

DATE: April 8, 1998

TOSCO MARKETING COMPANY QUARTERLY REPORT

Tosco Facility: 5353 Address: 600 Westlake Avenue North, Seattle, Washington
Tosco Environmental Manager: Timothy D. Johnson
Consulting Co./Contact Person: Environmental Resolutions, Inc., John Meyer
ERI Project No.: 03102013
Primary Agency/Regulatory ID No.: Washington State Department of Ecology UST 2788 and 2789

WORK PERFORMED THIS QUARTER(S) [First - 1998]:

1. First quarter groundwater monitoring, sampling, and report.

WORK PROPOSED FOR NEXT QUARTER [Second - 1998]:

1. Second quarter groundwater monitoring and sampling.

Current Phase of Project:	<u>Remediation</u>	(Assmnt, Remed., etc.)
Frequency of Sampling:	<u>Quarterly</u>	(Quarterly, etc.)
Frequency of Monitoring:	<u>Quarterly</u>	(Monthly, etc.)
Are Liquid Phase Hydrocarbons Present On-site:	<u>Yes</u>	(Yes/No)
Cumulative LPH Recovered to Date:	<u>46,632 Gallons</u>	(gallons)
LPH Recovered This Quarter:	<u>None</u>	(gallons)
Bulk Soil Removed to Date:	<u>None</u>	(cubic yards)
Bulk Soil Removed This Quarter:	<u>None</u>	(cubic yards)
Water Wells or Surface Waters w/in a 2000' Radius & Their Respective Directions:	<u>Lake Union, 400 Feet North</u>	(Distance and Direction)
Current Remediation Techniques:	<u>VES</u>	(SVES, LPH Removal,
Permits for Discharge:	<u>PSAPCA No. 4397</u>	(NPDES, POTW, etc.)
Approximate Depth to Groundwater:	<u>9 to 11 Feet</u>	(Measured Feet)
Groundwater Gradient:	<u>Generally East</u>	(Direction)
	<u>0.005 Vertical Feet per Linear Foot</u>	(Magnitude)

Discussion: On March 16, 1998, Environmental Resolutions, Inc., (ERI) gauged 9 and sampled 5 groundwater monitoring wells. Groundwater samples were collected without purging. Monitoring wells MW-33, 34 and 47 could not be accessed. Results indicated groundwater present approximately 9 to 11 feet bgs with a gradient generally directed toward the east. Liquid-phase hydrocarbons (LPH) were observed in MW-37 (0.01 ft.).

The groundwater sample collected from MW-35 contained concentrations of total petroleum hydrocarbons (TPH-G and TPH-D) exceeding the MTCA Method A Cleanup Level. Groundwater samples collected from MW-35 and MW-43 contained benzene concentrations exceeding the MTCA Method A Cleanup Level. No other analyte concentrations exceeded MTCA Method A Cleanup Levels in any well sampled.

Summary of Unusual Activity: None
Agency Directive Requirements: None
Recommended Activities: Continue quarterly groundwater sampling

ATTACHED:

- Plate P-1 - Groundwater Sample Analyses Map, 3/16/98
- Table 1 - Groundwater Analytical Results
- Laboratory Reports and Chain-of-Custody Documentation

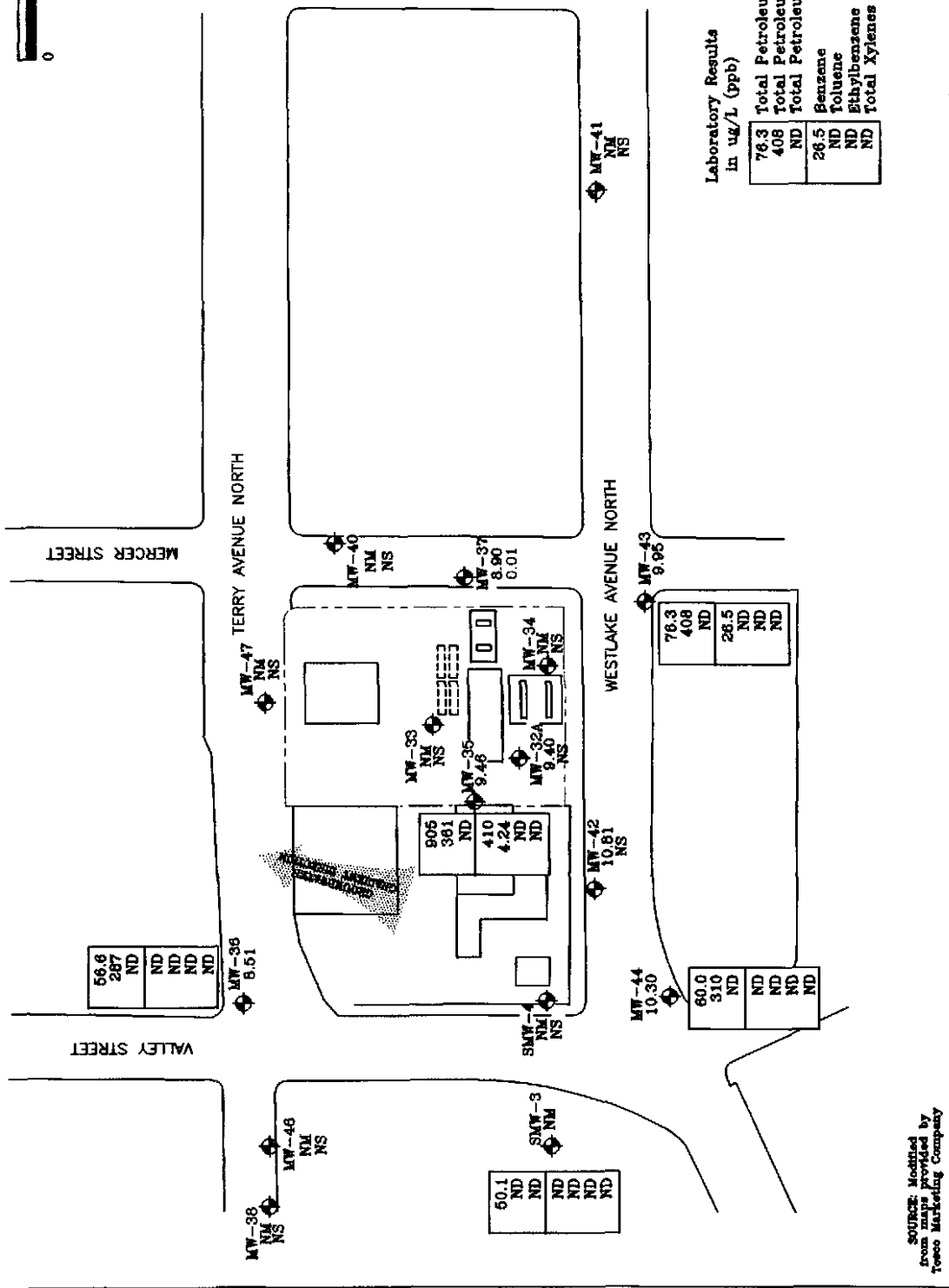
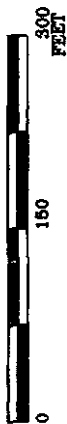
Prepared by:



John K. Meyer, R.G.
Environmental Resolutions, Inc.

cc: Washington State Department of Ecology

APPROXIMATE SCALE



PROJECT NO.

31020

PLATE

P-1

DATE: 4/8/98

TABLE 1
GROUNDWATER ANALYTICAL RESULTS
Tosco Facility 5353
600 Westlake Avenue North
Seattle, Washington
Page 1 of 4

Well Name	Sample Date	DTW	LPH	GW Elev.	TPH-G	TPH-D	TPH-O	B	T	E	X
SMW-3	03/08/95	10.25	0.00	--	<50	400	2,500	<0.5	<0.5	<0.5	<1.0
	06/06/95	10.23	0.00	--	<50	<250	<750	<0.5	<0.5	<0.5	<1.0
	09/07/95	10.89	0.00	--	<50	300	<750	<0.5	<0.5	<0.5	<1.0
	12/08/95	10.36	0.00	--	<50	300	<750	<0.5	<0.5	<0.5	<1.0
	04/01/96	10.07	0.00	--	34,000	4,000	2,300	6,400	42	2,100	3,000
	06/25/96	10.19	0.00	--	<50.0	320	<750	<0.500	<0.500	<0.500	<1.00
	09/27/96	11.12	0.00	--	<50.0	<250	<750	<0.500	<0.500	<0.500	<1.00
	03/28/97	10.19	0.00	--	<50.0	<250	<750	<0.500	<0.500	<0.500	<1.00
	06/30/97 ^{NP}	10.14	0.00	--	<50.0	<250	<750	<0.500	<0.500	<0.500	<1.00
	09/08/97 ^{NP}	10.85	0.00	--	<50.0	<250	<750	<0.500	<0.500	<0.500	<1.00
	12/19/97 ^{NP}	9.67	0.00	--	<50.0	521	<750	<0.500	<0.500	<0.500	<1.00
	3/16/98 ^{NP}	9.28	0.00	--	50.1	<250	<750	<0.500	<0.500	<0.500	<1.00
	SMW-4	03/08/95	8.14	0.00	--	39,000	4,100	6,100	13,000	<250	2,400
06/06/95		8.90	0.00	--	41,000	5,500	<750	9,400	44	2,700	4,900
09/07/95		8.99	0.00	--	--	--	--	--	--	--	--
12/08/95		7.56	0.00	--	40,000	1,600	920	8,100	57	2,600	3,600
04/01/96		8.13	0.00	--	<50	<250	<750	<0.5	<0.5	<0.5	<1.0
06/25/96		8.20	0.00	--	26,100	2,680	630	3,900	81.4	1,710	1,710
09/27/96		8.62	0.00	--	28,600	2,460	<750	6,090	<0.500	2,060	1,730
03/28/97		8.20	0.00	--	--	--	--	--	--	--	--
06/30/97		8.06	0.00	--	--	--	--	--	--	--	--
09/08/97		9.00	0.00	--	--	--	--	--	--	--	--
12/19/97		9.41	0.04	--	--	--	--	--	--	--	--
3/16/98		9.09	0.00	--	--	--	--	--	--	--	--
MW-32A 20.70		03/08/95	11.29	0.00	9.69	21,000	2,300	2,300	5,800	1,700	990
	06/06/95	--	--	--	--	--	--	--	--	--	--
	09/07/95	11.27	--	9.43	20,000	2,600	1,600	4,200	470	730	2,000
	12/08/95	10.61	--	10.06	11,000	1,200	<750	1,600	86	420	910
	04/01/96	10.90	--	9.80	7,900	1,400	1,000	2,200	68	300	490
	06/25/96	10.98	--	9.72	7,600	1,260	<750	1,200	60.4	217	436
	09/27/96	11.37	--	9.61	7,060	1,040	<750	1,670	37.4	264	416
	03/28/97	11.26	--	9.72	--	--	--	--	--	--	--
	06/30/97	10.89	--	--	--	--	--	--	--	--	--
	09/08/97	11.67	0.00	9.31	--	--	--	--	--	--	--
	12/19/97	11.42	0.00	9.28	--	--	--	--	--	--	--
	3/16/98	11.30	0.00	9.40	--	--	--	--	--	--	--
	MW-33 20.75	03/08/95	11.16	0.00	9.73	4,900	1,400	2,000	660	<25	320
06/06/95		--	--	--	--	--	--	--	--	--	--
09/07/95		11.20	0.00	9.55	9,700	1,400	820	660	140	230	620
12/08/95		--	--	--	13,000	1,900	1,800	800	240	280	760
04/01/96		11.00	0.00	9.75	6,200	960	<750	630	33	130	270
06/25/96		11.05	0.00	9.70	2,700	1,030	<750	230	24.6	46.5	61.1
09/27/96		11.13	0.00	9.76	6,160	1,190	<750	1,190	237	86.3	272
03/28/97		11.19	0.00	9.70	--	--	--	--	--	--	--
06/30/97		10.66	0.00	10.23	--	--	--	--	--	--	--
09/08/97		10.48	0.00	10.41	--	--	--	--	--	--	--
12/19/97		--	--	--	--	--	--	--	--	--	--
3/16/98		--	--	--	--	--	--	--	--	--	--
MW-34 21.42		03/08/95	11.62	0.00	10.08	8,200	1,100	480	2,400	1,600	260
	06/06/95	11.73	0.00	9.97	9,100	2,300	<750	4,200	1,000	330	1,200
	09/07/95	11.57	0.00	9.85	18,000	1,800	930	4,800	2,300	560	2,000
	12/08/95	10.92	0.00	10.50	68,000	2,900	1,600	12,000	9,200	1,200	6,600
	04/01/96	11.21	0.00	10.21	10,000	1,900	<750	6,600	680	620	1,200
	06/25/96	11.19	0.00	10.23	13,700	1,160	<750	4,190	1,110	393	1,740
	09/27/96	11.58	0.00	10.12	16,300	1,030	<750	6,010	2,620	541	1,310
	03/28/97	11.47	0.00	10.23	--	--	--	--	--	--	--
	06/30/97 ^{NP}	11.19	0.00	10.51	2,970	311	<750	1,930	15.7	271	631
	09/08/97 ^{NP}	11.74	0.00	9.96	8,390	466	<750	3,920	646	667	1,270
	12/19/97	--	--	--	--	--	--	--	--	--	--
	3/16/98	--	--	--	--	--	--	--	--	--	--

MTCA Method A Cleanup Level
Continued on Page 2.

1,000^a 5 40 30 20

TABLE 1
GROUNDWATER ANALYTICAL RESULTS
Tosco Facility 5353
600 Westlake Avenue North
Seattle, Washington
Page 2 of 4

Well Name	Sample Date	DTW	LPH	GW Elev.	TPH-G	TPH-D	TPH-O	B	T	E	X
MW-35 20.10	03/08/95	10.67	0.00	9.60	2,600	1,200	1,300	400	<25	120	83
	06/06/95	10.67	0.00	9.60	810	1,000	930	62	1.4	27	36
	09/07/95	10.87	0.00	9.43	--	--	--	--	--	--	--
	12/08/95	0.00	--	--	--	--	--	--	--	--	--
	04/01/96	--	--	--	--	--	--	--	--	--	--
	06/25/96	11.11	0.00	8.99	1,620	860	<750	68.2	1.11	26.7	17.6
	09/27/96	10.64	0.00	9.63	959	524	<750	38.8	0.990	10.4	6.18
	03/28/97 ^{NP}	11.28	0.00	8.99	1,370	333	<750	161	2.36	31.9	10.7
	03/28/97	11.28	0.00	8.99	1,800	<250	<750	260	2.62	49.1	8.04
	06/30/97 ^{NP}	10.19	0.00	10.08	1,900	<250	<750	348	<2.50	85.0	7.31
	09/08/97 ^{NP}	10.86	0.00	9.41	4,200	<250	<750	1,460	16.2	231	68.2
	12/19/97	--	--	--	--	--	--	--	--	--	--
	3/16/98 ^{NP}	10.64	0.00	9.46	905	361	<750	410	4.24	<2.50	<5.00
MW-36 17.80	03/08/95	9.07	0.00	8.97	<50	660	1,200	2.6	<0.5	<0.5	<1.0
	06/06/95	7.92	0.00	10.12	<50	<250	<750	1.0	<0.5	<0.5	<1.0
	09/07/95	8.11	0.00	9.69	<50	<250	<750	<0.5	<0.5	<0.5	<1.0
	12/08/95	9.00	0.00	8.80	<50	610	1,200	1.1	<0.5	<0.5	<1.0
	04/01/96	9.00	0.00	8.80	<50	<250	<750	<0.5	<0.5	<0.5	<1.0
	06/25/96	8.97	0.00	--	<50.0	<250	<750	0.580	0.500	<0.500	<1.00
	09/27/96	7.53	0.00	10.51	<50.0	<250	<750	1.18	<0.500	<0.500	<1.00
	03/28/97	9.21	0.00	8.83	<50.0	<250	<750	0.810	<0.500	<0.500	<1.00
	06/30/97 ^{NP}	6.88	0.00	11.16	<50.0	<250	<750	<0.500	<0.500	<0.500	<1.00
	09/08/97 ^{NP}	9.21	0.00	8.83	<50.0	<250	<750	<0.500	<0.500	<0.500	<1.00
	12/19/97 ^{NP}	10.09	0.00	7.71	<50.0	<250	<750	0.606	<0.500	<0.500	<1.00
	3/16/98 ^{NP}	9.29	0.00	8.51	56.6	287	<750	<0.500	<0.500	<0.500	<1.00
	MW-37 21.01	03/08/95	11.94	0.00	9.24	34	3,200	1,400	3,100	2,400	1,200
06/06/95		11.76	0.01	9.43	46	4,600	2,600	3,700	2,400	1,300	7,900
06/06/95		11.76	0.01	9.43	90	--	--	5,100	6,000	2,400	14,000
09/07/95		11.17	0.00	9.84	--	--	--	--	--	--	--
12/08/95		10.22	0.00	10.79	--	--	--	--	--	--	--
04/01/96		10.79	0.02	10.22	--	--	--	--	--	--	--
06/25/96		10.82	0.20	10.19	--	--	--	--	--	--	--
09/27/96		11.47	0.06	9.75	--	--	--	--	--	--	--
03/28/97 ^{NP}		11.14	0.26	10.40	60,100	7,670	789	1,630	2,180	1,660	7,440
03/28/97		11.14	0.25	10.40	297,000	46,100	<8,250	6,670	13,200	4,930	22,900
06/30/97		10.80	0.02	10.23	--	--	--	--	--	--	--
09/08/97		11.41	0.23	9.77	--	--	--	--	--	--	--
12/19/97		11.28	0.02	9.75	--	--	--	--	--	--	--
3/16/98	11.11	0.01	8.90	--	--	--	--	--	--	--	
MW-38 16.52	03/08/95	--	--	--	--	--	--	--	--	--	--
	06/06/95	--	--	--	--	--	--	--	--	--	--
	09/07/95	--	--	--	--	--	--	--	--	--	--
	12/08/95	--	--	--	--	--	--	--	--	--	--
	04/01/96	--	--	--	--	--	--	--	--	--	--
	06/25/96	--	--	--	--	--	--	--	--	--	--
	09/27/96	--	--	--	--	--	--	--	--	--	--
	03/28/97	9.23	0.00	7.60	<50	<250	<750	<0.500	<0.500	<0.500	<1.00
	06/30/97	--	--	--	--	--	--	--	--	--	--
	09/08/97	--	--	--	--	--	--	--	--	--	--
MW-40 20.89	03/08/95	10.98	0.00	10.14	960	2,600	2,600	11	<0.5	11	<1.0
	06/06/95	11.18	0.00	9.94	1,600	2,300	1,600	6.8	4.3	4.1	21
	09/07/95	11.08	0.00	9.81	650	13,000	66,000	11	0.91	0.57	<1.0
	12/08/95	10.30	0.00	10.59	600	1,400	4,800	2.7	3	<0.5	<1.0
	04/01/96	10.56	0.00	10.33	620	3,200	13,900	1.2	<0.5	0.55	<1.0
	06/25/96	10.69	0.00	10.20	600	2,700	8,460	<0.500	9.82	<0.500	<1.00
	09/27/96	10.95	0.00	10.17	602	3,650	9,860	0.604	41.1	0.525	<1.0
	03/28/97	10.92	0.00	10.20	--	--	--	--	--	--	--
	06/30/97	--	--	--	--	--	--	--	--	--	--
	09/08/97	--	--	--	--	--	--	--	--	--	--
	12/19/97 ^{NP}	11.11	0.00	9.78	926	3,260	12,600	<0.500	0.504	0.663	2.44
	3/16/98	--	--	--	--	--	--	--	--	--	--
	MTCA Method A Cleanup Level					1,000 ^d			5	40	30

TABLE 1
GROUNDWATER ANALYTICAL RESULTS
Tosco Facility 5353
600 Westlake Avenue North
Seattle, Washington
Page 3 of 4

Well Name	Sample Date	DTW	LPH	GW Elev.	TPH-G	TPH-D	TPH-O	B	T	E	X
MW-41 27.00	03/08/95	14.72	--	12.48	<50	<250	<750	1.6	<0.5	<0.5	<1.0
	06/06/95	15.02	--	12.18	<50	<250	<750	<0.5	<0.5	<0.5	<1.0
	09/07/95	15.00	--	12.00	<50	<250	<750	<0.5	<0.5	<0.5	<1.0
	12/08/95	16.30	--	10.70	<50	<250	<750	<0.5	<0.5	<0.5	<1.0
	04/01/96	15.02	--	11.98	<50	<250	<750	<0.5	<0.5	<0.5	<1.0
	06/25/96	15.07	--	11.93	<50.0	<250	<750	<0.500	<0.500	<0.500	<1.00
	09/27/96	15.42	0.00	11.78	<50.0	<250	<750	<0.500	<0.500	<0.500	<1.00
	03/28/97	15.27	0.00	11.93	--	--	--	--	--	--	--
	06/30/97	--	--	--	--	--	--	--	--	--	--
	09/08/97	--	--	--	--	--	--	--	--	--	--
	12/19/97	--	--	--	--	--	--	--	--	--	--
	3/16/98	--	--	--	--	--	--	--	--	--	--
	MW-42 20.34	03/08/95	9.45	0.00	10.91	130	670	1,200	790	<25	<25
06/06/95		9.37	0.00	10.89	120	920	1,500	500	<0.56	<0.5	<1.0
09/07/95		9.50	0.00	10.84	3,000	780	1,200	210	4.1	42	230
12/08/95		8.95	0.00	11.39	200	1,300	1,900	380	<2.0	<2.0	<4.0
04/01/96		9.03	0.00	11.31	180	650	<750	280	0.52	<0.5	<1.0
06/25/96		9.07	0.00	11.27	150	720	<750	160	<0.500	<0.500	<1.00
09/27/96		9.12	0.00	11.24	<250	534	<750	228	<2.50	<2.50	<5.00
03/28/97		9.09	0.00	11.27	--	--	--	--	--	--	--
06/30/97		8.92	0.00	11.44	--	--	--	--	--	--	--
09/08/97		9.57	0.00	10.79	--	--	--	--	--	--	--
12/19/97		--	--	--	--	--	--	--	--	--	--
3/16/98		9.53	0.00	10.81	--	--	--	--	--	--	--
MW-43 21.04		03/08/95	11.35	0.00	9.94	<50	650	2,400	25	<0.5	<0.5
	06/06/95	11.45	0.00	9.84	<50	690	1,500	8.2	<0.5	<0.5	<1.0
	09/07/95	11.14	0.00	9.90	<50	<250	850	10	<0.5	<0.5	<1.0
	12/08/95	10.85	0.00	10.19	<50	960	3,100	37	<0.5	<0.5	<1.0
	04/01/96	10.98	0.00	10.06	<50	300	<750	4.5	<0.5	<0.5	<1.0
	06/25/96	11.06	0.00	9.98	<50.0	370	<750	2.57	<0.500	<0.500	<1.00
	09/27/96	11.33	0.00	9.96	<50.0	339	<750	4.40	<0.5	<0.500	<1.00
	03/28/97	11.13	0.00	9.98	<50.0	<250	<750	5.89	0.884	<0.500	2.47
	06/30/97 ^{NP}	7.08	0.00	14.21	<50.0	<250	<750	69.2	<0.500	<0.500	<1.00
	09/08/97 ^{NP}	11.46	0.00	9.83	83	<250	<750	35.5	<0.500	2.10	3.08
	12/19/97	--	--	--	--	--	--	--	--	--	--
	3/16/98 ^{NP}	11.09	0.00	9.95	76.3	408	<750	26.5	<0.500	<0.500	<1.00
	MW-44 18.73	03/08/95	9.44	0.00	10.46	<50	290	940	<0.5	<0.5	<0.5
06/06/95		8.28	0.00	10.62	<50	<250	820	<0.5	<0.5	<0.5	1.6
09/07/95		7.94	0.00	10.79	<50	<250	<750	<0.5	<0.5	<0.5	<1.0
12/08/95		8.09	0.00	10.64	<50	520	2,500	<0.5	<0.5	<0.5	<1.0
04/01/96		7.98	0.00	10.75	<50	<250	<750	<0.5	<0.5	<0.5	<1.0
06/25/96		7.90	0.00	10.83	<50.0	<250	<750	<0.500	<0.500	<0.500	<1.00
09/27/96		8.28	0.00	10.59	<50.0	<250	<750	<0.500	<0.500	<0.500	<1.00
03/28/97		8.07	0.00	10.83	<50.0	<250	<750	<0.500	<0.500	<0.500	<1.00
06/30/97 ^{NP}		7.84	0.00	11.06	<50.0	<250	<750	<0.500	<0.500	<0.500	<1.00
09/08/97 ^{NP}		8.65	0.00	10.25	<50.0	<250	<750	<0.500	<0.500	<0.500	<1.00
12/19/97 ^{NP}		8.51	0.00	10.22	<50.0	<250	<750	<0.500	<0.500	<0.500	<1.00
3/16/98 ^{NP}		8.43	0.00	10.30	60.0	310	<750	<0.500	<0.500	<0.500	<1.00
MW-46 16.91		03/08/95	8.00	0.00	8.91	<50	720	3,500	<0.5	<0.5	<0.5
	06/06/95	7.30	0.00	10.01	<50	<250	1,400	<0.5	<0.5	<0.5	<1.0
	09/07/95	7.80	0.00	8.93	<50	710	5,500	<0.5	<0.5	<0.5	<1.0
	12/08/95	8.32	0.00	8.59	<50	1,400	14,000	<0.5	<0.5	<0.5	<1.0
	04/01/96	7.04	0.00	9.87	<50	<400	2,800	<0.5	<0.5	<0.5	<1.0
	06/25/96	7.85	0.00	9.06	<50.0	440	2,090	<0.500	<0.500	<0.500	<1.00
	09/27/96	7.57	0.00	9.74	<50.0	267	<750	0.518	<0.500	<0.500	<1.00
	03/28/97	7.25	0.00	10.06	<50.0	<250	<750	<0.500	1.25	<0.500	2.06
	06/30/97	7.12	0.00	10.19	--	--	--	--	--	--	--
	09/08/97	8.82	0.00	8.49	--	--	--	--	--	--	--
	12/19/97 ^{NP}	9.40	0.00	7.51	<50.0	<250	<750	<0.500	<0.500	<0.500	<1.00
	3/16/98	--	--	--	--	--	--	--	--	--	--

MTCA Method A Cleanup Level

1,000^d

5

40

30

20

Continued on Page 4.

TABLE 1
GROUNDWATER ANALYTICAL RESULTS
Tosco Facility 5353
600 Westlake Avenue North
Seattle, Washington
Page 4 of 4

Well Name	Sample Date	DTW	LPH	GW Elev.	TPH-G	TPH-D	TPH-O	B	T	E	X
MW-47	03/08/95	10.88	0.00	9.16	<50	330	1,600	5.3	<0.5	<0.5	<1.0
19.83	06/06/95	10.91	0.00	9.13	70	360	780	15	0.59	<0.5	2.3
	09/07/95	10.76	0.00	9.07	<50	260	<750	1.7	<0.5	<0.5	<1.0
	12/08/95	10.40	0.00	9.43	740	580	2,000	<0.5	<0.5	<0.5	<1.0
	04/01/96	10.67	0.00	9.16	<50	<250	<750	4.4	<0.5	<0.5	<1.0
	06/25/96	10.71	0.00	9.12	110	400	<750	14.4	<0.500	<0.500	<1.00
	09/27/96	10.85	0.00	9.19	<50.0	<250	<750	4.34	<0.500	<0.500	<1.00
	03/28/97 ^{NP}	10.92	0.00	9.12	64.5	<250	<750	7.61	<0.500	<0.500	1.57
	03/28/97	10.92	0.00	9.12	177	<250	<750	52.6	<0.500	<0.500	<1.00
	06/30/97	--	--	--	--	--	--	--	--	--	--
	09/08/97	--	--	--	--	--	--	--	--	--	--
	12/19/97	--	--	--	--	--	--	--	--	--	--
	3/16/98	--	--	--	--	--	--	--	--	--	--
MTCA Method A Cleanup Level						1,000 ^a		5	40	30	20

EXPLANATION:

Concentrations in ug/L (ppb).

Wellhead elevations taken from prior consultant's reports.

DTW = Depth to water in feet below top of casing except where noted in prior reports.

LPH = Liquid-phase petroleum hydrocarbon thickness in feet.

GW Elev. = Groundwater elevation relative to DTW data, corrected for LPH where applicable using a specific gravity of 0.85.

TPH-G = Total Petroleum Hydrocarbons as Gasoline by Ecology Method WTPH-G.

TPH-D and TPH-O = Total petroleum hydrocarbons as diesel and as oil (respectively) by Ecology Method WTPH-D (Extended).

B = Benzene; T = Toluene; E = Ethylbenzene; X = Total Xylenes.

BTEX = Aromatic compounds by EPA Method 8020.

^{NP} = Well not purged prior to sampling.

< = Less than the stated laboratory reporting limit.

-- = Not analyzed or no data.

Shaded values equal or exceed MTCA Method A Cleanup Levels.

^a Total Petroleum Hydrocarbons

Data collected before 12/19/97 are taken from prior consultants.



NORTH CREEK ANALYTICAL

Environmental Laboratory Services

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


ERI 1921 Edmonds Drive SE Renton, WA 98055	Project: UNOCAL #5353 Project Number: 31020 Project Manager: John Meyer	Sampled: 3/16/98 Received: 3/18/98 Reported: 3/30/98 09:31
--	---	--

ANALYTICAL REPORT FOR SAMPLES:

Sample Description	Laboratory Sample Number	Sample Matrix	Date Sampled
SMW-3	B803402-01	Water	3/16/98
MW-35	B803402-02	Water	3/16/98
MW-36	B803402-03	Water	3/16/98
MW-43	B803402-04	Water	3/16/98
MW-44	B803402-05	Water	3/16/98

North Creek Analytical, Inc.

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


 Matthew Essig, Project Manager

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



NORTH CREEK ANALYTICAL


Environmental Laboratory Services

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

ERI 1921 Edmonds Drive SE Renton, WA 98055	Project: UNOCAL #5353 Project Number: 31020 Project Manager: John Meyer	Sampled: 3/16/98 Received: 3/18/98 Reported: 3/30/98 09:31
--	---	--

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

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
				<u>B803402-01</u>			<u>Water</u>	
Diesel Range Hydrocarbons	0380549	3/20/98	3/24/98		0.250	ND	mg/l	
Heavy Oil Range Hydrocarbons	"	"	"		0.750	ND	"	
Surrogate: 2-FBP	"	"	"	50.0-150		69.3	%	
				<u>B803402-02</u>			<u>Water</u>	
Diesel Range Hydrocarbons	0380549	3/20/98	3/24/98		0.250	0.361	mg/l	
Heavy Oil Range Hydrocarbons	"	"	"		0.750	ND	"	
Surrogate: 2-FBP	"	"	"	50.0-150		76.8	%	
				<u>B803402-03</u>			<u>Water</u>	
Diesel Range Hydrocarbons	0380549	3/20/98	3/24/98		0.250	0.287	mg/l	1
Heavy Oil Range Hydrocarbons	"	"	"		0.750	ND	"	
Surrogate: 2-FBP	"	"	"	50.0-150		66.6	%	
				<u>B803402-04</u>			<u>Water</u>	
Diesel Range Hydrocarbons	0380549	3/20/98	3/24/98		0.250	0.408	mg/l	1
Heavy Oil Range Hydrocarbons	"	"	"		0.750	ND	"	
Surrogate: 2-FBP	"	"	"	50.0-150		77.8	%	
				<u>B803402-05</u>			<u>Water</u>	
Diesel Range Hydrocarbons	0380549	3/20/98	3/24/98		0.250	0.310	mg/l	1
Heavy Oil Range Hydrocarbons	"	"	"		0.750	ND	"	
Surrogate: 2-FBP	"	"	"	50.0-150		71.5	%	


 Matthew Essig, Project Manager



NORTH CREEK ANALYTICAL

Environmental Laboratory Services

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


ERI 1921 Edmonds Drive SE Renton, WA 98055	Project: UNOCAL #5353 Project Number: 31020 Project Manager: John Meyer	Sampled: 3/16/98 Received: 3/18/98 Reported: 3/30/98 09:31
--	---	--

Gasoline Hydrocarbons (Toluene to Dodecane) and BTEX per WTPH-G and EPA 8020A North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
SMW-3				B803402-01		Water		
Benzene	0380576	3/24/98	3/24/98		0.500	ND	ug/l	
Toluene	"	"	"		0.500	ND	"	
Ethylbenzene	"	"	"		0.500	ND	"	
Xylenes (total)	"	"	"		1.00	ND	"	
Gasoline Range Hydrocarbons	"	"	"		50.0	50.1	"	
Surrogate: 4-BFB (FID)	"	"	"	50.0-150		99.8	%	
Surrogate: 4-BFB (PID)	"	"	"	50.0-150		97.0	"	
MW-35				B803402-02		Water		
Benzene	0380635	3/26/98	3/26/98		2.50	410	ug/l	
Toluene	"	"	"		2.50	4.24	"	
Ethylbenzene	"	"	"		2.50	ND	"	
Xylenes (total)	"	"	"		5.00	ND	"	
Gasoline Range Hydrocarbons	"	"	"		250	905	"	
Surrogate: 4-BFB (FID)	"	"	"	50.0-150		101	%	
Surrogate: 4-BFB (PID)	"	"	"	50.0-150		112	"	
MW-36				B803402-03		Water		
Benzene	0380576	3/24/98	3/24/98		0.500	ND	ug/l	
Toluene	"	"	"		0.500	ND	"	
Ethylbenzene	"	"	"		0.500	ND	"	
Xylenes (total)	"	"	"		1.00	ND	"	
Gasoline Range Hydrocarbons	"	"	"		50.0	56.6	"	
Surrogate: 4-BFB (FID)	"	"	"	50.0-150		103	%	
Surrogate: 4-BFB (PID)	"	"	"	50.0-150		99.6	"	
MW-43				B803402-04		Water		
Benzene	0380576	3/24/98	3/24/98		0.500	26.5	ug/l	
Toluene	"	"	"		0.500	ND	"	
Ethylbenzene	"	"	"		0.500	ND	"	
Xylenes (total)	"	"	"		1.00	ND	"	
Gasoline Range Hydrocarbons	"	"	"		50.0	76.3	"	
Surrogate: 4-BFB (FID)	"	"	"	50.0-150		104	%	
Surrogate: 4-BFB (PID)	"	"	"	50.0-150		99.6	"	
MW-44				B803402-05		Water		
Benzene	0380576	3/24/98	3/24/98		0.500	ND	ug/l	
Toluene	"	"	"		0.500	ND	"	

North Creek Analytical, Inc.

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


 Matthew Essig, Project Manager

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



NORTH CREEK ANALYTICAL


Environmental Laboratory Services

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

ERI 1921 Edmonds Drive SE Renton, WA 98055	Project: UNOCAL #5353 Project Number: 31020 Project Manager: John Meyer	Sampled: 3/16/98 Received: 3/18/98 Reported: 3/30/98 09:31
--	---	--

Gasoline Hydrocarbons (Toluene to Dodecane) and BTEX per WTPH-G and EPA 8020A
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
MW-44 (continued)				B803402-05			Water	
Ethylbenzene	0380576	3/24/98	3/24/98		0.500	ND	ug/l	
Xylenes (total)	"	"	"		1.00	ND	"	
Gasoline Range Hydrocarbons	"	"	"		50.0	60.0	"	
<i>Surrogate: 4-BFB (FID)</i>	"	"	"	50.0-150		95.6	%	
<i>Surrogate: 4-BFB (PID)</i>	"	"	"	50.0-150		93.4	"	


 Matthew Essig, Project Manager



NORTH CREEK ANALYTICAL


Environmental Laboratory Services

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

ERI 1921 Edmonds Drive SE Renton, WA 98055	Project: UNOCAL #5353 Project Number: 31020 Project Manager: John Meyer	Sampled: 3/16/98 Received: 3/18/98 Reported: 3/30/98 09:31
--	---	--

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

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Batch: 0380549			Date Prepared: 3/20/98			Extraction Method: EPA 3520C/600 Series				
Blank			0380549-BLK1							
Diesel Range Hydrocarbons	3/24/98			ND	mg/l	0.250				
Heavy Oil Range Hydrocarbons	"			ND	"	0.750				
Surrogate: 2-FBP	"	0.320		0.238	"	50.0-150	74.4			
LCS			0380549-BS1							
Diesel Range Hydrocarbons	3/24/98	2.00		1.58	mg/l	60.0-140	79.0			
Surrogate: 2-FBP	"	0.320		0.227	"	50.0-150	70.9			
Duplicate			0380549-DUP1 B803380-03							
Diesel Range Hydrocarbons	3/24/98		ND	ND	mg/l					44.0
Surrogate: 2-FBP	"	0.605		0.453	"	50.0-150	74.9			
Duplicate			0380549-DUP2 B803402-01							
Diesel Range Hydrocarbons	3/24/98		ND	ND	mg/l					44.0
Surrogate: 2-FBP	"	0.605		0.403	"	50.0-150	66.6			


 Matthew Essig, Project Manager



NORTH CREEK ANALYTICAL

Environmental Laboratory Services

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

ERI 1921 Edmonds Drive SE Renton, WA 98055	Project: UNOCAL #5353 Project Number: 31020 Project Manager: John Meyer	Sampled: 3/16/98 Received: 3/18/98 Reported: 3/30/98 09:31
--	---	--

Gasoline Hydrocarbons (Toluene to Dodecane) and BTEX per WTPH-G and EPA 8020A/Quality Control
 North Creek Analytical - Portland

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Batch: 0380576			Date Prepared: 3/24/98			Extraction Method: EPA 5030				
Blank										
0380576-BLK1										
Benzene	3/24/98			ND	ug/l	0.500				
Toluene	"			ND	"	0.500				
Ethylbenzene	"			ND	"	0.500				
Xylenes (total)	"			ND	"	1.00				
Gasoline Range Hydrocarbons	"			ND	"	50.0				
Surrogate: 4-BFB (FID)	"	50.0		48.3	"	50.0-150	96.6			
Surrogate: 4-BFB (PID)	"	50.0		47.1	"	50.0-150	94.2			
LCS										
0380576-BS1										
Gasoline Range Hydrocarbons	3/24/98	1250		1220	ug/l	50.0-150	97.6			
Surrogate: 4-BFB (FID)	"	50.0		47.9	"	50.0-150	95.8			
LCS										
0380576-BS2										
Benzene	3/24/98	20.0		18.3	ug/l	67.0-130	91.5			
Toluene	"	20.0		18.3	"	75.0-126	91.5			
Ethylbenzene	"	20.0		18.7	"	76.0-124	93.5			
Xylenes (total)	"	60.0		56.9	"	75.0-126	94.8			
Surrogate: 4-BFB (PID)	"	50.0		49.5	"	50.0-150	99.0			
Duplicate										
0380576-DUP1 B803402-03										
Gasoline Range Hydrocarbons	3/24/98		56.6	63.1	ug/l			50.0	10.9	
Surrogate: 4-BFB (FID)	"	50.0		50.0	"	50.0-150	100			
Duplicate										
0380576-DUP2 B803402-05										
Gasoline Range Hydrocarbons	3/24/98		60.0	56.8	ug/l			50.0	5.48	
Surrogate: 4-BFB (FID)	"	50.0		48.9	"	50.0-150	97.8			
Matrix Spike										
0380576-MS1 B803402-01										
Benzene	3/24/98	20.0	ND	20.0	ug/l	67.0-130	100			
Toluene	"	20.0	ND	20.0	"	75.0-126	100			
Ethylbenzene	"	20.0	ND	20.1	"	76.0-124	101			
Xylenes (total)	"	60.0	ND	60.1	"	75.0-126	100			
Surrogate: 4-BFB (PID)	"	50.0		50.5	"	50.0-150	101			
Matrix Spike Dup										
0380576-MSD1 B803402-01										
Benzene	3/24/98	20.0	ND	19.9	ug/l	67.0-130	99.5	13.0	0.501	
Toluene	"	20.0	ND	19.7	"	75.0-126	98.5	13.0	1.51	

North Creek Analytical, Inc.

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


 Matthew Essig, Project Manager

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



NORTH CREEK ANALYTICAL

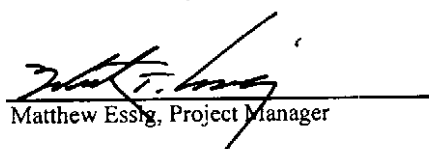
Environmental Laboratory Services

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

ERI 1921 Edmonds Drive SE Renton, WA 98055	Project: UNOCAL #5353 Project Number: 31020 Project Manager: John Meyer	Sampled: 3/16/98 Received: 3/18/98 Reported: 3/30/98 09:31
--	---	--

Gasoline Hydrocarbons (Toluene to Dodecane) and BTEX per WTPH-G and EPA 8020A/Quality Control
North Creek Analytical - Portland

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Matrix Spike Dup (continued)										
	0380576-MSD1	B803402-01								
Ethylbenzene	3/24/98	20.0	ND	20.3	ug/l	76.0-124	101	15.0	0	
Xylenes (total)	"	60.0	ND	61.0	"	75.0-126	102	13.0	1.98	
Surrogate: 4-BFB (PID)	"	50.0		50.0	"	50.0-150	100			
Batch: 0380635										
Blank										
Date Prepared: 3/26/98										
Extraction Method: EPA 5030										
Benzene	3/26/98			ND	ug/l	0.500				
Toluene	"			ND	"	0.500				
Ethylbenzene	"			ND	"	0.500				
Xylenes (total)	"			ND	"	1.00				
Gasoline Range Hydrocarbons	"			ND	"	50.0				
Surrogate: 4-BFB (FID)	"	50.0		47.8	"	50.0-150	95.6			
Surrogate: 4-BFB (PID)	"	50.0		51.8	"	50.0-150	104			
LCS										
0380635-BS1										
Gasoline Range Hydrocarbons	3/26/98	1250		1290	ug/l	50.0-150	103			
Surrogate: 4-BFB (FID)	"	50.0		44.7	"	50.0-150	89.4			
LCS										
0380635-BS2										
Benzene	3/26/98	20.0		22.0	ug/l	67.0-130	110			
Toluene	"	20.0		22.4	"	75.0-126	112			
Ethylbenzene	"	20.0		22.2	"	76.0-124	111			
Xylenes (total)	"	60.0		67.7	"	75.0-126	113			
Surrogate: 4-BFB (PID)	"	50.0		54.4	"	50.0-150	109			


 Matthew Essig, Project Manager



NORTH CREEK ANALYTICAL

Environmental Laboratory Services

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

ERI 1921 Edmonds Drive SE Renton, WA 98055	Project: UNOCAL #5353 Project Number: 31020 Project Manager: John Meyer	Sampled: 3/16/98 Received: 3/18/98 Reported: 3/30/98 09:31
--	---	--

Notes and Definitions

#	Note
---	------

- 1 The hydrocarbon concentration result in this sample is partially due to one or more individual peaks eluting in the diesel/heavy oil range. Quantitation by EPA method 8270 is recommended.
- DET Analyte DETECTED
- ND Analyte NOT DETECTED at or above the reporting limit
- NR Not Reported
- dry Sample results reported on a dry weight basis
- Recov. Recovery
- RPD Relative Percent Difference

North Creek Analytical, Inc.


 Matthew Essig, Project Manager

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

UNOCAL CHAIN OF CUSTODY REPORT

UNOCAL INFORMATION

Facility Number: 5353

Site Address: 600 Westlake Avon

City, State, ZIP: Seattle, WA

Site Release Number: 1989/71553251/500/939
849/1000/255353

Unocal Manager: Tim Johnson

CERT INFO: (check one) Evaluation Remediation
 Detection Demolition Closure Miscellaneous

CONSULTANT INFORMATION

Firm: ERI Project # 21020

Address: 1931 Edmond's Drive
Renton, WA 98055

Phone: (425) 227-0290 Fax: 222-5

Project Manager: Donna Meyer

Sample Collection by: D. Meyer

Chain of Custody Record #:
6803402

Quality Assurance Data Level:
 A B

A: Standard Summary
B: Standard + Chromatograms

Laboratory Turnaround Days:
 1 2 3 4 5 10

SAMPLE IDENTIFICATION	SAMPLING DATE / TIME	MATRIX (W.S.O)	# OF CON-TAINERS
1. <u>SMPW-3</u>	<u>2/16/98</u>	<u>W</u>	<u>3</u>
2. <u>MW-35</u>			
3. <u>MW-36</u>			
4. <u>MW-43</u>			
5. <u>MW-44</u>			
6.			
7.			
8.			
9.			
10.			

TPH-HCID	TPH-Gas	BTEX	EPA 8021 Mod	TPH-Gas + BTEX	TPH-Diesel	TPH-Diesel-Ext. Extended	W/SG Cleanup	Halogen Volatiles	EPA 8021	Pesticides/PCBs or PCBs Only	GC/MS Volatiles	EPA 8260	GC/MS SemiVols	EPA 8270	PAH's	Lead: 8270 SIM or 8310	Total or Dissolved	TCLP or RCRA	Metals (8)
				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>													

NCA SAMPLE NUMBER:
6803402-01
02
03
04
05

Requested by: [Signature] Firm: ERI Date & Time: 3/16/98

Received by: [Signature] Firm: NCA Date & Time: 3/18/98 1330

3. [Signature] Firm: NCA Date & Time: 3/18/98 1330

Final Report Approval

Were all requested results provided? yes no Define

Were results within requested turnaround? yes no "No" on back

Final Approval Signature: _____ Date: _____

DATE: August 11, 1998

TOSCO MARKETING COMPANY QUARTERLY REPORT

Tosco Facility: 5353 Address: 600 Westlake Avenue North, Seattle, Washington
Tosco Environmental Manager: Timothy D. Johnson
Consulting Co./Contact Person: Environmental Resolutions, Inc., John Meyer
ERI Project No.: 03102013
Primary Agency/Regulatory ID No.: Washington State Department of Ecology UST 2788 and 2789

WORK PERFORMED THIS QUARTER(S) [Second - 1998]:

1. Second quarter groundwater monitoring, sampling, and report.

WORK PROPOSED FOR NEXT QUARTER [Third - 1998]:

1. Third quarter groundwater monitoring and sampling.

Current Phase of Project:	<u>Remediation</u>	(Assmnt, Remed., etc.)
Frequency of Sampling:	<u>Quarterly</u>	(Quarterly, etc.)
Frequency of Monitoring:	<u>Quarterly</u>	(Monthly, etc.)
Are Liquid Phase Hydrocarbons Present On-site:	<u>Yes</u>	(Yes/No)
Cumulative LPH Recovered to Date:	<u>46,632 Gallons</u>	(gallons)
LPH Recovered This Quarter:	<u>None</u>	(gallons)
Bulk Soil Removed to Date:	<u>None</u>	(cubic yards)
Bulk Soil Removed This Quarter:	<u>None</u>	(cubic yards)
Water Wells or Surface Waters w/in a 2000'		
Radius & Their Respective Directions:	<u>Lake Union, 400 Feet North</u>	(Distance and Direction)
Current Remediation Techniques:	<u>VES</u>	(SVES, LPH Removal,
Permits for Discharge:	<u>PSAPCA No. 4397</u>	(NPDES, POTW, etc.)
Approximate Depth to Groundwater:	<u>8 to 11 Feet</u>	(Measured Feet)
Groundwater Gradient:	<u>Generally East</u>	(Direction)
	<u>0.003 Vertical Feet per Linear Foot</u>	(Magnitude)

Discussion: On June 26, 1998, Environmental Resolutions, Inc., (ERI) gauged 12 and sampled 7 groundwater monitoring wells. Groundwater samples were collected without purging. Results indicated groundwater present approximately 8 to 11 feet bgs with a gradient generally directed toward the east. Liquid-phase hydrocarbons (LPH) were observed in MW-37 (0.01 ft.) And SMW-4 (trace).

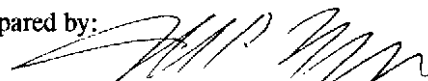
The groundwater samples collected from MW-34 and MW-35 contained concentrations of total petroleum hydrocarbons (TPH-G and TPH-D), benzene, and ethylbenzene exceeding MTCA Method A Cleanup Levels. The sample collected from MW-34 also contained concentrations of toluene and total xylenes exceeding MTCA Method A Cleanup Levels. Groundwater samples collected from MW-43 and MW-47 contained benzene concentrations exceeding the MTCA Method A Cleanup Level. No other analyte concentrations exceeded MTCA Method A Cleanup Levels in any well sampled.

Summary of Unusual Activity: None
Agency Directive Requirements: None
Recommended Activities: Continue quarterly groundwater sampling

ATTACHED:

- Plate P-1 - Groundwater Sample Analyses Map, 6/26/98
- Table 1 - Groundwater Analytical Results
- Laboratory Reports and Chain-of-Custody Documentation

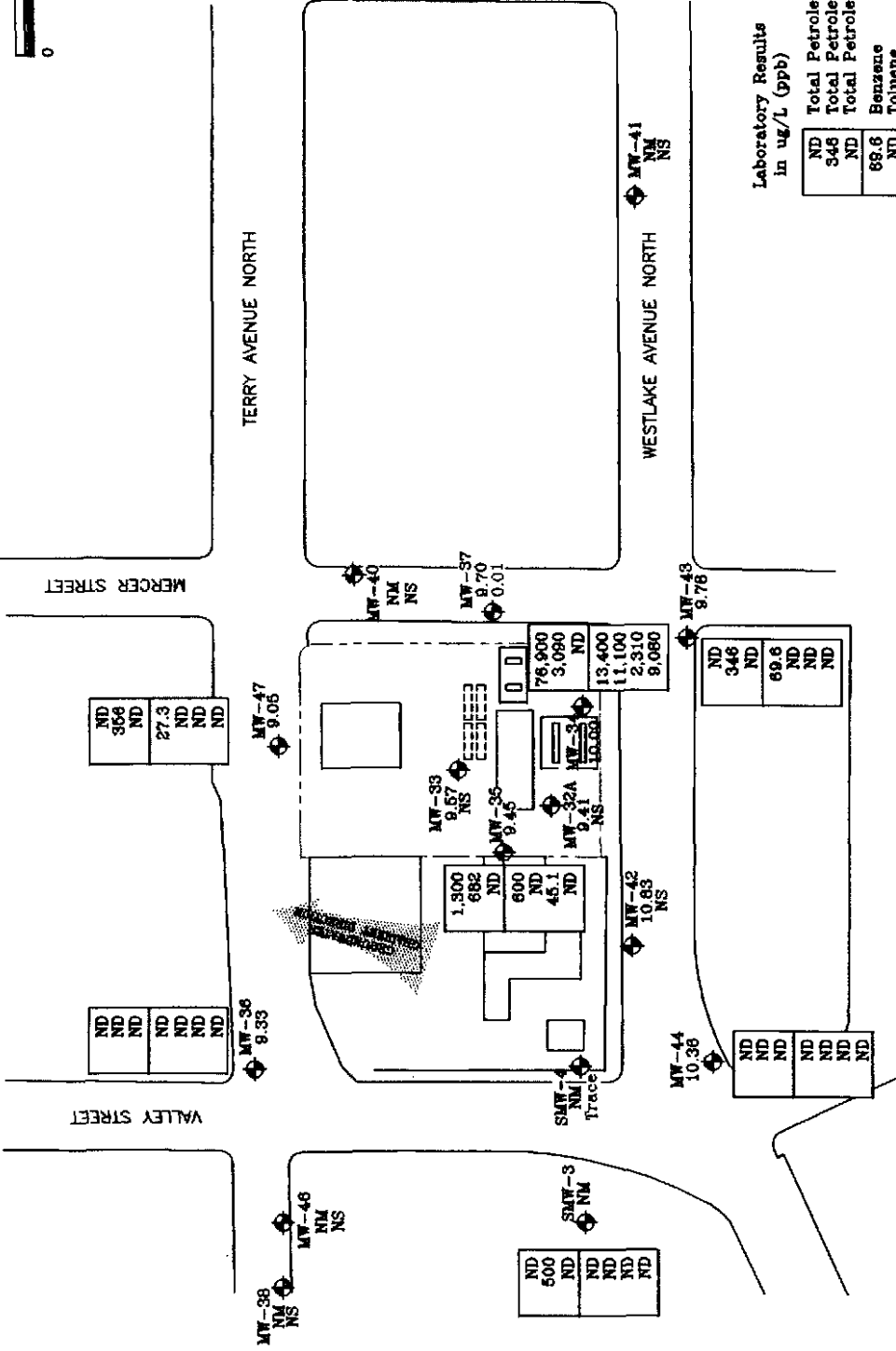
Prepared by:



cc: Washington State Department of Ecology
GeoEngineers

John K. Meyer, R.G.
Environmental Resolutions, Inc.

APPROXIMATE SCALE



Laboratory Results
in ug/L (ppb)

ND	Total Petroleum Hydrocarbons as Gasoline
346	Total Petroleum Hydrocarbons as Diesel
ND	Total Petroleum Hydrocarbons as Oil
69.6	Benzene
ND	Toluene
ND	Ethylbenzene
ND	Total Xylenes

Numbers in Red Exceed
MPCA Method A Cleanup Levels
ND = Not Detected

SOURCE: Modified by
from
Tosco Marketing Company

FN 6363

GROUNDWATER SAMPLE ANALYSES MAP - 6/26/98

TOSCO FACILITY 5353
600 Westlake Avenue North
Seattle, Washington

PROJECT NO.
31020

PLATE
P-1

DATE: 8/11/98

EXPLANATION

◆	MW-37	Groundwater Monitoring Well
9.70		Groundwater Elevation
0.01		Free Product Thickness in Feet
NM		Not Measured
NS		Not Sampled

ERI ENVIRONMENTAL RESOLUTIONS, INC.

TABLE 1
GROUNDWATER ANALYTICAL RESULTS
Tosco Facility 5353
600 Westlake Avenue North
Seattle, Washington
Page 1 of 5

Well Name	Sample Date	DTW	LPH	GW Elev.	TPH-G	TPH-D	TPH-O	B	T	E	X
SMW-3 --	03/08/95	10.25	0.00	--	<50	400	2,500	<0.5	<0.5	<0.5	<1.0
	06/06/95	10.23	0.00	--	<50	<250	<750	<0.5	<0.5	<0.5	<1.0
	09/07/95	10.89	0.00	--	<50	300	<750	<0.5	<0.5	<0.5	<1.0
	12/08/95	10.36	0.00	--	<50	300	<750	<0.5	<0.5	<0.5	<1.0
	04/01/96	10.07	0.00	--	34,000	4,000	2,300	6,400	42	2,100	3,000
	06/25/96	10.19	0.00	--	<50.0	320	<750	<0.500	<0.500	<0.500	<1.00
	09/27/96	11.12	0.00	--	<50.0	<250	<750	<0.500	<0.500	<0.500	<1.00
	03/28/97	10.19	0.00	--	<50.0	<250	<750	<0.500	<0.500	<0.500	<1.00
	06/30/97 ^{NP}	10.14	0.00	--	<50.0	<250	<750	<0.500	<0.500	<0.500	<1.00
	09/08/97 ^{NP}	10.85	0.00	--	<50.0	<250	<750	<0.500	<0.500	<0.500	<1.00
	12/19/97 ^{NP}	9.67	0.00	--	<50.0	521	<750	<0.500	<0.500	<0.500	<1.00
	3/16/98 ^{NP}	9.28	0.00	--	50.1	<250	<750	<0.500	<0.500	<0.500	<1.00
	6/26/98 ^{NP}	8.87	0.00	--	<50.0	500	<750	<0.500	<0.500	<0.500	<1.00
	SMW-4 --	03/08/95	8.14	0.00	--	39,000	4,100	5,100	13,000	<250	2,400
06/06/95		8.90	0.00	--	41,000	6,500	<750	9,400	44	2,700	4,800
09/07/95		8.99	0.00	--	--	--	--	--	--	--	--
12/08/95		7.56	0.00	--	40,000	1,500	920	8,100	67	2,600	3,600
04/01/96		8.13	0.00	--	<50	<250	<750	<0.5	<0.5	<0.5	<1.0
06/25/96		8.20	0.00	--	28,100	2,680	630	3,900	81.4	1,710	1,710
09/27/96		8.62	0.00	--	28,600	2,460	<750	6,090	<0.500	2,060	1,730
03/28/97		8.20	0.00	--	--	--	--	--	--	--	--
06/30/97		8.06	0.00	--	--	--	--	--	--	--	--
09/08/97		9.00	0.00	--	--	--	--	--	--	--	--
12/19/97		9.41	0.04	--	--	--	--	--	--	--	--
3/16/98	9.09	0.00	--	--	--	--	--	--	--	--	
6/26/98	8.76	Trace	--	--	--	--	--	--	--	--	
MW-32A 20.70	03/08/95	11.29	0.00	9.69	21,000	2,300	2,300	5,800	1,700	980	2,900
	06/06/95	--	--	--	--	--	--	--	--	--	--
	09/07/95	11.27	--	9.43	20,000	2,500	1,600	4,200	470	730	2,000
	12/08/95	10.61	--	10.06	11,000	1,200	<750	1,600	86	420	910
	04/01/96	10.90	--	9.80	7,900	1,400	1,000	2,200	68	300	490
	06/25/96	10.98	--	9.72	7,500	1,250	<750	1,200	66.4	217	436
	09/27/96	11.37	--	9.61	7,060	1,040	<750	1,670	37.4	264	416
	03/28/97	11.26	--	9.72	--	--	--	--	--	--	--
	06/30/97	10.89	--	--	--	--	--	--	--	--	--
	09/08/97	11.67	0.00	9.31	--	--	--	--	--	--	--
	12/19/97	11.42	0.00	9.28	--	--	--	--	--	--	--
3/16/98	11.30	0.00	9.40	--	--	--	--	--	--	--	
6/26/98	11.29	0.00	9.41	--	--	--	--	--	--	--	
MW-33 20.75	03/08/95	11.16	0.00	9.73	4,900	1,400	2,000	660	<25	320	420
	06/06/95	--	--	--	--	--	--	--	--	--	--
	09/07/95	11.20	0.00	9.55	9,700	1,400	820	650	140	230	620
	12/08/95	--	--	--	13,000	1,900	1,800	800	240	280	760
	04/01/96	11.00	0.00	9.75	5,200	960	<750	680	33	130	270
	06/25/96	11.05	0.00	9.70	2,700	1,030	<750	230	24.6	48.5	61.1
	09/27/96	11.13	0.00	9.76	6,150	1,190	<750	1,190	237	86.3	272
	03/28/97	11.19	0.00	9.70	--	--	--	--	--	--	--
	06/30/97	10.66	0.00	10.23	--	--	--	--	--	--	--
	09/08/97	10.48	0.00	10.41	--	--	--	--	--	--	--
	12/19/97	--	--	--	--	--	--	--	--	--	--
3/16/98	--	--	--	--	--	--	--	--	--	--	
6/26/98	11.18	0.00	9.57	--	--	--	--	--	--	--	

MTCA Method A Cleanup Level

1,000^a

5

40

30

20

Continued on Page 2.

TABLE 1
GROUNDWATER ANALYTICAL RESULTS
Tosco Facility 5353
600 Westlake Avenue North
Seattle, Washington
Page 2 of 5

Well Name	Sample Date	DTW	LPH	GW Elev.	TPH-G	TPH-D	TPH-O	B	T	E	X
MW-34 21.42	03/08/95	11.62	0.00	10.08	8,200	1,100	480	2,400	1,500	250	1,300
	06/06/95	11.73	0.00	9.97	9,100	2,300	<750	4,200	1,000	330	1,200
	09/07/95	11.57	0.00	9.85	18,000	1,800	930	4,800	2,300	560	2,000
	12/08/95	10.92	0.00	10.50	68,000	2,900	1,600	12,000	9,200	1,200	5,600
	04/01/96	11.21	0.00	10.21	10,000	1,900	<750	5,500	580	520	1,200
	06/25/96	11.19	0.00	10.23	13,700	1,160	<750	4,190	1,110	393	1,740
	09/27/96	11.58	0.00	10.12	16,300	1,030	<750	5,010	2,520	541	1,310
	03/28/97	11.47	0.00	10.23	--	--	--	--	--	--	--
	06/30/97 ^{NP}	11.19	0.00	10.51	2,970	311	<750	1,930	15.7	271	531
	09/08/97 ^{NP}	11.74	0.00	9.96	8,390	485	<750	3,920	645	567	1,270
	12/19/97	--	--	--	--	--	--	--	--	--	--
	3/16/98	--	--	--	--	--	--	--	--	--	--
	6/26/98 ^{NP}	11.42	0.00	10.00	76,900	3,090	<750	13,400	11,100	2,310	9,080
	MW-35 20.10	03/08/95	10.67	0.00	9.60	2,600	1,200	1,300	400	<25	120
06/06/95		10.67	0.00	9.60	810	1,000	930	62	1.4	27	36
09/07/95		10.87	0.00	9.43	--	--	--	--	--	--	--
12/08/95		0.00	--	--	--	--	--	--	--	--	--
04/01/96		--	--	--	--	--	--	--	--	--	--
06/25/96		11.11	0.00	8.99	1,620	860	<750	68.2	1.11	26.7	17.6
09/27/96		10.64	0.00	9.63	959	624	<750	38.8	0.990	10.4	6.18
03/28/97 ^{NP}		11.28	0.00	8.99	1,370	333	<750	161	2.36	31.9	10.7
03/28/97		11.28	0.00	8.99	1,800	<250	<750	260	2.62	49.1	8.04
06/30/97 ^{NP}		10.19	0.00	10.08	1,900	<250	<750	348	<2.50	85.0	7.31
09/08/97 ^{NP}		10.86	0.00	9.41	4,200	<250	<750	1,460	16.2	231	68.2
12/19/97		--	--	--	--	--	--	--	--	--	--
3/16/98 ^{NP}		10.64	0.00	9.46	906	361	<750	410	4.24	<2.50	<5.00
6/26/98 ^{NP}		10.65	0.00	9.45	1,300	682	<750	600	<10.0	45.1	<20.0
MW-36 17.80	03/08/95	9.07	0.00	8.97	<50	560	1,200	2.6	<0.5	<0.5	<1.0
	06/06/95	7.92	0.00	10.12	<50	<250	<750	1.0	<0.5	<0.5	<1.0
	09/07/95	8.11	0.00	9.69	<50	<250	<750	<0.5	<0.5	<0.5	<1.0
	12/08/95	9.00	0.00	8.80	<50	610	1,200	1.1	<0.5	<0.5	<1.0
	04/01/96	9.00	0.00	8.80	<50	<250	<750	<0.5	<0.5	<0.5	<1.0
	06/25/96	8.97	0.00	--	<50.0	<250	<750	0.580	0.500	<0.500	<1.00
	09/27/96	7.53	0.00	10.51	<50.0	<250	<750	1.18	<0.500	<0.500	<1.00
	03/28/97	9.21	0.00	8.83	<50.0	<250	<750	0.810	<0.500	<0.500	<1.00
	06/30/97 ^{NP}	6.88	0.00	11.16	<50.0	<250	<750	<0.500	<0.500	<0.500	<1.00
	09/08/97 ^{NP}	9.21	0.00	8.83	<50.0	<250	<750	<0.500	<0.500	<0.500	<1.00
	12/19/97 ^{NP}	10.09	0.00	7.71	<50.0	<250	<750	0.606	<0.500	<0.500	<1.00
	3/16/98 ^{NP}	9.29	0.00	8.51	56.6	287	<750	<0.500	<0.500	<0.500	<1.00
	6/26/98 ^{NP}	8.47	0.00	9.33	<50.0	<250	<750	<0.500	<0.500	<0.500	<1.00
	MW-37 21.01	03/08/95	11.94	0.00	9.24	34	3,200	1,400	3,100	2,400	1,200
06/06/95		11.76	0.01	9.43	45	4,600	2,600	3,700	2,400	1,300	7,800
06/06/95		11.76	0.01	9.43	90	--	--	5,100	5,000	2,400	14,000
09/07/95		11.17	0.00	9.84	--	--	--	--	--	--	--
12/08/95		10.22	0.00	10.79	--	--	--	--	--	--	--
04/01/96		10.79	0.02	10.22	--	--	--	--	--	--	--
06/25/96		10.82	0.20	10.19	--	--	--	--	--	--	--
09/27/96		11.47	0.06	9.75	--	--	--	--	--	--	--
03/28/97 ^{NP}		11.14	0.25	10.40	60,100	7,670	769	1,530	2,180	1,660	7,440
03/28/97		11.14	0.25	10.40	297,900	45,100	<8,250	6,670	13,200	4,930	22,900
06/30/97		10.80	0.02	10.23	--	--	--	--	--	--	--
09/08/97		11.41	0.23	9.77	--	--	--	--	--	--	--
12/19/97		11.28	0.02	9.75	--	--	--	--	--	--	--
3/16/98		11.11	0.01	8.90	--	--	--	--	--	--	--
6/26/98	11.32	0.01	9.70	--	--	--	--	--	--	--	
MTCA Method A Cleanup Level					1,000 ^a			5	40	30	20

Continued on Page 3.

TABLE 1
GROUNDWATER ANALYTICAL RESULTS
Tosco Facility 5353
600 Westlake Avenue North
Seattle, Washington
Page 3 of 5

Well Name	Sample Date	DTW	LPH	GW Elev.	TPH-G	TPH-D	TPH-O	B	T	E	X
MW-38 16.52	03/08/95	--	--	--	--	--	--	--	--	--	--
	06/06/95	--	--	--	--	--	--	--	--	--	--
	09/07/95	--	--	--	--	--	--	--	--	--	--
	12/08/95	--	--	--	--	--	--	--	--	--	--
	04/01/96	--	--	--	--	--	--	--	--	--	--
	06/25/96	--	--	--	--	--	--	--	--	--	--
	09/27/96	--	--	--	--	--	--	--	--	--	--
	03/28/97	9.23	0.00	7.60	<50	<250	<750	<0.500	<0.500	<0.500	<1.00
	06/30/97	--	--	--	--	--	--	--	--	--	--
	09/08/97	--	--	--	--	--	--	--	--	--	--
	12/19/97	--	--	--	--	--	--	--	--	--	--
	3/16/98	--	--	--	--	--	--	--	--	--	--
	6/26/98	--	--	--	--	--	--	--	--	--	--
MW-40 20.89	03/08/95	10.98	0.00	10.14	960	2,600	2,600	11	<0.5	11	<1.0
	06/06/95	11.18	0.00	9.94	1,600	2,300	1,600	6.8	4.3	4.1	21
	09/07/95	11.08	0.00	9.81	660	13,000	66,000	11	0.91	0.57	<1.0
	12/08/95	10.30	0.00	10.59	600	1,400	4,800	2.7	3	<0.5	<1.0
	04/01/96	10.56	0.00	10.33	620	3,200	13,000	1.2	<0.5	0.56	<1.0
	06/25/96	10.69	0.00	10.20	600	2,700	8,480	<0.500	9.82	<0.500	<1.00
	09/27/96	10.95	0.00	10.17	602	3,550	9,860	0.604	41.1	0.525	<1.0
	03/28/97	10.92	0.00	10.20	--	--	--	--	--	--	--
	06/30/97	--	--	--	--	--	--	--	--	--	--
	09/08/97	--	--	--	--	--	--	--	--	--	--
	12/19/97 ^{NP}	11.11	0.00	9.78	325	3,260	12,600	<0.500	0.504	0.663	2.44
3/16/98	--	--	--	--	--	--	--	--	--	--	
6/26/98	--	--	--	--	--	--	--	--	--	--	
MW-41 27.00	03/08/95	14.72	--	12.48	<50	<250	<750	1.6	<0.5	<0.5	<1.0
	06/06/95	15.02	--	12.18	<50	<250	<750	<0.5	<0.5	<0.5	<1.0
	09/07/95	15.00	--	12.00	<50	<250	<750	<0.5	<0.5	<0.5	<1.0
	12/08/95	16.30	--	10.70	<50	<250	<750	<0.5	<0.5	<0.5	<1.0
	04/01/96	15.02	--	11.98	<50	<250	<750	<0.5	<0.5	<0.5	<1.0
	06/25/96	15.07	--	11.93	<50.0	<250	<750	<0.500	<0.500	<0.500	<1.00
	09/27/96	15.42	0.00	11.78	<50.0	<250	<750	<0.500	<0.500	<0.500	<1.00
	03/28/97	15.27	0.00	11.93	--	--	--	--	--	--	--
	06/30/97	--	--	--	--	--	--	--	--	--	--
	09/08/97	--	--	--	--	--	--	--	--	--	--
	12/19/97	--	--	--	--	--	--	--	--	--	--
	3/16/98	--	--	--	--	--	--	--	--	--	--
	6/26/98	--	--	--	--	--	--	--	--	--	--
MW-42 20.34	03/08/95	9.45	0.00	10.91	130	670	1,200	790	<25	<25	<50
	06/06/95	9.37	0.00	10.89	120	920	1,600	600	<0.56	<0.5	<1.0
	09/07/95	9.50	0.00	10.84	3,000	780	1,200	210	4.1	42	230
	12/08/95	8.95	0.00	11.39	200	1,300	1,900	380	<2.0	<2.0	<4.0
	04/01/96	9.03	0.00	11.31	180	650	<750	280	0.52	<0.5	<1.0
	06/25/96	9.07	0.00	11.27	150	720	<750	160	<0.500	<0.500	<1.00
	09/27/96	9.12	0.00	11.24	<250	534	<750	228	<2.50	<2.50	<5.00
	03/28/97	9.09	0.00	11.27	--	--	--	--	--	--	--
	06/30/97	8.92	0.00	11.44	--	--	--	--	--	--	--
	09/08/97	9.57	0.00	10.79	--	--	--	--	--	--	--
	12/19/97	--	--	--	--	--	--	--	--	--	--
	3/16/98	9.53	0.00	10.81	--	--	--	--	--	--	--
	6/26/98	9.51	0.00	10.83	--	--	--	--	--	--	--

MTCA Method A Cleanup Level

1,000^a

5

40

30

20

Continued on Page 4.

TABLE 1
GROUNDWATER ANALYTICAL RESULTS
Tosco Facility 5353
600 Westlake Avenue North
Seattle, Washington
Page 4 of 5

Well Name	Sample Date	DTW	LPH	GW Elev.	TPH-G	TPH-D	TPH-O	B	T	E	X
MW-43 21.04	03/08/95	11.35	0.00	9.94	<50	650	2,400	25	<0.5	<0.5	<1.0
	06/06/95	11.45	0.00	9.84	<50	690	1,500	8.2	<0.5	<0.5	<1.0
	09/07/95	11.14	0.00	9.90	<50	<250	850	10	<0.5	<0.5	<1.0
	12/08/95	10.85	0.00	10.19	<50	980	3,100	37	<0.5	<0.5	<1.0
	04/01/96	10.98	0.00	10.06	<50	300	<750	4.5	<0.5	<0.5	<1.0
	06/25/96	11.06	0.00	9.98	<50.0	370	<750	2.57	<0.500	<0.500	<1.00
	09/27/96	11.33	0.00	9.96	<50.0	339	<750	4.40	<0.5	<0.500	<1.00
	03/28/97	11.13	0.00	9.98	<50.0	<250	<750	6.89	0.884	<0.500	2.47
	06/30/97 ^{NP}	7.08	0.00	14.21	<50.0	<250	<750	69.2	<0.500	<0.500	<1.00
	09/08/97 ^{NP}	11.46	0.00	9.83	83	<250	<750	36.6	<0.500	2.10	3.08
	12/19/97	--	--	--	--	--	--	--	--	--	--
	3/16/98 ^{NP}	11.09	0.00	9.95	76.3	408	<750	26.6	<0.500	<0.500	<1.00
	6/26/98 ^{NP}	11.26	0.00	9.78	<50.0	346	<750	69.6	<0.500	<0.500	<1.00
	MW-44 18.73	03/08/95	9.44	0.00	10.46	<50	290	940	<0.5	<0.5	<0.5
06/06/95		8.28	0.00	10.62	<50	<250	820	<0.5	<0.5	<0.5	1.6
09/07/95		7.94	0.00	10.79	<50	<250	<750	<0.5	<0.5	<0.5	<1.0
12/08/95		8.09	0.00	10.64	<50	620	2,600	<0.5	<0.5	<0.5	<1.0
04/01/96		7.98	0.00	10.75	<50	<250	<750	<0.5	<0.5	<0.5	<1.0
06/25/96		7.90	0.00	10.83	<50.0	<250	<750	<0.500	<0.500	<0.500	<1.00
09/27/96		8.28	0.00	10.59	<50.0	<250	<750	<0.500	<0.500	<0.500	<1.00
03/28/97		8.07	0.00	10.83	<50.0	<250	<750	<0.500	<0.500	<0.500	<1.00
06/30/97 ^{NP}		7.84	0.00	11.06	<50.0	<250	<750	<0.500	<0.500	<0.500	<1.00
09/08/97 ^{NP}		8.65	0.00	10.25	<50.0	<250	<750	<0.500	<0.500	<0.500	<1.00
12/19/97 ^{NP}		8.51	0.00	10.22	<50.0	<250	<750	<0.500	<0.500	<0.500	<1.00
3/16/98 ^{NP}		8.43	0.00	10.30	60.0	310	<750	<0.500	<0.500	<0.500	<1.00
6/26/98 ^{NP}		8.37	0.00	10.36	<50.0	<250	<750	<0.500	<0.500	<0.500	<1.00
MW-46 16.91		03/08/95	8.00	0.00	8.91	<50	720	3,600	<0.5	<0.5	<0.5
	06/06/95	7.30	0.00	10.01	<50	<250	1,400	<0.5	<0.5	<0.5	<1.0
	09/07/95	7.80	0.00	8.93	<50	710	5,600	<0.5	<0.5	<0.5	<1.0
	12/08/95	8.32	0.00	8.59	<50	1,400	14,000	<0.5	<0.5	<0.5	<1.0
	04/01/96	7.04	0.00	9.87	<50	<400	2,800	<0.5	<0.5	<0.5	<1.0
	06/25/96	7.85	0.00	9.06	<50.0	440	2,090	<0.500	<0.500	<0.500	<1.00
	09/27/96	7.57	0.00	9.74	<50.0	267	<750	0.518	<0.500	<0.500	<1.00
	03/28/97	7.25	0.00	10.06	<50.0	<250	<750	<0.500	1.25	<0.500	2.06
	06/30/97	7.12	0.00	10.19	--	--	--	--	--	--	--
	09/08/97	8.82	0.00	8.49	--	--	--	--	--	--	--
	12/19/97 ^{NP}	9.40	0.00	7.51	<50.0	<250	<750	<0.500	<0.500	<0.500	<1.00
	3/16/98	--	--	--	--	--	--	--	--	--	--
	6/26/98	--	--	--	--	--	--	--	--	--	--
	MW-47 19.83	03/08/95	10.88	0.00	9.16	<50	330	1,600	5.3	<0.5	<0.5
06/06/95		10.91	0.00	9.13	70	380	780	16	0.59	<0.5	2.3
09/07/95		10.76	0.00	9.07	<50	260	<750	1.7	<0.5	<0.5	<1.0
12/08/95		10.40	0.00	9.43	740	680	2,000	<0.5	<0.5	<0.5	<1.0
04/01/96		10.67	0.00	9.16	<50	<250	<750	4.4	<0.5	<0.5	<1.0
06/25/96		10.71	0.00	9.12	110	400	<750	14.4	<0.500	<0.500	<1.00
09/27/96		10.85	0.00	9.19	<50.0	<250	<750	4.34	<0.500	<0.500	<1.00
03/28/97 ^{NP}		10.92	0.00	9.12	64.5	<250	<750	7.61	<0.500	<0.500	1.57
03/28/97		10.92	0.00	9.12	177	<250	<750	62.6	<0.500	<0.500	<1.00
06/30/97		--	--	--	--	--	--	--	--	--	--
09/08/97		--	--	--	--	--	--	--	--	--	--
12/19/97		--	--	--	--	--	--	--	--	--	--
3/16/98		--	--	--	--	--	--	--	--	--	--
6/26/98 ^{NP}		10.78	0.00	9.05	<50.0	356	<750	27.3	<0.500	<0.500	<1.00
MTCA Method A Cleanup Level					1,000 ^a			5	40	30	20

Continued on Page 5.

TABLE 1
GROUNDWATER ANALYTICAL RESULTS
Tosco Facility 5353
600 Westlake Avenue North
Seattle, Washington
Page 5 of 5

Well Name	Sample Date	DTW	LPH	GW Elev.	TPH-G	TPH-D	TPH-O	B	T	E	X
-----------	-------------	-----	-----	----------	-------	-------	-------	---	---	---	---

EXPLANATION:

Concentrations in ug/L (ppb).

Wellhead elevations taken from prior consultant's reports.

DTW = Depth to water in feet below top of casing except where noted in prior reports.

LPH = Liquid-phase petroleum hydrocarbon thickness in feet.

GW Elev. = Groundwater elevation relative to DTW data; corrected for LPH where applicable using a specific gravity of 0.85.

TPH-G = Total Petroleum Hydrocarbons as Gasoline by Ecology Method WTPH-G.

TPH-D and TPH-O = Total petroleum hydrocarbons as diesel and as oil (respectively) by Ecology Method WTPH-D (Extended).

B = Benzene; T = Toluene; E = Ethylbenzene; X = Total Xylenes.

BTEX = Aromatic compounds by EPA Method 8020.

NP = Well not purged prior to sampling.

< = Less than the stated laboratory reporting limit.

-- = Not analyzed or no data.

Shaded values equal or exceed MTCA Method A Cleanup Levels.

¹ Total Petroleum Hydrocarbons

Data collected before 12/19/97 are taken from prior consultants.



NORTH CREEK ANALYTICAL

Environmental Laboratory Services

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

ERI 1921 Edmonds Drive SE Renton, WA 98055	Project: TOSCO #5353 Project Number: 31020 Project Manager: John Meyer	Sampled: 6/26/98 Received: 6/26/98 Reported: 7/14/98 14:55
--	--	--

ANALYTICAL REPORT FOR SAMPLES:

Sample Description	Laboratory Sample Number	Sample Matrix	Date Sampled
MW-3	B806589-01	Water	6/26/98
MW-34	B806589-02	Water	6/26/98
MW-35	B806589-03	Water	6/26/98
MW-36	B806589-04	Water	6/26/98
MW-43	B806589-05	Water	6/26/98
MW-44	B806589-06	Water	6/26/98
MW-47	B806589-07	Water	6/26/98

North Creek Analytical, Inc.

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


 Matthew Essig, Project Manager

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



NORTH CREEK ANALYTICAL

Environmental Laboratory Services

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

ERI 1921 Edmonds Drive SE Renton, WA 98055	Project: TOSCO #5353 Project Number: 31020 Project Manager: John Meyer	Sampled: 6/26/98 Received: 6/26/98 Reported: 7/14/98 14:55
--	--	--

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

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
				<u>B806589-01</u>				
							<u>Water</u>	
Gasoline Range Hydrocarbons	0780029	7/6/98	7/7/98		50.0	ND	ug/l	
Benzene	"	"	"		0.500	ND	"	
Toluene	"	"	"		0.500	ND	"	
Ethylbenzene	"	"	"		0.500	ND	"	
Xylenes (total)	"	"	"		1.00	ND	"	
Surrogate: 4-BFB (FID)	"	"	"	50.0-150		112	%	
Surrogate: 4-BFB (PID)	"	"	"	50.0-150		102	"	
				<u>B806589-02</u>				
							<u>Water</u>	
Gasoline Range Hydrocarbons	0780029	7/6/98	7/12/98		25000	76900	ug/l	
Benzene	"	"	"		250	13400	"	
Toluene	"	"	"		250	11100	"	
Ethylbenzene	"	"	"		250	2310	"	
Xylenes (total)	"	"	"		500	9080	"	
Surrogate: 4-BFB (FID)	"	"	"	50.0-150		110	%	
Surrogate: 4-BFB (PID)	"	"	"	50.0-150		103	"	
				<u>B806589-03</u>				
							<u>Water</u>	
Gasoline Range Hydrocarbons	0780029	7/6/98	7/12/98		1000	1300	ug/l	
Benzene	"	"	"		10.0	600	"	
Toluene	"	"	"		10.0	ND	"	
Ethylbenzene	"	"	"		10.0	45.1	"	
Xylenes (total)	"	"	"		20.0	ND	"	
Surrogate: 4-BFB (FID)	"	"	"	50.0-150		111	%	
Surrogate: 4-BFB (PID)	"	"	"	50.0-150		113	"	
				<u>B806589-04</u>				
							<u>Water</u>	
Gasoline Range Hydrocarbons	0780029	7/6/98	7/12/98		50.0	ND	ug/l	
Benzene	"	"	"		0.500	ND	"	
Toluene	"	"	"		0.500	ND	"	
Ethylbenzene	"	"	"		0.500	ND	"	
Xylenes (total)	"	"	"		1.00	ND	"	
Surrogate: 4-BFB (FID)	"	"	"	50.0-150		108	%	
Surrogate: 4-BFB (PID)	"	"	"	50.0-150		102	"	
				<u>B806589-05</u>				
							<u>Water</u>	
Gasoline Range Hydrocarbons	0780029	7/6/98	7/7/98		50.0	ND	ug/l	
Benzene	"	"	"		0.500	69.6	"	

North Creek Analytical, Inc.

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


 Matthew Essig, Project Manager

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



NORTH CREEK ANALYTICAL

Environmental Laboratory Services

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

ERI 1921 Edmonds Drive SE Renton, WA 98055	Project: TOSCO #5353 Project Number: 31020 Project Manager: John Meyer	Sampled: 6/26/98 Received: 6/26/98 Reported: 7/14/98 14:55
--	--	--

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

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
MW-43 (continued)			B806589-05			Water		
Toluene	0780029	7/6/98	7/7/98		0.500	ND	ug/l	
Ethylbenzene	"	"	"		0.500	ND	"	
Xylenes (total)	"	"	"		1.00	ND	"	
Surrogate: 4-BFB (FID)	"	"	"	50.0-150		109	%	
Surrogate: 4-BFB (PID)	"	"	"	50.0-150		102	"	
MW-44			B806589-06			Water		
Gasoline Range Hydrocarbons	0780029	7/6/98	7/7/98		50.0	ND	ug/l	
Benzene	"	"	"		0.500	ND	"	
Toluene	"	"	"		0.500	ND	"	
Ethylbenzene	"	"	"		0.500	ND	"	
Xylenes (total)	"	"	"		1.00	ND	"	
Surrogate: 4-BFB (FID)	"	"	"	50.0-150		107	%	
Surrogate: 4-BFB (PID)	"	"	"	50.0-150		105	"	
MW-47			B806589-07			Water		
Gasoline Range Hydrocarbons	0780029	7/6/98	7/7/98		50.0	ND	ug/l	
Benzene	"	"	"		0.500	27.3	"	
Toluene	"	"	"		0.500	ND	"	
Ethylbenzene	"	"	"		0.500	ND	"	
Xylenes (total)	"	"	"		1.00	ND	"	
Surrogate: 4-BFB (FID)	"	"	"	50.0-150		110	%	
Surrogate: 4-BFB (PID)	"	"	"	50.0-150		105	"	


 Matthew Essig, Project Manager



NORTH CREEK ANALYTICAL

Environmental Laboratory Services

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

ERI 1921 Edmonds Drive SE Renton, WA 98055	Project: TOSCO #5353 Project Number: 31020 Project Manager: John Meyer	Sampled: 6/26/98 Received: 6/26/98 Reported: 7/14/98 14:55
--	--	--

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

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
								Water
MW-3								
				B806589-01				
Diesel Range Hydrocarbons	0780062	7/2/98	7/6/98		0.250	0.500	mg/l	
Heavy Oil Range Hydrocarbons	"	"	"		0.750	ND	"	
Surrogate: 2-FBP	"	"	"	50.0-150		77.2	%	
								Water
MW-34								
				B806589-02				
Diesel Range Hydrocarbons	0780062	7/2/98	7/6/98		0.250	3.09	mg/l	
Heavy Oil Range Hydrocarbons	"	"	"		0.750	ND	"	
Surrogate: Octacosane	"	"	"	50.0-150		103	%	1
								Water
MW-35								
				B806589-03				
Diesel Range Hydrocarbons	0780062	7/2/98	7/6/98		0.250	0.682	mg/l	
Heavy Oil Range Hydrocarbons	"	"	"		0.750	ND	"	
Surrogate: 2-FBP	"	"	"	50.0-150		87.1	%	
								Water
MW-36								
				B806589-04				
Diesel Range Hydrocarbons	0780062	7/2/98	7/6/98		0.250	ND	mg/l	
Heavy Oil Range Hydrocarbons	"	"	"		0.750	ND	"	
Surrogate: 2-FBP	"	"	"	50.0-150		85.5	%	
								Water
MW-43								
				B806589-05				
Diesel Range Hydrocarbons	0780062	7/2/98	7/6/98		0.250	0.346	mg/l	
Heavy Oil Range Hydrocarbons	"	"	"		0.750	ND	"	
Surrogate: 2-FBP	"	"	"	50.0-150		75.2	%	
								Water
MW-44								
				B806589-06				
Diesel Range Hydrocarbons	0780062	7/2/98	7/6/98		0.250	ND	mg/l	
Heavy Oil Range Hydrocarbons	"	"	"		0.750	ND	"	
Surrogate: 2-FBP	"	"	"	50.0-150		68.8	%	
								Water
MW-47								
				B806589-07				
Diesel Range Hydrocarbons	0780062	7/2/98	7/6/98		0.250	0.356	mg/l	
Heavy Oil Range Hydrocarbons	"	"	"		0.750	ND	"	
Surrogate: 2-FBP	"	"	"	50.0-150		86.2	%	


 Matthew Essig, Project Manager



NORTH CREEK ANALYTICAL

Environmental Laboratory Services

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

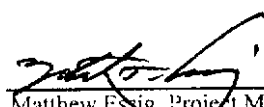
ERI 1921 Edmonds Drive SE Renton, WA 98055	Project: TOSCO #5353 Project Number: 31020 Project Manager: John Mcyer	Sampled: 6/26/98 Received: 6/26/98 Reported: 7/14/98 14:55
--	--	--

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

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Batch: 0780029			Date Prepared: 7/6/98			Extraction Method: EPA 5030B (P/T)				
Blank			0780029-BLK1							
Gasoline Range Hydrocarbons	7/6/98			ND	ug/l	50.0				
Benzene	"			ND	"	0.500				
Toluene	"			ND	"	0.500				
Ethylbenzene	"			ND	"	0.500				
Xylenes (total)	"			ND	"	1.00				
Surrogate: 4-BFB (FID)	"	48.0		54.2	"	50.0-150	113			
Surrogate: 4-BFB (PID)	"	48.0		49.8	"	50.0-150	104			
LCS			0780029-BS1							
Gasoline Range Hydrocarbons	7/6/98	500		485	ug/l	70.0-130	97.0			
Surrogate: 4-BFB (FID)	"	48.0		56.8	"	50.0-150	118			
Duplicate			0780029-DUP1		B807065-04					
Gasoline Range Hydrocarbons	7/6/98		23800	22400	ug/l			25.0	6.06	
Surrogate: 4-BFB (FID)	"	48.0		59.4	"	50.0-150	124			
Duplicate			0780029-DUP2		B806585-02					
Gasoline Range Hydrocarbons	7/6/98		345	429	ug/l			25.0	21.7	
Surrogate: 4-BFB (FID)	"	48.0		66.8	"	50.0-150	139			
Matrix Spike			0780029-MS1		B806585-04					
Benzene	7/12/98	10.0	ND	9.78	ug/l	70.0-130	97.8			
Toluene	"	10.0	ND	9.70	"	70.0-130	97.0			
Ethylbenzene	"	10.0	ND	9.35	"	70.0-130	93.5			
Xylenes (total)	"	30.0	ND	28.7	"	70.0-130	95.7			
Surrogate: 4-BFB (PID)	"	48.0		49.6	"	50.0-150	103			
Matrix Spike Dup			0780029-MSD1		B806585-04					
Benzene	7/6/98	10.0	ND	10.1	ug/l	70.0-130	101	15.0	3.22	
Toluene	"	10.0	ND	9.75	"	70.0-130	97.5	15.0	0.514	
Ethylbenzene	"	10.0	ND	9.56	"	70.0-130	95.6	15.0	2.22	
Xylenes (total)	"	30.0	ND	29.1	"	70.0-130	97.0	15.0	1.35	
Surrogate: 4-BFB (PID)	"	48.0		50.4	"	50.0-150	105			

North Creek Analytical, Inc.

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


 Matthew Essig, Project Manager

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



NORTH CREEK ANALYTICAL

Environmental Laboratory Services

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

ERI 1921 Edmonds Drive SE Renton, WA 98055	Project: TOSCO #5353 Project Number: 31020 Project Manager: John Meyer	Sampled: 6/26/98 Received: 6/26/98 Reported: 7/14/98 14:55
--	--	--

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

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Batch: 0780062			Date Prepared: 7/2/98			Extraction Method: EPA 3520C/600 Series				
Blank										
Diesel Range Hydrocarbons	7/6/98			ND	mg/l	0.250				
Heavy Oil Range Hydrocarbons	"			ND	"	0.750				
Surrogate: 2-FBP	"	0.330		0.272	"	50.0-150	82.4			
LCS										
0780062-BS1										
Diesel Range Hydrocarbons	7/6/98	2.00		1.64	mg/l	60.0-140	82.0			
Surrogate: 2-FBP	"	0.330		0.279	"	50.0-150	84.5			
Duplicate										
0780062-DUP1 B806589-01										
Diesel Range Hydrocarbons	7/6/98		0.500	0.454	mg/l			44.0	9.64	
Heavy Oil Range Hydrocarbons	"		ND	ND	"			44.0		
Surrogate: 2-FBP	"	0.622		0.536	"	50.0-150	86.2			


 Matthew Essig, Project Manager



NORTH CREEK ANALYTICAL

Environmental Laboratory Services

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

ERI
1921 Edmonds Drive SE
Renton, WA 98055

Project: TOSCO #5353
Project Number: 31020
Project Manager: John Meyer

Sampled: 6/26/98
Received: 6/26/98
Reported: 7/14/98 14:55

Notes and Definitions

#	Note
---	------

- | | |
|--------|---|
| 1 | Due to interference from coeluting organic compounds with the primary surrogate, results of the secondary surrogate have been used to control the analysis. |
| DET | Analyte DETECTED |
| ND | Analyte NOT DETECTED at or above the reporting limit |
| NR | Not Reported |
| dry | Sample results reported on a dry weight basis |
| Recov. | Recovery |
| RPD | Relative Percent Difference |

North Creek Analytical, Inc.


Matthew Essig, Project Manager

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

UNOCAL CHAIN OF CUSTODY REPORT

B806589

UNOCAL INFORMATION

Facility Number: 5397 Westlake
 Site Address: 6000 Westlake Ave N
 City, State, ZIP: Seattle, WA
 Site Release Number: 4888 / 775353 2571 / 500 / 9200
 Unocal Manager: 8460 / 110000 / 2552053

CERT INFO: (check one) Evaluation Remediation
 Detection Demolition Closure Miscellaneous

CONSULTANT INFORMATION

Firm: ERI
 Project #: 31020
 Address: 1921 Edwards Dr SE
 Renton, WA 98055
 Phone: (206) 227-0280 Fax: 1-022-5
 Project Manager: John Meyer
 Sample Collection by: John Meyer

Chain of Custody Record #:

Quality Assurance Data Level:
 A B

A: Standard Summary
 B: Standard + Chromatograms

Laboratory Turnaround Days:
 1 2 3 1

SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	MATRIX (W.S.O)	# OF CON-TAINERS
1. 5MW-3	4/26/98	N	3
2. MW-34			
3. MW-35			
4. MW-36			
5. MW-43			
6. MW-44			
7. MW-47			
8.			
9.			
10.			

OR	WA	AK	NV	Series	TPH-HCID	TPH-Gas	BTEX	EPA 8021 Mod. BTEX	TPH-Gas + BTEX	TPH-Diesel	TPH-Diesel-Ext.	TPH-Diesel-Ext. & WSG Cleanup	Halogen Volatiles EPA 8021	Pesticides/PCBs or PCBs Only EPA 8260	GCMS Semivol. EPA 8270	GCMS Volatiles EPA 8270	PAHs: 8270 SIM or 8310	Lead: Total or Dissolved TCLP or RCRA Metals (81)	
									X	X	X	X	X	X	X	X	X	X	X

NCA SAMPLE NUMBER

B806589-01
 -02
 -03
 -04
 -05
 -06
 -07
 -08

Relinquished by: [Signature]
 Firm: ERI
 Date & Time: 4/28/98

Received by: [Signature]
 Firm: NCA
 Date & Time: 4/26/98 17:20

Final Report Approval

Were all requested results provided? Yes No

Were results within requested turnaround? Yes No

Final Approval Signature: [Signature]
 Date: 4/27/98