

DATE: February 4, 1998**TOSCO MARKETING COMPANY QUARTERLY REPORT**

Tosco Facility: 4165 Address: 202 Avenue D, Snohomish, Washington
 Tosco Environmental Manager: Timothy D. Johnson
 Consulting Co./Contact Person: Environmental Resolutions, Inc., John Meyer
 ERI Project No.: 03101813
 Primary Agency/Regulatory ID No.: Washington State Department of Ecology UST

WORK PERFORMED THIS QUARTER(S) [Fourth - 1997]:

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

WORK PROPOSED FOR NEXT QUARTER [First - 1998]:

1. First quarter groundwater monitoring and sampling.

RECEIVED

FEB 10 1998

DEPT. OF ECOLOGY
(Assmnt, Remed., etc.)

Current Phase of Project:	<u>Quarterly Groundwater Sampling</u>	
Frequency of Sampling:	<u>Quarterly</u>	(Quarterly, etc.)
Frequency of Monitoring:	<u>Quarterly</u>	(Monthly, etc.)
Are Liquid Phase Hydrocarbons Present On-site:	<u>No</u>	(Yes/No)
Cumulative LPH Recovered to Date:	<u>Unknown</u>	(gallons)
LPH Recovered This Quarter:	<u>None</u>	(gallons)
Bulk Soil Removed to Date:	<u>Unknown</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>Unknown</u>	(Distance and Direction)
Current Remediation Techniques:	<u>None</u>	(SVES, LPH Removal,
Permits for Discharge:	<u>None</u>	(NPDES, POTW, etc.)
Approximate Depth to Groundwater:	<u>5 to 10 feet</u>	(Measured Feet)
Groundwater Gradient:	<u>South</u>	(Direction)
	<u>0.04 vertical feet per linear foot</u>	(Magnitude)

Discussion: On December 16, 1997, Environmental Resolutions, Inc., (ERI) gauged 10 and sampled 9 groundwater monitoring wells. Off-site monitoring well MW-12 contained approximately 0.01 foot of liquid-phase petroleum hydrocarbons (LPH) and was not sampled. On December 23, 1997, ERI returned to the site to resample MW-1, MW-10, and MW-11 because the samples previously collected had been inadvertently damaged by the laboratory. Results indicated groundwater present approximately 5 to 10 feet bgs with a gradient generally directed toward the south.

The groundwater samples collected from MW-1, MW-2, MW-6, MW-8, and MW-10 contained total petroleum hydrocarbon concentrations (TPH-G, TPH-D, and TPH-O) exceeding the MTCA Method A Cleanup Level. Samples collected from MW-2, MW-6, MW-8, and MW-11 contained benzene concentrations exceeding the MTCA Method A Cleanup Level. The sample collected from MW-6 also contained concentrations of ethylbenzene and total xylenes exceeding MTCA Method A Cleanup Levels. No petroleum hydrocarbon compounds were detected in the samples collected from MW-3, MW-7, and MW-9.

Summary of Unusual Activity: LPH observed for the first time in MW-12 (0.01 ft)
 Agency Directive Requirements: None
 Recommended Activities: Continue quarterly groundwater sampling

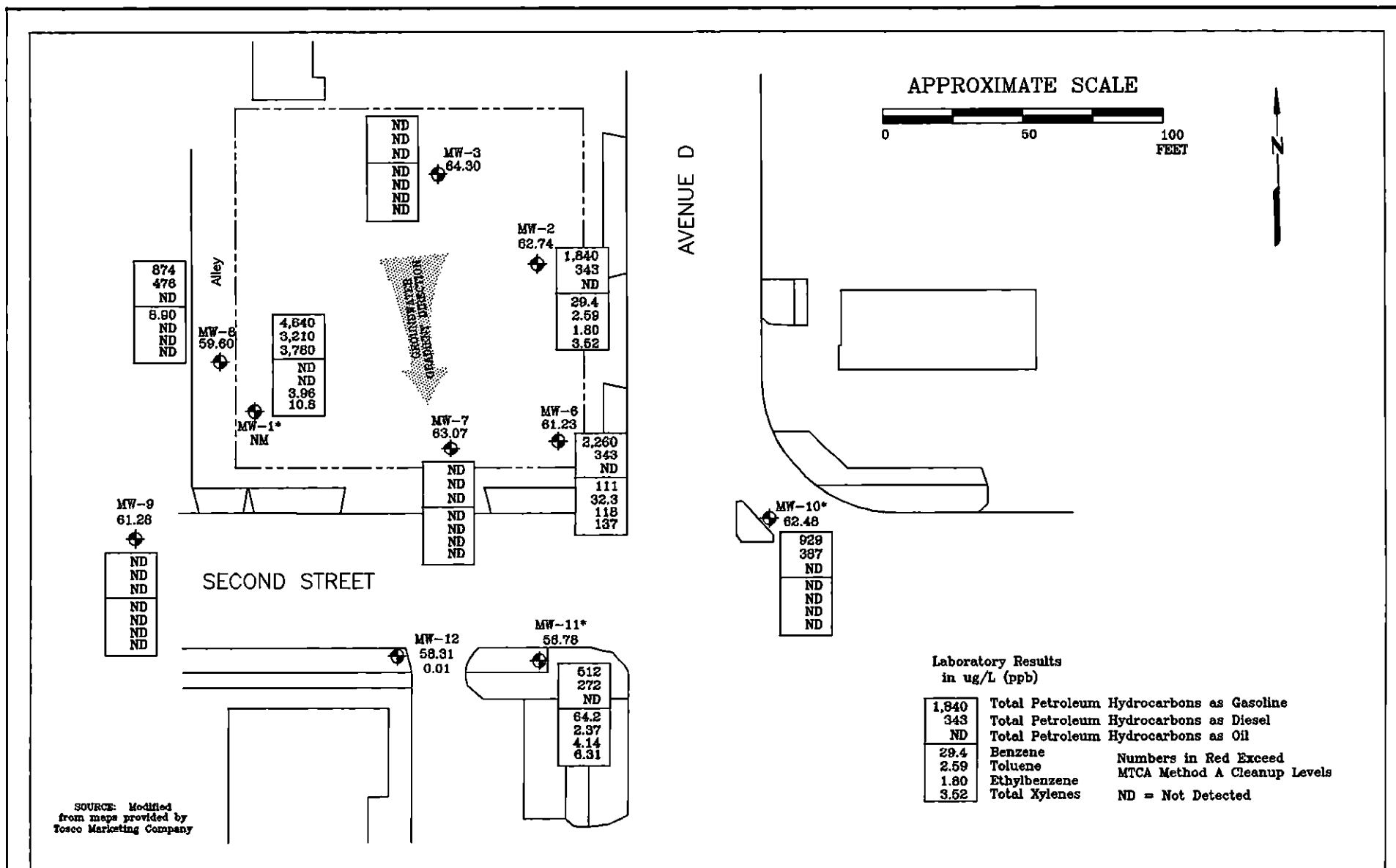
ATTACHED:

- Plate P-1 - Groundwater Sample Analyses Map, 12/16/97
- Table 1 - Groundwater Analytical Results
- Laboratory Reports and Chain-of-Custody Documentation

Prepared by:

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

cc: Brian Sato, Washington State Department of Ecology
 Mick Monken, City of Snohomish
 Lisa Bona, GeoEngineers



FN 4165



GROUNDWATER SAMPLE ANALYSES MAP - 12/16/97

TOSCO FACILITY 4165
202 Avenue D
Snohomish, Washington

EXPLANATION

- ◆ MW-12 Groundwater Monitoring Well
- 58.31 Groundwater Elevation
- NM Not Measured
- 0.01 Liquid-Phase Hydrocarbon Thickness (Ft)
- * Well Sampled on 12/23/97

PROJECT NO.

31018

PLATE

P-1

DATE: 1/28/98

TABLE 1
GROUNDWATER ANALYTICAL RESULTS
Tosco Facility 4165
202 Avenue D
Snohomish, Washington
Page 1 of 2

Well Name	Sample Date	DTW	GW Elev.	TPH-G	TPH-D	TPH-O	B	T	E	X
MW-1 98.11	01/23/95	7.16	90.95	26,000	2,400	<750	32	110	370	2,400
	01/23/95	--	--	27,000	--	--	36	120	390	2,700
	04/20/95	7.56	90.55	40,000	1,600	<750	100	390	760	4,900
	04/20/95	--	--	40,000	--	--	100	420	780	5,200
	07/21/95	10.15	87.96	7,300	1,600	<1,000	6.6	17	60	310
	07/21/95	--	--	8,100	--	--	6.9	19	81	320
	10/18/95	9.17	88.94	30,000	2,500	<750	19	24	260	1,600
	10/18/95	--	--	29,000	--	--	17	17	280	1,600
	01/24/96	5.51	95.47	36,000	2,600	1,700	66	99	640	3,800
	01/24/96	--	--	36,000	--	--	62	84	620	3,700
	04/24/96	7.78	90.73	19,000	1,600	<750	<2.0	<2.0	25	140
	04/24/96	--	--	16,000	--	--	16	4.1	22	130
	07/23/96	9.77	58.89	7,950	648	<750	9.35	61.9	32.1	94.3
	07/23/96	--	--	7,430	--	--	<2.50	<2.50	24.7	72.3
	10/15/96	10.52	58.14	1,750	321	<750	<0.500	1.89	4.91	10.1
	10/15/96	--	--	1,730	--	--	<0.500	1.86	5.01	10.2
	03/17/97 ^{NP}	6.61	62.05	8,600	984	<785	<0.500	3.60	3.25	8.37
	03/17/97	--	--	13,600	2,070	1,030	13.2	8.11	10.3	26.3
	06/04/97	8.40	60.26	16,600	895	<750	18.1	14.7	25.5	106
	09/12/97	10.70	57.96	815	358	<750	12.7	2.76	2.64	9.20
	12/16/97*	--	--	4,640	3,210	3,780	<1.25	<6.25	3.96	10.8
MW-2 68.26	01/23/95	4.67	94.72	9,800	810	<750	4.8	5.0	8.8	16
	04/20/95	5.20	94.19	5,700	1,100	<750	46	4.1	4.5	7.0
	07/21/95	8.30	91.09	7,000	1,700	<1,000	2.8	2.4	3.9	7.2
	10/18/95	6.00	93.39	6,400	1,000	760	<2.0	2.7	7.0	11
	01/24/96	3.92	95.75	6,600	680	<750	1.9	<0.5	3.5	6.2
	04/24/96	5.30	94.7	6,300	630	<750	1.6	2.9	4.4	7.1
	07/23/96	8.24	61.97	3,710	468	<750	<2.50	2.61	2.92	<5.00
	10/15/96	8.65	61.56	4,190	427	<750	<1.00	2.57	2.58	4.47
	03/17/97 ^{NP}	4.19	66.02	2,730	369	<750	<2.50	<2.50	<2.50	<5.00
	03/17/97	--	--	3,260	677	<750	<2.50	3.13	2.61	<5.00
	06/04/97	6.20	64.01	2,970	<250	<750	33.7	2.77	2.71	5.07
	09/12/97	8.92	61.29	1,850	336	<750	60.3	4.24	3.37	4.83
	12/16/97	5.52	62.74	1,840	343	<750	29.4	2.59	1.80	3.52
MW-3 70.25	01/23/95	4.61	95.26	<50	<250	<750	<0.5	<0.5	<0.5	<0.5
	04/20/95	5.15	94.72	<50	<250	<750	<0.5	<0.5	<0.5	<1.0
	07/21/95	8.72	91.15	<50	<250	<1,000	<0.5	<0.5	<0.5	<1.0
	10/18/95	6.36	93.51	<50	<250	<750	<0.5	<0.5	<0.5	<1.0
	01/24/96	4.12	95.75	<50	<250	<750	<0.5	<0.5	<0.5	<1.0
	04/24/96	5.34	95.04	--	--	--	--	--	--	--
	07/23/96	8.81	61.95	<50.0	<250	<750	<0.500	<0.500	<0.500	<1.00
	10/15/96	9.14	61.62	--	--	--	--	--	--	--
	03/17/97	4.46	66.30	<50.0	<250	<750	<0.500	<0.500	<0.500	<1.00
	06/04/97	--	--	--	--	--	--	--	--	--
	09/12/97	9.41	61.35	<50.0	<250	<750	<0.500	<0.500	<0.500	<1.00
	12/16/97	5.95	64.30	<50.0	<250	<750	<0.500	<0.500	<0.500	<1.00
MW-6 67.74	03/17/97 ^{NP}	--	--	4,710	595	<750	941	102	218	142
	03/17/97	6.86	61.30	2,700	551	<750	1,100	37.5	170	105
	06/04/97	6.94	61.22	3,920	<250	<750	201	37.8	141	166
	09/12/97	9.05	59.11	674	<250	<750	7.66	3.98	6.57	12.7
	12/16/97	6.51	61.23	2,260	343	<750	111	32.3	118	137
MW-7 67.86	03/17/97	2.30	65.95	<50.0	<250	<750	<0.500	<0.500	<0.500	<1.00
	06/04/97	5.68	62.57	<50.0	1,420	<750	<0.500	<0.500	<0.500	<1.00
	09/12/97	9.22	59.03	--	--	--	--	--	--	--
	12/16/97	4.79	63.07	<50.0	<250	<750	<0.500	<0.500	<0.500	<1.00

MTCA Method A Cleanup Level

1,000^a

5

40

30

20

Continued on Page 2.

TABLE 1
GROUNDWATER ANALYTICAL RESULTS
Tosco Facility 4165
202 Avenue D
Snohomish, Washington
Page 2 of 2

Well Name	Sample Date	DTW	GW Elev.	TPH-G	TPH-D	TPH-O	B	T	E	X
MW-8 67.52	03/17/97	6.48	61.45	<50	<250	<750	<0.500	<0.500	<0.500	<1.00
	06/04/97	8.46	59.47	1,060	<250	<750	8.87	4.77	1.79	31.6
	09/12/97	10.74	57.19	1,330	1,360	914	12.2	5.74	2.66	7.89
	12/16/97	7.92	59.60	874	476	<750	8.90	<4.00	<4.00	<8.00
MW-9 68.66	03/17/97	6.89	62.21	6,770	4,850	1,140	<2.50	15.7	9.38	12.3
	06/04/97	7.94	61.16	<50	887	<750	<0.500	<0.500	<0.500	<1.00
	09/12/97	9.84	59.26	<50	<250	<750	<0.500	<0.500	<0.500	<1.00
	12/16/97	7.38	61.28	<50.0	<250	<750	<0.500	<0.500	<0.500	<1.00
MW-10 67.33	03/17/97	6.47	61.31	4,180	14,300	1,040	10.6	<10.0	124	<20.0
	03/17/97 ^{NP}	--	--	4,560	5,940	<750	9.94	8.36	66.8	9.77
	06/04/97	5.46	62.32	3,620	<250	<750	13.1	7.70	66.4	13.6
	09/12/97	7.49	60.29	4,280	660	<750	21.6	13.4	10.7	41.6
	12/16/97*	4.85	62.48	929	387	<750	<2.00	<2.00	<2.00	<4.00
MW-11 66.37	03/17/97 ^{NP}	--	--	924	<250	<750	246	17.5	37.1	30.1
	03/17/97	9.58	57.33	798	<250	<750	241	16.0	34.4	26.7
	06/04/97	10.05	56.86	1,030	<250	<750	241	11.2	29.6	26.3
	09/12/97	11.01	55.90	1,200	<250	<750	38.4	1.27	2.34	7.12
	12/16/97*	9.59	56.78	512	272	<750	64.2	2.37	4.14	6.31
MW-12 66.40	03/17/97	9.01	58.05	2,080	1,700	<750	9.27	3.53	12.0	13.4
	06/04/97	9.68	57.38	2,840	726	<750	11.4	4.16	32.2	33.6
	09/12/97	10.91	56.15	2,740	762	<750	15.7	2.75	16.7	19.5
	12/16/97	8.09	58.31	0.01 Feet LPH - No sample collected						
MTCA Method A Cleanup Level				1,000 ^a	5	40	30	20		

EXPLANATION:

All concentrations in ug/L (ppb).

Wellhead elevations taken from prior consultant's reports. Elevations recalculated 4/29/96.

DTW = Depth to water in feet below top of casing. Measurements taken from ground surface between 4/24/96 and 9/12/97.

GW Elev. = Groundwater elevation relative to top of casing elevations; corrected for free product where applicable using a specific gravity of 0.75.

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

TPH-D and TPH-O = Total Petroleum Hydrocarbons as Diesel and Oil, respectively, by Ecology Method WTPH-D (extended).

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

BTEX = Aromatic compounds by EPA Method 8020.

LPH = Liquid-phase petroleum hydrocarbons present; no sample collected.

-- = No Data.

< = Less than the stated laboratory reporting limit.

^{NP} = Sample collected without purging.

* = Well resampled on 12/23/97 due to laboratory breakage.

^a Total Petroleum Hydrocarbons.

Shaded values equal or exceed MTCA Method A Cleanup Levels.

Data collected before 12/16/97 are taken from prior consultants.



NORTH CREEK ANALYTICAL

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ERI
1921 Edmonds Drive SE
Renton, WA 98055

Project: TOSCO #4165, Snohomish
Project Number: 03101813
Project Manager: John Meyer

Sampled: 12/16/97
Received: 12/17/97
Reported: 12/30/97 14:00

ANALYTICAL REPORT FOR SAMPLES:

Sample Description	Laboratory Sample Number	Sample Matrix	Date Sampled
MW-2	B712364-01	Water	12/16/97
MW-3	B712364-02	Water	12/16/97
MW-6	B712364-03	Water	12/16/97
MW-7	B712364-04	Water	12/16/97
MW-8	B712364-05	Water	12/16/97
MW-9	B712364-06	Water	12/16/97

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 for
Matthew Essig, Project Manager

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ERI	Project: TOSCO #4165, Snohomish	Sampled: 12/16/97
1921 Edmonds Drive SE	Project Number: 03101813	Received: 12/17/97
Renton, WA 98055	Project Manager: John Meyer	Reported: 12/30/97 14:00

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

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
MW-2				B712364-01		Water		
Gasoline Range Hydrocarbons	1270746	12/29/97	12/29/97		50.0	1840	ug/l	
Benzene	"	"	"		0.500	29.4	"	
Toluene	"	"	"		0.500	2.59	"	
Ethylbenzene	"	"	"		0.500	1.80	"	
Xylenes (total)	"	"	"		1.00	3.52	"	
Surrogate: 4-BFB (FID)	"	"	"	50.0-150		109	%	
Surrogate: 4-BFB (PID)	"	"	"	50.0-150		78.1	"	
MW-3				B712364-02		Water		
Gasoline Range Hydrocarbons	1270746	12/29/97	12/29/97		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		71.9	%	
Surrogate: 4-BFB (PID)	"	"	"	50.0-150		76.5	"	
MW-6				B712364-03		Water		
Gasoline Range Hydrocarbons	1270746	12/29/97	12/29/97		250	2260	ug/l	
Benzene	"	"	"		2.50	111	"	
Toluene	"	"	"		2.50	32.3	"	
Ethylbenzene	"	"	"		2.50	118	"	
Xylenes (total)	"	"	"		5.00	137	"	
Surrogate: 4-BFB (FID)	"	"	"	50.0-150		90.6	%	
Surrogate: 4-BFB (PID)	"	"	"	50.0-150		85.4	"	
MW-7				B712364-04		Water		
Gasoline Range Hydrocarbons	1270746	12/29/97	12/29/97		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		65.8	%	
Surrogate: 4-BFB (PID)	"	"	"	50.0-150		73.1	"	
MW-8				B712364-05		Water		
Gasoline Range Hydrocarbons	1270746	12/29/97	12/29/97		50.0	874	ug/l	
Benzene	"	"	"		0.500	8.90	"	

North Creek Analytical, Inc.

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

Matthew Essig, Project Manager

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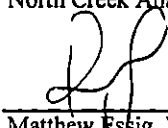
ERI	Project: TOSCO #4165, Snohomish	Sampled: 12/16/97
1921 Edmonds Drive SE	Project Number: 03101813	Received: 12/17/97
Renton, WA 98055	Project Manager: John Meyer	Reported: 12/30/97 14:00

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

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
<u>MW-8 (continued)</u>		<u>B712364-05</u>		<u>Water</u>				
Toluene	1270746	12/29/97	12/29/97		4.00	ND	ug/l	1
Ethylbenzene	"	"	"		4.00	ND	"	1
Xylenes (total)	"	"	"		8.00	ND	"	1
Surrogate: 4-BFB (FID)	"	"	"	50.0-150		86.9	%	
Surrogate: 4-BFB (PID)	"	"	"	50.0-150		74.0	"	
<u>MW-9</u>		<u>B712364-06</u>		<u>Water</u>				
Gasoline Range Hydrocarbons	1270746	12/29/97	12/29/97		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		65.4	%	
Surrogate: 4-BFB (PID)	"	"	"	50.0-150		71.3	"	

North Creek Analytical, Inc.

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


Matthew Essig, Project Manager

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Page 3 of 7



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PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

ERI	Project: TOSCO #4165, Snohomish	Sampled: 12/16/97
1921 Edmonds Drive SE	Project Number: 03101813	Received: 12/17/97
Renton, WA 98055	Project Manager: John Meyer	Reported: 12/30/97 14:00

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

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
MW-2								
B712364-01								Water
Diesel Range Hydrocarbons	1270057	12/23/97	12/24/97		0.250	0.343	mg/l	
Heavy Oil Range Hydrocarbons	"	"	"		0.750	ND	"	
Surrogate: 2-FBP	"	"	"	50.0-150		112	%	
Surrogate: p-Terphenyl-d14	"	"	"	50.0-150		117	"	
MW-3								
B712364-02								Water
Diesel Range Hydrocarbons	1270057	12/23/97	12/24/97		0.250	ND	mg/l	
Heavy Oil Range Hydrocarbons	"	"	"		0.750	ND	"	
Surrogate: 2-FBP	"	"	"	50.0-150		100	%	
Surrogate: p-Terphenyl-d14	"	"	"	50.0-150		101	"	
MW-6								
B712364-03								Water
Diesel Range Hydrocarbons	1270057	12/23/97	12/24/97		0.250	0.343	mg/l	
Heavy Oil Range Hydrocarbons	"	"	"		0.750	ND	"	
Surrogate: 2-FBP	"	"	"	50.0-150		106	%	
Surrogate: p-Terphenyl-d14	"	"	"	50.0-150		110	"	
MW-7								
B712364-04								Water
Diesel Range Hydrocarbons	1270057	12/23/97	12/24/97		0.250	ND	mg/l	
Heavy Oil Range Hydrocarbons	"	"	"		0.750	ND	"	
Surrogate: 2-FBP	"	"	"	50.0-150		102	%	
Surrogate: p-Terphenyl-d14	"	"	"	50.0-150		114	"	
MW-8								
B712364-05								Water
Diesel Range Hydrocarbons	1270057	12/23/97	12/24/97		0.250	0.476	mg/l	
Heavy Oil Range Hydrocarbons	"	"	"		0.750	ND	"	
Surrogate: 2-FBP	"	"	"	50.0-150		116	%	
Surrogate: p-Terphenyl-d14	"	"	"	50.0-150		119	"	
MW-9								
B712364-06								Water
Diesel Range Hydrocarbons	1270057	12/23/97	12/24/97		0.250	ND	mg/l	
Heavy Oil Range Hydrocarbons	"	"	"		0.750	ND	"	
Surrogate: 2-FBP	"	"	"	50.0-150		93.2	%	
Surrogate: p-Terphenyl-d14	"	"	"	50.0-150		102	"	

North Creek Analytical, Inc.

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

Matthew Essig, Project Manager

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Page 4 of 7



NORTH CREEK ANALYTICAL

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BOTHELL ■ (425) 481-9200 ■ FAX 485-2992
SPOKANE ■ (509) 924-9200 ■ FAX 924-9290
PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

ERI	Project: TOSCO #4165, Snohomish	Sampled: 12/16/97
1921 Edmonds Drive SE	Project Number: 03101813	Received: 12/17/97
Renton, WA 98055	Project Manager: John Meyer	Reported: 12/30/97 14:00

Gasoline Hydrocarbons (Toluene to Dodecane) and BTEX by WTPH-G and EPA 8020A/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: 1270746										
Blank										
Date Prepared: 12/29/97										
1270746-BLK1										
Extraction Method: EPA 5030 (P/T)										
Gasoline Range Hydrocarbons	12/29/97			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		31.2	"	50.0-150	65.0			
Surrogate: 4-BFB (PID)	"	48.0		34.6	"	50.0-150	72.1			
LCS										
1270746-BS1										
Gasoline Range Hydrocarbons	12/29/97	500		532	ug/l	75.0-125	106			
Surrogate: 4-BFB (FID)	"	48.0		40.6	"	50.0-150	84.6			
Duplicate										
1270746-DUP1 B712364-03										
Gasoline Range Hydrocarbons	12/29/97		2260	2850	ug/l			25.0	23.1	
Surrogate: 4-BFB (FID)	"	48.0		37.4	"	50.0-150	77.9			
Duplicate										
1270746-DUP2 B712374-04										
Gasoline Range Hydrocarbons	12/29/97		289	258	ug/l			25.0	11.3	
Surrogate: 4-BFB (FID)	"	48.0		38.0	"	50.0-150	79.2			
Matrix Spike										
1270746-MS1 B712364-04										
Benzene	12/29/97	10.0	ND	10.3	ug/l	70.0-130	103			
Toluene	"	10.0	ND	9.65	"	70.0-130	96.5			
Ethylbenzene	"	10.0	ND	10.2	"	70.0-130	102			
Xylenes (total)	"	30.0	ND	30.8	"	70.0-130	103			
Surrogate: 4-BFB (PID)	"	48.0		36.4	"	50.0-150	75.8			
Matrix Spike Dup										
1270746-MSD1 B712364-04										
Benzene	12/29/97	10.0	ND	10.6	ug/l	70.0-130	106	15.0	2.87	
Toluene	"	10.0	ND	10.3	"	70.0-130	103	15.0	6.52	
Ethylbenzene	"	10.0	ND	10.6	"	70.0-130	106	15.0	3.85	
Xylenes (total)	"	30.0	ND	32.1	"	70.0-130	107	15.0	3.81	
Surrogate: 4-BFB (PID)	"	48.0		37.4	"	50.0-150	77.9			

North Creek Analytical, Inc.

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

Matthew Essig, Project Manager

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Page 5 of 7



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ERI	Project: TOSCO #4165, Snohomish	Sampled: 12/16/97
1921 Edmonds Drive SE	Project Number: 03101813	Received: 12/17/97
Renton, WA 98055	Project Manager: John Meyer	Reported: 12/30/97 14:00

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

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

Batch: 1270057

Date Prepared: 12/23/97

Extraction Method: EPA 3510/600 Series

Blank

1270057-BLK1

Diesel Range Hydrocarbons	12/24/97			ND	mg/l	0.250				
Heavy Oil Range Hydrocarbons	"			ND	"	0.750				
Surrogate: 2-FBP	"	0.200		0.216	"	50.0-150	108			
Surrogate: p-Terphenyl-d14	"	0.200		0.232	"	50.0-150	116			

LCS

1270057-BS1

Diesel Range Hydrocarbons	12/24/97	5.00		4.97	mg/l	57.0-131	99.4			
Surrogate: 2-FBP	"	0.200		0.224	"	50.0-150	112			
Surrogate: p-Terphenyl-d14	"	0.200		0.244	"	50.0-150	122			

Duplicate

1270057-DUP1

B712364-02

Diesel Range Hydrocarbons	12/24/97		ND	ND	mg/l			50.0		
Surrogate: 2-FBP	"	0.381		0.377	"	50.0-150	99.0			
Surrogate: p-Terphenyl-d14	"	0.382		0.423	"	50.0-150	111			

Duplicate

1270057-DUP2

B712364-05

Diesel Range Hydrocarbons	12/24/97		0.476	0.400	mg/l			50.0	17.4	
Surrogate: 2-FBP	"	0.381		0.415	"	50.0-150	109			
Surrogate: p-Terphenyl-d14	"	0.382		0.427	"	50.0-150	112			

North Creek Analytical, Inc.

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

Matthew Essig, Project Manager

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ERI
1921 Edmonds Drive SE
Renton, WA 98055

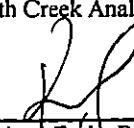
Project: TOSCO #4165, Snohomish
Project Number: 03101813
Project Manager: John Meyer

Sampled: 12/16/97
Received: 12/17/97
Reported: 12/30/97 14:00

Notes and Definitions

#	Note
I	The reporting limit for this analyte has been raised to account for interference from coeluting organic compounds present in the sample.
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

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ANALYTICAL**
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CHAIN OF CUSTODY REPORT

Work Order #

B712364

REPORT TO: ER/			INVOICE TO: Toxo			TURNAROUND REQUEST in Business Days * ☒ 10 Standard ☐ 7 ☐ 5 ☐ 4 ☐ 3 ☐ 2 ☐ 1 ☐ Same Day ☐ 5 Standard ☐ 3-4 ☐ 2 ☐ 1 ☐ Same Day OTHER Specify: _____ * Turnaround Requests less than standard may incur Rush Charges.																													
ATTENTION: John Meyer			ATTENTION: 774/652511/500/																																
ADDRESS: 1921 Edmond Dr SE Renton, WA 98055			ADDRESS: 970/840/11000/254165																																
PHONE: (425) 227-0280 FAX: X0225			P.O. NUMBER: _____ NCA QUOTE #: _____																																
PROJECT NAME: Toxo 4/65 Spokaneish			TNA-6/BTEX TNA-D (extemp)																																
PROJECT NUMBER: 03101813																																			
SAMPLED BY: Meyer																																			
<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 30%;">CLIENT SAMPLE IDENTIFICATION</th> <th style="width: 15%;">SAMPLING DATE/TIME</th> <th style="width: 15%;">NCA SAMPLE ID (Laboratory Use Only)</th> </tr> </thead> <tbody> <tr><td>1. MW-2</td><td>12/14/97</td><td>B712364-01</td></tr> <tr><td>2. MW-3</td><td></td><td>-02</td></tr> <tr><td>3. MW-6</td><td></td><td>-03</td></tr> <tr><td>4. MW-7</td><td></td><td>-04</td></tr> <tr><td>5. MW-8</td><td></td><td>-05</td></tr> <tr><td>6. MW-9</td><td></td><td>-06</td></tr> <tr><td>7. MW-10</td><td></td><td>-07</td></tr> <tr><td>8. MW-11</td><td></td><td>-08</td></tr> <tr><td>9.</td><td></td><td></td></tr> <tr><td>10.</td><td></td><td></td></tr> </tbody> </table>						CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	NCA SAMPLE ID (Laboratory Use Only)	1. MW-2	12/14/97	B712364-01	2. MW-3		-02	3. MW-6		-03	4. MW-7		-04	5. MW-8		-05	6. MW-9		-06	7. MW-10		-07	8. MW-11		-08	9.		
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9.																																			
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MATRIX (W, S, A, O)	# OF CONTAINERS	COMMENTS																																	
W	3																																		

RELINQUISHED BY (Signature): [Signature]		DATE: 12/16/97		RECEIVED BY (Signature): [Signature]		DATE: 12/17/97	
PRINT NAME: John Meyer		FIRM: ER/		PRINT NAME: Kendra Barker		FIRM: NCA	
RELINQUISHED BY (Signature): [Signature]		DATE: 12/17/97		RECEIVED BY (Signature): [Signature]		DATE: 12/17/97	
PRINT NAME: Kendra Barker		FIRM: NCA		PRINT NAME: J. HEWZ		FIRM: NCA B	
TIME: 1320		TIME: 1320		TIME: 1320		TIME: 1320	
ADDITIONAL REMARKS: 13.7° No CS							



NORTH CREEK ANALYTICAL

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ERI
1921 Edmonds Drive SE
Renton, WA 98055

Project: TOSCO #4165, Snohomish
Project Number: 31018
Project Manager: John Meyer

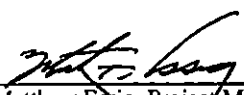
Sampled: 12/23/97
Received: 12/24/97
Reported: 1/2/98 10:54

Summary Report*

(Please refer to the Analytical Report for a thorough review of the complete data set.)

Method	Analyte	Units	MW-1 Water 12/23/97 B712536-01	MW-10 Water 12/23/97 B712536-02	MW-11 Water 12/23/97 B712536-03
WTPH-G/8020	Gasoline Range Hydrocarbons	ug/l	4640	929	512
"	Benzene	"	<1.25	<2.00	64.2
"	Toluene	"	<6.25	<2.00	2.37
"	Ethylbenzene	"	3.96	<2.00	4.14
"	Xylenes (total)	"	10.8	<4.00	6.31
WTPH-Dext	Diesel Range Hydrocarbons	mg/l	3.21	0.387	0.272
"	Heavy Oil Range Hydrocarbons	"	3.78	<0.750	<0.750

North Creek Analytical, Inc.


Matthew Essig, Project Manager

**The Summary Report is a subset of the final Analytical Report and does not include substantial supportive information such as quality control data; this report accurately summarizes sample results for your convenience only.*

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ERI
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Renton, WA 98055

Project: TOSCO #4165, Snohomish
Project Number: 31018
Project Manager: John Meyer

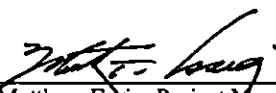
Sampled: 12/23/97
Received: 12/24/97
Reported: 1/2/98 10:45

ANALYTICAL REPORT FOR SAMPLES:

Sample Description	Laboratory Sample Number	Sample Matrix	Date Sampled
MW-1	B712536-01	Water	12/23/97
MW-10	B712536-02	Water	12/23/97
MW-11	B712536-03	Water	12/23/97

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

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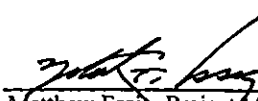
ERI	Project: TOSCO #4165, Snohomish	Sampled: 12/23/97
1921 Edmonds Drive SE	Project Number: 31018	Received: 12/24/97
Renton, WA 98055	Project Manager: John Meyer	Reported: 1/2/98 10:45

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

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
MW-1				B712536-01			Water	
Gasoline Range Hydrocarbons	1270761	12/29/97	12/30/97		125	4640	ug/l	
Benzene	"	"	"		1.25	ND	"	
Toluene	"	"	"		6.25	ND	"	1
Ethylbenzene	"	"	"		1.25	3.96	"	
Xylenes (total)	"	"	"		2.50	10.8	"	
Surrogate: 4-BFB (FID)	"	"	"	50.0-150		85.0	%	
Surrogate: 4-BFB (PID)	"	"	"	50.0-150		84.8	"	
MW-10				B712536-02			Water	
Gasoline Range Hydrocarbons	1270761	12/29/97	12/29/97		50.0	929	ug/l	
Benzene	"	"	"		2.00	ND	"	1
Toluene	"	"	"		2.00	ND	"	1
Ethylbenzene	"	"	"		2.00	ND	"	1
Xylenes (total)	"	"	"		4.00	ND	"	1
Surrogate: 4-BFB (FID)	"	"	"	50.0-150		92.9	%	
Surrogate: 4-BFB (PID)	"	"	"	50.0-150		86.0	"	
MW-11				B712536-03			Water	
Gasoline Range Hydrocarbons	1270761	12/29/97	12/29/97		50.0	512	ug/l	
Benzene	"	"	"		0.500	64.2	"	
Toluene	"	"	"		0.500	2.37	"	
Ethylbenzene	"	"	"		0.500	4.14	"	
Xylenes (total)	"	"	"		1.00	6.31	"	
Surrogate: 4-BFB (FID)	"	"	"	50.0-150		90.4	%	
Surrogate: 4-BFB (PID)	"	"	"	50.0-150		93.3	"	

North Creek Analytical, Inc.

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


Matthew Essig, Project Manager

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ERI	Project: TOSCO #4165, Snohomish	Sampled: 12/23/97
1921 Edmonds Drive SE	Project Number: 31018	Received: 12/24/97
Renton, WA 98055	Project Manager: John Meyer	Reported: 1/2/98 10:45

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*
MW-1								
				B712536-01			Water	
Diesel Range Hydrocarbons	1270790	12/30/97	12/31/97		0.250	3.21	mg/l	
Heavy Oil Range Hydrocarbons	"	"	"		0.750	3.78	"	
Surrogate: 2-FBP	"	"	"	50.0-150		75.8	%	
MW-10								
				B712536-02			Water	
Diesel Range Hydrocarbons	1270790	12/30/97	12/31/97		0.250	0.387	mg/l	
Heavy Oil Range Hydrocarbons	"	"	"		0.750	ND	"	
Surrogate: 2-FBP	"	"	"	50.0-150		78.5	%	
MW-11								
				B712536-03			Water	
Diesel Range Hydrocarbons	1270790	12/30/97	12/31/97		0.250	0.272	mg/l	
Heavy Oil Range Hydrocarbons	"	"	"		0.750	ND	"	
Surrogate: 2-FBP	"	"	"	50.0-150		80.1	%	



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ERI
1921 Edmonds Drive SE
Renton, WA 98055

Project: TOSCO #4165, Snohomish
Project Number: 31018
Project Manager: John Meyer

Sampled: 12/23/97
Received: 12/24/97
Reported: 1/2/98 10:45

Gasoline Hydrocarbons (Toluene to Dodecane) and BTEX by WTPH-G and EPA 8020A/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: 1270761										
Blank										
1270761-BLK1										
Gasoline Range Hydrocarbons	12/29/97			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		39.4	"	50.0-150	82.1			
Surrogate: 4-BFB (PID)	"	48.0		46.7	"	50.0-150	97.3			
LCS										
1270761-BS1										
Gasoline Range Hydrocarbons	12/29/97	500		538	ug/l	75.0-125	108			
Surrogate: 4-BFB (FID)	"	48.0		41.6	"	50.0-150	86.7			
Duplicate										
1270761-DUP1 B712530-04										
Gasoline Range Hydrocarbons	12/29/97		1280	ND	ug/l				25.0	
Surrogate: 4-BFB (FID)	"	48.0		39.5	"	50.0-150	82.3			
Duplicate										
1270761-DUP2 B712536-01										
Gasoline Range Hydrocarbons	12/29/97		4640	5030	ug/l				25.0	8.07
Surrogate: 4-BFB (FID)	"	48.0		39.1	"	50.0-150	81.5			
Matrix Spike										
1270761-MS1 B712529-03										
Benzene	12/29/97	10.0	ND	10.6	ug/l	70.0-130	106			
Toluene	"	10.0	ND	9.79	"	70.0-130	97.9			
Ethylbenzene	"	10.0	ND	9.57	"	70.0-130	95.7			
Xylenes (total)	"	30.0	ND	27.9	"	70.0-130	93.0			
Surrogate: 4-BFB (PID)	"	48.0		44.5	"	50.0-150	92.7			
Matrix Spike Dup										
1270761-MSD1 B712529-03										
Benzene	12/29/97	10.0	ND	11.1	ug/l	70.0-130	111	15.0	4.61	
Toluene	"	10.0	ND	10.1	"	70.0-130	101	15.0	3.12	
Ethylbenzene	"	10.0	ND	9.64	"	70.0-130	96.4	15.0	0.729	
Xylenes (total)	"	30.0	ND	27.8	"	70.0-130	92.7	15.0	0.323	
Surrogate: 4-BFB (PID)	"	48.0		43.8	"	50.0-150	91.2			

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


Matthew Essig, Project Manager

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NORTH CREEK ANALYTICAL

Environmental Laboratory Services

BOTHELL ■ (425) 481-9200 ■ FAX 485-2992
SPOKANE ■ (509) 924-9200 ■ FAX 924-9290
PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

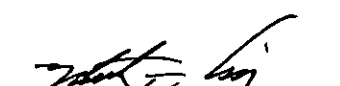
ERI	Project: TOSCO #4165, Snohomish	Sampled: 12/23/97
1921 Edmonds Drive SE	Project Number: 31018	Received: 12/24/97
Renton, WA 98055	Project Manager: John Meyer	Reported: 1/2/98 10:45

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: 1270790		Date Prepared: 12/30/97		Extraction Method: EPA 3520/600 Series						
Blank		1270790-BLK1								
Diesel Range Hydrocarbons	12/31/97			ND	mg/l	0.250				
Heavy Oil Range Hydrocarbons	"			ND	"	0.750				
Surrogate: 2-FBP	"	0.364		0.313	"	50.0-150	86.0			
LCS		1270790-BS1								
Diesel Range Hydrocarbons	12/31/97	2.00		1.68	mg/l	60.0-140	84.0			
Surrogate: 2-FBP	"	0.364		0.308	"	50.0-150	84.6			
Duplicate		1270790-DUP1		B712536-01						
Diesel Range Hydrocarbons	12/31/97		3.21	2.97	mg/l			44.0	7.77	
Surrogate: 2-FBP	"	0.687		0.512	"	50.0-150	74.5			
Duplicate		1270790-DUP2		B712536-03						
Diesel Range Hydrocarbons	12/31/97		0.272	ND	mg/l			44.0		
Surrogate: 2-FBP	"	0.687		0.556	"	50.0-150	80.9			

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Page 5 of 6



NORTH CREEK ANALYTICAL

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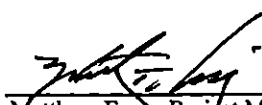
ERI 1921 Edmonds Drive SE Renton, WA 98055	Project: TOSCO #4165, Snohomish Project Number: 31018 Project Manager: John Meyer	Sampled: 12/23/97 Received: 12/24/97 Reported: 1/2/98 10:45
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Notes and Definitions

#	Note
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1	The reporting limit for this analyte has been raised to account for interference from coeluting organic compounds present in the sample.
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

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Page 6 of 6



**NORTH
CREEK
ANALYTICAL**
Environmental Laboratory Services

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9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132 (503) 643-9200 FAX 644-2202

CHAIN OF CUSTODY REPORT

Work Order # **B712536**

REPORT TO: ERI			INVOICE TO: Tony		
ATTENTION: John Meyer			ATTENTION: 888/17741652511/500/		
ADDRESS: 1921 Edwards Dr SE Renton, WA 98055			ADDRESS: 930/849/11000/254165		
PHONE: (425) 227-0280 FAX: 1 0225			P.O. NUMBER: NCA QUOTE #:		
PROJECT NAME: Tony 4/65 Spokane			Analysis Request: TH16/172X TH17/172X		
PROJECT NUMBER: 31018					
SAMPLED BY: Meyer					
CLIENT SAMPLE IDENTIFICATION					
SAMPLING DATE/TIME			NCA SAMPLE ID (Laboratory Use Only)		
1. MIN-1			12/23/97 B712536-01		
2. MIN-10			02		
3. MIN-11			03		
4.					
5.					
6.					
7.					
8.					
9.					
10.					
RELINQUISHED BY (Signature): [Signature]			RECEIVED BY (Signature): K Barker		
DATE: 12/24/97			DATE: 12/24/97		
PRINT NAME: John Meyer			PRINT NAME: K BARKER		
FIRM: ERI			FIRM: NCA		
TIME: 1200			TIME: 1030		
RELINQUISHED BY (Signature): K Barker			RECEIVED BY (Signature): Lisa Hurley		
DATE: 12/24/97			DATE: 12/24/97		
PRINT NAME: K BARKER			PRINT NAME: Lisa Hurley		
FIRM: NCA			FIRM: NCA		
TIME: 1200			TIME: 1200		
ADDITIONAL REMARKS:			11.3 w/pcs		

TURNAROUND REQUEST in Business Days *

10	7	5	4	3	2	1	Same Day
Standard							

Organic & Inorganic Analyses

Fuels & Hydrocarbon Analyses

5	3-4	2	1	Same Day
Standard				

OTHER

Specify:

* Turnaround Requests less than standard may incur Rush Charges.

MATRIX (W, S, A, O)	# OF CONTAINERS	COMMENTS
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u	3	Resample
		Resample
		Resample