	"	"	"	"	"	"	
p-Isopropyltoluene	ND	1.00	"	"	"	"	"	"	
n-Propylbenzene	ND	1.00	"	"	"	"	"	"	
Styrene	ND	1.00	"	"	"	"	"	"	
Toluene	ND	1.00	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	1.00	"	"	"	"	"	"	
Trichloroethene	ND	1.00	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.00	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.00	"	"	"	"	"	"	
o-Xylene	ND	1.00	"	"	"	"	"	"	
m,p-Xylene	ND	2.00	"	"	"	"	"	"	

North Creek Analytical - Bothell

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Jeanne Garthwaite, Project Manager

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Shell Puget Sound Refinery
8505 South Texas Road
Anacortes, WA 98221

Project: SWMU 11 Sampling
Project Number: 4550237616
Project Manager: Brian Rhodes

Reported:
06/07/04 16:03

Volatile Organic Compounds (Modified Skinner List) by EPA Method 8260B
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
60 (B4E0548-04) Water Sampled: 05/18/04 12:00 Received: 05/21/04 09:25									
Surrogate: 1,2-DCA-d4	86.5 %	70-130			4E28033	05/28/04	05/28/04	"	
Surrogate: Toluene-d8	100 %	70-130			"	"	"	"	
Surrogate: 4-BFB	98.0 %	70-130			"	"	"	"	
61 (B4E0548-05) Water Sampled: 05/18/04 12:00 Received: 05/21/04 09:25									
Acetone	ND	25.0	ug/l	1	4E28033	05/28/04	05/28/04	EPA 8260B	
Benzene	18.5	1.00	"	"	"	"	"	"	
2-Butanone	ND	10.0	"	"	"	"	"	"	
n-Butylbenzene	ND	1.00	"	"	"	"	"	"	
Carbon disulfide	ND	1.00	"	"	"	"	"	"	
Chlorobenzene	ND	1.00	"	"	"	"	"	"	
Chloroform	ND	1.00	"	"	"	"	"	"	
1,2-Dibromoethane	ND	1.00	"	"	"	"	"	"	
1,2-Dichloroethane	ND	1.00	"	"	"	"	"	"	
Ethylbenzene	ND	1.00	"	"	"	"	"	"	
p-Isopropyltoluene	ND	1.00	"	"	"	"	"	"	
n-Propylbenzene	ND	1.00	"	"	"	"	"	"	
Styrene	ND	1.00	"	"	"	"	"	"	
Toluene	ND	1.00	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	1.00	"	"	"	"	"	"	
Trichloroethene	ND	1.00	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.00	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.00	"	"	"	"	"	"	
o-Xylene	ND	1.00	"	"	"	"	"	"	
m,p-Xylene	ND	2.00	"	"	"	"	"	"	
Surrogate: 1,2-DCA-d4	85.5 %	70-130			"	"	"	"	
Surrogate: Toluene-d8	97.0 %	70-130			"	"	"	"	
Surrogate: 4-BFB	100 %	70-130			"	"	"	"	

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Jeanne Garthwaite, Project Manager

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Shell Puget Sound Refinery
8505 South Texas Road
Anacortes, WA 98221

Project: SWMU 11 Sampling
Project Number: 4550237616
Project Manager: Brian Rhodes

Reported:
06/07/04 16:03

Volatile Organic Compounds (Modified Skinner List) by EPA Method 8260B
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
94 (B4E0548-06) Water Sampled: 05/18/04 12:00 Received: 05/21/04 09:25									
Acetone	ND	25.0	ug/l	1	4E26016	05/26/04	05/26/04	EPA 8260B	
Benzene	ND	1.00	"	"	"	"	"	"	
2-Butanone	ND	10.0	"	"	"	"	"	"	
n-Butylbenzene	ND	1.00	"	"	"	"	"	"	
Carbon disulfide	ND	1.00	"	"	"	"	"	"	
Chlorobenzene	ND	1.00	"	"	"	"	"	"	
Chloroform	ND	1.00	"	"	"	"	"	"	
1,2-Dibromoethane	ND	1.00	"	"	"	"	"	"	
1,2-Dichloroethane	ND	1.00	"	"	"	"	"	"	
Ethylbenzene	ND	1.00	"	"	"	"	"	"	
p-Isopropyltoluene	ND	1.00	"	"	"	"	"	"	
n-Propylbenzene	ND	1.00	"	"	"	"	"	"	
Styrene	ND	1.00	"	"	"	"	"	"	
Toluene	ND	1.00	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	1.00	"	"	"	"	"	"	
Trichloroethene	ND	1.00	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.00	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.00	"	"	"	"	"	"	
o-Xylene	ND	1.00	"	"	"	"	"	"	
m,p-Xylene	ND	2.00	"	"	"	"	"	"	
Surrogate: 1,2-DCA-d4	93.5 %	70-130			"	"	"	"	
Surrogate: Toluene-d8	98.5 %	70-130			"	"	"	"	
Surrogate: 4-BFB	99.0 %	70-130			"	"	"	"	

98 (B4E0548-07) Water Sampled: 05/18/04 12:00 Received: 05/21/04 09:25

Acetone	ND	25.0	ug/l	1	4E26016	05/26/04	05/26/04	EPA 8260B	
Benzene	ND	1.00	"	"	"	"	"	"	
2-Butanone	ND	10.0	"	"	"	"	"	"	
n-Butylbenzene	ND	1.00	"	"	"	"	"	"	
Carbon disulfide	ND	1.00	"	"	"	"	"	"	
Chlorobenzene	ND	1.00	"	"	"	"	"	"	
Chloroform	ND	1.00	"	"	"	"	"	"	
1,2-Dibromoethane	ND	1.00	"	"	"	"	"	"	
1,2-Dichloroethane	ND	1.00	"	"	"	"	"	"	
Ethylbenzene	ND	1.00	"	"	"	"	"	"	

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Jeanne Garthwaite, Project Manager

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Shell Puget Sound Refinery
8505 South Texas Road
Anacortes, WA 98221

Project: SWMU 11 Sampling
Project Number: 4550237616
Project Manager: Brian Rhodes

Reported:
06/07/04 16:03

Volatile Organic Compounds (Modified Skinner List) by EPA Method 8260B
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
98 (B4E0548-07) Water Sampled: 05/18/04 12:00 Received: 05/21/04 09:25									
p-Isopropyltoluene	ND	1.00	ug/l	1	4E26016	05/26/04	05/26/04	"	
n-Propylbenzene	ND	1.00	"	"	"	"	"	"	
Styrene	ND	1.00	"	"	"	"	"	"	
Toluene	ND	1.00	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	1.00	"	"	"	"	"	"	
Trichloroethene	ND	1.00	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.00	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.00	"	"	"	"	"	"	
o-Xylene	ND	1.00	"	"	"	"	"	"	
m,p-Xylene	ND	2.00	"	"	"	"	"	"	
Surrogate: 1,2-DCA-d4	93.5 %	70-130			"	"	"	"	
Surrogate: Toluene-d8	100 %	70-130			"	"	"	"	
Surrogate: 4-BFB	101 %	70-130			"	"	"	"	
95 (B4E0548-08) Water Sampled: 05/18/04 12:00 Received: 05/21/04 09:25									
Acetone	ND	25.0	ug/l	1	4E26016	05/26/04	05/26/04	EPA 8260B	
Benzene	ND	1.00	"	"	"	"	"	"	
2-Butanone	ND	10.0	"	"	"	"	"	"	
n-Butylbenzene	ND	1.00	"	"	"	"	"	"	
Carbon disulfide	ND	1.00	"	"	"	"	"	"	
Chlorobenzene	ND	1.00	"	"	"	"	"	"	
Chloroform	ND	1.00	"	"	"	"	"	"	
1,2-Dibromoethane	ND	1.00	"	"	"	"	"	"	
1,2-Dichloroethane	ND	1.00	"	"	"	"	"	"	
Ethylbenzene	ND	1.00	"	"	"	"	"	"	
p-Isopropyltoluene	ND	1.00	"	"	"	"	"	"	
n-Propylbenzene	ND	1.00	"	"	"	"	"	"	
Styrene	ND	1.00	"	"	"	"	"	"	
Toluene	ND	1.00	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	1.00	"	"	"	"	"	"	
Trichloroethene	ND	1.00	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.00	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.00	"	"	"	"	"	"	
o-Xylene	ND	1.00	"	"	"	"	"	"	
m,p-Xylene	ND	2.00	"	"	"	"	"	"	

North Creek Analytical - Bothell

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Shell Puget Sound Refinery
8505 South Texas Road
Anacortes, WA 98221

Project: SWMU 11 Sampling
Project Number: 4550237616
Project Manager: Brian Rhodes

Reported:
06/07/04 16:03

Volatile Organic Compounds (Modified Skinner List) by EPA Method 8260B
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
95 (B4E0548-08) Water Sampled: 05/18/04 12:00 Received: 05/21/04 09:25									
Surrogate: 1,2-DCA-d4	92.0 %	70-130			4E26016	05/26/04	05/26/04	"	
Surrogate: Toluene-d8	100 %	70-130			"	"	"	"	
Surrogate: 4-BFB	100 %	70-130			"	"	"	"	
96 (B4E0548-09) Water Sampled: 05/18/04 12:00 Received: 05/21/04 09:25									
Acetone	ND	25.0	ug/l	1	4E26016	05/26/04	05/26/04	EPA 8260B	
Benzene	ND	1.00	"	"	"	"	"	"	
2-Butanone	ND	10.0	"	"	"	"	"	"	
n-Butylbenzene	ND	1.00	"	"	"	"	"	"	
Carbon disulfide	ND	1.00	"	"	"	"	"	"	
Chlorobenzene	ND	1.00	"	"	"	"	"	"	
Chloroform	ND	1.00	"	"	"	"	"	"	
1,2-Dibromoethane	ND	1.00	"	"	"	"	"	"	
1,2-Dichloroethane	ND	1.00	"	"	"	"	"	"	
Ethylbenzene	ND	1.00	"	"	"	"	"	"	
p-Isopropyltoluene	ND	1.00	"	"	"	"	"	"	
n-Propylbenzene	ND	1.00	"	"	"	"	"	"	
Styrene	ND	1.00	"	"	"	"	"	"	
Toluene	ND	1.00	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	1.00	"	"	"	"	"	"	
Trichloroethene	ND	1.00	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.00	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.00	"	"	"	"	"	"	
o-Xylene	ND	1.00	"	"	"	"	"	"	
m,p-Xylene	ND	2.00	"	"	"	"	"	"	
Surrogate: 1,2-DCA-d4	93.5 %	70-130			"	"	"	"	
Surrogate: Toluene-d8	100 %	70-130			"	"	"	"	
Surrogate: 4-BFB	102 %	70-130			"	"	"	"	

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Shell Puget Sound Refinery
8505 South Texas Road
Anacortes, WA 98221

Project: SWMU 11 Sampling
Project Number: 4550237616
Project Manager: Brian Rhodes

Reported:
06/07/04 16:03

Volatile Organic Compounds (Modified Skinner List) by EPA Method 8260B
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
97 (B4E0548-10) Water Sampled: 05/18/04 12:00 Received: 05/21/04 09:25									
Acetone	ND	25.0	ug/l	1	4E26016	05/26/04	05/26/04	EPA 8260B	
Benzene	ND	1.00	"	"	"	"	"	"	
2-Butanone	ND	10.0	"	"	"	"	"	"	
n-Butylbenzene	ND	1.00	"	"	"	"	"	"	
Carbon disulfide	ND	1.00	"	"	"	"	"	"	
Chlorobenzene	ND	1.00	"	"	"	"	"	"	
Chloroform	ND	1.00	"	"	"	"	"	"	
1,2-Dibromoethane	ND	1.00	"	"	"	"	"	"	
1,2-Dichloroethane	ND	1.00	"	"	"	"	"	"	
Ethylbenzene	ND	1.00	"	"	"	"	"	"	
p-Isopropyltoluene	ND	1.00	"	"	"	"	"	"	
n-Propylbenzene	ND	1.00	"	"	"	"	"	"	
Styrene	ND	1.00	"	"	"	"	"	"	
Toluene	ND	1.00	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	1.00	"	"	"	"	"	"	
Trichloroethene	ND	1.00	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.00	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.00	"	"	"	"	"	"	
o-Xylene	ND	1.00	"	"	"	"	"	"	
m,p-Xylene	ND	2.00	"	"	"	"	"	"	
Surrogate: 1,2-DCA-d4	92.5 %	70-130			"	"	"	"	
Surrogate: Toluene-d8	99.5 %	70-130			"	"	"	"	
Surrogate: 4-BFB	98.0 %	70-130			"	"	"	"	

63 (B4E0548-11) Water **Sampled: 05/18/04 12:00** **Received: 05/21/04 09:25**

Acetone	ND	50.0	ug/l	2	4E28033	05/28/04	05/28/04	EPA 8260B	
Benzene	ND	2.00	"	"	"	"	"	"	
2-Butanone	ND	20.0	"	"	"	"	"	"	
n-Butylbenzene	6.10	2.00	"	"	"	"	"	"	
Carbon disulfide	ND	2.00	"	"	"	"	"	"	
Chlorobenzene	ND	2.00	"	"	"	"	"	"	
Chloroform	ND	2.00	"	"	"	"	"	"	
1,2-Dibromoethane	ND	2.00	"	"	"	"	"	"	
1,2-Dichloroethane	ND	2.00	"	"	"	"	"	"	
Ethylbenzene	4.58	2.00	"	"	"	"	"	"	

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Project: SWMU 11 Sampling
Project Number: 4550237616
Project Manager: Brian Rhodes

Reported:
06/07/04 16:03

Volatile Organic Compounds (Modified Skinner List) by EPA Method 8260B
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
63 (B4E0548-11) Water Sampled: 05/18/04 12:00 Received: 05/21/04 09:25									
p-Isopropyltoluene	ND	2.00	ug/l	2	4E28033	05/28/04	05/28/04	"	
n-Propylbenzene	4.28	2.00	"	"	"	"	"	"	
Styrene	ND	2.00	"	"	"	"	"	"	
Toluene	ND	2.00	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	2.00	"	"	"	"	"	"	
Trichloroethene	ND	2.00	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	63.2	2.00	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	4.62	2.00	"	"	"	"	"	"	
o-Xylene	ND	2.00	"	"	"	"	"	"	
m,p-Xylene	4.40	4.00	"	"	"	"	"	"	
Surrogate: 1,2-DCA-d4	83.0 %	70-130			"	"	"	"	
Surrogate: Toluene-d8	98.5 %	70-130			"	"	"	"	
Surrogate: 4-BFB	102 %	70-130			"	"	"	"	
65 (B4E0548-12) Water Sampled: 05/18/04 12:00 Received: 05/21/04 09:25									
Acetone	ND	25.0	ug/l	1	4E27042	05/27/04	05/27/04	EPA 8260B	
Benzene	ND	1.00	"	"	"	"	"	"	
2-Butanone	ND	10.0	"	"	"	"	"	"	
n-Butylbenzene	ND	1.00	"	"	"	"	"	"	
Carbon disulfide	ND	1.00	"	"	"	"	"	"	
Chlorobenzene	ND	1.00	"	"	"	"	"	"	
Chloroform	ND	1.00	"	"	"	"	"	"	
1,2-Dibromoethane	ND	1.00	"	"	"	"	"	"	
1,2-Dichloroethane	24.1	1.00	"	"	"	"	"	"	
Ethylbenzene	ND	1.00	"	"	"	"	"	"	
p-Isopropyltoluene	ND	1.00	"	"	"	"	"	"	
n-Propylbenzene	ND	1.00	"	"	"	"	"	"	
Styrene	ND	1.00	"	"	"	"	"	"	
Toluene	ND	1.00	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	1.00	"	"	"	"	"	"	
Trichloroethene	ND	1.00	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.00	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.00	"	"	"	"	"	"	
o-Xylene	ND	1.00	"	"	"	"	"	"	
m,p-Xylene	ND	2.00	"	"	"	"	"	"	

North Creek Analytical - Bothell

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Jeanne Garthwaite

Jeanne Garthwaite, Project Manager

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907.563.9200 fax 907.563.9210

Shell Puget Sound Refinery
8505 South Texas Road
Anacortes, WA 98221

Project: SWMU 11 Sampling
Project Number: 4550237616
Project Manager: Brian Rhodes

Reported:
06/07/04 16:03

Volatile Organic Compounds (Modified Skinner List) by EPA Method 8260B
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
65 (B4E0548-12) Water Sampled: 05/18/04 12:00 Received: 05/21/04 09:25									
Surrogate: 1,2-DCA-d4	94.5 %	70-130			4E27042	05/27/04	05/27/04	"	
Surrogate: Toluene-d8	100 %	70-130			"	"	"	"	
Surrogate: 4-BFB	100 %	70-130			"	"	"	"	
100 (B4E0548-13) Water Sampled: 05/18/04 12:00 Received: 05/21/04 09:25									
Acetone	ND	25.0	ug/l	1	4E28033	05/28/04	05/28/04	EPA 8260B	
Benzene	39.9	1.00	"	"	"	"	"	"	
2-Butanone	ND	10.0	"	"	"	"	"	"	
n-Butylbenzene	ND	1.00	"	"	"	"	"	"	
Carbon disulfide	ND	1.00	"	"	"	"	"	"	
Chlorobenzene	ND	1.00	"	"	"	"	"	"	
Chloroform	ND	1.00	"	"	"	"	"	"	
1,2-Dibromoethane	ND	1.00	"	"	"	"	"	"	
1,2-Dichloroethane	ND	1.00	"	"	"	"	"	"	
Ethylbenzene	ND	1.00	"	"	"	"	"	"	
p-Isopropyltoluene	ND	1.00	"	"	"	"	"	"	
n-Propylbenzene	ND	1.00	"	"	"	"	"	"	
Styrene	ND	1.00	"	"	"	"	"	"	
Toluene	ND	1.00	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	1.00	"	"	"	"	"	"	
Trichloroethene	ND	1.00	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.00	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.00	"	"	"	"	"	"	
o-Xylene	ND	1.00	"	"	"	"	"	"	
m,p-Xylene	ND	2.00	"	"	"	"	"	"	
Surrogate: 1,2-DCA-d4	84.5 %	70-130			"	"	"	"	
Surrogate: Toluene-d8	102 %	70-130			"	"	"	"	
Surrogate: 4-BFB	101 %	70-130			"	"	"	"	

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Jeanne Garthwaite, Project Manager

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Shell Puget Sound Refinery
8505 South Texas Road
Anacortes, WA 98221

Project: SWMU 11 Sampling
Project Number: 4550237616
Project Manager: Brian Rhodes

Reported:
06/07/04 16:03

Volatile Organic Compounds (Modified Skinner List) by EPA Method 8260B
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
TRIP BLANK (B4E0548-15) Water Sampled: 05/20/04 12:00 Received: 05/21/04 09:25									
Acetone	ND	25.0	ug/l	1	4E27042	05/27/04	05/27/04	EPA 8260B	
Benzene	ND	1.00	"	"	"	"	"	"	
2-Butanone	ND	10.0	"	"	"	"	"	"	
n-Butylbenzene	ND	1.00	"	"	"	"	"	"	
Carbon disulfide	ND	1.00	"	"	"	"	"	"	
Chlorobenzene	ND	1.00	"	"	"	"	"	"	
Chloroform	ND	1.00	"	"	"	"	"	"	
1,2-Dibromoethane	ND	1.00	"	"	"	"	"	"	
1,2-Dichloroethane	ND	1.00	"	"	"	"	"	"	
Ethylbenzene	ND	1.00	"	"	"	"	"	"	
p-Isopropyltoluene	ND	1.00	"	"	"	"	"	"	
n-Propylbenzene	ND	1.00	"	"	"	"	"	"	
Styrene	ND	1.00	"	"	"	"	"	"	
Toluene	ND	1.00	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	1.00	"	"	"	"	"	"	
Trichloroethene	ND	1.00	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.00	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.00	"	"	"	"	"	"	
o-Xylene	ND	1.00	"	"	"	"	"	"	
m,p-Xylene	ND	2.00	"	"	"	"	"	"	
Surrogate: 1,2-DCA-d4	95.5 %	70-130			"	"	"	"	
Surrogate: Toluene-d8	99.0 %	70-130			"	"	"	"	
Surrogate: 4-BFB	98.5 %	70-130			"	"	"	"	

North Creek Analytical - Bothell

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Shell Puget Sound Refinery
8505 South Texas Road
Anacortes, WA 98221

Project: SWMU 11 Sampling
Project Number: 4550237616
Project Manager: Brian Rhodes

Reported:
06/07/04 16:03

Semivolatile Organic Compounds (Modified Skinner List) by EPA Method 8270C
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
92 (B4E0548-01) Water Sampled: 05/18/04 12:00 Received: 05/21/04 09:25									
Acenaphthylene	ND	10.0	ug/l	1	4E24011	05/24/04	05/27/04	EPA 8270C	
Anthracene	ND	10.0	"	"	"	"	"	"	
Benzo (a) anthracene	ND	10.0	"	"	"	"	"	"	
Benzo (a) pyrene	ND	10.0	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	10.0	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	10.0	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	10.0	"	"	"	"	"	"	
Bis(2-ethylhexyl)phthalate	ND	10.0	"	"	"	"	"	"	
Butyl benzyl phthalate	ND	10.0	"	"	"	"	"	"	
Chrysene	ND	10.0	"	"	"	"	"	"	
Di-n-butyl phthalate	ND	10.0	"	"	"	"	"	"	
Dibenz (a,h) acridine	ND	10.0	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	10.0	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	10.0	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	10.0	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	10.0	"	"	"	"	"	"	
Diethyl phthalate	ND	10.0	"	"	"	"	"	"	
7,12-Dimethylbenz (a) anthracene	ND	10.0	"	"	"	"	"	"	
2,4-Dimethylphenol	ND	10.0	"	"	"	"	"	"	
Dimethyl phthalate	ND	10.0	"	"	"	"	"	"	
2,4-Dinitrophenol	ND	10.0	"	"	"	"	"	"	
Fluoranthene	ND	10.0	"	"	"	"	"	"	
Fluorene	ND	10.0	"	"	"	"	"	"	
Indene	ND	10.0	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	10.0	"	"	"	"	"	"	
6-Methyl chrysene	ND	10.0	"	"	"	"	"	"	
1-Methylnaphthalene	ND	10.0	"	"	"	"	"	"	
2-Methylnaphthalene	ND	10.0	"	"	"	"	"	"	
2-Methylphenol	ND	10.0	"	"	"	"	"	"	
3 & 4-Methylphenol	ND	10.0	"	"	"	"	"	"	
Naphthalene	ND	10.0	"	"	"	"	"	"	
4-Nitrophenol	ND	10.0	"	"	"	"	"	"	
Di-n-octyl phthalate	ND	10.0	"	"	"	"	"	"	
Phenanthrene	ND	10.0	"	"	"	"	"	"	
Phenol	ND	10.0	"	"	"	"	"	"	

North Creek Analytical - Bothell

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Jeanne Garthwaite

Jeanne Garthwaite, Project Manager

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Shell Puget Sound Refinery
8505 South Texas Road
Anacortes, WA 98221

Project: SWMU 11 Sampling
Project Number: 4550237616
Project Manager: Brian Rhodes

Reported:
06/07/04 16:03

Semivolatile Organic Compounds (Modified Skinner List) by EPA Method 8270C
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
92 (B4E0548-01) Water Sampled: 05/18/04 12:00 Received: 05/21/04 09:25									
Pyrene	ND	10.0	ug/l	1	4E24011	05/24/04	05/27/04	"	
Pyridine	ND	10.0	"	"	"	"	"	"	
Quinoline	ND	10.0	"	"	"	"	"	"	
Thiophenol	ND	10.0	"	"	"	"	"	"	
Surrogate: 2-FBP	71.5 %	41-129			"	"	"	"	
Surrogate: 2-FP	38.4 %	18-124			"	"	"	"	
Surrogate: Nitrobenzene-d5	71.7 %	44-124			"	"	"	"	
Surrogate: Phenol-d6	48.2 %	25-122			"	"	"	"	
Surrogate: p-Terphenyl-d14	52.0 %	10-132			"	"	"	"	
Surrogate: 2,4,6-TBP	58.1 %	19-132			"	"	"	"	
91 (B4E0548-02) Water Sampled: 05/18/04 12:00 Received: 05/21/04 09:25									
Acenaphthylene	ND	10.0	ug/l	1	4E24011	05/24/04	05/27/04	EPA 8270C	
Anthracene	ND	10.0	"	"	"	"	"	"	
Benzo (a) anthracene	ND	10.0	"	"	"	"	"	"	
Benzo (a) pyrene	ND	10.0	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	10.0	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	10.0	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	10.0	"	"	"	"	"	"	
Bis(2-ethylhexyl)phthalate	46.1	10.0	"	"	"	"	"	"	
Butyl benzyl phthalate	ND	10.0	"	"	"	"	"	"	
Chrysene	ND	10.0	"	"	"	"	"	"	
Di-n-butyl phthalate	ND	10.0	"	"	"	"	"	"	
Dibenz (a,h) acridine	ND	10.0	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	10.0	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	10.0	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	10.0	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	10.0	"	"	"	"	"	"	
Diethyl phthalate	ND	10.0	"	"	"	"	"	"	
7,12-Dimethylbenz (a) anthracene	ND	10.0	"	"	"	"	"	"	
2,4-Dimethylphenol	ND	10.0	"	"	"	"	"	"	
Dimethyl phthalate	ND	10.0	"	"	"	"	"	"	
2,4-Dinitrophenol	ND	10.0	"	"	"	"	"	"	
Fluoranthene	ND	10.0	"	"	"	"	"	"	
Fluorene	ND	10.0	"	"	"	"	"	"	

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Jeanne Garthwaite, Project Manager

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Shell Puget Sound Refinery
8505 South Texas Road
Anacortes, WA 98221

Project: SWMU 11 Sampling
Project Number: 4550237616
Project Manager: Brian Rhodes

Reported:
06/07/04 16:03

Semivolatile Organic Compounds (Modified Skinner List) by EPA Method 8270C
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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91 (B4E0548-02) Water Sampled: 05/18/04 12:00 Received: 05/21/04 09:25

Indene	ND	10.0	ug/l	1	4E24011	05/24/04	05/27/04	"	
Indeno (1,2,3-cd) pyrene	ND	10.0	"	"	"	"	"	"	
6-Methyl chrysene	ND	10.0	"	"	"	"	"	"	
1-Methylnaphthalene	ND	10.0	"	"	"	"	"	"	
2-Methylnaphthalene	ND	10.0	"	"	"	"	"	"	
2-Methylphenol	ND	10.0	"	"	"	"	"	"	
3 & 4-Methylphenol	ND	10.0	"	"	"	"	"	"	
Naphthalene	ND	10.0	"	"	"	"	"	"	
4-Nitrophenol	ND	10.0	"	"	"	"	"	"	
Di-n-octyl phthalate	ND	10.0	"	"	"	"	"	"	
Phenanthrene	ND	10.0	"	"	"	"	"	"	
Phenol	ND	10.0	"	"	"	"	"	"	
Pyrene	ND	10.0	"	"	"	"	"	"	
Pyridine	ND	10.0	"	"	"	"	"	"	
Quinoline	ND	10.0	"	"	"	"	"	"	
Thiophenol	ND	10.0	"	"	"	"	"	"	
Surrogate: 2-FBP	74.8 %	41-129			"	"	"	"	
Surrogate: 2-FP	39.6 %	18-124			"	"	"	"	
Surrogate: Nitrobenzene-d5	75.3 %	44-124			"	"	"	"	
Surrogate: Phenol-d6	48.7 %	25-122			"	"	"	"	
Surrogate: p-Terphenyl-d14	69.1 %	10-132			"	"	"	"	
Surrogate: 2,4,6-TBP	56.5 %	19-132			"	"	"	"	

93 (B4E0548-03) Water Sampled: 05/18/04 12:00 Received: 05/21/04 09:25

Acenaphthylene	ND	10.0	ug/l	1	4E24011	05/24/04	05/27/04	EPA 8270C	
Anthracene	ND	10.0	"	"	"	"	"	"	
Benzo (a) anthracene	ND	10.0	"	"	"	"	"	"	
Benzo (a) pyrene	ND	10.0	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	10.0	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	10.0	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	10.0	"	"	"	"	"	"	
Bis(2-ethylhexyl)phthalate	ND	10.0	"	"	"	"	"	"	
Butyl benzyl phthalate	ND	10.0	"	"	"	"	"	"	
Chrysene	ND	10.0	"	"	"	"	"	"	
Di-n-butyl phthalate	ND	10.0	"	"	"	"	"	"	

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Jeanne Garthwaite, Project Manager

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Shell Puget Sound Refinery
8505 South Texas Road
Anacortes, WA 98221

Project: SWMU 11 Sampling
Project Number: 4550237616
Project Manager: Brian Rhodes

Reported:
06/07/04 16:03

Semivolatile Organic Compounds (Modified Skinner List) by EPA Method 8270C
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
93 (B4E0548-03) Water Sampled: 05/18/04 12:00 Received: 05/21/04 09:25									
Dibenz (a,h) acridine	ND	10.0	ug/l	1	4E24011	05/24/04	05/27/04	"	
Dibenz (a,h) anthracene	ND	10.0	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	10.0	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	10.0	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	10.0	"	"	"	"	"	"	
Diethyl phthalate	ND	10.0	"	"	"	"	"	"	
7,12-Dimethylbenz (a) anthracene	ND	10.0	"	"	"	"	"	"	
2,4-Dimethylphenol	ND	10.0	"	"	"	"	"	"	
Dimethyl phthalate	ND	10.0	"	"	"	"	"	"	
2,4-Dinitrophenol	ND	10.0	"	"	"	"	"	"	
Fluoranthene	ND	10.0	"	"	"	"	"	"	
Fluorene	ND	10.0	"	"	"	"	"	"	
Indene	ND	10.0	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	10.0	"	"	"	"	"	"	
6-Methyl chrysene	ND	10.0	"	"	"	"	"	"	
1-Methylnaphthalene	ND	10.0	"	"	"	"	"	"	
2-Methylnaphthalene	ND	10.0	"	"	"	"	"	"	
2-Methylphenol	ND	10.0	"	"	"	"	"	"	
3 & 4-Methylphenol	ND	10.0	"	"	"	"	"	"	
Naphthalene	ND	10.0	"	"	"	"	"	"	
4-Nitrophenol	ND	10.0	"	"	"	"	"	"	
Di-n-octyl phthalate	ND	10.0	"	"	"	"	"	"	
Phenanthrene	ND	10.0	"	"	"	"	"	"	
Phenol	ND	10.0	"	"	"	"	"	"	
Pyrene	ND	10.0	"	"	"	"	"	"	
Pyridine	ND	10.0	"	"	"	"	"	"	
Quinoline	ND	10.0	"	"	"	"	"	"	
Thiophenol	ND	10.0	"	"	"	"	"	"	
Surrogate: 2-FBP	81.9 %	41-129			"	"	"	"	
Surrogate: 2-FP	35.9 %	18-124			"	"	"	"	
Surrogate: Nitrobenzene-d5	75.3 %	44-124			"	"	"	"	
Surrogate: Phenol-d6	47.4 %	25-122			"	"	"	"	
Surrogate: p-Terphenyl-d14	69.5 %	10-132			"	"	"	"	
Surrogate: 2,4,6-TBP	71.8 %	19-132			"	"	"	"	

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Jeanne Garthwaite

Jeanne Garthwaite, Project Manager

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Shell Puget Sound Refinery
8505 South Texas Road
Anacortes, WA 98221

Project: SWMU 11 Sampling
Project Number: 4550237616
Project Manager: Brian Rhodes

Reported:
06/07/04 16:03

Semivolatile Organic Compounds (Modified Skinner List) by EPA Method 8270C
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
60 (B4E0548-04) Water Sampled: 05/18/04 12:00 Received: 05/21/04 09:25									
Acenaphthylene	ND	10.0	ug/l	1	4E24011	05/24/04	05/27/04	EPA 8270C	
Anthracene	ND	10.0	"	"	"	"	"	"	
Benzo (a) anthracene	ND	10.0	"	"	"	"	"	"	
Benzo (a) pyrene	ND	10.0	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	10.0	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	10.0	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	10.0	"	"	"	"	"	"	
Bis(2-ethylhexyl)phthalate	ND	10.0	"	"	"	"	"	"	
Butyl benzyl phthalate	ND	10.0	"	"	"	"	"	"	
Chrysene	ND	10.0	"	"	"	"	"	"	
Di-n-butyl phthalate	ND	10.0	"	"	"	"	"	"	
Dibenz (a,h) acridine	ND	10.0	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	10.0	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	10.0	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	10.0	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	10.0	"	"	"	"	"	"	
Diethyl phthalate	ND	10.0	"	"	"	"	"	"	
7,12-Dimethylbenz (a) anthracene	ND	10.0	"	"	"	"	"	"	
2,4-Dimethylphenol	44.5	10.0	"	"	"	"	"	"	
Dimethyl phthalate	ND	10.0	"	"	"	"	"	"	
2,4-Dinitrophenol	ND	10.0	"	"	"	"	"	"	
Fluoranthene	ND	10.0	"	"	"	"	"	"	
Fluorene	ND	10.0	"	"	"	"	"	"	
Indene	ND	10.0	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	10.0	"	"	"	"	"	"	
6-Methyl chrysene	ND	10.0	"	"	"	"	"	"	
1-Methylnaphthalene	ND	10.0	"	"	"	"	"	"	
2-Methylnaphthalene	ND	10.0	"	"	"	"	"	"	
2-Methylphenol	ND	10.0	"	"	"	"	"	"	
3 & 4-Methylphenol	ND	10.0	"	"	"	"	"	"	
Naphthalene	ND	10.0	"	"	"	"	"	"	
4-Nitrophenol	ND	10.0	"	"	"	"	"	"	
Di-n-octyl phthalate	ND	10.0	"	"	"	"	"	"	
Phenanthrene	ND	10.0	"	"	"	"	"	"	
Phenol	ND	10.0	"	"	"	"	"	"	

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Jeanne Garthwaite, Project Manager

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907.563.9200 fax 907.563.9210

Shell Puget Sound Refinery
8505 South Texas Road
Anacortes, WA 98221

Project: SWMU 11 Sampling
Project Number: 4550237616
Project Manager: Brian Rhodes

Reported:
06/07/04 16:03

Semivolatile Organic Compounds (Modified Skinner List) by EPA Method 8270C
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
60 (B4E0548-04) Water Sampled: 05/18/04 12:00 Received: 05/21/04 09:25									
Pyrene	ND	10.0	ug/l	1	4E24011	05/24/04	05/27/04	"	
Pyridine	ND	10.0	"	"	"	"	"	"	
Quinoline	ND	10.0	"	"	"	"	"	"	
Thiophenol	ND	10.0	"	"	"	"	"	"	
Surrogate: 2-FBP	85.5 %	41-129			"	"	"	"	
Surrogate: 2-FP	50.8 %	18-124			"	"	"	"	
Surrogate: Nitrobenzene-d5	79.6 %	44-124			"	"	"	"	
Surrogate: Phenol-d6	65.1 %	25-122			"	"	"	"	
Surrogate: p-Terphenyl-d14	75.1 %	10-132			"	"	"	"	
Surrogate: 2,4,6-TBP	95.5 %	19-132			"	"	"	"	
61 (B4E0548-05) Water Sampled: 05/18/04 12:00 Received: 05/21/04 09:25									
Acenaphthylene	ND	10.0	ug/l	1	4E24011	05/24/04	05/27/04	EPA 8270C	
Anthracene	ND	10.0	"	"	"	"	"	"	
Benzo (a) anthracene	ND	10.0	"	"	"	"	"	"	
Benzo (a) pyrene	ND	10.0	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	10.0	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	10.0	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	10.0	"	"	"	"	"	"	
Bis(2-ethylhexyl)phthalate	ND	10.0	"	"	"	"	"	"	
Butyl benzyl phthalate	ND	10.0	"	"	"	"	"	"	
Chrysene	ND	10.0	"	"	"	"	"	"	
Di-n-butyl phthalate	ND	10.0	"	"	"	"	"	"	
Dibenz (a,h) acridine	ND	10.0	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	10.0	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	10.0	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	10.0	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	10.0	"	"	"	"	"	"	
Diethyl phthalate	ND	10.0	"	"	"	"	"	"	
7,12-Dimethylbenz (a) anthracene	ND	10.0	"	"	"	"	"	"	
2,4-Dimethylphenol	17.5	10.0	"	"	"	"	"	"	
Dimethyl phthalate	ND	10.0	"	"	"	"	"	"	
2,4-Dinitrophenol	ND	10.0	"	"	"	"	"	"	
Fluoranthene	ND	10.0	"	"	"	"	"	"	
Fluorene	ND	10.0	"	"	"	"	"	"	

North Creek Analytical - Bothell

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Shell Puget Sound Refinery
8505 South Texas Road
Anacortes, WA 98221

Project: SWMU 11 Sampling
Project Number: 4550237616
Project Manager: Brian Rhodes

Reported:
06/07/04 16:03

Semivolatile Organic Compounds (Modified Skinner List) by EPA Method 8270C
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
61 (B4E0548-05) Water Sampled: 05/18/04 12:00 Received: 05/21/04 09:25									
Indene	ND	10.0	ug/l	1	4E24011	05/24/04	05/27/04	"	
Indeno (1,2,3-cd) pyrene	ND	10.0	"	"	"	"	"	"	
6-Methyl chrysene	ND	10.0	"	"	"	"	"	"	
1-Methylnaphthalene	ND	10.0	"	"	"	"	"	"	
2-Methylnaphthalene	ND	10.0	"	"	"	"	"	"	
2-Methylphenol	ND	10.0	"	"	"	"	"	"	
3 & 4-Methylphenol	ND	10.0	"	"	"	"	"	"	
Naphthalene	ND	10.0	"	"	"	"	"	"	
4-Nitrophenol	ND	10.0	"	"	"	"	"	"	
Di-n-octyl phthalate	ND	10.0	"	"	"	"	"	"	
Phenanthrene	ND	10.0	"	"	"	"	"	"	
Phenol	ND	10.0	"	"	"	"	"	"	
Pyrene	ND	10.0	"	"	"	"	"	"	
Pyridine	ND	10.0	"	"	"	"	"	"	
Quinoline	ND	10.0	"	"	"	"	"	"	
Thiophenol	ND	10.0	"	"	"	"	"	"	
Surrogate: 2-FBP	85.0 %	41-129			"	"	"	"	
Surrogate: 2-FP	56.6 %	18-124			"	"	"	"	
Surrogate: Nitrobenzene-d5	83.8 %	44-124			"	"	"	"	
Surrogate: Phenol-d6	57.0 %	25-122			"	"	"	"	
Surrogate: p-Terphenyl-d14	49.9 %	10-132			"	"	"	"	
Surrogate: 2,4,6-TBP	85.0 %	19-132			"	"	"	"	
94 (B4E0548-06) Water Sampled: 05/18/04 12:00 Received: 05/21/04 09:25									
Acenaphthylene	ND	10.0	ug/l	1	4E24011	05/24/04	05/27/04	EPA 8270C	
Anthracene	ND	10.0	"	"	"	"	"	"	
Benzo (a) anthracene	ND	10.0	"	"	"	"	"	"	
Benzo (a) pyrene	ND	10.0	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	10.0	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	10.0	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	10.0	"	"	"	"	"	"	
Bis(2-ethylhexyl)phthalate	ND	10.0	"	"	"	"	"	"	
Butyl benzyl phthalate	ND	10.0	"	"	"	"	"	"	
Chrysene	ND	10.0	"	"	"	"	"	"	
Di-n-butyl phthalate	ND	10.0	"	"	"	"	"	"	

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Jeanne Garthwaite, Project Manager

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Shell Puget Sound Refinery
8505 South Texas Road
Anacortes, WA 98221

Project: SWMU 11 Sampling
Project Number: 4550237616
Project Manager: Brian Rhodes

Reported:
06/07/04 16:03

Semivolatile Organic Compounds (Modified Skinner List) by EPA Method 8270C
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
94 (B4E0548-06) Water Sampled: 05/18/04 12:00 Received: 05/21/04 09:25									
Dibenz (a,h) acridine	ND	10.0	ug/l	1	4E24011	05/24/04	05/27/04	"	
Dibenz (a,h) anthracene	ND	10.0	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	10.0	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	10.0	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	10.0	"	"	"	"	"	"	
Diethyl phthalate	ND	10.0	"	"	"	"	"	"	
7,12-Dimethylbenz (a) anthracene	ND	10.0	"	"	"	"	"	"	
2,4-Dimethylphenol	ND	10.0	"	"	"	"	"	"	
Dimethyl phthalate	ND	10.0	"	"	"	"	"	"	
2,4-Dinitrophenol	ND	10.0	"	"	"	"	"	"	
Fluoranthene	ND	10.0	"	"	"	"	"	"	
Fluorene	ND	10.0	"	"	"	"	"	"	
Indene	ND	10.0	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	10.0	"	"	"	"	"	"	
6-Methyl chrysene	ND	10.0	"	"	"	"	"	"	
1-Methylnaphthalene	ND	10.0	"	"	"	"	"	"	
2-Methylnaphthalene	ND	10.0	"	"	"	"	"	"	
2-Methylphenol	ND	10.0	"	"	"	"	"	"	
3 & 4-Methylphenol	ND	10.0	"	"	"	"	"	"	
Naphthalene	ND	10.0	"	"	"	"	"	"	
4-Nitrophenol	ND	10.0	"	"	"	"	"	"	
Di-n-octyl phthalate	ND	10.0	"	"	"	"	"	"	
Phenanthrene	ND	10.0	"	"	"	"	"	"	
Phenol	ND	10.0	"	"	"	"	"	"	
Pyrene	ND	10.0	"	"	"	"	"	"	
Pyridine	ND	10.0	"	"	"	"	"	"	
Quinoline	ND	10.0	"	"	"	"	"	"	
Thiophenol	ND	10.0	"	"	"	"	"	"	
Surrogate: 2-FBP	83.9 %	41-129			"	"	"	"	
Surrogate: 2-FP	65.5 %	18-124			"	"	"	"	
Surrogate: Nitrobenzene-d5	80.2 %	44-124			"	"	"	"	
Surrogate: Phenol-d6	66.3 %	25-122			"	"	"	"	
Surrogate: p-Terphenyl-d14	67.6 %	10-132			"	"	"	"	
Surrogate: 2,4,6-TBP	89.8 %	19-132			"	"	"	"	

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Jeanne Garthwaite, Project Manager

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Shell Puget Sound Refinery
8505 South Texas Road
Anacortes, WA 98221

Project: SWMU 11 Sampling
Project Number: 4550237616
Project Manager: Brian Rhodes

Reported:
06/07/04 16:03

Semivolatile Organic Compounds (Modified Skinner List) by EPA Method 8270C
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
98 (B4E0548-07) Water Sampled: 05/18/04 12:00 Received: 05/21/04 09:25 X									
Acenaphthylene	ND	10.0	ug/l	1	4E24011	05/24/04	05/27/04	EPA 8270C	
Anthracene	ND	10.0	"	"	"	"	"	"	
Benzo (a) anthracene	ND	10.0	"	"	"	"	"	"	
Benzo (a) pyrene	ND	10.0	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	10.0	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	10.0	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	10.0	"	"	"	"	"	"	
Bis(2-ethylhexyl)phthalate	12.3	10.0	"	"	"	"	"	"	
Butyl benzyl phthalate	ND	10.0	"	"	"	"	"	"	
Chrysene	ND	10.0	"	"	"	"	"	"	
Di-n-butyl phthalate	ND	10.0	"	"	"	"	"	"	
Dibenz (a,h) acridine	ND	10.0	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	10.0	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	10.0	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	10.0	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	10.0	"	"	"	"	"	"	
Diethyl phthalate	ND	10.0	"	"	"	"	"	"	
7,12-Dimethylbenz (a) anthracene	ND	10.0	"	"	"	"	"	"	
2,4-Dimethylphenol	ND	10.0	"	"	"	"	"	"	
Dimethyl phthalate	ND	10.0	"	"	"	"	"	"	
2,4-Dinitrophenol	ND	10.0	"	"	"	"	"	"	
Fluoranthene	ND	10.0	"	"	"	"	"	"	
Fluorene	ND	10.0	"	"	"	"	"	"	
Indene	ND	10.0	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	10.0	"	"	"	"	"	"	
6-Methyl chrysene	ND	10.0	"	"	"	"	"	"	
1-Methylnaphthalene	ND	10.0	"	"	"	"	"	"	
2-Methylnaphthalene	ND	10.0	"	"	"	"	"	"	
2-Methylphenol	ND	10.0	"	"	"	"	"	"	
3 & 4-Methylphenol	ND	10.0	"	"	"	"	"	"	
Naphthalene	ND	10.0	"	"	"	"	"	"	
4-Nitrophenol	ND	10.0	"	"	"	"	"	"	
Di-n-octyl phthalate	ND	10.0	"	"	"	"	"	"	
Phenanthrene	ND	10.0	"	"	"	"	"	"	
Phenol	ND	10.0	"	"	"	"	"	"	

North Creek Analytical - Bothell

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Jeanne Garthwaite

Jeanne Garthwaite, Project Manager

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907.563.9200 fax 907.563.9210

Shell Puget Sound Refinery
8505 South Texas Road
Anacortes, WA 98221

Project: SWMU 11 Sampling
Project Number: 4550237616
Project Manager: Brian Rhodes

Reported:
06/07/04 16:03

Semivolatile Organic Compounds (Modified Skinner List) by EPA Method 8270C
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
98 (B4E0548-07) Water Sampled: 05/18/04 12:00 Received: 05/21/04 09:25 X									
Pyrene	ND	10.0	ug/l	1	4E24011	05/24/04	05/27/04	"	
Pyridine	ND	10.0	"	"	"	"	"	"	
Quinoline	ND	10.0	"	"	"	"	"	"	
Thiophenol	ND	10.0	"	"	"	"	"	"	
Surrogate: 2-FBP	75.9 %	41-129			"	"	"	"	
Surrogate: 2-FP	16.4 %	18-124			"	"	"	"	
Surrogate: Nitrobenzene-d5	70.1 %	44-124			"	"	"	"	
Surrogate: Phenol-d6	21.2 %	25-122			"	"	"	"	
Surrogate: p-Terphenyl-d14	67.6 %	10-132			"	"	"	"	
Surrogate: 2,4,6-TBP	13.6 %	19-132			"	"	"	"	
95 (B4E0548-08) Water Sampled: 05/18/04 12:00 Received: 05/21/04 09:25 X									
Acenaphthylene	ND	10.0	ug/l	1	4E24011	05/24/04	05/27/04	EPA 8270C	
Anthracene	ND	10.0	"	"	"	"	"	"	
Benzo (a) anthracene	ND	10.0	"	"	"	"	"	"	
Benzo (a) pyrene	ND	10.0	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	10.0	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	10.0	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	10.0	"	"	"	"	"	"	
Bis(2-ethylhexyl)phthalate	14.9	10.0	"	"	"	"	"	"	
Butyl benzyl phthalate	ND	10.0	"	"	"	"	"	"	
Chrysene	ND	10.0	"	"	"	"	"	"	
Di-n-butyl phthalate	ND	10.0	"	"	"	"	"	"	
Dibenz (a,h) acridine	ND	10.0	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	10.0	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	10.0	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	10.0	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	10.0	"	"	"	"	"	"	
Diethyl phthalate	ND	10.0	"	"	"	"	"	"	
7,12-Dimethylbenz (a) anthracene	ND	10.0	"	"	"	"	"	"	
2,4-Dimethylphenol	ND	10.0	"	"	"	"	"	"	
Dimethyl phthalate	ND	10.0	"	"	"	"	"	"	
2,4-Dinitrophenol	ND	10.0	"	"	"	"	"	"	
Fluoranthene	ND	10.0	"	"	"	"	"	"	
Fluorene	ND	10.0	"	"	"	"	"	"	

North Creek Analytical - Bothell

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Jeanne Garthwaite

Jeanne Garthwaite, Project Manager

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907.563.9200 fax 907.563.9210

Shell Puget Sound Refinery
8505 South Texas Road
Anacortes, WA 98221

Project: SWMU 11 Sampling
Project Number: 4550237616
Project Manager: Brian Rhodes

Reported:
06/07/04 16:03

Semivolatile Organic Compounds (Modified Skinner List) by EPA Method 8270C
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
95 (B4E0548-08) Water Sampled: 05/18/04 12:00 Received: 05/21/04 09:25									
Indene	ND	10.0	ug/l	1	4E24011	05/24/04	05/27/04	"	
Indeno (1,2,3-cd) pyrene	ND	10.0	"	"	"	"	"	"	
6-Methyl chrysene	ND	10.0	"	"	"	"	"	"	
1-Methylnaphthalene	ND	10.0	"	"	"	"	"	"	
2-Methylnaphthalene	ND	10.0	"	"	"	"	"	"	
2-Methylphenol	ND	10.0	"	"	"	"	"	"	
3 & 4-Methylphenol	ND	10.0	"	"	"	"	"	"	
Naphthalene	ND	10.0	"	"	"	"	"	"	
4-Nitrophenol	ND	10.0	"	"	"	"	"	"	
Di-n-octyl phthalate	ND	10.0	"	"	"	"	"	"	
Phenanthrene	ND	10.0	"	"	"	"	"	"	
Phenol	ND	10.0	"	"	"	"	"	"	
Pyrene	ND	10.0	"	"	"	"	"	"	
Pyridine	ND	10.0	"	"	"	"	"	"	
Quinoline	ND	10.0	"	"	"	"	"	"	
Thiophenol	ND	10.0	"	"	"	"	"	"	
Surrogate: 2-FBP	56.0 %	41-129			"	"	"	"	
Surrogate: 2-FP	17.7 %	18-124			"	"	"	"	
Surrogate: Nitrobenzene-d5	57.3 %	44-124			"	"	"	"	
Surrogate: Phenol-d6	24.6 %	25-122			"	"	"	"	
Surrogate: p-Terphenyl-d14	44.2 %	10-132			"	"	"	"	
Surrogate: 2,4,6-TBP	33.3 %	19-132			"	"	"	"	
96 (B4E0548-09) Water Sampled: 05/18/04 12:00 Received: 05/21/04 09:25									
Acenaphthylene	ND	10.0	ug/l	1	4E24011	05/24/04	05/27/04	EPA 8270C	
Anthracene	ND	10.0	"	"	"	"	"	"	
Benzo (a) anthracene	ND	10.0	"	"	"	"	"	"	
Benzo (a) pyrene	ND	10.0	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	10.0	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	10.0	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	10.0	"	"	"	"	"	"	
Bis(2-ethylhexyl)phthalate	18.7	10.0	"	"	"	"	"	"	
Butyl benzyl phthalate	ND	10.0	"	"	"	"	"	"	
Chrysene	ND	10.0	"	"	"	"	"	"	
Di-n-butyl phthalate	ND	10.0	"	"	"	"	"	"	

North Creek Analytical - Bothell

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Jeanne Garthwaite, Project Manager

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907.563.9200 fax 907.563.9210

Shell Puget Sound Refinery
8505 South Texas Road
Anacortes, WA 98221

Project: SWMU 11 Sampling
Project Number: 4550237616
Project Manager: Brian Rhodes

Reported:
06/07/04 16:03

Semivolatile Organic Compounds (Modified Skinner List) by EPA Method 8270C
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
96 (B4E0548-09) Water Sampled: 05/18/04 12:00 Received: 05/21/04 09:25									
Dibenz (a,h) acridine	ND	10.0	ug/l	1	4E24011	05/24/04	05/27/04	"	
Dibenz (a,h) anthracene	ND	10.0	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	10.0	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	10.0	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	10.0	"	"	"	"	"	"	
Diethyl phthalate	ND	10.0	"	"	"	"	"	"	
7,12-Dimethylbenz (a) anthracene	ND	10.0	"	"	"	"	"	"	
2,4-Dimethylphenol	ND	10.0	"	"	"	"	"	"	
Dimethyl phthalate	ND	10.0	"	"	"	"	"	"	
2,4-Dinitrophenol	ND	10.0	"	"	"	"	"	"	
Fluoranthene	ND	10.0	"	"	"	"	"	"	
Fluorene	ND	10.0	"	"	"	"	"	"	
Indene	ND	10.0	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	10.0	"	"	"	"	"	"	
6-Methyl chrysene	ND	10.0	"	"	"	"	"	"	
1-Methylnaphthalene	ND	10.0	"	"	"	"	"	"	
2-Methylnaphthalene	ND	10.0	"	"	"	"	"	"	
2-Methylphenol	ND	10.0	"	"	"	"	"	"	
3 & 4-Methylphenol	ND	10.0	"	"	"	"	"	"	
Naphthalene	ND	10.0	"	"	"	"	"	"	
4-Nitrophenol	ND	10.0	"	"	"	"	"	"	
Di-n-octyl phthalate	ND	10.0	"	"	"	"	"	"	
Phenanthrene	ND	10.0	"	"	"	"	"	"	
Phenol	ND	10.0	"	"	"	"	"	"	
Pyrene	ND	10.0	"	"	"	"	"	"	
Pyridine	ND	10.0	"	"	"	"	"	"	
Quinoline	ND	10.0	"	"	"	"	"	"	
Thiophenol	ND	10.0	"	"	"	"	"	"	
Surrogate: 2-FBP	77.3 %	41-129			"	"	"	"	
Surrogate: 2-FP	59.6 %	18-124			"	"	"	"	
Surrogate: Nitrobenzene-d5	76.9 %	44-124			"	"	"	"	
Surrogate: Phenol-d6	64.1 %	25-122			"	"	"	"	
Surrogate: p-Terphenyl-d14	68.4 %	10-132			"	"	"	"	
Surrogate: 2,4,6-TBP	89.6 %	19-132			"	"	"	"	

North Creek Analytical - Bothell

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Jeanne Garthwaite, Project Manager

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Shell Puget Sound Refinery
8505 South Texas Road
Anacortes, WA 98221

Project: SWMU 11 Sampling
Project Number: 4550237616
Project Manager: Brian Rhodes

Reported:
06/07/04 16:03

Semivolatile Organic Compounds (Modified Skinner List) by EPA Method 8270C

North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
97 (B4E0548-10) Water Sampled: 05/18/04 12:00 Received: 05/21/04 09:25									
Acenaphthylene	ND	10.0	ug/l	1	4E24011	05/24/04	05/27/04	EPA 8270C	
Anthracene	ND	10.0	"	"	"	"	"	"	
Benzo (a) anthracene	ND	10.0	"	"	"	"	"	"	
Benzo (a) pyrene	ND	10.0	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	10.0	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	10.0	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	10.0	"	"	"	"	"	"	
Bis(2-ethylhexyl)phthalate	16.8	10.0	"	"	"	"	"	"	
Butyl benzyl phthalate	ND	10.0	"	"	"	"	"	"	
Chrysene	ND	10.0	"	"	"	"	"	"	
Di-n-butyl phthalate	ND	10.0	"	"	"	"	"	"	
Dibenz (a,h) acridine	ND	10.0	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	10.0	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	10.0	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	10.0	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	10.0	"	"	"	"	"	"	
Diethyl phthalate	ND	10.0	"	"	"	"	"	"	
7,12-Dimethylbenz (a) anthracene	ND	10.0	"	"	"	"	"	"	
2,4-Dimethylphenol	ND	10.0	"	"	"	"	"	"	
Dimethyl phthalate	ND	10.0	"	"	"	"	"	"	
2,4-Dinitrophenol	ND	10.0	"	"	"	"	"	"	
Fluoranthene	ND	10.0	"	"	"	"	"	"	
Fluorene	ND	10.0	"	"	"	"	"	"	
Indene	ND	10.0	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	10.0	"	"	"	"	"	"	
6-Methyl chrysene	ND	10.0	"	"	"	"	"	"	
1-Methylnaphthalene	ND	10.0	"	"	"	"	"	"	
2-Methylnaphthalene	ND	10.0	"	"	"	"	"	"	
2-Methylphenol	ND	10.0	"	"	"	"	"	"	
3 & 4-Methylphenol	ND	10.0	"	"	"	"	"	"	
Naphthalene	ND	10.0	"	"	"	"	"	"	
4-Nitrophenol	ND	10.0	"	"	"	"	"	"	
Di-n-octyl phthalate	ND	10.0	"	"	"	"	"	"	
Phenanthrene	ND	10.0	"	"	"	"	"	"	
Phenol	ND	10.0	"	"	"	"	"	"	

North Creek Analytical - Bothell

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Jeanne Garthwaite, Project Manager

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Shell Puget Sound Refinery
8505 South Texas Road
Anacortes, WA 98221

Project: SWMU 11 Sampling
Project Number: 4550237616
Project Manager: Brian Rhodes

Reported:
06/07/04 16:03

Semivolatile Organic Compounds (Modified Skinner List) by EPA Method 8270C
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
97 (B4E0548-10) Water Sampled: 05/18/04 12:00 Received: 05/21/04 09:25									
Pyrene	ND	10.0	ug/l	1	4E24011	05/24/04	05/27/04	"	
Pyridine	ND	10.0	"	"	"	"	"	"	
Quinoline	ND	10.0	"	"	"	"	"	"	
Thiophenol	ND	10.0	"	"	"	"	"	"	
Surrogate: 2-FBP	83.7 %	41-129			"	"	"	"	
Surrogate: 2-FP	30.0 %	18-124			"	"	"	"	
Surrogate: Nitrobenzene-d5	78.8 %	44-124			"	"	"	"	
Surrogate: Phenol-d6	29.6 %	25-122			"	"	"	"	
Surrogate: p-Terphenyl-d14	77.8 %	10-132			"	"	"	"	
Surrogate: 2,4,6-TBP	53.3 %	19-132			"	"	"	"	
63 (B4E0548-11) Water Sampled: 05/18/04 12:00 Received: 05/21/04 09:25									
Acenaphthylene	ND	10.0	ug/l	1	4E24011	05/24/04	05/27/04	EPA 8270C	
Anthracene	ND	10.0	"	"	"	"	"	"	
Benzo (a) anthracene	ND	10.0	"	"	"	"	"	"	
Benzo (a) pyrene	ND	10.0	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	10.0	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	10.0	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	10.0	"	"	"	"	"	"	
Bis(2-ethylhexyl)phthalate	30.6	10.0	"	"	"	"	"	"	
Butyl benzyl phthalate	ND	10.0	"	"	"	"	"	"	
Chrysene	ND	10.0	"	"	"	"	"	"	
Di-n-butyl phthalate	ND	10.0	"	"	"	"	"	"	
Dibenz (a,h) acridine	ND	10.0	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	10.0	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	10.0	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	10.0	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	10.0	"	"	"	"	"	"	
Diethyl phthalate	ND	10.0	"	"	"	"	"	"	
7,12-Dimethylbenz (a) anthracene	ND	10.0	"	"	"	"	"	"	
2,4-Dimethylphenol	ND	10.0	"	"	"	"	"	"	
Dimethyl phthalate	ND	10.0	"	"	"	"	"	"	
2,4-Dinitrophenol	ND	10.0	"	"	"	"	"	"	
Fluoranthene	ND	10.0	"	"	"	"	"	"	
Fluorene	17.9	10.0	"	"	"	"	"	"	

North Creek Analytical - Bothell

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Jeanne Garthwaite, Project Manager

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Shell Puget Sound Refinery
8505 South Texas Road
Anacortes, WA 98221

Project: SWMU 11 Sampling
Project Number: 4550237616
Project Manager: Brian Rhodes

Reported:
06/07/04 16:03

Semivolatile Organic Compounds (Modified Skinner List) by EPA Method 8270C
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
63 (B4E0548-11) Water Sampled: 05/18/04 12:00 Received: 05/21/04 09:25									
Indene	ND	10.0	ug/l	1	4E24011	05/24/04	05/27/04	"	
Indeno (1,2,3-cd) pyrene	ND	10.0	"	"	"	"	"	"	
6-Methyl chrysene	ND	10.0	"	"	"	"	"	"	
1-Methylnaphthalene	47.9	10.0	"	"	"	"	"	"	
2-Methylnaphthalene	23.3	10.0	"	"	"	"	"	"	
2-Methylphenol	ND	10.0	"	"	"	"	"	"	
3 & 4-Methylphenol	ND	10.0	"	"	"	"	"	"	
Naphthalene	23.9	10.0	"	"	"	"	"	"	
4-Nitrophenol	ND	10.0	"	"	"	"	"	"	
Di-n-octyl phthalate	ND	10.0	"	"	"	"	"	"	
Phenanthrene	35.8	10.0	"	"	"	"	"	"	
Phenol	ND	10.0	"	"	"	"	"	"	
Pyrene	ND	10.0	"	"	"	"	"	"	
Pyridine	ND	10.0	"	"	"	"	"	"	
Quinoline	ND	10.0	"	"	"	"	"	"	
Thiophenol	ND	10.0	"	"	"	"	"	"	
Surrogate: 2-FBP	93.5 %	41-129			"	"	"	"	
Surrogate: 2-FP	54.5 %	18-124			"	"	"	"	
Surrogate: Nitrobenzene-d5	109 %	44-124			"	"	"	"	
Surrogate: Phenol-d6	66.3 %	25-122			"	"	"	"	
Surrogate: p-Terphenyl-d14	85.3 %	10-132			"	"	"	"	
Surrogate: 2,4,6-TBP	80.2 %	19-132			"	"	"	"	
65 (B4E0548-12) Water Sampled: 05/18/04 12:00 Received: 05/21/04 09:25									
Acenaphthylene	ND	10.0	ug/l	1	4E24011	05/24/04	05/27/04	EPA 8270C	
Anthracene	ND	10.0	"	"	"	"	"	"	
Benzo (a) anthracene	ND	10.0	"	"	"	"	"	"	
Benzo (a) pyrene	ND	10.0	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	10.0	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	10.0	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	10.0	"	"	"	"	"	"	
Bis(2-ethylhexyl)phthalate	44.9	10.0	"	"	"	"	"	"	
Butyl benzyl phthalate	ND	10.0	"	"	"	"	"	"	
Chrysene	ND	10.0	"	"	"	"	"	"	
Di-n-butyl phthalate	ND	10.0	"	"	"	"	"	"	

North Creek Analytical - Bothell

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Jeanne Garthwaite

Jeanne Garthwaite, Project Manager

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907.563.9200 fax 907.563.9210

Shell Puget Sound Refinery
8505 South Texas Road
Anacortes, WA 98221

Project: SWMU 11 Sampling
Project Number: 4550237616
Project Manager: Brian Rhodes

Reported:
06/07/04 16:03

Semivolatile Organic Compounds (Modified Skinner List) by EPA Method 8270C
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
65 (B4E0548-12) Water Sampled: 05/18/04 12:00 Received: 05/21/04 09:25									
Dibenz (a,h) acridine	ND	10.0	ug/l	1	4E24011	05/24/04	05/27/04	"	
Dibenz (a,h) anthracene	ND	10.0	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	10.0	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	10.0	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	10.0	"	"	"	"	"	"	
Diethyl phthalate	ND	10.0	"	"	"	"	"	"	
7,12-Dimethylbenz (a) anthracene	ND	10.0	"	"	"	"	"	"	
2,4-Dimethylphenol	ND	10.0	"	"	"	"	"	"	
Dimethyl phthalate	ND	10.0	"	"	"	"	"	"	
2,4-Dinitrophenol	ND	10.0	"	"	"	"	"	"	
Fluoranthene	ND	10.0	"	"	"	"	"	"	
Fluorene	ND	10.0	"	"	"	"	"	"	
Indene	ND	10.0	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	10.0	"	"	"	"	"	"	
6-Methyl chrysene	ND	10.0	"	"	"	"	"	"	
1-Methylnaphthalene	ND	10.0	"	"	"	"	"	"	
2-Methylnaphthalene	ND	10.0	"	"	"	"	"	"	
2-Methylphenol	ND	10.0	"	"	"	"	"	"	
3 & 4-Methylphenol	ND	10.0	"	"	"	"	"	"	
Naphthalene	ND	10.0	"	"	"	"	"	"	
4-Nitrophenol	ND	10.0	"	"	"	"	"	"	
Di-n-octyl phthalate	ND	10.0	"	"	"	"	"	"	
Phenanthrene	ND	10.0	"	"	"	"	"	"	
Phenol	ND	10.0	"	"	"	"	"	"	
Pyrene	ND	10.0	"	"	"	"	"	"	
Pyridine	ND	10.0	"	"	"	"	"	"	
Quinoline	ND	10.0	"	"	"	"	"	"	
Thiophenol	ND	10.0	"	"	"	"	"	"	
Surrogate: 2-FBP	78.6 %	41-129			"	"	"	"	
Surrogate: 2-FP	51.4 %	18-124			"	"	"	"	
Surrogate: Nitrobenzene-d5	74.4 %	44-124			"	"	"	"	
Surrogate: Phenol-d6	58.8 %	25-122			"	"	"	"	
Surrogate: p-Terphenyl-d14	81.9 %	10-132			"	"	"	"	
Surrogate: 2,4,6-TBP	91.5 %	19-132			"	"	"	"	

North Creek Analytical - Bothell

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Shell Puget Sound Refinery
8505 South Texas Road
Anacortes, WA 98221

Project: SWMU 11 Sampling
Project Number: 4550237616
Project Manager: Brian Rhodes

Reported:
06/07/04 16:03

Semivolatile Organic Compounds (Modified Skinner List) by EPA Method 8270C
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
100 (B4E0548-13) Water Sampled: 05/18/04 12:00 Received: 05/21/04 09:25									
Acenaphthylene	ND	10.0	ug/l	1	4E24011	05/24/04	05/26/04	EPA 8270C	
Anthracene	ND	10.0	"	"	"	"	"	"	
Benzo (a) anthracene	ND	10.0	"	"	"	"	"	"	
Benzo (a) pyrene	ND	10.0	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	10.0	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	10.0	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	10.0	"	"	"	"	"	"	
Bis(2-ethylhexyl)phthalate	29.1	10.0	"	"	"	"	"	"	
Butyl benzyl phthalate	ND	10.0	"	"	"	"	"	"	
Chrysene	ND	10.0	"	"	"	"	"	"	
Di-n-butyl phthalate	ND	10.0	"	"	"	"	"	"	
Dibenz (a,h) acridine	ND	10.0	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	10.0	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	10.0	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	10.0	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	10.0	"	"	"	"	"	"	
Diethyl phthalate	ND	10.0	"	"	"	"	"	"	
7,12-Dimethylbenz (a) anthracene	ND	10.0	"	"	"	"	"	"	
2,4-Dimethylphenol	46.3	10.0	"	"	"	"	"	"	
Dimethyl phthalate	ND	10.0	"	"	"	"	"	"	
2,4-Dinitrophenol	ND	10.0	"	"	"	"	"	"	
Fluoranthene	ND	10.0	"	"	"	"	"	"	
Fluorene	ND	10.0	"	"	"	"	"	"	
Indene	ND	10.0	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	10.0	"	"	"	"	"	"	
6-Methyl chrysene	ND	10.0	"	"	"	"	"	"	
1-Methylnaphthalene	ND	10.0	"	"	"	"	"	"	
2-Methylnaphthalene	ND	10.0	"	"	"	"	"	"	
2-Methylphenol	ND	10.0	"	"	"	"	"	"	
3 & 4-Methylphenol	ND	10.0	"	"	"	"	"	"	
Naphthalene	ND	10.0	"	"	"	"	"	"	
4-Nitrophenol	ND	10.0	"	"	"	"	"	"	
Di-n-octyl phthalate	ND	10.0	"	"	"	"	"	"	
Phenanthrene	ND	10.0	"	"	"	"	"	"	
Phenol	ND	10.0	"	"	"	"	"	"	

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Jeanne Garthwaite, Project Manager

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Shell Puget Sound Refinery
8505 South Texas Road
Anacortes, WA 98221

Project: SWMU 11 Sampling
Project Number: 4550237616
Project Manager: Brian Rhodes

Reported:
06/07/04 16:03

Semivolatile Organic Compounds (Modified Skinner List) by EPA Method 8270C
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
100 (B4E0548-13) Water Sampled: 05/18/04 12:00 Received: 05/21/04 09:25									
Pyrene	ND	10.0	ug/l	1	4E24011	05/24/04	05/26/04	"	
Pyridine	ND	10.0	"	"	"	"	"	"	
Quinoline	ND	10.0	"	"	"	"	"	"	
Thiophenol	ND	10.0	"	"	"	"	"	"	
Surrogate: 2-FBP	93.1 %	41-129			"	"	"	"	
Surrogate: 2-FP	51.0 %	18-124			"	"	"	"	
Surrogate: Nitrobenzene-d5	90.0 %	44-124			"	"	"	"	
Surrogate: Phenol-d6	69.6 %	25-122			"	"	"	"	
Surrogate: p-Terphenyl-d14	65.9 %	10-132			"	"	"	"	
Surrogate: 2,4,6-TBP	92.2 %	19-132			"	"	"	"	
BLANK (B4E0548-14) Water Sampled: 05/18/04 12:00 Received: 05/21/04 09:25									
Acenaphthylene	ND	10.0	ug/l	1	4E24011	05/24/04	05/26/04	EPA 8270C	
Anthracene	ND	10.0	"	"	"	"	"	"	
Benzo (a) anthracene	ND	10.0	"	"	"	"	"	"	
Benzo (a) pyrene	ND	10.0	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	10.0	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	10.0	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	10.0	"	"	"	"	"	"	
Bis(2-ethylhexyl)phthalate	ND	10.0	"	"	"	"	"	"	
Butyl benzyl phthalate	ND	10.0	"	"	"	"	"	"	
Chrysene	ND	10.0	"	"	"	"	"	"	
Di-n-butyl phthalate	ND	10.0	"	"	"	"	"	"	
Dibenz (a,h) acridine	ND	10.0	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	10.0	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	10.0	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	10.0	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	10.0	"	"	"	"	"	"	
Diethyl phthalate	ND	10.0	"	"	"	"	"	"	
7,12-Dimethylbenz (a) anthracene	ND	10.0	"	"	"	"	"	"	
2,4-Dimethylphenol	ND	10.0	"	"	"	"	"	"	
Dimethyl phthalate	ND	10.0	"	"	"	"	"	"	
2,4-Dinitrophenol	ND	10.0	"	"	"	"	"	"	
Fluoranthene	ND	10.0	"	"	"	"	"	"	
Fluorene	ND	10.0	"	"	"	"	"	"	

North Creek Analytical - Bothell

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Shell Puget Sound Refinery
8505 South Texas Road
Anacortes, WA 98221

Project: SWMU 11 Sampling
Project Number: 4550237616
Project Manager: Brian Rhodes

Reported:
06/07/04 16:03

Semivolatile Organic Compounds (Modified Skinner List) by EPA Method 8270C
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
BLANK (B4E0548-14) Water Sampled: 05/18/04 12:00 Received: 05/21/04 09:25									
Indene	ND	10.0	ug/l	1	4E24011	05/24/04	05/26/04	"	
Indeno (1,2,3-cd) pyrene	ND	10.0	"	"	"	"	"	"	
6-Methyl chrysene	ND	10.0	"	"	"	"	"	"	
1-Methylnaphthalene	ND	10.0	"	"	"	"	"	"	
2-Methylnaphthalene	ND	10.0	"	"	"	"	"	"	
2-Methylphenol	ND	10.0	"	"	"	"	"	"	
3 & 4-Methylphenol	ND	10.0	"	"	"	"	"	"	
Naphthalene	ND	10.0	"	"	"	"	"	"	
4-Nitrophenol	ND	10.0	"	"	"	"	"	"	
Di-n-octyl phthalate	ND	10.0	"	"	"	"	"	"	
Phenanthrene	ND	10.0	"	"	"	"	"	"	
Phenol	ND	10.0	"	"	"	"	"	"	
Pyrene	ND	10.0	"	"	"	"	"	"	
Pyridine	ND	10.0	"	"	"	"	"	"	
Quinoline	ND	10.0	"	"	"	"	"	"	
Thiophenol	ND	10.0	"	"	"	"	"	"	
Surrogate: 2-FBP	84.7 %	41-129			"	"	"	"	
Surrogate: 2-FP	44.1 %	18-124			"	"	"	"	
Surrogate: Nitrobenzene-d5	77.9 %	44-124			"	"	"	"	
Surrogate: Phenol-d6	58.3 %	25-122			"	"	"	"	
Surrogate: p-Terphenyl-d14	83.7 %	10-132			"	"	"	"	
Surrogate: 2,4,6-TBP	79.4 %	19-132			"	"	"	"	

North Creek Analytical - Bothell

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Jeanne Garthwaite, Project Manager

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Environmental Laboratory Network

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Shell Puget Sound Refinery
8505 South Texas Road
Anacortes, WA 98221

Project: SWMU 11 Sampling
Project Number: 4550237616
Project Manager: Brian Rhodes

Reported:
06/07/04 16:03

Semivolatile Petroleum Products by NWTPH-Dx (w/o 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 4E25012: Prepared 05/25/04 Using EPA 3520C

Blank (4E25012-BLK1)

Diesel Range Hydrocarbons	ND	0.250	mg/l							
Lube Oil Range Hydrocarbons	ND	0.500	"							
Surrogate: 2-FBP	0.293		"	0.320		91.6	50-150			
Surrogate: Octacosane	0.159		"	0.160		99.4	50-150			

LCS (4E25012-BS1)

Diesel Range Hydrocarbons	1.73	0.250	mg/l	2.00		86.5	58-125			
Surrogate: 2-FBP	0.308		"	0.320		96.2	50-150			

LCS Dup (4E25012-BSD1)

Diesel Range Hydrocarbons	1.71	0.250	mg/l	2.00		85.5	58-125	1.16	40	
Surrogate: 2-FBP	0.300		"	0.320		93.8	50-150			

North Creek Analytical - Bothell

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Shell Puget Sound Refinery
8505 South Texas Road
Anacortes, WA 98221

Project: SWMU 11 Sampling
Project Number: 4550237616
Project Manager: Brian Rhodes

Reported:
06/07/04 16:03

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

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

Batch 4E24045: Prepared 05/24/04 Using EPA 7470A

Blank (4E24045-BLK1)

Mercury	ND	0.000200	mg/l							
---------	----	----------	------	--	--	--	--	--	--	--

LCS (4E24045-BS1)

Mercury	0.00465	0.000200	mg/l	0.00500		93.0	80-120			
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LCS Dup (4E24045-BSD1)

Mercury	0.00474	0.000200	mg/l	0.00500		94.8	80-120	1.92	20	
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Matrix Spike (4E24045-MS1)

Source: B4E0544-01

Mercury	0.00486	0.000200	mg/l	0.00500	ND	97.2	70-130			
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Matrix Spike Dup (4E24045-MSD1)

Source: B4E0544-01

Mercury	0.00463	0.000200	mg/l	0.00500	ND	92.6	70-130	4.85	20	
---------	---------	----------	------	---------	----	------	--------	------	----	--

Batch 4E25025: Prepared 05/25/04 Using EPA 3020A

Blank (4E25025-BLK1)

Silver	ND	0.00100	mg/l							
Arsenic	ND	0.00100	"							
Barium	ND	0.0100	"							
Beryllium	ND	0.00100	"							
Cadmium	ND	0.00100	"							
Cobalt	ND	0.00100	"							
Chromium	ND	0.00100	"							
Copper	ND	0.00100	"							
Nickel	ND	0.00100	"							
Lead	ND	0.00100	"							
Antimony	ND	0.00300	"							
Selenium	ND	0.00100	"							
Vanadium	ND	0.00100	"							

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Jeanne Garthwaite, Project Manager

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Shell Puget Sound Refinery
8505 South Texas Road
Anacortes, WA 98221

Project: SWMU 11 Sampling
Project Number: 4550237616
Project Manager: Brian Rhodes

Reported:
06/07/04 16:03

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

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

Batch 4E25025: Prepared 05/25/04 Using EPA 3020A

LCS (4E25025-BS1)

Silver	0.0749	0.00100	mg/l	0.0800		93.6	80-120			
Arsenic	0.0731	0.00100	"	0.0800		91.4	80-120			
Barium	0.0762	0.0100	"	0.0800		95.2	80-120			
Beryllium	0.0792	0.00100	"	0.0800		99.0	80-120			
Cadmium	0.0747	0.00100	"	0.0800		93.4	80-120			
Cobalt	0.0738	0.00100	"	0.0800		92.2	80-120			
Chromium	0.0741	0.00100	"	0.0800		92.6	80-120			
Copper	0.0742	0.00100	"	0.0800		92.8	80-120			
Nickel	0.0748	0.00100	"	0.0800		93.5	80-120			
Lead	0.0756	0.00100	"	0.0800		94.5	80-120			
Antimony	0.0744	0.00300	"	0.0800		93.0	80-120			
Selenium	0.0750	0.00100	"	0.0800		93.8	80-120			
Vanadium	0.0745	0.00100	"	0.0800		93.1	80-120			

LCS Dup (4E25025-BSD1)

Silver	0.0756	0.00100	mg/l	0.0800		94.5	80-120	0.930	20	
Arsenic	0.0746	0.00100	"	0.0800		93.3	80-120	2.03	20	
Barium	0.0772	0.0100	"	0.0800		96.5	80-120	1.30	20	
Beryllium	0.0803	0.00100	"	0.0800		100	80-120	1.38	20	
Cadmium	0.0768	0.00100	"	0.0800		96.0	80-120	2.77	20	
Cobalt	0.0752	0.00100	"	0.0800		94.0	80-120	1.88	20	
Chromium	0.0754	0.00100	"	0.0800		94.2	80-120	1.74	20	
Copper	0.0757	0.00100	"	0.0800		94.6	80-120	2.00	20	
Nickel	0.0764	0.00100	"	0.0800		95.5	80-120	2.12	20	
Lead	0.0772	0.00100	"	0.0800		96.5	80-120	2.09	20	
Antimony	0.0770	0.00300	"	0.0800		96.2	80-120	3.43	20	
Selenium	0.0770	0.00100	"	0.0800		96.2	80-120	2.63	20	
Vanadium	0.0756	0.00100	"	0.0800		94.5	80-120	1.47	20	

North Creek Analytical - Bothell

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Jeanne Garthwaite, Project Manager

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Shell Puget Sound Refinery
8505 South Texas Road
Anacortes, WA 98221

Project: SWMU 11 Sampling
Project Number: 4550237616
Project Manager: Brian Rhodes

Reported:
06/07/04 16:03

Total Metals by EPA 6000/7000 Series 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 4E25025: Prepared 05/25/04 Using EPA 3020A

Matrix Spike (4E25025-MS1)

Source: B4E0548-01

Silver	0.0729	0.00100	mg/l	0.0800	0.000430	90.6	21-136			
Arsenic	0.0855	0.00100	"	0.0800	0.00783	97.1	75-125			
Barium	0.0993	0.0100	"	0.0800	0.0207	98.2	75-125			
Beryllium	0.0803	0.00100	"	0.0800	0.000130	100	75-125			
Cadmium	0.0757	0.00100	"	0.0800	ND	94.6	75-125			
Cobalt	0.0739	0.00100	"	0.0800	0.000460	91.8	75-125			
Chromium	0.0755	0.00100	"	0.0800	0.000710	93.5	75-125			
Copper	0.0750	0.00100	"	0.0800	0.000940	92.6	70-124			
Nickel	0.0796	0.00100	"	0.0800	0.00524	93.0	76-125			
Lead	0.0785	0.00100	"	0.0800	0.000690	97.3	75-125			
Antimony	0.0758	0.00300	"	0.0800	0.000710	93.9	78-125			
Selenium	0.0783	0.00100	"	0.0800	0.00144	96.1	76-128			
Vanadium	0.0793	0.00100	"	0.0800	0.00271	95.7	75-129			

Matrix Spike Dup (4E25025-MSD1)

Source: B4E0548-01

Silver	0.0518	0.00100	mg/l	0.0800	0.000430	64.2	21-136	33.8	50	
Arsenic	0.0851	0.00100	"	0.0800	0.00783	96.6	75-125	0.469	20	
Barium	0.0985	0.0100	"	0.0800	0.0207	97.2	75-125	0.809	20	
Beryllium	0.0802	0.00100	"	0.0800	0.000130	100	75-125	0.125	20	
Cadmium	0.0760	0.00100	"	0.0800	ND	95.0	75-125	0.396	20	
Cobalt	0.0741	0.00100	"	0.0800	0.000460	92.1	75-125	0.270	20	
Chromium	0.0752	0.00100	"	0.0800	0.000710	93.1	75-125	0.398	20	
Copper	0.0746	0.00100	"	0.0800	0.000940	92.1	70-124	0.535	20	
Nickel	0.0795	0.00100	"	0.0800	0.00524	92.8	76-125	0.126	20	
Lead	0.0780	0.00100	"	0.0800	0.000690	96.6	75-125	0.639	20	
Antimony	0.0750	0.00300	"	0.0800	0.000710	92.9	78-125	1.06	20	
Selenium	0.0782	0.00100	"	0.0800	0.00144	96.0	76-128	0.128	20	
Vanadium	0.0793	0.00100	"	0.0800	0.00271	95.7	75-129	0.00	20	

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Shell Puget Sound Refinery
 8505 South Texas Road
 Anacortes, WA 98221

Project: SWMU 11 Sampling
 Project Number: 4550237616
 Project Manager: Brian Rhodes

Reported:
 06/07/04 16:03

Total Metals by EPA 6000/7000 Series 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 4E25025: Prepared 05/25/04 Using EPA 3020A

Post Spike (4E25025-PS1)				Source: B4E0548-01						
Silver	0.0927		ug/ml	0.100	0.000430	92.3	75-125			
Arsenic	0.104		"	0.100	0.00783	96.2	75-125			
Barium	0.119		"	0.100	0.0207	98.3	75-125			
Beryllium	0.0996		"	0.100	0.000130	99.5	75-125			
Cadmium	0.0976		"	0.100	ND	97.6	75-125			
Cobalt	0.0937		"	0.100	0.000460	93.2	75-125			
Chromium	0.0963		"	0.100	0.000710	95.6	75-125			
Copper	0.0940		"	0.100	0.000940	93.1	75-125			
Nickel	0.0990		"	0.100	0.00524	93.8	75-125			
Lead	0.0972		"	0.100	0.000690	96.5	75-125			
Antimony	0.0499		"	0.0500	0.000710	98.4	75-125			
Selenium	0.0989		"	0.100	0.00144	97.5	75-125			
Vanadium	0.0988		"	0.100	0.00271	96.1	75-125			

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Shell Puget Sound Refinery
8505 South Texas Road
Anacortes, WA 98221

Project: SWMU 11 Sampling
Project Number: 4550237616
Project Manager: Brian Rhodes

Reported:
06/07/04 16:03

Volatile Organic Compounds (Modified Skinner List) by EPA Method 8260B - 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 4E26016: Prepared 05/26/04 Using EPA 5030B

Blank (4E26016-BLK1)

Acetone	ND	25.0	ug/l							
Benzene	ND	1.00	"							
2-Butanone	ND	10.0	"							
n-Butylbenzene	ND	1.00	"							
Carbon disulfide	ND	1.00	"							
Chlorobenzene	ND	1.00	"							
Chloroform	ND	1.00	"							
1,2-Dibromoethane	ND	1.00	"							
1,2-Dichloroethane	ND	1.00	"							
Ethylbenzene	ND	1.00	"							
p-Isopropyltoluene	ND	1.00	"							
n-Propylbenzene	ND	1.00	"							
Styrene	ND	1.00	"							
Toluene	ND	1.00	"							
1,1,1-Trichloroethane	ND	1.00	"							
Trichloroethene	ND	1.00	"							
1,2,4-Trimethylbenzene	ND	1.00	"							
1,3,5-Trimethylbenzene	ND	1.00	"							
o-Xylene	ND	1.00	"							
m,p-Xylene	ND	2.00	"							
Surrogate: 1,2-DCA-d4	19.2		"	20.0		96.0	70-130			
Surrogate: Toluene-d8	19.6		"	20.0		98.0	70-130			
Surrogate: 4-BFB	20.0		"	20.0		100	70-130			

LCS (4E26016-BS1)

Benzene	9.82	1.00	ug/l	10.0		98.2	80-120			
Chlorobenzene	10.1	1.00	"	10.0		101	77-120			
Toluene	10.0	1.00	"	10.0		100	80-120			
Surrogate: 1,2-DCA-d4	19.6		"	20.0		98.0	70-130			
Surrogate: Toluene-d8	20.8		"	20.0		104	70-130			
Surrogate: 4-BFB	19.9		"	20.0		99.5	70-130			

North Creek Analytical - Bothell

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Shell Puget Sound Refinery
8505 South Texas Road
Anacortes, WA 98221

Project: SWMU 11 Sampling
Project Number: 4550237616
Project Manager: Brian Rhodes

Reported:
06/07/04 16:03

Volatile Organic Compounds (Modified Skinner List) by EPA Method 8260B - 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 4E26016: Prepared 05/26/04 Using EPA 5030B

LCS Dup (4E26016-BSD1)

Benzene	9.86	1.00	ug/l	10.0		98.6	80-120	0.407	20	
Chlorobenzene	10.7	1.00	"	10.0		107	77-120	5.77	20	
Toluene	10.6	1.00	"	10.0		106	80-120	5.83	20	
Surrogate: 1,2-DCA-d4	18.9		"	20.0		94.5	70-130			
Surrogate: Toluene-d8	20.6		"	20.0		103	70-130			
Surrogate: 4-BFB	19.7		"	20.0		98.5	70-130			

Batch 4E27042: Prepared 05/27/04 Using EPA 5030B

Blank (4E27042-BLK1)

Acetone	ND	25.0	ug/l							
Benzene	ND	1.00	"							
2-Butanone	ND	10.0	"							
n-Butylbenzene	ND	1.00	"							
Carbon disulfide	ND	1.00	"							
Chlorobenzene	ND	1.00	"							
Chloroform	ND	1.00	"							
1,2-Dibromoethane	ND	1.00	"							
1,2-Dichloroethane	ND	1.00	"							
Ethylbenzene	ND	1.00	"							
p-Isopropyltoluene	ND	1.00	"							
n-Propylbenzene	ND	1.00	"							
Styrene	ND	1.00	"							
Toluene	ND	1.00	"							
1,1,1-Trichloroethane	ND	1.00	"							
Trichloroethene	ND	1.00	"							
1,2,4-Trimethylbenzene	ND	1.00	"							
1,3,5-Trimethylbenzene	ND	1.00	"							
o-Xylene	ND	1.00	"							
m,p-Xylene	ND	2.00	"							
Surrogate: 1,2-DCA-d4	18.7		"	20.0		93.5	70-130			
Surrogate: Toluene-d8	19.8		"	20.0		99.0	70-130			
Surrogate: 4-BFB	20.2		"	20.0		101	70-130			

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Shell Puget Sound Refinery
8505 South Texas Road
Anacortes, WA 98221

Project: SWMU 11 Sampling
Project Number: 4550237616
Project Manager: Brian Rhodes

Reported:
06/07/04 16:03

Volatile Organic Compounds (Modified Skinner List) by EPA Method 8260B - 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 4E27042: Prepared 05/27/04 Using EPA 5030B

LCS (4E27042-BS1)

Benzene	9.12	1.00	ug/l	10.0		91.2	80-120			
Chlorobenzene	9.62	1.00	"	10.0		96.2	77-120			
Toluene	9.33	1.00	"	10.0		93.3	80-120			
Surrogate: 1,2-DCA-d4	18.5		"	20.0		92.5	70-130			
Surrogate: Toluene-d8	20.2		"	20.0		101	70-130			
Surrogate: 4-BFB	19.4		"	20.0		97.0	70-130			

LCS Dup (4E27042-BSD1)

Benzene	10.1	1.00	ug/l	10.0		101	80-120	10.2	20	
Chlorobenzene	10.4	1.00	"	10.0		104	77-120	7.79	20	
Toluene	10.2	1.00	"	10.0		102	80-120	8.91	20	
Surrogate: 1,2-DCA-d4	18.5		"	20.0		92.5	70-130			
Surrogate: Toluene-d8	19.8		"	20.0		99.0	70-130			
Surrogate: 4-BFB	19.7		"	20.0		98.5	70-130			

Batch 4E28033: Prepared 05/28/04 Using EPA 5030B

Blank (4E28033-BLK1)

Acetone	ND	25.0	ug/l							
Benzene	ND	1.00	"							
2-Butanone	ND	10.0	"							
n-Butylbenzene	ND	1.00	"							
Carbon disulfide	ND	1.00	"							
Chlorobenzene	ND	1.00	"							
Chloroform	ND	1.00	"							
1,2-Dibromoethane	ND	1.00	"							
1,2-Dichloroethane	ND	1.00	"							
Ethylbenzene	ND	1.00	"							
p-Isopropyltoluene	ND	1.00	"							
n-Propylbenzene	ND	1.00	"							
Styrene	ND	1.00	"							
Toluene	ND	1.00	"							
1,1,1-Trichloroethane	ND	1.00	"							
Trichloroethene	ND	1.00	"							
1,2,4-Trimethylbenzene	ND	1.00	"							

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Project: SWMU 11 Sampling
Project Number: 4550237616
Project Manager: Brian Rhodes

Reported:
06/07/04 16:03

Volatile Organic Compounds (Modified Skinner List) by EPA Method 8260B - 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 4E28033: Prepared 05/28/04 Using EPA 5030B

Blank (4E28033-BLK1)

1,3,5-Trimethylbenzene	ND	1.00	ug/l							
o-Xylene	ND	1.00	"							
m,p-Xylene	ND	2.00	"							
Surrogate: 1,2-DCA-d4	17.6		"	20.0		88.0	70-130			
Surrogate: Toluene-d8	19.4		"	20.0		97.0	70-130			
Surrogate: 4-BFB	20.2		"	20.0		101	70-130			

LCS (4E28033-BS1)

Benzene	9.24	1.00	ug/l	10.0		92.4	80-120			
Chlorobenzene	9.97	1.00	"	10.0		99.7	77-120			
Toluene	9.64	1.00	"	10.0		96.4	80-120			
Surrogate: 1,2-DCA-d4	17.0		"	20.0		85.0	70-130			
Surrogate: Toluene-d8	20.0		"	20.0		100	70-130			
Surrogate: 4-BFB	20.2		"	20.0		101	70-130			

LCS Dup (4E28033-BSD1)

Benzene	8.82	1.00	ug/l	10.0		88.2	80-120	4.65	20	
Chlorobenzene	9.36	1.00	"	10.0		93.6	77-120	6.31	20	
Toluene	9.20	1.00	"	10.0		92.0	80-120	4.67	20	
Surrogate: 1,2-DCA-d4	17.2		"	20.0		86.0	70-130			
Surrogate: Toluene-d8	20.1		"	20.0		100	70-130			
Surrogate: 4-BFB	19.7		"	20.0		98.5	70-130			

Matrix Spike (4E28033-MS1)

Source: B4E0730-03

Benzene	10.3	1.00	ug/l	10.0	ND	103	63-148			
Chlorobenzene	11.2	1.00	"	10.0	ND	112	80-128			
Toluene	11.3	1.00	"	10.0	ND	113	72-127			
Surrogate: 1,2-DCA-d4	16.4		"	20.0		82.0	70-130			
Surrogate: Toluene-d8	20.0		"	20.0		100	70-130			
Surrogate: 4-BFB	19.7		"	20.0		98.5	70-130			

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 907.563.9200 fax 907.563.9210

Shell Puget Sound Refinery
 8505 South Texas Road
 Anacortes, WA 98221

Project: SWMU 11 Sampling
 Project Number: 4550237616
 Project Manager: Brian Rhodes

Reported:
 06/07/04 16:03

Volatile Organic Compounds (Modified Skinner List) by EPA Method 8260B - Quality Control
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4E28033: Prepared 05/28/04 Using EPA 5030B										
Matrix Spike Dup (4E28033-MSD1)										
Source: B4E0730-03										
Benzene	10.1	1.00	ug/l	10.0	ND	101	63-148	1.96	20	
Chlorobenzene	11.0	1.00	"	10.0	ND	110	80-128	1.80	20	
Toluene	10.8	1.00	"	10.0	ND	108	72-127	4.52	20	
Surrogate: 1,2-DCA-d4	16.4		"	20.0		82.0	70-130			
Surrogate: Toluene-d8	19.7		"	20.0		98.5	70-130			
Surrogate: 4-BFB	19.9		"	20.0		99.5	70-130			

North Creek Analytical - Bothell

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Jeanne Garthwaite

Jeanne Garthwaite, Project Manager

North Creek Analytical, Inc.
 Environmental Laboratory Network

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Seattle 1172L Creek Pkwy N, Suite 400, Bothell, WA 98011-8244
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907.563.9200 fax 907.563.9210

Shell Puget Sound Refinery
8505 South Texas Road
Anacortes, WA 98221

Project: SWMU 11 Sampling
Project Number: 4550237616
Project Manager: Brian Rhodes

Reported:
06/07/04 16:03

Semivolatile Organic Compounds (Modified Skinner List) by EPA Method 8270C - Quality Control
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4E24011: Prepared 05/24/04 Using EPA 3520C										
Blank (4E24011-BLK1)										
Acenaphthylene	ND	10.0	ug/l							
Anthracene	ND	10.0	"							
Benzo (a) anthracene	ND	10.0	"							
Benzo (a) pyrene	ND	10.0	"							
Benzo (b) fluoranthene	ND	10.0	"							
Benzo (k) fluoranthene	ND	10.0	"							
Benzo (ghi) perylene	ND	10.0	"							
Bis(2-ethylhexyl)phthalate	ND	10.0	"							
Butyl benzyl phthalate	ND	10.0	"							
Chrysene	ND	10.0	"							
Di-n-butyl phthalate	ND	10.0	"							
Dibenz (a,h) acridine	ND	10.0	"							
Dibenz (a,h) anthracene	ND	10.0	"							
1,2-Dichlorobenzene	ND	10.0	"							
1,3-Dichlorobenzene	ND	10.0	"							
1,4-Dichlorobenzene	ND	10.0	"							
Diethyl phthalate	ND	10.0	"							
7,12-Dimethylbenz (a) anthracene	ND	10.0	"							
2,4-Dimethylphenol	ND	10.0	"							
Dimethyl phthalate	ND	10.0	"							
2,4-Dinitrophenol	ND	10.0	"							
Fluoranthene	ND	10.0	"							
Fluorene	ND	10.0	"							
Indene	ND	10.0	"							
Indeno (1,2,3-cd) pyrene	ND	10.0	"							
6-Methyl chrysene	ND	10.0	"							
1-Methylnaphthalene	ND	10.0	"							
2-Methylnaphthalene	ND	10.0	"							
2-Methylphenol	ND	10.0	"							
3 & 4-Methylphenol	ND	10.0	"							
Naphthalene	ND	10.0	"							
4-Nitrophenol	ND	10.0	"							
Di-n-octyl phthalate	ND	10.0	"							
Phenanthrene	ND	10.0	"							

North Creek Analytical - Bothell

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Jeanne Garthwaite

Jeanne Garthwaite, Project Manager

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Environmental Laboratory Network

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503.906.9200 fax 503.906.9210
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907.563.9200 fax 907.563.9210

Shell Puget Sound Refinery
8505 South Texas Road
Anacortes, WA 98221

Project: SWMU 11 Sampling
Project Number: 4550237616
Project Manager: Brian Rhodes

Reported:
06/07/04 16:03

Semivolatile Organic Compounds (Modified Skinner List) by EPA Method 8270C - Quality Control
North Creek Analytical - Bothell

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 4E24011: Prepared 05/24/04 Using EPA 3520C										
Blank (4E24011-BLK1)										
Phenol	ND	10.0	ug/l							
Pyrene	ND	10.0	"							
Pyridine	ND	10.0	"							
Quinoline	ND	10.0	"							
Thiophenol	ND	10.0	"							
Surrogate: 2-FBP	33.1		"	50.0		66.2	41-129			
Surrogate: 2-FP	18.4		"	50.0		36.8	18-124			
Surrogate: Nitrobenzene-d5	35.0		"	50.0		70.0	44-124			
Surrogate: Phenol-d6	26.3		"	50.0		52.6	25-122			
Surrogate: p-Terphenyl-d14	39.8		"	50.0		79.6	10-132			
Surrogate: 2,4,6-TBP	27.9		"	50.0		55.8	19-132			
LCS (4E24011-BS1)										
1,4-Dichlorobenzene	81.3	10.0	ug/l	100		81.3	43-122			
4-Nitrophenol	74.9	10.0	"	100		74.9	12-153			
Phenol	49.4	10.0	"	100		49.4	20-124			
Pyrene	90.7	10.0	"	100		90.7	59-134			
Surrogate: 2-FBP	38.3		"	50.0		76.6	41-129			
Surrogate: 2-FP	17.8		"	50.0		35.6	18-124			
Surrogate: Nitrobenzene-d5	38.0		"	50.0		76.0	44-124			
Surrogate: Phenol-d6	23.9		"	50.0		47.8	25-122			
Surrogate: p-Terphenyl-d14	37.4		"	50.0		74.8	10-132			
Surrogate: 2,4,6-TBP	29.9		"	50.0		59.8	19-132			
LCS Dup (4E24011-BS1)										
1,4-Dichlorobenzene	77.9	10.0	ug/l	100		77.9	43-122	4.27	26	
4-Nitrophenol	80.1	10.0	"	100		80.1	12-153	6.71	37	
Phenol	47.2	10.0	"	100		47.2	20-124	4.55	53	
Pyrene	92.4	10.0	"	100		92.4	59-134	1.86	50	
Surrogate: 2-FBP	38.0		"	50.0		76.0	41-129			
Surrogate: 2-FP	15.9		"	50.0		31.8	18-124			
Surrogate: Nitrobenzene-d5	37.6		"	50.0		75.2	44-124			
Surrogate: Phenol-d6	22.5		"	50.0		45.0	25-122			
Surrogate: p-Terphenyl-d14	37.8		"	50.0		75.6	10-132			
Surrogate: 2,4,6-TBP	31.4		"	50.0		62.8	19-132			

North Creek Analytical - Bothell

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Jeanne Garthwaite

Jeanne Garthwaite, Project Manager

North Creek Analytical, Inc.
Environmental Laboratory Network

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907.563.9200 fax 907.563.9210

Shell Puget Sound Refinery
8505 South Texas Road
Anacortes, WA 98221

Project: SWMU 11 Sampling
Project Number: 4550237616
Project Manager: Brian Rhodes

Reported:
06/07/04 16:03

Notes and Definitions

E Estimated value. The reported value exceeds the calibration range of the analysis.
X See case narrative.
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

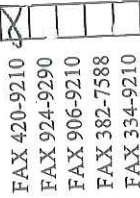
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Jeanne Garthwaite

Jeanne Garthwaite, Project Manager

North Creek Analytical, Inc.
Environmental Laboratory Network

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503-906-9200 FAX 906-9210
541-383-9310 FAX 382-7588
907-334-9200 FAX 334-9210

B4E0548

Work Order #: 4550234616

TURNAROUND REQUEST

INVOICE TO:

CLIENT: Shell Refinery
REPORT TO: Brian Rhodes
ADDRESS:

FAX:

PHONE: FAX:
PROJECT NAME: SWML 11

PROJECT NUMBER:

SAMPLED BY: *Kentman/WRS*

CLIENT SAMPLE IDENTIFICATION

66	5:18.04
----	---------

6

93

46

61

94

98

1	9
---	---

10

97

RELEASED BY: [REDACTED]
PRINT NAME: [REDACTED]

RELEASED BY:

PRINT NAME: _____
ADDITIONAL R _____

COC REV 1/03

DATE: 5.20.04
TIME: 2 PM

RECEIVED BY: _____
PRINT NAME: _____

FIRM: NCA

TIME: _____ DATE: _____

925

DATE: _____

TIME: _____

PRINT NAME:

FIRM: _____

...	...
-----	-----

FIRM:

TIME:

| PRINI NAME.

1

..C

1.00

PRINT NAME.

COC DEV 1/03



11720 North Creek Pkwy N Suite 400, Bothell, WA 98011-9508
11115 E Montgomery Suite B, Spokane, WA 99206-4776
9405 SW Nimbus Ave, Beaverton, OR 97008-7132
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3209 Denali St, Anchorage, AK 99503-4030

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509-924-9200 FAX 924-9290
503-906-9200 FAX 906-9210
541-383-9310 FAX 382-7588
907-334-9200 FAX 334-9210

CHAIN OF CUSTODY REPORT

Work Order #: 4550237616

TURNAROUND REQUEST

INVOICE TO:

CLIENT: Shell Refinery
REPORT TO: BRIAN Rhodes
ADDRESS:

P.O. NUMBER: 3450548
PRESERVATIVE: 1

PHONE:

PROJECT NAME: SUMU 11

PROJECT NUMBER:

SAMPLED BY: KOOLMAN/WRS

CLIENT SAMPLE IDENTIFICATION

63

65

100

Blank

5.18.04

SAMPLING DATE/TIME

1

2

3

4

5

6

7

8

9

10

RELEASED BY:

PRINT NAME: ADRIAN KOOLMAN

RELEASED BY:

PRINT NAME:

ADDITIONAL REMARKS:

5 chests

DATE: 5.20.04

TIME: 8pm

DATE:

TIME:

RECEIVED BY: Colette Weaver

PRINT NAME: COLETTE WEAVER

RECEIVED BY:

PRINT NAME:

DATE: 5-21-04

TIME: 0925

DATE:

TIME:

DATE: 5-21-04

TIME: 0925

DATE:

TIME:

TEMP: 4.8°C

PAGE 2 OF 2

W/O

in Business Days *

Organic & Inorganic Analyses

Petroleum Hydrocarbon Analyses

STD.

7 5 4 3 2 1 <1

5 4 3 2 1 <1

STD.

OTHER Specify:

* Turnaround Requests less than standard may incur Rush Charges.

MATRIX (W, S, O)

OF CONT.

LOCATION / COMMENTS

NCA WO ID

W 5 -11

1 5 -12

1 5 -13

1 5 -14

1 5 -7