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June 26, 2003

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 2003 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

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Circle:

Air	Corr.
Water	Rpt
DW/RCRA	Int.
HWCU	Ent
SW	Eng.
PSR	

Company Name	

**GROUNDWATER MONITORING AND SAMPLING REPORT
FOR THE SECOND QUARTER OF 2003
PUGET SOUND REFINERY
SWMU 11**

Prepared by

Puget Sound Refinery
Anacortes, Washington

June 2003



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 2003 at Puget Sound Refinery, RCRA/RFI Solid Waste Management Unit 11. This report includes recent groundwater monitoring and sampling data collected during May of 2003.

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.

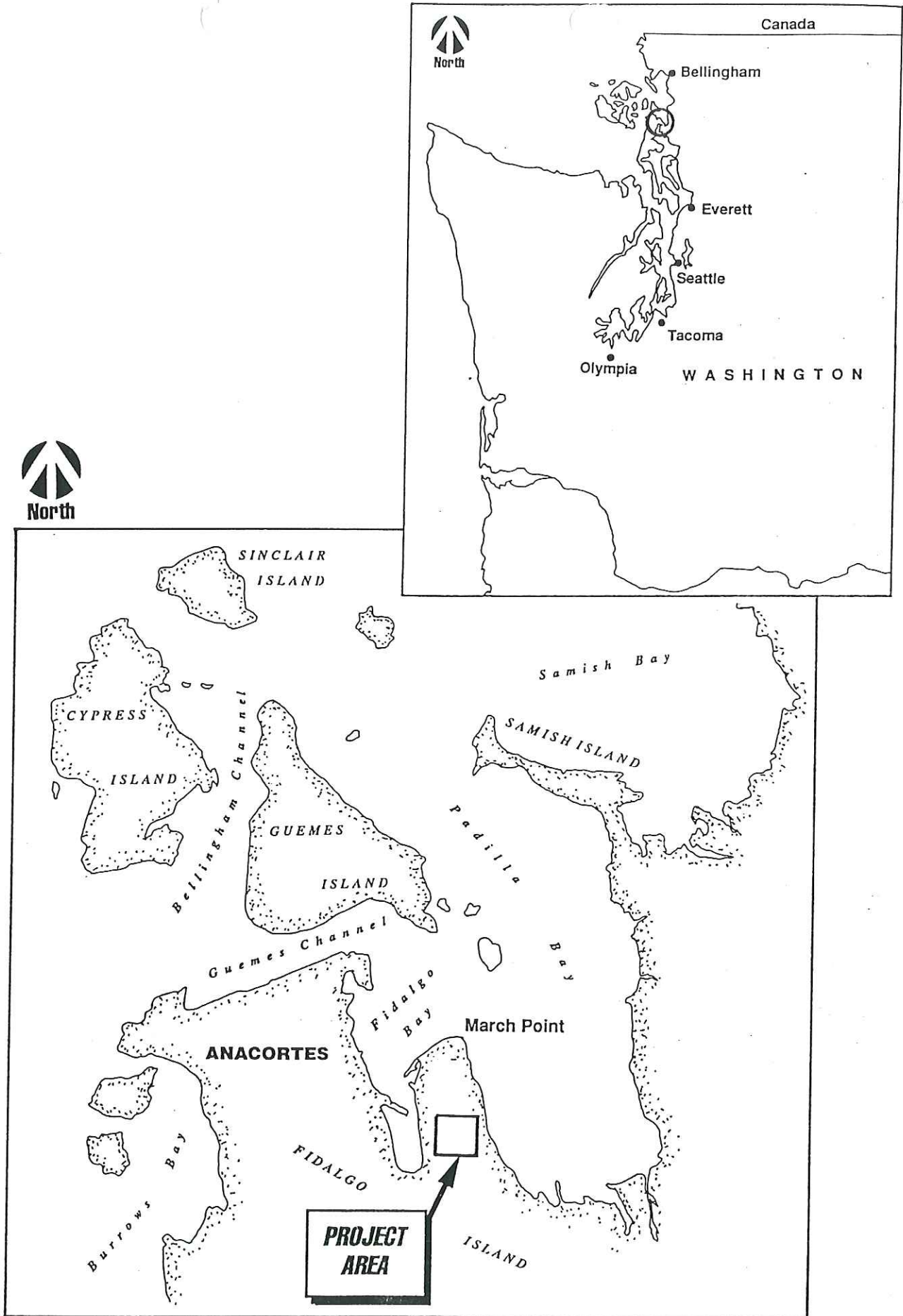
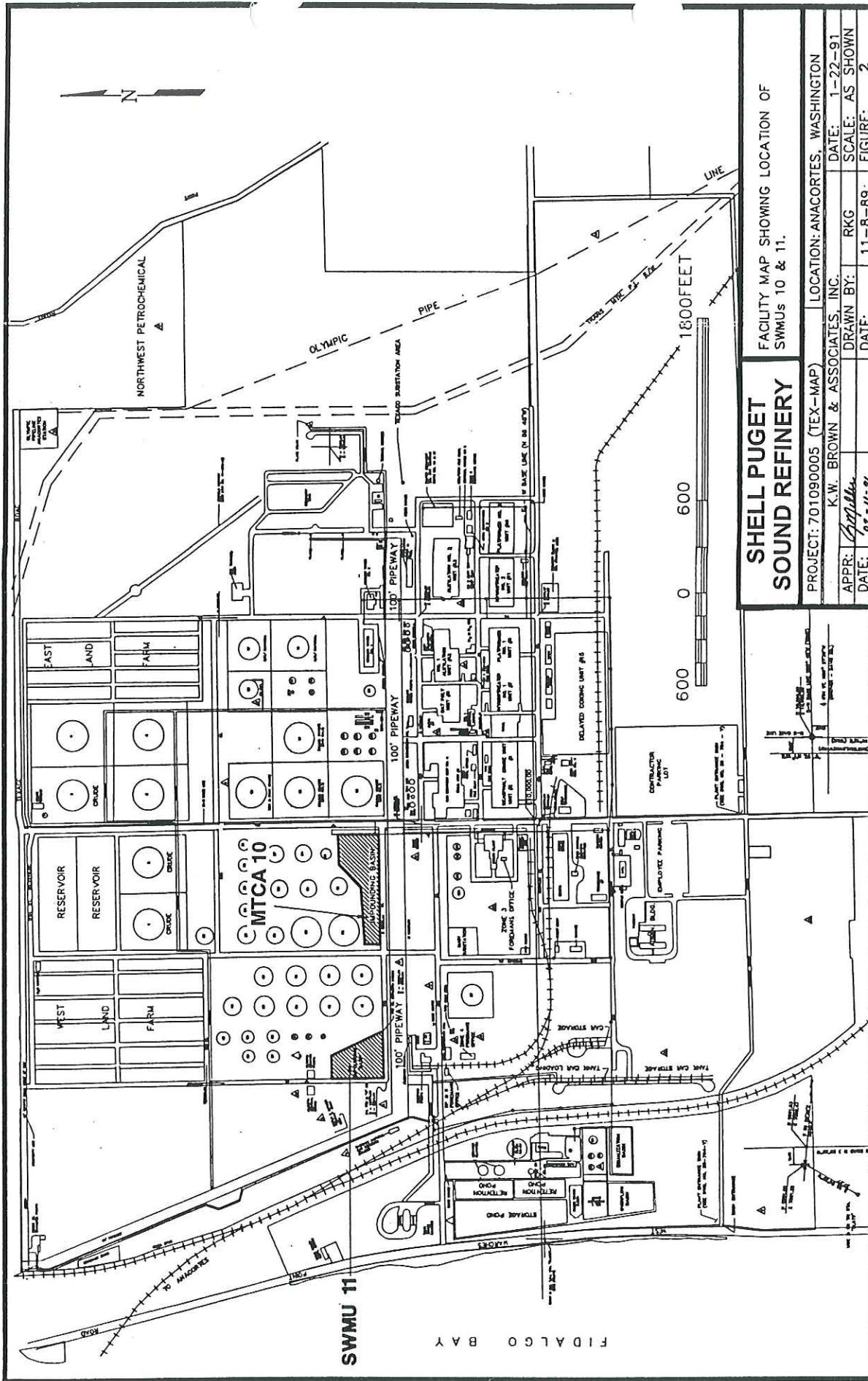


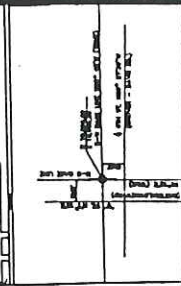
Figure 1. Vicinity map of Shell Puget Sound Refinery



SHELL PUGET SOUND REFINERY

FACILITY MAP SHOWING LOCATION OF SWMUs 10 & 11.

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



FIDALGO BAY

SWMU 11

2.0 FIELD WORK

2.1 GROUNDWATER SURFACE AND FREE PRODUCT MEASUREMENTS

Groundwater surface level measurements were collected from fourteen wells on May 12th, 2003. 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 withalconox (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

The latest monitoring data indicates that the local groundwater gradient is 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 (05-12-03)												
*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	32.60	N/A	54.40	75.37	N/A	107.97	0.33	14.228	1.359	31.41	42.68	
MW-61	34.32	N/A	39.42	74.68	N/A	109.00	0.33	3.263	1.359	7.20	9.79	
MW-62	Dry	N/A	25.64	DRY	DRY	108.22	0.33	NS	1.359	DRY	DRY	
MW-63	31.54	N/A	40.67	78.24	N/A	109.78	0.33	5.841	1.359	12.90	17.52	
MW-64	NS	NS	43.66	N/A	N/A	111.48	0.33	NS	1.359	LNAPL	NS	
MW-65	27.00	N/A	41.37	93.41	N/A	120.41	0.33	9.194	1.359	20.30	27.58	
MW-91	21.98	N/A	40.77	99.55	N/A	121.53	0.17	3.190	0.254	37.68	9.57	
MW-92	30.76	N/A	36.77	87.64	N/A	118.40	0.17	1.020	0.254	12.05	3.06	
MW-93	32.54	N/A	41.27	77.99	N/A	110.53	0.17	1.482	0.254	17.51	4.45	
MW-94	36.26	N/A	39.60	72.40	N/A	108.66	0.17	0.567	0.254	6.70	1.70	
MW-95	33.06	N/A	40.92	76.68	N/A	109.74	0.17	1.335	0.254	15.76	4.00	
MW-96	32.26	N/A	40.41	79.26	N/A	111.52	0.17	1.384	0.254	16.34	4.15	
MW-97	27.20	N/A	40.71	87.64	N/A	114.84	0.17	2.294	0.254	27.09	6.88	
MW-98	31.64	N/A	35.54	72.46	N/A	104.10	0.17	0.662	0.254	7.82	1.99	
P21	32.78	31.31	36	82.01	1.47	114.79	0.17	0.547	0.254	6.46	1.64	
MW-118	31.58	N/A	83	76.44	N/A	108.02	0.17	8.730	0.254	103.12	26.19	

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 November of 2002 are shown in Figures 4 and 5. To date a total of approximately 233,384 Gallons of groundwater and 20,690 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
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

FIGURE 4

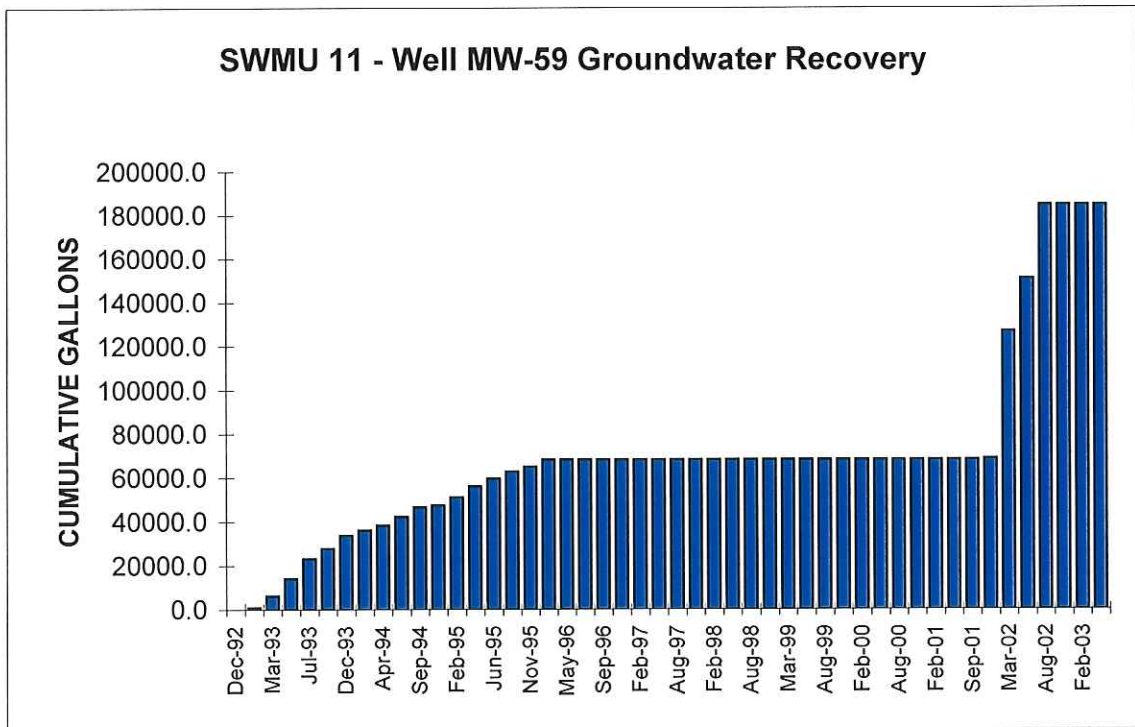
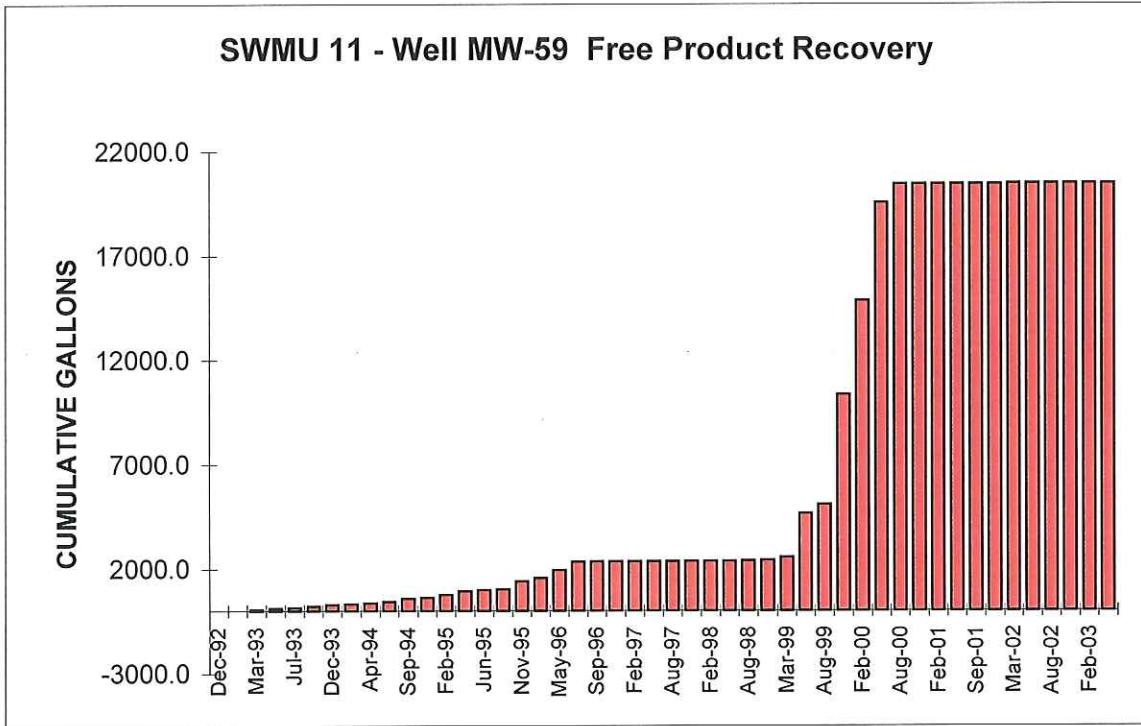
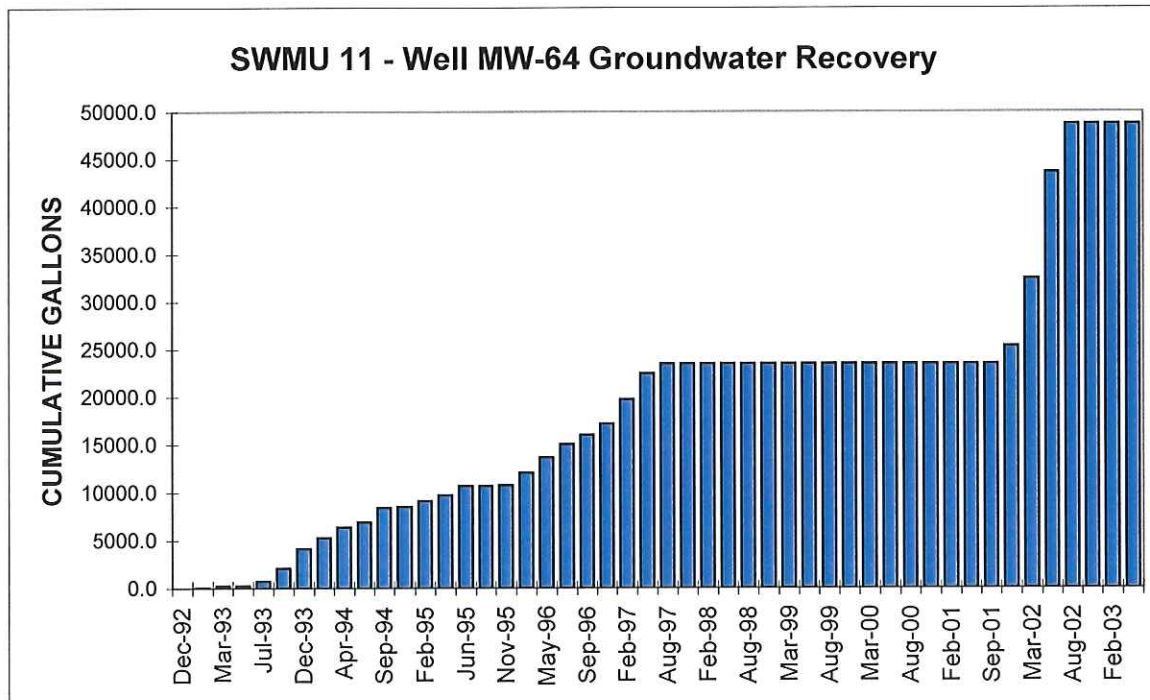
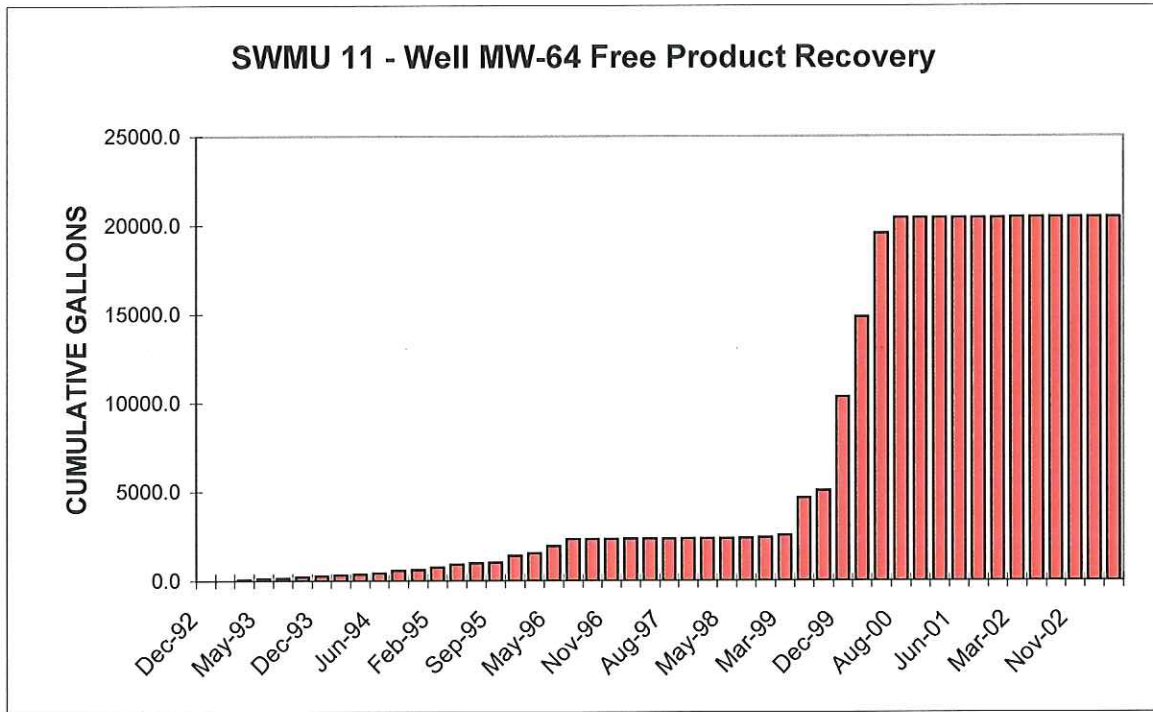


FIGURE 5



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, well MW-59 resumed recovery of free product and groundwater and MW-64 also 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 changed 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 29th, 2003, 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

ANALYTICAL

SWMU 11 Well Sampling Event																			
May-03																			
pH and Conductivity																			
Parameter	Well Numbers																		
	59	60	61	62	63	64	65	91	92	93	94	95	96	97	98	P-21	SB	100	Comments
pH Mean	7.3	7.4	7.2	7.1	7.0	7.0	7.3	7.1	7.0	7.0	7.3	7.1	7.2	7.1	7.1				
Conductivity (mhos 10-3)	1020	860	840	720	790	820	230	810	810	810	810	820	710	1060					

(TABLE 4)

SWMU 11 Well Sampling Event																				
May-03																				
Method 8260B - Skinner Volatiles (ug/l)																				
Analytes	Well Numbers																			
	59	60	61	62	63	64	65	91	92	93	94	95	96	97	98	P-21	SB	Dup 60	Reporting Limit	Comments
Benzene	43	3	nd	nd	nd	nd	nd	nd	1	nd	nd	nd	nd	nd	nd		nd	43	1.0	
1,4-Dioxane	nm	nm	nm	nm	nm	nm	nm	nm	nm	nm	nm	nm	nm	nm	nm		nm	nm	50.0	
2-Butanone (MEK)	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd		nd	nd	10.0	
Carbon Disulfide	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd		nd	nd	1.0	
Chlorobenzene	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd		nd	nd	1.0	
Chloroform	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd		1	nd	1.0	
1,2 Dichloroethane	1	nd	nd	nd	63	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd		nd	1	1.0	
Ethylbenzene	1	nd	16	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd		nd	1	1.0	
Styrene	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd		nd	nd	1.0	
Toluene	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd		nd	nd	1.0	
1,1,1 - Trichloroethane	nd	nd	nd	nd	nd	nd	nd	25	nd	nd	nd	nd	nd	nd	nd		nd	nd	1.0	
Trichloroethene	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd		nd	nd	1.0	
Xylenes (total)	nd	nd	26	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd		nd	nd	2.0	

ANALYTICAL

SWMU 11 Well Sampling Event																															
May-03		(TABLE 5)																													
Method 8270C - Skinner Semi-Volatiles (ug/l)																															
Analytes	59	Well Numbers										92	93	94	95	96	97	98	P-21	SB	Dup 60	Reporting Limit	Comments								
		60	61	62	63	64	65	66	67	68	69																				
Anthracene		ND	ND																							ND	ND	10			
Benzenethiol		ND	ND																							ND	ND	10			
Benzo(a)anthracene		ND	ND																							ND	ND	10			
Benzo(b)fluoranthene		ND	ND																							ND	ND	10			
Benzo(k)fluoranthene		ND	ND																							ND	ND	10			
Benzo(a)pyrene		ND	ND																							ND	ND	10			
Butyl benzyl phthalate		ND	ND																							ND	ND	10			
Chrysene		ND	ND																							ND	ND	10			
Dibenz(a,h)anthracene		ND	ND																							ND	ND	10			
Di-n-butyl phthalate		ND	ND																							ND	ND	10			
1,2-Dichlorobenzene		ND	ND																							ND	ND	10			
1,3-Dichlorobenzene		ND	ND																							ND	ND	10			
1,4 Dichlorobenzene		ND	ND																							ND	ND	10			
Diethyl phthalate		ND	ND																							ND	ND	10			
7,12-Dimethylbenz(a)-anthracene																															
2,4-Dimethylphenol		ND	ND																							ND	ND	10			
Dimethyl phthalate		36	ND																							ND	24	10			
2,4 Dinitrophenol		ND	ND																							ND	ND	10			
Di-n-octyl phthalate		ND	ND																							ND	ND	10			
Indene		ND	ND																							ND	ND	10			
bis(2-ethylhexyl)-phthalate																															
1-Methylnaphthalene		ND	ND																							ND	ND	10			
Fluoranthene		ND	ND				20																			ND	ND	10			
2-Methylnaphthalene		ND	ND				14																			ND	ND	10			
2-Methylphenol		ND	ND				ND																			ND	ND	10			

ANALYTICAL

SWMU 11 Well Sampling Event	(TABLE 5 Continued)																				Reporting Limit	Comments
May-03	Method 8270 - Skinner Semi-Volatiles (ug/l)																					
Analytes	59	60	61	62	63	64	65	91	92	93	94	95	96	97	98	P-21	SB	100	Reporting Limit	Comments		
Well Numbers																						
4-Methylphenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	10		
Naphthalene	ND	ND	ND	12	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	10		
4-Nitrophenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	10		
Pyridine	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	10		
Quinoline	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	10		
Phenanthrene	ND	ND	ND	14	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	10		
Phenol	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	10		
Pyrene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	10		
Methyl Chrysene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	10		

SWMU 11 Well Sampling Event	(TABLE 6)																				Reporting Limit	Comments
May-03	NW Total Extractable Hydrocarbons as Diesel (mg/l)																					
Analytes	59	60	61	62	63	64	65	91	92	93	94	95	96	97	98	P-21	SB	60 Dup	Reporting Limit	Comments		
Well Numbers																						
NWTPHdx		2.5	2.8		49.4		0.3	ND	0.8	0.7	0.4	ND	ND	ND	ND		ND	6.8	0.3			

ANALYTICAL

SWMU 11 Well Sampling Event		(TABLE 7)																				Reporting Limit	Comments
May-03		Skinner Metals (mg/l)																					
Analytes	Well Numbers	59	60	61	62	63	64	65	91	92	93	94	95	96	97	98	P-21	SB	60 dup				
Antimony	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.001	
Arsenic	0.006	0.006	0.003	0.005	0.002	0.011	0.040	0.005	0.003	0.019	0.001	0.002	0.002	0.019	0.001	0.002	0.002	0.006	0.006	0.006	0.006	0.001	
Barium	0.562	0.043	0.044	0.033	0.046	0.040	0.036	0.044	0.047	0.051	0.063	0.090	0.047	0.051	0.063	0.090	0.044	0.044	0.044	0.044	0.044	0.010	
Beryllium	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.001	
Cadmium	0.001	0.002	ND	ND	ND	0.002	0.006	0.002	0.002	0.002	0.005	0.016	0.002	0.002	0.005	0.016	0.002	0.001	0.001	0.001	0.001	0.001	
Chromium	0.002	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.001	
Cobalt	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.002	0.016	0.003	0.016	ND	ND	ND	ND	ND	ND	ND	0.001	
Copper	0.002	0.003	ND	0.002	0.003	0.012	0.005	0.003	0.003	0.001	0.004	0.008	0.003	0.001	0.004	0.008	0.003	0.002	0.002	0.002	0.002	0.001	
Lead	ND	ND	ND	ND	0.010	0.007	0.002	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.001	
Mercury	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.001	
Nickel	0.002	0.010	0.003	0.003	0.005	0.003	0.002	0.010	0.018	0.011	0.006	0.010	0.018	0.011	0.006	0.010	0.010	0.002	0.002	0.002	0.001	0.001	
Selenium	0.002	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.001	
Silver	ND	ND	ND	ND	ND	ND	ND	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	0.005	ND	0.003	0.005	ND	0.004	0.008	0.005	ND	0.004	0.008	0.003	0.002	0.002	0.002	0.001	0.001	

3.1 'SKINNER LIST' VOLATILE ORGANICS

No volatile organics were detected in groundwater above reporting limits for wells MW-93 through MW-97 and MW-98. Table 4 summarizes the levels of volatile organics above PQL's found in other wells at the site. Additional 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 well MW-60. As this material was never previously reported at the site and was not detected in any other wells upgradient of MW-60, it is believed that this may be an anomalous value. Bis(2-ethylhexyl)phthalate was detected in well MW-96. 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 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 2003/2004. 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 29, 2003 SAMPLING ROUND



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 907-334-9200 FAX 334-9210

CHAIN OF CUSTODY REPORT

Work Order #: 4550237616

CLIENT: Shell Refinery INVOICE TO: TURNAROUND REQUEST

REPORT TO: BRIAN RHODES
 ADDRESS: 8505 S. TEXAS Rd
 ANACORTES, WA 98021-0622
 PHONE: FAX:

PROJECT NAME: SWMU 11 P.O. NUMBER: 251 PRESERVATIVE

PROJECT NUMBER: REQUESTED ANALYSES

SAMPLED BY: KOOLMAN/WRS

CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	WTPH FILE #	SCAN #5 DISC 1	8270 SKINNER (GRT & METH)	NPHYTHRENE	SKINNER METALS	8660 SKINNER RELATIVES	TC64 + T64	7-1-TM	CONTAINER ID	CONTAINER ID HAS	OFF PH	MATRIX (W, S, O)	# OF CONT.	LOCATION / COMMENTS	NCA WO ID
92	5.29.03	X	X	X	X	X	X	X	X	Container ID has wrong Ph	Container ID has wrong Ph	7-0	W	5		
91		X	X	X	X	X	X	X	X	Container ID has wrong Ph	Container ID has wrong Ph	7-0				
93		X	X	X	X	X	X	X	X	Container ID has wrong Ph	Container ID has wrong Ph	7-0				
60		X	X	X	X	X	X	X	X	Container ID has wrong Ph	Container ID has wrong Ph	10-0				
61		X	X	X	X	X	X	X	X	Container ID has wrong Ph	Container ID has wrong Ph	7-0				
94		X	X	X	X	X	X	X	X	Container ID has wrong Ph	Container ID has wrong Ph	7-0				
98		X	X	X	X	X	X	X	X	Container ID has wrong Ph	Container ID has wrong Ph	7-0				
95		X	X	X	X	X	X	X	X	Container ID has wrong Ph	Container ID has wrong Ph	7-0				
96		X	X	X	X	X	X	X	X	Container ID has wrong Ph	Container ID has wrong Ph	7-0				
97		X	X	X	X	X	X	X	X	Container ID has wrong Ph	Container ID has wrong Ph	7-0				

RELEASED BY: ADRIAN KOOLMAN FIRM: WRS DATE: 5.29.03 TIME: 2pm
 RECEIVED BY: C. DEWEAVER FIRM: NCA DATE: 5/30/03 TIME: 1:05
 RECEIVED BY: C. DEWEAVER FIRM: NCA DATE: DATE: TIME: DATE: TIME:
 ADDITIONAL REMARKS: 4 chests (2 green, 2 blue)
 TEMP: 6.8c PAGE 1 OF 2
 W/0



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

CHAIN OF CUSTODY REPORT

Work Order #: **B3E0743**

TURNAROUND REQUEST

INVOICE TO:

CLIENT: *Shell Refinery*
 REPORT TO: *Brian Rhodes*
 ADDRESS: *8505 S. TEXAS RD
 ANACORTES, WA 98021-0622*
 PHONE: _____ FAX: _____
 PROJECT NAME: *SIOMU11*
 PROJECT NUMBER: _____
 SAMPLED BY: *KOOZMAN/WRS*

PRESERVATIVE: _____
 REQUESTED ANALYSES:
 SKINNY SKINNY + Org
 83705 KINNEY
 8260 SKINNY
 8260 SKINNY
 8260 SKINNY

CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	W	S	O	SKINNY	SKINNY + Org	83705 KINNEY	8260 SKINNY	8260 SKINNY	8260 SKINNY	MATRIX (W, S, O)	# OF CONT.	LOCATION / COMMENTS	NCA WO ID
1 63	5.29.03	X	X	X	X	X	X	X	X	X	W	5	- 11	
2 65		X	X	X	X	X	X	X	X	X		1	- 12	
3 100		X	X	X	X	X	X	X	X	X		1	- 13	
4 Blank		X	X	X	X	X	X	X	X	X		1	- 14	
5														
6														
7														
8														
9														
10														

in Business Days *

Organic & Inorganic Analyses

7
 5
 4
 3
 2
 1
 <1

Petroleum Hydrocarbon Analyses

5
 4
 3
 2
 1
 <1

OTHER Specify:

* Turnaround Requests less than standard may incur Rush Charges.

RELEASED BY: _____ DATE: *5.29.03*
 PRINT NAME: *ADRIAN KOZMAN* FIRM: *WRS*
 RECEIVED BY: _____ DATE: _____
 PRINT NAME: *Colette Weaver* FIRM: *NCA*
 RECEIVED BY: _____ DATE: _____
 PRINT NAME: _____ FIRM: _____
 ADDITIONAL REMARKS: *4 chests (2 green, 2 blue)*
 TEMP: *6.8°C* PAGE *2* OF *2*
 COC REV 1/03

w/o



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907.563.9200 fax 907.563.9210

19 June 2003

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

Enclosed are **amended** results of analyses for samples received by the laboratory on 05/30/03 11:05. 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 B3E0743

Client: Shell – Puget Sound Plant
Project Manager: Brian Rhodes
Project Name: SWMU 11 Sampling
Project Number: 4550237616

1.0 DESCRIPTION OF CASE

Fourteen water samples were submitted for the following analyses: Semivolatile Petroleum Products by NWTPH-Dx (w/o Acid/Silica Gel Clean-up); Total Metals by EPA 6000/7000 Series Methods; Volatile Organic Compounds (Modified Skinner List) by EPA Method 8260B; and Semivolatile Organic Compounds (Modified Skinner List) by EPA Method 8270C.

2.0 COMMENTS ON SAMPLE RECEIPT

Samples were received and logged in May 30, 2003, at a temperature of 6.8° C. The following anomalies were noted at sample receipt:

- The sample receipt temperature of 6.8° C was slightly outside the recommended temperature range of 2° to 6° C. Samples were processed as scheduled per the chain of custody document (COC).
- Sample IDs did not match among the sample containers and the COC—in most cases, the sample label IDs included an “MW” designator, but the COC IDs did not. All samples were logged in according to the IDs listed on the COC.

3.0 PREPARATIONS AND ANALYSIS

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

Surrogate recoveries for sample B3E0743-09 were low outside of established control limits of 50-150%. The samples were rerun and the results were confirmed. There was no sample volume remaining to allow re-extraction. The analyte concentrations may be biased low. Other anomalies, discrepancies, and issues associated with sample preparation, analysis and quality control are qualified in the data and described in the Notes and Definitions page at the end of this report.

Total Metals by EPA 6000/7000 Series Methods

No anomalies were associated with sample preparation and analysis. All criteria for acceptable QC measurements were met.

Volatile Organic Compounds (Modified Skinner List) by EPA Method 8260B

No anomalies were associated with sample preparation and analysis. All criteria for acceptable QC measurements were met.

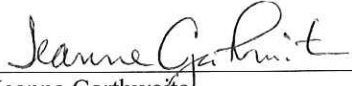


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Semivolatile Organic Compounds (Modified Skinner List) by EPA Method 8270C

No anomalies were associated with sample preparation and analysis. All criteria for acceptable QC measurements were met.

"I certify that this data package is in compliance with the Contract both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Director or his designee, as verified by the following signature."



Jeanne Garthwaite
Project Manager
North Creek Analytical



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Shell - Puget Sound Plant
 8505 South Texas Road
 Anacortes WA, 98221

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

Amended Report
 Issued: 06/19/03 10:35

ANALYTICAL REPORT FOR SAMPLES - Amended

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
92	B3E0743-01	Water	05/29/03 12:00	05/30/03 11:05
91	B3E0743-02	Water	05/29/03 12:00	05/30/03 11:05
93	B3E0743-03	Water	05/29/03 12:00	05/30/03 11:05
60	B3E0743-04	Water	05/29/03 12:00	05/30/03 11:05
61	B3E0743-05	Water	05/29/03 12:00	05/30/03 11:05
94	B3E0743-06	Water	05/29/03 12:00	05/30/03 11:05
98	B3E0743-07	Water	05/29/03 12:00	05/30/03 11:05
95	B3E0743-08	Water	05/29/03 12:00	05/30/03 11:05
96	B3E0743-09	Water	05/29/03 12:00	05/30/03 11:05
97	B3E0743-10	Water	05/29/03 12:00	05/30/03 11:05
63	B3E0743-11	Water	05/29/03 12:00	05/30/03 11:05
65	B3E0743-12	Water	05/29/03 12:00	05/30/03 11:05
100	B3E0743-13	Water	05/29/03 12:00	05/30/03 11:05
BLANK	B3E0743-14	Water	05/29/03 12:00	05/30/03 11:05

Jeanne Garthwaite

Jeanne Garthwaite, Project Manager



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Shell - Puget Sound Plant
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 Anacortes WA, 98221

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

Amended Report
 Issued: 06/19/03 10:35

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 (B3E0743-01) Water Sampled: 05/29/03 12:00 Received: 05/30/03 11:05									
Diesel Range Hydrocarbons	0.849	0.250	mg/l	1	3F02012	06/02/03	06/05/03	NWTPH-Dx	
Lube Oil Range Hydrocarbons	ND	0.500	"	"	"	"	"	"	
Surrogate: 2-FBP	84.7 %	50-150			"	"	"	"	
Surrogate: Octacosane	79.8 %	50-150			"	"	"	"	
91 (B3E0743-02) Water Sampled: 05/29/03 12:00 Received: 05/30/03 11:05									
Diesel Range Hydrocarbons	ND	0.250	mg/l	1	3F02012	06/02/03	06/04/03	NWTPH-Dx	
Lube Oil Range Hydrocarbons	ND	0.500	"	"	"	"	"	"	
Surrogate: 2-FBP	83.2 %	50-150			"	"	"	"	
Surrogate: Octacosane	90.8 %	50-150			"	"	"	"	
93 (B3E0743-03) Water Sampled: 05/29/03 12:00 Received: 05/30/03 11:05									
Diesel Range Hydrocarbons	0.655	0.250	mg/l	1	3F02012	06/02/03	06/05/03	NWTPH-Dx	D-06
Lube Oil Range Hydrocarbons	ND	0.500	"	"	"	"	"	"	
Surrogate: 2-FBP	83.7 %	50-150			"	"	"	"	
Surrogate: Octacosane	92.3 %	50-150			"	"	"	"	
60 (B3E0743-04) Water Sampled: 05/29/03 12:00 Received: 05/30/03 11:05									
Diesel Range Hydrocarbons	2.52	0.250	mg/l	1	3F02012	06/02/03	06/05/03	NWTPH-Dx	
Lube Oil Range Hydrocarbons	ND	0.500	"	"	"	"	"	"	
Surrogate: 2-FBP	93.4 %	50-150			"	"	"	"	
Surrogate: Octacosane	87.5 %	50-150			"	"	"	"	
61 (B3E0743-05) Water Sampled: 05/29/03 12:00 Received: 05/30/03 11:05									
Diesel Range Hydrocarbons	2.75	0.250	mg/l	1	3F02012	06/02/03	06/04/03	NWTPH-Dx	
Lube Oil Range Hydrocarbons	ND	0.500	"	"	"	"	"	"	
Surrogate: 2-FBP	71.6 %	50-150			"	"	"	"	
Surrogate: Octacosane	58.3 %	50-150			"	"	"	"	

North Creek Analytical - Bothell

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

Jeanne Garthwaite

Jeanne Garthwaite, Project Manager

North Creek Analytical, Inc.
 Environmental Laboratory Network



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Shell - Puget Sound Plant
 8505 South Texas Road
 Anacortes WA, 98221

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

Amended Report
 Issued: 06/19/03 10:35

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 (B3E0743-06) Water Sampled: 05/29/03 12:00 Received: 05/30/03 11:05									
Diesel Range Hydrocarbons	0.417	0.250	mg/l	1	3F02012	06/02/03	06/05/03	NWTPH-Dx	
Lube Oil Range Hydrocarbons	ND	0.500	"	"	"	"	"	"	
Surrogate: 2-FBP	83.3 %	50-150			"	"	"	"	
Surrogate: Octacosane	81.9 %	50-150			"	"	"	"	
98 (B3E0743-07) Water Sampled: 05/29/03 12:00 Received: 05/30/03 11:05									
Diesel Range Hydrocarbons	ND	0.250	mg/l	1	3F02012	06/02/03	06/04/03	NWTPH-Dx	
Lube Oil Range Hydrocarbons	ND	0.500	"	"	"	"	"	"	
Surrogate: 2-FBP	71.6 %	50-150			"	"	"	"	
Surrogate: Octacosane	62.1 %	50-150			"	"	"	"	
95 (B3E0743-08) Water Sampled: 05/29/03 12:00 Received: 05/30/03 11:05									
Diesel Range Hydrocarbons	ND	0.250	mg/l	1	3F02012	06/02/03	06/04/03	NWTPH-Dx	
Lube Oil Range Hydrocarbons	ND	0.500	"	"	"	"	"	"	
Surrogate: 2-FBP	82.5 %	50-150			"	"	"	"	
Surrogate: Octacosane	86.0 %	50-150			"	"	"	"	
96 (B3E0743-09) Water Sampled: 05/29/03 12:00 Received: 05/30/03 11:05									
Diesel Range Hydrocarbons	ND	0.250	mg/l	1	3F02012	06/02/03	06/05/03	NWTPH-Dx	
Lube Oil Range Hydrocarbons	ND	0.500	"	"	"	"	"	"	
Surrogate: 2-FBP	%	50-150			"	"	"	"	X
Surrogate: Octacosane	%	50-150			"	"	"	"	X
97 (B3E0743-10) Water Sampled: 05/29/03 12:00 Received: 05/30/03 11:05									
Diesel Range Hydrocarbons	ND	0.250	mg/l	1	3F02012	06/02/03	06/04/03	NWTPH-Dx	
Lube Oil Range Hydrocarbons	ND	0.500	"	"	"	"	"	"	
Surrogate: 2-FBP	79.2 %	50-150			"	"	"	"	
Surrogate: Octacosane	80.5 %	50-150			"	"	"	"	

North Creek Analytical - Bothell

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

Jeanne Garthwaite

Jeanne Garthwaite, Project Manager

North Creek Analytical, Inc.
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Shell - Puget Sound Plant
 8505 South Texas Road
 Anacortes WA, 98221

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

Amended Report
 Issued: 06/19/03 10:35

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
63 (B3E0743-11) Water Sampled: 05/29/03 12:00 Received: 05/30/03 11:05									
Diesel Range Hydrocarbons	49.4	5.00	mg/l	20	3F02012	06/02/03	06/05/03	NWTPH-Dx	
Lube Oil Range Hydrocarbons	ND	10.0	"	"	"	"	"	"	
Surrogate: 2-FBP	%	50-150			"	"	"	"	S-01
Surrogate: Octacosane	%	50-150			"	"	"	"	S-01
65 (B3E0743-12) Water Sampled: 05/29/03 12:00 Received: 05/30/03 11:05									
Diesel Range Hydrocarbons	0.327	0.250	mg/l	1	3F02012	06/02/03	06/04/03	NWTPH-Dx	
Lube Oil Range Hydrocarbons	ND	0.500	"	"	"	"	"	"	
Surrogate: 2-FBP	72.8 %	50-150			"	"	"	"	
Surrogate: Octacosane	69.4 %	50-150			"	"	"	"	
100 (B3E0743-13) Water Sampled: 05/29/03 12:00 Received: 05/30/03 11:05									
Diesel Range Hydrocarbons	6.80	1.25	mg/l	5	3F02012	06/02/03	06/05/03	NWTPH-Dx	
Lube Oil Range Hydrocarbons	ND	2.50	"	"	"	"	"	"	
Surrogate: 2-FBP	68.4 %	50-150			"	"	"	"	
Surrogate: Octacosane	59.3 %	50-150			"	"	"	"	
BLANK (B3E0743-14) Water Sampled: 05/29/03 12:00 Received: 05/30/03 11:05									
Diesel Range Hydrocarbons	ND	0.250	mg/l	1	3F02012	06/02/03	06/04/03	NWTPH-Dx	
Lube Oil Range Hydrocarbons	ND	0.500	"	"	"	"	"	"	
Surrogate: 2-FBP	84.6 %	50-150			"	"	"	"	
Surrogate: Octacosane	92.3 %	50-150			"	"	"	"	

North Creek Analytical - Bothell

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Jeanne Garthwaite

Jeanne Garthwaite, Project Manager

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Shell - Puget Sound Plant
 8505 South Texas Road
 Anacortes WA, 98221

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

Amended Report
 Issued: 06/19/03 10:35

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

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
92 (B3E0743-01) Water Sampled: 05/29/03 12:00 Received: 05/30/03 11:05									
Silver	ND	0.00100	mg/l	1	3F02032	06/02/03	06/03/03	EPA 6020	
Arsenic	0.0113	0.00100	"	"	"	"	"	"	
Barium	0.0396	0.0100	"	"	"	"	"	"	
Beryllium	ND	0.00100	"	"	"	"	"	"	
Cadmium	0.00233	0.00100	"	"	"	"	"	"	
Cobalt	ND	0.00100	"	"	"	"	"	"	
Chromium	ND	0.00100	"	"	"	"	"	"	
Copper	0.0116	0.00100	"	"	"	"	"	"	
Mercury	ND	0.00100	"	"	3F04015	06/04/03	06/05/03	EPA 7470A	
Nickel	0.00343	0.00100	"	"	3F02032	06/02/03	06/03/03	EPA 6020	
Lead	0.00657	0.00100	"	"	"	"	"	"	
Antimony	ND	0.00300	"	"	"	"	"	"	
Selenium	ND	0.00100	"	"	"	"	"	"	
Vanadium	0.00450	0.00100	"	"	"	"	"	"	
92 (B3E0743-01RE1) Water Sampled: 05/29/03 12:00 Received: 05/30/03 11:05									
Zinc	0.0198	0.0100	mg/l	1	3F03032	06/03/03	06/05/03	EPA 6020	
91 (B3E0743-02) Water Sampled: 05/29/03 12:00 Received: 05/30/03 11:05									
Silver	ND	0.00100	mg/l	1	3F02032	06/02/03	06/03/03	EPA 6020	
Arsenic	0.00211	0.00100	"	"	"	"	"	"	
Barium	0.0455	0.0100	"	"	"	"	"	"	
Beryllium	ND	0.00100	"	"	"	"	"	"	
Cadmium	ND	0.00100	"	"	"	"	"	"	
Cobalt	ND	0.00100	"	"	"	"	"	"	
Chromium	ND	0.00100	"	"	"	"	"	"	
Copper	0.00328	0.00100	"	"	"	"	"	"	
Mercury	ND	0.00100	"	"	3F04015	06/04/03	06/05/03	EPA 7470A	
Nickel	0.00477	0.00100	"	"	3F02032	06/02/03	06/03/03	EPA 6020	
Lead	0.0101	0.00100	"	"	"	"	"	"	
Antimony	ND	0.00300	"	"	"	"	"	"	
Selenium	ND	0.00100	"	"	"	"	"	"	
Vanadium	0.00965	0.00100	"	"	"	"	"	"	

North Creek Analytical - Bothell

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Jeanne Garthwaite

Jeanne Garthwaite, Project Manager

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Shell - Puget Sound Plant
 8505 South Texas Road
 Anacortes WA, 98221

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

Amended Report
 Issued: 06/19/03 10:35

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

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
91 (B3E0743-02RE1) Water Sampled: 05/29/03 12:00 Received: 05/30/03 11:05									
Zinc	0.0318	0.0100	mg/l	1	3F03032	06/03/03	06/05/03	EPA 6020	
93 (B3E0743-03) Water Sampled: 05/29/03 12:00 Received: 05/30/03 11:05									
Silver	ND	0.00100	mg/l	1	3F02032	06/02/03	06/03/03	EPA 6020	
Arsenic	0.0396	0.00100	"	"	"	"	"	"	
Barium	0.0357	0.0100	"	"	"	"	"	"	
Beryllium	ND	0.00100	"	"	"	"	"	"	
Cadmium	0.00623	0.00100	"	"	"	"	"	"	
Cobalt	ND	0.00100	"	"	"	"	"	"	
Chromium	ND	0.00100	"	"	"	"	"	"	
Copper	0.00502	0.00100	"	"	"	"	"	"	
Mercury	ND	0.00100	"	"	3F04015	06/04/03	06/05/03	EPA 7470A	
Nickel	0.00221	0.00100	"	"	3F02032	06/02/03	06/03/03	EPA 6020	
Lead	0.00154	0.00100	"	"	"	"	"	"	
Antimony	ND	0.00300	"	"	"	"	"	"	
Selenium	ND	0.00100	"	"	"	"	"	"	
Vanadium	ND	0.00100	"	"	"	"	"	"	
93 (B3E0743-03RE1) Water Sampled: 05/29/03 12:00 Received: 05/30/03 11:05									
Zinc	0.0748	0.0100	mg/l	1	3F03032	06/03/03	06/05/03	EPA 6020	
60 (B3E0743-04) Water Sampled: 05/29/03 12:00 Received: 05/30/03 11:05									
Silver	ND	0.00100	mg/l	1	3F02032	06/02/03	06/03/03	EPA 6020	
Arsenic	0.00613	0.00100	"	"	"	"	"	"	
Barium	0.562	0.0200	"	2	"	"	06/03/03	"	
Beryllium	ND	0.00100	"	1	"	"	06/03/03	"	
Cadmium	0.00113	0.00100	"	"	"	"	"	"	
Cobalt	ND	0.00100	"	"	"	"	"	"	
Chromium	0.00158	0.00100	"	"	"	"	"	"	
Copper	0.00231	0.00100	"	"	"	"	"	"	
Mercury	ND	0.00100	"	"	3F04015	06/04/03	06/05/03	EPA 7470A	
Nickel	0.00222	0.00100	"	"	3F02032	06/02/03	06/03/03	EPA 6020	
Lead	ND	0.00100	"	"	"	"	"	"	
Antimony	ND	0.00300	"	"	"	"	"	"	
Selenium	0.00177	0.00100	"	"	"	"	"	"	
Vanadium	ND	0.00100	"	"	"	"	"	"	

North Creek Analytical - Bothell

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Shell - Puget Sound Plant
 8505 South Texas Road
 Anacortes WA, 98221

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

Amended Report
 Issued: 06/19/03 10:35

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

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
60 (B3E0743-04RE1) Water Sampled: 05/29/03 12:00 Received: 05/30/03 11:05									
Zinc	ND	0.0100	mg/l	1	3F03032	06/03/03	06/05/03	EPA 6020	
61 (B3E0743-05) Water Sampled: 05/29/03 12:00 Received: 05/30/03 11:05									
Silver	ND	0.00100	mg/l	1	3F02032	06/02/03	06/03/03	EPA 6020	
Arsenic	0.00561	0.00100	"	"	"	"	"	"	
Barium	0.0433	0.0100	"	"	"	"	"	"	
Beryllium	ND	0.00100	"	"	"	"	"	"	
Cadmium	0.00211	0.00100	"	"	"	"	"	"	
Cobalt	ND	0.00100	"	"	"	"	"	"	
Chromium	ND	0.00100	"	"	"	"	"	"	
Copper	0.00329	0.00100	"	"	"	"	"	"	
Mercury	ND	0.00100	"	"	3F04015	06/04/03	06/05/03	EPA 7470A	
Nickel	0.0101	0.00100	"	"	3F02032	06/02/03	06/03/03	EPA 6020	
Lead	ND	0.00100	"	"	"	"	"	"	
Antimony	ND	0.00300	"	"	"	"	"	"	
Selenium	ND	0.00100	"	"	"	"	"	"	
Vanadium	0.00446	0.00100	"	"	"	"	"	"	
61 (B3E0743-05RE1) Water Sampled: 05/29/03 12:00 Received: 05/30/03 11:05									
Zinc	ND	0.0100	mg/l	1	3F03032	06/03/03	06/05/03	EPA 6020	
94 (B3E0743-06) Water Sampled: 05/29/03 12:00 Received: 05/30/03 11:05									
Silver	ND	0.00100	mg/l	1	3F02032	06/02/03	06/03/03	EPA 6020	
Arsenic	0.00506	0.00100	"	"	"	"	"	"	
Barium	0.0444	0.0100	"	"	"	"	"	"	
Beryllium	ND	0.00100	"	"	"	"	"	"	
Cadmium	0.00214	0.00100	"	"	"	"	"	"	
Cobalt	0.00176	0.00100	"	"	"	"	"	"	
Chromium	ND	0.00100	"	"	"	"	"	"	
Copper	0.00266	0.00100	"	"	"	"	"	"	
Mercury	ND	0.00100	"	"	3F04015	06/04/03	06/05/03	EPA 7470A	
Nickel	0.00997	0.00100	"	"	3F02032	06/02/03	06/03/03	EPA 6020	
Lead	ND	0.00100	"	"	"	"	"	"	
Antimony	ND	0.00300	"	"	"	"	"	"	
Selenium	ND	0.00100	"	"	"	"	"	"	
Vanadium	0.00267	0.00100	"	"	"	"	"	"	

North Creek Analytical - Bothell

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

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

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
94 (B3E0743-06RE1) Water Sampled: 05/29/03 12:00 Received: 05/30/03 11:05									
Zinc	0.0240	0.0100	mg/l	1	3F03032	06/03/03	06/05/03	EPA 6020	
98 (B3E0743-07) Water Sampled: 05/29/03 12:00 Received: 05/30/03 11:05									
Silver	ND	0.00100	mg/l	1	3F02032	06/02/03	06/03/03	EPA 6020	
Arsenic	0.00155	0.00100	"	"	"	"	"	"	
Barium	0.0904	0.0100	"	"	"	"	"	"	
Beryllium	ND	0.00100	"	"	"	"	"	"	
Cadmium	0.0162	0.00100	"	"	"	"	"	"	
Cobalt	ND	0.00100	"	"	"	"	"	"	
Chromium	ND	0.00100	"	"	"	"	"	"	
Copper	0.00786	0.00100	"	"	"	"	"	"	
Mercury	ND	0.00100	"	"	3F04015	06/04/03	06/05/03	EPA 7470A	
Nickel	0.0101	0.00100	"	"	3F02032	06/02/03	06/03/03	EPA 6020	
Lead	ND	0.00100	"	"	"	"	"	"	
Antimony	ND	0.00300	"	"	"	"	"	"	
Selenium	ND	0.00100	"	"	"	"	"	"	
Vanadium	0.00804	0.00100	"	"	"	"	"	"	
98 (B3E0743-07RE1) Water Sampled: 05/29/03 12:00 Received: 05/30/03 11:05									
Zinc	0.0267	0.0100	mg/l	1	3F03032	06/03/03	06/05/03	EPA 6020	
95 (B3E0743-08) Water Sampled: 05/29/03 12:00 Received: 05/30/03 11:05									
Silver	ND	0.00100	mg/l	1	3F02032	06/02/03	06/03/03	EPA 6020	
Arsenic	0.00264	0.00100	"	"	"	"	"	"	
Barium	0.0469	0.0100	"	"	"	"	"	"	
Beryllium	ND	0.00100	"	"	"	"	"	"	
Cadmium	0.00154	0.00100	"	"	"	"	"	"	
Cobalt	0.00348	0.00100	"	"	"	"	"	"	
Chromium	ND	0.00100	"	"	"	"	"	"	
Copper	0.00326	0.00100	"	"	"	"	"	"	
Mercury	ND	0.00100	"	"	3F04015	06/04/03	06/05/03	EPA 7470A	
Nickel	0.0177	0.00100	"	"	3F02032	06/02/03	06/03/03	EPA 6020	
Lead	ND	0.00100	"	"	"	"	"	"	
Antimony	ND	0.00300	"	"	"	"	"	"	
Selenium	ND	0.00100	"	"	"	"	"	"	
Vanadium	0.00454	0.00100	"	"	"	"	"	"	

North Creek Analytical - Bothell

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

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
95 (B3E0743-08RE1) Water Sampled: 05/29/03 12:00 Received: 05/30/03 11:05									
Zinc	0.0229	0.0100	mg/l	1	3F03032	06/03/03	06/05/03	EPA 6020	
96 (B3E0743-09) Water Sampled: 05/29/03 12:00 Received: 05/30/03 11:05									
Silver	ND	0.00100	mg/l	1	3F02032	06/02/03	06/03/03	EPA 6020	
Arsenic	0.0185	0.00100	"	"	"	"	"	"	
Barium	0.0508	0.0100	"	"	"	"	"	"	
Beryllium	ND	0.00100	"	"	"	"	"	"	
Cadmium	0.00188	0.00100	"	"	"	"	"	"	
Cobalt	0.0160	0.00100	"	"	"	"	"	"	
Chromium	ND	0.00100	"	"	"	"	"	"	
Copper	0.00145	0.00100	"	"	"	"	"	"	
Mercury	ND	0.00100	"	"	3F04015	06/04/03	06/05/03	EPA 7470A	
Nickel	0.0110	0.00100	"	"	3F02032	06/02/03	06/03/03	EPA 6020	
Lead	ND	0.00100	"	"	"	"	"	"	
Antimony	ND	0.00300	"	"	"	"	"	"	
Selenium	ND	0.00100	"	"	"	"	"	"	
Vanadium	ND	0.00100	"	"	"	"	"	"	
96 (B3E0743-09RE1) Water Sampled: 05/29/03 12:00 Received: 05/30/03 11:05									
Zinc	0.0161	0.0100	mg/l	1	3F03032	06/03/03	06/05/03	EPA 6020	
97 (B3E0743-10) Water Sampled: 05/29/03 12:00 Received: 05/30/03 11:05									
Silver	ND	0.00100	mg/l	1	3F02032	06/02/03	06/03/03	EPA 6020	
Arsenic	0.00146	0.00100	"	"	"	"	"	"	
Barium	0.0627	0.0100	"	"	"	"	"	"	
Beryllium	ND	0.00100	"	"	"	"	"	"	
Cadmium	0.00495	0.00100	"	"	"	"	"	"	
Cobalt	ND	0.00100	"	"	"	"	"	"	
Chromium	ND	0.00100	"	"	"	"	"	"	
Copper	0.00407	0.00100	"	"	"	"	"	"	
Mercury	ND	0.00100	"	"	3F04015	06/04/03	06/05/03	EPA 7470A	
Nickel	0.00566	0.00100	"	"	3F02032	06/02/03	06/03/03	EPA 6020	
Lead	ND	0.00100	"	"	"	"	"	"	
Antimony	ND	0.00300	"	"	"	"	"	"	
Selenium	ND	0.00100	"	"	"	"	"	"	
Vanadium	0.00402	0.00100	"	"	"	"	"	"	

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Shell - Puget Sound Plant
 8505 South Texas Road
 Anacortes WA, 98221

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

Amended Report
 Issued: 06/19/03 10:35

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

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
97 (B3E0743-10RE1) Water Sampled: 05/29/03 12:00 Received: 05/30/03 11:05									
Zinc	ND	0.0100	mg/l	1	3F03032	06/03/03	06/05/03	EPA 6020	
63 (B3E0743-11) Water Sampled: 05/29/03 12:00 Received: 05/30/03 11:05									
Silver	ND	0.00100	mg/l	1	3F02032	06/02/03	06/03/03	EPA 6020	
Arsenic	0.00328	0.00100	"	"	"	"	"	"	
Barium	0.0439	0.0100	"	"	"	"	"	"	
Beryllium	ND	0.00100	"	"	"	"	"	"	
Cadmium	ND	0.00100	"	"	"	"	"	"	
Cobalt	ND	0.00100	"	"	"	"	"	"	
Chromium	ND	0.00100	"	"	"	"	"	"	
Copper	ND	0.00100	"	"	"	"	"	"	
Mercury	ND	0.00100	"	"	3F04015	06/04/03	06/05/03	EPA 7470A	
Nickel	0.00270	0.00100	"	"	3F02032	06/02/03	06/03/03	EPA 6020	
Lead	ND	0.00100	"	"	"	"	"	"	
Antimony	ND	0.00300	"	"	"	"	"	"	
Selenium	ND	0.00100	"	"	"	"	"	"	
Vanadium	ND	0.00100	"	"	"	"	"	"	
63 (B3E0743-11RE1) Water Sampled: 05/29/03 12:00 Received: 05/30/03 11:05									
Zinc	ND	0.0100	mg/l	1	3F03032	06/03/03	06/05/03	EPA 6020	
65 (B3E0743-12) Water Sampled: 05/29/03 12:00 Received: 05/30/03 11:05									
Silver	ND	0.00100	mg/l	1	3F02032	06/02/03	06/03/03	EPA 6020	
Arsenic	0.00526	0.00100	"	"	"	"	"	"	
Barium	0.0327	0.0100	"	"	"	"	"	"	
Beryllium	ND	0.00100	"	"	"	"	"	"	
Cadmium	ND	0.00100	"	"	"	"	"	"	
Cobalt	ND	0.00100	"	"	"	"	"	"	
Chromium	ND	0.00100	"	"	"	"	"	"	
Copper	0.00229	0.00100	"	"	"	"	"	"	
Mercury	ND	0.00100	"	"	3F04015	06/04/03	06/05/03	EPA 7470A	
Nickel	0.00306	0.00100	"	"	3F02032	06/02/03	06/03/03	EPA 6020	
Lead	ND	0.00100	"	"	"	"	"	"	
Antimony	ND	0.00300	"	"	"	"	"	"	
Selenium	ND	0.00100	"	"	"	"	"	"	
Vanadium	0.00804	0.00100	"	"	"	"	"	"	

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Jeanne Garthwaite, Project Manager

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Shell - Puget Sound Plant 8505 South Texas Road Anacortes WA, 98221	Project: SWMU 11 Sampling Project Number: 4550237616 Project Manager: Brian Rhodes	Amended Report Issued: 06/19/03 10:35
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**Total Metals by EPA 6000/7000 Series Methods
 North Creek Analytical - Bothell**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
65 (B3E0743-12RE1) Water Sampled: 05/29/03 12:00 Received: 05/30/03 11:05									
Zinc	0.0126	0.0100	mg/l	1	3F03032	06/03/03	06/05/03	EPA 6020	
100 (B3E0743-13) Water Sampled: 05/29/03 12:00 Received: 05/30/03 11:05									
Silver	ND	0.00100	mg/l	1	3F02032	06/02/03	06/03/03	EPA 6020	
Arsenic	0.00590	0.00100	"	"	"	"	"	"	
Barium	0.568	0.0200	"	2	"	"	06/04/03	"	
Beryllium	ND	0.00100	"	1	"	"	06/03/03	"	
Cadmium	0.00123	0.00100	"	"	"	"	"	"	
Cobalt	ND	0.00100	"	"	"	"	"	"	
Chromium	0.00166	0.00100	"	"	"	"	"	"	
Copper	0.00237	0.00100	"	"	"	"	"	"	
Mercury	ND	0.00100	"	"	3F04015	06/04/03	06/05/03	EPA 7470A	
Nickel	0.00230	0.00100	"	"	3F02032	06/02/03	06/03/03	EPA 6020	
Lead	ND	0.00100	"	"	"	"	"	"	
Antimony	ND	0.00300	"	"	"	"	"	"	
Selenium	0.00144	0.00100	"	"	"	"	"	"	
Vanadium	ND	0.00100	"	"	"	"	"	"	
100 (B3E0743-13RE1) Water Sampled: 05/29/03 12:00 Received: 05/30/03 11:05									
Zinc	0.0163	0.0100	mg/l	1	3F03032	06/03/03	06/05/03	EPA 6020	
BLANK (B3E0743-14) Water Sampled: 05/29/03 12:00 Received: 05/30/03 11:05									
Silver	ND	0.00100	mg/l	1	3F02032	06/02/03	06/03/03	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	ND	0.00100	"	"	"	"	"	"	
Mercury	ND	0.00100	"	"	3F04015	06/04/03	06/05/03	EPA 7470A	
Nickel	ND	0.00100	"	"	3F02032	06/02/03	06/03/03	EPA 6020	
Lead	ND	0.00100	"	"	"	"	"	"	
Antimony	ND	0.00300	"	"	"	"	"	"	
Selenium	ND	0.00100	"	"	"	"	"	"	
Vanadium	ND	0.00100	"	"	"	"	"	"	

North Creek Analytical - Bothell

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Shell - Puget Sound Plant 8505 South Texas Road Anacortes WA, 98221	Project: SWMU 11 Sampling Project Number: 4550237616 Project Manager: Brian Rhodes	Amended Report Issued: 06/19/03 10:35
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**Total Metals by EPA 6000/7000 Series Methods
 North Creek Analytical - Bothell**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
BLANK (B3E0743-14RE1) Water Sampled: 05/29/03 12:00 Received: 05/30/03 11:05									
Zinc	ND	0.0100	mg/l	1	3F03032	06/03/03	06/05/03	EPA 6020	

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Shell - Puget Sound Plant 8505 South Texas Road Anacortes WA, 98221	Project: SWMU 11 Sampling Project Number: 4550237616 Project Manager: Brian Rhodes	Amended Report Issued: 06/19/03 10:35
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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
92 (B3E0743-01) Water Sampled: 05/29/03 12:00 Received: 05/30/03 11:05									
1,1,1-Trichloroethane	ND	1.00	ug/l	1	3F09016	06/06/03	06/06/03	EPA 8260B	
1,2,4-Trimethylbenzene	ND	1.00	"	"	"	"	"	"	
1,2-Dibromoethane	ND	1.00	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.00	"	"	"	"	"	"	
2-Butanone	ND	10.0	"	"	"	"	"	"	
Acetone	ND	25.0	"	"	"	"	"	"	
Benzene	1.38	1.00	"	"	"	"	"	"	
Carbon disulfide	ND	1.00	"	"	"	"	"	"	
Chlorobenzene	ND	1.00	"	"	"	"	"	"	
Chloroform	ND	1.00	"	"	"	"	"	"	
Ethylbenzene	ND	1.00	"	"	"	"	"	"	
m,p-Xylene	ND	2.00	"	"	"	"	"	"	
n-Butylbenzene	ND	1.00	"	"	"	"	"	"	
n-Propylbenzene	ND	1.00	"	"	"	"	"	"	
o-Xylene	ND	1.00	"	"	"	"	"	"	
p-Isopropyltoluene	ND	1.00	"	"	"	"	"	"	
Styrene	ND	1.00	"	"	"	"	"	"	
Toluene	ND	1.00	"	"	"	"	"	"	
Trichloroethene	ND	1.00	"	"	"	"	"	"	

Surrogate: 1,2-DCA-d4	102 %	70-130			"	"	"	"	
Surrogate: Toluene-d8	104 %	70-130			"	"	"	"	
Surrogate: 4-BFB	97.5 %	70-130			"	"	"	"	

92 (B3E0743-01RE1) Water Sampled: 05/29/03 12:00 Received: 05/30/03 11:05									
1,2-Dichloroethane	62.9	4.00	ug/l	4	3F09021	06/09/03	06/10/03	EPA 8260B	
Surrogate: 1,2-DCA-d4	98.0 %	70-130			"	"	"	"	
Surrogate: Toluene-d8	97.5 %	70-130			"	"	"	"	
Surrogate: 4-BFB	97.0 %	70-130			"	"	"	"	

North Creek Analytical - Bothell

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Shell - Puget Sound Plant
 8505 South Texas Road
 Anacortes WA, 98221

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

Amended Report
 Issued: 06/19/03 10:35

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 (B3E0743-02) Water Sampled: 05/29/03 12:00 Received: 05/30/03 11:05									
1,1,1-Trichloroethane	25.4	1.00	ug/l	1	3F09016	06/06/03	06/06/03	EPA 8260B	
1,2,4-Trimethylbenzene	ND	1.00	"	"	"	"	"	"	
1,2-Dibromoethane	ND	1.00	"	"	"	"	"	"	
1,2-Dichloroethane	ND	1.00	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.00	"	"	"	"	"	"	
2-Butanone	ND	10.0	"	"	"	"	"	"	
Acetone	ND	25.0	"	"	"	"	"	"	
Benzene	ND	1.00	"	"	"	"	"	"	
Carbon disulfide	ND	1.00	"	"	"	"	"	"	
Chlorobenzene	ND	1.00	"	"	"	"	"	"	
Chloroform	ND	1.00	"	"	"	"	"	"	
Ethylbenzene	ND	1.00	"	"	"	"	"	"	
m,p-Xylene	ND	2.00	"	"	"	"	"	"	
n-Butylbenzene	ND	1.00	"	"	"	"	"	"	
n-Propylbenzene	ND	1.00	"	"	"	"	"	"	
o-Xylene	ND	1.00	"	"	"	"	"	"	
p-Isopropyltoluene	ND	1.00	"	"	"	"	"	"	
Styrene	ND	1.00	"	"	"	"	"	"	
Toluene	ND	1.00	"	"	"	"	"	"	
Trichloroethene	ND	1.00	"	"	"	"	"	"	
Surrogate: 1,2-DCA-d4	100 %	70-130			"	"	"	"	
Surrogate: Toluene-d8	106 %	70-130			"	"	"	"	
Surrogate: 4-BFB	98.5 %	70-130			"	"	"	"	

93 (B3E0743-03) Water Sampled: 05/29/03 12:00 Received: 05/30/03 11:05									
1,1,1-Trichloroethane	ND	1.00	ug/l	1	3F09016	06/06/03	06/06/03	EPA 8260B	
1,2,4-Trimethylbenzene	ND	1.00	"	"	"	"	"	"	
1,2-Dibromoethane	ND	1.00	"	"	"	"	"	"	
1,2-Dichloroethane	ND	1.00	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.00	"	"	"	"	"	"	
2-Butanone	ND	10.0	"	"	"	"	"	"	
Acetone	ND	25.0	"	"	"	"	"	"	
Benzene	ND	1.00	"	"	"	"	"	"	
Carbon disulfide	ND	1.00	"	"	"	"	"	"	
Chlorobenzene	ND	1.00	"	"	"	"	"	"	

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Shell - Puget Sound Plant 8505 South Texas Road Anacortes WA, 98221	Project: SWMU 11 Sampling Project Number: 4550237616 Project Manager: Brian Rhodes	Amended Report Issued: 06/19/03 10:35
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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 (B3E0743-03) Water Sampled: 05/29/03 12:00 Received: 05/30/03 11:05									
Chloroform	ND	1.00	ug/l	1	3F09016	06/06/03	06/06/03	"	
Ethylbenzene	ND	1.00	"	"	"	"	"	"	
m,p-Xylene	ND	2.00	"	"	"	"	"	"	
n-Butylbenzene	ND	1.00	"	"	"	"	"	"	
n-Propylbenzene	ND	1.00	"	"	"	"	"	"	
o-Xylene	ND	1.00	"	"	"	"	"	"	
p-Isopropyltoluene	ND	1.00	"	"	"	"	"	"	
Styrene	ND	1.00	"	"	"	"	"	"	
Toluene	ND	1.00	"	"	"	"	"	"	
Trichloroethene	ND	1.00	"	"	"	"	"	"	
Surrogate: 1,2-DCA-d4	99.5 %	70-130			"	"	"	"	
Surrogate: Toluene-d8	102 %	70-130			"	"	"	"	
Surrogate: 4-BFB	97.5 %	70-130			"	"	"	"	
60 (B3E0743-04) Water Sampled: 05/29/03 12:00 Received: 05/30/03 11:05									
1,1,1-Trichloroethane	ND	1.00	ug/l	1	3F09016	06/06/03	06/06/03	EPA 8260B	
1,2,4-Trimethylbenzene	ND	1.00	"	"	"	"	"	"	
1,2-Dibromoethane	ND	1.00	"	"	"	"	"	"	
1,2-Dichloroethane	1.17	1.00	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.00	"	"	"	"	"	"	
2-Butanone	ND	10.0	"	"	"	"	"	"	
Acetone	29.1	25.0	"	"	"	"	"	"	
Benzene	43.3	1.00	"	"	"	"	"	"	
Carbon disulfide	ND	1.00	"	"	"	"	"	"	
Chlorobenzene	ND	1.00	"	"	"	"	"	"	
Chloroform	ND	1.00	"	"	"	"	"	"	
Ethylbenzene	1.04	1.00	"	"	"	"	"	"	
m,p-Xylene	ND	2.00	"	"	"	"	"	"	
n-Butylbenzene	ND	1.00	"	"	"	"	"	"	
n-Propylbenzene	ND	1.00	"	"	"	"	"	"	
o-Xylene	ND	1.00	"	"	"	"	"	"	
p-Isopropyltoluene	ND	1.00	"	"	"	"	"	"	
Styrene	ND	1.00	"	"	"	"	"	"	
Toluene	ND	1.00	"	"	"	"	"	"	
Trichloroethene	ND	1.00	"	"	"	"	"	"	

North Creek Analytical - Bothell

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Shell - Puget Sound Plant
 8505 South Texas Road
 Anacortes WA, 98221

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

Amended Report
 Issued: 06/19/03 10:35

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 (B3E0743-04) Water Sampled: 05/29/03 12:00 Received: 05/30/03 11:05									
Surrogate: 1,2-DCA-d4	99.0 %	70-130			3F09016	06/06/03	06/06/03		"
Surrogate: Toluene-d8	104 %	70-130			"	"	"		"
Surrogate: 4-BFB	98.5 %	70-130			"	"	"		"
61 (B3E0743-05) Water Sampled: 05/29/03 12:00 Received: 05/30/03 11:05									
1,1,1-Trichloroethane	ND	1.00	ug/l	1	3F09016	06/06/03	06/06/03	EPA 8260B	
1,2,4-Trimethylbenzene	ND	1.00	"	"	"	"	"		"
1,2-Dibromoethane	ND	1.00	"	"	"	"	"		"
1,2-Dichloroethane	ND	1.00	"	"	"	"	"		"
1,3,5-Trimethylbenzene	ND	1.00	"	"	"	"	"		"
2-Butanone	ND	10.0	"	"	"	"	"		"
Acetone	ND	25.0	"	"	"	"	"		"
Benzene	2.78	1.00	"	"	"	"	"		"
Carbon disulfide	ND	1.00	"	"	"	"	"		"
Chlorobenzene	ND	1.00	"	"	"	"	"		"
Chloroform	ND	1.00	"	"	"	"	"		"
Ethylbenzene	ND	1.00	"	"	"	"	"		"
m,p-Xylene	ND	2.00	"	"	"	"	"		"
n-Butylbenzene	ND	1.00	"	"	"	"	"		"
n-Propylbenzene	ND	1.00	"	"	"	"	"		"
o-Xylene	ND	1.00	"	"	"	"	"		"
p-Isopropyltoluene	ND	1.00	"	"	"	"	"		"
Styrene	ND	1.00	"	"	"	"	"		"
Toluene	ND	1.00	"	"	"	"	"		"
Trichloroethene	ND	1.00	"	"	"	"	"		"
Surrogate: 1,2-DCA-d4	100 %	70-130			"	"	"		"
Surrogate: Toluene-d8	104 %	70-130			"	"	"		"
Surrogate: 4-BFB	98.5 %	70-130			"	"	"		"

North Creek Analytical - Bothell

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Jeanne Garthwaite

Jeanne Garthwaite, Project Manager



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Shell - Puget Sound Plant
 8505 South Texas Road
 Anacortes WA, 98221

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

Amended Report
 Issued: 06/19/03 10:35

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 (B3E0743-06) Water Sampled: 05/29/03 12:00 Received: 05/30/03 11:05									
1,1,1-Trichloroethane	ND	1.00	ug/l	1	3F09016	06/06/03	06/06/03	EPA 8260B	
1,2,4-Trimethylbenzene	ND	1.00	"	"	"	"	"	"	
1,2-Dibromoethane	ND	1.00	"	"	"	"	"	"	
1,2-Dichloroethane	ND	1.00	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.00	"	"	"	"	"	"	
2-Butanone	ND	10.0	"	"	"	"	"	"	
Acetone	ND	25.0	"	"	"	"	"	"	
Benzene	ND	1.00	"	"	"	"	"	"	
Carbon disulfide	ND	1.00	"	"	"	"	"	"	
Chlorobenzene	ND	1.00	"	"	"	"	"	"	
Chloroform	ND	1.00	"	"	"	"	"	"	
Ethylbenzene	ND	1.00	"	"	"	"	"	"	
m,p-Xylene	ND	2.00	"	"	"	"	"	"	
n-Butylbenzene	ND	1.00	"	"	"	"	"	"	
n-Propylbenzene	ND	1.00	"	"	"	"	"	"	
o-Xylene	ND	1.00	"	"	"	"	"	"	
p-Isopropyltoluene	ND	1.00	"	"	"	"	"	"	
Styrene	ND	1.00	"	"	"	"	"	"	
Toluene	ND	1.00	"	"	"	"	"	"	
Trichloroethene	ND	1.00	"	"	"	"	"	"	
Surrogate: 1,2-DCA-d4	99.0 %	70-130			"	"	"	"	
Surrogate: Toluene-d8	104 %	70-130			"	"	"	"	
Surrogate: 4-BFB	98.5 %	70-130			"	"	"	"	

98 (B3E0743-07) Water Sampled: 05/29/03 12:00 Received: 05/30/03 11:05									
1,1,1-Trichloroethane	ND	1.00	ug/l	1	3F09016	06/06/03	06/06/03	EPA 8260B	
1,2,4-Trimethylbenzene	ND	1.00	"	"	"	"	"	"	
1,2-Dibromoethane	ND	1.00	"	"	"	"	"	"	
1,2-Dichloroethane	ND	1.00	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.00	"	"	"	"	"	"	
2-Butanone	ND	10.0	"	"	"	"	"	"	
Acetone	ND	25.0	"	"	"	"	"	"	
Benzene	ND	1.00	"	"	"	"	"	"	
Carbon disulfide	ND	1.00	"	"	"	"	"	"	
Chlorobenzene	ND	1.00	"	"	"	"	"	"	

North Creek Analytical - Bothell

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Jeanne Garthwaite

Jeanne Garthwaite, Project Manager



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Shell - Puget Sound Plant
 8505 South Texas Road
 Anacortes WA, 98221

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

Amended Report
 Issued: 06/19/03 10:35

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

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
98 (B3E0743-07) Water Sampled: 05/29/03 12:00 Received: 05/30/03 11:05										
Chloroform	ND	1.00		ug/l	1	3F09016	06/06/03	06/06/03	"	
Ethylbenzene	ND	1.00		"	"	"	"	"	"	
m,p-Xylene	ND	2.00		"	"	"	"	"	"	
n-Butylbenzene	ND	1.00		"	"	"	"	"	"	
n-Propylbenzene	ND	1.00		"	"	"	"	"	"	
o-Xylene	ND	1.00		"	"	"	"	"	"	
p-Isopropyltoluene	ND	1.00		"	"	"	"	"	"	
Styrene	ND	1.00		"	"	"	"	"	"	
Toluene	ND	1.00		"	"	"	"	"	"	
Trichloroethene	ND	1.00		"	"	"	"	"	"	
Surrogate: 1,2-DCA-d4	99.5 %	70-130				"	"	"	"	
Surrogate: Toluene-d8	104 %	70-130				"	"	"	"	
Surrogate: 4-BFB	98.0 %	70-130				"	"	"	"	
95 (B3E0743-08) Water Sampled: 05/29/03 12:00 Received: 05/30/03 11:05										
1,1,1-Trichloroethane	ND	1.00		ug/l	1	3F09016	06/06/03	06/06/03	EPA 8260B	
1,2,4-Trimethylbenzene	ND	1.00		"	"	"	"	"	"	
1,2-Dibromoethane	ND	1.00		"	"	"	"	"	"	
1,2-Dichloroethane	ND	1.00		"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.00		"	"	"	"	"	"	
2-Butanone	ND	10.0		"	"	"	"	"	"	
Acetone	ND	25.0		"	"	"	"	"	"	
Benzene	ND	1.00		"	"	"	"	"	"	
Carbon disulfide	ND	1.00		"	"	"	"	"	"	
Chlorobenzene	ND	1.00		"	"	"	"	"	"	
Chloroform	ND	1.00		"	"	"	"	"	"	
Ethylbenzene	ND	1.00		"	"	"	"	"	"	
m,p-Xylene	ND	2.00		"	"	"	"	"	"	
n-Butylbenzene	ND	1.00		"	"	"	"	"	"	
n-Propylbenzene	ND	1.00		"	"	"	"	"	"	
o-Xylene	ND	1.00		"	"	"	"	"	"	
p-Isopropyltoluene	ND	1.00		"	"	"	"	"	"	
Styrene	ND	1.00		"	"	"	"	"	"	
Toluene	ND	1.00		"	"	"	"	"	"	
Trichloroethene	ND	1.00		"	"	"	"	"	"	

North Creek Analytical - Bothell

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Jeanne Garthwaite

Jeanne Garthwaite, Project Manager

North Creek Analytical, Inc.
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Shell - Puget Sound Plant
 8505 South Texas Road
 Anacortes WA, 98221

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

Amended Report
 Issued: 06/19/03 10:35

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 (B3E0743-08) Water Sampled: 05/29/03 12:00 Received: 05/30/03 11:05									
Surrogate: 1,2-DCA-d4	99.5 %	70-130			3F09016	06/06/03	06/06/03	"	
Surrogate: Toluene-d8	104 %	70-130			"	"	"	"	
Surrogate: 4-BFB	99.5 %	70-130			"	"	"	"	
96 (B3E0743-09) Water Sampled: 05/29/03 12:00 Received: 05/30/03 11:05									
1,1,1-Trichloroethane	ND	1.00	ug/l	1	3F09016	06/06/03	06/06/03	EPA 8260B	
1,2,4-Trimethylbenzene	ND	1.00	"	"	"	"	"	"	
1,2-Dibromoethane	ND	1.00	"	"	"	"	"	"	
1,2-Dichloroethane	ND	1.00	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.00	"	"	"	"	"	"	
2-Butanone	ND	10.0	"	"	"	"	"	"	
Acetone	ND	25.0	"	"	"	"	"	"	
Benzene	ND	1.00	"	"	"	"	"	"	
Carbon disulfide	ND	1.00	"	"	"	"	"	"	
Chlorobenzene	ND	1.00	"	"	"	"	"	"	
Chloroform	ND	1.00	"	"	"	"	"	"	
Ethylbenzene	ND	1.00	"	"	"	"	"	"	
m,p-Xylene	ND	2.00	"	"	"	"	"	"	
n-Butylbenzene	ND	1.00	"	"	"	"	"	"	
n-Propylbenzene	ND	1.00	"	"	"	"	"	"	
o-Xylene	ND	1.00	"	"	"	"	"	"	
p-Isopropyltoluene	ND	1.00	"	"	"	"	"	"	
Styrene	ND	1.00	"	"	"	"	"	"	
Toluene	ND	1.00	"	"	"	"	"	"	
Trichloroethene	ND	1.00	"	"	"	"	"	"	
Surrogate: 1,2-DCA-d4	97.5 %	70-130			"	"	"	"	
Surrogate: Toluene-d8	103 %	70-130			"	"	"	"	
Surrogate: 4-BFB	98.5 %	70-130			"	"	"	"	

North Creek Analytical - Bothell

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Shell - Puget Sound Plant
 8505 South Texas Road
 Anacortes WA, 98221

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

Amended Report
 Issued: 06/19/03 10:35

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 (B3E0743-10) Water Sampled: 05/29/03 12:00 Received: 05/30/03 11:05									
1,1,1-Trichloroethane	ND	1.00	ug/l	1	3F09016	06/06/03	06/06/03	EPA 8260B	
1,2,4-Trimethylbenzene	ND	1.00	"	"	"	"	"	"	
1,2-Dibromoethane	ND	1.00	"	"	"	"	"	"	
1,2-Dichloroethane	ND	1.00	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.00	"	"	"	"	"	"	
2-Butanone	ND	10.0	"	"	"	"	"	"	
Acetone	ND	25.0	"	"	"	"	"	"	
Benzene	ND	1.00	"	"	"	"	"	"	
Carbon disulfide	ND	1.00	"	"	"	"	"	"	
Chlorobenzene	ND	1.00	"	"	"	"	"	"	
Chloroform	ND	1.00	"	"	"	"	"	"	
Ethylbenzene	ND	1.00	"	"	"	"	"	"	
m,p-Xylene	ND	2.00	"	"	"	"	"	"	
n-Butylbenzene	ND	1.00	"	"	"	"	"	"	
n-Propylbenzene	ND	1.00	"	"	"	"	"	"	
o-Xylene	ND	1.00	"	"	"	"	"	"	
p-Isopropyltoluene	ND	1.00	"	"	"	"	"	"	
Styrene	ND	1.00	"	"	"	"	"	"	
Toluene	ND	1.00	"	"	"	"	"	"	
Trichloroethene	ND	1.00	"	"	"	"	"	"	
Surrogate: 1,2-DCA-d4	97.0 %	70-130			"	"	"	"	
Surrogate: Toluene-d8	104 %	70-130			"	"	"	"	
Surrogate: 4-BFB	98.5 %	70-130			"	"	"	"	

63 (B3E0743-11) Water Sampled: 05/29/03 12:00 Received: 05/30/03 11:05									
1,1,1-Trichloroethane	ND	1.00	ug/l	1	3F09016	06/06/03	06/06/03	EPA 8260B	
1,2-Dibromoethane	ND	1.00	"	"	"	"	"	"	
1,2-Dichloroethane	ND	1.00	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	6.61	1.00	"	"	"	"	"	"	
2-Butanone	ND	10.0	"	"	"	"	"	"	
Acetone	ND	25.0	"	"	"	"	"	"	
Benzene	ND	1.00	"	"	"	"	"	"	
Carbon disulfide	ND	1.00	"	"	"	"	"	"	
Chlorobenzene	ND	1.00	"	"	"	"	"	"	
Chloroform	ND	1.00	"	"	"	"	"	"	

North Creek Analytical - Bothell

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Jeanne Garthwaite, Project Manager

North Creek Analytical, Inc.
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Shell - Puget Sound Plant Project: SWMU 11 Sampling
 8505 South Texas Road Project Number: 4550237616
 Anacortes WA, 98221 Project Manager: Brian Rhodes Amended Report
 Issued: 06/19/03 10:35

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 (B3E0743-11) Water Sampled: 05/29/03 12:00 Received: 05/30/03 11:05									
Ethylbenzene	6.99	1.00	ug/l	1	3F09016	06/06/03	06/06/03	"	
m,p-Xylene	8.23	2.00	"	"	"	"	"	"	
n-Butylbenzene	9.08	1.00	"	"	"	"	"	"	
n-Propylbenzene	6.05	1.00	"	"	"	"	"	"	
o-Xylene	1.63	1.00	"	"	"	"	"	"	
p-Isopropyltoluene	2.10	1.00	"	"	"	"	"	"	
Styrene	ND	1.00	"	"	"	"	"	"	
Toluene	ND	1.00	"	"	"	"	"	"	
Trichloroethene	ND	1.00	"	"	"	"	"	"	
Surrogate: 1,2-DCA-d4	97.5 %	70-130			"	"	"	"	
Surrogate: Toluene-d8	101 %	70-130			"	"	"	"	
Surrogate: 4-BFB	98.0 %	70-130			"	"	"	"	
63 (B3E0743-11RE1) Water Sampled: 05/29/03 12:00 Received: 05/30/03 11:05									
1,2,4-Trimethylbenzene	86.9	5.00	ug/l	5	3F09021	06/09/03	06/10/03	EPA 8260B	
Surrogate: 1,2-DCA-d4	99.0 %	70-130			"	"	"	"	
Surrogate: Toluene-d8	97.0 %	70-130			"	"	"	"	
Surrogate: 4-BFB	97.0 %	70-130			"	"	"	"	
65 (B3E0743-12) Water Sampled: 05/29/03 12:00 Received: 05/30/03 11:05									
1,1,1-Trichloroethane	ND	1.00	ug/l	1	3F09021	06/09/03	06/10/03	EPA 8260B	
1,2,4-Trimethylbenzene	ND	1.00	"	"	"	"	"	"	
1,2-Dibromoethane	ND	1.00	"	"	"	"	"	"	
1,2-Dichloroethane	27.0	1.00	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.00	"	"	"	"	"	"	
2-Butanone	ND	10.0	"	"	"	"	"	"	
Acetone	ND	25.0	"	"	"	"	"	"	
Benzene	ND	1.00	"	"	"	"	"	"	
Carbon disulfide	ND	1.00	"	"	"	"	"	"	
Chlorobenzene	ND	1.00	"	"	"	"	"	"	
Chloroform	ND	1.00	"	"	"	"	"	"	
Ethylbenzene	ND	1.00	"	"	"	"	"	"	
m,p-Xylene	ND	2.00	"	"	"	"	"	"	
n-Butylbenzene	ND	1.00	"	"	"	"	"	"	
n-Propylbenzene	ND	1.00	"	"	"	"	"	"	
o-Xylene	ND	1.00	"	"	"	"	"	"	

North Creek Analytical - Bothell

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Jeanne Garthwaite

Jeanne Garthwaite, Project Manager



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Shell - Puget Sound Plant
 8505 South Texas Road
 Anacortes WA, 98221

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

Amended Report
 Issued: 06/19/03 10:35

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 (B3E0743-12) Water Sampled: 05/29/03 12:00 Received: 05/30/03 11:05									
p-Isopropyltoluene	ND	1.00	ug/l	1	3F09021	06/09/03	06/10/03	"	
Styrene	ND	1.00	"	"	"	"	"	"	
Toluene	ND	1.00	"	"	"	"	"	"	
Trichloroethene	ND	1.00	"	"	"	"	"	"	
Surrogate: 1,2-DCA-d4	99.5 %	70-130			"	"	"	"	
Surrogate: Toluene-d8	98.0 %	70-130			"	"	"	"	
Surrogate: 4-BFB	100 %	70-130			"	"	"	"	
100 (B3E0743-13) Water Sampled: 05/29/03 12:00 Received: 05/30/03 11:05									
1,1,1-Trichloroethane	ND	1.00	ug/l	1	3F09016	06/06/03	06/07/03	EPA 8260B	
1,2,4-Trimethylbenzene	ND	1.00	"	"	"	"	"	"	
1,2-Dibromoethane	ND	1.00	"	"	"	"	"	"	
1,2-Dichloroethane	1.15	1.00	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.00	"	"	"	"	"	"	
2-Butanone	ND	10.0	"	"	"	"	"	"	
Acetone	26.2	25.0	"	"	"	"	"	"	
Benzene	43.0	1.00	"	"	"	"	"	"	
Carbon disulfide	ND	1.00	"	"	"	"	"	"	
Chlorobenzene	ND	1.00	"	"	"	"	"	"	
Chloroform	ND	1.00	"	"	"	"	"	"	
Ethylbenzene	1.05	1.00	"	"	"	"	"	"	
m,p-Xylene	ND	2.00	"	"	"	"	"	"	
n-Butylbenzene	ND	1.00	"	"	"	"	"	"	
n-Propylbenzene	ND	1.00	"	"	"	"	"	"	
o-Xylene	ND	1.00	"	"	"	"	"	"	
p-Isopropyltoluene	ND	1.00	"	"	"	"	"	"	
Styrene	ND	1.00	"	"	"	"	"	"	
Toluene	ND	1.00	"	"	"	"	"	"	
Trichloroethene	ND	1.00	"	"	"	"	"	"	
Surrogate: 1,2-DCA-d4	96.5 %	70-130			"	"	"	"	
Surrogate: Toluene-d8	103 %	70-130			"	"	"	"	
Surrogate: 4-BFB	97.0 %	70-130			"	"	"	"	

North Creek Analytical - Bothell

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Jeanne Garthwaite

Jeanne Garthwaite, Project Manager



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Shell - Puget Sound Plant
 8505 South Texas Road
 Anacortes WA, 98221

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

Amended Report
 Issued: 06/19/03 10:35

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
BLANK (B3E0743-14) Water Sampled: 05/29/03 12:00 Received: 05/30/03 11:05									
1,1,1-Trichloroethane	ND	1.00	ug/l	1	3F09021	06/09/03	06/09/03	EPA 8260B	
1,2,4-Trimethylbenzene	ND	1.00	"	"	"	"	"	"	
1,2-Dibromoethane	ND	1.00	"	"	"	"	"	"	
1,2-Dichloroethane	ND	1.00	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.00	"	"	"	"	"	"	
2-Butanone	ND	10.0	"	"	"	"	"	"	
Acetone	ND	25.0	"	"	"	"	"	"	
Benzene	ND	1.00	"	"	"	"	"	"	
Carbon disulfide	ND	1.00	"	"	"	"	"	"	
Chlorobenzene	ND	1.00	"	"	"	"	"	"	
Chloroform	ND	1.00	"	"	"	"	"	"	
Ethylbenzene	ND	1.00	"	"	"	"	"	"	
m,p-Xylene	ND	2.00	"	"	"	"	"	"	
n-Butylbenzene	ND	1.00	"	"	"	"	"	"	
n-Propylbenzene	ND	1.00	"	"	"	"	"	"	
o-Xylene	ND	1.00	"	"	"	"	"	"	
p-Isopropyltoluene	ND	1.00	"	"	"	"	"	"	
Styrene	ND	1.00	"	"	"	"	"	"	
Toluene	ND	1.00	"	"	"	"	"	"	
Trichloroethene	ND	1.00	"	"	"	"	"	"	
Surrogate: 1,2-DCA-d4	98.0 %	70-130			"	"	"	"	
Surrogate: Toluene-d8	99.5 %	70-130			"	"	"	"	
Surrogate: 4-BFB	100 %	70-130			"	"	"	"	

North Creek Analytical - Bothell

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Jeanne Garthwaite

Jeanne Garthwaite, Project Manager



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Shell - Puget Sound Plant
 8505 South Texas Road
 Anacortes WA, 98221

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

Amended Report
 Issued: 06/19/03 10:35

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 (B3E0743-01) Water Sampled: 05/29/03 12:00 Received: 05/30/03 11:05									
1,2-Dichlorobenzene	ND	10.0	ug/l	1	3F04002	06/04/03	06/10/03	EPA 8270C	
1,3-Dichlorobenzene	ND	10.0	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	10.0	"	"	"	"	"	"	
1-Methylnaphthalene	ND	10.0	"	"	"	"	"	"	
2,4-Dimethylphenol	ND	10.0	"	"	"	"	"	"	
2,4-Dinitrophenol	ND	10.0	"	"	"	"	"	"	
2-Methylnaphthalene	ND	10.0	"	"	"	"	"	"	
2-Methylphenol	ND	10.0	"	"	"	"	"	"	
3 & 4-Methylphenol	ND	10.0	"	"	"	"	"	"	
4-Nitrophenol	ND	10.0	"	"	"	"	"	"	
6-Methyl chrysene	ND	10.0	"	"	"	"	06/11/03	"	
7,12-Dimethylbenz (a) anthracene	ND	10.0	"	"	"	"	06/10/03	"	
Acenaphthylene	ND	10.0	"	"	"	"	"	"	
Anthracene	ND	10.0	"	"	"	"	"	"	
Benzo (a) anthracene	ND	10.0	"	"	"	"	"	"	
Benzo (a) pyrene	ND	10.0	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	10.0	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	10.0	"	"	"	"	"	"	
Benzo (k) fluoranthene	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	"	"	"	"	"	"	
Di-n-octyl phthalate	ND	10.0	"	"	"	"	"	"	
Dibenz (a,h) acridine	ND	10.0	"	"	"	"	06/11/03	"	
Dibenz (a,h) anthracene	ND	10.0	"	"	"	"	06/10/03	"	
Diethyl phthalate	ND	10.0	"	"	"	"	"	"	
Dimethyl phthalate	ND	10.0	"	"	"	"	"	"	
Fluoranthene	ND	10.0	"	"	"	"	"	"	
Fluorene	ND	10.0	"	"	"	"	"	"	
Indene	ND	10.0	"	"	"	"	06/12/03	"	
Indeno (1,2,3-cd) pyrene	ND	10.0	"	"	"	"	06/10/03	"	
Naphthalene	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 Plant
 8505 South Texas Road
 Anacortes WA, 98221

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

Amended Report
 Issued: 06/19/03 10:35

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 (B3E0743-01) Water Sampled: 05/29/03 12:00 Received: 05/30/03 11:05									
Pyrene	ND	10.0	ug/l	1	3F04002	06/04/03	06/10/03	"	
Pyridine	ND	10.0	"	"	"	"	"	"	
Quinoline	ND	10.0	"	"	"	"	06/11/03	"	
Thiophenol	ND	10.0	"	"	"	"	06/11/03	"	
Surrogate: 2-FP	49.1 %	18-124			"	"	06/10/03	"	
Surrogate: Phenol-d6	60.2 %	25-122			"	"	"	"	
Surrogate: 2,4,6-TBP	58.3 %	19-132			"	"	"	"	
Surrogate: Nitrobenzene-d5	67.0 %	44-124			"	"	"	"	
Surrogate: p-Terphenyl-d14	68.7 %	10-132			"	"	"	"	
Surrogate: 2-FBP	70.9 %	41-129			"	"	"	"	
91 (B3E0743-02) Water Sampled: 05/29/03 12:00 Received: 05/30/03 11:05									
1,2-Dichlorobenzene	ND	10.0	ug/l	1	3F04002	06/04/03	06/10/03	EPA 8270C	
1,3-Dichlorobenzene	ND	10.0	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	10.0	"	"	"	"	"	"	
1-Methylnaphthalene	ND	10.0	"	"	"	"	"	"	
2,4-Dimethylphenol	ND	10.0	"	"	"	"	"	"	
2,4-Dinitrophenol	ND	10.0	"	"	"	"	"	"	
2-Methylnaphthalene	ND	10.0	"	"	"	"	"	"	
2-Methylphenol	ND	10.0	"	"	"	"	"	"	
3 & 4-Methylphenol	ND	10.0	"	"	"	"	"	"	
4-Nitrophenol	ND	10.0	"	"	"	"	"	"	
6-Methyl chrysene	ND	10.0	"	"	"	"	06/11/03	"	
7,12-Dimethylbenz (a) anthracene	ND	10.0	"	"	"	"	06/10/03	"	
Acenaphthylene	ND	10.0	"	"	"	"	"	"	
Anthracene	ND	10.0	"	"	"	"	"	"	
Benzo (a) anthracene	ND	10.0	"	"	"	"	"	"	
Benzo (a) pyrene	ND	10.0	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	10.0	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	10.0	"	"	"	"	"	"	
Benzo (k) fluoranthene	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	"	"	"	"	"	"	

North Creek Analytical - Bothell

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Jeanne Garthwaite

Jeanne Garthwaite, Project Manager

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Shell - Puget Sound Plant
 8505 South Texas Road
 Anacortes WA, 98221

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

Amended Report
 Issued: 06/19/03 10:35

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
91 (B3E0743-02) Water Sampled: 05/29/03 12:00 Received: 05/30/03 11:05									
Di-n-octyl phthalate	ND	10.0	ug/l	1	3F04002	06/04/03	06/10/03	"	
Dibenz (a,h) acridine	ND	10.0	"	"	"	"	06/11/03	"	
Dibenz (a,h) anthracene	ND	10.0	"	"	"	"	06/10/03	"	
Diethyl phthalate	ND	10.0	"	"	"	"	"	"	
Dimethyl phthalate	ND	10.0	"	"	"	"	"	"	
Fluoranthene	ND	10.0	"	"	"	"	"	"	
Fluorene	ND	10.0	"	"	"	"	"	"	
Indene	ND	10.0	"	"	"	"	06/12/03	"	
Indeno (1,2,3-cd) pyrene	ND	10.0	"	"	"	"	06/10/03	"	
Naphthalene	ND	10.0	"	"	"	"	"	"	
Phenanthrene	ND	10.0	"	"	"	"	"	"	
Phenol	ND	10.0	"	"	"	"	"	"	
Pyrene	ND	10.0	"	"	"	"	"	"	
Pyridine	ND	10.0	"	"	"	"	"	"	
Quinoline	ND	10.0	"	"	"	"	06/11/03	"	
Thiophenol	ND	10.0	"	"	"	"	06/11/03	"	
Surrogate: 2-FP	56.4 %	18-124			"	"	06/10/03	"	
Surrogate: Phenol-d6	70.3 %	25-122			"	"	"	"	
Surrogate: 2,4,6-TBP	59.6 %	19-132			"	"	"	"	
Surrogate: Nitrobenzene-d5	88.5 %	44-124			"	"	"	"	
Surrogate: p-Terphenyl-d14	74.5 %	10-132			"	"	"	"	
Surrogate: 2-FBP	87.3 %	41-129			"	"	"	"	
93 (B3E0743-03) Water Sampled: 05/29/03 12:00 Received: 05/30/03 11:05									
1,2-Dichlorobenzene	ND	10.0	ug/l	1	3F04002	06/04/03	06/10/03	EPA 8270C	
1,3-Dichlorobenzene	ND	10.0	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	10.0	"	"	"	"	"	"	
1-Methylnaphthalene	ND	10.0	"	"	"	"	"	"	
2,4-Dimethylphenol	ND	10.0	"	"	"	"	"	"	
2,4-Dinitrophenol	ND	10.0	"	"	"	"	"	"	
2-Methylnaphthalene	ND	10.0	"	"	"	"	"	"	
2-Methylphenol	ND	10.0	"	"	"	"	"	"	
3 & 4-Methylphenol	ND	10.0	"	"	"	"	"	"	
4-Nitrophenol	ND	10.0	"	"	"	"	"	"	
6-Methyl chrysene	ND	10.0	"	"	"	"	06/11/03	"	

North Creek Analytical - Bothell

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Jeanne Garthwaite

Jeanne Garthwaite, Project Manager

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Shell - Puget Sound Plant
 8505 South Texas Road
 Anacortes WA, 98221

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

Amended Report
 Issued: 06/19/03 10:35

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 (B3E0743-03) Water Sampled: 05/29/03 12:00 Received: 05/30/03 11:05									
7,12-Dimethylbenz (a) anthracene	ND	10.0	ug/l	1	3F04002	06/04/03	06/10/03	"	
Acenaphthylene	ND	10.0	"	"	"	"	"	"	
Anthracene	ND	10.0	"	"	"	"	"	"	
Benzo (a) anthracene	ND	10.0	"	"	"	"	"	"	
Benzo (a) pyrene	ND	10.0	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	10.0	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	10.0	"	"	"	"	"	"	
Benzo (k) fluoranthene	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	"	"	"	"	"	"	
Di-n-octyl phthalate	ND	10.0	"	"	"	"	"	"	
Dibenz (a,h) acridine	ND	10.0	"	"	"	"	06/11/03	"	
Dibenz (a,h) anthracene	ND	10.0	"	"	"	"	06/10/03	"	
Diethyl phthalate	ND	10.0	"	"	"	"	"	"	
Dimethyl phthalate	ND	10.0	"	"	"	"	"	"	
Fluoranthene	ND	10.0	"	"	"	"	"	"	
Fluorene	ND	10.0	"	"	"	"	"	"	
Indene	ND	10.0	"	"	"	"	06/12/03	"	
Indeno (1,2,3-cd) pyrene	ND	10.0	"	"	"	"	06/10/03	"	
Naphthalene	ND	10.0	"	"	"	"	"	"	
Phenanthrene	ND	10.0	"	"	"	"	"	"	
Phenol	ND	10.0	"	"	"	"	"	"	
Pyrene	ND	10.0	"	"	"	"	"	"	
Pyridine	ND	10.0	"	"	"	"	"	"	
Quinoline	ND	10.0	"	"	"	"	06/11/03	"	
Thiophenol	ND	10.0	"	"	"	"	06/11/03	"	
Surrogate: 2-FP	54.0 %	18-124			"	"	06/10/03	"	
Surrogate: Phenol-d6	64.7 %	25-122			"	"	"	"	
Surrogate: 2,4,6-TBP	53.4 %	19-132			"	"	"	"	
Surrogate: Nitrobenzene-d5	83.1 %	44-124			"	"	"	"	
Surrogate: p-Terphenyl-d14	57.3 %	10-132			"	"	"	"	
Surrogate: 2-FBP	75.9 %	41-129			"	"	"	"	

North Creek Analytical - Bothell

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Jeanne Garthwaite

Jeanne Garthwaite, Project Manager

North Creek Analytical, Inc.
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Shell - Puget Sound Plant Project: SWMU 11 Sampling
 8505 South Texas Road Project Number: 4550237616 Amended Report
 Anacortes WA, 98221 Project Manager: Brian Rhodes Issued: 06/19/03 10:35

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 (B3E0743-04) Water Sampled: 05/29/03 12:00 Received: 05/30/03 11:05									
1,2-Dichlorobenzene	ND	10.0	ug/l	1	3F04002	06/04/03	06/10/03	EPA 8270C	
1,3-Dichlorobenzene	ND	10.0	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	10.0	"	"	"	"	"	"	
1-Methylnaphthalene	ND	10.0	"	"	"	"	"	"	
2,4-Dimethylphenol	36.2	10.0	"	"	"	"	"	"	
2,4-Dinitrophenol	ND	10.0	"	"	"	"	"	"	
2-Methylnaphthalene	ND	10.0	"	"	"	"	"	"	
2-Methylphenol	ND	10.0	"	"	"	"	"	"	
3 & 4-Methylphenol	ND	10.0	"	"	"	"	"	"	
4-Nitrophenol	ND	10.0	"	"	"	"	"	"	
6-Methyl chrysene	ND	10.0	"	"	"	"	06/11/03	"	
7,12-Dimethylbenz (a) anthracene	ND	10.0	"	"	"	"	06/10/03	"	
Acenaphthylene	ND	10.0	"	"	"	"	"	"	
Anthracene	ND	10.0	"	"	"	"	"	"	
Benzo (a) anthracene	ND	10.0	"	"	"	"	"	"	
Benzo (a) pyrene	ND	10.0	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	10.0	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	10.0	"	"	"	"	"	"	
Benzo (k) fluoranthene	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	"	"	"	"	"	"	
Di-n-octyl phthalate	ND	10.0	"	"	"	"	"	"	
Dibenz (a,h) acridine	ND	10.0	"	"	"	"	06/11/03	"	
Dibenz (a,h) anthracene	ND	10.0	"	"	"	"	06/10/03	"	
Diethyl phthalate	ND	10.0	"	"	"	"	"	"	
Dimethyl phthalate	ND	10.0	"	"	"	"	"	"	
Fluoranthene	ND	10.0	"	"	"	"	"	"	
Fluorene	ND	10.0	"	"	"	"	"	"	
Indene	ND	10.0	"	"	"	"	06/12/03	"	
Indeno (1,2,3-cd) pyrene	ND	10.0	"	"	"	"	06/10/03	"	
Naphthalene	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 Plant
 8505 South Texas Road
 Anacortes WA, 98221

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

Amended Report
 Issued: 06/19/03 10:35

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 (B3E0743-04) Water Sampled: 05/29/03 12:00 Received: 05/30/03 11:05									
Pyrene	ND	10.0	ug/l	1	3F04002	06/04/03	06/10/03	"	
Pyridine	ND	10.0	"	"	"	"	"	"	
Quinoline	ND	10.0	"	"	"	"	06/11/03	"	
Thiophenol	ND	10.0	"	"	"	"	06/11/03	"	
Surrogate: 2-FP	58.0 %	18-124			"	"	06/10/03	"	
Surrogate: Phenol-d6	63.7 %	25-122			"	"	"	"	
Surrogate: 2,4,6-TBP	64.5 %	19-132			"	"	"	"	
Surrogate: Nitrobenzene-d5	79.8 %	44-124			"	"	"	"	
Surrogate: p-Terphenyl-d14	54.1 %	10-132			"	"	"	"	
Surrogate: 2-FBP	78.0 %	41-129			"	"	"	"	
61 (B3E0743-05) Water Sampled: 05/29/03 12:00 Received: 05/30/03 11:05									
1,2-Dichlorobenzene	ND	10.0	ug/l	1	3F04002	06/04/03	06/10/03	EPA 8270C	
1,3-Dichlorobenzene	ND	10.0	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	10.0	"	"	"	"	"	"	
1-Methylnaphthalene	ND	10.0	"	"	"	"	"	"	
2,4-Dimethylphenol	ND	10.0	"	"	"	"	"	"	
2,4-Dinitrophenol	ND	10.0	"	"	"	"	"	"	
2-Methylnaphthalene	ND	10.0	"	"	"	"	"	"	
2-Methylphenol	ND	10.0	"	"	"	"	"	"	
3 & 4-Methylphenol	ND	10.0	"	"	"	"	"	"	
4-Nitrophenol	ND	10.0	"	"	"	"	"	"	
6-Methyl chrysene	ND	10.0	"	"	"	"	06/11/03	"	
7,12-Dimethylbenz (a) anthracene	ND	10.0	"	"	"	"	06/10/03	"	
Acenaphthylene	ND	10.0	"	"	"	"	"	"	
Anthracene	ND	10.0	"	"	"	"	"	"	
Benzo (a) anthracene	ND	10.0	"	"	"	"	"	"	
Benzo (a) pyrene	ND	10.0	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	10.0	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	10.0	"	"	"	"	"	"	
Benzo (k) fluoranthene	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	"	"	"	"	"	"	

North Creek Analytical - Bothell

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Jeanne Garthwaite

Jeanne Garthwaite, Project Manager



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Shell - Puget Sound Plant 8505 South Texas Road Anacortes WA, 98221	Project: SWMU 11 Sampling Project Number: 4550237616 Project Manager: Brian Rhodes	Amended Report Issued: 06/19/03 10:35
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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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61 (B3E0743-05) Water **Sampled: 05/29/03 12:00** **Received: 05/30/03 11:05**

Di-n-octyl phthalate	ND	10.0	ug/l	1	3F04002	06/04/03	06/10/03	"	
Dibenz (a,h) acridine	ND	10.0	"	"	"	"	06/11/03	"	
Dibenz (a,h) anthracene	ND	10.0	"	"	"	"	06/10/03	"	
Diethyl phthalate	ND	10.0	"	"	"	"	"	"	
Dimethyl phthalate	ND	10.0	"	"	"	"	"	"	
Fluoranthene	ND	10.0	"	"	"	"	"	"	
Fluorene	ND	10.0	"	"	"	"	"	"	
Indene	ND	10.0	"	"	"	"	06/12/03	"	
Indeno (1,2,3-cd) pyrene	ND	10.0	"	"	"	"	06/10/03	"	
Naphthalene	ND	10.0	"	"	"	"	"	"	
Phenanthrene	ND	10.0	"	"	"	"	"	"	
Phenol	ND	10.0	"	"	"	"	"	"	
Pyrene	ND	10.0	"	"	"	"	"	"	
Pyridine	ND	10.0	"	"	"	"	"	"	
Quinoline	ND	10.0	"	"	"	"	06/11/03	"	
Thiophenol	ND	10.0	"	"	"	"	06/11/03	"	
Surrogate: 2-FP	59.2 %	18-124			"	"	06/10/03	"	
Surrogate: Phenol-d6	67.8 %	25-122			"	"	"	"	
Surrogate: 2,4,6-TBP	64.0 %	19-132			"	"	"	"	
Surrogate: Nitrobenzene-d5	82.0 %	44-124			"	"	"	"	
Surrogate: p-Terphenyl-d14	59.0 %	10-132			"	"	"	"	
Surrogate: 2-FBP	81.0 %	41-129			"	"	"	"	

94 (B3E0743-06) Water **Sampled: 05/29/03 12:00** **Received: 05/30/03 11:05**

1,2-Dichlorobenzene	ND	10.0	ug/l	1	3F04002	06/04/03	06/10/03	EPA 8270C	
1,3-Dichlorobenzene	ND	10.0	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	10.0	"	"	"	"	"	"	
1-Methylnaphthalene	ND	10.0	"	"	"	"	"	"	
2,4-Dimethylphenol	ND	10.0	"	"	"	"	"	"	
2,4-Dinitrophenol	ND	10.0	"	"	"	"	"	"	
2-Methylnaphthalene	ND	10.0	"	"	"	"	"	"	
2-Methylphenol	ND	10.0	"	"	"	"	"	"	
3 & 4-Methylphenol	ND	10.0	"	"	"	"	"	"	
4-Nitrophenol	ND	10.0	"	"	"	"	"	"	
6-Methyl chrysene	ND	10.0	"	"	"	"	06/11/03	"	

North Creek Analytical - Bothell

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Jeanne Garthwaite

Jeanne Garthwaite, Project Manager



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Shell - Puget Sound Plant
 8505 South Texas Road
 Anacortes WA, 98221

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

Amended Report
 Issued: 06/19/03 10:35

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 (B3E0743-06) Water Sampled: 05/29/03 12:00 Received: 05/30/03 11:05									
7,12-Dimethylbenz (a) anthracene	ND	10.0	ug/l	1	3F04002	06/04/03	06/10/03	"	
Acenaphthylene	ND	10.0	"	"	"	"	"	"	
Anthracene	ND	10.0	"	"	"	"	"	"	
Benzo (a) anthracene	ND	10.0	"	"	"	"	"	"	
Benzo (a) pyrene	ND	10.0	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	10.0	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	10.0	"	"	"	"	"	"	
Benzo (k) fluoranthene	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	"	"	"	"	"	"	
Di-n-octyl phthalate	ND	10.0	"	"	"	"	"	"	
Dibenz (a,h) acridine	ND	10.0	"	"	"	"	06/11/03	"	
Dibenz (a,h) anthracene	ND	10.0	"	"	"	"	06/10/03	"	
Diethyl phthalate	ND	10.0	"	"	"	"	"	"	
Dimethyl phthalate	ND	10.0	"	"	"	"	"	"	
Fluoranthene	ND	10.0	"	"	"	"	"	"	
Fluorene	ND	10.0	"	"	"	"	"	"	
Indene	ND	10.0	"	"	"	"	06/12/03	"	
Indeno (1,2,3-cd) pyrene	ND	10.0	"	"	"	"	06/10/03	"	
Naphthalene	ND	10.0	"	"	"	"	"	"	
Phenanthrene	ND	10.0	"	"	"	"	"	"	
Phenol	ND	10.0	"	"	"	"	"	"	
Pyrene	ND	10.0	"	"	"	"	"	"	
Pyridine	ND	10.0	"	"	"	"	"	"	
Quinoline	ND	10.0	"	"	"	"	06/11/03	"	
Thiophenol	ND	10.0	"	"	"	"	06/11/03	"	
Surrogate: 2-FP	51.8 %	18-124			"	"	06/10/03	"	
Surrogate: Phenol-d6	63.1 %	25-122			"	"	"	"	
Surrogate: 2,4,6-TBP	58.4 %	19-132			"	"	"	"	
Surrogate: Nitrobenzene-d5	81.4 %	44-124			"	"	"	"	
Surrogate: p-Terphenyl-d14	60.8 %	10-132			"	"	"	"	
Surrogate: 2-FBP	70.4 %	41-129			"	"	"	"	

North Creek Analytical - Bothell

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Jeanne Garthwaite

Jeanne Garthwaite, Project Manager

North Creek Analytical, Inc.
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Shell - Puget Sound Plant
 8505 South Texas Road
 Anacortes WA, 98221

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

Amended Report
 Issued: 06/19/03 10:35

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 (B3E0743-07) Water Sampled: 05/29/03 12:00 Received: 05/30/03 11:05									
1,2-Dichlorobenzene	ND	10.0	ug/l	1	3F04002	06/04/03	06/11/03	EPA 8270C	
1,3-Dichlorobenzene	ND	10.0	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	10.0	"	"	"	"	"	"	
1-Methylnaphthalene	ND	10.0	"	"	"	"	"	"	
2,4-Dimethylphenol	ND	10.0	"	"	"	"	"	"	
2,4-Dinitrophenol	ND	10.0	"	"	"	"	"	"	
2-Methylnaphthalene	ND	10.0	"	"	"	"	"	"	
2-Methylphenol	ND	10.0	"	"	"	"	"	"	
3 & 4-Methylphenol	ND	10.0	"	"	"	"	"	"	
4-Nitrophenol	ND	10.0	"	"	"	"	"	"	
6-Methyl chrysene	ND	10.0	"	"	"	"	06/11/03	"	
7,12-Dimethylbenz (a) anthracene	ND	10.0	"	"	"	"	06/11/03	"	
Acenaphthylene	ND	10.0	"	"	"	"	"	"	
Anthracene	ND	10.0	"	"	"	"	"	"	
Benzo (a) anthracene	ND	10.0	"	"	"	"	"	"	
Benzo (a) pyrene	ND	10.0	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	10.0	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	10.0	"	"	"	"	"	"	
Benzo (k) fluoranthene	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	"	"	"	"	"	"	
Di-n-octyl phthalate	ND	10.0	"	"	"	"	"	"	
Dibenz (a,h) acridine	ND	10.0	"	"	"	"	06/11/03	"	
Dibenz (a,h) anthracene	ND	10.0	"	"	"	"	06/11/03	"	
Diethyl phthalate	ND	10.0	"	"	"	"	"	"	
Dimethyl phthalate	ND	10.0	"	"	"	"	"	"	
Fluoranthene	ND	10.0	"	"	"	"	"	"	
Fluorene	ND	10.0	"	"	"	"	"	"	
Indene	ND	10.0	"	"	"	"	06/12/03	"	
Indeno (1,2,3-cd) pyrene	ND	10.0	"	"	"	"	06/11/03	"	
Naphthalene	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 Plant
 8505 South Texas Road
 Anacortes WA, 98221

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

Amended Report
 Issued: 06/19/03 10:35

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 (B3E0743-07) Water Sampled: 05/29/03 12:00 Received: 05/30/03 11:05									
Pyrene	ND	10.0	ug/l	1	3F04002	06/04/03	06/11/03	"	
Pyridine	ND	10.0	"	"	"	"	"	"	
Quinoline	ND	10.0	"	"	"	"	06/11/03	"	
Thiophenol	ND	10.0	"	"	"	"	06/11/03	"	
Surrogate: 2-FP	35.2 %	18-124			"	"	06/11/03	"	
Surrogate: Phenol-d6	55.8 %	25-122			"	"	"	"	
Surrogate: 2,4,6-TBP	37.4 %	19-132			"	"	"	"	
Surrogate: Nitrobenzene-d5	67.9 %	44-124			"	"	"	"	
Surrogate: p-Terphenyl-d14	68.7 %	10-132			"	"	"	"	
Surrogate: 2-FBP	67.3 %	41-129			"	"	"	"	
95 (B3E0743-08) Water Sampled: 05/29/03 12:00 Received: 05/30/03 11:05									
1,2-Dichlorobenzene	ND	10.0	ug/l	1	3F04002	06/04/03	06/11/03	EPA 8270C	
1,3-Dichlorobenzene	ND	10.0	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	10.0	"	"	"	"	"	"	
1-Methylnaphthalene	ND	10.0	"	"	"	"	"	"	
2,4-Dimethylphenol	ND	10.0	"	"	"	"	"	"	
2,4-Dinitrophenol	ND	10.0	"	"	"	"	"	"	
2-Methylnaphthalene	ND	10.0	"	"	"	"	"	"	
2-Methylphenol	ND	10.0	"	"	"	"	"	"	
3 & 4-Methylphenol	ND	10.0	"	"	"	"	"	"	
4-Nitrophenol	ND	10.0	"	"	"	"	"	"	
6-Methyl chrysene	ND	10.0	"	"	"	"	06/11/03	"	
7,12-Dimethylbenz (a) anthracene	ND	10.0	"	"	"	"	06/11/03	"	
Acenaphthylene	ND	10.0	"	"	"	"	"	"	
Anthracene	ND	10.0	"	"	"	"	"	"	
Benzo (a) anthracene	ND	10.0	"	"	"	"	"	"	
Benzo (a) pyrene	ND	10.0	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	10.0	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	10.0	"	"	"	"	"	"	
Benzo (k) fluoranthene	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	"	"	"	"	"	"	

North Creek Analytical - Bothell

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Jeanne Garthwaite

Jeanne Garthwaite, Project Manager

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Shell - Puget Sound Plant
 8505 South Texas Road
 Anacortes WA, 98221

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

Amended Report
 Issued: 06/19/03 10:35

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 (B3E0743-08) Water Sampled: 05/29/03 12:00 Received: 05/30/03 11:05									
Di-n-octyl phthalate	ND	10.0	ug/l	1	3F04002	06/04/03	06/11/03	"	
Dibenz (a,h) acridine	ND	10.0	"	"	"	"	06/11/03	"	
Dibenz (a,h) anthracene	ND	10.0	"	"	"	"	06/11/03	"	
Diethyl phthalate	ND	10.0	"	"	"	"	"	"	
Dimethyl phthalate	ND	10.0	"	"	"	"	"	"	
Fluoranthene	ND	10.0	"	"	"	"	"	"	
Fluorene	ND	10.0	"	"	"	"	"	"	
Indene	ND	10.0	"	"	"	"	06/12/03	"	
Indeno (1,2,3-cd) pyrene	ND	10.0	"	"	"	"	06/11/03	"	
Naphthalene	ND	10.0	"	"	"	"	"	"	
Phenanthrene	ND	10.0	"	"	"	"	"	"	
Phenol	ND	10.0	"	"	"	"	"	"	
Pyrene	ND	10.0	"	"	"	"	"	"	
Pyridine	ND	10.0	"	"	"	"	"	"	
Quinoline	ND	10.0	"	"	"	"	06/11/03	"	
Thiophenol	ND	10.0	"	"	"	"	06/11/03	"	
Surrogate: 2-FP	19.1 %	18-124			"	"	06/11/03	"	
Surrogate: Phenol-d6	39.2 %	25-122			"	"	"	"	
Surrogate: 2,4,6-TBP	43.7 %	19-132			"	"	"	"	
Surrogate: Nitrobenzene-d5	61.0 %	44-124			"	"	"	"	
Surrogate: p-Terphenyl-d14	51.8 %	10-132			"	"	"	"	
Surrogate: 2-FBP	59.0 %	41-129			"	"	"	"	
96 (B3E0743-09) Water Sampled: 05/29/03 12:00 Received: 05/30/03 11:05									
1,2-Dichlorobenzene	ND	10.0	ug/l	1	3F04002	06/04/03	06/11/03	EPA 8270C	
1,3-Dichlorobenzene	ND	10.0	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	10.0	"	"	"	"	"	"	
1-Methylnaphthalene	ND	10.0	"	"	"	"	"	"	
2,4-Dimethylphenol	ND	10.0	"	"	"	"	"	"	
2,4-Dinitrophenol	ND	10.0	"	"	"	"	"	"	
2-Methylnaphthalene	ND	10.0	"	"	"	"	"	"	
2-Methylphenol	ND	10.0	"	"	"	"	"	"	
3 & 4-Methylphenol	ND	10.0	"	"	"	"	"	"	
4-Nitrophenol	ND	10.0	"	"	"	"	"	"	
6-Methyl chrysene	ND	10.0	"	"	"	"	06/11/03	"	

North Creek Analytical - Bothell

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Shell - Puget Sound Plant
 8505 South Texas Road
 Anacortes WA, 98221

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

Amended Report
 Issued: 06/19/03 10:35

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 (B3E0743-09) Water Sampled: 05/29/03 12:00 Received: 05/30/03 11:05									
7,12-Dimethylbenz (a) anthracene	ND	10.0	ug/l	1	3F04002	06/04/03	06/11/03	"	
Acenaphthylene	ND	10.0	"	"	"	"	"	"	
Anthracene	ND	10.0	"	"	"	"	"	"	
Benzo (a) anthracene	ND	10.0	"	"	"	"	"	"	
Benzo (a) pyrene	ND	10.0	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	10.0	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	10.0	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	10.0	"	"	"	"	"	"	
Bis(2-ethylhexyl)phthalate	44.5	10.0	"	"	"	"	"	"	
Butyl benzyl phthalate	ND	10.0	"	"	"	"	"	"	
Chrysene	ND	10.0	"	"	"	"	"	"	
Di-n-butyl phthalate	ND	10.0	"	"	"	"	"	"	
Di-n-octyl phthalate	ND	10.0	"	"	"	"	"	"	
Dibenz (a,h) acridine	ND	10.0	"	"	"	"	06/11/03	"	
Dibenz (a,h) anthracene	ND	10.0	"	"	"	"	06/11/03	"	
Diethyl phthalate	ND	10.0	"	"	"	"	"	"	
Dimethyl phthalate	ND	10.0	"	"	"	"	"	"	
Fluoranthene	ND	10.0	"	"	"	"	"	"	
Fluorene	ND	10.0	"	"	"	"	"	"	
Indene	ND	10.0	"	"	"	"	06/12/03	"	
Indeno (1,2,3-cd) pyrene	ND	10.0	"	"	"	"	06/11/03	"	
Naphthalene	ND	10.0	"	"	"	"	"	"	
Phenanthrene	ND	10.0	"	"	"	"	"	"	
Phenol	ND	10.0	"	"	"	"	"	"	
Pyrene	ND	10.0	"	"	"	"	"	"	
Pyridine	ND	10.0	"	"	"	"	"	"	
Quinoline	ND	10.0	"	"	"	"	06/11/03	"	
Thiophenol	ND	10.0	"	"	"	"	06/11/03	"	
Surrogate: 2-FP	40.2 %	18-124			"	"	06/11/03	"	
Surrogate: Phenol-d6	57.4 %	25-122			"	"	"	"	
Surrogate: 2,4,6-TBP	47.7 %	19-132			"	"	"	"	
Surrogate: Nitrobenzene-d5	59.6 %	44-124			"	"	"	"	
Surrogate: p-Terphenyl-d14	66.5 %	10-132			"	"	"	"	
Surrogate: 2-FBP	72.1 %	41-129			"	"	"	"	

North Creek Analytical - Bothell

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Jeanne Garthwaite

Jeanne Garthwaite, Project Manager



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Shell - Puget Sound Plant
 8505 South Texas Road
 Anacortes WA, 98221

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

Amended Report
 Issued: 06/19/03 10:35

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 (B3E0743-10) Water Sampled: 05/29/03 12:00 Received: 05/30/03 11:05									
1,2-Dichlorobenzene	ND	10.0	ug/l	1	3F04002	06/04/03	06/11/03	EPA 8270C	
1,3-Dichlorobenzene	ND	10.0	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	10.0	"	"	"	"	"	"	
1-Methylnaphthalene	ND	10.0	"	"	"	"	"	"	
2,4-Dimethylphenol	ND	10.0	"	"	"	"	"	"	
2,4-Dinitrophenol	ND	10.0	"	"	"	"	"	"	
2-Methylnaphthalene	ND	10.0	"	"	"	"	"	"	
2-Methylphenol	ND	10.0	"	"	"	"	"	"	
3 & 4-Methylphenol	ND	10.0	"	"	"	"	"	"	
4-Nitrophenol	ND	10.0	"	"	"	"	"	"	
6-Methyl chrysene	ND	10.0	"	"	"	"	06/11/03	"	
7,12-Dimethylbenz (a) anthracene	ND	10.0	"	"	"	"	06/11/03	"	
Acenaphthylene	ND	10.0	"	"	"	"	"	"	
Anthracene	ND	10.0	"	"	"	"	"	"	
Benzo (a) anthracene	ND	10.0	"	"	"	"	"	"	
Benzo (a) pyrene	ND	10.0	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	10.0	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	10.0	"	"	"	"	"	"	
Benzo (k) fluoranthene	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	"	"	"	"	"	"	
Di-n-octyl phthalate	ND	10.0	"	"	"	"	"	"	
Dibenz (a,h) acridine	ND	10.0	"	"	"	"	06/11/03	"	
Dibenz (a,h) anthracene	ND	10.0	"	"	"	"	06/11/03	"	
Diethyl phthalate	ND	10.0	"	"	"	"	"	"	
Dimethyl phthalate	ND	10.0	"	"	"	"	"	"	
Fluoranthene	ND	10.0	"	"	"	"	"	"	
Fluorene	ND	10.0	"	"	"	"	"	"	
Indene	ND	10.0	"	"	"	"	06/12/03	"	
Indeno (1,2,3-cd) pyrene	ND	10.0	"	"	"	"	06/11/03	"	
Naphthalene	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 Plant
 8505 South Texas Road
 Anacortes WA, 98221

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

Amended Report
 Issued: 06/19/03 10:35

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 (B3E0743-10) Water Sampled: 05/29/03 12:00 Received: 05/30/03 11:05									
Pyrene	ND	10.0	ug/l	1	3F04002	06/04/03	06/11/03	"	
Pyridine	ND	10.0	"	"	"	"	"	"	
Quinoline	ND	10.0	"	"	"	"	06/11/03	"	
Thiophenol	ND	10.0	"	"	"	"	06/11/03	"	
Surrogate: 2-FP	39.5 %	18-124			"	"	06/11/03	"	
Surrogate: Phenol-d6	52.3 %	25-122			"	"	"	"	
Surrogate: 2,4,6-TBP	41.3 %	19-132			"	"	"	"	
Surrogate: Nitrobenzene-d5	59.5 %	44-124			"	"	"	"	
Surrogate: p-Terphenyl-d14	54.6 %	10-132			"	"	"	"	
Surrogate: 2-FBP	62.2 %	41-129			"	"	"	"	
63 (B3E0743-11) Water Sampled: 05/29/03 12:00 Received: 05/30/03 11:05									
1,2-Dichlorobenzene	ND	10.0	ug/l	1	3F04002	06/04/03	06/11/03	EPA 8270C	
1,3-Dichlorobenzene	ND	10.0	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	10.0	"	"	"	"	"	"	
1-Methylnaphthalene	20.2	10.0	"	"	"	"	"	"	
2,4-Dimethylphenol	ND	10.0	"	"	"	"	"	"	
2,4-Dinitrophenol	ND	10.0	"	"	"	"	"	"	
2-Methylnaphthalene	13.8	10.0	"	"	"	"	"	"	
2-Methylphenol	ND	10.0	"	"	"	"	"	"	
3 & 4-Methylphenol	ND	10.0	"	"	"	"	"	"	
4-Nitrophenol	ND	10.0	"	"	"	"	"	"	
6-Methyl chrysene	ND	10.0	"	"	"	"	06/11/03	"	
7,12-Dimethylbenz (a) anthracene	ND	10.0	"	"	"	"	06/11/03	"	
Acenaphthylene	ND	10.0	"	"	"	"	"	"	
Anthracene	ND	10.0	"	"	"	"	"	"	
Benzo (a) anthracene	ND	10.0	"	"	"	"	"	"	
Benzo (a) pyrene	ND	10.0	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	10.0	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	10.0	"	"	"	"	"	"	
Benzo (k) fluoranthene	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	"	"	"	"	"	"	

North Creek Analytical - Bothell

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Jeanne Garthwaite

Jeanne Garthwaite, Project Manager

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Shell - Puget Sound Plant 8505 South Texas Road Anacortes WA, 98221	Project: SWMU 11 Sampling Project Number: 4550237616 Project Manager: Brian Rhodes	Amended Report Issued: 06/19/03 10:35
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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 (B3E0743-11) Water Sampled: 05/29/03 12:00 Received: 05/30/03 11:05									
Di-n-octyl phthalate	ND	10.0	ug/l	1	3F04002	06/04/03	06/11/03	"	
Dibenz (a,h) acridine	ND	10.0	"	"	"	"	06/11/03	"	
Dibenz (a,h) anthracene	ND	10.0	"	"	"	"	06/11/03	"	
Diethyl phthalate	ND	10.0	"	"	"	"	"	"	
Dimethyl phthalate	ND	10.0	"	"	"	"	"	"	
Fluoranthene	ND	10.0	"	"	"	"	"	"	
Fluorene	ND	10.0	"	"	"	"	"	"	
Indene	ND	10.0	"	"	"	"	06/12/03	"	
Indeno (1,2,3-cd) pyrene	ND	10.0	"	"	"	"	06/11/03	"	
Naphthalene	12.1	10.0	"	"	"	"	"	"	
Phenanthrene	14.0	10.0	"	"	"	"	"	"	
Phenol	ND	10.0	"	"	"	"	"	"	
Pyrene	ND	10.0	"	"	"	"	"	"	
Pyridine	ND	10.0	"	"	"	"	"	"	
Quinoline	ND	10.0	"	"	"	"	06/11/03	"	
Thiophenol	ND	10.0	"	"	"	"	06/11/03	"	
Surrogate: 2-FP	48.0 %	18-124			"	"	06/11/03	"	
Surrogate: Phenol-d6	56.7 %	25-122			"	"	"	"	
Surrogate: 2,4,6-TBP	43.7 %	19-132			"	"	"	"	
Surrogate: Nitrobenzene-d5	71.2 %	44-124			"	"	"	"	
Surrogate: p-Terphenyl-d14	48.2 %	10-132			"	"	"	"	
Surrogate: 2-FBP	61.2 %	41-129			"	"	"	"	

65 (B3E0743-12) Water Sampled: 05/29/03 12:00 Received: 05/30/03 11:05									
1,2-Dichlorobenzene	ND	10.0	ug/l	1	3F04002	06/04/03	06/11/03	EPA 8270C	
1,3-Dichlorobenzene	ND	10.0	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	10.0	"	"	"	"	"	"	
1-Methylnaphthalene	ND	10.0	"	"	"	"	"	"	
2,4-Dimethylphenol	ND	10.0	"	"	"	"	"	"	
2,4-Dinitrophenol	ND	10.0	"	"	"	"	"	"	
2-Methylnaphthalene	ND	10.0	"	"	"	"	"	"	
2-Methylphenol	ND	10.0	"	"	"	"	"	"	
3 & 4-Methylphenol	ND	10.0	"	"	"	"	"	"	
4-Nitrophenol	ND	10.0	"	"	"	"	"	"	
6-Methyl chrysene	ND	10.0	"	"	"	"	06/12/03	"	

North Creek Analytical - Bothell

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Shell - Puget Sound Plant
 8505 South Texas Road
 Anacortes WA, 98221

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

Amended Report
 Issued: 06/19/03 10:35

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 (B3E0743-12) Water Sampled: 05/29/03 12:00 Received: 05/30/03 11:05									
7,12-Dimethylbenz (a) anthracene	ND	10.0	ug/l	1	3F04002	06/04/03	06/11/03	"	
Acenaphthylene	ND	10.0	"	"	"	"	"	"	
Anthracene	ND	10.0	"	"	"	"	"	"	
Benzo (a) anthracene	ND	10.0	"	"	"	"	"	"	
Benzo (a) pyrene	ND	10.0	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	10.0	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	10.0	"	"	"	"	"	"	
Benzo (k) fluoranthene	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	"	"	"	"	"	"	
Di-n-octyl phthalate	ND	10.0	"	"	"	"	"	"	
Dibenz (a,h) acridine	ND	10.0	"	"	"	"	06/12/03	"	
Dibenz (a,h) anthracene	ND	10.0	"	"	"	"	06/11/03	"	
Diethyl phthalate	ND	10.0	"	"	"	"	"	"	
Dimethyl phthalate	ND	10.0	"	"	"	"	"	"	
Fluoranthene	ND	10.0	"	"	"	"	"	"	
Fluorene	ND	10.0	"	"	"	"	"	"	
Indene	ND	10.0	"	"	"	"	06/12/03	"	
Indeno (1,2,3-cd) pyrene	ND	10.0	"	"	"	"	06/11/03	"	
Naphthalene	ND	10.0	"	"	"	"	"	"	
Phenanthrene	ND	10.0	"	"	"	"	"	"	
Phenol	ND	10.0	"	"	"	"	"	"	
Pyrene	ND	10.0	"	"	"	"	"	"	
Pyridine	ND	10.0	"	"	"	"	"	"	
Quinoline	ND	10.0	"	"	"	"	06/12/03	"	
Thiophenol	ND	10.0	"	"	"	"	06/11/03	"	
Surrogate: 2-FP	41.6 %	18-124			"	"	06/11/03	"	
Surrogate: Phenol-d6	51.1 %	25-122			"	"	"	"	
Surrogate: 2,4,6-TBP	43.5 %	19-132			"	"	"	"	
Surrogate: Nitrobenzene-d5	54.8 %	44-124			"	"	"	"	
Surrogate: p-Terphenyl-d14	47.4 %	10-132			"	"	"	"	
Surrogate: 2-FBP	52.2 %	41-129			"	"	"	"	

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Jeanne Garthwaite

Jeanne Garthwaite, Project Manager

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Shell - Puget Sound Plant
 8505 South Texas Road
 Anacortes WA, 98221

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

Amended Report
 Issued: 06/19/03 10:35

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 (B3E0743-13) Water Sampled: 05/29/03 12:00 Received: 05/30/03 11:05									
1,2-Dichlorobenzene	ND	10.0	ug/l	1	3F04002	06/04/03	06/11/03	EPA 8270C	
1,3-Dichlorobenzene	ND	10.0	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	10.0	"	"	"	"	"	"	
1-Methylnaphthalene	ND	10.0	"	"	"	"	"	"	
2,4-Dimethylphenol	24.2	10.0	"	"	"	"	"	"	
2,4-Dinitrophenol	ND	10.0	"	"	"	"	"	"	
2-Methylnaphthalene	ND	10.0	"	"	"	"	"	"	
2-Methylphenol	ND	10.0	"	"	"	"	"	"	
3 & 4-Methylphenol	ND	10.0	"	"	"	"	"	"	
4-Nitrophenol	ND	10.0	"	"	"	"	"	"	
6-Methyl chrysene	ND	10.0	"	"	"	"	06/12/03	"	
7,12-Dimethylbenz (a) anthracene	ND	10.0	"	"	"	"	06/11/03	"	
Acenaphthylene	ND	10.0	"	"	"	"	"	"	
Anthracene	ND	10.0	"	"	"	"	"	"	
Benzo (a) anthracene	ND	10.0	"	"	"	"	"	"	
Benzo (a) pyrene	ND	10.0	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	10.0	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	10.0	"	"	"	"	"	"	
Benzo (k) fluoranthene	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	"	"	"	"	"	"	
Di-n-octyl phthalate	ND	10.0	"	"	"	"	"	"	
Dibenz (a,h) acridine	ND	10.0	"	"	"	"	06/12/03	"	
Dibenz (a,h) anthracene	ND	10.0	"	"	"	"	06/11/03	"	
Diethyl phthalate	ND	10.0	"	"	"	"	"	"	
Dimethyl phthalate	ND	10.0	"	"	"	"	"	"	
Fluoranthene	ND	10.0	"	"	"	"	"	"	
Fluorene	ND	10.0	"	"	"	"	"	"	
Indene	ND	10.0	"	"	"	"	06/12/03	"	
Indeno (1,2,3-cd) pyrene	ND	10.0	"	"	"	"	06/11/03	"	
Naphthalene	ND	10.0	"	"	"	"	"	"	
Phenanthrene	ND	10.0	"	"	"	"	"	"	
Phenol	ND	10.0	"	"	"	"	"	"	

North Creek Analytical - Bothell

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Shell - Puget Sound Plant
 8505 South Texas Road
 Anacortes WA, 98221

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

Amended Report
 Issued: 06/19/03 10:35

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 (B3E0743-13) Water Sampled: 05/29/03 12:00 Received: 05/30/03 11:05									
Pyrene	ND	10.0	ug/l	1	3F04002	06/04/03	06/11/03	"	
Pyridine	ND	10.0	"	"	"	"	"	"	
Quinoline	ND	10.0	"	"	"	"	06/12/03	"	
Thiophenol	ND	10.0	"	"	"	"	06/12/03	"	
Surrogate: 2-FP	46.8 %	18-124			"	"	06/11/03	"	
Surrogate: Phenol-d6	46.8 %	25-122			"	"	"	"	
Surrogate: 2,4,6-TBP	47.4 %	19-132			"	"	"	"	
Surrogate: Nitrobenzene-d5	54.0 %	44-124			"	"	"	"	
Surrogate: p-Terphenyl-d14	36.9 %	10-132			"	"	"	"	
Surrogate: 2-FBP	55.7 %	41-129			"	"	"	"	
BLANK (B3E0743-14) Water Sampled: 05/29/03 12:00 Received: 05/30/03 11:05									
1,2-Dichlorobenzene	ND	10.0	ug/l	1	3F04002	06/04/03	06/11/03	EPA 8270C	
1,3-Dichlorobenzene	ND	10.0	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	10.0	"	"	"	"	"	"	
1-Methylnaphthalene	ND	10.0	"	"	"	"	"	"	
2,4-Dimethylphenol	ND	10.0	"	"	"	"	"	"	
2,4-Dinitrophenol	ND	10.0	"	"	"	"	"	"	
2-Methylnaphthalene	ND	10.0	"	"	"	"	"	"	
2-Methylphenol	ND	10.0	"	"	"	"	"	"	
3 & 4-Methylphenol	ND	10.0	"	"	"	"	"	"	
4-Nitrophenol	ND	10.0	"	"	"	"	"	"	
6-Methyl chrysene	ND	10.0	"	"	"	"	06/12/03	"	
7,12-Dimethylbenz (a) anthracene	ND	10.0	"	"	"	"	06/11/03	"	
Acenaphthylene	ND	10.0	"	"	"	"	"	"	
Anthracene	ND	10.0	"	"	"	"	"	"	
Benzo (a) anthracene	ND	10.0	"	"	"	"	"	"	
Benzo (a) pyrene	ND	10.0	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	10.0	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	10.0	"	"	"	"	"	"	
Benzo (k) fluoranthene	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	"	"	"	"	"	"	

North Creek Analytical - Bothell

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Shell - Puget Sound Plant 8505 South Texas Road Anacortes WA, 98221	Project: SWMU 11 Sampling Project Number: 4550237616 Project Manager: Brian Rhodes	Amended Report Issued: 06/19/03 10:35
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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 (B3E0743-14) Water Sampled: 05/29/03 12:00 Received: 05/30/03 11:05									
Di-n-octyl phthalate	ND	10.0	ug/l	1	3F04002	06/04/03	06/11/03	"	
Dibenz (a,h) acridine	ND	10.0	"	"	"	"	06/12/03	"	
Dibenz (a,h) anthracene	ND	10.0	"	"	"	"	06/11/03	"	
Diethyl phthalate	ND	10.0	"	"	"	"	"	"	
Dimethyl phthalate	ND	10.0	"	"	"	"	"	"	
Fluoranthene	ND	10.0	"	"	"	"	"	"	
Fluorene	ND	10.0	"	"	"	"	"	"	
Indene	ND	10.0	"	"	"	"	06/12/03	"	
Indeno (1,2,3-cd) pyrene	ND	10.0	"	"	"	"	06/11/03	"	
Naphthalene	ND	10.0	"	"	"	"	"	"	
Phenanthrene	ND	10.0	"	"	"	"	"	"	
Phenol	ND	10.0	"	"	"	"	"	"	
Pyrene	ND	10.0	"	"	"	"	"	"	
Pyridine	ND	10.0	"	"	"	"	"	"	
Quinoline	ND	10.0	"	"	"	"	06/12/03	"	
Thiophenol	ND	10.0	"	"	"	"	06/12/03	"	
Surrogate: 2-FP	45.8 %	18-124			"	"	06/11/03	"	
Surrogate: Phenol-d6	50.1 %	25-122			"	"	"	"	
Surrogate: 2,4,6-TBP	39.8 %	19-132			"	"	"	"	
Surrogate: Nitrobenzene-d5	51.5 %	44-124			"	"	"	"	
Surrogate: p-Terphenyl-d14	49.5 %	10-132			"	"	"	"	
Surrogate: 2-FBP	55.9 %	41-129			"	"	"	"	

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Shell - Puget Sound Plant
 8505 South Texas Road
 Anacortes WA, 98221

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

Amended Report
 Issued: 06/19/03 10:35

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
Batch 3F02012: Prepared 06/02/03 Using EPA 3520C										
Blank (3F02012-BLK1)										
Diesel Range Hydrocarbons	ND	0.250	mg/l							
Lube Oil Range Hydrocarbons	ND	0.500	"							
Surrogate: 2-FBP	0.274		"	0.320		85.6	50-150			
Surrogate: Octacosane	0.140		"	0.160		87.5	50-150			
LCS (3F02012-BS1)										
Diesel Range Hydrocarbons	1.78	0.250	mg/l	2.00		89.0	63-107			
Surrogate: 2-FBP	0.296		"	0.320		92.5	50-150			
LCS Dup (3F02012-BSD1)										
Diesel Range Hydrocarbons	1.80	0.250	mg/l	2.00		90.0	63-107	1.12	40	
Surrogate: 2-FBP	0.282		"	0.320		88.1	50-150			

North Creek Analytical - Bothell

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Shell - Puget Sound Plant
 8505 South Texas Road
 Anacortes WA, 98221

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

Amended Report
 Issued: 06/19/03 10:35

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 3F02032: Prepared 06/02/03 Using EPA 3020A

Blank (3F02032-BLK1)

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

LCS (3F02032-BS1)

Antimony	0.0819	0.00300	mg/l	0.0800		102	80-120			
Arsenic	0.0799	0.00100	"	0.0800		99.9	80-120			
Barium	0.0811	0.0100	"	0.0800		101	80-120			
Beryllium	0.0814	0.00100	"	0.0800		102	80-120			
Cadmium	0.0802	0.00100	"	0.0800		100	80-120			
Chromium	0.0802	0.00100	"	0.0800		100	80-120			
Cobalt	0.0797	0.00100	"	0.0800		99.6	80-120			
Copper	0.0788	0.00100	"	0.0800		98.5	80-120			
Lead	0.0799	0.00100	"	0.0800		99.9	80-120			
Nickel	0.0796	0.00100	"	0.0800		99.5	80-120			
Selenium	0.0808	0.00100	"	0.0800		101	80-120			
Silver	0.0796	0.00100	"	0.0800		99.5	80-120			
Vanadium	0.0812	0.00100	"	0.0800		102	80-120			

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Shell - Puget Sound Plant 8505 South Texas Road Anacortes WA, 98221	Project: SWMU 11 Sampling Project Number: 4550237616 Project Manager: Brian Rhodes	Amended Report Issued: 06/19/03 10:35
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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 3F02032: Prepared 06/02/03 Using EPA 3020A

LCS Dup (3F02032-BSD1)

Antimony	0.0821	0.00300	mg/l	0.0800		103	80-120	0.244	20	
Arsenic	0.0793	0.00100	"	0.0800		99.1	80-120	0.754	20	
Barium	0.0798	0.0100	"	0.0800		99.8	80-120	1.62	20	
Beryllium	0.0798	0.00100	"	0.0800		99.8	80-120	1.99	20	
Cadmium	0.0793	0.00100	"	0.0800		99.1	80-120	1.13	20	
Chromium	0.0797	0.00100	"	0.0800		99.6	80-120	0.625	20	
Cobalt	0.0793	0.00100	"	0.0800		99.1	80-120	0.503	20	
Copper	0.0781	0.00100	"	0.0800		97.6	80-120	0.892	20	
Lead	0.0790	0.00100	"	0.0800		98.8	80-120	1.13	20	
Nickel	0.0788	0.00100	"	0.0800		98.5	80-120	1.01	20	
Selenium	0.0801	0.00100	"	0.0800		100	80-120	0.870	20	
Silver	0.0793	0.00100	"	0.0800		99.1	80-120	0.378	20	
Vanadium	0.0801	0.00100	"	0.0800		100	80-120	1.36	20	

Matrix Spike (3F02032-MS1)

Source: B3E0681-01

Antimony	0.0873	0.00300	mg/l	0.0800	ND	109	78-125			
Arsenic	0.0827	0.00100	"	0.0800	0.00164	101	75-125			
Barium	0.135	0.0100	"	0.0800	0.0573	97.1	75-125			
Beryllium	0.0845	0.00100	"	0.0800	ND	106	75-125			
Cadmium	0.0792	0.00100	"	0.0800	ND	99.0	75-125			
Chromium	0.0800	0.00100	"	0.0800	ND	100	75-125			
Cobalt	0.0786	0.00100	"	0.0800	0.000570	97.5	75-125			
Copper	0.0774	0.00100	"	0.0800	0.00105	95.4	70-124			
Lead	0.0818	0.00100	"	0.0800	0.00133	101	75-125			
Nickel	0.0780	0.00100	"	0.0800	0.000930	96.3	76-125			
Selenium	0.0809	0.00100	"	0.0800	0.000810	100	76-128			
Silver	0.0765	0.00100	"	0.0800	ND	95.6	21-136			
Vanadium	0.0821	0.00100	"	0.0800	0.000300	102	75-129			

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Shell - Puget Sound Plant
 8505 South Texas Road
 Anacortes WA, 98221

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

Amended Report
 Issued: 06/19/03 10:35

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 3F02032: Prepared 06/02/03 Using EPA 3020A

Matrix Spike Dup (3F02032-MSD1)

Source: B3E0681-01

Antimony	0.0854	0.00300	mg/l	0.0800	ND	107	78-125	2.20	20	
Arsenic	0.0809	0.00100	"	0.0800	0.00164	99.1	75-125	2.20	20	
Barium	0.133	0.0100	"	0.0800	0.0573	94.6	75-125	1.49	20	
Beryllium	0.0817	0.00100	"	0.0800	ND	102	75-125	3.37	20	
Cadmium	0.0785	0.00100	"	0.0800	ND	98.1	75-125	0.888	20	
Chromium	0.0795	0.00100	"	0.0800	ND	99.4	75-125	0.627	20	
Cobalt	0.0774	0.00100	"	0.0800	0.000570	96.0	75-125	1.54	20	
Copper	0.0762	0.00100	"	0.0800	0.00105	93.9	70-124	1.56	20	
Lead	0.0804	0.00100	"	0.0800	0.00133	98.8	75-125	1.73	20	
Nickel	0.0767	0.00100	"	0.0800	0.000930	94.7	76-125	1.68	20	
Selenium	0.0803	0.00100	"	0.0800	0.000810	99.4	76-128	0.744	20	
Silver	0.0768	0.00100	"	0.0800	ND	96.0	21-136	0.391	50	
Vanadium	0.0814	0.00100	"	0.0800	0.000300	101	75-129	0.856	20	

Post Spike (3F02032-PS1)

Source: B3E0681-01

Antimony	0.0510	0.00300	mg/l	0.0500	ND	102	75-125			
Arsenic	0.0988	0.00100	"	0.100	0.00164	97.2	75-125			
Barium	0.157	0.0100	"	0.100	0.0573	99.7	75-125			
Beryllium	0.0993	0.00100	"	0.100	ND	99.3	75-125			
Cadmium	0.0965	0.00100	"	0.100	ND	96.5	75-125			
Chromium	0.0980	0.00100	"	0.100	ND	98.0	75-125			
Cobalt	0.0965	0.00100	"	0.100	0.000570	95.9	75-125			
Copper	0.0956	0.00100	"	0.100	0.00105	94.6	75-125			
Lead	0.0985	0.00100	"	0.100	0.00133	97.2	75-125			
Nickel	0.0953	0.00100	"	0.100	0.000930	94.4	75-125			
Selenium	0.0995	0.00100	"	0.100	0.000810	98.7	75-125			
Silver	0.0914	0.00100	"	0.100	ND	91.4	75-125			
Vanadium	0.0998	0.00100	"	0.100	0.000300	99.5	75-125			

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Jeanne Garthwaite, Project Manager

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Shell - Puget Sound Plant
 8505 South Texas Road
 Anacortes WA, 98221

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

Amended Report
 Issued: 06/19/03 10:35

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 3F03032: Prepared 06/03/03 Using EPA 3020A

Blank (3F03032-BLK1)

Zinc ND 0.0100 mg/l

LCS (3F03032-BS1)

Zinc 0.0810 0.0100 mg/l 0.0800 101 80-120

LCS Dup (3F03032-BSD1)

Zinc 0.0798 0.0100 mg/l 0.0800 99.8 80-120 1.49 20

Matrix Spike (3F03032-MS1)

Source: B3E0743-01RE1

Zinc 0.0916 0.0100 mg/l 0.0800 0.0198 89.8 75-131

Matrix Spike Dup (3F03032-MSD1)

Source: B3E0743-01RE1

Zinc 0.104 0.0100 mg/l 0.0800 0.0198 105 75-131 12.7 20

Post Spike (3F03032-PS1)

Source: B3E0743-01RE1

Zinc 0.118 0.0100 mg/l 0.0800 0.0198 123 75-125

Batch 3F04015: Prepared 06/04/03 Using EPA 7470A

Blank (3F04015-BLK1)

Mercury ND 0.00100 mg/l

LCS (3F04015-BS1)

Mercury 0.00486 0.00100 mg/l 0.00500 97.2 80-120

LCS Dup (3F04015-BSD1)

Mercury 0.00498 0.00100 mg/l 0.00500 99.6 80-120 2.44 20

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Shell - Puget Sound Plant
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 Anacortes WA, 98221

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

Amended Report
 Issued: 06/19/03 10:35

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	Limit	RPD	RPD Limit	Notes
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Batch 3F04015: Prepared 06/04/03 Using EPA 7470A

Matrix Spike (3F04015-MS1)				Source: B3E0743-01						
Mercury	0.00503	0.00100	mg/l	0.00500	0.000143	97.7	73-121			
Matrix Spike Dup (3F04015-MSD1)				Source: B3E0743-01						
Mercury	0.00505	0.00100	mg/l	0.00500	0.000143	98.1	73-121	0.397	20	

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 8505 South Texas Road
 Anacortes WA, 98221

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

Amended Report
 Issued: 06/19/03 10:35

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 3F09016: Prepared 06/06/03 Using EPA 5030B

Blank (3F09016-BLK1)

1,1,1-Trichloroethane	ND	1.00	ug/l							
1,2,4-Trimethylbenzene	ND	1.00	"							
1,2-Dibromoethane	ND	1.00	"							
1,2-Dichloroethane	ND	1.00	"							
1,3,5-Trimethylbenzene	ND	1.00	"							
2-Butanone	ND	10.0	"							
Acetone	ND	25.0	"							
Benzene	ND	1.00	"							
Carbon disulfide	ND	1.00	"							
Chlorobenzene	ND	1.00	"							
Chloroform	ND	1.00	"							
Ethylbenzene	ND	1.00	"							
m,p-Xylene	ND	2.00	"							
n-Butylbenzene	ND	1.00	"							
n-Propylbenzene	ND	1.00	"							
o-Xylene	ND	1.00	"							
p-Isopropyltoluene	ND	1.00	"							
Styrene	ND	1.00	"							
Toluene	ND	1.00	"							
Trichloroethene	ND	1.00	"							
Surrogate: 1,2-DCA-d4	20.3		"	20.0		102	70-130			
Surrogate: Toluene-d8	20.8		"	20.0		104	70-130			
Surrogate: 4-BFB	19.4		"	20.0		97.0	70-130			

LCS (3F09016-BS1)

Benzene	10.5	1.00	ug/l	10.0		105	80-120			
Chlorobenzene	9.92	1.00	"	10.0		99.2	77-120			
Toluene	10.6	1.00	"	10.0		106	80-120			
Surrogate: 1,2-DCA-d4	20.9		"	20.0		104	70-130			
Surrogate: Toluene-d8	21.7		"	20.0		108	70-130			
Surrogate: 4-BFB	19.3		"	20.0		96.5	70-130			

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Shell - Puget Sound Plant
 8505 South Texas Road
 Anacortes WA, 98221

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

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 Issued: 06/19/03 10:35

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 3F09016: Prepared 06/06/03 Using EPA 5030B

LCS Dup (3F09016-BSD1)

Benzene	9.49	1.00	ug/l	10.0		94.9	80-120	10.1	20	
Chlorobenzene	9.31	1.00	"	10.0		93.1	77-120	6.34	20	
Toluene	9.82	1.00	"	10.0		98.2	80-120	7.64	20	
Surrogate: 1,2-DCA-d4	20.6		"	20.0		103	70-130			
Surrogate: Toluene-d8	21.5		"	20.0		108	70-130			
Surrogate: 4-BFB	19.6		"	20.0		98.0	70-130			

Batch 3F09021: Prepared 06/09/03 Using EPA 5030B

Blank (3F09021-BLK1)

1,1,1-Trichloroethane	ND	1.00	ug/l							
1,2,4-Trimethylbenzene	ND	1.00	"							
1,2-Dibromoethane	ND	1.00	"							
1,2-Dichloroethane	ND	1.00	"							
1,3,5-Trimethylbenzene	ND	1.00	"							
2-Butanone	ND	10.0	"							
Acetone	ND	25.0	"							
Benzene	ND	1.00	"							
Carbon disulfide	ND	1.00	"							
Chlorobenzene	ND	1.00	"							
Chloroform	ND	1.00	"							
Ethylbenzene	ND	1.00	"							
m,p-Xylene	ND	2.00	"							
n-Butylbenzene	ND	1.00	"							
n-Propylbenzene	ND	1.00	"							
o-Xylene	ND	1.00	"							
p-Isopropyltoluene	ND	1.00	"							
Styrene	ND	1.00	"							
Toluene	ND	1.00	"							
Trichloroethene	ND	1.00	"							
Surrogate: 1,2-DCA-d4	19.7		"	20.0		98.5	70-130			
Surrogate: Toluene-d8	19.9		"	20.0		99.5	70-130			
Surrogate: 4-BFB	19.6		"	20.0		98.0	70-130			

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Shell - Puget Sound Plant
 8505 South Texas Road
 Anacortes WA, 98221

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

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 Issued: 06/19/03 10:35

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 3F09021: Prepared 06/09/03 Using EPA 5030B

LCS (3F09021-BS1)

Benzene	10.2	1.00	ug/l	10.0		102	80-120			
Chlorobenzene	10.1	1.00	"	10.0		101	77-120			
Toluene	10.1	1.00	"	10.0		101	80-120			
Surrogate: 1,2-DCA-d4	20.0		"	20.0		100	70-130			
Surrogate: Toluene-d8	20.1		"	20.0		100	70-130			
Surrogate: 4-BFB	19.7		"	20.0		98.5	70-130			

LCS Dup (3F09021-BSD1)

Benzene	9.69	1.00	ug/l	10.0		96.9	80-120	5.13	20	
Chlorobenzene	9.80	1.00	"	10.0		98.0	77-120	3.02	20	
Toluene	9.69	1.00	"	10.0		96.9	80-120	4.14	20	
Surrogate: 1,2-DCA-d4	19.9		"	20.0		99.5	70-130			
Surrogate: Toluene-d8	20.1		"	20.0		100	70-130			
Surrogate: 4-BFB	19.5		"	20.0		97.5	70-130			

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Shell - Puget Sound Plant 8505 South Texas Road Anacortes WA, 98221	Project: SWMU 11 Sampling Project Number: 4550237616 Project Manager: Brian Rhodes	Amended Report Issued: 06/19/03 10:35
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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
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Batch 3F04002: Prepared 06/04/03 Using EPA 3520C

Blank (3F04002-BLK1)

1,2-Dichlorobenzene	ND	10.0	ug/l							
1,3-Dichlorobenzene	ND	10.0	"							
1,4-Dichlorobenzene	ND	10.0	"							
1-Methylnaphthalene	ND	10.0	"							
2,4-Dimethylphenol	ND	10.0	"							
2,4-Dinitrophenol	ND	10.0	"							
2-Methylnaphthalene	ND	10.0	"							
2-Methylphenol	ND	10.0	"							
3 & 4-Methylphenol	ND	10.0	"							
4-Nitrophenol	ND	10.0	"							
6-Methyl chrysene	ND	10.0	"							
7,12-Dimethylbenz (a) anthracene	ND	10.0	"							
Acenaphthylene	ND	10.0	"							
Anthracene	ND	10.0	"							
Benzo (a) anthracene	ND	10.0	"							
Benzo (a) pyrene	ND	10.0	"							
Benzo (b) fluoranthene	ND	10.0	"							
Benzo (ghi) perylene	ND	10.0	"							
Benzo (k) fluoranthene	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	"							
Di-n-octyl phthalate	ND	10.0	"							
Dibenz (a,h) acridine	ND	10.0	"							
Dibenz (a,h) anthracene	ND	10.0	"							
Diethyl phthalate	ND	10.0	"							
Dimethyl phthalate	ND	10.0	"							
Fluoranthene	ND	10.0	"							
Fluorene	ND	10.0	"							
Indene	ND	10.0	"							
Indeno (1,2,3-cd) pyrene	ND	10.0	"							
Naphthalene	ND	10.0	"							
Phenanthrene	ND	10.0	"							

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Shell - Puget Sound Plant
 8505 South Texas Road
 Anacortes WA, 98221

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

Amended Report
 Issued: 06/19/03 10:35

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
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Batch 3F04002: Prepared 06/04/03 Using EPA 3520C

Blank (3F04002-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-FP	33.7		"	50.0		67.4	18-124			
Surrogate: Phenol-d6	40.9		"	50.0		81.8	25-122			
Surrogate: 2,4,6-TBP	30.7		"	50.0		61.4	19-132			
Surrogate: Nitrobenzene-d5	46.8		"	50.0		93.6	44-124			
Surrogate: p-Terphenyl-d14	45.4		"	50.0		90.8	10-132			
Surrogate: 2-FBP	48.3		"	50.0		96.6	41-129			

LCS (3F04002-BS1)

1,4-Dichlorobenzene	71.6	10.0	ug/l	100		71.6	43-122			
4-Nitrophenol	76.1	10.0	"	100		76.1	12-153			
Phenol	61.4	10.0	"	100		61.4	20-124			
Pyrene	81.8	10.0	"	100		81.8	59-134			
Surrogate: 2-FP	28.6		"	50.0		57.2	18-124			
Surrogate: Phenol-d6	32.7		"	50.0		65.4	25-122			
Surrogate: 2,4,6-TBP	32.5		"	50.0		65.0	19-132			
Surrogate: Nitrobenzene-d5	38.4		"	50.0		76.8	44-124			
Surrogate: p-Terphenyl-d14	34.1		"	50.0		68.2	10-132			
Surrogate: 2-FBP	42.3		"	50.0		84.6	41-129			

LCS Dup (3F04002-BSD1)

1,4-Dichlorobenzene	78.1	10.0	ug/l	100		78.1	43-122	8.68	26	
4-Nitrophenol	91.5	10.0	"	100		91.5	12-153	18.4	37	
Phenol	75.8	10.0	"	100		75.8	20-124	21.0	53	
Pyrene	99.8	10.0	"	100		99.8	59-134	19.8	50	
Surrogate: 2-FP	28.6		"	50.0		57.2	18-124			
Surrogate: Phenol-d6	38.5		"	50.0		77.0	25-122			
Surrogate: 2,4,6-TBP	35.1		"	50.0		70.2	19-132			
Surrogate: Nitrobenzene-d5	42.9		"	50.0		85.8	44-124			
Surrogate: p-Terphenyl-d14	44.8		"	50.0		89.6	10-132			
Surrogate: 2-FBP	47.5		"	50.0		95.0	41-129			

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Shell - Puget Sound Plant 8505 South Texas Road Anacortes WA, 98221	Project: SWMU 11 Sampling Project Number: 4550237616 Project Manager: Brian Rhodes	Amended Report Issued: 06/19/03 10:35
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Notes and Definitions

- D-06 The sample chromatographic pattern does not resemble the fuel standard used for quantitation.
- S-01 The surrogate recovery for this sample is not available due to sample dilution required from high analyte concentration and/or matrix interferences.
- 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

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