76 PRODUCTS COMPANY

ADC 0922 CORRECT.

INCIDENT INVESTIGATION REPORT

This form meets the intent of the OSHA 101

** = Press F1 To Activate On-Line Help*

*Cost Center	*Sequence No.
0608	1207

GENERAL INFORMATION

Date/Time Investigation Began: 02/22/97 5:00 PM

1. Incident Type: ☒ Accident (Costs) ☐ Near Miss (No Costs)

2. Business Segment: **Supply and Transportation** Name of Facility/Business Unit: **Portland Terminal**	3. Facility/Business Unit Location (Street, City, State, Zip Code): **5528 N.W. Doane Ave. Portland, OR 97210** Incident Location if Different from Above (Street, City, State, Zip Code): **Same**	4. Date of Incident: **2/22/97** Shift: **Evenings** Time of Incident: **1555** *HRS Weather/Natural Occurrences: **Clear**
5. Division: **Pipelines/Terminals**	6. Department 1: **Bulk Handling** Department 2:	
*7. Work Area Affected 1: **Tank Farm** Work Area Affected 2: **#2**	8. Classification of Incident: *Environmental Comments: **Spill** If Fatality, Enter Date of Death:	*9. Actual Loss Severity: **Major** Potential Loss Severity: **Major**
*10. Probability of Recurrence: **Seldom** *(If no corrective action taken)*	*11. Service Station No.: ☒ N/A Vehicle No.:	12. Incident on Company Property: **YES**

PERSONNEL DATA (Person Involved) ☐ N/A

If N/A, proceed to Step No. 26 *☐ Check if more than one person involved

13. Last Name: **Morrison** First Name: **/Dexter** Middle Initial: **M**	14. Address (Street, City, State, Zip Code): **2223 SE 186th Ave Portland, Or 97233**	15. Home Phone: Business Phone: Social Security #:	
16. Classification of Individual: **Company Employee** Position: **Head Operator** Describe Other: Length of Time in Present Position: **20**	17. Age Group: **40-49** Actual Age: **42**	18. Length of Service: **>20 years** Actual Service: **20**	19. Gender: **Male**
20. Contractor Company Name: **N/A**	21. Contractor Address (Street, City, State, Zip Code):	22. Business Phone:	
23. Contractor's Supervisor Name:	24. Unocal Contact:	25. Contact Phone:	

WITNESS DATA ☒ N/A

If N/A, proceed to Step No. 29 *☐ Check if more than one witness

26. Last Name: * First Name: Middle Initial:	27. Address (Street, City, State, Zip Code):	28. Home Phone: Business Phone:

THIRD PARTY DATA ☒ N/A

If N/A, proceed to Step No. 32 *☒ Check if more than one third party

29. Last Name: * First Name: Middle Initial:	30. Address (Street, City, State, Zip Code):	31. Home Phone: Business Phone: Comments: *	
32. Vehicle Make: *N/A Vehicle Type:	*33. Vehicle License No.: Driver License No.:	34. Insurance Co. Name: Policy No.:	

INJURY/ILLNESS DATA ☒ N/A ☐ INJURY ☐ ILLNESS

If N/A, proceed to Step No. 47

*35. Injury/Illness Class.:	36. Type of Injury: * Describe Multiple/Other:	37. Type of Illness: Describe Multiple/Other:
38. Type of Contact:	*39. Contact With:	
40. Activity Being Performed:	*41. Primary Body Part: Secondary Body Part:	
42. Describe Multiple/Other:		
43. Hospital/Clinic Name: *☐ N/A	44. Hospital/Clinic Address (City, State):	
45. Hospital/Clinic Telephone:	*46. Treating Physician's Name and Address:	

COP0013862

FACTUAL INFORMATION (Describe fully how the incident happened)

47. *See Attachment A.

*48. Phase of Operation: Tranferring Product

LOSS TO PROPERTY OR ENVIRONMENT ☐ N/A If N/A, proceed to Step No. 57

49. Type of Property: Other Describe Other: Gasoline	50. Type of Loss: *Product Loss Describe Other:	51. Property Owner: Company
52. Vehicle Make: *N/A Vehicle Type:	*53. Vehicle License No.: Driver License No.:	54. Material Involved: *Petroleum Liquids Describe: High Performance Gasoline
55. Type of Environmental Incident: Spill/Release Environmental Media: Soil		56. Containment: *On-Site Quantity: *11,600 gsallons GALS

REGULATORY AGENCY DATA ☒ N/A If N/A, proceed to Step No. 60

57. Name of Law Enforcement/Regulatory Agencies Reported to: See attached "B" ☐ N/A	58. Notice of Non-Compliance (NONC) Issued: *NO Issuing Agencies: None at this time	59. NONC Issued for: ☒ N/A

CAUSAL ANALYSIS

*60. Immediate Cause Related to Acts: Securing

*61. Immediate Cause Related to Conditions: Other

62. Narrative of Immediate Causes:

*Immediate Cause related to conditions: None

Mr. Morrison failed to properly monitor the transfer of product and he failed to stop the transfer prior to reaching the safe fill limit or releasing product from the tank.

*63. Basic Cause Related to Personal Factors: Judgement

*64. Basic Cause Related to Job Factors:

65. Narrative of Basic Causes:

*Basic Cause Related to Job Factors: Inadequate Work Planning

As indicated in Attachment A, Mr Morrison was made aware of the ongoing product transfer by the preceeding operator on duty. Mr. Morriosn noted during the post incident interview that he forgot about the transfer. At the start of his shift he began an unrelated and unnecessary task which led to his distraction.

66. Additional Observations:

*The tank involved in the overfill has no redundant high level alarm. Although this was not a contributing factor to the overfill, installation of the alarm may provide an additonal warning for the operator.

67. Equipment/Machine/Tool: Tankage
Describe Other:

COSTS Actual/Estimate: Estimate Provide costs for the incident

68. Equipment/Property Loss:	☒ N/A	
69. Process Loss/Product Loss/Product Contamination or Mix:	☐ N/A	$8,439
70. Environmental/Clean Up Costs:	☐ N/A	$193,000
71. Regulatory Fines:	☒ N/A	
72. Medical Costs:	☐ N/A	$ 100
73. Lost Work (Supervisor & Employee):	☒ N/A	$10,315
74. Other Costs: ☐ N/A for: *		
	75. Total Costs:	$211,908
76. Costs Recovered From Other Parties:	☒ N/A	*

ACTION PLAN TO PREVENT RECURRENCE ☐ N/A Provide description of what is to be done (list each item separately)

77. Action Item: Employee terminated

Tentative Completion Date: 2/28/97	Responsible Person: Schnieders/Sherman

78. Action Item: **Review Procedures for Tank transfers with terminal operators**	
Tentative Completion Date: **3/20/97**	Responsible Person: **John Sherman**
79. Action Item: **Review need for high level redundant alarms on taniks**	
Tentative Completion Date: **6/1/97**	Responsible Person: **Dennis Coey**
80. Action Item:	
Tentative Completion Date:	Responsible Person:
81. Action Item:	
Tentative Completion Date:	Responsible Person:
82. Action Item:	
Tentative Completion Date:	Responsible Person:
83. Category of Corrective Action Items: ***Other** Describe Other: **Discipline, motivation, procedural policy review**	

Form Completed by: All signatures are required

84. Print Immediate Supervisor's Name: **J. W. SHERMAN**
Title: **SUPERVISOR OF OPERATIONS**
Telephone Number: **2481538**
Date: **3/31/97**
Immediate Supervisor's Signature:

85. Print Superintendent's/Manager's Name: **P. L. SCHNIEDERS**
Title: **MANAGER, NORTHWEST TERMINALS**
Telephone Number: **5032481530**
Date: **3/31/97**
Superintendent's/Manager's Signature:

NOTE: *The following page contains an area for diagraming the incident, if applicable. Print this document to obtain a copy of the form. Do not attempt to complete the diagram while using the computer program.*

1-1L15 (REVISED 7/1/96)

COP0013864

Attachment "A"
Report 1207
2-22-97

OVERVIEW

On Saturday, February 22, 1997 terminal operator Dexter Morrison was transferring 92 octane gasoline in Tank Farm #2 from Tank 3408 to Tank 3411. At 1555 hours he was advised by a truck driver that a Unocal storage tank was overfilling. Mr. Morrison responded to the tank farm to investigate. He found product spilling from the vents on Tank 3411. He stopped the transfer pump and closed the base valve on Tank 3408. He then went to the terminal control room and began requesting assistance and notifying the emergency response team. At 1610 Mr. Morrison made contact with the Portland Fire Bureau and remained with them until relieved as incident commander at 1635. Approximately 11,670 gallons were released.

SEQUENCE OF EVENTS

Head Operator Ralph Sandercock was working during the day shift (0650 to 1450 hours) on February 22. Following Mr. Sandercock on the swing shift and working as a Head Operator was Dexter Morrison. At 1400 hours Mr. Sandercock began a review of his ongoing activities and the scheduled activities on the swing shift in preparation of a shift change conference with Mr. Morrison. At this time he noted that a 92 octane receipt on the Olympic Pipeline was scheduled at 2119 hours to be delivered into Tank 3408. Based on the size of the tender, Mr. Sandercock determined that there would be a containment problem and began to transfer product from 3408 to Tank 3411. The transfer started at 1415 hours. The transfer rate was approximately 1300 barrels/hour.

At 1445 Mr. Morrison arrived at the terminal and the shift change conference was held. At 1450 Mr. Morrison assumed Head Operator responsibilities. Mr. Sandercock left the terminal at 1500 hours.

At approximately 1555 hours Mr. Morrison received a call from a driver at the refined products load rack that a tank was overfilling. He went to Tank

Farm 2 where the transfer was taking place and found product flowing from the vents on Tank 3411. He then turned off the product transfer pump and closed the base valve on Tank 3408. Mr. Morrison returned to the terminal control room and began internal notification procedure. The Portland Fire Bureau was notified of the spill at 1558 hours. They arrived on scene at 1604. Mr. Morrison met with the fire department at 1610 hours and remained with them until terminal management arrived at 1635 hours.

During the response terminal personnel worked closely with the Fire Bureau to maintain a foam blanket to eliminate vapors while cleaning up free standing product. The Coast Guard responded, determined that no product had entered the Willamette River, that the product was contained on site and they left the scene with no further concerns. The Oregon Department of Environmental Quality (DEQ) was notified and did not respond to the scene but stated that they were satisfied with the facility response. They visited the scene the following Monday, February 24.

The emergency response ended at 0400 hours on Sunday, February 23. At 0700 on February 23 the cleanup phase of the operation began. Terminal technical, HES and operational personnel began working with a local contractor assessing soil conditions and defining the extent of the release.

The Portland Fire Bureau public information officer worked with Unocal representatives at the scene to develop facts related to the release. Several members of the media arrived at the scene, but were prevented by the Portland Police Bureau from getting close to the scene and therefore could not obtain video of the incident. The media was provided facts related to the incident when they arrived along with periodic updates regarding the response. Karen Rodgers, Manager of Public Affairs, was notified and public relations concerns were addressed with her.

ATTACHMENT "B"

76 PRODUCTS - PORTLAND TERMINAL
EMERGENCY CALL-OUT LIST

	Recheck	Regulatory Notifications	
	NOTIFIED 1715	**Clean Rivers Cooperative** TELE: FAX:	(503) 220-2040 (503) 295-3660
RE NOTIFIED AT 11000 GALS 1000 HRS	NOTIFIED 1705 PETER WYATT 377727	**National Response Center (NRC)** TELE:	(800) 424-8802
RENOTIFIED 1004 HRS	NOTIFIED 1700 HRS RANDY 970545	**Oregon Department of Emergency Management** TELE:	(800) 452-0311
DID NOT RENOTIFY WASHINGTON AGENCIES	NOTIFIED 1718 [illegible]	**Washington Emergency Management Division** TELE: FAX:	(800) 258-5990 (360) 438-7395
	NOTIFIED AT 17:30 OPERATOR #3	Washington State - Department of Ecology TELE:	(360) 407-6300
RENOTIFIED 1010	NTOIFIED 17:25 [illegible]	USCG Marine Safety Office - Portland	(503) 240-9300
RENOTIFIED 1015 HRS TOM POST	NOTIFIED AT 17:26	EPA - Region 10 Spill Response Washington OPS Oregon OPS RCRA/CERCLA Hotline	(206) 553-1263 (360) 753-9437 (503) 378-6377 (800) 424-9346

EARST Veto Called

Reference:

Portland Terminal 5528 N. W. Doane Ave. Tele: (503) 248-7600
Portland, OR 97210 FAX: (503) 248-1522
Boiler Rm FAX: (503) 248-1519

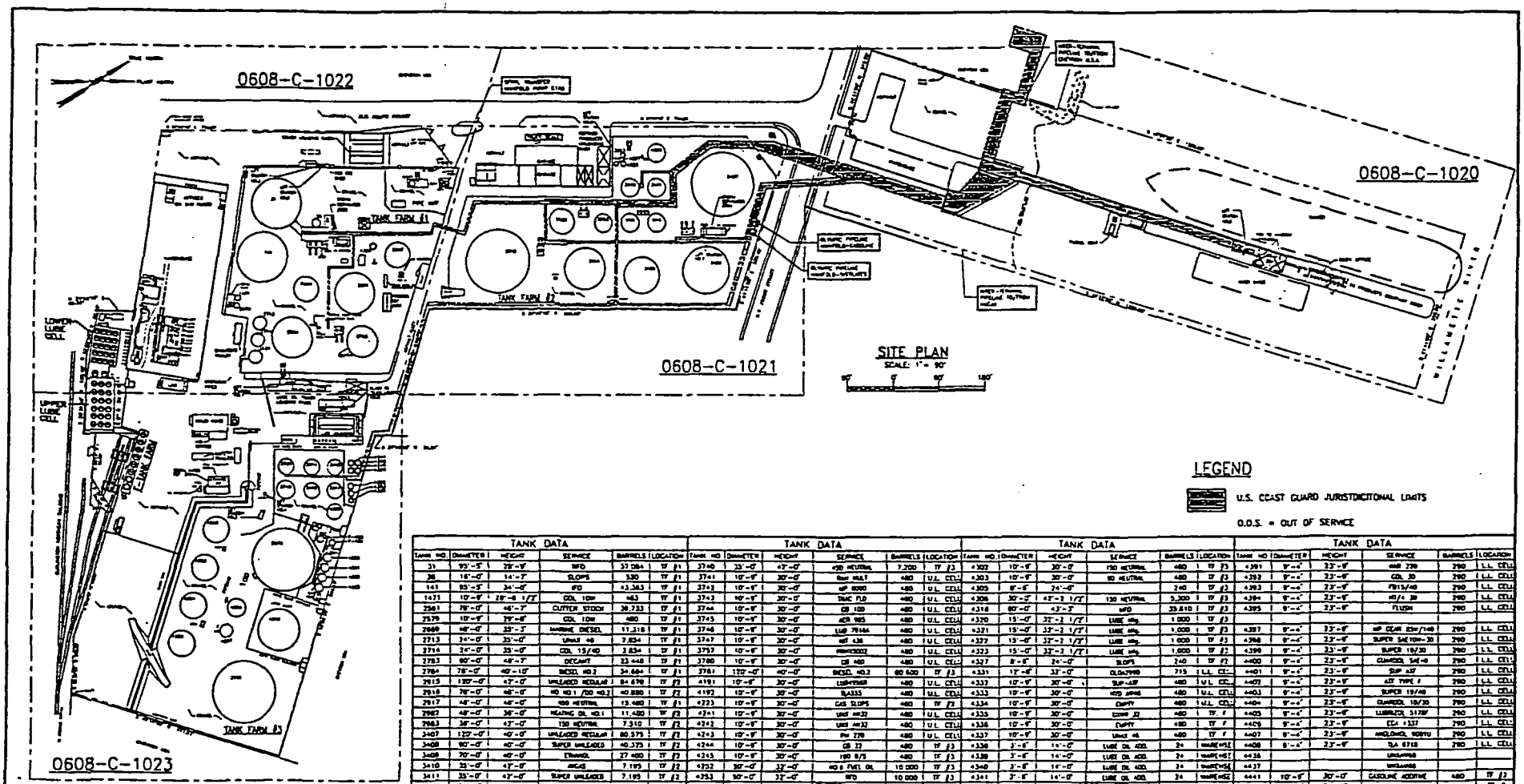
PORTLAND TERMINAL - EMERGENCY CALL OUT LIST

714-281-1249 [illegible]

ATTACHMENT "A"

Item No.	Quantity & Item	Material Cost	Labor Cost	Total
1.0	**Expense**			
1.1	Immediate Spill Response			
1.1.1	Secure Site (2/22)	$2,000	$3,000	
1.1.2	Initial Subsurface Inv. (2/23)	$3,000	$5,000	
1.1.3	Cont. Response and (2/24 - 2/28)	$3,000	$12,000	
1.1.4	Waste Disposal	$4,000		
1.1.5	Foam Replacement	$7,000		
1.1.6	Lab Testing Fees	$1,000		
1.1.7	Misc.	$2,000	$1,000	
	Subtotal	$22,000	$21,000	
1.2	Recovery Wells			
1.2.1	Drill & Install 3 Wells	$2,000	$3,000	
1.2.2	Recovery Pumps (3)	$22,000	$2,000	
1.2.3	Recovery Piping	$1,000	$3,000	
1.2.4	Lab Testing	$5,000		
1.2.5	Technical Oversight	$1,000	$6,000	
	Sub-Total	$31,000	$14,000	
1.3	Groundwater Treatment System			
1.3.1	Oil/Water Separator	$9,000	$3,000	
1.3.2	Product Recovery Tank	$2,000	$1,000	
1.3.3	Transfer Pumps (2)	$2,000	$3,000	
1.3.4	Carbon Filter Units (2)	$12,000	$1,000	
1.3.5	Power & Controls	$3,000	$8,000	
1.3.6	Spill Containment	$4,000	$5,000	
1.3.6	Contractor Operation	$2,000	$8,000	
	Sub-Total	$23,000	$25,000	
1.4	Engineering & Inspection			
1.4.1	Design Engineering		$5,000	
1.4.2	Permitting		$1,000	
1.4.3	DEQ Reimbursement		$10,000	
1.4.4	Inspection/Start-up		$9,000	
	Sub-Total	$0	$25,000	
1.5	Contingency			
	20%	$15,200	$17,000	
	Total 1.0 Capital	**$91,200**	**$102,000**	**$193,000**
2.0	**Capital**			
	Total 2.0 Capital	**$0**	**$0**	**$0**
	SUMMARY OF COSTS			
	1.0 Expense	$91,200	$102,000	
	2.0 Capital	$0	$0	
	Total Estimated Costs			**$193,000**

COP0013868



TANK DATA

TANK NO.	DIAMETER	HEIGHT	SERVICE	BARRELS	LOCATION
31	93'-5"	28'-9"	MFO	37,084	TF #1
36	16'-0"	14'-7"	SLOPS	530	TF #1
141	85'-5"	34'-0"	#2	43,363	TF #1
1471	10'-9"	28'-8 1/2"	COL 10W	463	TF #1
2361	78'-0"	46'-7"	CUTTER STOCK	38,733	TF #1
2579	10'-9"	29'-8"	COL 10W	480	TF #1
2660	46'-0"	33'-7"	MARINE DIESEL	11,318	TF #1
2713	24'-0"	33'-0"	UNLD #6	7,834	TF #1
2714	24'-0"	33'-0"	COL 15/40	7,834	TF #1
2783	90'-0"	48'-1"	DECANT	33,448	TF #1
2784	78'-0"	40'-10"	DIESEL NO.2	34,664	TF #1
2915	120'-0"	42'-0"	UNLEADED REGULAR	84,679	TF #2
2916	78'-0"	46'-0"	NO #2 / 100 NO.2	40,880	TF #2
2917	46'-0"	46'-0"	100 NEUTRAL	13,480	TF #1
2987	46'-0"	36'-0"	HEATING OIL NO.1	11,400	TF #2
2983	36'-0"	42'-0"	150 NEUTRAL	7,510	TF #2
3407	122'-0"	40'-0"	UNLEADED REGULAR	80,375	TF #2
3408	90'-0"	40'-0"	SUPER UNLEADED	40,375	TF #2
3409	70'-0"	48'-0"	ETHANOL	27,400	TF #2
3410	35'-0"	42'-0"	JP-5	7,195	TF #2
3411	35'-0"	42'-0"	SUPER UNLEADED	7,195	TF #2
3412	35'-0"	42'-0"	HEATING OIL NO.1	7,195	TF #2
3413	35'-0"	42'-0"	UNLEADED REGULAR	7,195	TF #2
3414	30'-0"	42'-0"	100 W/S	5,790	TF #2
3415	30'-0"	42'-0"	80 NEUTRAL	5,790	TF #2
3416	30'-0"	42'-0"	150 NEUTRAL	5,790	TF #2
3417	30'-0"	42'-0"	80 NEUTRAL	5,790	TF #2
3378	120'-0"	40'-0"	MFO	80,800	TF #2
3638	35'-0"	38'-0"	COL 30	3,130	TF #1
3673	10'-9"	30'-0"	SLOPS	480	TF #2
3736	30'-0"	42'-0"	100 W/S	5,400	TF #2

TANK DATA

TANK NO.	DIAMETER	HEIGHT	SERVICE	BARRELS	LOCATION
3740	35'-0"	42'-0"	100 NEUTRAL	7,200	TF #3
3741	10'-9"	30'-0"	Base Mat'l	480	U.L. CELL
3742	10'-9"	30'-0"	HP 8090	480	U.L. CELL
3743	90'-0"	30'-0"	TRAC FLO	480	U.L. CELL
3744	10'-9"	30'-0"	CB 100	480	U.L. CELL
3745	10'-9"	30'-0"	HDR 985	480	U.L. CELL
3746	10'-9"	30'-0"	LUB 7916A	480	U.L. CELL
3747	10'-9"	30'-0"	HT 438	480	U.L. CELL
3757	10'-9"	30'-0"	[illegible]3002	480	U.L. CELL
3780	10'-9"	30'-0"	CB 460	480	U.L. CELL
3781	122'-0"	40'-0"	DIESEL NO.2	80,620	TF #3
4191	10'-9"	30'-0"	[illegible]2988	480	U.L. CELL
4192	10'-9"	30'-0"	SLA335	480	U.L. CELL
4223	10'-9"	30'-0"	GAS SLOPS	480	TF #3
4241	10'-9"	30'-0"	UNLD #32	480	U.L. CELL
4242	10'-9"	30'-0"	UNLD #32	480	U.L. CELL
4243	10'-9"	30'-0"	PH 770	480	U.L. CELL
4244	10'-9"	30'-0"	CB 22	480	TF #3
4245	10'-9"	30'-0"	100 W/S	480	TF #3
4252	30'-0"	32'-0"	NO 6 FUEL OIL	10,000	TF #3
4253	30'-0"	32'-0"	MFO	10,000	TF #3
4254	30'-0"	32'-0"	HS-300	10,000	TF #3
4255	30'-0"	32'-0"	O.O.S.	10,000	TF #3
4256	35'-0"	37'-0"		5,000	TF #3
4257	75'-0"	18'-0"	O.O.S.	1,000	TF #3
4258	10'-9"	30'-0"		480	TF #3
4259	35'-0"	32'-0"	Base Mat'l	5,480	TF #2
4268	10'-9"	30'-0"	FLUSH	480	TF #3
4281	10'-9"	30'-0"	ASF HP	480	U.L. CELL
4300	17'-8"	33'-0"	Base Mat'l	715	L.L. CELL

TANK DATA

TANK NO.	DIAMETER	HEIGHT	SERVICE	BARRELS	LOCATION
4302	10'-9"	30'-0"	150 NEUTRAL	480	TF #3
4303	10'-9"	30'-0"	80 NEUTRAL	480	TF #3
4305	8'-6"	24'-0"		240	TF #3
4306	30'-0"	42'-3 1/2"	150 NEUTRAL	5,300	TF #3
4318	80'-0"	43'-3"	MFO	33,810	TF #3
4370	15'-0"	32'-2 1/2"	LUBE slop	1,000	TF #3
4371	15'-0"	32'-2 1/2"	LUBE slop	1,000	TF #3
4372	15'-0"	32'-2 1/2"	LUBE slop	1,000	TF #3
4373	15'-0"	32'-2 1/2"	LUBE slop	1,000	TF #3
4327	8'-6"	24'-0"	SLOPS	240	TF #2
4331	17'-6"	32'-0"	OLDA7998	715	L.L. CELL
4332	10'-9"	30'-0"	SLP-ASF	480	U.L. CELL
4333	10'-9"	30'-0"	100 #998	480	U.L. CELL
4334	10'-9"	30'-0"	Empty	480	U.L. CELL
4335	10'-9"	30'-0"	[illegible]32	480	TF F
4336	10'-9"	30'-0"	Empty	480	TF F
4337	10'-9"	30'-0"	Unld #6	480	TF F
4338	3'-6"	16'-0"	LUBE OIL 400	24	MARINE
4339	3'-6"	16'-0"	LUBE OIL 400	24	MARINE
4340	3'-6"	16'-0"	LUBE OIL 400	24	MARINE
4341	3'-6"	16'-0"	LUBE OIL 400	24	MARINE
4342	3'-6"	16'-0"	LUBE OIL 400	24	MARINE
4343	3'-6"	16'-0"	LUBE OIL 400	24	MARINE
4344	3'-6"	16'-0"	LUBE OIL 400	24	MARINE
4345	3'-6"	16'-0"	LUBE OIL 400	24	MARINE
4346	3'-6"	16'-0"	LUBE OIL 400	24	MARINE
4347	3'-6"	16'-0"	LUBE OIL 400	24	MARINE
4368	10'-9"	30'-0"	150 N	480	TF #1
4388	9'-0"	23'-9"	FLUSH	290	L.L. CELL
4389	9'-0"	23'-9"	UNICOR 46	290	L.L. CELL
4390	9'-0"	23'-9"	Base 150	290	L.L. CELL

TANK DATA

TANK NO.	DIAMETER	HEIGHT	SERVICE	BARRELS	LOCATION
4391	9'-0"	23'-9"	HHR 220	290	L.L. CELL
4392	9'-0"	23'-9"	COL 30	290	L.L. CELL
4393	9'-0"	23'-9"	FB13/40	290	L.L. CELL
4394	9'-0"	23'-9"	HS/4 30	290	L.L. CELL
4395	9'-0"	23'-9"	FLUSH	290	L.L. CELL
4397	9'-0"	23'-9"	HP GEAR 80W/140	290	L.L. CELL
4398	9'-0"	23'-9"	SUPER SAE 10W-30	290	L.L. CELL
4399	9'-0"	23'-9"	SUPER 10/30	290	L.L. CELL
4400	9'-0"	23'-9"	CLARIDOL SAE 40	290	L.L. CELL
4401	9'-0"	23'-9"	SUP ASF	290	L.L. CELL
4402	9'-0"	23'-9"	ASF TYPE F	290	L.L. CELL
4403	9'-0"	23'-9"	SUPER 10/40	290	L.L. CELL
4404	9'-0"	23'-9"	CLARIDOL 10/30	290	L.L. CELL
4405	9'-0"	23'-9"	LUBRICOL 5178F	290	L.L. CELL
4406	9'-0"	23'-9"	EDA 4337	290	L.L. CELL
4407	9'-0"	23'-9"	ARCLOHOL 90PRU	290	L.L. CELL
4408	8'-0"	23'-9"	SLA 6718	290	L.L. CELL
4436			UNLEADED		
4437			UNLEADED		
4441	10'-9"	30'-0"	GASOLINE ADDITIVE	480	TF #3
F-103	12'-6"	32'-0"	EXXON 100	690	TF F
F-104	10'-9"	32'-0"	EXXON 100	316	TF F
F-10			EMPTY		TF F
F-11			EMPTY		TF F
F-12			TURBOCOOR		TF F
F-13			EMPTY		
F-14			FLUSH		

DRAWING NO.	REFERENCE DRAWINGS
0608-C-1020	DOCK FACILITIES
0608-C-1021	TANK FARM NO.2 GENERAL ARRANGEMENT
0608-C-1022	TANK FARM NO.1 GENERAL ARRANGEMENT
0608-C-1023	TANK FARM NO.3 GENERAL ARRANGEMENT

REV. NO.	DATE	REVISED	DRAWN BY	CHK'D BY
0	01/29/96	UPDATED TANK DATA	DAB	WHB
1	11/20/96	GENERAL UPDATES	DAB	WHB
2	01/17/97	DEFINED COAST GUARD JURISDICATIONAL LIMITS	DAB	WHB

UNOCAL 76
76 PRODUCTS COMPANY
Los Angeles, California

ALPHA ENGINEERS and CONSTRUCTORS, INC.

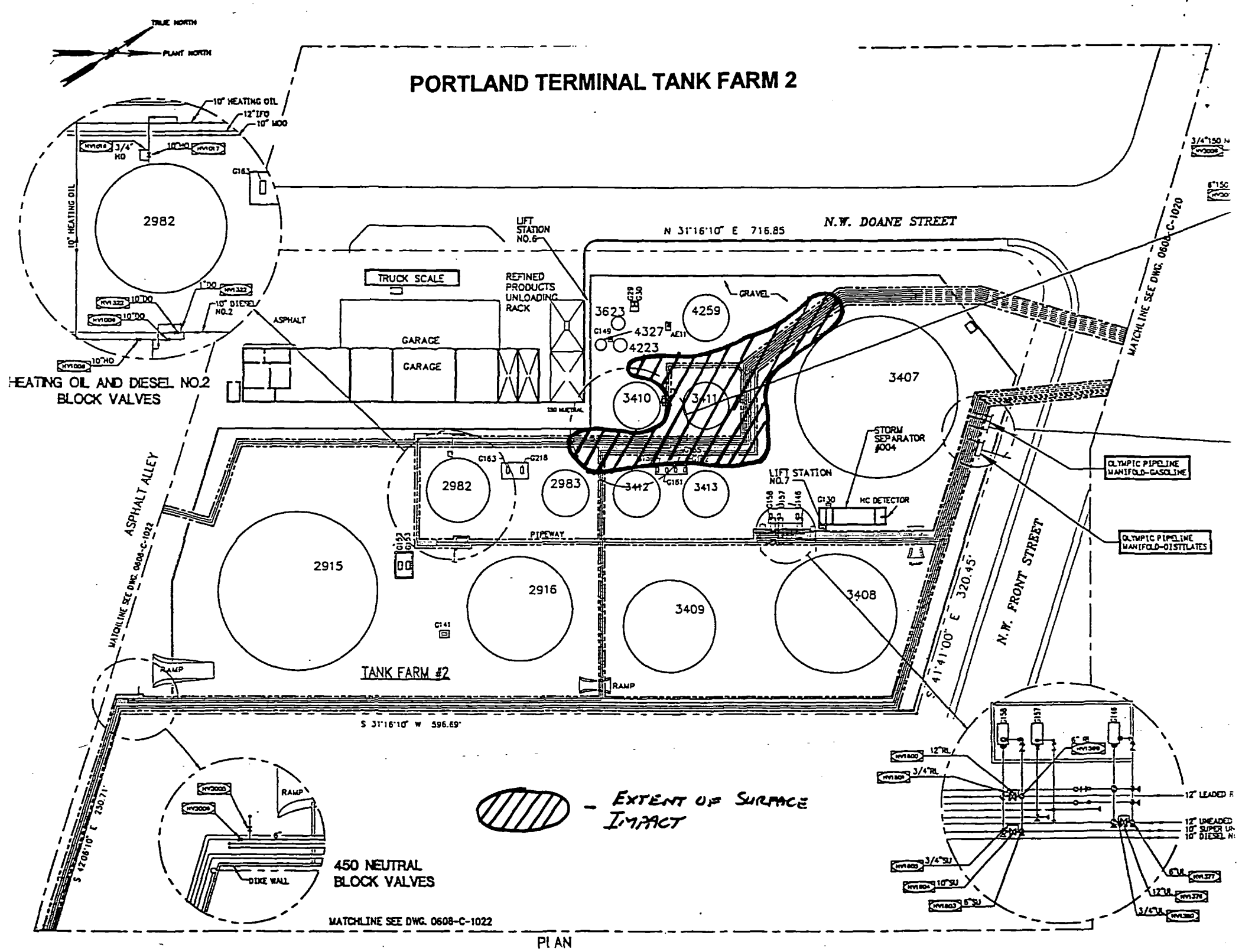
DRAWN BY	D.A.BYRNUM
CHK'D BY	WHB
APP'D BY	K.J.P
SCALE	AS SHOWN
DATE	01/29/96

PORTLAND TERMINAL
PORTLAND, OREGON

SITE PLAN
COAST GUARD OPERATING MANUAL

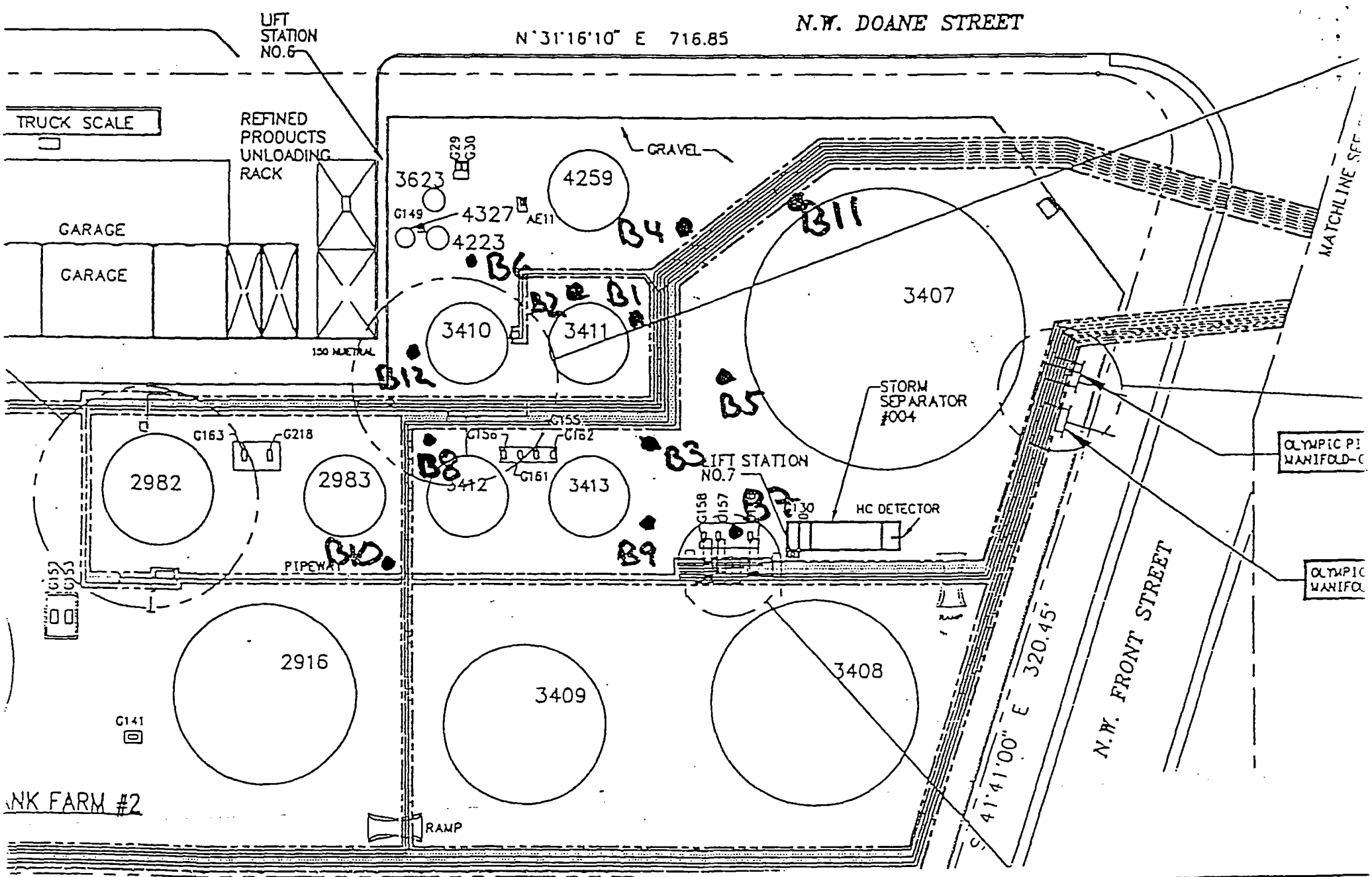
DRAWING NO.	SHT	OF	REV
0608-C-1000	1	OF 1	2

COP0013869



PLAN

COP0013870



PORTLAND TERMINAL
TANK FARM #2

• Soil Boring

UNOCAL 76
76 PRODUCTS COMPANY
Los Angeles, California

ALPHA ENGINEERS and CONSTRUCTORS, INC.

DRAWN BY	D.A.BYNUM
CHKD BY	
APPD BY	
SCALE	AS SHOWN
DATE	01/10/97

PORTLAND TERMINAL
PORTLAND, OREGON
TANK FARM NO.2
GENERAL ARRANGEMENT
COAST GUARD OPERATING MANUAL
DRAWING NO. 0608-C-1021
SHEET 1 OF 1

COP0013871

2-22-97

AOC 0922

CORRESP.

Loren Garner
Oregon Department of Environmental Quality
2020 SW 4th Avenue, Ste. 400
Portland, OR 97201-5884

Re: Written Report for Tank 3411 Spill
Unocal/76 Products Company Portland Terminal

Dear Mr. Garner:

This letter has been prepared to confirm your conversation earlier today with Martin Cramer of the Unocal Portland Terminal wherein you granted an extension for submitting the written report summarizing our response to the February 22, 1997 overfilling of Tank 3411. As discussed we are still waiting on some analytical results and a report from our consultant, Geo Engineers, to complete the subject report. Therefore, we will be unable to meet the original report submittal date of March 24. All outstanding information should be received by March 26 and assuming two or three days will be required to complete the report, we request a new submittal date of April 1.

If your understanding of the conversation with Martin Cramer differ from those described above, please contact me at your earliest convenience at 248-1530. Otherwise, we will assume the new submittal date of April 1 is acceptable and will proceed accordingly.

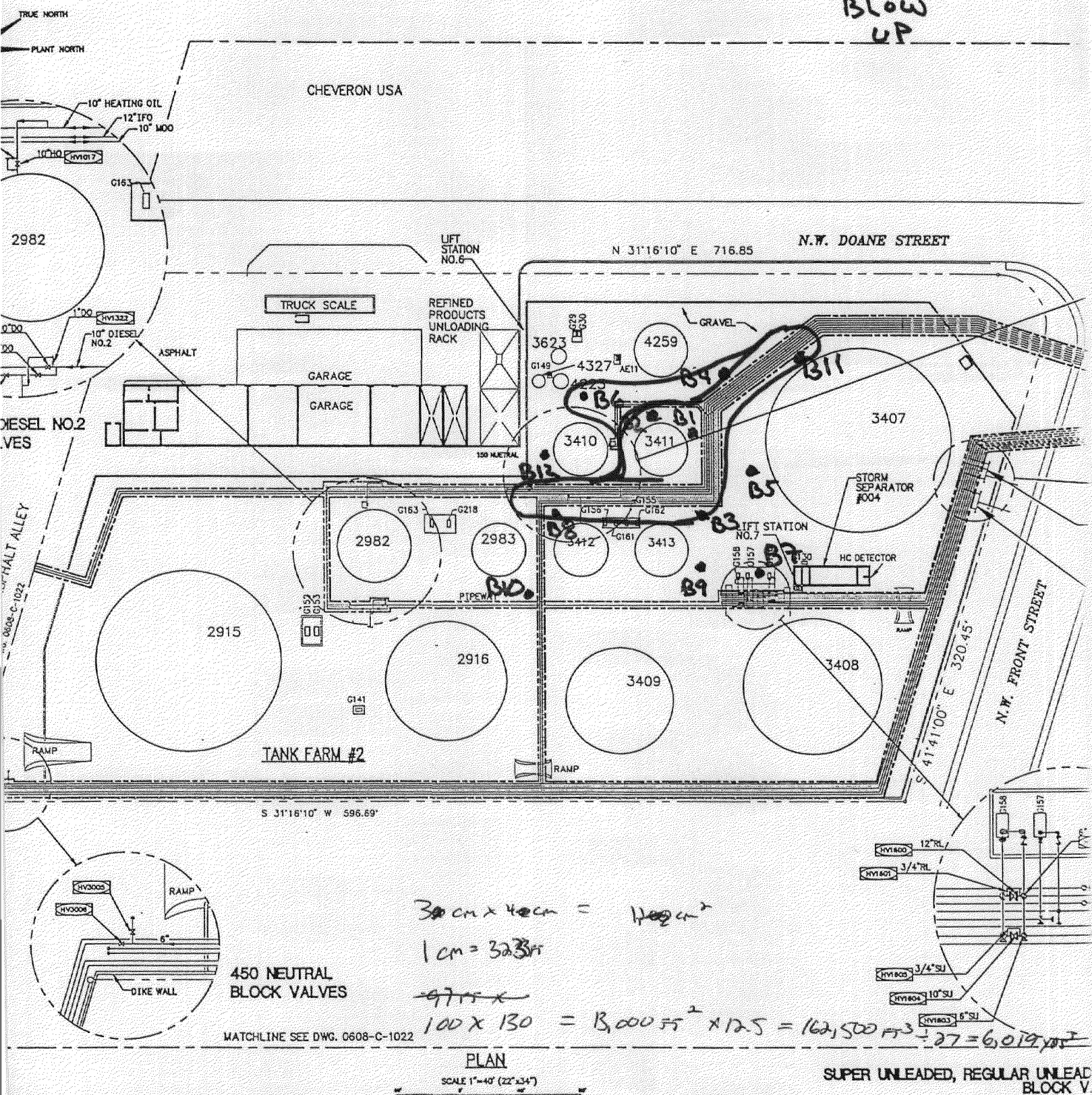
Thank you for your assistance and understanding in this matter. If you have any questions or require additional information, please feel free to contact me at the above number or Martin Cramer at 248-1517.

Sincerely,

Peter L. Schnieders
Manager, NW Operations

cc: M. Cramer
J. Sherman
K. Penningroth

BLOW UP



30 cm x 40 cm = 1200 cm²

1 cm = 32.33 ft

~~9775 x~~

100 x 130 = 13,000 ft² x 12.5 = 162,500 ft³ ÷ 27 = 6,019 yds³

PLAN

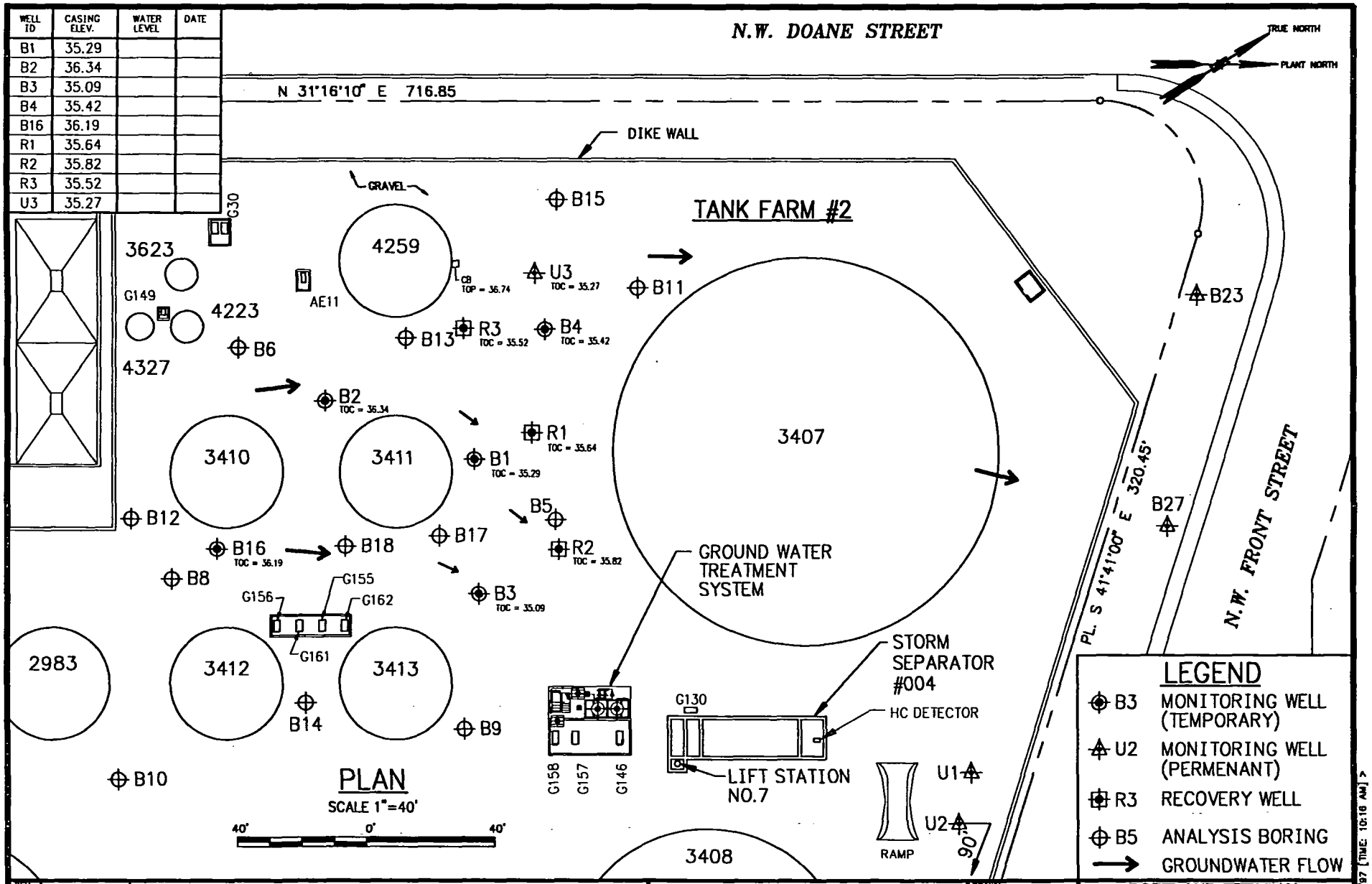
SCALE 1"=40' (22"x34")

SUPER UNLEADED, REGULAR UNLEAD
BLOCK V

REFERENCE DRAWINGS	REV. NO.	DATE	REVISED	DRAWN BY	CKD. BY
ILITIES GENERAL ARRANGEMENT	A	10/07/96	UPDATED TO SHOW U.S. COAST GUARD LIMITS	DAB	
M NO.1 GENERAL ARRANGMENT					

COP0013873

WELL ID	CASING ELEV.	WATER LEVEL	DATE
B1	35.29		
B2	36.34		
B3	35.09		
B4	35.42		
B16	36.19		
R1	35.64		
R2	35.82		
R3	35.52		
U3	35.27		



LEGEND

- B3 MONITORING WELL (TEMPORARY)
- U2 MONITORING WELL (PERMENANT)
- R3 RECOVERY WELL
- B5 ANALYSIS BORING
- GROUNDWATER FLOW

REV. NO.	DATE	REVISED
A	02/28/97	FOR REVIEW AND COMMENT
B	03/03/97	ADDED ANALYSIS BORINGS & WATER TREATMENT SYSTEM

UNOCAL 76
76 PRODUCTS COMPANY
Los Angeles, California

ALPHA ENGINEERS and CONSTRUCTORS, INC.
19 NW 5th AVE, SUITE 204, PORTLAND, OR 97209 Tel:(503)227-3317

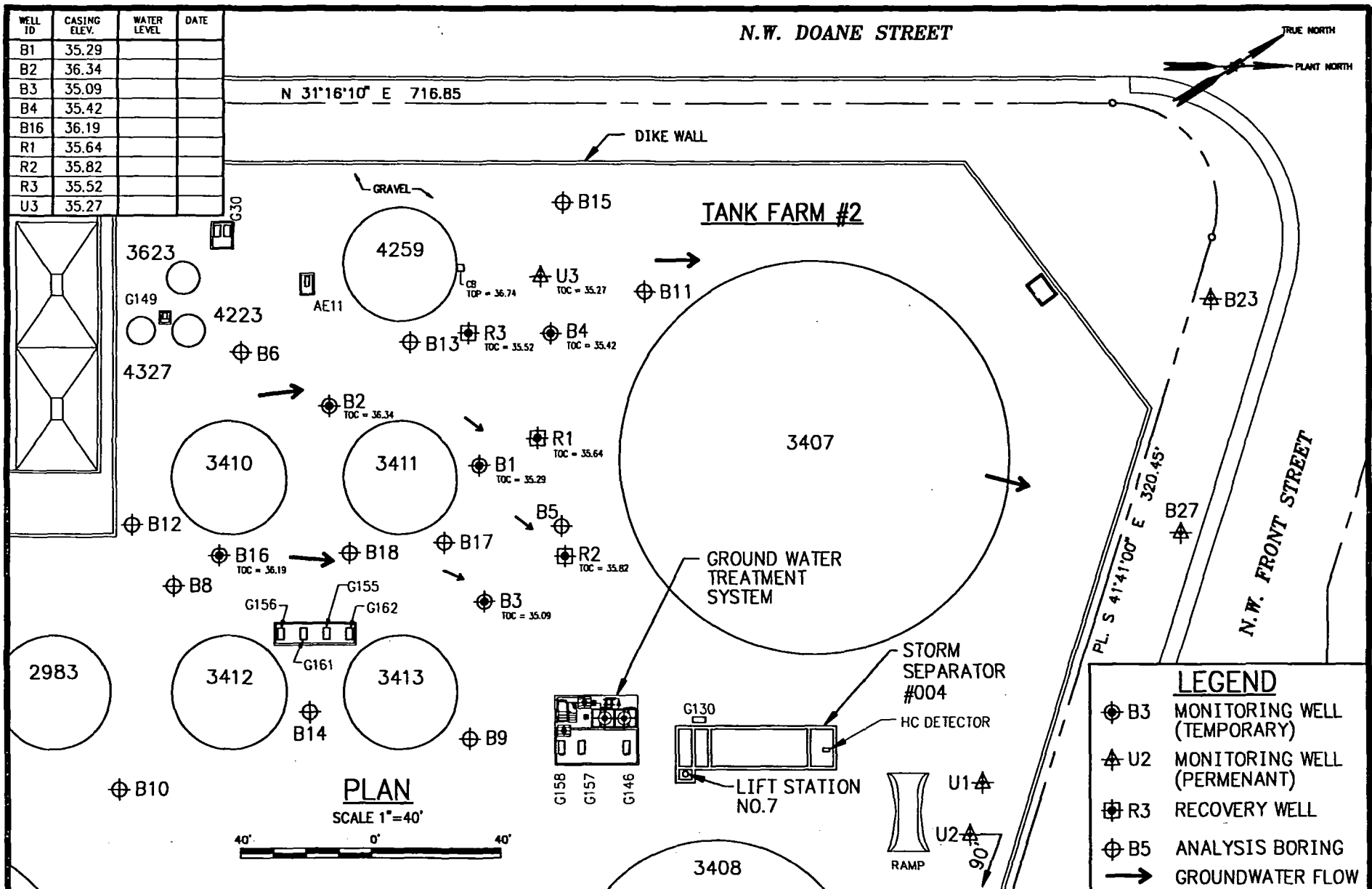
DRAWN BY D.A.BYNUM
CHKD BY
APPD BY
SCALE AS SHOWN
DATE 02/26/97

PORTLAND TERMINAL
PORTLAND, OREGON
TANK FARM #2 TK 3411 SPILL RESPONCE
AREA PLAN

DRAWING NO.	SHEET	REV.
0608-C-7100	1 OF 1	B

08C71008.DWG <CPD: 03/05/97 [TIME: 10:16 AM] >

COP0013874



WELL ID	CASING ELEV.	WATER LEVEL	DATE
B1	35.29		
B2	36.34		
B3	35.09		
B4	35.42		
B16	36.19		
R1	35.64		
R2	35.82		
R3	35.52		
U3	35.27		

LEGEND

- B3 MONITORING WELL (TEMPORARY)
- U2 MONITORING WELL (PERMENANT)
- R3 RECOVERY WELL
- B5 ANALYSIS BORING
- GROUNDWATER FLOW

REV. NO.	DATE	REVISED
A	02/28/97	FOR REVIEW AND COMMENT
B	03/03/97	ADDED ANALYSIS BORINGS & WATER TREATMENT SYSTEM

UNOCAL 76

76 PRODUCTS COMPANY
Los Angeles, California

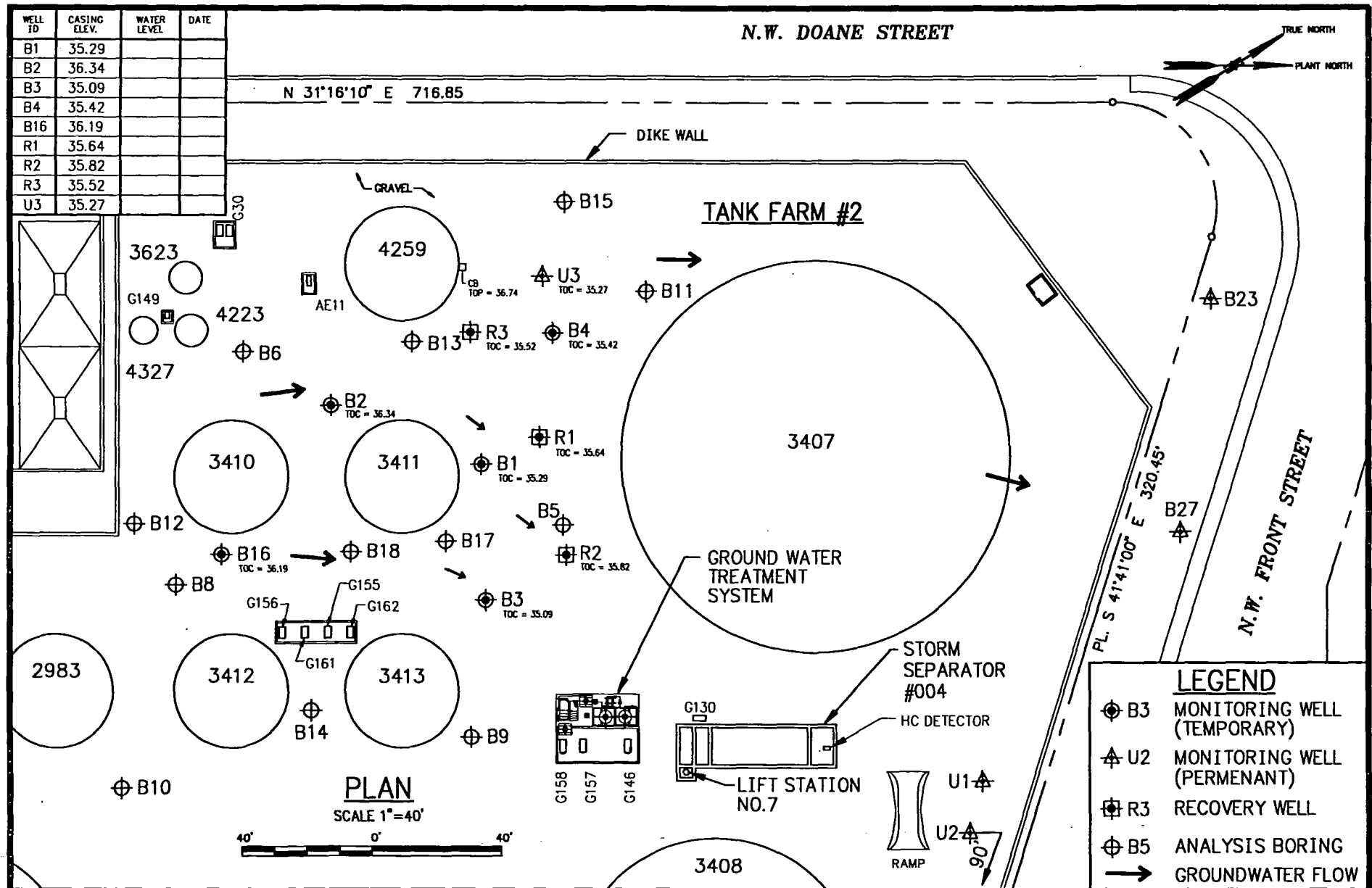
ALPHA ENGINEERS and CONSTRUCTORS, INC.
19 NW 5th AVE, SUITE 204, PORTLAND, OR 97209 Tel:(503)227-3317

DRAWN BY D.A.BYNUM
CHKD BY
APP'D BY
SCALE AS SHOWN
DATE 02/26/97

PORTLAND TERMINAL
PORTLAND, OREGON
TANK FARM #2 TK 3411 SPILL RESPONCE AREA PLAN

DRAWING NO. 0608-C-7100 | SHEET 1 OF 1 | REV. B

0867100B.DWG <PD: 03/05/97 [TIME: 10:18 AM] >



WELL ID	CASING ELEV.	WATER LEVEL	DATE
B1	35.29		
B2	36.34		
B3	35.09		
B4	35.42		
B16	36.19		
R1	35.64		
R2	35.82		
R3	35.52		
U3	35.27		

REV. NO.	DATE	REVISED
A	02/28/97	FOR REVIEW AND COMMENT
B	03/03/97	ADDED ANALYSIS BORINGS & WATER TREATMENT SYSTEM

UNOCAL 76
76 PRODUCTS COMPANY
Los Angeles, California

ALPHA ENGINEERS and CONSTRUCTORS, INC.
19 NW 5th AVE, SUITE 204, PORTLAND, OR 97209 Tel:(503)227-3317

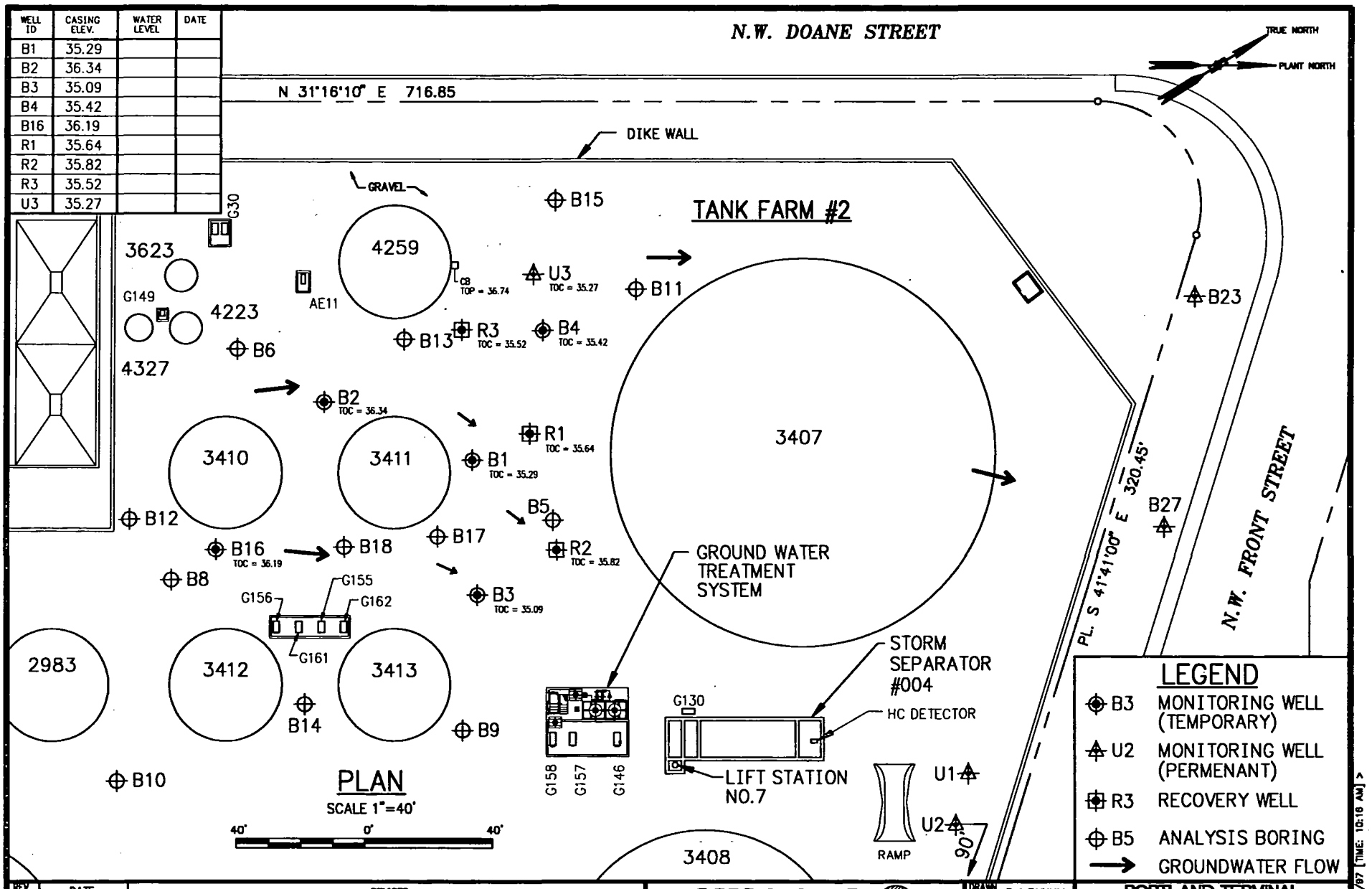
DRAWN BY D.A.BYNUM
CHKD BY
APP'D BY
SCALE AS SHOWN
DATE 02/26/97

PORTLAND TERMINAL
PORTLAND, OREGON
TANK FARM #2 TK 3411 SPILL RESPONCE
AREA PLAN

DRAWING NO. 0608-C-7100 | SHEET 1 OF 1 | REV. B

08C7100B.DWG <CPD: 03/05/97 [TIME: 10:16 AM] >

WELL ID	CASING ELEV.	WATER LEVEL	DATE
B1	35.29		
B2	36.34		
B3	35.09		
B4	35.42		
B16	36.19		
R1	35.64		
R2	35.82		
R3	35.52		
U3	35.27		



REV. NO.	DATE	REVISED
A	02/28/97	FOR REVIEW AND COMMENT
B	03/03/97	ADDED ANALYSIS BORINGS & WATER TREATMENT SYSTEM

UNOCAL 76
76 PRODUCTS COMPANY
Los Angeles, California

ALPHA ENGINEERS and CONSTRUCTORS, INC.
19 NW 5th AVE, SUUITE 204, PORTLAND, OR 97209 Tel:(503)227-3317

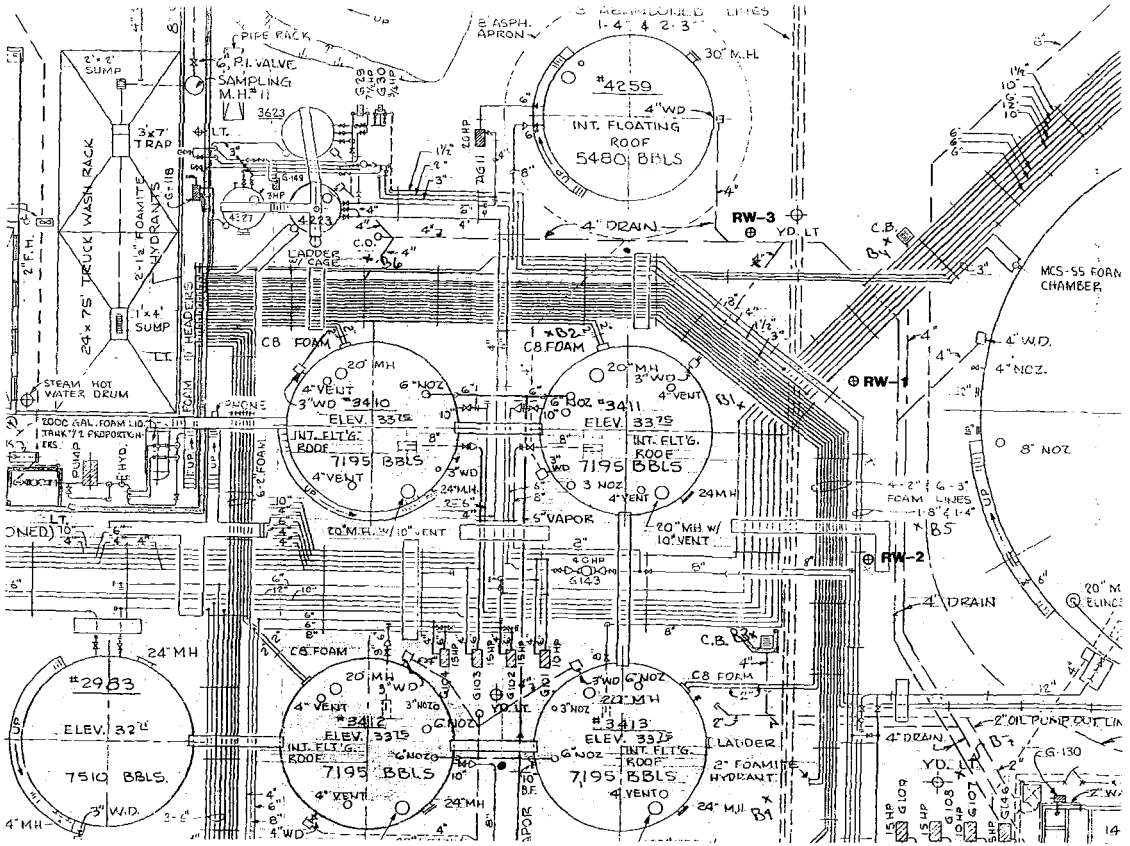
DRAWN BY D.A.BYNUM
CHKD BY
APPD BY
SCALE AS SHOWN
DATE 02/26/97

PORTLAND TERMINAL
PORTLAND, OREGON
TANK FARM #2 TK 3411 SPILL RESPONCE
AREA PLAN

DRAWING NO.	SHEET	REV.
0608-C-7100	1 OF 1	B

68C7100B.DWG <CPD: 03/05/97 [TIME: 10:16 AM] >

COP0013877



Note: The locations of all features shown are approximate.

References: Drawing provided by 76 Products Company.

Geo Engineers

SITE PLAN

FIGURE 2

0161-492-62 PJS:WEB 03/20/97

COP0013878

	P.C.	W.C.	WATER METER
3-7-97	1 3/4"	3/4"	
3-10-97	2 1/2"	1"	216240
3-11-97	3"	1"	217200
3-12-97	3 1/4"	1 1/4"	218160
3-13-97	3 1/2	1 1/4	219210
3-14-97	3 1/2	1 1/4	220130
3-17-97	5	1 3/4	225160
3-18-97	5 3/4	2	226800
3-19-97	6 1/4	2	228000
3-20-97	6 5/8	2 1/4	229660
3-21-97	7	2 1/4	230160
3-24-97	8	3 1/4	235360
3-25-97	8	3 1/4	236940
3-26-97	8 1/4	3 1/4	238520
3-27-97	8 3/8	3 1/4	239330
3-31-97	9	3 3/4	241130
4-1-97	9	3 3/4	241440
4-2-97	9	3 3/4	241770

76 PRODUCTS COMPANY

AOC 0922
CORRESP.

Portland Terminal
February 23, 1997

Memorandum

To: D. E. D'Zurilla
A. E. Viens

From: P. L. Schnieders P.L. Schnieders
J. W. Sherman J.W. Sherman

PRELIMINARY REPORT
OVERFILL OF TANK 3411
PORTLAND TERMINAL: 2-22-97

OVERVIEW

On Saturday, February 22, 1997 terminal operator Dexter Morrison was transferring 92 octane gasoline in Tank Farm #2 at the Portland terminal from Tank 3408 to Tank 3411. At 1555 hours he was advised by a truck driver that a Unocal storage tank was overfilling. Mr. Morrison responded to the tank farm to investigate. He found product spilling from the vents on Tank 3411. He stopped the transfer pump and closed the base valve on Tank 3408. He then went to the terminal control room and began requesting assistance and notifying the emergency response team. At 1610 Mr. Morrison made contact with the Portland Fire Bureau at the scene and remained with them until relieved as incident commander at 1635. Approximately 11,670 gallons were released and 1,600 gallons recovered as of 2-23-97.

SEQUENCE OF EVENTS

Head Operator Ralph Sandercock was working during the day shift (0650 to 1450 hours) on February 22. Following Mr. Sandercock on the swing shift and working as a Head Operator was Dexter Morrison. At 1400 hours Mr. Sandercock began a review of his ongoing activities and the scheduled activities on the swing shift in preparation of a shift change conference with Mr. Morrison. At this time he noted that a 92 octane gasoline receipt from the Olympic Pipeline was scheduled at 2119 hours to be delivered

into Tank 3408. Based on the size of the tender, Mr. Sandercock determined that there would be a containment problem and began to transfer product from 3408 to Tank 3411. The transfer started at 1415 hours. The transfer rate was approximately 1300 barrels/hour.

At 1445 Mr. Morrison arrived at the terminal and the shift change conference was held. At 1450 Mr. Morrison assumed Head Operator responsibilities. Mr. Sandercock left the terminal at 1500 hours.

At approximately 1555 hours Mr. Morrison received a call from a driver at the refined products load rack that a tank was overfilling. He went to Tank Farm 2 where the transfer was taking place and found product flowing from the vents on Tank 3411. He then turned off the product transfer pump and closed the base valve on Tank 3408. Mr. Morrison returned to the terminal control room and began requesting assistance and notifying the Northwest area emergency response team. The Portland Fire Bureau was notified of the spill at 1558 hours. They arrived on scene at 1604. Mr. Morrison met with the fire department at 1610 hours and remained with them until relieved as incident commander at 1635 hours.

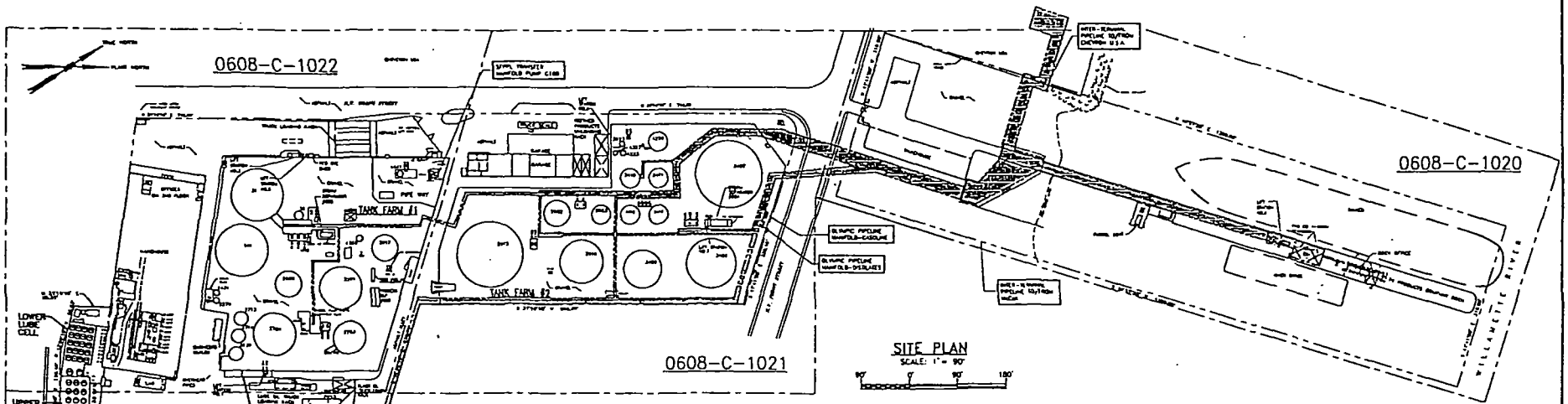
During the response, terminal personnel worked closely with the Fire Bureau to maintain a foam blanket on the released product to eliminate vapors and reduce the possibility of ignition while cleaning up free standing product. The Coast Guard responded, determined that no product had entered the Willamette river, that the product was contained on site, and they left the scene without any further concerns. The Oregon Department of Environmental Quality (DEQ) was notified and did not respond to the scene but stated that they were satisfied with the facility response. There will be further contact with DEQ on Monday, February 24.

The emergency response ended at 0400 hours on Sunday, February 23. At 0700 on February 23 the cleanup phase of the operation began. Terminal technical, HES, and operational personnel are currently working with a local contractor assessing soil conditions and defining the extent of the release. We have been in contact with John Dietzman of 76 Products Company HES. No assistance has been requested at this time but Mr. Dietzman will be advised on a daily basis of soil assessment and cleanup operation status.

The Portland Fire Bureau public information officer worked with Unocal representatives at the scene to develop facts related to the release. Several members of the media arrived at the scene, but were prevented by the Police department from getting close to the scene and therefore

could not obtain video of the incident. The media was provided facts related to the incident when they arrived along with periodic updates regarding the response. Karen Rodgers, Manager of Public Affairs, has been notified and public relations concerns have been addressed with her. At least two local television stations had coverage on the Saturday evening news, 11:00. An article appeared in the Sunday Oregonian newspaper, a copy of which will be faxed to you today. Two interviews were conducted with local TV stations (ABC & NBC) on Sunday, the interviews were not shown but coverage of the incident was included on their Sunday evening 5:00 newscast.

cc:
J. R. Dietzman
J. J. Maney
K. G. Rodgers
W. T. Skok



SITE PLAN
SCALE: 1" = 90'

LEGEND

U.S. COAST GUARD JURISDICTIONAL LIMITS

O.O.S. = OUT OF SERVICE

TANK DATA

TANK NO.	DIAMETER	HEIGHT	SERVICE	BARRELS	LOCATION
31	95'-5"	28'-8"	RFO	37,084	TF #1
36	18'-0"	14'-7"	SLOPS	520	TF #1
141	95'-5"	34'-0"	#6	43,363	TF #1
1471	10'-9"	28'-8 1/2"	COIL 10W	463	TF #1
2581	78'-0"	48'-7"	CUTTER STOCK	39,733	TF #1
2578	10'-9"	28'-8"	COIL 10W	480	TF #1
2668	48'-0"	35'-3"	MARINE DIESEL	11,318	TF #1
2713	24'-0"	35'-0"	UNAX 48	2,854	TF #1
2714	24'-0"	35'-0"	COIL 15/40	2,854	TF #1
2783	80'-0"	48'-7"	DECANT	23,440	TF #1
2784	78'-0"	40'-10"	DIESEL NO.2	34,684	TF #1
2915	170'-0"	42'-0"	UNLEADED REGULAR	84,670	TF #2
2916	78'-0"	48'-0"	HO NO.1 /DO NO.2	40,850	TF #2
2917	48'-0"	48'-0"	150 NEUTRAL	15,480	TF #1
2982	48'-0"	36'-0"	HEATING OIL NO.1	11,400	TF #2
2983	36'-0"	42'-0"	150 NEUTRAL	7,510	TF #2
3407	120'-0"	40'-0"	UNLEADED REGULAR	80,575	TF #2
3408	90'-0"	40'-0"	SUPER UNLEADED	40,335	TF #2
3409	70'-0"	40'-0"	ETHANOL	27,400	TF #2
3410	35'-0"	42'-0"	#6LS	7,195	TF #2
3411	35'-0"	42'-0"	SUPER UNLEADED	7,195	TF #2
3412	35'-0"	42'-0"	HEATING OIL NO.1	7,195	TF #2
3413	35'-0"	42'-0"	UNLEADED REGULAR	7,195	TF #2
3414	30'-0"	42'-0"	180 B/S	5,290	TF #3
3415	30'-0"	42'-0"	90 NEUTRAL	5,290	TF #3
3416	30'-0"	42'-0"	150 NEUTRAL	5,290	TF #3
3417	30'-0"	42'-0"	80 NEUTRAL	5,290	TF #3
3579	120'-0"	40'-0"	MFO	80,600	TF #3
3639	25'-0"	36'-0"	COIL 30	3,150	TF #1
3823	10'-9"	30'-0"	SLOPS	480	TF #3
3739	30'-0"	42'-0"	180 B/S	5,400	TF #3
3740	35'-0"	42'-0"	450 NEUTRAL	7,200	TF #3
3741	10'-9"	30'-0"	RAM MULT	480	U.L. CELL
3742	10'-9"	30'-0"	MP 8090	480	U.L. CELL
3743	10'-9"	30'-0"	TRAC FLO	480	U.L. CELL
3744	10'-9"	30'-0"	CB 100	480	U.L. CELL
3745	10'-9"	30'-0"	HDR 885	480	U.L. CELL
3746	10'-9"	30'-0"	LUB 7818A	480	U.L. CELL
3747	10'-9"	30'-0"	HT 436	480	U.L. CELL
3757	10'-9"	30'-0"	PRM3003	480	U.L. CELL
3760	10'-9"	30'-0"	CB 480	480	U.L. CELL
3761	120'-0"	40'-0"	DIESEL NO.2	80,600	TF #3
4191	10'-9"	30'-0"	LUB 9568	480	U.L. CELL
4192	10'-9"	30'-0"	TLA555	480	U.L. CELL
4223	10'-9"	30'-0"	GAS SLOPS	480	TF #2
4241	10'-9"	30'-0"	UNT AW32	480	U.L. CELL
4242	10'-9"	30'-0"	UNT AW32	480	U.L. CELL
4243	10'-9"	30'-0"	PH 370	480	U.L. CELL
4244	10'-9"	30'-0"	CB 32	480	TF #3
4245	10'-9"	30'-0"	180 B/S	480	TF #3
4252	50'-0"	32'-0"	#6 FUEL OIL	10,000	TF #3
4253	50'-0"	32'-0"	RFO	10,000	TF #3
4254	50'-0"	32'-0"	PS-300	10,000	TF #3
4255	50'-0"	32'-0"	O.O.S.	10,000	TF #3
4256	35'-0"	32'-0"		5,000	TF #3
4257	25'-0"	18'-0"	O.O.S.	1,000	TF #3
4258	10'-9"	30'-0"		480	TF #3
4259	35'-0"	32'-0"	TRANSMIX	5,480	TF #2
4266	10'-9"	30'-0"	FLUSH	480	TF #3
4281	10'-9"	30'-0"	ATF HP	480	U.L. CELL
4300	12'-6"	32'-0"	RAM MULT	715	L.L. CELL
4302	10'-9"	30'-0"	150 NEUTRAL	480	TF #3
4303	10'-9"	30'-0"	90 NEUTRAL	480	TF #3
4305	8'-6"	24'-0"		240	TF #3
4306	30'-0"	42'-2 1/2"	150 NEUTRAL	5,300	TF #3
4318	80'-0"	42'-3"	MFO	33,810	TF #3
4320	15'-0"	32'-2 1/2"	LUBE Mfg.	1,000	TF #3
4321	15'-0"	32'-2 1/2"	LUBE Mfg.	1,000	TF #3
4322	15'-0"	32'-2 1/2"	LUBE Mfg.	1,000	TF #3
4323	15'-0"	32'-2 1/2"	LUBE Mfg.	1,000	TF #3
4327	8'-6"	24'-0"	SLOPS	240	TF #3
4331	12'-6"	32'-0"	OLOA7999	715	L.L. CELL
4332	10'-9"	30'-0"	SUP-ATF	480	U.L. CELL
4333	10'-9"	30'-0"	MYD AW68	480	U.L. CELL
4334	10'-9"	30'-0"	EMPTY	480	U.L. CELL
4335	10'-9"	30'-0"	LUBE 32	480	TF. F
4336	10'-9"	30'-0"	EMPTY	480	TF. F
4337	10'-9"	30'-0"	UNAX 48	480	TF. F
4338	3'-6"	14'-0"	LUBE OIL ADD.	24	WAREHSE
4339	3'-6"	14'-0"	LUBE OIL ADD.	24	WAREHSE
4340	3'-6"	14'-0"	LUBE OIL ADD.	24	WAREHSE
4341	3'-6"	14'-0"	LUBE OIL ADD.	24	WAREHSE
4342	3'-6"	14'-0"	LUBE OIL ADD.	24	WAREHSE
4343	3'-6"	14'-0"	LUBE OIL ADD.	24	WAREHSE
4344	3'-6"	14'-0"	LUBE OIL ADD.	24	WAREHSE
4345	3'-6"	14'-0"	LUBE OIL ADD.	24	WAREHSE
4346	3'-6"	14'-0"	LUBE OIL ADD.	24	WAREHSE
4347	3'-6"	14'-0"	LUBE OIL ADD.	24	WAREHSE
4389	10'-9"	30'-0"	450 N	480	TF #1
4388	9'-4"	23'-9"	FLUSH	390	L.L. CELL
4389	9'-4"	23'-9"	UNICOR 48	390	L.L. CELL
4390	9'-4"	23'-9"	BAC 150	390	L.L. CELL
4391	9'-4"	23'-9"	MAR 220	390	L.L. CELL
4392	9'-4"	23'-9"	COIL 30	390	L.L. CELL
4393	9'-4"	23'-9"	FB15/40	390	L.L. CELL
4394	9'-4"	23'-9"	HY/A 30	390	L.L. CELL
4395	9'-4"	23'-9"	FLUSH	390	L.L. CELL
4397	9'-4"	23'-9"	MP GEAR 85W/140	390	L.L. CELL
4398	9'-4"	23'-9"	SUPER SAE10W-30	390	L.L. CELL
4399	9'-4"	23'-9"	SUPER 10/30	390	L.L. CELL
4400	9'-4"	23'-9"	QUAKOIL SAE40	390	L.L. CELL
4401	9'-4"	23'-9"	SUP ATF	390	L.L. CELL
4402	9'-4"	23'-9"	ATF TYPE F	390	L.L. CELL
4403	9'-4"	23'-9"	SUPER 10/40	390	L.L. CELL
4404	9'-4"	23'-9"	QUAKOIL 10/30	390	L.L. CELL
4405	9'-4"	23'-9"	LUBRITOL 5178F	390	L.L. CELL
4406	9'-4"	23'-9"	ECA 4337	390	L.L. CELL
4407	9'-4"	23'-9"	AMOLOIL 9001U	390	L.L. CELL
4408	9'-4"	23'-9"	TLA 6718	390	L.L. CELL
4410			UNLEADED		
4432			UNLEADED		
4441	10'-0"	30'-0"	GASOLINE ADDITIVE	480	TF #3
F-103	12'-6"	32'-0"	EXXON 100	690	TF. F
F-104	10'-9"	32'-0"	EXXON 100	518	TF. F
F-10			EMPTY		TF. F
F-11			EMPTY		TF. F
F-12			TURMOIL0608		TF. F
F-13					
F-14			FLUSH		

DRAWING NO.	REFERENCE DRAWINGS
0608-C-1020	DOCK FACILITIES
0608-C-1021	TANK FARM NO.2 GENERAL ARRANGEMENT
0608-C-1022	TANK FARM NO.1 GENERAL ARRANGEMENT
0608-C-1023	TANK FARM NO.3 GENERAL ARRANGEMENT

REV. NO.	DATE	REVISED	DRAWN BY	CHK'D BY
0	01/29/96	UPDATED TANK DATA	DAB	WHB
1	11/20/96	GENERAL UPDATES	DAB	WHB
2	01/17/97	DEFINED COAST GUARD JURISDICATIONAL LIMITS	DAB	WHB

UNOCAL 76
76 PRODUCTS COMPANY
Los Angeles, California

ALPHA ENGINEERS and CONSTRUCTORS, INC.

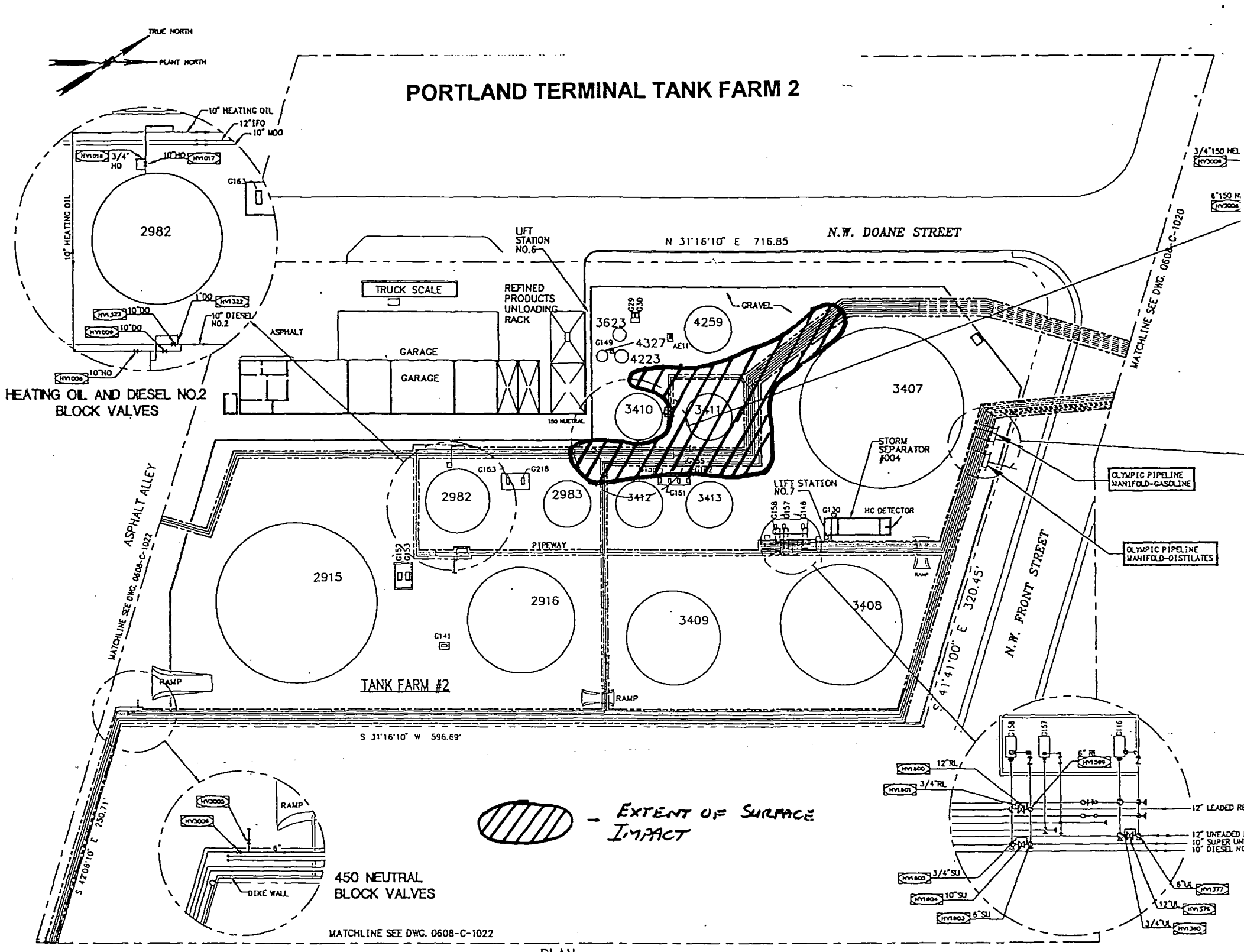
DRAWN BY	D.A.BYNUM
CHK'D BY	WHB
APP'D BY	KJP
SCALE	AS SHOWN
DATE	01/29/96

PORTLAND TERMINAL
PORTLAND, OREGON

SITE PLAN
COAST GUARD OPERATING MANUAL

DRAWING NO. 0608-C-1000 | SHEET 1 OF 1 | REV. 2

COP0013883



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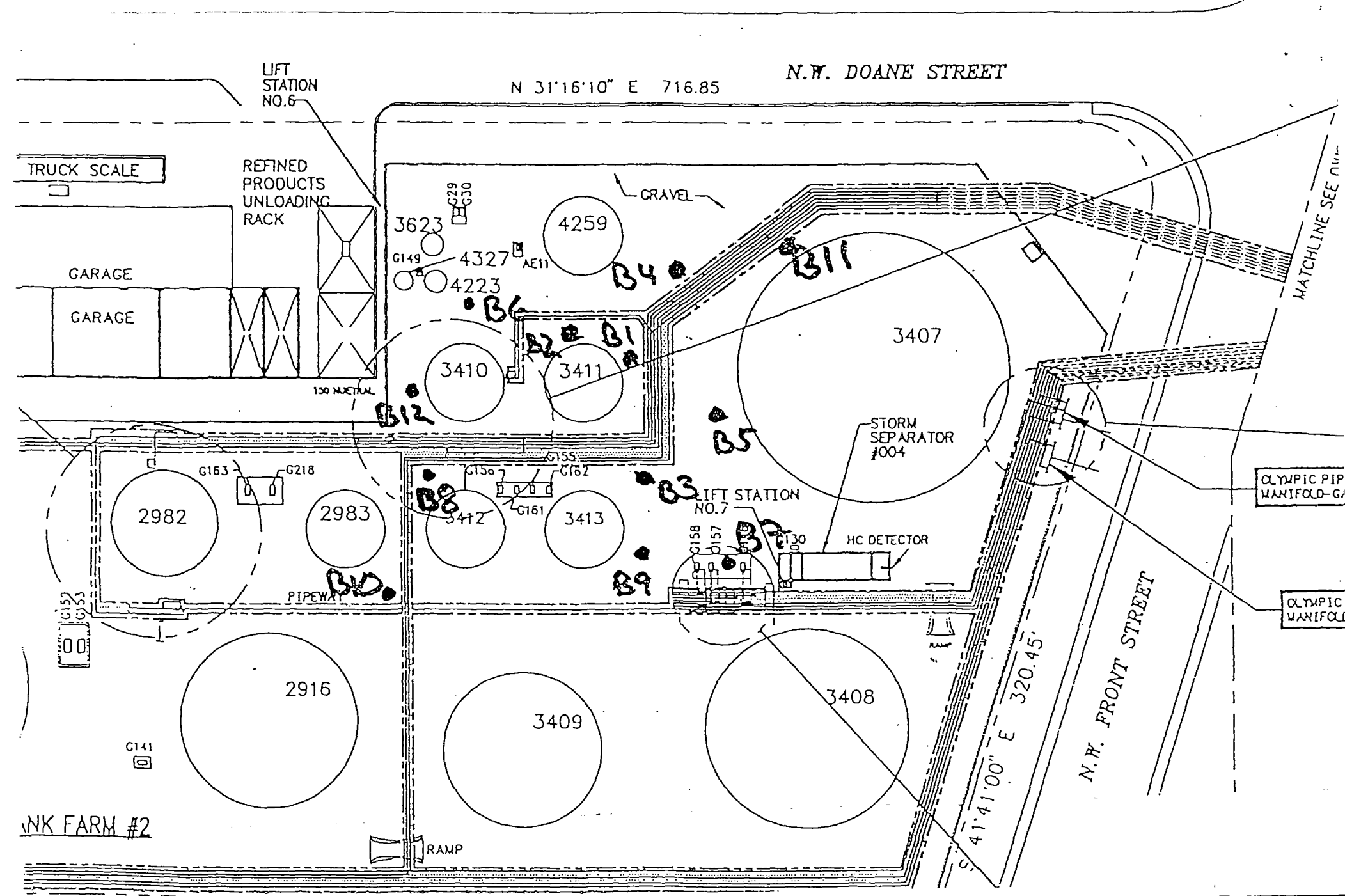
COP0013884

PORTLAND TERMINAL
TANK 3411 SPILL
INITIAL SUBSURFACE INVESTIGATION

BORING NUMBER	DATE BORED	DEPTH TO GROUNDWATER (FT)	SOIL HEADSPACE ANALYSIS AT GROUNDWATER (PPM)	COMMENTS
B1	2/23/97	12.5	500	SANDY SOILS. 3" OF FREE PRODUCT ON GROUNDWATER SURFACE.
B2	2/23/97	13	430	SANDY SOILS. FILM OF PRODUCT ON GROUNDWATER, MODERATE GASOLINE ODOR
B3	2/23/97	12.5	590	SANDY SOILS.
B4	2/23/97	13.5	140	SANDY SOILS. SLIGHT GASOLINE ODOR
B5	2/23/97	14	3.5	SANDY SOILS.
B6	2/23/97	13	145	SANDY SOILS WITH CLAY ENCOUNTERED AT LOWER DEPTHS. FILM OF PRODUCT ON GROUNDWATER. SLIGHT GASOLINE ODOR
B7	2/23/97	14	10	SANDY SOILS
B8	2/23/97			SANDY SOILS. COBBLE ENCOUNTERED. BORING STOPPED < 3'
B9	2/23/97	13.5	50	SANDY SOILS.
B10	2/23/97	12.5	250	SANDY SOILS. ODOR OF OLD OIL
B11	2/23/97	12.5	150	SANDY SOILS. MAY BE OLD GASOLINE
B12	2/23/97	12.5	180	SANDY SOILS WITH CLAY ENCOUNTERED AT LOWER DEPTHS.

NOTE: Additional data and comments collected during boring activities (not presented here) are shown on field data sheets.



• Soil Boring

COP0013886

Unocal gasoline leak closes 12 blocks of N.W. Front Avenue

An undetermined amount of super unleaded gasoline leaked about 3:40 p.m. Saturday from tanks at a Unocal storage facility, 5528 N.W. Doane Ave.

Officials closed 12 blocks of Front Avenue, as far south as the Kittridge Bridge, said Gary Farland, a spokesman for the Portland Fire Bureau.

The spill occurred when Unocal workers tried to do a routine fuel transfer from one tank to another, Farland said. The gasoline leaked from a tank that holds 6,340 barrels of fuel, but the spill was confined to a dike area around the tanks, he said.

Fire Bureau and Unocal officials applied a foam to suppress the flammable fumes and manually open a valve on the spilled tank to reduce the amount of its contents.

Thirty-six firefighters from 17 units responded. Some monitored the spill overnight.

There were no injuries or evacuations, although nearby businesses were warned of the situation. Front Avenue was reopened by 10 p.m.

"Anytime you have an undetermined amount of super unleaded fuel leaked, you have the possibility of a very dangerous area," Farland said.

Hillsboro police charge man in Friday night stabbing

HILLSBORO — Police accused a man of attempted murder Friday night after discovering another man lying in a street with a stab wound to the abdomen.

Luis Jose Gomez-Bacerra, 25, was arrested and lodged in the Washington County Jail.

The victim, whose name was unknown, was discovered in the 1300 block of Southeast Oak Street. He was taken to Legacy Emanuel Hospital, where he was listed as a John Doe and was in serious condition.

Hillsboro police discovered the injured man while responding to a call of a fight in the area. An investigation revealed that the two men were fighting, which resulted in the stabbing.

Medford man dies when Jeep hits his car; passenger hurt

KLAMATH FALLS — A Medford man was killed Saturday, and his passenger was injured when a Jeep hit his car broadside at Keno Worden Road and U.S. 97.

Robert M. Stebbings, 41, died at the scene after driving his 1989 Honda Accord into the path of a Jeep Cherokee driven by Timoteo Guerrero Silvas, 27, of Quincy, Wash.

A passenger in Stebbing's car, Helen E. Stebbings, 70, was taken to Merle West Medical Center with a chest injury. She was in stable condition Saturday night, a nursing supervisor said.

Oregon State Police said Robert Stebbings was driving on Keno Worden Road and stopped at a stop sign before proceeding across U.S. 97. Silvas' vehicle struck Stebbings' car in the southbound lane.

Silvas and five passengers received minor bumps and bruises. The passengers in both vehicles were wearing seat belts.

FBI arrests Portland man in Friday Wells Fargo holdup

A suspect in a Friday afternoon bank robbery was arrested Friday night.

The FBI in Portland arrested Dale Ramsey Olson, 38, of Portland at 7:30 p.m. near the robbery scene.

Patrick Geonetta, spokesman for the FBI, said Olson allegedly walked into the Wells Fargo Bank, 2625 E. Burnside St., about 3 p.m. and demanded money and handed tellers a note. Geonetta said a witness got the license plate of the getaway car, and that led police to Olson.

Olson was held at the Justice Center jail. Officials expect to charge him with bank robbery in U.S. District Court.

THE OREGONIAN 2-23-97
METRO SECTION PAGE D8

COP0013887

76 PRODUCTS COMPANY

Portland, Oregon
February 25, 1997

AOC 0922
CORR

Memorandum

To: D. E. D'Zurilla
A. E. Viens

From: P. L. Schnieders
P. L. Schnieders

PORTLAND TERMINAL
REMEDIATION PLAN

As a result of the tank overfill incident on February 22, 1997, the Portland terminal has the following plan to recover product released.

All free product on the surface, in the stormwater system, and in the process water system was recovered on February 22 and February 23 during the initial emergency response. This activity included flushing of all stormwater and process water piping systems, and recovery of the product in the oil/water separators. Approximately 1650 gallons of product were recovered in this process, product was measured while in the vacuum truck utilizing an interface probe which can detect both the product surface and the interface point between product and water.

The main focus on February 23-24 was to assess the extent of product movement in the soil and on the groundwater. This assessment was accomplished by using a hand auger to bore holes at selected locations from the ground surface to ground water. During each boring, samples of the soil were removed at selected depths and the headspace screened for hydrocarbon content using an organic vapor meter. In addition, the team members inspected each sample and noted the soil type, moisture content, and presence and type of hydrocarbon odor (recently released gasoline, old gasoline, old diesel, etc.). This information is important because there is known contamination in the area and a Potential Responsible Party (PRP) group has been working with the state of Oregon to clean up the area for several years. The location of these borings is shown on Attachment 1 and the results of the soil and hydrocarbon content evaluations in each boring are shown on Attachment 2. PVC well casings were temporarily installed in selected borings to identify the presence of free or separate phase product on the groundwater.

After the results of these borings were obtained, Geo Engineers, a contractor that previously worked with Unocal and the local PRP group to characterize the extent of existing subsurface contamination and hydrogeology at the terminal, was retained to assist in developing a plan to recover released product. Boring results show that in certain areas hydrocarbon content is greater than in other areas which leads us to believe that the release impacted the area shown on Attachment 3. Separate phase product has been

found on the groundwater only in Boring #1, but it is believed that the groundwater may be impacted in the area shown on Attachment 4.

The short term focus is to recover product on the groundwater to minimize the area of impact and to prevent offsite product migration. To facilitate product recovery from the groundwater, three monitoring/recovery wells are planned as shown on Attachment 3 and should be installed by February 28. The well locations are based on proximity to the known area of separate phase product accumulation and the local groundwater gradient sloping to the northeast towards Tank 3407 and the Willamette River. The center well will be utilized as the initial product recovery point with the other two wells used primarily for monitoring, but may also be used for recovery should separate phase product appear in the wells. We will also be inspecting an underground pipe trench that traverses the area and runs across Doane Ave to Chevron to ensure that product is not using this conduit to exit the facility.

Product retained in the soil between the surface and the water table is likely to remain in that state for an extended period of time. Minor amounts of separate and dissolved phase product may, however, be flushed to the water table by percolating storm water. Therefore, the short term focus is not to attempt recovery of this product. In the long term, vapor extraction is the process that will most likely be used to recover the soil-bound product. Since this process is not planned in the short term, the next two weeks, I will not include a description of this process in this memo.

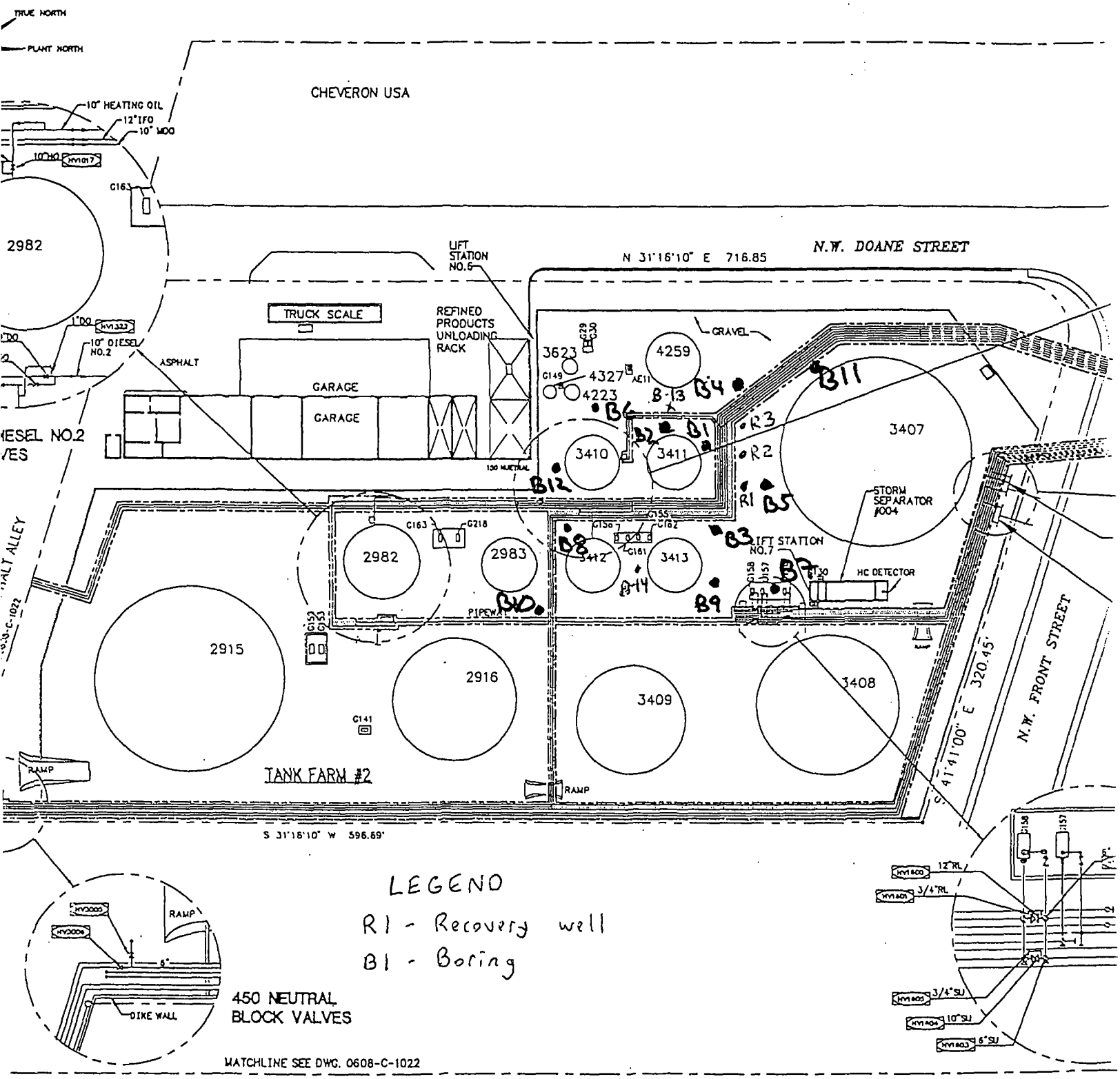
It is unknown at this time as to the time frame for completion of the product recovery activities. The cost of the emergency response and product recovery is expected to be approximately $40M by the end of this week and will be approximately $200M in the first 30 days of the response. This cost estimate is very preliminary and includes replacing the fire department's foam used to suppress vapors at the time of the incident (the fire department stated at the time of the incident that they would not invoice Unocal for their services), the emergency response and cleanup contractor, the environmental consultant, and equipment to recover and process separate product and some contaminated groundwater. A copy of this estimate is provided as Attachment 5.

We will continue to work with Geo Engineers to assess recovery progress and further actions. Please let me know if you have questions, concerns, or need additional information.

cc:
M. A. Cramer
J. R. Dietzman
J. J. Maney
K. J. Penningroth
K. G. Rodgers
W. T. Skok
D. Truzzolino

Shown
Roger
John

ATTACHMENT 1



PLAN

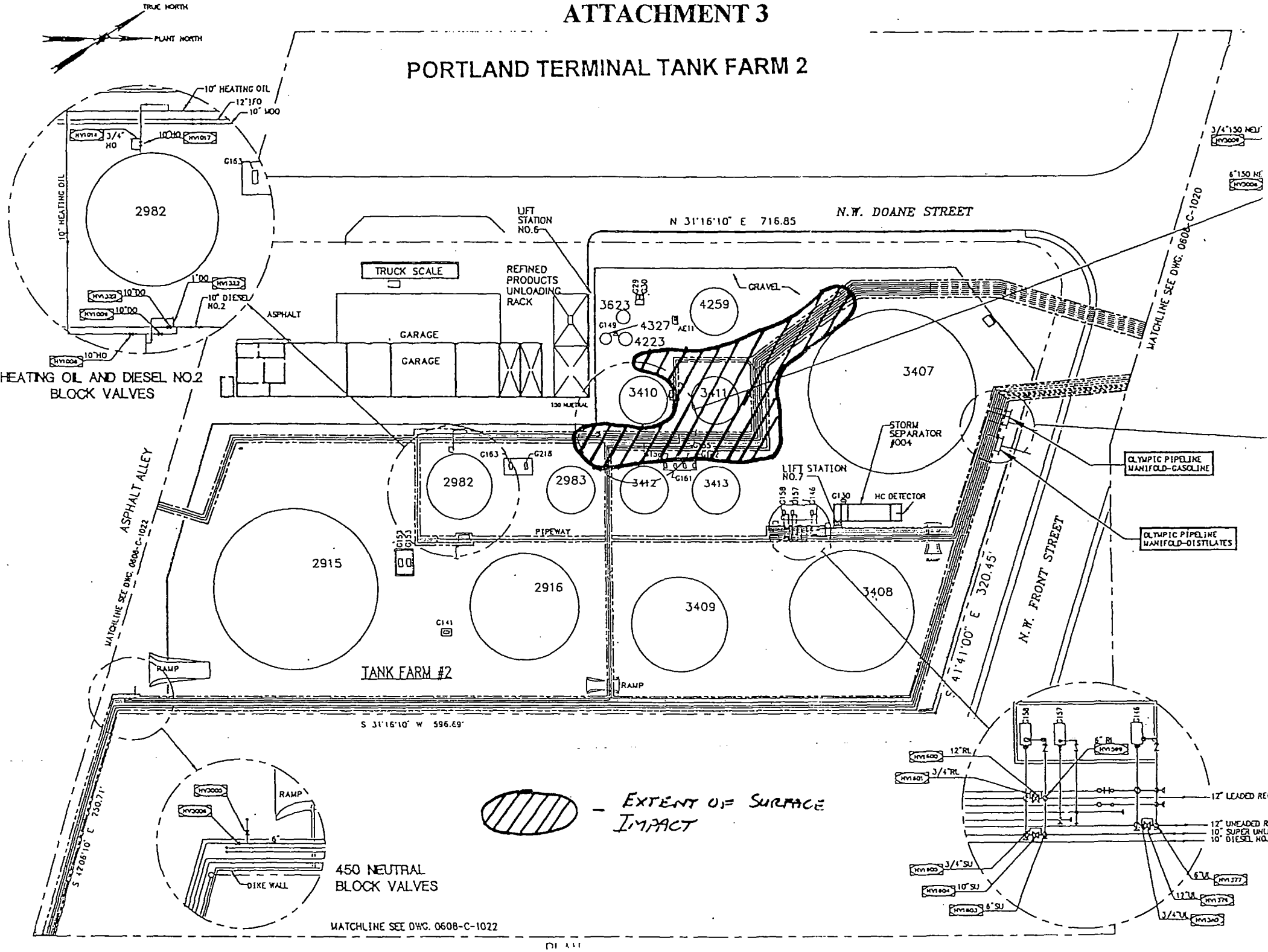
SCALE 1"=40' (22"x34")

SUPER UNLEADED, REGULAR UNLEAD
BLOCK V

REFERENCE DRAWINGS	REV. NO.	DATE	REVISED	DRAWN BY	CHD. BY
LITIES GEN RAL ARRANGEMENT	A	10/07/96	UPDATED TO SHOW U.S. COAST GUARD LIMITS	DAB	
NO.1 GENERAL ARRANGMENT					

COP0013890

ATTACHMENT 3



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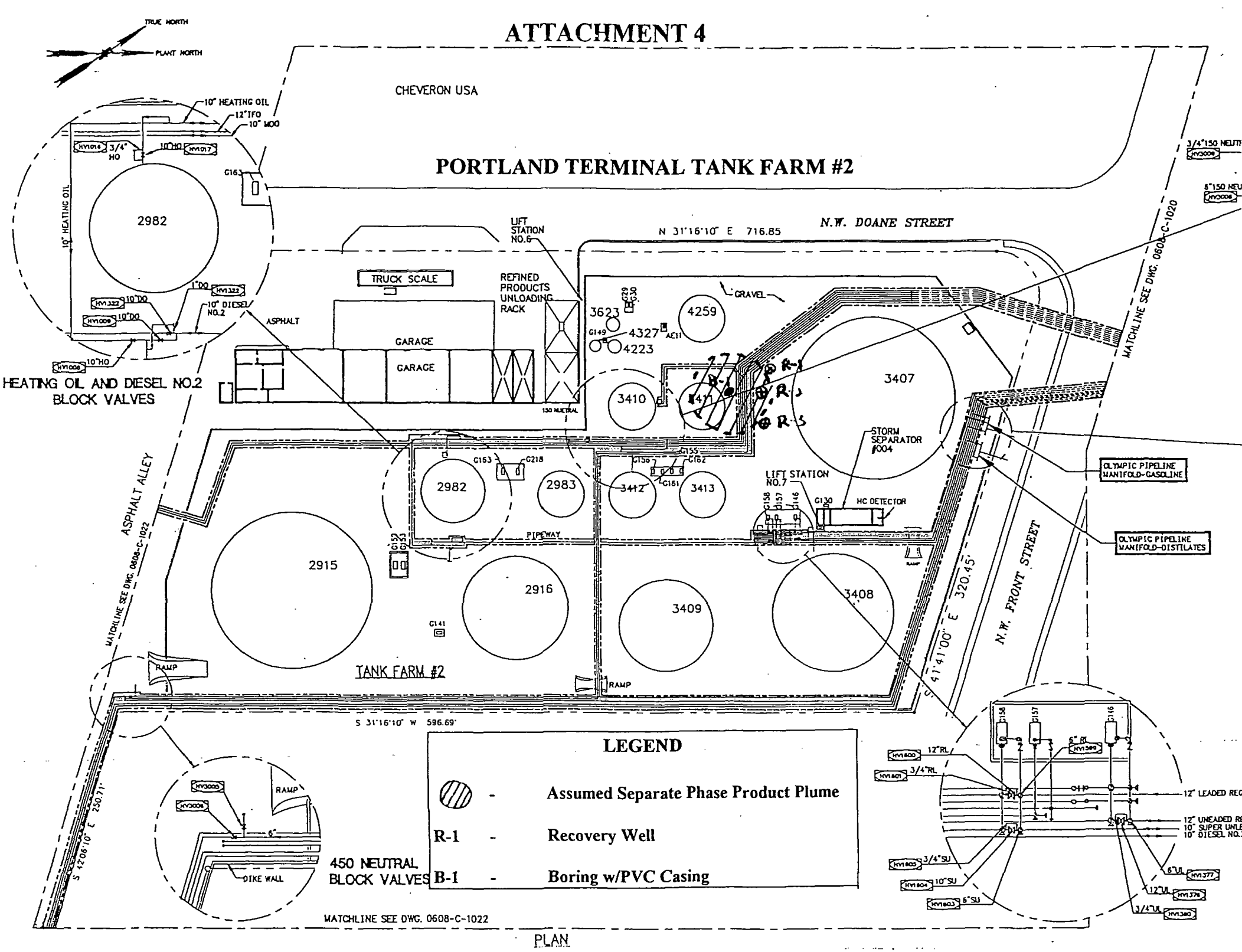
ATTACHMENT 4



PLAN

COP0013892

ATTACHMENT 5

UNOCAL BUDGET COST ESTIMATE

MADE BY:	K.J. PENNINGROTH
DATE:	25-Feb-97
ESTIMATE NO.:	1
EXP. CODE:	920 367 00051
FACILITY CODE:	350608

TANK 3411 SPILL RESPONSE
PORTLAND TERMINAL

Scope of Work:
This project is intended to locate and remove free-phase gasoline perched on the ground water table in tank farm 1 at Unocal's Portland terminal. The ground water contamination is the result of a 11,600 gallon release of super unleaded gasoline from tank 3411 on February 22, 1997.

Emergency response contractors were immediately retained to assist in responding to the incident. They assisted in isolating the tank and removing captured gasoline from surface impoundments as well as the water handling systems. Efforts then shifted to locating the suspected plume of free-phase gasoline on the groundwater table. This included boring temporary monitoring wells and installing well casings to delineate the extent of the plume. These tasks are complete and are included in the cost estimate below.

Recovery efforts will concentrate on installing a series of three recovery wells, collection piping and a pre-treatment system for captured groundwater and free-phase product. The 4" diameter recovery wells will be approximately 25' deep and installed per the State of Oregon's Water Resources' requirements. Collection piping will connect the recovery wells to the groundwater pre-treatment system. The system will be designed to handle a flow rate of approximately 20 gpm.

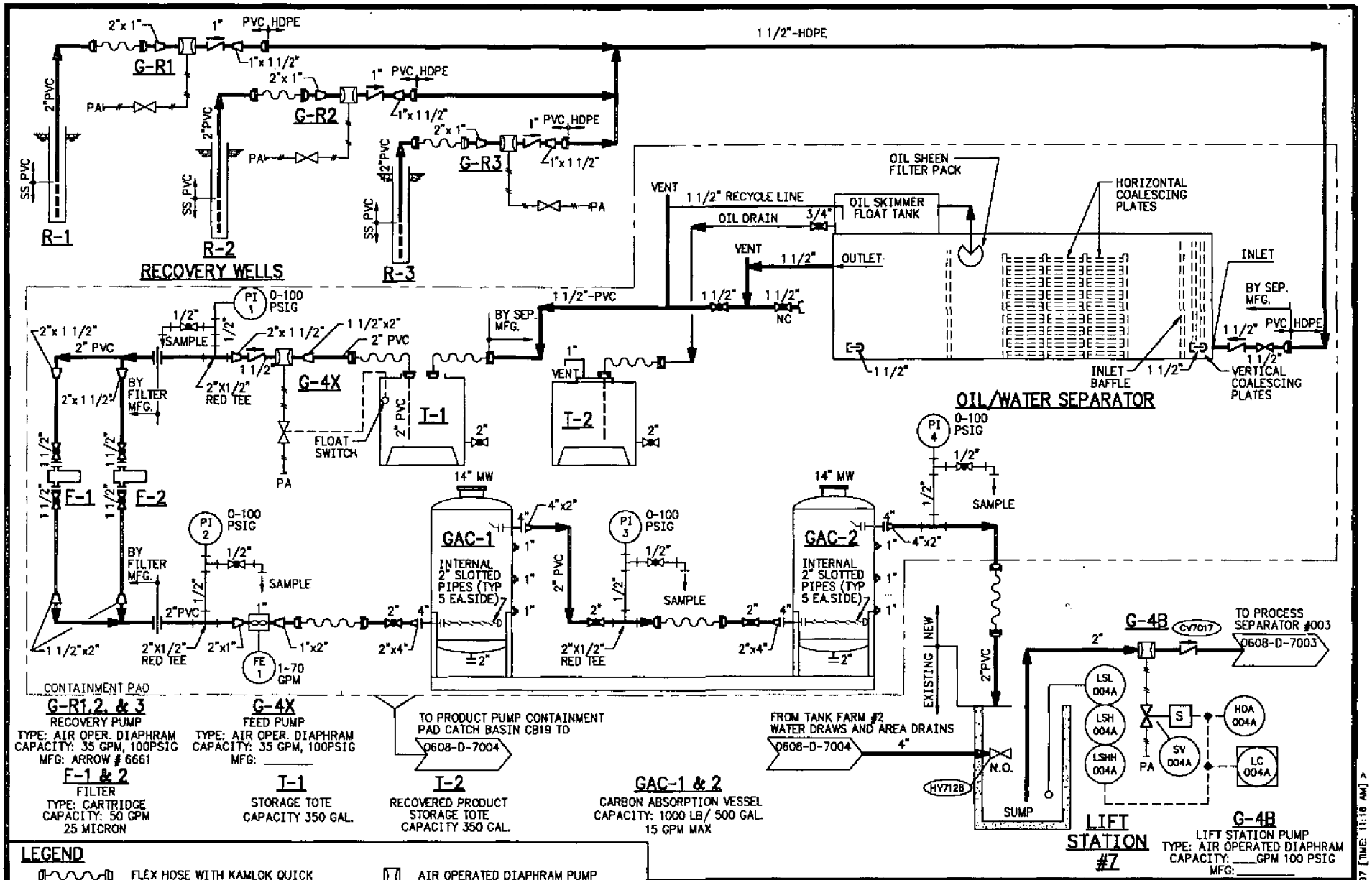
The groundwater pre-treatment system is to consist of an oil/water separator, free-phase collection tank, two transfer pumps and two carbon filter units (in series). The treated groundwater will then be pumped into into the terminal's process water treatment system and finally discharged to the POTW under an industrial wastewater discharge permit.

The scope of work includes technical consultanting fees, system checkout and start-up assistance. This project is limited in duration from the initial response through the first 30 days of operation of the product recovery system.

COP0013893

Item No.	Quantity & Item	Material Cost	Labor Cost	Total
1.0	**Expense**			
1.1	Immediate Spill Response			
1.1.1	Secure Site (2/22)	$2,000	$3,000	
1.1.2	Initial Subsurface Inv. (2/23)	$3,000	$5,000	
1.1.3	Cont. Response and (2/24 - 2/28)	$3,000	$12,000	
1.1.4	Waste Disposal	$4,000		
1.1.5	Foam Replacement	$7,000		
1.1.6	Lab Testing Fees	$1,000		
1.1.7	Misc.	$2,000	$1,000	
	Subtotal	$22,000	$21,000	
1.2	Recovery Wells			
1.2.1	Drill & Install 3 Wells	$2,000	$3,000	
1.2.2	Recovery Pumps (3)	$22,000	$2,000	
1.2.3	Recovery Piping	$1,000	$3,000	
1.2.4	Lab Testing	$5,000		
1.2.5	Technical Oversight	$1,000	$6,000	
	Sub-Total	$31,000	$14,000	
1.3	Groundwater Treatment System			
1.3.1	Oil/Water Separator	$9,000	$3,000	
1.3.2	Product Recovery Tank	$2,000	$1,000	
1.3.3	Transfer Pumps (2)	$2,000	$3,000	
1.3.4	Carbon Filter Units (2)	$12,000	$1,000	
1.3.5	Power & Controls	$3,000	$8,000	
1.3.6	Spill Containment	$4,000	$5,000	
1.3.6	Contractor Operation	$2,000	$8,000	
	Sub-Total	$23,000	$25,000	
1.4	Engineering & Inspection			
1.4.1	Design Engineering		$5,000	
1.4.2	Permitting		$1,000	
1.4.3	DEQ Reimbursement		$10,000	
1.4.4	Inspection/Start-up		$9,000	
	Sub-Total	$0	$25,000	
1.5	Contingency			
	20%	$15,200	$17,000	
	Total 1.0 Capital	**$91,200**	**$102,000**	**$193,000**
2.0	**Capital**			
	Total 2.0 Capital	**$0**	**$0**	**$0**
	SUMMARY OF COSTS			
	1.0 Expense	$91,200	$102,000	
	2.0 Capital	$0	$0	
	Total Estimated Costs			**$193,000**

COP0013894



G-R1,2, & 3
RECOVERY PUMP
TYPE: AIR OPER. DIAPHRAM
CAPACITY: 35 GPM, 100PSIG
MFG: ARROW # 6661

G-4X
FEED PUMP
TYPE: AIR OPER. DIAPHRAM
CAPACITY: 35 GPM, 100PSIG
MFG: ____

F-1 & 2
FILTER
TYPE: CARTRIDGE
CAPACITY: 50 GPM
25 MICRON

I-1
STORAGE TOTE
CAPACITY 350 GAL.

I-2
RECOVERED PRODUCT STORAGE TOTE
CAPACITY 350 GAL.

GAC-1 & 2
CARBON ABSORPTION VESSEL
CAPACITY: 1000 LB/ 500 GAL.
15 GPM MAX

G-4B
LIFT STATION PUMP
TYPE: AIR OPERATED DIAPHRAM
CAPACITY: ____GPM 100 PSIG
MFG: ____

LEGEND

- FLEX HOSE WITH KAMLOK QUICK DISCONNECT
- POSITIVE DISPLACEMENT METER
- GATE VALVE
- BALL VALVE
- CHECK VALVE
- AIR OPERATED DIAPHRAM PUMP
- PRESSURE INDICATOR

UNOCAL 76
76 PRODUCTS COMPANY
Los Angeles, California

ALPHA ENGINEERS and CONSTRUCTORS, INC.
19 NW 5th AVE, SUUITE 204, PORTLAND, OR 97209 Tel:(503)227-3317

DRAWN BY	D.A.BYNUM
CHKD BY	
APPD BY	
SCALE	NONE
DATE	02/25/97

PORTLAND TERMINAL
PORTLAND, OREGON
TANK FARM #2 TK 3411 SPILL RESPONCE
PIPING AND INSTRUMENTATION DIAGRAM
WATER TREATMENT SYSTEM

DRAWING NO.	SHEET	REV.
0608-D-7006	1 OF 1	A

6500701X1.DWG <CPD: 02/27/97 [TIME: 11:16 AM] >

Truzzolino, Dan

From: Krug, Lori D.
To: Sherman, John W.; Penningroth, Kent J.; Cramer, Marty A.; Schnieders, Peter L.; McGowne, Roger W.; Gilfillan, Shawn B.
Cc: Johnson, Carol M.; Truzzolino, Dan
Subject: RE: Portland Gasoline Release
Date: Thursday, February 27, 1997 3:39PM

Sorry for all of the confusion.

Carol and I met yesterday (after she had spoken to Kent) and developed general guidelines for the use of G/L codes within the "Environmental" and "Uninsured Losses" categories on the monthly budget reports. Costs related to the gasoline release appropriately fall into those categories, therefore, please do use the 92036725 and 92036751 G/L codes and 301 activity code. By doing so, we will also avoid losing costs related to this incident in what sometimes becomes the "contractor services black hole".

Please let me know if you have any questions.

Lori

From: Schnieders, Peter L.
To: McGowne, Roger W.; Sherman, John W.; Cramer, Marty A.; Gilfillan, Shawn B.; Penningroth, Kent J.
Cc: Krug, Lori D.; Truzzolino, Dan; Johnson, Carol M.
Subject: RE: Portland Gasoline Release
Date: Thursday, February 27, 1997 6:12AM

The codes indicated in my e-mail below were discussed with Lori Krug, and I want them used unless we hear differently from Lori.

Pete

From: Penningroth, Kent J.
Sent: Wednesday, February 26, 1997 6:42PM
To: Schnieders, Peter L.; McGowne, Roger W.; Sherman, John W.; Cramer, Marty A.; Gilfillan, Shawn B.
Cc: Krug, Lori D.; Truzzolino, Dan; Johnson, Carol M.
Subject: RE: Portland Gasoline Release

Pete:

I spoke with Carol Johnson on 2/26 and she indicated that the correct coding for expenses related to the spill should be:

G/L Code 920 505
Activity 306

-----Original Message-----
From: Schnieders, Peter L.
Sent: Wednesday, February 26, 1997 4:27 PM
To: Penningroth, Kent J.; McGowne, Roger W.; Sherman, John W.; Cramer, Marty A.; Gilfillan, Shawn B.
Cc: Krug, Lori D.; Truzzolino, Dan
Subject: Portland Gasoline Release

Please use the following codes for charges resulting from the February 22 gasoline release.

Activity code - 301

Uninsured loss due to operations including the initial emergency response and initial assessment (CET's activities should be charged here since they were handling the initial response and boring of assessment wells) - 920 36725.

Uninsured loss, cleanup including all costs from Geo Engineers and other contractors associated with

monitoring and recovery wells, and costs for equipment and facilities to treat recovered fluids - 920 36751.

Lori, if I have this wrong please let me know.

Pete

COP0013897

UNOCAL 76
PORTLAND TERMINAL
FACSIMILE TRANSMISSION

DATE: 2-25-97 TIME: 12:05

This transmission is 11 pages including cover sheet.

If any problems with this transmission please call (503)248-1531.

PLEASE DELIVER TO:

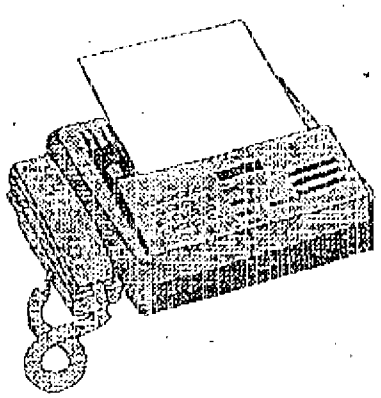
Dan Truzzolino
John Marcy
Name: Andy Viens
Office:
Fax#:

FROM:

Name: Pete Schnieders
Fax #: (503) 248-1598

COMMENT: Vicki, Please make a copy for Andy, John, Dan

Pete



PRODUCTS COMPANY

Portland, Oregon
February 25, 1997

To: D. E. D'Zurilla
A. E. Viens

Memorandum

From: P. L. Schnieders

PORTLAND TERMINAL
REMEDIATION PLAN

As a result of the tank overfill incident on February 22, 1997, the Portland terminal has the following plan to recover product released.

All free product on the surface, in the stormwater system, and in the process water system was recovered on February 22 and February 23 during the initial emergency response. This activity included flushing of all stormwater and process water piping systems, and recovery of the product in the oil/water separators. Approximately 1650 gallons of product were recovered in this process, product was measured while in the vacuum truck utilizing an interface probe which can detect both the product surface and the interface point between product and water.

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COP0013899

found on the groundwater only in Boring #1, but it is believed that the groundwater may be impacted in the area shown on Attachment 4.

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We will continue to work with Geo Engineers to assess recovery progress and further actions. Please let me know if you have questions, concerns, or need additional information.

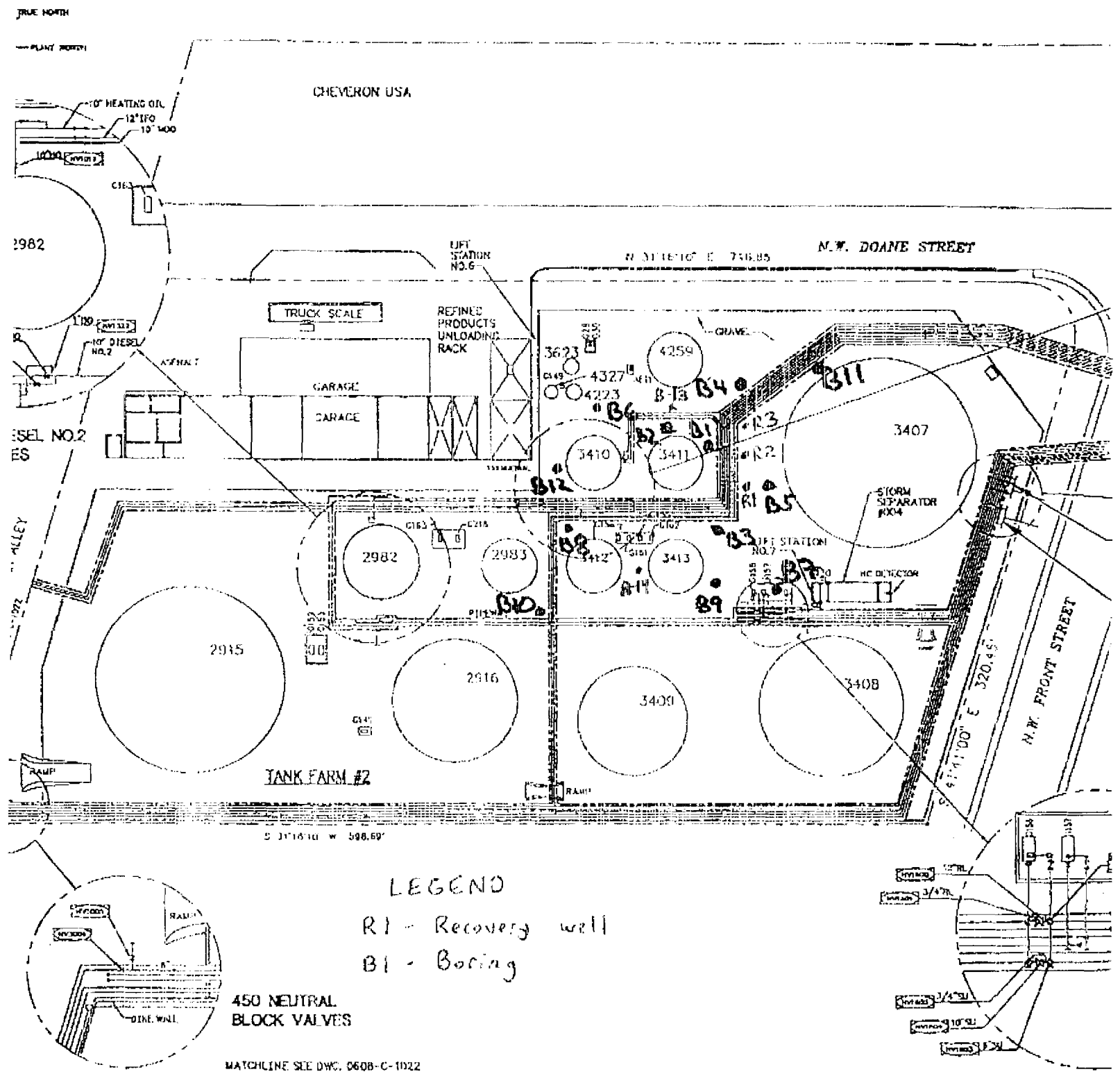
→ Terry Fisk

cc:
M. A. Cramer
J. R. Dietzman
J. J. Maney
K. J. Penningroth
K. G. Rodgers
W. T. Skok
D. Tuzzolino

CARBON CANISTER SUPPLIER;

CARBONAIR — MINNESOTA, (A MAPLE GROVE)

800-526-4999



PLAN

SUPER UNLEADED, REGULAR UNLEA
BLOCK

REFERENCE DRAWINGS	REV NO.	DATE	REVISED	DRAWN BY	CHK BY
ILITIES GENERAL ARRANGEMENT	A	10/07/96	UPDATED TO SHOW U.S. COAST GUARD LIMITS	DAB	
M NO.1 GENERAL ARRANGEMENT					

COP0013901

PORTLAND TERMINAL
TANK 3411 SPILL
SUBSURFACE INVESTIGATION

BORING NUMBER: B1 **TIME:** 1115 **SAMPLER:** Kent Penningroth **DATE:** 2/23/97

DEPTH	SOIL TYPE	MOISTURE	PPM	GAS ODOR	COMMENTS
0	Gravel/sand	Fairly dry	400		3" of free product on groundwater surface.
1	Sand	Fairly dry	120		
3	Sand	Fairly dry	170		
5	Sand	Fairly dry	120		
7	Sand	Fairly dry	200		
9	Sand	Fairly dry	330		
11	Sand	Fairly dry	160		
12	Sand	Saturated	500		

BORING NUMBER: B2 **TIME:** 1115 - 1200 **SAMPLER:** Marty Cramer **DATE:** 2/23/97

DEPTH	SOIL TYPE	MOISTURE	PPM	GAS ODOR	COMMENTS
0	Gravel/Sand	Slight	62	Moderate to strong	Film of product on ground-water, moderate gasoline odor.
1	Med sand	Slight	250	Moderate to strong	
3	Med. - Sand/some silt	Slight	120	Strong	
5	Med. - Sand/some silt	Slight higher	125	Moderate	
7.5	Med. - Sand/some silt	Slight higher	250	Moderate	
10	Med. - Sand/some silt	Mod - Close to water table	240	Moderate	
13	More silt or clay	High	430	Slight to moderate	

BORING NUMBER: B3 **TIME:** 1205 **SAMPLER:** Kent Penningroth **DATE:** 2/23/97

DEPTH	SOIL TYPE	MOISTURE	PPM	GAS ODOR	COMMENTS
0	Gravel/sand	Relativity dry	90		
1.5	Gravel/sand	Fairly dry	340		
3	Sand	Fairly dry	260		
5	Sand	Fairly dry	220		
7	Sand	Fairly dry	250		
8.5	Sand/gray change in color	Fairly dry	590		
11	Sand/gray	Moist	570		
12	Sand	Saturated @ water table	590		

BORING NUMBER: B4 **TIME:** 1213 - 1239 **SAMPLER:** Marty Cramer **DATE:** 2/23/97

DEPTH	SOIL TYPE	MOISTURE	PPM	GAS ODOR	COMMENTS
0	Med. sand/sandy silt & gravel	Moderate	90	Moderate to strong	Slight gasoline odor
1	Same - more gravel	Slight	180	Slight	
3	Med. sand/less silt/no gravel	Moderate	80	Moderate to strong	
5	Med. sand - sand silt	Moderate	100	Moderate	
7.5	Med. sand - sand silt	Moderate	25	Moderate	
10	Med. sand - sand silt	Slightly more moisture	75	Slight to Moderate	
12.5	Same w/more silt	High - Saturate	23	None to slight	
13	Color change slightly gray/charcoal	Saturated	140	Slight	

BORING NUMBER: B5 **TIME:** 1230 **SAMPLER:** Kent Penningroth **DATE:** 2/23/97

DEPTH	SOIL TYPE	MOISTURE	PPM	GAS ODOR	COMMENTS
0.5	Gravel & sand	Dry	20		
1	Gravel & sand	Fairly dry	4		
3	Gravel, clay & sand	Fairly dry	6		
5	Clay & sand	Fairly dry	4		
7	Clay & sand	Fairly dry	2		
10	Clay & sand	Fairly dry	2		
12.5	Clay & sand/slightly more silt	High	3.5		
13.5	Clay & sand/slightly more silt	V. high	2		
14	Clay & sand/slightly more silt	Saturated	3.5		

BORING NUMBER: B6 **TIME:** 1242 **SAMPLER:** Marty Cramer **DATE:** 2/23/97

DEPTH	SOIL TYPE	MOISTURE	PPM	GAS ODOR	COMMENTS
0	Med. sand w/silt & gravel	Med - high	85	Moderate	Clay encountered. Film of
1	Med. sand w/silt & gravel	Med - high	85	Moderate to strong	product on groundwater.
3	Med. sand w/silt & gravel	Med - high	130	Moderate to strong	Slight gasoline odor.
5	Med. sand w/silt & gravel	Med - high	320	Slight to moderate	
7.5	Med. sand w/silt & gravel	Med - high	120	Moderate	
10	Med. sand w/silt & gravel	Med - high	510	Slight	
12.5	Med. sand w/silt & gravel	Saturated	120	Moderate	
13	Same, but into sandy clay/ silt slightly clay-gray	Semi-saturated	145	None to slight	

BORING NUMBER: B7 **TIME:** 1150 **SAMPLER:** Kent Penningroth **DATE:** 2/23/97

DEPTH	SOIL TYPE	MOISTURE	PPM	GAS ODOR	COMMENTS
0	Gravel & sand	Relatively dry	2		
2.5	Gravel & sand	Relatively dry	8		
5	Sand	Relatively dry	5		
7.5	Sand	Relatively dry	3		
10	Sand - darker color	Relatively dry	6		
12.5	Sand - darker	Moist	10		
14	Sand - darker - water table	Saturated w/water	10		

BORING NUMBER: B8 **TIME:** 1500 **SAMPLER:** Marty Cramer **DATE:** 2/23/97

DEPTH	SOIL TYPE	MOISTURE	PPM	GAS ODOR	COMMENTS
0	Silty sand w/gravel	Low	160		Cobble encountered. Boring
1	Refusal - tried 3 more spots but continued to hit rock				stopped < 3'.

BORING NUMBER: B9 **TIME:** 1530 **SAMPLER:** Kent Penningroth **DATE:** 2/23/97

DEPTH	SOIL TYPE	MOISTURE	PPM	GAS ODOR	COMMENTS
0	Gravel & sand	Relatively dry	2		
2.5	Sand	Moist	1		
5	Sand	Moist	19		
7.5	Sand	Moist	20		
10	Sand	Moist	22		
12.5	Sand	Moist	40		
14	Sand	Saturated w/water	50		

BORING NUMBER: B10 **TIME:** 1515 **SAMPLER:** Marty Cramer **DATE:** 2/23/97

DEPTH	SOIL TYPE	MOISTURE	PPM	GAS ODOR	COMMENTS
0	Silty sand/saucy silt w/gravel	Med	12		Odor of old oil
2.5	Sand silty/silty clay - firm	High	150		
7.5	Charcoal silty sand	Med	80		
12.5	Silty sand	Saturated	250		

BORING NUMBER: B11 **TIME:** 1630 **SAMPLER:** Marty Cramer **DATE:** 2/23/97

DEPTH	SOIL TYPE	MOISTURE	PPM	GAS ODOR	COMMENTS
0	Silty sand	Low	210		May be old gasoline
2.5	Silty sand	Med	20		
7.5	Silty sand	Med	10		
12.5	Silty sand - some clay	High	150		

BORING NUMBER: B12 **TIME:** 1550 **SAMPLER:** Marty Cramer **DATE:** 2/23/97

DEPTH	SOIL TYPE	MOISTURE	PPM	GAS ODOR	COMMENTS
0	Silty med sand	Low	3.5		Refusal @ 2ft - probably hit containment wall - moved to other side of pipe
2					
2.5	Silty med sand	Med	5		
7.5	Silty med sand	Med	2.5		
12.5	Clay	Saturated	180		

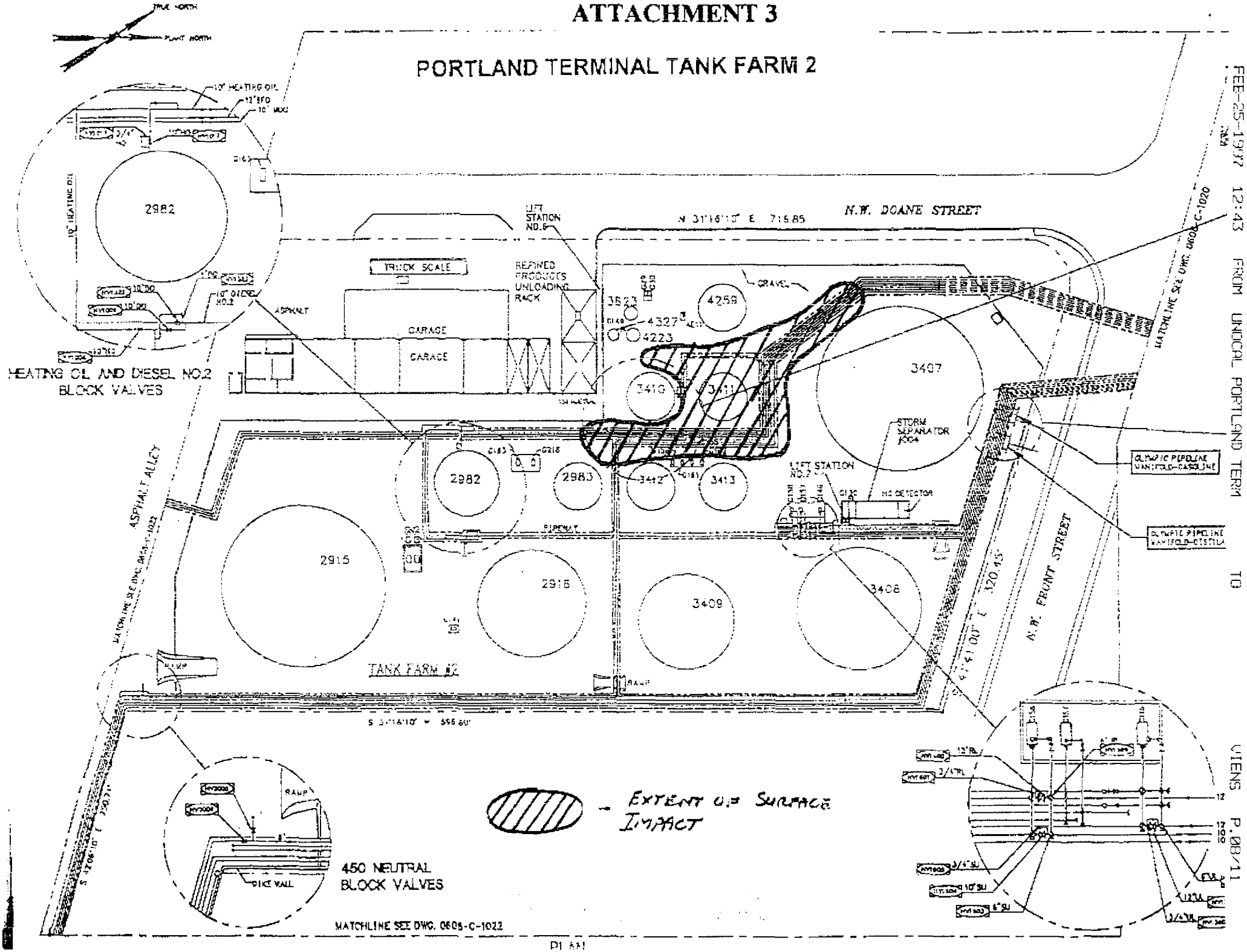
BORING NUMBER: B13 **TIME:** 1230 **SAMPLER:** Mike Thomas **DATE:** 2/24/97

DEPTH	SOIL TYPE	MOISTURE	PPM	GAS ODOR	COMMENTS
0	Sand	Med	1000		
2.5	Sand	Med	522		
5	Sand	Med	1048		
7.5	Sand	Med	727		
10	Sand	Med	454		
12.5	Sand	Med	1582		
13	Sand	High	192		

BORING NUMBER: B14 **TIME:** 1305 **SAMPLER:** Mike Thomas **DATE:** 2/24/97

DEPTH	SOIL TYPE	MOISTURE	PPM	GAS ODOR	COMMENTS
0	Sand	Low	0		
2.5	Sand/clay	Med	387		
5	Sand	Med	397		
7.5	Sand	Med	475		
10	Sand	Med	434		
12.5	Sand	Med	496		
13	Sand/ground water	High	309		

ATTACHMENT 3



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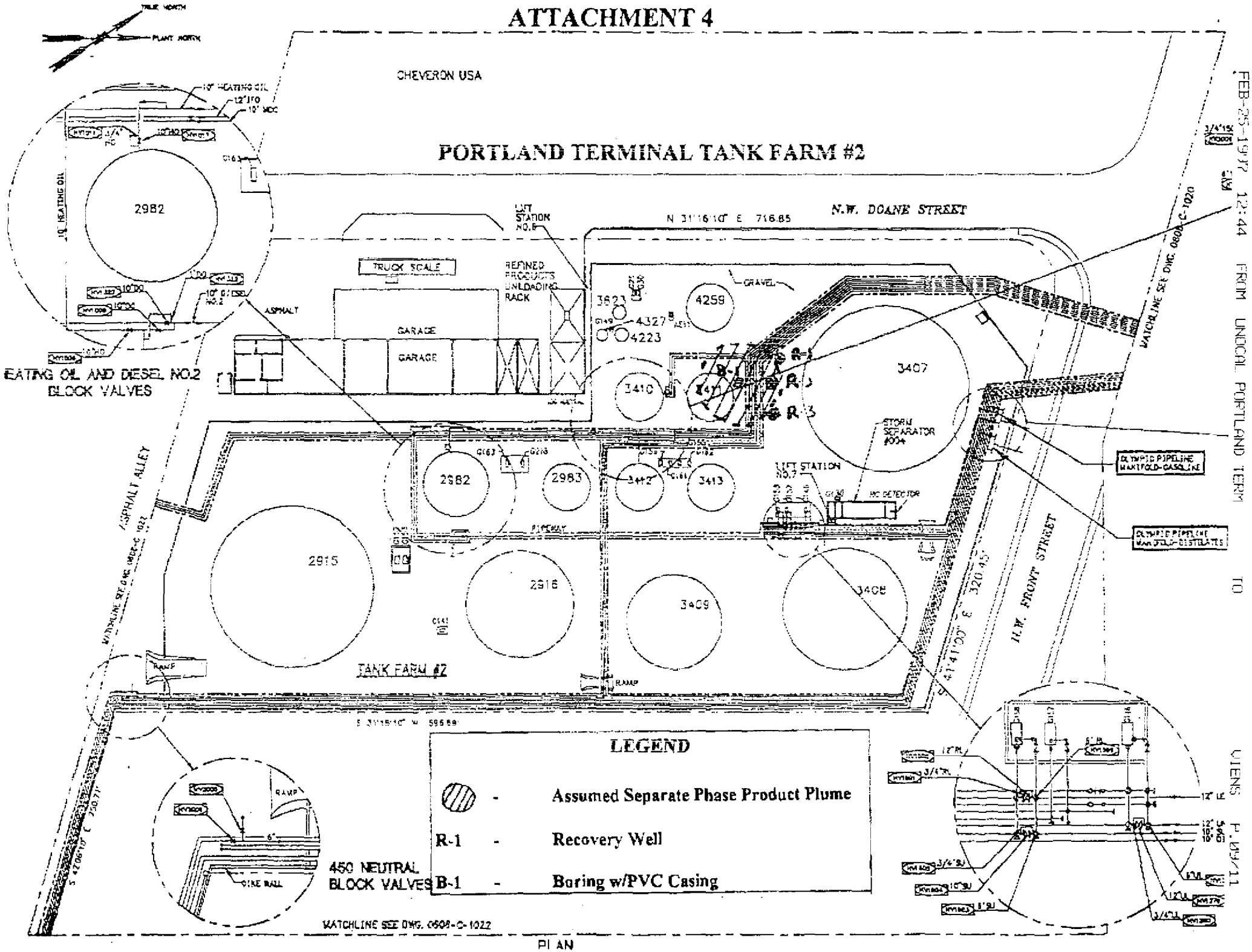
ATTACHMENT 4



LEGEND

	-	Assumed Separate Phase Product Plume
R-1	-	Recovery Well
B-1	-	Boring w/PVC Casing

PLAN

FEB-25-1997 12:44 FROM UNOCAL PORTLAND TERM TO VIENS P.09/11

COP0013906

UNOCAL BUDGET COST ESTIMATE

MADE BY:	K.J. PENNINGROTH
DATE:	25-Feb-97
ESTIMATE NO.:	1
EXP. CODE:	920 367 00051
FACILITY CODE:	350608

TANK 3411 SPILL RESPONSE
PORTLAND TERMINAL

Scope of Work:
This project is intended to locate and remove free-phase gasoline perched on the ground water table in tank farm 1 at Unocal's Portland terminal. The ground water contamination is the result of a 11,600 gallon release of super unleaded gasoline from tank 3411 on February 22, 1997.

Emergency response contractors were immediately retained to assist in responding to the incident. They assisted in isolating the tank and removing captured gasoline from surface impoundments as well as the water handling systems. Efforts then shifted to locating the suspected plume of free-phase gasoline on the groundwater table. This included boring temporary monitoring wells and installing well casings to delineate the extent of the plume. These tasks are complete and are included in the cost estimate below.

Recovery efforts will concentrate on installing a series of three recovery wells, collection piping and a pre-treatment system for captured groundwater and free-phase product. The 4" diameter recovery wells will be approximately 25' deep and installed per the State of Oregon's Water Resources' requirements. Collection piping will connect the recovery wells to the groundwater pre treatment system. The system will be designed to handle a flow rate of approximately 20 gpm.

we don't want to clean up the entire aquifer.

The groundwater pre-treatment system is to consist of an oil/water separator, free-phase collection tank, two transfer pumps and two carbon filter units (in series). The treated groundwater will then be pumped into into the terminal's process water treatment system and finally discharged to the POTW under an industrial wastewater discharge permit.

The scope of work includes technical consulting fees, system checkout and start-up assistance. This project is limited in duration from the initial response through the first 30 days of operation of the product recovery system.

TANK 3411 SPILL RESPONSE
PORTLAND TERMINAL
PAGE 2 OF 2

Item No.	Quantity & Item	Material Cost	Labor Cost	Total
1.0	**Expense**			
1.1	Immediate Spill Response			
1.1.1	Secure Site (2/22)	$2,000	$3,000	
1.1.2	Initial Subsurface Inv. (2/23)	$3,000	$5,000	
1.1.3	Cont. Response and (2/24 - 2/28)	$3,000	$12,000	
1.1.4	Waste Disposal	$4,000		
1.1.5	Foam Replacement	$7,000		
1.1.6	Lab Testing Fees	$1,000		
1.1.7	Misc.	$2,000	$1,000	
	Subtotal	$22,000	$21,000	
1.2	Recovery Wells			
1.2.1	Drill & Install 3 Wells	$2,000	$3,000	
1.2.2	Recovery Pumps (3)	$22,000	$2,000	
1.2.3	Recovery Piping	$1,000	$3,000	
1.2.4	Lab Testing	$6,000		
1.2.5	Technical Oversight	$1,000	$6,000	
	Sub-Total	$31,000	$14,000	
1.3	Groundwater Treatment System			
1.3.1	Oil/Water Separator	$9,000	$3,000	
1.3.2	Product Recovery Tank	$2,000	$1,000	
1.3.3	Transfer Pumps (2)	$2,000	$3,000	
1.3.4	Carbon Filter Units (2)	$12,000	$7,000	
1.3.5	Power & Controls	$3,000	$8,000	
1.3.6	Spill Containment	$4,000	$5,000	
1.3.6	Contractor Operation	$2,000	$8,000	
	Sub-Total	$23,000	$25,000	
1.4	Engineering & Inspection			
1.4.1	Design Engineering		$5,000	
1.4.2	Permitting		$1,000	
1.4.3	DEQ Reimbursement ?		$10,000	
1.4.4	Inspection/Start-up		$9,000	
	Sub-Total	$0	$25,000	
1.5	Contingency			
	20%	$16,200	$17,000	
	Total 1.0 ~~Capital~~ EXPENSE	**$91,200**	**$102,000**	**$193,000**
2.0	**Capital**			
	Total 2.0 Capital	**$0**	**$0**	**$0**
	SUMMARY OF COSTS			
	1.0 Expense	$91,200	$102,000	
	2.0 Capital	$0	$0	
	Total Estimated Costs			**$193,000**

GW PUMP & TREAT VS FP SKIMMERS

= $48,000 FOR 1 MONTH..!?

LEASE VS PURCHASE

I HAVE SPECS. & DWGS TO START FROM.

360-0132

3411SP-1.XLS

TOTAL P.11

CARBONAIR ENVIRONMENTAL SYSTEMS, INC.
8640 MONTICELLO LANE
MAPLE GROVE, MINNESOTA
55369-4547
612•425•2992 800•526•4999
FAX 612•425•6882

FACSIMILE TRANSMITTAL

TO: Dan Treuzzolino
UNOCAL
(714) 428-8031 Fax

FROM: Chris Riddle
DATE: February 26, 1997
RE: Proposal Number: 407955
Project Name: Rental System
Location: Portland, OR

Number of pages sent: 13 including this page.
Confirming phone number at facsimile location: 612-425-2992
Carbonair's facsimile number: 612-425-6882
Carbonair's courier address: 8640 Monticello Lane
Maple Grove, MN 55369

Dan:

Carbonair is pleased to quote products and services for the referenced project. The proposal is based on the information provided in our phone conversation of February 26, 1997. Detailed product specifications are attached. The pricing shown below is based upon standard UNOCAL pricing where applicable.

All Carbonair equipment and systems should be operated only after thorough review of the O&M manual. If there are any questions regarding the operation of the equipment, please contact your Carbonair project manager at 800-526-4999 or 612-425-2992.

Rental Pricing (1 month minimum term)

Treatment Equipment	$ 2,230.00/week
(3) Grundfos model 10E5 submersible well pumps	× 8 weeks
- 85 gpm @ 100' TDH	$17,840
- 1/3 hp, 230V, 1 phase motor	1,440
- 25' of 2 wire plus ground motor lead	2,400
(6) Recovery well floats	2,100
- 50' lead	$23,780 TOTAL
- (2) floats per well	
(1) Carbonair COWS 30S oil/water separator	
- 30 gpm flow capacity	
- 270 gallon working volume	
- 164 gallon discharge sump capacity	
- 68" long x 52" wide x 46" high FRP vessel	
- 3" inlets and outlets	
- Coalescing media	
- Vapor tight cover	
- Solids collection sump	
- High level alarm and pump operation switches	
- Mounted on a stand (4' high maximum, actual height to be determined)	
(1) Product storage drum	
- 55 gallon capacity	
- High level alarm switch	

CARBONAIR

(1) Centrifugal transfer pump
- 20 gpm @ 74' TDH
- 1 hp, 230V, 1 phase, TEFC motor

(2) Carbonair PC 13 liquid phase carbon adsorbers
- 4 ft. diameter x 7.5 ft. high steel vessels
- 1,500 lbs. carbon capacity each
- Maximum design pressure 91 psi
- Estimated breakthrough of both vessels in approximately 80 days

One time preparation fee	$ 1,440.00
3,000 lbs. of reactivated carbon	$ 2,400.00
Disposal of spent carbon	$ 2,100.00
- Assumes non-hazardous classification of spent carbon	

General Conditions
All rentals subject to equipment availability and the Rental Agreement attached.
Terms of payment are Net 30 days, unless otherwise specified in this document.
Proposal and pricing valid for 30 days.
This proposal and pricing are based on our interpretation of the sections of the RFQ or specification that have been made available to us. Exceptions have been noted where ever possible. In the event of a conflict between the language in the specification and the proposal, the language in the proposal takes precedence and is the basis of the proposed pricing. Carbonair reserves the right to reject any order based on differences in pricing. Carbonair reserves the right to reject any order based on differences in interpretation of the specification, or for any reason at the time that an order is tendered.
Carbonair will not initiate work without a signed Rental Agreement.
The typical shipping time for this equipment is 1 - 2 weeks. The actual delivery schedule is dependent upon equipment availability and will be provided after receipt of signed Rental Agreement.
Shipping charges are not included. Actual freight costs, FOB New Hope, MN, will be prepaid and added to invoice.
The electrical and control panel design for the proposed system is based upon the availability of a 120/230V, 1 phase power source, unless otherwise specified. Costs associated with the redesign and/or retrofitting of the system as described above are the responsibility of the purchaser.
Sales tax is not included in prices quoted, where required, sales tax will be added to the invoice.

If you have any questions or comments concerning this information, please feel free call Mr. Ron White at (206) 720-4612 or me at (612) 425-2992. Thank you for the opportunity to bid on this project.

Sincerely,

Chris Riddle
OEM/Sales Development Manager

Ron White
Regional Manager, West

Accepted by:
The proposal and terms & conditions herein are acknowledged and accepted:

Name/Title

Date

Oil/Water Separators

Carbonair's coalescing oil/water separators are designed for use in many applications including groundwater remediation, treatment of storm water run off and waste water treatment.

Carbonair has the knowledge and experience to assist you in selecting the proper equipment for your specific application.

Our separator design incorporates coalescing media that facilitates the collection and removal of small oil droplets and also facilitates the effective removal of fine suspended solids that may not be removed with quiet zone separators.

Our separators are constructed of fiberglass reinforced plastic and are highly resistant to corrosion

Piping is constructed of sturdy PVC.

STANDARD FEATURES

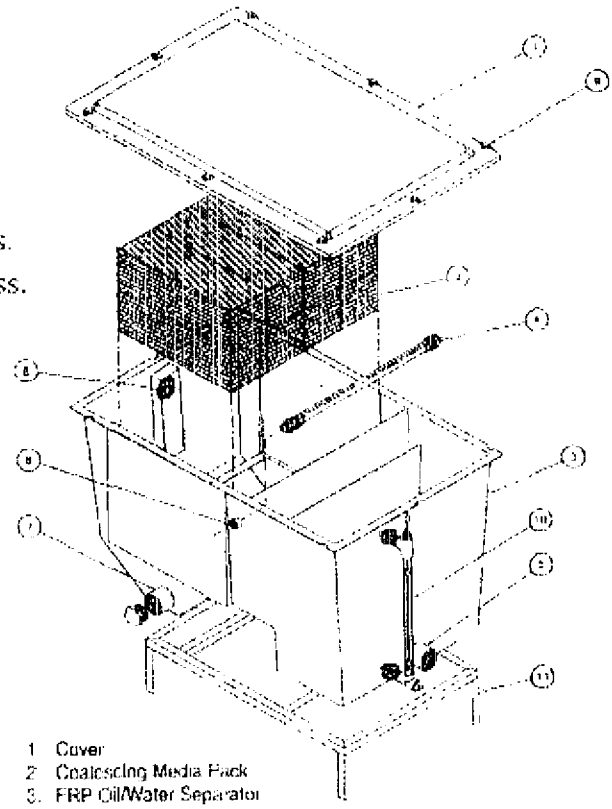
- Fiberglass construction.
- Crossfluted PVC coalescing media packs.
- Vapor tight cover, with quick release latches.
- Solids collection sumps with clean out access.

OPTIONS

- Custom designed equipment.
- Steel construction
- Water discharge pump with level controls.
- Sight glass.
- Level controls.
- Sludge discharge pump.
- Oil discharge pump.
- External oil reservoirs.
- Elevation stand.
- Influent pump.

SPECIFICATIONS

Listed on other side.



1. Cover
2. Coalescing Media Pack
3. FRP Oil/Water Separator
4. Oil Skimmer
5. Effluent Outlet
6. Oil Skimmer Outlet
7. Sludge Drain
9. Quick Release Latch
10. Sight Glass with Level Controls (Optional)
11. Stand (Optional)

CARBONAIR®
ENVIRONMENTAL SYSTEMS

Minneapolis, MN
800-526-4999

SPECIFICATIONS

MODEL #	COWS 5	COWS 10	COWS 15	COWS 30	COWS 50
L (inches)	60	60	60	68	80
W (inches)	16	28	40	52	52
H (inches)	34	34	34	46	45
Inlet (NPT)	2"	2"	3"	3"	4"
Outlet (NPT)	2"	2"	3"	3"	4"
Oil Out (NPT)	1 1/2"	2"	2"	2"	2"
Weight Empty	100	115	175	280	380
Weight Full	816	1264	1900	3895	4705
Media Cubic Ft.	2	4	6	16	24
Media Surface Area	238	476	716	1901	2856
Working Volume (gals.)	51	81	125	270	353
Water Reservoir (gals.)	35	57	87	164	166

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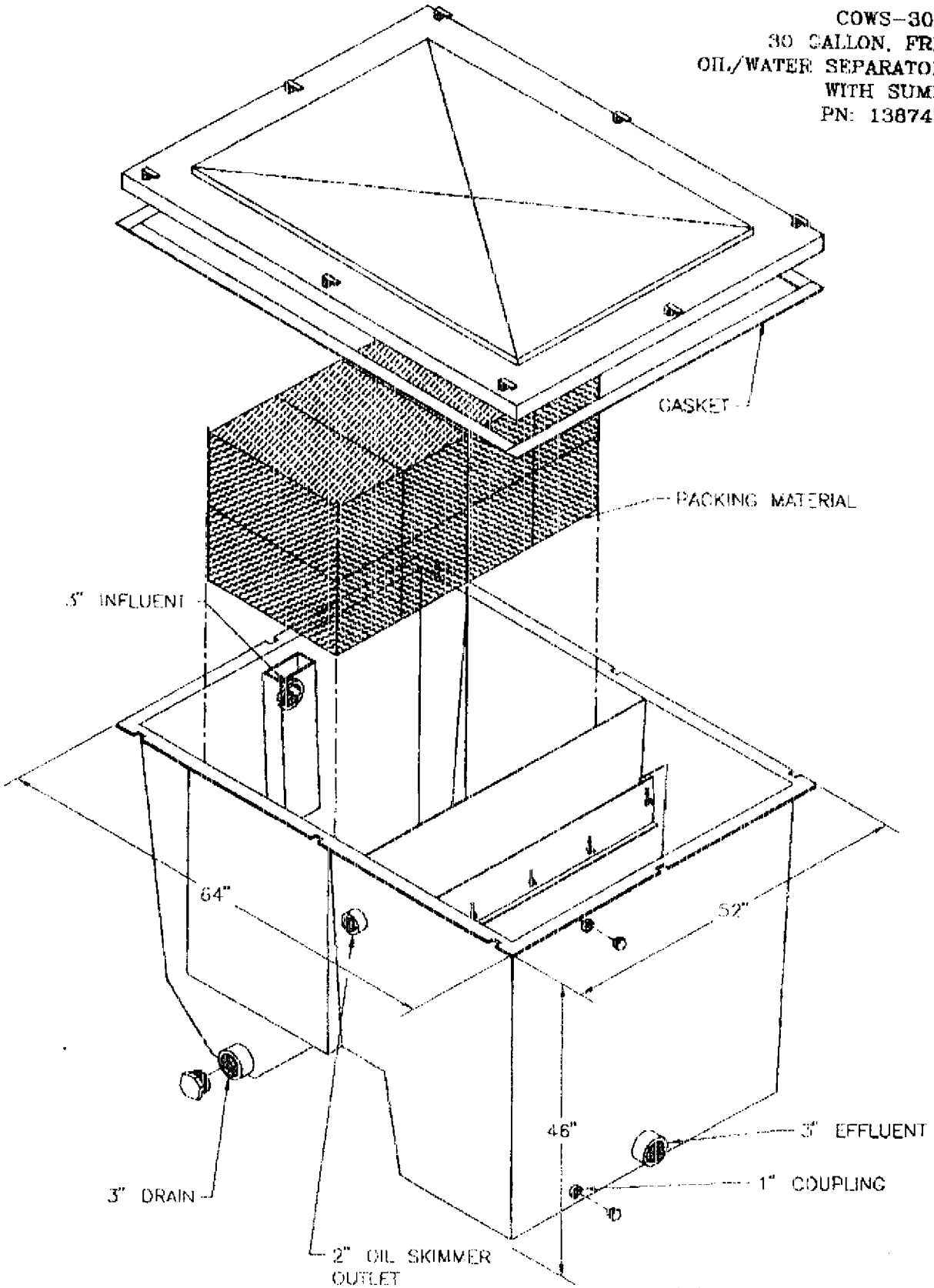
Printed on recycled paper

COWS-30S
30 GALLON, FRP
OIL/WATER SEPARATOR
WITH SUMP
PN: 138740



Sales Drawing #138757
95.01.31
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CARBONAIR Water Treatment

Liquid Phase Carbon Vessels

Carbonair carbon adsorbers are designed and manufactured in accordance with engineering standards set forth by the American Society of Mechanical Engineers. The materials used in construction are in accordance with standards established by AWWA, FDA and EPA.

LPC 3 These low pressure drum-type adsorbers provide a simple, economical way to treat low-flow organic-laden water streams. The LPC 3 arrives ready to use; installation is quick and easy.

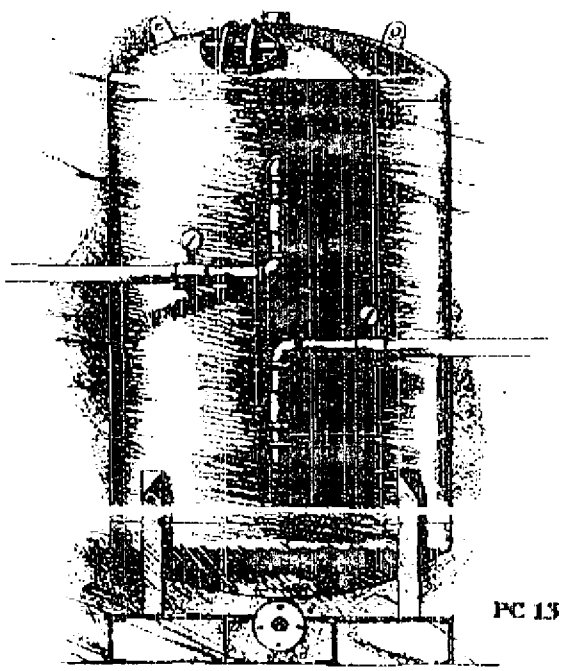
PC 1, PC 3 Interiors of these vessels are lined with high density polyethylene for resistance to chemicals and abrasions. The reinforced fiberglass construction makes PC1 and PC3 units suitable for high pressure operation.

PC 5, PC 7, PC 13, PC 20 The welded-steel construction of these popular models assures strength and durability. Interiors are double coated with a corrosion-resistant epoxy. Two-inch diameter influent/effluent couplings give greater connection flexibility. Large carbon slurry lines permit fast removal of spent carbon, and dual access ports provide easy inspection and maintenance.

PC 28 Carbonair's PC 28 carbon adsorber offers above average value. The proportions of this vessel (six-foot diameter) and its capabilities make it adaptable to a variety of industrial, municipal and potable operations. Durability is built in with tough welded-steel construction and double coated epoxy-lined interiors.

PC 50 The rugged PC 50 is a proven performer. The conical bottom collection system allows full use of the carbon bed, while the carbon slurry piping permits complete removal of spent carbon. The unit is made of welded steel; vessel interiors are double coated with a corrosion-resistant epoxy. The large carbon slurry lines permit fast removal of spent carbon, and the 10,000-pound carbon capacity provides extended life at a full range of flow rates.

PC 78 With a carbon capacity of 20,000 pounds, the PC 78 is one of the largest single-bed adsorbers available. The unit has an excellent track record in municipal, industrial and potable applications. Constructed of welded steel, the vessel interior's epoxy coating offers high chemical resistance.



PC 13

OPTIONS

Decon/3 piping package with quick connectors.

Influent/effluent quick-connect kit.

Influent/effluent sampling and pressure indicator kit.

Interior sampling kit.

Non-aerating sample ports.

Flow instrumentation, including meters, gauges and valves.

Carbon disposal and replacement program for full compliance with environmental regulations.

ASME stamp.

Skid (forkliftable).

SPECIFICATIONS

Listed on reverse.

COP0013914

CARBONAIR®
ENVIRONMENTAL SYSTEMS

8640 Monticello Lane
Maple Grove, MN 55369-4547
612-425-2992 800-526-4999
Fax 612-425-6882

SPECIFICATIONS

	LPC1	LPC 3.85	LPC 3.110	PC1	PC3	PC5	PC7	PC13	PC22	PC28	PC50	PC78
VESSEL DIAMETER	1.8 ft. (0.55 m)	2.16 ft. (0.66 m)	2.5 ft. (0.76 m)	1.2 ft. (0.37 m)	1.5 ft. (0.55 m)	2.5 ft. (0.76 m)	3.0 ft. (0.91 m)	4.0 ft. (1.22 m)	5.0 ft. (1.51 m)	6 ft. (1.83 m)	8 ft. (2.44 m)	10 ft. (3.05 m)
OVERALL HEIGHT	2.5 ft. (0.75 m)	3.00 ft. (0.92 m)	3.4 ft. (1.04 m)	3.9 ft. (1.19 m)	4.5 ft. (1.37 m)	7.3 ft. (2.23 m)	7.3 ft. (2.23 m)	7.5 ft. (2.29 m)	7.5 ft. (2.29 m)	15 ft. (4.57 m)	17 ft. (5.19 m)	18.5 ft. (5.64 m)
BED AREA	2.6 ft² (0.24 m²)	3.68 ft² (0.34 m²)	4.5 ft² (0.46 m²)	1.1 ft² (0.10 m²)	2.4 ft² (0.22 m²)	4.9 ft² (0.44 m²)	7 ft² (0.65 m²)	12.6 ft² (1.2 m²)	19.6 ft² (1.82 m²)	28 ft² (2.6 m²)	50 ft² (4.7 m²)	78.5 ft² (7.3 m²)
FLOW RANGE	1-10 gpm (4-38 L/min)	1-17 gpm (4-64 L/min)	1-17 gpm (4-64 L/min)	0.5-10 gpm (1-38 L/min)	1-20 gpm (4-76 L/min)	3-35 gpm (11-132 L/min)	4-70 gpm (15-265 L/min)	6-90 gpm (23-340 L/min)	10-138 gpm (38-522 L/min)	14-200 gpm (53-761 L/min)	25-360 gpm (95-1363 L/min)	40-550 gpm (150-2082 L/min)
CARBON CAPACITY	150 lbs. (68 kg)	250 lbs. (114 kg)	350 lbs. (159 kg)	90 lbs. (41 kg)	250 lbs. (114 kg)	575 lbs. (261 kg)	900 lbs. (409 kg)	1,500 lbs. (681 kg)	2,500 lbs. (1,135 kg)	5,000 lbs. (2,270 kg)	10,000 lbs. (4,540 kg)	20,000 lbs. (9,080 kg)
FITTINGS	Two 1/4" influent/ effluent connections	Two 1/4" influent/ effluent connections	Two 1/4" influent/ effluent connections	Two 1" influent/ effluent connections	Two 1" influent/ effluent connections	Two 2" influent/ effluent full coupling, one 12" x 12" and one 8" x 8" access port One 3" air pressure relief coupling	Two 3" influent/ effluent full coupling, one 12" x 12" and one 8" x 8" access port One 3" air pressure relief coupling	Two 3" influent/ effluent full coupling, two 12" x 12" access ports One 3" air pressure relief coupling One 3" carbon slurry flange	Two 3" influent/ effluent full coupling, four 12" x 12" access ports, one 4" carbon slurry flange	Two 4" influent/ effluent flanges, four 12" x 12" access ports, one 4" carbon slurry flange	Two 6" influent/ effluent flanges, four 24" x 16" access ports, one 4" carbon slurry flange	
DESIGN PRESSURE	65 psi (4.5 bar)	65 psi (4.5 bar)	65 psi (4.5 bar)	150 psi (10 bar)	150 psi (10 bar)	150 psi (10 bar)	90 psi (6.3 bar)	90 psi, optional ASME inspected and stamped (6.3 bar)	70 psi, optional ASME inspected and stamped (4.8 bar)	70 psi, optional ASME inspected and stamped (4.8 bar)	65 psi, optional ASME inspected and stamped (4.5 bar)	80 psi, optional ASME inspected and stamped (5.5 bar)
EMPTY WEIGHT	90 lbs. (23 kg)	100 lbs. (45 kg)	125 lbs. (55 kg)	23 lbs. (10 kg)	55 lbs. (24 kg)	1,200 lbs. (545 kg)	1,400 lbs. (635 kg)	1,510 lbs. (686 kg)	2,100 lbs. (953 kg)	4,000 lbs. (1,815 kg)	8,100 lbs. (3,677 kg)	10,900 lbs. (4,949 kg)
LOADED WEIGHT	205 lbs. (93 kg)	350 lbs. (159 kg)	475 lbs. (215 kg)	150 lbs. (59 kg)	320 lbs. (145 kg)	1,775 lbs. (805 kg)	2,500 lbs. (1,134 kg)	3,910 lbs. (1,367 kg)	4,600 lbs. (2,088 kg)	9,000 lbs. (4,086 kg)	18,100 lbs. (8,217 kg)	30,000 lbs. (13,620 kg)
OPERATING WEIGHT	225 lbs. (102 kg)	725 lbs. (329 kg)	970 lbs. (440 kg)	260 lbs. (102 kg)	775 lbs. (352 kg)	2,850 lbs. (1293 kg)	3,750 lbs. (1,693 kg)	5,250 lbs. (2,650 kg)	6,475 lbs. (4,302 kg)	26,000 lbs. (10,896 kg)	35,500 lbs. (16,431 kg)	67,900 lbs. (30,837 kg)
EMPTY & DRAINED WEIGHT	154 lbs. (183 kg)	600 lbs. (272 kg)	820 lbs. (372 kg)	215 lbs. (98 kg)	540 lbs. (254 kg)	2,350 lbs. (1067 kg)	3,200 lbs. (1,455 kg)	4,510 lbs. (2,048 kg)	7,100 lbs. (3,225 kg)	14,000 lbs. (6,356 kg)	28,100 lbs. (12,553 kg)	50,900 lbs. (23,109 kg)

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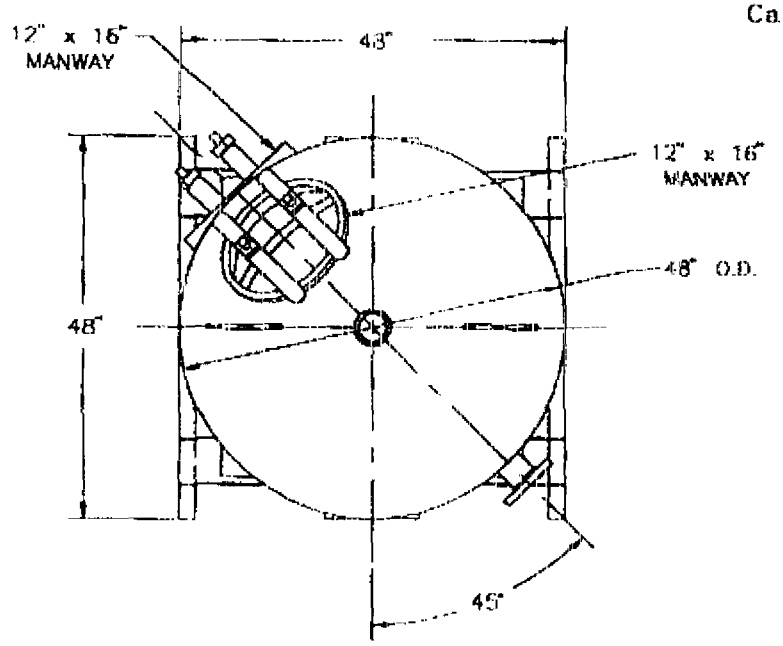
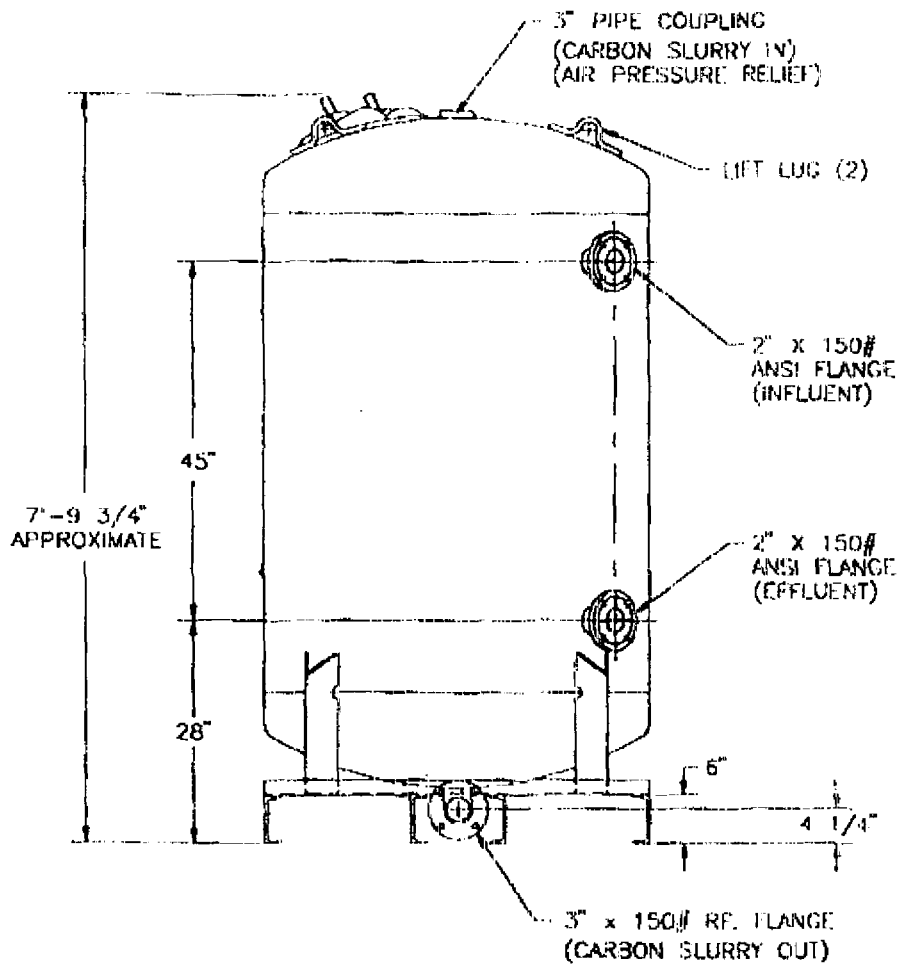
Carbon Adsorber–Liquid Phase
PC 13



TOP VIEW

Notes:

1. Pressure vessel manufactured to ASME standards with a pressure rating of 91 PSIG working pressure. Code stamp not included unless required.
2. Standard piping and valve packages are shown on piping drawings.



ELEVATION / FRONT VIEW

Sales Drawing #106520
94.05.06
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LIQUID-PHASE CARBON ADSORPTION MODEL CALCULATIONS

CARBONAIR ENVIRONMENTAL SYSTEMS
8640 MONTICELLO LANE
MAPLE GROVE, MN 55369
PHONE: 612-425-2992
FAX: 612-425-6882

CARBON ADSORBERS:	PC13
NO OF ADSORBERS IN SERIES:	1
TOTAL MASS OF CARBON (LBS):	1500.0
FLOW RATE (GPM):	20.000
HYDRAULIC LOADING (GPM/SQ.FT):	1.5893
EMPTY BED CONTACT TIME (MIN.):	17.992
DESIGN COMPOUND:	BENZENE
EXPECTED INFLUENT CONCENTRATION (PPB):	10000.
MODEL INFLUENT CONCENTRATION (PPB):	10000.
EFFLUENT CRITERIA (PPB):	1.0000

TIME(DAYS)	VOLUME TREATED(GAL)	EFF. CONC.(PPB)
10.0	288000.	0.0000
20.0	576000.	0.0000
30.0	864000.	3.3019
40.0	1152000.	113.2948
50.0	1440000.	3887.4147
60.0	1728000.	7428.1039
70.0	2016000.	9002.6447
80.0	2304000.	9627.8958
90.0	2592000.	9864.6018
100.0	2880000.	9951.3057
110.0	3168000.	9982.4050
120.0	3456000.	9993.8895
130.0	3744000.	9997.3660
140.0	4032000.	9998.3910
150.0	4320000.	9999.3779
160.0	4608000.	9999.8918
170.0	4896000.	9999.8767
180.0	5184000.	9999.7970
190.0	5472000.	9999.7518
200.0	5760000.	9999.8995
210.0	6048000.	10000.0425
220.0	6336000.	10000.1731
230.0	6624000.	10000.1623
240.0	6912000.	10000.1012
250.0	7200000.	10000.0167
260.0	7488000.	9999.9740
270.0	7776000.	9999.9617
280.0	8064000.	9999.9258
290.0	8352000.	9999.8966
300.0	8640000.	9999.8970
310.0	8928000.	9999.9356
320.0	9216000.	9999.9835
330.0	9504000.	10000.0010
340.0	9792000.	10000.0174
350.0	10080000.	10000.0301

LIQUID-PHASE CARBON ADSORPTION MODEL CALCULATIONS

CARBONAIR ENVIRONMENTAL SYSTEMS
8640 MONTICELLO LANE
MAPLE GROVE, MN 55369
PHONE: 612-425-2992
FAX: 612-425-6882

CARBON ADSORBERS:	PC13
NO OF ADSORBERS IN SERIES:	2
TOTAL MASS OF CARBON (LBS):	3000.0
FLOW RATE (GPM):	20.000
HYDRAULIC LOADING (GPM/SQ.FT):	1.5893
EMPTY BED CONTACT TIME (MIN.):	35.984
DESIGN COMPOUND:	BENZENE
EXPECTED INFLUENT CONCENTRATION (PPB):	10000.
MODEL INFLUENT CONCENTRATION (PPB):	10000.
EFFLUENT CRITERIA (PPB):	1.0000

TIME(DAYS)	VOLUME TREATED(GAL)	EFF. CONC.(PPB)
10.0	288000.	0.0000
20.0	576000.	0.0000
30.0	864000.	0.0000
40.0	1152000.	0.0000
50.0	1440000.	0.0000
60.0	1728000.	0.0000
70.0	2016000.	0.0000
80.0	2304000.	0.0000
90.0	2592000.	370.7213
100.0	2880000.	1482.7516
110.0	3168000.	5930.4724
120.0	3456000.	8308.0296
130.0	3744000.	9323.7147
140.0	4032000.	9734.1310
150.0	4320000.	9898.3909
160.0	4608000.	9960.6207
170.0	4896000.	9985.4187
180.0	5184000.	9994.6871
190.0	5472000.	9998.0458
200.0	5760000.	9999.4841
210.0	6048000.	10000.1766
220.0	6336000.	10000.3498
230.0	6624000.	10000.2304
240.0	6912000.	10000.0782
250.0	7200000.	10000.0120
260.0	7488000.	10000.0278
270.0	7776000.	10000.0721
280.0	8064000.	10000.0770
290.0	8352000.	10000.1022
300.0	8640000.	10000.0735
310.0	8928000.	10000.0613
320.0	9216000.	10000.0379
330.0	9504000.	10000.0169
340.0	9792000.	10000.0041
350.0	10080000.	9999.9982

Rental Agreement

This rental agreement is made as of _____, 19____, by and between Carbonair Environmental Systems, Inc., (Carbonair), and _____, (Renter).

This agreement and the accompanying proposal constitute a binding contract, once signed, subject to the terms outlined in this agreement.

TERM

The term of this agreement will begin on the date the equipment is shipped, and will continue for _____.

If the equipment is not returned to Carbonair by the end of the rental term, rental charges shall continue to accrue on a month-to-month/week-to-week basis. These rental charges will be assessed for every month/week, or portion thereof, that the equipment is not returned.

In the event the Renter requires Carbonair to demobilize the equipment, Renter will provide thirty (30) days written notice prior to the scheduled date of demobilization. In this case, the termination date will be thirty (30) days from this notification unless Carbonair is delayed from demobilizing the equipment for reasons beyond its control, in which case rental charges will continue until the equipment is demobilized. If the equipment is returned before the end of the initial term, Renter is responsible for the remaining rental periods.

ACCEPTANCE

The accompanying proposal No. _____ is an invitation to rent and will become a binding contract, in conjunction with this agreement, when accepted.

RENTAL EQUIPMENT

Renter agrees to rent and Carbonair agrees to furnish the equipment listed in accordance with the terms and conditions set forth herein.

LIMITATION OF PROPOSAL

The prices, terms and delivery quoted in this proposal are subject to acceptance by the Purchaser within a period of thirty (30) calendar days from the date hereon.

TERMS OF PAYMENT

To Renters of approved credit, net amount is due at Carbonair's offices 30 days from date of invoice. Carbonair reserves the right to cancel the contract or cease work if payments thereon are not received when due. Eighteen percent (18%) interest per annum shall be charged on all unpaid balances.

PURCHASE OPTION

Rental payments are applicable toward the purchase of equipment at the rate of 55% of the rental payments made to a maximum of 75% of the purchase price. New equipment warranties extend from the date of purchase. Installation and other service charges do not apply toward purchase.

6\8\95

TAXES
Any local, state or federal sales, excise or use tax imposed on the equipment or work covered by this proposal shall be paid by the Purchaser in addition to the prices quoted.

SERVICES
Carbonair will provide training for the operators of the equipment. The price to be paid by the Renter for these services shall be the amount shown on the proposal. Renter shall seek to provide access for Carbonair to such location for purposes of service and inspection, shall not hold Carbonair responsible for obtaining any necessary permits, licenses and other governmental authorizations and for compliance with applicable laws and regulations, and shall rent equipment during such period as delays cause the equipment to be idle.

DISCLAIMER
Carbonair will not be responsible for damage to equipment or materials through improper storage, improper servicing, or through attempts to operate it in excess of its rated capacity or recommended use, intentional or otherwise, by parties other than Carbonair or its authorized representatives. No Carbonair equipment is certified for operation until the installation is inspected and start-up is performed by Carbonair or its authorized representatives.

DELIVERY AND RETURN OF EQUIPMENT (if required)
Carbonair shall make arrangements for delivery and return of the equipment to and from the project location. Upon delivery of the equipment to such location, the equipment shall not be removed from such location without Carbonair's prior written consent.

RISK OF LOSS OR DAMAGE
All risk of loss or damage to the equipment during the term of this Agreement and prior to its return to Carbonair shall be the responsibility of Renter.

MAINTENANCE
Renter shall, at Renter's own expense, operate and maintain the equipment in good working order and provide regular operating reports periodically to Carbonair. Major maintenance labor is provided by Carbonair only as described in the proposal. All necessary replacement parts (due to normal wear, not resulting from Renter's negligence) shall be paid for by Carbonair, shall become part of the equipment, and shall be the property of Carbonair.

TITLE
Title to the equipment shall at all times remain in possession of Carbonair.

ALTERATIONS OR ATTACHMENTS
Renter agrees not to add attachments, features or devices to the equipment furnished under this Agreement or make any changes or alterations to the equipment without the prior written consent of Carbonair. Renter agrees to remove any alterations or attachments before the equipment is returned to Carbonair, and agrees to pay Carbonair for any charges to restore the equipment to its original condition.

INDEMNITY
Renter agrees to indemnify Carbonair and hold Carbonair harmless from any and all claims, demands, judgments, actions, suits, costs or expenses, including actual reasonable attorney fees, arising from or connected with the injury or damage to persons or property resulting from the Renter's use or operation of the equipment

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DISCLAIMER OF WARRANTIES

Except as set forth in this Agreement, Carbonair GIVES NO WARRANTY, EXPRESS OR IMPLIED, AS TO MERCHANTABILITY, FITNESS FOR PURPOSES, LEASED OR SOLD, DESCRIPTION, QUALITY, OR ANY OTHER MATTER WHATSOEVER. Carbonair shall not be obligated to conduct any tests to determine the quality of the effluent. Renter assumes sole responsibility for the quality of the resulting effluent, its ultimate disposal and compliance with applicable legal and regulatory requirements. Carbonair shall not be liable for any direct, indirect, incidental or consequential damages arising in connection with Renter's operation or other use of the equipment, the quality of the resulting effluent or the ultimate disposal of such effluent, except to the extent that such damages result from a breach of Carbonair's representations described in this paragraph.

DEFAULT

Renter shall be in default hereunder should Renter fail to make any payment required by this Agreement within thirty (30) days of the invoice date of said payment, or should Renter fail to take any action required by the terms of this Agreement. In the event of default, Carbonair may enter upon the property of Renter and take possession of the equipment without demand or notice wherever the equipment may be located, without process of law. Carbonair may also maintain an action to recover rents and other payments due, or that become due hereunder, may terminate this Agreement, and may pursue any other remedy at law or in equity. Should Carbonair be required to take legal action to collect sums due pursuant to the provisions of this Agreement, Renter agrees to pay Carbonair's costs and expenses of collection and/or repossession, including Carbonair's actual reasonable attorney fees. The remedies provided herein are cumulative and not exclusive.

ASSIGNMENT

Renter may not assign or otherwise transfer its rights or obligations under this Agreement except with the prior written consent of Carbonair. Carbonair may assign all or part of the payments under this Agreement. Any prohibited assignment will be void.

GOVERNING LAW

This Agreement shall be construed, and the rights and remedies of the parties shall be determined, in accordance with the laws of Minnesota.

ENTIRE AGREEMENT

This Agreement constitutes the entire Agreement between the parties hereto, and supersedes all prior oral or written proposals and communications related to this Agreement. This Agreement may not be changed except by written amendment signed by both parties.

ACCEPTED:	ACCEPTED:
Carbonair Environmental Systems, Inc.	_____
By _____	By _____
Date _____	Date _____

GeoEngineers
FAX TRANSMITTAL

7504 SW Bridgeport Road
Portland, Oregon 97224
Telephone: (503) 624-9274
Fax: (503) 620-5940

To: 76 Products
Portland Terminal

Date: February 25, 1997

File: 0161-492-00

Fax Number: 248-1592

Attention: Mr. Kent J. Penningroth / Dan Trgovcich

Regarding: Product Recovery

Pages	Date	Description
1	02/25/97	Fax Transmittal
5	02/25/97	Work Plan and Fee Estimate

Total Pages: 6

Comments: Dear Kent;

For your review. I have a class at Portland Comm. Coll. on Tuesdays, therefore will be out of the office after about 5:10. However, you will be able to reach Julia Fowler with any questions if you need to speak with someone here. She has been fully involved in our Portland Terminal work for the past 3 years, is the Associate for the project, and is designated with contractual authority.

Signed:
Terry T. Fink

GeoEngineers

February 25, 1997

Consulting Engineers
and Geoscientists
Offices in Washington,
Oregon, and Alaska

76 Products Company
5528 Northwest Doane Avenue
Portland, Oregon 97210

Attention: Mr. Kent J. Penningroth

Work Plan and Fee Estimate
Product Recovery System Design
76 Products Company Portland Terminal
Portland, Oregon
File No. 0161-492-00

INTRODUCTION

GeoEngineers, Inc. is pleased to submit this work plan and fee estimate for environmental services at 76 Products Company Portland Terminal. This submittal is based on a February 24, 1997 site visit by Mr. Terry Pisk and Mr. Pat Sullivan of GeoEngineers. The scope of services described below was developed in conjunction with Mr. Kent Penningroth of 76 Products Company during the site visit. The site visit was conducted at the request of 76 Products Company in response to a spill of super unleaded gasoline that occurred from Tank 3411 on February 22, 1997. Tank 3411 is within Tank Farm No. 2 at the Terminal.

WORK PLAN

The purpose of the services described in this work plan is to provide design recommendations to 76 Products Company regarding recovery of product from the subsurface. The planned scope of GeoEngineers' services for this project is as follows:

OK

Task 1: Initial Site Visit

Conduct an initial site visit on February 24, 1997 at the request of 76 Products Company. Observe the area of the spill and ongoing exploration and remedial activities conducted by CET Environmental under contract to 76 Products Company. Meet with representatives of 76 Products Company and DEQ (Oregon Department of Environmental Quality) to discuss the spill and appropriate remedial measures. Develop, in conjunction with 76 Products Company, a general scope of GeoEngineers' services.

GeoEngineers, Inc.
7504 SW Bridgeport Road
Portland, OR 97224
Telephone (503) 624-9274
Fax (503) 620-5940

Printed on recycled paper.

OK

Task 2: Project Planning and Preliminary Design

Communicate with representatives of 76 Products Company regarding remedial design possibilities and equipment requirements. Coordinate with GeoEngineers' subcontractors regarding construction of recovery wells, health and safety requirements at the Terminal, and the project schedule. Develop the project work plan and budget.

Task 3: Field Services

OK

Product Recovery Wells. Observe drilling and construction of three product recovery wells in the vicinity of Tank 3411. The drilling will be conducted by Cascade Drilling under subcontract to GeoEngineers. At this time, three 4-inch-diameter product recovery wells are planned for installation on February 26 and 27, 1997. The wells will consist of stainless steel screen and casing, if available. If stainless steel materials are not available, the wells will be constructed from PVC (polyvinyl chloride). The wells will be completed to a depth of about 25 feet below ground surface and consist of 15 feet of screen and 10 feet of casing. The wells will be completed within flush-grade protective steel monuments. Soil samples will be collected from the borings at approximate 2.5 foot intervals for field screening.

use PVC

One composite soil sample will be collected from soil cuttings generated during drilling of each well. The soil samples (three total) will be submitted for chemical analysis of petroleum hydrocarbons to facilitate off-site disposal of the soil cuttings.

The product recovery wells will be developed by GeoEngineers after installation to ensure continuity with surrounding soils. Water generated during development of the wells and decontamination water generated during well construction will be disposed of in the on-site oil/water separator, or other location specified by 76 Products Company.

Treatment System Installation. Observe installation and initial operation of pumps in the product recovery wells, and in at least one of the existing well points installed at the site by 76 Products Company. Measure and record water levels in surrounding wells and well points as pumping is initiated to evaluate the radius of influence during pumping from the wells. Observe initial operation of the treatment system to evaluate the overall system effectiveness.

By UNOCAL

Interim Vacuum Recovery. Observe, if requested, recovery of product and water from the currently installed well points by vacuum methods. Measure and record water levels in surrounding well points as vacuum recovery is initiated to evaluate the radius of influence during vacuum recovery from the well points.

No

OK-?

Task 4: Data Evaluation and System Design

Coordinate with representatives of 76 Products Company during development of the product recovery system design. Provide design modifications and final design recommendations on an as needed basis, depending on the performance of the initial system installed at the site.

COP0013924

By UNOCAL

Task 5: System Monitoring

We recommend that the treatment system be monitored on a frequent and regular basis during the first week of operation. We understand that CET will conduct much of this monitoring under contract to 76 Products Company. However, we recommend that GeoEngineers visit the site on a daily basis for the first week of operation to observe the operation of the system, interview CET personnel regarding system operation and to measure water levels in monitoring wells, well points and any recovery wells from which product and water are not pumped. The purpose of the monitoring is to evaluate the effectiveness of the system and the radius of influence from pumping wells in order to determine if additional wells or equipment modifications may be required.

By UNOCAL

Task 6: Report Preparation

Prepare letter report which includes a summary of the actions completed for the above scope items, recovery well logs, schematics of the treatment system and an evaluation of the treatment system effectiveness. The report will be suitable for submittal to DEQ, or for internal use by 76 Products Company.

SCHEDULE

The initial site visit (Task 1) was conducted on February 24, 1997. Project planning and preliminary design are ongoing. Installation of the product recovery wells is planned to begin on February 26, 1997. We understand that CET Environmental is proceeding with acquisition and installation of treatment system components. The report schedule will be determined in conjunction with 76 Products Company.

BUDGET

We will conduct our services in accordance with the rates and terms described in our existing contract with 76 Products Company. Copies of the contract and the Schedule of Charges for the contract are available from 76 Products Company. The estimated fee for the scope of services outlined above for Tasks 1 through 6 is about $19,747. Because of uncertainty regarding specific services which may be provided to 76 Products Company for this project, the fee estimate should be considered an approximation based on our knowledge of the project and anticipated scope of services. We will not exceed this fee estimate without prior approval by 76 Products Company. A breakdown of the anticipated fees is presented below.

1.0 Initial Response

Principal	1 hour @ $109/hour	$ 109
Senior Geologist	5 hours @ $90/hour	450
Project Manager	5 hours @ $75/hour	375
Expenses		20
	Total 1.0	$ 954

COP0013925

2.0 Project Planning and Preliminary Design		
Senior Geologist	6 hours @ $90/hour	$ 540
Project Manager	8 hours @ $75/hour	600
Clerical/Support	2 hours @ $45/hour	90
	Total 2.0	$1,230
3.0 Field Services		
3.1 Drilling		
Office Coordination and Management	10 hours @ $75/hour	$ 750
Field Labor	24 hours @ $75/hour	1,800
Equipment		200
Expenses and Field Supplies		200
	Total 3.1	$2,950
3.2 Subcontracted Driller		
Subcontractor		$4,900
	Total 3.2	$4,900
3.3 Recovery System Installation and Operation Monitoring		
Senior Geologist	2 hours @ $90/hour	$ 180
Office Coordination and Management	6 hours @ $75/hour	450
Field Labor	10 hours @ $75/hour	750
Equipment		200
Expenses and Field Supplies		50
	Total 3.3	$1,630
4.0 Data Evaluation and System Design		
Senior Geologist	8 hours @ $90/hour	$ 720
Project Manager	20 hours @ $75/hour	1,500
Clerical/Support	8 hours @ $39/hour	312
	Total 4.0	$2,532
5.0 System Monitoring		
Senior Geologist	2 hours @ $90/hour	$ 180
Project Manager	20 hours @ $75/hour	1,500
Equipment		400
Expenses		100
	Total 5.0	$2,180

COP0013926

6.0 Report Preparation

Principal	3 hours @ $109/hour	$ 327
Senior Geologist	8 hours @ $90/hour	720
Project Manager	25 hours @ $75/hour	1,875
Drafting	5 hours @ $43/hour	215
Clerical/Support	6 hours @ $39/hour	$ 234
	Total 6.0	$3,371
Project Total		$19,747

We appreciate the opportunity to be of service to 76 Products Company and the Portland Terminal on this project. Please call if you have questions regarding this work plan.

Yours very truly,

GeoEngineers, Inc.

Patrick J. Sullivan, R.G.
Geologist

Terry Hunt, R.G.
Senior Geologist

Julia Fowler, P.E.
Associate

PJS:TTF:JF:mln
Document ID: 01614921.pro

Two copies submitted

The scope of services and terms described herein are accepted and GeoEngineers, Inc. is authorized to proceed.

_____ by _____
Organization *Signature

_____ _____
Date Name Printed

*Individual with contracting authority and responsible for payment of GeoEngineers, Inc. services.

COP0013927

76 PRODUCTS COMPANY

Portland Terminal
February 23, 1997

Memorandum

To: D. E. D'Zurilla
A. E. Viens

From: P. L. Schnieders
J. W. Sherman

PRELIMINARY REPORT
OVERFILL OF TANK 3411
PORTLAND TERMINAL: 2-22-97

OVERVIEW

On Saturday, February 22, 1997 terminal operator Dexter Morrison was transferring 92 octane gasoline in Tank Farm #2 at the Portland terminal from Tank 3408 to Tank 3411. At 1555 hours he was advised by a truck driver that a Unocal storage tank was overfilling. Mr. Morrison responded to the tank farm to investigate. He found product spilling from the vents on Tank 3411. He stopped the transfer pump and closed the base valve on Tank 3408. He then went to the terminal control room and began requesting assistance and notifying the emergency response team. At 1610 Mr. Morrison made contact with the Portland Fire Bureau at the scene and remained with them until relieved as incident commander at 1635. Approximately 11,670 gallons were released and 1,600 gallons recovered as of 2-23-97.

SEQUENCE OF EVENTS

Head Operator Ralph Sandercock was working during the day shift (0650 to 1450 hours) on February 22. Following Mr. Sandercock on the swing shift and working as a Head Operator was Dexter Morrison. At 1400 hours Mr. Sandercock began a review of his ongoing activities and the scheduled activities on the swing shift in preparation of a shift change conference with Mr. Morrison. At this time he noted that a 92 octane gasoline receipt from the Olympic Pipeline was scheduled at 2119 hours to be delivered

into Tank 3408. Based on the size of the tender, Mr. Sandercock determined that there would be a containment problem and began to transfer product from 3408 to Tank 3411. The transfer started at 1415 hours. The transfer rate was approximately 1300 barrels/hour.

At 1445 Mr. Morrison arrived at the terminal and the shift change conference was held. At 1450 Mr. Morrison assumed Head Operator responsibilities. Mr. Sandercock left the terminal at 1500 hours.

At approximately 1555 hours Mr. Morrison received a call from a driver at the refined products load rack that a tank was overfilling. He went to Tank Farm 2 where the transfer was taking place and found product flowing from the vents on Tank 3411. He then turned off the product transfer pump and closed the base valve on Tank 3408. Mr. Morrison returned to the terminal control room and began requesting assistance and notifying the Northwest area emergency response team. The Portland Fire Bureau was notified of the spill at 1558 hours. They arrived on scene at 1604. Mr. Morrison met with the fire department at 1610 hours and remained with them until relieved as Incident commander at 1635 hours.

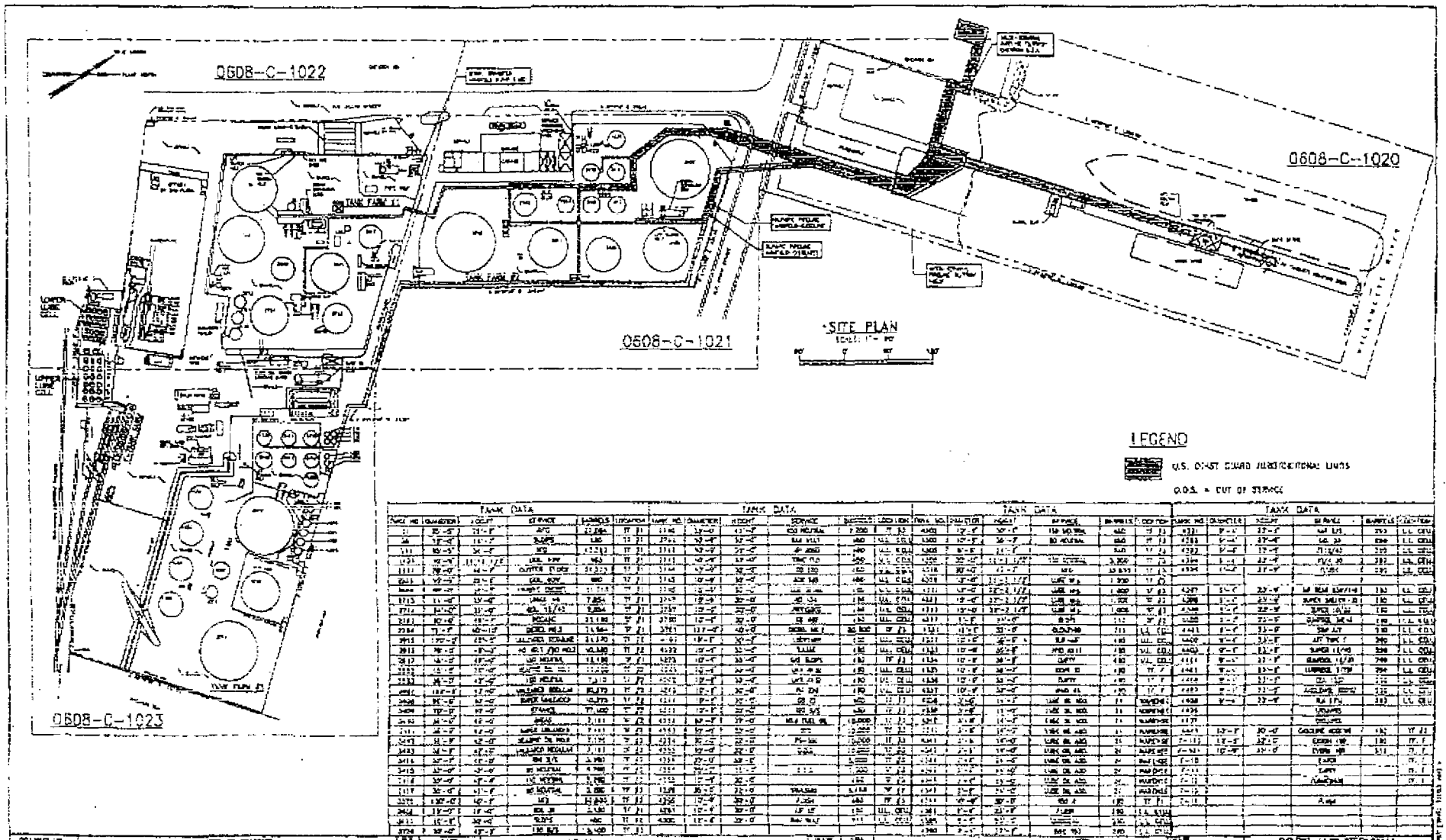
During the response, terminal personnel worked closely with the Fire Bureau to maintain a foam blanket on the released product to eliminate vapors and reduce the possibility of ignition while cleaning up free standing product. The Coast Guard responded, determined that no product had entered the Willamette river, that the product was contained on site, and they left the scene without any further concerns. The Oregon Department of Environmental Quality (DEQ) was notified and did not respond to the scene but stated that they were satisfied with the facility response. There will be further contact with DEQ on Monday, February 24.

The emergency response ended at 0400 hours on Sunday, February 23. At 0700 on February 23 the cleanup phase of the operation began. Terminal technical, HES, and operational personnel are currently working with a local contractor assessing soil conditions and defining the extent of the release. We have been in contact with John Dietzman of 76 Products Company HES. No assistance has been requested at this time but Mr. Dietzman will be advised on a daily basis of soil assessment and cleanup operation status.

The Portland Fire Bureau public information officer worked with Unocal representatives at the scene to develop facts related to the release. Several members of the media arrived at the scene, but were prevented by the Police department from getting close to the scene and therefore

could not obtain video of the incident. The media was provided facts related to the incident when they arrived along with periodic updates regarding the response. Karen Rodgers, Manager of Public Affairs, has been notified and public relations concerns have been addressed with her. At least two local television stations had coverage on the Saturday evening news, 11:00. An article appeared in the Sunday Oregonian newspaper, a copy of which will be faxed to you today. Two interviews were conducted with local TV stations (ABC & NBC) on Sunday, the interviews were not shown but coverage of the incident was included on their Sunday evening 5:00 newscast.

cc:
J. R. Dietzman
J. J. Maney
K. G. Rodgers
W. T. Skok



TANK DATA

TANK DATA

TANK DATA

TANK DATA

DRAWING NO.	REFERENCE DRAWINGS	REV NO	DATE	REVISED	DRAWN	CHECKED
0608-C-1000	DOCK FACILITIES	0	01/28/94	UPDATED TANK DATA	DAB	WEB
0608-C-1021	TANK FARM NO.2 GENERAL ARRANGEMENT	1	11/20/96	GENERAL UPDATES	DAB	WEB
0608-C-1022	TANK FARM NO.1 GENERAL ARRANGEMENT	2	01/17/97	DEFINED COAST GUARD JURISDICTIONAL LIMIT	DAB	WEB
0608-C-1023	TANK FARM NO.3 GENERAL ARRANGEMENT					

UNOCAL 76
76 PRODUCTS COMPANY
Los Angeles, California

ALPHA ENGINEERS and CONSTRUCTORS, INC.

DRAWN	DAB/TMH
CHECKED	WEB
APPROVED	JCP
SCALE AS SHOWN	
DATE	01/29/98

PORTLAND TERMINAL
PORTLAND, OREGON

SITE PLAN
COAST GUARD OPERATING MANUAL

DRAWING NO. 0608-C-1000 · SHEET 1 OF 1 · REV 2

FEB-24-1997 08:32 FROM UNOCAL PORTLAND TERM TO VIENS P.03/09

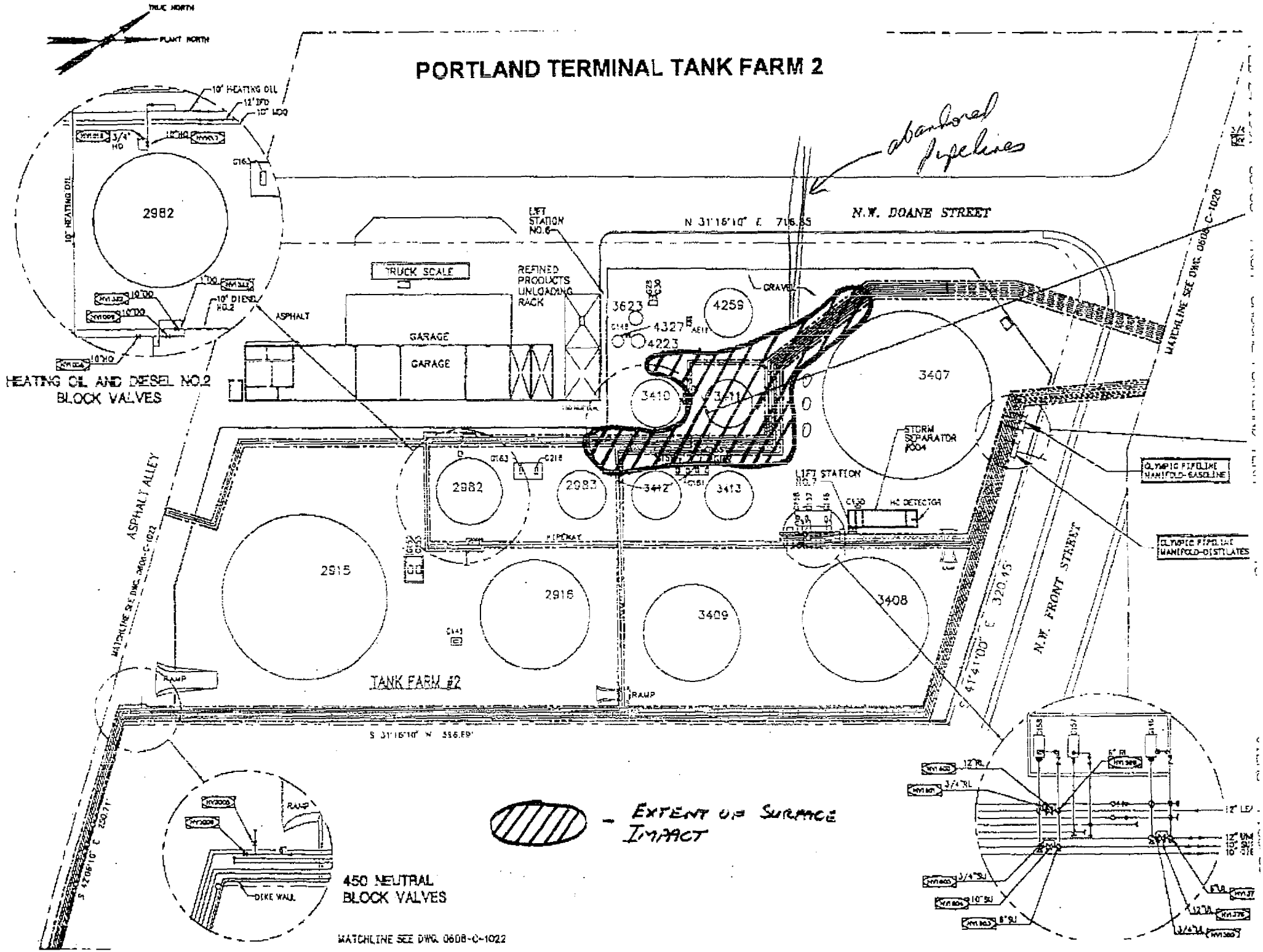
COP0013931

PORTLAND TERMINAL
TANK 3411 SPILL
INITIAL SUBSURFACE INVESTIGATION

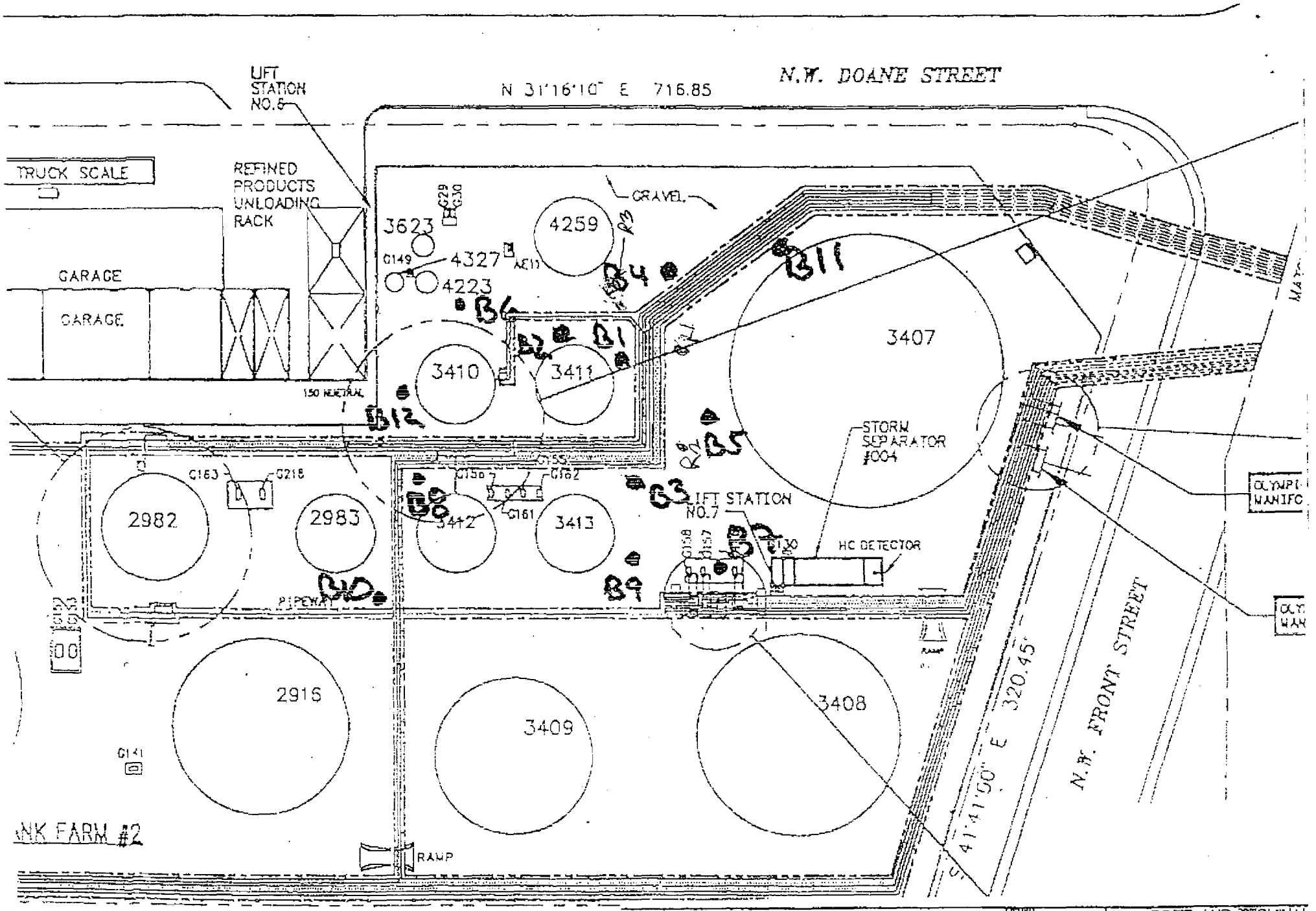
2/24/97

BORING NUMBER	DATE BORED	DEPTH TO GROUNDWATER (FT)	SOIL HEADSPACE ANALYSIS AT GROUNDWATER (PPM)	COMMENTS
B1	2/23/97	12.5	500	SANDY SOILS. 3" OF FREE PRODUCT ON GROUNDWATER SURFACE. 1'5"
B2	2/23/97	13	430	SANDY SOILS. FILM OF PRODUCT ON GROUNDWATER, MODERATE GASOLINE ODOR
B3	2/23/97	12.5	590	SANDY SOILS.
B4	2/23/97	13.5	140	SANDY SOILS. SLIGHT GASOLINE ODOR
B5	2/23/97	14	3.5	SANDY SOILS.
B6	2/23/97	13	145	SANDY SOILS WITH CLAY ENCOUNTERED AT LOWER DEPTHS. FILM OF PRODUCT ON GROUNDWATER. SLIGHT GASOLINE ODOR
B7	2/23/97	14	10	SANDY SOILS
B8	2/23/97			SANDY SOILS. COBBLE ENCOUNTERED. BORING STOPPED < 3'
B9	2/23/97	13.5	50	SANDY SOILS.
B10	2/23/97	12.5	250	SANDY SOILS. ODOR OF OLD OIL
B11	2/23/97	12.5	150	SANDY SOILS. MAY BE OLD GASOLINE
B12	2/23/97	12.5	180	SANDY SOILS WITH CLAY ENCOUNTERED AT LOWER DEPTHS.

NOTE: Additional data and comments collected during boring activities (not presented here) are shown on field data sheets.


TRUE NORTH
PLANT NORTH
PORTLAND TERMINAL TANK FARM 2
abandoned pipelines
N.W. DOANE STREET
N 31°16'10" E 716.55'
LIFT STATION NO.6
TRUCK SCALE
REFINED PRODUCTS UNLOADING RACK
GRAVEL
ASPHALT
GARAGE
GARAGE
HEATING OIL AND DIESEL NO.2 BLOCK VALVES
2982
3623
4259
4327
4223
3407
3410
3411
STORM SEPARATOR #004
LIFT STATION NO.7
HC DETECTOR
OLYMPIC PIPELINE MANIFOLD-GASOLINE
OLYMPIC PIPELINE MANIFOLD-DISTILLATES
2982
2983
3412
3413
ASPHALT ALLEY
MATCHLINE SEE DWG. 0608-C-1022
2915
2916
3409
3408
N.W. FRONT STREET
S 41°41'10" E 320.45'
TANK FARM #2
RAMP
RAMP
S 31°16'10" W 556.69'
RAMP
DIKE WALL
450 NEUTRAL BLOCK VALVES
- EXTENT OF SURFACE IMPACT
MATCHLINE SEE DWG. 0608-C-1022

COP0013933



COP00139346

Unocal gasoline leak closes 12 blocks of N.W. Front Avenue

An undetermined amount of super unleaded gasoline leaked about 3:40 p.m. Saturday from tanks at a Unocal storage facility, 5528 N.W. Doane Ave.

Officials closed 12 blocks of Front Avenue, as far south as the Kittridge Bridge, said Gary Farland, a spokesman for the Portland Fire Bureau.

The spill occurred when Unocal workers tried to do a routine fuel transfer from one tank to another, Farland said. The gasoline leaked from a tank that holds 6,340 barrels of fuel, but the spill was confined to a dike area around the tanks, he said.

Fire Bureau and Unocal officials applied a foam to suppress the flammable fumes and manually open a valve on the spilled tank to reduce the amount of its contents.

Thirty-six firefighters from 17 units responded. Some monitored the spill overnight.

There were no injuries or evacuations, although nearby businesses were warned of the situation. Front Avenue was reopened by 10 p.m.

"Anytime you have an undetermined amount of super unleaded fuel leaked, you have the possibility of a very dangerous area," Farland said.

Hillsboro police charge man in Friday night stabbing

HILLSBORO — Police accused a man of attempted murder Friday night after discovering another man lying in a street with a stab wound to the abdomen.

Luis Jose Gomez-Bacerra, 25, was arrested and lodged in the Washington County Jail.

The victim, whose name was unknown, was discovered in the 2300 block of Southeast Oak Street. He was taken to Legacy Emanuel Hospital, where he was listed as a John Doe and was in serious condition.

Hillsboro police discovered the injured man while responding to a call of a fight in the area. An investigation revealed that the two men were fighting, which resulted in the stabbing.

Medford man dies when Jeep hits his car; passenger hurt

KLAMATH FALLS — A Medford man was killed Saturday, and his passenger was injured when a Jeep hit his car broadside at Keno Worden Road and U.S. 97.

Robert M. Stebbings, 41, died at the scene after driving his 1989 Honda Accord into the path of a Jeep Cherokee driven by Tinoteo Guerrero Silvas, 27, of Quincy, Wash.

A passenger in Stebbing's car, Helen E. Stebbings, 70, was taken to Merle West Medical Center with a chest injury. She was in stable condition Saturday night, a nursing supervisor said.

Oregon State Police said Robert Stebbings was driving on Keno Worden Road and stopped at a stop sign before proceeding across U.S. 97. Silvas' vehicle struck Stebbings' car in the southbound lane.

Silvas and five passengers received minor bumps and bruises. The passengers in both vehicles were wearing seat belts.

FBI arrests Portland man in Friday Wells Fargo holdup

A suspect in a Friday afternoon bank robbery was arrested Friday night.

The FBI in Portland arrested Dale Ramsey Olson, 38, of Portland at 7:30 p.m. near the robbery scene.

Patrick Geonetta, spokesman for the FBI, said Olson allegedly walked into the Wells Fargo Bank, 2625 E. Burnside St., about 3 p.m. and demanded money and handed tellers a note. Geonetta said a witness got the license plate of the getaway car, and that led police to Olson.

Olson was held at the Justice Center jail. Officials expect to charge him with bank robbery in U.S. District Court.

THE OREGONIAN 2-23-97
METRO SECTION PAGE D8

COP0013935

PRODUCTS COMPANY

Portland, Oregon
February 27, 1997

Memorandum

To: D. E. D'Zurilla
A. E. Viens

From: P. L. Schnieders

PORTLAND TERMINAL REMEDIATION PLAN

The following is an update regarding Portland terminal remediation activities resulting from the February 22, 1997 gasoline release.

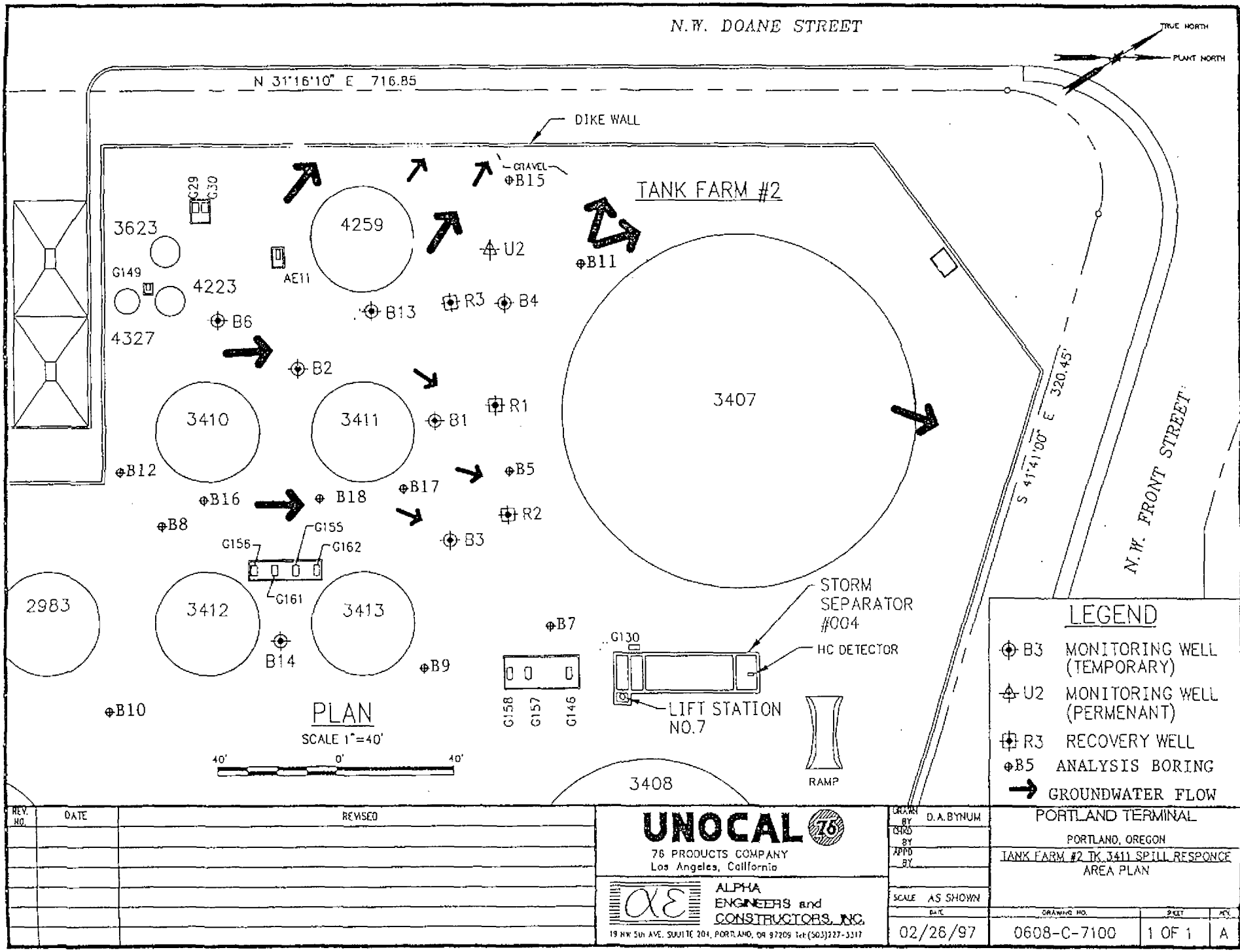
Attachment 1 shows the location of exploratory analysis borings, temporary monitoring wells, and recovery wells. The current plan is to install three recovery wells in strategic areas around the area of groundwater that is believed to be impacted by the product. Recovery wells R1, R2, and R3 have been installed and a fifth temporary monitoring well is being installed at B16.

Product recovered from the wells will be pumped through an oil/water separator and carbon filtration to recover free product while polishing the water for discharge through the terminal's process water system. The city of Portland is the governing agency for the process water system and has approved the plan. In addition, Oregon Department of Environmental Quality and the Water Resource Board have approved the plan. A copy of the P&ID for this process is attached for your information.

Since our last correspondence we have estimated that 460 gallons of product evaporated during the initial response. These calculations were reviewed with Bob King of ERST. Therefore, the total product recovered or evaporated total approximately 2110 gallons.

The cost estimate submitted on February 25 included purchase of water treatment facilities, but we have since determined that it is more cost effective to lease the oil/water separator and carbon filtration cartridges.

There will likely be adjustments to our plan as we gain additional information, but we will continue to work with Dan Truzzolino and GeoEngineers, and keep everyone on the cc list informed.



REV. NO.	DATE	REVISED

UNOCAL 76
76 PRODUCTS COMPANY
Los Angeles, California

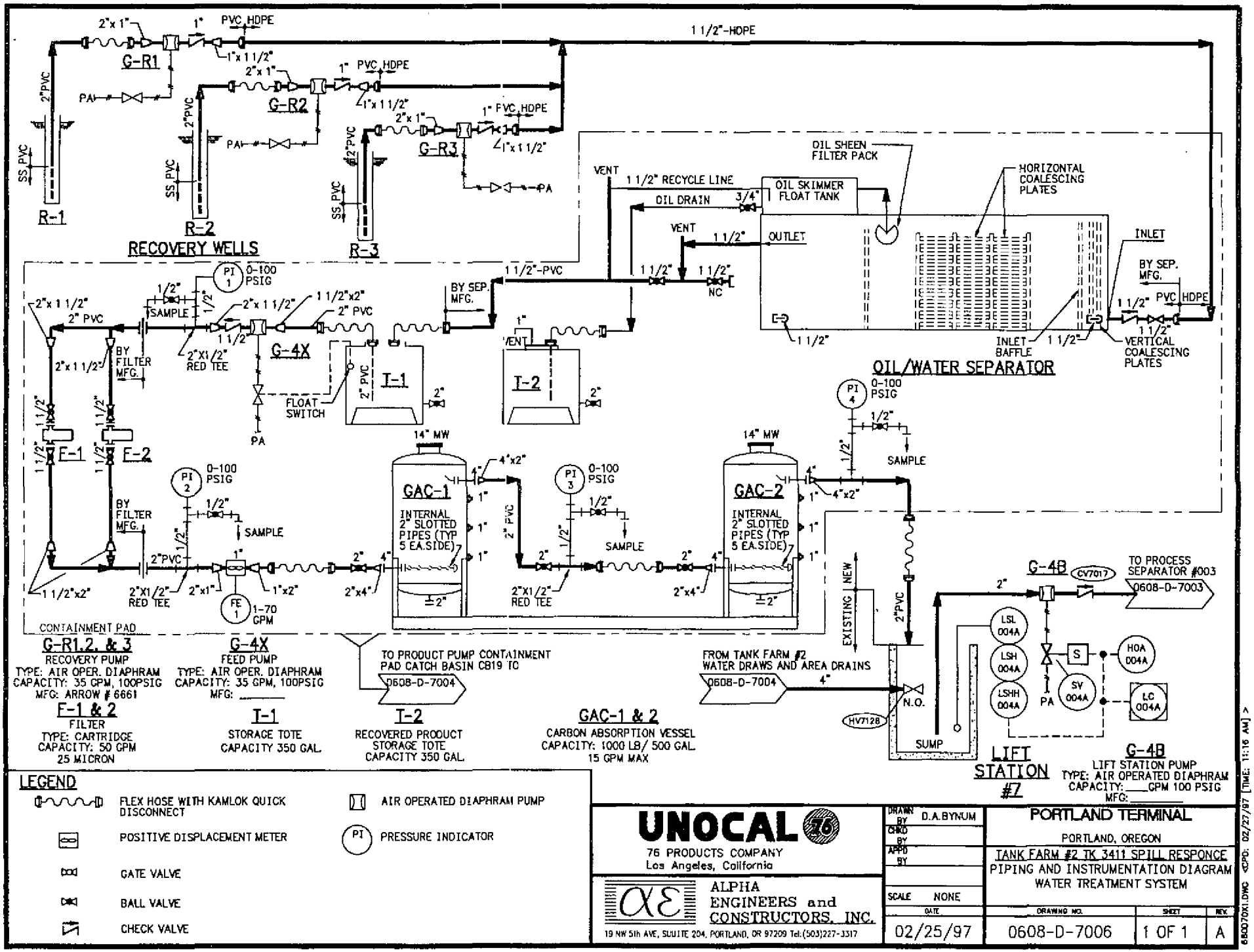
ALPHA ENGINEERS and CONSTRUCTORS, INC.
19 NW 5th AVE. SUITE 204, PORTLAND, OR 97209 Tel:(503)227-3317

DRAWN BY	D.A.BYNUM
CHKD BY	
APPD BY	
SCALE	AS SHOWN
DATE	02/26/97

PORTLAND TERMINAL
PORTLAND, OREGON
TANK FARM #2 TK.3411 SPILL RESPONCE AREA PLAN

DRAWING NO.	SHEET	REV.
0608-C-7100	1 OF 1	A

COP0013937


G-R1
G-R2
G-R3
R-1
R-2
R-3
RECOVERY WELLS
2"x 1"
1" PVC HDPE
1"x 1 1/2"
1 1/2"-HDPE
2"PVC
SS PVC
PA
VENT
1 1/2" RECYCLE LINE
OIL SKIMMER FLOAT TANK
OIL DRAIN
3/4"
OIL SHEEN FILTER PACK
HORIZONTAL COALESCING PLATES
OUTLET
INLET
BY SEP. MFG.
INLET BAFFLE
VERTICAL COALESCING PLATES
OIL/WATER SEPARATOR
PI 1
PI 2
PI 3
PI 4
0-100 PSIG
1/2"
SAMPLE
2"x 1 1/2"
2" PVC
1 1/2"x2"
BY FILTER MFG.
2"X1/2" RED TEE
G-4X
FLOAT SWITCH
I-1
I-2
F-1
F-2
14" MW
GAC-1
GAC-2
INTERNAL 2" SLOTTED PIPES (TYP 5 EA.SIDE)
4"x2"
FE 1
1-70 GPM
CONTAINMENT PAD
G-4B
CV7017
TO PROCESS SEPARATOR #003
0608-D-7003
EXISTING
NEW
HV7128
N.O.
SUMP
LSL 004A
LSH 004A
LSHH 004A
HOA 004A
SV 004A
LC 004A
S
PA
LIFT STATION #7
TO PRODUCT PUMP CONTAINMENT PAD CATCH BASIN CB19 TC
0608-D-7004
FROM TANK FARM #2 WATER DRAWS AND AREA DRAINS
0608-D-7004
G-R1,2, & 3
RECOVERY PUMP
TYPE: AIR OPER. DIAPHRAM
CAPACITY: 35 GPM, 100PSIG
MFG: ARROW # 6661
G-4X
FEED PUMP
TYPE: AIR OPER. DIAPHRAM
CAPACITY: 35 GPM, 100PSIG
MFG: ____
F-1 & 2
FILTER
TYPE: CARTRIDGE
CAPACITY: 50 GPM
25 MICRON
I-1
STORAGE TOTE
CAPACITY 350 GAL.
I-2
RECOVERED PRODUCT
STORAGE TOTE
CAPACITY 350 GAL.
GAC-1 & 2
CARBON ABSORPTION VESSEL
CAPACITY: 1000 LB/ 500 GAL.
15 GPM MAX
G-4B
LIFT STATION PUMP
TYPE: AIR OPERATED DIAPHRAM
CAPACITY: ____GPM 100 PSIG
MFG: ____
LEGEND
FLEX HOSE WITH KAMLOK QUICK DISCONNECT
POSITIVE DISPLACEMENT METER
GATE VALVE
BALL VALVE
CHECK VALVE
AIR OPERATED DIAPHRAM PUMP
PRESSURE INDICATOR
UNOCAL 76
76 PRODUCTS COMPANY
Los Angeles, California
ALPHA ENGINEERS and CONSTRUCTORS, INC.
19 NW 5th AVE, SUITE 204, PORTLAND, OR 97209 Tel:(503)227-3317
DRAWN BY D.A.BYNUM
CHKD BY
APP'D BY
SCALE NONE
DATE 02/25/97
PORTLAND TERMINAL
PORTLAND, OREGON
TANK FARM #2 TK 3411 SPILL RESPONCE
PIPING AND INSTRUMENTATION DIAGRAM
WATER TREATMENT SYSTEM
DRAWING NO. 0608-D-7006
SHEET 1 OF 1
REV. A
6800706XI.DWG <CPD: 02/27/97 [TIME: 11:16 AM] >

COP0013938

cc:
M. A. Cramer
J. R. Dietzman
S. B. Gilfillan
J. J. Maney
R. W. McGowne
K. J. Penningroth
J. W. Sherman
W. T. Skok
D. Truzzolino

PRODUCTS COMPANY

February 27, 1997

0922
CORRESP.

Mr. Greg Grunow
Oregon Department of Environmental Quality
2020 SW Fourth Avenue, Suite 400
Portland, OR 97201-4987

PETER L. SCHNIEDERS
Manager
Northwest Operations Area
Portland Terminal

GASOLINE SPILL ON FEBRUARY 22, 1997

Dear Mr. Grunow:

This letter has been prepared in compliance with the Unocal/76 Products Company Portland Terminal's Air Pollution Discharge Permit No. 26-2026 wherein we are required to provide a written follow up report on any gasoline spills greater than five gallons. At the time of the subject spill, the Oregon Emergency Management Division (EMD) was notified and they stated that the Oregon Department of Environmental Quality (DEQ) would be notified by them. Not withstanding our notification to the EMD, terminal personnel placed a call to Mr. Michael Zollitsch of DEQ on February 22, 1997. A description of the incident, emergency response actions, and actions taken to prevent recurrence is provided below.

The incident was discovered at approximately 3:55 pm on Saturday, February 22, 1997 during a tank overfill in Tank Farm 2. The operator was transferring gasoline from Tank 3408 to Tank 3411 in Tank Farm 2, when gasoline began discharging out the vents at the top of the tank. The discharge continued for approximately 10 minutes before it was discovered and the transfer could be terminated. Approximately 11,700 gallons of gasoline was estimated to have been released during the incident.

The emergency notification process of both the terminal response personnel and the regulatory agencies was initiated immediately by the terminal operator. The Portland Fire Department was onsite within approximately eight minutes and cordoned off the area. Terminal incident command personnel were onsite within 45 minutes and an incident command post was established in conjunction with the fire department. Terminal personnel and the fire department worked together to; 1) apply foam to the release area to suppress vapors and minimize the fire and explosion hazard, 2) transfer product by gravity flow from Tank 3411 to Tank 3408 to reduce the volume in Tank 3411 and allow for foam injection into the tank if necessary, and 3) recover free product on the ground and in the stormwater and process systems.

5528 Northwest Doane Avenue
Portland, Oregon 97210
PH (503) 248-1530
A Unocal Company

The discharge valve to the Storm Water Separator #004 for Tank Farm 2 had been closed. The evening of February 21 eliminating the possibility of gasoline being discharged to the Willamette River. Terminal personnel and U.S. Coast Guard representatives inspected the outfall area at the Willamette river, and found no indications of gasoline or reason to believe product would exit the facility. The Process Water Separator was visually inspected and shut down shortly after the incident to ensure no gasoline was discharged to the municipal sanitary sewer system. The visual inspection indicated that gasoline had not yet entered the process water system. Subsequent samples taken from the separator discharge sampling box after the system was shut down indicated hydrocarbon constituents were well below the permitted limitations which indicates that no unauthorized discharges occurred to the sanitary sewer as a result of the incident. Some product was later transferred from Separator #004 to the Process Water Separator and recovered. Terminal operations were discontinued following the spill but returned to partial operation on Sunday, February 23, and then to full operations that evening.

The impacted area was limited to the general vicinity of Tank 3411 and was contained within the tank farm. A preliminary assessment conducted on February 23 indicated the spill had initially spread out laterally from the tank following the natural surface gradient which generally slopes to adjacent pipe racks situated within shallow trenches. Once in the trenches, the gasoline flowed to nearby catch basins and into the storm water collection system. Some of the spilled product did, however, appear to have absorbed into the underlying soils. Approximately 1,650 gallons were recovered Saturday night and Sunday morning from the storm and process water systems. In addition, approximately 460 gallons are estimated to have evaporated during the incident and emergency response.

The Portland Terminal is conducting an investigation of the spill area to determine the extent of the impacted suburface soil and groundwater. Several borings and four monitoring wells have been installed in the spill area to determine the extent of gasoline migration. The extent of air emissions resulting from the spill is difficult to assess although we estimated that 460 gallons evaporated. The foam applied to the spill area by the fire department appeared to have mitigated the release of significant quantities of gasoline vapors. No acute or chronic health affects to exposed or potentially exposed personnel were identified.

A remediation system designed to recover separate phase product discovered on the ground water in one well near Tank 3411 is in the process of being installed along with three to four recovery/monitoring wells. We anticipate the system will be operational next week. Remediation methods for recovery of residual gasoline that may be retained in the subsurface soils are being analyzed. The affected storm and process water separators have been cleaned and the Process Water Separator placed back in service. Samples from the Process Water Separator were taken and analyzed prior to start up to ensure our permitted discharge limitations would not be exceeded.

The Storm Water Separator #004 discharge has been rerouted to the Process Water Separator during the initial few days of operation and samples are being taken periodically to monitor for compliance with our effluent limitations. Once it has been determined the effluent from the storm water separator is consistently within the permitted limits, the effluent will be rerouted to its normal discharge point (i.e., the municipal storm water system and the Willamette River).

Portland Terminal management is currently conducting a comprehensive investigation of the incident. Once it is completed and the findings of the investigation team are released, modifications to the terminal equipment and operational procedures will be made as necessary. A supplemental written report will be made at that time.

If you have any questions or require additional information, please do not hesitate to contact me at 248-1530.

Sincerely,

Peter L. Schnieders
Manager, Northwest Operations Area

PLS/jk

cc: M. A. Cramer
J. R. Dietzman
J. W. Sherman
W. T. Skok

GeoEngineers

7504 SW Bridgeport Road
Portland, Oregon 97224
Telephone: (800) 446-4987
Fax: (503) 620-8046

FAX TRANSMITTAL

To: GeoEngineers at 76 Products Willbridge

Date: 2/27/97

File: AOC 0922 CORRESP.

Fax Number: 248-1519 / 248-1592

Attention: Pat Sullivan

Regarding: TLV Calibration Records

Pages	Date	Description
1	02/26/97	Fax Transmittal
1		summary sheet

Total Pages: 2

Comments:

Pat,

This a copy of the summary sheet. We found the individual calibration sheet for TLV#22 and added the latest calibration to this summary sheet

Signed: DWC

(9) TLVs

#17 #25
#7 #24
#18 #22
#8 #3.
#26

TLV SNIFFER Calibration Sheet

GEI

Date	Name	Unit No:	Calibration Check: Source Gas	Reading	Recalibration: yes	no	Verification Reading	Battery Charge	Needed Calibration Supplies	Comments
11/11/96	Factory + BLR	17	Calibrated by Century Safety due to repair of potentiometer							Good condition
11/11/96	Factory + BLR	24	Calibrated by Century Safety due to replacement of detector							Good condition
11/11/96	Factory + BLR / cable replaced	8	Calibrated by Century Safety due to detector elem. + potentiometer							Good condition
12/16/96	Factory + BLR / cable replaced	18	Calibrated + Repaired by BACHARACH (newly rebuilt battery pack)							Good condition
1/14/97	Factory / cable replaced	7	Calibrated + repaired by BACHARACH (" ")							Good condition
1/14/97	BLR	24	478 ppm	450	X		478	70%	possible pump leak + ixerrar	Poor condition / sent for repair under warran
1/16/97	BLR / cable replaced	26	478 ppm	300	X		478	85%	possible new sensor	needs new sensor / ordered 1/16/97
1/16/97	BLR / cable replaced	22	478 ppm	460	X		478	~80%	none	Good condition

GEO ENGINEERS
THU 09:08 FAX 503 620 5940

DAILY HEALTH AND SAFETY MESSAGE

INCIDENT NAME: 3411 tank spill Portland Terr	DATE PREPARED: 2/24/97	OPERATIONAL PERIOD:	DATE	TIME
INCIDENT NUMBER:	TIME PREPARED: 0745	FROM:	2/24	0800
		TO:	2/24	1700

GENERAL ADVISORIES

1. Use Hand Augers only for ground sampling. Othe tools such as shovels must be non-sparking.
2. Use metal buckets only for contaminated soils (No Plastic.)
3. Use Ramps and stairs while moving about the tank farm, do not step over pipes (on pipes).
4. if evacuation alarm sounds, move to the area in front of maintenance or over north dike wall and meet by Asphalt shed.
5. No person may enter tank farm 2 without signing in and out. Also sign-in at maintenance office.

P.P.E. - Hard hats, tyvek (worker handling soil), Rubber gloves, Rubber boots, safety glasses (Half or full Face organic vapor Cart Respirators IN Hot Area only)

SPECIFIC ADVISORIES

DIVISION/GROUP	CHEMICAL/PHYSICAL HAZARD(S)	PRECAUTION(S)
Group I	Benzene exp	(Half mask organic vapor in hot area only)
	Chemical exp Loskin	
	Fire	Tyvek, gloves, Rubber boots
	Other chemicals	LEL monitoring - Continuous
		PID monitoring - Continous.
Group II	Same as Group I.	Same as Group II

PREPARED BY: Doug Chance

IAP-4

© OSERMS, 1992

DAMES & MOORE ⇒ DID ENGINEERING BORINGS FOR MOST TANKS & BUILDINGS

		TOC ELEV.
WELL	U-3	35.25
	B-1	34.79
	B-2	35.35
	B-4	34.79
	U-2	35.02
	U-4	34.46
	U-5a	33.77
	U-5	34.20

NOTIFICATION ⇒ SHOULD POST LIST
⇒ SHOULD DETERMINE IF WE WILL PROVIDE COURTESY } SECONDARY

PLAN NEEDS TO BE IMPROVED ⇒ PROVIDE LISTS OF SUPPORT SERVICES
⇒ PROVIDE BETTER GUIDANCE ON INITIAL ACTIONS

LIGHTING? ⇒ DO WE NEED BETTER LIGHTING OR PORTABLE LIGHTING

Tank 3411 Spill - Reporting Requirements

Community Right to Know - SARA 313

Benzene	3,654 = ~~3,436~~	lbs (10 lb RQ)
Ethylbenzene	3,654 = ~~3,436~~	lbs (1,000 lb RQ)
Methyl Tert-Butyl Ether	7,309 = ~~6,872~~	lbs (1,000 lbs RQ)
Toluene	6,579 = ~~6,185~~	lbs (1,000 lbs RQ)
Xylenes	10,233 = ~~9,621 lbs~~	(100 lbs RQ)

Provide verbal notification immediately to the LEPC and SERC including:

1. Chemical or substance name
2. Determination if it is extremely hazardous
3. Estimated release quantity
4. Time and duration of release
5. Medium or media to which it was released
6. Any known or anticipated acute or chronic health risk where advice regarding medical attention is required for exposed individuals
7. Proper precautions taken or to be taken including evacuation
8. Names and telephone numbers or facility contact(s)

Provide written notification as soon as practicable including updates on the above information and:

1. Actions taken to respond to and contain the release
2. Any known or anticipated acute or chronic health risks associated with the release
3. Where appropriate, advice regarding medical attention necessary for exposed individuals

DEQ Air Quality

Current permit requires reporting any gasoline spill more than 5 gals to Northwest Region office at 229-5263. Excess emissions which endanger public health and occur during non-business hours must be reported to the DEM/Oregon Accident Response System (OARS) (need to check to see if one and the same)

1. Source name
2. Nature of emissions
3. Name of person reporting incident
4. Name and phone number of contact person
5. Date and time of onset of incident
6. Whether or not incident was planned
7. Cause of emissions
8. Equipment involved
9. Type and quantity of emissions
10. Time of return to normal operations
11. Efforts made to minimize emissions
12. Description of remedial actions to be taken
13. Follow up reporting to be made in accordance with Department direction and OAR 340-28-1430 (2) and 340-28-1440

City of Portland Environmental Services Wastewater Permit

Accidental or slug loading discharges must be reported verbally immediately to Duty Officer Pager (323-3398) and Lead Operator CBWTP (823-7121). Samples shall be taken immediately upon discovery. Within 5 days submit an initial written report describing the:

1. Incident
2. Actual quantity of resultant waste discharge
3. Corrective action taken
4. Steps taken to prevent recurrence
5. Any other pertinent information

Within 15 days a follow up report shall be submitted summarizing the analytical results and demonstrating the discharge has returned to within the permitted limits.

DEQ NPDES General (1200-T) and Individual Permits

Reports of non-compliance must be made verbally within 24 hours of spill discovery and a written report submitted within 5 days containing:

1. Description of non-compliance and the cause
2. Period of non-compliance including exact dates and times
3. Estimated time of non-compliance if continuing
4. Steps taken or planned to prevent or minimize chance of recurrence

DEQ Spill Response

Verbal report immediately including:

1. Type of oil spilled
2. Quantity
3. Location
4. Corrective and cleanup actions taken and/or proposed

Written report must be submitted within 7 days following a spill including a detailed description of all aspects of the spill and steps taken to prevent recurrence.

Conversation on 2/28

Fire Dists → should have completed initial

OEM/OERS (503) 452-0311

Jim Mazza - 378-2911 x 239 ~~OEM~~ - SERC

Diane Henry 373-1540 x 239 ~~SERC~~
- Didn't think modification required without & to call Jim Mazza @ OEM

~~Jim Mazza~~
- Actually w/ OR Em. Mgmt which is the LEPC & SERC → only one LEPC in OR at this time

OERS Coordinator
Oregon Emergency Mgmt
Dept. State Police
595 Cottage St NE
Salem, OR 97310

COP0013949

76 PRODUCTS COMPANY

February 28, 1997

0922
CORRESPONDENCE

Mr. Eric DeBerry
City of Portland
Environmental Services
1211 S. W. 5th Avenue, Room 800
Portland, OR 97204-3713

PETER L. SCHNIEDERS
Manager,
Northwest Operations Area
Portland Terminal

Discharge of Treated Groundwater
NPDES Permit 400-012

Dear Mr. DeBerry:

This letter is a follow up to a telephone conversation on February 27, 1997 between yourself and Unocal's Kent Penningroth concerning the discharge of pre-treated groundwater into the terminal's industrial process water treatment system. The system discharges to the City of Portland water treatment system under NPDES permit number 400-012. Recovery and treatment of separate phase product and groundwater is part of an action plan resulting from a February 22, 1997 gasoline release at Unocal's Portland terminal. A description of the incident, action taken to date, and proposed treatment facilities and operation are provided below. Your written approval of the plan discussed here is hereby requested.

The incident was discovered at approximately 3:55 pm on Saturday, February 22, 1997 during a tank overfill in Tank Farm 2. The operator was transferring gasoline from Tank 3408 to Tank 3411 in Tank Farm 2 when gasoline began discharging out the vents at the top of the tank. The discharge continued for approximately 10 minutes before it was discovered and the transfer could be terminated. Approximately 11,700 gallons of gasoline was estimated to have been released during the incident.

The emergency notification process of both the terminal response personnel and the regulatory agencies was initiated immediately by the terminal operator. The Portland Fire Department was onsite within approximately eight minutes and cordoned off the area. Terminal incident command personnel were onsite within 45 minutes and an incident command post was established in conjunction with the fire department. Terminal personnel and the fire department worked together to; 1) apply foam to the release area to suppress vapors and minimize the fire and explosion hazard, 2) transfer product by gravity flow from Tank 3411 to Tank 3408 to reduce the volume in Tank 3411 and allow for foam injection into the tank if necessary, and 3) recover free product on the ground and in the stormwater and process systems.

5528 Northwest Doane Avenue
Portland, Oregon 97210
PH (503) 248-1530
A Unocal Company

The discharge valve to the Storm Water Separator #004 for Tank Farm 2 had been closed the evening of February 21 eliminating the possibility of gasoline being discharged to the Willamette River. Terminal personnel and U.S. Coast Guard representatives inspected the outfall area at the Willamette River, and found no indications of gasoline.

The Process Water Separator was visually inspected and shut down shortly after the incident to ensure no gasoline was discharged to the municipal sanitary sewer system. The visual inspection indicated that gasoline had not entered the process water system. Subsequent samples taken from the separator discharge sampling box after the system was shut down indicated hydrocarbon constituents were well below the permitted limitations. This indicates that no unauthorized discharges to the sanitary sewer system occurred as a result of the incident. Some product was later transferred from Separator #004 to the Process Water Separator and recovered. Terminal operations were discontinued following the spill but returned to partial operation on Sunday, February 23, and then to full operations that evening.

The impacted area was limited to the general vicinity of Tank 3411 all of which was contained within the tank farm. A preliminary assessment conducted on February 23 indicated the spill had initially spread out laterally from the tank following the natural surface gradient which generally slopes to adjacent pipe racks situated within shallow trenches. Once in the trenches, the gasoline flowed to nearby catch basins and into the storm water collection system. Product also penetrated into the underlying soils and some evaporated into the air. The foam applied to the spill area by the fire department appeared to have mitigated the release of significant quantities of gasoline vapors. No acute or chronic health affects to exposed or potentially exposed personnel were identified as a result of the spill.

Approximately 1,650 gallons were recovered Saturday night and Sunday morning from the storm and process water systems. An additional 460 gallons are estimated to have evaporated during the incident and emergency response. Some gasoline has reached the water table with the remainder assumed to be retained in the soils beneath the area impacted by the spill.

The Portland Terminal is conducting an investigation of the spill area to determine the extent of the impacted subsurface soil and groundwater. Several borings and five interim monitoring wells have been installed in the spill area to determine the extent of gasoline migration. An additional three monitoring wells were installed down-gradient of the impacted area to further delineate the extent of gasoline migration and to serve as recovery wells if necessary.

A remediation system designed to recover separate phase product discovered on the ground water near Tank 3411 has been installed along with three recovery/monitoring wells. Primary components of the recovery and pre-treatment system consist of the

recovery wells, an oil/water separator and two 1,000-lb. carbon filtration units. The system will be operational by February 28, 1997.

Separate phase product and groundwater will be pumped from the recovery wells to a coalescing plate oil/water separator at an estimated flow rate of 20 gpm. The separate phase product will be skimmed off, collected in a nearby tank, and disposed of. After the separator, the groundwater will be pumped through a 25 micron particulate filter to remove dirt and grit and then on to two 1,000-lb granular activated carbon units for polishing. The treated groundwater will then be discharged into the process water system at lift station #7, located in tank farm 2. The lift station will then pump the water to separator 003 to be treated along with the normal flow of the Process Water System. See the attached Piping and Instrumentation Diagram 0608-D-7006 for details.

Terminal personnel will sample and analyze the effluent from the groundwater treatment system for oil and grease prior to discharging into the Process Water System. The effluent from the groundwater treatment system must not exceed 100 ppm oil and grease at the point of entry into the system. In addition, a sample will be taken and analyzed for BETX compounds. It is our understanding that the BETX sample is for information purposes and that the results will be forwarded to you sometime during the week of March 3. A three-day turnaround will be stipulated to the lab for the BETX sample.

Your expedient assistance during the aforementioned emergency actions is greatly appreciated. Again, please fax written approval of this action plan to me at (503) 248-1598. If you have any questions do not hesitate to call on me at (503) 248-1530.

Sincerely,

Peter L. Schnieders
Manager, Northwest Area Operations

cc: S. B. Gilfillan
J. Holtrop - City of Portland
R. W. McGowne
J. W. Sherman
M. A. Cramer
K. J. Penningroth
M. A. Smith

PRODUCTS COMPANY

February 28, 1997

ADC 0922
REPORTS
CORRESP.

Mr. Mike Zollitsch
Oregon Department of Environmental Quality
Waste Management and Cleanup Division
811 SW Sixth Avenue
Portland, OR 97204-1390

PETER L. SCHNIEDERS
Manager
Northwest Operations Area
Portland Terminal

Gasoline Spill on February 22, 1997

Dear Mr. Zollitsch:

This letter has been prepared in compliance with State of Oregon regulations wherein we are required to provide a written follow up report on oil spills at our facility. At the time of the subject spill, the Oregon Emergency Management Division (EMD) was notified and they stated that the Oregon Department of Environmental Quality (DEQ) would be notified by them. Not withstanding our notification to the EMD, terminal personnel placed a call to you directly the evening of February 22, 1997. The initial incident description was provided to you and the DEM at that time whereas a more detailed description of the incident, initial and subsequent emergency response actions, and actions taken to prevent recurrence is provided below.

The incident was discovered at approximately 3:55 pm on Saturday, February 22, 1997 during a tank overfill in Tank Farm 2. The operator was transferring gasoline from Tank 3408 to Tank 3411 in Tank Farm 2 when gasoline began discharging out the vents at the top of the tank. The discharge continued for approximately 10 minutes before it was discovered and the transfer could be terminated. Approximately 11,700 gallons of gasoline was estimated to have been released during the incident.

The emergency notification process of both the terminal response personnel and the regulatory agencies was initiated immediately by the terminal operator. The Portland Fire Department was onsite within approximately eight minutes and cordoned off the area. Terminal incident command personnel were onsite within 45 minutes and an incident command post was established in conjunction with the fire department. Terminal personnel and the fire department worked together to; 1) apply foam to the release area to suppress vapors and minimize the fire and explosion hazard, 2) transfer product by gravity flow from Tank 3411 to Tank 3408 to reduce the volume in Tank 3411 and allow for foam injection into the tank if necessary, and 3) recover free product on the ground and in the stormwater and process systems.

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The Process Water Separator was visually inspected and shut down shortly after the incident to ensure no gasoline was discharged to the municipal sanitary sewer system. The visual inspection indicated that gasoline had not entered the process water system. Subsequent samples taken from the separator discharge sampling box after the system was shut down indicated hydrocarbon constituents were well below the permitted limitations. This indicates that no unauthorized discharges to the sanitary sewer system occurred as a result of the incident. Some product was later transferred from Separator #004 to the Process Water Separator and recovered. Terminal operations were discontinued following the spill but returned to partial operation on Sunday, February 23, and then to full operations that evening.

The impacted area was limited to the general vicinity of Tank 3411 all of which was contained within the tank farm. A preliminary assessment conducted on February 23 indicated the spill had initially spread out laterally from the tank following the natural surface gradient which generally slopes to adjacent pipe racks situated within shallow trenches. Once in the trenches, the gasoline flowed to nearby catch basins and into the storm water collection system. Product also penetrated into the underlying soils and some evaporated into the air. The foam applied to the spill area by the fire department appeared to have mitigated the release of significant quantities of gasoline vapors. No acute or chronic health affects to exposed or potentially exposed personnel were identified as a result of the spill.

Approximately 1,650 gallons were recovered Saturday night and Sunday morning from the storm and process water systems. An additional 460 gallons are estimated to have evaporated during the incident and emergency response. Some gasoline has reached the water table with the remainder assumed to be retained in the soils beneath the area impacted by the spill.

The Portland Terminal is conducting an investigation of the spill area to determine the extent of the impacted subsurface soil and groundwater. Several borings and five interim monitoring wells have been installed in the spill area to determine the extent of gasoline migration. An additional three monitoring wells were installed down-gradient of the impacted area to further delineate the extent of gasoline migration and to serve as recovery wells if necessary.

A remediation system for the recovery of separate phase product from the groundwater is being installed adjacent to Storm Water Separator #004. The system consists primarily of an oil/water separator, sediment filters, two activated carbon vessels, pumps, and ancillary

piping and controls. The system has the capabilities of recovering separate phase product only or product and groundwater with the activated carbon used to remove dissolved phase hydrocarbons from the groundwater. The treated groundwater will be discharged to the Process Water Separator and, subsequently, the municipal sanitary sewer system. We anticipate the system will be operational next week. Remediation methods for recovery of residual gasoline that may be retained in the subsurface soils are being analyzed.

The affected storm and process water separators have been cleaned and the Process Water Separator placed back in service. Samples from the Process Water Separator were taken and analyzed prior to start up to ensure our permitted discharge limitations would not be exceeded. The Storm Water Separator #004 discharge has been rerouted to the Process Water Separator for the initial few days of operation and samples are being taken periodically to monitor for compliance with our effluent limitations. Once it has been determined the effluent from the storm water separator is consistently within the permitted limits, the effluent will be rerouted to its normal discharge point (i.e., the municipal storm water system and the Willamette River).

Portland Terminal management is currently conducting a comprehensive investigation of the incident. Once it is completed and the findings of the investigation team are released, modifications to the terminal equipment and operational procedures will be made as necessary. A supplemental written report will be made at that time.

If you have any questions or require additional information, please do not hesitate to contact me at 248-1530.

Sincerely,

Peter L. Schnieders
Manager, Northwest Area Operations

PLS:jk

cc: S. B. Gilfillan
R. W. McGowne
J. W. Sherman
M. A. Cramer
K. J. Penningroth
M. A. Smith

FACSIMILE TRANSMITTAL COVER SHEET

CET ENVIRONMENTAL SERVICES, INC.
5315 N.W. St. Helens Road, Portland, OR 97210
Telephone No.: (503) 227-5892 FAX No. (503) 241-8259
Send regular mail to: P.O. Box 83655, Portland, OR 97283

AOC #922 CORRESP.

DATE: 3/25/97

FAX NO: 248-1592

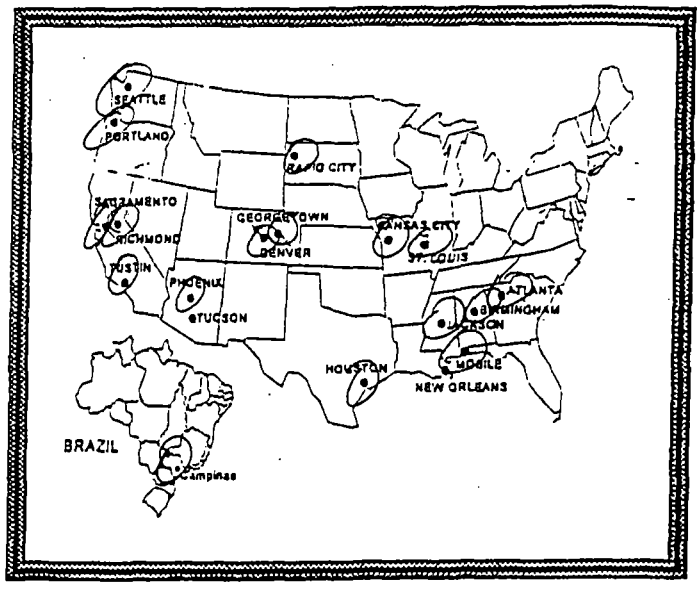
ATTN: Marty Cramer

CO. NAME: 76 Products Co.

FROM: Scott Gilfillan

RE:

PAGES: 3
(including cover)



COMMENTS:

Please page me w/ any questions.
Thank-You.
Scott
Pager # 1-888-719-2668

The information contained in this facsimile may be confidential, proprietary, and/or legally privileged information intended only for the use of the individual or entity named above. If the reader of this facsimile is not the intended recipient, you are hereby notified that any copying, dissemination or distribution of confidential, proprietary or privileged information is strictly prohibited. If you have received this communication in error, please immediately notify the sender by telephone, and we will arrange for the return of this facsimile.

CET Environmental
Services, Inc.
P.O. Box 83655, Portland, Oregon 97283
5315 N.W. St. Helens Road, Portland, Oregon 97210
Telephone: (503) 227-5892 Fax: (503) 241-8259

March 25, 1997

Mr. Marty Cramer
76 Products Company
5528 NW Doane St.
Portland, OR 97210

Dear Marty,

This letter is in reponse to your request for an outline of activities that took place during the installation of 5 temporary monitoring wells, placed at various locations, within the confines of Tank Farm #2, at the 76 Products Terminal, Portland, Oregon.

The wells were placed at Unocal's request as part of an investigation into the subsurface monitoring and possible migration of gasoline as a result of the recent overfill incident of storage tank #3411.

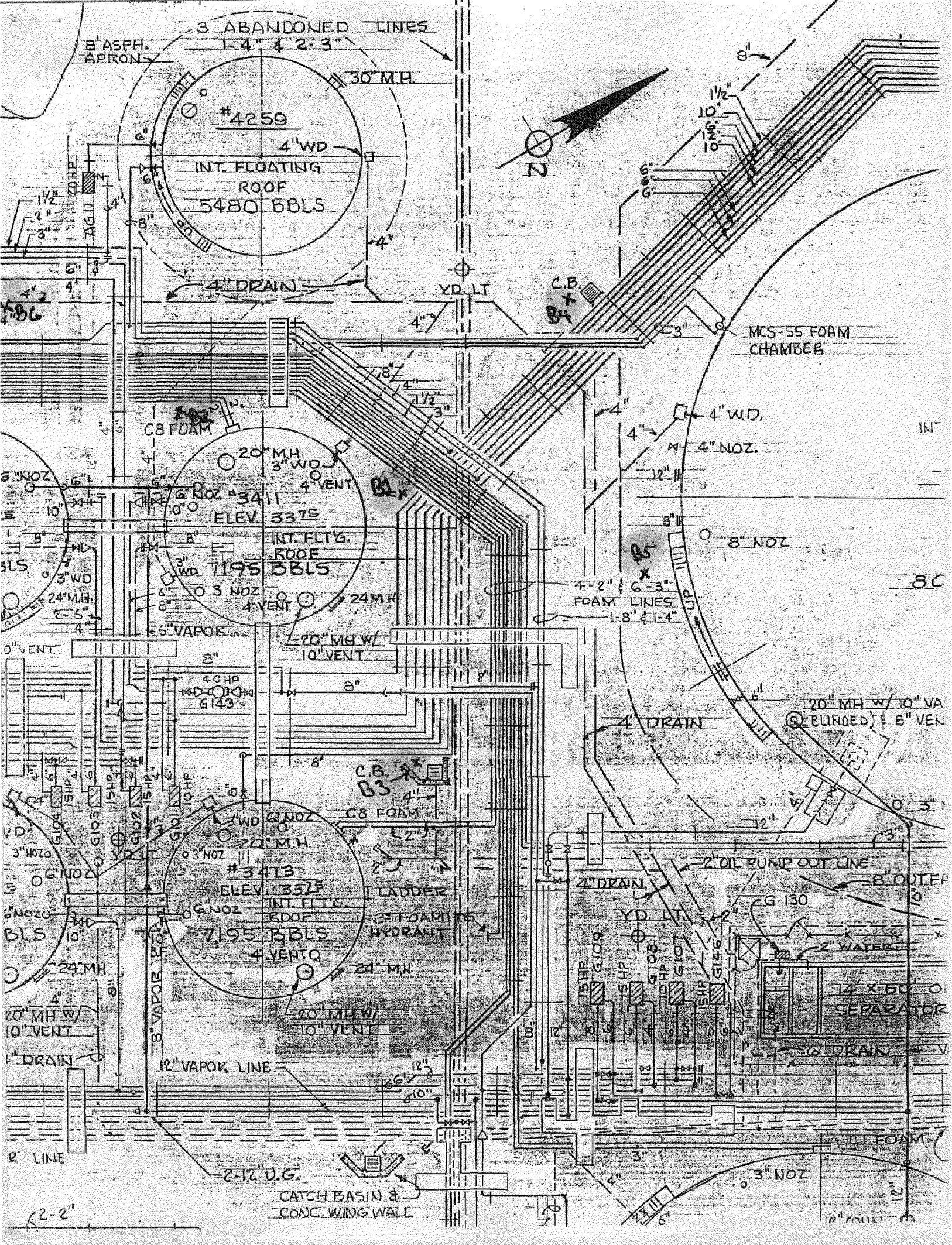
All 5 wells were installed in the same manner using the procedures listed below:

Borings were hand augured down to the water table, which varied slightly between each hole. The water table was found to be between 12' and 13' below ground surface (bgs) at each location. Once ground water was reached, a 5' stainless steel, 2" inside diameter, 10,000th slotted screen was placed into the boring, followed by a 5' by 2" id, 10,000th slotted PVC screen. Next, a 5' by 2' i.d. sch.40 PVC blank was attached. This 15' by 3 piece section was driven into the boring utilizing a piece of 1" steel, round stock pipe, and a slam hammer driving device. An additional 5' by 2" i.d. PVC blank was attached on the top of the well pipe and driven into the boring until no further penetration was achieved. The amount of casing depth varied from hole to hole, depending on where refusal was encountered at each boring. The variation was between 16' to 19' of casing bgs. Once the casing was in place, 10-20 drill sand was packed around the outside of the casing up to a depth of 4' bgs. Next, bentonite was brought up to .5' bgs. and a concrete patch was poured around the casing at ground surface to stabilize the well. A 2" plumber cap was placed over the top of the cap for ease of removal during monitoring.

I apologize for the delay in getting this information off to you. If you should have any questions, please contact me at (503) 227-6797.

Sincerely,

Scott Gilfillan
CET Environmental Services, Inc.


3 ABANDONED LINES
1-4" & 2-3"
8' ASPH. APRON
30" M.H.
#4259
4" WD
INT. FLOATING ROOF
5480 BBLS
4" DRAIN
YD. LT
C.B.
B4
MCS-55 FOAM CHAMBER
C8 FOAM
B2
20" M.H.
3" WD
4" VENT
B1
6" NOZ #3411
ELEV. 337'S
INT. ELT'G. ROOF
7195 BBLS
3" WD
3 NOZ
4" VENT
24" M.H.
6" VAPOR
20" MH W/ 10" VENT
4" W.D.
4" NOZ.
8" NOZ
B5
4-2" & 6-3" FOAM LINES
1-8" & 1-4"
20" MH W/ 10" VA
(BLINDED) & 8" VEN
4" DRAIN
C.B.
B3
C8 FOAM
20" M.H.
#3413
ELEV. 337'S
INT. ELT'G. ROOF
7195 BBLS
LADDER
2" FOAMITE HYDRANT
2" OIL PUMP OUT LINE
8" OUTFA
G-130
2" WATER
14' x 60' SEPARATOR
4" DRAIN
12" VAPOR LINE
2-12" D.G.
CATCH BASIN & CONC. WING WALL
3" NOZ
FOAM
N

COP0013959

Tank 3411 Spill Response

Date 2/23 Time 11:15 Sampler KJP

Pit/Boring No. B-1

Depth	Soil Type	Moisture	Headspace
0	Gravel/sand	Fairly dry	400
1	sand	Fairly dry	120
2			
3	sand	"	170
4			
5	sand	"	120
6			
7	sand	"	210
8			
9	sand	"	330
10			
11	Sand	"	160
12	"	Saturated	500
13			
14			
15			

COP0013960

TANK 3411 SPILL RESPONSE

DATE 2/23 TIME 1115-1200 SAMPLER M. CRAMER

PIT / BORING NO. B-2

DEPTH	SOIL TYPE	MOISTURE	HEADSPACE
0	ORANGE SAND	SLIGHT	62 ppm
1	MED SAND	SLIGHT	250 ppm
2			
3	MED SAND - SOME SILT	SLIGHT	120 ppm
4			
5	MED SAND	SLIGHTLY HIGHER	125
6			
7	SAME	SAME	250
8			
9			
10	SAME	MOD - CLOSE TO LOWER MARK	240
11			
12			
13	MED SILT OR CLAY	HIGH	430
14			
15			

COP0013961

TANK 3411 SOIL RESPONSE

DATE 2/23/97 TIME 1205 SAMPLER KLP

PIT / BORING NO. B3

DEPTH	SOIL TYPE	MOISTURE	HEADSPACE
0	gravel + sand	Relt Dry	50
1	gravel + sand	fairly dry	340
2			
3	sand	fairly dry	260
4			
5	sand	"	220
6			
7	sand	"	250
8	Sand - gray	"	570
9	- change in color		
10			
11	sand - gray	moist	570
12	sand	saturated @ water table	590
13			
14			
15			

COP0013962

TANK 3411 SPILL RESPONSE

DATE 2/23/ TIME 1213-1239 SAMPLER M. CRAMER

PIT/BORING NO. R-4

DEPTH	SOIL TYPE	MOISTURE	HEADSPACE
0	MED SAND - SAME SILT & GRAVEL	MODERATE	90 PPM
1	SAME - MORE GRAVEL	SLIGHTLY	180
2			
3	MED SAND - LESS SILT - NO GRAVEL	MODERATE	80
4			
5	MED SAND - SOME SILT	MODERATE	100
6			
7			
	SAME	SAME	20
8			
9			
10	SAME	SLIGHTLY MORE MOIST	75
11			
12			
	SAND W/ MORE SILT	WET → SAT	93
13	SLIGHTLY COARSE/GRAVEL MOSTLY ORGANIC	SAT	140
14			
15			

COP0013963

TANK 3411 SOIL RESPONSE

DATE 2/21/97 TIME 12:3 SAMPLER VJP

PIT/BORING NO. B5

DEPTH	SOIL TYPE	MOISTURE	HEADSPACE
0			
←	gravel + sand	dry	20
1 ←	gravel + sand	Fairly dry	4
2			
3 ←	gravel, clay + sand	Fairly dry	6
4			
5 ←	clay + sand	Fairly dry	4
6			
7 ←	SAME	SAME	2
8			
9			
10 ←	SAME	SAME	2
11			
12			
←	SAND W/ SLIGHTLY MORE SILT	HIGH	3.5
13			
←	SAME	V. HIGH	2
14 ←	~~SAME~~ SAME	SATURATED	3.5
←			
15			

COP0013964

TANK 3411 SPILL RESPONSE

DATE 12/23 TIME 12:42 SAMPLER M. CRAMER

PIT/BORING NO. B-6

DEPTH	SOIL TYPE	MOISTURE	HEADSPACE
0	MED. SAND W/ SILT & GRAVEL	MOD - HIGH	85
1	SAME	SAME	85
2			
3	SAME	SAME	130
4			
5	SAME	SAME	320
6			
7			
8	SAME	SAME	120
9			
10	SAME	SAME	510
11			
12			
	SAME	SATURATED	120
13	SAME BUT INTO SANDY CLAYEY SILT SILTY CLAY - GREY	SEMI SATURATED	145
14			
15			

COP0013965

TANK 3411 SPILL RESPONSE

DATE 2 TIME 1500 SAMPLER M. CRAMER

PIT / BORING NO. B-8

DEPTH	SOIL TYPE	MOISTURE	HEADSPACE v. STRONG ODOR
0	SILTY SAND W/ GRAVEL	LOW	160
1	REFUSAL → TRIED 3 MORE SPOTS BUT CONTINUOUS HIT ROCK		
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			

COP0013966

Tank 3411 Soil Response

Date 2/23/97 Time 11:50 Sampler WJP

Pit / Boring No. 7

Depth	Soil Type	Moisture	Headspace
0	gravel + sand	relatively dry	2
1			
2	sand + gravel	" "	9
3			
4			
5	sand	" "	5
6			
7	sand	" "	3
8			
9			
10	sand: darker color	" "	6
11			
12	sand- darker	moist	10
13			
14	sand- darker - water table	saturated w/water	10
15			

COP0013967

TANK 3411 SPILL RESPONSE

DATE 2/23 TIME 1550 SAMPLER M. CRAMER

PIT / BORING NO. B-12

DEPTH	SOIL TYPE	MOISTURE	HEADSPACE NO ODOR
0	SILTY MED. SAND	LOW	3.5
1			
2	REFUSAL @ 2 FT - PROBABLY HIT CONTAINMENT WALL FOOTING - MOVED ON OTHER SIDE OF PIPES		
3	SILTY MED SAND	MOD	3.0
4			
5			
6			
7			
	SAME	MOD	2.5
8			
9			
10			
11			
12			
	CLAYEY	SAT	OVER 180 PPM
13			
14			
15			

COP0013968

TANK 3411 SPILL RESPONSE

DATE 2/23 TIME 1630 SAMPLER M. CRAMER

PIT / BORING NO. B-11

DEPTH	SOIL TYPE	MOISTURE	HEADSPACE
0	SILTY SAND	LOW	210 STRONG GASOLINE ODOR
1			
2			
	SILTY SAND	MOD	20 NO ODOR
3			
4			
5			
6			
7			
	SILTY SAND	MOD.	10 NO ODOR
8			
9			
10			
11			
12			
	SILTY SAND-SOME CLAY	HIGH	150 SLIGHT ODOR - MOST OLD OIL BUT COULD BE SOME GASOLINE
13			
14			
15			

COP0013969

TANK 3411 SPILL RESPONSE

DATE 12/23 TIME 1515 SAMPLER M. CRAMER

PIT / BORING NO. B-10

DEPTH	SOIL TYPE	MOISTURE	HEADSPACE
0	SILTY SAND / SANDY SILT W/ GRAVEL	MOD	NO ODOR 12 PPM
1			
2			
3	CHARCOAL SANDY SILT / SILTY CLAY - FIRM COULD BE PERCHED WATER	HIGH	MOD. OILY ODOR 150 PPM
4			
5			
6			
7	CHARCOAL SILTY SAND	MOD	SLIGHT OILY ODOR 80 PPM
8			
9			
10			
11			
12	OLIVE SILTY SAND	SATURATED	MODERATE OILY ODOR 250 PPM
13			
14			
15			

COP0013970

TANK 3411 SOIL RESPONSE

DATE 2/23/97 TIME 15:30 SAMPLER KJP

PIT / BORING NO. 9

DEPTH	SOIL TYPE	MOISTURE	HEADSPACE
0	gravel + sand	Rel. Dry	2
1			
2	sand	moist	1
3			
4			
5	sand	moist	19
6			
7	sand	moist	20
8			
9			
10	sand	moist	22
11			
12	sand	Moist	40
13			
14	sand	saturated w/ water	50
15			

COP0013971

76 PRODUCTS COMPANY

AOC 0922

March 26, 1997 CORRESP.

PETER L. SCHNIEDERS
Manager
Northwest Operations Area
Portland Terminal

OERS Coordinator
Oregon Emergency Management
Department of State Police
595 Cottage Street NE
Salem, OR 97310

Gasoline Spill on February 22, 1997

Dear OERS Coordinator:

This letter has been prepared in compliance with 40 CFR 355.40, Emergency Release Notification wherein we are required to provide a written follow up report on releases/spills of CERCLA hazardous substances at our facility. At the time of the subject spill, the Oregon Emergency Response System (OERS) was notified and we understand they take the responsibility for immediately notifying the SERC/LEPC as required by 40 CFR 355.40. The initial incident description was provided to the OERS at that time whereas a more detailed description of the incident, initial and subsequent emergency response actions, and actions taken to prevent recurrence is provided below.

The incident was discovered at approximately 3:55 pm on Saturday, February 22, 1997. The operator was transferring gasoline from Tank 3408 to Tank 3411 in Tank Farm 2 when gasoline inadvertantly began discharging out the vents at the top of the tank. The discharge continued for approximately 10 minutes before it was discovered and the transfer could be terminated. It is estimated that 11,700 gallons of gasoline were during the incident.

The emergency notification process of both the terminal response personnel and the regulatory agencies was initiated immediately by the terminal operator. The Portland Fire Department was onsite within approximately eight minutes and cordoned off the area. Terminal incident command personnel were onsite within 45 minutes and an incident command post was established in conjunction with the fire department. Terminal personnel and the fire department worked together to: 1) apply foam to the release area to suppress vapors and minimize the fire and explosion hazard, 2) transfer product by gravity flow from Tank 3411 to Tank 3408 to reduce the volume in Tank 3411 and allow for foam injection into the tank if necessary, and 3) recover free product on the ground and in the stormwater and process water systems.

5528 Northwest Doane Avenue
Portland, Oregon 97210
PH (503) 248-1530
A Unocal Company

The impacted area was limited to the general vicinity of Tank 3411 which was totally contained within Tank Farm 2. A preliminary assessment conducted on February 23 indicated the spill had initially spread out laterally from the tank following the natural surface gradient which generally slopes to adjacent pipe racks situated within shallow trenches. Once in the trenches, the gasoline flowed to nearby catch basins and into the storm water collection system. Product also penetrated into the underlying soils and some evaporated into the air. The foam applied to the spill area by the fire department appeared to have mitigated the release of significant quantities of gasoline vapors. No acute or chronic health affects to exposed or potentially exposed personnel were identified A stringent benzene and hydrocarbon vapor monitoring program was implemented during the initial response and subsequent response and investigation activities.

Approximately 1,650 gallons of gasoline were recovered Saturday night and Sunday morning from the storm and process water systems. An additional 460 gallons are estimated to have evaporated during the incident and emergency response. Some gasoline has reached the water table with the remainder assumed to be retained in the soils beneath the area impacted by the spill.

The CERCLA hazardous substances contained in the gasoline that was released and that were above the reportable quantities (RQs) are listed below along with their estimated quantities. The estimated quantities are based on the total spill volume and the maximum concentration of those components in the gasoline although actual concentrations are often considerably less. Therefore, the quantities listed below are very conservative and represent the maximum amounts that could have been released.

- Benzene = 3,654 lbs (RQ = 10 lbs)
- Ethylbenzene = 3,654 lbs (RQ = 1,000 lbs)
- Methyl Tert-Butyl Ether = 7,309 lbs (RQ = 1,000 lbs)
- Toluene = 6,579 lbs (RQ = 1,000 lbs)
- Xylenes = 10,233 lbs (RQ = 1,000 lbs)

The Portland Terminal is conducting an investigation of the spill area to determine the extent of the impacted subsurface soil and groundwater. Several borings and five interim monitoring wells have been installed in the spill area to determine the extent of gasoline migration. An additional three monitoring wells were installed down-gradient of the impacted area to further delineate the extent of gasoline migration and to serve as recovery wells if necessary.

A remediation system for the recovery of separate phase product from the groundwater is being installed adjacent to Storm Water Separator #004. The system consists primarily of an oil/water separator, sediment filters, two activated carbon vessels, pumps, and ancillary piping and controls. The system has the capabilities of recovering separate phase product only or product and groundwater with the activated carbon used to remove dissolved

phase hydrocarbons from the groundwater. The treated groundwater will be discharged to the Process Water Separator and, subsequently, the municipal sanitary sewer system. We anticipate the system will be operational next week. Remediation methods for recovery of residual gasoline that may be retained in the subsurface soils are being analyzed.

Portland Terminal management is currently conducting a comprehensive investigation of the incident. Once it is completed and the findings of the investigation team are released, modifications to the terminal equipment and operational procedures will be made as necessary. A supplemental written report will be made at that time.

If you have any questions or require additional information, please do not hesitate to contact me at 248-1530.

Sincerely,

Peter L. Schnieders
Manager, Northwest Area Operations

cc: J. Sherman
M. Cramer
N. Dietzman
M. Smith

PRODUCTS COMPANY

March 31, 1997

ADC 0922
REPORTS

Loren Garner
Oregon Department of Environmental Quality
2020 SW 4th Avenue, Ste. 400
Portland, OR 97201-5884

PETER L. SCHNIEDERS
Manager
Northwest Operations Area
Portland Terminal

Written Report for Tank 3411 Spill
Unocal/76 Products Company Portland Terminal

Dear Mr. Garner:

In response to your correspondence of March 4, 1997 and in compliance of OAR 340-108-040, please find the enclosed written report concerning the gasoline spill experienced at the terminal on February 22, 1997. The report includes the completed form provided in your March 4 correspondence as well as a summary of how the incident occurred and the response actions taken to date. Copies of the supplemental information requested in the report form are attached to the report

If you have any questions or require additional information, please feel free to contact me at the above number or Martin Cramer at 248-1517.

Sincerely,

Peter L. Schnieders

cc: M. Cramer
J. Sherman
K. Penningroth

5528 Northwest Doane Avenue
Portland, Oregon 97210
PH (503) 248-1530
A Unocal Company

SPILL/RELEASE REPORT

1 - GENERAL INFORMATION OERS No. 970545

a. Company/Individual Name: UNOCAL / 76 PRODUCTS CO.

b. Address: 5528 N.W. OGDEN AVE.
PORTLAND, OR 97210

c. Company Contact Person: _____

d. Phone Number(s): _____

e. Specific on-site location of the release (and address if different from above):
TANK FARM #2 AT PORTLAND TERMINAL - SAME ADDRESS

Please provide a map of the site showing area(s) where the release occurred, any sample collection locations, location of roads/ditches/surface water bodies, etc.

2 - RELEASE INFORMATION

a. Date/Time Release started: 2/22/97 @ 1555 HRS Date/Time stopped: 2/22/97 @ 1605 HRS

b. Release was reported to (specify Date/Time/Name of Person contacted where applicable):

ODEQ 2/22 VIA OERS

OERS 2/22 @ 1700 HRS - RANDY # 970545

NRC 2/22 @ 1705 HRS - PETER WYATT # 377727

Other (describe): SEE ATTACHED WRITE-UP

c. Person(s) reporting release: VITO DE BELLIS - SR. HEAD OPERATOR

d. Name, quantity and physical state (gas, liquid, solid or semi-solid) of material(s) released:
SUPREME GASOLINE, 11,700 GALLONS, LIQUID

Please attach copies of material safety data sheets (MSDS) for released material(s).

e. The release affected: X Air X Groundwater ___ Surface Water X Soil ___ Sediment

f. Name and distance to nearest surface water body(s), even if unaffected (include locations of creeks, streams, rivers and ditches that discharge to surface water on maps):
WILLAMETTE RIVER - APPROX. 1,000 FT N.E. OF SPILL LOCATION
Has the release reached the surface water identified above?: ___ Yes X No
Could the release potentially reach the surface water identified above? ___ Yes X No
Explain: ONLY PATHWAY TO RIVER IS THROUGH STORM WATER COLLECTION / TREATMENT SYSTEM WHICH WAS CLOSED OFF AT TIME OF SPILL

g. Depth to nearest aquifer/groundwater: 12 TO 13 FT
Is nearest aquifer/groundwater potable (drinkable)? ___ Yes X No
Has the release reached the nearest aquifer/groundwater? X Yes ___ No
Explain: PRODUCT HAS BEEN OBSERVED IN 3 MONITORING WELLS INSTALLED TO DELINEATE EXTENT OF SPILL

h. Release or potential release to the air occurred? X Yes ___ No

Explain: SPILL OCCURRED AS THE RESULT OF TANK OVERFILL. APPROX. 460 GALLONS WERE ESTIMATED TO HAVE EVAPORATED.

i. Was there a threat to public safety? X Yes ___ No

j. Is there potential for future releases? X Yes ___ No

Explain: STEPS ARE BEING TAKEN AND MODIFICATIONS TO PROCEDURES AND/OR EQUIPMENT WILL BE MADE TO MINIMIZE THE POTENTIAL

k. Describe other effects/impacts from release (emergency evacuation, fish kills, etc.):

FIRE DEPARTMENT CORDONED OFF AREA UNTIL CONFIRMED THAT A FIRE AND EXPLOSION HAZARD WAS NOT PRESENT

l. Describe how the release occurred. Include details such as the release source, cause, contributing weather factors, activities occurring prior to or during the release, dates and times of various activities, first responders involved in containment activities, etc.:

SEE ATTACHED WRITE-UP

3 - SITE INFORMATION

a. Adjacent land uses include (check all that apply and depict on site maps):
___ Residential X Commercial ___ Light Industrial X Heavy Industrial
___ Agricultural ___ Other (describe): _____

b. What is the population density surrounding the site: MINIMAL - PRIMARILY OIL TERMINALING AND

c. Is the site and/or release area secured by fencing or other means? X Yes ___ No INDUSTRIAL

d. Soil types (check all that apply): ___ alluvial ___ bedrock ___ clay X sandy
X silt ___ silty loam ___ artificial surface (cement/asphalt/etc.)

e. Describe site topography: RELATIVELY FLAT WITHIN TANK FARM WITH LOCALIZED GRADING TOWARDS STORM WATER CATCH BASINS AND PIPING TRENCHES

4 - CLEANUP INFORMATION

a. Was site cleanup performed? X Yes ___ No
If No, explain: _____

b. Who performed the site cleanup?
Company Name: CET
Address: 5515 NW St. Helens Rd
Portland, OR 97210
Cleanup Supervisor: Scott Gilfillan
Phone Number(s): (503) 227-6797

c. Has all contamination been removed from the site? ___ Yes X No
If No, explain: Currently addressing recovery of separate phase hydrocarbon from groundwater

d. Estimated volume of contaminated soil removed: None

e. Estimated volume of contaminated soil left in place: Approx. 2,750 yds^3

f. Was a hazardous waste determination made for cleanup materials? ___ Yes X No

g. Based on the determination, are the cleanup materials hazardous wastes?
___ Yes X No If Yes, list all waste codes: _____

h. Was contaminated soil or water disposed of at an off-site location? X Yes ___ No
If yes, attach copies of receipts/manifests/etc., and provide the following information:
Facility Name: Harbor Oil, Inc.
Address: 11535 N. Force Ave.
Portland, OR 97217
Facility Contact: Dana Deuretz
Phone Number(s): (503) 285-4648

i. Is contaminated soil or water being stored and/or treated on-site? Y Yes ___ No
If yes, please describe the material(s), storage and/or treatment area, and methods utilized (attach additional sheets if necessary):

See attached write-up

j. Describe cleanup activities including what actions were taken, dates and times actions were initiated and completed, volumes of contaminated materials that were removed, etc. (attach additional sheets or contractor reports if necessary or more convenient):

See attached write-up

5 - SAMPLING INFORMATION

Attach copies of all sample data and indicate locations of sample collection on maps.

a. Were samples of contaminated soil collected? X Yes ___ No ___ N/A
b. Were samples of contaminated water collected? ___ Yes X No ___ N/A
c. Were samples collected to show that all contamination had been removed?
___ Yes X No ___ N/A
d. Describe sampling activities, results and discuss rationale for sampling methods:

See ATTACHED WRITE-UP

6 - SPILL REPORT CHECKLIST

To ensure that you have gathered all the information requested by the Department in this Spill/Release Report, please complete the following checklist:

X Map(s) of the site showing buildings, roads, surface water bodies, ditches, waterways, point of the release, extent of contamination, areas of excavation and sample collection locations attached.

X Material Safety Data Sheet (MSDS) for released material(s) attached.

X Sampling data/analytical results attached.

X Receipts/manifests (if any) for disposal of cleanup materials attached.

X Contractor reports (if any) attached.

SPILL/RELEASE REPORT
Supplemental Information

The release occurred as the result of overfilling Tank 3411 in Tank Farm 2 at the Portland Terminal. A terminal operator began transferring supreme gasoline from a larger tank (Tank 3408) into a smaller tank (Tank 3411) at 1415 hrs to make room for a pipeline receipt that was to occur that evening. The transfer rate was approximately 1300 bbls/hr. A shift change occurred during the transfer at 1450 hrs and although the new operator was informed of the transfer, he became involved in a project in the terminal and lost track of time. The receiving tank is equipped with a high level alarm but it enunciates in the control room and the operator was out in the terminal when the alarm was triggered.

The operator was notified that the tank was overfilling by a driver at the truck rack at approximately 1555 hrs. The notification was made via a cellular phone that operators are required to carry when away from the control room. The operator immediately went to Tank Farm 2 and found product escaping from the vents around the top of Tank 3411. The operator then terminated the transfer at approximately 1600 hrs and began requesting assistance. The spill was estimated to have occurred over only a 10 minute period and based on beginning and ending levels in Tanks 3408 and 3411, approximately 11,700 gallons of gasoline were released. A diagram showing the facility layout, spill location, and proximity to the Willamette River is provided in Attachment 1.

The Fire Department was on scene within about 8 minutes, cordoned off the area and began applying foam to the spill area to suppress vapors and minimize the fire and explosion hazard. The 76 Products Company response team personnel began arriving at approximately 1635 hrs and established an incident command in conjunction with the Fire Department. Terminal personnel and the Fire Department then worked together to continue applying foam to the spill area. Product was also transferred by gravity from Tank 3411 to Tank 3408 to reduce the volume in Tank 3411 and allow for foam injection into the tank if necessary.

Once the fire and explosion hazard was minimized, a visual assessment was made of the spill area by 76 Products Company and Fire Department personnel equipped with the appropriate personal protection equipment. The assessment found that all of the spill product had been contained within the tank farm. Most of the product appeared to have drained to nearby stormwater collection system catch basins or penetrated into the underlying soils. Only small amounts of free product and fire suppression water remained on the ground surface. An appreciable amount of product was discovered in the stormwater separator for Tank Farm #2. The separator discharge valve had, however, been closed for the weekend the day before which eliminated the possibility of product being discharged offsite to the Willamette River.

CET, a contractor for 76 Product Company, was mobilized and onsite by 2000 hrs. CET then worked with the Fire Department and 76 Products Company personnel to recover free product on the ground in the spill area. CET also assisted in recovering free product and water from the storm and process water collection and treatment systems. The product was recovered using a combination of pneumatic pumps and vacuum trucks.

Notifications to the various regulatory agencies and 76 Products Company personnel were made by both the terminal operator and 76 Products Company response team personnel. Notifications were made to the following agencies and organizations:

1. Oregon Emergency Response System @ 1700 hrs

2. National Response Center @ 1705 hrs
3. Clean Rivers Cooperative @ 1715 hrs
4. Washington Emergency Management Division @ 1718 hrs
5. US Coast Guard Portland MSO @ 1725 hrs
6. EPA Region 10 Oregon OPS @ 1726 hrs
7. Washington Department of Ecology @ 1730 hrs
8. Unocal Emergency Response Strike Team @ 1735 hrs

Subsequent notifications to the above agencies and organizations as well as Mr. Mike Zollitsch of the DEQ were made around 2200 hrs to provide updates on the release volume and response activities implemented.

The free product recovery operations were completed and the fire and explosion hazard minimized at approximately 3:00 am Sunday morning. The Fire Department, CET, and most 76 Products Company personnel were demobilized although selected 76 Products Company personnel remained onsite through the night to periodically monitor the area for potentially explosive vapors.

76 Products Company and CET personnel returned to the terminal at 7:00 am Sunday morning and began assessing the extent of the release through visual observations, soil borings, and installation of monitoring wells. All borings and most wells were installed using hand augers with the exception of three wells installed downgradient of the Tank 3411 which were installed by GeoEngineers using a small hollow stem auger rig. A diagram showing the locations of the various wells and borings is provided in Attachment 1.

Several of the borings exhibited indications of the presence of gasoline in the soil. For those borings with strong indications of gasoline at or near the water table, temporary monitoring wells were installed using screened, 2-inch PVC casings. Only two of the eight wells (B-1 and B-2) installed in the spill area contained an appreciable amount of separate phase product (SPH) on the water table. Both wells were adjacent to Tank 3411 and each contained approximately 1.3 ft of SPH. Some of the temporary wells were removed if they did not contain free product and were not in the immediate vicinity of Tank 3411 and others were converted to a more permanent type of installation. Assessment activities continued until March 5 when the last wells and borings were installed. All borings not converted to monitoring wells were backfilled with hydrated bentonite pellets up to approximately one foot of the surface where native materials were used to complete the backfilling.

Soil samples were taken every 2 to 3 feet during the installation of the borings and wells. Grab samples of the soil were placed in ziplock bags and the headspace was monitored for hydrocarbon vapors using a organic vapor meter to assess the relative levels of hydrocarbons in the soil. During the installation of the three downgradient monitoring wells, a sheen test was also performed on the soil cuttings at regular intervals to better assess the presence of free product in the soils. Three soil samples from each of the latter monitoring well borings were submitted to an accredited laboratory for HCID analyses. The two samples taken at or above the water table were also analyzed for BTEX and TPH-G. In addition, two samples from RW-3 situated above the water table were analyzed for heavy oil range hydrocarbons.

The headspace monitoring was used on all samples as it provides a general assessment of the relative concentrations of volatile hydrocarbons in the soil and is a good screening tool. Those borings that contained consistently high headspace readings were selected for the installation of well casings to assess the potential presence of SPH on the water table. The headspace monitoring,

sheen tests, and proximity to the water table were used to select samples from the downgradient wells (RW-1, RW-2, RW-3) for laboratory analyses.

Three samples from each downgradient well boring were submitted to North Creek Analytical for analyses. The samples from each boring consisted of one sample from the vadose zone, one from at or slightly above the water table, and one from below the water table. An HCID analyses was conducted on all of these samples to determine the presence of gasoline, diesel, and heavy oil range hydrocarbons. This was done to assess the potential for historical spills contributing to the hydrocarbons noted in the headspace monitoring and sheen tests. It is important to note that RW-1 and RW-2 were situated just outside the area of surface impact and were not anticipated to contain hydrocarbons in the upper portion of the vadose zone but possibly at greater depths. RW-3 is situated at the estimated boundary of the area of surface impact and was expected to contain elevated hydrocarbon levels at least near the surface.

The HCID analyses revealed the presence of hydrocarbons in all samples taken below the water table but none from above the water table although the method detection level is relatively high. Each of these samples contained diesel range hydrocarbons while the sample from borings RW-2 and RW-3 also contained gasoline and the sample from RW-3 also contained heavy range hydrocarbons. The two samples from each boring situated at or above the water table were also analyzed for TPH-G and BTEX to assess the presence of gasoline and its more volatile components. Only the sample near the water table in RW-2 contained TPH-G at a concentration of 3.3 mg/kg but no BTEX was detected suggesting that it may be related to an historical spill. Neither TPH-G or BTEX were detected in any of the other samples. Similarly, a general TPH analyses using DEQ method 418.1 (modified) was run on the two vadose zone samples from the RW-3 boring to assess the presence of heavy hydrocarbons but none were detected.

The results of the headspace monitoring activities during installation of the hand auger borings/monitoring wells are provided in Attachment 2. The results of the headspace monitoring and sheen tests for the three wells installed with an auger rig are included in the boring logs in Attachment 3 along with the entire report from GeoEngineers. The analytical results for the samples taken from the latter three borings are provided in Attachment 4. As shown in Attachment 2, the highest headspace readings were encountered within the surface area impacted by the spill although they were not always associated with the presence of SPH on the water table. Residual contamination from historical spills or leaks may have contributed to the elevated headspace readings in some of the samples as the terminal has been in operation since 1908.

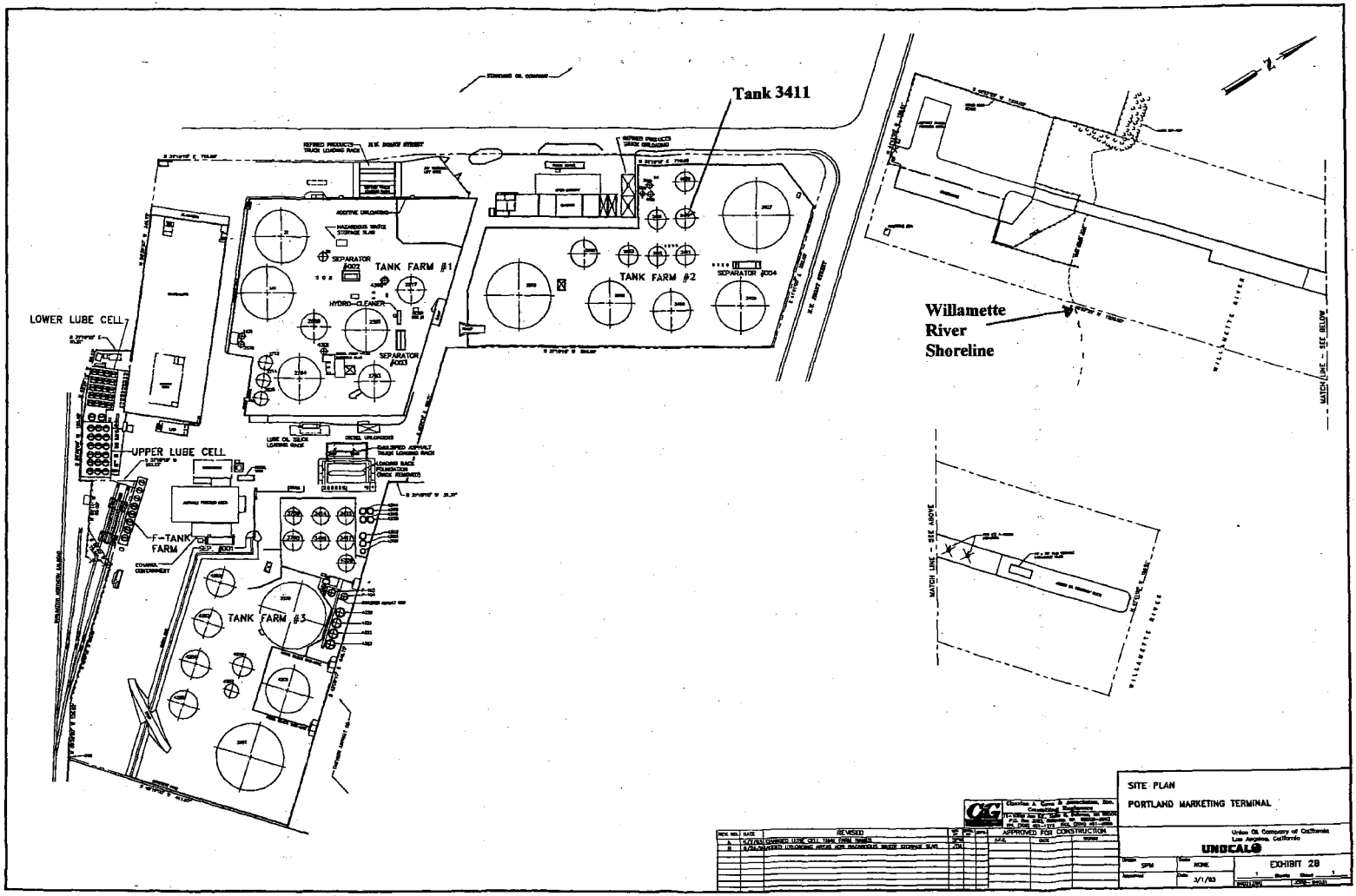
The product and water recovered from the storm and process water systems and the ground surface in the spill area were contained in a vacuum truck at the terminal and transported the following morning to Harbor Oil for recycling. Copies of the associated Bill of Lading and the Materials Receipt from Harbor Oil as well as the MSDS for super gasoline are provided in Attachment 5. The cuttings from the soil borings and monitoring wells and the well development water were placed in drums and temporarily stored onsite in a contained area within Tank Farm 1. The containment area consists of curbed concrete pad surrounded by a locked chain link fence. The well development water was later discharged to the terminal process water system. Arrangements are currently being made for disposal of the soil drums at TPST Soil Recyclers of Oregon. Composite samples have been taken and submitted to a laboratory for analysis. Disposal of the drums is anticipated to be completed by April 15.

A pump and treat recovery system was installed shortly after the spill and operational by February 28. It was, however, only operated intermittently until March 3 when it began continuous operation. The system consists of double diaphragm pumps which are used to recover total fluids

from the wells B-1 and B-2. The pump intakes are situated approximately 1 to 2 feet below the normal groundwater level. The pumps are connected to a coalescing plate oil/water separator to separate out the recovered product and groundwater. The recovered product flows by gravity to a storage tank whereas the water is pumped through two, 1,000 lb, activated carbon treatment vessels. The treated water is then discharged to the terminal's process water system and ultimately to the city sewer system. Pre-approval was obtained from the City of Portland Environmental Services for discharging the treated groundwater to the process water system. The system processes a total of about 1,000 gallons of water per day (0.66 gpm) and has recovered approximately 75 gallons of product as of March 21, 1997.

We intend to continue operation of the system for the next few months at a minimum depending on the amount of product recovered. Once the product recovery rate begins to decline appreciably, the system will be shut down and the water table allowed to stabilize to determine the amount of remaining SPH. Depending on the results, the system will be returned to continuous operation until the SPH is significantly reduced at which time the terminal will consult with DEQ personnel to determine the most appropriate means of continued remediation to achieve closure.

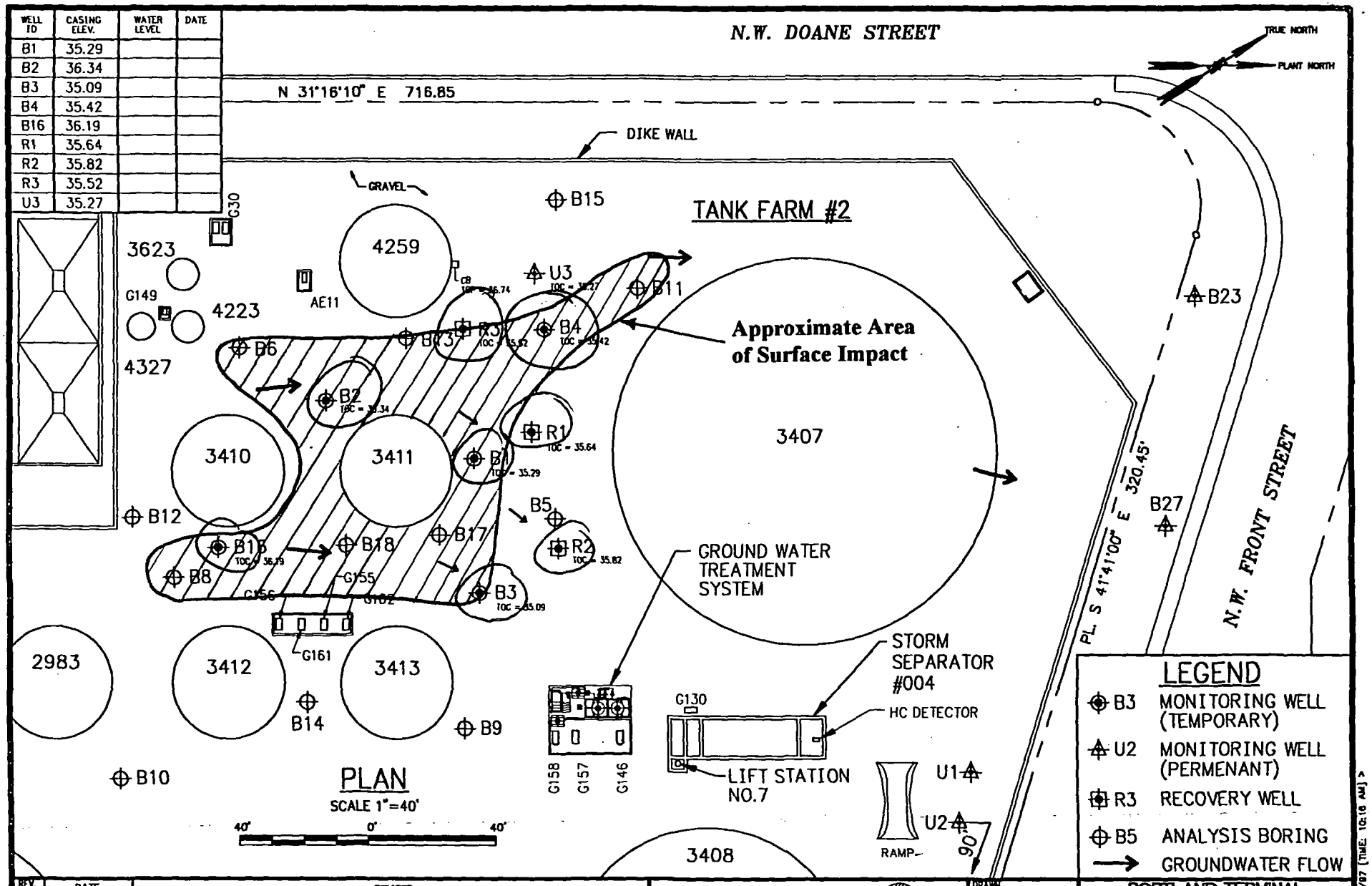
ATTACHMENT 1



C:\UNOCAL\94031\94031 Fri Feb 3 11:08:17 1995 PLOTTED BY JOHN

COP0013985

WELL ID	CASING ELEV.	WATER LEVEL	DATE
B1	35.29		
B2	36.34		
B3	35.09		
B4	35.42		
B16	36.19		
R1	35.64		
R2	35.82		
R3	35.52		
U3	35.27		



REV. NO.	DATE	REVISED
A	02/28/97	FOR REVIEW AND COMMENT
B	03/03/97	ADDED ANALYSIS BORINGS & WATER TREATMENT SYSTEM

UNOCAL 76
76 PRODUCTS COMPANY
Los Angeles, California

ALPHA ENGINEERS and CONSTRUCTORS, INC.
19 NW 5th AVE., SUITE 204, PORTLAND, OR 97209 Tel:(503)227-3317

DRAWN BY D.A.BYNUM
CHKD BY
APPD BY
SCALE AS SHOWN
DATE 02/26/97

PORTLAND TERMINAL
PORTLAND, OREGON
TANK FARM #2 TK 3411 SPILL RESPONCE
AREA PLAN

DRAWING NO. 0608-C-7100 | SHEET 1 OF 1 | REV. B

86C7100B.DWG <DPD: 03/05/97 [TIME: 10:16 AM] >

COP0013986

ATTACHMENT 2

ATTACHMENT 2

PORTLAND TERMINAL
TANK 3411 SPILL
SUBSURFACE INVESTIGATION

BORING NUMBER: B1 — TIME: 1115 — SAMPLER: Kent Penningroth — DATE: 2/23/97

DEPTH	SOIL TYPE	MOISTURE	PPM	GAS ODOR	COMMENTS
0	Gravel/sand	Fairly dry	400		3" of free product on groundwater surface.
1	Sand	Fairly dry	120		
3	Sand	Fairly dry	170		
5	Sand	Fairly dry	120		
7	Sand	Fairly dry	200		
9	Sand	Fairly dry	330		
11	Sand	Fairly dry	160		
12	Sand	Saturated	500		

BORING NUMBER: B2 — TIME: 1115 - 1200 — SAMPLER: Marty Cramer — DATE: 2/23/97

DEPTH	SOIL TYPE	MOISTURE	PPM	GAS ODOR	COMMENTS
0	Gravel/Sand	Slight	62	Moderate to strong	Film of product on ground-water, moderate gasoline odor.
1	Med sand	Slight	250	Moderate to strong	
3	Med. - Sand/some silt	Slight	120	Strong	
5	Med. - Sand/some silt	Slight higher	125	Moderate	
7.5	Med. - Sand/some silt	Slight higher	250	Moderate	
10	Med. - Sand/some silt	Mod - Close to water table	240	Moderate	
13	More silt or clay	High	430	Slight to moderate	

BORING NUMBER: B3 — TIME: 1205 — SAMPLER: Kent Penningroth — DATE: 2/23/97

DEPTH	SOIL TYPE	MOISTURE	PPM	GAS ODOR	COMMENTS
0	Gravel/sand	Relativity dry	90		
1.5	Gravel/sand	Fairly dry	340		
3	Sand	Fairly dry	260		
5	Sand	Fairly dry	220		
7	Sand	Fairly dry	250		
8.5	Sand/gray change in color	Fairly dry	590		
11	Sand/gray	Moist	570		
12	Sand	Saturated @ water table	590		

BORING NUMBER: B4 — TIME: 1213 - 1239 — SAMPLER: Marty Cramer — DATE: 2/23/97

DEPTH	SOIL TYPE	MOISTURE	PPM	GAS ODOR	COMMENTS
0	Med. sand/sandy silt & gravel	Moderate	90	Moderate to strong	Slight gasoline odor
1	Same - more gravel	Slight	180	Slight	
3	Med. sand/less silt/no gravel	Moderate	80	Moderate to strong	
5	Med. sand - sand silt	Moderate	100	Moderate	
7.5	Med. sand - sand silt	Moderate	20	Moderate	
10	Med. sand - sand silt	Slightly more moisture	75	Slight to Moderate	
12.5	Same w/more silt	High - Saturate	23	None to slight	
13	Color change slightly gray/charcoal	Saturated	140	Slight	

COP0013988

BORING NUMBER: B5 TIME: 1230 SAMPLER: Kent Penningroth DATE: 2/23/97

DEPTH	SOIL TYPE	MOISTURE	PPM	GAS ODOR	COMMENTS
0.5	Gravel & sand	Dry	20		
1	Gravel & sand	Fairly dry	4		
3	Gravel, clay & sand	Fairly dry	6		
5	Clay & sand	Fairly dry	4		
7	Clay & sand	Fairly dry	2		
10	Clay & sand	Fairly dry	2		
12.5	Clay & sand/slightly more silt	High	3.5		
13.5	Clay & sand/slightly more silt	V. high	2		
14	Clay & sand/slightly more silt	Saturated	3.5		

BORING NUMBER: B6 TIME: 1242 SAMPLER: Marty Cramer DATE: 2/23/97

DEPTH	SOIL TYPE	MOISTURE	PPM	GAS ODOR	COMMENTS
0	Med. sand w/silt & gravel	Med - high	85	Moderate	Clay encountered. Film of product on groundwater. Slight gasoline odor.
1	Med. sand w/silt & gravel	Med - high	85	Moderate to strong	
3	Med. sand w/silt & gravel	Med - high	130	Moderate to strong	
5	Med. sand w/silt & gravel	Med - high	320	Slight to moderate	
7.5	Med. sand w/silt & gravel	Med - high	120	Moderate	
10	Med. sand w/silt & gravel	Med - high	510	Slight	
12.5	Med. sand w/silt & gravel	Saturated	120	Moderate	
13	Same, but into sandy clay/ silt slightly clay-gray	Semi-saturated	145	None to slight	

BORING NUMBER: B7 TIME: 1150 SAMPLER: Kent Penningroth DATE: 2/23/97

DEPTH	SOIL TYPE	MOISTURE	PPM	GAS ODOR	COMMENTS
0	Gravel & sand	Relatively dry	2		
2.5	Gravel & sand	Relatively dry	9		
5	Sand	Relatively dry	5		
7.5	Sand	Relatively dry	3		
10	Sand - darker color	Relatively dry	6		
12.5	Sand - darker	Moist	10		
14	Sand - darker - water table	Saturated w/water	10		

BORING NUMBER: B8 TIME: 1500 SAMPLER: Marty Cramer DATE: 2/23/97

DEPTH	SOIL TYPE	MOISTURE	PPM	GAS ODOR	COMMENTS
0	Silty sand w/gravel	Low	160		Cobble encountered. Boring stopped < 3'.
1	Refusal - tried 3 more spots but continued to hit rock				

BORING NUMBER: B9 TIME: 1530 SAMPLER: Kent Penningroth DATE: 2/23/97

DEPTH	SOIL TYPE	MOISTURE	PPM	GAS ODOR	COMMENTS
0	Gravel & sand	Relatively dry	2		
2.5	Sand	Moist	1		
5	Sand	Moist	19		
7.5	Sand	Moist	20		
10	Sand	Moist	22		
12.5	Sand	Moist	40		
14	Sand	Saturated w/water	50		

COP0013989

BORING NUMBER: B10 TIME: 1515 SAMPLER: Marty Cramer DATE: 2/23/97

DEPTH	SOIL TYPE	MOISTURE	PPM	GAS ODOR	COMMENTS
0	Silty sand/saucy silt w/gravel	Med	12		Odor of old oil
2.5	Sand silty/silty clay - firm	High	150		
7.5	Charcoal silty sand	Med	80		
12.5	Silty sand	Saturated	250		

BORING NUMBER: B11 TIME: 1630 SAMPLER: Marty Cramer DATE: 2/23/97

DEPTH	SOIL TYPE	MOISTURE	PPM	GAS ODOR	COMMENTS
0	Silty sand	Low	210		May be old gasoline
2.5	Silty sand	Med	20		
7.5	Silty sand	Med	10		
12.5	Silty sand - some clay	High	150		

BORING NUMBER: B12 TIME: 1550 SAMPLER: Marty Cramer DATE: 2/23/97

DEPTH	SOIL TYPE	MOISTURE	PPM	GAS ODOR	COMMENTS
0	Silty med sand	Low	3.5		Refusal @ 2ft - probably hit containment wall - moved to other side of pipe
2					
2.5	Silty med sand	Med	5		
7.5	Silty med sand	Med	2.5		
12.5	Clay	Saturated	180		

BORING NUMBER: B13 TIME: 1230 SAMPLER: Mike Thomas DATE: 2/24/97

DEPTH	SOIL TYPE	MOISTURE	PPM	GAS ODOR	COMMENTS
0	Sand	Med	1000		
2.5	Sand	Med	522		
5	Sand	Med	1048		
7.5	Sand	Med	727		
10	Sand	Med	454		
12.5	Sand	Med	1582		
13	Sand	High	192		

BORING NUMBER: B14 TIME: 1305 SAMPLER: Mike Thomas DATE: 2/24/97

DEPTH	SOIL TYPE	MOISTURE	PPM	GAS ODOR	COMMENTS
0	Sand	Low	0		
2.5	Sand/clay	Med	387		
5	Sand	Med	397		
7.5	Sand	Med	475		
10	Sand	Med	434		
12.5	Sand	Med	496		
13	Sand/ground water	High	309		

COP0013990

ATTACHMENT 3

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

BOTHELL ■ (206) 481-9200 ■ FAX 485-2992
SPOKANE ■ (509) 924-9200 ■ FAX 924-9290
PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

GeoEngineers, Inc.	Project:	WILLBRIDGE (UNOCAL)	Sampled: 2/26/97 to 2/27/97
7504 S.W. Bridgeport Road	Project Number:	0161-492-00	Received: 2/28/97
Portland, OR 97224	Project Manager:	Pat Sullivan	Reported: 3/21/97 13:17

ANALYTICAL REPORT FOR SAMPLES:

Sample Description	Laboratory Sample Number	Sample Matrix	Date Sampled
RW-1-10.0	P702481-01	Soil	2/26/97
RW-1-12.5	P702481-02	Soil	2/26/97
RW-1-15.0	P702481-03	Soil	2/26/97
RW-2-10.0	P702481-04	Soil	2/26/97
RW-2-12.5	P702481-05	Soil	2/27/97
RW-2-15.0	P702481-06	Soil	2/27/97
RW-3-5.0	P702481-07	Soil	2/27/97
RW-3-7.5	P702481-08	Soil	2/27/97
RW-3-15.0	P702481-09	Soil	2/27/97

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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.

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GeoEngineers, Inc.	Project:	WILLBRIDGE (UNOCAL)	Sampled: 2/26/97 to 2/27/97
7504 S.W. Bridgeport Road	Project Number:	0161-492-00	Received: 2/28/97
Portland, OR 97224	Project Manager:	Pat Sullivan	Reported: 3/21/97 13:17

Hydrocarbon Identification per Oregon DEQ Method HCID
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
RW-1-10.0			**P702481-01**				**Soil**	
Gasoline Range Hydrocarbons	0370124	3/6/97	3/6/97		20.0	ND	mg/kg	
Diesel Range Hydrocarbons	"	"	"		50.0	ND	"	
Heavy Oil Range Hydrocarbons	"	"	"		100	ND	"	
Surrogate: 1-Chlorooctadecane	"	"	"	*50.0-150*		*112*	%	
RW-1-12.5			**P702481-02**				**Soil**	
Gasoline Range Hydrocarbons	0370124	3/6/97	3/6/97		20.0	ND	mg/kg	
Diesel Range Hydrocarbons	"	"	"		50.0	ND	"	
Heavy Oil Range Hydrocarbons	"	"	"		100	ND	"	
Surrogate: 1-Chlorooctadecane	"	"	"	*50.0-150*		*126*	%	
RW-1-15.0			**P702481-03**				**Soil**	
Gasoline Range Hydrocarbons	0370124	3/6/97	3/6/97		20.0	ND	mg/kg	
Diesel Range Hydrocarbons	"	"	"		50.0	**DET**	"	1
Heavy Oil Range Hydrocarbons	"	"	"		100	ND	"	
Surrogate: 1-Chlorooctadecane	"	"	"	*50.0-150*		*122*	%	
RW-2-10.0			**P702481-04**				**Soil**	
Gasoline Range Hydrocarbons	0370124	3/6/97	3/6/97		20.0	ND	mg/kg	
Diesel Range Hydrocarbons	"	"	"		50.0	ND	"	
Heavy Oil Range Hydrocarbons	"	"	"		100	ND	"	
Surrogate: 1-Chlorooctadecane	"	"	"	*50.0-150*		*116*	%	
RW-2-12.5			**P702481-05**				**Soil**	
Gasoline Range Hydrocarbons	0370124	3/6/97	3/6/97		20.0	ND	mg/kg	
Diesel Range Hydrocarbons	"	"	"		50.0	ND	"	
Heavy Oil Range Hydrocarbons	"	"	"		100	ND	"	
Surrogate: 1-Chlorooctadecane	"	"	"	*50.0-150*		*119*	%	
RW-2-15.0			**P702481-06**				**Soil**	
Gasoline Range Hydrocarbons	0370124	3/6/97	3/7/97		20.0	**DET**	mg/kg	
Diesel Range Hydrocarbons	"	"	"		50.0	**DET**	"	1
Heavy Oil Range Hydrocarbons	"	"	"		100	ND	"	
Surrogate: 1-Chlorooctadecane	"	"	"	*50.0-150*		*126*	%	
RW-3-5.0			**P702481-07**				**Soil**	
Gasoline Range Hydrocarbons	0370124	3/6/97	3/7/97		20.0	ND	mg/kg	
Diesel Range Hydrocarbons	"	"	"		50.0	ND	"	

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Portland, OR 97224	Project Manager:	Pat Sullivan	Reported: 3/21/97 13:17

Hydrocarbon Identification per Oregon DEQ Method HCID
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
RW-3-5.0 (continued)			P702481-07				Soil	
Heavy Oil Range Hydrocarbons	0370124	3/6/97	3/7/97		100	ND	mg/kg	
Surrogate: 1-Chlorooctadecane	"	"	"	*50.0-150*		*118*	%	
RW-3-7.5			P702481-08				Soil	
Gasoline Range Hydrocarbons	0370124	3/6/97	3/7/97		20.0	ND	mg/kg	
Diesel Range Hydrocarbons	"	"	"		50.0	ND	"	
Heavy Oil Range Hydrocarbons	"	"	"		100	ND	"	
Surrogate: 1-Chlorooctadecane	"	"	"	*50.0-150*		*121*	%	
RW-3-15.0			P702481-09				Soil	
Gasoline Range Hydrocarbons	0370124	3/6/97	3/7/97		20.0	DET	mg/kg	
Diesel Range Hydrocarbons	"	"	"		50.0	DET	"	2
Heavy Oil Range Hydrocarbons	"	"	"		100	DET	"	
Surrogate: 1-Chlorooctadecane	"	"	"	*50.0-150*		*83.2*	%	

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7504 S.W. Bridgeport Road	Project Number:	0161-492-00	Received: 2/28/97
Portland, OR 97224	Project Manager:	Pat Sullivan	Reported: 3/21/97 13:17

Gasoline Hydrocarbons (Benzene to Naphthalene) per Oregon DEQ Method TPH-G
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
RW-1-10.0			P702481-01				Soil	
Gasoline Range Hydrocarbons	0370002	3/1/97	3/8/97		2.00	ND	mg/kg	
Surrogate: a,a,a-TFT	"	"	"	*50.0-150*		*68.4*	%	
RW-1-12.5			P702481-02				Soil	
Gasoline Range Hydrocarbons	0370002	3/1/97	3/10/97		2.00	ND	mg/kg	
Surrogate: a,a,a-TFT	"	"	"	*50.0-150*		*57.2*	%	
RW-2-10.0			P702481-04				Soil	
Gasoline Range Hydrocarbons	0370002	3/1/97	3/8/97		2.00	ND	mg/kg	
Surrogate: a,a,a-TFT	"	"	"	*50.0-150*		*75.2*	%	
RW-2-12.5			P702481-05				Soil	
Gasoline Range Hydrocarbons	0370002	3/1/97	3/10/97		2.00	3.30	mg/kg	
Surrogate: a,a,a-TFT	"	"	"	*50.0-150*		*60.4*	%	
RW-3-5.0			P702481-07				Soil	
Gasoline Range Hydrocarbons	0370002	3/1/97	3/8/97		2.00	ND	mg/kg	
Surrogate: a,a,a-TFT	"	"	"	*50.0-150*		*75.6*	%	
RW-3-7.5			P702481-08				Soil	
Gasoline Range Hydrocarbons	0370002	3/1/97	3/8/97		2.00	ND	mg/kg	
Surrogate: a,a,a-TFT	"	"	"	*50.0-150*		*76.8*	%	

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7504 S.W. Bridgeport Road	Project Number:	0161-492-00	Received: 2/28/97
Portland, OR 97224	Project Manager:	Pat Sullivan	Reported: 3/21/97 13:17

Heavy Oil Range Hydrocarbons per Oregon DEQ Method 418.1 (modified)
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Specific Method	Reporting Limit	Result	Units	Notes*
RW-3-5.0			P702481-07				Soil	
Petroleum Oil Hydrocarbons	0370400	3/19/97	3/21/97	DEQ 418.1 M	20.0	ND	mg/kg	
RW-3-7.5			P702481-08				Soil	
Petroleum Oil Hydrocarbons	0370400	3/19/97	3/21/97	DEQ 418.1 M	20.0	ND	mg/kg	

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GeoEngineers, Inc.	Project: WILLBRIDGE (UNOCAL)	Sampled:	2/26/97 to 2/27/97
7504 S.W. Bridgeport Road	Project Number: 0161-492-00	Received:	2/28/97
Portland, OR 97224	Project Manager: Pat Sullivan	Reported:	3/21/97 13:17

BTEX per EPA Method 8020A
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
RW-1-10.0			**P702481-01**				**Soil**	
Benzene	0370002	3/1/97	3/8/97		0.0500	ND	mg/kg dry	
Toluene	"	"	"		0.0500	ND	"	
Ethylbenzene	"	"	"		0.0500	ND	"	
Xylenes (total)	"	"	"		0.0500	ND	"	
Surrogate: a,a,a-TFT	"	"	"	*50.0-150*		*68.6*	%	
RW-1-12.5			**P702481-02**				**Soil**	
Benzene	0370002	3/1/97	3/10/97		0.0500	ND	mg/kg dry	
Toluene	"	"	"		0.0500	ND	"	
Ethylbenzene	"	"	"		0.0500	ND	"	
Xylenes (total)	"	"	"		0.0500	ND	"	
Surrogate: a,a,a-TFT	"	"	"	*50.0-150*		*57.7*	%	
RW-2-10.0			**P702481-04**				**Soil**	
Benzene	0370002	3/1/97	3/8/97		0.0500	ND	mg/kg dry	
Toluene	"	"	"		0.0500	ND	"	
Ethylbenzene	"	"	"		0.0500	ND	"	
Xylenes (total)	"	"	"		0.0500	ND	"	
Surrogate: a,a,a-TFT	"	"	"	*50.0-150*		*73.2*	%	
RW-2-12.5			**P702481-05**				**Soil**	
Benzene	0370002	3/1/97	3/10/97		0.0500	ND	mg/kg dry	
Toluene	"	"	"		0.0500	ND	"	
Ethylbenzene	"	"	"		0.0500	ND	"	
Xylenes (total)	"	"	"		0.0500	ND	"	
Surrogate: a,a,a-TFT	"	"	"	*50.0-150*		*60.3*	%	
RW-3-5.0			**P702481-07**				**Soil**	
Benzene	0370002	3/1/97	3/8/97		0.0500	ND	mg/kg dry	
Toluene	"	"	"		0.0500	ND	"	
Ethylbenzene	"	"	"		0.0500	ND	"	
Xylenes (total)	"	"	"		0.0500	ND	"	
Surrogate: a,a,a-TFT	"	"	"	*50.0-150*		*73.9*	%	
RW-3-7.5			**P702481-08**				**Soil**	
Benzene	0370002	3/1/97	3/8/97		0.0500	ND	mg/kg dry	
Toluene	"	"	"		0.0500	ND	"	
Ethylbenzene	"	"	"		0.0500	ND	"	

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7504 S.W. Bridgeport Road	Project Number:	0161-492-00	Received: 2/28/97
Portland, OR 97224	Project Manager:	Pat Sullivan	Reported: 3/21/97 13:17

BTEX per EPA Method 8020A
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
RW-3-7.5 (continued)			**P702481-08**				**Soil**	
Xylenes (total)	0370002	3/1/97	3/8/97		0.0500	ND	mg/kg dry	
Surrogate: a,a,a-TFT	"	"	"	*50.0-150*		*75.5*	%	

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Portland, OR 97224	Project Manager:	Pat Sullivan	Reported: 3/21/97 13:17

Dry Weight Determination
North Creek Analytical - Portland

Sample Name	Lab ID	Matrix	Result	Units
RW-1-10.0	P702481-01	Soil	89.4	%
RW-1-12.5	P702481-02	Soil	77.2	%
RW-1-15.0	P702481-03	Soil	76.1	%
RW-2-10.0	P702481-04	Soil	89.2	%
RW-2-12.5	P702481-05	Soil	78.9	%
RW-2-15.0	P702481-06	Soil	73.2	%
RW-3-5.0	P702481-07	Soil	90.6	%
RW-3-7.5	P702481-08	Soil	91.1	%
RW-3-15.0	P702481-09	Soil	76.2	%

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7504 S.W. Bridgeport Road	Project Number:	0161-492-00	Received: 2/28/97
Portland, OR 97224	Project Manager:	Pat Sullivan	Reported: 3/21/97 13:17

[redacted]

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit / Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Batch: 0370124	**Date Prepared: 3/6/97**					**Extraction Method: TPH-HCID (OR)**				
Blank	**0370124-BLK1**									
Gasoline Range Hydrocarbons	3/6/97			ND	mg/kg	20.0				
Diesel Range Hydrocarbons	"			ND	"	50.0				
Heavy Oil Range Hydrocarbons	"			ND	"	100				
Surrogate: 1-Chlorooctadecane	"	*DET*		*DET*	"	*50.0-150*	*117*			

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7504 S.W. Bridgeport Road	Project Number:	0161-492-00	Received: 2/28/97
Portland, OR 97224	Project Manager:	Pat Sullivan	Reported: 3/21/97 13:17

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Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit / Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Batch: 0370002	**Date Prepared: 3/1/97**					**Extraction Method: MeOH Extraction**				
Blank	**0370002-BLK1**									
Gasoline Range Hydrocarbons	3/13/97			ND	mg/kg	2.00				
Surrogate: a,a,a-TFT	"	2.5		*2.16*	"	*50.0-150*	*86.4*			
LCS	**0370002-BS1**									
Gasoline Range Hydrocarbons	3/13/97	37.5		30.9	mg/kg	50.0-150	82.4			
Surrogate: a,a,a-TFT	"	2.5		*2.49*	"	*50.0-150*	*99.6*			
Duplicate	**0370002-DUP1**		**P702319-01**							
Gasoline Range Hydrocarbons	3/1/97		945	882	mg/kg			50.0	6.90	
Surrogate: a,a,a-TFT	"	2.5		*ND*	"	*50.0-150*	*NR*			*3*

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7504 S.W. Bridgeport Road	Project Number:	0161-492-00	Received: 2/28/97
Portland, OR 97224	Project Manager:	Pat Sullivan	Reported: 3/21/97 13:17

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit / Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Batch: 0370400	**Date Prepared: 3/19/97**					**Extraction Method: TPH-418.1 (OR)**				
Blank	0370400-BLK1									
Petroleum Oil Hydrocarbons	3/19/97			ND	mg/kg	20.0				
Blank	0370400-BLK2									
Petroleum Oil Hydrocarbons	3/20/97			ND	mg/kg	20.0				
LCS	0370400-BS1									
Petroleum Oil Hydrocarbons	3/19/97	175		102	mg/kg	50.0-150	58.3			
Duplicate	0370400-DUP1		P703201-05							
Petroleum Oil Hydrocarbons	3/19/97		2250	1750	mg/kg			50.0	25.0	
Duplicate	0370400-DUP2		P703259-01							
Petroleum Oil Hydrocarbons	3/19/97		83.2	67.0	mg/kg			50.0	21.6	
Duplicate	0370400-DUP3		P703259-02							
Petroleum Oil Hydrocarbons	3/21/97		ND	ND	mg/kg			50.0		

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7504 S.W. Bridgeport Road	Project Number: 0161-492-00	Received: 2/28/97
Portland, OR 97224	Project Manager: Pat Sullivan	Reported: 3/21/97 13:17

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Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Batch: 0370002	**Date Prepared: 3/1/97**				**Extraction Method: MeOH Extraction**					
Blank	**0370002-BLK1**									
Benzene	3/7/97			ND	mg/kg dry	0.0500				
Toluene	"			ND	"	0.0500				
Ethylbenzene	"			ND	"	0.0500				
Xylenes (total)	"			ND	"	0.0500				
Surrogate: a,a,a-TFT	"	*2.5*		*2.13*	"	*50.0-150*	*85.2*			
LCS	**0370002-BS2**									
Benzene	3/7/97	0.5		0.498	mg/kg dry	69.0-138	99.6			
Toluene	"	0.5		0.450	"	53.0-151	90.0			
Ethylbenzene	"	0.5		0.442	"	61.0-141	88.4			
Xylenes (total)	"	1.5		1.35	"	62.0-144	90.0			
Surrogate: a,a,a-TFT	"	*2.5*		*2.14*	"	*50.0-150*	*85.6*			
Matrix Spike	**0370002-MS1**		**P702452-01**							
Benzene	3/7/97	0.551	ND	0.959	mg/kg dry	56.0-123	NR			4
Toluene	"	0.551	ND	2.90	"	54.0-123	NR			4
Ethylbenzene	"	0.551	2.77	5.69	"	45.0-130	NR			4
Xylenes (total)	"	1.65	64.1	69.6	"	50.0-127	NR			4
Surrogate: a,a,a-TFT	"	*2.75*		*2.33*	"	*50.0-150*	*84.7*			
Matrix Spike Dup	**0370002-MSD1**		**P702452-01**							
Benzene	3/7/97	0.551	ND	0.952	mg/kg dry	56.0-123	NR	17.0	NR	4
Toluene	"	0.551	ND	3.38	"	54.0-123	NR	24.0	NR	4
Ethylbenzene	"	0.551	2.77	6.66	"	45.0-130	NR	20.0	NR	4
Xylenes (total)	"	1.65	64.1	80.8	"	50.0-127	NR	20.0	NR	4
Surrogate: a,a,a-TFT	"	*2.75*		*2.06*	"	*50.0-150*	*74.9*			

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PN

Philip Nerenberg, Laboratory 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 ■ (206) 481-9200 ■ FAX 485-2992
SPOKANE ■ (509) 924-9200 ■ FAX 924-9290
PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

GeoEngineers, Inc.	Project: WILLBRIDGE (UNOCAL)	Sampled: 2/26/97 to 2/27/97
7504 S.W. Bridgeport Road	Project Number: 0161-492-00	Received: 2/28/97
Portland, OR 97224	Project Manager: Pat Sullivan	Reported: 3/21/97 13:17

Notes and Definitions

#	Note
1	Detected hydrocarbons in the diesel range appear to be due to weathered gasoline.
2	Detected hydrocarbons in the diesel range appear to be due to the overlap of both weathered gasoline and heavy oil.
3	The surrogate recovery for this sample is not available due to sample dilution required from high analyte concentration and/or matrix interferences.
4	The spike recovery and RPD for this sample cannot be accurately quantified due to sample dilution required from high analyte concentration.
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.

Philip Nerenberg, Laboratory Manager

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East 11115 Montgomery, Suite B, Spokane, WA 99206-4776
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COP0014004

EPA #ORO 001010289
PUC #206271

STRAIGHT BILL OF LADING

ORIGINAL - NOT NEGOTIABLE

CET ENVIRONMENTAL SERVICES, INC.
5315 NW St. Helens Rd.
Portland, OR 97210
Phone (503) 241-3827 FAX (503) 241-8259

Shipper No. 4092-000
Carrier No. 6664
Date 2-23-97

TO: Consignee	Harbor oil	FROM: Shipper	UNOCAL
Street	11535 N Force AVE	Street	5528 Doane ST.
Destination	PORTLAND OR. Zip Code	Origin	PORTLAND OR
Route		Vehicle Number	101008

No. Shipping Units	HM*	Kind of Packaging. Description of Articles, Special Marks and Exceptions	Weight (subject to correction)	Rate	CHARGES
1548	X	G. RQ, GASOLINE MIXTURE (GAS/MTBE) 3, UN1203, PG II, Marine Pollutant	10,000 EST		
		If spill should occur, dike and contain material, then call CET Environmental Services 24 hour spill response at (503) 241-3827.			

REMIT C.O.D. TO:
ADDRESS

COD Amt: $

C.O.D. FEE:
PREPAID ☐
COLLECT ☐ $

TOTAL CHARGES: $

FREIGHT CHARGES:
FREIGHT PREPAID Check box if charges are to be collect except when box right is checked ☐

NOTE–Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property.
The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding.
$ _____ per _____

This is to certify that the above named materials are properly classified, described, packaged, marked, and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation

_____ Signature

Subject to Section 7 of the conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement:
The carrier shall not make delivery of the shipment without payment of freight and all other lawful charges.

_____ (Signature of Consignor)

RECEIVED, subject to the classifications and lawfully filed tariffs in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated above which said carrier (the word carrier being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of, said property over all or any portion of said route to destination and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the bill of lading terms and conditions in the governing classification on the date of shipment.

Shipper hereby certifies that he is familiar with all the bill of lading terms and conditions in the governing classification and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

SHIPPER
PER

CARRIER **CET ENVIRONMENTAL SERVICES, INC.**
PER Brad Redlinger
DATE 2-23-97

* Hazardous Materials

No. 01886

Harbor Oil, Inc.

11535 N. Force Avenue • Portland, OR 97217
Phone: (503) 285-4648 • Fax: (503) 285-9521

MATERIALS RECIEPT

nerator UNOCAL Date 2/23/97

dress PORTLAND

nsporter CET Purchase Order No.

ck No. 05-97-P0119

iler No.

oduct	GASOLINE + H2O		Gals Loaded	OFFICE USE ONLY
				Unit Price
				Product / Sub Total
PI	Weight	HAL	Gross Gals	
EMP	GROSS	DIST	Net Gals	Freight / Sub Total
TOR	TARE	SW	550 GAS	
L	NET	SS	1000 H2O	Tax / Sub Total
EMARKS:				Hours / Sub Total
	T# 4092-000			TOTAL

IVER Brad Pendleton RECEIVED BY

White: Customer Canary: Office Pink: Billing Goldenrod: Yard

COP0014006

03-21-1997 02:10PM FROM TO 2481592 P.15

18939 120th Avenue N.E., Suite 101, Bothell, WA 98011-9508 (206) 481-9200 FAX 485-2992
East 11115 Montgomery, Suite B, Spokane, WA 99206-4779 (509) 924-9200 FAX 924-9290
9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132 (503) 643-9200 FAX 664-2202

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

CHAIN OF CUSTODY REPORT

Work Order # P702481

REPORT TO:
ATTENTION: PAT SULLIVAN
ADDRESS: 7504 SW BRIDGEPORT RD
PORTLAND, OR 97224
PHONE: 603-6692 FAX:
PROJECT NAME: WILLDRIDGE (UNOCAL)
PROJECT NUMBER: 0161-492-00
SAMPLED BY: PJS

INVOICE TO:
ATTENTION: MARTIN CRAMER, 76 PRODUCTS CO.
ADDRESS: 5528 NORTHWEST DOANE AVE
PORTLAND, OR 97210
P.O. NUMBER: NCA QUOTE #:

TURNAROUND REQUEST in Business Days *
Organic & Inorganic Analyses: 10 (Standard) | 7 | 5 | 4 | 3 | 2 | 1 | Same Day
Fuels & Hydrocarbon Analyses: 5 (Standard) | 3-4 | 2 | 1 | Same Day
OTHER Specify:
* Turnaround Requests less than standard may incur Rush Charges.

Analysis Request:

CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	OREGON TPH-HCID	BETX (EPA 8020)	TPH-G	418 mod	MATRIX (W, S, A, O)	# OF CONTAINERS	COMMENTS
1. RW-1-10.0	2/26/97 2:05	X	X	X		S	1	
2. RW-1-12.5	2/26/97 2:10	X	X	X		S	1	
3. RW-1-15.0	2/26/97 2:15	X				S	1	
4. RW-2-10.0	2/27/97 8:35	X	X	X		S	1	
5. RW-2-12.5	2/27/97 8:40	X	X	X		S	1	
6. RW-2-15.0	2/27/97 8:45	X				S	1	
7. RW-3-5.0	2/27/97 1:10	X	X	X	X	S	1	
8. RW-3-7.5	2/27/97 1:15	X	X	X	X	S	1	
9. RW-3-15.0	2/27/97 1:30	X				S	1	
10.								

RELINQUISHED BY (Signature): Patrick J. Sullivan DATE: 2/28/97
PRINT NAME: PATRICK J. SULLIVAN FIRM: GEOENGINEERS TIME: 10:25
RELINQUISHED BY (Signature): DATE:
PRINT NAME: FIRM: TIME:

RECEIVED BY (Signature): DATE:
PRINT NAME: FIRM: TIME:
RECEIVED BY (Signature): Sara McClurg DATE: 2-28-97
PRINT NAME: Sara McClurg FIRM: NCA TIME: 1405

ADDITIONAL REMARKS: ANALYZE SAMPLES UNDER 76 PRODUCTS CONTRACT. FAX PRELIMINARY RESULTS TO MARTIN CRAMER OF 76 PROD @ 248-1592 AND PAT SULLIVAN OF GEOENGINEERS @ 620-5940. DO NOT RUN HCID FOLLOW-UP. 76 PRODUCTS WILL CALL WITH INSTRUCTIONS FOR FOLLOW-UP.

PAGE 1 OF 1

CGC Rev 8, 1/96

ATTACHMENT 4

GeoEngineers

March 25, 1997

Consulting Engineers and Geoscientists
Offices in Washington, Oregon, and Alaska

76 Products Company
5528 Northwest Doane Avenue
Portland, Oregon 97297

Attention: Mr. Martin Cramer

Recovery Well Construction
76 Products Terminal 0608
5528 Northwest Doane Avenue
Portland, Oregon
File No. 0161-492-00

INTRODUCTION

This letter presents the results of GeoEngineers' recovery well construction activities conducted at 76 Products Terminal 0608 in February 1997. The site is located at 5528 Northwest Doane Avenue in Portland, Oregon, as shown in Figure 1. A spill of super unleaded gasoline occurred from Tank 3411, located within Tank Farm No. 2, on February 22, 1997. At the request of 76 Products Company, GeoEngineers constructed three recovery wells in the vicinity of Tank 3411.

SUBSURFACE EXPLORATION

Cascade Drilling Company, Inc. of Woodinville, Washington drilled three hollow-stem auger soil borings (RW-1 through RW-3) on February 26 and February 27, 1997 at locations selected by 76 Products Company and GeoEngineers. The approximate locations of the recovery wells are shown in Figure 2. A crane was used to lift the drilling rig over above-grade pipelines to access the locations of RW-1 and RW-2. Each boring was drilled to an approximate depth of 22.5 feet. GeoEngineers obtained soil samples from the borings at 2.5-foot intervals for field screening using visual, headspace vapor and sheen screening methods. A description of our field procedures and boring logs are presented in Attachment A. 76 Products Company selected three soil samples from each boring, and GeoEngineers submitted the soil samples to North Creek Analytical in Beaverton, Oregon for chemical analysis. The chemical analytical results were provided directly to 76 Products Company by the analytical laboratory.

GeoEngineers, Inc.
7504 SW Bridgeport Road
Portland, OR 97224
Telephone (503) 624-9274
Fax (503) 620-5940

Printed on recycled paper.

SOIL CONDITIONS

A surficial layer of approximately 0.5 foot of silty gravel fill was encountered at the location of each boring. Brown silty fine sand was encountered in each boring beneath the silty gravel fill to depths ranging between approximately 17.5 feet and 18.5 feet. Gray to brown silty clay was encountered beneath the silty fine sand to the total depth explored in each boring. Ground water was encountered in the borings at approximate depths of 12.0 feet to 12.5 feet, based on soil moisture observed in samples obtained from the borings. The soil cuttings were placed in labeled 55-gallon drums for temporary storage on site.

FIELD SCREENING RESULTS

Petroleum-stained soil was present in RW-1 between approximate depths of 14.0 feet and 17.5 feet. Petroleum-stained soil was present in RW-2 and RW-3 between approximate depths of 14.0 feet and 18.5 feet.

Moderate to heavy sheens were observed on soil samples obtained from RW-1 between approximate depths of 7.0 feet and 17.5 feet. Moderate to heavy sheens were observed on soil samples obtained from RW-2 from the surface to an approximate depth of 18.5 feet. Moderate to heavy sheens were observed on soil samples obtained from RW-3 from the surface to an approximate depth of 17.0 feet.

Combustible vapor concentrations were measured in the soil sample headspace during field screening using a TLV Sniffer. The lower threshold of significance of this instrument in this application is 100 ppm (parts per million). Elevated headspace vapor concentrations were detected in samples obtained from RW-1 at the approximate depths of 5.0 feet and between approximate depths of 10.0 feet and 17.5 feet. Elevated headspace vapor concentrations were detected in samples obtained from RW-2 between approximate depths of 12.0 feet and 18.5 feet. Elevated headspace vapor concentrations were detected in samples obtained from RW-3 between approximate depths of 5.0 feet, 10.0 feet and between approximate depths of 14.5 feet and 17.0 feet.

In general, the field screening evidence of petroleum hydrocarbons appears to indicate aged hydrocarbons. The combustible vapor concentrations are lower than would typically be expected from fresh gasoline.

RECOVERY WELL CONSTRUCTION

Recovery wells RW-1, RW-2 and RW-3 were constructed with 4-inch diameter schedule 40 PVC (polyvinyl chloride) casing and screen. The base of each well is approximately 22.5 feet below ground surface. The screen in each well was placed between approximate depths of 7.0 feet and 22.0 feet. Cascade Drilling developed the wells by removing approximately 50 gallons of water from each well with a bailer. The purge water was placed in 55-gallon drums for temporary storage on site. Well construction details are shown on the boring logs in Attachment A.

COP0014010

GROUND WATER CONDITIONS

We measured depths to water from the casing rims in the recovery wells RW-1, RW-2 and RW-3 on February 27, 1997. Measurable free product was not present in the wells at the time of our measurements. The water level data follow:

Well	Casing Rim Elevation (feet)	Depth to Ground Water (feet)	Ground Water Elevation (feet)
RW-1	35.64	12.75	22.89
RW-2	35.82	13.07	22.75
RW-3	35.52	13.37	22.15

DISCUSSION

A zone of apparent petroleum hydrocarbon-contaminated soil was encountered in each boring between approximate depths of 14.0 feet and 18.5 feet. The soil in this zone exhibited gray staining, moderate to heavy sheens and elevated combustible headspace vapors. This apparent zone of contaminated soil appears to be from a historic release and does not appear to be related to the February 22, 1997 release. Field screening evidence of petroleum hydrocarbons also was present in soil samples obtained above the depth of 14.0 feet in the borings. However, this evidence was not a conclusive indication of petroleum hydrocarbon contamination related to the February 22, 1997 release of gasoline.

Free product was not present in recovery wells RW-1, RW-2 and RW-3 on February 27, 1997. We recommend that 76 Products Company not remove water from recovery wells that do not have free product. Removal of water from a recovery well without free product could accelerate downgradient migration of free product and decrease the effectiveness and efficiency of product recovery from hand-augered wells in which free product is present.

LIMITATIONS

We have prepared this report for use by 76 Products Company. This report may be made available to regulatory agencies. This report is not intended for use by others and the information contained herein is not applicable to other sites.

Our interpretations of subsurface conditions are based on data from widely spaced borings at the site. It is always possible that contamination exists in areas of the site that were not explored by drilling.

COP0014011

Within the limitations of scope, schedule and budget, our services have been executed in accordance with generally accepted practices in this area at the time this letter was prepared. No warranty, express or implied, should be understood.

We appreciate the opportunity to be of continued service to 76 Products Company. If you have questions concerning this report, please call.

Yours very truly,

GeoEngineers, Inc.

Patrick J. Sullivan, R.G.
Project Geologist

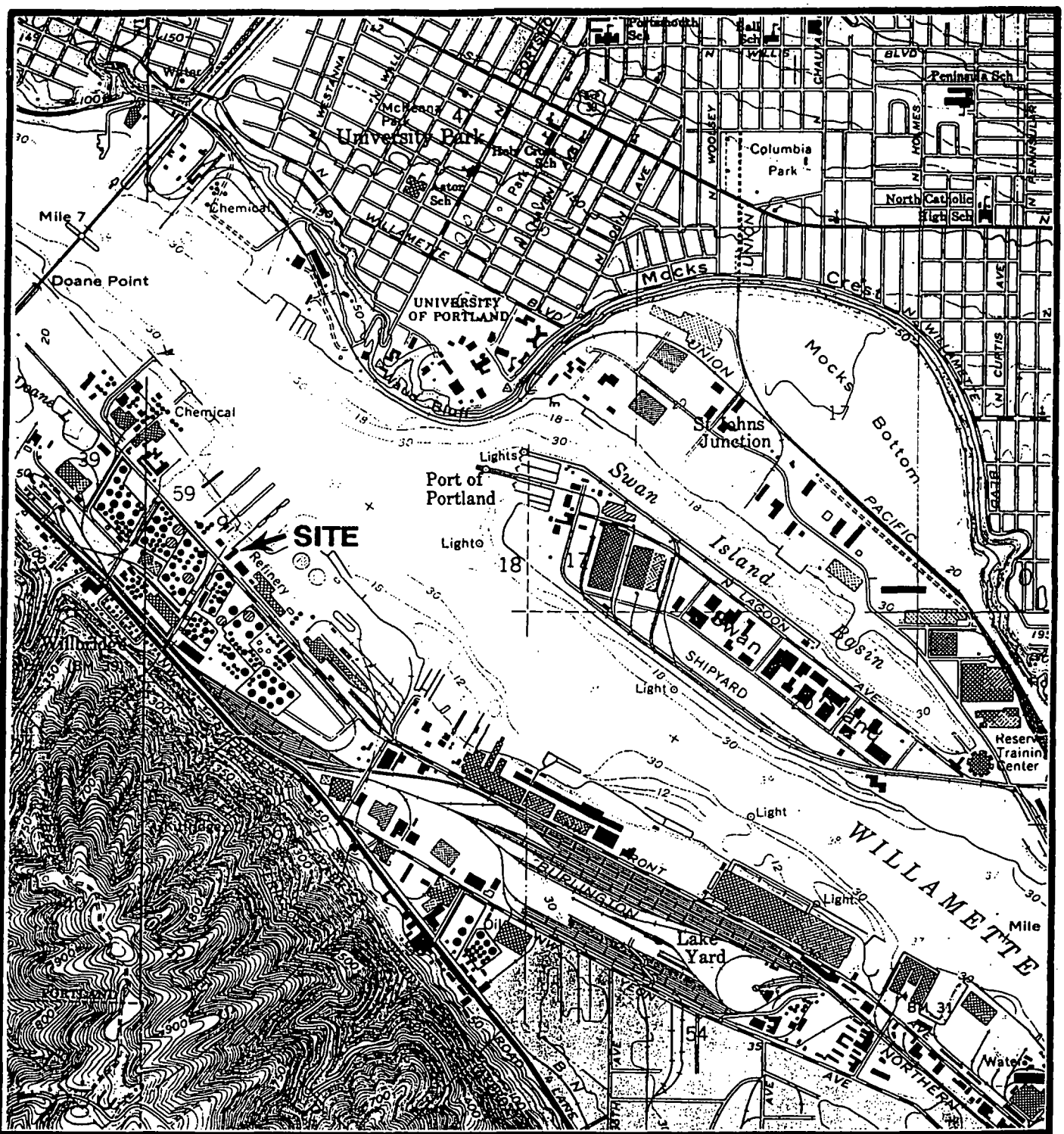
Julia Fowler, P.E.
Associate

PJS:JF:mln
Document ID: 0161492r.rw

Attachments

Two copies submitted

COP0014012



0 2000 4000

SCALE IN FEET

N

Reference: USGS 7.5' topographic quadrangle map, "Portland, OR – WA," photorevised 1977.

0161-492-62 PJS:WEB 03/20/97

Geo Engineers

VICINITY MAP

FIGURE 1

COP0014013

ATTACHMENT A

ATTACHMENT A

FIELD EXPLORATIONS

DRILLING AND SOIL SAMPLING PROGRAM

Subsurface conditions in the vicinity of Tank 3411 were explored by drilling three soil borings (RW-1, RW-2 and RW-3) on February 26 and February 27, 1997 to an approximate depth of 22.5 feet below the ground surface using hollow-stem auger drilling equipment owned and operated by Cascade Drilling, Inc. of Woodinville, Washington. The borings were drilled at the approximate locations shown in Figure 2. The auger drilling and soil sampling equipment were cleaned with a hot-water pressure washer before drilling each boring.

The exploratory boring locations drilled for 76 Products Company were determined in the field by representatives of 76 Products Company and GeoEngineers. All soil samples obtained during drilling were examined and classified by a GeoEngineers representative during drilling. Detailed logs of each exploratory boring were developed. Soils encountered were classified visually in general accordance with ASTM (American Society for Testing and Materials) D 2488-90, which is described in Figure A-1. An explanation of the boring log symbols is presented in Figure A-2. The boring logs are presented in Figures A-3 through A-5.

Soil samples were obtained from each hollow-stem auger boring using a 2.5-inch OD (outside diameter) split-spoon sampler. The split-spoon sampler was driven with a 140-pound hammer falling a distance of approximately 30 inches. The soil samplers were cleaned between each sampling attempt with a Liquinox wash, a tap water rinse and a distilled water rinse. Our representative wore clean, disposable latex gloves during sample collection. The soil samples were transferred to 8-ounce glass jars to minimize headspace and sealed with Teflon-lined lids. All soil samples were kept cool prior to and during transport to the analytical laboratory. Selected soil samples from the borings were submitted to North Creek Analytical in Beaverton, Oregon for chemical analysis. The soil samples analyzed are denoted in the boring logs with a "CA." Chain-of-custody procedures were followed during transport of the samples to the analytical laboratory.

FIELD SCREENING OF SOIL SAMPLES

A GeoEngineers representative performed field screening tests on the soil samples obtained from the borings. Field screening results are used as a general guideline to delineate areas of possible petroleum-related contamination. In addition, screening results are used to aid in the selection of soil samples for chemical analysis. The screening methods used include (1) visual examination, (2) water sheen screening and (3) headspace vapor screening using a Bacharach TLV Sniffer.

Visual screening consists of inspecting the soil for stains indicative of petroleum-related contamination. Visual screening generally is more effective when contamination is related to heavy petroleum hydrocarbons, such as motor oil, or when hydrocarbon concentrations are high.

COP0014015

Water sheen screening and headspace vapor screening are more sensitive methods that have been effective in detecting contamination at concentrations less than regulatory cleanup guidelines.

Water sheen screening involves placing soil in water and observing the water surface for signs of sheen. Sheen testing can detect the presence of volatile and nonvolatile hydrocarbons. Sheen classifications are as follows:

No Sheen (NS)	No visible sheen on the water surface.
Slight Sheen (SS)	Light, colorless, dull sheen; spread is irregular, not rapid; sheen dissipates rapidly. Natural organic matter in the soil may produce a slight sheen.
Moderate Sheen (MS)	Light to heavy sheen; may have some color/iridescence; spread is irregular to flowing, may be rapid; few remaining areas of no sheen on the water surface.
Heavy Sheen (HS)	Heavy sheen with color/iridescence; spread is rapid; entire water surface may be covered with sheen.

Headspace vapor screening targets volatile hydrocarbons and involves placing a soil sample in a plastic sample bag. Air is captured in the bag, and the bag is shaken to expose the soil to the air trapped in the bag. The probe of a Bacharach TLV Sniffer is inserted in the bag, and the TLV Sniffer measures the concentration of combustible vapors present within the sample bag headspace. The TLV Sniffer measures combustible vapor concentrations in ppm (parts per million) and is calibrated to hexane. The TLV Sniffer is designed to quantify combustible gas concentrations in the range between 100 ppm and 10,000 ppm in this application.

Field screening results are site- and boring-specific. The results vary with temperature, soil moisture content, soil type and type of contaminant.

RECOVERY WELL CONSTRUCTION

Soil borings RW-1, RW-2 and RW-3 were completed as recovery wells. In addition, these wells were constructed to state of Oregon monitoring well standards and may be used to obtain ground water samples for chemical analysis. Four-inch-diameter, Schedule 40 PVC well casing was installed in each boring following completion of drilling. The upper portions of the wells are unslotted PVC well casing. Slotted PVC casing was placed from depths of approximately 7.0 feet to 20.0 feet to allow the entry of water. Medium sand was placed in the annulus around the screened interval. A bentonite seal was placed above the sand pack to prevent surface water infiltration. Cement grout was placed in the recovery well boring annulus above the bentonite seal. Each casing was protected with a flush-grade surface monument set in concrete. Construction details are included in Figures A-3 through A-5. The well screens were developed by surging and bailing with a steel bailer on the drilling rig.

COP0014016

GROUND WATER ELEVATIONS

GeoEngineers determined the elevations of RW-1, RW-2 and RW-3 on February 27, 1997 relative to the casing elevation of monitoring well U-3, which was provided by 76 Products Company. The casing rim elevations were redetermined by 76 Products Company in conjunction with other work at the site. These elevations are summarized in the table on page 3 of this report. Depths to free product and/or ground water, relative to the recovery well casing rims, were measured in RW-1, RW-2 and RW-3 on February 27, 1997. The depths to ground water were measured using an ORS (Oil Recovery System, Inc.) interface probe to an accuracy of 0.01 foot. The water table elevations were calculated by subtracting the water table depths from the casing rim elevations. The water table elevations are summarized in the table on page 3 of this report.

COP0014017

SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS			GROUP SYMBOL	GROUP NAME
COARSE GRAINED SOILS More Than 50% Retained on No. 200 Sieve	GRAVEL More Than 50% of Coarse Fraction Retained on No. 4 Sieve	CLEAN GRAVEL	GW	WELL-GRADED GRAVEL, FINE TO COARSE GRAVEL
			GP	POORLY-GRADED GRAVEL
		GRAVEL WITH FINES	GM	SILTY GRAVEL
			GC	CLAYEY GRAVEL
	SAND More Than 50% of Coarse Fraction Passes No. 4 Sieve	CLEAN SAND	SW	WELL-GRADED SAND, FINE TO COARSE SAND
			SP	POORLY-GRADED SAND
		SAND WITH FINES	SM	SILTY SAND
			SC	CLAYEY SAND
FINE GRAINED SOILS More Than 50% Passes No. 200 Sieve	SILT AND CLAY Liquid Limit Less Than 50	INORGANIC	ML	SILT
			CL	CLAY
		ORGANIC	OL	ORGANIC SILT, ORGANIC CLAY
	SILT AND CLAY Liquid Limit 50 or More	INORGANIC	MH	SILT OF HIGH PLASTICITY, ELASTIC SILT
			CH	CLAY OF HIGH PLASTICITY, FAT CLAY
		ORGANIC	OH	ORGANIC CLAY, ORGANIC SILT
HIGHLY ORGANIC SOILS			PT	PEAT

NOTES:

1. Field classification is based on visual examination of soil in general accordance with ASTM D2488-90.
2. Soil classification using laboratory tests is based on ASTM D2487-90.
3. Descriptions of soil density or consistency are based on interpretation of blow count data, visual appearance of soils, and/or test data.

SOIL MOISTURE MODIFIERS:

Dry - Absence of moisture, dusty, dry to the touch

Moist - Damp, but no visible water

Wet - Visible free water or saturated, usually soil is obtained from below water table

GEI 85-85 Rev. 05/93

Geo Engineers

SOIL CLASSIFICATION SYSTEM

FIGURE A-1

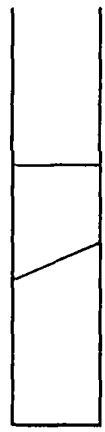
COP0014018

C:\DETAILS\GTKBR140

LABORATORY TESTS:

AL	Atterberg limits
CP	Compaction
CS	Consolidation
DS	Direct Sheer
GS	Grain – size
%F	Percent fines
HA	Hydrometer analysis
SK	Permeability
SM	Moisture content
MD	Moisture and density
SP	Swelling pressure
TX	Triaxial compression
UC	Unconfiend compression
CA	Chemical analysis

SOIL GRAPH:



SM Soil Group Symbol (See Note 2)

Distinct Contact Between Soil Strata

Gradual or Approximate Location of Change Between Soil Strata

Water Level

Bottom of Boring

BLOW-COUNT/SAMPLE DATA:

Blows required to drive a 2.4–inch I.D. split–barrel sampler 12 inches or other indicated distances using a 140–pound hammer falling 30 inches.

22 Location of relatively undisturbed sample

12 Location of disturbed sample

17 Location of sampling attempt with no recovery

Blows required to drive a 1.5–inch I.D. (SPT) split–barrel sampler 12 inches or other indicated distances using a 140–pound hammer falling 30 inches.

10 Location of sample obtained in general accordance with Standard Penetration Test (ASTM D 1586) procedures

26 Location of SPT sampling attempt with no recovery

"P" indicates sampler pushed with weight of hammer or against weight of drill rig.

P Location of relatively undisturbed sample obtained using a 3–inch–diamter thin–wall sample tube. Sample obtained in general accordance with ASTM D 1587.

Location of grab sample

NOTES:

1. The reader must refer to the discussion in the report text, the Key to Boring Log Symbols and the exploration logs for a proper understanding of subsurface conditions.
2. Soil classification system is summarized in Figure A–1.

GEI 121–90

Geo Engineers

KEY TO BORING LOG SYMBOLS

FIGURE A-2

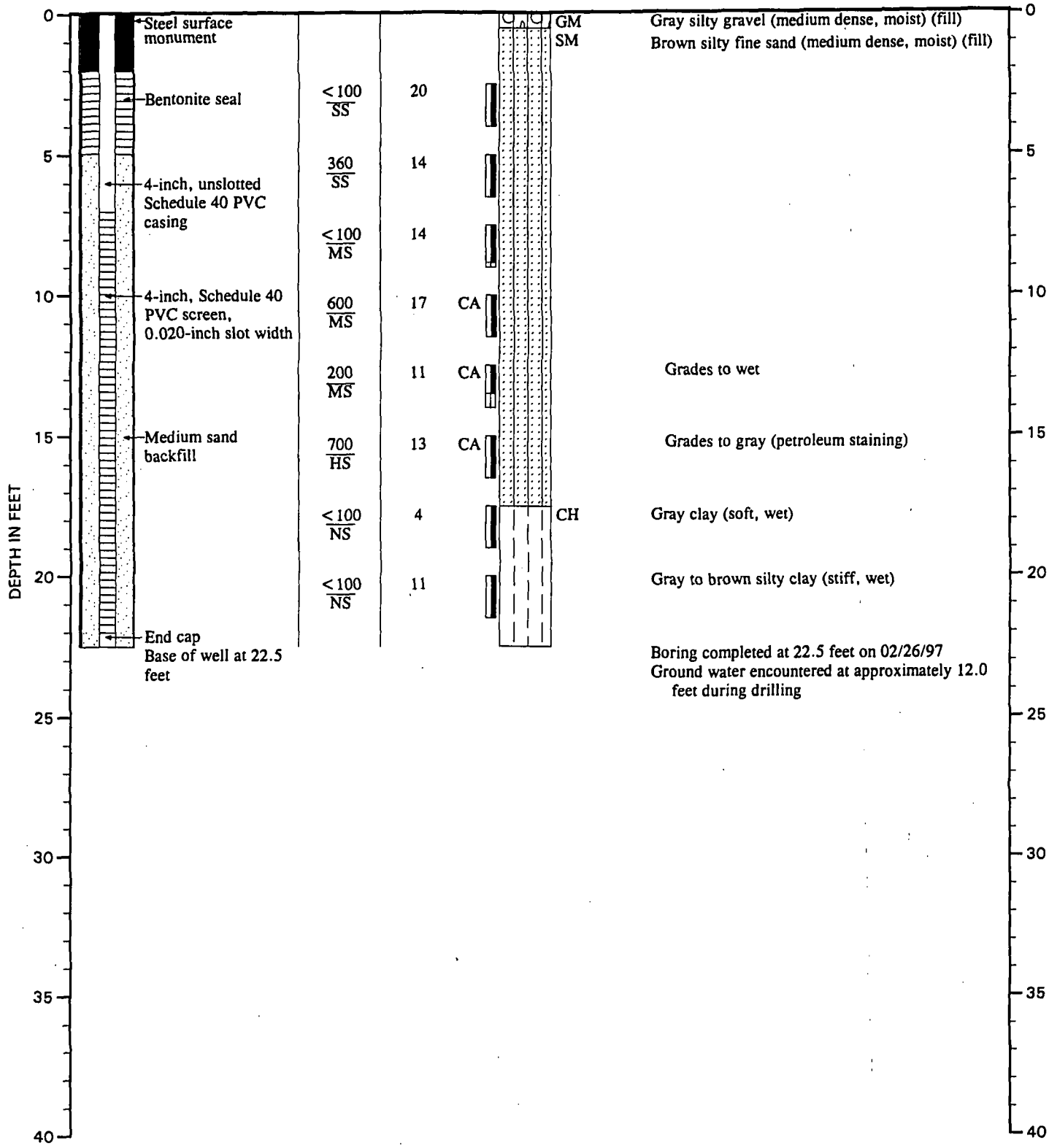
COP0014019

RECOVERY WELL RW-1

WELL SCHEMATIC

Casing Elevation (ft.): 35.67
Casing Stickup (ft.): -0.23

Surface Elevation (ft.): 35.90



Note: See Figure A- 2 for explanation of symbols

JF:PJS:MLN 3/21/97

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Geo Engineers

LOG OF RECOVERY WELL

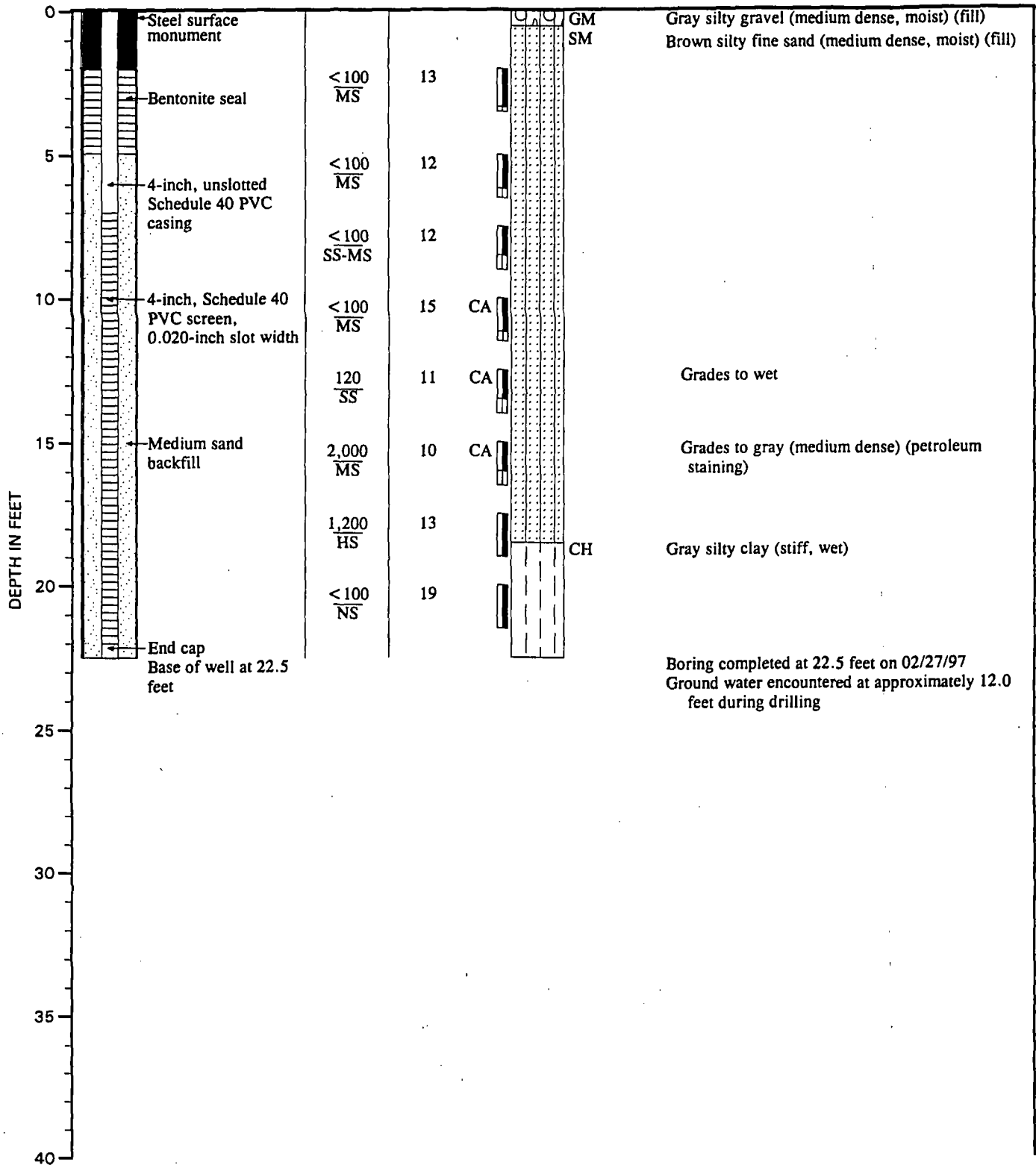
FIGURE A-3

COP0014020

RECOVERY WELL RW-2

WELL SCHEMATIC

Casing Elevation (ft.): 35.84
Casing Stickup (ft.): -0.66



Note: See Figure A- 2 for explanation of symbols

JF:PJS:MLN 3/21/97

0161-492-00-2150

Geo Engineers

LOG OF RECOVERY WELL

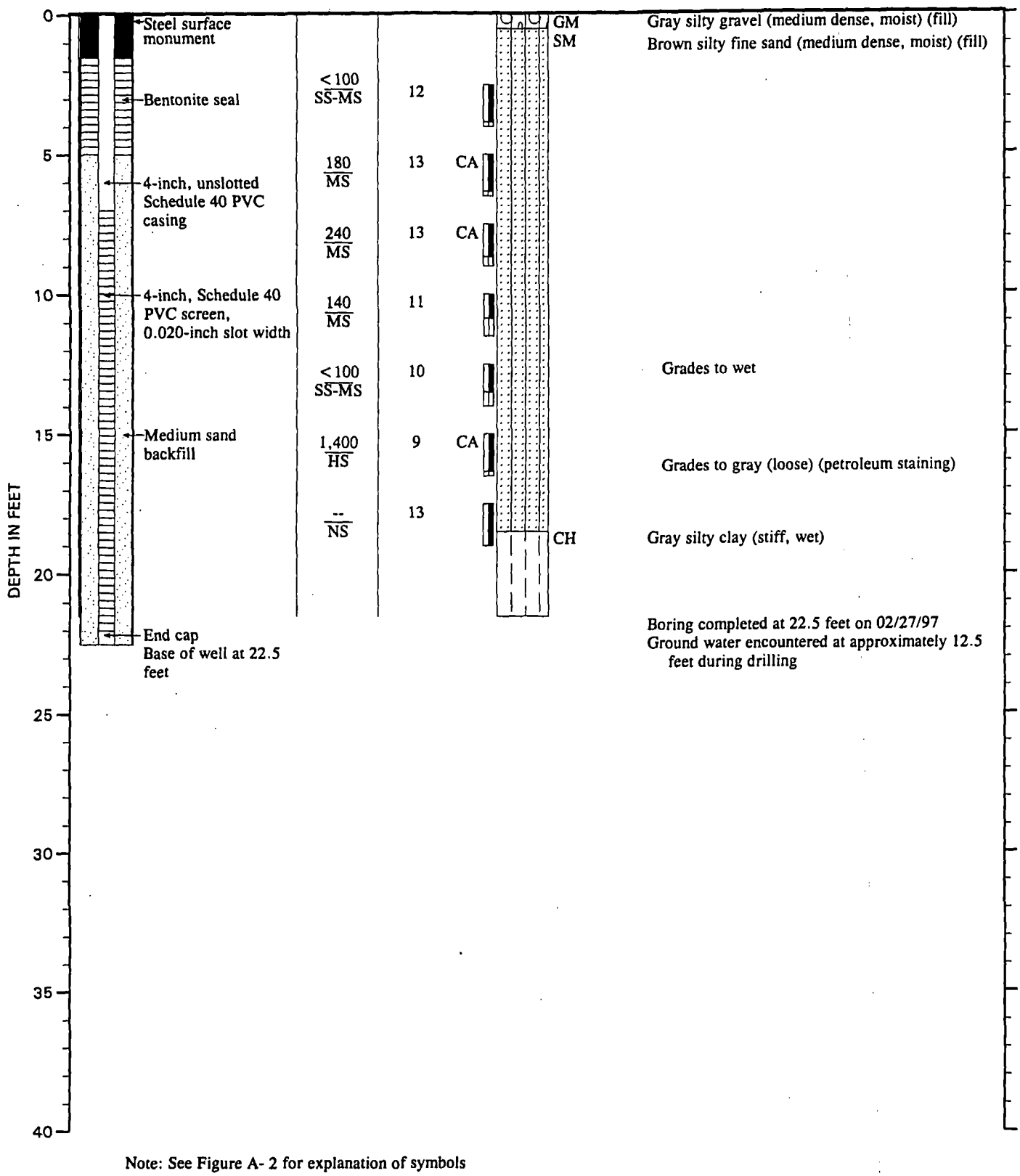
FIGURE A-4

COP0014021

RECOVERY WELL RW-3

WELL SCHEMATIC

Casing Elevation (ft.): 35.39
Casing Stickup (ft.): -0.82



Note: See Figure A- 2 for explanation of symbols

JF:PJS:MLN 3/21/97

0161-492-00-2150

Geo Engineers

LOG OF RECOVERY WELL

FIGURE A-5

COP0014022

No. 01886

Harbor Oil, Inc.

11535 N. Force Avenue • Portland, OR 97217
Phone: (503) 285-4648 • Fax: (503) 285-9521

MATERIALS RECIEPT

nerator UNOCAL Date 2/23/97

dress PORTLAND

ansporter CET Purchase Order No. 05-97-P0119

uck No.

ailer No.

oduct GASOLINE + H2O			Gals Loaded	OFFICE USE ONLY	
				Unit Price	
				Product	Sub Total
PI	Weight	HAL	Gross Gals		
EMP	GROSS	DIST	Net Gals	Freight	Sub Total
PR CTOR	TARE	SW	550 GAS		
L	NET	SS	1000 H2O	Tax	Sub Total
EMARKS:					
4092-000				Hours	Sub Total
				TOTAL	

IVER Brad Rudhnyk RECEIVED BY

White: Customer Canary: Office Pink: Billing Goldenrod: Yard

COP0014023

UNOCAL MATERIAL SAFETY DATA SHEET

Unocal Corporation
1201 West 5th Street
Los Angeles, California 90017

Product Name: Unocal 76 Super Gasoline
Product Code: 00201

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: Unocal 76 Super Gasoline
Product Code: 00201
Generic Name: Leaded gasoline
Chemical Family: Petroleum Hydrocarbon Mixture

Responsible Party: 76 Products Company
Union Oil Company of California
1201 West 5th Street
Los Angeles, California
90017

For further information contact Help Desk
8am - 4pm Pacific Time, Mon - Fri: 213-977-7589

EMERGENCY OVERVIEW

24 Hour Emergency Telephone Numbers:

For Chemical Emergencies:	Health Emergencies for Unocal/UNO-VEN Products:
Spill, Leak, Fire or Accident	Los Angeles Poison
Call CHEMTREC - Day or Night	Information Center
(800)424-9300	Cont. US: (800)356-3129
AK, HI (202)483-7616 (collect)	Outside US: (213)222-3212

Health Hazards: May be harmful or fatal if swallowed. Aspiration hazard. Possible cancer hazard based on animal data. Causes moderate to severe skin irritation. Causes eye irritation. Use ventilation adequate to keep exposures below recommended exposure limits, if any (see Section 2 of MSDS). Avoid breathing vapor or mist. Avoid contact with eyes, skin and clothing. Do not taste or swallow. Wash thoroughly after handling.

Physical Hazards: Extremely flammable liquid and vapor. Vapor can cause flash fire. Keep away from heat, sparks, flames, or other sources of ignition (e.g., static electricity, pilot lights, mechanical/electrical equipment).

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w Physical Form: Liquid
w Appearance: Red
w Odor: Gasoline

NFPA HAZARD CLASS: Health: 1 (Slight)
Flammability: 3 (High)
Reactivity: 0 (Least)

2. COMPOSITION/INFORMATION ON INGREDIENTS

HAZARDOUS COMPONENTS	% WEIGHT	EXPOSURE GUIDELINE		
		Limits	Agency	Type
Gasoline	89-100	300 ppm	ACGIH	TWA
CAS# None		500 ppm	ACGIH	STEL
		300 ppm	OSHA	TWA
		500 ppm	OSHA	STEL
		300 ppm	Cal.OSHA	TWA
		500 ppm	Cal.OSHA	STEL
Xylenes	1-21	100 ppm	ACGIH	TWA
CAS# 1330-20-7		150 ppm	ACGIH	STEL
		100 ppm	OSHA	TWA
		150 ppm	OSHA	STEL
		100 ppm	MSHA	TWA
		100 ppm	Cal.OSHA	TWA-SKIN
		150 ppm	Cal.OSHA	STEL-SKIN
		300 ppm	Cal.OSHA	CEIL-SKIN
Toluene	1-15	50 ppm	ACGIH	TWA-SKIN
CAS# 108-88-3		100 ppm	OSHA	TWA
		150 ppm	OSHA	STEL
		100 ppm	MSHA	TWA
		100 ppm	Cal.OSHA	TWA-SKIN
		150 ppm	Cal.OSHA	STEL-SKIN
		500 ppm	Cal.OSHA	CEIL-SKIN
Methyl tert-Butyl Ether	0-11	40 ppm	ACGIH	TWA
CAS# 1634-04-4		100 ppm	AIHA	TWA
1,2,4-Trimethyl Benzene	1-5	25 ppm	ACGIH	TWA
CAS# 95-63-6		25 ppm	OSHA	TWA
		25 ppm	MSHA	TWA
		25 ppm	Cal.OSHA	TWA
Benzene	1-5	10 ppm	ACGIH	TWA
CAS# 71-43-2		1 ppm	OSHA	TWA
		5 ppm	OSHA	STEL

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		25 ppm	MSHA	CEIL-SKIN
		1 ppm	Cal.OSHA	TWA-SKIN
		5 ppm	Cal.OSHA	STEL-SKIN
Ethyl Benzene	1-5	100 ppm	ACGIH	TWA
CAS# 100-41-4		125 ppm	ACGIH	STEL
		100 ppm	OSHA	TWA
		125 ppm	OSHA	STEL
		100 ppm	MSHA	TWA
		100 ppm	Cal.OSHA	TWA
n-Hexane	0-4	50 ppm	ACGIH	TWA
CAS# 110-54-3		50 ppm	OSHA	TWA
		50 ppm	Cal.OSHA	TWA
Tetraethyl Lead	0.1 gm/gal	0.1 mg/m3	ACGIH	TWA-SKIN
CAS# 78-00-2		0.07 mg/m3	OSHA	TWA-SKIN
		0.1 mg/m3	MSHA	TWA-SKIN
		0.07 mg/m3	Cal.OSHA	TWA-SKIN

Note: OSHA exposure limits adopted in 1989 were vacated by the U.S. Court of Appeals. OSHA PEL's listed above (if any) may be included in those that were overturned, but are provided as guidance. Enforceable limits may be less stringent or not yet established.

3. HAZARDS IDENTIFICATION

POTENTIAL HEALTH EFFECTS:

Eye: Eye irritant. Contact may cause stinging, watering, redness, and swelling.

Skin: Skin irritant. Contact may cause redness and burning of the skin. Prolonged or repeated contact may cause drying and cracking of the skin, burns, and severe skin damage. No harmful effects from skin absorption have been reported.

Inhalation (Breathing): Low to moderate degree of toxicity by inhalation.

Ingestion (Swallowing): Low to moderate degree of toxicity by ingestion. ASPIRATION HAZARD - This material can enter lungs during swallowing or vomiting and cause lung inflammation and damage.

Signs and Symptoms: Effects of overexposure may include irritation of the nose and throat, irritation of the digestive

tract, coughing, nausea, flushing, diarrhea, signs of nervous system depression (e.g., headache, drowsiness, dizziness, loss of coordination, and fatigue), blurred vision, shortness of breath, respiratory failure, unconsciousness, convulsions and death.

Cancer: Possible human cancer hazard (see Sections 11 and 14).

Target Organs: Inadequate evidence available for this material. See Section 11 for target-organ toxicity information of individual components, if any.

Developmental: Inadequate evidence available for this material. See Section 11 for developmental toxicity information of individual components, if any.

Other Comments: Reports have associated repeated and prolonged occupational overexposure to solvents with permanent brain and nervous system damage (sometimes referred to as Solvent or Painters' Syndrome). Intentional misuse by deliberately concentrating and inhaling this material may be harmful or fatal.

Pre-Existing Medical Conditions: Conditions aggravated by exposure may include skin disorders and respiratory (asthma-like) disorders.

Exposure to high concentrations of this material may cause irregular heartbeats (arrhythmias). Persons with pre-existing heart disorders may be more susceptible to this effect (see Section 4 - Note to Physicians).

4. FIRST AID MEASURES

Eye: Move victim away from exposure and into fresh air. If irritation or redness develops, flush eyes with clean water and seek medical attention. For direct contact, hold eyelids apart and flush the affected eye(s) with clean water for at least 15 minutes. Seek medical attention.

Skin: Remove contaminated shoes and clothing, and flush affected area(s) with large amounts of water. If skin surface is damaged, apply a clean dressing and seek medical attention. If skin surface is not damaged, cleanse affected area(s) thoroughly by washing with mild soap and water. If irritation

or redness develops, seek medical attention.

Inhalation (Breathing): If respiratory symptoms or other symptoms of exposure develop, move victim away from source of exposure and into fresh air. If symptoms persist, seek immediate medical attention. If victim is not breathing, immediately begin artificial respiration. If breathing difficulties develop, oxygen should be administered by qualified personnel. Seek immediate medical attention.

Ingestion (Swallowing): Aspiration hazard: Do not induce vomiting or give anything by mouth because this material can enter the lungs and cause severe lung damage. If victim is drowsy or unconscious, place on the left side with the head down. If possible, do not leave victim unattended. Seek medical attention.

Note To Physicians: Exposure to high concentrations of this material (e.g., in enclosed spaces or with deliberate abuse) may be associated with cardiac arrhythmias. Epinephrine and other sympathomimetic drugs may initiate cardiac arrhythmias in persons exposed to this material. Other drugs with less arrhythmogenic potential should be considered. If sympathomimetic drugs are administered, observe for the development of cardiac arrhythmias.

5. FIRE FIGHTING MEASURES

Flammable Properties: Flash Point: -45xF (TCC)
OSHA Flammability Class: Flammable Liquid
LEL/UEL: No Data
Autoignition Temperature: No Data

Unusual Fire & Explosion Hazards: This material is extremely flammable and can be ignited by heat, sparks, flames, or other sources of ignition (e.g., static electricity, pilot lights, or mechanical/electrical equipment). Vapors may travel considerable distances to a source of ignition where they can ignite, flashback, or explode. May create vapor/air explosion hazard indoors, outdoors, or in sewers. Vapors are heavier than air and can accumulate in low areas. If container is not properly cooled, it can explode in the heat of a fire.

Extinguishing Media: Dry chemical, carbon dioxide, halon, or foam is recommended. Water spray is recommended to cool or protect exposed materials or structures. Water may be ineffective for

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extinguishment, unless used under favorable conditions by experienced fire fighters. Halon may decompose into toxic materials. Carbon dioxide can displace oxygen. Use caution when applying halon or carbon dioxide in confined spaces.

Fire Fighting Instructions: Emergency responders in the danger area should wear bunker gear and self-contained breathing apparatus for fires beyond the incipient stage (29CFR 1910. 156). In addition, wear other appropriate protective equipment as conditions warrant (see Section 8). Isolate damage area, keep unauthorized personnel out. Stop spill/release if it can be done with minimal risk. Move undamaged containers from danger area if it can be done with minimal risk. Water spray may be useful in minimizing or dispersing vapors. Cool equipment exposed to fire with water, if it can be done with minimal risk. Avoid spreading burning liquid with water used for cooling purposes.

6. ACCIDENTAL RELEASE MEASURES

Extremely flammable. Keep all sources of ignition and hot metal surfaces away from spill/release. Use explosion-proof equipment. Stay upwind and away from spill/release. Isolate danger area and keep unauthorized personnel out. Stop spill/release if it can be done with minimal risk. Wear appropriate protective equipment including respiratory protection as conditions warrant (see Section 8). Prevent spilled material from entering sewers, storm drains, other unauthorized treatment drainage systems, and natural waterways. Dike far ahead of spill for later recovery or disposal. Use foam on spills to minimize vapors (see Section 5). Spilled material may be absorbed into an appropriate absorbent material. Notify fire authorities and appropriate federal, state, and local agencies. Immediate cleanup of any spill is recommended. If spill of any amount is made into or upon navigable waters, the contiguous zone, or adjoining shorelines, notify the National Response Center (phone number 800-424-8802).

7. HANDLING AND STORAGE

Handling: Open container slowly to relieve any pressure. Bond and ground all equipment when transferring from one vessel to another. Can accumulate static charge by flow or agitation. Vapor can be ignited by static discharge. The use of explosion-proof equipment is recommended and may be required

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(see appropriate fire codes). Do not enter confined spaces such as tanks or pits without following proper entry procedures such as ASTM D-4276 and 29CFR 1910.146. The use of respiratory protection is advised when concentrations exceed any established exposure limits (see Sections 2 and 8). Wash thoroughly after handling. Do not wear contaminated clothing or shoes. Use good personal hygiene practice.

"Empty" containers retain residue (liquid and/or vapor) and may be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, or other sources of ignition. They may explode and cause injury or death. "Empty" drums should be completely drained, properly bunged, and promptly shipped to the supplier or a drum reconditioner. All containers should be disposed of in an environmentally safe manner and in accordance with governmental regulations. Before working on or in tanks which contain or have contained this material, refer to Occupational Safety and Health Administration Regulations, ANSI Z49.1 and other governmental and industrial references pertaining to cleaning, repairing, welding, or other contemplated operations.

Storage: Keep container(s) tightly closed. Use and store this material in cool, dry, well-ventilated areas away from heat, direct sunlight, hot metal surfaces, and all sources of ignition. Post area "No Smoking or Open Flame." Store only in approved containers. Keep away from any incompatible material (see Section 10). Protect container(s) against physical damage. Outdoor or detached storage is preferred. Indoor storage should meet OSHA standards and appropriate fire codes.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering controls: If current ventilation practices are not adequate to maintain airborne concentrations below the established exposure limits (see Section 2), additional ventilation or exhaust systems may be required. Where explosive mixtures may be present, electrical systems safe for such locations must be used (see appropriate electrical codes).

Personal Protective Equipment (PPE):

Respiratory: The use of respiratory protection is advised when concentrations are expected to exceed the established exposure limits (see Section 2). Depending

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on the airborne concentration, use a respirator with appropriate cartridges (NIOSH approved, if available) or supplied-air equipment.

Skin: The use of gloves impermeable to the specific material handled is advised to prevent skin contact, possible irritation, and skin damage.

Eye/Face: Approved eye protection to safeguard against potential eye contact, irritation, or injury is recommended.

Other Protective Equipment: Eye wash and quick-drench shower facilities should be available in the work area. Thoroughly clean shoes and wash contaminated clothing before reuse. It is recommended that impervious clothing be worn.

9. PHYSICAL AND CHEMICAL PROPERTIES

Note: Unless otherwise stated, values are determined at 20xC (68xF) and 760 mm Hg (1 atm).

Flash Point: -45xF (TCC)
Flammable/Explosive Limits (%): No Data
Autoignition Temperature: No Data
Burn Rate (solids only): No Data
Appearance: Red
Physical State: Liquid
Odor: Gasoline
pH: No Data
Vapor Pressure (mm Hg): No Data
Vapor Density (air=1): >1
Boiling Point: 85-430xF/29-221xC
Freezing/Melting Point: No Data
Solubility in Water: Negligible
Specific Gravity: 0.80
Percent Volatile: 100 vol.%
Evaporation Rate (nBuAc=1): <1
Bulk Density: 6.67 lbs/gal

10.STABILITY AND REACTIVITY

Chemical Stability: Stable under normal conditions of storage and handling. Extremely flammable liquid and vapor. Vapor may

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cause flash fire.

Conditions To Avoid: Avoid all possible sources of ignition (see Sections 5 and 7).

Incompatible Materials: Contact with strong oxidizing agents such as chlorine, dichromates, or permanganates can cause fire or explosion.

Hazardous Decomposition Products: Combustion can yield major amounts of oxides of carbon and minor amounts of oxides of sulfur and nitrogen, benzene and other organic compounds.

Hazardous Polymerization: Will not occur.

11.TOXICOLOGICAL INFORMATION

Gasoline (CAS# None)

Carcinogenicity: Two year inhalation studies of wholly vaporized unleaded gasoline produced increased incidences of kidney tumors in male rats and liver tumors in female mice. Follow-up studies suggest that occurrence of the kidney tumors may be linked to alpha-2-u-globulin nephropathy, and most likely unique to the male rat. Epidemiology data collected from a study of more than 18,000 petroleum marketing and distribution workers showed no increased risk of leukemia, multiple myeloma, or kidney cancer from gasoline exposure. Unleaded gasoline has been identified as a possible carcinogen by IARC.

Because solvent extracts of gasoline exhaust particulates caused skin cancer in laboratory animals, IARC has categorized gasoline engine exhaust as a possible human cancer hazard.

Target Organ(s): A two year inhalation study of wholly vaporized unleaded gasoline produced nephropathy in male rats, characterized by the accumulation of alpha-2-u- globulin in epithelial cells of the proximal tubules, and necrosis and hyperplasia of surrounding cells. Follow-up studies have demonstrated that these changes are unique to the male rat.

Although prolonged exposure to n-hexane, a component of gasoline, has resulted in adverse male reproductive effects in experimental animal studies, no adverse male reproductive effects were found in studies conducted with gasoline.

Xylenes (CAS# 1330-20-7)

Target Organ(s): A six week inhalation study with xylene produced hearing loss in rats.

Developmental: Both mixed xylenes and the individual isomers produced limited evidence of developmental toxicity in laboratory animals. Inhalation and oral administration of xylene resulted in decreased fetal weight, increased incidences of delayed ossification, skeletal variations and resorptions.

Toluene (CAS# 108-88-3)

Target Organ(s): Intentional misuse by deliberate inhalation of high concentrations of toluene has been shown to cause liver, kidney and central nervous system damage, including hearing loss and visual disturbances. Subchronic and chronic inhalation studies with toluene produced kidney and liver damage, hearing loss and central nervous system damage (brain damage) in laboratory animals.

Developmental: Exposure to toluene during pregnancy has demonstrated limited evidence of developmental toxicity in laboratory animals. The effects seen include decreased fetal body weight and increased skeletal variations in both inhalation and oral studies.

Methyl tert-Butyl Ether (CAS# 1634-04-4)

Carcinogenicity: Chronic inhalation exposure of Fischer 344 rats to methyl tert-butyl ether (MTBE) vapors produced increased incidences of testicular interstitial cell adenomas at 400, 3000, and 8000 ppm and kidney tumors at 3000 and 8000 ppm. An increased incidence of liver tumors was reported in female CD-1 mice at 8000 ppm. MTBE has not been identified as a carcinogen by NTP, IARC, or OSHA.

Target Organ(s): A two-year inhalation study of MTBE produced an exposure related increase in incidence and severity of kidney changes indicative of chronic nephropathy. These changes were observed in males at 400, 3000, and 8000 ppm and to a lesser extent at 3000 and 8000 ppm in females.

Benzene (CAS# 71-43-2)

Carcinogenicity: Benzene is a known animal carcinogen and is known to produce leukemia in humans. Benzene has been identified as a human carcinogen by NTP, IARC and OSHA.

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Target Organ(s): Human exposure to benzene has been linked to bone marrow toxicity which can result in blood disorders such as leukopenia and aplastic anemia.

Developmental: Exposure to benzene during pregnancy has demonstrated limited evidence of developmental toxicity in laboratory animals. The effects seen include decreased body weight and increased skeletal variations in rodents. Alterations in hematopoeisis have been observed in the fetuses and offspring of pregnant mice.

Mutagenicity: Benzene exposure has resulted in chromosomal aberrations in human lymphocytes and animal bone marrow cells and DNA damage in mammalian cells in vitro.

n-Hexane (CAS# 110-54-3)

Target Organ(s): Excessive exposure to n-hexane can result in peripheral neuropathies. The initial symptoms are symmetrical sensory numbness and paresthesias of distal portions of the extremities. Motor weakness is typically observed in muscles of the toes and fingers but may also involve muscles of the arms, thighs and forearms. The onset of these symptoms may be delayed for several months to a year after the beginning of exposure. The neurotoxic properties of n-hexane are potentiated by exposure to methyl ethyl ketone and methyl isobutyl ketone.

Prolonged exposure to high concentrations of n-hexane (>1,000 ppm) has resulted in decreased sperm count and degenerative changes in the testes of rats but not those of mice.

12.DISPOSAL CONSIDERATIONS

This material, as produced, is not an EPA "listed" hazardous waste, but has not been evaluated using the Toxicity Characteristic Leaching Procedure. The EPA hazardous waste classification has not been determined.

Empty containers must be handled with care due to material residue. Empty drums should be completely drained, properly bunged, and promptly returned to the supplier or shipped to a drum reconditioner. All containers should be disposed of in an environmentally safe manner and in accordance with governmental regulations. Any rinsate may be considered RCRA hazardous waste and must be disposed of with care.

State and local requirements for waste disposal may be more restrictive or otherwise different from federal regulations. Consult state and local regulations regarding the proper disposal of this material.

13. TRANSPORT INFORMATION

DOT Proper Shipping Name / Technical Name: Gasoline
Hazard Class or Division: 3
ID #: UN1203
Packing Group: II

14. REGULATORY INFORMATION

This material contains the following chemicals subject to the reporting requirements of SARA 313 and 40 CFR 372:

COMPONENT	CAS NUMBER	WEIGHT %
Xylenes	1330-20-7	1-21
Toluene	108-88-3	1-15
Methyl tert-Butyl Ether	1634-04-4	0-11
1,2,4-Trimethyl Benzene	95-63-6	1-5
Benzene	71-43-2	1-5
Ethyl Benzene	100-41-4	1-5
n-Hexane	110-54-3	0-4
Tetraethyl Lead	78-00-2	0.1 gm/gal

WARNING: This material contains the following chemicals which are known to the State of California to cause cancer, birth defects or other reproductive harm, and are subject to the requirements of California Proposition 65 (CA Health & Safety Code Section 25249.5):

COMPONENT	EFFECT
Benzene	Cancer
Toluene	Developmental Toxicant
Unleaded Gasoline (wholly vaporized)	Cancer

Unleaded gasoline has been identified as a carcinogen by IARC. For carcinogenicity information on individual components, see Section 11. This material has not been identified as a carcinogen by NTP, IARC, or OSHA. For carcinogenicity information on individual components, see Section 11.

EPA (CERCLA) Reportable Quantity: --None--

Issue Date: 12/15/95 Status: Final Revised
Revised Sections: 1,2,3,11,12,15

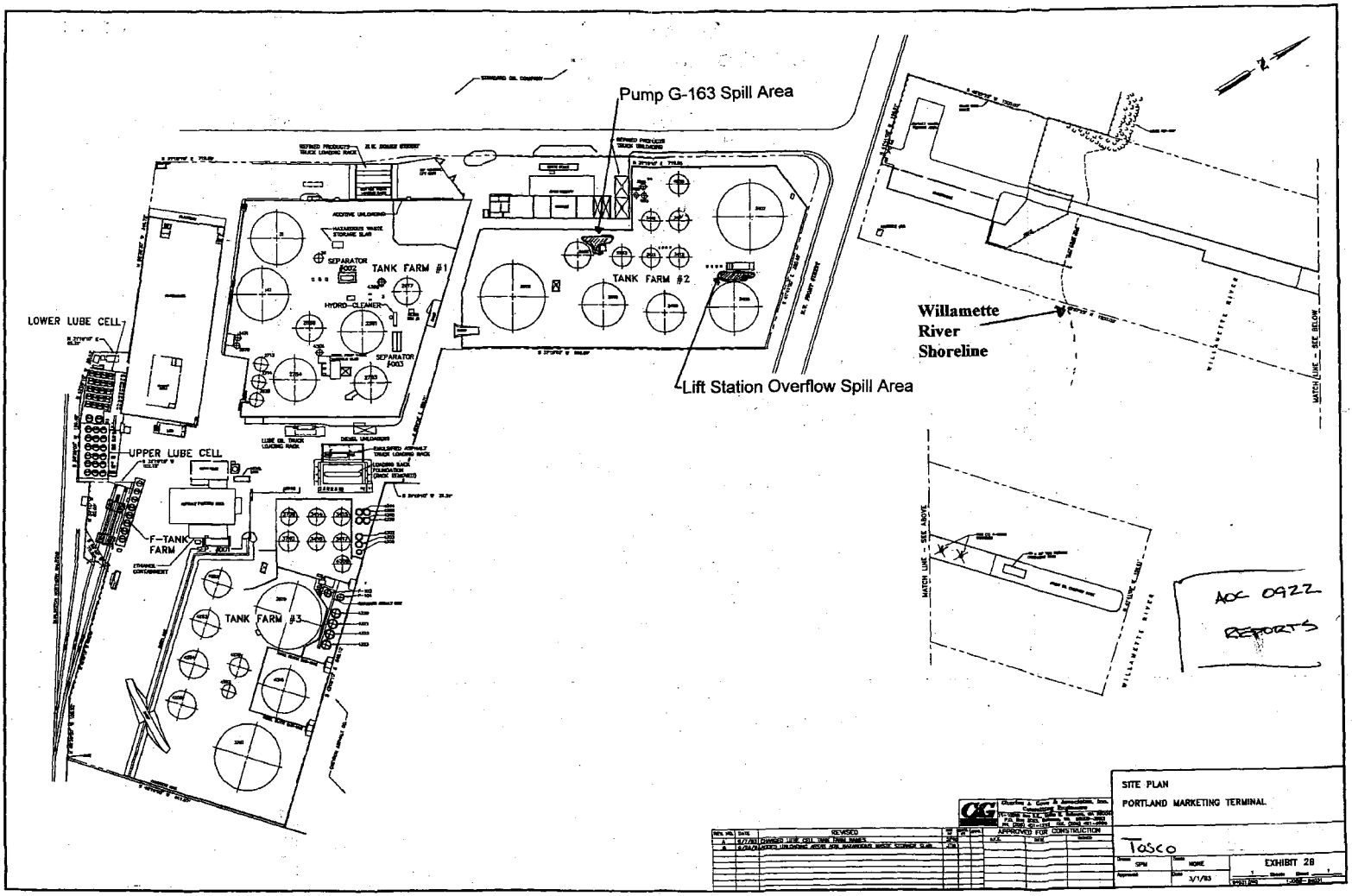
15.DOCUMENTARY INFORMATION

Issue Date: 12/15/95
Previous Issue Date: 02/07/95
Product Code: 00201
Previous Product Code: 00201

16.DISCLAIMER OF EXPRESSED AND IMPLIED WARRANTIES

The information in this document is believed to be correct as of the date issued. HOWEVER, NO WARRANTY OF MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE, OR ANY OTHER WARRANTY IS EXPRESSED OR IS TO BE IMPLIED REGARDING THE ACCURACY OR COMPLETENESS OF THIS INFORMATION, THE RESULTS TO BE OBTAINED FROM THE USE OF THIS INFORMATION OR THE PRODUCT, THE SAFETY OF THIS PRODUCT, OR THE HAZARDS RELATED TO ITS USE. This information and product are furnished on the condition that the person receiving them shall make his own determination as to the suitability of the product for his particular purpose and on the condition that he assume the risk of his use thereof.

COP0014036



C:\UNOCAL\94031\94031 Fri Feb 3 11:08:17 1995 PLOTTED BY JOHN

PACIFIC
ENVIRONMENTAL
GROUP INC.

AOC 0922
CORRESP.

April 17, 1997
Project No. 1105-003.3A

Department of Water Resources
Salem, Oregon
Attention Rob Carter

Dear Mr. Carter:

This letter accompanies a request for five start cards to be issued and filed with the Department. These five monitoring wells were installed as part of an emergency response at the Willbridge Bulk Terminal (Unocal facility) located in north Portland, in March of this year. Start cards were not filed with the Department at the time of installation due to the timing and nature of the emergency response.

CET Environmental Services, Inc. of Portland Oregon installed the monitoring wells. Five borings were advanced to the water table using a 3-inch OD hand auger. The water table was encountered between 12 and 13 feet below ground surface. The accompanied well completion diagrams and geotechnical data provide details on installation procedures. As requested by the Department, each individual start card is accompanied by a monitoring well report, a geotechnical hole report, and the start card request form.

If you should have any questions regarding this information, please do not hesitate to contact our office at (503) 639-6305.

Sincerely,

Pacific Environmental Group, Inc.

Mark A. Ochsner

Mark Ochsner

Project Hydrogeologist

Attachments: Start Card packet for B-1, B-2, B-3, B-4, and B-16.

7320 SW Hunziker Street, Suite 320, Portland, Oregon 97223 (503) 639-6305 FAX (503) 639-7482

COP0014038

TOSCO

5528 Doane Ave.
Portland, OR. 97210

AOC 0922
CORRESP.

May 30, 1997

John Holtrop
Environmental Tech
City of Portland Environmental Services
1211 SW 5th Avenue, Room 800
Portland, OR 97204-3713

Re: Follow-up Report on the Tank 3411 Spill Impacts to the Tosco Portland Terminal Stormwater System

Dear Mr. Holtrop:

In response to your recent conversation with Marty Cramer at the Portland Terminal, this letter is intended to advise you of the results of the stormwater monitoring conducted following the Tank 3411 overfill and resulting spill on February 22, 1997. As you are aware, the Tank 3411 spill resulted in approximately 1,600 gallons of gasoline entering the storm and process water collection systems with the majority going to the stormwater Separator 004 and the remainder to the process water Separator 003. Following recovery of the product from the separators, Separator 004 was drained and the drain lines feeding the separator from the spill area were flushed with water to remove residual gasoline.

Stormwater accumulating in Separator 004 was then periodically pumped to Separator 003 to be discharged to the municipal sanitary sewer system along with the terminal's process water. Per our agreement with Mr. Eric DeBerry of the City of Portland and yourself, this practice was to continue until we could confirm the effluent from Separator 004 did not contain elevated levels of hydrocarbons. And also remained within the limitations established in our stormwater permits (i.e., 10 mg/l oil and grease). Accordingly, the effluent from Separator 004 was sampled before and during transfers of stormwater to Separator 003 for the period between February 28 and March 11. The effluent from Separator 003 was also sampled during these periods to ensure there were no adverse impacts to the process water effluent.

As indicated on the attached analytical reports, the effluents from Separator 004 as well as Separator 003 were within the permitted limitations for oil and grease. Even the sample taken from Separator 004 the day after the spill occurred (i.e., February 23) found only 8.9 mg/l oil and grease. In addition, the dissolved hydrocarbon sensors installed at the discharge point of each separator were not triggered at anytime after the spill indicating the hydrocarbon concentrations were well below the effluent limits.

After Separator 004 was emptied and the connecting drain lines flushed with water, the oil and grease concentration in the discharge decreased from the 8.9 mg/l mentioned above to 3.146 mg/l. The concentration continued to decrease to approximately 1 mg/l on March 11, 1997. It was then determined there were no lingering effects from the spill that may impact compliance with our effluent limitations for Separator 004. Consequently, we resumed discharging the effluent to the municipal storm drain system along Doane Avenue.

I hope this information satisfies your requirements. If you have any questions or require additional information, please feel free to contact me at 248-1538 or Marty Cramer at 248-1517.

Sincerely,

Dennis Coey
Terminal Manger

Attachments

cc: Anita Rogers
Marty Cramer
Sandy Matthews
Larry Silva

OIL GREASE

PORTLAND TERMINAL LAB

OIL AND GREASE IN WATER TESTING

DATE TESTED 2/25/97

TANK 3411 INCIDENT

DATE	TIME	SEPERATOR #	pH	Grams per liter	mg/liter
2/23/97	1015	003 Final Box **	6.72	-64714.5000	######
2/23/97	1015	003	6.67	0.0251	25.055
2/23/97	1030	004 ✓	6.39	0.0089	8.901
2/25/97	0730	003 Final Box	6.74	0.0221	22.088
2/25/97	1410	003	6.15	0.0182	18.222
				0.0000	0.000
				0.0000	0.000
				0.0000	0.000
				0.0000	0.000
				0.0000	0.000
				0.0000	0.000
				0.0000	0.000
				0.0000	0.000
				0.0000	0.000
				0.0000	0.000
				0.0000	0.000
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				0.0000	0.000
				0.0000	0.000
				0.0000	0.000
				0.0000	0.000
				0.0000	0.000
				0.0000	0.000

** FINAL BOX OF 003 BEFORE GOING INTO FINAL BOX

** NO RESULTS--SAMPLE WAS CONTAMINATED WITH FIRE FOAM AND TEST COULD NOT BE COMPLETED

OIL GREASE

PORTLAND TERMINAL LAB

OIL AND GREASE IN WATER TESTING

2/28/97 Corrected

DATE TESTED ~~2/10/97~~

February 1997

DATE	TIME	SEPERATOR #	pH	Grams per liter	mg/liter
2/10/97	0945	Coos Bay	7.12	0.0033	3.265
2/13/97	0700	001	7.02	0.0037	3.656
2/13/97	0830	004 ✓	6.95	0.0042	4.194
2/19/97	1215	001	7.07	0.0040	4.022
2/19/97	1200	004 ✓	7.11	0.0036	3.587
2/28/97	1130	004 ✓	6.55	0.0031	3.146
2/28/97	1345	003 ✓	7.1	0.0022	2.198
2/25/97	0920	Coos Bay	7.07	0.0022	2.234
				0.0000	0.000
				0.0000	0.000
				0.0000	0.000
				0.0000	0.000
				0.0000	0.000
				0.0000	0.000
				0.0000	0.000
				0.0000	0.000
				0.0000	0.000
				0.0000	0.000
				0.0000	0.000
				0.0000	0.000
				0.0000	0.000
				0.0000	0.000
				0.0000	0.000
				0.0000	0.000
				0.0000	0.000
				0.0000	0.000

* Denotes multiple grab sample

PLEASE DELIVER THIS TO: TOM ADDLEMAN

OIL GREASE

PORTLAND TERMINAL LAB

OIL AND GREASE IN WATER TESTING

DATE TESTED **3/27/97**

March 1997

DATE	TIME	SEPERATOR #	pH	Grams per liter	mg/liter
3/3/97	0700	004 ✓	6.28	0.0027	2.727
3/3/97	0750	003	6.49	0.0071	7.097
3/3/97	1210	003	6.61	0.0096	9.565
3/3/97	1200	004 ✓	6.24	0.0028	2.826
3/3/97	1230	001	6.12	0.0079	7.935
3/4/97	1400	Recovery System	8.33	0.0006	0.575
3/4/97	1400	003	6.42	0.0084	8.370
3/5/97	1230	003	6.53	0.0028	2.778
3/6/97	1330	003	6.25	0.0114	11.444
3/7/97	0730	004 ✓	6.12	0.0013	1.319
3/7/97	0900	003	6.51	0.0079	7.872
3/11/97	0900	001	6.45	0.0018	1.809
3/11/97	1100	003	6.85	0.0076	7.609
3/11/97	0830	004 ✓	6.33	0.0010	1.011
3/19/97	1140	001	6.44	0.0005	0.549
3/19/97	1130	004 ✓	6.7	0.0004	0.435
3/6/97	0915	COOS BAY	7.08	0.0012	1.224
3/20/97	0720	COOS BAY	7.04	0.0029	2.887
3/26/97	1230	001	6.49	0.0015	1.512
3/26/97	1230	004 ✓	6.72	0.0043	4.324
				0.0000	0.000
				0.0000	0.000
				0.0000	0.000
				0.0000	0.000
				0.0000	0.000

* Denotes multiple grab sample

PLEASE DELIVER THIS TO: TOM ADDLEMAN

Tosco Distribution Company
A Division of Tosco Corporation
Portland Terminal
5528 Northwest Doane Avenue
Portland, Oregon 97210
P.O. Box 76
Portland, Oregon 97207

June 13, 1997

OERS Coordinator
Oregon Emergency Management
Department of State Police
595 Cottage Street NE
Salem, OR 97310

ADC 0922
REPORTS
CORRECTED.

Re: Gasoline Spill on February 22, 1997

Dear OERS Coordinator:

This letter has been prepared as a supplement to our correspondence of March 27, 1997 wherein we provided a written follow up report associated with an 11,700 gasoline spill that occurred at the Portland Terminal on February 22, 1997. The March 27 letter was intended to satisfy most of the requirements of 40 CFR 355.40, Emergency Release Notification with the exception of describing the cause of the spill and the steps taken to prevent reoccurrence as the terminal's incident investigation had not yet been completed. Therefore, this letter addresses the outstanding release notification requirements and will be the final correspondence on this incident.

The incident occurred during the transfer of gasoline from Tank 3408 to Tank 3411 to ensure enough capacity was available in Tank 3408 to receive a pipeline shipment later that evening. The transfer began at 1415 hrs and continued through the normal terminal operator shift change which occurred at 1450 hrs. Although the new operator was made aware of the ongoing transfer operation, he became involved in another project at the terminal and lost track of time. Tank 3411 is equipped with a high level alarm but because the tank does not receive product directly from a vessel or pipeline, the alarm only enunciates in the terminal control room. The operator was the only one at the terminal and was involved in another task outside the control room at the time and did not hear the alarm. Tank 3411 began overfilling at approximately 1550 hrs and continued for about 10 minutes before the transfer was terminated. The spill was fully contained within the tank farm.

The terminal conducted a comprehensive investigation of the incident and concluded the cause to be primarily human error on the part of the operator. To prevent reoccurrence, the terminal is in the process of making modifications to both the equipment and operational procedures. These modifications include equipping all tanks with redundant high level alarms that enunciate both in the control room and throughout the terminal via strategically located horns. High level redundant alarms will be connected to the intertank pump controls, so that when high level status is active, the pumps will not operate. Tank to tank transfers are now conducted only during the

confines of the operator shift. If a transfer is not concluded by the end of the shift, it will be shutdown and the relieving operator will need to reactivate the transfer. Also, all operators have received refresher training on the revised intertank transfer procedures.

We have completed the operator training, tank transfer procedure revisions, and the high level horn enunciator installation. Our plan is to have the additional high level redundant alarms and transfer pump shutdown programming in place by the end of the third quarter of 1997.

If you have any questions or require additional information, please do not hesitate to contact me at (503) 248-1538.

Sincerely,

Dennis Coey
Terminal Manager

cc: Anita Rogers, Tosco
Marty Cramer, Tosco
Larry Silva, Tosco
Loren Garner, Oregon DEQ
Mike Zollitsch, Oregon DEQ

ADC 0922
CORRESP.

AUG. 12 INCIDENT REVIEW 8/12/97

VITO - FIRE ALARM WASN'T SOUNDED SOON ENOUGH
- MORE DIRECTION ON EVACUATION

DENNIS - ICS NOT SET UP

EVENTS

NEW TRUCKING COMPANY OFFLOADED BUNKER & CLOGGED LINE → SPILL RESULTED FROM LINE PRESSURE DURING DISCONNECT - JUST A FEW GALLONS SPILLED

ORIGINALLY THOUGHT CHECK VALVE FAILED BUT MATERIAL HAD 125°F POUR POINT AND CLOGGED LINE

TRIED OFFLOADING HOT RFO MONDAY BUT COULD NOT CLEAR LINE

NARROWED IT DOWN TO 14FT SECTION OF LINE THAT WAS PLUGGED

TUES - DISCUSSED USING TORCH TO HEAT LINE BUT ANITA SAID NO - MAINT. HOOKED UP A PORTABLE TANK AND PUMPED DIESEL INTO LINE AND USED TORCH TO HEAT LINE

- DIESEL HOSE RUPTURED AND IGNITED
- TWO ACETYLENE TANKS WERE INVOLVED IN FIRE
- OPERATORS WERE CALLING 911 & FIRE DEPART. & COULD NOT GET TO FIRE ALARM → MIKE FATON? HIT ALARM IN WAREHOUSE
- FIRE WAS OUT BY TIME FIRE DEPT ARRIVED BUT FOAMED AS PRECAUTIONAL MEASURE → FIRE WAS EXTINGUISHED WITH WATER USING WATER HOSE
- O^2 & ACETYLENE & FIRE EXTINGUISHER TANKS ARE EXPLODED
- HOSE ACTUALLY FAILED PROBABLY DUE TO FATIGUE AS IT HAD BEEN AROUND A WHILE BUT APPEARED IN GOOD SHAPE

→ COOLED DIESEL TANK FIRST ~~AND THEN~~ WHICH ALSO BEGAN EXTINGUISHING ~~LINE~~ FIRE SO FINISHED IT OFF.

COP0014046

RETEC

Baseline Ranking and Phase II Scope of Work

Former Unocal Terminals and Los Angeles Refineries Portland Terminal

Prepared by:

Remediation Technologies, Inc.
1011 S.W. Klickitat Way, Suite #207
Seattle, Washington 98134

RETEC Project No.: 3-2798-800

Prepared for:

TOSCO REFINING COMPANY
Avon Refinery
Martinez, California 94553

TOSCO

August 16, 1997

RETEC

1011 S.W. Klickitat Way
Suite 207
Seattle, WA 98134
(206) 624-9349
FAX (206) 624-2839

August 16, 1997

Mr. Max C. Boone
Coordinator, Groundwater Compliance Programs
Tosco Refining Company
Avon Refinery
1 Selano Way
Martinez, California 94553-1487

Dear Max:

Enclosed with this correspondence, please find three work products for the Los Angeles refineries and each of the terminals:

A. A Summary Table which describes the general Phase 2 scope. A cost and estimated schedule for completing the Phase 2 work at each facility is shown on this table.

B. A table which identifies the areas of concern, the proposed Phase 2 activity at each of these areas of concern, and the estimated cost for completing the Phase 2 work at the area of concern.

C. The Baseline Table which describes how we ranked the individual areas of concern to identify those areas where we recommend completing additional Phase 2 work.

The baseline tables will form the "living document" for each facility. We will provide you with electronic copies of all the baseline tables so that additional information can be added to these tables as it becomes available.

Project Approach

The basic approach to developing the cost estimate for Phase 2 was as follows:

1. The baseline data was screened using the ranking system discussed at our meeting of July 25. Based on the ranking, areas of concern were identified for each of the facilities.

2. A phase 2 scope of work was developed for each of the areas of concern.

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3. A cost estimate was developed for each of the Phase 2 scopes. This represents the maximum budget for each facility.

4. For each facility, we then evaluated how to reduce the scope of Phase 2 work and developed a minimum budget by either prioritizing areas of concern and/or minimizing the investigative effort at each area of concern.

Facility Ranking

The baseline areas for each facility were screened to evaluate whether the relative contribution related to former UNOCAL operations is "distinguishable or indistinguishable." The weight of evidence was also assessed. The screening process is further discussed in my memorandum of July 24, 1997.

In general, areas where the contribution is indistinguishable and there is low to moderate weight of evidence were selected as areas of concern for Phase 2 sampling.

Phase 2 Scope of Work

The Phase 2 scope of work for each of area of concern was minimized to the extent possible by using field screening techniques (geoprobe, soil gas surveys, hydropunch) and limiting the number of samples and indicator constituents. The Phase 2 scope did include a round of groundwater sampling at most sites which included analyzing water samples for MTBE. Soil gas surveys were selected for screening areas of concern which included underground process piping or sewers. One to two soil bores to a depth of 10 to 20 feet were scoped for tanks and process areas where the contribution was indistinguishable and there was a deep groundwater table.

Costs

We developed a standard template for costing Phase 2 activities using actual vendor quotes and our own experience. Investigation costs were increased by a factor of 30 percent to allow for report production, pre-mob activities and a contingency factor. This is our maximum recommended scope.

Once a total cost was developed for each facility, we reviewed the costs to determine if there were opportunities to reduce the scope by prioritizing the areas of concern or minimizing the scope of the investigative effort. In general, this reduced total costs at each facility by 50 to 60 percent and represents our minimum recommended scope. The range of costs for all the facilities is $243,000-$520,000. Table 1 summarizes the range of Phase 2 costs for each of the facilities. Attached to this letter is a summary table for each facility which summarizes the Phase 2 scope and costs. Detailed facility rankings and a breakdown of the scope for each area of concern is provided in the enclosed tables

We estimate that it will take seven separate teams to complete the Phase 2 sampling effort in a four week time frame. One for the Hawaii terminals, two for the northern California and northwest terminals and four teams for the Southern California terminals and refineries. I have made this a priority assignment for the company and will only assign individuals which have worked on the Phase 2 scoping effort to lead the Phase 2 work.

Follow-up Activities

We recommend meeting with each of the facility managers to review the enclosed tables and finalize a scope of work for each of the facilities. Please let me know how we can help in your review of this information.

Best Regards,

REMEDIATION TECHNOLOGIES, INC.

John R. Ryan
Vice President

JRR:hhj

Enclosure

cc: Meg George (w/ Wilmington Refinery and Terminal & Carson Volume)
Marty Cramer (w/ Northwest Terminals)
Dan T. (w/ California, Hawaii, Phoenix, and Savannah Terminals Volume)
Larry Silva (all volumes)
John Jengo
Chris Leuteritz
Steve Nelson
Dan Baker
Tom Tatnall
Halah Voges
RETEC File No. 3-2798

REIEC

Table 1 Summary of Phase 2 Costs

Site	Range of Costs Maximum	Minimum
Carson Refinery	$34,000	$11,000
Wilimington Refinery	$70,000	$42,000
Wilmington Terminal	$36,000	$26,000
Subtotal	$140,000	$79,000
Coos Bay	$7,000	$8,000
Portland	$26,000	$4,000
Ketchikan	$14,000	$0
Tacoma	$8,000	$3,000
Subtotal	$55,000	$15,000
Savannah	$21,000	$15,000
Phoenix	$13,000	$8,000
Torrance	$74,000	$30,000
Colton	$36,000	$10,000
Center St.	$19,000	$5,000
LAT West	$14,000	$13,000
LAT East	$11,000	$8,000
Sacramento	$19,000	$10,000
Richmond	$26,000	$14,000
Eureka	$15,000	$10,000
Honolulu	$23,000	$10,000
Kawaihae	$24,000	$7,000
Hilo	$11,000	$9,000
Brewer Chemical	$20,000	$0
Subtotal	$326,000	$149,000
TOTAL	**$521,000**	**$243,000**

Summary Table-Coos Bay Terminal

Age of Facility	Property Status	Level of Investigation	Cleanup Orders	Cost Estimate
62 yrs	Owned	Low to Moderate	None	$7,000 to $8,300

The recommendations for the Coos Bay Terminal are as follows:

- ***Although there is sufficient evidence for the major sources (above ground tanks), limited soil and groundwater investigations are recommended.***

- ***Existing groundwater analytical data is limited to one location on site and data from off site. Sampling existing wells is recommended along with collecting an additional four samples to establish evidence for a widespread plume. Groundwater should be analyzed for VOCs (including MTBE), lead, and TPH fingerprint.***

- ***The soil investigation should consist of a limited number of borings around miscellaneous sources (USTs, sumps and the oil/water separator, etc.) to establish evidence of shallow soil contamination in these potential source areas.***

The investigation could be decreased as follows:

- ***Only sample one of the three existing wells as they are all located in the same general area (savings of about $700).***

- ***Do not investigate soils around the oil/water separator or Sump No. 1 as they are in Tank Farm No.1 (savings of about $600).***

In addition to the described field investigation activities, the above cost estimates include mobilization, mapping field locations, collecting photographic evidence and basic documentation. Project management, laboratory analysis and documentation are incorporated in the field investigation costs. A breakdown by unit is provided in the attached Phase II Summary Table.

Summary Table-Ketchikan Terminal

Age of Facility	**Property Status**	**Level of Investigation**	**Corrective Action**	**Cost Estimate**
Varies 71 yrs	Owned	High - North of Stedman Low - South of Stedman	Yes - North of Stedman No - South of Stedman	$0-$14,000

The recommendations for the Ketchikan Terminal are as follows:

- ***No work over most of the area as either have high weight of evidence (tank farm), has been paved, concreted, service has changed or is an open area***
- ***Conduct a one-day soil gas survey or surface sampling program focused mainly south of Stedman in areas of continuing use***
- ***Verify soil removals in oil/water separator pond and ditch area to south by records check or collect samples to establish evidence that contamination still exists***
- ***Collect groundwater samples near shoreline to establish existence of groundwater contamination***
- ***The minimum recommendation would be to perform no Phase II work as there is already a substantial amount of evidence and the marginal gains may not justify the high mobilization costs***

Summary Table-Portland Terminal

Age of Facility	Property Status	Level of Investigation	Cleanup Orders	Cost Estimate
90 yrs	Owned	Moderate	Ongoing product recovery	$4,200 to $26,600

The recommendations for the Portland Terminal are as follows:

- *Gauging and sampling of wells to establish baseline conditions. Select 10 wells throughout site for sampling and analysis for volatiles, metals and either TPH or product fingerprinting to establish baseline conditions.*

- *Perform a soil vapor survey to collect evidence of soil contamination in source areas. A three-day effort is suggested for the three main tank farms (Tank Farms No. 1, 2 and 3), USTs and oil/water separators. Analyses would be performed for TPH as an indicator parameter on all samples (assume 36) and volatile organics, including MTBE, on samples (assume 18) collected near potential gasoline sources.*

- *Collect shallow soil samples by hand augering or other means around the rail road loading area (five locations) and lube cells (12 locations), field screen and submit one sample from each location for analysis. Rail road loading area samples should be analyzed for volatiles (including MTBE), semivolatiles, metals and TPH. Lube cell samples will only be analyzed for TPH.*

The investigation could be decreased as follows:

- *Soil vapor sampling effort could be readily decreased (reducing the scope to a one-day effort would decrease costs by $8,000).*

- *Considering the existence of free product and dissolved contamination and active recovery operations, soil investigation activities may not provide much benefit and could be skipped entirely ($19,000 savings).*

- *Well gauging could be dropped and groundwater sampling reduced to five wells (decrease of $3,000).*

In addition to the described field investigation activities, the above cost estimates include mobilization, mapping field locations, collecting photographic evidence and basic documentation. Project management, laboratory analysis and documentation are incorporated in the field investigation costs. A breakdown by unit is provided in the attached Phase II Summary Table.

Summary Table-Tacoma Terminal

Age of Facility	**Property Status**	**Level of Investigation**	**Corrective Action**	**Cost Estimate**
Varies 69 yrs	Owned	Moderate to High	Operating Remediation Systems	$3,000-$8,250

The recommendations for the Tacoma Terminal are as follows:

- ***Not much, if any, work required as there is a free product or dissolved plume beneath the area***
- ***A two-day shallow soil sampling effort could be conducted to establish evidence of sources in tank farm and by USTs and underground piping. Hand augering is suggested due to access limitations in most areas***
- ***Sample selected wells for VOCs including MTBE (if no data) and product fingerprinting***
- ***The minimum scope of work recommended would be to only perform the groundwater sampling of existing wells***

Summary Table-Portland Terminal

Age of Facility	Property Status	Level of Investigation	Cleanup Orders	Cost Estimate
90 yrs	Owned	Moderate	Ongoing product recovery	$4,200 to $26,600

The recommendations for the Portland Terminal are as follows:

- ***Gauging and sampling of wells to establish baseline conditions. Select 10 wells throughout site for sampling and analysis for volatiles, metals and either TPH or product fingerprinting to establish baseline conditions.***

- ***Perform a soil vapor survey to collect evidence of soil contamination in source areas. A three-day effort is suggested for the three main tank farms (Tank Farms No. 1, 2 and 3), USTs and oil/water separators. Analyses would be performed for TPH as an indicator parameter on all samples (assume 36) and volatile organics, including MTBE, on samples (assume 18) collected near potential gasoline sources.***

- ***Collect shallow soil samples by hand augering or other means around the rail road loading area (five locations) and lube cells (12 locations), field screen and submit one sample from each location for analysis. Rail road loading area samples should be analyzed for volatiles (including MTBE), semivolatiles, metals and TPH. Lube cell samples will only be analyzed for TPH.***

The investigation could be decreased as follows:

- ***Soil vapor sampling effort could be readily decreased (reducing the scope to a one-day effort would decrease costs by $8,000).***

- ***Considering the existence of free product and dissolved contamination and active recovery operations, soil investigation activities may not provide much benefit and could be skipped entirely ($19,000 savings).***

- ***Well gauging could be dropped and groundwater sampling reduced to five wells (decrease of $3,000).***

In addition to the described field investigation activities, the above cost estimates include mobilization, mapping field locations, collecting photographic evidence and basic documentation. Project management, laboratory analysis and documentation are incorporated in the field investigation costs. A breakdown by unit is provided in the attached Phase II Summary Table.

PHASE II SCOPE
AREAS OF CONCERN
PORTLAND TERMINAL, OREGON

Area of Concern	Phase II	Phase II Cost
Subsurface/ Groundwater	Gauge 30 existing wells, collect samples from 10 existing wells and analyze for VOCs, (including MTBE), lead and TPH and/or product fingerprinting to establish baseline.	5,400
Recovery Well Holbrook Recovery Trench	Gauge wells for FPLH thickness Gauge wells for FPLH thickness	300
Tank Farm #1 Includes Former Tanks 151, 712, 713, 714, 715, 716, 569, 1144, 1475, and "X"	Perform soil gas survey (assume 3 locations). Analyze 8 samples for TPH as indicator parameter and 6 for VOCs including MTBE near potential gasoline sources	2,700
Tank Farm #2	Perform soil gas survey (assume 8 locations). Analyze 8 samples for TPH as indicator parameter and 4 for VOCs including MTBE near potential gasoline sources.	2,700
Tank Farm #3 Drainage Ditch	Perform soil gas survey (assume 8 locations). Analyze 8 samples for TPH as indicator parameter and 4 for VOCs including MTBE near potential gasoline sources. Included in TF #3 investigation	2,700
Upper Lube Cell	Conduct soil sampling by hand augering or other means. Assume six locations with analysis of six samples for TPH	2,000
Lower Lube Cell	Conduct soil sampling by hand augering or other means. Assume six locations with analysis of six samples for TPH	2,000
Tank 4402 ATF Type F 15,000 gallons		
Tank 4403 Super IOW-40 15,000 gallons		
Tank 4404 Utility 15,000 gallons		
Tank 4405 Lubrizol 5191A 15,000 gallons		

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PHASE SCOPE
AREAS OF CONCERN
PORTLAND TERMINAL, OREGON
[Continued]

Area of Concern	Phase II	Phase II Cost
Underground Storage Tanks and Oil/Water Separators	Perform soil gas survey (one-day effort). Analyze 12 samples for TPH as an indicator parameter and 6 for VOCs including MTBE near potential gasoline sources.	4,000
Railroad Car Loading Area Former Shed	~~Five~~ hand auger borings to 5' depth. Analyze one sample from each for Four volatile organics, semivolatile organics, metals & TPH	3,000
	Subtotal Field Investigations	25,100
	Mobilization/Photodocumentation/Record Checks	1,500
	Total	26,600

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ENVIRONMENTAL BASELINE ASSESSMENT
AREAS OF CONCERN
PORTLAND TERMINAL, OREGON

Area of Concern	Basis of Concern	Weight of Evidence	Contribution	Risk of Corr. Action	Phase II
Historical Information	The Portland terminal construction commenced circa 1907; Tank Farm No. 1 area, including Tank Farm No. 4, was developed circa 1910; between 1925 and pre-1936, the garage and shops in the Tank Farm No. 2 area plus the wharf and the warehouse were present; the 1939 aerial photographs show Tank Nos. 2915 and 2916 present in Tank Farm No. 2 area, the now off-site (to the east) office building and auto repair shop were also present; between 1939 and 1941 the boiler house was erected, the warehouse/garage/shop building in Tank Farm No. 2 was enlarged to the northeast; between 1948 and 1951 Tank Farm No. 3 was partially developed; between 1967 and 1969 Tank Nos. 4252 and 4255 were installed and Tank Farm No. 3 was reconfigured; the asphalt plant was added between 1967 and 1969; between 1973 and 1974 a new warehouse was constructed in the Tank Farm No. 1 area; between 1984 and 1986 the garage/shop building in Tank Farm No. 2 was modified (decreased in size); between 1986 and 1990 the asphalt plant was partially dismantled				

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ENVIRONMENTAL BASELINE ASSESSMENT
AREAS OF CONCERN
PORTLAND TERMINAL, OREGON
[Continued]

Area of Concern	Basis of Concern	Weight of Evidence	Contribution	Risk of Corr. Action	Phase II
Subsurface/ Groundwater	On 1/21/79, 8,500 gallons of leaded regular gasoline was released from the filter check valve and contained in the separator system, 100 gallons may have entered the sanitary sewer; on 4/29/81, approx. 100 gallons of asphalt spilled from TK-4254 due to a tank leak; on 9/10/81, 310 gallons of RR-40 spilled from a tank overfill; on 6/22/82, 127 gallons of RRA-40 spilled from the underground flush tank due to an UST overfill; on 7/19/82, a product line cracked during annual pressure testing releasing 800 gallons; on 5/30/85, 370 gallons of ATF were released from TK-4388 due to a tank overflow; on 6/11/85, 3,000 gallons of fuel oil were released from a pipeline beneath Front Avenue due to a leak at a broken flange gasket, a 10-inch pipeline from TK-3579; on 3/14/86, approximately 1 barrel of asphalt spilled from TK-4318 due to a leak from the metering system; on 8/19/86, approximately 200 gallons of Oil (450 Neutral) leaked from a rupture of a heating vessel; on 9/20/86, two barrels of fuel oil spilled from the electric steam pumps behind loading rack in Tank Farm #1; on 4/15/88, 1,300 gallons of diesel leaked from the loading rack and was fully contained; on NA/8/89, 50 gallons of fuel oil spilled from TK-36 when a drain overflowed; on 7/18/89, 300 gallons of Acryloid spilled from a tank car and was contained; On 11/24/89, 3-5 barrels of fuel oil were spilled onto the ground from the steam pump; on 4/26/90, 72 gallons of unleaded were spilled from the loading rack due to an equipment malfunction, and was contained; on 3/8/93, 2,900 gallons of Lube oil were spilled from the Ramar 20/40 area due to an overflow and was contained; Olympic pipeline spilled 25 gallons of diesel on 6/10/84, UNOCAL cleaned up spill;	High: GW impacted and free product is present	Indistinguishable - potential for continuing releases		Gauge 30 existing wells, collect samples from 10 existing wells and analyze for VOCs, (including MTBE), and TPH and/or product fingerprinting to establish baseline.

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ENVIRONMENTAL BASELINE ASSESSMENT
AREAS OF CONCERN
PORTLAND TERMINAL, OREGON
[Continued]

Area of Concern	Basis of Concern	Weight of Evidence	Contribution	Risk of Corr. Action	Phase II
Subsurface/ Groundwater	5 gallons of diesel was lost from a line where a gasket blew; 4" diesel line leak; 3.5 gallons of diesel contaminated soil were affected; A seasonal average of free phase liquid hydrocarbons (FPLH) volume in the ground at the Willbridge Site is 45,500 gallons; Hydrocarbons in boring U4-A extended from the beginning of the saturated zone at approx. 15' and continued into the clay unit, where drilling was terminated at 31 feet; from 22 to 25.5', the boring contained significant amounts of FPLH in a medium to coarse sand; boring B-27A contained strong hydrocarbon odor throughout the saturated zone beginning at 15' and extending to the clay contact at 25.5'; the thickness of FPLH in the formation is estimated to be 0.16 feet; In 1987, a total fluids pneumatic diaphragm pump, intake 31 feet below top of casing, recovered <1 gallon of FPLH; reactivated in 1990 and 1991, a total fluids pneumatic diaphragm pump recovered an unknown volume of product; after the well was in operation, the amount of FPLH in the surrounding wells began to increase; this corresponds to the drop in the amount of FPLH collected by the RES; RES-New (a two pump liquid hydrocarbon recovery system) recovered 1,070 gallons of diesel in 1987; in 1988, 2,500 gallons of diesel were recovered; in 1989, 488 gallons of diesel were recovered; in 1990, 220 gallons of diesel				

COP0014061

ENVIRONMENTAL BASELINE ASSESSMENT
AREAS OF CONCERN
PORTLAND TERMINAL, OREGON
[Continued]

Area of Concern	Basis of Concern	Weight of Evidence	Contribution	Risk of Corr. Action	Phase II
Subsurface/ Groundwater (cont.)	were recovered; in 1991, 0.2 gallons of FPLH were recovered; total fluids pumping was performed in 1994; shut down in 8/1994; restarted FPLH recovery in 10/94 at approx. 10 gpm with extracted groundwater passing through an o/w separator; shallow tray air stripper, and activated carbon polishing before being discharged to the Willamette River under a NPDES permit; Concentrations of water samples collected from B-14 on 3/31/93 (B=540, T=27, E=380, X=110 ppb); on 6/20/94 (B=300, T=24, E=87, X=49 ppb); on 6/20/94 (PAHs=14.83 ppb); from B-24, there was 0.35' of FPLH in 1993; on 6/20/94 (PAHs=92.1 ppb); from B-27, located south of intersection along Front St., contained 1.45' FPLH in 1994; in 1991, 0.67' of FPLH was measured; from U-4 in Sept. 86, installed a pneumatic skimmer pump and recovered 1,600 gallons of product in three months; in 1992, approx. 28 gallons of product was collected; No. 2 diesel fuel accumulation was 9.51' in 1991, 4.3 feet in 1993; U-5 contained 0.65' of FPLH in 1991, 0.3' in 1994; Well RES-Old was installed as a 12-inch diameter recovery well in 1984; total fluids were pumped until Nov. 85 when it was shut down; well was restarted in March 1986; Sample collected from B-39 on 10/20/94 contained a mixture of No. 2 diesel and a small amount of motor oil/gear oil-type hydrocarbons; sample collected from B-24 contained No. 2 diesel-type hydrocarbons; sample from U-4 contained No. 2 diesel-type hydrocarbons; sample from U-5A contained a mixture of gasoline, kerosene/mineral spirits, and motor oil/gear oil type hydrocarbons; FPLH thickness in U-5A was 0.32 ft, U-5 FPLH thickness was 0.01 ft , B-39 thickness was 0.72 ft., B-40 thickness was 0.15 ft., B-1 thickness was 0.02 ft B-38 thickness was 1.25 ft., B-40 thickness was 0.12 ft., on 6/24/96;				

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ENVIRONMENTAL BASELINE ASSESSMENT
AREAS OF CONCERN
PORTLAND TERMINAL, OREGON
[Continued]

Area of Concern	Basis of Concern	Weight of Evidence	Contribution	Risk of Corr. Action	Phase II
Subsurface/ Groundwater (cont.)	The presence of FPLH appears to be associated with the former and current alignments of the Doane Ave. stormwater outfall and possible Holbrook slough; Wells B-1, B-4, and B-35 located in the dock area nearest the Old Doane Ave. storm drain alignment contained 0.15, 0.07, and 0.06 feet of FPLH, respectively (April measurement); Wells B-38, B-39, U-5, and RES-New appear to be connected to the New Doane Ave storm drain backfill material and contained 0.25, 0.08, 0.08, and 0.02 feet of FPLH, respectively; Volume of FPLH removed from May 1995 through August 1996 was 71.5 gallons On 2/22/97, approximately 11,670 gallons of 92 octane gasoline was released while transferring from Tank 3408 to Tank 3411; as of 2/23/97, 1,600 gallons were recovered				
Recovery Well	Unocal has been recovering petroleum hydrocarbon impacted groundwater from two recovery wells RES-old and REW-new from the site since 1980; One or both wells were deactivated in 1994; RES-new was reactivated in 10/94; in Jan. 1993, a total of 180 gal FPLH were recovered from RES-New; in Feb. 1993, a total of 2.2 gal were recovered; in Mar. 1993, a total of 221.8 gal were recovered; in Apr. 1993, a total of 107.5 gal were recovered; in May 1993, a total of 131 gal were recovered; in June 1993, a total of 38.7 gal were recovered; in July 1993, a total of 104.4 gal were recovered; in Aug. 1993, a total of 7.5 gal were recovered; from RES-Old, 17.53 gal were recovered in March 1993; 10.4 gal were recovered in April 1993; 21.1 gal were recovered in May 1993; 8 gal were recovered in June 1993; and 6.5 gal were recovered in July, 1993; Well RES-new was installed in 1987; Well RES-new was reconstructed on 12/15/92; reactivated and maintained recovery operations until summer 1994	High: Free product	Indistinguishable - potential for continuing releases	Active recovery well	Gauge wells for FPLH thickness
Holbrook Recovery Trench	The river stage controls operation of the Holbrook Slough Recovery Trench, located along the shoreline near the old Doane Avenue outfall location; the trench is shut off as the river rises above approx. 5 to 6 ft; approx. 700 gallons of FPLH was recovered by the trench during May-Oct. 1995	High: Free product	Indistinguishable - potential for continuing releases	Active recovery well	Gauge wells for FPLH thickness

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Area of Concern	Basis of Concern	Weight of Evidence	Contribution	Risk of Corr. Action	Phase II
Tank Farm #1 Includes Former Tanks 151, 712, 713, 714, 715, 716, 569, 1144, 1475, and "X"	The following structures and features were evident in a circa 1910 photograph: Tank Nos. 31 and 141, several tanks in the lower lube cell, the former Cooper Shop, the former boiler house, the former foamite tanks and foamite building, the former warehouse/drum platform, the pump house, and the former garage; A pre-1925 ground level photograph confirmed the presence of the above-mentioned features; In addition, seven tanks were located west from Tank No. 31 (adjacent to the former garage structure); Former Tank No. 1475 and the railroad loading/unloading rack were evident by 1925; it was removed between 1948 and 1951; Former Tank Nos. 712, 714, and 716 were removed between 1948 and 1951; at the same time a truck loading rack was erected; From circa 1966 to 1975, discolored soil was observed in the vicinity of Tank Nos. 569, 713, 151, 715, and "X"; Tank Nos. 569, 151, and "X" were removed by 1980; a possible liquid release to the south/southeast from Tank No. 715 was observed in 1980; Tank Nos. 715 and 713 had been removed by 1981; On 1/21/79, leaded regular gasoline spill of 8,500 gallons occurred in tank yard; contained in separator system; 100 gallons may have entered sanitary sewer; On 3/21/85, 150 gallons of industrial fuel oil (bunker oil) spilled near shore in tank farm #1, near office building along railroad; oil spilled into sump area around faulty pump and was cleaned up; On 9/20/86, two barrels of fuel oil spilled from the electric steam pumps behind loading rack in Tank Farm #1 On 11/24/89, 3 to 5 barrels of fuel oil released to the ground; most of the product recovered and pumped to a slop tank; gravel was steam washed; Tanks TK-36, TK-1471, TK-2579, TK-2784, and yard piping contain some lead paint; Stained gravel, visible product from valves and piping along concrete berm between tanks 2783 and 2784; staining on gravel below piping under valve; 500 gallon vapor recovery with knockout tank located in TF#1; standard tank bottom disposal practices; use of lead-based paint/primer and preparation practices;	Medium: Aerial photograph evidence and soil staining, reported releases mostly contained	Indistinguishable - potential for continuing releases	Active	Perform one day soil gas survey. Analyze samples for TPH as indicator parameter and for VOCs including MTBE near gasoline tanks

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Area of Concern	Basis of Concern	Weight of Evidence	Contribution	Risk of Corr. Action	Phase II
Tank Farm #1 [continued]	A thick oily accumulation lined surfaces in the Final Box Sump of the process water system; several leaks from the Black Oil Manifold were observed, the product flowed over concrete to a grated drain; an active leak was observed at an Oil Heater Unit north from Tank No. 36, the oil flowed to a drain within the concrete containment; localized hydrocarbon releases to gravel were noted northwest and southeast from the north and south sides of Process Water Separator 003; an oil pan was located beneath a leaking hose, which was attached to Tank No. 2783, the surrounding soil and gravel were heavily stained by hydrocarbons				
Tank 31 RFO 1,557,528 gallons	Constructed in 1907 of single-wall, riveted (bottom and shell) steel resting on a gravel pad; located in TF #1, insulated; 50 gallons of black oil was spilled during water draw operations onto the gravel; the gravel was shoveled into open top barrels and new gravel was spread; External inspection indicated number of leaks in the shell and around nozzles, a major leak is known to exist on the east side at an elevation of 18 feet; possible structural problems with the roof structural system; external corrosion above the insulation ring; parts of the tank are below grade; Corrugated steel removed from bottom 1' of tank with insulation showing, staining on gravel from valves from pipes behind tank; standard water bottom release practices; potential releases to subsurface through tank bottom	High: Product releases	Indistinguishable - potential for continuing releases	Active-90 year old tank	No

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Area of Concern	Basis of Concern	Weight of Evidence	Contribution	Risk of Corr. Action	Phase II
Tank 36 Slops 21,840 gallons	Constructed in 1907 of single-wall, riveted steel resting on a sand and gravel pad; located in TF #1, on NA/8/89, 50 gallons of fuel oil spilled from TK-36 when a drain overflowed Riveted shell; last painted 1988; base chime edge rusting; random impact damage with rusting substrate; breakdown starting to show at rivet seams; External inspection indicated two roof areas with severe deterioration and four thin areas; the shell had a number of 1-inch diameter bulges of an unknown nature; coating failure was noted in isolated areas around the entire perimeter of the tank; the tar seal around the tank perimeter has significantly deteriorated and there are several cavities in the foundation; the area is poorly graded; Sandblasted 9/86, water draw tank; slag present; standard water bottom release practices; potential releases to subsurface through tank bottom	Medium: Standard tank operations	Indistinguishable - potential for continuing releases	Active 90 year old slop tank	Included in TF #1 investigation
Tank 141 IFO 1,821,246 gallons	Construction in 1908 of single-wall, riveted (bottom and shell) steel resting on a sand pad and is located in TF #1; External inspection indicated number of leaks in the shell (especially along the seams) and around nozzles; possible structural problems with the roof structural system; severe external corrosion above the insulation ring and around two inlet nozzles; a short dike wall constructed against the tank shell; thin roof plates exist; insulated; Corrugated steel removed from bottom 1' of tank with insulation showing, staining on gravel from valves from pipes behind tank	Medium: Standard tank operations	Indistinguishable - potential for continuing releases	Active 89 year old IFO tank	Included in TF #1 investigation
Tank 1471 GDL 10W Guardol 10 19,448 gallons	Constructed in 1921 of welded steel; located in TF #1, concrete dike secondary containment; minor staining on pump pad; Riveted shell; last painted 1978; slight cracking and disbondment of topcoat; riveted seams starting to show coating breakdown with substrate rust; random impact damage visible on plate; Water draw tank, valve staining on gravel and concrete pad, scraped and painted 10-26-78; standard water bottom release practices; potential releases to subsurface through tank bottom	Medium: Standard tank operations	Indistinguishable - potential for continuing releases	Active 76 year old lube oil tank	Included in TF #1 investigation

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Area of Concern	Basis of Concern	Weight of Evidence	Contribution	Risk of Corr. Action	Phase II
Tank 2561 Cutter Stock Fuel Oil Black Oil Product 1,668,775 gallons	Constructed in 1929 of single-wall, riveted steel resting on a sand and gravel pad and is located in TF #1; Riveted shell; last painted 1986; existing coatings appear in good shape; only visible problem is leaching rivets; approximately 12 leaks randomly distributed around the tank; External inspection indicated number of leaks in the shell (at rivet heads and seams) and around nozzles; the roof structure has one corroded hole in it and two areas where the steel thickness is less than 0.1 inch; roof fitting number 1 is missing and there is evidence of product seepage; there are nine flat plates welded to the tank shell; portions of the shell and roof coating have failed; parts of the tank are below grade; the chime is heavily corroded with 1/16 inch thickness remain in some locations; Water draw tank, sand blasted on 8/15/86; standard water bottom release practices; potential releases to subsurface through tank bottom	High: Product releases	Indistinguishable - potential for continuing releases	Active 68 year old oil tank	Included in TF #1 investigation
Tank 2579 Guardol 10W 20,149 gallons	Welded Steel tank constructed in 1929; concrete dike secondary containment; Shell last painted in 1978; some cracking and disbondment of topcoats; random impact damage to flat plate; indication of lead paint; Water draw tank; minor staining on pump pad; standard water bottom release practices; potential releases to subsurface through tank bottom	Medium: Standard tank operations	Indistinguishable - potential for continuing releases	Active 68 year old lube oil tank	Included in TF #1 investigation
Tank 2669 Marine Diesel Black Oil Product 475,356 gallons	Welded steel tank constructed in 1931, concrete dike secondary containment; wetted soil from a possible product flow was observed at the piping located north and contiguous with the tank in 1963 aerial photograph; Riveted tank, regrade and recondition the entire tank perimeter; portions of the shell and the entire roof coating system have failed; tank shell is supported on a sand and gravel foundation pad; Riveted shell; last painted in 1985; some edge rusting at rivet seams and base chime area observed; Water draw tank, staining on gravel from two valves; pump pad near tank - observed staining on concrete, on pumps, no cracks; standard water bottom release practices; potential releases to subsurface through tank bottom	Medium: Aerial photograph evidence and soil staining	Indistinguishable - potential for continuing releases	Active 68 year old black oil tank	Included in TF #1 investigation

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Area of Concern	Basis of Concern	Weight of Evidence	Contribution	Risk of Corr. Action	Phase II
Tank 2783 Industrial Fuel Oil PS-300 Black Oil Product 984,486 gallons	Welded steel tank constructed in 1937, concrete dike secondary containment; insulated; discolored soil was observed north and northeast of tank in 1940 aerial photograph and east of the tank in 1968 aerial photograph; wetted soil was noted east of the tank in 1969 aerial photograph Approx. 4 gallons of black oil leaked from valve onto the ground; Flat bottom tank with welded bottom plates and riveted shell plates; the interior vertical riveted seams on the shell were visually examined, some of the seams appeared to have product wicking from between the plates; one external seam was exposed, the seam had apparently been leaking; the MFL identified topside (internal) corrosion in the form of general pitting; three small diameter pits approx. 0.1" deep were found; the tank foundation is below grade; On 3/2/95, 20 gallon release of black oil decant onto containment pad, approx. 5 gallons spraying onto ground; On 10/10/95, pressure relief system sprung a leak and 5 gallons sprayed out, 4 onto the pad and one onto the surrounding ground/gravel; On 11/3/95, product spraying from the pump G1B next to TK-2783; Approximately 5,200 gallons were released, 20% went to the separators and 80% on to the soil; Covered with corrugated steel, product staining along 10' of base, sandblast grit, staining on gravel from piping from tank; some buried and exposed wood saturated with product near tank; pump pad near tank saturated with product and the gravel around it was saturated; visible product from valves and piping along concrete berm between TK-2783 and TK-2784 and staining on gravel; some buried and exposed wood saturated with product near tank; pump pad near TK-2783 saturated with product and gravel around it was saturated; MW near TK-2783 (U-5A); standard water bottom release practices; potential releases to subsurface through tank bottom	High: Product releases	Indistinguishable - potential for continuing releases	Active 60 year old IFO tank	No

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Area of Concern	Basis of Concern	Weight of Evidence	Contribution	Risk of Corr. Action	Phase II
Tank 2784 Diesel No. 2 1,456,937 gallons	Welded steel tank constructed in 1937, concrete dike secondary containment; Discolored soil was noted northeast (1945) and north/contiguous to Tank No. 2784 (1961, 1971) and wetted soil was observed in 1977 (south/southwest from the tank); Riveted shell; last painted 1980; observed leaching rivets with most concentrated on bottom three rings; appears repairs were attempted unsuccessfully; most repairs continue to leak; most severe is in southside with product undercreep to surrounding coating with resulting blisters/cracking/ disbondment and leaching of product; Lap welded floor, butt and lap-riveted shell; few product side pit indications were detected on the tank bottom floor; the primary area with pits is located at the water draw line near the sump; an existing epoxy coat type liner has been applied over the corner weld and all vertical and horizontal shell (riveted) seams; light amounts of product at various locations along the shell to bottom area were seen, possibly surfacing from beneath the epoxy liner; 1'x 1' area of valve drip on gravel, water draw tank, scraped and painted 12/10/80, paint chips; observed staining on concrete and drains on pump pad next to tank; staining on concrete below diesel pump valve manifold slab next to tank 2784; visible free product from valves and piping along concrete berm between 2783 and 2784 and staining on gravel; standard water bottom release practices; potential releases to subsurface through tank bottom	High: Product releases	Distinguishable - <3 years since internal inspection	Active 60 year old diesel tank	No
Tank 2917 450 Neutral 650,160 gallons	Welded steel tank constructed in 1938, concrete dike secondary containment; Last painted in 1979; checking and cracking of coating system visible throughout with pinpoint rust starting to show on southside of tank; Observed severe breakdown on base chime; Scraped and painted 7/11/79, paint chips, water draw to concrete box, staining on gravel under piping to pump; standard water bottom release practices; potential releases to subsurface through tank bottom	Medium: Standard tank operations	Indistinguishable - potential for continuing releases	Active 59 year old 450 neutral tank	Included in TF #1 investigation

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Area of Concern	Basis of Concern	Weight of Evidence	Contribution	Risk of Corr. Action	Phase II
Tank 4318 Industrial Fuel Oil 1,504,000 gallons	Constructed in 1973 of welded steel; concrete dike secondary containment; insulated; ; on 3/14/86, approximately 1 barrel of asphalt spilled from TK-4318 due to a leak from the metering system Corrugated steel tank, visibly hardened product on asphalt skirt and gravel, water draw tank, sandblast grit; standard water bottom release practices; potential releases to subsurface through tank bottom	Medium: Standard tank operations	Indistinguishable - potential for continuing releases	Active 26 year old IFO tank	Included in TF #3 investigation
Tank 4369 Drying 20,000 gallons	Insulated; welded steel tank constructed in 1979, concrete dike secondary containment; Water draw tank, gravel around concrete pad stained and visible product observed; standard water bottom release practices; potential releases to subsurface through tank bottom	Medium: Standard tank operations	Indistinguishable - potential for continuing releases	Active 18 year old IFO tank	Included in TF #1 investigation
Tank 4441 Additive	Staining on pad from pump; pump pad and gravel area 1'x 1' stained from piping; potential releases to subsurface through tank bottom	Medium: Soil staining	Indistinguishable - potential for continuing releases	Active Additive tank	Included in TF #1 investigation

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Area of Concern	Basis of Concern	Weight of Evidence	Contribution	Risk of Corr. Action	Phase II
Tank Farm #2	Undeveloped in 1925; An office and auto repair shop was located southeast from Tank Farm No. 2; it was part of Unocal's property per Sanborn Maps, however the available terminal drawings and plans did not depict this area; the structures were razed by 1975; A Signal Oil Company Oil Warehouse was located southeast from Tank Farm No. 2 on the Sanborn Maps from circa 1941 to 1975; Product found leaking onto soils from an unused Diesel No. 2 line between TF#1 and TF#2 where the line enters tank farm #2; Tanks 2915 (top only), 2982, 3409, 3410, and 3411 contain some lead paint; Contained within concrete wall berms; slag; standard tank bottom disposal practices; use of lead-based paint/primer and preparation practices; Leaking flanges on the product pumps were evident, releases were observed throughout the concrete containment; a bucket that was full of product was located next to an empty bucket under a leaking pipe; stained rock and soil were observed around the bermed containment area; the valves at Tank No. 2983 were covered with oily material, the soil under the attached pipes was stained	High: Product releases	Indistinguishable - potential for continuing releases	Active 72 year old tank farm	One day soil gas survey. Analyze samples for TPH as indicator parameter and for VOCs including MTBE near gasoline tanks.
Tank 2915 Unleaded Internal Float 3,556,140 gallons	Welded steel tank constructed in 1938, concrete dike secondary containment; Last painted in 1978; topcoats starting to check and crack; small amount of topcoat disbondment with exposed primer; coatings exhibit heavy weathering; Butt welded cone roof tank; regrade and recondition the entire perimeter of the tank; portions of the shell and the entire roof coating system have failed; the tank has no grounding cables; the bottom shell course has a band of 1/64" to 1/32" deep pits scattered 360 degrees around the tank; there are isolated areas of coating failure; the tank shell is supported on a sand and gravel foundation pad; there is an asphalt seal which has deteriorated and pulled away from the chime; small excavation observed offsite from tank in 1939 aerial photograph Water draw tank, valve from tank to concrete box drain for water draw, sand blast chime area 1978, asphalt skirt; standard water bottom release practices; potential releases to subsurface through tank bottom	Medium: Standard tank operations	Indistinguishable - potential for continuing releases	Active 59 year old gasoline tank	Included in TF #2 investigation

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Area of Concern	Basis of Concern	Weight of Evidence	Contribution	Risk of Corr. Action	Phase II
Tank 2916 Diesel No. 2 1,716,960 gallons	Welded steel tank constructed in 1938, concrete dike secondary containment; Flat bottom tank, welded construction; the lower 1" to 2" of the shell exterior is heavily corroded and pitted; the tank foundation is below grade; the drainage around the tank is inadequate; Last painted in 1981; widespread checking and cracking of topcoats with visible and severe rusting of base chime area and shell bottom; Paint chips, painted 8/24/81, vault with underground piping, water draw valve into concrete box; standard water bottom release practices; potential releases to subsurface through tank bottom	Medium: Standard tank operations	Indistinguishable - potential for continuing releases	Active 59 year old diesel tank	Included in TF #2 investigation
Tank 2982 Heating Oil #1 478,800 gallons	Welded steel tank, 1941, concrete dike secondary containment; Tall flat bottom tank welded construction; the top shell course has some distortions due to the overfilling which took place in 1978; portions of the tank coating have failed; the tank foundation has eroded around some portions of the tank perimeter; in order to prevent further erosion, the tank base should be reconditioned; the chime is heavily corroded and pitted on the north side of the tank; the exterior corner weld is questionable; The shell is severely corroded all around approx. 4" to 6" up from the bottom; Two small holes within 2" of the bottom were discovered and/or created when the bottom was being sandblasted; the most severe corrosion occurs between vertical weld seams; there are no grounding cables; there is a hole in the bottom approximately 1' from the shell near the vertical seam weld; the hole was discovered when the epoxy coating was being sandblasted; Last painted 1979; severe checking and cracking of topcoats with rust bleed through on approx. 40%; lead indications; Painted 6/13/78, paint chips, water draw, staining on valve and gravel (fill line) in a 3'x3' area; concrete pump pad between TK-2982 and TK-2983 had staining on valves and pumps and concrete pad; standard water bottom release practices; potential releases to subsurface through tank bottom	Medium: Standard tank operations	Distinguishable - <3 years since internal inspection	Active 56 year old heating oil tank	No

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Area of Concern	Basis of Concern	Weight of Evidence	Contribution	Risk of Corr. Action	Phase II
Tank 2983 150 Neutral 315,420 gallons	Welded steel tank constructed in 1941, concrete dike secondary containment; Last painted 1985; Sandblasted 5/15/86; concrete pump pad between TK-2982 and TK-2983 had staining on valves and pumps and concrete pad; potential releases to subsurface through tank bottom; The valves at Tank No. 2983 were covered with oily material, the soil under the attached pipes was stained	Medium: Standard tank operations	Indistinguishable - potential for continuing releases	Active 56 year old 150 neutral oil tank	Included in TF #2 investigation
Tank 3407 Unleaded Internal Float 3,384,150 gallons	Welded steel tank constructed in 1949, concrete dike secondary containment; Floating roof tank; the coating on the shell has areas of deterioration; no tank grounding was located; the tank rests on a sand foundation; last painted 1986; Sandblasted 5/15/86, water draw to concrete box; standard water bottom release practices; potential releases to subsurface through tank bottom	Medium: Standard tank operations	Indistinguishable - potential for continuing releases	Active 48 year old gasoline tank	Included in TF #2 investigation
Tank 3408 Super Unleaded Internal Float 1,693,650 gallons	Welded steel tank constructed in 1949, concrete dike secondary containment; Internal float roof and vapor dome tank; the coating on the shell has areas of deterioration; the coating is completely gone approx. 2" above the corner weld and the plate has surface corrosion; no tank grounding; the tank rests on a sand foundation; the chime projection past the toe of the corner weld was measured with the minimum dimension equal to ¾", the minimum allowable by API is 1"; in 1991 the tank bottom pitting was repaired; Last painted 1985, base chime coating damaged during internal welding; overall condition of shell remains good with the exception of three small areas of breakdown on west side of tank; Sandblasted 7/11/85, water draw to concrete box; standard water bottom release practices; potential releases to subsurface through tank bottom	Medium: Standard tank operations	Indistinguishable - potential for continuing releases	Active 48 year old gasoline tank	Included in TF #2 investigation

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Area of Concern	Basis of Concern	Weight of Evidence	Contribution	Risk of Corr. Action	Phase II
Tank 3409 Ethanol Internal Float 1,150,800 gallons	Welded steel tank constructed in 1949, concrete dike secondary containment; Internal floating roof tank; the coating on the shell has areas of deterioration; no tank grounding was located; tank rests on a sand foundation; the tank is at grade or 1" below grade around the perimeter; Last painted 1981; widespread checking and cracking of topcoats with pinpoint rusting; edge rusting of base chime; lead indications; Painted 8/24/81, paint chips, two water draws to stained concrete box, truck valve to underground; standard water bottom release practices; potential releases to subsurface through tank bottom	Medium: Standard tank operations	Indistinguishable - potential for continuing releases	Active 48 year old ethanol tank	Included in TF #2 investigation
Tank 3410 Av Gas Internal Float 302,190 gallons	Welded steel tank constructed in 1949, concrete dike secondary containment; Last painting unknown; coating system adhesion is very poor with film thickness high; coating system exhibits blistering and cracking with rusting of substrate; lead indications; Scraped and painted 8/24/81, paint chips, water draw to concrete box; standard water bottom release practices; potential releases to subsurface through tank bottom	Medium: Standard tank operations	Indistinguishable - potential for continuing releases	Active 48 year old aviation gas tank	Included in TF #2 investigation
Tank 3411 Super Unleaded Internal Float 302,190 gallons	Welded steel tank constructed in 1949, concrete dike secondary containment; Last painting unknown; very poor condition of topcoats to old original lead primer; visible blistering and cracking with substrate rusting; paint chips, water draw to concrete box; standard water bottom release practices; potential releases to subsurface through tank bottom	Medium: Standard tank operations	Indistinguishable - potential for continuing releases	Active 48 year old gasoline tank	Included in TF #2 investigation

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Area of Concern	Basis of Concern	Weight of Evidence	Contribution	Risk of Corr. Action	Phase II
Tank 3412 Heating Oil #1? Ethanol? Internal Float 302,190 gallons	Welded steel tank constructed in 1948, concrete dike secondary containment; The bottom plate has significant thinning from soil side pitting; several spots of paint failure and corrosion were observed on the tank shell, piping, handrails, stairs, and chime ring; the grades around the tank are such that water does not drain away from the tank; there is excessive corrosion and erosion in the tanks chime ring; leaking packing was noted on valves; Water draw to concrete box, sandblasted 7/11/85; concrete pump pad between tanks 3412 and 3413 stained; standard water bottom release practices; potential releases to subsurface through tank bottom	Medium: Standard tank operations	Indistinguishable - potential for continuing releases	Active 49 year old heating oil tank	Included in TF #2 investigation
Tank 3413 Unleaded Internal Float 302,190 gallons	Welded steel tank constructed in 1949, concrete dike secondary containment; Concrete pump pad between TK-3412 and TK-3413 stained; standard water bottom release practices; potential releases to subsurface through tank bottom	Medium: Standard tank operations	Indistinguishable - potential for continuing releases	Active 49 year old gasoline tank	Included in TF #2 investigation
Tank 4259 Transmix Internal Float 230,160 gallons	Welded steel tank constructed in 1968, concrete dike secondary containment; Last painted 1981; widespread pinpoint rusting visible throughout shell coating; The shell coating has failed at numerous locations around the entire surface; the lowest three inches of the tank shell is lightly corroded and contains widely scattered 1/64" pits around the entire perimeter; the entire area had been covered by asphalt prior to inspection; no tank grounding cables were found; t 7 locations around the tank perimeter, the bottom plate lap seams which project past the tank shell were either not welded or had significant deterioration; the tank shell is supported on a gravel and sand foundation pad; the perimeter of the tank should be regraded to allow for proper drainage; Scraped 5/24/81, paint chips observed, water draw to concrete box, slag; standard water bottom release practices; potential releases to subsurface through tank bottom	Medium: Standard tank operations	Indistinguishable - potential for continuing releases	Active 29 year old transmix tank	Included in TF #2 investigation

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Area of Concern	Basis of Concern	Weight of Evidence	Contribution	Risk of Corr. Action	Phase II
Tank Farm #3	Tanks 3414, 3415, 3416, 3417, 3739, 3744, and yard piping contain some lead paint; Gravel saturated with product under piping between tanks 4252 and 4253; some gravel staining under piping between tanks 4254 and 4255; standard tank bottom disposal practices; use of lead-based paint/primer and preparation practices; Localized hydrocarbon stains were noted on the concrete and in the dirt at the water draw and valve for Tank No. 3761; the gravel was hydrocarbon-stained in and around the Railroad Loading/Unloading Racks; rainbow sheens were evident on various paved surfaces; localized areas of asphalt-like material were observed in and around the pipes at Tank No. 4256; localized hydrocarbon stains were observed around the Oil Heater Unit and beneath the valve for Tank No. 3579; a layer (several inches thick) of hydrocarbon residues was located in a concrete-lined pit at the Black Oil Truck Loading Rack; more than forty 55-gallon drums were stored on bare soil in the southeast corner of the yard area;	Medium: Soil staining	Indistinguishable - potential for continuing releases	Tank Farm #3	One day soil gas survey. Analyze samples for TPH as indicator parameter and for VOCs including MTBE near gasoline tanks.
Drainage Ditch	A drainage ditch extended from the northwest to southeast along a pipeway and terminated in a depression southwest from Tank 3761 (1970, 1971, and 1972); soil along the pipeway appeared discolored (possibly just wet); liquid ponded in the depression; the erosional feature was stained in 1972, and the ground was wetted in 1974	Medium: Soil staining	Indistinguishable - potential for continuing releases	Active Drainage ditch	Included in TF #3 investigation

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Area of Concern	Basis of Concern	Weight of Evidence	Contribution	Risk of Corr. Action	Phase II
Tank 3579 Industrial Fuel Oil 3,385,200 gallons Trench/Pit Depression/Pit	Constructed of welded steel in 1950; concrete dike secondary containment; Localized discolored soil was observed in the vicinity of the water draw on the south/southwest side of the tank in 1952 aerial photographs; wet flows were observed west from the tank in 1956 and 1957; wetted ground was observed west from the tank (1963); a depression with ponded liquid was at the east end of the containment area in 1964; A trench (possibly for tank bottom disposal) was located east from the tank in 1966; a pile of "clean" soil was also evident; dark to black staining was evident around the trench, especially to the southeast (general area of future Tank No. 4318); another depression/pit was noted southwest from the tank just inside an earthen containment dike; both pits were filled by the 1967 photograph date; There is an area of the shell ring where there are several thin thickness measurements; this could be a shell plate lamination or deep pits; water does not drain away from the tank; several spots of paint failure and corrosion were observed on the tank shell, piping, valves, heater, handrails, stairs, and chime ring; A 6" diameter lap welded patch plate was installed over the soil side pit in bottom plate; the shell to bottom corner plate was repaired; a lap welded patch plate over the ripple in bottom plate was installed; weld repair pits in bottom was done; two coats of epoxy liner were applied to bottom and lower 18" of shell; A total of 39 pits in the bottom plates were identified; a single soil side indication was located in bottom plate; tank sits on a sand foundation; insulated; Corrugated steel tank; valve staining on gravel, water draw tank, sand blast grit observed on ground surface; concrete pad pump had visible product, no cracks in concrete, some gravel staining; standard water bottom release practices; potential releases to subsurface through tank bottom	Medium: Aerial photograph evidence and soil staining	Distinguishable - <3 years since internal inspection	Active 47 year old IFO tank	No

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Area of Concern	Basis of Concern	Weight of Evidence	Contribution	Risk of Corr. Action	Phase II
Tank 3761 Diesel No. 2 3,385,200 gallons Drainage Ditch	Constructed in 1954 of welded steel; concrete dike secondary containment; 20 gallon diesel tank leak on 1/25/83; Ponded liquid was observed generally south/southeast from the tank in 1969, 1970, and 1972; A drainage ditch extended from the northwest to southeast along a pipeway and terminated in a depression southwest from Tank 3761 (1970, 1971, and 1972); soil along the pipeway appeared discolored (possibly just wet); liquid ponded in the depression; the erosional feature was stained in 1972; Flat bottom tank, welded construction; topside (internal) corrosion was identified in the form of general pitting; three small diameter holes were found; the tank sits on grade; the asphalt paving around the tank is higher than the tank bottom; Installed new tank bottom with secondary containment lining and leak detection; Cleaned and painted interior of new bottom and lower two feet of shell and columns; Last painted bottom course 1995, remainder of shell 1983; shell contains approximately ten coats of paint; the top five coats are severely checked and cracked and easily peels from the first five coats; Water draw to concrete box, cracked asphalt skirt, sandblasted 1983, staining from valve on skirt, crack, and gravel, painted 7/28/95, paint chips and sandblast grit observed on gravel; double bottom tank; standard water bottom release practices; potential releases to subsurface through tank bottom; Localized hydrocarbon stains were noted on the concrete and in the dirt at the water draw and valve for Tank No. 3761	High: Product releases	Distinguishable - <3 years since internal inspection	Active 43 year old diesel tank	No

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Area of Concern	Basis of Concern	Weight of Evidence	Contribution	Risk of Corr. Action	Phase II
Tank 4252 Out of Service 420,000 gallons	Constructed in 1968 of welded steel; concrete dike secondary containment; Flat bottom welded tank; several spots of paint failure and corrosion were observed on the tank shell, windgirder, piping, handrails, stairs, and chime ring; water does not drain way from the tank; sections of the tank bottom have excessive soil-side pitting; insulated; Diesel No. 2 release of 4 gallons, three to drip pans and absorbent pads, one to the ground surface from BP circulation line to tanks TK-4252 and TK-4253; Corrugated steel tank, asphalt skirt, staining on asphalt, sand blast grit; Earthen berms by tank TK-4252 had hardened product on berms and flowing towards the stormwater drain; standard water bottom release practices; potential releases to subsurface through tank bottom	High: Product releases and soil staining	Distinguishable – out of service	Inactive 29 year old tank	No
Tank 4253 Out of Service 420,000 gallons Depression/Pit Black Mound	Constructed in 1968 of welded steel; concrete dike secondary containment; The bottom has excessive soil side pitting which combined with product side corrosion caused the actual thickness of numerous areas of the tank bottom to be less than the minimum allowed by API, a new bottom is required; several spots of paint failure and corrosion were observed on the tank shell, flanges, and chime ring; water does not drain away from the tank; one hole was identified in the floor; severe plate thinning; Insulated; Diesel No. 2 release of 4 gallons, three to drip pans and absorbent pads, one to the ground surface from BP circulation line to tanks TK-4252 and TK-4253; Corrugated steel tank, asphalt skirt, staining on asphalt, sand blast grit; A depression/pit was noted north of the tank just inside an earthen containment dike; filled by the 1967 photograph date; A mound of black material was observed in the general location of this tank (pre-development) Standard water bottom release practices; potential releases to subsurface through tank bottom	High: Product releases and soil staining	Distinguishable – out of service	Inactive 29 year old tank	No

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Area of Concern	Basis of Concern	Weight of Evidence	Contribution	Risk of Corr. Action	Phase II
Tank 4254 Out of Service 420,000 gallons	Constructed in 1968 of welded steel; concrete dike secondary containment; insulated; On 4/29/81, asphalt release of 100 gallons from a tank leak; Corrugated steel tank, asphalt skirt, staining on asphalt, sand blast grit, water draw; standard water bottom release practices; potential releases to subsurface through tank bottom	High: Product releases	Distinguishable – out of service	Inactive 29 year old tank	No
Tank 4255 Out of Service 420,000 gallons	Constructed in 1968 of welded steel; concrete dike secondary containment; insulated; Corrugated steel tank, asphalt skirt, staining on asphalt, sand blast grit, gravel stained area 6'x 6'; standard water bottom release practices; potential releases to subsurface through tank bottom	Medium: Standard tank operations	Distinguishable – out of service	Inactive 29 year old tank	Included in TF #3 investigation
Tank 4256 Out of Service 420,000 gallons	Constructed in 1968 of welded steel; concrete dike secondary containment; insulated; Corrugated steel tank, water draw, gravel stained from valve, piping near tank, gravel saturated with product; standard water bottom release practices; potential releases to subsurface through tank bottom	Medium: Standard tank operations	Distinguishable – out of service	Inactive 29 year old tank	Included in TF #3 investigation
Tank 4257 Out of Service 420,000 gallons	Constructed in 1968 of welded steel concrete dike secondary containment; Last date painted 1979; shell coatings contain widespread coating breakdown with rust bleed through; Scraped and painted 7/11/79, water draw tank; standard water bottom release practices; potential releases to subsurface through tank bottom	Medium: Standard tank operations	Distinguishable – out of service	Inactive 29 year old tank	Included in TF #3 investigation
Tank 4281 MP ATF 20,000 gallons	Welded steel tank constructed of 1969, concrete dike secondary containment; Last painting unknown; topcoats heavily cracked and checked; Water draw, on concrete pad, paint chips observed; standard water bottom release practices; potential releases to subsurface through tank bottom	Medium: Standard tank operations	Indistinguishable - potential for continuing releases	28 year old ATF tank	Included in TF #3 investigation

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Area of Concern	Basis of Concern	Weight of Evidence	Contribution	Risk of Corr.A Action	Phase II
Tank 4306 150 Neutral 222,600 gallons	Constructed in 1971 of welded steel; concrete dike secondary containment 1971; flat bottom welded construction; the lower 1" to 2" of the shell exterior is heavily corroded and pitted; the deepest pit is 1/16"; inadequate site drainage; the tank sits on grade; Discoloration in the general area of Tank No. 4306 was noted in the 1972 aerial photograph; Last date painted 1986; severe coating breakdown at base of tank with disbonded coating and exposed substrate; small areas of spot rusting; Staining below water draw valve on concrete and gravel, paint chips observed on gravel, sandblasted 9/86; standard water bottom release practices; potential releases to subsurface through tank bottom	Medium: Aerial photograph evidence and soil staining	Indistinguishable - potential for continuing releases	Active 48 year old lube oil tank	Included in TF #3 investigation
Tank Farm-1A Containment Area	Subsurface impacted by surrounding tank farm events and product spillage on ground surface within this tank farm	High: Product releases	Indistinguishable - potential for continuing releases	Active	No
Tank 2713 UNIX AW 46 119,868 gallons	Welded steel tank constructed in 1937, concrete dike secondary containment; Last painted unknown; some slight topcoat peeling and cracking at bottom course weld seams; remainder exhibits heavy weathering; Spills on skirt and gravel in a 3'x 20' area, paint chips; potential releases to subsurface through tank bottom	High: Product releases			
Tank 2714 Guardol 15/40 119,868 gallons	Welded steel tank constructed in 1937, concrete dike secondary containment; Last painted 1979; observed slight checking and cracking of topcoat; Asphalt skirt, drip from valve onto skirt and gravel in a 3'x5' area, another two valve stains on skirt and gravel in a 1'x3' area, paint chips; potential releases to subsurface through tank bottom	High: Product releases			
Tank 3639 Guardol 30 132,300 gallons	Welded steel tank constructed in 1951, concrete dike secondary containment; Last painted 1979; some base chime edge rusting; observed slight checking and cracking of topcoats; coating weathered dull and streaked; Asphalt skirt around tank; 1' diameter valve drip, sandblasted 11/10/79, valve from tank to product line covered with product and onto ground covering a 5'x5' area; potential releases to subsurface through tank bottom	High: Product releases			

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Area of Concern	Basis of Concern	Weight of Evidence	Contribution	Risk of Corr. Action	Phase II
Tank Farm-2A Containment Area	Subsurface impacted by surrounding tank farm events and significant product spillage on ground surface within this tank farm	High: Product releases	Indistinguishable - potential for continuing releases	Active	No
Tank 3623 R224 Gas Slops 20,000 gallons	Welded steel tank constructed in 1950, concrete dike secondary containment; Last painted unknown; observed some rust scale at base chime underside; shell coating exhibits random small and widely scattered areas of blisters with rust underside; Hardened tar-like substance along outside of tank on concrete pad and ground, water draw tank to concrete box, paint chips; additive injection pumps on concrete tank near tank is very stained; process drain between TK-4327, TK-4223, and TK-3623 pump on concrete pad, much staining, water draw; additive injection pump on concrete pad near TK-3623 - very stained; standard water bottom release practices; potential releases to subsurface through tank bottom	Medium: Soil staining			
Tank 4223 Slop 20,000 gallons	Welded steel tank constructed in 1968, concrete dike secondary containment; Last painted unknown; shell coating contain widespread coating breakdown with blistering, disbondment, and rust bleed through; Water draw tank; process drain between TK-4327, TK-4223, & TK-3623 pump on concrete pad, much staining, water draw; standard water bottom release practices; potential releases to subsurface through tank bottom	Medium: Soil staining			
Tank 4327 R224W Gas Slops 10,000 gallons	Welded steel tank constructed in 1974, concrete dike secondary containment; Last painted unknown; base chime exhibits edge rusting; slight topcoat breakdown on horizontal weld seams; pealing paint; Paint chips observed on gravel, solid tar-like substance on concrete pad around tank bottom, drips to gravel; process drain between TK-4327, TK-4223, & TK-3623 pump on concrete pad, much staining, water draw; standard water bottom release practices; potential releases to subsurface through tank bottom	Medium: Soil staining			
Tank Farm-3A Containment Area	Subsurface impacted by surrounding tank farm events and product spillage on ground surface within this tank farm	High: Product releases	Indistinguishable - potential for continuing releases	Active	No

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Area of Concern	Basis of Concern	Weight of Evidence	Contribution	Risk of Corr. Action	Phase II
Tank F-103 Exxon White Oil 30,000 gallons	Constructed in 1973 of welded steel; concrete dike secondary containment; Coatings weathered, dull and streaked; minor impact damage with spot rusting; Water draw tank on concrete pad, sandblasted 7/10/82; standard water bottom release practices; potential releases to subsurface through tank bottom	Medium: Standard tank operations			
Tank F-104 Exxon White Oil Evergreen 100N 21,700 gallons	Constructed in 1973 of welded steel; concrete dike secondary containment; Coatings weathered, dull and streaked; minor impact damage with spot rusting; Concrete pad, sandblast grit, sandblasted 8/15/86; potential releases to subsurface through tank bottom	Medium: Standard tank operations			
Tank 4320 PS300 super motor oil 10W/30 previously: emulsified asphalt 42,000 gallons	Constructed in 1973 of welded steel; concrete dike secondary containment; insulated; pipe associated with tanks TK-4320 to TK-4323 leaked approx. 5 gallons of black oil (PS300) onto the soil; ½ drum of contaminated soil was removed; Tank sits on a grid of beams resting on grade; there is some minor mill scale visible; Corrugated steel tank on concrete pad, sandblast grit, gravel stained under valve; potential releases to subsurface through tank bottom	High: Product releases			
Tank 4321 PS300 Uniguide 46 previously: emulsified asphalt 42,000 gallons	Constructed in 1973 of welded steel; concrete dike secondary containment; Insulated; flat bottom tank, tank sits on a grid of beams resting on grade; there is some minor mill scale visible; Corrugated steel tank on concrete pad, sandblast grit; potential releases to subsurface through tank bottom	Medium: Standard tank operations			
Tank 4322 PS300 tractor fluid previously: emulsified asphalt 42,000 gallons	Constructed in 1973 of welded steel; concrete dike secondary containment; insulated; flat bottom tank, tank sits on a grid of beams resting on grade; there is some minor mill scale visible; Corrugated steel tank on concrete pad, sandblast grit; potential releases to subsurface through tank bottom	Medium: Standard tank operations			

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Area of Concern	Basis of Concern	Weight of Evidence	Contribution	Risk of Corr. Action	Phase II
Tank 4323 PS300 Super ATF previously: emulsified asphalt 42,000 gallons	Constructed in 1973 of welded steel; concrete dike secondary containment; insulated; flat bottom tank; tank sits on a grid of beams resting on grade; there is some minor mill scale visible; the settlement pattern is not in conformance with API levelness; Corrugated steel tank on concrete pad, sandblast grit; potential releases to subsurface through tank bottom	Medium: Standard tank operations			
Tank Farm-3B Containment Area	Subsurface impacted by surrounding tank farm events and product spillage on ground surface within this tank farm	High: Product releases	Indistinguishable	Active	
Tank 3414 190 Bright Stock 222,180 gallons	Constructed in 1949 of welded steel; concrete dike secondary containment; Tall flat bottom, welded construction tank; two areas of underside (external) corrosion beyond the threshold settings were located; the tank sits on grade; Last painted 1986; observed some tank settlement on base chime below asphalt; shell coating weathered, dull, and streaked; lead indication; Sand blasted 9/86, water draw staining on gravel; standard water bottom release practices; potential releases to subsurface through tank bottom	Medium: Standard tank operations		Active 43 year old bright stock tank	Included in TF #3 investigation

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Area of Concern	Basis of Concern	Weight of Evidence	Contribution	Risk of Corr. Action	Phase II
Tank 3415 Mineral Oil 90 Neutral 222,180 gallons	Constructed in 1949 of welded steel; concrete dike secondary containment; At the base of the tank near the corner weld and on the bottom extension the coatings are failing and areas of corrosion are developing; corrosion is developing near the manway, an area of bottom extension underside corrosion is evident; the asphalt apron has deteriorated; a bull plug is screwed in the bottom near the suction line, outside the tank in the area of this plug is where product residue is found; visual inspection of topside corrosion found 2 isolated areas of pitting corrosion and one mechanical loss; tank on grade w/asphalt apron, butt welded shell, lap welded bottom, built in 1949, last painted 1978, 0.5 to 1" of grade localized coating failure and corrosion of the corner weld area; the asphalt apron around several areas of the bottom is deteriorating and allowing runoff to accumulate around the bottom extension; at the base of the tank, near the corner weld and on the bottom extension the coatings are failing and areas of corrosion are developing; near the manway, an area of bottom extension underside corrosion was examined; outside the tank in the area of the bull plug product residue is found; topside corrosion found 2 isolated areas of pitting corrosion and one mechanical loss area; the bottom has edge settlement that exceeds API standards; Last painted 1986; observed some tank settlement at base chime below asphalt; shell coating weathered, dull, and streaked; lead indication; valves and ground below the valves were saturated and stained with product; Gravel stained below water draw valves, sand blasted 9/86; standard water bottom release practices; potential releases to subsurface through tank bottom	Medium: Standard tank operations		Active 48 year old mineral oil tank	

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Area of Concern	Basis of Concern	Weight of Evidence	Contribution	Risk of Corr. Action	Phase II
Tank 3416 150 Neutral 222,180 gallons	Constructed in 1949 of welded steel; concrete dike secondary containment; Wetted/stained soil was observed in the 1970 aerial photograph generally east/southeast from Tank Nos. 3416 and 3417; Repairs performed during 8/94: re-welding of interior corner weld, 360 degrees around; removing a section of a sketch plate containing an obsolete nozzle (bull plug); slotting a new section of floor plate to replace the section above; welding a 3'6"x3'6" bearing plate under roof support column; Observed small hole made by an existing weld defect; tank floor has puddle welding of minor pitting occurred and some repair of minor weld defects on the internal piping; Last painted 1978; observed severe breakdown at base chime; shell coating weathered, dull, and streaked; lead indication; Scraped and painted 8/17/78; water draw staining on gravel; standard water bottom release practices; potential releases to subsurface through tank bottom	Medium: Aerial photograph evidence		Active 48 year old lube oil tank	
Tank 3417 90 Neutral 222,180 gallons	Constructed in 1949 of welded steel; concrete dike secondary containment; Discolored soil was observed east/southeast from Tank No. 3417 in the 1969 aerial photograph; wetted/stained soil was observed in the 1970 aerial photograph generally east/southeast from Tank Nos. 3416 and 3417; Last painted 1986; observed some tank settlement - base chime below asphalt and partially covered with earth; shell coating is weathered, dull, and streaked; lead indication; Valves and gravel below valves stained, water draw tank, paint chips observed on ground surface, sand blasted 9/86; standard water bottom release practices; potential releases to subsurface through tank bottom	Medium: Aerial photograph evidence		Active 43 year old lube oil tank	

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Area of Concern	Basis of Concern	Weight of Evidence	Contribution	Risk of Corr Action	Phase II
Tank 3739 190 Bright Stock 226,800 gallons	Constructed in 1954; flat bottom tank, welded steel construction; concrete dike secondary containment; the lower 1" to 2" of the shell exterior is corroded and pitted; one borderline area of underside (external) corrosion was located; a ¼" lap welded patch plate was found on the interior which does not conform to API standard weld spacing requirements; Localized wetted soil was evident west from the tank extending to the pipeway (1956); Last painted 1978; observed some tank settlement - base chime below asphalt; severe breakdown at base of tank - coatings peeling with exposed rusted substrate; shell coating weathering with slight checking and cracking of topcoats; lead indication; Scraped and painted 8/17/78, water draw tank; some staining on gravel between tanks 3739 and 3749; standard water bottom release practices; potential releases to subsurface through tank bottom	Medium: Soil staining	Distinguishable - <3 years since internal inspection	Active 43 year old bright stock tank	No

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Area of Concern	Basis of Concern	Weight of Evidence	Contribution	Risk of Corr. Action	Phase II
Tank 3740 Lube Oil 450 Neutral 302,400 gallons	Constructed in 1954 of welded steel; concrete dike secondary containment; Discolored ground under the pipeway and southwest from Tank No. 3740 was observed in the 1954, 1964, 1975, and 8/4/90 aerial photograph; Repairs performed during 8/94 included removing a section of a sketch plate containing an obsolete nozzle; slotting a new section of floor plate to replace section mentioned above; welding a 3'6"x3'6" bearing plate under roof support column; repairing small areas of weld defects in the corner weld and several shell attachments; Flat bottom tank; approximately 3/32" deep pits were found on the interior south side of the shell near the bottom; approximately 3/32" deep pits were found on the bottom plate near the water draw; minor pits were found on the inside shell-to-bottom weld around the entire perimeter; the tank sits on grade; Last painted in 1978; observed some tank settlement on base chime below asphalt; base chime exhibits coating breakdown; severe checking and cracking with some rust bleed through; coating is weathered, dull, streaked; Sand blasted 9/86, scraped and painted 1978, water draw tank, staining on concrete and gravel; some staining on gravel between tanks TK-3739 and TK-3749; standard water bottom release practices; potential releases to subsurface through tank bottom	Medium: Aerial photograph evidence	Distinguishable - <3 years since internal inspection	Active 43 year old lube oil tank	No
Tank Farm-3C Containment Area	Subsurface impacted by surrounding tank farm events and product spillage on ground surface within this tank farm	High: Product releases	Indistinguishable - potential for continuing releases	Active	Included in TF #3 investigation
Tank 4244 Golden Bear 22 100 Oil 20,000 gallons	Constructed in 1968 of welded steel; concrete dike secondary containment; On concrete pad, water draw, spot blasted on 5/17/86; standard water bottom release practices; potential releases to subsurface through tank bottom	Medium: Standard tank operations			

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Area of Concern	Basis of Concern	Weight of Evidence	Contribution	Risk of Corr. Action	Phase II
Tank 4245 Drying Tank 20,000 gallons	Constructed in 1968 of welded steel; concrete dike secondary containment; insulated; Water draw to concrete box, stained around outside of concrete box on gravel, staining on concrete, stain on gravel under valve; standard water bottom release practices; potential releases to subsurface through tank bottom	Medium: Soil staining			
Tank 4258 Drying Tank 20,000 gallons	Constructed in 1968 of welded steel; concrete dike secondary containment Insulated; observed severe corrosion (rust scale) at and under base chime area; tank contains bare rusted pipe, valves, and outlets between tank and insulation jacket; Corrugated steel tank on concrete; potential releases to subsurface through tank bottom	Medium: Standard tank operations			
Tank 4266 Lube Oil Flush 20,000 gallons	Constructed in 1968 of welded steel; concrete dike secondary containment Last painted 1986; slight edge rusting at base chime and minor pinpoint rusting on the roof lip underside; Spot blasted 5/17/86, water draw on concrete pad; standard water bottom release practices; potential releases to subsurface through tank bottom	Medium: Standard tank operations			
Tank 4302 Drying Tank 20,000 gallons	Constructed in 1971 of welded steel; concrete dike secondary containment; insulated; Corrugated steel tank on concrete pad, staining on gravel around concrete, water draw; standard water bottom release practices; potential releases to subsurface through tank bottom	Medium: Soil staining			
Tank 4303 Drying Tank 20,000 gallons	Constructed in 1971 of welded steel; concrete dike secondary containment; insulated; Corrugated steel tank on concrete pad, staining on gravel around concrete, water draw; standard water bottom release practices; potential releases to subsurface through tank bottom	Medium: Standard tank operations			
Tank 4305 190 Bright Stock 10,000 gallons	Constructed in 1971 of welded steel; concrete dike secondary containment; insulated; Base chime area is exposed and does contain severe corrosion below insulation jacket; bare steel pipe and valves attached to the tank; Corrugated steel tank on concrete pad; potential releases to subsurface through tank bottom	Medium: Standard tank operations			

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Area of Concern	Basis of Concern	Weight of Evidence	Contribution	Risk of Corrs Action	Phase II
Tank Farm-F Containment Area	A 1994 aerial photograph depicted a flow signature from the tank farm which extended to the northeast; subsurface impacted by surrounding tank farm events and product spillage on ground surface within this tank farm	Medium: Aerial photograph evidence	Concrete pads and concrete containment	Active	No
Tank 4336 Utility 20,000 gallons	Welded steel tank located on concrete pad, constructed in 1973, concrete dike secondary containment; potential releases to subsurface through tank bottom	Medium: Standard tank operations			
Tank 4337 Utility 20,000 gallons	Welded steel tank located on concrete pad, constructed in 1973, concrete dike secondary containment; potential releases to subsurface through tank bottom	Medium: Standard tank operations			
Tank 4335 Unax AW 32WR 20,000 gallons	Welded steel tank located on concrete pad constructed in 1973, concrete dike secondary containment; potential releases to subsurface through tank bottom	Low Medium: Standard tank operations			
Tank 4436 Unax AW 68 20,000 gallons	Welded steel tank constructed in 1990, concrete dike secondary containment; On concrete pad, concrete dike secondary containment; potential releases to subsurface through tank bottom	Medium: Standard tank operations			
Tank 4437 Unax AW 68 20,000 gallons	Welded steel tank, 1990, concrete dike secondary containment; On 6/8/93, 0.5 gallon release of product to ground; On concrete pad, concrete dike secondary containment; potential releases to subsurface through tank bottom	High: Product releases			
Tank F-10 Utility 6,384 gallons	Welded steel tank constructed in 1954, concrete dike secondary containment; insulated; Corrugated steel on concrete footings; potential releases to subsurface through tank bottom	Medium: Standard tank operations			

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Area of Concern	Basis of Concern	Weight of Evidence	Contribution	Risk of Corr. Action	Phase II
Tank F-11 Utility 6,384 gallons	Welded steel tank constructed in 1954, concrete dike secondary containment; Corrugated steel on concrete footings, insulated, staining below tank; potential releases to subsurface through tank bottom	Medium: Standard tank operations			
Tank F-12 Utility 6,384 gallons	Welded steel tank constructed in 1954, concrete dike secondary containment; Corrugated steel on concrete footings, insulated, staining below tank; potential releases to subsurface through tank bottom	Medium: Standard tank operations			
Upper Lube Cell	Concrete pump area had staining on concrete, no visible cracks; piping in vault between tanks TK-4191 and TK-4281 and between tanks TK-4281 and TK-4332 had staining and sheen on surface; historical aerial photographs indicated three former storage tanks were located north of this unit; subsurface impacted by surrounding tank farm events and product spillage on ground surface within this tank farm	Medium: Soil staining	Indistinguishable - potential for continuing releases	Active	One-half day soil gas survey. Analyze samples for TPH as indicator parameter and for VOCs including MTBE near gasoline tanks
Tank 3741 Ramar 20/40 20,000 gallons	Welded steel tank constructed in 1954, concrete dike secondary containment; Water draw tank, paint chips observed on gravel, product on gravel and on concrete pad; on 3/8/93, 2,900 gallons of Lube oil were possibly spilled from this Ramar 20/40 area due to an overflow; potential releases to subsurface through tank bottom	High: Product releases			
Tank 3742 LS80/90 20,000 gallons	Welded steel tank constructed in 1954, concrete dike secondary containment; Insulated; Corrugated steel tank on concrete pad, hardened product on gravel, staining on concrete, paint chips observed on gravel; potential releases to subsurface through tank bottom	Medium: Soil staining			

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Area of Concern	Basis of Concern	Weight of Evidence	Contribution	Risk of Corr. Action	Phase II
Tank 3743 Hydraulic Tractor Fluid 20,000 gallons	Welded steel tank, constructed in 1954, concrete dike secondary containment; insulated; Corrugated steel tank on concrete pad, hardened product on gravel, staining on concrete, paint chips observed on gravel; potential releases to subsurface through tank bottom	Medium: Soil staining			
Tank 3744 Golden Bear 100 20,000 gallons	Welded steel tank constructed in 1954, concrete dike secondary containment; Last date painted unknown; base chime exhibits coating breakdown; lead indication; Tank located on concrete pad, paint chips observed on gravel, hardened product on gravel and concrete pad, staining; potential releases to subsurface through tank bottom	Medium: Standard tank operations			
Tank 3745 Acryloid 954 20,000 gallons	Welded steel tank constructed in 1954, concrete dike secondary containment; insulated; 300 gallons of additive released due to tank overfill; Water draw, corrugated steel tank on concrete pad, staining on gravel; standard water bottom release practices; potential releases to subsurface through tank bottom	High: Product releases			
Tank 3746 Paratorq 4509 20,000 gallons	Welded steel tank constructed in 1954, concrete dike secondary containment; insulated; Corrugated steel tank on concrete pad, water draw, staining on concrete pad and staining on gravel; standard water bottom release practices; potential releases to subsurface through tank bottom	Medium: Soil staining			
Tank 3747 Lubrizol 7916A HiTec 436 20,000 gallons	Welded steel tank constructed in 1954, concrete dike secondary containment; insulated; Corrugated steel tank on concrete pad, water draw tank, hardened product on gravel; standard water bottom release practices; potential releases to subsurface through tank bottom	Medium: Standard tank operations			
Tank 3757 HiTec 7330 Lub 9800F 20,000 gallons	Welded steel tank constructed in 1954, concrete dike secondary containment; insulated; Corrugated steel water draw tank on concrete pad; standard water bottom release practices; potential releases to subsurface through tank bottom	Medium: Standard tank operations			

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Area of Concern	Basis of Concern	Weight of Evidence	Contribution	Risk of Corr. Action	Phase II
Tank 3760 Golden Bear 100 20,000 gallons	Welded steel tank constructed in 1954, concrete dike secondary containment; insulated; Corrugated steel water draw tank on concrete pad, paint chips observed on gravel, stain on gravel; standard water bottom release practices; potential releases to subsurface through tank bottom	Medium: Standard tank operations			
Tank 4191 Lubrizol 4954W 20,000 gallons	Welded steel tank constructed in 1964, concrete dike secondary containment; insulated; Corrugated steel tank on concrete pad, water draw with staining on gravel below valve; standard water bottom release practices; potential releases to subsurface through tank bottom	Medium: Standard tank operations			
Tank 4192 TLA 555 HiTec 5755 20,000 gallons	Welded steel tank constructed in 1964, concrete dike secondary containment; Insulated; Corrugated steel tank on concrete pad, water draw, staining on pad and gravel, paint chips observed on gravel; standard water bottom release practices; potential releases to subsurface through tank bottom	Medium: Standard tank operations			
Tank 4241 Unax AW 32 20,000 gallons	Welded steel tank constructed in 1968, concrete dike secondary containment; Last painting unknown; topcoats exhibit checking, cracking, and peeling; Paint chips observed on gravel, concrete pad, staining on gravel below valve; potential releases to subsurface through tank bottom	Medium: Standard tank operations			
Tank 4242 Unax AW 32 20,000 gallons	Welded steel tank constructed in 1968, concrete dike secondary containment; Last painting unknown; topcoats exhibit checking, cracking, and peeling; tank on concrete pad, paint chips observed on gravel, staining on pad and gravel; potential releases to subsurface through tank bottom	Medium: Soil staining			
Tank 4243 PM 220 20,000 gallons	Welded steel tank constructed in 1968, concrete dike secondary containment; insulated; Staining on concrete pad and gravel, paint chips observed; potential releases to subsurface through tank bottom	Medium: Standard tank operations			
Tank 4332 MP ATF 20,000 gallons	Welded steel tank constructed in 1973, concrete dike secondary containment; Last painted unknown; shell coating weathered, dull, and streaked; Paint chips observed on gravel, tank on concrete pad; potential releases to subsurface through tank bottom	Medium: Standard tank operations			

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Area of Concern	Basis of Concern	Weight of Evidence	Contribution	Risk of Corr. Action	Phase II
Tank 4333 Hydraulic AW 46 20,000 gallons	Welded steel tank constructed in 1973, concrete dike secondary containment; Last painted unknown; some peeling topcoat visible; Tank on concrete pad, stained pad and gravel, paint chips; potential releases to subsurface through tank bottom	Medium: Standard tank operations			
Tank 4334 Hydraulic AW 32/68 20,000 gallons	Welded steel tank constructed in 1973, concrete dike secondary containment; Last painted unknown; finish coat weathered, dull and streaked with scattered impact damage; Tank on concrete pad, stained pad and gravel; potential releases to subsurface through tank bottom	Medium: Standard tank operations			
Lower Lube Cell	Pump and piping area stained concrete, some small cracks; subsurface impacted by surrounding tank farm events and product spillage on ground surface within this tank farm	Medium: Soil staining	Indistinguishable - potential for continuing releases		One-half day soil gas survey. Analyze samples for TPH as indicator parameter and for VOCs including MTBE near gasoline tanks
Tank 4300 RAMAR 20/40 30,000 gallons	Welded steel tank constructed in 1969, concrete dike secondary containment; insulated; Corrugated steel tank on concrete pad, paint chips observed on gravel, staining on gravel and concrete pad; on 3/8/93, 2,900 gallons of Lube oil were possibly spilled from this Ramar 20/40 area due to an overflow; potential releases to subsurface through tank bottom	High: Soil staining and product releases			
Tank 4331 OLOA 2990 30,000 gallons	Insulated; welded steel tank constructed in 1973, concrete dike secondary containment; Corrugated steel tank on concrete pad, paint chips observed on gravel, stained pad and gravel; potential releases to subsurface through tank bottom	Medium: Standard tank operations			

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Area of Concern	Basis of Concern	Weight of Evidence	Contribution	Risk of Corr. Action	Phase II
Tank 4388 Utility 15,000 gallons	Welded steel tank constructed in 1985; concrete dike secondary containment; Insulated; on 5/30/85, 370 gallons of ATF were released from TK-4388 due to a tank overflow Corrugated steel tank on concrete pad, staining on concrete; potential releases to subsurface through tank bottom	High: product releases			
Tank 4389 Uniguide 46 15,000 gallons	Welded steel tank constructed in 1985; concrete dike secondary containment; insulated; Corrugated steel tank on concrete pad, staining on concrete; potential releases to subsurface through tank bottom	Medium: Standard tank operations			
Tank 4390 Bare Chain 15,000 gallons	Welded steel tank constructed in 1985; concrete dike secondary containment; insulated; Corrugated steel tank on concrete pad; potential releases to subsurface through tank bottom	Medium: Standard tank operations			
Tank 4391 Utility 15,000 gallons	Welded steel tank constructed in 1985; concrete dike secondary containment; insulated; Corrugated steel tank on concrete pad, staining on pad; potential releases to subsurface through tank bottom	Medium: Soil staining			
Tank 4392 Utility 15,000 gallons	Welded steel tank constructed in 1985; concrete dike secondary containment; Release of 268 gallons of super ATF due to tank overfill; 200 gallons of paratac released from camlock fitting onto ground; oil recovered and put into slop tanks; On concrete pad, staining on pad; potential releases to subsurface through tank bottom	High: Soil staining and product releases			
Tank 4393 Utility 15,000 gallons	Welded steel tank constructed in 1985; concrete dike secondary containment; On concrete pad, staining on pad; potential releases to subsurface through tank bottom	Medium: Soil staining			
Tank 4394 HP 20W/ 40 15,000 gallons	Welded steel tank constructed in 1985; concrete dike secondary containment; On concrete pad, staining on pad; potential releases to subsurface through tank bottom	Medium: Soil staining			
Tank 4395 Utility 15,000 gallons	Welded steel tank constructed in 1985; concrete dike secondary containment; On concrete pad, staining on pad; potential releases to subsurface through tank bottom	Medium: Soil staining			

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Area of Concern	Basis of Concern	Weight of Evidence	Contribution	Risk of Corr. Action	Phase II
Tank 4397 LS85/140 15,000 gallons	Welded steel tank, constructed in 1985; concrete dike secondary containment; insulated; On concrete pad, staining on pad; potential releases to subsurface through tank bottom	Medium: Soil staining			
Tank 4398 Utility 15,000 gallons	Welded steel tank, constructed in 1985; concrete dike secondary containment; insulated; On concrete pad, staining on pad; potential releases to subsurface through tank bottom	Medium: Soil staining			
Tank 4399 Utility 15,000 gallons	Welded steel tank, constructed in 1985; concrete dike secondary containment; insulated; On concrete pad; potential releases to subsurface through tank bottom	Medium: Standard tank operations			
Tank 4400 Guardol 40 15,000 gallons	Welded steel tank, constructed in 1985; concrete dike secondary containment; insulated; On concrete pad, staining on pad; potential releases to subsurface through tank bottom	Medium: Soil staining			
Tank 4401 Utility 15,000 gallons	Welded steel tank constructed in 1985; concrete dike secondary containment; Last painted unknown; top course eastside contains approx. three square feet of coating breakdown with rusting of the substrate; On concrete pad; potential releases to subsurface through tank bottom	Medium: Standard tank operations			
Tank 4402 ATF Type F 15,000 gallons	Welded steel tank constructed in 1985, concrete dike secondary containment; On concrete pad, staining on pad and valves to pipeline; potential releases to subsurface through tank bottom	Medium: Soil staining			
Tank 4403 Super IOW-40 15,000 gallons	Welded steel tank, constructed in 1985; concrete dike secondary containment; On concrete pad, staining on pad; potential releases to subsurface through tank bottom	Medium: Soil staining			
Tank 4404 Utility 15,000 gallons	Welded steel tank, constructed in 1985; concrete dike secondary containment; On concrete pad, staining on pad; potential releases to subsurface through tank bottom	Medium: Soil staining			
Tank 4405 Lubrizol 5191A 15,000 gallons	Welded steel tank, constructed in 1987; concrete dike secondary containment; insulated; Corrugated steel tank on concrete pad, staining on pad and valves; potential releases to subsurface through tank bottom	Medium: Soil staining			

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Area of Concern	Basis of Concern	Weight of Evidence	Contribution	Risk of Corr. Action	Phase II
Tank 4406 HiTec 7729 15,000 gallons	Welded steel tank constructed in 1987, concrete dike secondary containment; insulated; Corrugated steel tank on concrete pad, staining on pad and valves; potential releases to subsurface through tank bottom	Medium: Soil staining			
Tank 4407 Anglamol 6084A 15,000 gallons	Welded steel tank constructed in 1987, concrete dike secondary containment; insulated; Corrugated steel tank on concrete pad, staining on pad and valves; potential releases to subsurface through tank bottom	Medium: Soil staining			
Tank 4408 ECA 4537 15,000 gallons	Welded steel tank constructed in 1987, concrete dike secondary containment; insulated; Corrugated steel tank on concrete pad, staining on pad and valves; potential releases to subsurface through tank bottom	Medium: Soil staining			

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Area of Concern	Basis of Concern	Weight of Evidence	Contribution	Risk of Corr. Action	Phase II
Lube Manufacturing and Packaging Warehouse Former Drum Platform/Canning Plant Former Lube Oil Barrel Fillers Former Garage Fmr Pumphouse 1 Fmr Pumphouse 2 Former Boiler House Former Cooper Shop Fmr. Blacksmith	Grates in concrete floor collect spills which are pumped to the 5,000 gallon underground flush tank outside the warehouse; the 5 gallon and 1 gallon bucket filler are underlain by a concrete vault which goes to the sump; old floor drains exist but it is unknown where they go to; potential releases to subsurface A former warehouse/drum platform/canning plant was located in the south/southwest part of the contemporary warehouse; the warehouse (including an inside drum platform and canning plant) was evident in a circa 1910 photograph; the warehouse was razed by 1974; The 1931 and 1940 terminal drawings depicted lube oil barrel fillers at the south side of the former warehouse; A former garage and pump houses were noted in a circa 1910 photograph; seven storage tanks were observed west/northwest from the structure in 1910; the structures were replaced between 1973 and 1974 by the contemporary warehouse; The former Boiler House was observed in the circa 1910 photograph; it was removed by 1941; three tanks were erected to the west by 1955, they were removed by 1974; The former Cooper shop was situated south/southeast from the barrel fillers, the warehouse extended southeastward over it between 1952 and 1955; Former Blacksmith Shop was located north of former Boiler House; On 8/7/93, 40 gallon release of Guardal 15/40 to ground; recovered by portable suction trailer; On 2/12/96, lube oil additive supply hose burst spraying lubrizol 5704 in the lube oil blending area; approximately 3 gallons spilled onto the blending loops and the sump area under the equipment	High: Product releases	Distinguishable – concrete floor	Active	No
Tank 4338 HiTec 2S39 15,000 gallons	Welded steel tank constructed in 1985; concrete dike secondary containment; Located in warehouse; potential releases to warehouse floor through tank bottom	Medium: Standard tank operations			
Tank 4339 Lubrizol 4702 1,000 gallons	Welded steel tank constructed in 1974; concrete dike secondary containment; Located in warehouse; potential releases to warehouse floor through tank bottom	Medium: Standard tank operations			

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Area of Concern	Basis of Concern	Weight of Evidence	Contribution	Risk of Corr. Action	Phase II
Tank 4340 Lubrizol 9692 1,000 gallons	Welded steel tank constructed in 1974; concrete dike secondary containment; Located in warehouse; potential releases to warehouse floor through tank bottom	Medium: Standard tank operations			
Tank 4341 Acryloid 154/70 1,000 gallons	Welded steel tank constructed in 1974; concrete dike secondary containment; Located in warehouse; potential releases to warehouse floor through tank bottom	Medium: Standard tank operations			
Tank 4342 Acryloid 154/70 1,000 gallons	Welded steel tank constructed in 1974; concrete dike secondary containment; Located in warehouse; potential releases to warehouse floor through tank bottom	Medium: Standard tank operations			
Tank 4343 Amoco 158 1,000 gallons	Welded steel tank constructed in 1974; concrete dike secondary containment; Located in warehouse; potential releases to warehouse floor through tank bottom	Medium: Standard tank operations			
Tank 4344 Priolene 6910 1,000 gallons	Welded steel tank constructed in 1974; concrete dike secondary containment; Located in warehouse; potential releases to warehouse floor through tank bottom	Medium: Standard tank operations			
Tank 4345 Oloa 1232A 1,000 gallons	Insulated; welded steel tank constructed in 1974; concrete dike secondary containment; located in warehouse; potential releases to warehouse floor through tank bottom	Medium: Standard tank operations			
Tank 4346 Lubrizol 9990A 1,000 gallons	Insulated; welded steel tank constructed in 1974; concrete dike secondary containment; located in warehouse; potential releases to warehouse floor through tank bottom	Medium: Standard tank operations			
Tank 4347 Acryloid HF833 1,000 gallons	Insulated; welded steel tank constructed in 1974; concrete dike secondary containment; located in warehouse; potential releases to warehouse floor through tank bottom	Medium: Standard tank operations			

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Area of Concern	Basis of Concern	Weight of Evidence	Contribution	Risk of Corr. Action	Phase II
Tank F-8 Slurry 1,050 gallons	Welded steel tank constructed in 1954, concrete dike secondary containment; potential releases to warehouse floor through tank bottom	Medium: Standard tank operations			
Tank F-9 Mobilad G305 2,772 gallons	Welded steel tank constructed in 1954, concrete dike secondary containment; potential releases to warehouse floor through tank bottom	Medium: Standard tank operations			
Former foamite tanks	Two former foamite tanks were located southeast from the former garage	Medium: Standard tank operations	Distinguishable	Former	No
Former Underground Storage Tank 1669	Located South of the Upper Lube Cell; removed in 1985; no record of clean closure; Tank overfill resulted in release of 310 gallons of RR-40 on 9/10/81; Potential releases to subsurface from spills and/or integrity failure	High: product releases	Distinguishable	Former	No
Underground Storage Tank	Located ~40' east of F-tank farm next to UST-3; 1,000 gallon capacity; contains gasoline; A flow signature extended to the north in the 1984, 1990, and 1991 aerial photographs; Potential releases to subsurface from spills and/or integrity failure	Medium: Aerial photograph evidence	Indistinguishable - potential for continuing releases	Active Gasoline UST	Soil gas sample, analyze for TPH plus VOCs including MTBE
Underground Storage Tank	Located ~40' east of F-tank farm next to UST-2; 10,000 gallon capacity; contains diesel; A flow signature extended to the north in the 1984, 1990, and 1991 aerial photographs; Potential releases to subsurface from spills and/or integrity failure	Medium: Aerial photograph evidence	Indistinguishable - potential for continuing releases	Active Diesel UST	Soil gas sample analyze for TPH as indicator parameter

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Area of Concern	Basis of Concern	Weight of Evidence	Contribution	Risk of Corr. Action	Phase II
Underground Storage Tank	Located under Lab; 5,000 gallon capacity; contains dirty oil; installed in 1984, constructed of steel; UST overfill of 127 gallons of RRA-40 on 6/22/82; On 6/8/93, there was a 350 gallon release of diesel onto concrete slab and into drain to the process separator; Total of 50 gallons of 90 neutral released onto a blacktop and cement area due to overfill; spill was contained and cleaned up with absorbent material; Overfill of tank released 12 gallons of oil; spill contained on concrete pad and cleaned up with absorbent pads; Potential releases to subsurface from spills and/or integrity failure	High: Product releases	Indistinguishable - potential for continuing releases	Active dirty oil UST	No
Underground Storage Tank	Located under lab; 5,000 gallon capacity; contains clean oil a/or dirty oil; installed in 1984, constructed of steel; Potential releases to subsurface from spills and/or integrity failure	Medium: Standard tank operations	Indistinguishable - potential for continuing releases	Active Clean oil and/or dirty oil UST	Soil gas sample analyze for TPH as indicator parameter
Underground Storage Tank	Located near southeast corner of TF#1; 550 gallon capacity; contains retain; installed in 1983, constructed of steel; Potential releases to subsurface from spills and/or integrity failure	Medium: Standard tank operations	Indistinguishable - potential for continuing releases	Active retain UST	Soil gas sample analyze for TPH as indicator parameter
Underground Storage Tank	Located near southeast corner of TF#1; 550 gallon capacity; contains retain; installed in 1983, constructed of steel; Potential releases to subsurface from spills and/or integrity failure	Medium: Standard tank operations	Indistinguishable - potential for continuing releases	Active retain UST	Soil gas sample analyze for TPH as indicator parameter

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Area of Concern	Basis of Concern	Weight of Evidence	Contribution	Risk of Corr. Action	Phase II
Underground Storage Tank	Located north of the truck loading rack; 550 gallon capacity; contains diesel additive; installed in 1983, constructed of steel; Potential releases to subsurface from spills and/or integrity failure	Medium: Standard tank operations	Indistinguishable - potential for continuing releases	Active diesel UST	Soil gas sample analyze for TPH as indicator parameter
Underground Storage Tank	Located under the garage; 650 gallon capacity; contains slop oil; installed in 1983 or 1986, constructed of steel; Potential releases to subsurface from spills and/or integrity failure	Medium: Standard tank operations	Indistinguishable - potential for continuing releases	Active slop oil UST	Soil gas sample analyze for TPH as indicator parameter
Former Underground Storage Tank	Located behind maintenance in the garage; 675 gallon slop oil tank; Removed approximately 1990; installed in 1983; constructed of steel, contains used oil; Potential releases to subsurface from spills and/or integrity failure	Medium: Standard tank operations	Distinguishable	Former UST	No
Former Underground Storage Tank	Located north of the boiler house; 10,000 gallon capacity; abandoned in place; installed in 1972 constructed of steel; diesel; Potential releases to subsurface from spills and/or integrity failure	Medium: Standard tank operations	Distinguishable	Former UST	No
Pumps	Concrete pump pad next to tank 2784 has staining on concrete and drains; piping network next to tank 2784 has staining on concrete; pump pad near 2783 saturated with product and gravel around it was saturated; potential and unreported releases of hazardous constituents to ground surface and/or subsurface	Medium: Staining	Distinguishable – concrete pad and berms	Pumps	No
Pumps	Concrete pump pad between TK-3412 and TK-3413 was stained; potential and unreported releases of hazardous constituents to ground surface and/or subsurface	Medium: Staining	Distinguishable – concrete pad and berms	Pumps	No
Pumps	Pump pad between TK-2669 and TK-36; staining on concrete, on pumps, no cracks; Black oil blender area on concrete pad has staining and drips; potential and unreported releases of hazardous constituents to ground surface and/or subsurface	Medium: Staining	Distinguishable – concrete pad and berms	Pumps	No

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Area of Concern	Basis of Concern	Weight of Evidence	Contribution	Risk of Corr. Action	Phase II
Pumps	Minor staining on pump pad between Tanks 2579 and 1471; potential and unreported releases of hazardous constituents to ground surface and/or subsurface	Medium: Staining	Distinguishable – concrete pad and berms	Pumps	No
Pumps	Concrete pump pad between TK-2982 and TK-2983 has staining on valves and pumps and concrete pad; potential and unreported releases of hazardous constituents to ground surface and/or subsurface	Medium: Staining	Distinguishable – concrete pad and berms	Pumps	No
Pumps	Concrete pump pad next to Tank 3579 has visible product, no cracks; potential and unreported releases of hazardous constituents to ground surface and/or subsurface	Medium: Staining	Distinguishable – concrete pad and berms	Pumps	No
Upper Lube Cell Pumps	Staining on concrete; no visible cracks; staining on piping; potential releases to subsurface and/or ground surface; potential and unreported releases of hazardous constituents to ground surface and/or subsurface	Medium: Staining	Distinguishable – concrete pad and berms	Pumps	No
Lower Lube Cell Pumps	Staining on concrete; no visible cracks; staining on piping; potential releases to subsurface and/or ground surface; potential and unreported releases of hazardous constituents to ground surface and/or subsurface	Medium: Staining	Distinguishable – concrete pad and berms	Active	No
Oil Water Separator #001	The separator was constructed by 1969; an excavation contiguous to the separator was noted in 1974 (possible extension of the separator); discoloration, possible liquid was evident north/northeast from the stormwater separator in 1980 aerial photographs; Located in the industrial fuel oils tank farm just south of the former asphalt process area; potential releases to subsurface from overflows and/or integrity failure	Medium: Aerial photograph evidence	Indistinguishable - potential for continuing releases Distinguishable – sheen on water	Active Oil Water Separator	Soil gas sample analyze for TPH as indicator parameter
Oil Water Separator #002	Located in the diesel and black oil tank farm; potential releases to subsurface from overflows and/or integrity failure	Low: No evidence	Indistinguishable - potential for continuing releases Distinguishable – sheen on water	Active Oil Water Separator	Included in TF #1 investigation

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Area of Concern	Basis of Concern	Weight of Evidence	Contribution	Risk of Corr. Action	Phase II
Oil Water Separator #003	The final box sump was first evident in 1975 photographs; the Process Water Separator No. 003 was installed at the same time; 5,000 gallons of gasoline spilled into the API separator and was removed with a vacuum truck; Located in the diesel and black oil tank farm; potential releases to subsurface from overflows and/or integrity failure; full of product/water mix; TPH probe in separator	Low: No evidence	Indistinguishable - potential for continuing releases Distinguishable – sheen on water	Active Oil Water Separator	Included in TF #1 investigation
Oil Water Separator #004	Located in the gasoline tank farm; potential releases to subsurface from overflows and/or integrity failure	Low: No evidence	Indistinguishable - potential for continuing releases Distinguishable – sheen on water	Active Oil Water Separator	Included in TF #3 investigation
River Outfall	Light-toned point discharges to the river were noted in 1940, 1952, 1964, 1966, 1967, 1969, and 1971; the reflectance of the discharges was a result of a high suspended solids load and/or from the rolling of sediments in the river; the 1966 discharge was particularly milky in appearance and may have been the result of a foreign substance; In 1972, a box or pipe was added at the discharge point; from 1974 onward, various floating booms surrounded the discharge point and much of the river bank north from the Unocal wharf; the new sewer discharge outfall was added circa 1976; thereafter, it was not clear whether or not the old outfall continued to be used; however, between 1986 and 1990, the bank was regraded in the vicinity of the old outfall; petroleum seeps may have continued in the vicinity, because floating booms were maintained along the entire bank through the 1996 photograph date; booms extended along the entire Unocal waterfront in the 1977 aerial photograph; Approximately 20-30 gallons of black oil observed on river outfall; booms contained it	Medium: Aerial photograph evidence	Distinguishable – sheen on water	River outfall	No
Drum Storage	Drum storage area located next to tank 4369, drums stacked on concrete pad and within a fenced area; potential releases of hazardous constituents due to storage a/or handling	Low: No evidence	Distinguishable – concrete pad and berms	Drum storage	No

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Area of Concern	Basis of Concern	Weight of Evidence	Contribution	Risk of Corr. Action	Phase II
Truck Loading Rack (includes Fmr Tanks 589, 590, 1471, 1472, 1902, and 1989) Fmr. Truck Load Rack No. 2	Rebuilt in 1979-1980; loads gas, diesel and ethanol; no cracks in concrete, minor staining; potential releases of hazardous constituents to ground surface Two aboveground rectangular Tank Nos. 1902 and 1989, were depicted on a 1940 terminal drawing; the tanks were noted as containing stove oil on a 1950 Sanborn Map; The contemporary truck loading rack was constructed pre-1951; a new canopy and asphalt paving were noted in 1980; Discoloration west from the rack was observed (1963, 1964, and 1966); a residual stain was noted in 1969; on 4/15/88, 1,300 gallons of diesel leaked from the loading rack and was fully contained; The former truck loading rack No. 2 was evident in the 1951 photographs and was removed by 1980; Stains and possible flow extended west from the rack (1956, 1963, 1964, 1966, and 1972); An open pit and a pile of dirt were located north from the rack (1974); On 3/25/85, 246 gallons of leaded gasoline spilled and was contained in an underground spill containment tank; On 12/15/95, 200 gallon gasoline spill due to a mechanical malfunction was contained in emergency overflow tank; During unloading, 10 gallons of 100 neutral oil was released onto the concrete pad beneath the tank car where it was cleaned up; During loading, 3.5 gallons of 7EP gear lube was released; it was recovered and wiped up with absorbent pads; 83 gallon spill of unleaded gasoline due to overfilling of truck; 72 gallons of unleaded spilled during loading due to truck overfill; 10 gallons of gearlube spilled onto the asphalt pavement; contained with absorbent pads; 10 gallon spill onto concrete pad; 40 gallons of diesel spilled & captured in drain to the separator; 100 gallons of diesel entered the diesel knock-down tank and an additional 100 gallons was washed down the rack drain; no product escaped the racks concrete catchment system 10 gallons of guardol 15/40 to released to separator drain during loading;	Medium: Aerial photograph evidence and product releases	Distinguishable – concrete and asphalt paving with concrete berms	Loading rack	No

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Area of Concern	Basis of Concern	Weight of Evidence	Contribution	Risk of Corr. Action	Phase II
Truck Loading Rack Fmr. Road Oil Load Rack Fmr. Truck Load Rack No. 1 (Area also includes seven former tanks)	Truck Loading Rack from the Lube Warehouse; potential releases of hazardous constituents to ground surface Former road oil load rack was sketched on a 1940 terminal drawing, it had been removed by 1952; Former truck loading rack No. 1 was located north/northwest from the former warehouse, a discoloration from a possible release was observed east from the rack (1939), the rack was dismantled by 1951; Historical aerial photographs indicate seven former aboveground storage tanks were present in this area	Medium: Aerial photograph evidence	Distinguishable – concrete and asphalt paving with concrete berms	Loading rack	No
Truck Unloading Rack	Discoloration and flow signatures in the vicinity of the unloading area were observed in 1964, 1966, 1971, and 1972; stains were evident in 1980 and 1990; Truck Unloading Rack; potential releases of hazardous constituents to ground surface	Medium: Aerial photograph evidence	Distinguishable – concrete and asphalt paving with concrete berms	Unloading rack	No
Black Oil Truck Loading Rack Former Asphalt Loading Rack	Truck Loading Rack for black oil; this loading rack was observed in 1990; potential releases of hazardous constituents to ground surface; a layer (several inches thick) of hydrocarbon residues was located in a concrete-lined pit at the Black Oil Truck Loading Rack; canopy-covered rack was first noted in 1974; Historical aerial photograph indicated that the former asphalt loading rack was in this location	Low: No evidence	Distinguishable – concrete and asphalt paving with asphalt berms	Black oil loading rack	No

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Area of Concern	Basis of Concern	Weight of Evidence	Contribution	Risk of Corr. Action	Phase II
Lube Loading Rack	The lube oil loading rack or predecessor was evident in the 1955 aerial photographs; A 1969 Sanborn Map depicted a filling stem at this location; discoloration was observed southwest and northeast from the rack in the 1969 photographs; a liquid flow was noted northeast from the rack (1972); stains on the pavement were observed in the vicinity of the rack (1974 and 1980); A second rack was depicted north/northeast from the rack in the 1957 drawing, it was confirmed in a 1977 aerial photograph; Localized stains were observed in the vicinity of the rack (1990); Staining on concrete by lube slop tank and diesel slop tank; piping and pump near asphalt slab drain valve is stained on concrete, approx. 22 drums of diesel slop are stored in a staging area; no cracks, some staining at lube loading rack; potential releases of hazardous constituents to ground surface	Medium: Aerial photograph evidence and staining	Distinguishable – concrete and asphalt paving with concrete berms	Lube loading rack	No
Lube Unloading Rack Former Emulsified Asphalt Loading Rack	Some cracks, staining, approximately 50 drums stored; potential releases of hazardous constituents to ground surface; An overhead pipeway was noted terminating in the vicinity of the future loading rack in 1955; discolored soil was noted northwest from the pipeway terminus in 1963; the overhead pipeway was removed, and a canopy-covered rack was observed in 1969; extensive liquid flows to the west/northwest were observed in 1970, 1971, and 1972; a flow appeared to extend north, downslope into the containment area for Tank Nos. 2783 and 2561; it terminated in the vicinity of the future final box sump; discoloration and staining were observed north/northwest from the rack in 1974; an active flow to the west/northwest from the north side of the rack was evident in 1975 and 1976; liquid flow north/northwest from the rack was evident in 1980 and 8/6/86; the canopy was removed by 1990; Historical aerial photographs indicate that the former emulsified asphalt loading rack was in this location and adjacent to the asphalt loading rack;	Medium: Aerial photograph evidence	Distinguishable – concrete pad with concrete berms	Lube unloading rack	No

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Area of Concern	Basis of Concern	Weight of Evidence	Contribution	Risk of Corr. Action	Phase II
Old Doane Ave Storm Sewer	A 27-inch wood stave storm sewer had been impacted by hydrocarbons via groundwater filtration since at least the early 1970s; the storm sewer was found to have cracks and deteriorated joints which allowed hydrocarbon and groundwater infiltration; the leaks to the storm sewer created hydrocarbon discharges at the outfall at the Willamette River; Hydrocarbon leakage first reported in 1974; the old Doane Ave. storm drain continued to be a location of hydrocarbon seepage from 1974 -1982 and again in 1988; Oil spill of unknown quantity infiltrated into Doane Street storm sewer from private sewer line closest to manhole near loading rack; sewer line leak was repaired on 2/10/75; On Aug. 19, 1996, Doane Ave storm sewer was inspected at manhole 2, in the tank farm; it was brick lined and contained water and a layer of mud coating the base with some hydrocarbons present in the mud material; sheen on the water released from behind the gate valve indicate that some product is present in this section of line; Between 1974 and 1978, more than 9,000 gallons of petroleum product were recovered from Old Doane Ave. Storm sewer	High: Free product	Indistinguishable - potential for continuing releases	Old Doane Avenue storm sewer	No
New 60-inch Doane Ave Storm Sewer	A seep was observed in 1984 at the riverbank beneath the invert of the new 60-inch storm drain; the backfill provided a pathway for the product migration; in 1987, a clay barrier and 12-inch product recovery well (RES-New) were installed within the trench backfill to mitigate new product seeps; a bentonite barrier wall (13' wide x 4' thick x 8' high) was constructed by removing fill from the trench, the barrier wads keyed into the native silt 5' below the pipe bottom; In 1988, 3,210 gallons of product were recovered from the clay barrier and water depression/product recovery well; In 1992, 6.4 gallons were recovered, corresponding to a decrease in recoverable hydrocarbons present; Sample collected from the surface of the Willamette River at the outfall location on 10/20/94 contained No. 2 diesel-type hydrocarbons; potential and unreported releases of hazardous constituents a/or integrity failure	High: Free product	Indistinguishable - potential for continuing releases	New Doane Avenue storm sewer	No

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Area of Concern	Basis of Concern	Weight of Evidence	Contribution	Risk of Corr. Action	Phase II
Former Asphalt Plant	Built approximately 1972, dismantled in 1984; probable releases of hazardous constituents from past operations; Construction of the Asphalt plant began c. 1968; it was completed by 1969 (based on available aerial photographs); it was partially dismantled by 1990; asphalt pipes and a heating apparatus were observed during the 1/21/97 site inspection	Low: No evidence	Distinguishable	Former asphalt plant	No
Boom Containment Area	Between 1974 and 1978, 9,000 gallons of petroleum product were recovered from this area	High: Free product	Indistinguishable	Boom storage area	No
UNOCAL Dock Area	Light sheens were visible along the shore of the Unocal and Chevron docks in 1982; Gasoline spill of 1 gallon; oil spill of 1 pint; diesel spill of ½ gallon; Hydrocarbon discharge to the river immediately downstream from the Unocal Dock was reported in Jan. 1982; booms installed; Old Holbrook Slough Interceptor Trench installed in 1988 along the beachline between Unocal's and Chevrons loading docks; 2,000 gallons of diesel spilled at the dock on 7/19/82, boom deployed; unknown quantity of oil spilled into Willamette river, containment tanks flooded - oil spilled over on 12/7/84; booms deployed; BTEX concentrations in wells in the riverfront dock area from 1995/1996: B-4 (FPLH), B-17 (B = 830 ppb, T = 36 ppb, E = 16 ppb, X = 43 ppb), B-18 (X = 0.6 ppb), B-22 (FPLH), B-35 (FPLH), B-36 (B = 480 ppb, T = 8.9 ppb, E = 8.2 ppb, X = 9.6 ppb), B-37 (FPLH); On 2/19/94, spill of approx. 1 pint of oil into bay, contained with absorbent pads, and containment boom; Spill of 2 gallons of cutter stock into bay; absorbent pads and booms deployed; On 9/4/93, approx. 80 gallons of unleaded spilled into the bay from an undetermined source; Unocal not responsible, spill origin undetermined; Product backed up in the seepage containment project and 5 gallons seeped into the Willamette River; Sheen observed under Unocal dock;	High: Soil impact and free product	Indistinguishable	UNOCAL dock	No, ongoing remediation

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AREAS OF CONCERN
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Area of Concern	Basis of Concern	Weight of Evidence	Contribution	Risk of Corr. Action	Phase II
UNOCAL Dock Area Former Oil & Grease Warehouse Former Laydown Yard	2 gallons of diesel sprayed out onto the pier; diesel was contained on dock catchment system; Approx. 0.5 gallon release of diesel No. 2 into the river; 7 gallon release of diesel No. 2; 5 gallons to the river, absorbent pads were deployed; Drains go to tank underneath the dock which are pumped into the stormwater system to separator 003; the underdock storage tank is a 2050 gallon tank; Yellow floating booms were present in the water on either side of the Unocal wharf; A circa 1925 oblique photo indicated that a wharf was not associated with the terminal; the oil and grease warehouse was identified on the 1931 terminal drawing; the wharf and warehouse were confirmed in the circa 1936 photos; a former laydown yard was also identified on historical aerial photographs				
Process Water System	On Oct. 18, 1996, a total of 60 gallons of ethanol were released into the process water system when an air eliminator at pump G-159 failed; no indications that the release reached OWS 003 or that any of the ethanol/water mixture was discharged to the POTW;	Medium : ethanol release	Indistinguishable	Active process water system	No
Boiler House	Two boilers, fired by natural gas	Low: No evidence	Distinguishable – concrete floor	Active boiler house	No
Maintenance Garage Former Garage 2 Former Machine Shop	Discontinued maintaining fleet of trucks in 1994, store lube in this garage for maintenance purposes; three drains tie into catch basin; to underground slop tank; some cracks in pavement floor; one other drain in floor which is now blocked off; potential releases of hazardous constituents through drains The garage building and former shops (maintenance/machine and repair) were evident in the 1936 photographs; the building was expanded to the northwest between 1941 and 1947; it was modified (downsized) to its present-day configuration between 1984 and 1986;	Low: No evidence	Distinguishable – concrete floor	Active maintenance garage and slop oil UST	No

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ENVIRONMENTAL BASELINE ASSESSMENT
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Area of Concern	Basis of Concern	Weight of Evidence	Contribution	Risk of Corr. Action	Phase II
Underground piping	Failed gasket leaked 5 gallons of ethanol onto the ground; approximately 25 gallons of soil were impacted; On 10/27/94, unleaded gasoline release from a valve on a product pipeline of 8700 gallons; the product was contained in the containment system and recovered from the oil/water separator; on 6/11/85, 3,000 gallons of fuel oil were released from a pipeline beneath Front Avenue due to a leak at a broken flange gasket, a 10-inch pipeline from TK-3579; on 7/19/82, a product line cracked during annual pressure testing releasing 800 gallons; potential and unreported releases of hazardous constituents a/or integrity failure	High: Product releases	Indistinguishable	Active	No
Former Railroad Loading/ Unloading Rack	Former railroad loading/unloading rack was located west from and adjacent to the former warehouse; three spur tracks from the Burlington Northern Railroad entered the Terminal from the northwest; the tracks originally terminated northwest from the Lower Lube Cell; surface discoloration was observed along the tracks on various photographs; they were removed when the new warehouse was constructed between 1973 and 1974;	Medium: Aerial photograph evidence	Distinguishable	Former RR loading/unloading rack	No
Railroad Car Loading Area Former Shed	Drips from rail car valves observed on ties and gravel; potential creosote contamination from preserved ties a/or releases of hazardous constituents from railcar transportation, maintenance or cleaning; the gravel was hydrocarbon-stained in and around the Railroad Loading/Unloading Racks; On 2/17/89, 10 gallons of Super RR-E 40 leaked in the loading area and was contained in the catchment system; On 9/30/91, 200 gallons of TLA555 released onto concrete catchment basin and cleaned up; On 3/8/93, 2,955 gallons of Unocal Ramar 20W-40 release; On 1/24/94 approximately 527 gallons of Ramar blend were released onto the concrete slab and into the catch basin system where it was contained, recovered, and put into the slops tank; A shed-like structure and spur track were observed from 1948 to circa 1972; soil around the shed was discolored;	Medium: Product releases	Indistinguishable	Active RR loading rack	Five hand auger borings to 5' depth. Analyze one sample from each for volatile organics, semivolatile organics, metals & TPH

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AREAS OF CONCERN
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Area of Concern	Basis of Concern	Weight of Evidence	Contribution	Risk of Corr. Action	Phase II
Open Land Area (South Yard) Former Drum Storage Former Disposal/ Seepage Pit	This largely unpaved area, located south/southeast from the boiler house, bordered by the railroad tracks (west), storage tanks (east/northeast) and the property line (south/southeast) appeared to have several functions: scrap yard, drum storage and possible cleaning, truck/trailer parking, and vehicle fueling; A mound of black material was observed in the general location of Tank No. 4253 (pre-development) in the 1955 aerial photographs; A trailer-type structure was noted in 1956; From circa 1936 to circa 1940, drum storage was limited to an area between and including parts of future Upper Lube cell and the future boiler house; Drum storage and possible cleaning were observed in the photographs circa 1951 to 1974 (generally southeast from the contemporary railroad racks); discolored soil and wet flows were evident in 1946, 1954, 1964, 1966, 1969, 1970; A possible disposal pit was observed in the southeast end of the drum storage area in 1972 and 1973, which also was a stockpile area for soil; discolored/wetted soil was evident throughout the southern end of the yard (1961, 1963, 1967 and 1970); fill material was evident in the southeast corner of the yard in 1971; hydrocarbon stains to soil were observed in and around stacked drums at the southeast end of the yard in 1972	Medium: Aerial photograph evidence	Distinguishable – no subsurface structures, aboveground releases are distinguishable	Not a current source	No
Ethanol Pit	The ethanol pit was constructed by 1994; Potential release of hazardous constituents to ground and/or subsurface	Low: No evidence	Indistinguishable	Ethanol pit	No
Off-Site Asphalt Operations and Structures	A former Unocal auto Repair Shop and Office were located east of the Tank Farm No. 2 as shown on the 1950 and 1969 Sanborn maps; located to the north of Tank Farm No. 3 was a former California Asphalt Corporation Oil Refinery (1950 Sanborn map); designated as a American Bitumuls & Asphalt Company Oil Refinery on a 1960 Sanborn map which subsequently became a Unocal Asphalt Plant; this facility was reportedly sold to Chevron in the 1980s	Low: No evidence	Distinguishable out of service	Former, off site	No

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0508-C-1000	ALPHA ENGINEERS AND CONSTRUCTORS SITE PLAN	6								
FIGURE 1	GEO ENGINEERS SITE PLANS	5								
		4								
		3	EAP	7/14/97	MODIFIED FORMER STRUCTURES					
		2	EAP	3/21/97	ADDED FORMER STRUCTURES					
		1	EAP	2/7/97	CHANGED SITE FEATURES & ADC MODIFICATIONS					
		0	EAP	1/31/97	INITIAL ISSUE					
REFERENCE DWG	DESCRIPTION	NO	DRWN	DATE	REVISION	CHKD	DATE	APPVD	DATE	

TOSCO

3-2798-400

CURRENT DATE: 7/15/97 | CAD FILE: 2798SA03

BASE SITE PLAN SHOWING AREAS OF CONCERN

PORTLAND TERMINAL
PORTLAND, OREGON

RETEC
PITTSBURGH PENNSYLVANIA
DRAWING NUMBER 2798SA03 REV 3

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Map Symbol	Map Location	Area of Concern	Basis of Concern	Reference	Baseline Category
		Historical Information	The Portland terminal construction commenced circa 1907; Tank Farm No. 1 area, including Tank Farm No. 4, was developed circa 1910; between 1925 and pre-1936, the garage and shops in the Tank Farm No. 2 area plus the wharf and the warehouse were present; the 1939 aerial photographs show Tank Nos. 2915 and 2916 present in Tank Farm No. 2 area, the now off-site (to the east) office building and auto repair shop were also present; between 1939 and 1941 the boiler house was erected, the warehouse/garage/shop building in Tank Farm No. 2 was enlarged to the northeast; between 1948 and 1951 Tank Farm No. 3 was partially developed; between 1967 and 1969 Tank Nos. 4252 and 4255 were installed and Tank Farm No. 3 was reconfigured; the asphalt plant was added between 1967 and 1969; between 1973 and 1974 a new warehouse was constructed in the Tank Farm No. 1 area; between 1984 and 1986 the garage/shop building in Tank Farm No. 2 was modified (decreased in size); between 1986 and 1990 the asphalt plant was partially dismantled	M/B&A, 1997	

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ENVIRONMENTAL BASELINE ASSESSMENT
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[Continued]

Map Symbol	Map Location	Area of Concern	Basis of Concern	Reference	Baseline Category
SUBSURF	Not Shown	Subsurface/ Groundwater	On 1/21/79, 8,500 gallons of leaded regular gasoline was released from the filter check valve and contained in the separator system, 100 gallons may have entered the sanitary sewer; on 4/29/81, approx. 100 gallons of asphalt spilled from TK-4254 due to a tank leak; on 9/10/81, 310 gallons of RR-40 spilled from a tank overfill; on 6/22/82, 127 gallons of RRA-40 spilled from the underground flush tank due to an UST overfill; on 7/19/82, a product line cracked during annual pressure testing releasing 800 gallons; on 5/30/85, 370 gallons of ATF were released from TK-4388 due to a tank overflow; on 6/11/85, 3,000 gallons of fuel oil were released from a pipeline beneath Front Avenue due to a leak at a broken flange gasket, a 10-inch pipeline from TK-3579; on 3/14/86, approximately 1 barrel of asphalt spilled from TK-4318 due to a leak from the metering system; on 8/19/86, approximately 200 gallons of Oil (450 Neutral) leaked from a rupture of a heating vessel; on 9/20/86, two barrels of fuel oil spilled from the electric steam pumps behind loading rack in Tank Farm #1; on 4/15/88, 1,300 gallons of diesel leaked from the loading rack and was fully contained; on NA/8/89, 50 gallons of fuel oil spilled from TK-36 when a drain overflowed; on 7/18/89, 300 gallons of Acryloid spilled from a tank car and was contained; Product line leak of 800 gallons on 7/29/82; on 11/24/89, 3-5 barrels of fuel oil were spilled onto the ground from the steam pump; on 4/26/90, 72 gallons of unleaded were spilled from the loading rack due to an equipment malfunction, and was contained; on 3/8/93, 2,900 gallons of Lube oil were spilled from the Ramar 20/40 area due to an overflow and was contained; Olympic pipeline spilled 25 gallons of diesel on 6/10/84, UNOCAL cleaned up spill;	6/15/93, Preliminary Assessment Report by S&E Analysis Corp. Table of reported spills at UNOCAL facility from Jan 1975 to Sept. 1993, file TM-0608; Incident Rpt, 6/7/90;	

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Map Symbol	Map Location	Area of Concern	Basis of Concern	Reference	Baseline Category
SUBSURF [continued]	Not Shown	Subsurface/ Groundwater	5 gallons of diesel was lost from a line where a gasket blew; 4" diesel line leak; 3.5 gallons of diesel contaminated soil were affected; A seasonal average of free phase liquid hydrocarbons (FPLH) volume in the ground at the Willbridge Site is 45,500 gallons;	Incident Rpt, 10/9/92; Jan 1988, Progress Rpt, Riedel;	
			Hydrocarbons in boring U4-A extended from the beginning of the saturated zone at approx. 15' and continued into the clay unit, where drilling was terminated at 31 feet; from 22 to 25.5', the boring contained significant amounts of FPLH in a medium to coarse sand; boring B-27A contained strong hydrocarbon odor throughout the saturated zone beginning at 15' and extending to the clay contact at 25.5'; the thickness of FPLH in the formation is estimated to be 0.16 feet;	Willbridge Bulk Plant Facility Mobile Hydrocarbon Reassessment, Riedel, 12/30/1990;	
			In 1987, a total fluids pneumatic diaphragm pump, intake 31 feet below top of casing, recovered <1 gallon of FPLH; reactivated in 1990 and 1991, a total fluids pneumatic diaphragm pump recovered an unknown volume of product; after the well was in operation, the amount of FPLH in the surrounding wells began to increase; this corresponds to the drop in the amount of FPLH collected by the RES;	Willbridge Facility 1992 Final Report, Riedel, 12/12/93;	
			RES-New (a two pump liquid hydrocarbon recovery system) recovered 1,070 gallons of diesel in 1987; in 1988, 2,500 gallons of diesel were recovered; in 1989, 488 gallons of diesel were recovered; in 1990, 220 gallons of diesel	Draft Interim Action Work Plan, CH2MHill, 11/1994;	

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Map Symbol	Map Location	Area of Concern	Basis of Concern	Reference	Baseline Category
SUBSURF [continued]	Not Shown	Subsurface/ Groundwater (cont.)	were recovered; in 1991, 0.2 gallons of FPLH were recovered; total fluids pumping was performed in 1994; shut down in 8/1994; restarted FPLH recovery in 10/94 at approx. 10 gpm with extracted groundwater passing through an o/w separator; shallow tray air stripper, and activated carbon polishing before being discharged to the Willamette River under a NPDES permit; Concentrations of water samples collected from B-14 on 3/31/93 (B=540, T=27, E=380, X=110 ppb); on 6/20/94 (B=300, T=24, E=87, X=49 ppb); on 6/20/94 (PAHs=14.83 ppb); from B-24, there was 0.35' of FPLH in 1993; on 6/20/94 (PAHs=92.1 ppb); from B-27, located south of intersection along Front St., contained 1.45' FPLH in 1994; in 1991, 0.67' of FPLH was measured; from U-4 in Sept. 86, installed a pneumatic skimmer pump and recovered 1,600 gallons of product in three months; in 1992, approx. 28 gallons of product was collected; No. 2 diesel fuel accumulation was 9.51' in 1991, 4.3 feet in 1993; U-5 contained 0.65' of FPLH in 1991, 0.3' in 1994; Well RES-Old was installed as a 12-inch diameter recovery well in 1984; total fluids were pumped until Nov. 85 when it was shut down; well was restarted in March 1986; Sample collected from B-39 on 10/20/94 contained a mixture of No. 2 diesel and a small amount of motor oil/gear oil-type hydrocarbons; sample collected from B-24 contained No. 2 diesel-type hydrocarbons; sample from U-4 contained No. 2 diesel-type hydrocarbons; sample from U-5A contained a mixture of gasoline, kerosene/mineral spirits, and motor oil/gear oil type hydrocarbons; FPLH thickness in U-5A was 0.32 ft, U-5 FPLH thickness was 0.01 ft , B-39 thickness was 0.72 ft., B-40 thickness was 0.15 ft., B-1 thickness was 0.02 ft B-38 thickness was 1.25 ft., B-40 thickness was 0.12 ft., on 6/24/96;	Letter to J. Comstock from T. Fisk dated 10/27/94;	

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Map Symbol	Map Location	Area of Concern	Basis of Concern	Reference	Baseline Category
SUBSURF [continued]	Not Shown	Subsurface/ Groundwater (cont.)	The presence of FPLH appears to be associated with the former and current alignments of the Doane Ave. stormwater outfall and possible Holbrook slough; Wells B-1, B-4, and B-35 located in the dock area nearest the Old Doane Ave. storm drain alignment contained 0.15, 0.07, and 0.06 feet of FPLH, respectively (April measurement); Wells B-38, B-39, U-5, and RES-New appear to be connected to the New Doane Ave storm drain backfill material and contained 0.25, 0.08, 0.08, and 0.02 feet of FPLH, respectively; Volume of FPLH removed from May 1995 through August 1996 was 71.5 gallons On 2/22/97, approximately 11,670 gallons of 92 octane gasoline was released while transferring from Tank 3408 to Tank 3411; as of 2/23/97, 1,600 gallons were recovered	Letter to J. Kiernan, DEQ from CH2MHill dated 6/18/96 CH2MHill Qrtrly Rpt., 10/3/96; Letter to D'Zurilla fr. Schnieders dated 2/23/97	
		Recovery Well	Unocal has been recovering petroleum hydrocarbon impacted groundwater from two recovery wells RES-old and REW-new from the site since 1980; One or both wells were deactivated in 1994; RES-new was reactivated in 10/94; in Jan. 1993, a total of 180 gal FPLH were recovered from RES-New; in Feb. 1993, a total of 2.2 gal were recovered; in Mar. 1993, a total of 221.8 gal were recovered; in Apr. 1993, a total of 107.5 gal were recovered; in May 1993, a total of 131 gal were recovered; in June 1993, a total of 38.7 gal were recovered; in July 1993, a total of 104.4 gal were recovered; in Aug. 1993, a total of 7.5 gal were recovered; from RES-Old, 17.53 gal were recovered in March 1993; 10.4 gal were recovered in April 1993; 21.1 gal were recovered in May 1993; 8 gal were recovered in June 1993; and 6.5 gal were recovered in July, 1993; Well RES-new was installed in 1987; Well RES-new was reconstructed on 12/15/92; reactivated and maintained recovery operations until summer 1994	Geoengineers Memo to DEQ dated 12/13/94 Recovery Well Operational Logs	
		Holbrook Recovery Trench	The river stage controls operation of the Holbrook Slough Recovery Trench, located along the shoreline near the old Doane Avenue outfall location; the trench is shut off as the river rises above approx. 5 to 6 ft; approx. 700 gallons of FPLH was recovered by the trench during May-Oct. 1995	Letter to J. Kiernan from CH2MHill dated 5/5/96;	

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Map Symbol	Map Location	Area of Concern	Basis of Concern	Reference	Baseline Category
TF-#1	C-4 to D-5	Tank Farm #1 Includes Former Tanks 151, 712, 713, 714, 715, 716, 569, 1144, 1475, and "X"	The following structures and features were evident in a circa 1910 photograph: Tank Nos. 31 and 141, several tanks in the lower lube cell, the former Cooper Shop, the former boiler house, the former foamite tanks and foamite building, the former warehouse/drum platform, the pump house, and the former garage; A pre-1925 ground level photograph confirmed the presence of the above-mentioned features; In addition, seven tanks were located west from Tank No. 31 (adjacent to the former garage structure); Former Tank No. 1475 and the railroad loading/unloading rack were evident by 1925; it was removed between 1948 and 1951; Former Tank Nos. 712, 714, and 716 were removed between 1948 and 1951; at the same time a truck loading rack was erected; From circa 1966 to 1975, discolored soil was observed in the vicinity of Tank Nos. 569, 713, 151, 715, and "X"; Tank Nos. 569, 151, and "X" were removed by 1980; a possible liquid release to the south/southeast from Tank No. 715 was observed in 1980; Tank Nos. 715 and 713 had been removed by 1981; On 1/21/79, leaded regular gasoline spill of 8,500 gallons occurred in tank yard; contained in separator system; 100 gallons may have entered sanitary sewer; On 3/21/85, 150 gallons of industrial fuel oil (bunker oil) spilled near shore in tank farm #1, near office building along railroad; oil spilled into sump area around faulty pump and was cleaned up; On 11/24/89, 3 to 5 barrels of fuel oil released to the ground; most of the product recovered and pumped to a slop tank; gravel was steam washed; Tanks TK-36, TK-1471, TK-2579, TK-2784, and yard piping contain some lead paint; Stained gravel, visible product from valves and piping along concrete berm between tanks 2783 and 2784; staining on gravel below piping under valve; 500 gallon vapor recovery with knockout tank located in TF#1; standard tank bottom disposal practices; use of lead-based paint/primer and preparation practices;	M/B&A, 1997 Table of reported spills at UNOCAL facility from Jan 1975 to Sept.; 1993, file TM-0608; Incident report dated 11-24-89; Coatings Survey Rpt dated 1/5/96 by Vass; RETEC Visit 1/6/97	

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Map Symbol	Map Location	Area of Concern	Basis of Concern	Reference	Baseline Category
TF-#1 [continued]	C-4 to D-5	Tank Farm #1 [continued]	A thick oily accumulation lined surfaces in the Final Box Sump of the process water system; several leaks from the Black Oil Manifold were observed, the product flowed over concrete to a grated drain; an active leak was observed at an Oil Heater Unit north from Tank No. 36, the oil flowed to a drain within the concrete containment; localized hydrocarbon releases to gravel were noted northwest and southeast from the north and south sides of Process Water Separator 003; an oil pan was located beneath a leaking hose, which was attached to Tank No. 2783, the surrounding soil and gravel were heavily stained by hydrocarbons	M/B&A Visit 1/21/97	
TK-31	D-4	Tank 31 RFO 1,557,528 gallons	Constructed in 1907 of single-wall, riveted (bottom and shell) steel resting on a gravel pad; located in TF #1, insulated; 50 gallons of black oil was spilled during water draw operations onto the gravel; the gravel was shoveled into open top barrels and new gravel was spread; External inspection indicated number of leaks in the shell and around nozzles, a major leak is known to exist on the east side at an elevation of 18 feet; possible structural problems with the roof structural system; external corrosion above the insulation ring; parts of the tank are below grade; Corrugated steel removed from bottom 1' of tank with insulation showing, staining on gravel from valves from pipes behind tank; standard water bottom release practices; potential releases to subsurface through tank bottom	Incident report dated 2-8-89; Field Inspection & Structural Evaluation of Tank 31 dated 8/29/95 RETEC Visit 1/6/97	
TK-36	D-4	Tank 36 Slops 21,840 gallons	Constructed in 1907 of single-wall, riveted steel resting on a sand and gravel pad; located in TF #1, Riveted shell; last painted 1988; base chime edge rusting; random impact damage with rusting substrate; breakdown starting to show at rivet seams; External inspection indicated two roof areas with severe deterioration and four thin areas; the shell had a number of 1-inch diameter bulges of an unknown nature; coating failure was noted in isolated areas around the entire perimeter of the tank; the tar seal around the tank perimeter has significantly deteriorated and there are several cavities in the foundation; the area is poorly graded; Sandblasted 9/86, water draw tank; slag present; standard water bottom release practices; potential releases to subsurface through tank bottom	Coatings Survey Rpt dated 1/5/96 by Vass Field Inspection & Structural Evaluation of Tank 36 dated 7/22/96 RETEC Visit 1/6/97	

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Map Symbol	Map Location	Area of Concern	Basis of Concern	Reference	Baseline Category
TK-141	C-4	Tank 141 IFO 1,821,246 gallons	Construction in 1908 of single-wall, riveted (bottom and shell) steel resting on a sand pad and is located in TF #1; External inspection indicated number of leaks in the shell (especially along the seams) and around nozzles; possible structural problems with the roof structural system; severe external corrosion above the insulation ring and around two inlet nozzles; a short dike wall constructed against the tank shell; thin roof plates exist; insulated; Corrugated steel removed from bottom 1' of tank with insulation showing, staining on gravel from valves from pipes behind tank;	Field Inspection & Structural Evaluation of Tank 141 dated 8/29/95; RETEC Visit 1/6/97	
TK-1471	C-5	Tank 1471 GDL 10W Guardol 10 19,448 gallons	Constructed in 1921 of welded steel; located in TF #1, concrete dike secondary containment; minor staining on pump pad; Riveted shell; last painted 1978; slight cracking and disbondment of topcoat; riveted seams starting to show coating breakdown with substrate rust; random impact damage visible on plate; Water draw tank, valve staining on gravel and concrete pad, scraped and painted 10-26-78; standard water bottom release practices; potential releases to subsurface through tank bottom	Coatings Survey Rpt dated 1/5/96 by Vass; RETEC Visit 1/6/97	
TK-2561	D-5	Tank 2561 Cutter Stock Fuel Oil Black Oil Product 1,668,775 gallons	Constructed in 1929 of single-wall, riveted steel resting on a sand and gravel pad and is located in TF #1; Riveted shell; last painted 1986; existing coatings appear in good shape; only visible problem is leaching rivets; approximately 12 leaks randomly distributed around the tank; External inspection indicated number of leaks in the shell (at rivet heads and seams) and around nozzles; the roof structure has one corroded hole in it and two areas where the steel thickness is less than 0.1 inch; roof fitting number 1 is missing and there is evidence of product seepage; there are nine flat plates welded to the tank shell; portions of the shell and roof coating have failed; parts of the tank are below grade; the chime is heavily corroded with 1/16 inch thickness remain in some locations; Water draw tank, sand blasted on 8/15/86; standard water bottom release practices; potential releases to subsurface through tank bottom	Coatings Survey Rpt dated 1/5/96 by Vass; Field Inspection & Structural Evaluation of Tank 2561 dated 7/26/96 RETEC Visit 1/6/97	

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Map Symbol	Map Location	Area of Concern	Basis of Concern	Reference	Baseline Category
TK-2579	C-5	Tank 2579 Guardol 10W 20,149 gallons	Welded Steel tank constructed in 1929; concrete dike secondary containment; Shell last painted in 1978; some cracking and disbondment of topcoats; random impact damage to flat plate; indication of lead paint; Water draw tank; minor staining on pump pad; standard water bottom release practices; potential releases to subsurface through tank bottom	Coatings Survey Rpt dated 1/5/96 by Vass; RETEC Visit 1/6/97	
TK-2669	D-5	Tank 2669 Marine Diesel Black Oil Product 475,356 gallons	Welded steel tank constructed in 1931, concrete dike secondary containment; Riveted tank, regrade and recondition the entire tank perimeter; portions of the shell and the entire roof coating system have failed; tank shell is supported on a sand and gravel foundation pad; Riveted shell; last painted in 1985; some edge rusting at rivet seams and base chime area observed; Water draw tank, staining on gravel from two valves; pump pad near tank - observed staining on concrete, on pumps, no cracks; standard water bottom release practices; potential releases to subsurface through tank bottom	7/23/94, Field insp. & structural evaluation report by AEC; 1/5/96 Coatings Survey Rpt by Vass; RETEC Visit 1/6/97	

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Map Symbol	Map Location	Area of Concern	Basis of Concern	Reference	Baseline Category
TK-2783	D-5	Tank 2783 Industrial Fuel Oil PS-300 Black Oil Product 984,486 gallons	Welded steel tank constructed in 1937, concrete dike secondary containment; insulated; Approx. 4 gallons of black oil leaked from valve onto the ground; Flat bottom tank with welded bottom plates and riveted shell plates; the interior vertical riveted seams on the shell were visually examined, some of the seams appeared to have product wicking from between the plates; one external seam was exposed, the seam had apparently been leaking; the MFL identified topside (internal) corrosion in the form of general pitting; three small diameter pits approx. 0.1" deep were found; the tank foundation is below grade; On 3/2/95, 20 gallon release of black oil decant onto containment pad, approx. 5 gallons spraying onto ground; On 10/10/95, pressure relief system sprung a leak and 5 gallons sprayed out, 4 onto the pad and one onto the surrounding ground/gravel; On 11/3/95, product spraying from the pump G1B next to TK-2783; Approximately 5,200 gallons were released, 20% went to the separators and 80% on to the soil; Covered with corrugated steel, product staining along 10' of base, sandblast grit, staining on gravel from piping from tank; some buried and exposed wood saturated with product near tank; pump pad near tank saturated with product and the gravel around it was saturated; visible product from valves and piping along concrete berm between TK-2783 and TK-2784 and staining on gravel; some buried and exposed wood saturated with product near tank; pump pad near TK-2783 saturated with product and gravel around it was saturated; MW near TK-2783 (U-5A); standard water bottom release practices; potential releases to subsurface through tank bottom	11/9/92 Incident Rpt.; Field Inspection and 10/6/94, Structural Evaluation Rpt by AEC; Incident Report dated 3/2/95; Incident Report dated 10/10/95; Incident Report dated 11/3/95; RETEC Visit 1/6/97	

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Map Symbol	Map Location	Area of Concern	Basis of Concern	Reference	Baseline Category
TK-2784	D-5	Tank 2784 Diesel No. 2 1,456,937 gallons	Welded steel tank constructed in 1937, concrete dike secondary containment; Discolored soil was noted north and contiguous to Tank No. 2784 (1961, 1971) and wetted soil was observed in 1977 (south/southwest from the tank); Riveted shell; last painted 1980; observed leaching rivets with most concentrated on bottom three rings; appears repairs were attempted unsuccessfully; most repairs continue to leak; most severe is in southside with product undercreep to surrounding coating with resulting blisters/cracking/ disbondment and leaching of product; Lap welded floor, butt and lap-riveted shell; few product side pit indications were detected on the tank bottom floor; the primary area with pits is located at the water draw line near the sump; an existing epoxy coat type liner has been applied over the corner weld and all vertical and horizontal shell (riveted) seams; light amounts of product at various locations along the shell to bottom area were seen, possibly surfacing from beneath the epoxy liner; 1'x 1' area of valve drip on gravel, water draw tank, scraped and painted 12/10/80, paint chips; observed staining on concrete and drains on pump pad next to tank; staining on concrete below diesel pump valve manifold slab next to tank 2784; visible free product from valves and piping along concrete berm between 2783 and 2784 and staining on gravel; standard water bottom release practices; potential releases to subsurface through tank bottom	M/B&A, 1997 Coatings Survey Rpt dated 1/5/96 by Vass RETEC Visit 1/6/97 Formal Internal/ External API Tank Inspection Report dated June 1996 by CTI; RETEC Visit 1/6/97	
TK-2917	E-5	Tank 2917 450 Neutral 650,160 gallons	Welded steel tank constructed in 1938, concrete dike secondary containment; Last painted in 1979; checking and cracking of coating system visible throughout with pinpoint rust starting to show on southside of tank; Observed severe breakdown on base chime; Scraped and painted 7/11/79, paint chips, water draw to concrete box, staining on gravel under piping to pump; standard water bottom release practices; potential releases to subsurface through tank bottom	Coatings Survey Rpt dated 1/5/96 by Vass RETEC Visit 1/6/97	
TK-4318	D-8	Tank 4318 Industrial Fuel Oil 1,504,000 gallons	Constructed in 1973 of welded steel; concrete dike secondary containment; insulated; Corrugated steel tank, visibly hardened product on asphalt skirt and gravel, water draw tank, sandblast grit; standard water bottom release practices; potential releases to subsurface through tank bottom	RETEC Visit 1/6/97	

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Map Symbol	Map Location	Area of Concern	Basis of Concern	Reference	Baseline Category
TK-4369	E-4	Tank 4369 Drying 20,000 gallons	Insulated; welded steel tank constructed in 1979, concrete dike secondary containment; Water draw tank, gravel around concrete pad stained and visible product observed; standard water bottom release practices; potential releases to subsurface through tank bottom	RETEC Visit 1/6/97	
TF-#2	G-4	Tank Farm #2	An office and auto repair shop was located southeast from Tank Farm No. 2; it was part of Unocal's property per Sanborn Maps, however the available terminal drawings and plans did not depict this area; the structures were razed by 1975; A Signal Oil Company Oil Warehouse was located southeast from Tank Farm No. 2 on the Sanborn Maps from circa 1941 to 1975; Product found leaking onto soils from an unused Diesel No. 2 line between TF#1 and TF#2 where the line enters tank farm #2; Tanks 2915 (top only), 2982, 3409, 3410, and 3411 contain some lead paint; Contained within concrete wall berms; slag; standard tank bottom disposal practices; use of lead-based paint/primer and preparation practices; Leaking flanges on the product pumps were evident, releases were observed throughout the concrete containment; a bucket that was full of product was located next to an empty bucket under a leaking pipe; stained rock and soil were observed around the bermed containment area; the valves at Tank No. 2983 were covered with oily material, the soil under the attached pipes was stained	M/B&A, 1997 Incident report dated 7/17/91; Coatings Survey Rpt dated 1/5/96 by Vass RETEC Visit 1/6/97 M/B&A Visit 1/21/97	

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Map Symbol	Map Location	Area of Concern	Basis of Concern	Reference	Baseline Category
TK-2915	F-5	Tank 2915 Unleaded Internal Float 3,556,140 gallons	Welded steel tank constructed in 1938, concrete dike secondary containment; Last painted in 1978; topcoats starting to check and crack; small amount of topcoat disbondment with exposed primer; coatings exhibit heavy weathering; Butt welded cone roof tank; regrade and recondition the entire perimeter of the tank; portions of the shell and the entire roof coating system have failed; the tank has no grounding cables; the bottom shell course has a band of 1/64" to 1/32" deep pits scattered 360 degrees around the tank; there are isolated areas of coating failure; the tank shell is supported on a sand and gravel foundation pad; there is an asphalt seal which has deteriorated and pulled away from the chime; Water draw tank, valve from tank to concrete box drain for water draw, sand blast chime area 1978, asphalt skirt; standard water bottom release practices; potential releases to subsurface through tank bottom	Coatings Survey Rpt dated 1/5/96 by Vass; External API Inspection Report dated 7/22/96 by AEC RETEC Visit 1/6/97	
TK-2916	G-5	Tank 2916 Diesel No. 2 1,716,960 gallons	Welded steel tank constructed in 1938, concrete dike secondary containment; Flat bottom tank, welded construction; the lower 1" to 2" of the shell exterior is heavily corroded and pitted; the tank foundation is below grade; the drainage around the tank is inadequate; Last painted in 1981; widespread checking and cracking of topcoats with visible and severe rusting of base chime area and shell bottom; Paint chips, painted 8/24/81, vault with underground piping, water draw valve into concrete box; standard water bottom release practices; potential releases to subsurface through tank bottom	10/24/94, Field Inspection & Structural Eval. Rpt by AEC; Coatings Survey Rpt dated 1/5/96 by Vass; RETEC Visit 1/6/97	

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Map Symbol	Map Location	Area of Concern	Basis of Concern	Reference	Baseline Category
TK-2982	F-4	Tank 2982 Heating Oil #1 478,800 gallons	Welded steel tank, 1941, concrete dike secondary containment; Tall flat bottom tank welded construction; the top shell course has some distortions due to the overfilling which took place in 1978; portions of the tank coating have failed; the tank foundation has eroded around some portions of the tank perimeter; in order to prevent further erosion, the tank base should be reconditioned; the chime is heavily corroded and pitted on the north side of the tank; the exterior corner weld is questionable; The shell is severely corroded all around approx. 4" to 6" up from the bottom; Two small holes within 2" of the bottom were discovered and/or created when the bottom was being sandblasted; the most severe corrosion occurs between vertical weld seams; there are no grounding cables; there is a hole in the bottom approximately 1' from the shell near the vertical seam weld; the hole was discovered when the epoxy coating was being sandblasted; Last painted 1979; severe checking and cracking of topcoats with rust bleed through on approx. 40%; lead indications; Painted 6/13/78, paint chips, water draw, staining on valve and gravel (fill line) in a 3'x3' area; concrete pump pad between TK-2982 and TK-2983 had staining on valves and pumps and concrete pad; standard water bottom release practices; potential releases to subsurface through tank bottom	Field Inspection & structural evaluation report dated 10/26/94 by AEC; Inspection and Evaluation Report dated 3/22/96 by AEC; Coatings Survey Rpt dated 1/5/96 by Vass; RETEC Visit 1/6/97	
TK-2983	G-4	Tank 2983 150 Neutral 315,420 gallons	Welded steel tank constructed in 1941, concrete dike secondary containment; Last painted 1985; Sandblasted 5/15/86; concrete pump pad between TK-2982 and TK-2983 had staining on valves and pumps and concrete pad; potential releases to subsurface through tank bottom; The valves at Tank No. 2983 were covered with oily material, the soil under the attached pipes was stained	Coatings Survey Rpt dated 1/5/96 by Vass; RETEC Visit 1/6/97 M/B&A Visit 1/21/97	
TK-3407	H-4	Tank 3407 Unleaded Internal Float 3,384,150 gallons	Welded steel tank constructed in 1949, concrete dike secondary containment; Floating roof tank; the coating on the shell has areas of deterioration; no tank grounding was located; the tank rests on a sand foundation; last painted 1986; Sandblasted 5/15/86, water draw to concrete box; standard water bottom release practices; potential releases to subsurface through tank bottom	AEC Insp & Eval Rpt, 11/2/95; RETEC Visit 1/6/97	

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Map Symbol	Map Location	Area of Concern	Basis of Concern	Reference	Baseline Category
TK-3408	H-5	Tank 3408 Super Unleaded Internal Float 1,693,650 gallons	Welded steel tank constructed in 1949, concrete dike secondary containment; Internal float roof and vapor dome tank; the coating on the shell has areas of deterioration; the coating is completely gone approx. 2" above the corner weld and the plate has surface corrosion; no tank grounding; the tank rests on a sand foundation; the chime projection past the toe of the corner weld was measured with the minimum dimension equal to ¾", the minimum allowable by API is 1"; in 1991 the tank bottom pitting was repaired; Last painted 1985, base chime coating damaged during internal welding; overall condition of shell remains good with the exception of three small areas of breakdown on west side of tank; Sandblasted 7/11/85, water draw to concrete box; standard water bottom release practices; potential releases to subsurface through tank bottom	Inspection & Evaluation report dated 11/2/95 by AEC; Coatings Survey Rpt dated 1/5/96 by Vass; RETEC Visit 1/6/97	
TK-3409	G-5	Tank 3409 Ethanol Internal Float 1,150,800 gallons	Welded steel tank constructed in 1949, concrete dike secondary containment; Internal floating roof tank; the coating on the shell has areas of deterioration; no tank grounding was located; tank rests on a sand foundation; the tank is at grade or 1" below grade around the perimeter; Last painted 1981; widespread checking and cracking of topcoats with pinpoint rusting; edge rusting of base chime; lead indications; Painted 8/24/81, paint chips, two water draws to stained concrete box, truck valve to underground; standard water bottom release practices; potential releases to subsurface through tank bottom	Inspection & Eval report dated 11/2/95 by AEC; Coatings Survey Rpt dated 1/5/96 by Vass; RETEC Visit 1/6/97	
TK-3410	G-4	Tank 3410 Av Gas Internal Float 302,190 gallons	Welded steel tank constructed in 1949, concrete dike secondary containment; Last painting unknown; coating system adhesion is very poor with film thickness high; coating system exhibits blistering and cracking with rusting of substrate; lead indications; Scraped and painted 8/24/81, paint chips, water draw to concrete box; standard water bottom release practices; potential releases to subsurface through tank bottom	Coatings Survey Rpt dated 1/5/96 by Vass RETEC Visit 1/6/97	
TK-3411	G-4	Tank 3411 Super Unleaded Internal Float 302,190 gallons	Welded steel tank constructed in 1949, concrete dike secondary containment; Last painting unknown; very poor condition of topcoats to old original lead primer; visible blistering and cracking with substrate rusting; paint chips, water draw to concrete box; standard water bottom release practices; potential releases to subsurface through tank bottom	Coatings Survey Rpt dated 1/5/96 by Vass; RETEC Visit 1/6/97	

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Map Symbol	Map Location	Area of Concern	Basis of Concern	Reference	Baseline Category
TK-3412	G-4	Tank 3412 Heating Oil #1? Ethanol? Internal Float 302,190 gallons	Welded steel tank constructed in 1948, concrete dike secondary containment; The bottom plate has significant thinning from soil side pitting; several spots of paint failure and corrosion were observed on the tank shell, piping, handrails, stairs, and chime ring; the grades around the tank are such that water does not drain away from the tank; there is excessive corrosion and erosion in the tanks chime ring; leaking packing was noted on valves; Water draw to concrete box, sandblasted 7/11/85; concrete pump pad between tanks 3412 and 3413 stained; standard water bottom release practices; potential releases to subsurface through tank bottom	API Inspection Report dated June 1993 by E&H Services; RETEC Visit 1/6/97	
TK-3413	G-4	Tank 3413 Unleaded Internal Float 302,190 gallons	Welded steel tank constructed in 1949, concrete dike secondary containment; Concrete pump pad between TK-3412 and TK-3413 stained; standard water bottom release practices; potential releases to subsurface through tank bottom	RETEC Visit 1/6/97	
TK-4259	G-4	Tank 4259 Transmix Internal Float 230,160 gallons	Welded steel tank constructed in 1968, concrete dike secondary containment; Last painted 1981; widespread pinpoint rusting visible throughout shell coating; The shell coating has failed at numerous locations around the entire surface; the lowest three inches of the tank shell is lightly corroded and contains widely scattered 1/64" pits around the entire perimeter; the entire area had been covered by asphalt prior to inspection; no tank grounding cables were found; t 7 locations around the tank perimeter, the bottom plate lap seams which project past the tank shell were either not welded or had significant deterioration; the tank shell is supported on a gravel and sand foundation pad; the perimeter of the tank should be regraded to allow for proper drainage; Scraped 5/24/81, paint chips observed, water draw to concrete box, slag; standard water bottom release practices; potential releases to subsurface through tank bottom	Coatings Survey Rpt dated 1/5/96 by Vass Field inspection and structural evaluation report dated 7/26/96 by AEC; RETEC Visit 1/6/97	

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Map Symbol	Map Location	Area of Concern	Basis of Concern	Reference	Baseline Category
TF-#3	C-7	Tank Farm #3	Tanks 3414, 3415, 3416, 3417, 3739, 3744, and yard piping contain some lead paint; Gravel saturated with product under piping between tanks 4252 and 4253; some gravel staining under piping between tanks 4254 and 4255; standard tank bottom disposal practices; use of lead-based paint/primer and preparation practices; Localized hydrocarbon stains were noted on the concrete and in the dirt at the water draw and valve for Tank No. 3761; the gravel was hydrocarbon-stained in and around the Railroad Loading/Unloading Racks; rainbow sheens were evident on various paved surfaces; localized areas of asphalt-like material were observed in and around the pipes at Tank No. 4256; localized hydrocarbon stains were observed around the Oil Heater Unit and beneath the valve for Tank No. 3579; a layer (several inches thick) of hydrocarbon residues was located in a concrete-lined pit at the Black Oil Truck Loading Rack; more than forty 55-gallon drums were stored on bare soil in the	Coatings Survey Rpt dated 1/5/96 by Vass; RETEC Visit 1/6/97 M/B&A Visit 1/21/97	
DITCH	C-7 to C-8	Drainage Ditch	southeast corner of the yard area; A drainage ditch extended from the northwest to southeast along a pipeway and terminated in a depression southwest from Tank 3761 (1970, 1971, and 1972); soil along the pipeway appeared discolored (possibly just wet); liquid ponded in the depression; the erosional feature was stained in 1972;		

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Map Symbol	Map Location	Area of Concern	Basis of Concern	Reference	Baseline Category
TK-3579	D-7	Tank 3579 Industrial Fuel Oil 3,385,200 gallons	Constructed of welded steel in 1950; concrete dike secondary containment; Localized discolored soil was observed in the vicinity of the water draw on the south/southwest side of the tank in 1952 aerial photographs; wet flows were observed west from the tank in 1956 and 1957; a depression with ponded liquid was at the east end of the containment area in 1964;	M/B&A, 1997	
TRENCH	D-8	Trench/Pit	A trench (possibly for tank bottom disposal) was located east from the tank in 1966; a pile of "clean" soil was also evident; dark to black staining was evident around the trench, especially to the southeast (general area of future		
DEPRESS	C-7	Depression/Pit	Tank No. 4318); another depression/pit was noted southwest from the tank just inside an earthen containment dike; both pits were filled by the 1967 photograph date;		
			There is an area of the shell ring where there are several thin thickness measurements; this could be a shell plate lamination or deep pits; water does not drain away from the tank; several spots of paint failure and corrosion were observed on the tank shell, piping, valves, heater, handrails, stairs, and chime ring;	API Inspection Report dated 8/93 by E&H Services;	
			A 6" diameter lap welded patch plate was installed over the soil side pit in bottom plate; the shell to bottom corner plate was repaired; a lap welded patch plate over the ripple in bottom plate was installed; weld repair pits in bottom was done; two coats of epoxy liner were applied to bottom and lower 18" of shell;	Inspection Report dated 11/8/95 by AEC	
			A total of 39 pits in the bottom plates were identified; a single soil side indication was located in bottom plate; tank sits on a sand foundation; insulated;	Inspection & Eval Rpt dated 8/23/95 by AEC;	
			Corrugated steel tank; valve staining on gravel, water draw tank, sand blast grit observed on ground surface; concrete pad pump had visible product, no cracks in concrete, some gravel staining; standard water bottom release practices; potential releases to subsurface through tank bottom	RETEC Visit 1/6/97	

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Map Symbol	Map Location	Area of Concern	Basis of Concern	Reference	Baseline Category
TK-3761	C-9	Tank 3761 Diesel No. 2 3,385,200 gallons	Constructed in 1954 of welded steel; concrete dike secondary containment; 20 gallon diesel tank leak on 1/25/83;	Tbl of reported spills at Unocal from 1/75-9/93 file TM-0608; M/B&A, 1997	
DITCH	C-7 to C-8	Drainage Ditch	Ponded liquid was observed generally south/southeast from the tank in 1969, 1970, and 1972; A drainage ditch extended from the northwest to southeast along a pipeway and terminated in a depression southwest from Tank 3761 (1970, 1971, and 1972); soil along the pipeway appeared discolored (possibly just wet); liquid ponded in the depression; the erosional feature was stained in 1972;		
			Flat bottom tank, welded construction; topside (internal) corrosion was identified in the form of general pitting; three small diameter holes were found; the tank sits on grade; the asphalt paving around the tank is higher than the tank bottom; Installed new tank bottom with secondary containment lining and leak detection; Cleaned and painted interior of new bottom and lower two feet of shell and columns; Last painted bottom course 1995, remainder of shell 1983; shell contains approximately ten coats of paint; the top five coats are severely checked and cracked and easily peels from the first five coats; Water draw to concrete box, cracked asphalt skirt, sandblasted 1983, staining from valve on skirt, crack, and gravel, painted 7/28/95, paint chips and sandblast grit observed on gravel; double bottom tank; standard water bottom release practices; potential releases to subsurface through tank bottom; Localized hydrocarbon stains were noted on the concrete and in the dirt at the water draw and valve for Tank No. 3761	Field inspection & structural evaluation report dated 10/7/94 by AEC; Field Insp Rpt dated 6/14/95 by AEC; AEC Coating Insp. Report dated 7/31/95; Coatings Survey Rpt dated 1/5/96 by Vass RETEC Visit 1/6/97 M/B&A Visit 1/21/97	

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Map Symbol	Map Location	Area of Concern	Basis of Concern	Reference	Baseline Category
TK-4252	C-7	Tank 4252 Out of Service 420,000 gallons	Constructed in 1968 of welded steel; concrete dike secondary containment; Flat bottom welded tank; several spots of paint failure and corrosion were observed on the tank shell, windgirder, piping, handrails, stairs, and chime ring; water does not drain way from the tank; sections of the tank bottom have excessive soil-side pitting; insulated; Diesel No. 2 release of 4 gallons, three to drip pans and absorbent pads, one to the ground surface from BP circulation line to tanks TK-4252 and TK-4253; Corrugated steel tank, asphalt skirt, staining on asphalt, sand blast grit; Earthen berms by tank TK-4252 had hardened product on berms and flowing towards the stormwater drain; standard water bottom release practices; potential releases to subsurface through tank bottom	API Inspection Report dated July 1993 by E&H Services; Incident Report dated 11-9-94; RETEC Visit 1/6/97	
TK-4253	C-7	Tank 4253 Out of Service 420,000 gallons	Constructed in 1968 of welded steel; concrete dike secondary containment; The bottom has excessive soil side pitting which combined with product side corrosion caused the actual thickness of numerous areas of the tank bottom to be less than the minimum allowed by API, a new bottom is required; several spots of paint failure and corrosion were observed on the tank shell, flanges, and chime ring; water does not drain away from the tank; one hole was identified in the floor; severe plate thinning; Insulated; Diesel No. 2 release of 4 gallons, three to drip pans and absorbent pads, one to the ground surface from BP circulation line to tanks TK-4252 and TK-4253; Corrugated steel tank, asphalt skirt, staining on asphalt, sand blast grit;	API Inspection Report dated July 93 by E&H; Incident Report dated 11-9-94; RETEC Visit 1/6/97	
DEPRESS	C-7	Depression/Pit	A depression/pit was noted north of the tank just inside an earthen containment dike; filled by the 1967 photograph date;	M/B&A, 1997	
MOUND	C-7	Black Mound	A mound of black material was observed in the general location of this tank (pre-development) Standard water bottom release practices; potential releases to subsurface through tank bottom		
TK-4354	C-8	Tank 4254 Out of Service 420,000 gallons	Constructed in 1968 of welded steel; concrete dike secondary containment; insulated; On 4/29/81, asphalt release of 100 gallons from a tank leak; Corrugated steel tank, asphalt skirt, staining on asphalt, sand blast grit, water draw; standard water bottom release practices; potential releases to subsurface through tank bottom	Reported spills (1/75-9/93), file TM-0608; RETEC Visit 1/6/97	

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Map Symbol	Map Location	Area of Concern	Basis of Concern	Reference	Baseline Category
TK-4255	C-8	Tank 4255 Out of Service 420,000 gallons	Constructed in 1968 of welded steel; concrete dike secondary containment; insulated; Corrugated steel tank, asphalt skirt, staining on asphalt, sand blast grit, gravel stained area 6'x 6'; standard water bottom release practices; potential releases to subsurface through tank bottom	RETEC Visit 1/6/97	
TK-4256	C-8	Tank 4256 Out of Service 420,000 gallons	Constructed in 1968 of welded steel; concrete dike secondary containment; insulated; Corrugated steel tank, water draw, gravel stained from valve, piping near tank, gravel saturated with product; standard water bottom release practices; potential releases to subsurface through tank bottom	RETEC Visit 1/6/97	
TK-4257	C-8	Tank 4257 Out of Service 420,000 gallons	Constructed in 1968 of welded steel concrete dike secondary containment; Last date painted 1979; shell coatings contain widespread coating breakdown with rust bleed through; Scraped and painted 7/11/79, water draw tank; standard water bottom release practices; potential releases to subsurface through tank bottom	Coatings Survey Rpt dated 1/5/96 by Vass RETEC Visit 1/6/97	
TK-4281		Tank 4281 MP ATF 20,000 gallons	Welded steel tank constructed of 1969, concrete dike secondary containment; Last painting unknown; topcoats heavily cracked and checked; Water draw, on concrete pad, paint chips observed; standard water bottom release practices; potential releases to subsurface through tank bottom	Coatings Survey Rpt dated 1/5/96 by Vass RETEC Visit 1/6/97	
TK-4306	D-7	Tank 4306 150 Neutral 222,600 gallons	Constructed in 1971 of welded steel; concrete dike secondary containment 1971; flat bottom welded construction; the lower 1" to 2" of the shell exterior is heavily corroded and pitted; the deepest pit is 1/16"; inadequate site drainage; the tank sits on grade; Discoloration in the general area of Tank No. 4306 was noted in the 1972 aerial photograph; Last date painted 1986; severe coating breakdown at base of tank with disbonded coating and exposed substrate; small areas of spot rusting; Staining below water draw valve on concrete and gravel, paint chips observed on gravel, sandblasted 9/86; standard water bottom release practices; potential releases to subsurface through tank bottom	Field inspection & structural evaluation dated 10/26/94 by AEC; M/B&A, 1997 Coatings Survey Rpt dated 1/5/96 by Vass RETEC Visit 1/6/97	
TK-4441	E-4	Tank 4441 Additive	Staining on pad from pump; pump pad and gravel area 1'x 1' stained from piping; potential releases to subsurface through tank bottom	RETEC Visit 1/6/97	

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Map Symbol	Map Location	Area of Concern	Basis of Concern	Reference	Baseline Category
TF-1A	C-5	Tank 2713 UNIX AW 46 119,868 gallons	Welded steel tank constructed in 1937, concrete dike secondary containment; Last painted unknown; some slight topcoat peeling and cracking at bottom course weld seams; remainder exhibits heavy weathering; Spills on skirt and gravel in a 3'x 20' area, paint chips; potential releases to subsurface through tank bottom	Coatings Survey Rpt dated 1/5/96 by Vass; RETEC Visit 1/6/97	
TF-1A	C-5	Tank 2714 Guardol 15/40 119,868 gallons	Welded steel tank constructed in 1937, concrete dike secondary containment; Last painted 1979; observed slight checking and cracking of topcoat; Asphalt skirt, drip from valve onto skirt and gravel in a 3'x5' area, another two valve stains on skirt and gravel in a 1'x3' area, paint chips; potential releases to subsurface through tank bottom	Coatings Survey Rpt dated 1/5/96 by Vass; RETEC Visit 1/6/97	
TF-1A	C-5	Tank 3639 Guardol 30 132,300 gallons	Welded steel tank constructed in 1951, concrete dike secondary containment; Last painted 1979; some base chime edge rusting; observed slight checking and cracking of topcoats; coating weathered dull and streaked; Asphalt skirt around tank; 1' diameter valve drip, sandblasted 11/10/79, valve from tank to product line covered with product and onto ground covering a 5'x5' area; potential releases to subsurface through tank bottom	Coatings Survey Rpt dated 1/5/96 by Vass RETEC Visit 1/6/97	
TF-2A	G-4	Tank 3623 R224 Gas Slops 20,000 gallons	Welded steel tank constructed in 1950, concrete dike secondary containment; Last painted unknown; observed some rust scale at base chime underside; shell coating exhibits random small and widely scattered areas of blisters with rust underside; Hardened tar-like substance along outside of tank on concrete pad and ground, water draw tank to concrete box, paint chips; additive injection pumps on concrete tank near tank is very stained; process drain between TK-4327, TK-4223, and TK-3623 pump on concrete pad, much staining, water draw; additive injection pump on concrete pad near TK-3623 - very stained; standard water bottom release practices; potential releases to subsurface through tank bottom	Coatings Survey Rpt dated 1/5/96 by Vass RETEC Visit 1/6/97	

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Map Symbol	Map Location	Area of Concern	Basis of Concern	Reference	Baseline Category
TF-2A	G-4	Tank 4223 Slop 20,000 gallons	Welded steel tank constructed in 1968, concrete dike secondary containment; Last painted unknown; shell coating contain widespread coating breakdown with blistering, disbondment, and rust bleed through; Water draw tank; process drain between TK-4327, TK-4223, & TK-3623 pump on concrete pad, much staining, water draw; standard water bottom release practices; potential releases to subsurface through tank bottom	Coatings Survey Rpt dated 1/5/96 by Vass RETEC Visit 1/6/97	
TF-2A	G-4	Tank 4327 R224W Gas Slops 10,000 gallons	Welded steel tank constructed in 1974, concrete dike secondary containment; Last painted unknown; base chime exhibits edge rusting; slight topcoat breakdown on horizontal weld seams; pealing paint; Paint chips observed on gravel, solid tar-like substance on concrete pad around tank bottom, drips to gravel; process drain between TK-4327, TK-4223, & TK-3623 pump on concrete pad, much staining, water draw; standard water bottom release practices; potential releases to subsurface through tank bottom	Coatings Survey Rpt dated 1/5/96 by Vass RETEC Visit 1/6/97	
TF-3A	D-7	Tank F-103 Exxon White Oil 30,000 gallons	Constructed in 1973 of welded steel; concrete dike secondary containment; Coatings weathered, dull and streaked; minor impact damage with spot rusting; Water draw tank on concrete pad, sandblasted 7/10/82; standard water bottom release practices; potential releases to subsurface through tank bottom	Coatings Survey Rpt dated 1/5/96 by Vass RETEC Visit 1/6/97	
TF-3A	D-7	Tank F-104 Exxon White Oil Evergreen 100N 21,700 gallons	Constructed in 1973 of welded steel; concrete dike secondary containment; Coatings weathered, dull and streaked; minor impact damage with spot rusting; Concrete pad, sandblast grit, sandblasted 8/15/86; potential releases to subsurface through tank bottom	Coatings Survey Rpt dated 1/5/96 by Vass RETEC Visit 1/6/97	

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Map Symbol	Map Location	Area of Concern	Basis of Concern	Reference	Baseline Category
TF-3A	D-7	Tank 4320 PS300 super motor oil 10W/30 previously: emulsified asphalt 42,000 gallons	Constructed in 1973 of welded steel; concrete dike secondary containment; insulated; pipe associated with tanks TK-4320 to TK-4323 leaked approx. 5 gallons of black oil (PS300) onto the soil; ½ drum of contaminated soil was removed; Tank sits on a grid of beams resting on grade; there is some minor mill scale visible; Corrugated steel tank on concrete pad, sandblast grit, gravel stained under valve; potential releases to subsurface through tank bottom	Incident Report dated 8/30/95; Fld insp & strctrl eval rpt,12/29/94, by AEC; RETEC Visit 1/6/97	
TF-3A	D-7	Tank 4321 PS300 Uniguide 46 previously: emulsified asphalt 42,000 gallons	Constructed in 1973 of welded steel; concrete dike secondary containment; Insulated; flat bottom tank, tank sits on a grid of beams resting on grade; there is some minor mill scale visible; Corrugated steel tank on concrete pad, sandblast grit; potential releases to subsurface through tank bottom	Fld insp & strctrl eval rpt,12/29/94, by AEC; RETEC Visit 1/6/97	
TF-3A	D-8	Tank 4322 PS300 tractor fluid previously: emulsified asphalt 42,000 gallons	Constructed in 1973 of welded steel; concrete dike secondary containment; insulated; flat bottom tank, tank sits on a grid of beams resting on grade; there is some minor mill scale visible; Corrugated steel tank on concrete pad, sandblast grit; potential releases to subsurface through tank bottom	Fld insp & strctrl eval rpt,12/29/94, by AEC; RETEC Visit 1/6/97	
TF-3A	D-8	Tank 4323 PS300 Super ATF previously: emulsified asphalt 42,000 gallons	Constructed in 1973 of welded steel; concrete dike secondary containment; insulated; flat bottom tank; tank sits on a grid of beams resting on grade; there is some minor mill scale visible; the settlement pattern is not in conformance with API levelness; Corrugated steel tank on concrete pad, sandblast grit; potential releases to subsurface through tank bottom	Fld insp & strctrl eval rpt,12/29/94, by AEC; RETEC Visit 1/6/97	

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Map Symbol	Map Location	Area of Concern	Basis of Concern	Reference	Baseline Category
TF-3B	D-6	Tank 3414 190 Bright Stock 222,180 gallons	Constructed in 1949 of welded steel; concrete dike secondary containment; Tall flat bottom, welded construction tank; two areas of underside (external) corrosion beyond the threshold settings were located; the tank sits on grade; Last painted 1986; observed some tank settlement on base chime below asphalt; shell coating weathered, dull, and streaked; lead indication; Sand blasted 9/86, water draw staining on gravel; standard water bottom release practices; potential releases to subsurface through tank bottom	11/21/94, Field Insp & Strctrl Evaluation by AEC; Coatings Survey Rpt dated 1/5/96 by Vass; RETEC Visit 1/6/97	
TF-3B	D-6	Tank 3415 Mineral Oil 90 Neutral 222,180 gallons	Constructed in 1949 of welded steel; concrete dike secondary containment; At the base of the tank near the corner weld and on the bottom extension the coatings are failing and areas of corrosion are developing; corrosion is developing near the manway, an area of bottom extension underside corrosion is evident; the asphalt apron has deteriorated; a bull plug is screwed in the bottom near the suction line, outside the tank in the area of this plug is where product residue is found; visual inspection of topside corrosion found 2 isolated areas of pitting corrosion and one mechanical loss; tank on grade w/asphalt apron, butt welded shell, lap welded bottom, built in 1949, last painted 1978, 0.5 to 1" of grade localized coating failure and corrosion of the corner weld area; the asphalt apron around several areas of the bottom is deteriorating and allowing runoff to accumulate around the bottom extension; at the base of the tank, near the corner weld and on the bottom extension the coatings are failing and areas of corrosion are developing; near the manway, an area of bottom extension underside corrosion was examined; outside the tank in the area of the bull plug product residue is found; topside corrosion found 2 isolated areas of pitting corrosion and one mechanical loss area; the bottom has edge settlement that exceeds API standards; Last painted 1986; observed some tank settlement at base chime below asphalt; shell coating weathered, dull, and streaked; lead indication; valves and ground below the valves were saturated and stained with product; Gravel stained below water draw valves, sand blasted 9/86; standard water bottom release practices; potential releases to subsurface through tank bottom	Inspection Report, HNT Inspection, 12/17/93; Coatings Survey Rpt dated 1/5/96 by Vass RETEC Visit 1/6/97	

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Map Symbol	Map Location	Area of Concern	Basis of Concern	Reference	Baseline Category
TF-3B	D-7	Tank 3416 150 Neutral 222,180 gallons	Constructed in 1949 of welded steel; concrete dike secondary containment; Wetted/stained soil was observed in the 1970 aerial photograph generally east/southeast from Tank Nos. 3416 and 3417; Repairs performed during 8/94: re-welding of interior corner weld, 360 degrees around; removing a section of a sketch plate containing an obsolete nozzle (bull plug); slotting a new section of floor plate to replace the section above; welding a 3'6"x3'6" bearing plate under roof support column; Observed small hole made by an existing weld defect; tank floor has puddle welding of minor pitting occurred and some repair of minor weld defects on the internal piping; Last painted 1978; observed severe breakdown at base chime; shell coating weathered, dull, and streaked; lead indication; Scraped and painted 8/17/78; water draw staining on gravel; standard water bottom release practices; potential releases to subsurface through tank bottom	M/B&A, 1997 AST Repair Monitoring Report, 8/11/94, AEC; Coatings Survey Rpt dated 1/5/96 by Vass RETEC Visit 1/6/97;	
TF-3B	D-7	Tank 3417 90 Neutral 222,180 gallons	Constructed in 1949 of welded steel; concrete dike secondary containment; Discolored soil was observed east/southeast from Tank No. 3417 in the 1969 aerial photograph; wetted/stained soil was observed in the 1970 aerial photograph generally east/southeast from Tank Nos. 3416 and 3417; Last painted 1986; observed some tank settlement - base chime below asphalt and partially covered with earth; shell coating is weathered, dull, and streaked; lead indication; Valves and gravel below valves stained, water draw tank, paint chips observed on ground surface, sand blasted 9/86; standard water bottom release practices; potential releases to subsurface through tank bottom	M/B&A, 1997 Coatings Survey Rpt dated 1/5/96 by Vass RETEC Visit 1/6/97	

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Map Symbol	Map Location	Area of Concern	Basis of Concern	Reference	Baseline Category
TF-3B	D-6	Tank 3739 190 Bright Stock 226,800 gallons	Constructed in 1954; flat bottom tank, welded steel construction; concrete dike secondary containment; the lower 1" to 2" of the shell exterior is corroded and pitted; one borderline area of underside (external) corrosion was located; a ¼" lap welded patch plate was found on the interior which does not conform to API standard weld spacing requirements; Last painted 1978; observed some tank settlement - base chime below asphalt; severe breakdown at base of tank - coatings peeling with exposed rusted substrate; shell coating weathering with slight checking and cracking of topcoats; lead indication; Scraped and painted 8/17/78, water draw tank; some staining on gravel between tanks 3739 and 3749; standard water bottom release practices; potential releases to subsurface through tank bottom	Field Inspection & Structural Evaluation Report dated 11/21/94 by AEC; Coatings Survey Rpt dated 1/5/96 by Vass RETEC Visit 1/6/97	
TF-3B	D-7	Tank 3740 Lube Oil 450 Neutral 302,400 gallons	Constructed in 1954 of welded steel; concrete dike secondary containment; Discolored ground under the pipeway and southwest from Tank No. 3740 was observed in the 1964 and 1975 aerial photograph; Repairs performed during 8/94 included removing a section of a sketch plate containing an obsolete nozzle; slotting a new section of floor plate to replace section mentioned above; welding a 3'6"x3'6" bearing plate under roof support column; repairing small areas of weld defects in the corner weld and several shell attachments; Flat bottom tank; approximately 3/32" deep pits were found on the interior south side of the shell near the bottom; approximately 3/32" deep pits were found on the bottom plate near the water draw; minor pits were found on the inside shell-to-bottom weld around the entire perimeter; the tank sits on grade; Last painted in 1978; observed some tank settlement on base chime below asphalt; base chime exhibits coating breakdown; severe checking and cracking with some rust bleed through; coating is weathered, dull, streaked; Sand blasted 9/86, scraped and painted 1978, water draw tank, staining on concrete and gravel; some staining on gravel between tanks TK-3739 and TK-3749; standard water bottom release practices; potential releases to subsurface through tank bottom	M/B&A, 1997 AST Repair Monitoring Report, 8/11/94, AEC; Field Inspection & Structural Evaluation report dated 8/23/94 by AEC; Coatings Survey Rpt dated 1/5/96 by Vass RETEC Visit 1/6/97	

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Map Symbol	Map Location	Area of Concern	Basis of Concern	Reference	Baseline Category
TF-3C	D-6	Tank 4244 Golden Bear 22 100 Oil 20,000 gallons	Constructed in 1968 of welded steel; concrete dike secondary containment; On concrete pad, water draw, spot blasted on 5/17/86; standard water bottom release practices; potential releases to subsurface through tank bottom	RETEC Visit 1/6/97	
TF-3C	D-6	Tank 4245 Drying Tank 20,000 gallons	Constructed in 1968 of welded steel; concrete dike secondary containment; insulated; Water draw to concrete box, stained around outside of concrete box on gravel, staining on concrete, stain on gravel under valve; standard water bottom release practices; potential releases to subsurface through tank bottom	RETEC Visit 1/6/97	
TF-3C	D-6	Tank 4258 Drying Tank 20,000 gallons	Constructed in 1968 of welded steel; concrete dike secondary containment Insulated; observed severe corrosion (rust scale) at and under base chime area; tank contains bare rusted pipe, valves, and outlets between tank and insulation jacket; Corrugated steel tank on concrete; potential releases to subsurface through tank bottom	Coatings Survey Rpt dated 1/5/96 by Vass RETEC Visit 1/6/97	
TF-3C	D-6	Tank 4266 Lube Oil Flush 20,000 gallons	Constructed in 1968 of welded steel; concrete dike secondary containment Last painted 1986; slight edge rusting at base chime and minor pinpoint rusting on the roof lip underside; Spot blasted 5/17/86, water draw on concrete pad; standard water bottom release practices; potential releases to subsurface through tank bottom	Coatings Survey Rpt dated 1/5/96 by Vass RETEC Visit 1/6/97	
TF-3C	D-7	Tank 4302 Drying Tank 20,000 gallons	Constructed in 1971 of welded steel; concrete dike secondary containment; insulated; Corrugated steel tank on concrete pad, staining on gravel around concrete, water draw; standard water bottom release practices; potential releases to subsurface through tank bottom	RETEC Visit 1/6/97	

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Map Symbol	Map Location	Area of Concern	Basis of Concern	Reference	Baseline Category
TF-3C	D-7	Tank 4303 Drying Tank 20,000 gallons	Constructed in 1971 of welded steel; concrete dike secondary containment; insulated; Corrugated steel tank on concrete pad, staining on gravel around concrete, water draw; standard water bottom release practices; potential releases to subsurface through tank bottom	RETEC Visit 1/6/97	
TF-3C	D-7	Tank 4305 190 Bright Stock 10,000 gallons	Constructed in 1971 of welded steel; concrete dike secondary containment; insulated; Base chime area is exposed and does contain severe corrosion below insulation jacket; bare steel pipe and valves attached to the tank; Corrugated steel tank on concrete pad; potential releases to subsurface through tank bottom	Coatings Survey Rpt dated 1/5/96 by Vass RETEC Visit 1/6/97	
TF-F	B-6		A 1994 aerial photograph depicted a flow signature from the tank farm which extended to the northeast;	M/B&A, 1997	
	B-6	Tank 4336 Utility 20,000 gallons	Welded steel tank located on concrete pad, constructed in 1973, concrete dike secondary containment; potential releases to subsurface through tank bottom	RETEC Visit 1/6/97	
TF-F	B-6	Tank 4337 Utility 20,000 gallons	Welded steel tank located on concrete pad, constructed in 1973, concrete dike secondary containment; potential releases to subsurface through tank bottom	RETEC Visit 1/6/97	
TF-F	B-6	Tank 4335 Unax AW 32WR 20,000 gallons	Welded steel tank located on concrete pad constructed in 1973, concrete dike secondary containment; potential releases to subsurface through tank bottom	RETEC Visit 1/6/97	
TF-F	B-7	Tank 4436 Unax AW 68 20,000 gallons	Welded steel tank constructed in 1990, concrete dike secondary containment; On concrete pad, concrete dike secondary containment; potential releases to subsurface through tank bottom	RETEC Visit 1/6/97	
TF-F	B-7	Tank 4437 Unax AW 68 20,000 gallons	Welded steel tank, 1990, concrete dike secondary containment; On 6/8/93, 0.5 gallon release of product to ground; On concrete pad, concrete dike secondary containment; potential releases to subsurface through tank bottom	Accident/Incident Report dated 6/7/93; RETEC Visit 1/6/97	

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Map Symbol	Map Location	Area of Concern	Basis of Concern	Reference	Baseline Category
TF-F	B-6	Tank F-10 Utility 6,384 gallons	Welded steel tank constructed in 1954, concrete dike secondary containment; insulated; Corrugated steel on concrete footings; potential releases to subsurface through tank bottom	RETEC Visit 1/6/97	
TF-F	B-6	Tank F-11 Utility 6,384 gallons	Welded steel tank constructed in 1954, concrete dike secondary containment; Corrugated steel on concrete footings, insulated, staining below tank; potential releases to subsurface through tank bottom	RETEC Visit 1/6/97	
TF-F	B-6	Tank F-12 Utility 6,384 gallons	Welded steel tank constructed in 1954, concrete dike secondary containment; Corrugated steel on concrete footings, insulated, staining below tank; potential releases to subsurface through tank bottom	RETEC Visit 1/6/97	
LUBE-UP	B-6	Upper Lube Cell	Concrete pump area had staining on concrete, no visible cracks; piping in vault between tanks TK-4191 and TK-4281 and between tanks TK-4281 and TK-4332 had staining and sheen on surface; historical aerial photographs indicated three former storage tanks were located north of this unit	RETEC Visit 1/6/97	
LUBE-UP	B-6	Tank 3741 Ramar 20/40 20,000 gallons	Welded steel tank constructed in 1954, concrete dike secondary containment; Water draw tank, paint chips observed on gravel, product on gravel and on concrete pad; potential releases to subsurface through tank bottom	RETEC Visit 1/6/97	
LUBE-UP	B-6	Tank 3742 LS80/90 20,000 gallons	Welded steel tank constructed in 1954, concrete dike secondary containment; Insulated; Corrugated steel tank on concrete pad, hardened product on gravel, staining on concrete, paint chips observed on gravel; potential releases to subsurface through tank bottom	RETEC Visit 1/6/97	
LUBE-UP	B-6	Tank 3743 Hydraulic Tractor Fluid 20,000 gallons	Welded steel tank, constructed in 1954, concrete dike secondary containment; insulated; Corrugated steel tank on concrete pad, hardened product on gravel, staining on concrete, paint chips observed on gravel; potential releases to subsurface through tank bottom	RETEC Visit 1/6/97	

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Map Symbol	Map Location	Area of Concern	Basis of Concern	Reference	Baseline Category
LUBE-UP	B-6	Tank 3744 Golden Bear 100 20,000 gallons	Welded steel tank constructed in 1954, concrete dike secondary containment; Last date painted unknown; base chime exhibits coating breakdown; lead indication; Tank located on concrete pad, paint chips observed on gravel, hardened product on gravel and concrete pad, staining; potential releases to subsurface through tank bottom	Coatings Survey Rpt dated 1/5/96 by Vass RETEC Visit 1/6/97	
LUBE-UP	B-6	Tank 3745 Acryloid 954 20,000 gallons	Welded steel tank constructed in 1954, concrete dike secondary containment; insulated; 300 gallons of additive released due to tank overfill; Water draw, corrugated steel tank on concrete pad, staining on gravel; standard water bottom release practices; potential releases to subsurface through tank bottom	Incident report dated 7/18/89; RETEC Visit 1/6/97	
LUBE-UP	B-6	Tank 3746 Paratorq 4509 20,000 gallons	Welded steel tank constructed in 1954, concrete dike secondary containment; insulated; Corrugated steel tank on concrete pad, water draw, staining on concrete pad and staining on gravel; standard water bottom release practices; potential releases to subsurface through tank bottom	RETEC Visit 1/6/97	
LUBE-UP	B-6	Tank 3747 Lubrizol 7916A HiTec 436 20,000 gallons	Welded steel tank constructed in 1954, concrete dike secondary containment; insulated; Corrugated steel tank on concrete pad, water draw tank, hardened product on gravel; standard water bottom release practices; potential releases to subsurface through tank bottom	RETEC Visit 1/6/97	
LUBE-UP	B-6	Tank 3757 HiTec 7330 Lub 9800F 20,000 gallons	Welded steel tank constructed in 1954, concrete dike secondary containment; insulated; Corrugated steel water draw tank on concrete pad; standard water bottom release practices; potential releases to subsurface through tank bottom	RETEC Visit 1/6/97	

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Map Symbol	Map Location	Area of Concern	Basis of Concern	Reference	Baseline Category
LUBE-UP	B-6	Tank 3760 Golden Bear 100 20,000 gallons	Welded steel tank constructed in 1954, concrete dike secondary containment; insulated; Corrugated steel water draw tank on concrete pad, paint chips observed on gravel, stain on gravel; standard water bottom release practices; potential releases to subsurface through tank bottom	RETEC Visit 1/6/97	
LUBE-UP	B-6	Tank 4191 Lubrizol 4954W 20,000 gallons	Welded steel tank constructed in 1964, concrete dike secondary containment; insulated; Corrugated steel tank on concrete pad, water draw with staining on gravel below valve; standard water bottom release practices; potential releases to subsurface through tank bottom	RETEC Visit 1/6/97	
LUBE-UP	B-6	Tank 4192 TLA 555 HiTec 5755 20,000 gallons	Welded steel tank constructed in 1964, concrete dike secondary containment; Insulated; Corrugated steel tank on concrete pad, water draw, staining on pad and gravel, paint chips observed on gravel; standard water bottom release practices; potential releases to subsurface through tank bottom	RETEC Visit 1/6/97	
LUBE-UP	B-6	Tank 4241 Unax AW 32 20,000 gallons	Welded steel tank constructed in 1968, concrete dike secondary containment; Last painting unknown; topcoats exhibit checking, cracking, and peeling; Paint chips observed on gravel, concrete pad, staining on gravel below valve; potential releases to subsurface through tank bottom	Coatings Survey Rpt dated 1/5/96 by Vass RETEC Visit 1/6/97	
LUBE-UP	B-6	Tank 4242 Unax AW 32 20,000 gallons	Welded steel tank constructed in 1968, concrete dike secondary containment; Last painting unknown; topcoats exhibit checking, cracking, and peeling; tank on concrete pad, paint chips observed on gravel, staining on pad and gravel; potential releases to subsurface through tank bottom	Coatings Survey Rpt dated 1/5/96 by Vass RETEC Visit 1/6/97	
LUBE-UP	B-6	Tank 4243 PM 220 20,000 gallons	Welded steel tank constructed in 1968, concrete dike secondary containment; insulated; Staining on concrete pad and gravel, paint chips observed; potential releases to subsurface through tank bottom	RETEC Visit 1/6/97	

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Map Symbol	Map Location	Area of Concern	Basis of Concern	Reference	Baseline Category
LUBE-UP	B-6	Tank 4332 MP ATF 20,000 gallons	Welded steel tank constructed in 1973, concrete dike secondary containment; Last painted unknown; shell coating weathered, dull, and streaked; Paint chips observed on gravel, tank on concrete pad; potential releases to subsurface through tank bottom	Coatings Survey Rpt dated 1/5/96 by Vass RETEC Visit 1/6/97;	
LUBE-UP	B-6	Tank 4333 Hydraulic AW 46 20,000 gallons	Welded steel tank constructed in 1973, concrete dike secondary containment; Last painted unknown; some peeling topcoat visible; Tank on concrete pad, stained pad and gravel, paint chips; potential releases to subsurface through tank bottom	Coatings Survey Rpt dated 1/5/96 by Vass RETEC Visit 1/6/97	
LUBE-UP	B-6	Tank 4334 Hydraulic AW 32/68 20,000 gallons	Welded steel tank constructed in 1973, concrete dike secondary containment; Last painted unknown; finish coat weathered, dull and streaked with scattered impact damage; Tank on concrete pad, stained pad and gravel; potential releases to subsurface through tank bottom	Coatings Survey Rpt dated 1/5/96 by Vass RETEC Visit 1/6/97	
LUBE-LOW	B-5, B-6	Lower Lube Cell	Pump and piping area stained concrete, some small cracks;	RETEC Visit 1/6/97	
LUBE-LOW	B-6	Tank 4300 RAMAR 20/40 30,000 gallons	Welded steel tank constructed in 1969, concrete dike secondary containment; insulated; Corrugated steel tank on concrete pad, paint chips observed on gravel, staining on gravel and concrete pad; potential releases to subsurface through tank bottom	RETEC Visit 1/6/97	
LUBE-LOW	B-6	Tank 4331 OLOA 2990 30,000 gallons	Insulated; welded steel tank constructed in 1973, concrete dike secondary containment; Corrugated steel tank on concrete pad, paint chips observed on gravel, stained pad and gravel; potential releases to subsurface through tank bottom	RETEC Visit 1/6/97	

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Map Symbol	Map Location	Area of Concern	Basis of Concern	Reference	Baseline Category
LUBE-LOW	B-5	Tank 4388 Utility 15,000 gallons	Welded steel tank constructed in 1985; concrete dike secondary containment; insulated; Corrugated steel tank on concrete pad, staining on concrete; potential releases to subsurface through tank bottom	RETEC Visit 1/6/97	
LUBE-LOW	B-5	Tank 4389 Uniguide 46 15,000 gallons	Welded steel tank constructed in 1985; concrete dike secondary containment; insulated; Corrugated steel tank on concrete pad, staining on concrete; potential releases to subsurface through tank bottom	RETEC Visit 1/6/97	
LUBE-LOW	B-5	Tank 4390 Bare Chain 15,000 gallons	Welded steel tank constructed in 1985; concrete dike secondary containment; insulated; Corrugated steel tank on concrete pad; potential releases to subsurface through tank bottom	RETEC Visit 1/6/97	
LUBE-LOW	B-5	Tank 4391 Utility 15,000 gallons	Welded steel tank constructed in 1985; concrete dike secondary containment; insulated; Corrugated steel tank on concrete pad, staining on pad; potential releases to subsurface through tank bottom	RETEC Visit 1/6/97	
LUBE-LOW	B-5	Tank 4392 Utility 15,000 gallons	Welded steel tank constructed in 1985; concrete dike secondary containment; Release of 268 gallons of super ATF due to tank overfill; 200 gallons of paratac released from camlock fitting onto ground; oil recovered and put into slop tanks; On concrete pad, staining on pad; potential releases to subsurface through tank bottom	Accident/Incident Report dated 5/7/93; Incident Report dated 6/21/91; RETEC Visit 1/6/97	
LUBE-LOW	B-5	Tank 4393 Utility 15,000 gallons	Welded steel tank constructed in 1985; concrete dike secondary containment; On concrete pad, staining on pad; potential releases to subsurface through tank bottom	RETEC Visit 1/6/97	

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Map Symbol	Map Location	Area of Concern	Basis of Concern	Reference	Baseline Category
LUBE-LOW	B-5	Tank 4394 HP 20W/ 40 15,000 gallons	Welded steel tank constructed in 1985; concrete dike secondary containment; On concrete pad, staining on pad; potential releases to subsurface through tank bottom	RETEC Visit 1/6/97	
LUBE-LOW	B-5	Tank 4395 Utility 15,000 gallons	Welded steel tank constructed in 1985; concrete dike secondary containment; On concrete pad, staining on pad; potential releases to subsurface through tank bottom	RETEC Visit 1/6/97	
LUBE-LOW	B-5	Tank 4397 LS85/140 15,000 gallons	Welded steel tank, constructed in 1985; concrete dike secondary containment; insulated; On concrete pad, staining on pad; potential releases to subsurface through tank bottom	RETEC Visit 1/6/97	
LUBE-LOW	B-5	Tank 4398 Utility 15,000 gallons	Welded steel tank, constructed in 1985; concrete dike secondary containment; insulated; On concrete pad, staining on pad; potential releases to subsurface through tank bottom	RETEC Visit 1/6/97	
LUBE-LOW	B-5	Tank 4399 Utility 15,000 gallons	Welded steel tank, constructed in 1985; concrete dike secondary containment; insulated; On concrete pad; potential releases to subsurface through tank bottom	RETEC Visit 1/6/97	
LUBE-LOW	B-5	Tank 4400 Guardol 40 15,000 gallons	Welded steel tank, constructed in 1985; concrete dike secondary containment; insulated; On concrete pad, staining on pad; potential releases to subsurface through tank bottom	RETEC Visit 1/6/97	
LUBE-LOW	B-5	Tank 4401 Utility 15,000 gallons	Welded steel tank constructed in 1985; concrete dike secondary containment; Last painted unknown; top course eastside contains approx. three square feet of coating breakdown with rusting of the substrate; On concrete pad; potential releases to subsurface through tank bottom	Coatings Survey Rpt dated 1/5/96 by Vass RETEC Visit 1/6/97	

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Map Symbol	Map Location	Area of Concern	Basis of Concern	Reference	Baseline Category
LUBE-LOW	B-5	Tank 4402 ATF Type F 15,000 gallons	Welded steel tank constructed in 1985, concrete dike secondary containment; On concrete pad, staining on pad and valves to pipeline; potential releases to subsurface through tank bottom	RETEC Visit 1/6/97	
LUBE-LOW	B-5	Tank 4403 Super IOW-40 15,000 gallons	Welded steel tank, constructed in 1985; concrete dike secondary containment; On concrete pad, staining on pad; potential releases to subsurface through tank bottom	RETEC Visit 1/6/97	
LUBE-LOW	B-5	Tank 4404 Utility 15,000 gallons	Welded steel tank, constructed in 1985; concrete dike secondary containment; On concrete pad, staining on pad; potential releases to subsurface through tank bottom	RETEC Visit 1/6/97	
LUBE-LOW	B-5	Tank 4405 Lubrizol 5191A 15,000 gallons	Welded steel tank, constructed in 1987; concrete dike secondary containment; insulated; Corrugated steel tank on concrete pad, staining on pad and valves; potential releases to subsurface through tank bottom	RETEC Visit 1/6/97	
LUBE-LOW	B-5	Tank 4406 HiTec 7729 15,000 gallons	Welded steel tank constructed in 1987, concrete dike secondary containment; insulated; Corrugated steel tank on concrete pad, staining on pad and valves; potential releases to subsurface through tank bottom	RETEC Visit 1/6/97	
LUBE-LOW	B-5	Tank 4407 Anglamol 6084A 15,000 gallons	Welded steel tank constructed in 1987, concrete dike secondary containment; insulated; Corrugated steel tank on concrete pad, staining on pad and valves; potential releases to subsurface through tank bottom	RETEC Visit 1/6/97	
LUBE-LOW	B-5	Tank 4408 ECA 4537 15,000 gallons	Welded steel tank constructed in 1987, concrete dike secondary containment; insulated; Corrugated steel tank on concrete pad, staining on pad and valves; potential releases to subsurface through tank bottom	RETEC Visit 1/6/97	

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Map Symbol	Map Location	Area of Concern	Basis of Concern	Reference	Baseline Category
LUBE-WH	B-4 to C-5	Lube Manufacturing and Packaging Warehouse	Grates in concrete floor collect spills which are pumped to the 5,000 gallon underground flush tank outside the warehouse; the 5 gallon and 1 gallon bucket filler are underlain by a concrete vault which goes to the sump; old floor drains exist but it is unknown where they go to; potential releases to subsurface	RETEC Visit, 1997	
FCANPLT	B-4, B-5	Former Drum Platform/Canning Plant	A former warehouse/drum platform/canning plant was located in the south/southwest part of the contemporary warehouse; the warehouse (including an inside drum platform and canning plant) was evident in a circa 1910 photograph; the warehouse was razed by 1974;	M/B&A, 1997	
FBARFILL	B-5	Former Lube Oil Barrel Fillers	The 1931 and 1940 terminal drawings depicted lube oil barrel fillers at the south side of the former warehouse;		
FGAR1	C-4, C-5	Former Garage	A former garage and pump houses were noted in a circa 1910 photograph;		
FPHSE1	C-4	Fmr Pumphouse 1	seven storage tanks were observed west/northwest from the structure in 1910;		
FPHSE2	C-5	Fmr Pumphouse 2	the structures were replaced between 1973 and 1974 by the contemporary warehouse;		
FBOIL	C-5	Former Boiler House	The former Boiler House was observed in the circa 1910 photograph; it was removed by 1941; three tanks were erected to the west by 1955, they were removed by 1974;		
FCOOP	C-5	Former Cooper Shop	The former Cooper shop was situated south/southeast from the barrel fillers, the warehouse extended southeastward over it between 1952 and 1955;		
FBLACK	C-5	Fmr. Blacksmith	Former Blacksmith Shop was located north of former Boiler House;		
			On 8/7/93, 40 gallon release of Guardal 15/40 to ground; recovered by portable suction trailer; On 2/12/96, lube oil additive supply hose burst spraying lubrizol 5704 in the lube oil blending area; approximately 3 gallons spilled onto the blending loops and the sump area under the equipment	Accident/Incident report dated 8/7/93; Incident Report dated 2/12/96;	
	C-5	Tank 4338 HiTec 2S39 15,000 gallons	Welded steel tank constructed in 1985; concrete dike secondary containment; Located in warehouse; potential releases to warehouse floor through tank bottom	RETEC Visit 1/6/97	
	C-5	Tank 4339 Lubrizol 4702 1,000 gallons	Welded steel tank constructed in 1974; concrete dike secondary containment; Located in warehouse; potential releases to warehouse floor through tank bottom	RETEC Visit 1/6/97	

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Map Symbol	Map Location	Area of Concern	Basis of Concern	Reference	Baseline Category
LUBE-WH [continued]	C-5	Tank 4340 Lubrizol 9692 1,000 gallons	Welded steel tank constructed in 1974; concrete dike secondary containment; Located in warehouse; potential releases to warehouse floor through tank bottom	RETEC Visit 1/6/97	
	C-5	Tank 4341 Acryloid 154/70 1,000 gallons	Welded steel tank constructed in 1974; concrete dike secondary containment; Located in warehouse; potential releases to warehouse floor through tank bottom	RETEC Visit 1/6/97	
	C-5	Tank 4342 Acryloid 154/70 1,000 gallons	Welded steel tank constructed in 1974; concrete dike secondary containment; Located in warehouse; potential releases to warehouse floor through tank bottom	RETEC Visit 1/6/97	
	C-5	Tank 4343 Amoco 158 1,000 gallons	Welded steel tank constructed in 1974; concrete dike secondary containment; Located in warehouse; potential releases to warehouse floor through tank bottom	RETEC Visit 1/6/97	
	C-5	Tank 4344 Priolene 6910 1,000 gallons	Welded steel tank constructed in 1974; concrete dike secondary containment; Located in warehouse; potential releases to warehouse floor through tank bottom	RETEC Visit 1/6/97	
	C-5	Tank 4345 Oloa 1232A 1,000 gallons	Insulated; welded steel tank constructed in 1974; concrete dike secondary containment; located in warehouse; potential releases to warehouse floor through tank bottom	RETEC Visit 1/6/97	
	C-5	Tank 4346 Lubrizol 9990A 1,000 gallons	Insulated; welded steel tank constructed in 1974; concrete dike secondary containment; located in warehouse; potential releases to warehouse floor through tank bottom	RETEC Visit 1/6/97	
	C-5	Tank 4347 Acryloid HF833 1,000 gallons	Insulated; welded steel tank constructed in 1974; concrete dike secondary containment; located in warehouse; potential releases to warehouse floor through tank bottom	RETEC Visit 1/6/97	

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Map Symbol	Map Location	Area of Concern	Basis of Concern	Reference	Baseline Category
LUBE-WH [continued]	C-5	Tank F-8 Slurry 1,050 gallons	Welded steel tank constructed in 1954, concrete dike secondary containment; potential releases to warehouse floor through tank bottom	RETEC Visit 1/6/97	
	C-5	Tank F-9 Mobilad G305 2,772 gallons	Welded steel tank constructed in 1954, concrete dike secondary containment; potential releases to warehouse floor through tank bottom	RETEC Visit 1/6/97	
FMR-FOAM	C-5	Former foamite tanks	Two former foamite tanks were located southeast from the former garage	M/B&A, 1997	
FUST-1	B-6	Former Underground Storage Tank 1669	Located South of the Upper Lube Cell; removed in 1985; no record of clean closure; Tank overfill resulted in release of 310 gallons of RR-40 on 9/10/81; Potential releases to subsurface from spills and/or integrity failure	Tbl of reported spills at Unocal fr. 1/75 to 9/93 file TM-0608;	
UST-2	B-7	Underground Storage Tank	Located ~40' east of F-tank farm next to UST-3; 1,000 gallon capacity; contains gasoline; A flow signature extended to the north in the 1984, 1990, and 1991 aerial photographs; Potential releases to subsurface from spills and/or integrity failure	RETEC Visit 1/6/97 M/B&A, 1997	
UST-3	B-7	Underground Storage Tank	Located ~40' east of F-tank farm next to UST-2; 10,000 gallon capacity; contains diesel; A flow signature extended to the north in the 1984, 1990, and 1991 aerial photographs; Potential releases to subsurface from spills and/or integrity failure	RETEC Visit 1/6/97 M/B&A, 1997	

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Map Symbol	Map Location	Area of Concern	Basis of Concern	Reference	Baseline Category
UST-4	C-6	Underground Storage Tank	Located under Lab; 5,000 gallon capacity; contains dirty oil; installed in 1984, constructed of steel; UST overfill of 127 gallons of RRA-40 on 6/22/82; On 6/8/93, there was a 350 gallon release of diesel onto concrete slab and into drain to the process separator; Total of 50 gallons of 90 neutral released onto a blacktop and cement area due to overfill; spill was contained and cleaned up with absorbent material; Overfill of tank released 12 gallons of oil; spill contained on concrete pad and cleaned up with absorbent pads; Potential releases to subsurface from spills and/or integrity failure	USEPA Table of USTs at the Portland Facility dated 9/8/89; Reported spills, 1/75 to 9/93 file TM-0608; Accident/Incident Report dated 6/8/93; Incident Report dated 9/4/92; Incident Report dated 7/31/92;	
UST-5	C-6	Underground Storage Tank	Located under lab; 5,000 gallon capacity; contains clean oil a/or dirty oil; installed in 1984, constructed of steel; Potential releases to subsurface from spills and/or integrity failure	9/8/89, USEPA Tbl of USTs at Portland;	
UST-6	D-3	Underground Storage Tank	Located near southeast corner of TF#1; 550 gallon capacity; contains retain; installed in 1983, constructed of steel; Potential releases to subsurface from spills and/or integrity failure	9/8/89, USEPA Tbl of USTs at Portland;	
UST-7	D-3	Underground Storage Tank	Located near southeast corner of TF#1; 550 gallon capacity; contains retain; installed in 1983, constructed of steel; Potential releases to subsurface from spills and/or integrity failure	9/8/89, USEPA Tbl of USTs at Portland;	
UST-8	D-3	Underground Storage Tank	Located north of the truck loading rack; 550 gallon capacity; contains diesel additive; installed in 1983, constructed of steel; Potential releases to subsurface from spills and/or integrity failure	9/8/89, USEPA Tbl of USTs at Portland;	
UST-9	F-3	Underground Storage Tank	Located under the garage; 650 gallon capacity; contains slop oil; installed in 1983 or 1986, constructed of steel; Potential releases to subsurface from spills and/or integrity failure	9/8/89, USEPA Tbl of USTs at Portland;	
FUST-10	G-4	Former Underground Storage Tank	Located behind maintenance in the garage; 675 gallon slop oil tank; Removed approximately 1990; installed in 1983; constructed of steel, contains used oil; Potential releases to subsurface from spills and/or integrity failure	9/8/89, USEPA Tbl of USTs at Portland;	

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Map Symbol	Map Location	Area of Concern	Basis of Concern	Reference	Baseline Category
FUST-11	C-6	Former Underground Storage Tank	Located north of the boiler house; 10,000 gallon capacity; abandoned in place; installed in 1972 constructed of steel; diesel; Potential releases to subsurface from spills and/or integrity failure	9/8/89, USEPA Tbl of USTs at Portland;	
P-1A	D-5	Pumps	Concrete pump pad next to tank 2784 has staining on concrete and drains; piping network next to tank 2784 has staining on concrete; pump pad near 2783 saturated with product and gravel around it was saturated; potential and unreported releases of hazardous constituents to ground surface and/or subsurface	RETEC Visit 1/6/97	
P-2A	G-4	Pumps	Concrete pump pad between TK-3412 and TK-3413 was stained; potential and unreported releases of hazardous constituents to ground surface and/or subsurface	RETEC Visit 1/6/97	
P-1B	D-4	Pumps	Pump pad between TK-2669 and TK-36; staining on concrete, on pumps, no cracks; Black oil blender area on concrete pad has staining and drips; potential and unreported releases of hazardous constituents to ground surface and/or subsurface	RETEC Visit 1/6/97	
P-1C	C-5	Pumps	Minor staining on pump pad between Tanks 2579 and 1471; potential and unreported releases of hazardous constituents to ground surface and/or subsurface	RETEC Visit 1/6/97	
P-2B	G-4	Pumps	Concrete pump pad between TK-2982 and TK-2983 has staining on valves and pumps and concrete pad; potential and unreported releases of hazardous constituents to ground surface and/or subsurface	RETEC Visit 1/6/97	
P-3A	D-7	Pumps	Concrete pump pad next to Tank 3579 has visible product, no cracks; potential and unreported releases of hazardous constituents to ground surface and/or subsurface	RETEC Visit 1/6/97	
PUMP-UP	B-6	Upper Lube Cell Pumps	Staining on concrete; no visible cracks; staining on piping; potential releases to subsurface and/or ground surface; potential and unreported releases of hazardous constituents to ground surface and/or subsurface	RETEC Visit 1/6/97	
PUMP-LOW	B-5	Lower Lube Cell Pumps	Staining on concrete; no visible cracks; staining on piping; potential releases to subsurface and/or ground surface; potential and unreported releases of hazardous constituents to ground surface and/or subsurface	RETEC Visit 1/6/97	

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Map Symbol	Map Location	Area of Concern	Basis of Concern	Reference	Baseline Category
OWS-001	C-7	Oil Water Separator #001	The separator was constructed by 1969; discoloration, possible liquid was evident north/northeast from the stormwater separator in 1975 aerial photographs; Located in the industrial fuel oils tank farm just south of the former asphalt process area; potential releases to subsurface from overflows and/or integrity failure	M/B&A, 1997 RETEC Visit 1/6/97	
OWS-002	D-4	Oil Water Separator #002	Located in the diesel and black oil tank farm; potential releases to subsurface from overflows and/or integrity failure	RETEC Visit 1/6/97	
OWS-003	E-5	Oil Water Separator #003	The final box sump was first evident in 1975 photographs; the Process Water Separator No. 003 was installed at the same time; 5,000 gallons of gasoline spilled into the API separator and was removed with a vacuum truck; Located in the diesel and black oil tank farm; potential releases to subsurface from overflows and/or integrity failure; full of product/water mix; TPH probe in separator	M/B&A, 1997 10/28/94 Incidnt Rpt; RETEC Visit 1/6/97	
OWS-004	H-4	Oil Water Separator #004	Located in the gasoline tank farm; potential releases to subsurface from overflows and/or integrity failure	RETEC Visit 1/6/97	
ROUTF	K-3	River Outfall	Light-toned point discharges to the river were noted in 1952, 1964, 1966, and 1971; the reflectance of the discharges was a result of a high suspended solids load and/or from the rolling of sediments in the river; the 1966 discharge was particularly milky in appearance and may have been the result of a foreign substance; In 1972, a box or pipe was added at the discharge point; from 1974 onward, various floating booms surrounded the discharge point and much of the river bank north from the Unocal wharf; the new sewer discharge outfall was added between 1977 and 1980; thereafter, it was not clear whether or not the old outfall continued to be used; however, between 1986 and 1990, the bank was regraded in the vicinity of the old outfall; petroleum seeps may have continued in the vicinity, because floating booms were maintained along the entire bank through the 1996 photograph date; booms extended along the entire Unocal waterfront in the 1977 aerial photograph; Approximately 20-30 gallons of black oil observed on river outfall; booms contained it	M/B&A, 1997 10/29/92 Preliminary Notification Incident Report;	

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Map Symbol	Map Location	Area of Concern	Basis of Concern	Reference	Baseline Category
DSA	D-4	Drum Storage	Drum storage area located next to tank 4369, drums stacked on concrete pad and within a fenced area; potential releases of hazardous constituents due to storage a/or handling	RETEC Visit 1/6/97	
LRACK	E-4	Truck Loading Rack (includes Fmr Tanks 589, 590, 1471, 1472, 1902, and 1989)	Rebuilt in 1979-1980; loads gas, diesel and ethanol; no cracks in concrete, minor staining; potential releases of hazardous constituents to ground surface Two aboveground rectangular Tank Nos. 1902 and 1989, were depicted on a 1940 terminal drawing; the tanks were noted as containing stove oil on a 1950 Sanborn Map; The contemporary truck loading rack was constructed pre-1951; a new canopy and asphalt paving were noted in 1980;	RETEC Visit 1/6/97 M/B&A, 1997	
FLRCK2	C-3, D-3	Fmr. Truck Load Rack No. 2	The former truck loading rack No. 2 was evident in the 1951 photographs and was removed by 1980; On 3/25/85, 246 gallons of leaded gasoline spilled and was contained in an underground spill containment tank; On 12/15/95, 200 gallon gasoline spill due to a mechanical malfunction was contained in emergency overflow tank; During unloading, 10 gallons of 100 neutral oil was released onto the concrete pad beneath the tank car where it was cleaned up; During loading, 3.5 gallons of 7EP gear lube was released; it was recovered and wiped up with absorbent pads; 83 gallon spill of unleaded gasoline due to overfilling of truck; 72 gallons of unleaded spilled during loading due to truck overfill; 10 gallons of gearlube spilled onto the asphalt pavement; contained with absorbent pads; 10 gallon spill onto concrete pad; 40 gallons of diesel spilled & captured in drain to the separator; 100 gallons of diesel entered the diesel knock-down tank and an additional 100 gallons was washed down the rack drain; no product escaped the racks concrete catchment system 10 gallons of guardol 15/40 to released to separator drain during loading;	Incident letter dated 11/25/96 from P. Schneiders to E. DeBerry, DEQ; Incident report dated 6/23/92; Incident Report dated 12/30/92; 5/6/91 Incident Rpt; 4/26/90 Incident Rpt; Incident report dated 8/23/90; 9/13/90 incident Rpt; 5/18/89 incident Rpt; Incident report dated 4/15/88; 11/1/88 incident Rpt	

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Map Symbol	Map Location	Area of Concern	Basis of Concern	Reference	Baseline Category
T-LOADING	C-4	Truck Loading Rack	Truck Loading Rack from the Lube Warehouse; potential releases of hazardous constituents to ground surface	RETEC Visit 1/6/97	
FRORCK	C-4	Fmr. Road Oil Load Rack	Former road oil load rack was sketched on a 1940 terminal drawing, it had been removed by 1952;	M/B&A, 1997	
FLRCK1	C-3	Fmr. Truck Load Rack No. 1 (Area also includes seven former tanks)	Former truck loading rack No. 1 was located north/northwest from the former warehouse, a discoloration from a possible release was observed east from the rack (1946), the rack was dismantled by 1951; Historical aerial photographs indicate seven former aboveground storage tanks were present in this area		
UNLOAD	F-3	Truck Unloading Rack	Discoloration and flow signatures in the vicinity of the unloading area were observed in 1964, 1966, 1971, and 1972; stains were evident in 1980 and 1990;	M/B&A, 1997	
			Truck Unloading Rack; potential releases of hazardous constituents to ground surface	RETEC Visit 1/6/97	
LOAD-BO	D-6	Black Oil Truck Loading Rack	Truck Loading Rack for black oil; this loading rack was observed in 1990; potential releases of hazardous constituents to ground surface; a layer (several inches thick) of hydrocarbon residues was located in a concrete-lined pit at the Black Oil Truck Loading Rack; canopy-covered rack was first noted in 1974;	RETEC Visit 1/6/97 M/B&A Visit 1/21/97 M/B&A, 1997	
FASRCK	D-6	Former Asphalt Loading Rack	Historical aerial photograph indicated that the former asphalt loading rack was in this location		
LOAD-LUBE	D-6	Lube Loading Rack	The lube oil loading rack or predecessor was evident in the 1955 aerial photographs; A 1969 Sanborn Map depicted a filling stem at this location; discoloration was observed southwest and northeast from the rack in the 1969 photographs; a liquid flow was noted northeast from the rack (1972); stains on the pavement were observed in the vicinity of the rack in 1980;	M/B&A, 1997	
			Staining on concrete by lube slop tank and diesel slop tank; piping and pump near asphalt slab drain valve is stained on concrete, approx. 22 drums of diesel slop are stored in a staging area; no cracks, some staining at lube loading rack; potential releases of hazardous constituents to ground surface	RETEC Visit 1/6/97	

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Map Symbol	Map Location	Area of Concern	Basis of Concern	Reference	Baseline Category
UNLOAD-LUBE	D-6	Lube Unloading Rack	Some cracks, staining, approximately 50 drums stored; potential releases of hazardous constituents to ground surface; An overhead pipeway was noted terminating in the vicinity of the future loading rack in 1955; discolored soil was noted northwest from the pipeway terminus in 1963; the overhead pipeway was removed, and a canopy-covered rack was observed in 1969; extensive liquid flows to the west/northwest were observed in 1970, 1971, and 1972; a flow appeared to extend north, downslope into the containment area for Tank Nos. 2783 and 2561; it terminated in the vicinity of the future final box sump; discoloration and staining were observed north/northwest from the rack in 1974; an active flow to the west/northwest from the north side of the rack was evident in 1975; liquid flow north/northwest from the rack was evident in 1980; the canopy was removed by 1990; Historical aerial photographs indicate that the former emulsified asphalt loading rack was in this location and adjacent to the asphalt loading rack;	RETEC Visit 1/6/97 M/B&A, 1997	
FEASRCK	D-6	Former Emulsified Asphalt Loading Rack			
SS-OLD	J-3	Old Doane Ave Storm Sewer	A 27-inch wood stave storm sewer had been impacted by hydrocarbons via groundwater filtration since at least the early 1970s; the storm sewer was found to have cracks and deteriorated joints which allowed hydrocarbon and groundwater infiltration; the leaks to the storm sewer created hydrocarbon discharges at the outfall at the Willamette River; Hydrocarbon leakage first reported in 1974; the old Doane Ave. storm drain continued to be a location of hydrocarbon seepage from 1974 -1982 and again in 1988; Oil spill of unknown quantity infiltrated into Doane Street storm sewer from private sewer line closest to manhole near loading rack; sewer line leak was repaired on 2/10/75; On Aug. 19, 1996, Doane Ave storm sewer was inspected at manhole 2, in the tank farm; it was brick lined and contained water and a layer of mud coating the base with some hydrocarbons present in the mud material; sheen on the water released from behind the gate valve indicate that some product is present in this section of line; Between 1974 and 1978, more than 9,000 gallons of petroleum product were recovered from Old Doane Ave. Storm sewer	Draft Preliminary Assessment, SECOR, Tualatin, OR, 6/15/93; Draft Interim Action Work Plan, CH2MHill, 11/1994; Tbl of reported spills fr. 1/75 to 9/93, file TM-0608; Letter to J. Comstock fr. CH2MHill dated 8/30/96; Draft Prelim Assess, SECOR, 6/15/93;	

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Map Symbol	Map Location	Area of Concern	Basis of Concern	Reference	Baseline Category
SS-NEW	I-4	New 60-inch Doane Ave Storm Sewer	A seep was observed in 1984 at the riverbank beneath the invert of the new 60-inch storm drain; the backfill provided a pathway for the product migration; in 1987, a clay barrier and 12-inch product recovery well (RES-New) were installed within the trench backfill to mitigate new product seeps; a bentonite barrier wall (13' wide x 4' thick x 8' high) was constructed by removing fill from the trench, the barrier wads keyed into the native silt 5' below the pipe bottom; In 1988, 3,210 gallons of product were recovered from the clay barrier and water depression/product recovery well; In 1992, 6.4 gallons were recovered, corresponding to a decrease in recoverable hydrocarbons present; Sample collected from the surface of the Willamette River at the outfall location on 10/20/94 contained No. 2 diesel-type hydrocarbons; potential and unreported releases of hazardous constituents a/or integrity failure	Draft Interim Action Work Plan, CH2MHill, 11/1994; 12/20/88, Annual Progress Rpt, Riedel, 12/12/93, 1992 Final Report, Riedel, 10/27/94, Ltr to J. Comstock from T. Fisk;	
FMR-ASPHALT	C-6	Former Asphalt Plant	Built approximately 1972, dismantled in 1984; probable releases of hazardous constituents from past operations; The plant was erected between 1967 and 1969; it was partially dismantled by 1990; asphalt pipes and a heating apparatus were observed during the 1/21/97 site inspection	RETEC Visit 1/6/97 M/B&A, 1997	
BOOM	I-5	Boom Containment Area	Between 1974 and 1978, 9,000 gallons of petroleum product were recovered from this area	Draft Preliminary Assessment, SECOR, Tualatin, OR, 6/15/93;	

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Map Symbol	Map Location	Area of Concern	Basis of Concern	Reference	Baseline Category
DOCK	M-4	UNOCAL Dock Area	Light sheens were visible along the shore of the Unocal and Chevron docks in 1982; Gasoline spill of 1 gallon; oil spill of 1 pint; diesel spill of ½ gallon; Hydrocarbon discharge to the river immediately downstream from the Unocal Dock was reported in Jan. 1982; booms installed; Old Holbrook Slough Interceptor Trench installed in 1988 along the beachline between Unocal's and Chevrons loading docks; 2,000 gallons of diesel spilled at the dock on 7/19/82, boom deployed; unknown quantity of oil spilled into Willamette river, containment tanks flooded - oil spilled over on 12/7/84; booms deployed; BTEX concentrations in wells in the riverfront dock area from 1995/1996: B-4 (FPLH), B-17 (B = 830 ppb, T = 36 ppb, E = 16 ppb, X = 43 ppb), B-18 (X = 0.6 ppb), B-22 (FPLH), B-35 (FPLH), B-36 (B = 480 ppb, T = 8.9 ppb, E = 8.2 ppb, X = 9.6 ppb), B-37 (FPLH); On 2/19/94, spill of approx. 1 pint of oil into bay, contained with absorbent pads, and containment boom; Spill of 2 gallons of cutter stock into bay; absorbent pads and booms deployed; On 9/4/93, approx. 80 gallons of unleaded spilled into the bay from an undetermined source; Unocal not responsible, spill origin undetermined; Product backed up in the seepage containment project and 5 gallons seeped into the Willamette River; Sheen observed under Unocal dock;	DEQ Spill Reports Draft Prelim. Assess., SECOR (6/15/93) Willbridge Site Annual Progress Rpt, Riedel (12/20/88) Reported spills at UNOCAL (Jan 1975 to Sept. 1993), file TM-0608; Technical Memo #3b to J. Comstock fr. Bruce Brody-Heine (CH2MHill) 12/6/96; Accident/Incident Rpt dated 2/19/94; Accident/Incident Rpt dated 6/20/94; Accident Rpt 9/8/93; Incident Rpt 8/7/92;	

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Map Symbol	Map Location	Area of Concern	Basis of Concern	Reference	Baseline Category
DOCK [continued]	M-4	UNOCAL Dock Area	2 gallons of diesel sprayed out onto the pier; diesel was contained on dock catchment system; Approx. 0.5 gallon release of diesel No. 2 into the river; 7 gallon release of diesel No. 2; 5 gallons to the river, absorbent pads were deployed; Drains go to tank underneath the dock which are pumped into the stormwater system to separator 003; the underdock storage tank is a 2050 gallon tank; Yellow floating booms were present in the water on either side of the Unocal wharf;	Prelimin. Incident Rpt dated 2/6/92; Incident Rpt 12/11/91 Incident Rpt 7/4/90; Incident Rpt 10/10/90 RETEC Visit 1/6/97 M/B&A Visit 1/21/97	
FOGWHSE FYARD	I-3, J-3 J-3	Former Oil & Grease Warehouse Former Laydown Yard	A circa 1925 oblique photo indicated that a wharf was not associated with the terminal; the oil and grease warehouse was identified on the 1931 terminal drawing; the wharf and warehouse were confirmed in the circa 1936 photos; a former laydown yard was also identified on historical aerial photographs	Draft Interim Action Work Plan, CH2MHill, 11/1994;	
	Not Shown	Process Water System	On Oct. 18, 1996, a total of 60 gallons of ethanol was released into the process water system when an air eliminator at pump G-159 failed; no indications that the release reached OWS 003 or that any of the ethanol/water mixture was discharged to the POTW;	Incident Report dated 10/18/96;	
BOILER	C-6	Boiler House	Two boilers, fired by natural gas	RETEC Visit 1/6/97	
GARAGE FGAR2 FMACH	F-4 F-3 F-4	Maintenance Garage Former Garage 2 Former Machine Shop	Discontinued maintaining fleet of trucks in 1994, store lube in this garage for maintenance purposes; three drains tie into catch basin; to underground slop tank; some cracks in pavement floor; one other drain in floor which is now blocked off; potential releases of hazardous constituents through drains The garage building and former shops (maintenance/machine and repair) were evident in the 1936 photographs; the building was expanded to the northwest between 1941 and 1947; it was modified (downsized) to its present-day configuration between 1984 and 1986;	RETEC Visit M/B&A, 1997	
UNPIPE	Not Shown	Underground piping	Failed gasket leaked 5 gallons of ethanol onto the ground; approximately 25 gallons of soil were impacted; On 10/27/94, unleaded gasoline release from a valve on a product pipeline of 8700 gallons; the product was contained in the containment system and recovered from the oil/water separator; potential and unreported releases of hazardous constituents a/or integrity failure	Incident Investig Rpt dated 10-6-95; Follow-up Report as Required by Sara Title III dated 11/7/94;	

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Map Symbol	Map Location	Area of Concern	Basis of Concern	Reference	Baseline Category
FMR-RAIL	B-4	Former Railroad Loading/ Unloading Rack	Former railroad loading/unloading rack was located west from and adjacent to the former warehouse; three spur tracks from the Burlington Northern Railroad entered the Terminal from the northwest; the tracks originally terminated northwest from the Lower Lube Cell; they were removed when the new warehouse was constructed between 1973 and 1974;	M/B&A, 1997	
RAILROAD	B-7	Railroad Car Loading Area	Drips from rail car valves observed on ties and gravel; potential creosote contamination from preserved ties a/or releases of hazardous constituents from railcar transportation, maintenance or cleaning; the gravel was hydrocarbon-stained in and around the Railroad Loading/Unloading Racks; On 2/17/89, 10 gallons of Super RR-E 40 leaked in the loading area and was contained in the catchment system; On 9/30/91, 200 gallons of TLA555 released onto concrete catchment basin and cleaned up; On 3/8/93, 2,955 gallons of Unocal Ramar 20W-40 release; On 1/24/94 approximately 527 gallons of Ramar blend were released onto the concrete slab and into the catch basin system where it was contained, recovered, and put into the slops tank;	RETEC Visit 1/6/97 M/B&A Visit 1/21/97 Incident Rpt, 2/17/89 Incident Rpt, 9/30/91 Incident Rpt, 3/8/93 Incident Investigation Report, 1/24/94	
FSHED	B-7	Former Shed	A shed-like structure and spur track were observed in 1948, 1951, 1956, 1966, and 1972; soil around the shed was discolored;	M/B&A, 1997	

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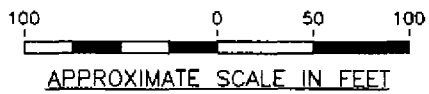
Map Symbol	Map Location	Area of Concern	Basis of Concern	Reference	Baseline Category
LAND-1	B-8	Open Land Area (South Yard)	This largely unpaved area, located south/southeast from the boiler house, bordered by the railroad tracks (west), storage tanks (east/northeast) and the property line (south/southeast) appeared to have several functions: scrap yard, drum storage and possible cleaning, truck/trailer parking, and vehicle fueling; A mound of black material was observed in the general location of Tank No. 4253 (pre-development) in the 1955 aerial photographs; A trailer-type structure was noted in 1956; From circa 1936 to circa 1940, drum storage was limited to an area between and including parts of future Upper Lube cell and the future boiler house;	M/B&A, 1997	
FDRUM	B-9	Former Drum Storage	Drum storage and possible cleaning were observed in the photographs circa 1951 to 1974 (generally southeast from the contemporary railroad racks); discolored soil and wet flows were evident in 1946, 1964, 1966, 1969, 1970;		
FPIT	B-8	Former Disposal/ Seepage Pit	a possible disposal pit was observed in the southeast end of the drum storage area in 1972 and 1973, which also was a stockpile area for soil; discolored/wetted soil was evident throughout the southern end of the yard (1961, 1963, and 1970); fill material was evident in the southeast corner of the yard in 1971; hydrocarbon stains to soil were observed in and around stacked drums at the southeast end of the yard in 1972		
ETH	C-7	Ethanol Pit	The ethanol pit was constructed by 1994; Potential release of hazardous constituents to ground and/or subsurface	M/B&A, 1997 RETEC Visit 1/6/97	
	G-6 F-8 to G-9	Off-Site Asphalt Operations and Structures	A former Unocal auto Repair Shop and Office were located east of the Tank Farm No. 2 as shown on the 1950 and 1969 Sanborn maps; located to the north of Tank Farm No. 3 was a former California Asphalt Corporation Oil Refinery (1950 Sanborn map); designated as a American Bitumuls & Asphalt Company Oil Refinery on a 1960 Sanborn map which subsequently became a Unocal Asphalt Plant; this facility was reportedly sold to Chevron in the 1980s	M/B&A, 1997	

COP0014163

8

9

10



M N O P

BASE SITE PLAN SHOWING AREAS OF CONCERN

PORTLAND TERMINAL
PORTLAND, OREGON

REIEC

PITTSBURGH PENNSYLVANIA

DRAWING NUMBER	REV
2798SA03	2

COP00141164

Santa Fe Pacific Pipeline Partners, L.P.
1100 Town & Country Road, Orange, California 92868
714/560-4863 FAX 714/560-4884

Santa Fe Pacific Pipelines, Inc.
General Partner

SFPP, L.P.
Operating Partnership

T.P. Danaher
Manager
Environmental Remediation

ENV 29.48.02 (5882.412.5716.LEK.0472)

October 8, 1997

Mr. Marty Kramer
TOSCO – Portland Terminal
5528 NW Doane Avenue
Portland, Oregon 97210

RE: REQUEST FOR INFORMATION
PIPELINE MAINTENANCE AND RELEASE HISTORY
SFPP – PORTLAND STATION
PORTLAND, OREGON

Dear Mr. Kramer,

Santa Fe Pacific Pipeline Partners, L. P. (SFPP) is submitting the following in response to your recent request for information.

Pipeline Line Section 14 (Portland Station to our Eugene Terminal) was inspected in August, 1997 using a gauge plate pig and a corrosion pig. The report is expected by mid-to-late October, 1997. The gathering lines are scheduled for inspection in the coming 2 to 5 years. Attached is a figure showing the location of the gathering lines and Line Section 14.

A review of our records indicates four known releases within an approximate ½ mile of our Portland Station. Three of these releases occurred within our Portland Station. The cleanup is currently under the guidance of the Oregon Department of Environmental Quality. The fourth release occurred at the ARCO facility in the manifold area in September, 1976.

If you have additional requests or concerns please contact Mark Sandon at the address on this letter head, by telephone at (714) 560-4867 or by facsimile at (714) 560-4884.

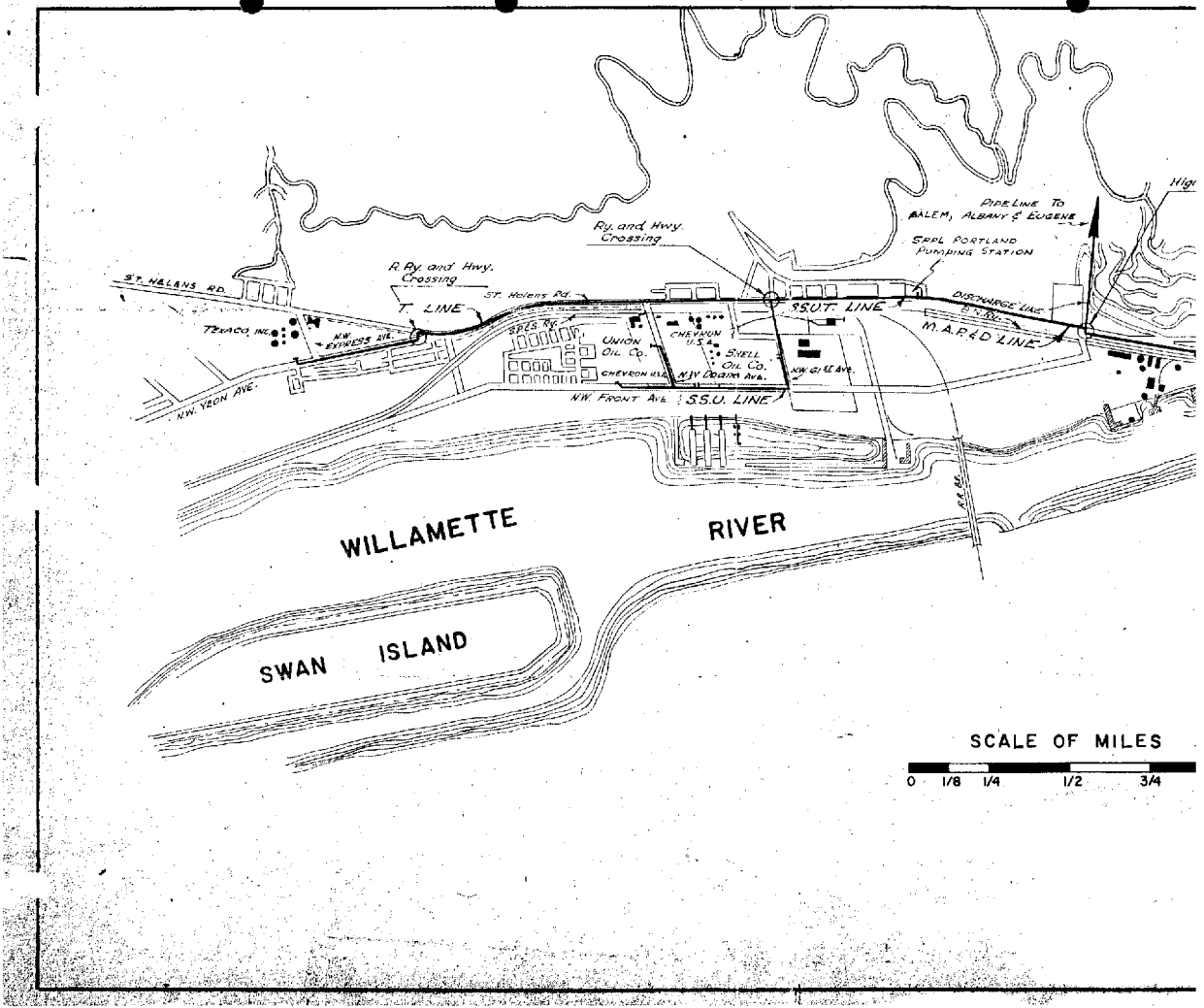
Sincerely,

Thomas P. Danaher

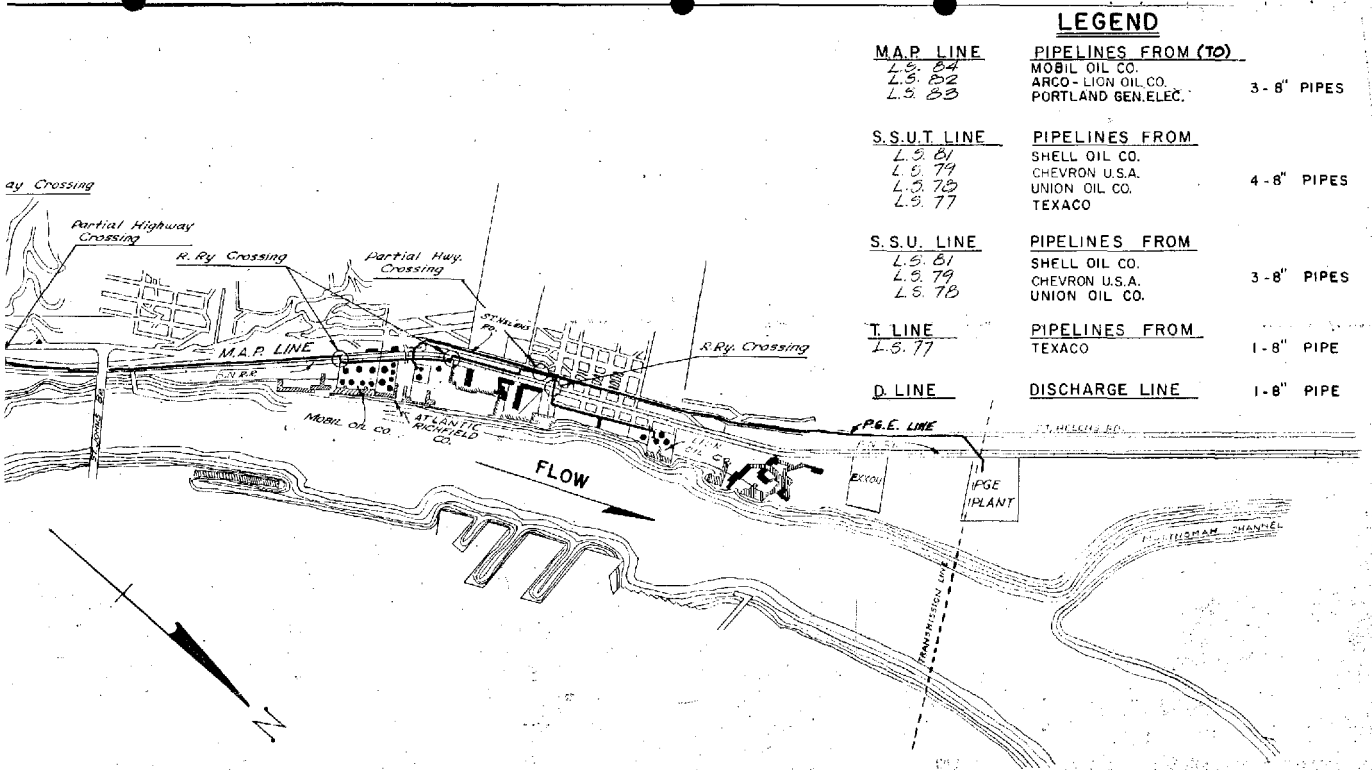
Attachment

H:\...\OREGON\PORTLAND\TOSCOLTMJS.nri

COP0014165


ST. HELENS RD.
R. Ry. and Hwy. Crossing
Ry. and Hwy. Crossing
PIPE LINE TO SALEM, ALBANY & EUGENE
SPPL PORTLAND PUMPING STATION
T. LINE
SSO.T. LINE
M.A.P.R.D LINE
DISCHARGE LINE
TEXACO, INC.
N.W. EXPRESS AVE.
SPRS RR
UNION OIL CO.
CHEVRON U.S.
SHELL OIL CO.
CHEVRON U.S.
N.W. YEON AVE.
N.W. FRONT AVE.
S.S.O. LINE
WILLAMETTE RIVER
SWAN ISLAND
SCALE OF MILES
0 1/8 1/4 1/2 3/4

COP0014166



LEGEND

M.A.P. LINE	PIPELINES FROM (TO)	
L.S. 84	MOBIL OIL CO.	
L.S. 82	ARCO - LION OIL CO.	3 - 8" PIPES
L.S. 88	PORTLAND GEN. ELEC.	

S.S.U.T. LINE	PIPELINES FROM	
L.S. 81	SHELL OIL CO.	
L.S. 79	CHEVRON U.S.A.	4 - 8" PIPES
L.S. 78	UNION OIL CO.	
L.S. 77	TEXACO	

S.S.U. LINE	PIPELINES FROM	
L.S. 81	SHELL OIL CO.	
L.S. 79	CHEVRON U.S.A.	3 - 8" PIPES
L.S. 78	UNION OIL CO.	

T. LINE	PIPELINES FROM	
L.S. 77	TEXACO	1 - 8" PIPE

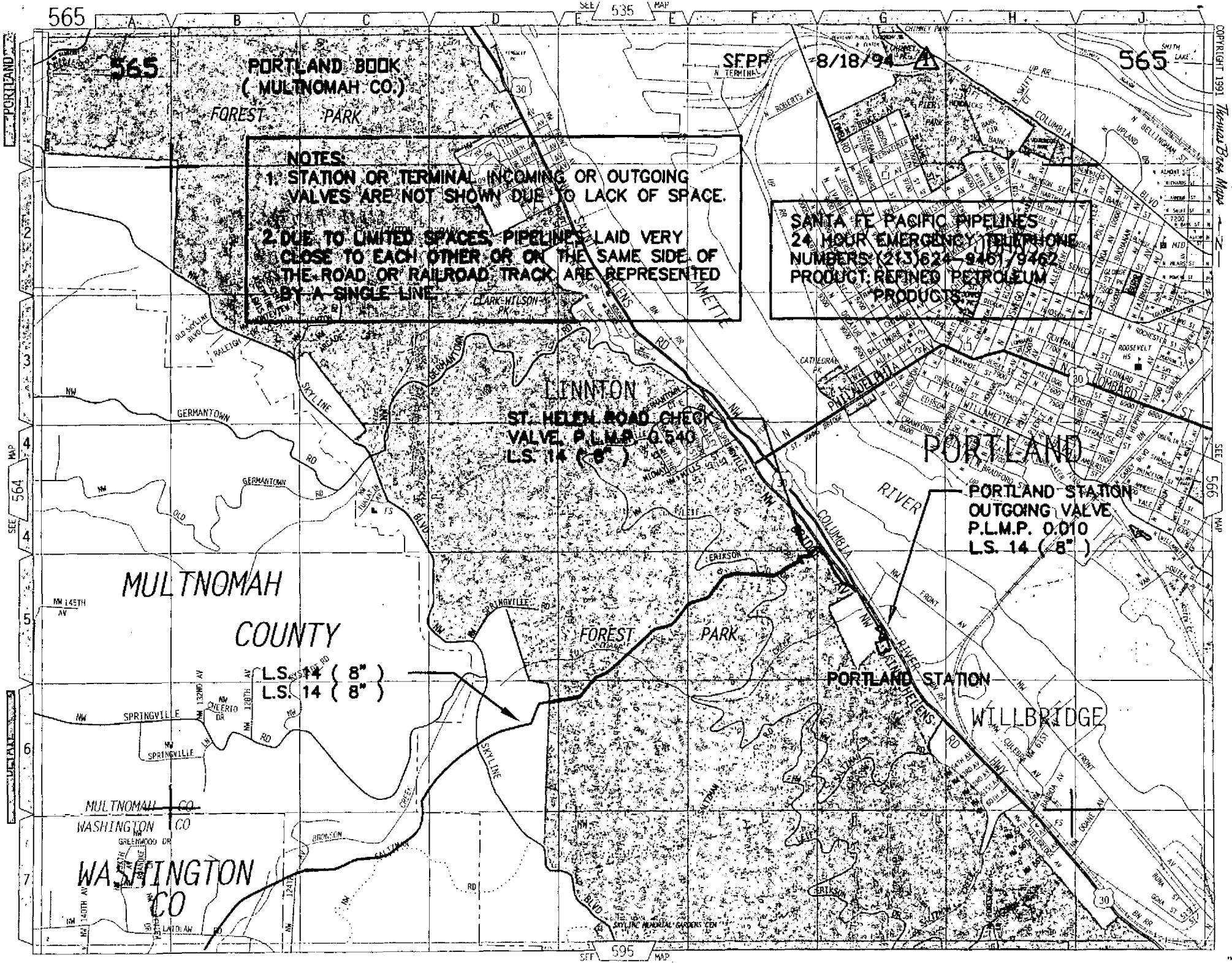
D. LINE	DISCHARGE LINE	
		1 - 8" PIPE

SOUTHERN PACIFIC PIPE LINES INC.
LOS ANGELES, CALIFORNIA

PORTLAND GATHERING SYSTEM

SCALE AS NOTED DATE 9-30-68	X-OD-013
DESIGNED	
DRAWN V.A.	
CHECKED	
APPROVED	

COP0014167


565
PORTLAND BOOK
(MULTNOMAH CO.)
NOTES:
1. STATION OR TERMINAL INCOMING OR OUTGOING VALVES ARE NOT SHOWN DUE TO LACK OF SPACE.
2. DUE TO LIMITED SPACES, PIPELINES LAID VERY CLOSE TO EACH OTHER OR ON THE SAME SIDE OF THE ROAD OR RAILROAD TRACK ARE REPRESENTED BY A SINGLE LINE.
SF PR 8/18/94
SANTA FE PACIFIC PIPELINES
24 HOUR EMERGENCY TELEPHONE NUMBERS: (213)624-9461/9462
PRODUCT: REFINED PETROLEUM PRODUCTS.
LINNTON
ST. HELEN ROAD CHECK VALVE, P.L.M.P. 0.540
L.S. 14 (8")
PORTLAND
PORTLAND STATION OUTGOING VALVE
P.L.M.P. 0.010
L.S. 14 (8")
MULTNOMAH COUNTY
L.S. 14 (8")
L.S. 14 (8")
PORTLAND STATION
WILLBRIDGE
WASHINGTON CO
FOREST PARK
SEE 564 MAP
SEE 566 MAP
SEE 595 MAP
SEE 535 MAP
COPYRIGHT 1991 Thomas Bros. Maps

COP0014168

10/30/97 MTG. W/ DEQ

INTERIM ACTIONS - 60"

- PEG TO HAND AUGER INTO EXISTING CLAY BARRIER TO CONFIRM COMPETENCY
- LINER WILL BE 30-40 MIL THICK W/ FACTOR SEALED COUPLINGS FOR PIPES
- MAYIS CONCERNED ABOUT DISSOLVED PAH'S CONTINUING THROUGH ALONG W/ WATER
- WILL USE PEA GRAVEL ON BOTH SIDES OF BARRIER
- NOVEMBER 7 - TENTATIVE START DATE
- PEG WILL SAMPLE RES NEW FOR PAHS
- WILL EXCAVATE & REMOVE FRENCH DRAIN & IT FAST WELL IF WEATHER COOPERATES
- ESTIMATING 8-9 DAYS OF WORK
- KEVIN TO PREPARE ADDENDUM LETTER ADDRESSING SOIL HANDLING, 4 in 1 composite/30 yd³, 40 MIL LINER, SAMPLING FOR PAH'S, PEA GRAVEL ON DOWNSTREAM SIDE, ADDING ADDITIONAL CLEANOUT,
- JILL AND MAYIS AGREED NOT TO HOLD UP PROJECT IF PAH'S ARE FOUND AND GAVE O.K. TO PROCEED AFTER RECEIPT OF LETTER
- MAYIS WANTS AT LEAST 3 SAMPLES OF WATER FLOWING THROUGH PIPES
- DEQ WOULD LIKE COMPLETION REPORT AFTER SYSTEM IS INSTALLED

Tosco Distribution Company
A Division of Tosco Corporation
Portland Terminal
5528 Northwest Doane Avenue
Portland, Oregon 97210
P.O. Box 76
Portland, Oregon 97207

December 5, 1997

Multnomah County Recorder
421 SW 6th Avenue, Rm. 308
Portland, OR 97204

AOC 0922
CORRESPONDENCE

Re: Oregon Well Ownership Information Forms

To Whom,it May Concern;

In response to a request from Lisa Juul of the Oregon Water Resources Department Well Identification Program, please find the enclosed Oregon Well Ownership Information Forms for the five groundwater monitoring wells installed at the Tosco Portland Terminal. Also enclosed is a check for $40.00 to cover the costs of the recording fees (i.e., $8.00/form). Please be advised that Tosco purchased the terminal from Unocal on April 1, 1997 and these wells were installed prior to the acquisition in response to a spill Unocal experienced at the terminal. Tosco is, however, managing the associated remediation activities for Unocal and has assumed responsibility for the wells on Unocal's behalf.

If you have any questions, please feel free to contact me at (503) 248-1517.

Sincerely,

Martin A. Cramer
Project Manager, Remediation

/mac

Enclosures

cc: Anita Rogers, Tosco Distribution Co.
Dennis Coey, Tosco Distribution Co.

TOSCO CORPORATION
PO BOX 52085
PHOENIX, AZ 85072-2085

VENDOR NO.	PAY GROUP	CHECK DATE	CHECK NO.
21018719	REFINING	12/04/97	566831

DATE	INVOICE NUMBER	BATCH NUMBER	GROSS AMOUNT	DISCOUNT	NET AMOUNT
120397	03-DEC-97 MAIL CK:M CRAMER, 5528 NW DOANE	8852 03-DEC-97	40.00 AVE, PORTLAND	0.00 OR 97210	40.00
		TOTAL	40.00	0.00	40.00

IF YOU HAVE ANY QUESTIONS, PLEASE CALL(602) 437-0600
AND ASK FOR THE AP HELP DESK

TOSCO CORPORATION
PO BOX 52085
PHOENIX, AZ 85072-2085
TOSCO

CHECK DATE	CHECK NUMBER
12/04/97	566831

Bank of Boston (Maine), N.A.
Southportland, ME
52-153
112

VOID AFTER SIXTY DAYS

PAY FORTY DOLLARS AND 00 CENTS **********

$40.00

TO THE ORDER OF
MULTNOMAH CNTY RECORDER
COMMONWEALTH BLDG
421 SW 6TH
RM 308
PORTLAND, OR 97204

BY Dwight H Wiggins
AUTHORIZED SIGNATURE

"0000056683 1" :0112015391: 80 038 104"

COP0014171

STATE OF OREGON WELL OWNERSHIP INFORMATION FORM
(FILE WITH COUNTY CLERK'S OFFICE)

Pursuant to ORS 537.788, owners of property on which a well is located shall, within 60 days following the construction and/or alteration of a new well or upon property transfer, **record the following information in the property deed records at the appropriate County Clerks Office**. Either the deed recording number or legal description of the property may be used to identify the property.

Property Owner Name(s): Tosco Corp.

Mailing Address: 5528 NW Doane Ave, Portland, OR 97210

Deed Recording Number (or legal description): Multnomah Co., Township 1N, Range 1E, Sect. 18, SW 1/4 of SW 1/4

Well Identification Number(s): L14950

Rights and Responsibilities: Oregon law finds that ownership and the rights to reasonable control of water within this state belongs to the public to be managed by the Water Resources Department. Most uses of water require a water right issued by the Water Resources Department. However, state law allows some uses of groundwater without benefit of a water right. Contact the Department for more information. The Water Resources Department cannot guarantee the presence of water in the desired amount on a specific property.

In addition to the above, owners of properties on which a well is located are responsible for maintaining that well in a proper manner. Some basic requirements are listed below:

1. All wells shall be maintained in a condition where they are not a threat to public health or safety, a source of contamination, or a waste of the groundwater resource,
2. All wells shall be securely covered to prevent any foreign substance from entering the well.
3. All wells shall be equipped with an access port or airline so that static water level information can be determined at any time.
4. Well casing must be protected from damage and meet minimum extension requirements.
5. Wells may only be permanently abandoned by a licensed and bonded well constructor or a landowner with a valid permit and bond. Well abandonment must be carried out in accordance with state rules.

If you would like further information about water rights, maintaining / abandoning your well, or wish to receive a copy of the administrative rules concerning well construction, please contact the Oregon Water Resources Department by phone at (503) 378-8455, or by mail at 158 12th Street NE, Salem, OR 97310.

I have read the above describing my basic rights and responsibilities related to well ownership.

Signature of Property Owner: [signature] for Tosco Corporation

Signed or attested before me this 3RD day of December, 1997

[signature] State of Oregon, County of Multnomah

(Signature of Notary Public)

My Commission Expires: March 23, 2001 (Notary - Please Place Seal Here)

OFFICIAL SEAL
SHAWN GILFILLAN
NOTARY PUBLIC-OREGON
COMMISSION NO.083100
MY COMMISSION EXPIRES MAR 23, 2001

Recording Office Use Only

COP0014172

STATE OF OREGON WELL OWNERSHIP INFORMATION FORM
(FILE WITH COUNTY CLERK'S OFFICE)

Pursuant to ORS 537.788, owners of property on which a well is located shall, within 60 days following the construction and/or alteration of a new well or upon property transfer, **record the following information in the property deed records at the appropriate County Clerks Office.** Either the deed recording number or legal description of the property may be used to identify the property.

Property Owner Name(s): Tosco Corp.

Mailing Address: 5528 NW Doane Ave., Portland, OR 97210

Deed Recording Number (or legal description): Multnomah Co., Township: 1N, Range: 1E, Sec. 18, SW 1/4 of SW 1/4

Well Identification Number(s): L14949

Rights and Responsibilities: Oregon law finds that ownership and the rights to reasonable control of water within this state belongs to the public to be managed by the Water Resources Department. Most uses of water require a water right issued by the Water Resources Department. However, state law allows some uses of groundwater without benefit of a water right. Contact the Department for more information. The Water Resources Department cannot guarantee the presence of water in the desired amount on a specific property.

In addition to the above, owners of properties on which a well is located are responsible for maintaining that well in a proper manner. Some basic requirements are listed below:

1. All wells shall be maintained in a condition where they are not a threat to public health or safety, a source of contamination, or a waste of the groundwater resource.
2. All wells shall be securely covered to prevent any foreign substance from entering the well.
3. All wells shall be equipped with an access port or airline so that static water level information can be determined at any time.
4. Well casing must be protected from damage and meet minimum extension requirements.
5. Wells may only be permanently abandoned by a licensed and bonded well constructor or a landowner with a valid permit and bond. Well abandonment must be carried out in accordance with state rules.

If you would like further information about water rights, maintaining / abandoning your well, or wish to receive a copy of the administrative rules concerning well construction, please contact the Oregon Water Resources Department by phone at (503) 378-8455, or by mail at 158 12th Street NE, Salem, OR 97310.

I have read the above describing my basic rights and responsibilities related to well ownership.

Signature of Property Owner: [signature] for Tosco Corporation

Signed or attested before me this 3RD day of December, 1997

[signature] State of Oregon, County of Multnomah

(Signature of Notary Public)

My Commission Expires: March 23, 2001 (Notary - Please Place Seal Here)

OFFICIAL SEAL
SHAWN GILFILLAN
NOTARY PUBLIC-OREGON
COMMISSION NO.063100
MY COMMISSION EXPIRES MAR 23, 2001

Recording Office Use Only
After Recording return to Property Owner(s)

COP0014173

STATE OF OREGON WELL OWNERSHIP INFORMATION FORM
(FILE WITH COUNTY CLERK'S OFFICE)

Pursuant to ORS 537.788, owners of property on which a well is located shall, within 60 days following the construction and/or alteration of a new well or upon property transfer, **record the following information in the property deed records at the appropriate County Clerks Office.** Either the deed recording number or legal description of the property may be used to identify the property.

Property Owner Name(s): Tosco Corp.

Mailing Address: 5528 NW Doane Ave., Portland, OR 97210

Deed Recording Number (or legal description): Multnomah Co., Township: 1N, Range: 1E, Sect. 18, SW 1/4 of SW 1/4

Well Identification Number(s): L14948

Rights and Responsibilities: Oregon law finds that ownership and the rights to reasonable control of water within this state belongs to the public to be managed by the Water Resources Department. Most uses of water require a water right issued by the Water Resources Department. However, state law allows some uses of groundwater without benefit of a water right. Contact the Department for more information. The Water Resources Department cannot guarantee the presence of water in the desired amount on a specific property.

In addition to the above, owners of properties on which a well is located are responsible for maintaining that well in a proper manner. Some basic requirements are listed below:

1. All wells shall be maintained in a condition where they are not a threat to public health or safety, a source of contamination, or a waste of the groundwater resource.
2. All wells shall be securely covered to prevent any foreign substance from entering the well.
3. All wells shall be equipped with an access port or airline so that static water level information can be determined at any time.
4. Well casing must be protected from damage and meet minimum extension requirements.
5. Wells may only be permanently abandoned by a licensed and bonded well constructor or a landowner with a valid permit and bond. Well abandonment must be carried out in accordance with state rules.

If you would like further information about water rights, maintaining / abandoning your well, or wish to receive a copy of the administrative rules concerning well construction, please contact the Oregon Water Resources Department by phone at (503) 378-8455, or by mail at 158 12th Street NE, Salem, OR 97310.

I have read the above describing my basic rights and responsibilities related to well ownership.

Signature of Property Owner: Walter Cramer for Tosco Corporation

Signed or attested before me this 3RD day of December, 1997

Shawn Gilfillan
(Signature of Notary Public)

State of Oregon, County of Multnomah

My Commission Expires: March 23, 2001 (Notary - Please Place Seal Here)

OFFICIAL SEAL
SHAWN GILFILLAN
NOTARY PUBLIC-OREGON
COMMISSION NO.063100
MY COMMISSION EXPIRES MAR 23, 2001

Recording Office Use Only
After Recording return to Property Owner(s)

COP0014174

STATE OF OREGON WELL OWNERSHIP INFORMATION FORM
(FILE WITH COUNTY CLERK'S OFFICE)

Pursuant to ORS 537.788, owners of property on which a well is located shall, within 60 days following the construction and/or alteration of a new well or upon property transfer, **record the following information in the property deed records at the appropriate County Clerks Office.** Either the deed recording number or legal description of the property may be used to identify the property.

Property Owner Name(s): Tosco Corp.

Mailing Address: 5528 NW Doane Ave, Portland, OR 97210

Deed Recording Number (or legal description): Multnomah County, Township 1N, Range 1E, Sect. 18, SW 1/4 of SW 1/4

Well Identification Number(s): L14947

Rights and Responsibilities: Oregon law finds that ownership and the rights to reasonable control of water within this state belongs to the public to be managed by the Water Resources Department. Most uses of water require a water right issued by the Water Resources Department. However, state law allows some uses of groundwater without benefit of a water right. Contact the Department for more information. The Water Resources Department cannot guarantee the presence of water in the desired amount on a specific property.

In addition to the above, owners of properties on which a well is located are responsible for maintaining that well in a proper manner. Some basic requirements are listed below:

1. All wells shall be maintained in a condition where they are not a threat to public health or safety, a source of contamination, or a waste of the groundwater resource.
2. All wells shall be securely covered to prevent any foreign substance from entering the well.
3. All wells shall be equipped with an access port or airline so that static water level information can be determined at any time.
4. Well casing must be protected from damage and meet minimum extension requirements.
5. Wells may only be permanently abandoned by a licensed and bonded well constructor or a landowner with a valid permit and bond. Well abandonment must be carried out in accordance with state rules.

If you would like further information about water rights, maintaining / abandoning your well, or wish to receive a copy of the administrative rules concerning well construction, please contact the Oregon Water Resources Department by phone at (503) 378-8455, or by mail at 158 12th Street NE, Salem, OR 97310.

I have read the above describing my basic rights and responsibilities related to well ownership.

Signature of Property Owner: [signature] for Tosco Corporation

Signed or attested before me this 3RD day of December, 1997

[signature]
(Signature of Notary Public)

State of Oregon, County of Multnomah

My Commission Expires: March 23, 2001

(Notary - Please Place Seal Here)

OFFICIAL SEAL
SHAWN GILFILLAN
NOTARY PUBLIC-OREGON
COMMISSION NO.063100
MY COMMISSION EXPIRES MAR 23, 2001

Recording Office Use Only
After Recording return to Property Owner(s)

COP0014175

STATE OF OREGON WELL OWNERSHIP INFORMATION FORM
(FILE WITH COUNTY CLERK'S OFFICE)

Pursuant to ORS 537.788, owners of property on which a well is located shall, within 60 days following the construction and/or alteration of a new well or upon property transfer, **record the following information in the property deed records at the appropriate County Clerks Office.** Either the deed recording number or legal description of the property may be used to identify the property.

Property Owner Name(s): Tasco Corp.

Mailing Address: 5528 NW Doane Ave, Portland OR 97210

Deed Recording Number (or legal description): Multnomah Co., Town 1N, Range 1E, Sec. 18, SW¼ of SW¼

Well Identification Number(s): L14946

Rights and Responsibilities: Oregon law finds that ownership and the rights to reasonable control of water within this state belongs to the public to be managed by the Water Resources Department. Most uses of water require a water right issued by the Water Resources Department. However, state law allows some uses of groundwater without benefit of a water right. Contact the Department for more information. The Water Resources Department cannot guarantee the presence of water in the desired amount on a specific property.

In addition to the above, owners of properties on which a well is located are responsible for maintaining that well in a proper manner. Some basic requirements are listed below:

1. All wells shall be maintained in a condition where they are not a threat to public health or safety, a source of contamination, or a waste of the groundwater resource.
2. All wells shall be securely covered to prevent any foreign substance from entering the well.
3. All wells shall be equipped with an access port or airline so that static water level information can be determined at any time.
4. Well casing must be protected from damage and meet minimum extension requirements.
5. Wells may only be permanently abandoned by a licensed and bonded well constructor or a landowner with a valid permit and bond. Well abandonment must be carried out in accordance with state rules.

If you would like further information about water rights, maintaining / abandoning your well, or wish to receive a copy of the administrative rules concerning well construction, please contact the Oregon Water Resources Department by phone at (503) 378-8455, or by mail at 158 12th Street NE, Salem, OR 97310.

I have read the above describing my basic rights and responsibilities related to well ownership.

Signature of Property Owner: [signature] for Tasco Corporation

Signed or attested before me this 3RD day of December, 1997

[signature]
(Signature of Notary Public)

State of Oregon, County of Multnomah

My Commission Expires: March 23, 2001

(Notary - Please Place Seal Here)

OFFICIAL SEAL
SHAWN GILFILLAN
NOTARY PUBLIC-OREGON
COMMISSION NO.063100
MY COMMISSION EXPIRES MAR 23, 2001

Recording Office Use Only

COP0014176

Marty:

The five monitoring wells need to be recorded at the County Clerks Office. You need to send $8 per "sheet" and $5 per additional sheet to the county clerk for recording. Since the Water Resources Form is only one page, **send $40 for the five wells. Make the check payable to "Multnomah County Recorder".** Fill in the appropriate lines and have your notary public sign.

You can send this packet by mail to:

Multnomah County Recorder
421 SW 6th Ave. Room 308
Portland, Oregon 97204

The documents will be recorded when they are received, but the documents will not be returned to you for about eight weeks.

Let me know if you need anything further.

Mark

Oregon

WATER
RESOURCES
DEPARTMENT

Dear Well Owner:

The Oregon Water Resources Department has implemented a well identification program. This program links existing or newly constructed wells with Department records. The program will facilitate better management of Oregon's groundwater resources and provide the public easier access to information about specific wells.

As part of the identification process, the well constructor attached a tag to your well at the time of completion or alteration.

The last step of this process requires you to file the enclosed State of Oregon Well Ownership Information Form with the county. **This form should be filed with the property deed records at your local County Clerk's Office.** Please check with your local county offices to determine the appropriate recording fee. The form must be notarized prior to recording.

If you have any questions, please feel free to contact me at (503) 378-8455, extension 260.

Sincerely,

Lisa Juul
Well Identification Program
Enforcement Section

Enclosure

c:\enforce\mwell4

Commerce Building
158 12th Street NE
Salem, OR 97310-0210
(503) 378-3739
FAX (503) 378-8130

COP0014178

AOC 0922
CORRESP.

76 PRODUCTS COMPANY

INCIDENT INVESTIGATION REPORT

This form meets the intent of the OSHA 101
** = Press F1 To Activate On-Line Help*

*Cost Center	*Sequence No.
1808	2007

GENERAL INFORMATION

Date/Time Investigation Began: 12/19/97 6:00 PM

1. Incident Type: ☒ Accident (Costs) ☐ Near Miss (No Costs)

2. Business Segment:	3. Facility/Business Unit Location (Street, City, State, Zip Code):	4. Date of Incident: 12/19/97
Supply and Transportation Name of Facility/Business Unit: Portland Terminal	5528 N.W. Doane Ave. Portland, OR 97210 Incident Location If Different from Above (Street, City, State, Zip Code):	Shift: Evenings Time of Incident: 1715 *PM Weather/Natural Occurrences: Overcast

5. Division: Lube Manufacturing	6. Department 1: Lube Manufacturing Department 2:	
*7. Work Area Affected 1: Lube Cell Work Area Affected 2: Lower	8. Classification of Incident: *Environmental Comments: Oil Spill If Fatality, Enter Date of Death:	*9. Actual Loss Severity: Serious Potential Loss Severity: Serious

*10. Probability of Recurrence: Seldom *(If no corrective action taken)*	*11. Service Station No.: ☒ N/A Vehicle No.:	12. Incident on Company Property: YES

PERSONNEL DATA (Person Involved) ☐ N/A If N/A, proceed to Step No. 26 *☐ Check if more than one person involved

13. Last Name: Kost First Name: James Middle Initial: E	14. Address (Street, City, State, Zip Code): 2818 SE Swain Milwaukie, Or 97267	15. Home Phone: 5036538470 Business Phone: 5032481541 Social Security #: [redacted]

16. Classification of Individual: Company Employee Position: Terminal Operator Describe Other: Length of Time in Present Position: 8 yrs.	17. Age Group: 50-59 Actual Age: 53	18. Length of Service: 11-15 years Actual Service: 15	19. Gender: Male

20. Contractor Company Name:	21. Contractor Address (Street, City, State, Zip Code):	22. Business Phone:
23. Contractor's Supervisor Name:	24. Unocal Contact:	25. Contact Phone:

WITNESS DATA ☒ N/A If N/A, proceed to Step No. 29 *☐ Check if more than one witness

26. Last Name: * First Name: Middle Initial:	27. Address (Street, City, State, Zip Code):	28. Home Phone: Business Phone:

THIRD PARTY DATA ☒ N/A If N/A, proceed to Step No. 32 *☐ Check if more than one third party

29. Last Name: * First Name: Middle Initial:	30. Address (Street, City, State, Zip Code):	31. Home Phone: Business Phone: Comments: *

32. Vehicle Make: * Vehicle Type:	*33. Vehicle License No.: Driver License No.:	34. Insurance Co. Name: Policy No.:

INJURY/ILLNESS DATA ☒ N/A ☐ INJURY ☐ ILLNESS If N/A, proceed to Step No. 47

*35. Injury/Illness Class.:	36. Type of Injury: * Describe Multiple/Other:	37. Type of Illness: Describe Multiple/Other:

38. Type of Contact:	*39. Contact With:
40. Activity Being Performed:	*41. Primary Body Part: Secondary Body Part:
42. Describe Multiple/Other:	
43. Hospital/Clinic Name: *☐ N/A	44. Hospital/Clinic Address (City, State):
45. Hospital/Clinic Telephone:	*46. Treating Physician's Name and Address:

FACTUAL INFORMATION (Describe fully how the incident happened)

47. *On 12/19/97 at 16:00hrs., upon completing his shift, lead man Dale Hoffman related turnover information to Jim Kost indicating a RR tank car pump - off in progress as well as a visual confirmation at @ 16:00 hrs. of the tank transfer of Uniguide 100 from tank 4388 via the new air

COP0014179

pump to tank 4321. At 16:55 hrs., upon finishing bulk truck loading and related paperwork Jim returned to the blending room and checked the status of both transfers on the computer tank gauge display screen. Previous verification confirmed that both products would properly fit into the respective tanks being filled. After this status check Jim proceeded to take a coffee break in the boiler room.

After 15 minutes (@ 17:10 hrs.) Jim returned to the blending room to review the daily activity sheet and then returned outside to physically inspect both transfers. At this time (@17:15 hrs.) Jim observed an oil spill of the Uniguide 100 product that covered approximately a 25 by 60 foot dimension of the lower lube pump cell area directly next to the warehouse. He immediately contacted head operator Ralph Sandercock and then proceeded to turn off the air pump at the barrel filler control panel. Jim then contacted production foreman Dave Hauck at @ 17:25 hrs.

Ralph Sandercock confirmed that oil product from the spill had not reached the oil water seperator and upon recommendation from Roger McGowne turned off valves and pumps at Lift Station #1 - directly west of the bulk lube oil loading rack - that in turn feeds the oil water separator. Arrangements were made to immediately begin removing oil product from both man hole # 1 and Lift Station #1 by use of a company portable sump pump/ slop tank.

It was determined from before and after tank gauging that @ 2000 gallons of product was released from the spill. On the evening of the incident approximately 1800 gallons of product was recovered by the company portable sump pump/ slop tank from Manhole #1 and Lift Station #1 and then pumped into slop tank# 36. Absorbant pads were also placed throughout the spill area that evening.

On 12/20/97 beginning at @ 8:00 A.M. an additional 900 gallons of oil and water were pumped out of Man Hole #1 and Lift Station #1 by members of the maintenance department using the company portable sump pump/ slop tank. At @ 10:00 A.M. a 4000 gallon capacity vacuum truck from C.E.T. arrived on scene and began to pump out additional oil/ water accumulation from the lube cell where the spill occured . Rain accumulation from the previous evening had caused additional water to fill the lube cell area since drainage could not occur after valves and pumps to the oil water seperator had been disengaged at Lift Station #1.

That same morning the remainder of the spilled product which had sprayed onto property equipment and walking surfaces was power washed by company personnel and vacuum pumped by C.E.T. at the lube cell site.

All water contaminated in this incident was pumped into slop tank #36.

Soil/ gravel contamination in lower lube cell spill site is estimated at @ 3.5 cubic yards. Gravel mixture will be removed and replaced by C.E.T. Contaminated mixture will be disposed off site at T.P.S. Technologies, Inc.

Company personnel from Administration, Environmental, H.E.S. , and Maintenance departments were at the scene the night of the spill and the following morning to coordinate incident investigation, clean up strategies, and notification requirements. The City of Portland was contacted on 12/19/97 at 22:15 hrs., the OERS was contacted on 12/19/97 at 22:20 hrs., the ODEQ was contacted on 12/19/97 via the OERS, and the Portland Bureau of Environmental Services was contacted on 12/23/97 at 16:10 hrs. All agencies were contacted by Marty Cramer of Environmental Remediation.

*48. Phase of Operation: Normal Operation

LOSS TO PROPERTY OR ENVIRONMENT ☐ N/A If N/A, proceed to Step No. 57

49. Type of Property: Other Describe Other: Finished lube oil	50. Type of Loss: *Product Loss Describe Other:	51. Property Owner: Company
52. Vehicle Make: * Vehicle Type:	*53. Vehicle License No.: Driver License No.:	54. Material Involved: *Other Describe: Lube oil
55. Type of Environmental Incident: Spill/Release Environmental Media: Soil		56. Containment: *On-Site Quantity: *2000 GALS

REGULATORY AGENCY DATA ☐ N/A If N/A, proceed to Step No. 60

57. Name of Law Enforcement/Regulatory Agencies Reported to: City of Portland, State of Oregon, ☐ N/A	58. Notice of Non-Compliance (NONC) Issued: * Issuing Agencies:	59. NONC Issued for: ☐ N/A

CAUSAL ANALYSIS

*60. Immediate Cause Related to Acts: Equipment Usage

*61. Immediate Cause Related to Conditions: Tools/Equipment/Materials

62. Narrative of Immediate Causes:

*Terminal operator Jim Kost was conducting work responsibilities following established operating procedures. Preliminary findings at the scene as well as further analysis indicated equipment failure of the newly installed air pump flex hose (used to transfer the Uniguide 100 product between tanks) to be the cause of the spill. Questions of adequate engineering, proper application, and correct installation of the air pumps will be researched to determine if these factors contributed to the equipment failure. The equipment vendor will also be contacted to review product integrity and warrenty issues

*63. Basic Cause Related to Personal Factors: Communication

*64. Basic Cause Related to Job Factors: Leadership/Supervision

65. Narrative of Basic Causes:

*Mechanical failure may have been prevented had requests to the maintenance department to secure the airpumps been responded to in a more timely manner. This is not to place blame on the maintenance personnel but points to a need to establish a more formal means of communication between terminal personnel regarding the prioritizing of maintenance requests and the accountability of completing these requests within a specified time period.

66. Additional Observations:

*Several members of the blending department who use these air pumps as well as myself (production foreman) expressed to the maintenance department serious reservations as to the excessive vibration and movement of these pumps when in use. We were concerned that product could be spilled not only from the pumps but also from metal fatigue of overhead pipes and connections. I was informed on the date of the incident by Dave McPhetridge of the maintenance department that it was reasonable to continue using the pumps and that additional securing of these pumps to their concrete bases was planned by his department. Requests to correct this pump situation had been communicated to the maintenance staff on previous occasions by the Lube Plant Manager as well as by the Maintenance Supervisor to his direct reports.

67. Equipment/Machine/Tool: Pumping Equipment
Describe Other: Pipes, fittings, valves.

COSTS **Actual/Estimate: Actual** Provide costs for the incident

68. Equipment/Property Loss:	☒ N/A	
69. Process Loss/Product Loss/Product Contamination or Mix:	☐ N/A	**$5,500**
70. Environmental/Clean Up Costs:	☐ N/A	**$5200**
71. Regulatory Fines:	☒ N/A	
72. Medical Costs:	☒ N/A	
73. Lost Work (Supervisor & Employee):	☐ N/A	**$150**
74. Other Costs: ☐ N/A for: *		
	75. Total Costs:	**$11,450**
76. Costs Recovered From Other Parties:	☒ N/A	*

ACTION PLAN TO PREVENT RECURRENCE ☐ **N/A** Provide description of what is to be done (list each item separately)

77. Action Item: **76 Lubricants Co. Portland Plant Manager to coordinate outside engineering analysis of equipment adequacy, application for designed use, and propriety of equipment installation and also the implementation of necessary changes resulting from this analysis.**	
Tentative Completion Date: **12/31/97**	Responsible Person: **Gary LeFebvre**
78. Action Item: **Plant Manager, Production Foreman, and members of the Blending department to conduct risk assessment of S.O.P.'s and S.W.I.'s for individuals in the blending department including proper use of pumps and adequate monitoring schedules for pumping activities.**	
Tentative Completion Date: **1/30/98**	Responsible Person: **D.Hauck**
79. Action Item: **Maintenance supervisor to determine and document a formal method of accountability for his direct reports to perform requested maintenance within a specified time period and to communicate anticipated completion of projects to appropriate parties.**	
Tentative Completion Date: **1/30/98**	Responsible Person: **Roger McGowne**
80. Action Item: **All future construction or repair projects will be assessed by the participation of terminal management and the maintenance department to determine the need for outside engineering consultation.**	
Tentative Completion Date: **12/31/97**	Responsible Person: **LeFebvre / McGowne**
81. Action Item:	
Tentative Completion Date:	Responsible Person:
82. Action Item:	
Tentative Completion Date:	Responsible Person:
83. Category of Corrective Action Items: *	
Describe Other:	

Form Completed by: All signatures are required

84. Print Immediate Supervisor's Name: **Dave Hauck**
Title: **Production Foreman**
Telephone Number: **5032481542**
Date: **12/24/97**
Immediate Supervisor's Signature: Dave Hauck

85. Print Superintendent's/Manager's Name: **Gary LeFebvre**
Title: **Plant Manager**
Telephone Number: **5032481533**
Date: **12/24/97**
Superintendent's/Manager's Signature: Gary LeFebvre

NOTE: *The following page contains an area for diagraming the incident, if applicable. Print this document to obtain a copy of the form. Do not attempt to complete the diagram while using the computer program.*

1-1L15 (REVISED 7/1/96)

LUBE SPILL 12/19/97

12/19 ARRIVED 9:00 AM ON 12/19 - ESTIMATED LOSS OF 1500 GALS OF UNIGLIDE SAW GUIDE OIL. RECOVERING SPILL FROM MANHOLE IN PROCESS SEWER. NO OIL APPARENTLY MADE IT TO SEPARATOR. LIFT STATION SHUT DOWN AFTER SPILL DISCOVERED. RECOVERED ≈1,800 FROM MANHOLE. USED SORBENTS TO PICK UP PONDED OIL. LEFT AT 10:30

12/20 ARRIVED 10:00 AM ON 12/20 - FELT THEY RECOVERED ANOTHER 500-700 GALLONS FROM THE SUMP. USED VAC TRUCK TO RECOVER OIL IN TANK FARM. TANK FARM HAD BACKED UP AND FLOODED RED DYE CONTAINMENT AREA WORSENING PROBLEM. ONCE TRUCK WAS FULL, DECANTED INTO #003. TOLD DAVE BURRARD TO TAKE WATER SAMPLE. BEGAN WASHING DOWN CONTAINMENT AREA & SUCKING WATER FROM MANHOLE. WILL DECANT AGAIN USING SORBENTS TO RECOVER REMAINING FLOATING OIL & PONDED OIL. DEPARTED AT 13:30. DAVE TO TAKE ANOTHER SAMPLE WHILE DECANTING FOR LAST TIME

12/22 SPOKE TO GARY @ 0715 - TOLD HIM WE NEED TO GET UPPER 2 INCHES OR SO OF DIRT REMOVED. GARY TO CALL CET TO GET ESTIMATE

TABLE 2-7
NOTIFICATION LOG SHEET

Use To Document Notifications of Government Agencies for Discharges

Date: 12/19/97	**Time:** 10:15
Contact Name: Eric DeBerry	**Phone:** 823-5538
Agency Name: Portland City	**Case #:**
Notes or Comments (if any): Left message on machine. Will call City Again tomorrow at 823-5556	

Date: 12/19/97	**Time:** 10:20
Contact Name: Ramon Para	**Phone:** (800) 452-0311
Agency Name: OERS	**Case #:** 973074
Notes or Comments (if any): Ramon said he would contact DEQ. I provided my name and phone no.	

Date: 12/23/97	**Time:** 4:10
Contact Name: Steve Rosenberger	**Phone:** 823-5556
Agency Name: Portland BES	**Case #:**
Notes or Comments (if any): No problem - will pass on to Eric. Told him about soil and our sampling results during excavating. Said to call following 24-hr number for spills that could enter City sewers. 823-7180 - City BES spill reporting number	

COP0014183

Cramer, Marty A.

AOC 0922

From: Cramer, Marty A.
Sent: Wednesday, January 21, 1998 6:26 PM
To: Lefebvre, Gary M.; Rogers, Anita K.; Silva, Larry B.; Hauck, David L.
Cc: Gilfillan, Shawn B.; Matthews, Sandy (Portland)
Subject: Lube Spill
Importance: High

Gary et. al.:

I received a call from Loren Garner of DEQ on the recent lube spill as he had a few questions. He asked about the status of the soil remediation and why it took so long to notify the state (approx. 4.5 hrs).

Regarding the soil I told him we were waiting for the analytical results to determine how much soil we had to remove and the lab was doing some forensics work which may take a few more days. The lab work is being conducted to try and differentiate between contamination from this spill and previous spills as we only intended to remove the soil impacted by this spill. Previous spills were being addressed under the current consent order. Loren seemed happy with that and was glad we did not opt to do nothing just because we had existing contamination at the site. I told him we would likely have the soil removed by the 6th of February and would call him when we complete it or if there are any delays.

On the notification issue, I explained there was initially some confusion as to if it was a reportable spill seeing as how it was within a contained area. It was not until we all arrived onsite at about 8:30 or 9:00 and had a chance to review the regulations that we concluded it was reportable. It was determined that although the majority of the spill was within a concrete lined containment, because a strip of bare ground was impacted and the quantity was greater than 1 bbl, the spill was, in fact, reportable and the notifications were promptly made.

He did not have a problem with that but cautioned us if it had reached or threatened to reach water and we waited that long, there would likely be enforcement action. He also said that even if a spill is not reportable (i.e. contained on an impervious surface), if it is of significant size, he requested we notify the state. He said that if it gets into the stormwater system, he would like to be notified as well even though we have separators to stop it before it goes offsite. He agreed that small spills to the stormwater system were not appropriate for notification but significant spills where there is a chance oil could escape past the separator, the state should be notified. I said I would look into what quantity of oil entering the separator under heavy storm conditions may have a chance of exceeding the separator's capacity and will include that in our spill notification guidelines along with the other issues discussed concerning spills to land.

The current spill plan only addresses spills to water even though the consultant had been requested to include regulations on spills to land where applicable during the last plan overhaul. I will modify the reporting requirements in the plan accordingly as well as requirements in the Coos Bay plan.

If you have any questions, please call.

Marty

TOSCO DISTRIBUTION COMPANY
NORTHWEST OPERATIONS
5528 NW Doane Ave.
Portland, OR 97210
(503) 248-1590
FAX (503) 248-1592

0922
CORRECT.

FAX INFORMATION SHEET

DATE: 22-Jan-98

ATTENTION:	Kent Patton	**SENDER:**	Marty Cramer
COMPANY:	North Creek	**COMPANY:**	TOSCO
FAX NUMBER:	644-2202		
LOCATION:	Beaverton	**LOCATION:**	PORTLAND, OR
NO. OF PAGES INCLUDING COVER	5		

MESSAGE:

Kent

Here is the first four pages of the MSDS for the red dye associated with the lube oil spill here at the Portland Terminal.

If you have any questions, please call me at 248-1517.

Thanks,

Marty

1. CHEMICAL PRODUCT AND COMPANY INFORMATION

Product ID: Automate Red IK
Generic Description: Disazo dye
Product Use: Colorant

For general information, contact:
Morton Adhesives & Chemical Specialties
100 N. Riverside Plaza
Chicago IL 60606-1598
312-807-3273

HAZARD RATINGS		
	HMIS	NFPA
Health	2 *	2
Fire	1	1
Reactivity	0	0
	* = Chronic	

MSDS prepared by:
Toxicology and Regulated Substance Compliance
David Wienckowski, D.A.B.T.
100 N. Riverside Plaza
Chicago IL 60606
312-807-3422

ChemTrec Emergency
1-800-424-9300

2. COMPOSITION/INFORMATION ON INGREDIENTS

COMMON NAME	CAS #	Approximate % (w/w)
Hydrotreated lt. naphthenic distillate (petroleum)	64742-53-6	58.0
C.I. Solvent Red 164	See below*	42.0
Non-hazardous and other ingredients below reportable levels	Proprietary	Balance

* 2-Napthalenol {(phenylazo)phenol} azo alkyl derivatives. Accession No.: 35371.

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: MAY CAUSE RESPIRATORY TRACT IRRITATION. MAY CAUSE DIGESTIVE TRACT IRRITATION. MAY CAUSE EYE IRRITATION. PROLONGED OR REPEATED CONTACT MAY CAUSE SKIN IRRITATION. See sections 3, 5, & 6.

PRIMARY ROUTES OF EXPOSURE: Eye. Skin. Inhalation (breathing).

EYE CONTACT: May cause slight to mild irritation.

SKIN CONTACT: Prolonged or repeated contact may cause irritation.

INHALATION (Breathing): Irritating to the eyes, nose, and respiratory tract.

INGESTION (Swallowing): Irritating to the mouth, throat, and stomach.

TARGET ORGANS/CHRONIC EFFECTS: Liver. Blood and/or blood-forming organs.

CONDITIONS AGGRAVATED BY EXPOSURE: Liver. Blood and/or blood-forming organs.

CARCINOGENICITY:

	ACGIH	IARC	NTP	OSHA
Hydrotreated lt. naphthenic distillate (petroleum)	No	No	No	No
C.I. Solvent Red 164	No	No	No	No

4. FIRST AID MEASURES

EYE CONTACT: Immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention if irriation persists.

SKIN CONTACT: Immediately flush with water. Remove contaminated clothing and shoes. Get medical attention if irritation persists. Professionally wash clothing and shoes before re-use.

INHALATION (Breathing): Remove to fresh air. If symptoms develop, seek immediate medical attention. If not breathing, give artificial respiration.

INGESTION (Swallowing): Seek medical attention. Immediately induce vomiting, as directed by medical personnel. Never give anything by mouth to an unconscious person.

NOTES TO PHYSICIANS: Treatment should be directed at preventing absorption, administering to symptoms (if they occur), and providing supportive therapy.

5. FIRE FIGHTING METHODS

Flash Point...: > 200F 93.3C Method.....: Setaflash Closed Cup
Explosive Lmts: LEL(%) Not Determined UEL(%) Not Determined
Autoignition..: Not Determined

HAZARDOUS COMBUSTION AND DECOMPOSITION PRODUCTS: Smoke, soot, and toxic/irritating fumes (i.e., carbon dioxide, carbon monoxide, etc.). Oxides of nitrogen.

FIRE AND EXPLOSION HAZARDS: During a fire, irritating and highly toxic gases may be generated during combustion or decomposition.

EXTINGUISHING MEDIA: SMALL FIRES: Dry chemical, carbon dioxide, halon, water spray, or foam. LARGE FIRES: Water spray, fog, or alcohol foam.

FIRE FIGHTING PROCEDURES/EQUIPMENT: Fire fighters and others who may be exposed to the products of combustion should be equipped with NIOSH-approved positive pressure self-contained breathing apparatus (SCBA) and full protective clothing.

6. ACCIDENTAL RELEASE MEASURES

EVACUATION: Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Eliminate all sources of ignition.

CONTAINMENT: Safely stop discharge. Contain material, as necessary, with a dike or barrier. Stop material from contaminating soil, or from entering sewers or bodies of water.

CLEAN-UP/PERSONAL PROTECTION EQUIPMENT: Appropriate safety measures and protective equipment should be used. Use supplied air respirator or self-contained breathing apparatus in enclosed spaces or if airborne exposure limits can be exceeded. See Section 8.

COLLECTION AND DISPOSAL: Stop discharge, if safe to do so. Use proper protective equipment. Cover spills with absorbent clay or sawdust and place in closed chemical waste containers. Dispose of according to applicable local, state and federal regulations.

REPORTING: Spills of this material in excess of a components's RQ must be reported to the National Response Center (1-800-424-8802) and to the appropriate state and local emergency response organizations.
No regulated ingredients.

7. HANDLING AND STORAGE

STORAGE CONDITIONS: Store in cool, dry, well ventilated area away from heat, ignition sources, and direct sunlight. Keep containers tightly closed.

TRANSFER: No special precautions are needed. Follow good manufacturing and handling practices.

PERSONAL HYGIENE: Wash thoroughly after handling, especially before eating, drinking, smoking, and using restroom facilities. Wash contaminated goggles faceshield, and gloves. Professionally launder contaminated clothing before re-use.

SPECIAL HANDLING: This product may contain trace quantities of the aromatic amines, ortho-toluidine and aniline, at levels less than 0.03%. Minimize exposure by applying proper handling techniques and by the use of appropriate protective equipment (refer to section 8). OSHA PEL and ACGIH TLV for ortho-toluidine are 5 ppm (skin) and 2 ppm (skin), respectively. OSHA PEL and ACGIH TLV expsoure limits for aniline are 2 ppm (skin). For further information of the pure forms of these materials, refer to NIOSH publication 83(7): 501-506.

EMPTY CONTAINER PRECAUTIONS: Attention! This container can be hazardous when empty. Follow label warnings even after container is emptied since empty containers may retain product residues. Do not reuse empty container without professional cleaning for food, clothing, or products for human or animal consumption or where skin contact can occur.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

EXPOSURE GUIDELINES:

ACGIH - TLV		
Hydrotreated lt. naphthenic distillate (petroleum	5	Oil mist-mineral
OSHA - PEL		
Hydrotreated lt. naphthenic distillate (petroleum	5	Oil mist-mineral

ENGINEERING CONTROLS/VENTILATION: Local exhaust ventilation is recommended when vapors, mists, or dusts can be released in excess of established airborne exposure limits (TLVs or PELs).

EYE PROTECTION: Wear chemical splash goggles or safety glasses with side shields.

SKIN PROTECTION: Wear protective clothing and appropriate impervious gloves. Because a variety of protective gloves exist, consult glove manufacturer to determine the proper type for a specific operation.

RESPIRATORY PROTECTION: Avoid breathing vapor and/or mists. Wear OSH/MSHA-approved equipment. Determine the appropriate type by consulting the respirator manufacturer. High airborne concentrations may necessitate the use of self-contained breathing apparatus (SCBA) or a supplied air respirator. Respiratory protection programs must be in compliance with 29 CFR 1910.134.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance....: Red, dark	Odor.....: Aromatic
Physical State: Liquid	Solubility....: Insoluble
pH.....: Not Applicable	Boiling Point.: 300F 148.8C
VOC Material..: Not Determined	Specific Grvty: 0.94
%Non-Vol(w/w).: 100	

NOTE: The physical data presented above are typical values and should not be construed as a specification.

10. STABILITY AND REACTIVITY

CHEMICAL STABILITY: Stable under normal conditions of use.

HAZARDOUS POLYMERIZATION: Will not occur.

CONDITIONS TO AVOID: High temperatures.

INCOMPATIBILITY WITH OTHER MATERIALS: Oxidizers. May react with reducing agents to liberate free amine(s).

TOXICITY INFORMATION

COMPONENTS:

Hydrotreated lt. naphthenic distillate (petroleum):

Oral LD50	Rat	> 5,000 mg/kg
Dermal LD50	Rabbit	> 3,160 mg/kg
Inhalation LC50	Rat	2,200 mg/M3/4-Hours
Eye Irritation	Rabbit	1.2/110
Skin Irritation	Rabbit	1/8

C.I. Solvent Red 164:
The effects of chromosomal structure on exposure were investigated in cultured human lymphocytes. Tests were conducted with and without the inclusion of a metabolic activating system. Mitotic indices were calculated for each culture and were based on the number of metaphases observed per 1000 cells scored. Consideration of mitotic index data showed no direct evidence of toxicity to dividing lymphocytes at any tested concentration in either the absence or presence of the activating system. However, after 48 hours of exposure, cultures @ 800 u/ml and 80 u/ml produced a number of metaphases which were not clearly visualized. This is believed to be indirectly associated with cytotoxicity. The dye was examined for mutagenic activity in four histidine-dependent auxotrophs of salmonella tymphimurium. It was concluded that the dye exhibited mutagenic activity in this study inducing frameshift mutations following metabolic activation. An in vivo micronucleus test in peripheral blood of swiss-webster mice produced a statistically significant increase in micronuclei in males, but only at the highest dosage (5000 mg/kg). A 4-week toxicity study was conducted following oral administration to rats. Changes were noted at higher dosages. Treatment at 1000 mg/kg/day showed low hemoglobin concentrations, high adrenal weights in males, high plasma urea

concentrations in females, and hepatic changes. Reversibility of effects seen the high dosage was demonstrated although recovery for some was incomplete weeks following cessation of treatment. It was determined that the no-toxic-effect level in this study was 40 mg/kg/day. The potential to produce delayed contact hypersensitivity in guinea pigs was evaluated. The data indicate that sensitization was not induced. The octanol/water partition coefficient was determined to be 1.53 x 10(5) and the standard deviation was less than 0.218 log units.

12. ECOLOGICAL INFORMATION

No data are available on this product.

13. DISPOSAL CONSIDERATIONS

DISPOSAL: Dispose in accordance with all local, state, and federal regulations.

GENERAL STATEMENTS: Federal regulations may apply to empty container. State and/or local regulations may be different.

GENERAL RECOMMENDATIONS: Of the methods of disposal currently available, it is recommended that an alternative be selected according to the following order of preference, based upon environmental acceptability: (1) recycle or rework, if feasible; (2) incinerate at an authorized facility; or (3) treat at an acceptable waste treatment facility.

SPECIAL INSTRUCTIONS: Be sure to contact the appropriate government environmental agencies if further guidance is required.

TRANSPORT INFORMATION

Weight (lb)	Shipping Name	49 CFR	IATA	IMO
	Non-regulated	Y	Y	Y

DOT Label.....: Not applicable
DOT Label No..: L735-1
UN/NA Id Num..: Not Applicable
WHMIS Label...: F735-1

15. REGULATORY INFORMATION

FEDERAL:

This product is considered hazardous under the OSHA Hazard Communication Standard (29 CFR 1910.1200).

SARA Title III - Section 311/312 - Hazard Categories:
N- Fire Hazard
N- Sudden Release of Pressure Hazard
N- Reactivity Hazard
Y- Immediate (acute) Health Hazard
Y- Delayed (chronic) Health Hazard

Ozone-Depleting Chemicals - No regulated ingredients.

SARA Section 302 Extremely Hazardous Mat - No regulated ingredients.

SARA Section 313 Toxic Chemicals - No regulated ingredients.

EMICAL LISTING - Listed on the following Country's Chemical Inventories:

Australia — Australian Inventory
Listed.

European Union — EINECS (Euro. Inventory of Chem. Subst.)
Listed.

Republic of Korea — Korean Inventory
Listed.

Japan — Japanese MITI Inventory
Listed.

Philippines — Phillipines Inventory
Listed.

United States — Toxic Substance Control Act
Chemical component(s) in this product are on the section 8(b) Chemical Substance Inventory List (40 CFR 710).

STATE RIGHT-TO-KNOW:

Pennsylvania - New Jersey R-T-K

Hydrotreated lt. naphthenic distillate (petroleum)	64742-53-6	58.0
C.I. Solvent Red 164	See Section 2	42.0
Non-hazardous trade secret ingredient(s)	Proprietary	Balance

California - California Proposition 65 - No regulated ingredients.

CONEG - No data available.

CANADA:
This is a "controlled product" under the Canadian Workplace Hazardous Materials Information System (WHMIS).

Class D Division 2 Sub-division B

CEPA - NPRI - No regulated ingredients.

Canadian Chemical Inventory

Domestic Substance List
Listed.

16. OTHER INFORMATION

USERS RESPONSIBILITY: A bulletin such as this cannot be expected to cover all possible individual situations. As the user has the responsibility to provide a safe workplace, all aspects of an individual operation should be examined to determine if, or where, precautions - in addition to those described herein - are required. Any health hazard and safety information herein should be passed on to your customers or employees, as the case may be.

DISCLAIMER OF LIABILITY: The information contained herein is, to the best of our knowledge and belief, accurate. However, since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by use of this material. All chemicals may present unknown health hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards which exist. Final determination of suitability of the chemical

is the sole responsibility of the user. No representations or warranties, either expressed or implied, of merchantability, fitness for a particular purpose or any other nature are made hereunder with respect to the information contained herein or the chemical to which the information refers. It is the responsibility of the user to comply with all applicable federal, state and local laws and regulations.

End of Material Safety Data Sheet

76 Lubricants Company
A DIVISION OF TOSCO CORPORATION

February 13, 1998

Mr. Loren Garner
Oregon Department of Environmental Quality
2020 SW 4th Avenue, Suite 400
Portland, OR 97201-5884

AOC 0922
REPORTS

Follow-up Report for Lube Oil Spill
76 Lubricants Company Portland Terminal

Dear Mr. Garner:

This correspondence has been prepared as a follow-up to our written report dated January 8, 1998 to summarize the final remedial actions and subsequent spill prevention measures implemented by Tosco as a result of the December 19, 1997 lube oil spill at the Portland Terminal. As described in the January 8 report, Tosco experienced a 2,000 gallon lube oil spill following the rupture of a flex hose during an oil transfer operation. The large majority of the oil was contained within the concrete containment system surrounding the pump area and in the associated drains to the process water system. Some oil was, however, sprayed onto the adjacent pipeway which is underlain by barren ground.

At the time of the spill, the response efforts focused on oil recovery from the pump containment area and process system as well as removal of surface oil from the pipeway. The oil spilled, known as Uniguide 100, is a relatively viscous lubricating oil that became even more viscous and sticky after being exposed to the low ambient temperatures at the time of the spill. Therefore, penetration into the pipeway soils was expected to be minimal which appeared to be confirmed by the removal of surficial soil in a few spots the night of the spill.

Because historic spills of lube oil had occurred in the pipeway, an attempt was made to differentiate between soil impacted by the previous events and the December 19 incident. Grab samples of soil were taken at depths of 2-, 6-, and 12-inches from three areas within the pipeway and submitted to North Creek Analytical for diesel and heavy range hydrocarbon analysis. North Creek also conducted some forensic analyses using gc/ms to evaluate potential differences in chromatograph and mass spec signatures between the oil at different depths. In addition, the samples were analyzed for the presence of a red dye that was associated with the lube oil spill. Unfortunately, there were no significant differences in oil signatures at the different depths and the red dye was not detected in significant concentrations in any of the samples. Consequently, it was not possible to differentiate between soils impacted by the current and historical spills. The lab reports for the hydrocarbon analyses are attached.

Based on visual observations mentioned above, it was assumed that oil did not penetrate more than a few inches into the pipeway soils. Therefore, CET was retained to remove the upper 3 to 4-inches of soil from the pipeway which occurred on February 4, 1998. In some

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Telephone (503) 248-1533 Fax (503) 248-1522

locations only 0.5- to 1.0-inches of soil were removed as the areas were underlain by concrete. The concrete apparently was the result of excess material being dumped in the pipeway following installation of the adjacent containment systems. A total of 3.5 tons of impacted soil and gravel was removed from the area and taken to TPS in Portland for thermal desorption treatment and recycling. A sample of impacted soil was taken on January 9 and submitted to OAL for disposal characterization. The associated laboratory report is attached.

Tosco is not planning any further remedial actions at this time as 1) we believe we have removed most, if not all, of the recently impacted soil, 2) the pipeway area is limited in size (10-ft x 75-ft), and 3) runoff from the pipeway drains to the pump area and into the terminal process water collection and treatment system. Additionally, the terminal and adjacent facilities are under a state consent order to assess and remediate petroleum contamination within the Willbridge Area which includes the pipeway. Although it was too late to include in this year's budget, Tosco will appropriate funds in 1999 to install a concrete liner beneath the pipeway which will also include the removal of additional impacted soil.

The cause of the flex hose rupture was attributed to excessive pump movement and subsequent loading on the flex hose. However, the rupture was also due, in part, to an untimely response to correct the pump movement problem. A piping engineer has been consulted to determine what design modifications to the pumping system would be required to ensure structural integrity and minimize the potential for future incidents. The resulting modifications are currently being made and the pumps have been taken out of service pending completion of the modifications. Critical and standard operating procedures for lube oil transfers have also been modified to more closely monitor these activities and avoid similar incidents in the future. Formal procedures to document time frames for responding to maintenance requests are being developed to ensure effective communication between the terminal supervisors and maintenance department.

If you have any questions or require additional information, please feel free to contact me at (503) 248-1542 or Martin Cramer at (503) 248-1517.

Sincerely,

David Hauck

David Hauck
Production Foreman

Enclosures

cc: G. LeFebver
M. Cramer
A. Rogers

OAL

RECEIVED FEB 0 2 1998

L4841

January 22, 1998

4301-000

Scott Gilfillan
CET Environmental Services
P.O. Box 83655
Portland, OR 97283

Phone: (503) 227-5892
FAX: (503) 241-8259

Re: Laboratory Sample Analysis

Project: 4301-000
Tosco Lube Soil

Project Manager: Scott Gilfillan

Dear Scott Gilfillan:

On Friday, January 9, 1998, OAL received one (1) soil sample for analysis. The sample was analyzed utilizing EPA or equivalent methodology.

Should you have any questions concerning the results in this report, please contact us at (503) 590-5300. Refer to OAL login number L4841.

Sincerely,

Project Manager

QA/QC Officer

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OAL

L4841

Sample Summary

Sample ID	Lab #	Matrix	Sampled	Received
TOSCO-01-4301	L4841-1	soil	01/09/98 13:00	01/09/98

Definition of Terms

D	Reported value is based on a dilution.
MI	Matrix interference.
ND	Analytical result was below the reporting limit.

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L4841

Client: *CET Environmental Services*
Contact: *Scott Gilfillan*

Project: *4301-000*
Tosco Lube Soil

Hydrocarbon Identification (HCID)

by OR TPH-HCID

Sample ID	*Matrix*					*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppm)**	**Comment**	
TOSCO-01-4301	*Soil*				**Sampled:** *01/09/98* **Extracted:** *01/13/98* **Analyzed:** *01/13/98*	*L4841-1*
Gasoline		ND	20.	mg/kg		
Diesel		ND	50.	mg/kg		
Oil		**Detected**	**100**	**mg/kg**		

Surrogate	Recovery	Limit
O-terphenyl	MI	50. - 150.

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L4841

Client: *CET Environmental Services*
Contact: *Scott Gilfillan*

Project: *4301-000*
Tosco Lube Soil

Total Petroleum Hydrocarbons
by OR TPH 418.1 MOD

Sample ID	*Matrix*					*Lab Number*
Analyte		Result	Reporting Limit	Units (ppm)	Comment	
					Sampled: *01/09/98*	
					Extracted: *01/13/98*	
TOSCO-01-4301	*Soil*				Analyzed: *01/13/98*	*L4841-1*
TPH		15,000	20.	mg/kg	D	

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Client: ***CET Environmental Services***
Contact: ***Scott Gilfillan***

Project: ***4301-000***
Tosco Lube Soil

TCLP Metals

Sample ID	*Matrix*						*Lab Number*
Analyte	**Result**	**Reporting Limit**	**Units (ppm)**	**Date Analyzed**	**Method**	**Comment**	
				Sampled: *01/09/98*			
				TCLP EPA 1311: *01/15/98*			
				Hot Plate Digestion EPA 200.2/3005A: *01/16/98*			
TOSCO-01-4301	*Soil*			**Mercury Digestion:** *01/21/98*			*L4841-1*
Arsenic	ND	0.10	mg/L	01/16/98	EPA 200.7/6010		
Barium	1.1	1.0	mg/L	01/16/98	EPA 200.7/6010		
Cadmium	ND	0.10	mg/L	01/16/98	EPA 200.7/6010		
Chromium	ND	0.10	mg/L	01/16/98	EPA 200.7/6010		
Lead	0.42	0.10	mg/L	01/16/98	EPA 200.7/6010		
Mercury	ND	0.010	mg/L	01/22/98	EPA 245.2/7470		
Selenium	ND	0.10	mg/L	01/16/98	EPA 200.7/6010		
Silver	ND	0.10	mg/L	01/16/98	EPA 200.7/6010		

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Client: ***CET Environmental Services***
Contact: ***Scott Gilfillan***

Project: ***4301-000***
Tosco Lube Soil

8240 Volatiles
by EPA 8260

Sample ID	*Matrix*					*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units**	**Comment**	
					Sampled: *01/09/98*	
					Extracted: *01/13/98*	
TOSCO-01-4301	*Soil*				**Analyzed:** *01/15/98*	*L4841-1*
See Attached Data Sheet						

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OAL

L4841

Client: **CET Environmental Services**
Contact: **Scott Gilfillan**

Project: **4301-000**

8240 Volatiles
by EPA Method 8260

Sample ID	Analyte	Result	Blank Result	Reporting Limit *	Units	Comment	*Lab Number*
TOSCO-01-4301	*Soil*		*MB0113W*			**Sampled :** *01/09/98* **Analyzed :** *01/15/98*	*L4841-1*
CAS #							
75-71-8	Dichlorodifluoromethane	nd	nd	200	ug/Kg		
74-87-3	Chloromethane	nd	nd	200	ug/Kg		
75-01-4	Vinyl chloride	nd	nd	200	ug/Kg		
74-83-9	Bromomethane	nd	nd	200	ug/Kg		
75-00-3	Chloroethane	nd	nd	200	ug/Kg		
75-69-4	Trichlorofluoromethane	nd	nd	100	ug/Kg		
67-64-1	Acetone	nd	nd	2000	ug/Kg		
75-35-4	1,1-Dichloroethene	nd	nd	100	ug/Kg		
75-09-2	Methylene chloride	nd	nd	200	ug/Kg		
156-60-5	trans-1,2-Dichloroethene	nd	nd	100	ug/Kg		
75-34-3	1,1-Dichloroethane	nd	nd	100	ug/Kg		
78-93-3	2-Butanone	nd	nd	2000	ug/Kg		
156-59-4	cis-1,2-Dichloroethene	nd	nd	100	ug/Kg		
67-66-3	Chloroform	nd	nd	100	ug/Kg		
71-55-6	1,1,1-Trichloroethane	nd	nd	100	ug/Kg		
56-23-5	Carbon tetrachloride	nd	nd	100	ug/Kg		
71-43-2	Benzene	nd	nd	100	ug/Kg		
107-06-2	1,2-Dichloroethane	nd	nd	100	ug/Kg		
79-01-6	Trichloroethene	nd	nd	100	ug/Kg		
78-87-5	1,2-Dichloropropane	nd	nd	100	ug/Kg		
75-27-4	Bromodichloromethane	nd	nd	100	ug/Kg		
110-75-8	2-Chloroethyl vinyl ether	nd	nd	100	ug/Kg		
10061-01-5	cis-1,3-Dichloropropene	nd	nd	100	ug/Kg		

none detected = nd

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L4841

Client: CET Environmental Services
Contact: Scott Gilfillan

Project: 4301-000

8240 Volatiles
by EPA Method 8260

Sample ID	Analyte	Result	Blank Result	Reporting Limit *	Units	Comment	*Lab Number*
TOSCO-01-4301	*Soil*		*MB0113W*			Sampled : *01/09/98* Analyzed : *01/15/98*	*L4841-1*
CAS #							
108-10-1	4-Methyl-2-pentanone	nd	nd	1000	ug/Kg		
108-88-3	Toluene	nd	nd	100	ug/Kg		
591-78-6	2-Hexanone	nd	nd	1000	ug/Kg		
10061-02-6	trans-1,3-Dichloropropene	nd	nd	100	ug/Kg		
79-00-5	1,1,2-Trichloroethane	nd	nd	100	ug/Kg		
127-18-4	Tetrachloroethene	nd	nd	100	ug/Kg		
124-48-1	Dibromochloromethane	nd	nd	100	ug/Kg		
106-93-4	1,2-Dibromoethane	nd	nd	100	ug/Kg		
108-90-7	Chlorobenzene	nd	nd	100	ug/Kg		
100-41-4	Ethylbenzene	nd	nd	100	ug/Kg		
100-42-5	Styrene	nd	nd	100	ug/Kg		
75-25-2	Bromoform	nd	nd	100	ug/Kg		
79-34-5	1,1,2,2-Tetrachloroethane	nd	nd	100	ug/Kg		
541-73-1	1,3-Dichlorobenzene	nd	nd	100	ug/Kg		
106-46-7	1,4-Dichlorobenzene	nd	nd	100	ug/Kg		
95-50-1	1,2-Dichlorobenzene	nd	nd	100	ug/Kg		
	Total Xylenes	nd	nd	100	ug/Kg		

Surrogates	Recovery L4841-1	Recovery MB0113W
1,2-Dichloroethane-d4	97%	98%
Toluene-d8	100%	102%
4-Bromofluorobenzene	100%	103%

none detected = nd

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Client: ***CET Environmental Services***
Contact: ***Scott Gilfillan***

Project: ***4301-000***
Tosco Lube Soil

Polychlorinated Biphenyl (PCB)
by EPA 3540/8081

Sample ID	*Matrix*					*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppm)**	**Comment**	

					Sampled: *01/09/98*	
					Extracted: *01/16/98*	
TOSCO-01-4301	*Soil*				**Analyzed:** *01/19/98*	*L4841-1*
Total PCB in Soil		**0.13**	**0.05**	**mg/kg**		

Surrogate	Recovery	Limit
Decachlorobiphenyl	106.%	50. - 150.
Tetrachloro-m-xylene	85.%	50. - 150.

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SPOKANE ▪ (509) 924-9200 ▪ FAX 924-9290
PORTLAND ▪ (503) 643-9200 ▪ FAX 644-2202

TOSCO	Project:	TOSCO, Portland, OR	Sampled: 1/13/98
5528 NW Doane Ave.	Project Number:	4301-000	Received: 1/13/98
Portland, OR 97207	Project Manager:	Marty Cramer	Reported: 1/20/98 22:49

ANALYTICAL REPORT FOR SAMPLES:

Sample Description	Laboratory Sample Number	Sample Matrix	Date Sampled
SOUTH 01 @ 2"	P801129-01	Soil	1/13/98
SOUTH 02 @ 6"	P801129-02	Soil	1/13/98
SOUTH 03 @ 12"	P801129-03	Soil	1/13/98
MID 04 @ 2"	P801129-04	Soil	1/13/98
MID 05 @ 6"	P801129-05	Soil	1/13/98
MID 06 @ 12"	P801129-06	Soil	1/13/98
NORTH 07 @ 2"	P801129-07	Soil	1/13/98
NORTH 08 @ 6"	P801129-08	Soil	1/13/98
NORTH 09 @ 12"	P801129-09	Soil	1/13/98

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.

Philip Nerenberg, Laboratory Manager

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East 11115 Montgomery, Suite B, Spokane, WA 99206-4776
9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132

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SPOKANE ▪ (509) 924-9200 ▪ FAX 924-9290
PORTLAND ▪ (503) 643-9200 ▪ FAX 644-2202

TOSCO	Project: TOSCO, Portland, OR	Sampled:	1/13/98
5528 NW Doane Ave.	Project Number: 4301-000	Received:	1/13/98
Portland, OR 97207	Project Manager: Marty Cramer	Reported:	1/20/98 22:49

Diesel and Heavy Range Hydrocarbons per NWTPH-Dx Method
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
SOUTH 01 @ 2"			P801129-01				Soil	
Diesel Range Organics	0180194	1/14/98	1/14/98		250	ND	mg/kg dry	
Heavy Oil Range Hydrocarbons	"	"	"		500	14900	"	
Surrogate: 1-Chlorooctadecane	"	"	"	*50.0-150*		*NR*	%	*1*
SOUTH 02 @ 6"			P801129-02				Soil	
Diesel Range Organics	0180194	1/14/98	1/14/98		1250	ND	mg/kg dry	
Heavy Oil Range Hydrocarbons	"	"	"		2500	14100	"	
Surrogate: 1-Chlorooctadecane	"	"	"	*50.0-150*		*NR*	%	*1*
SOUTH 03 @ 12"			P801129-03				Soil	
Diesel Range Organics	0180194	1/14/98	1/15/98		125	ND	mg/kg dry	
Heavy Oil Range Hydrocarbons	"	"	"		250	1730	"	
Surrogate: 1-Chlorooctadecane	"	"	"	*50.0-150*		*66.0*	%	
MID 04 @ 2"			P801129-04				Soil	
Diesel Range Organics	0180194	1/14/98	1/15/98		250	ND	mg/kg dry	
Heavy Oil Range Hydrocarbons	"	"	"		500	4530	"	
Surrogate: 1-Chlorooctadecane	"	"	"	*50.0-150*		*NR*	%	*1*
MID 05 @ 6"			P801129-05				Soil	
Diesel Range Organics	0180194	1/14/98	1/15/98		1250	ND	mg/kg dry	
Heavy Oil Range Hydrocarbons	"	"	"		2500	13500	"	
Surrogate: 1-Chlorooctadecane	"	"	"	*50.0-150*		*NR*	%	*1*
MID 06 @ 12"			P801129-06				Soil	
Diesel Range Organics	0180194	1/14/98	1/14/98		1250	ND	mg/kg dry	
Heavy Oil Range Hydrocarbons	"	"	"		2500	32400	"	
Surrogate: 1-Chlorooctadecane	"	"	"	*50.0-150*		*NR*	%	*1*
NORTH 07 @ 2"			P801129-07				Soil	
Diesel Range Organics	0180194	1/14/98	1/15/98		250	ND	mg/kg dry	
Heavy Oil Range Hydrocarbons	"	"	"		500	5140	"	
Surrogate: 1-Chlorooctadecane	"	"	"	*50.0-150*		*NR*	%	*1*
NORTH 08 @ 6"			P801129-08				Soil	
Diesel Range Organics	0180194	1/14/98	1/15/98		125	ND	mg/kg dry	
Heavy Oil Range Hydrocarbons	"	"	"		250	2600	"	
Surrogate: 1-Chlorooctadecane	"	"	"	*50.0-150*		*83.0*	%	

North Creek Analytical, Inc.

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

Philip Nerenberg, Laboratory Manager

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TOSCO	Project:	TOSCO, Portland, OR	Sampled: 1/13/98
5528 NW Doane Ave.	Project Number:	4301-000	Received: 1/13/98
Portland, OR 97207	Project Manager:	Marty Cramer	Reported: 1/20/98 22:49

Diesel and Heavy Range Hydrocarbons per NWTPH-Dx Method
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
NORTH 09 @ 12"			**P801129-09**				**Soil**	
Diesel Range Organics	0180194	1/14/98	1/15/98		125	ND	mg/kg dry	
Heavy Oil Range Hydrocarbons	"	"	"		250	4250	"	
Surrogate: 1-Chlorooctadecane	"	"	"	*50.0-150*		*96.0*	%	

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

Philip Nerenberg, Laboratory Manager

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

TOSCO	Project:	TOSCO, Portland, OR	Sampled: 1/13/98
6528 NW Doane Ave.	Project Number:	4301-000	Received: 1/13/98
Portland, OR 97207	Project Manager:	Marty Cramer	Reported: 1/20/98 22:49

Dry Weight Determination
North Creek Analytical - Portland

Sample Name	Lab ID	Matrix	Result	Units
SOUTH 01 @ 2"	P801129-01	Soil	94.5	%
SOUTH 02 @ 6"	P801129-02	Soil	87.2	%
SOUTH 03 @ 12"	P801129-03	Soil	86.0	%
MID 04 @ 2"	P801129-04	Soil	89.2	%
MID 05 @ 6"	P801129-05	Soil	84.5	%
MID 06 @ 12"	P801129-06	Soil	70.8	%
NORTH 07 @ 2"	P801129-07	Soil	75.1	%
NORTH 08 @ 6"	P801129-08	Soil	78.1	%
NORTH 09 @ 12"	P801129-09	Soil	77.1	%

North Creek Analytical, Inc.

Philip Nerenberg, Laboratory Manager

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

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

TOSCO	Project: TOSCO, Portland, OR	Sampled:	1/13/98
5528 NW Doane Ave.	Project Number: 4301-000	Received:	1/13/98
Portland, OR 97207	Project Manager: Marty Cramer	Reported:	1/20/98 22:49

Diesel and Heavy Range Hydrocarbons per NWTPH-Dx Method/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: 0180194	**Date Prepared: 1/13/98**					**Extraction Method: TPH-D Extraction**				
Blank	**0180194-BLK1**									
Diesel Range Organics	1/13/98			ND	mg/kg dry	25.0				
Heavy Oil Range Hydrocarbons	"			ND	"	50.0				
Surrogate: 1-Chlorooctadecane	"	*5.00*		*4.04*	"	*50.0-150*	*80.8*			
Blank	**0180194-BLK2**									
Diesel Range Organics	1/14/98			ND	mg/kg dry	25.0				
Heavy Oil Range Hydrocarbons	"			ND	"	50.0				
Surrogate: 1-Chlorooctadecane	"	*5.00*		*5.60*	"	*50.0-150*	*112*			
LCS	**0180194-BS1**									
Diesel Range Organics	1/13/98	125		94.0	mg/kg dry	50.0-150	75.2			
Surrogate: 1-Chlorooctadecane	"	*5.00*		*4.49*	"	*50.0-150*	*89.8*			
Duplicate	**0180194-DUP1**	**P801079-03**								
Diesel Range Organics	1/16/98		53.6	50.5	mg/kg dry			50.0	5.96	
Heavy Oil Range Hydrocarbons	"		ND	ND	"			50.0		
Surrogate: 1-Chlorooctadecane	"	*6.02*		*5.45*	"	*50.0-150*	*90.5*			
Duplicate	**0180194-DUP2**	**P801091-01**								
Diesel Range Organics	1/16/98		ND	ND	mg/kg dry			50.0		
Heavy Oil Range Hydrocarbons	"		ND	ND	"			50.0		
Surrogate: 1-Chlorooctadecane	"	*6.07*		*6.56*	"	*50.0-150*	*108*			
Duplicate	**0180194-DUP3**	**P801129-01**								
Diesel Range Organics	1/14/98		ND	ND	mg/kg dry			50.0		
Heavy Oil Range Hydrocarbons	"		14900	18800	"			50.0	23.1	
Surrogate: 1-Chlorooctadecane	"	*5.29*		*ND*	"	*50.0-150*	*NR*			*1*

North Creek Analytical, Inc.

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

Philip Nercnberg, Laboratory Manager

18939 120th Avenue N.E., Suite 101, Bothell, WA 98011-8508
East 11115 Montgomery, Suite B, Spokane, WA 99206-4776
9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132

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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

TOSCO	Project:	TOSCO, Portland, OR	Sampled: 1/13/98
5528 NW Doane Ave.	Project Number:	4301-000	Received: 1/13/98
Portland, OR 97207	Project Manager:	Marty Cramer	Reported: 1/20/98 22:49

Notes and Definitions

#	Note
I	The surrogate recovery for this sample is not available due to sample dilution required from high analyte concentration and/or matrix interferences.
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.

Philip Nerenberg, Laboratory Manager

Eric Gonars
Ian Jenkins
Gerald O'Regan
Lance Gesselbracht
Kevin Freeman

Willbridge RI Work Plan Mtg 3/5/98

- Video Survey ⇒ Detected heavy sheen & possible SPH in 60" ⇒ need to look into further
- DEQ Comments ⇒ Need to prepare formal response to comments & meet near end of March to review responses w/ DEQ
- Positives from DEQ Comments
  - No specific requirement for subsurface soil samples across sites
  - No PCB evaluation/analysis required
  - Most comments editorial
  - Did not attack risk scenarios except trespassers & terrestrial ECO risks ⇒ PEG/E&E will fight
- Negatives
  - Wants us to assess contamination on McCall, GS Roof & Chem Asphalt
    - Should consider researching spills from BNSF ⇒ will do if new wells indicate something is coming from RR
    - * Need to check into terms of dock leases to see what control port has over remed. activities
    - Assess potent. pathways to River ⇒ Holbrook Slough & 27"
    - New Analytes
      - → EDB & EDC
      - → BNAs (8270)
      - → Halogenated VOCs (8010s)
      - → VOCs (8240)
      - → Metals → will fight if no reason to look for it
    - DEQs definition of hot spots ⇒ Kevin to put together discussion on hot spots
- DEQ Mtg April (8,) 13 & 14 — 9, 16 backup
- PEG to prepare W.P. & cost est. for assessing area around Holbrook Slough/27" to embellish on Nov 3 proposal

3/5/98

Willbridge Mtg

Additional RI Costs → Table 1 in handout provides rough costs on additional work resulting from DEQ's comments → PEG will provide harder cost estimate after meeting w/ DEQ next month

PEG: Proposing to increase mon/SPA removal to $53/well

PEG to work on consistency w/ monthly SPA recovery vs quarterly reporting

PEG will add task subtotals to new spreadsheets

PEG to look into DEQ charges on IA & IAWP vs. RI

ERIC CONARD – CITY

IRA JENKINS – STATE

GRAHAM O'REILLY – CITY

DAN CALLAHAN – TRANSQUEST

LANCE GRESSLEBAUGH – PRIVATE

KEVIN FAGERMAN – OTHERS

WILD BADGER MEETING 4/7/98

TRANSQUEST

- EXISTING STUDY WILL ONLY IDENTIFY LITHOLOGIC AREAS DRAIN ALLUVIAL FAN OTHERS → COULD INDICATE PRESERVATION PATHWAYS
- MAY NEED TO INSTALL WELLS NEAR BEACH TO GET BETTER IDEA
- TRANSQUEST STUDY LOOKS TO BE OF VALUE
- CITY WILL LIKELY NEED TO INSTALL WELLS FOR PUMPING TEST OR COULD DO SLUG TESTS
- PUMP TESTS MORE VALUABLE THAN SLUG TESTS
- LOOK TO BEGIN ABOUT 2-SESSION - 45 DAYS
  - NEED TO COINCIDE W/ DAM RELEASES TO CAPTURE MAXIMUM FLUCTUATIONS
- BASE WELL SELECTION ON WELLS THAT HAVE FOSSIL CONIFERS IN FILL OR SILTS BUT NOT IN BOTH IF POSSIBLE
  - ORGANIC SCREENING THE BEACH
  - CONCERN ON INSTALLING PIEZOMETERS AT RIVER – BENEFICIAL
  - NEED TO DRY & CAT WELLS W/O SEPARATE PHASE – IN MINIMAL THICKNESSES
  - POSSIBLE TO WORK ON WELL SELECTION & CHECK W/ DAN

RIVERMAN – TRANSQUEST

NEED TO ADDRESS DEQ'S CONCERNS ABOUT PRESERVATION PATHWAYS

- OFFERED UP TRANSQUEST & PHASE STUDY TO CHARACTERIZE THE PRES. PATHWAYS → AGREED TO PUT IN A FEW PIEZOMETERS → HARDGROUND SHOULD SATISFY IF PLANNED SAMPLES ALONG WATERFRONT → WAIT UNTIL AFTER TRANSQUEST →

PATHWAYS

- SAME WHAT DEQ WANTS BUT SHOULD BEGIN AT BEACH & WORK BACK UP
- WILL NAME BEST PATHWAYS & COMMIT TO AT LEAST ONE SITE & GET SAMPLE ALONG THE 5 POTENTIAL PATHWAYS

LOCATIONS

- TWO BOREHOLES IN SIGHT OF McCALL TO BE CONVERTED AS TO WELLS

BOREHOLES

- OUR ADD WELL BOREHOLES TO USGS LOGS & BR RR

FUTURE WATER & LAND USE

- CANNOT RELY ON CITY PLANNING DEPT. TO DETERMINE
- NOT REQUIRED TO BE BASED ON R.T. WITH AGREED TO POSSIBLE NEEDS

COP0014212

WILLBRIDGE MTG (CONT.) 4/7/98

SPH

- MAY NEED TO PUT IN MORE BORINGS & WELLS AROUND USA BUT WILL TRY AND USE RETEC DATA

HOT SPOTS

- COULD USE SURROGATE HOT SPOTS SUCH AS 3411 SPILLS AND GATX JET FUEL - LIKE WARM RECEPTION FROM DEQ
- COULD HAVE DEQ DECIDE ON MAX SIZE OF HOT SPOT & ADJUST PROPOSED GRID SPACING TO HIT THE MAJORITY
- WILL PWA SURROGATE APPROACH ~~BUT~~ AND IF NOT, COMMIT TO REASSESS BUT LIKELY WILL AGREE TO INVESTIGATE ALL WELL DOCUMENTED SPILLS

COSTS

- SHELL/GATX TO CONSIDER REALLOCATION OF COSTS ASSOCIATED W/ HOLBROOK SLOUGH
- I SUGGESTED WE SPLIT TRANSDUCER COSTS 3 WAYS AS DATA IS RETURN FOR GOOD OF THE WHOLE
- WE WILL THINK ABOUT IT AND DISCUSS LATER

MEET AT DOUBLE TREE COFFEE SHOP @ 8:30 AM

PACIFIC
ENVIRONMENTAL
GROUP, INC.

AN IT COMPANY

May 20, 1998
Project 1115-007.4A

Ms. Jill Kiernan, P.E.
Waste Management and Cleanup Division
Oregon Department of Environmental Quality
2020 Southwest Fourth Avenue, Suite 400
Portland, Oregon 97201-4987

Re: Barrier Wall Construction Report
Doane Avenue 60-Inch Storm Sewer Line
Willbridge Facility
Portland, Oregon

Dear Ms. Kiernan:

Pacific Environmental Group, Inc. (PEG), on behalf of the Willbridge responsible parties (RPs), is pleased to submit this Interim Action Completion Report describing the final design and installation of the HDPE barrier wall at the Doane Avenue storm sewer. This letter describes the field installation and modifications to the original barrier design described in the "*Barrier Wall Installation Design Report*" dated October 14, 1997.

PRE-FIELD SITE CONDITIONS

Subsurface Investigation at the 60-inch Storm Drain

As discussed in previous reports, a native silt/clay barrier was unearthed approximately 50 feet from the shoreline during construction of the 60-inch storm drain. PACIFIC performed a subsurface investigation around the 60-inch storm drain in August 1997, using a track-mounted backhoe to investigate the soils in the area of the 60-inch storm drain. The purpose of the subsurface investigation was to locate the native silt/clay barrier and determine if installation of the HDPE barrier was feasible in this area. Several test pits were excavated along the alignment of the 60-inch sewer line. The native silt/clay barrier was located at approximately 7 to 8 feet below ground surface, approximately 75 feet from the 60-inch outfall. Hydrocarbon impacted soil was not encountered during the test pit excavation.

Results of the investigation determined that excavation and installation of the HDPE liner would not be feasible in the area of the native silt/clay barrier due to the proximity of the Willamette River. This area can be submerged during high-river stage several months during the year, which would jeopardize the systems effectiveness. For these reasons, the area around the existing clay barrier, installed in 1988, was determined to be more feasible for construction of the HDPE liner.

Tracer Test Results

On September 1, 1997, PACIFIC placed a red Rhodimine WT dye in monitoring Wells B-17 and B-18 to examine transport through the "new" 60-inch and "old" 27-inch storm sewer bedding material. Wells B-17 and B-18 are completed in the bedding material beneath the 60-inch and 27-inch storm sewer lines. A green Rhodimine WT dye was placed in Wells B-33 and U-4. Well U-4 is completed in the 60- inch storm sewer bedding material upgradient of the location of Well B-18. Well B-33 is believed to be installed within the historic Holbrook Slough channel. Monitoring wells located downgradient from these wells have been monitored at bi-weekly intervals to track the tracer dye migration.

Groundwater flow velocity calculations through the 60-inch bedding material indicate approximately 11 feet/day. The red tracer was observed at the 60-inch outfall 162 days following injection at Well B-18, which indicates the groundwater flow velocity through the 60-inch bedding material is approximately 3 feet per day. This also suggests that the 60-inch storm sewer from NW Front Avenue to the outfall is a preferential pathway for contaminants migrating to the Willamette River. The tracer dye placed in Well U-4, upgradient from B-18, has not been observed at Well B-18.

The green dye placed in Well B-33 at the historic Holbrook Slough has an estimated groundwater flow velocity of approximately 1 foot/day. The tracer dye is calculated to be visible at the slough outfall approximately 200 days after injection. It was calculated that the tracer dye would be visible at the Holbrook Slough outfall in March of 1998. However, during the winter months, the groundwater flow velocity will probably increase allowing the tracer dye to migrate to the outfall at a faster rate. The dye has been observed in downgradient monitoring Well B-20, which is 181 days following injection. The tracer study in this area as well as in the area of the 27-inch storm drain line is ongoing.

Groundwater Sampling Prior to Excavation

As requested by the Oregon Department of Environmental Quality (DEQ), groundwater samples were collected from monitoring Well RES-N prior to installation of the barrier. Monitoring Well RES-N is located upgradient of the clay barrier on the north side of the 60-inch sewer line (Figure 1). Water level and separate-phase hydrocarbon (SPH)

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thickness were recorded in RES-N prior to purging. Static water level was recorded at 23.93 feet below top of casing (TOC) and SPH thickness was measured at 0.12 foot. Approximately 188 gallons of water was extracted prior to sampling.

Groundwater samples were analyzed for benzene, toluene, ethylbenzene, and xylenes (BTEX) and polynuclear aromatic hydrocarbons (PAHs) by EPA Methods 8020 and 8270-SIM, respectively. These compounds represent the constituents of potential concern (COPCs) likely to be encountered at the installation location.

Analytical results for BTEX indicate that benzene 29.1 parts per billion (ppb), toluene (2.18 ppb), ethylbenzene (2.06 ppb) and total xylenes (2.59 ppb) were detected in groundwater collected from RES-N.

Analytical results for PAH compounds were generally below 1 ppb with the exception of acenaphthene (2.55 ppb), fluorene (6.21 ppb), phenanthrene (5.47 ppb), and pyrene (0.446 ppb). The certified analytical reports are presented as Attachment A.

Video Logging of the 60-inch Storm Sewer

Prior to excavation of the 60-inch storm sewer, an Encroachment Permit was issued to Tosco from the City of Portland, Bureau of Environmental Services (BES). As part of the Permit, the City requested video logging of the 60-inch sewer line prior to excavation and following completion of the construction project. Gelco Services of Salem; Oregon was contracted to perform the video logging. Video logs recorded prior to construction and post-construction were submitted to BES as specified in the Permit. The video logging before and after construction did not indicate any structural damage to the storm drain piping in the area where the barrier was constructed.

DESCRIPTION OF THE INTERIM ACTION PERFORMED

The barrier wall at the 60-inch storm drain was installed in the same area as the clay barrier installed in 1988 by Riedel Environmental Services (Riedel). The new barrier required the installation of an engineered shoring system with approximate dimensions of 10 foot by 20 foot by 21 feet deep in soils best described as river sediments. Soils were excavated using a large hydraulic excavator by segregating the upper "clean" soils from the lower "impacted" soils after the shoring system was installed. The placement of the shoring system allowed excavation to occur in a manner that exposed the top of the 60-inch pipe and the clay barrier installed beneath and to the sides of the pipe in 1988 by Riedel.

Once the top of the clay barrier was exposed, a hand auger was used to verify the competency of the clay barrier. This involved excavating of eight hand auger borings to verify the thickness of the clay barrier and that the permeable bedding material was removed from beneath the pipe when the clay barrier was installed. Results of the hand

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augers indicate the clay barrier is approximately 4 to 5 feet thick. Native silty/clay was encountered beneath the Riedel barrier. Soil samples collected from the hand augers indicate the barrier was composed of damp silt and clay topsoil. Field photo-ionized detector (PID) readings and headspace analysis on the soil samples did not indicated the presence of petroleum hydrocarbons. Once the competency of the Riedel clay barrier was determined, the 4-inch flow-through piping was installed on each side of the 60-inch pipe, parallel to the storm drain alignment.

Following installation of the flow-through piping, a 45-mil high-density polyethylene (HDPE) liner was installed in the excavation in accordance with the original design drawings. This HDPE liner spanned the full width of the excavation (20') and "keyed" 18-inches into the existing clay barrier. The toe of the HDPE liner was grouted in placed, tying the Riedel clay barrier with the newly installed liner. The grout extends one foot above the top of the 60-inch pipe, and consisted of 4-sack concrete mix with sand. Pea gravel was added to help the mix flow more easily through the pump truck. Approximately 600 pounds of bentonite powder and 100 gallons of water were added to the concrete mix while still in the ready mix truck prior to pumping. Five cubic yards of the mix was used in constructing the new HDPE liner barrier.

Two 6-inch diameter, PVC wells with 0.050-slot well screens were installed on the upgradient side of the liner prior to backfill for collection of SPH product that will accumulate behind the liner. The wells were also used for dewatering of the excavation during construction activities. The excavation was then backfilled with pea gravel on the upgradient and downgradient side of the liner. The rest of the excavation was then backfilled with the excavated soils that were determined to be satisfactory as backfill material by DEQ. The shoring system was removed and the ground surface restored to original condition after the excavation was backfilled.

FIELD MODIFICATIONS DURING CONSTRUCTION

Modification of the flow-through piping was made during field activities due to the uncertainty of the elevation of the top of the existing clay barrier installed by Riedel in 1988. Once the excavation was completed and the top of the clay barrier was exposed, an approximate elevation was determined for the top of the clay barrier. This elevation in conjunction with historic water level trends in the area determined that the flow through piping be installed at a lower elevation than originally designed. This design change will not affect the overall performance of the system. "As-built" details of the 4-inch flow through piping and the rest of the new barrier are shown on Figures 1 and 2.

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CONTAMINATED SOILS AND GROUNDWATER REMOVED DURING CONSTRUCTION

Soil Management

All excavated soils were stored on visqueen and covered during the field activities. The excavated soils were field screened using an OVM 530B PID. One discrete composite soil sample for every 20 cubic yards was analyzed for BTEX DEQ Method 8020, and PAHs DEQ Method 8270-Sim. Approximately 120 cubic yards of soil was removed from the excavation. Analytical results were presented to DEQ and the excavated soils were within acceptable limits to be returned to the excavation as backfill.

Groundwater Management

Construction of the barrier was originally intended to occur during periods of historically lowest static water levels in November and December. Due to construction not starting until January, groundwater seepage was encountered during excavation. To continue hand excavation of the flow-through piping trenches, dewatering of the excavation was necessary.

Diaphragm pumps, capable of handling solids, were used to extract groundwater from the new 6-inch wells and discharge to an existing underground pipeline that crosses Front Avenue and terminates at the existing Tosco process wastewater treatment system. This treatment system consists of an oil water separator and dissolved air floatation (DAF) processes for treatment prior to discharging into the sanitary sewer system under permit and verbal approval from the BES. The volume of water extracted during installation, development, and dewatering was monitored daily, and total volumes extracted recorded and reported to BES. Approximately 6,000 gallons of water were extracted during the excavation dewatering, well development and purging.

Groundwater Sampling

Following installation of the barrier, groundwater samples were collected from the 4-inch flow-through piping as requested by DEQ. Groundwater samples were collected from the upgradient and downgradient flow-through pipes. The samples were analyzed for BTEX and PAHs per EPA Methods 8020 and 8270, respectively.

Analytical results for BTEX were non-detect in samples collected from upgradient (IF-1) and downgradient (OF-1) flow-through piping.

Analytical results for PAH compounds collected from the upgradient 4-inch piping (IF-1) were generally below 2 ppb with the exception of acenaphthene (7.31 ppb), fluorene (18.1 ppb), phenanthrene (30.7 ppb), and pyrene (1.39 ppb). PAH compounds analyzed from the downgradient 4-inch piping (OF-1) were generally below 2 ppb, with

COP0014218

the exception of acenaphthene (17.1 ppb), fluorene (44.6 ppb), phenanthrene (89.6 ppb), and pyrene (10.5 ppb). Although identical PAH compounds were detected in the upgradient and downgradient groundwater samples, analysis from the downgradient 4-inch piping indicated higher levels of the compounds detected than those collected from the upgradient side of the barrier.

Initial Operation and Maintenance (O&M) of the Barrier System

Groundwater and SPH levels are currently being monitored at weekly intervals in the two new 6-inch monitoring wells and the 4-inch flow-through piping. Separate-phase hydrocarbon has not been recorded in the upgradient or downgradient side of the liner, including RES-N, since installation. The liner system will continue to be monitored at bi-weekly intervals.

If you have any questions regarding the contents of this letter, please call.

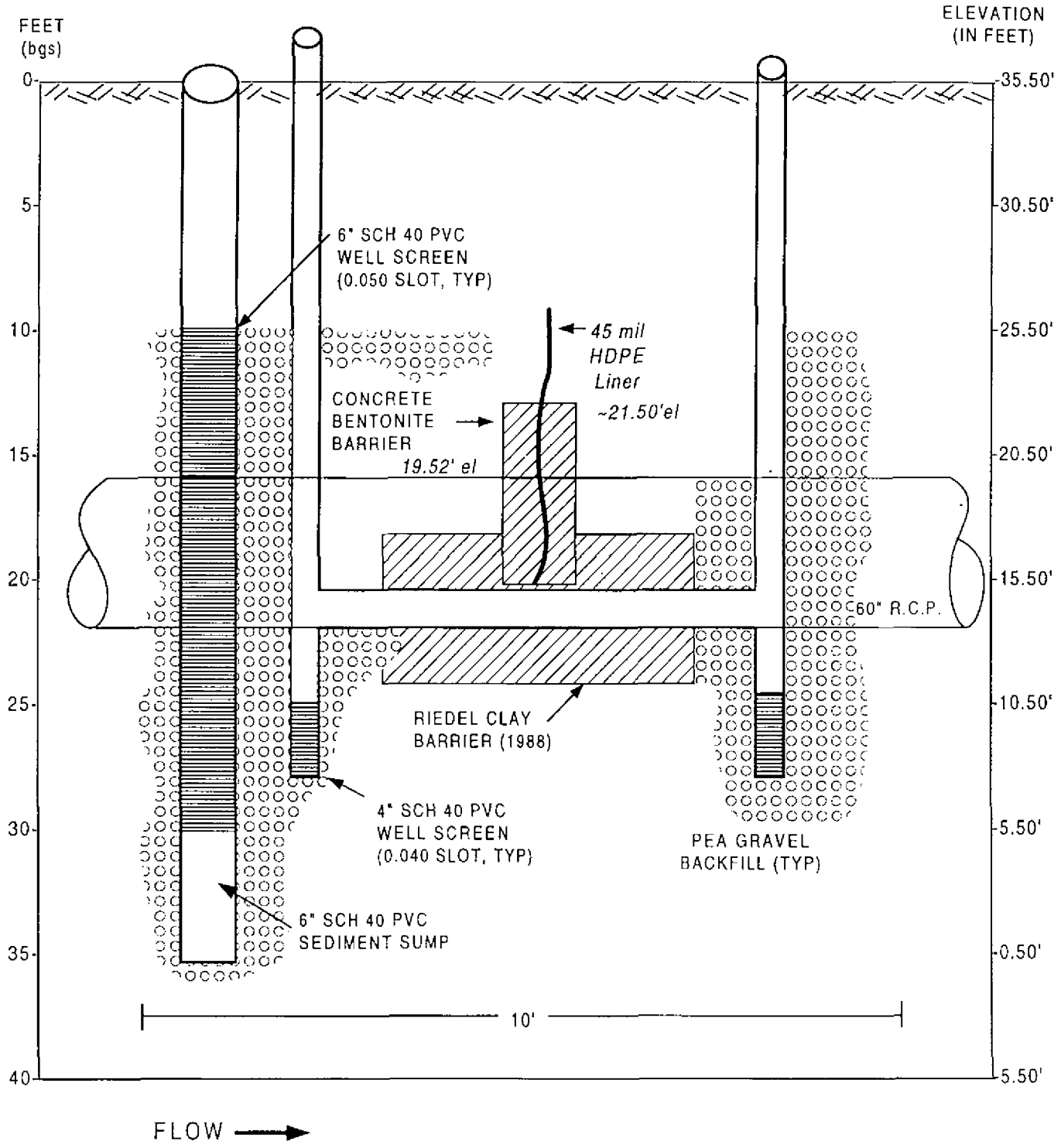
Sincerely,
Pacific Environmental Group, Inc.

Lance D. Geselbracht, P.E.
Senior Engineer

Attachments: Figure 1 - 60-Inch Barrier Installation Profile View
Figure 2 - 60-Inch Barrier Installation Top View
Attachment A - Certified Analytical Report and Chain-of-Custody Documentation

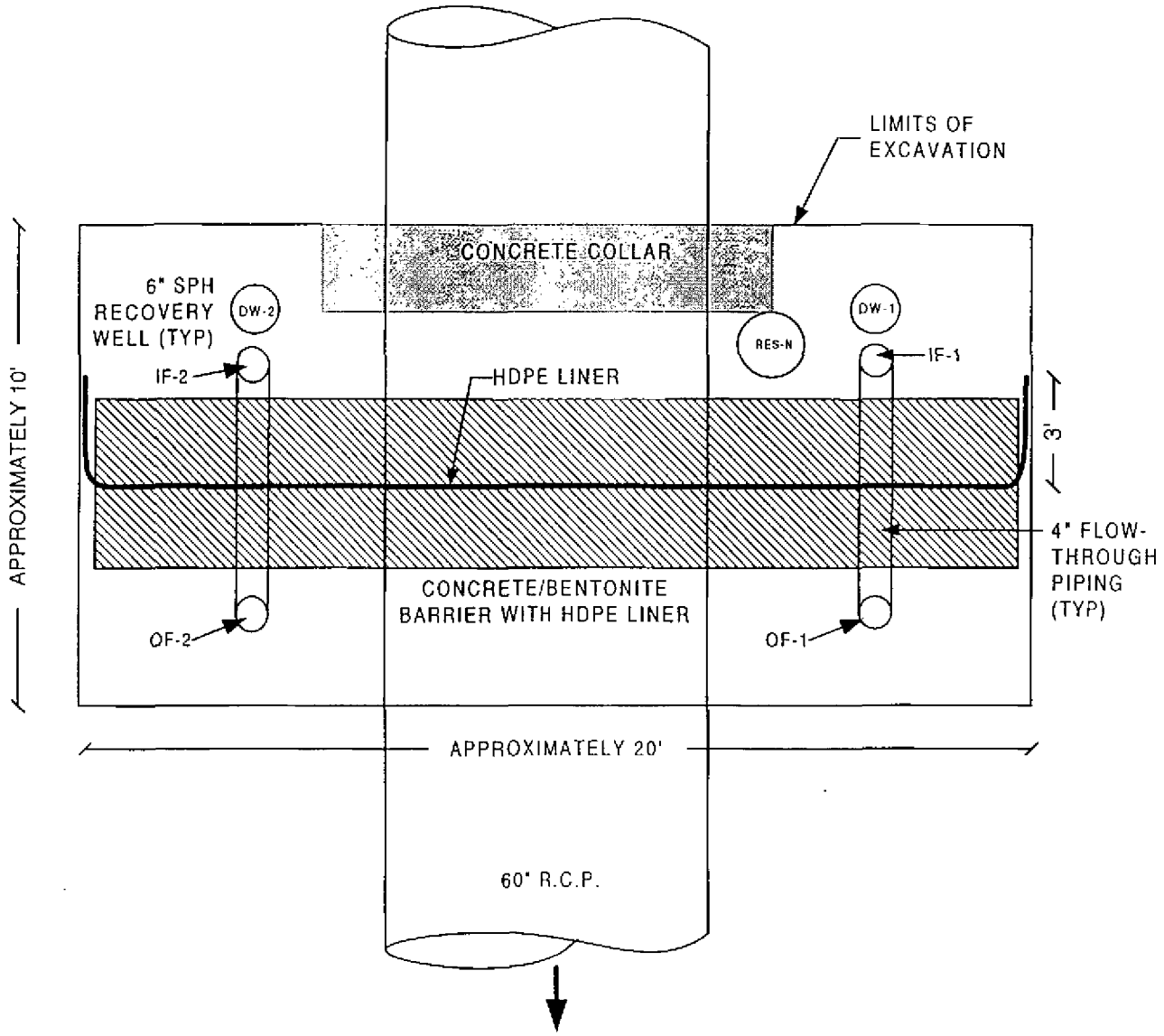
cc: Mr. Gerald O'Regan, Chevron Products Company
Mr. Eric Conard, GATX Terminals Corporation
Mr. Martin Cramer, Tosco Distribution Company
Mr. Irv Jenkins, Shell Oil Products Company
Ms. Nanci Snyder, City of Portland - Bureau of Environmental Services

COP0014219



PACIFIC ENVIRONMENTAL GROUP, INC.	**WILLBRIDGE TERMINAL** Portland, Oregon	FIGURE: 1
	60" BARRIER INSTALLATION PROFILE VIEW	PROJECT: B15-007.4A

COP0014220



NOTE: AREAL EXTENT OF PEA GRAVEL BACKFILL IS WITHIN THE APPROXIMATE 10' x 20' RECTANGLE ("EXCAVATION FOOTPRINT")

PACIFIC ENVIRONMENTAL GROUP, INC.	**WILLBRIDGE TERMINAL** Portland, Oregon	FIGURE: 2
	60" BARRIER INSTALLATION TOP VIEW	PROJECT: B15-007.4A

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ATTACHMENT A

CERTIFIED ANALYTICAL REPORT AND

CHAIN-OF-CUSTODY DOCUMENTATION

RECEIVED MAR 1 9 1998

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

Pacific Environmental Group - OR	Project:	TOSCO #0608, Portland, OR	Sampled: 3/11/98
7233 SW Kable Lane, Suite 900	Project Number:	1115-007-4A	Received: 3/11/98
Portland, OR 97224	Project Manager:	Mark Ochsner	Reported: 3/17/98 17:07

ANALYTICAL REPORT FOR SAMPLES:

Sample Description	Laboratory Sample Number	Sample Matrix	Date Sampled
IF-1	P803223-01	Water	3/11/98

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NORTH CREEK ANALYTICAL
Environmental Laboratory Services

BOTHELL ▪ (425) 481-9200 ▪ FAX 485-2992
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PORTLAND ▪ (503) 906-9200 ▪ FAX 906-9210

Pacific Environmental Group - OR	Project:	TOSCO #0608, Portland, OR	Sampled: 3/11/98
7233 SW Kable Lane, Suite 900	Project Number:	1115-007-4A	Received: 3/11/98
Portland, OR 97224	Project Manager:	Mark Ochsner	Reported: 3/17/98 17:07

BTEX per EPA Method 8020A
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
IF-1			P803223-01				Water	
Benzene	0380241	3/11/98	3/11/98		0.500	ND	ug/l	
Toluene	"	"	"		0.500	ND	"	
Ethylbenzene	"	"	"		0.500	ND	"	
Xylenes (total)	"	"	"		1.00	ND	"	
Surrogate: 4-BFB	"	"	"	*75.0-120*		*94.4*	*%*	

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

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PORTLAND ▪ (503) 906-9200 ▪ FAX 906-9210

Pacific Environmental Group - OR	Project:	TOSCO #0608, Portland, OR	Sampled: 3/11/98
7233 SW Kable Lane, Suite 900	Project Number:	1115-007-4A	Received: 3/11/98
Portland, OR 97224	Project Manager:	Mark Ochsner	Reported: 3/17/98 17:07

Polynuclear Aromatic Compounds per EPA 8270M-SIM
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
IF-1			P803223-01				Water	1
Acenaphthene	0380287	3/12/98	3/12/98		2.50	8.40	ug/l	
Acenaphthylene	"	"	"		2.50	ND	"	
Anthracene	"	"	"		5.00	ND	"	
Benzo (a) anthracene	"	"	"		1.00	ND	"	
Benzo (a) pyrene	"	"	"		1.00	ND	"	
Benzo (b) fluoranthene	"	"	"		1.00	ND	"	
Benzo (ghi) perylene	"	"	"		1.00	ND	"	
Benzo (k) fluoranthene	"	"	"		1.00	ND	"	
Chrysene	"	"	"		1.00	ND	"	
Dibenzo (a,h) anthracene	"	"	"		2.00	ND	"	
Fluoranthene	"	"	"		2.50	ND	"	
Fluorene	"	"	"		2.50	18.9	"	
Indeno (1,2,3-cd) pyrene	"	"	"		1.00	ND	"	
Naphthalene	"	"	"		5.00	ND	"	
Phenanthrene	"	"	"		2.50	30.7	"	
Pyrene	"	"	"		1.00	3.97	"	
Surrogate: 2-Fluorobiphenyl	"	"	"	*43.0-116*		*120*	%	*2*
Surrogate: Nitrobenzene-d5	"	"	"	*35.0-114*		*NR*	"	*3*
Surrogate: p-Terphenyl-d14	"	"	"	*33.0-141*		*116*	"	

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

Pacific Environmental Group - OR	Project:	TOSCO #0608, Portland, OR	Sampled: 3/11/98
7233 SW Kable Lane, Suite 900	Project Number:	1115-007-4A	Received: 3/11/98
Portland, OR 97224	Project Manager:	Mark Ochsner	Reported: 3/17/98 17:07

BTEX per EPA Method 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: 0380241	**Date Prepared: 3/11/98**					**Extraction Method: EPA 5030**				
Blank	0380241-BLK1									
Benzene	3/11/98			ND	ug/l	0.500				
Toluene	"			ND	"	0.500				
Ethylbenzene	"			ND	"	0.500				
Xylenes (total)	"			ND	"	1.00				
Surrogate: 4-BFB	"	*50.0*		*47.9*	"	*75.0-120*	*95.8*			
LCS	0380241-BS2									
Benzene	3/11/98	20.0		20.4	ug/l	67.0-130	102			
Toluene	"	20.0		20.3	"	75.0-126	101			
Ethylbenzene	"	20.0		20.4	"	76.0-124	102			
Xylenes (total)	"	60.0		61.9	"	75.0-126	103			
Surrogate: 4-BFB	"	*50.0*		*50.9*	"	*75.0-120*	*102*			
Batch: 0380245	**Date Prepared: 3/11/98**					**Extraction Method: EPA 5030**				
Blank	0380245-BLK1									
Benzene	3/11/98			ND	ug/l	0.500				
Toluene	"			ND	"	0.500				
Ethylbenzene	"			ND	"	0.500				
Xylenes (total)	"			ND	"	1.00				
Surrogate: 4-BFB	"	*50.0*		*44.3*	"	*75.0-120*	*88.6*			
LCS	0380245-BS2									
Benzene	3/11/98	20.0		18.6	ug/l	67.0-130	93.0			
Toluene	"	20.0		18.5	"	75.0-126	92.5			
Ethylbenzene	"	20.0		18.7	"	76.0-124	93.5			
Xylenes (total)	"	60.0		56.4	"	75.0-126	94.0			
Surrogate: 4-BFB	"	*50.0*		*44.4*	"	*75.0-120*	*88.8*			
Matrix Spike	0380245-MS1		P803211-01							
Benzene	3/11/98	20.0	ND	15.7	ug/l	67.0-130	78.5			
Toluene	"	20.0	ND	15.7	"	75.0-126	78.5			
Ethylbenzene	"	20.0	ND	16.4	"	76.0-124	82.0			
Xylenes (total)	"	60.0	ND	48.9	"	75.0-126	81.5			
Surrogate: 4-BFB	"	*50.0*		*40.2*	"	*75.0-120*	*80.4*			
Matrix Spike Dup	0380245-MSD1		P803211-01							
Benzene	3/11/98	20.0	ND	15.6	ug/l	67.0-130	78.0	13.0	0.639	

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

Mary A. Fritzmann Smith, Project Manager

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Pacific Environmental Group - OR	Project:	TOSCO #0608, Portland, OR	Sampled: 3/11/98
7233 SW Kable Lane, Suite 900	Project Number:	1115-007-4A	Received: 3/11/98
Portland, OR 97224	Project Manager:	Mark Ochsner	Reported: 3/17/98 17:07

BTEX per EPA Method 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)	0380245-MSD1		P803211-01							
Toluene	3/11/98	20.0	ND	15.7	ug/l	75.0-126	78.5	13.0	0	
Ethylbenzene	"	20.0	ND	16.2	"	76.0-124	81.0	15.0	1.23	
Xylenes (total)	"	60.0	ND	48.6	"	75.0-126	81.0	13.0	0.615	
Surrogate: 4-BFB	"	*50.0*		*39.6*	"	*75.0-120*	*79.2*			

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Pacific Environmental Group - OR	Project:	TOSCO #0608, Portland, OR	Sampled: 3/11/98
7233 SW Kable Lane, Suite 900	Project Number:	1115-007-4A	Received: 3/11/98
Portland, OR 97224	Project Manager:	Mark Ochsner	Reported: 3/17/98 17:07

Polynuclear Aromatic Compounds per EPA 8270M-SIM/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: 0380287	**Date Prepared: 3/12/98**					**Extraction Method: EPA 3510/600 Series**				
Blank	0380287-BLK1									
Acenaphthene	3/13/98			ND	ug/l	0.100				
Acenaphthylene	"			ND	"	0.100				
Anthracene	"			ND	"	0.100				
Benzo (a) anthracene	"			ND	"	0.100				
Benzo (a) pyrene	"			ND	"	0.100				
Benzo (b) fluoranthene	"			ND	"	0.100				
Benzo (ghi) perylene	"			ND	"	0.100				
Benzo (k) fluoranthene	"			ND	"	0.100				
Chrysene	"			ND	"	0.100				
Dibenzo (a,h) anthracene	"			ND	"	0.200				
Fluoranthene	"			ND	"	0.100				
Fluorene	"			ND	"	0.100				
Indeno (1,2,3-cd) pyrene	"			ND	"	0.100				
Naphthalene	"			ND	"	0.100				
Phenanthrene	"			ND	"	0.100				
Pyrene	"			ND	"	0.100				
Surrogate: 2-Fluorobiphenyl	"	*2.50*		*2.48*	"	*43.0-116*	*99.2*			
Surrogate: Nitrobenzene-d5	"	*2.50*		*2.66*	"	*35.0-114*	*106*			
Surrogate: p-Terphenyl-d14	"	*2.50*		*2.68*	"	*33.0-141*	*107*			
LCS	0380287-BS1									
Acenaphthylene	3/12/98	5.00		5.50	ug/l	50.0-150	110			
Benzo (k) fluoranthene	"	5.00		5.61	"	50.0-150	112			
Pyrene	"	5.00		6.02	"	50.0-150	120			
Surrogate: 2-Fluorobiphenyl	"	*2.50*		*2.51*	"	*43.0-116*	*100*			
Surrogate: Nitrobenzene-d5	"	*2.50*		*2.75*	"	*35.0-114*	*110*			
Surrogate: p-Terphenyl-d14	"	*2.50*		*2.61*	"	*33.0-141*	*104*			
LCS Dup	0380287-BSD1									
Acenaphthylene	3/12/98	5.00		5.68	ug/l	50.0-150	114	60.0	3.57	
Benzo (k) fluoranthene	"	5.00		5.69	"	50.0-150	114	60.0	1.77	
Pyrene	"	5.00		6.16	"	50.0-150	123	60.0	2.47	
Surrogate: 2-Fluorobiphenyl	"	*2.50*		*2.61*	"	*43.0-116*	*104*			
Surrogate: Nitrobenzene-d5	"	*2.50*		*2.75*	"	*35.0-114*	*110*			
Surrogate: p-Terphenyl-d14	"	*2.50*		*2.70*	"	*33.0-141*	*108*			

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Pacific Environmental Group - OR	Project:	TOSCO #0608, Portland, OR	Sampled:	3/11/98
7233 SW Kable Lane, Suite 900	Project Number:	1115-007-4A	Received:	3/11/98
Portland, OR 97224	Project Manager:	Mark Ochsner	Reported:	3/17/98 17:07

Notes and Definitions

#	Note
1	Reporting limits raised due to dilution necessary for analysis.
2	Surrogate recovery is outside control limits due to matrix interference.
3	The surrogate recovery for this sample cannot be accurately quantified due to 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.

Mary A. Fritzmann Smith, Project Manager

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UNOCAL CHAIN OF CUSTODY REPORT

UNOCAL INFORMATION

Facility Number: 0608
Site Address: 5528 NW Doane Ave.
City, State, ZIP: Portland OR 97210
Site Release Number:
Unocal Manager: Marty Cramer
CERT INFO: (check one) ☐ Evaluation ☐ Remediation
☐ Detection ☐ Demolition ☐ Closure ☐ Miscellaneous

CONSULTANT INFORMATION

Firm: PEG Project# 1115-007.4A
Address: Portland
Phone: 639-6305 Fax:
Project Manager: M. Oehsner
Sample Collection by: J. Callison

Chain of Custody Record #: P803223

Quality Assurance Data Level:
[A] [B]
A: Standard Summary
B: Standard + Chromatograms

Laboratory Turnaround Days:
[10] [5] [3] [2] [ ]

○ OR ○ WA ○ AK ○ NW Series

SAMPLE INDENTIFICATION	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CON-TAINERS	TPH-HCID	TPH-Gas	BTEX EPA 8021 Mod.	TPH-Gas + BTEX	TPH-Diesel	TPH-Diesel Extended	TPH-Diesel-Ext. w/SG Cleanup	Halogen. Volatiles EPA 8021	Pesticides/PCBs or PCBs Only	GC/MS Volatiles EPA 8260	GC/MS SemiVols. EPA 8270	PAH's: 8270 SIM or 8310	Lead: Total or Dissolved	TCLP or RCRA Metals (8)	NCA SAMPLE NUMBER
1. IF-1	3/11/98	W	3			X									X			
2.																		
3.																		
4.																		
5.																		
6.																		
7.																		
8.																		
9.																		
10.																		

Relinquished by:	Firm:	Date & Time	Received by:	Firm:	Date & Time
1. [signature]	PEG	3/11/98 1445	[signature]	NCA	3-11-98 1445
2. [signature] NCA 3-11-98 1640			Sara McClay	NCA	3-11-98 1620
3.					

Final Report Approval

Were all requested results provided? [yes] [no] Define
Were results within requested turnaround? [yes] [no] "No"
Final Approval Signature: on back
Firm: Date:

Page ____ of ____

Comments:

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Pacific Environmental Group - OR	Project:	CHEVRON #61001868, Portland, OR	Sampled: 3/11/98
7233 SW Kable Lane, Suite 900	Project Number:	1115-007.4A	Received: 3/11/98
Portland, OR 97224	Project Manager:	Mark Ochsner	Reported: 3/17/98 17:15

ANALYTICAL REPORT FOR SAMPLES:

Sample Description	Laboratory Sample Number	Sample Matrix	Date Sampled
OF-1	P803224-01	Water	3/11/98

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.

Mary A. Fritzmann Smith, Project Manager

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Pacific Environmental Group - OR	Project:	CHEVRON #61001868, Portland, OR	Sampled: 3/11/98
7233 SW Kable Lane, Suite 900	Project Number:	1115-007.4A	Received: 3/11/98
Portland, OR 97224	Project Manager:	Mark Ochsner	Reported: 3/17/98 17:15

BTEX per EPA Method 8020A
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
OF-1			P803224-01				Water	
Benzene	0380241	3/11/98	3/11/98		0.500	ND	ug/l	
Toluene	"	"	"		0.500	ND	"	
Ethylbenzene	"	"	"		0.500	ND	"	
Xylenes (total)	"	"	"		1.00	ND	"	
Surrogate: 4-BFB	"	"	"	*75.0-120*		*93.8*	*%*	

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Pacific Environmental Group - OR	Project:	CHEVRON #61001868, Portland, OR	Sampled: 3/11/98
7233 SW Kable Lane, Suite 900	Project Number:	1115-007.4A	Received: 3/11/98
Portland, OR 97224	Project Manager:	Mark Ochsner	Reported: 3/17/98 17:15

Polynuclear Aromatic Compounds per EPA 8270M-SIM
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
OF-1			P803224-01				Water	1
Acenaphthene	0380287	3/12/98	3/12/98		5.00	**19.2**	ug/l	
Acenaphthylene	"	"	"		5.00	ND	"	
Anthracene	"	"	"		10.0	ND	"	
Benzo (a) anthracene	"	"	"		2.00	ND	"	
Benzo (a) pyrene	"	"	"		2.00	ND	"	
Benzo (b) fluoranthene	"	"	"		2.00	ND	"	
Benzo (ghi) perylene	"	"	"		2.00	ND	"	
Benzo (k) fluoranthene	"	"	"		2.00	ND	"	
Chrysene	"	"	"		2.00	ND	"	
Dibenzo (a,h) anthracene	"	"	"		4.00	ND	"	
Fluoranthene	"	"	"		10.0	ND	"	
Fluorene	"	"	"		5.00	**44.7**	"	
Indeno (1,2,3-cd) pyrene	"	"	"		2.00	ND	"	
Naphthalene	"	"	"		10.0	ND	"	
Phenanthrene	"	"	"		5.00	**89.6**	"	
Pyrene	"	"	"		2.00	**10.5**	"	
Surrogate: 2-Fluorobiphenyl	"	"	"	*43.0-116*		*NR*	%	*2*
Surrogate: Nitrobenzene-d5	"	"	"	*35.0-114*		*NR*	"	*2*
Surrogate: p-Terphenyl-d14	"	"	"	*33.0-141*		*90.7*	"	

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

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Pacific Environmental Group - OR	Project:	CHEVRON #61001868, Portland, OR	Sampled: 3/11/98
7233 SW Kable Lane, Suite 900	Project Number:	1115-007.4A	Received: 3/11/98
Portland, OR 97224	Project Manager:	Mark Ochsner	Reported: 3/17/98 17:15

BTEX per EPA Method 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: 0380241	**Date Prepared: 3/11/98**					**Extraction Method: EPA 5030**				
Blank	**0380241-BLK1**									
Benzene	3/11/98			ND	ug/l	0.500				
Toluene	"			ND	"	0.500				
Ethylbenzene	"			ND	"	0.500				
Xylenes (total)	"			ND	"	1.00				
Surrogate: 4-BFB	"	*50.0*		*47.9*	"	*75.0-120*	*95.8*			
LCS	**0380241-BS2**									
Benzene	3/11/98	20.0		20.4	ug/l	67.0-130	102			
Toluene	"	20.0		20.3	"	75.0-126	101			
Ethylbenzene	"	20.0		20.4	"	76.0-124	102			
Xylenes (total)	"	60.0		61.9	"	75.0-126	103			
Surrogate: 4-BFB	"	*50.0*		*50.9*	"	*75.0-120*	*102*			
Batch: 0380245	**Date Prepared: 3/11/98**					**Extraction Method: EPA 5030**				
Blank	**0380245-BLK1**									
Benzene	3/11/98			ND	ug/l	0.500				
Toluene	"			ND	"	0.500				
Ethylbenzene	"			ND	"	0.500				
Xylenes (total)	"			ND	"	1.00				
Surrogate: 4-BFB	"	*50.0*		*44.3*	"	*75.0-120*	*88.6*			
LCS	**0380245-BS2**									
Benzene	3/11/98	20.0		18.6	ug/l	67.0-130	93.0			
Toluene	"	20.0		18.5	"	75.0-126	92.5			
Ethylbenzene	"	20.0		18.7	"	76.0-124	93.5			
Xylenes (total)	"	60.0		56.4	"	75.0-126	94.0			
Surrogate: 4-BFB	"	*50.0*		*44.4*	"	*75.0-120*	*88.8*			
Matrix Spike	**0380245-MS1**		**P803211-01**							
Benzene	3/11/98	20.0	ND	15.7	ug/l	67.0-130	78.5			
Toluene	"	20.0	ND	15.7	"	75.0-126	78.5			
Ethylbenzene	"	20.0	ND	16.4	"	76.0-124	82.0			
Xylenes (total)	"	60.0	ND	48.9	"	75.0-126	81.5			
Surrogate: 4-BFB	"	*50.0*		*40.2*	"	*75.0-120*	*80.4*			
Matrix Spike Dup	**0380245-MSD1**		**P803211-01**							
Benzene	3/11/98	20.0	ND	15.6	ug/l	67.0-130	78.0	13.0	0.639	

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

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Pacific Environmental Group - OR	Project:	CHEVRON #61001868, Portland, OR	Sampled: 3/11/98
7233 SW Kable Lane, Suite 900	Project Number:	1115-007.4A	Received: 3/11/98
Portland, OR 97224	Project Manager:	Mark Ochsner	Reported: 3/17/98 17:15

BTEX per EPA Method 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)	0380245-MSD1		P803211-01							
Toluene	3/11/98	20.0	ND	15.7	ug/l	75.0-126	78.5	13.0	0	
Ethylbenzene	"	20.0	ND	16.2	"	76.0-124	81.0	15.0	1.23	
Xylenes (total)	"	60.0	ND	48.6	"	75.0-126	81.0	13.0	0.615	
Surrogate: 4-BFB	"	*50.0*		*39.6*	"	*75.0-120*	*79.2*			

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Pacific Environmental Group - OR	Project:	CHEVRON #61001868, Portland, OR	Sampled: 3/11/98
7233 SW Kable Lane, Suite 900	Project Number:	1115-007.4A	Received: 3/11/98
Portland, OR 97224	Project Manager:	Mark Ochsner	Reported: 3/17/98 17:15

Polynuclear Aromatic Compounds per EPA 8270M-SIM/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: 0380287	**Date Prepared: 3/12/98**					**Extraction Method: EPA 3510/600 Series**				
Blank	**0380287-BLK1**									
Acenaphthene	3/13/98			ND	ug/l	0.100				
Acenaphthylene	"			ND	"	0.100				
Anthracene	"			ND	"	0.100				
Benzo (a) anthracene	"			ND	"	0.100				
Benzo (a) pyrene	"			ND	"	0.100				
Benzo (b) fluoranthene	"			ND	"	0.100				
Benzo (ghi) perylene	"			ND	"	0.100				
Benzo (k) fluoranthene	"			ND	"	0.100				
Chrysene	"			ND	"	0.100				
Dibenzo (a,h) anthracene	"			ND	"	0.200				
Fluoranthene	"			ND	"	0.100				
Fluorene	"			ND	"	0.100				
Indeno (1,2,3-cd) pyrene	"			ND	"	0.100				
Naphthalene	"			ND	"	0.100				
Phenanthrene	"			ND	"	0.100				
Pyrene	"			ND	"	0.100				
Surrogate: 2-Fluorobiphenyl	"	*2.50*		*2.48*	"	*43.0-116*	*99.2*			
Surrogate: Nitrobenzene-d5	"	*2.50*		*2.66*	"	*35.0-114*	*106*			
Surrogate: p-Terphenyl-d14	"	*2.50*		*2.68*	"	*33.0-141*	*107*			
LCS	**0380287-BS1**									
Acenaphthylene	3/12/98	5.00		5.50	ug/l	50.0-150	110			
Benzo (k) fluoranthene	"	5.00		5.61	"	50.0-150	112			
Pyrene	"	5.00		6.02	"	50.0-150	120			
Surrogate: 2-Fluorobiphenyl	"	*2.50*		*2.51*	"	*43.0-116*	*100*			
Surrogate: Nitrobenzene-d5	"	*2.50*		*2.75*	"	*35.0-114*	*110*			
Surrogate: p-Terphenyl-d14	"	*2.50*		*2.61*	"	*33.0-141*	*104*			
LCS Dup	**0380287-BSD1**									
Acenaphthylene	3/12/98	5.00		5.68	ug/l	50.0-150	114	60.0	3.57	
Benzo (k) fluoranthene	"	5.00		5.69	"	50.0-150	114	60.0	1.77	
Pyrene	"	5.00		6.16	"	50.0-150	123	60.0	2.47	
Surrogate: 2-Fluorobiphenyl	"	*2.50*		*2.61*	"	*43.0-116*	*104*			
Surrogate: Nitrobenzene-d5	"	*2.50*		*2.75*	"	*35.0-114*	*110*			
Surrogate: p-Terphenyl-d14	"	*2.50*		*2.70*	"	*33.0-141*	*108*			

North Creek Analytical, Inc.

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

Mary A. Fritzmann Smith, Project Manager

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Pacific Environmental Group - OR	Project:	CHEVRON #61001868, Portland, OR	Sampled: 3/11/98
7233 SW Kable Lane, Suite 900	Project Number:	1115-007.4A	Received: 3/11/98
Portland, OR 97224	Project Manager:	Mark Ochsner	Reported: 3/17/98 17:15

Notes and Definitions

#	Note
1	Reporting limits raised due to dilution necessary for analysis.
2	The surrogate recovery for this sample is not available due to sample dilution required from high analyte concentration and/or matrix interferences.
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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CHEVRON U.S.A., Inc. CHAIN OF CUSTODY REPORT

CHEVRON INFORMATION

Facility Number: 6100 1868
Site Address: 5531 NW Doane Ave.
City, State, ZIP: Portland OR 97210
Service Code:
Service Order:
Cost Element: 75100100
Chevron Project Manager: G. O'Regan (510) 842-3334

- ☐ Site Assesment
- ☐ Remediation
- ☐ O & M
- ☐ GWM

CONSULTANT INFORMATION

Name: PEG Project# 1115-007.4A
Address: Portland
Phone: 639-6305 Fax:
Project Manager: M. Oschner Airbill#:
Sample Collection by: J. Callison

Laboratory Turnaround Time

- ☒ 1 Business Day
- ☐ 3 Business Days
- ☐ 5 Business Days
- ☐ 10 Business Days
- ☐ 3 Day Air Samples (Please Select One)

☐ AK ☐ OR ☐ WA ☐ NW Series

SAMPLE INDENTIFICATION	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CON-TAINERS	TPH-HCID	TPH-Gas	BTEX Only EPA 8021 Mod.	TPH-Gas + BTEX	TPH-Diesel	TPH-Diesel Extended	TPH-Diesel-Ext. w/SG Cleanup	Halogen. Volatiles EPA 8021	Pesticides/PCBs or PCBs Only	GC/MS Volatiles EPA 8260	GC/MS SemiVols. EPA 8270	PAH's: 8270 SIM or 8310	Lead: Total or Dissolved	TCLP or RCRA Metals (8)	NCA SAMPLE NUMBER
1. OF-1	3/11/98	W	3			X									X			P803224-1
2.																		
3.																		
4.																		
5.																		
6.																		
7.																		
8.																		
9.																		
10.																		

Relinquished by:	Firm:	Date & Time	Received by:	Firm:	Date & Time
1. [signature]	PEG	3/11/98 1445	[signature]	NCA	3-11-98 1445
2. [signature] NCA 3-11-98 1820			Sara McClurg	NCA	3.11-98 1620
3.					

Additional Comments:

COP0014238

JULY 1998

DOC 0922

CORRESP.

CALLED NRC @ 1940 FOSS ALREADY CALLED THEM
TOLD THEM 25-30 GALLONS BUT CLEAN RIVERS EST. 60-70
95% CONTAINED W/IN BOOM - RED DYE DIESEL - V. LIGHT BROKEN SHEEN OUTSIDE BOOM
NRC REPORT 439-410 MRS KINNEY
SHEENS SPOTTED ABOUT 1/4 MILE DOWNSTREAM BUT V. LIGHT + SPOTTY
TOLD THEM OVERFILLED DAY TANK ON TUG + VALVE LEFT OPEN
ALLOWED DIESEL TO SPILL ON DECK AND INTO WATER
TOLD THEM WE WERE NOT RESPONSIBLE PARTY - GAVE US SEPARATE
TO BE SURE

TOSCO BOAT CHECKED DOWN TO RR BRIDGE & ACROSS TO SWAN ISLAND - SEE ABOVE
FOSS ENV ARRIVED @ 1930 HRS - SPILL OCCURRED @ 1745 HRS
BOOM DEPLOYMENT COMPLETED AT 1845 HRS
TUG IS ~~[illegible]~~ HOWARD OLSON

RANDY PARR - OERS ⇒ CALLED HIM AT 2005 ⇒ SAID THEY HAVE
ALREADY BEEN NOTIFIED OF THE INCIDENT + TURNED IT OVER TO
DEQ + USCG

PAGED LARRY @ 1955 + HE CALLED BACK W/IN 5 MINUTES -
EXPLAINED SITUATION + THOUGHT ALL WAS FINE

602-200-4600 (800) 847-0242

WILLBRIDGE MTG W/ LANCE 10/9/98

- DISCUSSED SHORELINE SAMPLING → PEG WILL TAKE SAMPLES ALONG 4 TRANSECTS W/ 3 SAMPLES EACH - 1 SAMPLE AT WATERLINE AT TIME OF LEAK, 1-10 FT ABOVE, AND 1-5 FT BELOW → GRAB SAMPLES W/ SHOVEL
- WILL BE DOING HYDROPUNCHES LATER IN TANK 3411 SPILL AREA - HOT SPOTS
- START AT DOCK AREA & THEN DO HOLES ON BACK PROPERTY LINE, WILL DO STREET HPS WHEN APPROVAL FROM CITY
- SUBMIT WORKING ON REPORT → SHOULD BE COMPLETED BY MID-NOV.
- NEXT GROUP MTG NOV. 19 & 20 → TENT.

* GET LANCE COPIES OF INVOICES

MTG W/ PEG (LANCE) 11/25/98

REVIEWED INVOICES & LANCE PROVIDED EXPLANATION ON THE INVOICES IN QUESTION

DISCUSSED BRISTOL/SUMMIT INVOICES ⇒ THEY ARE LOOKING FOR AN ADDITIONAL $9,500 ⇒ LANCE THINKS SOME IS UNWARRANTED & THINKS THEY REALLY WANT A FEW MORE THOUSAND

- WILL PROPOSE TO BRISTOL TO PRESENT RESULTS AT NEXT MTG & DISCUSS OVERRUNS

SURVEYING - LANCE PROPOSED TO RE SURVEY SELECTED WELLS AT DOCK & RIVER GAUGE ON DOCK TO CONFIRM ELEV. ⇒ TOLD HIM O.K. & SHOULD PROBABLY DO ALL WELLS

MEETING W/ JILL TO DISCUSS U.G. UTILITY BORINGS & PEG MAP ⇒ WILL TRY FOR 12/4 OR 12/8 - 11

SOIL SAMPLES AT OUTFALL HAD HIGH HITS NEXT TO OUTFALL BUT LOW AT PERIMETER - PEG WILL PREPARE DRAWING & LETTER TO LOREN & VIDEO EXPLAINING HIGH HITS WERE DUE TO HISTORICAL & DO NOT WANT TO CONDUCT REMEDIATION UNTIL RI COMPLETED.

COP0014241

AOC 0922

CORRESP.

TOSCO REFINING COMPANY

DISTRIBUTION WEST AND 76 PRODUCTS COMPANY

PRELIMINARY INCIDENT NOTIFICATION (PIN) FORM

(Due within 8 hours of the incident)

Directions: To complete this form electronically, select "Tools" from the menu bar at the top of this screen, then "Protect Document", "Protect Document for Forms" and click on the "OK" button. Use the TAB key or your mouse to move to the next field (Shift + TAB to move to the previous field). Use your mouse to check/uncheck the check boxes.

Date Prepared **12/24/98**

Time Prepared **2130 hrs**

Business Unit/Facility
Portland Terminal

Date and Time Of Occurrence **12/24/1998**

(Check one)

☐ Serious Accident	Fatality, hospitalization of employee, lost workday case, injury/spill reportable to government agency, significant media coverage, significant threat to public/environment, citation/NOV, potential loss ≥$10,000.
☒ Minor Accident	Restricted workday or medical treatment case, first aid case, spill/incident not reportable to government agency, minor vehicle accident (no injury), potential loss <$10,000.
☐ Other Incident (Near Miss)	Events that, under slightly different circumstances, could have reasonably resulted in a serious or minor accident, as described above.

(Check all that apply)

☐ Fatality	☐ Injury	☐ Occupational Illness
☒ Spill/Leak/Release	☐ Environmental Impact	☐ Product Mix/Contamination
☐ Fire/Explosion	☐ Motor Vehicle Accident	☐ Property Damage/Loss/Theft
☐ Loss of Process	☐ Significant Media Coverage	
☐ Other (Describe)		

(Check all that apply)

☐ Employee	☐ Contractor	☐ Customer / General Public

DESCRIPTION (Describe the accident/incident--who, what, when, where, how, why. Attach any photos / sketches):

At 1200 hrs on 12/23 operator noticed stress cracks in paint on abandoned leaded gas dockline near shore valve and ice forming around gasket on adjacent valve. He contacted Operations Supervisor at 1230 hrs that investigated situation and discussed with maintenance potential hazards and options for mitigation. Notifications were made to appropriate Tosco Management, HES personnel, and Clean Rivers. Attempts were made to evacuate water and residual gas from the line but most of the line contents were frozen. As a precautionary measure, containment boom was placed in the water below the line the following morning after the ongoing barge transfer was complete and the barge had departed the dock. Operators were instructed to continually monitor the line and the water within the boom. At 1630 hrs on 12/24 the operator noticed a sheen within the boomed area and upon investigation, found a rupture in the leaded gas line about midway down the dock. Notifications were made to the appropriate agencies, Tosco Management and key NW Area Response Team personnel. Air monitoring was, and continues to be, performed in the area and has found zero LEL levels.

TOSCO

CORRECTIVE ACTION TAKEN (Describe immediate action taken):
Attempts are currently being made to place a patch over the rupture to terminate the leak, which is continuing at approximately 0.2 gpm. Additional attempts are also being made to evacuate the line. Due to the absence of LEL readings and based on visual observations, the material appears to be primarily water. Clean Rivers will remain onsite until the leak is stopped.

INVESTIGATION LEADER: **Vito DeBellis**

Phone Number: **503-248-1572**

Prepared by: **Vito DeBellis** Title: **Operations Supervisor** Date: **12/24/98**

TOSCO

TOSCO

Date: December 24, 1998 **Time:** 9:56 PM

Number of Pages Including Cover Sheet: 3

To: DAVE WRIGHT
Tosco Refining Company, Distribution West
Santa Fe Springs, CA

From: VITO DEBELLIS
Tosco Portland Terminal
5528 NW Doane Ave.
Portland, OR 97210

Phone:
Fax: 714-963-4175

Phone: 503-248-1572
Fax: 503-248-1519

REMARKS

☐ **Urgent** ☐ **For Your Review** ☐ **Reply ASAP** ☐ **Please Comment**

Dave:

Please find the attached Preliminary Incident Report for the leaded gas pipeline rupture and spill at the Portland Terminal.

If you have any questions, please feel free to contact me at the above number.

Thanks,

Vito

COP0014244

TOSCO

Date: December 24, 1998 **Time:** 10:14 PM

Number of Pages Including Cover Sheet: 3

To: LARRY SILVA
Tosco

From: MARTY CRAMER
Tosco Portland Terminal
5528 NW Doane Ave.
Portland, OR 97210

Phone:
Fax: 909-898-8670

Phone: 503-248-1517
Fax: 503-248-1592

REMARKS

☒ **Urgent** ☒ **For Your Review** ☐ **Reply ASAP** ☐ **Please Comment**

Larry:

Per our discussion, here is the PIN form for the spill.

If you have any questions, please feel free to contact me at the above number.

Thanks,

Marty

COP0014245

Response Critique

AOC 0922
CORRECT.

Portland Dock Line Rupture Incident 12/24/98.

Incident Description

Spilled Amount: The HES department estimated the leak at 1/2 gallon/minute for duration of 10 hours with as much as 1% gasoline content which would equal a maximum volume of approximately 3 gallons of gasoline.

Basic Causes: Lack of formal follow-up for abnormal operations/maintenance activities that resulted from an incident

Action Plan: Management will ensure assigned activities are completed timely.

Response Critique Follow-up:

1) Update the written procedures for pipeline testing to include the use of water as a testing medium.

2) Develop a fall protection system for conducting maintenance activities on the lines extending under the dock where no walkway is in place.

3) Add to the current inventory of emergency response equipment for pipeline repair supplies.

Lessons Learned:

1) Absent the designated IC, a back-up must be nominated on site and take charge of the incident by assigning key role responsibility.

MTG. ON GAS PIPE SPILL ADC 0922

CORRESP.

BASIC CAUSE

- LACK OF FORMAL FOLLOW-UP PROCEDURES FOR ABNORMAL OPERATIONS/MAINTENANCE PROCEDURES

ACTION PLAN

- MGMT WILL MONITOR COMPLIANCE WITH ABNORMAL ACTIVITY PROCEDURES WITH REVIEW OF COMPLETED MAINTENANCE WORK FORMS
- ~~HYPROTEST~~ PRESSURE TEST PROCEDURE NEEDS TO BE UPDATED TO INCLUDE HYPROTEST & REMOVING WATER AFTERWARDS (NOT A CAUSE OF SPILL)
- NEED FALL PROTECTION LINES INSTALLED EVEN IF ONLY ACCESS LINES INFREQUENTLY OR DURING EMERGENCIES
- NEED TO IMPROVE COMMUNICATIONS + DEVELOP ACTION PLANS FOR ALL INCIDENTS
- PURCHASE PIPE REPAIR EQUIPMENT/SUPPLIES
- NEED TO LEAVE PHONE/CONTACT # WHEN OUT OF PAGER RANGE/TOWN
- GET ANITA TO SWITCH PAGERS

TOSCO

Tosco Distribution Company
A Division of Tosco Corporation
Portland Terminal
5528 Northwest Doane Avenue
Portland, Oregon 97210
P.O. Box 76
Portland, Oregon 97207
Telephone: 503-248-1529
Facsimile: 503-248-1597

January 15, 1999

AOC 0922
REPORTS
~~CORRESPONDENCE~~

Mr. Loren Garner
Oregon Department of Environmental Quality
2020 SW 4th Avenue, Suite 400
Portland, Oregon 97201-5884

Re: Written Report for Gasoline Spill – OERS No. 98-3147
Tosco Distribution Company Portland Terminal

Dear Mr. Garner:

In response to your correspondence of January 11, 1999 and in compliance of OAR 340-108-040, please find the enclosed written report concerning the gasoline spill that occurred at the terminal on December 24, 1998. The report includes the completed form provide in you January 11 correspondence as well as a summary of how the incident occurred and response actions taken to date. Copies of relevant supplemental information requested in the report form are attached to the report.

If you have additional questions or require further information, please contact me a 248-1538.

Sincerely,

Steve Gloeckner

Steve Gloeckner
Terminal Manager

Cc: A. Rogers
M. Cramer

SPILL/RELEASE REPORT

1 - GENERAL INFORMATION

OERS No. 98-3147

a. Company/Individual Name: Tosco Distribution Company, A Division of Tosco Corporation

b. Address: 5328 N.W. Doane Ave
Portland, Oregon 97210

c. Company Contact Person: Steve Gloeckner

d. Phone Number(s): (503) 248-1538

e. Specific on-site location of the release (and address if different from above):
same as above

Please provide a map of the site showing area(s) where the release occurred, any sample collection locations, location of roads/ditches/surface water bodies, etc.

2 - RELEASE INFORMATION

a. Date/Time Release started: 12/24/98 16:30 Date/Time stopped: 12/25/98 02:30

b. Release was reported to (specify Date/Time/Name of Person contacted where applicable):

ODEQ 12/24/98 17:15 Loren Garner
OERS 12/24/98 17:20 Joseph Cunningham
NRC 12/24/98 17:11 Rutherford
Other (describe) (12/24/98 16:58 USCG, Steve Reif) 12/24/98 17:07 Clean Rivers, Brent Way,

c. Person(s) reporting release: Jim Teske - Tosco Portland Terminal Head Operator

d. Name, quantity and physical state (gas, liquid, solid or semi-solid) of material(s) released:
Name: Leaded Regular Gasoline Quantity: 3 gallons (maximum)
Physical State: liquid

Please attach copies of material safety data sheets (MSDS) for released material(s).

e. The release affected: ✓ Air ___ Groundwater ✓ Surface Water ___ Soil ___ Sediment

f. Name and distance to nearest surface water body(s), even if unaffected (include locations of creeks, streams, rivers and ditches that discharge to surface water on maps):
Leak occured into the Willamette River

Has the release reached the surface water identified above?: ✓ Yes ___ No
Could the release potentially reach the surface water identified above? ✓ Yes ___ No
Explain:

g. Depth to nearest aquifer/groundwater: N/A

Is nearest aquifer/groundwater potable (drinkable)? ___ Yes ✓ No
Has the release reached the nearest aquifer/groundwater? ___ Yes ✓ No
Explain:

h. Release or potential release to the air occurred? ✓ Yes ___ No
Explain: Evaporation of the liquid gasoline

i. Was there a threat to public safety? ___ Yes ✓ No
j. Is there potential for future releases? ✓ Yes ___ No
Explain: Mechanical/equipment failure is a potential for future release

k. Describe other effects/impacts from release (emergency evacuation, fish kills, etc.):
No other effects. The small amount of gasoline evaporated.

l. Describe how the release occurred. Include details such as the release source, cause, contributing weather factors, activities occurring prior to or during the release, dates and times of various activities, first responders involved in containment activities, etc.:
(See Attached)

3 - SITE INFORMATION

a. Adjacent land uses include (check all that apply and depict on site maps):
___ Residential ___ Commercial ___ Light Industrial ✓ Heavy Industrial
___ Agricultural ___ Other (describe):
b. What is the population density surrounding the site: minimal - primarily industrial
c. Is the site and/or release area secured by fencing or other means? ✓ Yes ___ No
d. Soil types (check all that apply): ___ alluvial ___ bedrock ___ clay ✓ sandy
___ silt ___ silty loam ___ artificial surface (cement/asphalt/etc.)
e. Describe site topography: Willamette River near shore under wharf.

4 - CLEANUP INFORMATION

a. Was site cleanup performed? ___Yes ✓ No

If No, explain: Small amount of gasoline evaporated. The Portland Fire Department, Clean Rivers Coop and Cowlitz Clean Sweep were in attendance; but there was no product to clean up.

b. Who performed the site cleanup?

Company Name: _____

Address: _____

_____

Cleanup Supervisor: _____

Phone Number(s): _____

c. Has all contamination been removed from the site? ✓ Yes ___No

If No, explain: _____

_____

d. Estimated volume of contaminated soil removed: N/A

e. Estimated volume of contaminated soil left in place: N/A

f. Was a hazardous waste determination made for cleanup materials? ✓ Yes ___No

g. Based on the determination, are the cleanup materials hazardous wastes?

___Yes ✓ No If Yes, list all waste codes: _____

h. Was contaminated soil or water disposed of at an off-site location? ___Yes ✓ No

If yes, attach copies of receipts/manifests/etc., and provide the following information:

Facility Name: _____

Address: _____

_____

Facility Contact: _____

Phone Number(s): _____

i. Is contaminated soil or water being stored and/or treated on-site? ___Yes ✓ No

If yes, please describe the material(s), storage and/or treatment area, and methods utilized (attach additional sheets if necessary):

N/A

_____

_____

_____

j. Describe cleanup activities including what actions were taken, dates and times actions were initiated and completed, volumes of contaminated materials that were removed, etc. (attach additional sheets or contractor reports if necessary or more convenient):

N/A

_____

_____

_____

_____

5 - SAMPLING INFORMATION

Attach copies of all sample data and indicate locations of sample collection on maps.

a. Were samples of contaminated soil collected? ___Yes ___No ✓N/A
b. Were samples of contaminated water collected? ___Yes ___No ✓N/A
c. Were samples collected to show that all contamination had been removed?
___Yes ___No ✓N/A
d. Describe sampling activities, results and discuss rationale for sampling methods:

N/A

6 - SPILL REPORT CHECKLIST

To ensure that you have gathered all the information requested by the Department in this Spill/Release Report, please complete the following checklist:

✓ Map(s) of the site showing buiidings, roads, surface water bodies, ditches, waterways, point of the release, extent of contamination, areas of excavation and sample collection locations attached.

✓ Material Safety Data Sheet (MSDS) for released material(s) attached.

N/A Sampling data/analytical results attached.

N/A Receipts/manifests (if any) for disposal of cleanup materials attached.

N/A Contractor reports (if any) attached.

Attachment – Section 2. 1
Describe how the release occurred

On 12/23/98 at 1200 hours Dave Allen the on duty operator was leaving the dock after loading a diesel barge. While he was closing the shore valve on the diesel line he noticed stress cracks in the paint on an out of service leaded gasoline line which has not been used for 6-7 years and ice bulging from the bonnet of the leaded line shore valve. He immediately informed the Maintenance group and Vito DeBellis, the Supervisor of Operations in turn, Vito DeBellis notified all supervisors and the HES Group. We concluded that the line might not have been drained after hydro testing in October. At 1400 on 12/23/98 we tried to relieve the pressure by taking suction on the barge riser; very little was pumped out and we surmised that the remaining water was frozen. Warmer weather was forecast and as a precaution we boomed the entire dock on the morning of 12/24/98. By the afternoon of 12/24/98 local temperatures had risen into the forties causing the ice to thaw. At approximately 1630 hours Jim Teske the Head Operator on duty noticed a sheen in the boomed area under the dock. Upon further investigation Jim found a rupture in the leaded regular line about halfway down the dock from the shore and a water/product mixture spilling into the river. He called Vito DeBellis who told him to initiate an emergency response and notify all agencies including the Portland Fire Department; odors of gasoline were present.

Actions taken:

Since gasoline odors were present, as soon as the Emergency Response team arrived air monitoring with LEL meters was initiated and continued during the entire response. Clean Rivers Co-Op responders assisted with LEL monitoring. At no time during the incident was an LEL level above zero.

We attempted to patch the rupture, but because of the position of the pipes, the size of the rupture, and the cold temperatures, the patching efforts were only able to reduce the leak flow by 75%. We next took suction with a sandpiper pump on a low-level thief at the head of the dock in an attempt to evacuate the line of any product. We tied a large drip pan to the pipes under the rupture and ran a hose down the pipeway securing the end in the drip pan. We hooked a sandpiper pump to the hose and discharged into the dock containment tank. At 0230 on 12/25/98 the leak was deemed secured. Clean River's personnel and the Tosco response team were released. Operators on duty were instructed to monitor the situation continuously through the weekend. There were no recoverable petroleum products in the river. It was agreed by all responders present that at least 99% of product released into the river was water with a small amount of gasoline. On 12/26/98 P.M. the boom encircling the dock was removed as the sheen had dissipated. Maintenance commenced permanent repairs on 12/28/98. The repairs were completed on 12/31/98.

TOSCO MSDS Number: 2324
01 ---- Section 01 Chemical Product and Company Identification ----

Tosco

24-Hour Emergency Assistance: TOSCO: (360) 384-1011
CHEMTREC: (800) 424-9300
General Assistance: (360)384-8400
Tosco, P.O. Box 8, Ferndale, WA 98248-0008

Product Name: GASOLINE, BP REGULAR LEADED or
GASOLINE, REGULAR LEADED
TOSCO MSDS Number: 2324
CAS Number: Mixture
Synonyms: Gasoline, Leaded; Motor Fuel, Leaded
Chemical Family: Petroleum Hydrocarbon
Molecular Formula: Mixture
Molecular Weight: Mixture
UN/NA Code: 1203
Revision Date: 06/16/95 Replaces Sheet Dated: May 9, 1995
Completed By: Tosco Industrial Hygiene Section
02 ---- Section 02 Composition, Information on Ingredients ----

COMPONENTS	CAS NO.	%	EXPOSURE LIMITS
Gasoline	8006-61-9	89-100	300 ppm (890 mg/M3) TLV; 500 ppm (1,480 mg/M3) STEL -- ACGIH 300 ppm (890 mg/M3) PEL; 500 ppm (1,480 mg/M3) STEL -- OSHA

Gasoline may contain one or more of the following:

Toluene	108-88-3	0-4	50 ppm (188 mg/M3) TLV -- ACGIH 100 ppm (377mg/M3) PEL; 150 ppm (565 mg/M3) STEL -- OSHA
Xylene	1330-20-7	0-4	100 ppm (434mg/M3) TLV; 150 ppm (651 mg/M3) STEL -- ACGIH 100 ppm (435mg/M3) PEL; 150 ppm (655 mg/M3) STEL -- OSHA
Benzene	71-43-2	0-3	0.1 ppm (0.3 mg/M3) TLV -- ACGIH 1.0 ppm PEL; 5.0 ppm STEL -- OSHA
1,2,4-Trimethylbenzene	95-63-6	0-3	25 ppm (123 mg/M3) TLV -- ACGIH 25 ppm (125 mg/M3) PEL -- OSHA
Ethylbenzene	100-41-4	0-1	100 ppm (434 mg/M3) TLV; 125 ppm (543 mg/M3) STEL -- ACGIH 100 ppm (435 mg/M3) PEL; 125 ppm (545 mg/M3)STEL -- OSHA
Cyclohexane	110-82-7	0-1	300 ppm (1,030 mg/M3) TLV -- ACGIH 300 ppm PEL (1,050 mg/M3) -- OSHA
Ethanol	64-17-5	0-11	1000ppm (1,880 mg/M3)TLV--ACGIH 1000 ppm PEL (1,900 mg/M3) -- OSHA

Remaining components not determined hazardous and/or hazardous components present at less than 1.0% (0.1% for carcinogens). NA

03 ---- Section 03 Hazards Identification ----

NFPA FIRE HAZARD RATING*
4-EXTREME
3-HIGH
2-MODERATE
1-SLIGHT
0-INSIGNIFICANT

HEALTH 1
FLAMMABILITY 4
REACTIVITY 0
SPECIAL HAZARD

*COPYRIGHT (C) 1980, NATIONAL FIRE PROTECTION ASSOC. MA 02269
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Health: DANGER!
HARMFUL OR FATAL IF SWALLOWED
ASPIRATION HAZARD IF SWALLOWED-- CAN ENTER LUNGS AND CAUSE DAMAGE
VAPORS MAY BE HARMFUL
CONTAINS BENZENE, CANCER HAZARD
MAY BE IRRITATING TO THE SKIN, EYES AND RESPIRATORY TRACT
LONG-TERM EXPOSURE TO VAPORS HAS CAUSED CANCER IN SOME LABORATORY ANIMALS

Ingestion:
MODERATELY TOXIC. Human oral LDLo = approx. 10-30 gms. Aspiration into lungs may cause pneumonitis. May cause gastrointestinal disturbances. Symptoms may include irritation, nausea, vomiting and diarrhea. May cause harmful central nervous system effects including excitation, euphoria, headache, dizziness, drowsiness, blurred vision, fatigue, tremors, convulsions, loss of consciousness, coma, respiratory arrest and death.

Skin:
PRACTICALLY NON-TOXIC. Human dermal LD50 = >5 ml/kg. SLIGHTLY IRRITATING. Repeated or prolonged contact may result in dermatitis and possible secondary infection. High pressure skin injections are SERIOUS MEDICAL EMERGENCIES. Injections may show no serious symptoms at first but require IMMEDIATE MEDICAL ATTENTION to treat possible serious delayed tissue damage.

Eye:
May cause slight to moderate transient irritation.

Inhalation:
May cause respiratory tract irritation. Central nervous systems effects are similar to those listed under "Ingestion" section. May also cause anemia and irregular heart rhythm. Repeated or prolonged exposures may cause behavioral changes.

Special Toxic Effects:
may cause liver and kidney damage based on tests with laboratory animals. A similar product has been found to be carcinogenic to laboratory animals when given by inhalation. Laboratory mutagenicity studies have had conflicting results.

IARC has determined that there is limited evidence for the carcinogenicity of gasoline in experimental animals. An additional determination was made by IARC that there is inadequate evidence for the carcinogenicity of gasoline in humans. (IARC Class --2B).

Warning: The use of hydrocarbon fuel in an area without adequate ventilation may result in hazardous levels of combustion products and/ or dangerously low oxygen levels. IARC has determined that gasoline engine exhaust is possibly carcinogenic to humans. (IARC Class -- 2B).

This product contains benzene which is carcinogenic to laboratory animals when injected or inhaled. There is an association between occupational exposure to benzene and increased risk of human leukemia. IARC has determined there is sufficient human and animal evidence for the carcinogenicity of benzene (IARC Class -- 1). NTP----- Known carcinogen. ACGIH-- confirmed human carcinogen.

Acute benzene poisoning causes central nervous system depression. Chronic exposure affects the hematopoietic system, causing blood disorders including anemia and pancytopenia. Mutagenic and clastogenic in laboratory animal tests and assays. Adverse reproductive effects occur only at doses that are maternally toxic, based on animal testing.

04 ---- Section 04 First Aid Measures ----

Ingestion:
DO NOT INDUCE VOMITING BECAUSE OF DANGER OF ASPIRATING LIQUID INTO LUNGS. Get immediate medical attention. If spontaneous vomiting occurs, monitor breathing for difficulty.

Skin Contact:
Remove contaminated clothing immediately. Wash area thoroughly with soap and water. Get medical attention if irritation persists. High pressure injections are SERIOUS medical emergencies requiring immediate medical attention.

Eye Contact:
Flush immediately with large amounts of water for at least 15 minutes. Eyelids should be held away from the eyeball to ensure thorough rinsing. Get medical attention if irritation results.

Inhalation:
Remove victim from source of exposure. If not breathing, ensure open airway and give artificial respiration or CPR as needed. Administer oxygen if available. Get immediate medical attention.

05 ---- Section 05 Fire Fighting Measures ----

Flammability: DANGER!
HIGHLY FLAMMABLE LIQUID AND VAPORS
VAPOR MAY CAUSE FLASH FIRE

Flash Point: -37.0 deg C (-35 F) TCC
Autoignition Temperature: 444 deg C (833 F)
Flammability Limits in Air (% by Vol.): Upper: 7.6 % Lower: 1.4 %
Reactivity: Stable under normal conditions of use. Avoid contact with strong oxidizers.

Basic Firefighting Procedures:
Use dry chemical, all purpose AFFF, alcohol foam or carbon dioxide to extinguish fire. Water may be ineffective for extinguishing fire but may be used to cool fire-impinged or expanded containers and structures. Water may be used to protect personnel and keep material away from sources of ignition. If leak or spill has not ignited, ventilate area and use water spray to disperse gas or vapor and to protect personnel attempting to stop a leak. Foam blankets may also be used to reduce vapors and protect responding personnel. Exposed personnel should wear NIOSH /NFPA approved positive pressure self contained breathing apparatus with full face mask and flame protective clothing. Keep material out of public sewers and waterways.

Unusual Fire and Explosion Hazards:
Dangerous when exposed to heat or flames. Vapors form flammable or explosive mixtures with air at room temperature. Vapor or gas may travel to distant ignition sources and flash back. Runoff to sewer may cause fire or explosion hazard or may be toxic to aquatic life. Containers may explode if heated.

06 ---- Section 06 Accidental Release Measures ----

Spill or Release:
If your facility has a hazardous materials emergency spill plan, activate its procedures. For transportation or other large spills, follow U.S. Dept.

of Transportation "Emergency Action Guide #27".

Take immediate steps to stop and contain the spill if there is no risk to personal safety.
Stay upwind; keep out of low areas. Use recommended personal protective equipment. Keep unnecessary and unprotected personnel away; isolate the area and deny entry. Shut off ignition sources; no flares, smoking, open flames or vehicles in hazard area. Vapors may be suppressed with a fire foam blanket. Contain spill far downstream by diking. Take up small spills with sand or other compatible absorbent.

Notification:
Clean Water Act (Oil spills):
Any spill or release or substantial threat of release, of this material to surface water, sufficient to cause a visible sheen on the water must be reported immediately to the National Response Center (800/424-8802), as required by U.S. Federal Law. Also notify the Coast Guard and appropriate state and local regulatory agencies.

This material contains one or more constituents regulated as hazardous substances under U.S. Federal Law. Any spill or other release, or substantial threat of release, of this material to the air, water or land (unless contained entirely in the workplace) equal to or in excess of the reportable quantity must be reported immediately to the National Response Center (800/424-8802). Also contact appropriate state and local regulatory authorities. Contact the Coast Guard if spilled into navigable waterways (most surface waters).

07 ---- Section 07 Handling and Storage ----

Handling and Storage:
Store gasoline only in NFPA approved, clearly labeled containers that are tightly closed. Never store in glass or unapproved plastic containers. The storage location must be cool, dry, isolated, well-ventilated and away from heat, sources of ignition and incompatible materials.

Use grounding wires and equipment during product transfer to reduce the possibility of static spark caused fire or explosion.

Use good personal hygiene practices. Wash hands before eating, drinking, smoking, or using toilet facilities. Remove contaminated clothing and clean before reuse. Shower after work using soap and water. Do not siphon this product by mouth. Use only as a motor fuel. Do not use for cleaning, pressure appliance fuel, or any other use. Keep out of reach of children.

Empty Containers: Empty containers may contain toxic, flammable/combustible or explosive residue or vapors. Do not cut, grind, drill, weld, reuse or dispose containers unless adequate precautions are taken against these hazards.

08 ---- Section 08 Exposure Controls, Personal Protection ----

Eye Protection:
Avoid eye contact with this material. Wear safety glasses or chemical goggles. Provide facilities in the work area for immediate flushing of the eyes.

Skin Protection:
Avoid skin contact. Wear protective clothing including impervious gloves, coveralls or lab aprons as needed for possible splash protection. Wash work clothing regularly. Remove contaminated clothing. Do not wear contaminated clothing near sources of ignition such as sparks or open flames. Solvent barrier cremes may be used to supplement impervious gloves.

Respiratory Protection:
Use adequate ventilation where possible. If ventilation is not adequate to

This product contains benzene which is carcinogenic to laboratory animals when injected or inhaled. There is an association between occupational exposure to benzene and increased risk of human leukemia. IARC has determined there is sufficient human and animal evidence for the carcinogenicity of benzene (IARC Class -- 1). NTP----- Known carcinogen. ACGIH-- confirmed human carcinogen.

Acute benzene poisoning causes central nervous system depression. Chronic exposure affects the hematopoietic system, causing blood disorders including anemia and pancytopenia. Mutagenic and clastogenic in laboratory animal tests and assays. Adverse reproductive effects occur only at doses that are maternally toxic, based on animal testing.

12 ---- Section 12 Ecological Information ----

13 ---- Section 13 Disposal Considerations ----

Waste Disposal:
This material, when discarded or disposed of, is not specifically listed as hazardous waste in Federal regulations; however it is a characteristically hazardous waste under the definitions of ignitability and toxicity. Additionally, this material may be defined as hazardous waste under state or local regulations. Chemical additions, processing or otherwise altering this material may make the waste management information in this MSDS incomplete. inaccurate or otherwise inappropriate.

If discarded in its original formulation, this material would have the EPA hazardous waste number D001.

14 ---- Section 14 Transport Information ----

UN/NA Code: 1203

D.O.T. PROPER SHIPPING NAME (49 CFR 172.101):	GASOLINE, 3, UN 1203, PG II
D.O.T. HAZARD CLASS (49 CFR 172.101):	3, (GASOLINE, LEADED) MARINE POLLUTANT
UN/NA CODE (49 CFR 172.101)	UN 1203
PACKAGING GROUP (49 CFR 172.101)	II
BILL OF LADING DESCRIPTION: (49 CFR 172.202): (GASOLINE, LEADED) MARINE POLLUTANT	GASOLINE, 3, UN 1203, PG II
D.O.T. LABELS REQUIRED (49 CFR 172.101):	FLAMMABLE LIQUID (for water transport add: MARINE POLLUTANT mark)
D.O.T. PLACARDS REQUIRED (49 CFR 172.504):	FLAMMABLE LIQUID (for water transport add: MARINE POLLUTANT mark)

15 ---- Section 15 Regulatory Information ----

CERCLA/SARA Act (Chemical Spills):
The reportable quantity of this material is 333 pounds based on the component with the lowest reportable quantity (RQ) by volume percent in the mixture.

SARA Title III Information:
Listed below are the hazard categories for the Superfund Amendments and Reauthorization Act (SARA) Section 311/312 (40 CFR 370):
Immediate Hazard: X Delayed Hazard: X Fire Hazard: X Pressure Hazard: __ Reactivity Hazard: __

The product contains the following toxic chemical(s) subject to the reporting requirements of the Superfund Amendments and Reauthorization Act (SARA) Section 313 (40 CFR 372):

Component:	CAS Number:	Maximum %:
Benzene	71-43-2	3.00
Toluene	108-88-3	4.00

reduce exposure below permissible limits, or if irritation is experienced, NIOSH approved respiratory protection should be worn.

09 ---- Section 09 Physical and Chemical Properties ----

Boiling Point: 26.7-226.7 C (80 - 440 F)
Specific Gravity: 0.72 - 0.74 @ 60 deg. F
Melting Point: NA
% Volatile: 100 at 437 deg. F
Vapor Pressure: 760 mm HG @ 100 deg. F
Evaporation Rate (water=1): >1
Vapor Density: 1.2 (air=1)
Viscosity: ND
pH: ND
Appearance / Odor: Clear to amber liquid with a strong hydrocarbon odor.

10 ---- Section 10 Stability and Reactivity ----

Reactivity: STABLE

Decomposition Products:
Burning material will emit irritating and toxic substances. Combustion may produce CO, CO2 and reactive hydrocarbons.

11 ---- Section 11 Toxicological Information ----

Ingestion:
MODERATELY TOXIC. Human oral LDLo = approx. 10-30 gms. Aspiration into lungs may cause pneumonitis. May cause gastrointestinal disturbances. Symptoms may include irritation, nausea, vomiting and diarrhea. May cause harmful central nervous system effects including excitation, euphoria, headache, dizziness, drowsiness, blurred vision, fatigue, tremors, convulsions, loss of consciousness, coma, respiratory arrest and death.

Skin:
PRACTICALLY NON-TOXIC. Human dermal LD50 = >5 ml/kg. SLIGHTLY IRRITATING. Repeated or prolonged contact may result in dermatitis and possible secondary infection. High pressure skin injections are SERIOUS MEDICAL EMERGENCIES. Injections may show no serious symptoms at first but require IMMEDIATE MEDICAL ATTENTION to treat possible serious delayed tissue damage.

Eye:
May cause slight to moderate transient irritation.

Inhalation:
May cause respiratory tract irritation. Central nervous systems effects are similar to those listed under "Ingestion" section. May also cause anemia and irregular heart rhythm. Repeated or prolonged exposures may cause behavioral changes.

Special Toxic Effects:
may cause liver and kidney damage based on tests with laboratory animals. A similar product has been found to be carcinogenic to laboratory animals when given by inhalation. Laboratory mutagenicity studies have had conflicting results.

IARC has determined that there is limited evidence for the carcinogenicity of gasoline in experimental animals. An additional determination was made by IARC that there is inadequate evidence for the carcinogenicity of gasoline in humans. (IARC Class --2B).

Warning: The use of hydrocarbon fuel in an area without adequate ventilation may result in hazardous levels of combustion products and/ or dangerously low oxygen levels. IARC has determined that gasoline engine exhaust is possibly carcinogenic to humans. (IARC Class -- 2B).

Xylene	1330-20-7	3.00
1,2,4-Trimethylbenzene	95-63-6	3.00
Ethylbenzene	100-41-4	1.00
Cyclohexane	110-82-7	1.00

Additional Environmental Regulation Information:
This material contains a substance listed as a hazardous air pollutant under U.S. Federal regulations. See 40 CFR Part 61 for restrictions which may apply to its use.

This material contains a mixture of substances, some of which are listed as toxic pollutants in 40 CFR 122.21, Appendix D, Tables II/III/V. Any unusual introduction of this product into the facility's process streams, storm water and/or wastewater could result in the violation of U.S. Federal law. Facilities must notify the USEPA as soon as they know, or have reason to believe, that any activity has occurred, or will occur which would result in discharge of a toxic pollutant which is not regulated in the facility's NPDES permit. Notification levels are described in 40 CFR 122.42(a)(1) and (2). Refer to spill section of this MSDS for additional regulatory requirements.

There may be additional specific regulations at the local, regional, or state level that pertain to this material.

This product contains ingredient(s) known to the State of California to cause cancer, birth defects or other reproductive harm. Contains benzene. Consult OSHA standard 1910.1028. Initial air monitoring should be conducted to determine if exposures are above the 0.5 ppm action level or the 1 ppm PEL. If permissible levels are exceeded, OSHA requirements apply for training, medical surveillance, personal protective equipment, regulated areas, and other benzene safety measures.

The following Canadian Workplace Hazardous Materials Information System (WHMIS) categories apply to this product:

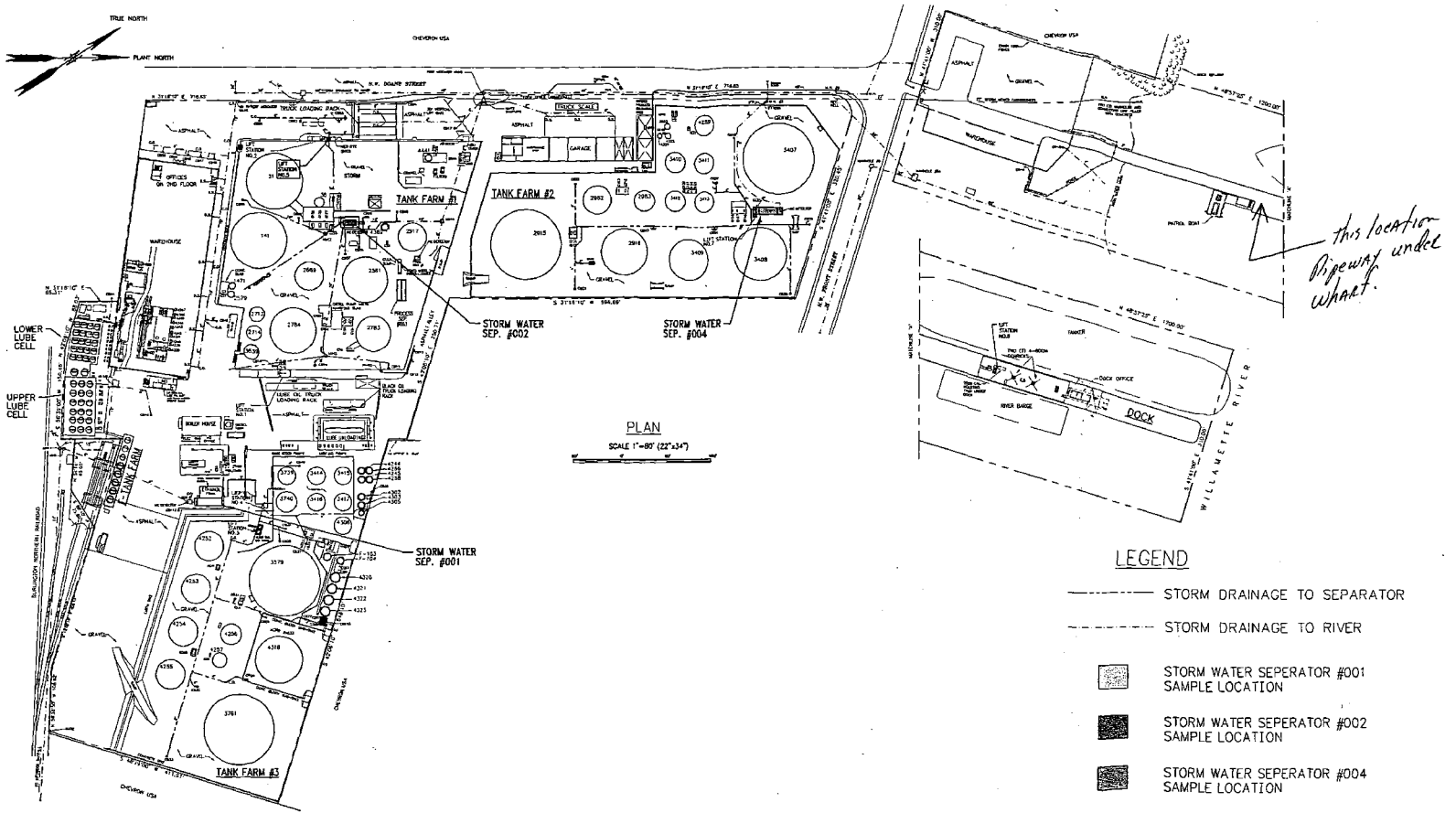
Compressed Gas__ Flammable/Combustible X Oxidizer__ Acutely Toxic __
Other Toxic Effects X Biohazardous__ Corrosive__ Dangerously Reactive__

16 ---- Section 16 Other Information ----

Completed By: Tosco Northwest Company Industrial Hygiene Section

NOTICE:
The information in this MSDS is believed to be correct as of the above date issued. However, no warranty or representation, express or implied, is made as to the accuracy or completeness of the data and safety information herein, nor is any authorization given or implied to practice any patented invention without a license. In addition, no responsibility can be assumed by vendor for any damage or injury resulting from abnormal use, from any failure to adhere to recommended practices, or from any hazards inherent in the nature of the product.

mg/M3 = Milligrams / Cubic Meter of Air
NA = Not Applicable
ND = No Data
PEL = Permissible Exposure Limit
ppm = Parts per Million
TLV = Threshold Limit Value



DRAWING NO.	REFERENCE DRAWINGS	REV. NO.	DATE	REVISED	DRAWN BY	CKD. BY
0608-C-7020	DOCK FACILITIES GENERAL ARRANGEMENT	A	03/02/98	UPDATED FOR SWPCP	DAB	SM
0608-C-7021	TANK FARM NO.1 GENERAL ARRANGMENT					
0608-C-7022	TANK FARM NO.2 GENERAL ARRANGEMENT					
0608-C-7023	TANK FARM NO.3 GENERAL ARRANGEMENT					

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Tosco Corporation Company
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DRAWN BY	D.A.BYNUM
CHKD BY	SM
APPD BY	SM
SCALE	AS SHOWN
DATE	03/02/98

PORTLAND TERMINAL
PORTLAND, OREGON
FIGURE 8-1
FACILITY SAMPLE LOCATIONS

DRAWING NO.	SHEET	REV
0608-C-7011	1 OF 1	A

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February 9, 1999

To: Kelly Kline

From: Pete Geiger
Tom Angus

Subject: Eco Risk Information, Feburary 11, 1999 Willbridge Meeting

The following is a summary of the important points for this week's Willbridge meeting.

Threatened and Endangered Species. Updated threatened and endangered species information was requested from the Oregon Natural Heritage Program and U.S. Fish and Wildlife Service. Angie Hernandez of the U.S. Fish and Wildlife Service stated that they only respond to information requests when a federal agency is involved in a project. The Oregon Natural Heritage Program had only one record within a 2-mile radius around the facility. This record was for the bristly sedge, with one reported occurrence more than one hundred years ago. The Oregon Natural Heritage Program does not have information on aquatic environments, but did provide a list of salmonids from the National Marine Fisheries Service which are expected to use the Willamette River as a migration route. E & E is contacting the National Marine Fisheries Service to request more information.

DEQ Sediment Guidance. E & E spoke to two DEQ risk assessors, Bruce Stirling and Bruce Hope, about DEQ's Contaminated Sediment Management Strategy.

Bruce Stirling stated that he would be handling the review of the human health risk assessment for Willbridge. Bruce Hope is handling all ecological issues related to sediment, including the ecological risk assessment of the Willbridge Facility. He referred me to Bruce Hope for the current state of DEQ Sediment Guidance.

Bruce Hope stated that the Contaminated Sediment Management Strategy has been replaced by the Portland Harbor Study. DEQ does not have any documents pertaining to this that are currently available. A draft of the Portland Harbor Study is due out in April. Bruce Hope stated that DEQ does not currently endorse any sediment benchmarks in the freshwater environment. Instead of comparing sediment concentrations to benchmarks, any site on a river is going to have to perform toxicity testing on sediment samples above, below, and adjacent to the site. This is in direct contrast to the approved workplan that we have for Willbridge. The DEQ-approved workplan states that we will compare sediment concentrations to benchmarks.

Initial Review of the Sediment and Surface Water Data for the Willamette River. Last week, E & E received the sediment and surface water data for the Willamette River. This data is currently being validated by an E & E chemist. E & E has performed an initial review of the data for ecological risks. This review is preliminary, and intended to provide only an indication of the potential chemicals of concern for ecological risk.

Chevron:

- There were no exceedences of surface water or sediment benchmarks for Willamette River samples.
- River front samples exceeded sediment screening benchmarks for phenanthrene and surface water screening benchmarks for copper, bis(2-ethylhexyl)phthalate, and ethylbenzene.

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GATX:

- Willamette River samples exceeded sediment screening benchmarks for cadmium and 4,4-DDD and surface water screening benchmarks for barium and lead.
- River front samples exceeded sediment screening benchmarks for cadmium and surface water benchmarks for arsenic, chromium, copper, lead, mercury, zinc, and bis(2-ethylhexyl)phthalate.

TOSCO:

- Willamette River samples exceeded sediment screening benchmarks for cadmium and surface water screening benchmarks for barium.
- River front sediment samples did not exceed any screening benchmarks. River front surface water samples exceeded the screening benchmarks for bis(2-ethylhexyl)phthalate.

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PORTLAND TERMINAL/WILDRIDGE GROUP MTG 2/11/99

PEG – VARIOUS GERALD O'REGAN, ERIC CONARD

EQE-PATILTON "

HUMAN HEALTH RISK – A FEW HITS AT GATX MAY EXCEED CRITERIA
– INDUSTRIAL WELLS CHEVRON ASPHALT & SCHNITZER COULD IMPACT ASSESSMENT

HOT SPOTS – MAY NOT ALWAYS REQUIRE TREATMENT → FEASIBILITY & COST
– SPH IS ALWAYS A HOT SPOT
– CONDITIONAL HOT SPOTS UNTIL FS

SUMMIT/BRISTOL

- CAN INSTALL VARIOUS PROBES IN WELLS TO CONTINUOUSLY MONITOR VARIOUS PARAMETERS INCLUDING TPH
- RIVER FLUCTUATIONAL WAS 9.45 FT
- GOOD CORRELATION BETWEEN RIVER LEVEL & BEACH PIEZOMETER EXCEPT AT LOWER LEVELS WHERE GROUNDWATER APPEARS TO DRAIN TO RIVER

LOCALITY

BENZENE – RELATIVELY HIGH IN PROBE NEAR RIVER & LOW LEVELS ALONG DOANE BETWEEN JOSCO & McCOLL – COULD BE IMPACTING McCOLL
– MAY NEED TO INSTALL PROBES ON McCOLL PROPERTY

SCHEDULE

NEED TO GET LEGAL REVIEW OF LETTERS TO SEND OUT

COP0014264

Phase II Environmental Assessment Report

Tosco Terminals PORTLAND TERMINAL
Volume 1: Investigation Methods and Data Summary

Prepared by:

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Seattle, Washington 98134

and

1250 E. 223rd Street, Suite #114
Carson, California 90745

ThermoRetec Project No.: 3-3333

Prepared for:

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Avon Refinery
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Martinez, California 94553

February 17, 1999

Phase II Environmental Assessment Report

Tosco Terminals
Volume 1: Investigation Methods and Data Summary

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Prepared by:

ThermoRetec Staff

Technically Reviewed by:

Dan Baker, Senior Project Manager
R.G. No. 4651

February 17, 1999

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1 Investigation Methods

1.1 Introduction

1.1.1 Purpose

On behalf of Tosco Distribution Company (Tosco), ThermoRetec Consulting Corporation (ThermoRetec; formerly Remediation Technologies, Inc. [RETEC]) and others conducted assessment activities at 17 terminal facilities from September to October 1997.

On March 31, 1997, Tosco completed the purchase of the following refinery, petroleum terminals, listed by state, from Unocal:

- Alaska
  - Ketchikan Terminal - Ketchikan
- Washington
  - Tacoma Terminal - Tacoma
- Oregon
  - Portland Terminal - Portland
  - Coos Bay Terminal - Coos Bay
- California
  - Eureka Terminal - Eureka
  - Sacramento Terminal - Sacramento
  - Richmond Terminal - Richmond
  - Center Street Terminal - Los Angeles
  - Colton Terminal - Bloomington
  - Los Angeles East Terminal - Los Angeles
  - Los Angeles West Lube Oil Terminal - Los Angeles
  - Torrance Tank Farm - Torrance
- Arizona
  - Phoenix Terminal - Phoenix
- Georgia
  - Savannah Terminal - Savannah

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- Hawaii
  - Honolulu Terminal - Honolulu
  - Hilo Terminal - Hilo
  - Kawaihae Terminal - Kawaihae

The investigations and assessments of these facilities, which are summarized in this report, were an essential part of an environmental due diligence program performed on behalf of Tosco. The purpose of the data compilation and analyses was to fill data gaps, as necessary, to establish baseline environmental conditions of the soils and groundwater for each facility at the time of the property purchase. The baseline investigation followed a similar methodology for each of the facilities listed above.

1.1.2 Background

A review of existing data from environmental studies and other documents in Unocal files was initiated by RETEC in January 1997. Files that were inspected included underground storage tank removal reports, spill reports, regulatory agency documents, consultant reports, and historical (Sanborn) maps. Facility personnel were interviewed to help identify and clarify written reports, and to expound upon facility historical facts. Tosco contractors, tasked with aerial photograph interpretation, were also consulted to obtain pertinent historical information. In the course of the initial interview, the facilities were toured to gain first-hand information regarding facility conditions and to identify known and/or potential release sources.

Following the review of accessible environmental documents and data, Phase II field investigations were conducted by RETEC and others in September and early October 1997 to fill data gaps identified during the initial assessment. The rationale for the number and locations of samples was dictated by existing data gaps and the need to specifically investigate typical hydrocarbon release pathways (e.g., subsurface piping, vessels or tanks; water draws for aboveground storage tanks; locations of wastewater discharge or collection; and key facility process units involving product handling).

1.1.3 Document Organization

Two volumes comprise this report. Volume 1 contains two main text sections, complete with data and documentation used to support the findings of the Phase II Investigation:

- Following this introduction, Section 1.2, Field Investigation Methods, presents a comprehensive description of all field methods and

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procedures followed during the execution of the Phase II Investigation program.

- Section 2, Terminal Data Summary, is subdivided according to facility. Each subsection provides a map and tables which present facility-specific field observations and analytical laboratory results generated during the Phase II Investigation, and a brief discussion of these results. Photographs with captions illustrating current conditions of selected facility areas of concern, and boring logs from the field sampling event are included at the conclusion of most subsections of Section 2.

Volume II provides copies of the original analytical laboratory reports for each facility, including complete analytical results and supporting Quality Assurance/Quality Control (QA/QC) data.

1.2 Field Investigation Methods

Field investigations of the 17 former Unocal terminals were performed by one of three firms. RETEC investigated 13 terminals located in Washington, Oregon, California, Arizona, and Georgia. West Central Environmental Consultants conducted the field investigation in the Alaska terminal, and Walker Consultants, Ltd. conducted the field investigations in the Hawaii terminals.

1.2.1 Investigation Overview

Tosco/RETEC selected sampling and analytical methods with the primary goal of obtaining representative analytical results that could be used to identify chemical constituents in the environment. In the discussion which follows, the various methods used during the investigation of the former Unocal facilities are described.

Safety of field personnel and of facility assets and/or operations was a prime consideration during the selection of field methods. To prevent potential damage to subsurface lines with uncertain routing, potential sample locations were field-checked against available facility maps showing below ground utilities and were adjusted, as necessary, based on input from operations personnel. The appropriate local or state "One-Call" responders were contacted, except in Hawaii, where "One-Call" responders were not available. Arrangements were made to meet utility representatives to locate utilities and subsurface services in an effort to clear all off-site and some on-site sample locations. In addition, hand augers were used to clear most on-site subsurface sampling locations prior to implementing any mechanized drilling procedures.

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Hand augers were the sampling tool of choice to obtain samples in areas with space or access limitations, or where shallow groundwater was expected to be present. At some facilities, the presence of gravel, cobbles, or buried construction debris (fill material) prevented completion of borings at targeted locations or to targeted depths, and alternative locations were selected, if possible, to obtain needed samples. Direct push (soil probe) soil sampling was the method of choice where deep soil samples, soil vapor samples, or *in-situ* groundwater samples were needed. Hollow-stem auger (HSA) drilling equipment was used where known soil conditions prevented the use of direct push probes. Mechanized drilling equipment was not used at facilities underlain by shallow bedrock. Soil vapor sampling was conducted only where the water table was greater than 6 feet below ground surface (bgs).

A complete list of sampling methods utilized at the facilities during the Phase II investigation, and the respective abbreviations, is presented in Table 1-1. These abbreviations used to identify the sampling methods were included within the sample identification strings for most facilities.

Table 1-1 Sampling Methods for Phase II Investigation

Sampling Method/Sample Media	Sample Method Abbreviation
Surface soil	SS/SD
Hand auger soil	HA
Hollow-stem auger soil	HS
Direct push soil	GP/SP
Direct push soil gas	SG/SV
Direct push free product	FP
Direct push groundwater	GW
Monitoring well groundwater	GW/MW
Surface water	SW
Dry well	DW

A list of the site abbreviations included in most sample identification strings is presented in Table 1-2.

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Table 1-2 Site Abbreviations for Sample Identification

Site ID	Abbreviation	Site ID	Abbreviation
Tacoma, Washington	TTAC	Colton, California	TCOL
Portland, Oregon	TPOR	Los Angeles East Terminal, California	TLATE
Coos Bay, Oregon	TCBY	Los Angeles West Lube Oil Terminal, California	TLATW
Eureka, California	TEUR	Torrance, California	TTOR
Sacramento, California	TSAC	Phoenix, Arizona	TPHX
Richmond, California	TRIC	Savannah, Georgia	SAV
Center Street, California	TCST		

NOTE:

Samples were labeled by identification strings in the following manner: Site abbreviation - Sample Method/Media - Location Number - Sample Depth. For example, TPHX-HA-1-4 represents Phoenix hand auger soil sample number 1, collected from a depth of 4 feet below grade. Site abbreviations were not used at the Ketchikan and three Hawaii terminals. This sample labeling procedure was not used at the Ketchikan, Savannah, and Hawaii terminals.

1.2.2 Field Observations and Sample Screening

Subsurface soil samples were collected from the ground surface to the water table (locations with deep groundwater were sampled to a maximum of approximately 30 feet below grade). Shallow soils were continuously sampled with hand augering equipment. Mechanized sampling was typically initiated 5 to 6 feet below grade. Discrete samples were collected in 18-, 24- or 36-inch samplers in conjunction with HSA and soil probe equipment. All soil samples recovered were examined by a qualified geologist. Field properties of the samples (i.e., color, texture, degree of sorting, degree of compaction or consolidation, and moisture content) were described according to the Unified Soil Classification System (USCS), and were recorded in a field book or on a boring log sheet. The location of sample collection was measured relative to facility structures and recorded in a field logbook or sample map.

The sample from each boring exhibiting the greatest evidence of contamination (i.e., elevated photoionization detector [PID] readings, liquid hydrocarbon, staining, odor) was selected for laboratory analysis. If there was similar evidence of contamination over a depth interval, the shallower sample was selected. In the absence of definitive field evidence of contamination, the sample just above the water table or at the bottom of the boring was selected.

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Samples intended for laboratory analysis were trimmed, split to provide both an analytical and headspace sample, and placed in appropriate containers. Samples identified for submittal to the laboratory were stored in an ice-filled cooler while in the field.

To evaluate the presence of hydrocarbons in samples from the borings, soil sample splits from each sampled interval were isolated in plastic Ziplock™ bags and allowed to equilibrate. The concentration of volatile organic compounds (VOCs) within the headspace of the bags was screened using a pre-calibrated PID. This screening provided a means to select discrete samples for laboratory analysis, as discussed above. The PID headspace readings were recorded in the field book or boring log.

1.2.3 Soil Sampling Methods

1.2.3.1 Surface Soil and Sediment

Samples of near surface soils were collected from depths ranging from 0 to 2 feet below grade. Sediment samples were collected from 0 to 6 inches below the water/sediment interface. Samples were collected using a thin-walled sample sleeve, a hand auger, a small garden trowel, or a stainless steel spoon. While using the sample sleeve, one end was covered with Teflon™ and capped, and the open end was either driven into the soil or used as a scoop. For the other sampling techniques, soil was placed directly from the auger bucket or the garden trowel into a clean laboratory-supplied jar. Soil was packed into containers to minimize headspace, and tightly sealed with lids. Care was taken to avoid vegetation or other debris in samples.

1.2.3.2 Hand Auger

Hand auger sample collection involved use of a stainless steel auger bucket; augering was augmented with a posthole digger or other digging tools, as necessary. Upon retrieving the hand auger from the borehole, the collected soil was examined and slough was discarded. As the bucket was emptied, a representative soil sample was collected for field screening and laboratory analysis. Hand auger borings were backfilled with soil cuttings and compacted upon completion of sampling.

1.2.3.3 Direct Push/Soil Probe

At most facilities, soil sampling below appropriate hand auger depth was performed with a truck-mounted direct push sampling system (also known as a soil probe). The system is hydraulically-driven, and relies on the truck weight to advance the drilling string to sampling depths less than 30 feet below grade.

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Similarly, samples of sediment in dry wells (surface water infiltration wells) were collected using a direct push sampler which was driven by an electrically-operated, hand-held percussion hammer.

The direct push sample barrel tool was driven to the top of the desired sample depth. The sample tool tip, which prevented any soils from entering the sampler down to this depth, was then mechanically removed and the sample tool was driven through the desired sample interval. Soil samples in the tool were collected by one of the following methods:

- An acetate liner containing the soil sample was removed from the tool, or
- An 18-, 24-, or 36-inch split-barrel sampler was attached to the rod and driven through the sample interval. Upon retrieval, the sampler was removed and split open to access the soil sample.

Deep probe holes and those potentially penetrating confining layers were backfilled with hydrated bentonite. Shallow probe holes and the upper portion of deep probe holes were backfilled with soil cuttings and compacted.

1.2.3.4 Hollow-Stem Auger

Use of an HSA drill rig allowed for deeper penetration into the subsurface and recovery of a discrete volume of sample, particularly in areas reported to contain significant gravel or cobble deposits. Soil samples were collected with a hammer-driven, 18-inch split spoon sampler every 5 feet. Borings completed with HSA methods were backfilled with soil cuttings and compacted.

1.2.4 Soil Gas Sampling Method

At selected facilities, soil gas samples were collected using the same sampling rods that were utilized for direct push soil sampling. Soil vapor sampling typically consisted of:

- Sampling soil to desired depth,
- Adding a retractable tip to the rods,
- Pushing rods to desired depth,
- Pulling up the rods to open the retractable tip,

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- Inserting sampling tubing to the open interval,
- Purging the tubing and extracting the sample with a syringe, and
- Filling a Tedlar™ bag or evacuated glass ampule with representative gases from the formation.

1.2.5 Groundwater Sampling Methods

Groundwater sampling was completed where records of previous groundwater sampling results were inadequate or incomplete. Samples were collected either by direct push methods or from existing monitoring wells using conventional methods.

Samples were collected in 40-ml volatile organic analysis (VOA) vials with Teflon-lined screw caps and 1-liter amber bottles.

1.2.5.1 Direct Push Method

The use of direct push sampling equipment was one method used to collect groundwater samples. The direct push sampling unit consisted of a retractable rod tip with an attached screen driven ahead of hollow, slotted steel probe rods.

Groundwater samples were collected through the slotted hollow probe rods or temporary PVC screen. Temporary PVC screen was inserted into probe holes in areas of slow groundwater recharge. Samples were collected using a peristaltic pump, based on the depth to groundwater and transmissivity of the water table zone, by inserting dedicated tubing into the probe rods or PVC screen. Samples were collected in 40-ml VOA vials with Teflon-lined screw caps and 1-liter amber bottles. The probe holes were backfilled with soil cuttings and compacted upon completion of sampling.

1.2.5.2 Monitoring Well Method

Prior to sample acquisition from existing monitoring wells, the wells were purged. The well purging process began by determining the volume of standing groundwater by measuring the depth to water and the depth to bottom of each well. Water level measurements were made using a battery-powered, depth-to-water meter. The meter was thoroughly decontaminated using the method described in Section 1.2.9 prior to use in each well. After completion of these measurements, the volume of standing water was determined in each well. Monitoring wells were then purged using a disposable bailer. Wells were purged until a minimum of three casing volumes were removed. All purge water was managed for on-site disposal utilizing site oil/water separator facilities.

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Samples were collected immediately following the completion of purging using 1¼-inch diameter, bottom-loading, polyethylene bailers to collect grab groundwater samples for transfer into the proper sample container. One bailer was dedicated to each monitoring well. New polypropylene line was used to raise and lower the bailers. The bailer was lowered to the screened interval for collection of the sample.

1.2.6 Surface Water Sampling Method

A surface water sample was collected from the Savannah Terminal. Surface water sampling was collected from immediately below the water surface of a drainage ditch with a disposable polyethylene bailer. The surface water sample was collected where there was no existing evidence of spills, seeps, or other impacts. The sample location and general water quality were documented in field notes.

1.2.7 Sample Handling Procedures

The following procedures were used to assure quality control in the collection of all the samples:

- All personnel participating in the sampling activities had training and experience in proper sampling procedures and were briefed on the objectives and types of documentation necessary for the particular sampling activity.

- Record keeping for the sampling activities involved collection of notes in dedicated field logbooks or on daily activity forms.

- Chain-of-custody forms were maintained for all samples collected and were included as part of the laboratory data package. All original forms, data, and other documentation were placed in the project files.

1.2.7.1 Sample Collection and Preservation

Immediately after collection, samples that were not collected in sample sleeves were transferred to properly labeled sample bottles or jars containing the necessary preservatives. The glass sample containers were supplied by the analytical laboratory, and were prepared by the laboratory with the necessary chemical preservatives (trace-analysis grade) according to EPA-accepted QA/QC protocol. Samples collected in thin-walled sample sleeves were not transferred to bottles or jars. Instead, both ends of the sleeve were covered with Teflon™ sheets and capped for shipment to the laboratory.

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Samples were placed in the appropriate containers at the time of sample collection and were placed on ice while in the field until they were transported to the analytical laboratory. Proper chain-of-custody control and documentation were maintained.

1.2.7.2 Sample Identification

Custody of the sample bottles was maintained by the field personnel. A self-adhesive sample label was affixed to each container before sample collection. At a minimum, the sample label contained the following information:

- Client - Job Name (Tosco)
- Sample identification - location and depth of sampling
- Date and time collected
- Sampler's initials
- Testing required
- Preservatives added

1.2.7.3 Sample Transportation and Chain-of-Custody

Immediately after sample collection, each sample bottle was sealed in an individual plastic bag. Samples were placed immediately into an insulated, ice-filled cooler for chilled transport to the laboratory. The chain-of-custody record, completed at the time of sample collection, accompanied the samples and was enclosed in a waterproof plastic bag inside the cooler for transport to the laboratory.

Each cooler contained sufficient ice and/or ice packs to ensure that proper temperature was maintained and was packed in a manner to prevent damage to sample containers during shipment. The field personnel sealed each sample cooler with an initialed custody seal. Coolers were transported to the laboratory by laboratory courier, Federal Express, or hand delivered by field personnel.

1.2.8 Laboratory Analytical Program

The analytical program for Phase II sampling was intended to be comprehensive in its ability to detect a variety of constituents typically associated with bulk petroleum terminals, while maintaining flexibility to include additional analyses based on knowledge of site-specific operational history. Total petroleum hydrocarbons (TPH) analysis (by EPA Method 8015-modified or state-specific equivalent) was selected as an indicator analysis to measure gross petroleum hydrocarbons in soil, sediment, water (surface and groundwater) and/or soil vapor. The following TPH fractions were quantified:

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- Gasoline-range petroleum hydrocarbons (TPH-G)
- Diesel-range petroleum hydrocarbons (TPH-D)
- Heavy oil-range petroleum hydrocarbons (TPH-HO)
- Diesel extended-range petroleum hydrocarbons (TPH-DX)

Diesel extended encompasses the TPH-D and TPH-HO fractions. For soil, sediment, groundwater and surface water, TPH-G, TPH-D and TPH-HO, or TPH-G and TPH-DX, were quantified. Soil gas samples were only analyzed for TPH-G. State-specific methods were used, when available. The specific methods and carbon ranges for the TPH fractions used for each facility are listed in the subsections of this report.

Other laboratory analyses were conducted to evaluate those chemicals which could be present at the facility and to control risk and/or the potential for cleanup at individual sites. These parameters included volatile organic compounds (VOCs) in soil and water, and polychlorinated biphenyls (PCBs) in soil. The specific method for analysis of VOCs was selected on a site-specific basis, depending on process knowledge for the site. For those sites where chlorinated or halogenated hydrocarbons were of potential concern, EPA Method 8260 was used for VOC analysis or EPA Method 8010 was used for halogenated volatile organics (HVO) analysis. Otherwise, EPA Method 8020 or 8021 was specified for analysis of benzene, toluene, ethylbenzene, and total xylenes (BTEX) and methyl tert-butyl ether (MTBE). Because EPA Method 8020/8021 does not include mass spectroscopy confirmation of individual compounds, EPA Method 8260 was used for confirmation of positive MTBE results. Confirmation was performed for the sample with the highest MTBE concentration (measured by EPA Method 8020) at each site, or one in every six samples for sites with more than six samples of any one media (water, soil, sediment, or soil vapor).

EPA Method 8080 was used for analysis of PCBs in soils for those sites where site history (e.g., the presence of transformers) indicated PCBs could be of potential concern.

The analytical program was coordinated with the various laboratories to ensure consistent reporting. However, due to sample dilution and laboratory capability, detection limits may vary from sample to sample and site to site. Since state-specific TPH methods were used, when available, TPH results reflected different carbon ranges for different states. Standard laboratory QA/QC information was obtained and is included in the hard copy analytical reports. This will allow formal data validation in the future, if necessary. The electronic data deliverables obtained from most of the laboratories were verified against the hard copy

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laboratory reports. Otherwise, no additional data validation effort was performed beyond that conducted by the laboratories for this phase of work.

1.2.9 Quality Assurance and Quality Control (QA/QC)

Quality assurance and quality control procedures were incorporated into all aspects of the investigations. QA/QC procedures presented in the following sections include a brief discussion of general laboratory QA/QC, sampling QA/QC, and equipment decontamination.

1.2.9.1 Laboratory QA/QC

Established and accepted laboratory QA/QC procedures were followed during the analyses of samples collected during the Phase II investigation. QA/QC results are included with the complete laboratory reports (Volume 2).

1.2.9.2 Sampling QA/QC

Sampling QA/QC procedures were employed throughout all field activities of the Phase II investigation. Any deviation from planned sampling protocol was documented in the field logbook, along with justification for the change.

1.2.9.3 Documentation

Field logbooks or daily activity logs were maintained during the sampling activities and contained all pertinent information and field observations. This information included descriptions of particular sample locations and any factors which might have affected sampling procedures, such as prevailing weather and/or sampling conditions. While sampling methods and procedures established for this investigation were intended to be strictly adhered to, any deviations or modifications to this plan were documented in the field logbook or daily activity logs. The field notes remained with the field investigator during the Phase II investigation and were later transferred to the project files. Information from the field notes, together with the results of the field investigation, were used in the data interpretation.

1.2.9.4 Decontamination Procedures

To avoid the potential for cross-contamination between monitoring wells, soil borings, or surface water/sediment sampling locations, sampling and associated equipment were decontaminated prior to each use.

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Nondisposable equipment used in the soil sampling efforts (split spoon samplers, bucket augers, scoops, stainless steel spoons, and soil probe equipment) and in groundwater sampling (water level meter) were decontaminated according to the following procedure:

- Manual scrub with a nonphosphate soap solution
- Triple rinse with distilled water
- Air dry

Probe rods, auger flights, and auger bits were decontaminated by steam cleaning or pressure washing prior to initial use, between boring locations, and at the completion of the drilling activities.

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2 Terminal Data Summary

This section presents the Phase II investigation results for each of the individual terminals. Each facility is discussed in a separate subsection below, beginning with the facilities located geographically north and moving generally southward. Each subsection contains a brief discussion of facility operations and history, rationale for the sample locations and field methods used, a summary of site geology and hydrogeology based on the limited Phase II investigation, a discussion of analytical results based on field observations, and a description of photographs taken to document current conditions. Tables and maps summarizing the facility-specific field observations and analytical laboratory results are presented. Phase II boring logs and photographic logs are attached to most subsections.

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2.3 Portland Terminal

2.3.1 Overview

The physical address of the Portland Terminal is 5528 Doane Avenue, Portland, Oregon. The Portland Terminal was constructed in the early 1900s. Initially, the terminal consisted of Tank Farm No. 1, a warehouse, a garage, and a wharf. Tank Farm No. 2 and the boiler house were constructed in the late 1930s. From 1948 to 1951, the initial phases of Tank Farm No. 3 and a truck loading rack were completed. Tank Farm No. 3 was completed in the 1960s. An asphalt plant was constructed in 1968 between Tank Farm No. 3 and the boiler house, and operated until about 1975. In the mid-1970s a new warehouse was constructed primarily to house a lube blending and packaging facility.

Currently, the Portland Terminal consists of three major tank farms (Tank Farm Nos. 1, 2, and 3) and three smaller tank farms (Tank Farms 4, 5, and F) housing a total of 119 tanks. A number of product pumps are in operation at various locations within the facility. Four oil/water separators (two in Tank Farm No. 1, one in Tank Farm No. 2, and one in Tank Farm No. 3) treat stormwater drainage, and process water. South of Tank Farm No. 1 is the lube manufacturing and packaging warehouse. The lube oil for this operation is supplied from Tank Farm Nos. 4, 5, and F, as well as selected tanks within the other tank farms. Truck loading and unloading racks, a railcar loading and unloading area, a boiler house, six underground storage tanks (USTs), a maintenance building, and a dock area are currently also in operation at the Portland Terminal.

The scope of work included advancing 11 hand auger borings and 23 StrataProbe™ borings, collecting soil samples from all but one of the borings, and collecting soil gas samples from five of the StrataProbe™ borings. Site features and boring sampling locations are shown on Figure 2-3. Copies of the boring logs are included as Attachment 2.3A and the photographic log is included as Attachment 2.3B. A copy of the laboratory analytical report can be found in Volume 2.

2.3.2 Sample Location Selection

Soil sample locations were selected to investigate common release pathways in tank farms or other specific areas of concern. At the Portland Terminal, Tank Farm Nos. 1, 2, and 3, USTs 2, 3, 4, and 5 (USTs 4 and 5 are also referred to as the lab USTs), the four oil/water separators, the railcar loading area, and underground piping on the east side of N.W. Front Street were investigated. Thirty-four subsurface sample locations were identified, resulting in the collection

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of 34 discrete soil samples and five soil gas samples. Locations of all sampling points are illustrated on Figure 2-3.

Samples were collected using a combination of hand auger and soil probe sampling techniques. A hydraulically-driven Strata Probe™ rig, owned and operated by TEG of Tacoma, Washington, was used for soil probe sampling. A hand auger was used to collect samples in areas inaccessible to the soil probe rig.

Soil sample depths ranged from 2.8 feet below ground surface (bgs) to 19 feet bgs. In Tank Farm No. 3, depths were restricted by the presence of a silt and clay layer at 4 to 6 feet bgs, which may represent an aquitard. This layer was not breached during this investigation in order to prevent the potential spread of contaminants to an underlying water-bearing unit. All five of the soil gas samples were collected at approximately 12 feet bgs. Soil gas samples were only collected in Tank Farm No. 2, where aboveground storage tanks containing gasoline are located. Four of the soil gas samples were collected in conjunction with soil samples.

Groundwater sampling was not performed as part of this investigation for the following reasons:

- The investigation was focused on specific data gaps associated with potential sources. Specific sources are best evaluated by shallow soil or soil gas sampling, as groundwater may be impacted from upgradient releases.

- Groundwater impacts may be part of a regional plume affected by adjacent facilities.

- Groundwater investigations have already been performed near the Willamette River, which is the area of greatest concern for the Portland Terminal.

Given the history of petroleum products routinely handled at the Portland facility, soil samples were submitted for laboratory analysis for three fractions of TPH:

- Gasoline-range hydrocarbons (TPH-G) for a carbon range of C6 to C10 by Oregon DEQ Method TPH-G

- Diesel-range hydrocarbons (TPH-D) for a carbon range of C10 to C28 by Oregon DEQ Method TPH-D

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- Heavy oil-range hydrocarbons (TPH-HO) for a carbon range of C28 to C40 by Oregon DEQ Method TPH-D (modified)

Quantification of benzene, toluene, ethylbenzene, and total xylenes (BTEX) and methyl tert-butyl ether (MTBE) were determined by EPA Method 8020A in combination with TPH-G analysis. In addition, seven soil samples were analyzed for VOCs by EPA Method 8260A. Method 8260A analyses were performed either in areas were halogenated hydrocarbons may have been handled or when field screening (i.e., odors) indicated solvents may be present.

The five soil gas samples were analyzed for TPH-G by EPA Method 8015 and for BTEX and MTBE by method 8020A. Laboratory analysis of the Portland Terminal samples was completed by North Creek Analytical located in Portland, Oregon.

2.3.3 Summary of Site Geology and Hydrogeology

The Portland site is located within the Willamette River flood plain. The subsurface is comprised of an extensive sequence of sand, locally interbedded with layers of silt and sandy silt. Lenses of clayey silt and silty clay were observed at various depths in some locations.

The typical soil profile includes surficial fill, consisting of sand and gravel, from 1 to 3 feet bgs. At one location in Tank Farm No. 3, the surficial fill extended deeper than 3 feet, but the lower extent could not be determined due to refusal. Typically, surficial fill is underlain by a brown to dark brown or gray to black medium sand fill layer of variable thickness. The medium sand layer beneath the far northern end of the site, adjacent to the Willamette River, extends to greater than 20 feet bgs. This sand layer decreases in thickness across the site to the south. In four of the borings completed in Tank Farm No. 2, a silt layer was observed from 2 to 4 feet bgs. In the southern half of the terminal, silt and clay were encountered beneath the sand layer at approximately 4 to 13 feet bgs.

During this investigation, the water table was encountered as shallow as 3.5 feet on the southern end of the site and as deep as 19 feet on the northern end of the site. Shallow groundwater generally flows south to north across the site, towards the Willamette River.

2.3.4 Discussion of Analytical Results

Table 2.3-1 provides a summary of boring and sample information (borehole identification, targeted area of concern, and total depth), laboratory sample information (sample identification, sample matrix, and sample interval), and

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information regarding field evidence of contamination (PID headspace readings and field observations). Boring logs are included as Attachment 2.3A.

Analytical results were reported electronically to RETEC by the laboratory and are summarized by media. Tables 2.3-2 through 2.3-4 provide a summary of analytical results. Complete copies of the laboratory reports can be found in Volume 2.

Twenty-one of the 34 soil samples contained TPH-G, at concentrations ranging from 5.78 (GP-21) to 1,390 (GP-20) mg/kg. TPH-D was detected in 21 samples, with a maximum concentration of 21,500 mg/kg in sample GP-10. Many of the samples with the highest TPH-G and TPH-D concentrations were collected in Tank Farm No. 1. Nine of the 34 soil samples contained TPH-HO. The maximum TPH-HO concentration of 13,500 mg/kg in GP-3 was collected in Tank Farm No. 2 near Tank 2915.

Light nonaqueous-phase liquid (LNAPL) was observed in samples GP-22, HA-24, and GP-26. All three of these samples were collected from the north-northeastern end of Tank Farm No. 1.

BTEX constituents were detected in four of the 34 soil samples analyzed. Benzene and toluene were detected only in GP-4, at concentrations of 0.0777 and 0.201 mg/kg, respectively. The maximum total xylenes concentration of 0.832 mg/kg, and the maximum ethylbenzene concentration of 0.6 mg/kg were observed in sample HA-24. Other VOCs were only detected in one of the seven soil samples submitted for VOC analysis. Sample HA-2 contained n-butylbenzene, n-propylbenzene, and sec-butylbenzene at concentrations of 388, 180, and 219 μg/kg, respectively (Table 2.3-3).

Five soil gas samples were submitted for laboratory analysis. Results are summarized in Table 2.3-4. Four of the five soil gas samples collected in Tank Farm No. 2 contained detectable concentrations of TPH-G, BTEX and MTBE. TPH-G concentrations ranged from 3,010 (SG-1) to 26,800 (GP-7) mg/m^3. Benzene concentrations ranged from 30.3 (SG-1) to 1,530 (GP-7) mg/m^3. Sample GP-7 contained the highest concentrations of ethylbenzene, toluene, total xylenes, and MTBE (52.5, 700, 298, and 2,930 mg/m^3, respectively).

2.3.5 Photographic Documentation

As a final task to the Phase II fieldwork, current conditions at three facility areas of concern were photographed:

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- Tank Farm No. 1
- Tank Farm No. 2
- Tank Farm No. 3
- Process water separator area
- Loading rack area
- Tank Farm F
- Railcar loading area
- Upper lube cell
- Lower lube cell
- Dock area

Photographs and descriptions of these areas are included as Attachment 2.3B.

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Table 2.3-1 Summary of Borehole Observations and Laboratory Samples, Portland Terminal

Borehole ID	Areas of Concern	Total Depth (feet bgs)	Laboratory Sample			Field Evidence of Contamination	
			Identification	Matrix	Sample Interval (feet bgs)	PID Headspace Readings	Observations
SG-1	Tank Farm No. 2	12	TPOR-SG-1-12	Soil Gas	12	2.2 ppm @ 7' bgs 37 ppm @ 10.5' bgs	
HA-2	Tank Farm No. 2	12	TPOR-HA-2-11.5	Soil	11.5	0.6 ppm @ 4.5' bgs 140 ppm @ 11.5' bgs 47 ppm @ 12' bgs	
GP-3	Tank Farm No. 2	11.5	TPOR-GP-3-2.8 TPOR-SG-3-11.5	Soil Soil Gas	2–3 11.5	3,240 ppm @ 2.8' bgs 32 ppm @ 5.5' bgs 1.1 ppm @ 8' bgs	Stained soils from 2.5' to 3'
GP-4	Tank Farm No. 2	10	TPOR-GP-4-5	Soil	4.5–5.5	280 ppm @ 4.5' bgs 20 ppm @ 9' bgs	Strong petroleum odor from 4' to 5.5'
GP-5	Tank Farm No. 2	12	TPOR-GP-5-9 TPOR-SG-5-12	Soil Soil Gas	8.5–9.5 12	11 ppm @ 3' bgs 23.5 ppm @ 6' bgs 40.1 ppm @ 9' bgs	
GP-6	Tank Farm No. 2, Oil/Water Separator No. 4	12	TPOR-GP-6-7.5 TPOR-SG-6-12	Soil Soil Gas	7–8 12	15.7 ppm @ 7' bgs 9.7 ppm @ 9' bgs	Petroleum odor from 5' to 8'
GP-7	Tank Farm No. 2	12	TPOR-GP-7-7 TPOR-SG-7-12	Soil Soil Gas	7.5–8.5 12	233 ppm @ 7' bgs 170 ppm @ 10' bgs	Solvent-like odor from 5' to 11'
HA-8	Tank Farm No. 2	12	TPOR-HA-8-3.5	Soil	3.5	284 ppm @ 3.5' bgs 21 ppm @ 9' bgs	Petroleum odor from 3' to 12'

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Table 2.3-1 Summary of Borehole Observations and Laboratory Samples (Continued)

Borehole ID	Areas of Concern	Total Depth (feet bgs)	Laboratory Sample			Field Evidence of Contamination	
			Identification	Matrix	Sample Interval (feet bgs)	PID Headspace Readings	Observations
GP-9	Underground Piping	21	TPOR-GP-9-16	Soil	15.5–16.5	1.4 ppm @ 9' bgs 8.4 ppm @ 11' bgs 31 ppm @ 13' bgs 340 ppm @ 16' bgs 230 ppm @ 18' bgs 17 ppm @ 20' bgs	Petroleum odor from 14' to 21'
GP-10	Underground Piping	19	TPOR-GP-10-16	Soil	15.5–16.5	0.5 ppm @ 6.5' bgs 0.8 ppm @ 9' bgs 3.0 ppm @ 11' bgs 87 ppm @ 13' bgs 246 ppm @ 16' bgs 156 ppm @ 18' bgs	Petroleum odor from 12' to 19' Sheen at 17'
GP-11	Underground Piping	20	TPOR-GP-11-19	Soil	18.5–19.5	95.7 ppm @ 17' bgs 189 ppm @ 19' bgs	Petroleum odor and sheen from 15' to 20'
GP-12	Laboratory USTs	11	TPOR-GP-12-10	Soil	9.5–10.5		
HA-13	Railroad Car Loading Area	10	TPOR-HA-13-9	Soil	9		
HA-14	Railroad Car Loading Area	8.5	TPOR-HA-14-8	Soil	8	1.2 ppm @ 4' bgs 10 ppm @ 8' bgs	
HA-15	Railroad Car Loading Area	3.5	TPOR-HA-15-3	Soil	3	20 ppm @ 3' bgs	
HA-16	Railroad Car Loading Area	4	TPOR-HA-16-3.5	Soil	3.5		
HA-17	UST No. 3 and UST No. 2	5.5	TPOR-HA-17-5	Soil		1.8 ppm @ 5' bgs	
HA-18	Oil/Water Separator No. 1	6.5	TPOR-HA-18-6	Soil	6	38 ppm @ 6' bgs	

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Table 2.3-1 Summary of Borehole Observations and Laboratory Samples (Continued)

Borehole ID	Areas of Concern	Total Depth (feet bgs)	Laboratory Sample			Field Evidence of Contamination	
			Identification	Matrix	Sample Interval (feet bgs)	PID Headspace Readings	Observations
GP-19	Tank Farm No. 1, Oil/Water Separator No. 2	14	TPOR-GP-19-10	Soil	9.5–10.5	1.7 ppm @ 6.5' bgs 351 ppm @ 10' bgs 184 ppm @ 13' bgs	Petroleum odor from 8' to 14'
GP-20	Tank Farm No. 1	14	TPOR-GP-20-12	Soil	11.5–12.5	250 ppm @ 6.5' bgs 252 ppm @ 10' bgs 284 ppm @ 13' bgs	Slight petroleum odor from 5' to 14'
GP-21	Tank Farm No. 1A	13	TPOR-GP-21-11	Soil	10.5–11	0.4 ppm @ 6.5' bgs 1.2 ppm @ 11' bgs 1.2 ppm @ 13' bgs	
GP-22	Tank Farm No. 1	14	TPOR-GP-22-13	Soil	12.5–13.5	0.6 ppm @ 6.5' bgs 1.5 ppm @ 9.5' bgs 70 ppm @ 13' bgs	Petroleum odor and LNAPL encountered at 13'
GP-23	Tank Farm No. 1, Oil/Water Separator No. 3	11	TPOR-GP-23-7.5 TPOR-GP-23-10	Soil Soil	7–8 9.5–10	407 ppm @ 7.5' bgs 247 ppm @ 10' bgs	Petroleum odor from 5' to 11'
HA-24	Tank Farm No. 1	3	TPOR-HA-24-3	Soil	3	91 ppm @ 1.5' bgs 506 ppm @ 3' bgs	Strong petroleum odor, sheen, and LNAPL from 1.5' to 3'
GP-25	Tank Farm No. 1	14	TPOR-GP-25-12	Soil	11.5–12.5	0.6 ppm @ 6' bgs 1.5 ppm @ 12' bgs	
GP-26	Tank Farm No. 1	15	TPOR-GP-26-11	Soil	10.5–11.5	0.6 ppm @ 4.5' bgs 160 ppm @ 8' bgs 230 ppm @ 11' bgs 15 ppm @ 13.5' bgs	Petroleum odor and sheen from 9' to 15' LNAPL present from 9' to 12'

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Table 2.3-1 Summary of Borehole Observations and Laboratory Samples (Continued)

Borehole ID	Areas of Concern	Total Depth (feet bgs)	Laboratory Sample			Field Evidence of Contamination	
			Identification	Matrix	Sample Interval (feet bgs)	PID Headspace Readings	Observations
GP-27	Tank Farm No. 3	12	TPOR-GP-27-11	Soil	10.5–11.5	1.9 ppm @ 6.5' bgs 2.8 ppm @ 9' bgs 2.2 ppm @ 11' bgs	
GP-28	Tank Farm No. 3	6	TPOR-GP-28-5.5	Soil	5–6	246 ppm @ 5.5' bgs	Petroleum odor from 5' to 6'
GP-29	Tank Farm No. 3	7	TPOR-GP-29-5.5	Soil	5–6	2.2 ppm @ 5.5' bgs 2.2 ppm @ 6.5' bgs	
GP-30	Tank Farm No. 3	10	TPOR-GP-30-6	Soil	5.5–6.5	2.1 ppm @ 6' bgs 1.2 ppm @ 9' bgs	Slight petroleum odor from 5' to 10'
HA-31	Tank Farm No. 3	4	TPOR-HA-31-3	Soil	3	1.7 ppm @ 3' bgs	
GP-32	Tank Farm No. 3	7	TPOR-GP-32-6	Soil	5–7	87 ppm @ 5.5' bgs	Slight petroleum odor at 5.5'
GP-33	Tank Farm No. 3B	12	TPOR-GP-33-6	Soil	5.5-6.5	72 ppm @ 6' bgs 11.6 ppm @ 9' bgs 14.2 ppm @ 11' bgs	Slight petroleum odor from 5' to 10'
HA-34	Tank Farm No. 3B	12	TPOR-HA-34-9	Soil	9	9.6 ppm @ 9' bgs	

NOTES:

Background PID reading = 0 ppm.
bgs - below ground surface
LNAPL - Light nonaqueous-phase liquid

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Table 2.3-2 Soil Analytical Results, Portland Terminal

Sample Location:	GP-3	GP-4	GP-5	GP-6	GP-7	GP-9	GP-10	GP-11	GP-12	GP-19	GP-20	GP-21
Sample Depth (feet bgs):	2.8	5	8	7.5	7	16	18	19	10	10	12	11
Sample Date:	09/17/1997	09/17/1997	09/17/1997	10/10/1997	10/10/1997	09/19/1997	09/18/1997	09/19/1997	09/18/1997	09/18/1997	09/18/1997	09/18/1997
Sample ID:	TPOR-GP-3-2.8	TPOR-GP-4-5	TPOR-GP-5-8	TPOR-GP-6-7.5	TPOR-GP-7-7	TPOR-GP-9-16	TPOR-GP-10-18	TPOR-GP-11-19	TPOR-GP-12-10	TPOR-GP-19-10	TPOR-GP-20-12	TPOR-GP-21-11
Compound												
Oregon DEQ Method TPH-D												
Diesel-range Hydrocarbons (C10-C28)	5,430	106	< 25	< 25	< 25	1,450	21,500	3,110	< 25	13,400	17,300	69.0
Heavy Oil-range Hydrocarbons (C28-C40)	13,500	< 50	< 50	< 50	< 50	< 50	< 1,000	< 50	< 50	1,070	1,260	105
Oregon DEQ Method TPH-G/EPA Method 8020A												
Gasoline-range Hydrocarbons (C6-C10)	< 2	30.5	< 2	< 2	< 2	1,300	646	388	< 2	630	1,390	5.78
Benzene	< 0.05	0.0777	< 0.05	< 0.05	< 0.05	< 1	< 2.5	< 0.5	< 0.05	< 1	< 1	< 0.05
Ethylbenzene	< 0.05	0.127	< 0.05	< 0.05	< 0.05	< 1	< 2.5	< 0.5	< 0.05	< 1	< 1	< 0.05
Toluene	< 0.05	0.201	< 0.05	< 0.05	< 0.05	< 1	< 2.5	< 0.5	< 0.05	< 1	< 1	< 0.05
Xylenes (total)	< 0.05	0.132	< 0.05	< 0.05	< 0.05	< 1	< 2.5	< 0.5	< 0.05	< 1	3.36	< 0.05
Methyl tert-butyl ether (MTBE)	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 40	< 2.5	< 20	< 0.05	< 1	< 1	< 0.05

Sample Location:	GP-22	GP-23		GP-25	GP-26	GP-27	GP-28	GP-29	GP-30	GP-32	GP-33
Sample Depth (feet bgs):	13	7.5	10	12	11	11	5.5	5.5	6	6	6
Sample Date:	09/18/1997	09/18/1997	09/18/1997	09/18/1997	09/18/1997	09/19/1997	09/19/1997	09/19/1997	09/19/1997	09/19/1997	09/19/1997
Sample ID:	TPOR-GP-22-13	TPOR-GP-23-7.5	TPOR-GP-23-10	TPOR-GP-25-12	TPOR-GP-26-11	TPOR-GP-27-11	TPOR-GP-28-5.5	TPOR-GP-29-5.5	TPOR-GP-30-6	TPOR-GP-32-6	TPOR-GP-33-6
Compound											
Oregon DEQ Method TPH-D											
Diesel-range Hydrocarbons (C10-C28)	11,600	7,300	6,810	< 25	15,000	< 25	6,400	< 25	43.5	525	930
Heavy Oil-range Hydrocarbons (C28-C40)	6,690	< 500	< 1,000	< 50	1,450	< 50	< 500	< 50	< 50	< 50	86.0
Oregon DEQ Method TPH-G/EPA Method 8020A											
Gasoline-range Hydrocarbons (C6-C10)	198	1,300	965	18.7	731	< 2	258	< 2	24.5	75.5	43.3
Benzene	< 0.2	< 1	< 1	< 0.05	< 2.5	< 0.05	< 0.5	< 0.05	< 0.05	< 0.1	< 0.1
Ethylbenzene	< 0.2	< 1	< 1	< 0.05	< 2.5	< 0.05	< 0.5	< 0.05	< 0.05	< 0.1	< 0.1
Toluene	< 0.2	< 1	< 1	< 0.05	< 2.5	< 0.05	< 0.5	< 0.05	< 0.05	< 0.1	< 0.1
Xylenes (total)	< 0.2	< 1	< 1	< 0.05	< 2.5	< 0.05	< 0.5	< 0.05	< 0.05	< 0.1	< 0.1
Methyl tert-butyl ether (MTBE)	< 0.2	< 1	< 1	< 0.05	< 2.5	< 0.05	< 20	< 0.05	< 0.05	< 200	< 4

Sample Location:	HA-2	HA-8	HA-13	HA-14	HA-15	HA-16	HA-17	HA-18	HA-24	HA-31	HA-34
Sample Depth (feet bgs):	11.5	3.5	9	8	3	3.5	5	6	3	3	9
Sample Date:	09/17/1997	09/18/1997	09/27/1997	09/27/1997	09/27/1997	09/27/1997	09/19/1997	09/19/1997	09/18/1997	09/27/1997	09/19/1997
Sample ID:	TPOR-HA-2-11.5	TPOR-HA-8-3.5	TPOR-HA-13-9	TPOR-HA-14-8	TPOR-HA-15-3	TPOR-HA-16-3.5	TPOR-HA-17-5	TPOR-HA-18-6	TPOR-GP-24-3	TPOR-HA-31-3	TPOR-HA-34-9
Compound											
Oregon DEQ Method TPH-D											
Diesel-range Hydrocarbons (C10-C28)	156	56.0	< 25	< 25	< 25	< 25	< 25	3,700	2,040	< 25	63.0
Heavy Oil-range Hydrocarbons (C28-C40)	< 50	< 50	< 50	< 50	< 50	< 50	< 50	57.5	1,330	< 50	< 50
Oregon DEQ Method TPH-G/EPA Method 8020A											
Gasoline-range Hydrocarbons (C6-C10)	169	75.8	< 2	< 2	< 2	< 2	< 2	154	473	< 2	17
Benzene	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.2	< 0.5	< 0.05	< 0.05
Ethylbenzene	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.2	0.6	< 0.05	< 0.05
Toluene	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.2	< 0.5	< 0.05	< 0.05
Xylenes (total)	< 0.1	0.138	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.2	0.832	< 0.05	< 0.05
Methyl tert-butyl ether (MTBE)	< 0.1	< 0.05	< 100	< 100	< 100	< 100	< 0.05	< 8	< 0.5	< 100	< 0.05

NOTE:
All values are in units of mg/kg.
bgs - below ground surface

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Table 2.3-3 Soil VOC Analytical Results, Portland Terminal

Sample Location:	GP-7	GP-12	HA-2	HA-13	HA-14	HA-15	HA-16
Sample Depth (feet bgs):	7	10	11.5	9	8	3	3.5
Sample Date:	10/10/1997	09/18/1997	09/17/1997	09/27/1997	09/27/1997	09/27/1997	09/27/1997
Sample ID:	TPOR-GP-7-7	TPOR-GP-12-10	TPOR-HA-2-11.5	TPOR-HA-13-9	TPOR-HA-14-8	TPOR-HA-15-3	TPOR-HA-16-3.5
Compound							
EPA Method 8260A							
1,1,1,2-Tetrachloroethane	< 50	< 50	< 50	< 0.2	< 0.2	< 0.2	< 0.2
1,1,1-Trichloroethane	< 50	< 50	< 50	< 0.2	< 0.2	< 0.2	< 0.2
1,1,2,2-Tetrachloroethane	< 50	< 50	< 50	< 0.2	< 0.2	< 0.2	< 0.2
1,1,2-Trichloroethane	< 50	< 50	< 50	< 0.2	< 0.2	< 0.2	< 0.2
1,1-Dichloroethane	< 50	< 50	< 50	< 0.2	< 0.2	< 0.2	< 0.2
1,1-Dichloroethene	< 50	< 50	< 50	< 0.2	< 0.2	< 0.2	< 0.2
1,1-Dichloropropene	< 50	< 50	< 50	< 0.2	< 0.2	< 0.2	< 0.2
1,2,3-Trichlorobenzene	< 50	< 50	< 50	< 0.2	< 0.2	< 0.2	< 0.2
1,2,3-Trichloropropane	< 250	< 250	< 50	< 0.2	< 0.2	< 0.2	< 0.2
1,2,4-Trichlorobenzene	< 50	< 50	< 50	< 0.2	< 0.2	< 0.2	< 0.2
1,2,4-Trimethylbenzene	< 50	< 50	< 50	< 0.2	< 0.2	< 0.2	< 0.2
1,2-Dibromo-3-chloropropane	< 250	< 250	< 250	< 1	< 1	< 1	< 1
1,2-Dibromoethane	< 50	< 50	< 50	< 0.2	< 0.2	< 0.2	< 0.2
1,2-Dichlorobenzene	< 50	< 50	< 50	< 0.2	< 0.2	< 0.2	< 0.2
1,2-Dichloroethane	< 50	< 50	< 50	< 0.2	< 0.2	< 0.2	< 0.2
1,2-Dichloropropane	< 50	< 50	< 50	< 0.2	< 0.2	< 0.2	< 0.2
1,3,5-Trimethylbenzene	< 50	< 50	< 50	< 0.2	< 0.2	< 0.2	< 0.2
1,3-Dichlorobenzene	< 50	< 50	< 50	< 0.2	< 0.2	< 0.2	< 0.2
1,3-Dichloropropane	< 50	< 50	< 50	< 0.2	< 0.2	< 0.2	< 0.2
1,4-Dichlorobenzene	< 50	< 50	< 50	< 0.2	< 0.2	< 0.2	< 0.2
2,2-Dichloropropane	< 50	< 50	< 50	< 0.2	< 0.2	< 0.2	< 0.2
2-Butanone	< 1,250	< 1,250	< 1,250	< 2	< 2	< 2	< 2
2-Chlorotoluene	< 50	< 50	< 50	< 0.2	< 0.2	< 0.2	< 0.2
2-Hexanone	< 250	< 250	< 250	< 2	< 2	< 2	< 2
4-Chlorotoluene	< 50	< 50	< 50	< 0.2	< 0.2	< 0.2	< 0.2
4-Methyl-2-pentanone	< 250	< 250	< 250	< 2	< 2	< 2	< 2
Acetone	< 1,250	< 1,250	< 1,250	< 2	< 2	< 2	< 2
Benzene	< 50	< 50	< 50	< 0.2	< 0.2	< 0.2	< 0.2
Bromobenzene	< 50	< 50	< 50	< 0.2	< 0.2	< 0.2	< 0.2
Bromochloromethane	< 50	< 50	< 50	< 0.2	< 0.2	< 0.2	< 0.2
Bromodichloromethane	< 50	< 50	< 50	< 0.2	< 0.2	< 0.2	< 0.2
Bromoform	< 100	< 100	< 100	< 0.2	< 0.2	< 0.2	< 0.2
Bromomethane	< 500	< 500	< 500	< 0.2	< 0.2	< 0.2	< 0.2
Carbon disulfide	NA	NA	NA	< 0.2	< 0.2	< 0.2	< 0.2
Carbon tetrachloride	< 50	< 50	< 50	< 0.2	< 0.2	< 0.2	< 0.2
Chlorobenzene	< 50	< 50	< 50	< 0.2	< 0.2	< 0.2	< 0.2
Chloroethane	< 500	< 500	< 100	< 0.2	< 0.2	< 0.2	< 0.2
Chloroform	< 50	< 50	< 50	< 0.2	< 0.2	< 0.2	< 0.2
Chloromethane	< 500	< 500	< 250	< 0.2	< 0.2	< 0.2	< 0.2
cis-1,2-Dichloroethene	< 50	< 50	< 50	< 0.2	< 0.2	< 0.2	< 0.2
cis-1,3-Dichloropropene	< 50	< 50	< 50	< 0.2	< 0.2	< 0.2	< 0.2
Dibromochloromethane	< 50	< 50	< 50	< 0.2	< 0.2	< 0.2	< 0.2
Dibromomethane	< 50	< 50	< 50	< 0.2	< 0.2	< 0.2	< 0.2
Dichlorodifluoromethane	< 500	< 500	< 100	< 0.2	< 0.2	< 0.2	< 0.2
Ethylbenzene	< 50	< 50	< 50	< 0.2	< 0.2	< 0.2	< 0.2
Hexachlorobutadiene	< 100	< 100	< 100	< 0.2	< 0.2	< 0.2	< 0.2
Isopropylbenzene	< 50	< 50	< 50	< 0.2	< 0.2	< 0.2	< 0.2
m,p-Xylene	< 50	< 50	< 50	< 0.2	< 0.2	< 0.2	< 0.2
Methylene chloride	< 500	< 500	< 500	< 1	< 1	< 1	< 1
Naphthalene	< 100	< 100	< 100	< 0.2	< 0.2	< 0.2	< 0.2
n-Butylbenzene	< 50	< 50	388	< 0.2	< 0.2	< 0.2	< 0.2
n-Propylbenzene	< 50	< 50	180	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	< 50	< 50	< 50	< 0.2	< 0.2	< 0.2	< 0.2
p-Isopropyltoluene	< 50	< 50	< 50	< 0.2	< 0.2	< 0.2	< 0.2
sec-Butylbenzene	< 50	< 50	219	< 0.2	< 0.2	< 0.2	< 0.2
Styrene	< 50	< 50	< 50	< 0.2	< 0.2	< 0.2	< 0.2
tert-Butylbenzene	< 50	< 50	< 50	< 0.2	< 0.2	< 0.2	< 0.2
Tetrachloroethene	< 50	< 50	< 50	< 0.2	< 0.2	< 0.2	< 0.2
Toluene	< 50	< 50	< 50	< 0.2	< 0.2	< 0.2	< 0.2
trans-1,2-Dichloroethene	< 50	< 50	< 50	< 0.2	< 0.2	< 0.2	< 0.2
trans-1,3-Dichloropropene	< 50	< 50	< 50	< 0.2	< 0.2	< 0.2	< 0.2
Trichloroethene	< 50	< 50	< 50	< 0.2	< 0.2	< 0.2	< 0.2
Trichlorofluoromethane	< 500	< 500	< 50	< 0.2	< 0.2	< 0.2	< 0.2
Vinyl chloride	< 500	< 500	< 100	< 0.2	< 0.2	< 0.2	< 0.2

NOTES:
All values are in units of µg/kg.
bgs - below ground surface
NA - Not analyzed

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Table 2.3-4 Soil Gas Analytical Results, Portland Terminal

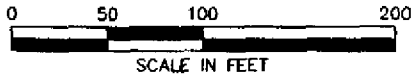
Sample Location:	SG-1	GP-3	GP-5	GP-6	GP-7
Sample Depth (feet bgs):	12	11.5	12	12	12
Sample Date:	09/17/1997	09/17/1997	09/17/1997	09/18/1997	09/18/1997
Sample ID:	TPOR-SG-1-12	TPOR-SG-3-11.5	TPOR-SG-5-12	TPOR-SG-6-12	TPOR-SG-7-12
Compound					
EPA Method 8015 Modified/EPA Method 8020A					
Gasoline-range Hydrocarbons (C6-C10)	3,010	< 8	20,400	4,050	26,800
Benzene	30.3	< 0.05	440	94.0	1,530
Ethylbenzene	17.5	< 0.05	27.4	8.38	52.5
Toluene	49.8	< 0.05	246	20.5	700
Xylenes (total)	6.34	< 0.1	22.4	17.4	298
Methyl tert-butyl ether	29.9	< 0.2	1,850	166	2,930

NOTE:

All values are in mg/m^3.

bgs - below ground surface

COP0014300



LEGEND

B-1	EXISTING MONITORING WELL LOCATION
RES-0	EXISTING RECOVERY WELL LOCATION
GP-9	SOIL PROBE SUBSURFACE SOIL OR SOIL AND SOIL GAS LOCATION
SG-1	SOIL GAS SAMPLING LOCATION
HA-2	HAND AUGER BORING LOCATION

DEPTH	DEPTH (FEET)
TPH-G	GASOLINE RANGE TPH (C6-C10)
TPH-D	DIESEL RANGE TPH (C10-C28)
TPH-HO	HEAVY OIL RANGE TPH (C28-C40)
B	BENZENE
T	TOLUENE
E	ETHYLBENZENE
X	XYLENES
M	MTBE (METHYL TERT BUTYL ETHER)

8

9

10

N O P

II SAMPLE LOCATIONS ANALYTICAL RESULTS

RTLAND TERMINAL

RETEC
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DRAWING NO.	REV.
FIGURE 2-3	0

COP0014301

Attachment 2.3A

Boring Logs for the Portland Terminal

BORING LOG

TPOR-SG-1

1011 S.W. Klickitat Way
Suite #207
Seattle, Washington 98134
(206) 624-9349

PROJECT NO: *3-3333-305 Tosco Phase II*		CLIENT: *Tosco Refining Company*
LOCATION: *Portland, Oregon; Tank Farm #2, 6 feet North of Tank 2915*		DRILLING CO.: *TEG*
START DATE: *09/17/97* TIME: *14:23*	BORING ID: *inches*	DRILLER: *Chris Beatty*
COMPLETION DATE: *09/17/97* TIME: *14:59*	BORING DEPTH: *12.0 feet bgs*	RIG TYPE: *Strata Probe*
WATER LEVEL DURING DRILLING: *' bgs*	SURFACE ELEV.: *feet (MSL)*	METHOD: *Direct Push*
DATE MEASURED:	M. P. ELEVATION: *feet (MSL)*	LOGGED BY: *J. Henley*

DEPTH (in feet)	SAMPLE DATA: TYPE	DEPTH	BLOWS/6"	% RECOVERY	PID (ppm)	U.S.C.S.	LITHOLOGY	SOIL DESCRIPTION
5	CB				2.2	SP		SAND; Dark brown; medium-grained; damp to moist.
	CB							8.0' – Grades to dark black; medium- to coarse-grained; moist.
10	SV				37			
								Total depth = 12.0 feet bgs.
15								
20								
25								

REMARKS:
■ – Analytical Sample
⊠ – Sample Interval
CB – Core Barrel
SV – Soil Vapor

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BORING LOG
TPOR-HA-2

RETEC
1011 S.W. Klickitat Way
Suite #207
Seattle, Washington 98134
(206) 624-9349

PROJECT NO: 3-3333-305 Tosco Phase II		CLIENT: Tosco Refining Company
LOCATION: Portland, Oregon; Southwest Side of Tank 2982		DRILLING CO.:
START DATE: 09/17/97 TIME: 14:00	BORING ID: inches	DRILLER:
COMPLETION DATE: 09/17/97 TIME: 15:20	BORING DEPTH: 12.0 feet bgs	RIG TYPE:
WATER LEVEL DURING DRILLING: 11.5' bgs	SURFACE ELEV.: feet (MSL)	METHOD: Hand Auger
DATE MEASURED: 09/17/97	M. P. ELEVATION: feet (MSL)	LOGGED BY: J. Henley

DEPTH (in feet)	SAMPLE DATA: TYPE	DEPTH	BLOWS/6"	% RECOVERY	PID (ppm)	U.S.C.S.	LITHOLOGY	SOIL DESCRIPTION
0	HA					SP		SAND: Brown; medium-grained; damp to moist; slight solvent odor.
					0.6			
5								
								10.0' - Grades to very moist; solvent odor.
10					140	▽		
					47	ML		SILT WITH CLAY: Dark gray; saturated; strong solvent odor.
								Total depth = 12.0 feet bgs.
15								
20								
25								

REMARKS:
■ - Analytical Sample
▨ - Sample Interval
HA - Hand Auger

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BORING LOG

TPOR-GP-3

RETEC
1011 S.W. Klickitat Way
Suite #207
Seattle, Washington 98134
(206) 624-9349

PROJECT NO: *3-3333-305 Tosco Phase II*		CLIENT: *Tosco Refining Company*
LOCATION: *Portland, Oregon; 2 feet South of Tank 2915*		DRILLING CO.: *TEG*
START DATE: *09/17/97* TIME: *12:52*	BORING ID: *inches*	DRILLER: *Chris Beatty*
COMPLETION DATE: *09/17/97* TIME: *13:50*	BORING DEPTH: *11.5 feet bgs*	RIG TYPE: *Strata Probe*
WATER LEVEL DURING DRILLING: *'bgs*	SURFACE ELEV.: *feet (MSL)*	METHOD: *Direct Push*
DATE MEASURED:	M. P. ELEVATION: *feet (MSL)*	LOGGED BY: *J. Henley*

DEPTH (in feet)	SAMPLE DATA: TYPE	DEPTH	BLOWS/6"	% RECOVERY	PID (ppm)	U.S.C.S.	LITHOLOGY	SOIL DESCRIPTION
0	CB							FILL: Sand with gravel.
					3240	SP		SAND: Medium-grained; trace fines; moist; staining.
	CB					ML		SILT WITH SAND: Fine- to coarse-grained sand; moist.
5					32	SP		SAND: Medium-grained; trace fines; moist.
	CB				1.1			
10	SV							Total depth = 11.5 feet bgs.
15								
20								
25								

REMARKS:
■ - Analytical Sample
⊠ - Sample Interval
CB - Core Barrel
SV - Soil Vapor

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BORING LOG

TPOR-GP-4

RETEC
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Suite #207
Seattle, Washington 98134
(206) 624-9349

PROJECT NO: 3-3333-305 Tosco Phase II		CLIENT: Tosco Refining Company
LOCATION: Portland, Oregon; 5.5 feet North of Tank 2916		DRILLING CO.: TEG
START DATE: 09/17/97 TIME: 16:48	BORING ID: inches	DRILLER: Chris Beatty
COMPLETION DATE: 09/17/97 TIME: 17:20	BORING DEPTH: 10.0 feet bgs	RIG TYPE: Strata Probe
WATER LEVEL DURING DRILLING: 'bgs	SURFACE ELEV.: feet (MSL)	METHOD: Direct Push
DATE MEASURED:	M. P. ELEVATION: feet (MSL)	LOGGED BY: J. Henley

DEPTH (in feet)	SAMPLE DATA: TYPE	DEPTH	BLOWS/6"	% RECOVERY	PID (ppm)	U.S.C.S.	LITHOLOGY	SOIL DESCRIPTION
0						SP		SAND
	CB				280	ML		SILT; Gray; and wood debris.
5						SP		SAND WITH SILT; Fine- to medium-grained; moist; sheen; strong petroleum odor.
	CB				32			
						SP		SAND; Dark gray; medium- to coarse-grained; very moist.
10					20			Total depth = 10.0 feet bgs.
15								
20								
25								

REMARKS: ▣ - Sample Interval
CB - Core Barrel

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BORING LOG

TPOR-GP-5

RETEC
1011 S.W. Klickitat Way
Suite #207
Seattle, Washington 98134
(206) 624-9349

PROJECT NO: *3-3333-305 Tosco Phase II*		CLIENT: *Tosco Refining Company*
LOCATION: *Portland, Oregon; 3 feet North of Tank 3409*		DRILLING CO.: *TEG*
START DATE: *09/17/97* TIME: *15:12*	BORING ID: *inches*	DRILLER: *Chris Beatty*
COMPLETION DATE: *09/17/97* TIME: *16:00*	BORING DEPTH: *10.0 feet bgs*	RIG TYPE: *Strata Probe*
WATER LEVEL DURING DRILLING: *' bgs*	SURFACE ELEV.: *feet (MSL)*	METHOD: *Direct Push*
DATE MEASURED:	M. P. ELEVATION: *feet (MSL)*	LOGGED BY: *J. Henley*

DEPTH (in feet)	SAMPLE DATA: TYPE	DEPTH	BLOWS/6"	% RECOVERY	PID (ppm)	U.S.C.S.	LITHOLOGY	SOIL DESCRIPTION
0	CB				11	SP		SAND WITH SILT: Brown; fine- to medium-grained.
						ML		SILT WITH SAND: Gray; with fine- to medium-grained sand.
5	CB				235	SP		SAND: Dark gray; medium- to coarse-grained.
	CB				40.1			*7.0'* - Grades to dark gray/black; medium-grained.
10								Total depth = 10.0 feet bgs.
15								
20								
25								

REMARKS:
■ - Analytical Sample
⊠ - Sample Interval
CB - Core Barrel

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BORING LOG
TPOR-GP-6

RETEC
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(206) 624-9349

PROJECT NO: *3-3333-305 Tosco Phase II*		CLIENT: *Tosco Refining Company*
LOCATION: *Portland, Oregon; 3.5 feet West of Oil/Water Separator*		DRILLING CO.: *TEG*
START DATE: *09/18/97 TIME: 07:45*	BORING ID: *inches*	DRILLER: *Chris Beatty*
COMPLETION DATE: *09/18/97 TIME: 08:15*	BORING DEPTH: *12.0 feet bgs*	RIG TYPE: *Strata Probe*
WATER LEVEL DURING DRILLING: *' bgs*	*SURFACE ELEV.: feet (MSL)*	METHOD: *Direct Push*
DATE MEASURED:	M. P. ELEVATION: *feet (MSL)*	LOGGED BY: *J. Henley*

DEPTH (in feet)	SAMPLE DATA: TYPE	DEPTH	BLOWS/6"	% RECOVERY	PID (ppm)	U.S.C.S.	LITHOLOGY	SOIL DESCRIPTION
0						SP		
5	CB				15.7			SAND: Black-gray; medium- to coarse-grained; slightly moist; petroleum odor.
	CB				9.7			*8.0'* – Grades with slight petroleum odor.
10	SV							
								Total depth = 12.0 feet bgs.
15								
20								
25								

REMARKS:
■ – Analytical Sample
▨ – Sample Interval
CB – Core Barrel
SV – Soil Vapor

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BORING LOG

TPOR-GP-7

1011 S.W. Klickitat Way
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Seattle, Washington 98134
(206) 624-9349

PROJECT NO: *3-3333-305 Tosco Phase II*		CLIENT: *Tosco Refining Company*
LOCATION: *Portland, Oregon; 6 feet Southwest of Tank 4259*		DRILLING CO.: *TEG*
START DATE: *09/18/97* TIME: *09:45*	BORING ID: *inches*	DRILLER: *Chris Beatty*
COMPLETION DATE: *09/18/97* TIME: *10:27*	BORING DEPTH: *12.0 feet bgs*	RIG TYPE: *Strata Probe*
WATER LEVEL DURING DRILLING: *' bgs*	SURFACE ELEV.: *feet (MSL)*	METHOD: *Direct Push*
DATE MEASURED:	M. P. ELEVATION: *feet (MSL)*	LOGGED BY: *J. Henley*

DEPTH (in feet)	SAMPLE DATA: TYPE	DEPTH	BLOWS/6"	% RECOVERY	PID (ppm)	U.S.C.S.	LITHOLOGY	SOIL DESCRIPTION
0						SP		
5	CB				233			SAND; Brown; medium-grained; trace fines; sweet solvent-like odor.
	CB							
10					170			
	SV							
								Total depth = 12.0 feet bgs.
15								
20								
25								

REMARKS:
■ – Analytical Sample
⊠ – Sample Interval
CB – Core Barrel
SV – Soil Vapor

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BORING LOG

TPOR-HA-8

RETEC
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Suite #207
Seattle, Washington 98134
(206) 624-9349

PROJECT NO: 3-3333-305 Tosco Phase II		CLIENT: Tosco Refining Company
LOCATION: Portland, Oregon; 14 feet West of Tank 2983		DRILLING CO.:
START DATE: 09/18/97 TIME: 12:00	BORING ID: inches	DRILLER:
COMPLETION DATE: 09/18/97 TIME: 13:00	BORING DEPTH: 12.0 feet bgs	RIG TYPE:
WATER LEVEL DURING DRILLING: ' bgs	SURFACE ELEV.: feet (MSL)	METHOD: Hand Auger
DATE MEASURED:	M. P. ELEVATION: feet (MSL)	LOGGED BY: J. Henley

DEPTH (in feet)	SAMPLE DATA: TYPE	DEPTH	BLOWS/6"	% RECOVERY	PID (ppm)	U.S.C.S.	LITHOLOGY	SOIL DESCRIPTION
0	HA				284	SP		FILL: Sand with gravel.
						CL		SILTY CLAY
5						SP		SAND: Black/gray; medium-grained; moist; petroleum odor.
					12			
10								
								Total depth = 12.0 feet bgs.
15								
20								
25								

REMARKS:
■ - Analytical Sample
⊠ - Sample Interval
HA - Hand Auger

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BORING LOG
TPOR-GP-9

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Suite #207
Seattle, Washington 98134
(206) 624-9349

PROJECT NO: *3-3333-305 Tosco Phase II*		CLIENT: *Tosco Refining Company*
LOCATION: *Portland, Oregon; Former Warehouse, 28 feet East of Southeast Corner*		DRILLING CO.: *TEG*
START DATE: *09/19/97 TIME: 11:00*	BORING ID: *inches*	DRILLER: *Chris Beatty*
COMPLETION DATE: *09/19/97 TIME: 12:00*	BORING DEPTH: *21.0 feet bgs*	RIG TYPE: *Strata Probe*
WATER LEVEL DURING DRILLING: *18.0' bgs*	*SURFACE ELEV.: feet (MSL)*	METHOD: *Direct Push*
DATE MEASURED: *09/19/97*	M. P. ELEVATION: *feet (MSL)*	LOGGED BY: *J. Henley*

DEPTH (in feet)	SAMPLE DATA: TYPE	DEPTH	BLOWS/6"	% RECOVERY	PID (ppm)	U.S.C.S.	LITHOLOGY	SOIL DESCRIPTION
0						SP		
5	CB				0.8			SAND; Brown; medium-grained; moist.
	CB				1.4			*8.0'* – Grades to gray; organic odor.
10	CB				8.4			
	CB				31			*12.0'* – Grades without organic odor.
15	CB				340			*14.0'* – Grades with petroleum odor.
	CB				230	▽		*17.0'* – Grades very moist to saturated.
20	CB				17			*19.0'* – Grades with 15% fine-grained sand; saturated; slight petroleum odor.
25								Total depth = 21.0 feet bgs.

REMARKS: ■ – Analytical Sample
⊠ – Sample Interval
CB – Core Barrel

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BORING LOG
TPOR-GP-10

RETEC
1011 S.W. Klickitat Way
Suite #207
Seattle, Washington 98134
(206) 624-9349

PROJECT NO: *3-3333-305 Tosco Phase II*			CLIENT: *Tosco Refining Company*
LOCATION: *Portland, Oregon; 10 feet East of Former Warehouse*			DRILLING CO.: *TEG*
START DATE: *09/19/97* TIME: *09:30*	BORING ID: *inches*		DRILLER: *Chris Beatty*
COMPLETION DATE: *09/19/97* TIME: *10:32*	BORING DEPTH: *19.0 feet bgs*		RIG TYPE: *Strata Probe*
WATER LEVEL DURING DRILLING: *18.0' bgs*	SURFACE ELEV.: *feet (MSL)*		METHOD: *Direct Push*
DATE MEASURED: *09/19/97*	M. P. ELEVATION: *feet (MSL)*		LOGGED BY: *J. Henley*

DEPTH (in feet)	SAMPLE DATA: TYPE	DEPTH	BLOWS/6"	% RECOVERY	PID (ppm)	U.S.C.S.	LITHOLOGY	SOIL DESCRIPTION
0						SP		
5	CB				0.5			SAND; Brown; medium-grained; with trace fines; moist.
	CB				0.8			
10	CB				3.0			
	CB				87			*13.0'* – Grades to gray; without fines; slight petroleum odor.
	CB							*14.0'* – Grades to brown; with trace fines; without petroleum odor.
15					264			*14.5'* – Grades to dark gray; moist to very moist; petroleum odor.
	CB							*17.0'* – Grades to very saturated; slight sheen on sample.
					156	▽		
20								Total depth = 19.0 feet bgs.
25								

REMARKS: ■ – Analytical Sample
▨ – Sample Interval
CB – Core Barrel

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BORING LOG

TPOR-GP-11

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Suite #207
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(206) 624-9349

PROJECT NO: *3-3333-305 Tosco Phase II*		CLIENT: *Tosco Refining Company*
LOCATION: *Portland, Oregon; Former Warehouse, 4 feet East of Northeast Corner*		DRILLING CO.: *TEG*
START DATE: *09/19/97 TIME: 07:30*	BORING ID: *inches*	DRILLER: *Chris Beatty*
COMPLETION DATE: *09/19/97 TIME: 09:10*	BORING DEPTH: *20.0 feet bgs*	RIG TYPE: *Strata Probe*
WATER LEVEL DURING DRILLING: *17.0' bgs*	*SURFACE ELEV.: feet (MSL)*	METHOD: *Direct Push*
DATE MEASURED: *09/19/97*	M. P. ELEVATION: *feet (MSL)*	LOGGED BY: *J. Henley*

DEPTH (in feet)	SAMPLE DATA: TYPE	DEPTH	BLOWS/6"	% RECOVERY	PID (ppm)	U.S.C.S.	LITHOLOGY	SOIL DESCRIPTION
0						SP		
5	CB				0.0			SAND; Brown; medium-grained.
	CB							
10					0.0			
	CB							*11.0'* – Grades with trace fine cobbles.
	CB				0.0			*13.0'* – Grades to light brown; without cobbles; with trace fines; moist.
15	CB				0.0			
					95.7	▽		*17.5'* – Grades to dark gray; without fines; saturated; slight sheen; petroleum odor.
	CB							*18.0'* – Grades with sheen.
					189			
20								Total depth = 20.0 feet bgs.
25								

REMARKS:
■ – Analytical Sample
⊠ – Sample Interval
CB – Core Barrel

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BORING LOG

TPOR-GP-12

1011 S.W. Klickitat Way
Suite #207
Seattle, Washington 98134
(206) 624-9349

PROJECT NO: 3-3333-305 Tosco Phase II		CLIENT: Tosco Refining Company
LOCATION: Portland, Oregon; 28 feet East of Laboratory		DRILLING CO.: TEG
START DATE: 09/18/97 TIME: 19:15	BORING ID: inches	DRILLER: Chris Beatty
COMPLETION DATE: 09/18/97 TIME: 20:00	BORING DEPTH: 14.0 feet bgs	RIG TYPE: Strata Probe
WATER LEVEL DURING DRILLING: ' bgs	SURFACE ELEV.: feet (MSL)	METHOD: Direct Push
DATE MEASURED:	M. P. ELEVATION: feet (MSL)	LOGGED BY: J. Henley

DEPTH (in feet)	SAMPLE DATA: TYPE	DEPTH	BLOWS/6"	% RECOVERY	PID (ppm)	U.S.C.S.	LITHOLOGY	SOIL DESCRIPTION
0								ASPHALT
								COBBLES/GRAVELS
5	CB				1.7	SP		SAND: Brown; medium-grained; gray sand with slight petroleum odor in shoe.
	CB							8.0' - Grades to gray; with trace fines; petroleum odor.
10	CB				351			11.0' - Grades to black/dark gray; without fines.
					184			
15								Total depth = 14.0 feet bgs.
20								
25								

REMARKS:
■ - Analytical Sample
Ø - Sample Interval
CB - Core Barrel

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COP0014314

BORING LOG
TPOR-HA-13

RETEC
1011 S.W. Klickitat Way
Suite #207
Seattle, Washington 98134
(206) 624-9349

PROJECT NO: 3-3333-305 Tosco Phase II		CLIENT: Tosco Refining Company
LOCATION: Portland, Oregon; South End of Terminal, North of Railroad Tracks		DRILLING CO.:
START DATE: 09/27/97 TIME: 11:15	BORING ID: inches	DRILLER:
COMPLETION DATE: 09/27/97 TIME: 11:50	BORING DEPTH: 10.0 feet bgs	RIG TYPE:
WATER LEVEL DURING DRILLING: 10.0' bgs	SURFACE ELEV.: feet (MSL)	METHOD: Hand Auger
DATE MEASURED: 09/27/97	M. P. ELEVATION: feet (MSL)	LOGGED BY: J. Henley

DEPTH (in feet)	SAMPLE DATA: TYPE	DEPTH	BLOWS/6"	% RECOVERY	PID (ppm)	U.S.C.S.	LITHOLOGY	SOIL DESCRIPTION
0	HA					SP		SAND WITH GRAVEL: Brown; medium-grained; trace fines; slightly moist.
						SP		SAND: Dark brown; medium-grained; very moist.
5								
					0.0			
10								10.0' - Grades to saturated.
								Total depth = 10.0 feet bgs.
15								
20								
25								

REMARKS:
■ - Analytical Sample
▨ - Sample Interval
HA - Hand Auger

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BORING LOG
TPOR-HA-14

RETEC
1011 S.W. Klickitat Way
Suite #207
Seattle, Washington 98134
(206) 624-9349

PROJECT NO: *3-3333-305 Tosco Phase II*		CLIENT: *Tosco Refining Company*
LOCATION: *Portland, Oregon; South End of Terminal, South of Railroad Tracks*		DRILLING CO.:
START DATE: *09/27/97* TIME: *12:20*	BORING ID: *inches*	DRILLER:
COMPLETION DATE: *09/27/97* TIME: *13:10*	BORING DEPTH: *8.5 feet bgs*	RIG TYPE:
WATER LEVEL DURING DRILLING: *8.5' bgs*	*SURFACE ELEV.: feet (MSL)*	METHOD: *Hand Auger*
DATE MEASURED: *09/27/97*	M. P. ELEVATION: *feet (MSL)*	LOGGED BY: *J. Henley*

DEPTH (in feet)	SAMPLE DATA: TYPE	DEPTH	BLOWS/6"	% RECOVERY	PID (ppm)	U.S.C.S.	LITHOLOGY	SOIL DESCRIPTION
0	HA					SP		SAND WITH GRAVEL; Brown; medium-grained; trace fines; slightly moist.
						SP		SAND; Dark brown; medium-grained; trace fines; very moist.
5								
					10			*8.0'* - Grades to saturated.
								Total depth = 8.5 feet bgs.
10								
15								
20								
25								

REMARKS:
■ - Analytical Sample
⊠ - Sample Interval
HA - Hand Auger

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BORING LOG

TPOR-HA-15

1011 S.W. Klickitat Way
Suite #207
Seattle, Washington 98134
(206) 624-9349

PROJECT NO: *3-3333-305 Tosco Phase II*		CLIENT: *Tosco Refining Company*
LOCATION: *Portland, Oregon; South End of Terminal, South of Railroad Tracks*		DRILLING CO.:
START DATE: *09/27/97* TIME: *13:50*	BORING ID: *inches*	DRILLER:
COMPLETION DATE: *09/27/97* TIME: *14:15*	BORING DEPTH: *3.5 feet bgs*	RIG TYPE:
WATER LEVEL DURING DRILLING: *3.5' bgs*	*SURFACE ELEV.:* *feet (MSL)*	METHOD: *Hand Auger*
DATE MEASURED: *09/27/97*	M. P. ELEVATION: *feet (MSL)*	LOGGED BY: *J. Henley*

DEPTH (in feet)	SAMPLE DATA: TYPE	DEPTH	BLOWS/6"	% RECOVERY	PID (ppm)	U.S.C.S.	LITHOLOGY	SOIL DESCRIPTION
0	HA					SP		SAND; Brown; medium-grained; 15% fines; trace medium gravel; very moist.
						SP		SAND WITH SILT; Brown; medium-grained; saturated.
								Total depth = 3.5 feet bgs.
5								
10								
15								
20								
25								

REMARKS:
▮ - Analytical Sample
⊠ - Sample Interval
HA - Hand Auger

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PROJECT NO: *3-3333-305 Tosco Phase II*		CLIENT: *Tosco Refining Company*
LOCATION: *Portland, Oregon; South End of Terminal, North of Railroad Tracks*		DRILLING CO.:
START DATE: *09/27/97 TIME: 10:35*	BORING ID: *inches*	DRILLER:
COMPLETION DATE: *09/27/97 TIME: 10:50*	BORING DEPTH: *4.0 feet bgs*	RIG TYPE:
WATER LEVEL DURING DRILLING: *4.0' bgs*	*SURFACE ELEV.: feet (MSL)*	METHOD: *Hand Auger*
DATE MEASURED: *09/27/97*	M. P. ELEVATION: *feet (MSL)*	LOGGED BY: *J. Henley*

DEPTH (in feet)	SAMPLE DATA: TYPE	DEPTH	BLOWS/6"	% RECOVERY	PID (ppm)	U.S.C.S.	LITHOLOGY	SOIL DESCRIPTION
0	HA				0.0	SP		SAND: Brown; medium-grained; moist.
					0.0			
						ML		SILT WITH SAND: Brown; with fine-grained sand; very moist.
5								Total depth = 4.0 feet bgs.
10								
15								
20								
25								

REMARKS:
■ - Analytical Sample
⊠ - Sample Interval
HA - Hand Auger

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PROJECT NO: *3-3333-305 Tosco Phase II*		CLIENT: *Tosco Refining Company*
LOCATION: *Portland, Oregon; 7 feet South of USTs 2 and 3*		DRILLING CO.:
START DATE: *09/19/97 TIME: 17:25*	BORING ID: *inches*	DRILLER:
COMPLETION DATE: *09/19/97 TIME: 18:10*	BORING DEPTH: *6.0 feet bgs*	RIG TYPE:
WATER LEVEL DURING DRILLING: *5.5' bgs*	*SURFACE ELEV.: feet (MSL)*	METHOD: *Hand Auger*
DATE MEASURED: *09/19/97*	M. P. ELEVATION: *feet (MSL)*	LOGGED BY: *J. Henley*

DEPTH (in feet)	SAMPLE DATA: TYPE	DEPTH	BLOWS/6"	% RECOVERY	PID (ppm)	U.S.C.S.	LITHOLOGY	SOIL DESCRIPTION
0	HA					SP		SAND; Brown; medium-grained; moist.
5					1.8 1.7	MT		SILT WITH SAND; Brown; very moist. *5.5'* - Grades to gray; saturated. Total depth = 6.0 feet bgs.
10								
15								
20								
25								

REMARKS:
■ - Analytical Sample
Ø - Sample Interval
HA - Hand Auger

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PROJECT NO: *3-3333-305 Tosco Phase II*		CLIENT: *Tosco Refining Company*
LOCATION: *Portland, Oregon; 3 feet North of Oil/Water Separator*		DRILLING CO.:
START DATE: *09/19/97 TIME: 18:20*	BORING ID: *inches*	DRILLER:
COMPLETION DATE: *09/19/97 TIME: 19:40*	BORING DEPTH: *6.5 feet bgs*	RIG TYPE:
WATER LEVEL DURING DRILLING: *6.0' bgs*	*SURFACE ELEV.: feet (MSL)*	METHOD: *Hand Auger*
DATE MEASURED: *09/19/97*	M. P. ELEVATION: *feet (MSL)*	LOGGED BY: *J. Henley*

DEPTH (in feet)	SAMPLE DATA: TYPE	DEPTH	BLOWS/6"	% RECOVERY	PID (ppm)	SOIL DESCRIPTION: U.S.C.S.	LITHOLOGY	
0	HA					SP		SAND: Brown; medium-grained; moist.
5					38	ML		SILT WITH SAND: Brown; very moist. *6.0'* – Grades to gray; very saturated.
								Total depth = 6.5 feet bgs.
10								
15								
20								
25								

REMARKS:
■ – Analytical Sample
Ø – Sample Interval
HA – Hand Auger

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PROJECT NO: 3-3333-305 Tosco Phase II		CLIENT: Tosco Refining Company
LOCATION: Portland, Oregon; 8 feet East of Oil/Water Separator ✓		DRILLING CO.: TEG
START DATE: 09/18/97 TIME: 17:30	BORING ID: inches	DRILLER: Chris Beatty
COMPLETION DATE: 09/18/97 TIME: 18:05	BORING DEPTH: 14.0 feet bgs	RIG TYPE: Strata Probe
WATER LEVEL DURING DRILLING: ' bgs	SURFACE ELEV.: feet (MSL)	METHOD: Direct Push
DATE MEASURED:	M. P. ELEVATION: feet (MSL)	LOGGED BY: J. Henley

DEPTH (in feet)	SAMPLE DATA: TYPE	DEPTH	BLOWS/6"	% RECOVERY	PID (ppm)	U.S.C.S.	LITHOLOGY	SOIL DESCRIPTION
0						SP		
5	CB				1.7			SAND; Brown; medium-grained.
	CB							8.0' – Grades to gray; with trace fines; petroleum odor.
10					351			
	CB							11.0' – Grades to black/dark gray; without fines.
					184			
15								Total depth = 14.0 feet bgs.
20								
25								

REMARKS:
■ – Analytical Sample
⊠ – Sample Interval
CB – Core Barrel

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PROJECT NO: *3-3333-305 Tosco Phase II*			CLIENT: *Tosco Refining Company*
LOCATION: *Portland, Oregon; Tank Farm #1, 5 feet East of Tank 589*			DRILLING CO.: *TEG*
START DATE: *09/18/97* TIME: *18:30*	BORING ID: *inches*		DRILLER: *Chris Beatty*
COMPLETION DATE: *09/18/97* TIME: *19:07*	BORING DEPTH: *14.0 feet bgs*		RIG TYPE: *Strata Probe*
WATER LEVEL DURING DRILLING: *13.0' bgs*	*SURFACE ELEV.: feet (MSL)*		METHOD: *Direct Push*
DATE MEASURED: *09/18/97*	M. P. ELEVATION: *feet (MSL)*		LOGGED BY: *J. Henley*

DEPTH (in feet)	SAMPLE DATA: TYPE	DEPTH	BLOWS/6"	% RECOVERY	PID (ppm)	U.S.C.S.	LITHOLOGY	SOIL DESCRIPTION
0								
5	CB				250	SP		SAND; Gray-black; medium-grained; trace fines; slight organic residue; slight petroleum odor.
	CB							*8.0'* – Grades without fines; with trace medium to coarse gravel; organic residue.
10	CB				252			*11.0'* – Grades to gray; fine- to medium-grained; without gravel; trace fines; strong organic residue.
					289	▽		
15								Total depth = 14.0 feet bgs.
20								
25								

REMARKS:
■ – Analytical Sample
⊠ – Sample Interval
CB – Core Barrel

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PROJECT NO: 3-3333-305 Tosco Phase II		CLIENT: Tosco Refining Company
LOCATION: Portland, Oregon; Tank Farm #1, 9 feet Southeast of Tank 2714		DRILLING CO.: TEG
START DATE: 09/18/97 TIME: 15:37	BORING ID: inches	DRILLER: Chris Beatty
COMPLETION DATE: 09/18/97 TIME: 16:11	BORING DEPTH: 13.0 feet bgs	RIG TYPE: Strata Probe
WATER LEVEL DURING DRILLING: ' bgs	SURFACE ELEV.: feet (MSL)	METHOD: Direct Push
DATE MEASURED:	M. P. ELEVATION: feet (MSL)	LOGGED BY: J. Henley

DEPTH (in feet)	SAMPLE DATA: TYPE	DEPTH	BLOWS/6"	% RECOVERY	PID (ppm)	U.S.C.S.	LITHOLOGY	SOIL DESCRIPTION
0								
5	CB				0.4	SP		SAND; Brown; medium-grained.
	CB							
10	CB				1.2	GW		GRAVEL WITH SAND; Brown; fine to coarse; with medium-grained sand.
						ML		SILT WITH SAND; Dark brown.
						SP		SAND WITH GRAVEL; Dark brown; medium-grained; with fine to medium gravels.
					1.2	PT		PEAT; Organic layer.
						SP		SAND WITH GRAVEL; Dark brown; medium-grained; with fine to medium gravels.
15								Total depth = 13.0 feet bgs.
20								
25								

REMARKS:
■ - Analytical Sample
⊠ - Sample Interval
CB - Core Barrel

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PROJECT NO: *3-3333-305 Tosco Phase II*		CLIENT: *Tosco Refining Company*
LOCATION: *Portland, Oregon; Tank Farm #1, 6 feet North of Tank 2784*		DRILLING CO.: *TEG*
START DATE: *09/18/97 TIME: 14:40*	BORING ID: *inches*	DRILLER: *Chris Beatty*
COMPLETION DATE: *09/18/97 TIME: 15:30*	BORING DEPTH: *14.0 feet bgs*	RIG TYPE: *Strata Probe*
WATER LEVEL DURING DRILLING: *' bgs*	*SURFACE ELEV.: feet (MSL)*	METHOD: *Direct Push*
DATE MEASURED:	M. P. ELEVATION: *feet (MSL)*	LOGGED BY: *J. Henley*

DEPTH (in feet)	SAMPLE DATA: TYPE	DEPTH	BLOWS/6"	% RECOVERY	PID (ppm)	U.S.C.S.	LITHOLOGY	SOIL DESCRIPTION
0								
5	CB				0.0	SP		SAND: Brown; medium-grained; trace fines; moist.
	CB				1.5			
10	CB				70			*11.0'* – Grades to gray to black; LNAPL present; slight petroleum odor.
						CL		CLAY WITH SILT
15								Total depth = 14.0 feet bgs.
20								
25								

REMARKS:
■ – Analytical Sample
⊠ – Sample Interval
CB – Core Barrel

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PROJECT NO: 3-3333-305 Tosco Phase II		CLIENT: Tosco Refining Company
LOCATION: Portland, Oregon; Tank Farm #1, North of Tank 2561		DRILLING CO.: TEG
START DATE: 09/18/97 TIME: 11:46	BORING ID: inches	DRILLER: Chris Beatty
COMPLETION DATE: 09/18/97 TIME: 12:15	BORING DEPTH: 11.0 feet bgs	RIG TYPE: Strata Probe
WATER LEVEL DURING DRILLING: 11.0' bgs	SURFACE ELEV.: feet (MSL)	METHOD: Direct Push
DATE MEASURED: 09/18/97	M. P. ELEVATION: feet (MSL)	LOGGED BY: J. Henley

DEPTH (in feet)	SAMPLE DATA: TYPE	DEPTH	BLOWS/6"	% RECOVERY	PID (ppm)	U.S.C.S.	LITHOLOGY	SOIL DESCRIPTION
0						SP		SAND; Brown; medium-grained.
						CL		CLAY WITH SILT; Slight petroleum odor.
						SP		SAND; Brown; medium-grained.
								3.0' – Grades to gray; petroleum odor.
5	CB							*5.0'* – Grades to black; trace fines; moist; slight petroleum odor.
					407			
	CB							*8.0'* – Grades to gray-black; with 15% fines; saturated; slight sheen; strong sour odor.
10					247			
								Total depth = 11.0 feet bgs.
15								
20								
25								

REMARKS: ■ – Analytical Sample
⊠ – Sample Interval
CB – Core Barrel

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PROJECT NO: *3-3333-305 Tosco Phase II*		CLIENT: *Tosco Refining Company*
LOCATION: *Portland, Oregon; Tank Farm #1, East Side of Tank 2783*		DRILLING CO.:
START DATE: *09/18/97* TIME: *10:52*	BORING ID: *inches*	DRILLER:
COMPLETION DATE: *09/18/97* TIME: *11:15*	BORING DEPTH: *3.0 feet bgs*	RIG TYPE:
WATER LEVEL DURING DRILLING: *' bgs*	*SURFACE ELEV.: feet (MSL)*	METHOD: *Hand Auger*
DATE MEASURED:	M. P. ELEVATION: *feet (MSL)*	LOGGED BY: *J. Henley*

DEPTH (in feet)	SAMPLE DATA: TYPE	DEPTH	BLOWS/6"	% RECOVERY	PID (ppm)	U.S.C.S.	LITHOLOGY	SOIL DESCRIPTION
0	HA					SP		SAND WITH SILT: Dark brown; very moist; LNAPL present.
					506	SP		SAND: Dark gray; medium-grained; very moist; strong sheen; LNAPL present; strong petroleum odor.
								Total depth = 3.0 feet bgs.
5								
10								
15								
20								
25								

REMARKS:
■ - Analytical Sample
⊠ - Sample Interval
HA - Hand Auger

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PROJECT NO: *3-3333-305 Tosco Phase II*		CLIENT: *Tosco Refining Company*
LOCATION: *Portland, Oregon; Tank Farm #1, Southeast of Tank 141*		DRILLING CO.: *TEG*
START DATE: *09/18/97* TIME: *16:15*	BORING ID: *inches*	DRILLER: *Chris Beatty*
COMPLETION DATE: *09/18/97* TIME: *17:19*	BORING DEPTH: *14.0 feet bgs*	RIG TYPE: *Strata Probe*
WATER LEVEL DURING DRILLING: *13.0' bgs*	SURFACE ELEV.: *feet (MSL)*	METHOD: *Direct Push*
DATE MEASURED: *09/18/97*	M. P. ELEVATION: *feet (MSL)*	LOGGED BY: *J. Henley*

DEPTH (in feet)	SAMPLE DATA: TYPE	DEPTH	BLOWS/6"	% RECOVERY	PID (ppm)	U.S.C.S.	LITHOLOGY	SOIL DESCRIPTION
0	CB			65	0.6	SP		SAND; Black-gray; medium-grained; moist.
5	CB			0				**NO RECOVERY**
10	CB			70	1.5	SP		SAND; Brown; medium-grained.
						CL		CLAY WITH SILT; Brown.
						ML		SILT WITH CLAY; Gray; with 15% clay; saturated.
15								Total depth = 14.0 feet bgs.
20								
25								

REMARKS:
■ - Analytical Sample
⊠ - Sample Interval
CB - Core Barrel

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PROJECT NO: *3-3333-305 Tosco Phase II*		CLIENT: *Tosco Refining Company*
LOCATION: *Portland, Oregon; Tank Farm #1, 2.5 feet North of Tank 2917*		DRILLING CO.: *TEG*
START DATE: *09/18/97* TIME: *10:36*	BORING ID: *inches*	DRILLER: *Chris Beatty*
COMPLETION DATE: *09/18/97* TIME: *11:15*	BORING DEPTH: *15.0 feet bgs*	RIG TYPE: *Strata Probe*
WATER LEVEL DURING DRILLING: *' bgs*	*SURFACE ELEV.: feet (MSL)*	METHOD: *Direct Push*
DATE MEASURED:	M. P. ELEVATION: *feet (MSL)*	LOGGED BY: *J. Henley*

DEPTH (in feet)	SAMPLE DATA: TYPE	DEPTH	BLOWS/6"	% RECOVERY	PID (ppm)	U.S.C.S.	LITHOLOGY	SOIL DESCRIPTION
0								
	CB			65	0.6	SP		SAND; Brown; fine- to medium-grained.
5	CB			30	160			*6.0'* – Grades to moist; slight sheen; slight odor.
	CB			65	230			*9.0'* – Grades to dark gray; medium-grained; trace fines; sheen; LNAPL present; petroleum odor.
10	CB			100	15			*12.0'* – Grades to dark gray-black.
15								Total depth = 15.0 feet bgs.
20								
25								

REMARKS:
■ – Analytical Sample
▯ – Sample Interval
CB – Core Barrel

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PROJECT NO: *3-3333-305 Tosco Phase II*		CLIENT: *Tosco Refining Company*
LOCATION: *Portland, Oregon; Tank Farm #3, North of Tank 4306*		DRILLING CO.: *TEG*
START DATE: *09/19/97* TIME: *13:15*	BORING ID: *inches*	DRILLER: *Chris Beatty*
COMPLETION DATE: *09/19/97* TIME: *14:26*	BORING DEPTH: *12.0 feet bgs*	RIG TYPE: *Strata Probe*
WATER LEVEL DURING DRILLING: *' bgs*	SURFACE ELEV.: *feet (MSL)*	METHOD: *Direct Push*
DATE MEASURED:	M. P. ELEVATION: *feet (MSL)*	LOGGED BY: *J. Henley*

DEPTH (in feet)	SAMPLE DATA: TYPE	DEPTH	BLOWS/6"	% RECOVERY	PID (ppm)	U.S.C.S.	LITHOLOGY	SOIL DESCRIPTION
0								
5	CB			65		SP		SAND WITH SILT; Brown; moist.
					1.9	ML		SILT; Gray; with trace of fine-grained sand.
	CB			50				
					2.8	SP		SAND; Gray-black.
10	CB			90				*10.0'* – Grades to gray to black; medium-grained; with 15% fines.
					2.2	ML		SILT WITH CLAY; Gray; dense.
								Total depth = 12.0 feet bgs.
15								
20								
25								

REMARKS:
■ – Analytical Sample
▨ – Sample Interval
CB – Core Barrel

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PROJECT NO: *3-3333-305 Tosco Phase II*		CLIENT: *Tosco Refining Company*
LOCATION: *Portland, Oregon; Tank Farm #3, Northwest of Tank 3761*		DRILLING CO.: *TEG*
START DATE: *09/19/97* TIME: *15:57*	BORING ID: *inches*	DRILLER: *Chris Beatty*
COMPLETION DATE: *09/19/97* TIME: *16:08*	BORING DEPTH: *6.0 feet bgs*	RIG TYPE: *Strata Probe*
WATER LEVEL DURING DRILLING: *' bgs*	*SURFACE ELEV.: feet (MSL)*	METHOD: *Direct Push*
DATE MEASURED:	M. P. ELEVATION: *feet (MSL)*	LOGGED BY: *J. Henley*

DEPTH (in feet)	SAMPLE DATA: TYPE	DEPTH	BLOWS/6"	% RECOVERY	PID (ppm)	U.S.C.S.	LITHOLOGY	SOIL DESCRIPTION
0								
5	CB			60	46	SP		SAND: Black to gray; medium-grained; trace fines; very moist to saturated; petroleum odor.
						ML		SILT WITH CLAY: Brown; very moist to saturated; organic odor.
								Total depth = 6.0 feet bgs.
10								
15								
20								
25								

REMARKS:
■ - Analytical Sample
▨ - Sample Interval
CB - Core Barrel

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PROJECT NO: *3-3333-305 Tosco Phase II*		CLIENT: *Tosco Refining Company*
LOCATION: *Portland, Oregon; Tank Farm #3, North of Tank 4257*		DRILLING CO.: *TEG*
START DATE: *09/19/97* TIME: *16:10*	BORING ID: *inches*	DRILLER: *Chris Beatty*
COMPLETION DATE: *09/19/97* TIME: *16:30*	BORING DEPTH: *7.0 feet bgs*	RIG TYPE: *Strata Probe*
WATER LEVEL DURING DRILLING: *' bgs*	SURFACE ELEV.: *feet (MSL)*	METHOD: *Direct Push*
DATE MEASURED:	M. P. ELEVATION: *feet (MSL)*	LOGGED BY: *J. Henley*

DEPTH (in feet)	SAMPLE DATA: TYPE	DEPTH	BLOWS/6"	% RECOVERY	PID (ppm)	U.S.C.S.	LITHOLOGY	SOIL DESCRIPTION
0								
5	CB	☒		70	2.2	SP		SAND; Brown; medium-grained; moist.
	CB	☒		50	2.2	SP		
						ML		SAND WITH SILT; Gray; fine- to medium-grained; moist.
						SM		SANDY SILT/SILTY SAND; Gray; interbedded sandy silt and silty, very fine-grained sand.
								Total depth = 7.0 feet bgs.
10								
15								
20								
25								

REMARKS: ☒ - Sample Interval
CB - Core Barrel

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PROJECT NO: *3-3333-305 Tosco Phase II*		CLIENT: *Tosco Refining Company*
LOCATION: *Portland, Oregon; Tank Farm #3, Northwest Side of Tank 4318*		DRILLING CO.: *TEG*
START DATE: *09/19/97* TIME: *14:30*	BORING ID: *inches*	DRILLER: *Chris Beatty*
COMPLETION DATE: *09/19/97* TIME: *15:06*	BORING DEPTH: *10.0 feet bgs*	RIG TYPE: *Strata Probe*
WATER LEVEL DURING DRILLING: *10.0' bgs*	SURFACE ELEV.: *feet (MSL)*	METHOD: *Direct Push*
DATE MEASURED: *09/19/97*	M. P. ELEVATION: *feet (MSL)*	LOGGED BY: *J. Henley*

DEPTH (in feet)	SAMPLE DATA: TYPE	DEPTH	BLOWS/6"	% RECOVERY	PID (ppm)	U.S.C.S.	LITHOLOGY	SOIL DESCRIPTION
0								
5	CB			85	2.1	ML		SILT WITH SAND; Gray; with fine-grained sand; moist; slight petroleum odor.
						ML		SILT; Gray; trace clay; moist; organic odor.
	CB				1.2	ML		SILT WITH SAND; Gray; with 20% fine-grained sand; saturated; slight petroleum odor.
10								Total depth = 10.0 feet bgs.
15								
20								
25								

REMARKS:
■ – Analytical Sample
▨ – Sample Interval
CB – Core Barrel

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PROJECT NO: *3-3333-305 Tosco Phase II*		CLIENT: *Tosco Refining Company*
LOCATION: *Portland, Oregon; Tank Farm #3, Southeast of Tank 3761*		DRILLING CO.:
START DATE: *09/27/97 TIME: 15:40*	BORING ID: *inches*	DRILLER:
COMPLETION DATE: *09/27/97 TIME: 16:30*	BORING DEPTH: *4.0 feet bgs*	RIG TYPE:
WATER LEVEL DURING DRILLING: *4.0' bgs*	*SURFACE ELEV.: feet (MSL)*	METHOD: *Hand Auger*
DATE MEASURED: *09/27/97*	M. P. ELEVATION: *feet (MSL)*	LOGGED BY: *J. Henley*

DEPTH (in feet)	SAMPLE DATA: TYPE	DEPTH	BLOWS/6"	% RECOVERY	PID (ppm)	U.S.C.S.	LITHOLOGY	SOIL DESCRIPTION
0	HA				1.7	SP		SAND WITH SILT: Brown; fine-grained; 30% silt; trace medium gravel.
4								Total depth = 4.0 feet bgs.
5								
10								
15								
20								
25								

REMARKS:
■ - Analytical Sample
Ø - Sample Interval
HA - Hand Auger

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BORING LOG

TPOR-GP-32

RETEC
1011 S.W. Klickitat Way
Suite #207
Seattle, Washington 98134
(206) 624-9349

PROJECT NO: 3-3333-305 Tosco Phase II		CLIENT: Tosco Refining Company
LOCATION: Portland, Oregon; Tank Farm #3, Northwest of Tank 4252		DRILLING CO.: TEG
START DATE: 09/19/97 TIME: 16:30	BORING ID: inches	DRILLER: Chris Beatty
COMPLETION DATE: 09/19/97 TIME: 17:05	BORING DEPTH: 7.0 feet bgs	RIG TYPE: Strata Probe
WATER LEVEL DURING DRILLING: 'bgs	SURFACE ELEV.: feet (MSL)	METHOD: Direct Push
DATE MEASURED:	M. P. ELEVATION: feet (MSL)	LOGGED BY: J. Henley

DEPTH (in feet)	SAMPLE DATA: TYPE	DEPTH	BLOWS/6"	% RECOVERY	PID (ppm)	SOIL DESCRIPTION: U.S.C.S.	LITHOLOGY	
0								
5	CB			100		SP		SAND; Black to gray; medium-grained.
						ML SM		SANDY SILT/SILTY SAND; Gray; interbedded sandy silt and silty sand; slight petroleum odor.
								Total depth = 7.0 feet bgs.
10								
15								
20								
25								

REMARKS:
■ - Analytical Sample
⊠ - Sample Interval
CB - Core Barrel

REMEDIATION TECHNOLOGIES, INC.
A Thermo Electron Company

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BORING LOG

TPOR-GP-33

1011 S.W. Klickitat Way
Suite #207
Seattle, Washington 98134
(206) 624-9349

PROJECT NO: *3-3333-305 Tosco Phase II*		CLIENT: *Tosco Refining Company*
LOCATION: *Portland, Oregon; Tank Farm #3, North of Tank 3740*		DRILLING CO.: *TEG*
START DATE: *09/19/97* TIME: *15:11*	BORING ID: *inches*	DRILLER: *Chris Beatty*
COMPLETION DATE: *09/19/97* TIME: *15:40*	BORING DEPTH: *12.0 feet bgs*	RIG TYPE: *Strata Probe*
WATER LEVEL DURING DRILLING: *11.0' bgs*	SURFACE ELEV.: *feet (MSL)*	METHOD: *Direct Push*
DATE MEASURED: *09/19/97*	M. P. ELEVATION: *feet (MSL)*	LOGGED BY: *J. Henley*

DEPTH (in feet)	SAMPLE DATA: TYPE	DEPTH	BLOWS/6"	% RECOVERY	PID (ppm)	U.S.C.S.	LITHOLOGY	SOIL DESCRIPTION
0								
5	CB			80	72	SP		SAND WITH SILT: Gray; very fine- to fine-grained; very moist to saturated; slight petroleum odor.
						SP		SAND: Dark gray to black; medium-grained; moist; slight petroleum odor.
	CB			75	11.6			*8.0'* – Grades to gray to black; trace fines; moist to very moist.
10	CB			55	14.2			*10.0'* – Grades without fines; saturated; strong organic odor.
								Total depth = 12.0 feet bgs.
15								
20								
25								

REMARKS:
■ – Analytical Sample
⊠ – Sample Interval
CB – Core Barrel

REMEDIATION TECHNOLOGIES, INC.
A Thermo Electron Company

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RETEC

BORING LOG
TPOR-HA-34

1011 S.W. Klickitat Way
Suite #207
Seattle, Washington 98134
(206) 624-9349

PROJECT NO: *3-3333-305 Tosco Phase II*		CLIENT: *Tosco Refining Company*
LOCATION: *Portland, Oregon; Tank Farm #3, Northwest of Tank 3415*		DRILLING CO.:
START DATE: *09/19/97 TIME: 16:20*	BORING ID: *inches*	DRILLER:
COMPLETION DATE: *09/19/97 TIME: 17:00*	BORING DEPTH: *12.0 feet bgs*	RIG TYPE:
WATER LEVEL DURING DRILLING: *' bgs*	*SURFACE ELEV.: feet (MSL)*	METHOD: *Hand Auger*
DATE MEASURED:	M. P. ELEVATION: *feet (MSL)*	LOGGED BY: *J. Henley*

DEPTH (in feet)	SAMPLE DATA: TYPE	DEPTH	BLOWS/6"	% RECOVERY	PID (ppm)	U.S.C.S.	LITHOLOGY	SOIL DESCRIPTION
0	HA					SP		SAND; Brown; medium-grained; moist.
5					4.2			*5.0'* – Grades to gray.
					3.7			
					3.1			
					9.6			
10					3.9			*10.0'* – Grades to moist to very moist.
					4.2			
					4.2			
								Total depth = 12.0 feet bgs.
15								
20								
25								

REMARKS:
■ – Analytical Sample
⊠ – Sample Interval
HA – Hand Auger

REMEDIATION TECHNOLOGIES, INC.
A Thermo Electron Company

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Attachment 2.3B

Photographic Log for the Portland Terminal

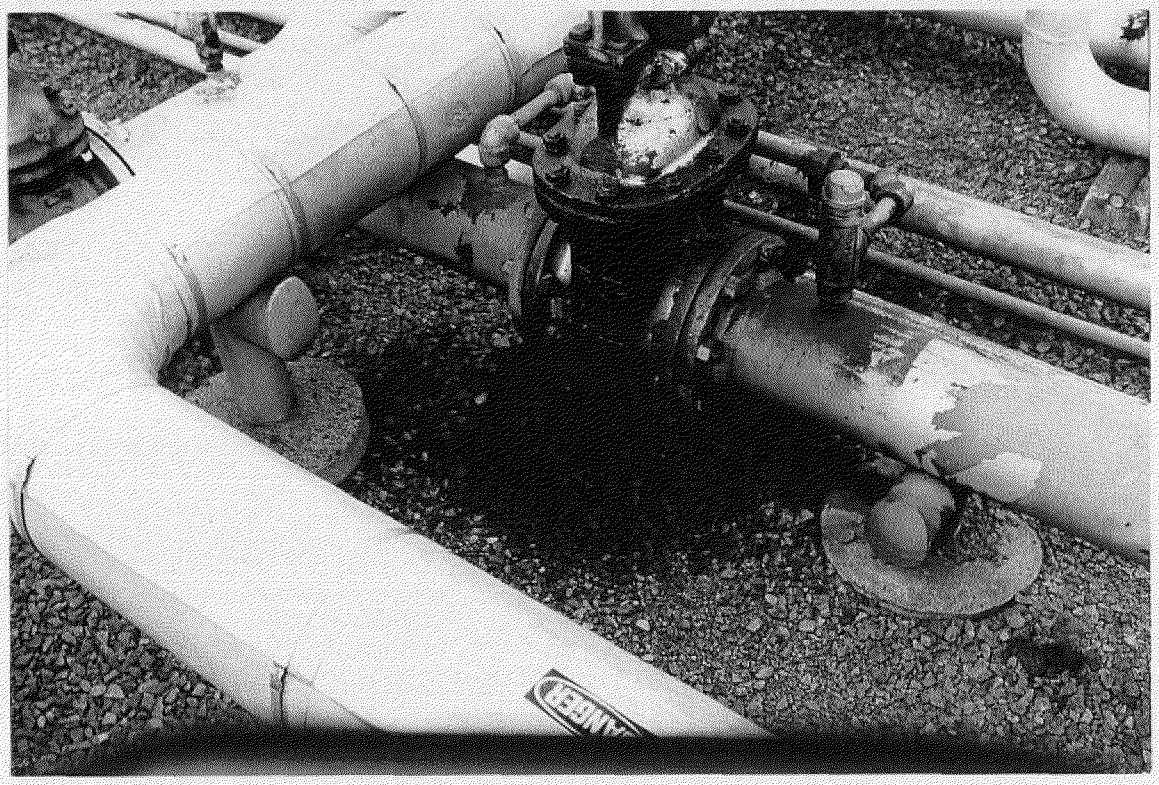

Photo No. 1: Tank Farm No. 1, Tank 2917—staining beneath valves

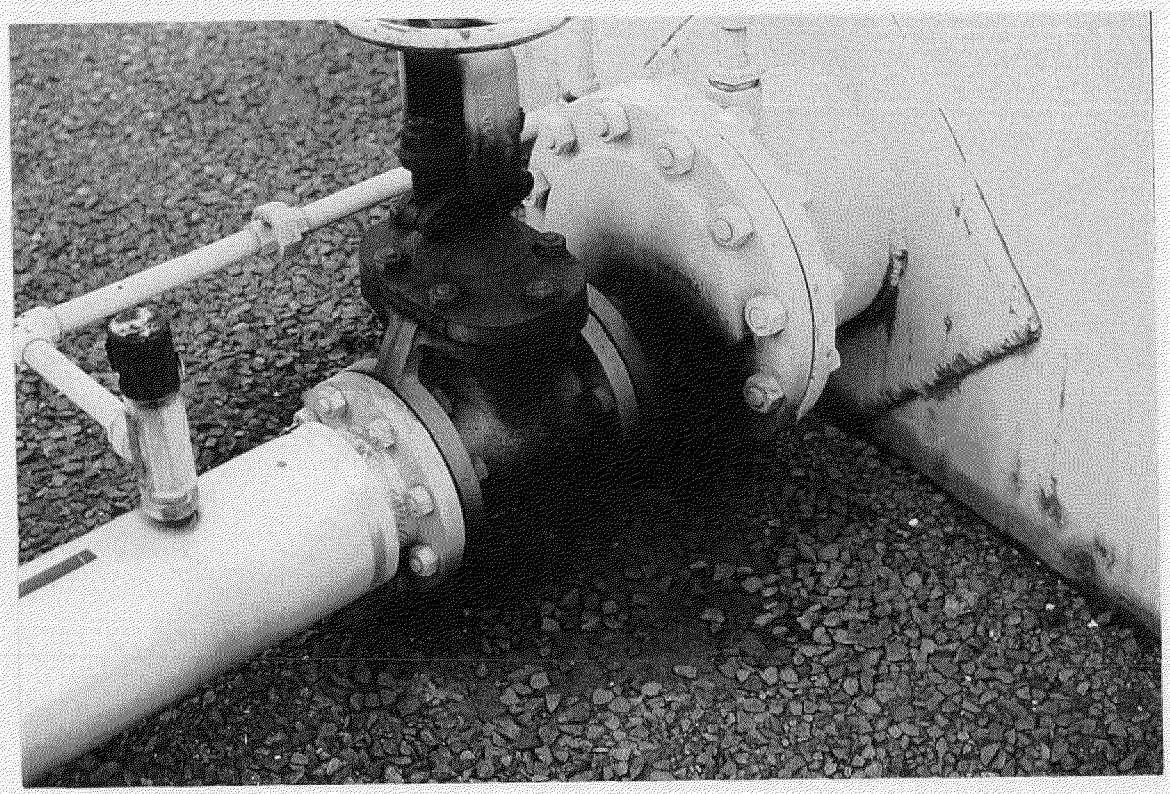

Photo No. 2: Tank Farm No. 1, Tank 2917—staining beneath valves

Photo No. 3: Tank Farm No. 1, Tank 4369—staining on gravel

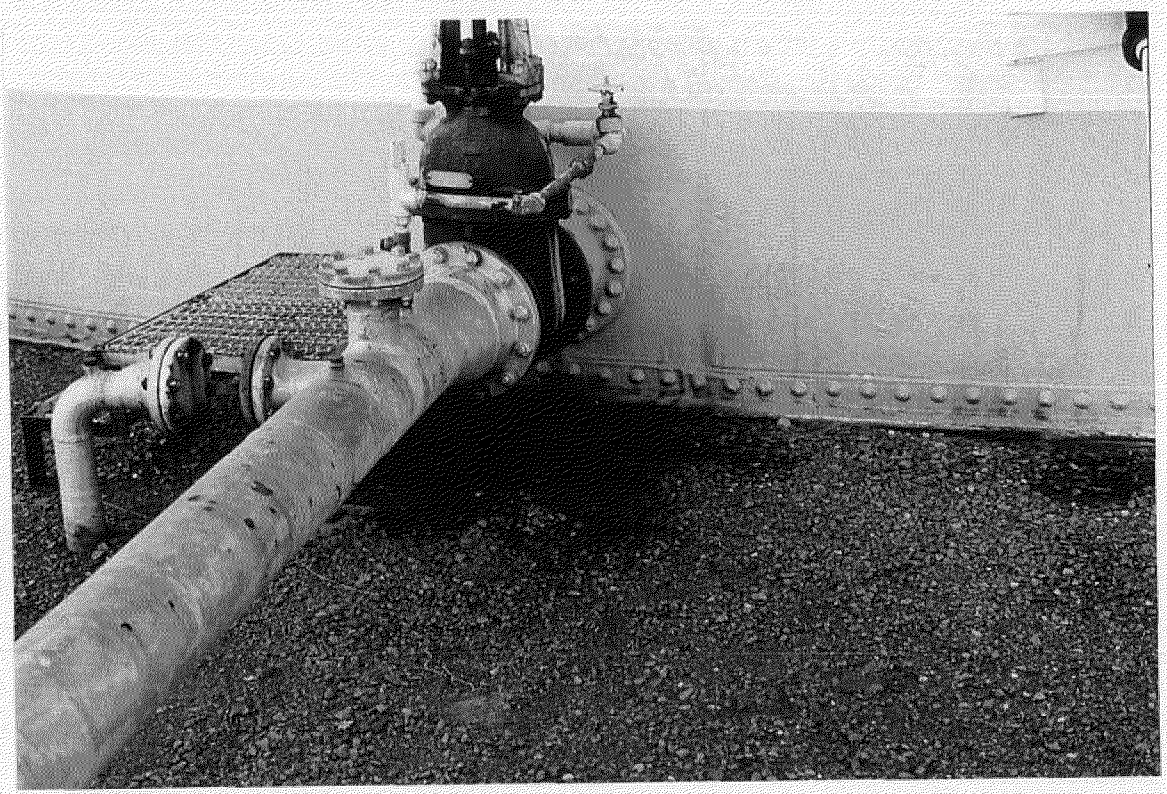

Photo No. 4: Tank Farm No. 1, Tank 2561—staining beneath valve

Photo No. 5: Tank Farm No. 1, Tank 2561—seepage beneath tank

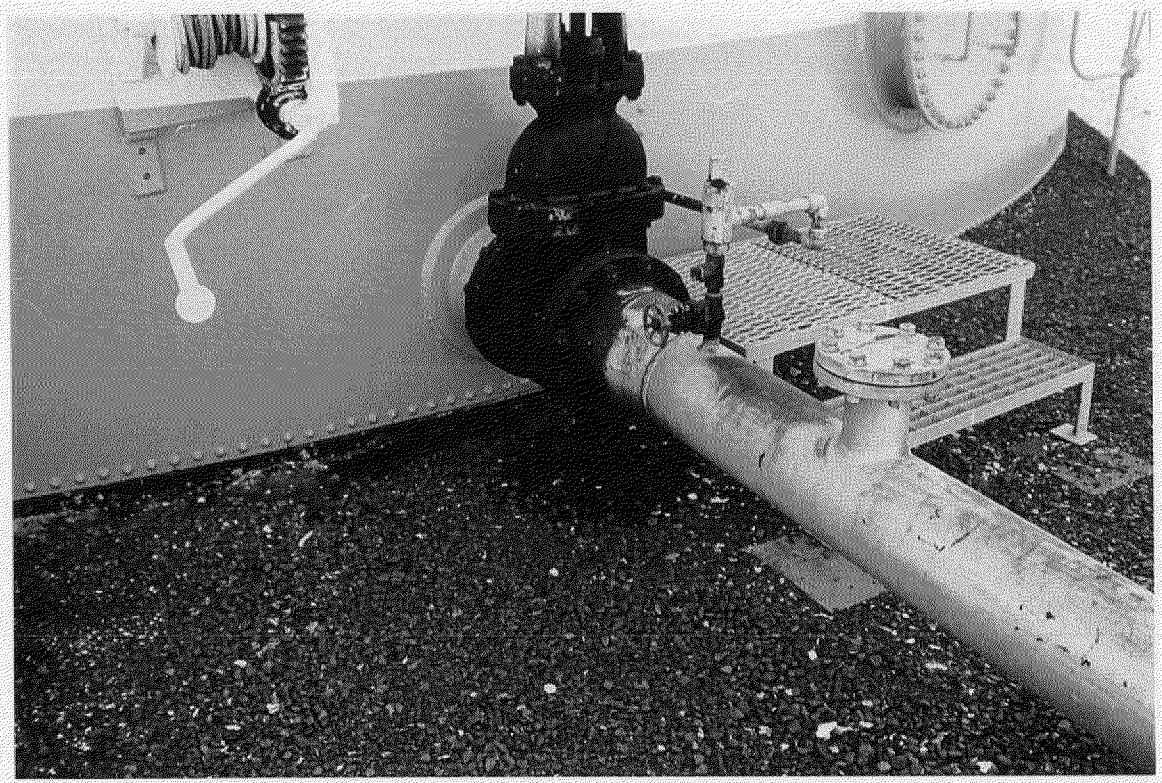

Photo No. 6: Tank Farm No. 1, Tank 2669—staining beneath valve

Photo No. 7: Tank Farm No. 1—paint chips (typical) near Tank 2669

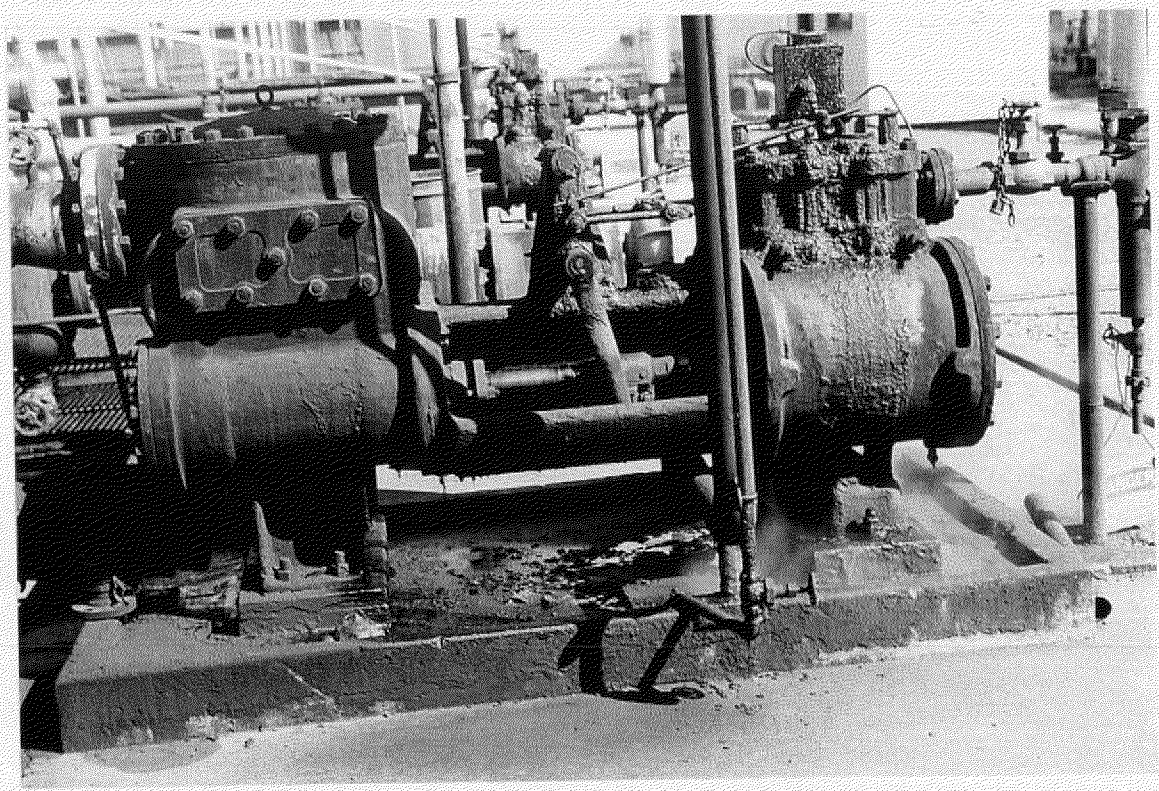

Photo No. 8: Tank Farm No. 1—pumps between Tanks 2669 and 36

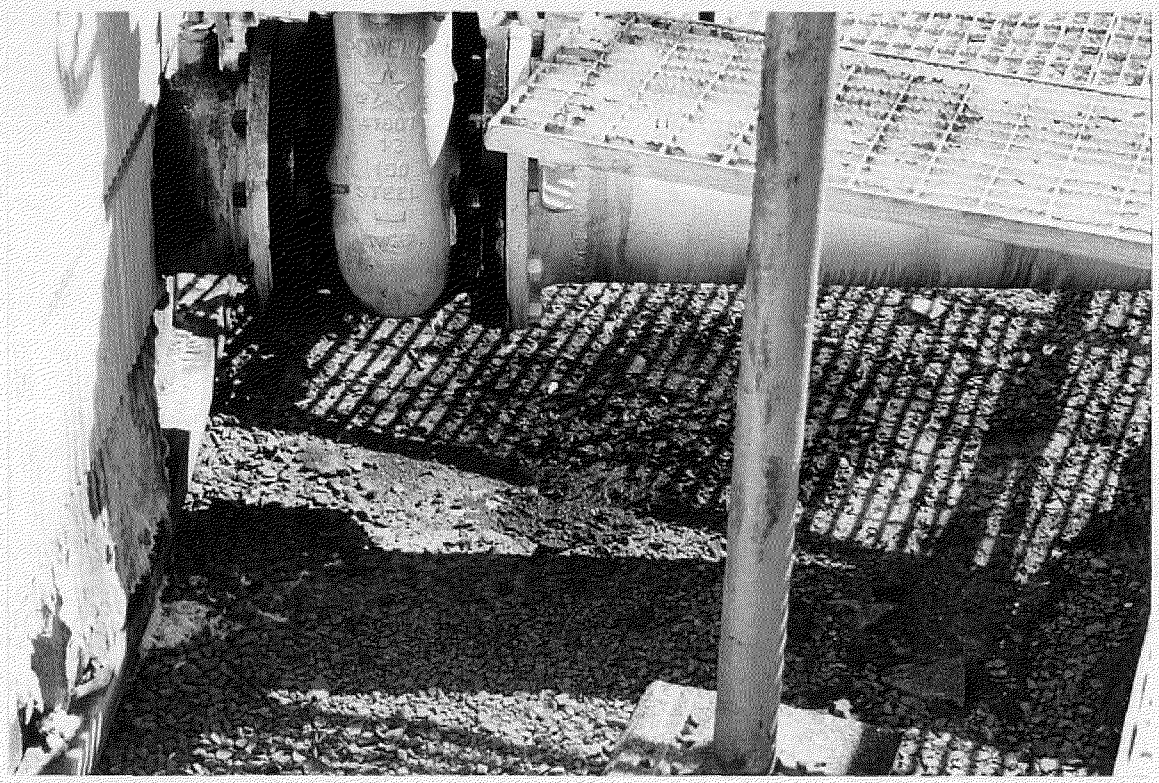

Photo No. 9: Tank Farm No. 1, Tank 31—drippage/stains beneath valve

Photo No. 10: Tank Farm No. 1, Tank 141—stain/drippage beneath piping

Photo No. 11: Tank Farm No. 1—staining beneath piping, west wall behind Tank 141

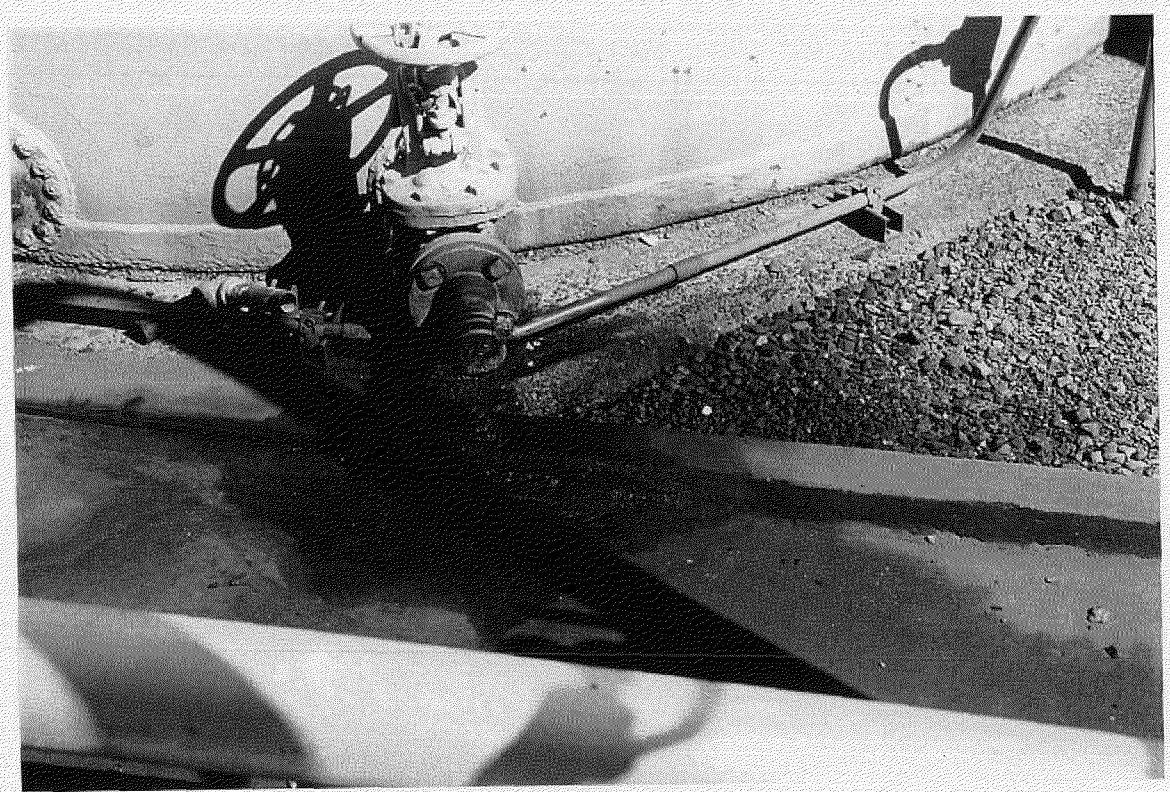

Photo No. 12: Tank Farm No. 1, Tank 1471—staining beneath valves

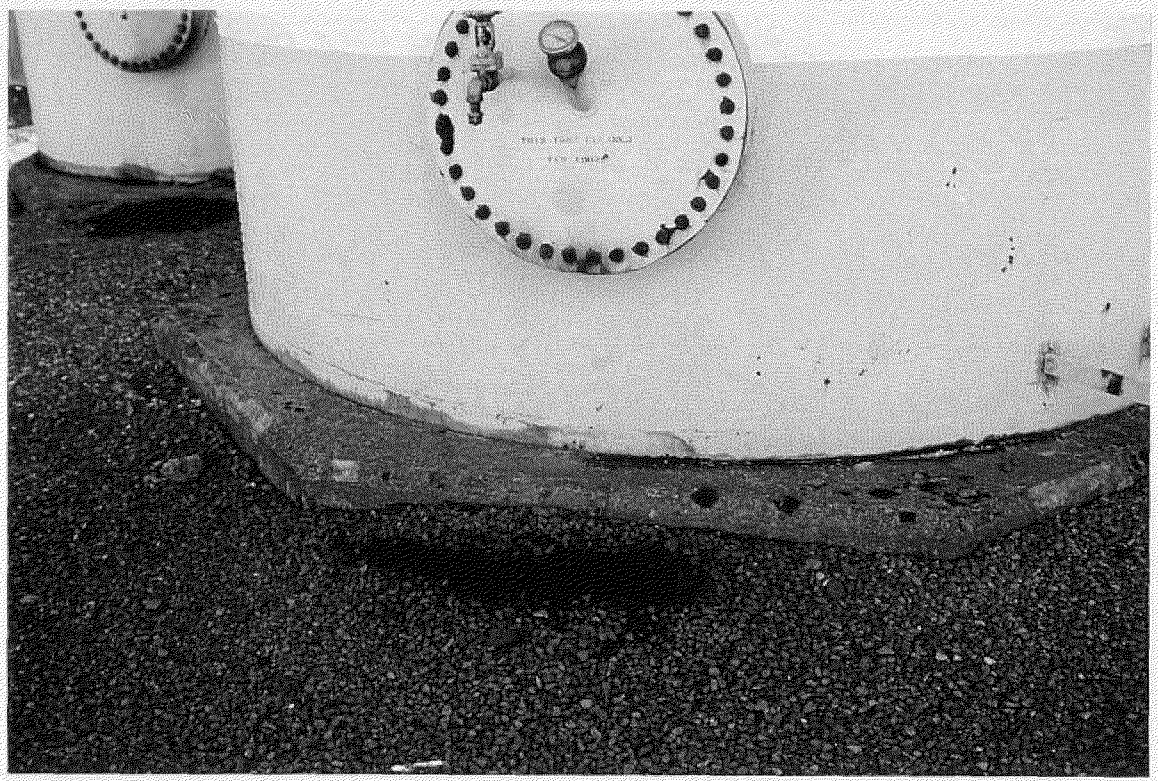

Photo No. 13: Tank Farm No. 1, Tank 1471—staining beneath manway

Photo No. 14: Tank Farm No. 1, Tank 2579—staining beneath manway

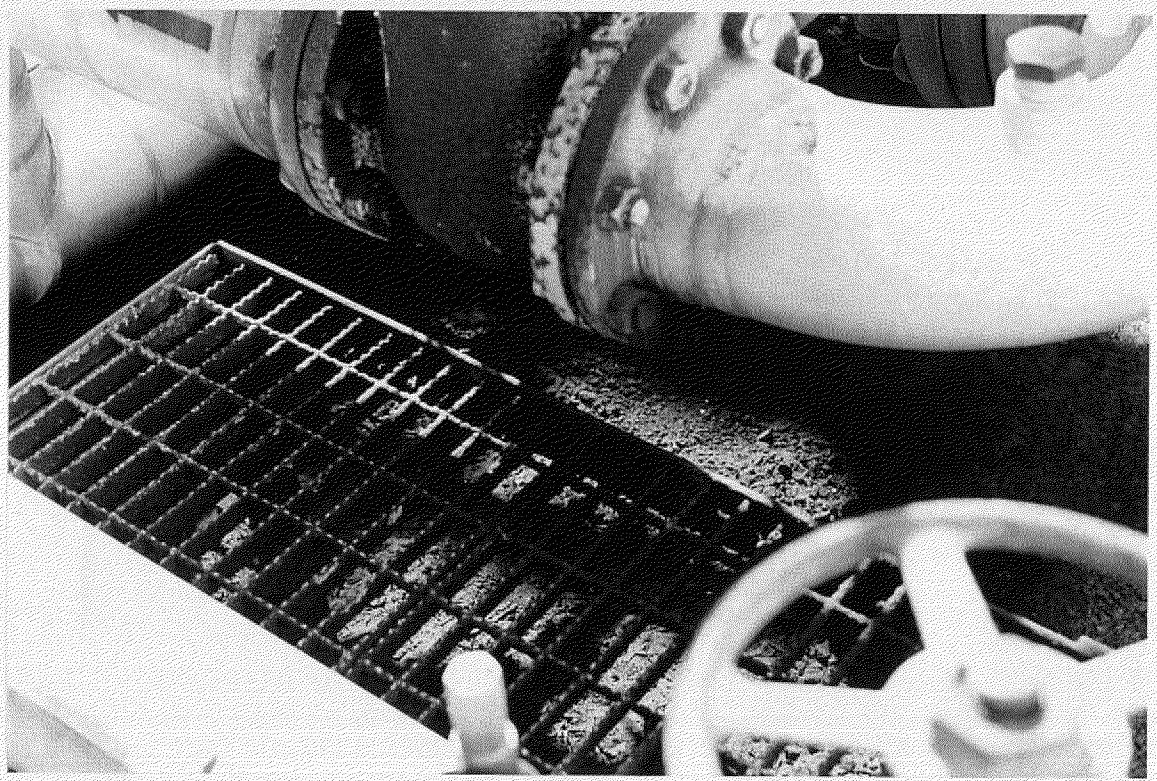

Photo No. 15: Tank Farm No. 1A, Tank 3639—stain/product beneath valves and piping

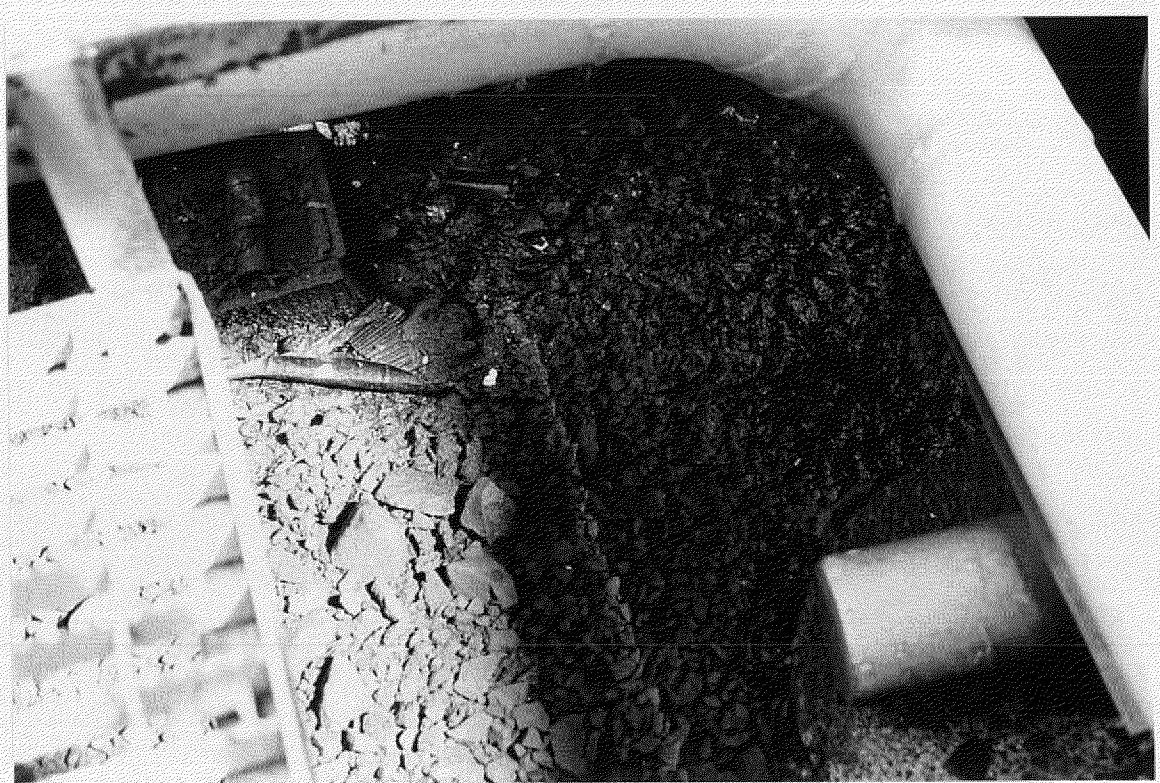

Photo No. 16: Tank Farm No. 1A, Tank 3639—stain/product beneath valves and piping

Photo No. 17: Tank Farm No. 1A, Tank 3639—stain/product beneath valves and piping

Photo No. 18: Tank Farm No. 1A, Tank 2714—staining beneath piping

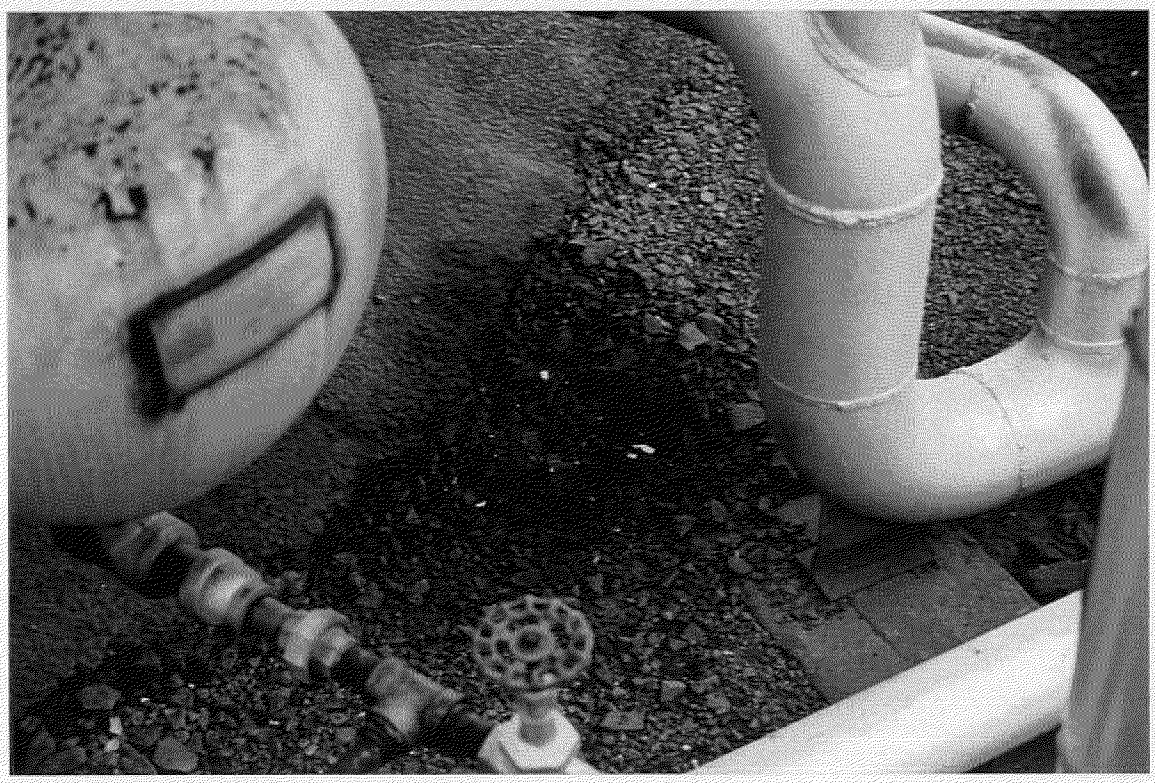

Photo No. 19: Tank Farm No. 1A, Tank 2713—staining beneath valves on asphalt skirt and gravel

Photo No. 20: Tank Farm No. 1A, Tank 2713—staining beneath valves on asphalt skirt and gravel

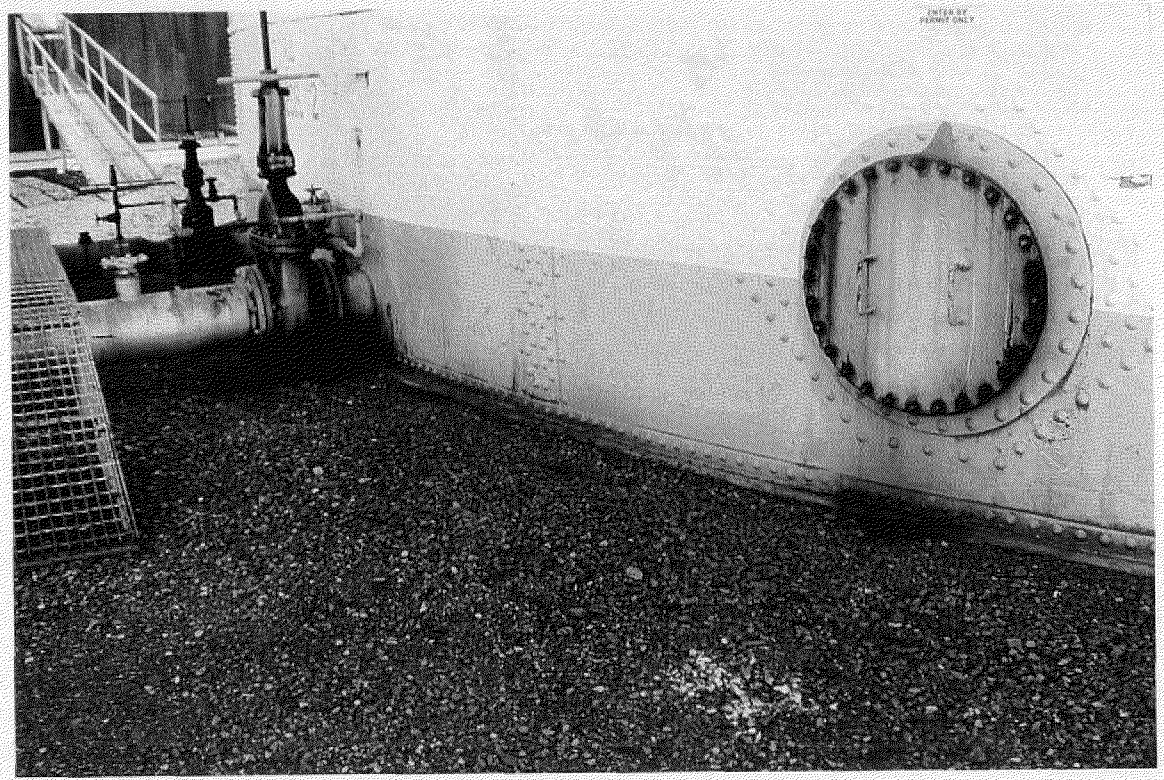

Photo No. 21: Tank Farm No. 1, Tank 2784—staining beneath valves (2) and manway

Photo No. 22: Tank Farm No. 1—staining/moisture from seepage around base of tank (typical)

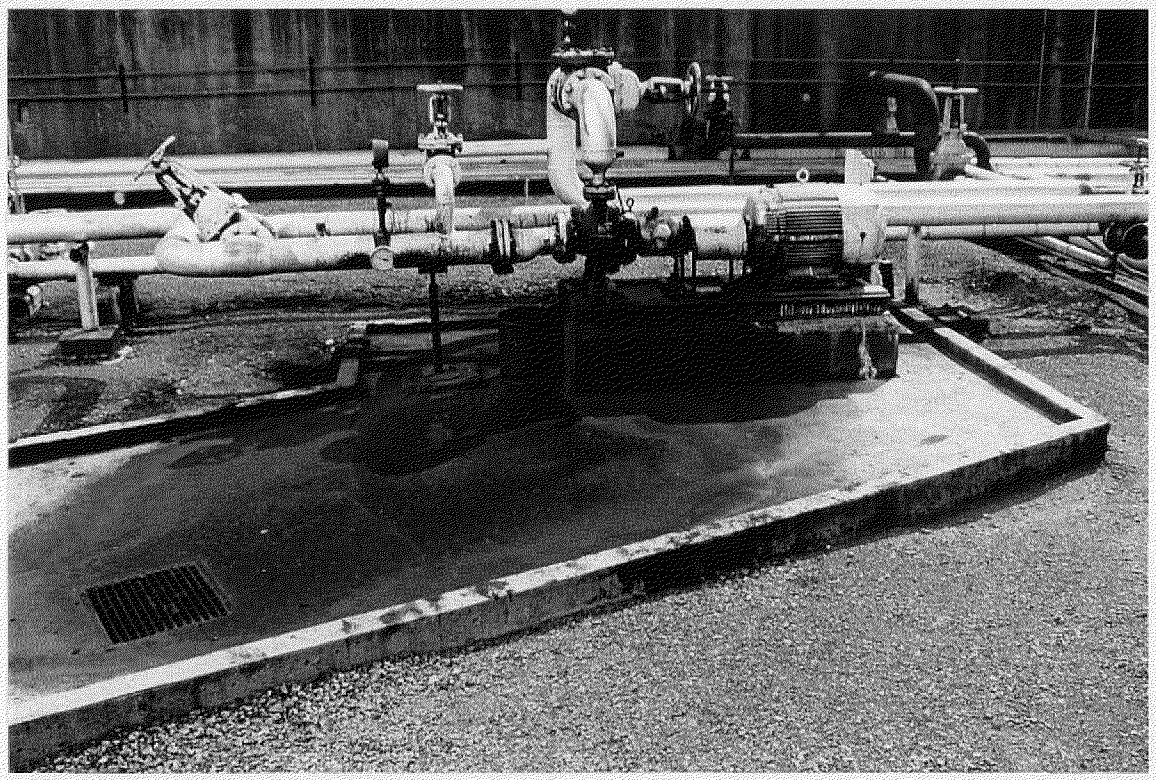

Photo No. 23: Tank Farm No. 1, Pump Pad between Tanks 2783 and 2784—staining/product on concrete and staining on surrounding gravel

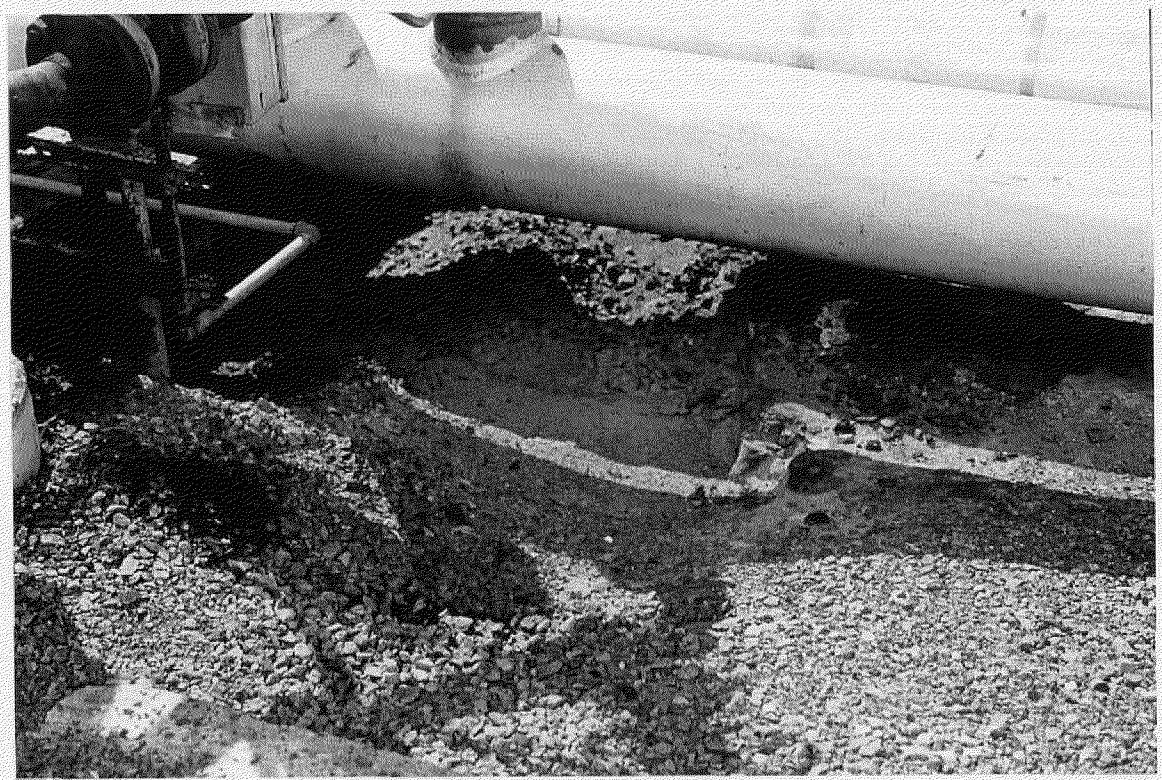

Photo No. 24: Tank Farm No. 1, Piping between Tanks 2783 and 2784—spotty staining (darker areas in shadows)

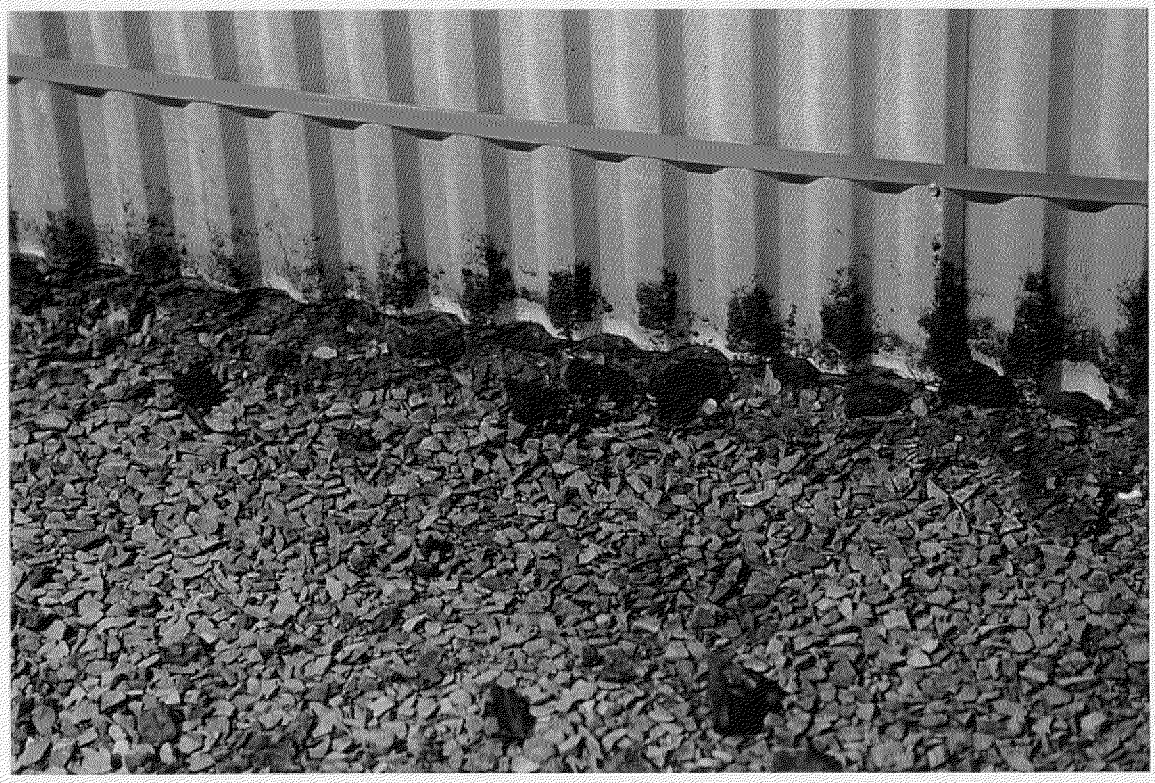

Photo No. 25: Tank 2783—saturated sand balls/soft asphalt near base of tank

Photo No. 26: Tank 2783—saturated wood near base of tank

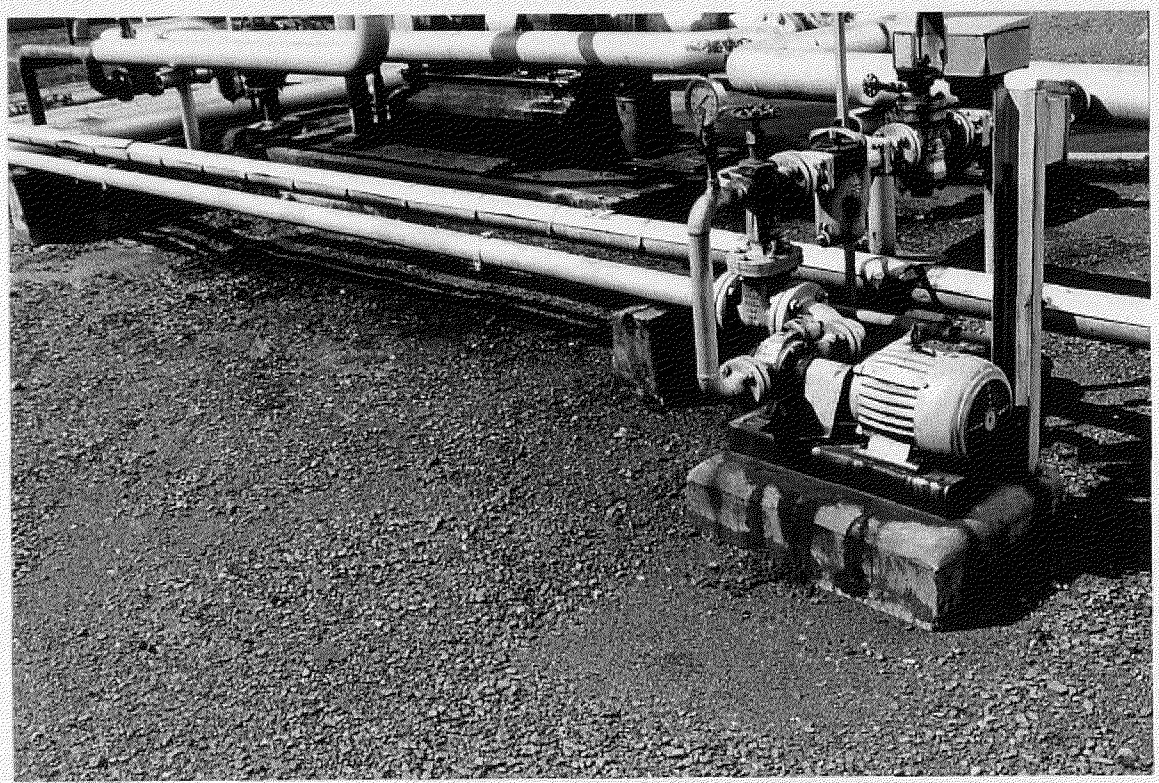

Photo No. 27: Tank 2783—staining around pump near tank

Photo No. 28: Process Water Separator Area—staining on gravel

Photo No. 29: Process Water Separator Area—liquid from leakage in gravel

Photo No. 30: Process Water Separator Area—staining by sump/circular pad

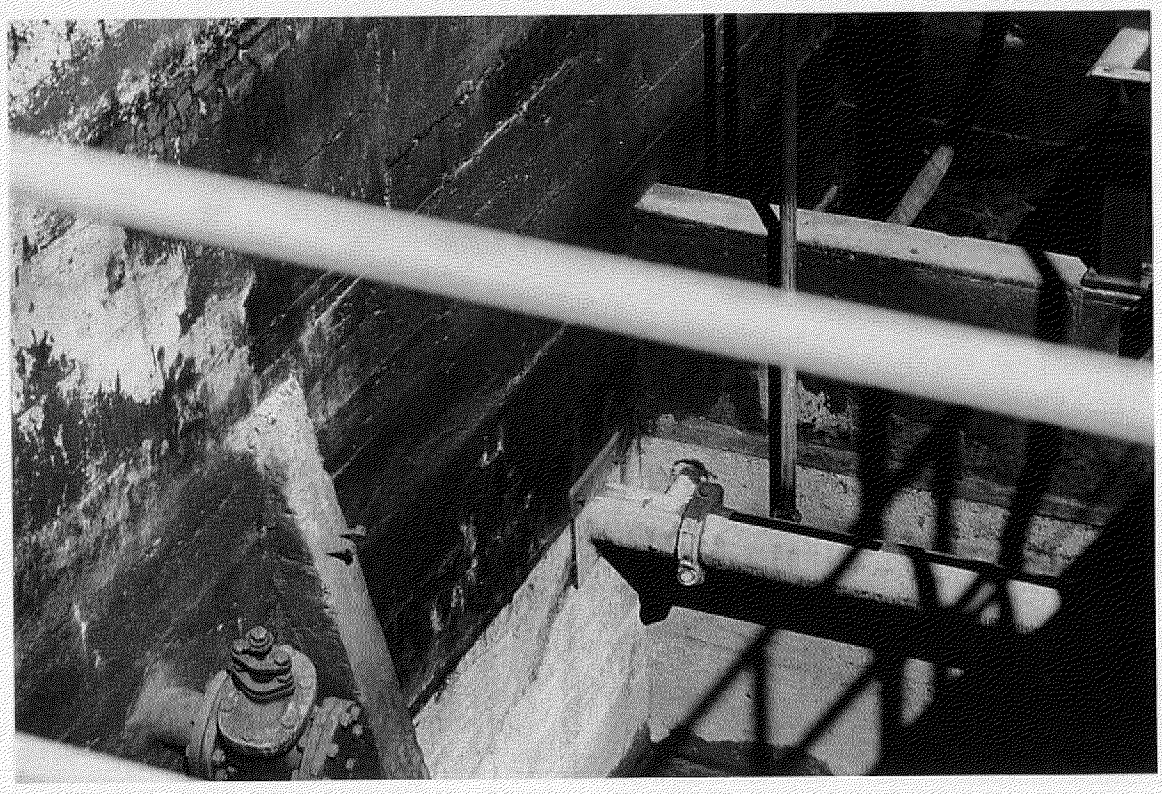

Photo No. 31: Staining/cracks/seepage in valve pit between Tanks 36 and 2917

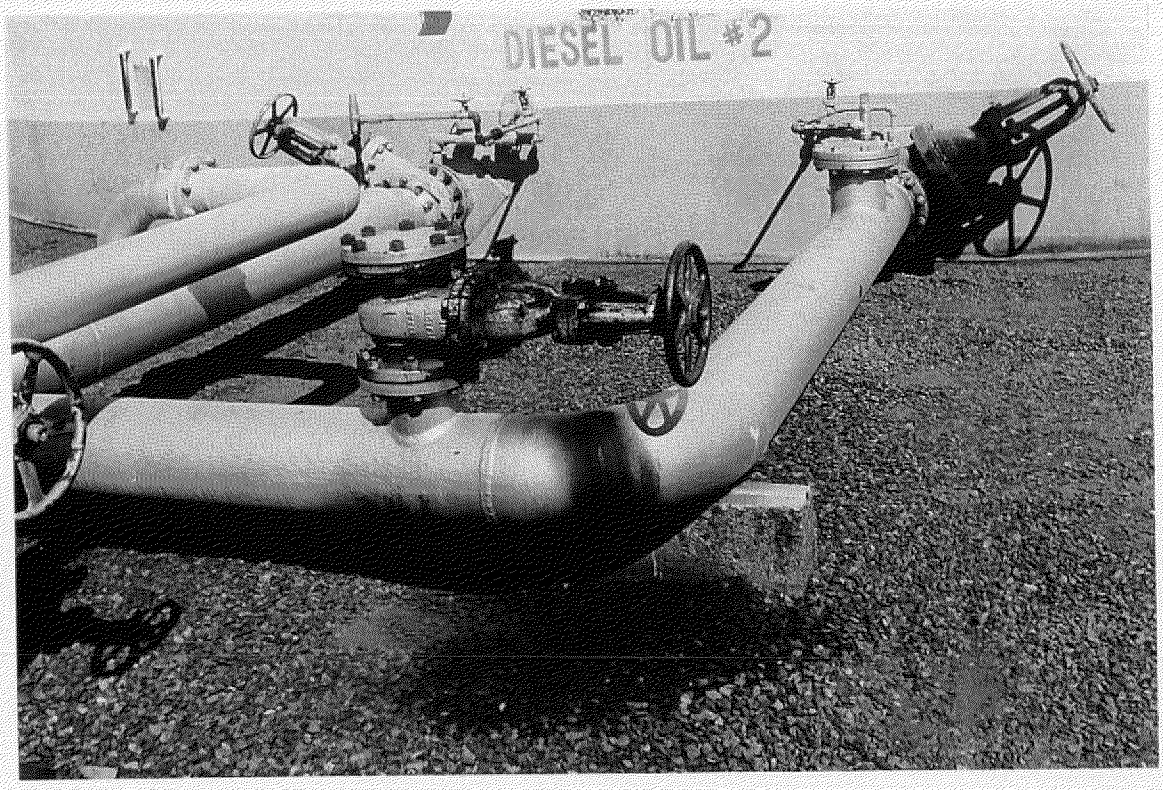

Photo No. 32: Tank Farm No. 2, Tank 2916—staining beneath valve

Photo No. 33: Tank Farm No. 2—paint chips near Tank 2916

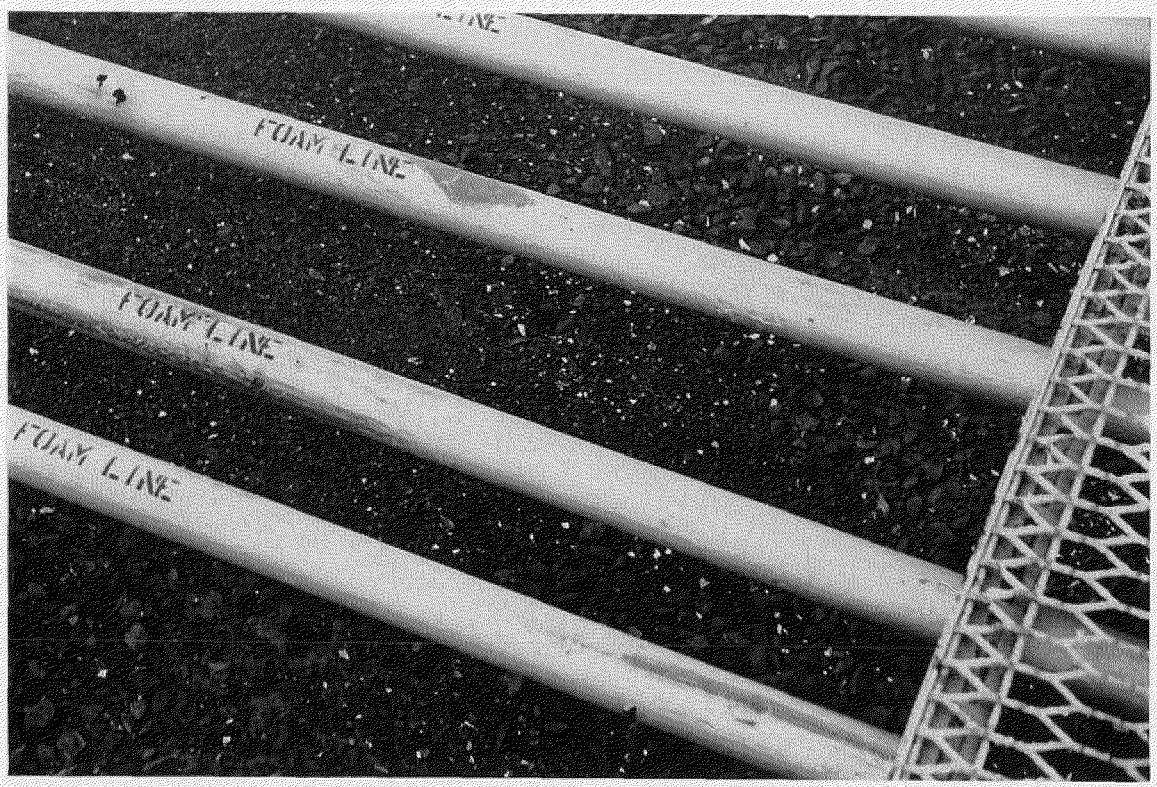

Photo No. 34: Tank Farm No. 2—paint chips near Tank 3410

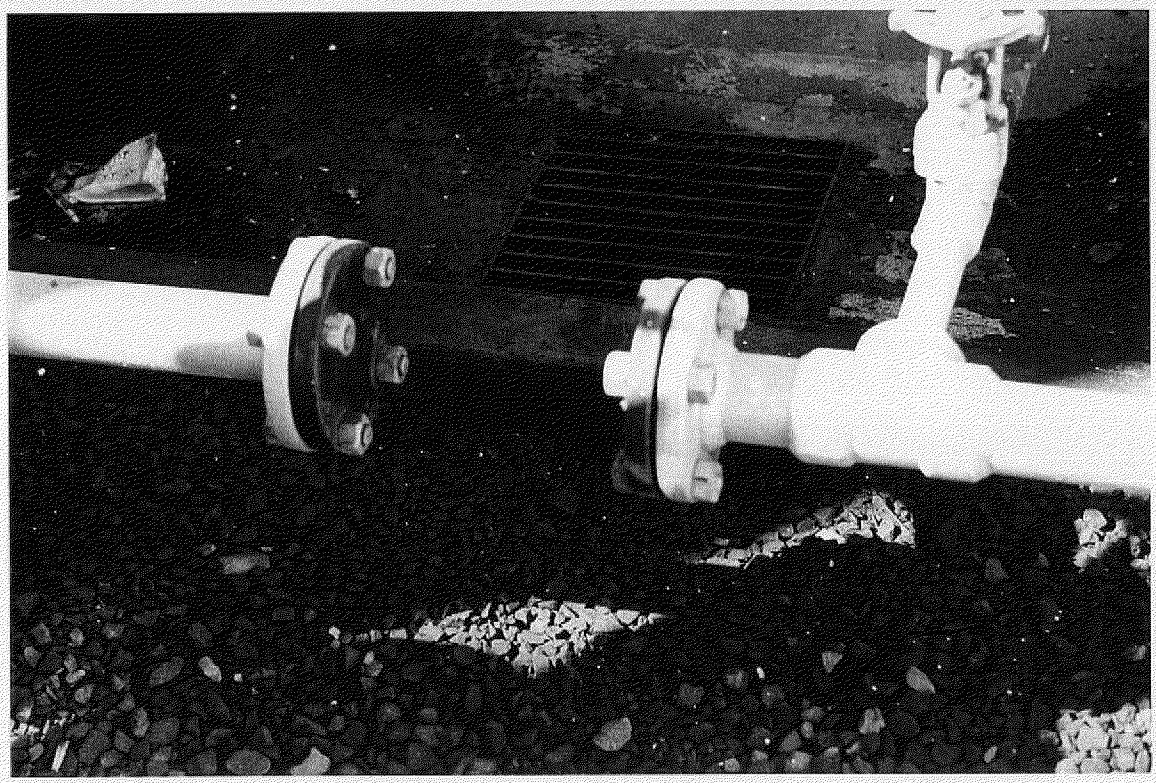

Photo No. 35: Tank Farm No. 2A—staining on pump pad and on gravel by Tank 3623

Photo No. 36: Tank Farm No. 2A—tarry substance near base of Tank 3623

Photo No. 37: Tank Farm No. 2A—tarry substance near base of Tank 3623

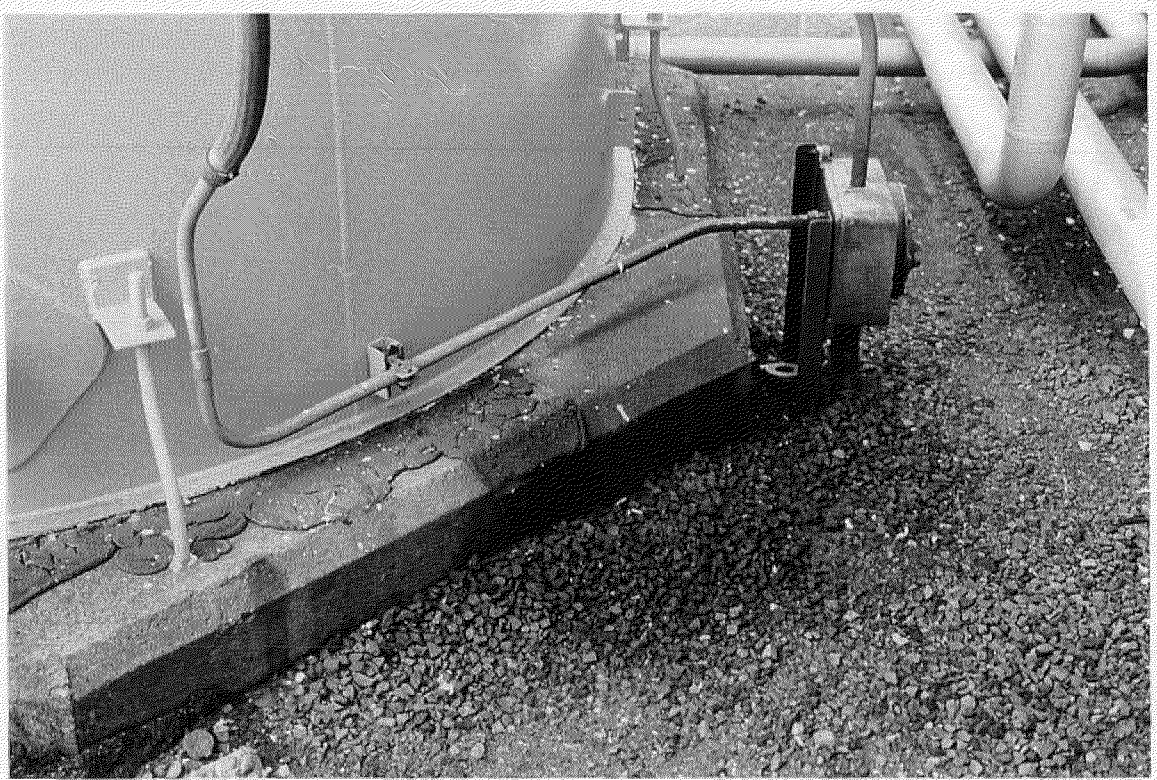

Photo No. 38: Tank Farm No. 2A—tarry substance and staining at base of Tank 4327

Photo No. 39: Tank Farm No. 2A, Tank 2983—staining beneath valves

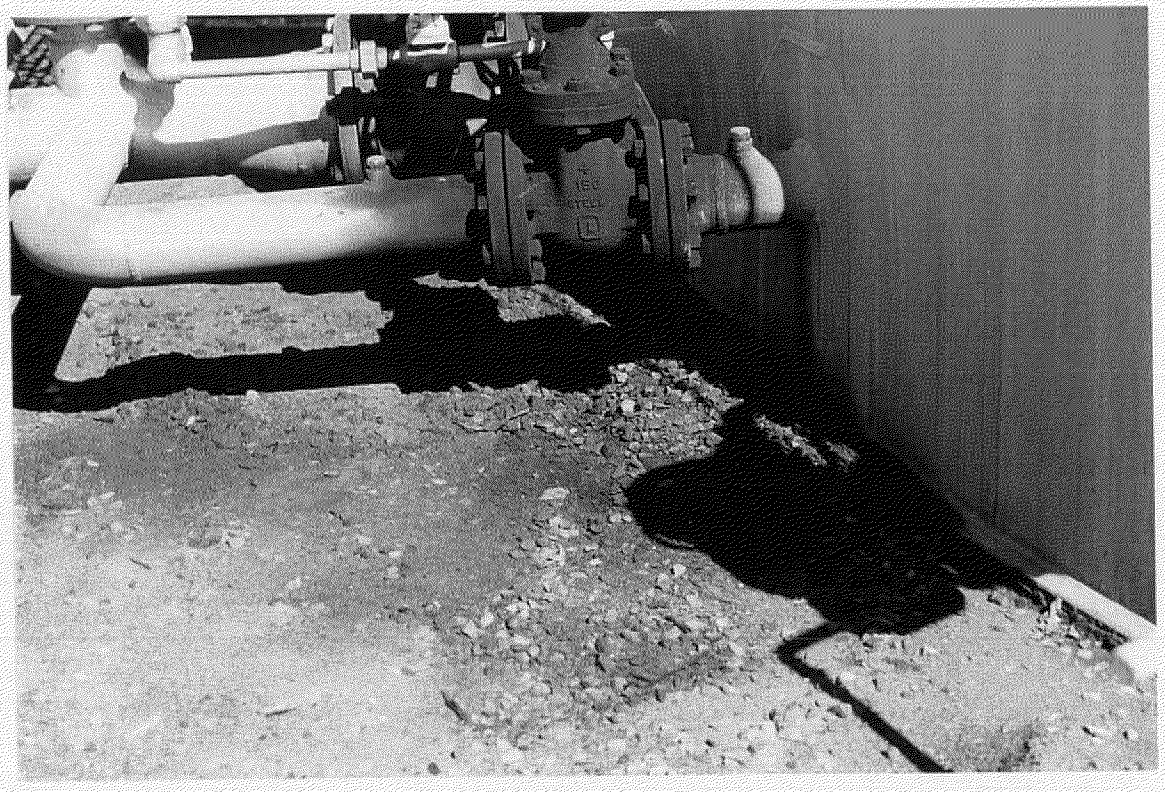

Photo No. 40: Tank Farm No. 2A, Tank 2983—staining beneath valves

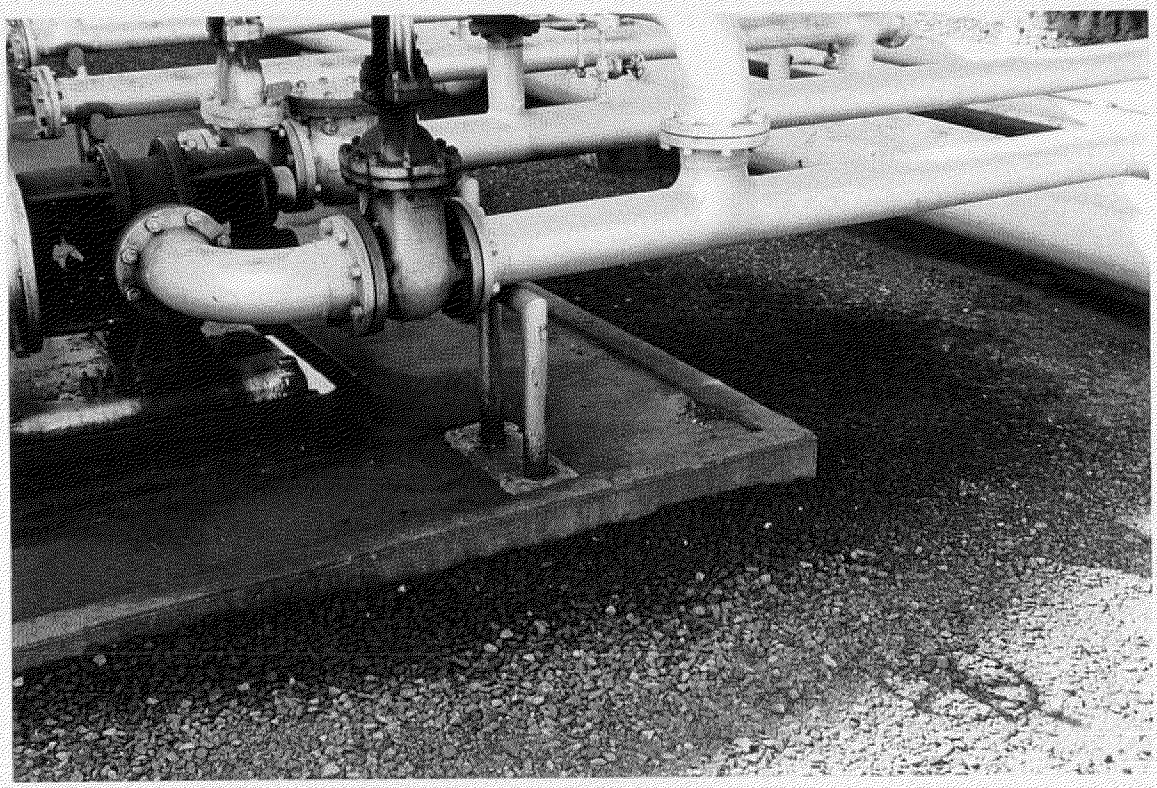

Photo No. 41: Tank Farm No. 2A, Pump Pad between Tanks 2982 and 2983—staining on gravel

Photo No. 42: Loading Rack Area—product in concrete-lined trench of central area

Photo No. 43: Loading Rack Area—product on slab by lube slop tank and diesel slop tank under canopy of Lube Loading Rack

Photo No. 44: Loading Rack Area, Pump Slab—staining and product on slab

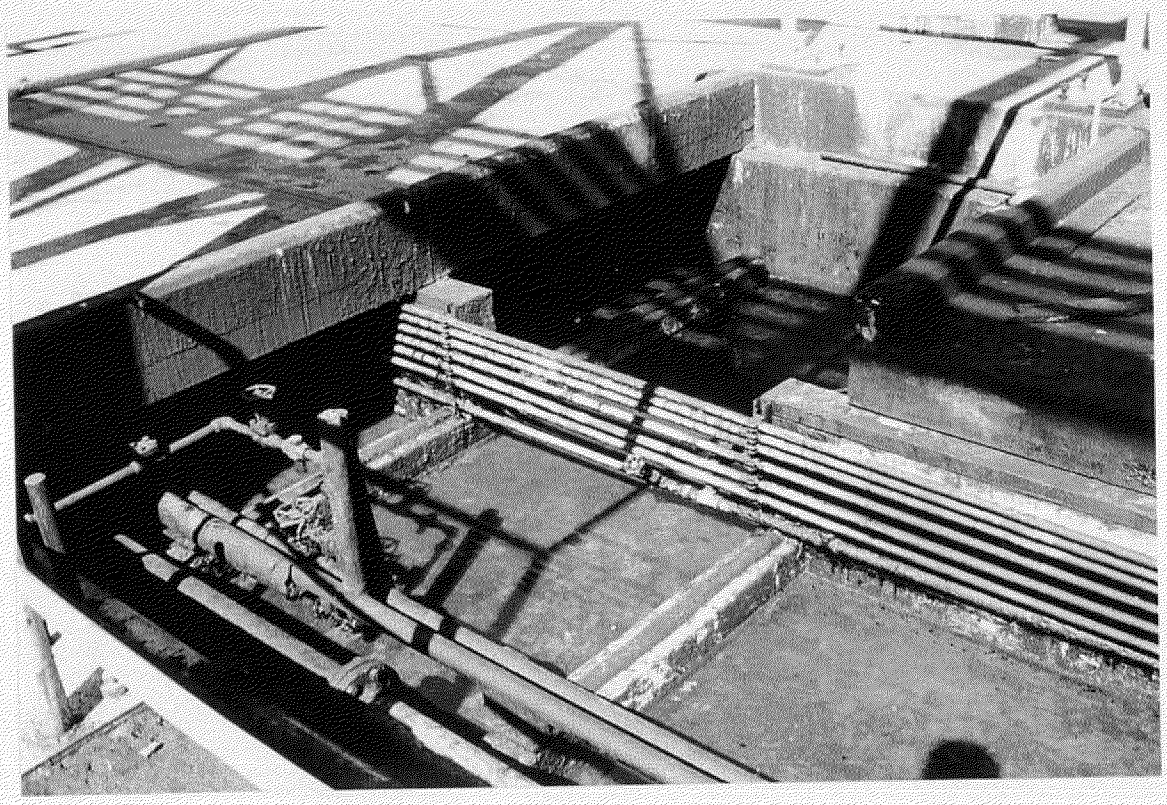

Photo No. 45: Loading Rack Area—water or product in concrete-lined trench or pit

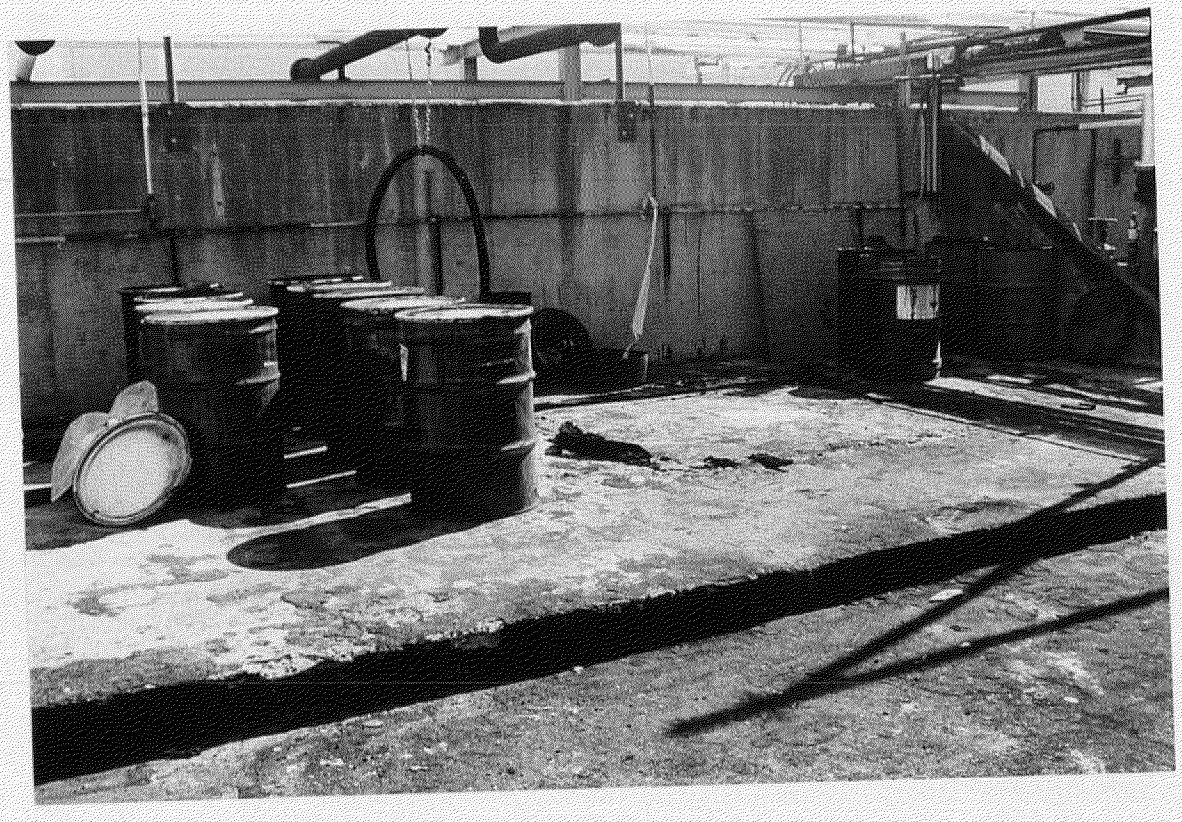

Photo No. 46: Loading Rack Area—showing general conditions of lube unloading/drum storage area

Photo No. 47: Tank Farm No. 3C, Tank 4245—stain beneath valve and by water draw drain

Photo No. 48: Tank Farm No. 3C—staining beneath valves/piping near Tank 4245

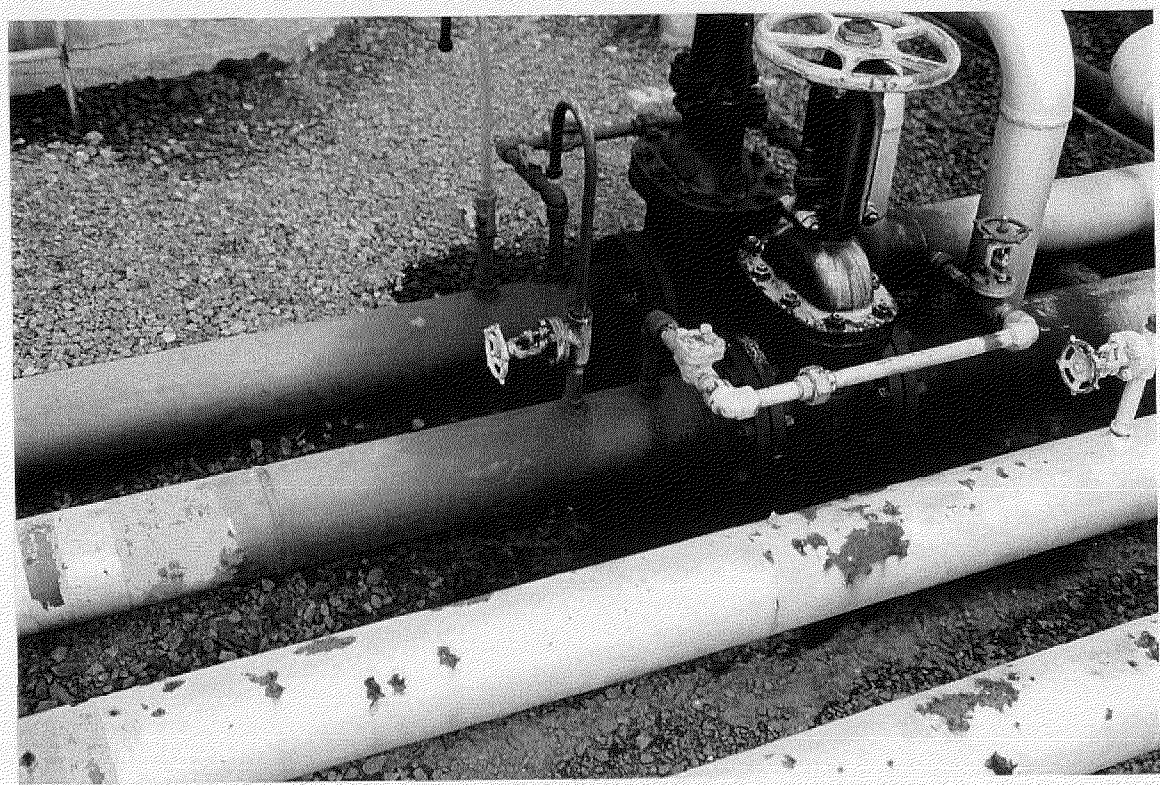

Photo No. 49: Tank Farm No. 3C—staining beneath valves/piping near Tank 4245

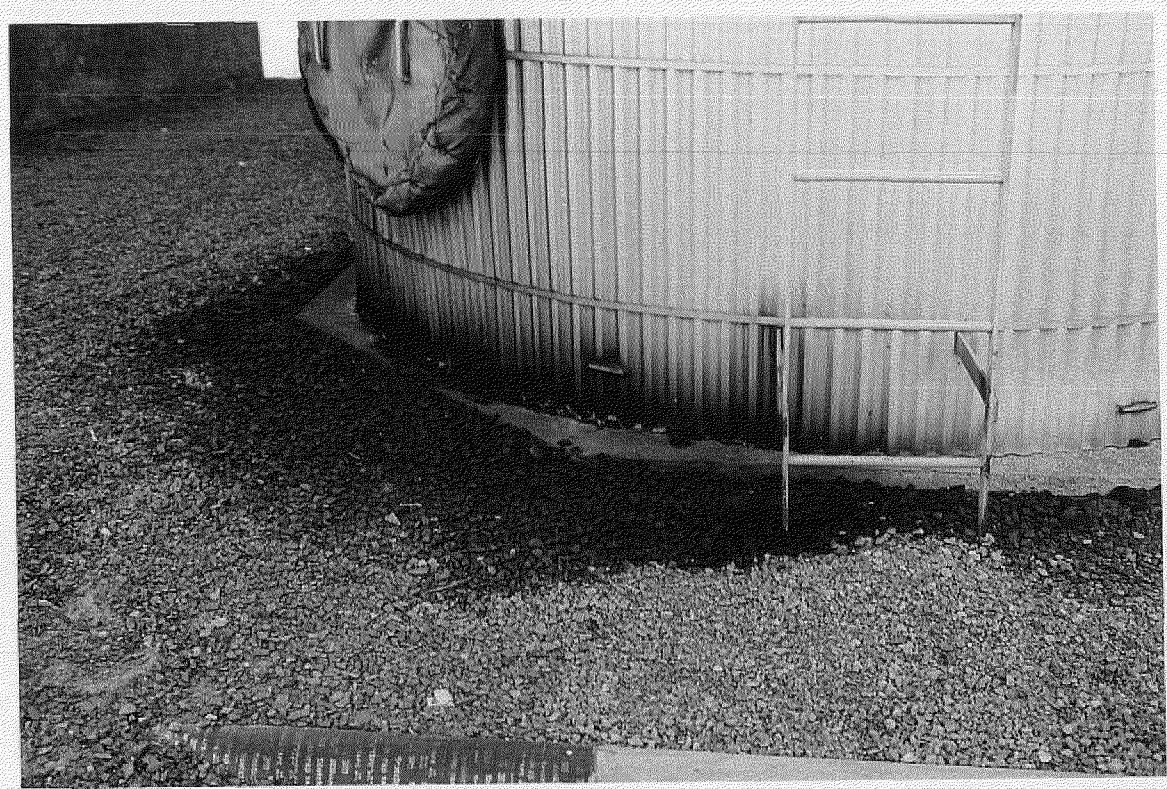

Photo No. 50: Tank Farm No. 3C—staining around Tank 4302

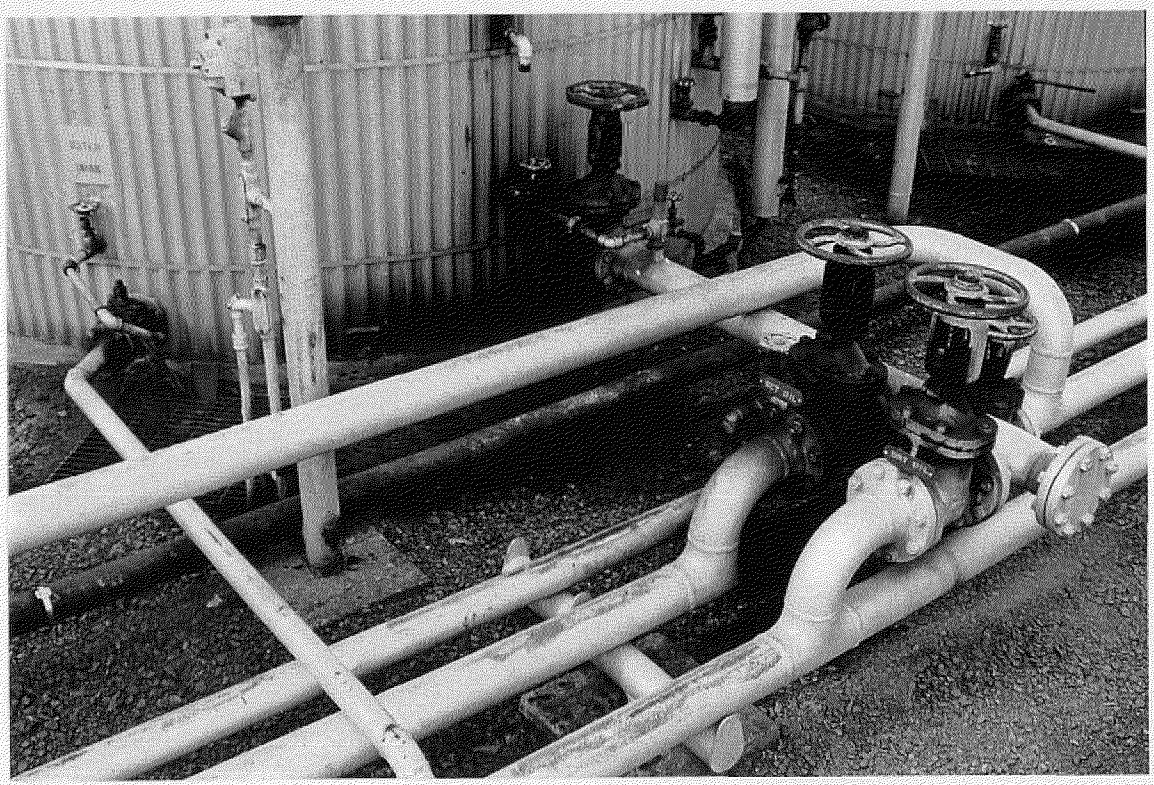

Photo No. 51: Tank Farm No. 3C, Tank 4302—staining beneath valves/piping

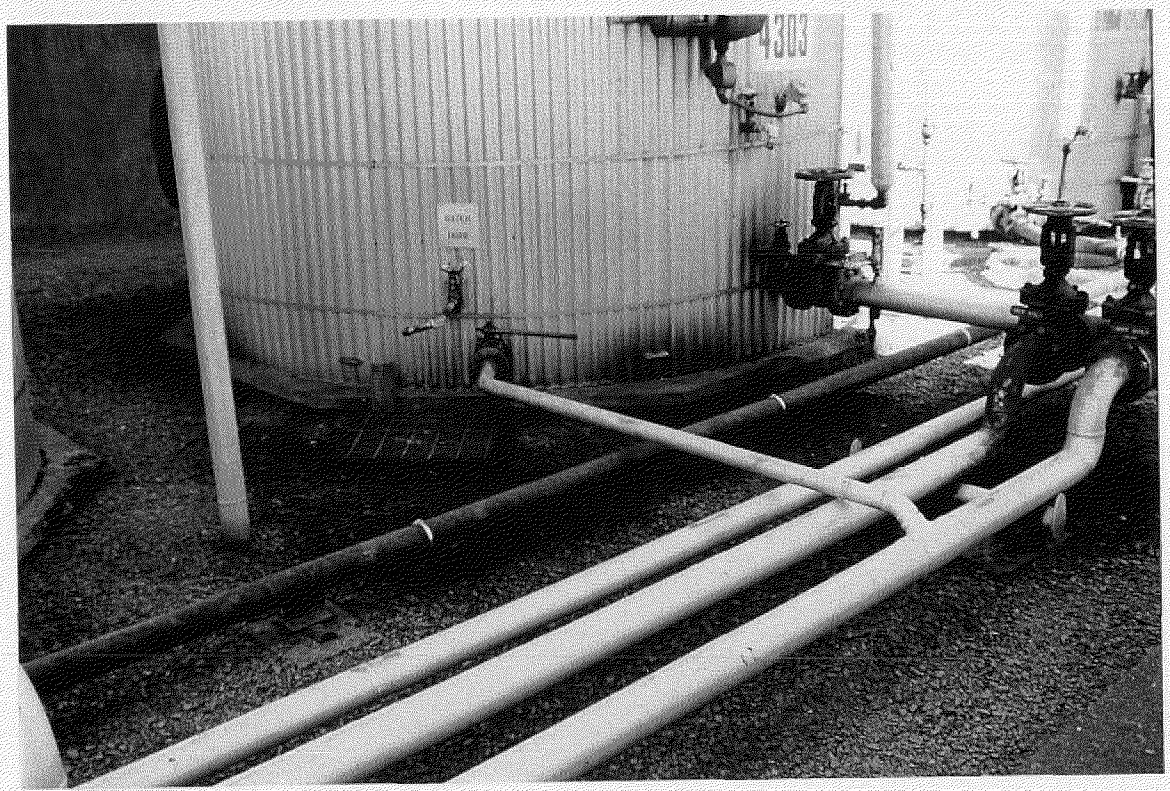

Photo No. 52: Tank Farm No. 3C—staining around Tank 4303

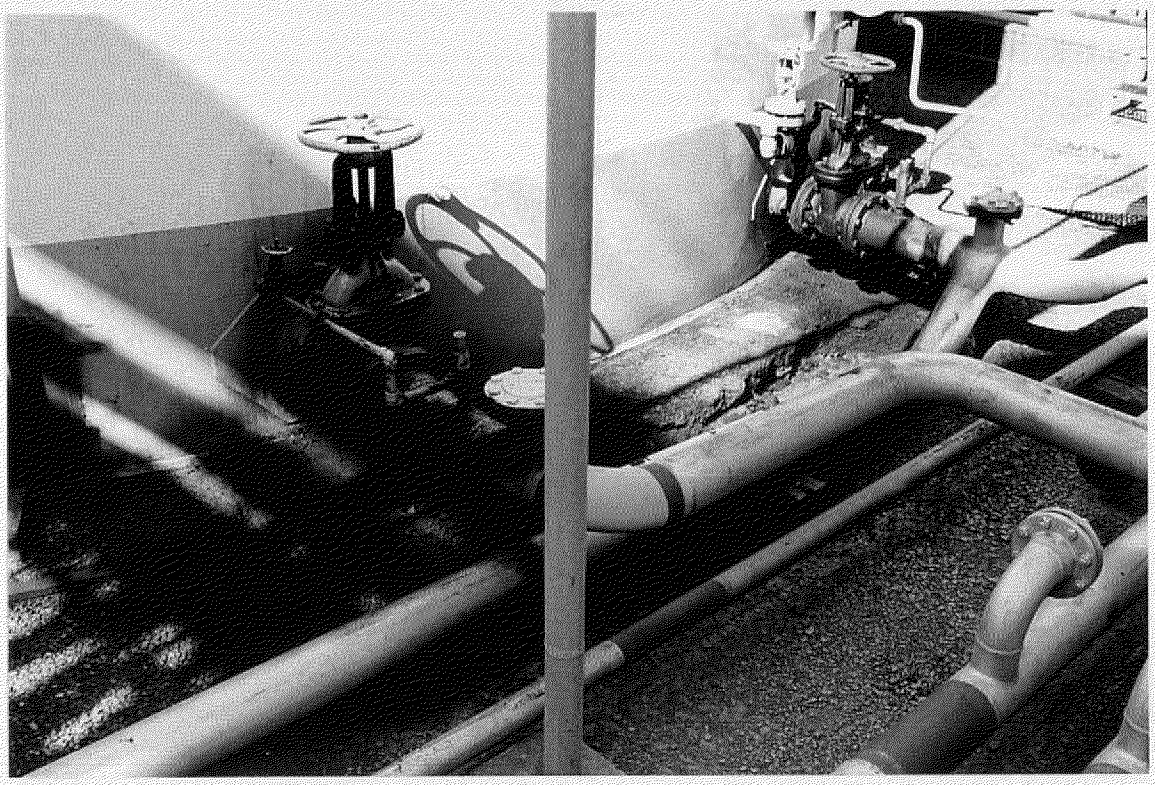

Photo No. 53: Tank Farm No. 3B, Tank 3415—staining beneath valves

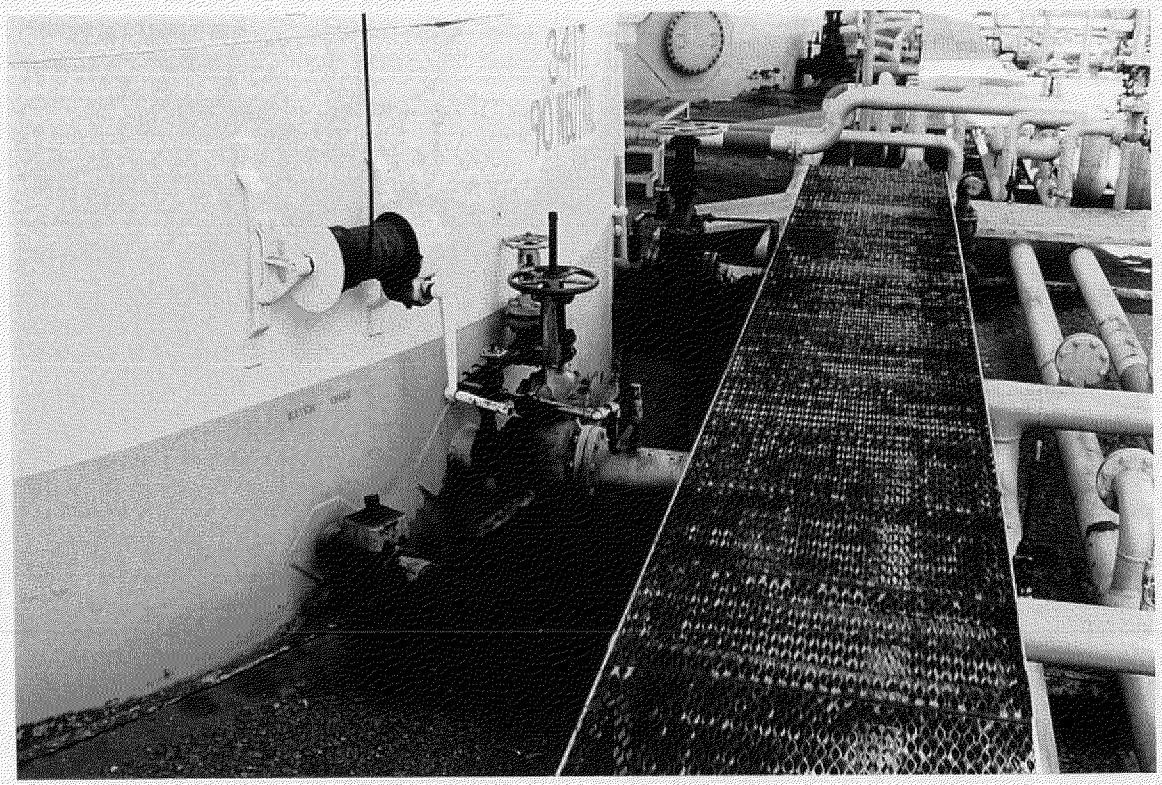

Photo No. 54: Tank Farm No. 3B, Tank 3417—staining beneath valves

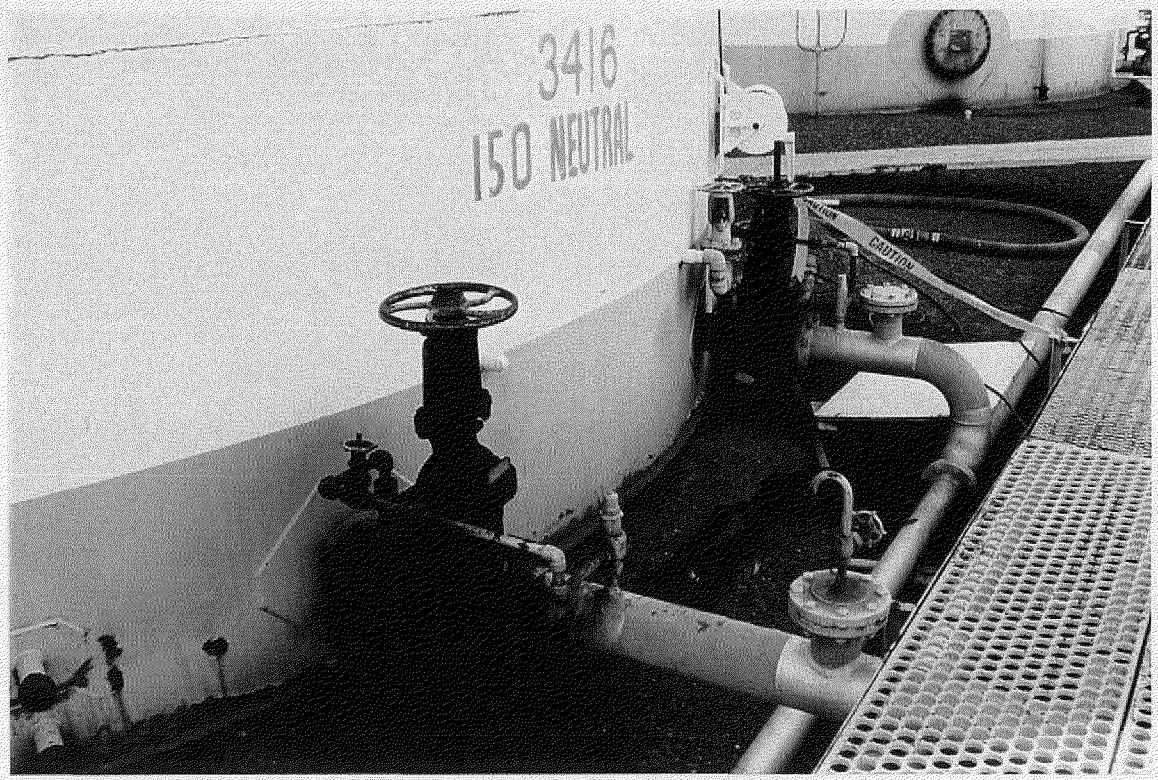

Photo No. 55: Tank Farm No. 3B, Tank 3416—staining beneath valves

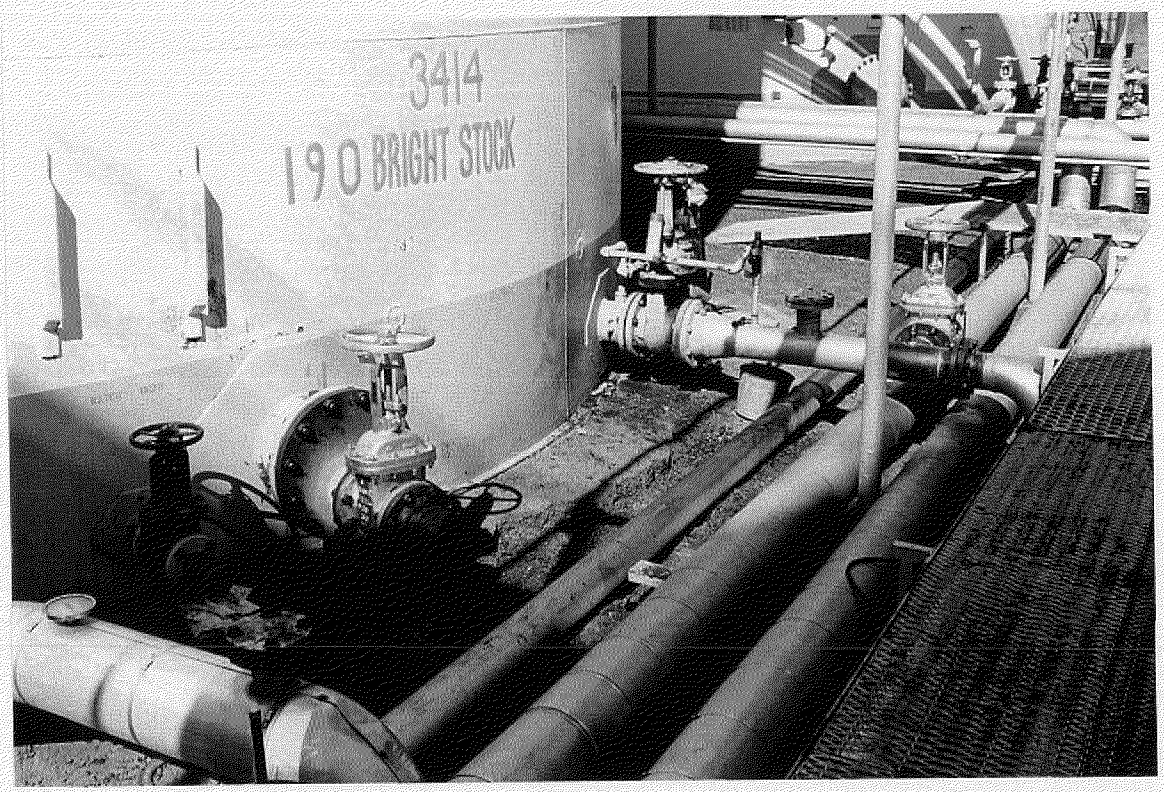

Photo No. 56: Tank Farm No. 3B, Tank 3414—staining beneath valves

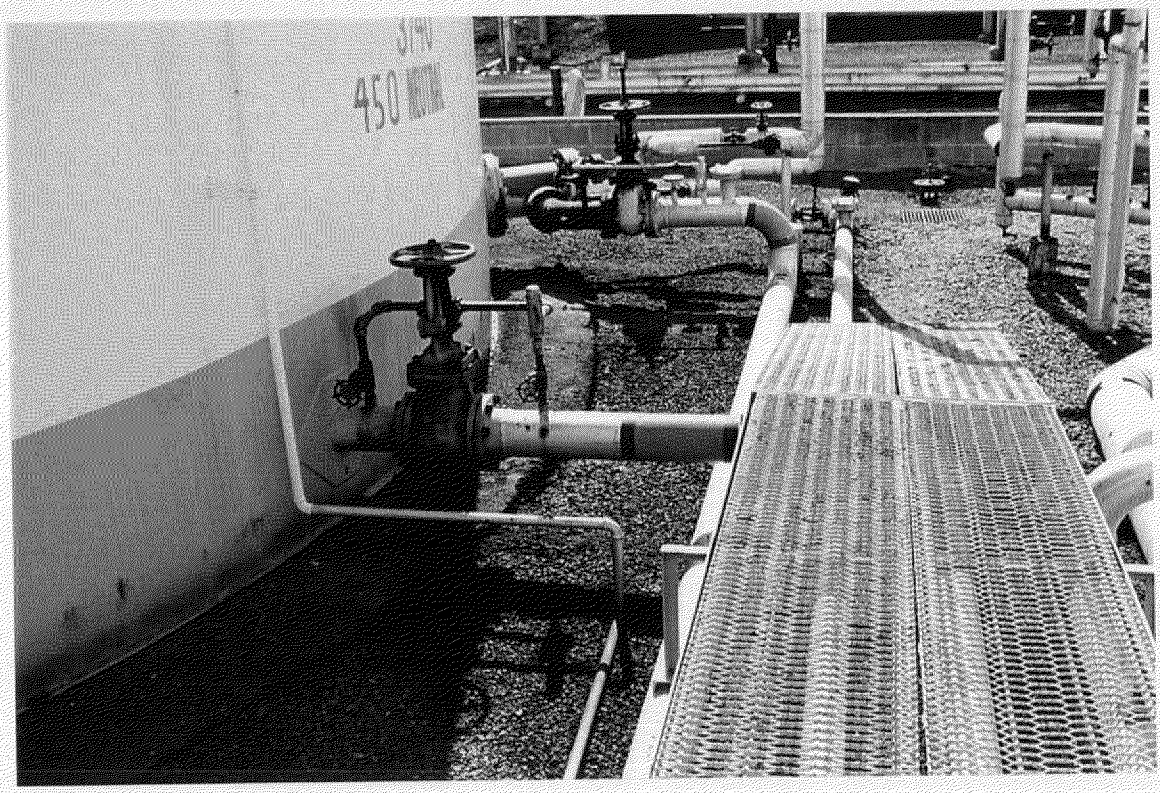

Photo No. 57: Tank Farm No. 3B—staining between Tanks 3739 and 3740

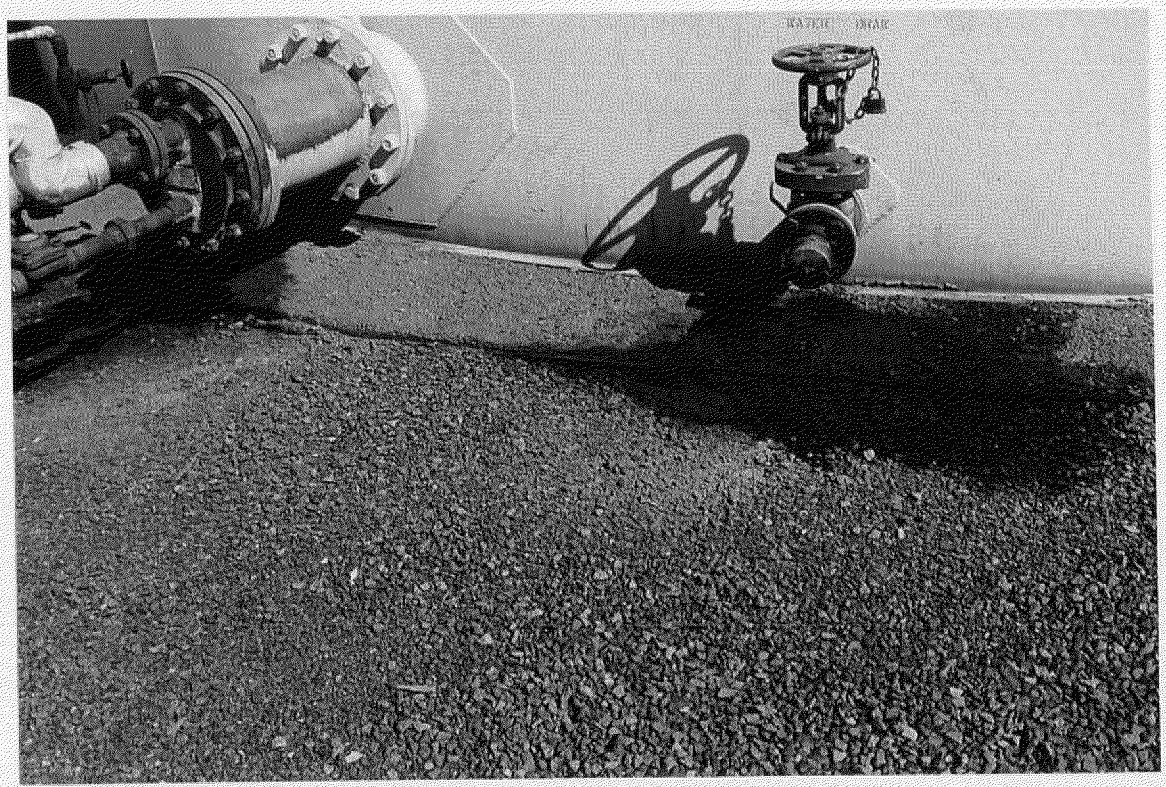

Photo No. 58: Tank Farm No. 3B—staining beneath valve at Tank 3740

Photo No. 59: Tank Farm No. 3A, Tank 4320—staining beneath valves

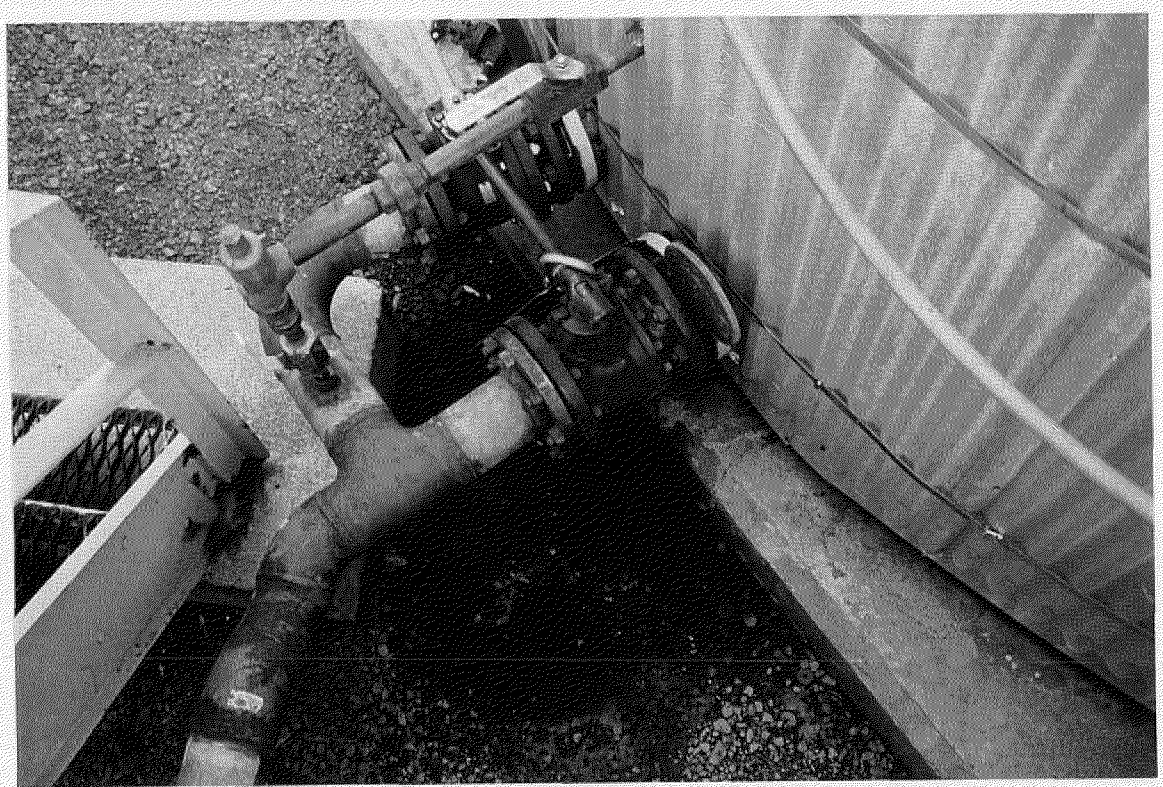

Photo No. 60: Tank Farm No. 3A, Tank 4322—staining beneath valves

Photo No. 61: Tank Farm No. 3, Tank 4318—tarry substance in asphalt skirt and gravel

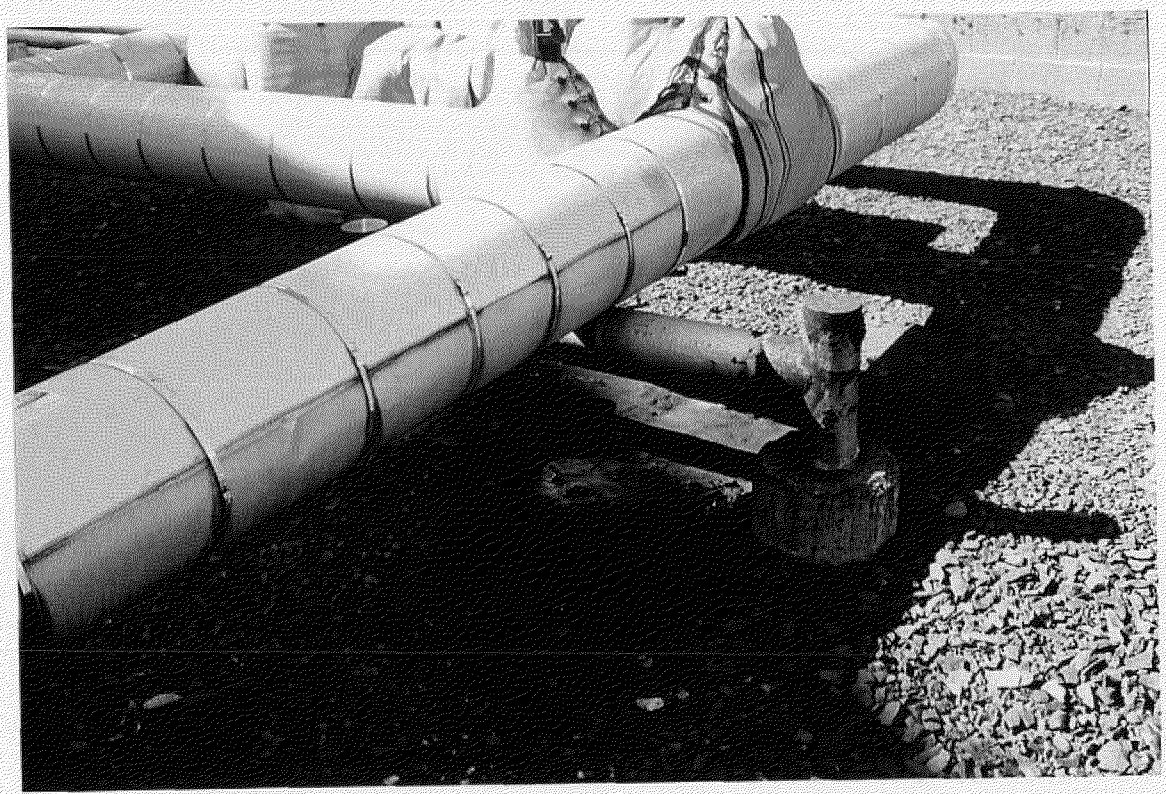

Photo No. 62: Tank Farm No. 3—tarry leak beneath valve northeast of Tank 4318

Photo No. 63: Tank Farm No. 3, Tank 3761—staining by piping and beneath valves

Photo No. 64: Tank Farm No. 3, Tank 3761—staining beneath valve (crack)

Photo No. 65: Tank Farm No. 3, Tank 4255—staining beneath piping

Photo No. 66: Tank Farm No. 3, Tank 4254—staining on asphalt skirt

Photo No. 67: Tank Farm No. 3, Tank 4256—staining/tarry product in gravel beneath piping/valves near tank

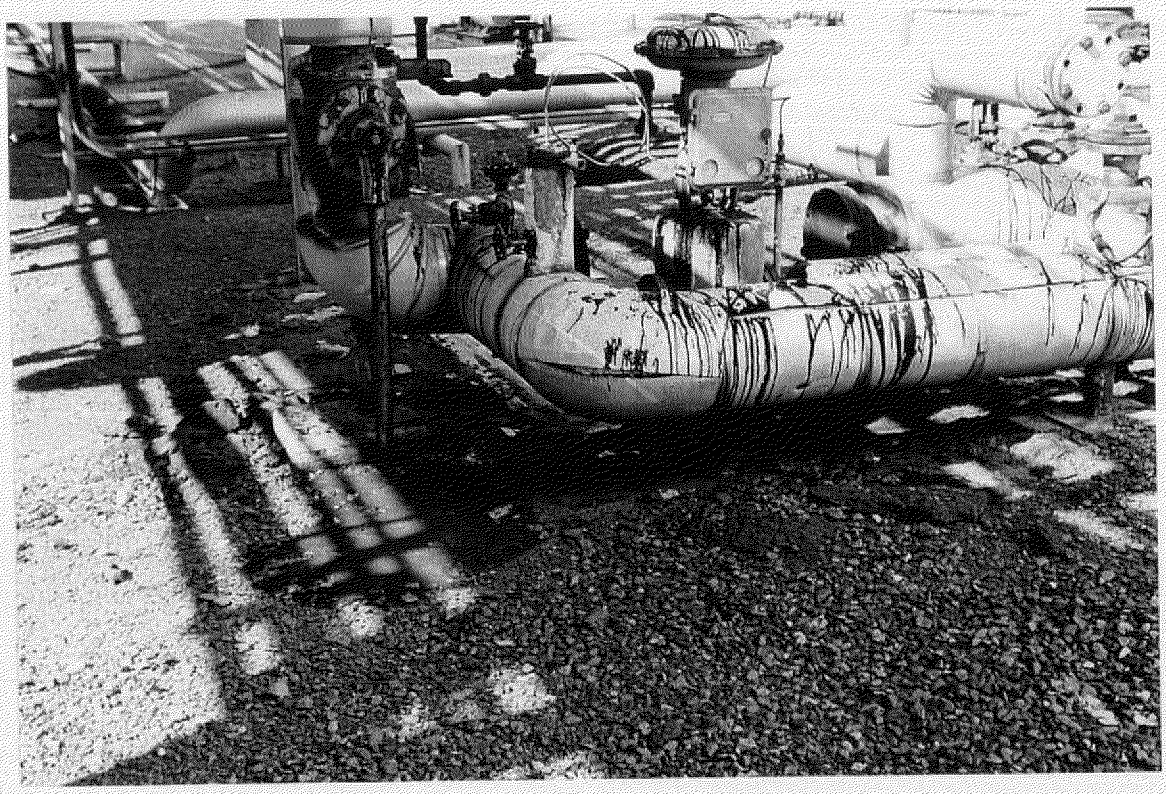

Photo No. 68: Tank Farm No. 3, Tank 4256—staining/tarry product in gravel beneath piping/valves near tank

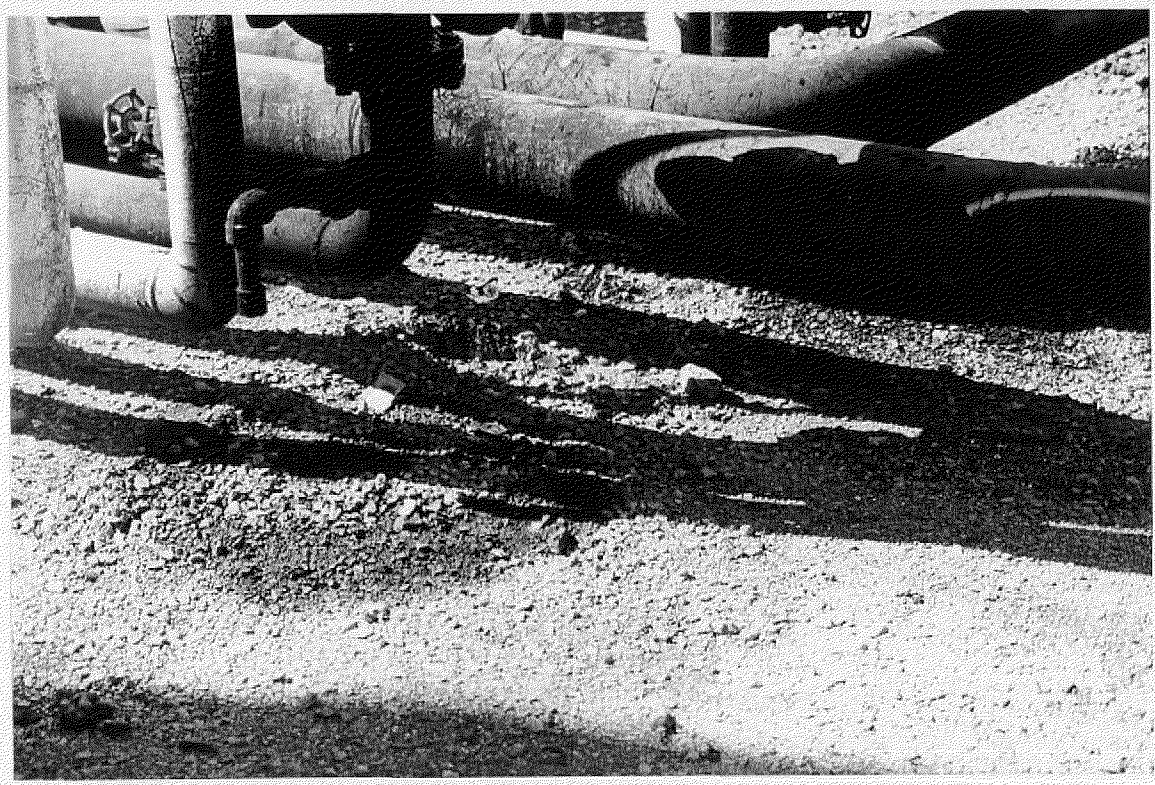

Photo No. 69: Tank Farm No. 3—staining beneath valves/piping between Tanks 4253 and 4252

Photo No. 70: Tank Farm No. 3—staining beneath valves/piping between Tanks 4253 and 4252

Photo No. 71: Tank Farm No. 3, Tank 4253—staining beneath valve (in shadows)

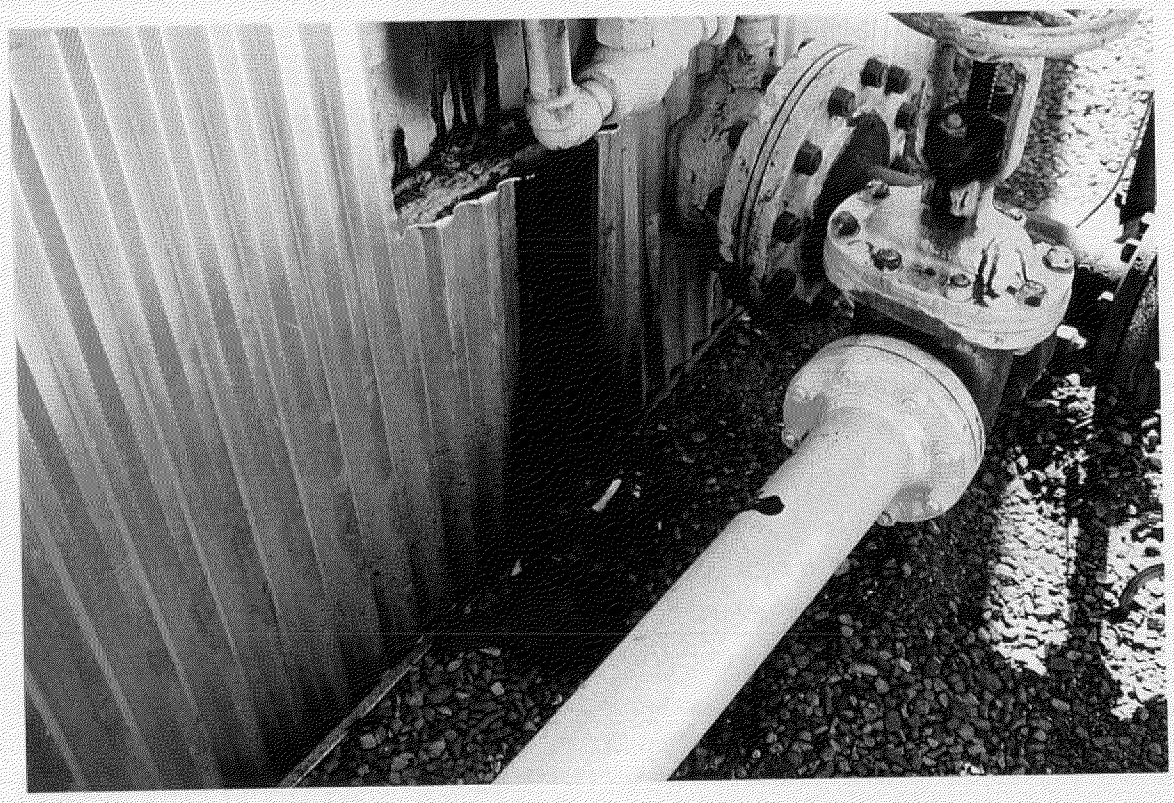

Photo No. 72: Tank Farm No. 3, Tank 3579—tarry product from piping near bottom of tank

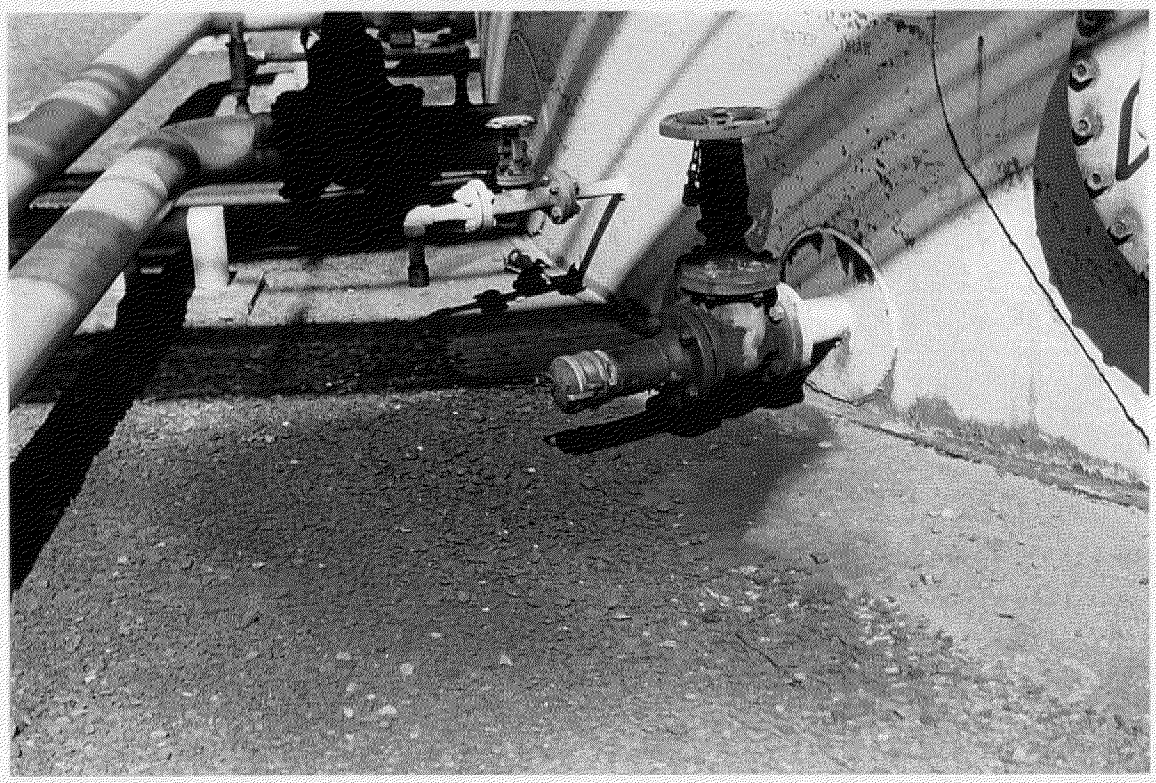

Photo No. 73: Tank Farm No. 3, Tank 4306—staining beneath valves

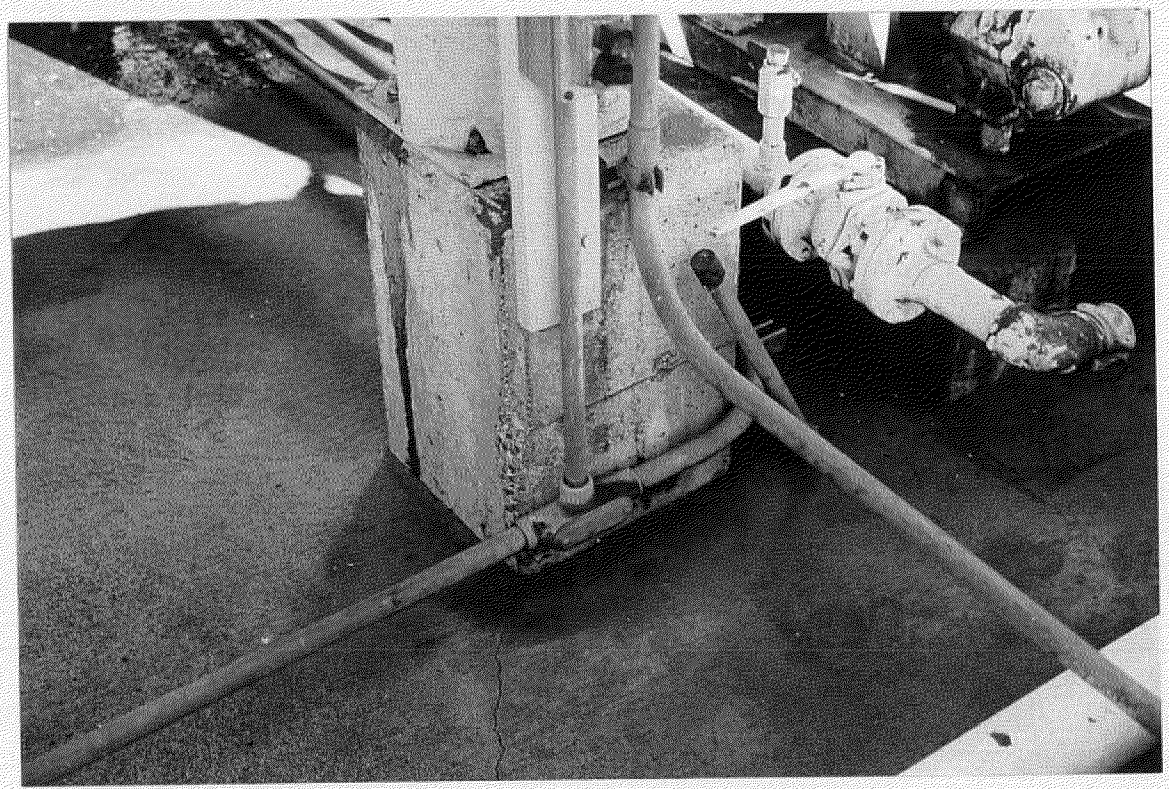

Photo No. 74: F Tank Farm—staining on concrete beneath Tank F-11

Photo No. 75: Railcar Loading Area—drippage on gravel and railroad ties

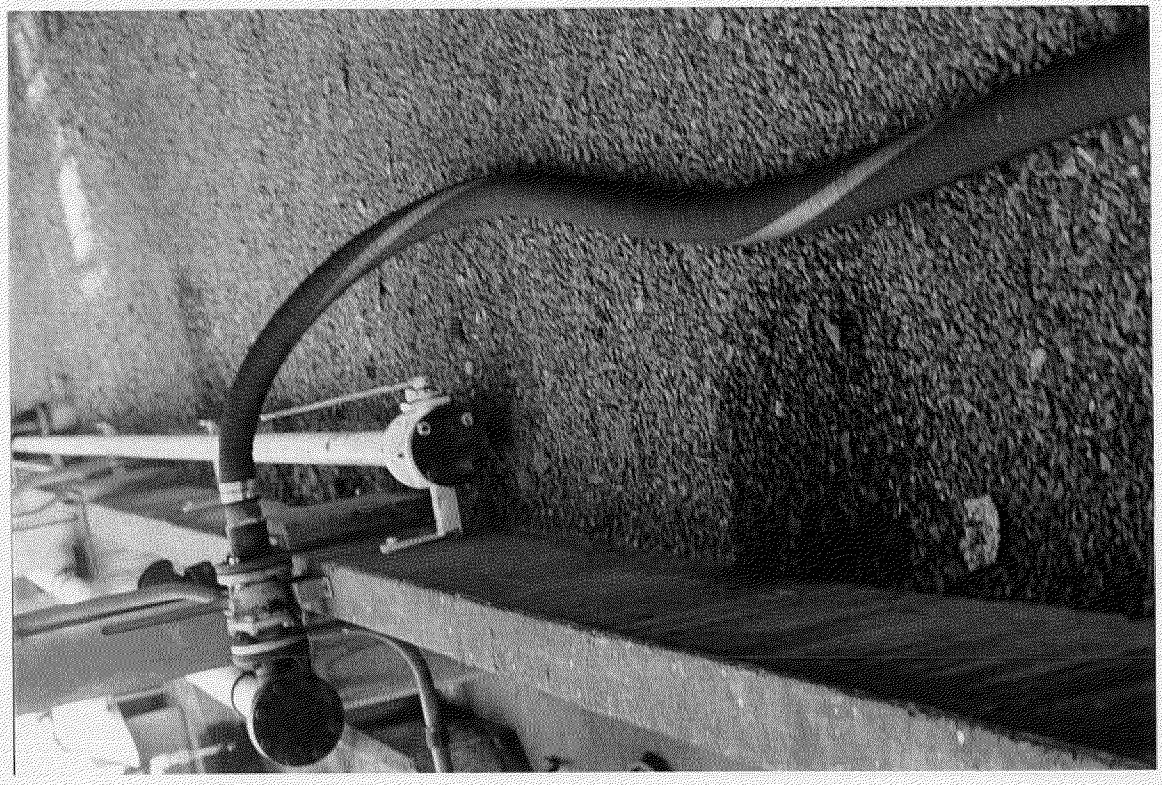

Photo No. 76: Railcar Loading Area—staining north of tracks

Photo No. 77: Railcar Loading Area—product on railroad ties

Photo No. 78: Railcar Loading Area—drippage/staining on tracks

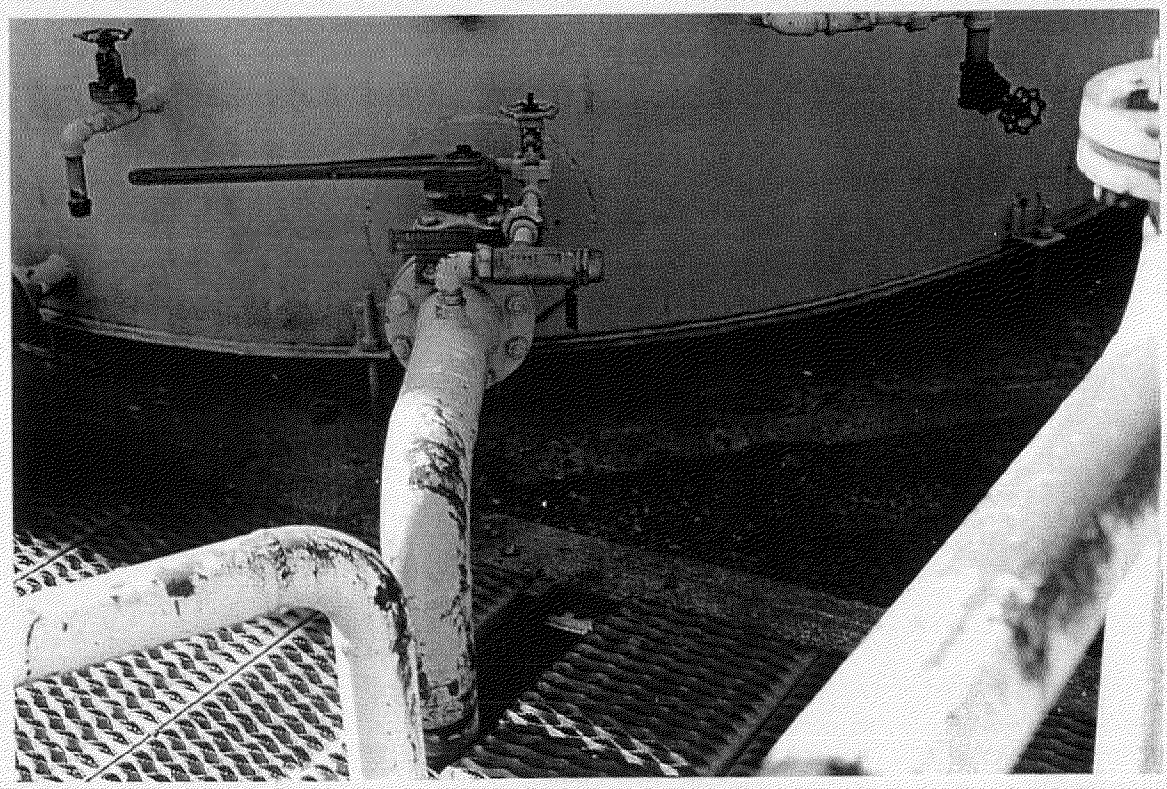

Photo No. 79: Upper Lube Cell—drippage/staining beneath Tank 4281

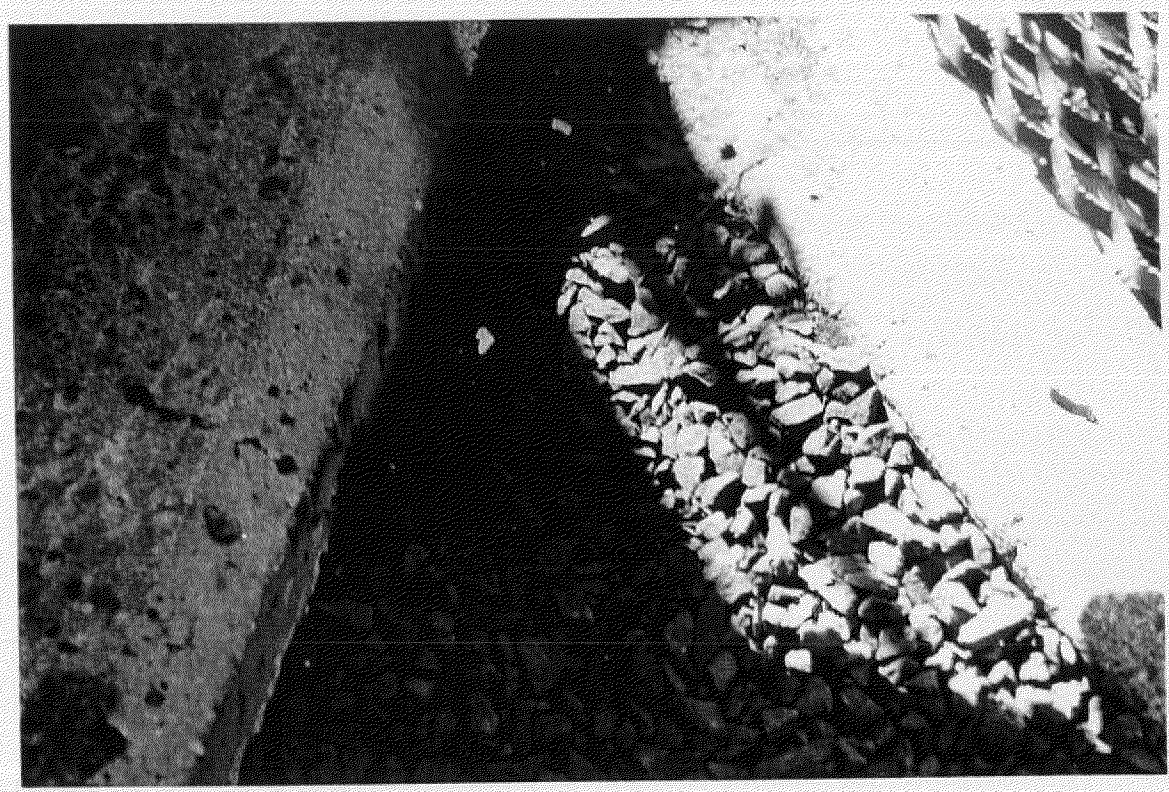

Photo No. 80: Upper Lube Cell, Tank 4333—staining on gravel

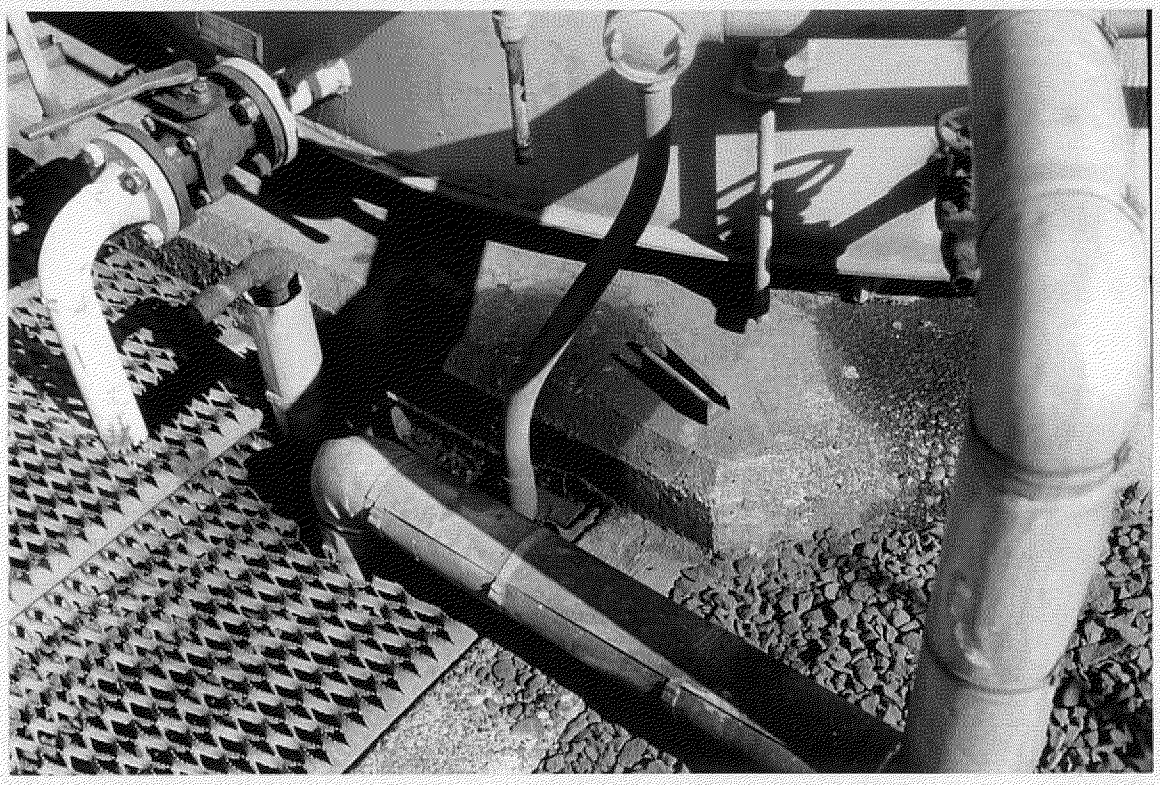

Photo No. 81: Upper Lube Cell, Tank 4334—drippage into pipe trench (dirt bottom)

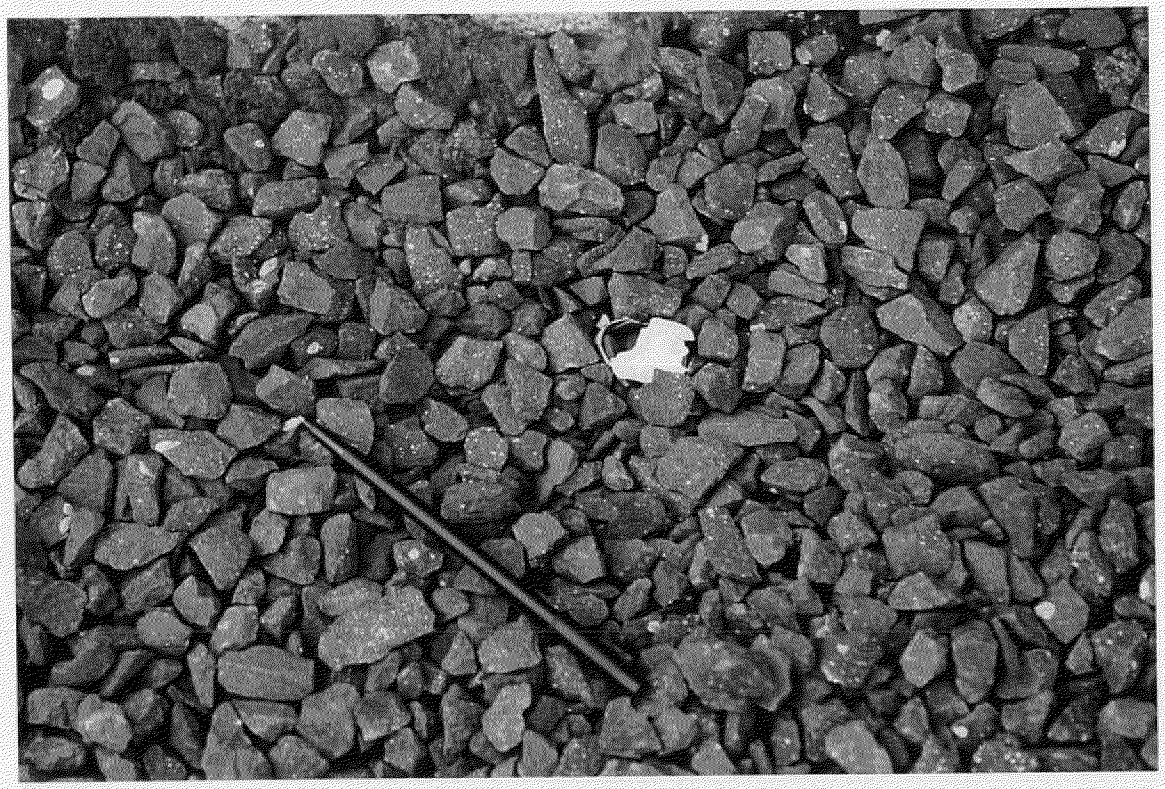

Photo No. 82: Upper Lube Cell—paint chips between Tanks 4332 and 4333

Photo No. 83: Upper Lube Cell, Tank 4243—drippage/staining

Photo No. 84: Upper Lube Cell, Tank 4242—drippage/staining and paint chips

Photo No. 85: Upper Lube Cell, Tank 4241—paint chips

Photo No. 86: Upper Lube Cell, Tank 4192—staining on gravel

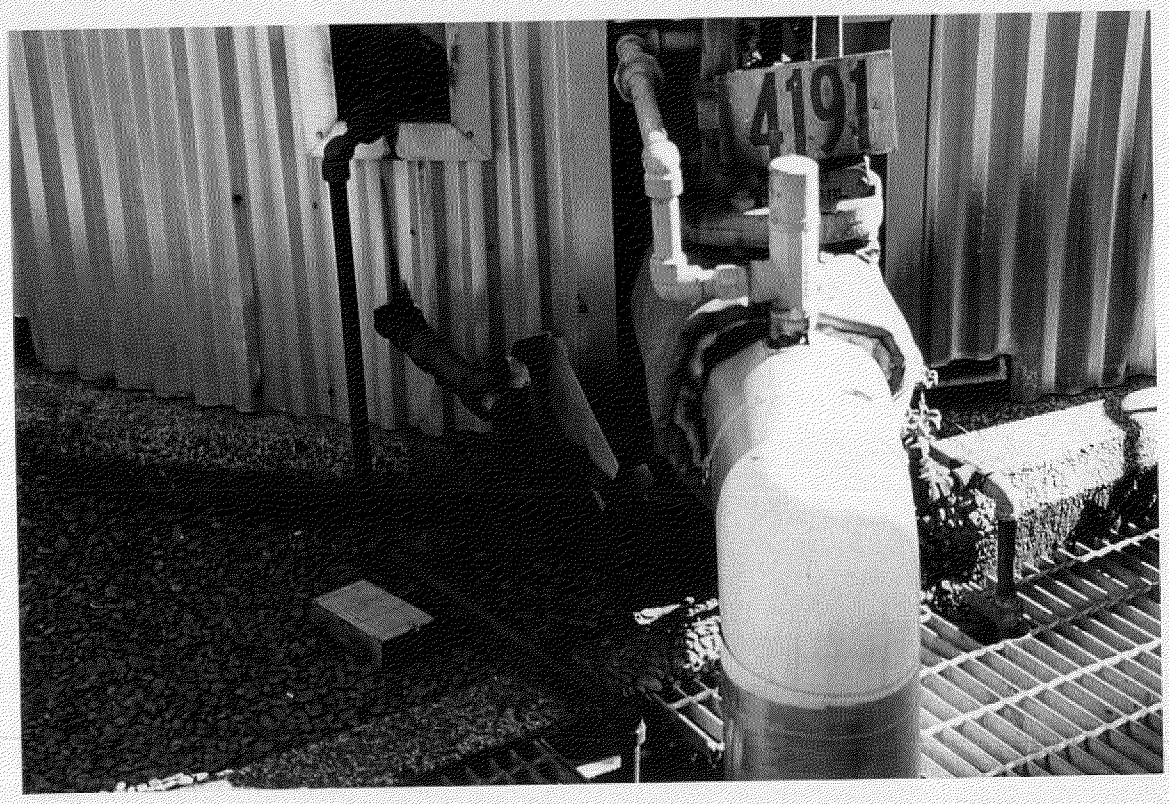

Photo No. 87: Upper Lube Cell, Tank 4191—staining on gravel

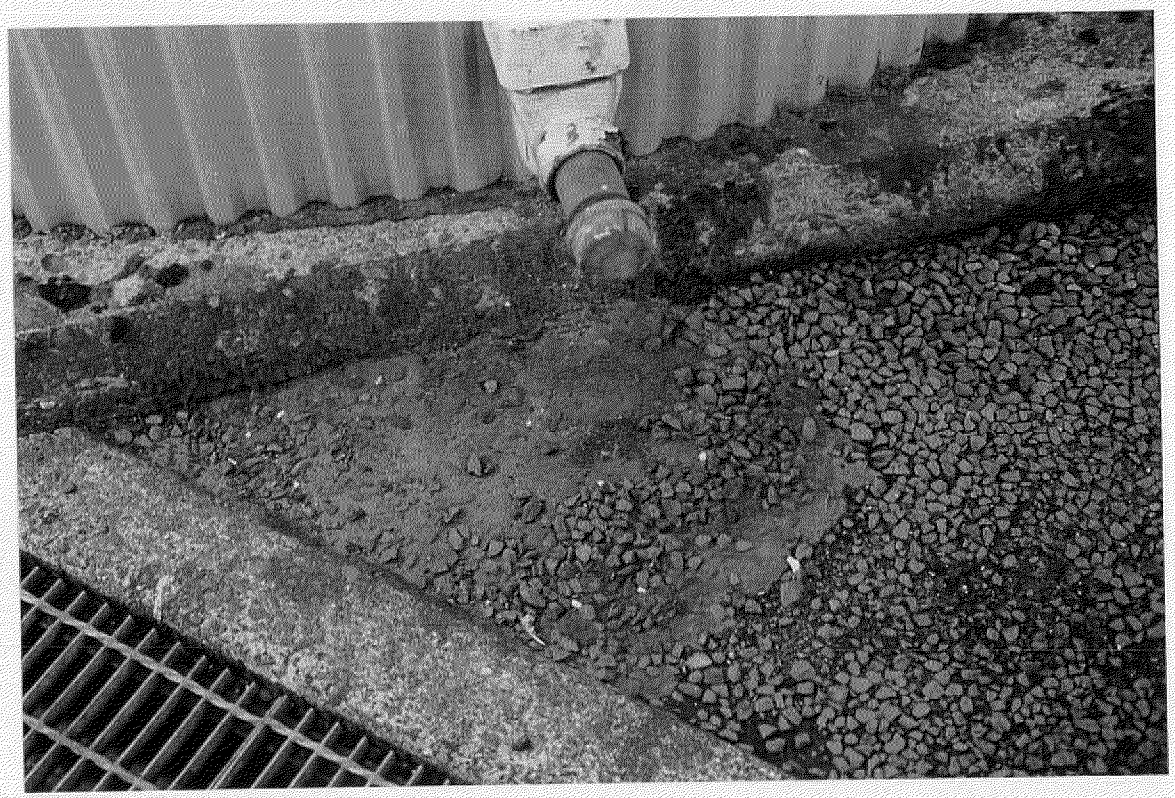

Photo No. 88: Upper Lube Cell, Tank 3747—hardened product on gravel

Photo No. 89: Upper Lube Cell, Tank 3757—hardened product on gravel

Photo No. 90: Upper Lube Cell, Tank 3760—drippage/leakage

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Photo No. 91: Upper Lube Cell, Tank 3744—hardened product on gravel beneath manway

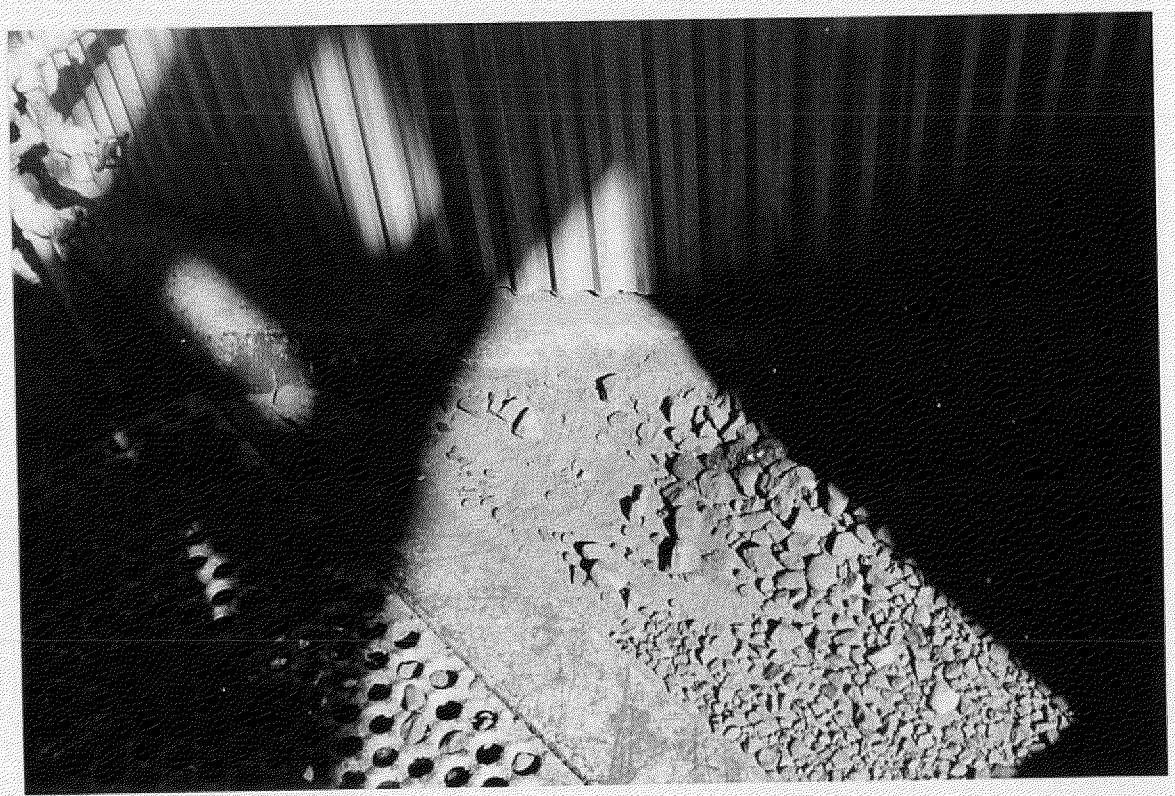

Photo No. 92: Upper Lube Cell, Tank 3745—drippage/staining on gravel

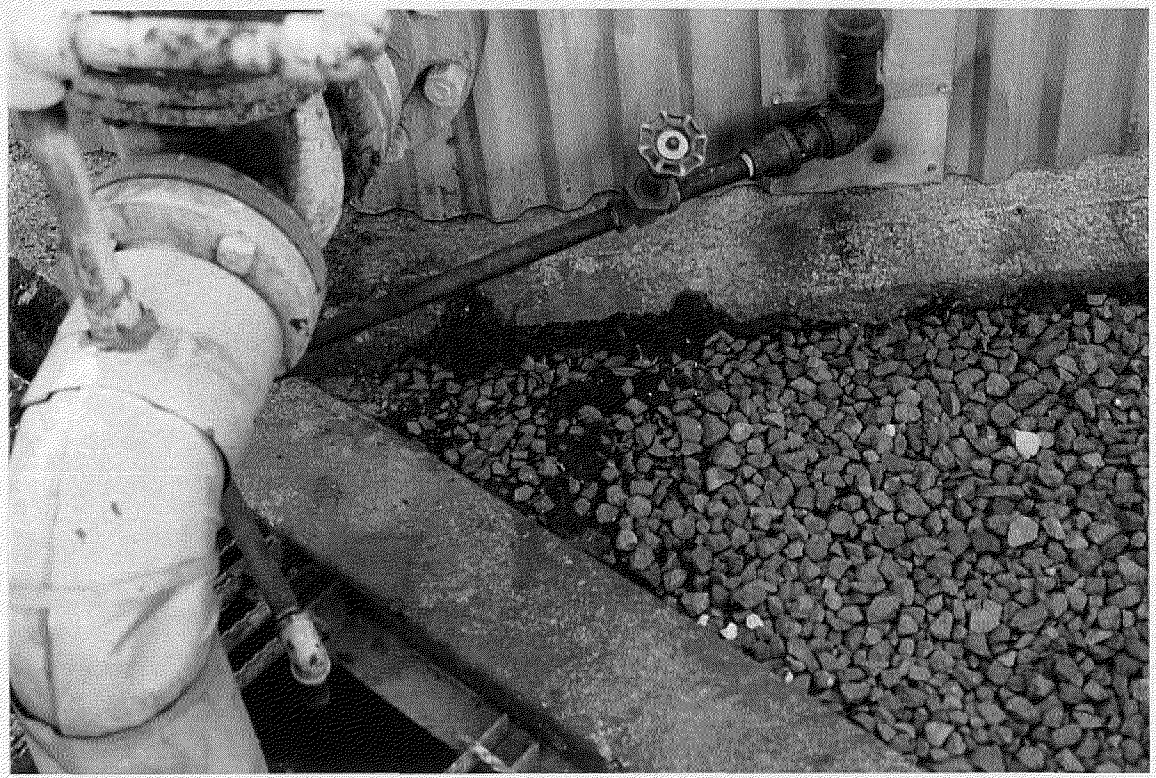

Photo No. 93: Upper Lube Cell, Tank 3746—staining on gravel

Photo No. 94: Upper Lube Cell, Tank 3741—drippage into pipe trench (gravel bottom)

Photo No. 95: Upper Lube Cell, Tank 3742—drippage/staining beneath valve (above)

Photo No. 96: Upper Lube Cell, Tank 3743—drippage/staining on gravel

Photo No. 97: Lower Lube Cell, Tank 4300—drippage/stains

Photo No. 98: Lower Lube Cell, Tank 4331—hardened product

Photo No. 99: Lower Lube Cell, Tank 4389—product on concrete

Photo No. 100: Lower Lube Cell, Tank 4394—drippage on concrete and in/under tank

Photo No. 101: Lower Lube Cell, Tank 4402—product seeping from valve

Photo No. 102: Lower Lube Cell, Tank 4404—hardened/cracked product on concrete, staining beneath piping by Tank 4405

Photo No. 103: Lower Lube Cell, Tank 4408—hardened product

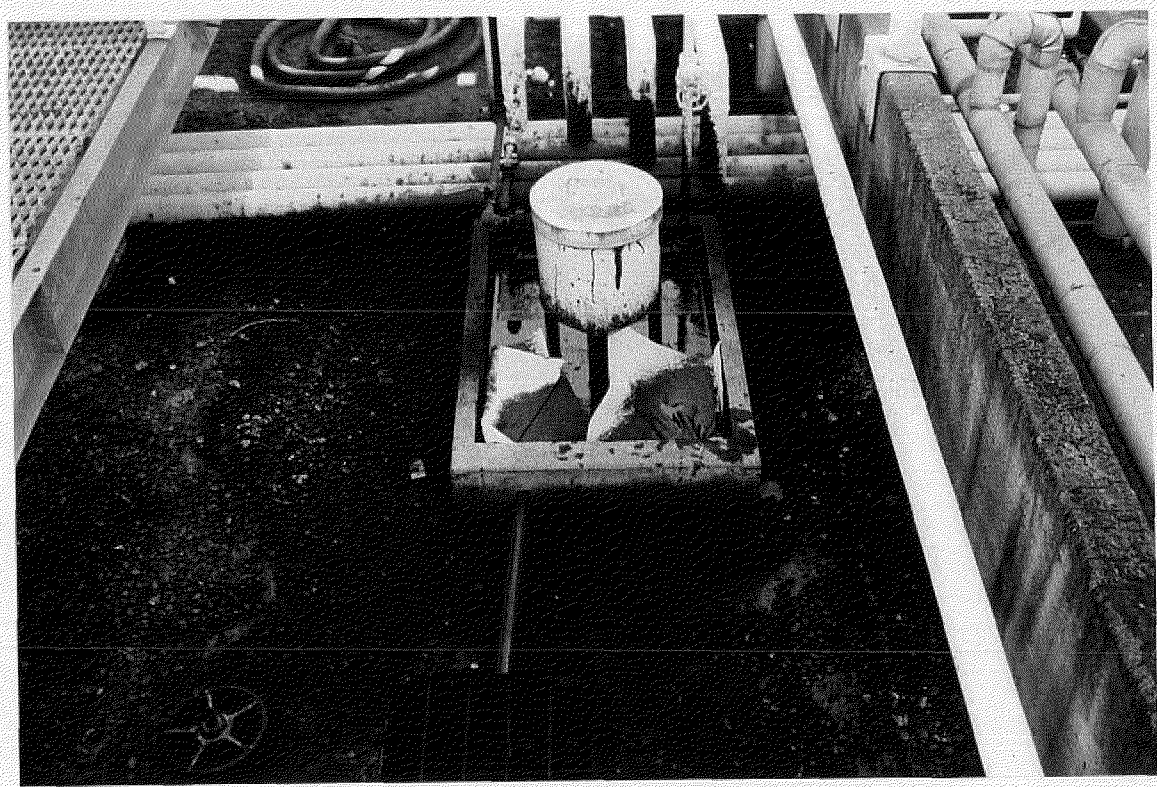

Photo No. 104: Lower Lube Cell—staining/product in pipe trench north of Upper Lube Cell

Photo No. 105: Lower Lube Cell, Maintenance Shop—cracks, staining

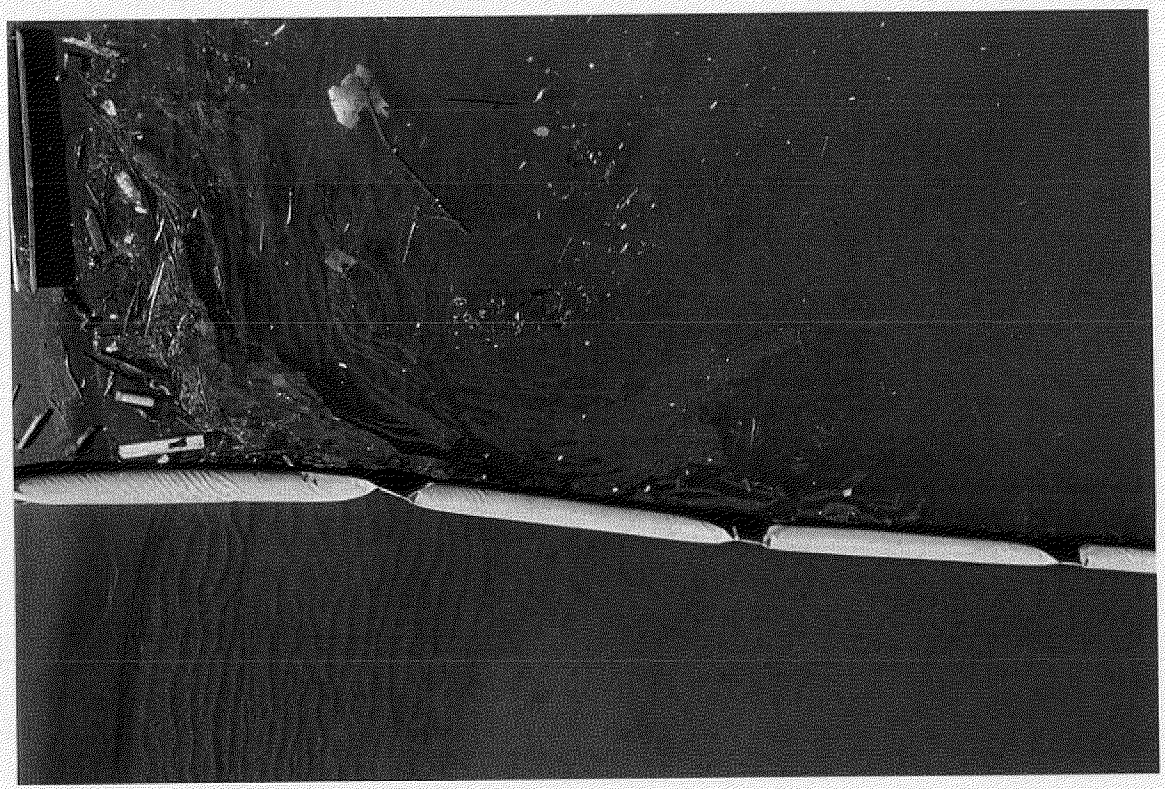

Photo No. 106: Dock Area—scum/possible spotty sheen near dock

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Phase II Environmental Assessment Report

Tosco Terminals
Volume 2: Laboratory Reports and Chain-of-Custody Forms

Prepared by:

ThermoRetec Consulting Corporation
1011 S.W. Klickitat Way, Suite #207
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and

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Carson, California 90745

RETEC Project No.: 3-3333

Prepared for:

Tosco Distribution Company
Avon Refinery
1 Solano Way
Martinez, California 94553

February 17, 1999

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RETEC	Project:	Tosco Terminals Phase II/ Portland	Sampled: 9/18/97
1011 S.W. Klickitat Way, Suite 207	Project Number:	3-3333	Received: 9/19/97
Seattle, WA 98134	Project Manager:	Halah Voges	Reported: 10/19/97 22:20

ANALYTICAL REPORT FOR SAMPLES:

Sample Description	Laboratory Sample Number	Sample Matrix	Date Sampled
TPOR-SG-7-12	P709394-01	Air	9/18/97
TPOR-SG-6-12	P709394-02	Air	9/18/97 JJH
TPOR-GP-7-7	P709394-03	Soil	~~10/10/97~~ 9/18/97 JJH
TPOR-GP-6-7.5	P709394-04	Soil	~~10/10/97~~ 9/18/97
TPOR-GP-20-12	P709394-05	Soil	9/18/97
TPOR-GP-23-10	P709394-06	Soil	9/18/97
TPOR-GP-24-3	P709394-08	Soil	9/18/97
TPOR-GP-26-11	P709394-09	Soil	9/18/97
TPOR-GP-19-10	P709394-11	Soil	9/18/97
TPOR-GP-22-13	P709394-12	Soil	9/18/97
TPOR-GP-23-7.5	P709394-13	Soil	9/18/97
TPOR-HA-8-3.5	P709394-14	Soil	9/18/97
TPOR-GP-25-12	P709394-15	Soil	9/18/97
TPOR-GP-21-11	P709394-16	Soil	9/18/97
TPOR-GP-12-10	P709394-17	Soil	9/18/97

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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.

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RETEC	Project:	Tosco Terminals Phase II/ Portland	Sampled: 9/18/97
1011 S.W. Klickitat Way, Suite 207	Project Number:	3-3333	Received: 9/19/97
Seattle, WA 98134	Project Manager:	Halah Voges	Reported: 10/19/97 22:20

Gasoline Hydrocarbons (Benzene to Naphthalene) and BTEX per Oregon DEQ TPH-G and EPA 8020A
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
TPOR-GP-7-7			**P709394-03**				**Soil**	**6**
Methyl tert-butyl ether	1070265	10/11/97	10/12/97		0.0500	ND	mg/kg	
Benzene	"	"	"		0.0500	ND	"	
Toluene	"	"	"		0.0500	ND	"	
Ethylbenzene	"	"	"		0.0500	ND	"	
Xylenes (total)	"	"	"		0.0500	ND	"	
Gasoline Range Hydrocarbons	"	"	"		2.00	ND	"	
Surrogate: a,a,a-TFT	"	"	"	*50.0-150*		*65.2*	*%*	
TPOR-GP-6-7.5			**P709394-04**				**Soil**	**6**
Methyl tert-butyl ether	1070265	10/11/97	10/12/97		0.0500	ND	mg/kg	
Benzene	"	"	"		0.0500	ND	"	
Toluene	"	"	"		0.0500	ND	"	
Ethylbenzene	"	"	"		0.0500	ND	"	
Xylenes (total)	"	"	"		0.0500	ND	"	
Gasoline Range Hydrocarbons	"	"	"		2.00	ND	"	
Surrogate: a,a,a-TFT	"	"	"	*50.0-150*		*69.2*	*%*	
TPOR-GP-20-12			**P709394-05**				**Soil**	
Methyl tert-butyl ether	0970526	9/22/97	9/23/97		1.00	ND	mg/kg	
Benzene	"	"	"		1.00	ND	"	
Toluene	"	"	"		1.00	ND	"	
Ethylbenzene	"	"	"		1.00	ND	"	
Xylenes (total)	"	"	"		1.00	**3.36**	"	
Gasoline Range Hydrocarbons	"	"	"		40.0	**1390**	"	
Surrogate: a,a,a-TFT	"	"	"	*50.0-150*		*NR*	*%*	*1*
TPOR-GP-23-10			**P709394-06**				**Soil**	
Methyl tert-butyl ether	0970526	9/22/97	9/23/97		1.00	ND	mg/kg	
Benzene	"	"	"		1.00	ND	"	
Toluene	"	"	"		1.00	ND	"	
Ethylbenzene	"	"	"		1.00	ND	"	
Xylenes (total)	"	"	"		1.00	ND	"	
Gasoline Range Hydrocarbons	"	"	"		40.0	**965**	"	
Surrogate: a,a,a-TFT	"	"	"	*50.0-150*		*NR*	*%*	*1*
TPOR-GP-24-3			**P709394-08**				**Soil**	
Methyl tert-butyl ether	0970526	9/22/97	9/23/97		0.500	ND	mg/kg	
Benzene	"	"	"		0.500	ND	"	

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RETEC	Project:	Tosco Terminals Phase II/ Portland	Sampled: 9/18/97
1011 S.W. Klickitat Way, Suite 207	Project Number:	3-3333	Received: 9/19/97
Seattle, WA 98134	Project Manager:	Halah Voges	Reported: 10/19/97 22:20

Gasoline Hydrocarbons (Benzene to Naphthalene) and BTEX per Oregon DEQ TPH-G and EPA 8020A
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
TPOR-GP-24-3 (continued)			**P709394-08**				**Soil**	
Toluene	0970526	9/22/97	9/23/97		0.500	ND	mg/kg	
Ethylbenzene	"	"	"		0.500	**0.600**	"	
Xylenes (total)	"	"	"		0.500	**0.832**	"	
Gasoline Range Hydrocarbons	"	"	"		20.0	**473**	"	
Surrogate: a,a,a-TFT	"	"	"	*50.0-150*		*64.0*	%	
TPOR-GP-26-11			**P709394-09**				**Soil**	**6**
Methyl tert-butyl ether	1070265	10/11/97	10/13/97		2.50	ND	mg/kg	
Benzene	"	"	"		2.50	ND	"	
Toluene	"	"	"		2.50	ND	"	
Ethylbenzene	"	"	"		2.50	ND	"	
Xylenes (total)	"	"	"		2.50	ND	"	
Gasoline Range Hydrocarbons	"	"	"		100	**731**	"	
Surrogate: a,a,a-TFT	"	"	"	*50.0-150*		*NR*	%	*1*
TPOR-GP-19-10			**P709394-11**				**Soil**	
Methyl tert-butyl ether	0970526	9/22/97	9/24/97		1.00	ND	mg/kg	
Benzene	"	"	"		1.00	ND	"	
Toluene	"	"	"		1.00	ND	"	
Ethylbenzene	"	"	"		1.00	ND	"	
Xylenes (total)	"	"	"		1.00	ND	"	
Gasoline Range Hydrocarbons	"	"	"		40.0	**630**	"	
Surrogate: a,a,a-TFT	"	"	"	*50.0-150*		*NR*	%	*1*
TPOR-GP-22-13			**P709394-12**				**Soil**	
Methyl tert-butyl ether	0970526	9/22/97	9/23/97		0.200	ND	mg/kg	
Benzene	"	"	"		0.200	ND	"	
Toluene	"	"	"		0.200	ND	"	
Ethylbenzene	"	"	"		0.200	ND	"	
Xylenes (total)	"	"	"		0.200	ND	"	
Gasoline Range Hydrocarbons	"	"	"		8.00	**198**	"	
Surrogate: a,a,a-TFT	"	"	"	*50.0-150*		*50.4*	%	
TPOR-GP-23-7.5			**P709394-13**				**Soil**	
Methyl tert-butyl ether	0970526	9/22/97	9/23/97		1.00	ND	mg/kg	
Benzene	"	"	"		1.00	ND	"	
Toluene	"	"	"		1.00	ND	"	
Ethylbenzene	"	"	"		1.00	ND	"	

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RETEC	Project:	Tosco Terminals Phase II/ Portland	Sampled: 9/18/97
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Gasoline Hydrocarbons (Benzene to Naphthalene) and BTEX per Oregon DEQ TPH-G and EPA 8020A
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
TPOR-GP-23-7.5 (continued)			**P709394-13**				**Soil**	
Xylenes (total)	0970526	9/22/97	9/23/97		1.00	ND	mg/kg	
Gasoline Range Hydrocarbons	"	"	"		40.0	**1300**	"	
Surrogate: a,a,a-TFT	"	"	"	*50.0-150*		*NR*	%	*1*
TPOR-HA-8-3.5			**P709394-14**				**Soil**	
Methyl tert-butyl ether	0970526	9/22/97	9/23/97		0.0500	ND	mg/kg	
Benzene	"	"	"		0.0500	ND	"	
Toluene	"	"	"		0.0500	ND	"	
Ethylbenzene	"	"	"		0.0500	ND	"	
Xylenes (total)	"	"	"		0.0500	**0.138**	"	
Gasoline Range Hydrocarbons	"	"	"		2.00	**75.8**	"	
Surrogate: a,a,a-TFT	"	"	"	*50.0-150*		*50.0*	%	
TPOR-GP-25-12			**P709394-15**				**Soil**	**6**
Methyl tert-butyl ether	1070265	10/11/97	10/12/97		0.0500	ND	mg/kg	
Benzene	"	"	"		0.0500	ND	"	
Toluene	"	"	"		0.0500	ND	"	
Ethylbenzene	"	"	"		0.0500	ND	"	
Xylenes (total)	"	"	"		0.0500	ND	"	
Gasoline Range Hydrocarbons	"	"	"		2.00	**18.7**	"	
Surrogate: a,a,a-TFT	"	"	"	*50.0-150*		*64.0*	%	
TPOR-GP-21-11			**P709394-16**				**Soil**	**6**
Methyl tert-butyl ether	1070265	10/11/97	10/12/97		0.0500	ND	mg/kg	
Benzene	"	"	"		0.0500	ND	"	
Toluene	"	"	"		0.0500	ND	"	
Ethylbenzene	"	"	"		0.0500	ND	"	
Xylenes (total)	"	"	"		0.0500	ND	"	
Gasoline Range Hydrocarbons	"	"	"		2.00	**5.78**	"	
Surrogate: a,a,a-TFT	"	"	"	*50.0-150*		*68.0*	%	
TPOR-GP-12-10			**P709394-17**				**Soil**	**6**
Methyl tert-butyl ether	1070265	10/11/97	10/12/97		0.0500	ND	mg/kg	
Benzene	"	"	"		0.0500	ND	"	
Toluene	"	"	"		0.0500	ND	"	
Ethylbenzene	"	"	"		0.0500	ND	"	
Xylenes (total)	"	"	"		0.0500	ND	"	
Gasoline Range Hydrocarbons	"	"	"		2.00	ND	"	

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Gasoline Hydrocarbons (Benzene to Naphthalene) and BTEX per Oregon DEQ TPH-G and EPA 8020A
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
TPOR-GP-12-10 (continued)			**P709394-17**				**Soil**	
Surrogate: a,a,a-TFT	*1070265*	*10/11/97*	*10/12/97*	*50.0-150*		*56.8*	*%*	

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Gasoline Hydrocarbons (Benzene to Naphthalene) and BTEX per EPA Method 8015 (modified) and 8020A
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
TPOR-SG-7-12			**P709394-01**				**Air**	
Methyl tert-butyl ether	0970460	9/19/97	9/19/97		100	**2930**	mg/m³ Air	2
Benzene	"	"	"		25.0	**1530**	"	
Toluene	"	"	"		25.0	**700**	"	
Ethylbenzene	"	"	"		25.0	**52.5**	"	
Xylenes (total)	"	"	"		50.0	**298**	"	
Gasoline Range Hydrocarbons	"	"	"		4000	**26800**	"	
Surrogate: 4-BFB	"	"	"	*50.0-150*		*99.8*	%	
TPOR-SG-6-12			**P709394-02**				**Air**	
Methyl tert-butyl ether	0970460	9/19/97	9/19/97		5.00	**166**	mg/m³ Air	
Benzene	"	"	"		1.25	**94.0**	"	
Toluene	"	"	"		1.25	**20.5**	"	
Ethylbenzene	"	"	"		1.25	**8.38**	"	
Xylenes (total)	"	"	"		2.50	**17.4**	"	
Gasoline Range Hydrocarbons	"	"	"		200	**4050**	"	
Surrogate: 4-BFB	"	"	"	*50.0-150*		*103*	%	

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RETEC	Project:	Tosco Terminals Phase II/ Portland	Sampled: 9/18/97
1011 S.W. Klickitat Way, Suite 207	Project Number:	3-3333	Received: 9/19/97
Seattle, WA 98134	Project Manager:	Halah Voges	Reported: 10/19/97 22:20

Diesel Hydrocarbons (C10-C28) and Heavy Oil (C28-C40) per Oregon DEQ Method TPH-D (modified)
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
TPOR-GP-7-7			**P709394-03**				**Soil**	3
Diesel Range Hydrocarbons	1070159	10/7/97	10/7/97		25.0	ND	mg/kg	
Heavy Oil Range Hydrocarbons	"	"	"		50.0	ND	"	
Surrogate: 1-Chlorooctadecane	"	"	"	*50.0-150*		*97.2*	*%*	
TPOR-GP-6-7.5			**P709394-04**				**Soil**	3
Diesel Range Hydrocarbons	1070159	10/7/97	10/7/97		25.0	ND	mg/kg	
Heavy Oil Range Hydrocarbons	"	"	"		50.0	ND	"	
Surrogate: 1-Chlorooctadecane	"	"	"	*50.0-150*		*93.2*	*%*	
TPOR-GP-20-12			**P709394-05**				**Soil**	
Diesel Range Hydrocarbons	0970528	9/22/97	9/24/97		500	**17300**	mg/kg	
Heavy Oil Range Hydrocarbons	"	"	"		1000	**1260**	"	
Surrogate: 1-Chlorooctadecane	"	"	"	*50.0-150*		*NR*	*%*	*1*
TPOR-GP-23-10			**P709394-06**				**Soil**	
Diesel Range Hydrocarbons	0970528	9/22/97	9/24/97		500	**6810**	mg/kg	
Heavy Oil Range Hydrocarbons	"	"	"		1000	ND	"	
Surrogate: 1-Chlorooctadecane	"	"	"	*50.0-150*		*NR*	*%*	*1*
TPOR-GP-24-3			**P709394-08**				**Soil**	
Diesel Range Hydrocarbons	0970528	9/22/97	9/23/97		500	**2040**	mg/kg	
Heavy Oil Range Hydrocarbons	"	"	"		1000	**1330**	"	
Surrogate: 1-Chlorooctadecane	"	"	"	*50.0-150*		*NR*	*%*	*1*
TPOR-GP-26-11			**P709394-09**				**Soil**	3
Diesel Range Hydrocarbons	1070159	10/7/97	10/7/97		250	**15000**	mg/kg	
Heavy Oil Range Hydrocarbons	"	"	"		500	**1450**	"	
Surrogate: 1-Chlorooctadecane	"	"	"	*50.0-150*		*NR*	*%*	*4*
TPOR-GP-19-10			**P709394-11**				**Soil**	
Diesel Range Hydrocarbons	0970528	9/22/97	9/24/97		500	**13400**	mg/kg	
Heavy Oil Range Hydrocarbons	"	"	"		1000	**1070**	"	
Surrogate: 1-Chlorooctadecane	"	"	"	*50.0-150*		*NR*	*%*	*1*
TPOR-GP-22-13			**P709394-12**				**Soil**	
Diesel Range Hydrocarbons	0970528	9/22/97	9/24/97		500	**11600**	mg/kg	
Heavy Oil Range Hydrocarbons	"	"	"		1000	**6690**	"	
Surrogate: 1-Chlorooctadecane	"	"	"	*50.0-150*		*NR*	*%*	*1*

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

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RETEC	Project:	Tosco Terminals Phase II/ Portland	Sampled: 9/18/97
1011 S.W. Klickitat Way, Suite 207	Project Number:	3-3333	Received: 9/19/97
Seattle, WA 98134	Project Manager:	Halah Voges	Reported: 10/19/97 22:20

Diesel Hydrocarbons (C10-C28) and Heavy Oil (C28-C40) per Oregon DEQ Method TPH-D (modified)
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
TPOR-GP-23-7.5			**P709394-13**				**Soil**	
Diesel Range Hydrocarbons	0970528	9/22/97	9/24/97		250	**7300**	mg/kg	
Heavy Oil Range Hydrocarbons	"	"	"		500	ND	"	
Surrogate: 1-Chlorooctadecane	"	"	"	*50.0-150*		*107*	%	
TPOR-HA-8-3.5			**P709394-14**				**Soil**	
Diesel Range Hydrocarbons	0970528	9/22/97	9/23/97		25.0	**56.0**	mg/kg	
Heavy Oil Range Hydrocarbons	"	"	"		50.0	ND	"	
Surrogate: 1-Chlorooctadecane	"	"	"	*50.0-150*		*69.2*	%	
TPOR-GP-25-12			**P709394-15**				**Soil**	3
Diesel Range Hydrocarbons	1070159	10/7/97	10/8/97		25.0	ND	mg/kg	
Heavy Oil Range Hydrocarbons	"	"	"		50.0	ND	"	
Surrogate: 1-Chlorooctadecane	"	"	"	*50.0-150*		*96.6*	%	
TPOR-GP-21-11			**P709394-16**				**Soil**	3
Diesel Range Hydrocarbons	1070159	10/7/97	10/8/97		25.0	**69.0**	mg/kg	5
Heavy Oil Range Hydrocarbons	"	"	"		50.0	**105**	"	
Surrogate: 1-Chlorooctadecane	"	"	"	*50.0-150*		*98.6*	%	
TPOR-GP-12-10			**P709394-17**				**Soil**	3
Diesel Range Hydrocarbons	1070159	10/7/97	10/7/97		25.0	ND	mg/kg	
Heavy Oil Range Hydrocarbons	"	"	"		50.0	ND	"	
Surrogate: 1-Chlorooctadecane	"	"	"	*50.0-150*		*95.0*	%	

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RETEC	Project:	Tosco Terminals Phase II/ Portland	Sampled: 9/18/97
1011 S.W. Klickitat Way, Suite 207	Project Number:	3-3333	Received: 9/19/97
Seattle, WA 98134	Project Manager:	Halah Voges	Reported: 10/19/97 22:20

Volatile Organic Compounds per EPA Method 8260A
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
TPOR-GP-7-7			**P709394-03**				**Soil**	**6,7**
Acetone	1070375	10/15/97	10/15/97		1250	ND	ug/kg dry	
Benzene	"	"	"		50.0	ND	"	
Bromobenzene	"	"	"		50.0	ND	"	
Bromochloromethane	"	"	"		50.0	ND	"	
Bromodichloromethane	"	"	"		50.0	ND	"	
Bromoform	"	"	"		100	ND	"	
Bromomethane	"	"	"		500	ND	"	
2-Butanone	"	"	"		1250	ND	"	
n-Butylbenzene	"	"	"		50.0	ND	"	
sec-Butylbenzene	"	"	"		50.0	ND	"	
tert-Butylbenzene	"	"	"		50.0	ND	"	
Carbon tetrachloride	"	"	"		50.0	ND	"	
Chlorobenzene	"	"	"		50.0	ND	"	
Chloroethane	"	"	"		500	ND	"	
Chloroform	"	"	"		50.0	ND	"	
Chloromethane	"	"	"		500	ND	"	
2-Chlorotoluene	"	"	"		50.0	ND	"	
4-Chlorotoluene	"	"	"		50.0	ND	"	
1,2-Dibromo-3-chloropropane	"	"	"		250	ND	"	
Dibromochloromethane	"	"	"		50.0	ND	"	
1,2-Dibromoethane	"	"	"		50.0	ND	"	
Dibromomethane	"	"	"		50.0	ND	"	
1,2-Dichlorobenzene	"	"	"		50.0	ND	"	
1,3-Dichlorobenzene	"	"	"		50.0	ND	"	
1,4-Dichlorobenzene	"	"	"		50.0	ND	"	
Dichlorodifluoromethane	"	"	"		500	ND	"	
1,1-Dichloroethane	"	"	"		50.0	ND	"	
1,2-Dichloroethane	"	"	"		50.0	ND	"	
1,1-Dichloroethene	"	"	"		50.0	ND	"	
cis-1,2-Dichloroethene	"	"	"		50.0	ND	"	
trans-1,2-Dichloroethene	"	"	"		50.0	ND	"	
1,2-Dichloropropane	"	"	"		50.0	ND	"	
1,3-Dichloropropane	"	"	"		50.0	ND	"	
2,2-Dichloropropane	"	"	"		50.0	ND	"	
1,1-Dichloropropene	"	"	"		50.0	ND	"	
cis-1,3-Dichloropropene	"	"	"		50.0	ND	"	
trans-1,3-Dichloropropene	"	"	"		50.0	ND	"	
Ethylbenzene	"	"	"		50.0	ND	"	

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RETEC	Project:	Tosco Terminals Phase II/ Portland	Sampled: 9/18/97
1011 S.W. Klickitat Way, Suite 207	Project Number:	3-3333	Received: 9/19/97
Seattle, WA 98134	Project Manager:	Halah Voges	Reported: 10/19/97 22:20

Volatile Organic Compounds per EPA Method 8260A
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
TPOR-GP-7-7 (continued)			**P709394-03**				**Soil**	**6,7**
Hexachlorobutadiene	1070375	10/15/97	10/15/97		100	ND	ug/kg dry	
2-Hexanone	"	"	"		250	ND	"	
Isopropylbenzene	"	"	"		50.0	ND	"	
p-Isopropyltoluene	"	"	"		50.0	ND	"	
4-Methyl-2-pentanone	"	"	"		250	ND	"	
Methylene chloride	"	"	"		500	ND	"	
Naphthalene	"	"	"		100	ND	"	
n-Propylbenzene	"	"	"		50.0	ND	"	
Styrene	"	"	"		50.0	ND	"	
1,1,1,2-Tetrachloroethane	"	"	"		50.0	ND	"	
1,1,2,2-Tetrachloroethane	"	"	"		50.0	ND	"	
Tetrachloroethene	"	"	"		50.0	ND	"	
Toluene	"	"	"		50.0	ND	"	
1,2,3-Trichlorobenzene	"	"	"		50.0	ND	"	
1,2,4-Trichlorobenzene	"	"	"		50.0	ND	"	
1,1,1-Trichloroethane	"	"	"		50.0	ND	"	
1,1,2-Trichloroethane	"	"	"		50.0	ND	"	
Trichloroethene	"	"	"		50.0	ND	"	
Trichlorofluoromethane	"	"	"		500	ND	"	
1,2,3-Trichloropropane	"	"	"		250	ND	"	
1,2,4-Trimethylbenzene	"	"	"		50.0	ND	"	
1,3,5-Trimethylbenzene	"	"	"		50.0	ND	"	
Vinyl chloride	"	"	"		500	ND	"	
o-Xylene	"	"	"		50.0	ND	"	
m,p-Xylene	"	"	"		50.0	ND	"	
Surrogate: 4-BFB	"	"	"	*65.0-130*		*106*	*%*	
Surrogate: Dibromofluoromethane	"	"	"	*65.0-130*		*126*	"	
Surrogate: Toluene-d8	"	"	"	*65.0-130*		*85.3*	"	

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RETEC	Project:	Tosco Terminals Phase II/ Portland	Sampled: 9/18/97
1011 S.W. Klickitat Way, Suite 207	Project Number:	3-3333	Received: 9/19/97
Seattle, WA 98134	Project Manager:	Halah Voges	Reported: 10/19/97 22:20

Volatile Organic Compounds per EPA Method 8260A
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
TPOR-GP-12-10			**P709394-17**				**Soil**	**6,7**
Acetone	1070375	10/15/97	10/17/97		1250	ND	ug/kg dry	
Benzene	"	"	"		50.0	ND	"	
Bromobenzene	"	"	"		50.0	ND	"	
Bromochloromethane	"	"	"		50.0	ND	"	
Bromodichloromethane	"	"	"		50.0	ND	"	
Bromoform	"	"	"		100	ND	"	
Bromomethane	"	"	"		500	ND	"	
2-Butanone	"	"	"		1250	ND	"	
n-Butylbenzene	"	"	"		50.0	ND	"	
sec-Butylbenzene	"	"	"		50.0	ND	"	
tert-Butylbenzene	"	"	"		50.0	ND	"	
Carbon tetrachloride	"	"	"		50.0	ND	"	
Chlorobenzene	"	"	"		50.0	ND	"	
Chloroethane	"	"	"		500	ND	"	
Chloroform	"	"	"		50.0	ND	"	
Chloromethane	"	"	"		500	ND	"	
2-Chlorotoluene	"	"	"		50.0	ND	"	
4-Chlorotoluene	"	"	"		50.0	ND	"	
1,2-Dibromo-3-chloropropane	"	"	"		250	ND	"	
Dibromochloromethane	"	"	"		50.0	ND	"	
1,2-Dibromoethane	"	"	"		50.0	ND	"	
Dibromomethane	"	"	"		50.0	ND	"	
1,2-Dichlorobenzene	"	"	"		50.0	ND	"	
1,3-Dichlorobenzene	"	"	"		50.0	ND	"	
1,4-Dichlorobenzene	"	"	"		50.0	ND	"	
Dichlorodifluoromethane	"	"	"		500	ND	"	
1,1-Dichloroethane	"	"	"		50.0	ND	"	
1,2-Dichloroethane	"	"	"		50.0	ND	"	
1,1-Dichloroethene	"	"	"		50.0	ND	"	
cis-1,2-Dichloroethene	"	"	"		50.0	ND	"	
trans-1,2-Dichloroethene	"	"	"		50.0	ND	"	
1,2-Dichloropropane	"	"	"		50.0	ND	"	
1,3-Dichloropropane	"	"	"		50.0	ND	"	
2,2-Dichloropropane	"	"	"		50.0	ND	"	
1,1-Dichloropropene	"	"	"		50.0	ND	"	
cis-1,3-Dichloropropene	"	"	"		50.0	ND	"	
trans-1,3-Dichloropropene	"	"	"		50.0	ND	"	
Ethylbenzene	"	"	"		50.0	ND	"	

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RETEC	Project:	Tosco Terminals Phase II/ Portland	Sampled: 9/18/97
1011 S.W. Klickitat Way, Suite 207	Project Number:	3-3333	Received: 9/19/97
Seattle, WA 98134	Project Manager:	Halah Voges	Reported: 10/19/97 22:20

Volatile Organic Compounds per EPA Method 8260A
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
TPOR-GP-12-10 (continued)			**P709394-17**				**Soil**	6,7
Hexachlorobutadiene	1070375	10/15/97	10/17/97		100	ND	ug/kg dry	
2-Hexanone	"	"	"		250	ND	"	
Isopropylbenzene	"	"	"		50.0	ND	"	
p-Isopropyltoluene	"	"	"		50.0	ND	"	
4-Methyl-2-pentanone	"	"	"		250	ND	"	
Methylene chloride	"	"	"		500	ND	"	
Naphthalene	"	"	"		100	ND	"	
n-Propylbenzene	"	"	"		50.0	ND	"	
Styrene	"	"	"		50.0	ND	"	
1,1,1,2-Tetrachloroethane	"	"	"		50.0	ND	"	
1,1,2,2-Tetrachloroethane	"	"	"		50.0	ND	"	
Tetrachloroethene	"	"	"		50.0	ND	"	
Toluene	"	"	"		50.0	ND	"	
1,2,3-Trichlorobenzene	"	"	"		50.0	ND	"	
1,2,4-Trichlorobenzene	"	"	"		50.0	ND	"	
1,1,1-Trichloroethane	"	"	"		50.0	ND	"	
1,1,2-Trichloroethane	"	"	"		50.0	ND	"	
Trichloroethene	"	"	"		50.0	ND	"	
Trichlorofluoromethane	"	"	"		500	ND	"	
1,2,3-Trichloropropane	"	"	"		250	ND	"	
1,2,4-Trimethylbenzene	"	"	"		50.0	ND	"	
1,3,5-Trimethylbenzene	"	"	"		50.0	ND	"	
Vinyl chloride	"	"	"		500	ND	"	
o-Xylene	"	"	"		50.0	ND	"	
m,p-Xylene	"	"	"		50.0	ND	"	
Surrogate: 4-BFB	"	"	"	*65.0-130*		*100*	%	
Surrogate: Dibromofluoromethane	"	"	"	*65.0-130*		*117*	"	
Surrogate: Toluene-d8	"	"	"	*65.0-130*		*67.0*	"	

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RETEC	Project:	Tosco Terminals Phase II/ Portland	Sampled:	9/18/97
1011 S.W. Klickitat Way, Suite 207	Project Number:	3-3333	Received:	9/19/97
Seattle, WA 98134	Project Manager:	Halah Voges	Reported:	10/19/97 22:20

Dry Weight Determination
North Creek Analytical - Portland

Sample Name	Lab ID	Matrix	Result	Units
TPOR-GP-7-7	P709394-03	Soil	88.2	%
TPOR-GP-12-10	P709394-17	Soil	81.0	%

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RETEC	Project:	Tosco Terminals Phase II/ Portland	Sampled: 9/18/97
1011 S.W. Klickitat Way, Suite 207	Project Number:	3-3333	Received: 9/19/97
Seattle, WA 98134	Project Manager:	Halah Voges	Reported: 10/19/97 22:20

Gasoline Hydrocarbons (Benzene to Naphthalene) and BTEX per Oregon DEQ TPH-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: 0970526	**Date Prepared: 9/22/97**					**Extraction Method: MeOH Extraction**				
Blank	**0970526-BLK1**									
Methyl tert-butyl ether	9/23/97			**ND**	mg/kg	**0.0500**				
Benzene	9/22/97			**ND**	"	**0.0500**				
Toluene	"			**ND**	"	**0.0500**				
Ethylbenzene	"			**ND**	"	**0.0500**				
Xylenes (total)	"			**ND**	"	**0.0500**				
Gasoline Range Hydrocarbons	"			**ND**	"	**2.00**				
Surrogate: a,a,a-TFT	"	*2.50*		*2.43*	"	*50.0-150*	*97.2*			
LCS	**0970526-BS1**									
Gasoline Range Hydrocarbons	9/22/97	31.3		32.0	mg/kg	50.0-150	102			
Surrogate: a,a,a-TFT	"	*2.50*		*2.58*	"	*50.0-150*	*103*			
LCS	**0970526-BS2**									
a,a,a-TFT (PID)	9/22/97	2.50		1.75	mg/kg	50.0-150	70.0			
Benzene	"	0.500		0.570	"	69.0-138	114			
Toluene	"	0.500		0.558	"	53.0-151	112			
Ethylbenzene	"	0.500		0.543	"	61.0-141	109			
Xylenes (total)	"	1.50		1.66	"	62.0-144	111			
LCS	**0970526-BS3**									
Methyl tert-butyl ether	9/22/97	0.00500		0.00445	mg/kg	50.0-150	89.0			
Duplicate	**0970526-DUP1**		**P709389-02**							
Gasoline Range Hydrocarbons	9/23/97		4280	4430	mg/kg			50.0	**3.44**	
Surrogate: a,a,a-TFT	"	*2.50*		*ND*	"	*50.0-150*	*NR*			*1*
Duplicate	**0970526-DUP2**		**P709377-01**							
Gasoline Range Hydrocarbons	9/22/97		ND	ND	mg/kg			50.0		
Surrogate: a,a,a-TFT	"	*2.50*		*1.93*	"	*50.0-150*	*77.2*			
Matrix Spike	**0970526-MS1**		**P709389-01**							
Benzene	9/22/97	0.500	ND	0.410	mg/kg	56.0-123	**82.0**			
Toluene	"	0.500	ND	0.412	"	54.0-123	**82.4**			
Ethylbenzene	"	0.500	ND	0.392	"	45.0-130	**78.4**			
Xylenes (total)	"	1.50	ND	1.17	"	50.0-127	**78.0**			
Surrogate: a,a,a-TFT	"	*2.50*		*1.75*	"	*50.0-150*	*70.0*			

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RETEC	Project:	Tosco Terminals Phase II/ Portland	Sampled: 9/18/97
1011 S.W. Klickitat Way, Suite 207	Project Number:	3-3333	Received: 9/19/97
Seattle, WA 98134	Project Manager:	Halah Voges	Reported: 10/19/97 22:20

Gasoline Hydrocarbons (Benzene to Naphthalene) and BTEX per Oregon DEQ TPH-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	**0970526-MSD1**		**P709389-01**							
Benzene	9/22/97	0.500	ND	0.395	mg/kg	56.0-123	**79.0**	17.0	**3.73**	
Toluene	"	0.500	ND	0.410	"	54.0-123	**82.0**	24.0	**0.487**	
Ethylbenzene	"	0.500	ND	0.392	"	45.0-130	**78.4**	20.0	**0**	
Xylenes (total)	"	1.50	ND	1.17	"	50.0-127	**78.0**	20.0	**0**	
Surrogate: a,a,a-TFT	"	*2.50*		*1.27*	"	*50.0-150*	*50.8*			
Batch: 1070265	**Date Prepared: 10/11/97**					**Extraction Method: MeOH Extraction**				
Blank	**1070265-BLK1**									
Methyl tert-butyl ether	10/12/97			**ND**	mg/kg	**0.0500**				
Benzene	"			**ND**	"	**0.0500**				
Toluene	"			**ND**	"	**0.0500**				
Ethylbenzene	"			**ND**	"	**0.0500**				
Xylenes (total)	"			**ND**	"	**0.0500**				
Gasoline Range Hydrocarbons	"			**ND**	"	**2.00**				
Surrogate: a,a,a-TFT	"	*2.50*		*1.32*	"	*50.0-150*	*52.8*			
LCS	**1070265-BS1**									
Gasoline Range Hydrocarbons	10/12/97	31.3		34.3	mg/kg	50.0-150	110			
Surrogate: a,a,a-TFT	"	*2.50*		*2.02*	"	*50.0-150*	*80.8*			
LCS	**1070265-BS2**									
Benzene	10/12/97	0.500		0.470	mg/kg	69.0-138	94.0			
Toluene	"	0.500		0.500	"	53.0-151	100			
Ethylbenzene	"	0.500		0.485	"	61.0-141	97.0			
Xylenes (total)	"	1.50		1.48	"	62.0-144	98.7			
Surrogate: a,a,a-TFT	"	*2.50*		*2.16*	"	*50.0-150*	*86.4*			
LCS	**1070265-BS3**									
Methyl tert-butyl ether	10/12/97	0.0200		0.0213	mg/kg	50.0-150	106			
Duplicate	**1070265-DUP1**		**P709352-04**							
Gasoline Range Hydrocarbons	10/13/97		ND	ND	mg/kg			50.0		
Surrogate: a,a,a-TFT	"	*2.50*		*1.06*	"	*50.0-150*	*42.4*			*8*
Duplicate	**1070265-DUP2**		**P709394-03**							
Gasoline Range Hydrocarbons	10/12/97		ND	ND	mg/kg			50.0		
Surrogate: a,a,a-TFT	"	*2.50*		*1.69*	"	*50.0-150*	*67.6*			

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RETEC	Project:	Tosco Terminals Phase II/ Portland	Sampled: 9/18/97
1011 S.W. Klickitat Way, Suite 207	Project Number:	3-3333	Received: 9/19/97
Seattle, WA 98134	Project Manager:	Halah Voges	Reported: 10/19/97 22:20

Gasoline Hydrocarbons (Benzene to Naphthalene) and BTEX per Oregon DEQ TPH-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*
Duplicate	**1070265-DUP3**		**P709394-16**							
Gasoline Range Hydrocarbons	10/12/97		5.78	3.58	mg/kg			50.0	**47.0**	
Surrogate: a,a,a-TFT	"	*2.50*		*1.66*	"	*50.0-150*	*66.4*			
Matrix Spike	**1070265-MS1**		**P709352-06**							
Benzene	10/12/97	0.500	ND	0.370	mg/kg	56.0-123	**74.0**			
Toluene	"	0.500	ND	0.385	"	54.0-123	**77.0**			
Ethylbenzene	"	0.500	ND	0.380	"	45.0-130	**76.0**			
Xylenes (total)	"	1.50	ND	1.18	"	50.0-127	**78.7**			
Surrogate: a,a,a-TFT	"	*2.50*		*1.75*	"	*50.0-150*	*70.0*			
Matrix Spike Dup	**1070265-MSD1**		**P709352-06**							
Benzene	10/12/97	0.500	ND	0.362	mg/kg	56.0-123	**72.4**	17.0	**2.19**	
Toluene	"	0.500	ND	0.368	"	54.0-123	**73.6**	24.0	**4.52**	
Ethylbenzene	"	0.500	ND	0.365	"	45.0-130	**73.0**	20.0	**4.03**	
Xylenes (total)	"	1.50	ND	1.12	"	50.0-127	**74.7**	20.0	**5.22**	
Surrogate: a,a,a-TFT	"	*2.50*		*1.46*	"	*50.0-150*	*58.4*			

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RETEC	Project:	Tosco Terminals Phase II/ Portland	Sampled: 9/18/97
1011 S.W. Klickitat Way, Suite 207	Project Number:	3-3333	Received: 9/19/97
Seattle, WA 98134	Project Manager:	Halah Voges	Reported: 10/19/97 22:20

Gasoline Hydrocarbons (Benzene to Naphthalene) and BTEX per EPA Method 8015 (modified) and 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: 0970460	**Date Prepared: 9/19/97**					**Extraction Method: EPA 5030**				
Blank	**0970460-BLK1**									
Methyl tert-butyl ether	9/19/97			**ND**	mg/m³ Air	**0.200**				
Benzene	"			**ND**	"	**0.0500**				
Toluene	"			**ND**	"	**0.0500**				
Ethylbenzene	"			**ND**	"	**0.0500**				
Xylenes (total)	"			**ND**	"	**0.100**				
Gasoline Range Hydrocarbons	"			**ND**	"	**8.00**				
Surrogate: 4-BFB	"	*50.0*		*46.6*	"	*50.0-150*	*93.2*			
LCS	**0970460-BS1**									
Gasoline Range Hydrocarbons	9/19/97	501		520	mg/m³ Air	50.0-150	104			
Surrogate: 4-BFB	"	*50.0*		*50.0*	"	*50.0-150*	*100*			
LCS	**0970460-BS2**									
Benzene	9/19/97	10.0		9.26	mg/m³ Air	50.0-115	92.6			
Toluene	"	10.0		8.94	"	50.0-115	89.4			
Ethylbenzene	"	10.0		8.04	"	50.0-115	80.4			
Xylenes (total)	"	30.0		23.0	"	50.0-115	76.7			
Surrogate: 4-BFB	"	*50.0*		*46.4*	"	*50.0-150*	*92.8*			
LCS	**0970460-BS3**									
Methyl tert-butyl ether	9/19/97	20.0		18.5	mg/m³ Air	50.0-115	92.5			
LCS Dup	**0970460-BSD2**									
Benzene	9/19/97	10.0		10.3	mg/m³ Air	50.0-115	103	35.0	10.6	
Toluene	"	10.0		9.69	"	50.0-115	96.9	35.0	8.05	
Ethylbenzene	"	10.0		9.21	"	50.0-115	92.1	35.0	13.6	
Xylenes (total)	"	30.0		25.9	"	50.0-115	86.3	35.0	11.8	
Surrogate: 4-BFB	"	*50.0*		*48.2*	"	*50.0-150*	*96.4*			
Duplicate	**0970460-DUP1**		**P709352-01**							
Gasoline Range Hydrocarbons	9/19/97		20400	19800	mg/m³ Air			50.0	**2.99**	
Surrogate: 4-BFB	"	*50.0*		*49.5*	"	*50.0-150*	*99.0*			

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RETEC	Project:	Tosco Terminals Phase II/ Portland	Sampled: 9/18/97
1011 S.W. Klickitat Way, Suite 207	Project Number:	3-3333	Received: 9/19/97
Seattle, WA 98134	Project Manager:	Halah Voges	Reported: 10/19/97 22:20

Diesel Hydrocarbons (C10-C28) and Heavy Oil (C28-C40) per Oregon DEQ Method TPH-D (modified)/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: 0970528	**Date Prepared: 9/22/97**				**Extraction Method: TPH-D Extraction**					
Blank	**0970528-BLK1**									
Diesel Range Hydrocarbons	9/23/97			**ND**	mg/kg	**25.0**				
Heavy Oil Range Hydrocarbons	"			**ND**	"	**50.0**				
Surrogate: 1-Chlorooctadecane	"	*5.00*		*3.90*	"	*50.0-150*	*78.0*			
Blank	**0970528-BLK2**									
Diesel Range Hydrocarbons	9/23/97			**ND**	mg/kg	**25.0**				
Heavy Oil Range Hydrocarbons	"			**ND**	"	**50.0**				
Surrogate: 1-Chlorooctadecane	"	*5.00*		*3.62*	"	*50.0-150*	*72.4*			
LCS	**0970528-BS1**									
Diesel Range Hydrocarbons	9/23/97	125		115	mg/kg	50.0-150	92.0			
Surrogate: 1-Chlorooctadecane	"	*5.00*		*4.62*	"	*50.0-150*	*92.4*			
Duplicate	**0970528-DUP1**	**P709394-11**								
Diesel Range Hydrocarbons	9/24/97		13400	13200	mg/kg			50.0	**1.50**	
Heavy Oil Range Hydrocarbons	"		1070	1070	"			50.0	**0**	
Surrogate: 1-Chlorooctadecane	"	*5.00*		*ND*	"	*50.0-150*	*NR*			*1*
Duplicate	**0970528-DUP2**	**P709313-04**								
Diesel Range Hydrocarbons	9/24/97		ND	ND	mg/kg			50.0		
Heavy Oil Range Hydrocarbons	"		96.0	202	"			50.0	**71.1**	9
Surrogate: 1-Chlorooctadecane	"	*5.00*		*3.93*	"	*50.0-150*	*78.6*			
Duplicate	**0970528-DUP3**	**P709313-05**								
Diesel Range Hydrocarbons	9/24/97		ND	ND	mg/kg			50.0		
Heavy Oil Range Hydrocarbons	"		240	184	"			50.0	**26.4**	
Surrogate: 1-Chlorooctadecane	"	*5.00*		*3.98*	"	*50.0-150*	*79.6*			
Batch: 1070159	**Date Prepared: 10/7/97**				**Extraction Method: TPH-D Extraction**					
Blank	**1070159-BLK1**									
Diesel Range Hydrocarbons	10/7/97			**ND**	mg/kg	**25.0**				
Heavy Oil Range Hydrocarbons	"			**ND**	"	**50.0**				
Surrogate: 1-Chlorooctadecane	"	*5.00*		*3.90*	"	*50.0-150*	*78.0*			
LCS	**1070159-BS1**									
Diesel Range Hydrocarbons	10/7/97	125		93.5	mg/kg	50.0-150	74.8			
Surrogate: 1-Chlorooctadecane	"	*5.00*		*4.55*	"	*50.0-150*	*91.0*			

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RETEC	Project:	Tosco Terminals Phase II/ Portland	Sampled: 9/18/97
1011 S.W. Klickitat Way, Suite 207	Project Number:	3-3333	Received: 9/19/97
Seattle, WA 98134	Project Manager:	Halah Voges	Reported: 10/19/97 22:20

Diesel Hydrocarbons (C10-C28) and Heavy Oil (C28-C40) per Oregon DEQ Method TPH-D (modified)/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*
Duplicate	**1070159-DUP1**		**P709352-04**							
Diesel Range Hydrocarbons	10/7/97		5430	5080	mg/kg			50.0	**6.66**	
Heavy Oil Range Hydrocarbons	"		13500	14200	"			50.0	**5.05**	
Surrogate: 1-Chlorooctadecane	"	*5.00*		*ND*	"	*50.0-150*	*NR*			*1*
Duplicate	**1070159-DUP2**		**P709402-07**							
Diesel Range Hydrocarbons	10/7/97		ND	ND	mg/kg			50.0		
Heavy Oil Range Hydrocarbons	"		ND	ND	"			50.0		
Surrogate: 1-Chlorooctadecane	"	*5.00*		*4.03*	"	*50.0-150*	*80.6*			
Duplicate	**1070159-DUP3**		**P710110-02**							
Diesel Range Hydrocarbons	10/8/97		680	467	mg/kg			50.0	**37.1**	
Heavy Oil Range Hydrocarbons	"		1530	1030	"			50.0	**39.1**	
Surrogate: 1-Chlorooctadecane	"	*5.00*		*ND*	"	*50.0-150*	*NR*			*1*

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RETEC	Project:	Tosco Terminals Phase II/ Portland	Sampled: 9/18/97
1011 S.W. Klickitat Way, Suite 207	Project Number:	3-3333	Received: 9/19/97
Seattle, WA 98134	Project Manager:	Halah Voges	Reported: 10/19/97 22:20

Volatile Organic Compounds per EPA Method 8260A/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: 1070375	**Date Prepared: 10/15/97**				**Extraction Method: MeOH Extraction**					
Blank	**1070375-BLK1**									
Acetone	10/15/97			ND	ug/kg dry	1250				
Benzene	"			ND	"	50.0				
Bromobenzene	"			ND	"	50.0				
Bromochloromethane	"			ND	"	50.0				
Bromodichloromethane	"			ND	"	50.0				
Bromoform	"			ND	"	100				
Bromomethane	"			ND	"	500				
2-Butanone	"			ND	"	1250				
n-Butylbenzene	"			ND	"	50.0				
sec-Butylbenzene	"			ND	"	50.0				
tert-Butylbenzene	"			ND	"	50.0				
Carbon tetrachloride	"			ND	"	50.0				
Chlorobenzene	"			ND	"	50.0				
Chloroethane	"			ND	"	500				
Chloroform	"			ND	"	50.0				
Chloromethane	"			ND	"	500				
2-Chlorotoluene	"			ND	"	50.0				
4-Chlorotoluene	"			ND	"	50.0				
1,2-Dibromo-3-chloropropane	"			ND	"	250				
Dibromochloromethane	"			ND	"	50.0				
1,2-Dibromoethane	"			ND	"	50.0				
Dibromomethane	"			ND	"	50.0				
1,2-Dichlorobenzene	"			ND	"	50.0				
1,3-Dichlorobenzene	"			ND	"	50.0				
1,4-Dichlorobenzene	"			ND	"	50.0				
Dichlorodifluoromethane	"			ND	"	500				
1,1-Dichloroethane	"			ND	"	50.0				
1,2-Dichloroethane	"			ND	"	50.0				
1,1-Dichloroethene	"			ND	"	50.0				
cis-1,2-Dichloroethene	"			ND	"	50.0				
trans-1,2-Dichloroethene	"			ND	"	50.0				
1,2-Dichloropropane	"			ND	"	50.0				
1,3-Dichloropropane	"			ND	"	50.0				
2,2-Dichloropropane	"			ND	"	50.0				
1,1-Dichloropropene	"			ND	"	50.0				
cis-1,3-Dichloropropene	"			ND	"	50.0				
trans-1,3-Dichloropropene	"			ND	"	50.0				

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RETEC	Project:	Tosco Terminals Phase II/ Portland	Sampled: 9/18/97
1011 S.W. Klickitat Way, Suite 207	Project Number:	3-3333	Received: 9/19/97
Seattle, WA 98134	Project Manager:	Halah Voges	Reported: 10/19/97 22:20

Volatile Organic Compounds per EPA Method 8260A/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*
Blank (continued)	**1070375-BLK1**									
Ethylbenzene	10/15/97			**ND**	ug/kg dry	**50.0**				
Hexachlorobutadiene	"			**ND**	"	**100**				
2-Hexanone	"			**ND**	"	**250**				
Isopropylbenzene	"			**ND**	"	**50.0**				
p-Isopropyltoluene	"			**ND**	"	**50.0**				
4-Methyl-2-pentanone	"			**ND**	"	**250**				
Methylene chloride	"			**ND**	"	**500**				
Naphthalene	"			**ND**	"	**100**				
n-Propylbenzene	"			**ND**	"	**50.0**				
Styrene	"			**ND**	"	**50.0**				
1,1,1,2-Tetrachloroethane	"			**ND**	"	**50.0**				
1,1,2,2-Tetrachloroethane	"			**ND**	"	**50.0**				
Tetrachloroethene	"			**ND**	"	**50.0**				
Toluene	"			**ND**	"	**50.0**				
1,2,3-Trichlorobenzene	"			**ND**	"	**50.0**				
1,2,4-Trichlorobenzene	"			**ND**	"	**50.0**				
1,1,1-Trichloroethane	"			**ND**	"	**50.0**				
1,1,2-Trichloroethane	"			**ND**	"	**50.0**				
Trichloroethene	"			**ND**	"	**50.0**				
Trichlorofluoromethane	"			**ND**	"	**500**				
1,2,3-Trichloropropane	"			**ND**	"	**250**				
1,2,4-Trimethylbenzene	"			**ND**	"	**50.0**				
1,3,5-Trimethylbenzene	"			**ND**	"	**50.0**				
Vinyl chloride	"			**ND**	"	**500**				
o-Xylene	"			**ND**	"	**50.0**				
m,p-Xylene	"			**ND**	"	**50.0**				
Surrogate: 4-BFB	"	*10.0*		*10.3*	"	*65.0-130*	*103*			
Surrogate: Dibromofluoromethane	"	*10.0*		*12.3*	"	*65.0-130*	*123*			
Surrogate: Toluene-d8	"	*10.0*		*7.97*	"	*65.0-130*	*79.7*			
LCS	**1070375-BS1**									
Benzene	10/15/97	10.0		12.0	ug/kg dry	66.0-142	120			
Chlorobenzene	"	10.0		10.2	"	60.0-133	102			
1,1-Dichloroethene	"	10.0		9.77	"	59.0-172	97.7			
Toluene	"	10.0		8.95	"	59.0-139	89.5			
Trichloroethene	"	10.0		9.40	"	62.0-137	94.0			
Surrogate: 4-BFB	"	*10.0*		*9.00*	"	*65.0-130*	*90.0*			
Surrogate: Dibromofluoromethane	"	*10.0*		*10.8*	"	*65.0-130*	*108*			

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RETEC	Project:	Tosco Terminals Phase II/ Portland	Sampled: 9/18/97
1011 S.W. Klickitat Way, Suite 207	Project Number:	3-3333	Received: 9/19/97
Seattle, WA 98134	Project Manager:	Halah Voges	Reported: 10/19/97 22:20

Volatile Organic Compounds per EPA Method 8260A/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*
LCS (continued)	**1070375-BS1**									
Surrogate: Toluene-d8	*10/15/97*	*10.0*		*7.74*	*ug/kg dry*	*65.0-130*	*77.4*			
Matrix Spike	**1070375-MS1**		**P710205-01**							
Benzene	10/15/97	10.9	ND	12.7	ug/kg dry	66.0-142	**117**			
Chlorobenzene	"	10.9	ND	10.8	"	60.0-133	**99.1**			
1,1-Dichloroethene	"	10.9	ND	9.08	"	59.0-172	**83.3**			
Toluene	"	10.9	ND	8.86	"	59.0-139	**81.3**			
Trichloroethene	"	10.9	ND	9.95	"	62.0-137	**91.3**			
Surrogate: 4-BFB	"	*10.9*		*11.5*	"	*65.0-130*	*106*			
Surrogate: Dibromofluoromethane	"	*10.9*		*13.6*	"	*65.0-130*	*125*			
Surrogate: Toluene-d8	"	*10.9*		*8.92*	"	*65.0-130*	*81.8*			
Matrix Spike Dup	**1070375-MSD1**		**P710205-01**							
Benzene	10/15/97	10.9	ND	13.4	ug/kg dry	66.0-142	**123**	25.0	**5.00**	
Chlorobenzene	"	10.9	ND	11.3	"	60.0-133	**104**	25.0	**4.83**	
1,1-Dichloroethene	"	10.9	ND	8.92	"	59.0-172	**81.8**	25.0	**1.82**	
Toluene	"	10.9	ND	9.19	"	59.0-139	**84.3**	25.0	**3.62**	
Trichloroethene	"	10.9	ND	10.3	"	62.0-137	**94.5**	25.0	**3.44**	
Surrogate: 4-BFB	"	*10.9*		*12.0*	"	*65.0-130*	*110*			
Surrogate: Dibromofluoromethane	"	*10.9*		*13.7*	"	*65.0-130*	*126*			
Surrogate: Toluene-d8	"	*10.9*		*8.70*	"	*65.0-130*	*79.8*			

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RETEC	Project:	Tosco Terminals Phase II/ Portland	Sampled: 9/18/97
1011 S.W. Klickitat Way, Suite 207	Project Number:	3-3333	Received: 9/19/97
Seattle, WA 98134	Project Manager:	Halah Voges	Reported: 10/19/97 22:20

Notes and Definitions

#	Note
1	The surrogate recovery for this sample is not available due to sample dilution required from high analyte concentration and/or matrix interferences.
2	MTBE did not confirm by GC/MS.
3	This sample was extracted outside the recommended holding time.
4	Unable to calculate surrogate recovery due to high analyte concentration.
5	Detected hydrocarbons in the diesel range appear to be due to overlap of heavy/oil range hydrocarbons.
6	This sample was analyzed outside the recommended holding time.
7	One of the QC checks for this sample was out of control limits, possibly due to the sample matrix. The effect on the results could be quantitations biased slightly high. Since no analytes were detected, the quality of the data has not been affected.
8	Surrogate recovery is outside control limits due to matrix interference.
9	The RPD is above the control limit due to a non-homogeneous sample matrix.
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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CHAIN OF CUSTODY REPORT

Work Order # P709394

REPORT TO:
ATTENTION: Halah Voges
ADDRESS: 1011 S W Klickitat Way
Suite 207 Seattle, WA 98134
PHONE: (206) 624-9349 FAX: (206) 624-2839
PROJECT NAME: Tosco Terminals Phase II / Portland
PROJECT NUMBER: 3-3333
SAMPLED BY: J. Henley

INVOICE TO:
ATTENTION:
ADDRESS:
P.O. NUMBER: NCA QUOTE #:

TURNAROUND REQUEST in Business Days *
Organic & Inorganic Analyses: 10 (Standard) | 7 | 5 | 4 | 3 | 2 | 1 | Same Day
Fuels & Hydrocarbon Analyses: 5 (Standard) | 3-4 | 2 | 1 | Same Day
OTHER Specify:
* Turnaround Requests less than standard may incur Rush Charges.

Analysis Request: TPH Gas (+ BTEX, MTBE) | TPH Diesel - Extended | WC 8260

CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME		NCA SAMPLE ID (Laboratory Use Only)	TPH Gas (+ BTEX, MTBE)	TPH Diesel - Extended	WC 8260	MATRIX (W, S, A, O)	# OF CONTAINERS	COMMENTS
1. TPOR-SG-7-12	9/18	1015		X			A	1	
2. TPOR-SG-6-12		812		X			A		
3. TPOR-GP-7-7		950		X	X	X	S		Hold; call Dan Baker @ RETEC
4. TPOR-GP-6-7.5		752		X	X		S		Hold; call Dan Baker @ RETEC
5. TPOR-GP-20-12		1849		X	X		S		
6. TPOR-GP-23-10		1155		X	X		S		
7. TPOR-HA-24-1.5		1052					S		Hold; call Dan Baker @ RETEC
8. TPOR-HA-24-3		1055		X	X		S		
9. TPOR-GP-26-11		1050		X	X		S		Hold; call Dan Baker @ RETEC
10. TPOR-GP-26-13		1105					S		Hold; call Dan Baker @ RETEC

RELINQUISHED BY (Signature): Jim Henley DATE: 9/19
PRINT NAME: Jim Henley FIRM: RETEC TIME: 1036

RECEIVED BY (Signature): [signature] DATE: 9-19-97
PRINT NAME: Carry Spangler FIRM: NCA TIME: 1600

RELINQUISHED BY (Signature): DATE:
PRINT NAME: FIRM: TIME:

RECEIVED BY (Signature): Kari Cline DATE: 9/19/97
PRINT NAME: KARI CLINE FIRM: NCA TIME: 1800

ADDITIONAL REMARKS:

COC Rev 8, 1/96

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COPY

CHAIN OF CUSTODY REPORT

Work Order # P709394

REPORT TO:	INVOICE TO:
ATTENTION: Halah Voges	ATTENTION:
ADDRESS: 1011 SW Klickitat Way Suite 207 Seattle WA 98134	ADDRESS:
PHONE: (206) 624-9349 FAX: (206) 624-2839	P.O. NUMBER: NCA QUOTE #:
PROJECT NAME: Tosco Terminals Phase II/Portland	
PROJECT NUMBER: 3-3333	
SAMPLED BY: J. Henley	

TURNAROUND REQUEST in Business Days *

Organic & Inorganic Analyses: [X] 10 Standard | 7 | 5 | 4 | 3 | 2 | 1 | Same Day

Fuels & Hydrocarbon Analyses: [5] Standard | 3-4 | 2 | 1 | Same Day

OTHER Specify:

* *Turnaround Requests less than standard may incur Rush Charges.*

CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	NCA SAMPLE ID (Laboratory Use Only)	Analysis Request: TPH Gas (w/ BTEX MTBE) Extended	TPH Diesel - WC 8260	MATRIX (W, S, A, O)	# OF CONTAINERS	COMMENTS
1. TPOR - GP-19-10	9/18 1740		X	X	S	1	
2. TPOR - GP-22-13	1500		X	X	S		
3. TPOR - GP-23-7.5	1151		X	X	S		
4. TPOR - ~~HA~~-8-3.5	1215		X	X	S		
5. TPOR - GP-25-12	1705		(X)	(X)	S		Hold; Call Dan Baker to RETEC
6. TPOR - GP-21-11	1505		(X)	(X)	S		
7. TPOR - GP-12-10	1951		(X)	(X)	(X)	S	
8. ~~TPOR~~							
9.							
10.							

RELINQUISHED BY (Signature): Jim Henley	DATE: 9/19	RECEIVED BY (Signature): Laura Lyle	DATE: 9-19-97
PRINT NAME: Jim Henley	FIRM: RETEC TIME: 1036	PRINT NAME: Corey Spangler	FIRM: NCA TIME: 1600
RELINQUISHED BY (Signature):	DATE:	RECEIVED BY (Signature): Kari Cline	DATE: 9/19/97
PRINT NAME:	FIRM: TIME:	PRINT NAME: KARI CLINE	FIRM: NCA TIME: 1800

ADDITIONAL REMARKS:

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RETEC	Project:	Tosco Terminals Phase II/ Portland	Sampled:	9/19/97
1011 S.W. Klickitat Way, Suite 207	Project Number:	3-3333	Received:	9/22/97
Seattle, WA 98134	Project Manager:	Halah Voges	Reported:	10/16/97 12:59

ANALYTICAL REPORT FOR SAMPLES:

Sample Description	Laboratory Sample Number	Sample Matrix	Date Sampled
TP0R-GP-11-19	P709402-01	Soil	9/19/97
TP0R-GP-9-16	P709402-02	Soil	9/19/97
TP0R-GP-33-6	P709402-03	Soil	9/19/97
TP0R-GP-32-6	P709402-04	Soil	9/19/97
TP0R-GP-28-5.5	P709402-05	Soil	9/19/97
TP0R-HA-18-6	P709402-06	Soil	9/19/97
TP0R-GP-29-5.5	P709402-07	Soil	9/19/97
TP0R-GP-30-6	P709402-08	Soil	9/19/97
TP0R-GP-10-16	P709402-09	Soil	9/19/97
TP0R-GP-27-11	P709402-11	Soil	9/19/97
TP0R-HA-34-9	P709402-12	Soil	9/19/97
TP0R-HA-17-5	P709402-13	Soil	9/19/97

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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.

Philip Nerenberg, Laboratory Manager

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RETEC	Project:	Tosco Terminals Phase II/ Portland	Sampled: 9/19/97
1011 S.W. Klickitat Way, Suite 207	Project Number:	3-3333	Received: 9/22/97
Seattle, WA 98134	Project Manager:	Halah Voges	Reported: 10/16/97 12:59

Gasoline Hydrocarbons (Benzene to Naphthalene) and BTEX per Oregon DEQ TPH-G and EPA 8020A
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
TP0R-GP-11-19			**P709402-01**				**Soil**	
Methyl tert-butyl ether	0970557	9/23/97	9/25/97		20.0	ND	mg/kg	
Benzene	"	"	"		0.500	ND	"	
Toluene	"	"	"		0.500	ND	"	
Ethylbenzene	"	"	"		0.500	ND	"	
Xylenes (total)	"	"	"		0.500	ND	"	
Gasoline Range Hydrocarbons	"	"	"		20.0	**388**	"	
Surrogate: a,a,a-TFT	"	"	"	*50.0-150*		*57.2*	%	
TP0R-GP-9-16			**P709402-02**				**Soil**	
Methyl tert-butyl ether	0970557	9/23/97	9/28/97		40.0	ND	mg/kg	
Benzene	"	"	"		1.00	ND	"	
Toluene	"	"	"		1.00	ND	"	
Ethylbenzene	"	"	"		1.00	ND	"	
Xylenes (total)	"	"	"		1.00	ND	"	
Gasoline Range Hydrocarbons	"	"	"		40.0	**1300**	"	
Surrogate: a,a,a-TFT	"	"	"	*50.0-150*		*NR*	%	*1*
TP0R-GP-33-6			**P709402-03**				**Soil**	
Methyl tert-butyl ether	0970557	9/23/97	9/29/97		4.00	ND	mg/kg	
Benzene	"	"	"		0.100	ND	"	
Toluene	"	"	"		0.100	ND	"	
Ethylbenzene	"	"	"		0.100	ND	"	
Xylenes (total)	"	"	"		0.100	ND	"	
Gasoline Range Hydrocarbons	"	"	"		4.00	**43.3**	"	
Surrogate: a,a,a-TFT	"	"	"	*50.0-150*		*52.4*	%	
TP0R-GP-32-6			**P709402-04**				**Soil**	
Methyl tert-butyl ether	0970557	9/23/97	9/29/97		200	ND	mg/kg	
Benzene	"	"	"		0.100	ND	"	
Toluene	"	"	"		0.100	ND	"	
Ethylbenzene	"	"	"		0.100	ND	"	
Xylenes (total)	"	"	"		0.100	ND	"	
Gasoline Range Hydrocarbons	"	"	"		4.00	**75.5**	"	
Surrogate: a,a,a-TFT	"	"	"	*50.0-150*		*52.8*	%	
TP0R-GP-28-5.5			**P709402-05**				**Soil**	
Methyl tert-butyl ether	0970557	9/23/97	9/25/97		20.0	ND	mg/kg	
Benzene	"	"	"		0.500	ND	"	

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**Refer to end of report for text of notes and definiti*

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RETEC	Project:	Tosco Terminals Phase II/ Portland	Sampled: 9/19/97
1011 S.W. Klickitat Way, Suite 207	Project Number:	3-3333	Received: 9/22/97
Seattle, WA 98134	Project Manager:	Halah Voges	Reported: 10/16/97 12:59

Gasoline Hydrocarbons (Benzene to Naphthalene) and BTEX per Oregon DEQ TPH-G and EPA 8020A
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
TP0R-GP-28-5.5 (continued)			**P709402-05**				**Soil**	
Toluene	0970557	9/23/97	9/25/97		0.500	ND	mg/kg	
Ethylbenzene	"	"	"		0.500	ND	"	
Xylenes (total)	"	"	"		0.500	ND	"	
Gasoline Range Hydrocarbons	"	"	"		20.0	**258**	"	
Surrogate: a,a,a-TFT	"	"	"	*50.0-150*		*58.0*	%	
TP0R-HA-18-6			**P709402-06**				**Soil**	
Methyl tert-butyl ether	0970557	9/23/97	9/29/97		8.00	ND	mg/kg	
Benzene	"	"	"		0.200	ND	"	
Toluene	"	"	"		0.200	ND	"	
Ethylbenzene	"	"	"		0.200	ND	"	
Xylenes (total)	"	"	"		0.200	ND	"	
Gasoline Range Hydrocarbons	"	"	"		8.00	**154**	"	
Surrogate: a,a,a-TFT	"	"	"	*50.0-150*		*43.6*	%	*2*
TP0R-GP-29-5.5			**P709402-07**				**Soil**	**6**
Methyl tert-butyl ether	1070265	10/11/97	10/12/97		0.0500	ND	mg/kg	
Benzene	"	"	"		0.0500	ND	"	
Toluene	"	"	"		0.0500	ND	"	
Ethylbenzene	"	"	"		0.0500	ND	"	
Xylenes (total)	"	"	"		0.0500	ND	"	
Gasoline Range Hydrocarbons	"	"	"		2.00	ND	"	
Surrogate: a,a,a-TFT	"	"	"	*50.0-150*		*50.4*	%	
TP0R-GP-30-6			**P709402-08**				**Soil**	**6**
Methyl tert-butyl ether	1070265	10/11/97	10/12/97		0.0500	ND	mg/kg	
Benzene	"	"	"		0.0500	ND	"	
Toluene	"	"	"		0.0500	ND	"	
Ethylbenzene	"	"	"		0.0500	ND	"	
Xylenes (total)	"	"	"		0.0500	ND	"	
Gasoline Range Hydrocarbons	"	"	"		2.00	**24.5**	"	
Surrogate: a,a,a-TFT	"	"	"	*50.0-150*		*53.2*	%	
TP0R-GP-10-16			**P709402-09**				**Soil**	**3,6**
Methyl tert-butyl ether	1070265	10/11/97	10/13/97		2.50	ND	mg/kg	
Benzene	"	"	"		2.50	ND	"	
Toluene	"	"	"		2.50	ND	"	
Ethylbenzene	"	"	"		2.50	ND	"	

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RETEC	Project:	Tosco Terminals Phase II/ Portland	Sampled: 9/19/97
1011 S.W. Klickitat Way, Suite 207	Project Number:	3-3333	Received: 9/22/97
Seattle, WA 98134	Project Manager:	Halah Voges	Reported: 10/16/97 12:59

Gasoline Hydrocarbons (Benzene to Naphthalene) and BTEX per Oregon DEQ TPH-G and EPA 8020A
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
TP0R-GP-10-16 (continued)			**P709402-09**				**Soil**	**3,6**
Xylenes (total)	1070265	10/11/97	10/13/97		2.50	ND	mg/kg	
Gasoline Range Hydrocarbons	"	"	"		100	**648**	"	
Surrogate: a,a,a-TFT	"	"	"	*50.0-150*		*NR*	*%*	*1*
TP0R-GP-27-11			**P709402-11**				**Soil**	**6**
Methyl tert-butyl ether	1070265	10/11/97	10/13/97		0.0500	ND	mg/kg	
Benzene	"	"	"		0.0500	ND	"	
Toluene	"	"	"		0.0500	ND	"	
Ethylbenzene	"	"	"		0.0500	ND	"	
Xylenes (total)	"	"	"		0.0500	ND	"	
Gasoline Range Hydrocarbons	"	"	"		2.00	ND	"	
Surrogate: a,a,a-TFT	"	"	"	*50.0-150*		*55.6*	*%*	
TP0R-HA-34-9			**P709402-12**				**Soil**	**6**
Methyl tert-butyl ether	1070265	10/11/97	10/12/97		0.0500	ND	mg/kg	
Benzene	"	"	"		0.0500	ND	"	
Toluene	"	"	"		0.0500	ND	"	
Ethylbenzene	"	"	"		0.0500	ND	"	
Xylenes (total)	"	"	"		0.0500	ND	"	
Gasoline Range Hydrocarbons	"	"	"		2.00	**17.0**	"	
Surrogate: a,a,a-TFT	"	"	"	*50.0-150*		*70.8*	*%*	
TP0R-HA-17-5			**P709402-13**				**Soil**	**6**
Methyl tert-butyl ether	1070265	10/11/97	10/13/97		0.0500	ND	mg/kg	
Benzene	"	"	"		0.0500	ND	"	
Toluene	"	"	"		0.0500	ND	"	
Ethylbenzene	"	"	"		0.0500	ND	"	
Xylenes (total)	"	"	"		0.0500	ND	"	
Gasoline Range Hydrocarbons	"	"	"		2.00	ND	"	
Surrogate: a,a,a-TFT	"	"	"	*50.0-150*		*38.8*	*%*	*2*

North Creek Analytical, Inc.

**Refer to end of report for text of notes and definit*

Philip Nerenberg, Laboratory Manager

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RETEC	Project:	Tosco Terminals Phase II/ Portland	Sampled: 9/19/97
1011 S.W. Klickitat Way, Suite 207	Project Number:	3-3333	Received: 9/22/97
Seattle, WA 98134	Project Manager:	Halah Voges	Reported: 10/16/97 12:59

Diesel Hydrocarbons (C10-C28) and Heavy Oil (C28-C40) per Oregon DEQ Method TPH-D (modified)
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
TP0R-GP-11-19			**P709402-01**				**Soil**	
Diesel Range Hydrocarbons	0970588	9/24/97	9/24/97		25.0	**3110**	mg/kg	
Heavy Oil Range Hydrocarbons	"	"	"		50.0	ND	"	
Surrogate: 1-Chlorooctadecane	"	"	"	*50.0-150*		*85.4*	%	
TP0R-GP-9-16			**P709402-02**				**Soil**	
Diesel Range Hydrocarbons	0970588	9/24/97	9/24/97		25.0	**1450**	mg/kg	
Heavy Oil Range Hydrocarbons	"	"	"		50.0	ND	"	
Surrogate: 1-Chlorooctadecane	"	"	"	*50.0-150*		*77.2*	%	
TP0R-GP-33-6			**P709402-03**				**Soil**	
Diesel Range Hydrocarbons	0970588	9/24/97	9/24/97		25.0	**930**	mg/kg	
Heavy Oil Range Hydrocarbons	"	"	"		50.0	**86.0**	"	
Surrogate: 1-Chlorooctadecane	"	"	"	*50.0-150*		*87.8*	%	
TP0R-GP-32-6			**P709402-04**				**Soil**	
Diesel Range Hydrocarbons	0970588	9/24/97	9/24/97		25.0	**525**	mg/kg	
Heavy Oil Range Hydrocarbons	"	"	"		50.0	ND	"	
Surrogate: 1-Chlorooctadecane	"	"	"	*50.0-150*		*74.8*	%	
TP0R-GP-28-5.5			**P709402-05**				**Soil**	
Diesel Range Hydrocarbons	0970588	9/24/97	9/25/97		250	**6400**	mg/kg	
Heavy Oil Range Hydrocarbons	"	"	"		500	ND	"	
Surrogate: 1-Chlorooctadecane	"	"	"	*50.0-150*		*NR*	%	*1*
TP0R-HA-18-6			**P709402-06**				**Soil**	
Diesel Range Hydrocarbons	0970588	9/24/97	9/24/97		25.0	**3700**	mg/kg	
Heavy Oil Range Hydrocarbons	"	"	"		50.0	**57.5**	"	
Surrogate: 1-Chlorooctadecane	"	"	"	*50.0-150*		*86.4*	%	
TP0R-GP-29-5.5			**P709402-07**				**Soil**	**4**
Diesel Range Hydrocarbons	1070159	10/7/97	10/7/97		25.0	ND	mg/kg	
Heavy Oil Range Hydrocarbons	"	"	"		50.0	ND	"	
Surrogate: 1-Chlorooctadecane	"	"	"	*50.0-150*		*76.8*	%	
TP0R-GP-30-6			**P709402-08**				**Soil**	**4**
Diesel Range Hydrocarbons	1070159	10/7/97	10/7/97		25.0	**43.5**	mg/kg	
Heavy Oil Range Hydrocarbons	"	"	"		50.0	ND	"	
Surrogate: 1-Chlorooctadecane	"	"	"	*50.0-150*		*97.8*	%	

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Environmental Laboratory Services

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RETEC	Project:	Tosco Terminals Phase II/ Portland	Sampled: 9/19/97
1011 S.W. Klickitat Way, Suite 207	Project Number:	3-3333	Received: 9/22/97
Seattle, WA 98134	Project Manager:	Halah Voges	Reported: 10/16/97 12:59

Diesel Hydrocarbons (C10-C28) and Heavy Oil (C28-C40) per Oregon DEQ Method TPH-D (modified)
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
TP0R-GP-10-16			**P709402-09**				**Soil**	**4,5**
Diesel Range Hydrocarbons	1070159	10/7/97	10/8/97		500	**21500**	mg/kg	
Heavy Oil Range Hydrocarbons	"	"	"		1000	ND	"	
Surrogate: 1-Chlorooctadecane	"	"	"	*50.0-150*		*NR*	%	*1*
TP0R-GP-27-11			**P709402-11**				**Soil**	**4**
Diesel Range Hydrocarbons	1070159	10/7/97	10/7/97		25.0	ND	mg/kg	
Heavy Oil Range Hydrocarbons	"	"	"		50.0	ND	"	
Surrogate: 1-Chlorooctadecane	"	"	"	*50.0-150*		*94.0*	%	
TP0R-HA-34-9			**P709402-12**				**Soil**	**4**
Diesel Range Hydrocarbons	1070159	10/7/97	10/7/97		25.0	**63.0**	mg/kg	
Heavy Oil Range Hydrocarbons	"	"	"		50.0	ND	"	
Surrogate: 1-Chlorooctadecane	"	"	"	*50.0-150*		*97.8*	%	
TP0R-HA-17-5			**P709402-13**				**Soil**	**4**
Diesel Range Hydrocarbons	1070159	10/7/97	10/7/97		25.0	ND	mg/kg	
Heavy Oil Range Hydrocarbons	"	"	"		50.0	ND	"	
Surrogate: 1-Chlorooctadecane	"	"	"	*50.0-150*		*93.0*	%	

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RETEC	Project:	Tosco Terminals Phase II/ Portland	Sampled: 9/19/97
1011 S.W. Klickitat Way, Suite 207	Project Number:	3-3333	Received: 9/22/97
Seattle, WA 98134	Project Manager:	Halah Voges	Reported: 10/16/97 12:59

Gasoline Hydrocarbons (Benzene to Naphthalene) and BTEX per Oregon DEQ TPH-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: 0970557	**Date Prepared: 9/23/97**					**Extraction Method: MeOH Extraction**				
Blank	**0970557-BLK1**									
Methyl tert-butyl ether	9/23/97			ND	mg/kg	**2.00**				
Benzene	"			ND	"	**0.0500**				
Toluene	"			ND	"	**0.0500**				
Ethylbenzene	"			ND	"	**0.0500**				
Xylenes (total)	"			ND	"	**0.0500**				
Gasoline Range Hydrocarbons	"			ND	"	**2.00**				
Surrogate: a,a,a-TFT	"	*2.50*		*2.43*	"	*50.0-150*	*97.2*			
LCS	**0970557-BS1**									
Gasoline Range Hydrocarbons	9/23/97	31.3		30.3	mg/kg	50.0-150	96.8			
Surrogate: a,a,a-TFT	"	*2.50*		*2.49*	"	*50.0-150*	*99.6*			
LCS	**0970557-BS2**									
Benzene	9/23/97	0.500		0.502	mg/kg	69.0-138	100			
Toluene	"	0.500		0.515	"	53.0-151	103			
Ethylbenzene	"	0.500		0.498	"	61.0-141	99.6			
Xylenes (total)	"	1.50		1.50	"	62.0-144	100			
Surrogate: a,a,a-TFT	"	*2.50*		*2.39*	"	*50.0-150*	*95.6*			
LCS	**0970557-BS3**									
Methyl tert-butyl ether	9/25/97	0.100		0.0940	mg/kg	50.0-150	94.0			
Duplicate	**0970557-DUP1**		**P709365-01**							
Gasoline Range Hydrocarbons	9/24/97		ND	ND	mg/kg			50.0		
Surrogate: a,a,a-TFT	"	*2.50*		*1.53*	"	*50.0-150*	*61.2*			
Duplicate	**0970557-DUP2**		**P709369-01**							
Gasoline Range Hydrocarbons	9/24/97		ND	ND	mg/kg			50.0		
Surrogate: a,a,a-TFT	"	*2.50*		*2.17*	"	*50.0-150*	*86.8*			
Duplicate	**0970557-DUP3**		**P709402-01**							
Gasoline Range Hydrocarbons	9/25/97		388	455	mg/kg			50.0	**15.9**	
Surrogate: a,a,a-TFT	"	*2.50*		*1.33*	"	*50.0-150*	*53.2*			
Matrix Spike	**0970557-MS1**		**P709369-01**							
Benzene	9/24/97	0.500	ND	0.477	mg/kg	56.0-123	**95.4**			
Toluene	"	0.500	ND	0.488	"	54.0-123	**97.6**			

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RETEC	Project:	Tosco Terminals Phase II/ Portland	Sampled: 9/19/97
1011 S.W. Klickitat Way, Suite 207	Project Number:	3-3333	Received: 9/22/97
Seattle, WA 98134	Project Manager:	Halah Voges	Reported: 10/16/97 12:59

Gasoline Hydrocarbons (Benzene to Naphthalene) and BTEX per Oregon DEQ TPH-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 (continued)	**0970557-MS1**		**P709369-01**							
Ethylbenzene	9/24/97	0.500	ND	0.475	mg/kg	45.0-130	**95.0**			
Xylenes (total)	"	1.50	ND	1.42	"	50.0-127	**94.7**			
Surrogate: a,a,a-TFT	"	*2.50*		*2.28*	"	*50.0-150*	*91.2*			
Matrix Spike Dup	**0970557-MSD1**		**P709369-01**							
Benzene	9/24/97	0.500	ND	0.472	mg/kg	56.0-123	**94.4**	17.0	**1.05**	
Toluene	"	0.500	ND	0.485	"	54.0-123	**97.0**	24.0	**0.617**	
Ethylbenzene	"	0.500	ND	0.472	"	45.0-130	**94.4**	20.0	**0.634**	
Xylenes (total)	"	1.50	ND	1.41	"	50.0-127	**94.0**	20.0	**0.742**	
Surrogate: a,a,a-TFT	"	*2.50*		*1.98*	"	*50.0-150*	*79.2*			
Batch: 1070265	**Date Prepared: 10/11/97**					**Extraction Method: MeOH Extraction**				
Blank	**1070265-BLK1**									
Methyl tert-butyl ether	10/12/97			**ND**	mg/kg	**0.0500**				
Benzene	"			**ND**	"	**0.0500**				
Toluene	"			**ND**	"	**0.0500**				
Ethylbenzene	"			**ND**	"	**0.0500**				
Xylenes (total)	"			**ND**	"	**0.0500**				
Gasoline Range Hydrocarbons	"			**ND**	"	**2.00**				
Surrogate: a,a,a-TFT	"	*2.50*		*1.32*	"	*50.0-150*	*52.8*			
LCS	**1070265-BS1**									
Gasoline Range Hydrocarbons	10/12/97	31.3		34.3	mg/kg	50.0-150	110			
Surrogate: a,a,a-TFT	"	*2.50*		*2.02*	"	*50.0-150*	*80.8*			
LCS	**1070265-BS2**									
Benzene	10/12/97	0.500		0.470	mg/kg	69.0-138	94.0			
Toluene	"	0.500		0.500	"	53.0-151	100			
Ethylbenzene	"	0.500		0.485	"	61.0-141	97.0			
Xylenes (total)	"	1.50		1.48	"	62.0-144	98.7			
Surrogate: a,a,a-TFT	"	*2.50*		*2.16*	"	*50.0-150*	*86.4*			
LCS	**1070265-BS3**									
Methyl tert-butyl ether	10/12/97	0.0200		0.0213	mg/kg	50.0-150	106			
Duplicate	**1070265-DUP1**		**P709352-04**							
Gasoline Range Hydrocarbons	10/13/97		ND	ND	mg/kg			50.0		
Surrogate: a,a,a-TFT	"	*2.50*		*1.06*	"	*50.0-150*	*42.4*			*2*

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**Refer to end of report for text of notes and definit*

Philip Nerenberg, Laboratory Manager

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RETEC	Project:	Tosco Terminals Phase II/ Portland	Sampled: 9/19/97
1011 S.W. Klickitat Way, Suite 207	Project Number:	3-3333	Received: 9/22/97
Seattle, WA 98134	Project Manager:	Halah Voges	Reported: 10/16/97 12:59

Gasoline Hydrocarbons (Benzene to Naphthalene) and BTEX per Oregon DEQ TPH-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*
Duplicate	**1070265-DUP2**		**P709394-03**							
Gasoline Range Hydrocarbons	10/12/97		ND	ND	mg/kg			50.0		
Surrogate: a,a,a-TFT	"	*2.50*		*1.69*	"	*50.0-150*	*67.6*			
Duplicate	**1070265-DUP3**		**P709394-16**							
Gasoline Range Hydrocarbons	10/12/97		5.78	3.58	mg/kg			50.0	**47.0**	
Surrogate: a,a,a-TFT	"	*2.50*		*1.66*	"	*50.0-150*	*66.4*			
Matrix Spike	**1070265-MS1**		**P709352-06**							
Benzene	10/12/97		ND	0.370	mg/kg	56.0-123				
Toluene	"		ND	0.385	"	54.0-123				
Ethylbenzene	"		ND	0.380	"	45.0-130				
Xylenes (total)	"		ND	1.18	"	50.0-127				
Surrogate: a,a,a-TFT	"	*2.50*		*1.75*	"	*50.0-150*	*70.0*			
Matrix Spike Dup	**1070265-MSD1**		**P709352-06**							
Benzene	10/12/97		ND	0.362	mg/kg	56.0-123		17.0		
Toluene	"		ND	0.368	"	54.0-123		24.0		
Ethylbenzene	"		ND	0.365	"	45.0-130		20.0		
Xylenes (total)	"		ND	1.12	"	50.0-127		20.0		
Surrogate: a,a,a-TFT	"	*2.50*		*1.46*	"	*50.0-150*	*58.4*			

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RETEC	Project:	Tosco Terminals Phase II/ Portland	Sampled: 9/19/97
1011 S.W. Klickitat Way, Suite 207	Project Number:	3-3333	Received: 9/22/97
Seattle, WA 98134	Project Manager:	Halah Voges	Reported: 10/16/97 12:59

Diesel Hydrocarbons (C10-C28) and Heavy Oil (C28-C40) per Oregon DEQ Method TPH-D (modified)/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: 0970588	**Date Prepared: 9/24/97**					**Extraction Method: TPH-D (OR)**				
Blank	**0970588-BLK1**									
Diesel Range Hydrocarbons	9/24/97			**ND**	mg/kg	**25.0**				
Heavy Oil Range Hydrocarbons	"			**ND**	"	**50.0**				
Surrogate: 1-Chlorooctadecane	"	*5.00*		*3.76*	"	*50.0-150*	*75.2*			
LCS	**0970588-BS1**									
Diesel Range Hydrocarbons	9/24/97	125		109	mg/kg	50.0-150	87.2			
Surrogate: 1-Chlorooctadecane	"	*5.00*		*4.47*	"	*50.0-150*	*89.4*			
Duplicate	**0970588-DUP1**	**P709402-01**								
Diesel Range Hydrocarbons	9/24/97		3110	2460	mg/kg			50.0	**23.3**	
Heavy Oil Range Hydrocarbons	"		ND	ND	"			50.0		
Surrogate: 1-Chlorooctadecane	"	*5.00*		*4.61*	"	*50.0-150*	*92.2*			
Duplicate	**0970588-DUP2**	**P709402-05**								
Diesel Range Hydrocarbons	9/24/97		6400	3200	mg/kg			50.0	**66.7**	7
Heavy Oil Range Hydrocarbons	"		ND	ND	"			50.0		
Surrogate: 1-Chlorooctadecane	"	*5.00*		*5.55*	"	*50.0-150*	*111*			
Duplicate	**0970588-DUP3**	**P709436-09**								
Diesel Range Hydrocarbons	9/25/97		ND	ND	mg/kg			50.0		
Heavy Oil Range Hydrocarbons	"		ND	ND	"			50.0		
Surrogate: 1-Chlorooctadecane	"	*5.00*		*4.01*	"	*50.0-150*	*80.2*			
Batch: 1070159	**Date Prepared: 10/7/97**					**Extraction Method: TPH-D Extraction**				
Blank	**1070159-BLK1**									
Diesel Range Hydrocarbons	10/7/97			**ND**	mg/kg	**25.0**				
Heavy Oil Range Hydrocarbons	"			**ND**	"	**50.0**				
Surrogate: 1-Chlorooctadecane	"	*5.00*		*3.90*	"	*50.0-150*	*78.0*			
LCS	**1070159-BS1**									
Diesel Range Hydrocarbons	10/7/97	125		93.5	mg/kg	50.0-150	74.8			
Surrogate: 1-Chlorooctadecane	"	*5.00*		*4.55*	"	*50.0-150*	*91.0*			
Duplicate	**1070159-DUP1**	**P709352-04**								
Diesel Range Hydrocarbons	10/7/97		5430	5080	mg/kg			50.0	**6.66**	
Heavy Oil Range Hydrocarbons	"		13500	14200	"			50.0	**5.05**	
Surrogate: 1-Chlorooctadecane	"	*5.00*		*ND*	"	*50.0-150*	*NR*			*1*

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**Refer to end of report for text of notes and definit*

Philip Nerenberg, Laboratory Manager

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RETEC	Project:	Tosco Terminals Phase II/ Portland	Sampled: 9/19/97
1011 S.W. Klickitat Way, Suite 207	Project Number:	3-3333	Received: 9/22/97
Seattle, WA 98134	Project Manager:	Halah Voges	Reported: 10/16/97 12:59

Diesel Hydrocarbons (C10-C28) and Heavy Oil (C28-C40) per Oregon DEQ Method TPH-D (modified)/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*
Duplicate	**1070159-DUP2**		**P709402-07**							
Diesel Range Hydrocarbons	10/7/97		ND	ND	mg/kg			50.0		
Heavy Oil Range Hydrocarbons	"		ND	ND	"			50.0		
Surrogate: 1-Chlorooctadecane	"	*5.00*		*4.03*	"	*50.0-150*	*80.6*			
Duplicate	**1070159-DUP3**		**P710110-02**							
Diesel Range Hydrocarbons	10/8/97		680	467	mg/kg			50.0	**37.1**	
Heavy Oil Range Hydrocarbons	"		1530	1030	"			50.0	**39.1**	
Surrogate: 1-Chlorooctadecane	"	*5.00*		*ND*	"	*50.0-150*	*NR*			*1*

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RETEC	Project:	Tosco Terminals Phase II/ Portland	Sampled: 9/19/97
1011 S.W. Klickitat Way, Suite 207	Project Number:	3-3333	Received: 9/22/97
Seattle, WA 98134	Project Manager:	Halah Voges	Reported: 10/16/97 12:59

Notes and Definitions

#	Note
1	The surrogate recovery for this sample is not available due to sample dilution required from high analyte concentration and/or matrix interferences.
2	Surrogate recovery is outside control limits due to matrix interference.
3	The reporting limit for this sample was raised due to matrix interference.
4	This sample was extracted outside the recommended holding time.
5	Reporting limits raised due to dilution necessary for analysis.
6	This sample was analyzed outside the recommended holding time.
7	The RPD is above the control limit due to a non-homogeneous sample matrix.
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.

Philip Nerenberg, Laboratory 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

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CHAIN OF CUSTODY RECORD

COPY

P709402

PROJ. NO.	PROJECT NAME
3-3333	Tosco Terminals/Phase II/ Portland

SAMPLERS: J. Henley

RECEIVING LABORATORY: North Creek Analytical

SEND RESULTS TO:
Halah Voges
Phone- (206)624-9349
Fax (206)624-2839

LAB I.D. NO.	DATE	TIME	SAMPLE NO.	NO. OF CONTAINERS	TPH Gas (+ BTEX, MTBE)	TPH Diesel - Extended	REMARKS
P709402-1	9/19	857	TPOR-GP-11-19	1	X	X	
2		1130	TPOR-GP-9-16	1	X	X	
3		1513	TPOR-GP-33-6	1	X	X	
4		1137	TPOR-GP-32-6	1	X	X	
5		1605	TPOR-GP-28-5.5	1	X	X	
6		1850	TPOR-HA-18-6	1	X	X	
7		1615	TPOR-GP-29-5.5	1	X	X	Hold; Contact Dan Baker @ Retec
8		1440	TPOR-GP-30-6	1	X	X	Hold - contact Dan Baker @ RETEC
9		1005	TPOR-GP-10-16	1	X	X	Hold
10		1017	TPOR-GP-10-18	1			Hold
11		1415	TPOR-GP-27-11	1	X	X	Hold
12		1430	~~TPOR~~ TPOR-HA-34-9	1	X	X	Hold
13	↓	1740	TPOR-~~HA~~ 17-5	1	X	X	Hold

Contact Dan Baker @ Retec

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Jim Henley	9/19/97 2048			9-22-97 1105	Sara McClurg
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)		Date / Time	

Shipper Information

REMEDIATION TECHNOLOGIES
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Seattle, WA 98134
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RETEC	Project:	Tosco Terminals Phase II/ Portland	Sampled:	9/17/97
1011 S.W. Klickitat Way, Suite 207	Project Number:	3-3333	Received:	9/18/97
Seattle, WA 98134	Project Manager:	Halah Voges	Reported:	10/16/97 18:10

ANALYTICAL REPORT FOR SAMPLES:

Sample Description	Laboratory Sample Number	Sample Matrix	Date Sampled
TPOR-SG-5-12	P709352-01	Air	9/17/97
TPOR-SG-3-11.5	P709352-02	Air	9/17/97
TPOR-SG-1-12	P709352-03	Air	9/17/97
TPOR-GP-3-2.8	P709352-04	Soil	9/17/97
TPOR-GP-4-5	P709352-05	Soil	9/17/97
TPOR-GP-5-9	P709352-06	Soil	9/17/97
TPOR-HA-2-11.5	P709352-07	Soil	9/17/97

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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.

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RETEC	Project:	Tosco Terminals Phase II/ Portland	Sampled: 9/17/97
1011 S.W. Klickitat Way, Suite 207	Project Number:	3-3333	Received: 9/18/97
Seattle, WA 98134	Project Manager:	Halah Voges	Reported: 10/16/97 18:10

Gasoline Hydrocarbons (Benzene to Naphthalene) and BTEX per Oregon DEQ TPH-G and EPA 8020A
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
TPOR-GP-3-2.8			**P709352-04**				**Soil**	**5**
Methyl tert-butyl ether	1070265	10/11/97	10/13/97		0.0500	ND	mg/kg	
Benzene	"	"	"		0.0500	ND	"	
Toluene	"	"	"		0.0500	ND	"	
Ethylbenzene	"	"	"		0.0500	ND	"	
Xylenes (total)	"	"	"		0.0500	ND	"	
Gasoline Range Hydrocarbons	"	"	"		2.00	ND	"	
Surrogate: a,a,a-TFT	"	"	"	*50.0-150*		*43.6*	%	*1*
TPOR-GP-4-5			**P709352-05**				**Soil**	
Methyl tert-butyl ether	0970490	9/19/97	9/19/97		0.0500	ND	mg/kg	
Benzene	"	"	"		0.0500	**0.0777**	"	
Toluene	"	"	"		0.0500	**0.201**	"	
Ethylbenzene	"	"	"		0.0500	**0.127**	"	
Xylenes (total)	"	"	"		0.0500	**0.132**	"	
Gasoline Range Hydrocarbons	"	"	"		2.00	**30.5**	"	
Surrogate: a,a,a-TFT	"	"	"	*50.0-150*		*57.2*	%	
TPOR-GP-5-9			**P709352-06**				**Soil**	**5**
Methyl tert-butyl ether	1070265	10/11/97	10/12/97		0.0500	ND	mg/kg	
Benzene	"	"	"		0.0500	ND	"	
Toluene	"	"	"		0.0500	ND	"	
Ethylbenzene	"	"	"		0.0500	ND	"	
Xylenes (total)	"	"	"		0.0500	ND	"	
Gasoline Range Hydrocarbons	"	"	"		2.00	ND	"	
Surrogate: a,a,a-TFT	"	"	"	*50.0-150*		*70.4*	%	
TPOR-HA-2-11.5			**P709352-07**				**Soil**	
Methyl tert-butyl ether	0970490	9/19/97	9/20/97		0.100	ND	mg/kg	
Benzene	"	"	"		0.100	ND	"	
Toluene	"	"	"		0.100	ND	"	
Ethylbenzene	"	"	"		0.100	ND	"	
Xylenes (total)	"	"	"		0.100	ND	"	
Gasoline Range Hydrocarbons	"	"	"		4.00	**169**	"	
Surrogate: a,a,a-TFT	"	"	"	*50.0-150*		*71.2*	%	

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RETEC	Project:	Tosco Terminals Phase II/ Portland	Sampled: 9/17/97
1011 S.W. Klickitat Way, Suite 207	Project Number:	3-3333	Received: 9/18/97
Seattle, WA 98134	Project Manager:	Halah Voges	Reported: 10/16/97 18:10

Gasoline Hydrocarbons (Benzene to Naphthalene) and BTEX per EPA Method 8015 (modified) and 8020A
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
TPOR-SG-5-12			**P709352-01**				**Air**	
Methyl tert-butyl ether	0970460	9/19/97	9/19/97		40.0	**1850**	mg/m³ Air	2
Benzene	"	"	"		10.0	**440**	"	
Toluene	"	"	"		10.0	**246**	"	
Ethylbenzene	"	"	"		10.0	**27.4**	"	
Xylenes (total)	"	"	"		20.0	**22.4**	"	
Gasoline Range Hydrocarbons	"	"	"		1600	**20400**	"	
Surrogate: 4-BFB	"	"	"	*50.0-150*		*99.6*	%	
TPOR-SG-3-11.5			**P709352-02**				**Air**	
Methyl tert-butyl ether	0970460	9/19/97	9/19/97		0.200	ND	mg/m³ Air	
Benzene	"	"	"		0.0500	ND	"	
Toluene	"	"	"		0.0500	ND	"	
Ethylbenzene	"	"	"		0.0500	ND	"	
Xylenes (total)	"	"	"		0.100	ND	"	
Gasoline Range Hydrocarbons	"	"	"		8.00	ND	"	
Surrogate: 4-BFB	"	"	"	*50.0-150*		*94.0*	%	
TPOR-SG-1-12			**P709352-03**				**Air**	
Methyl tert-butyl ether	0970460	9/19/97	9/19/97		1.00	**29.9**	mg/m³ Air	
Benzene	"	"	"		0.250	**30.3**	"	
Toluene	"	"	"		0.250	**49.8**	"	
Ethylbenzene	"	"	"		0.250	**17.5**	"	
Xylenes (total)	"	"	"		0.500	**6.34**	"	
Gasoline Range Hydrocarbons	"	"	"		80.0	**3010**	"	
Surrogate: 4-BFB	"	"	"	*50.0-150*		*125*	%	

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RETEC	Project:	Tosco Terminals Phase II/ Portland	Sampled:	9/17/97
1011 S.W. Klickitat Way, Suite 207	Project Number:	3-3333	Received:	9/18/97
Seattle, WA 98134	Project Manager:	Halah Voges	Reported:	10/16/97 18:10

Diesel Hydrocarbons (C10-C28) and Heavy Oil (C28-C40) per Oregon DEQ Method TPH-D (modified)
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
TPOR-GP-3-2.8			**P709352-04**				**Soil**	**3**
Diesel Range Hydrocarbons	1070159	10/7/97	10/7/97		1250	**5430**	mg/kg	4
Heavy Oil Range Hydrocarbons	"	"	"		2500	**13500**	"	
Surrogate: 1-Chlorooctadecane	"	"	"	*50.0-150*		*NR*	%	*6*
TPOR-GP-4-5			**P709352-05**				**Soil**	
Diesel Range Hydrocarbons	0970510	9/22/97	9/23/97		25.0	**106**	mg/kg	
Heavy Oil Range Hydrocarbons	"	"	"		50.0	ND	"	
Surrogate: 1-Chlorooctadecane	"	"	"	*50.0-150*		*76.4*	%	
TPOR-GP-5-9			**P709352-06**				**Soil**	**3**
Diesel Range Hydrocarbons	1070159	10/7/97	10/7/97		25.0	ND	mg/kg	
Heavy Oil Range Hydrocarbons	"	"	"		50.0	ND	"	
Surrogate: 1-Chlorooctadecane	"	"	"	*50.0-150*		*95.6*	%	
TPOR-HA-2-11.5			**P709352-07**				**Soil**	
Diesel Range Hydrocarbons	0970510	9/22/97	9/23/97		25.0	**156**	mg/kg	
Heavy Oil Range Hydrocarbons	"	"	"		50.0	ND	"	
Surrogate: 1-Chlorooctadecane	"	"	"	*50.0-150*		*81.2*	%	

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1011 S.W. Klickitat Way, Suite 207	Project Number:	3-3333	Received: 9/18/97
Seattle, WA 98134	Project Manager:	Halah Voges	Reported: 10/16/97 18:10

Volatile Organic Compounds per EPA Method 8260A
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
TPOR-HA-2-11.5			**P709352-07**				**Soil**	
Acetone	1070063	9/30/97	9/30/97		1250	ND	ug/kg dry	
Benzene	"	"	"		50.0	ND	"	
Bromobenzene	"	"	"		50.0	ND	"	
Bromochloromethane	"	"	"		50.0	ND	"	
Bromodichloromethane	"	"	"		50.0	ND	"	
Bromoform	"	"	"		100	ND	"	
Bromomethane	"	"	"		500	ND	"	
2-Butanone	"	"	"		1250	ND	"	
n-Butylbenzene	"	"	"		50.0	**388**	"	
sec-Butylbenzene	"	"	"		50.0	**219**	"	
tert-Butylbenzene	"	"	"		50.0	ND	"	
Carbon tetrachloride	"	"	"		50.0	ND	"	
Chlorobenzene	"	"	"		50.0	ND	"	
Chloroethane	"	"	"		100	ND	"	
Chloroform	"	"	"		50.0	ND	"	
Chloromethane	"	"	"		250	ND	"	
2-Chlorotoluene	"	"	"		50.0	ND	"	
4-Chlorotoluene	"	"	"		50.0	ND	"	
1,2-Dibromo-3-chloropropane	"	"	"		250	ND	"	
Dibromochloromethane	"	"	"		50.0	ND	"	
1,2-Dibromoethane	"	"	"		50.0	ND	"	
Dibromomethane	"	"	"		50.0	ND	"	
1,2-Dichlorobenzene	"	"	"		50.0	ND	"	
1,3-Dichlorobenzene	"	"	"		50.0	ND	"	
1,4-Dichlorobenzene	"	"	"		50.0	ND	"	
Dichlorodifluoromethane	"	"	"		100	ND	"	
1,1-Dichloroethane	"	"	"		50.0	ND	"	
1,2-Dichloroethane	"	"	"		50.0	ND	"	
1,1-Dichloroethene	"	"	"		50.0	ND	"	
cis-1,2-Dichloroethene	"	"	"		50.0	ND	"	
trans-1,2-Dichloroethene	"	"	"		50.0	ND	"	
1,2-Dichloropropane	"	"	"		50.0	ND	"	
1,3-Dichloropropane	"	"	"		50.0	ND	"	
2,2-Dichloropropane	"	"	"		50.0	ND	"	
1,1-Dichloropropene	"	"	"		50.0	ND	"	
cis-1,3-Dichloropropene	"	"	"		50.0	ND	"	
trans-1,3-Dichloropropene	"	"	"		50.0	ND	"	
Ethylbenzene	"	"	"		50.0	ND	"	

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1011 S.W. Klickitat Way, Suite 207	Project Number:	3-3333	Received: 9/18/97
Seattle, WA 98134	Project Manager:	Halah Voges	Reported: 10/16/97 18:10

Volatile Organic Compounds per EPA Method 8260A
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
TPOR-HA-2-11.5 (continued)			**P709352-07**				**Soil**	
Hexachlorobutadiene	1070063	9/30/97	9/30/97		100	ND	ug/kg dry	
2-Hexanone	"	"	"		250	ND	"	
Isopropylbenzene	"	"	"		50.0	ND	"	
p-Isopropyltoluene	"	"	"		50.0	ND	"	
4-Methyl-2-pentanone	"	"	"		250	ND	"	
Methylene chloride	"	"	"		500	ND	"	
Naphthalene	"	"	"		100	ND	"	
n-Propylbenzene	"	"	"		50.0	**180**	"	
Styrene	"	"	"		50.0	ND	"	
1,1,1,2-Tetrachloroethane	"	"	"		50.0	ND	"	
1,1,2,2-Tetrachloroethane	"	"	"		50.0	ND	"	
Tetrachloroethene	"	"	"		50.0	ND	"	
Toluene	"	"	"		50.0	ND	"	
1,2,3-Trichlorobenzene	"	"	"		50.0	ND	"	
1,2,4-Trichlorobenzene	"	"	"		50.0	ND	"	
1,1,1-Trichloroethane	"	"	"		50.0	ND	"	
1,1,2-Trichloroethane	"	"	"		50.0	ND	"	
Trichloroethene	"	"	"		50.0	ND	"	
Trichlorofluoromethane	"	"	"		50.0	ND	"	
1,2,3-Trichloropropane	"	"	"		50.0	ND	"	
1,2,4-Trimethylbenzene	"	"	"		50.0	ND	"	
1,3,5-Trimethylbenzene	"	"	"		50.0	ND	"	
Vinyl chloride	"	"	"		100	ND	"	
o-Xylene	"	"	"		50.0	ND	"	
m,p-Xylene	"	"	"		50.0	ND	"	
Surrogate: 4-BFB	"	"	"	*65.0-130*		*124*	%	
Surrogate: Dibromofluoromethane	"	"	"	*65.0-130*		*116*	"	
Surrogate: Toluene-d8	"	"	"	*65.0-130*		*89.1*	"	

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Seattle, WA 98134	Project Manager:	Halah Voges	Reported:	10/16/97 18:10

Dry Weight Determination
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Sample Name	Lab ID	Matrix	Result	Units
TPOR-HA-2-11.5	P709352-07	Soil	73.8	%

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RETEC	Project:	Tosco Terminals Phase II/ Portland	Sampled: 9/17/97
1011 S.W. Klickitat Way, Suite 207	Project Number:	3-3333	Received: 9/18/97
Seattle, WA 98134	Project Manager:	Halah Voges	Reported: 10/16/97 18:10

Gasoline Hydrocarbons (Benzene to Naphthalene) and BTEX per Oregon DEQ TPH-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: 0970490	**Date Prepared: 9/19/97**					**Extraction Method: MeOH Extraction**				
Blank	**0970490-BLK1**									
Benzene	9/19/97			**ND**	mg/kg	**0.0500**				
Toluene	"			**ND**	"	**0.0500**				
Ethylbenzene	"			**ND**	"	**0.0500**				
Xylenes (total)	"			**ND**	"	**0.0500**				
Gasoline Range Hydrocarbons	"			**ND**	"	**2.00**				
Surrogate: a,a,a-TFT	"	*2.50*		*2.15*	"	*50.0-150*	*86.0*			
LCS	**0970490-BS1**									
Gasoline Range Hydrocarbons	9/19/97	31.3		27.0	mg/kg	50.0-150	86.3			
Surrogate: a,a,a-TFT	"	*2.50*		*2.13*	"	*50.0-150*	*85.2*			
LCS	**0970490-BS2**									
Benzene	9/19/97	0.500		0.490	mg/kg	69.0-138	98.0			
Toluene	"	0.500		0.517	"	53.0-151	103			
Ethylbenzene	"	0.500		0.508	"	61.0-141	102			
Xylenes (total)	"	1.50		1.55	"	62.0-144	103			
Surrogate: a,a,a-TFT	"	*2.50*		*1.35*	"	*50.0-150*	*54.0*			
Duplicate	**0970490-DUP1**		**P709385-03**							
Gasoline Range Hydrocarbons	9/19/97		7.02	8.90	mg/kg			50.0	**23.6**	
Surrogate: a,a,a-TFT	"	*2.50*		*1.64*	"	*50.0-150*	*65.6*			
Duplicate	**0970490-DUP2**		**P709385-04**							
Gasoline Range Hydrocarbons	9/19/97		3.08	3.35	mg/kg			50.0	**8.40**	
Surrogate: a,a,a-TFT	"	*2.50*		*1.70*	"	*50.0-150*	*68.0*			
Matrix Spike	**0970490-MS1**		**P709385-04**							
Benzene	9/19/97	0.500	ND	0.400	mg/kg	56.0-123	**80.0**			
Toluene	"	0.500	ND	0.412	"	54.0-123	**82.4**			
Ethylbenzene	"	0.500	ND	0.412	"	45.0-130	**82.4**			
Xylenes (total)	"	1.50	ND	1.27	"	50.0-127	**84.7**			
Surrogate: a,a,a-TFT	"	*2.50*		*1.65*	"	*50.0-150*	*66.0*			
Matrix Spike Dup	**0970490-MSD1**		**P709385-04**							
Benzene	9/19/97	0.500	ND	0.435	mg/kg	56.0-123	**87.0**	17.0	**8.38**	
Toluene	"	0.500	ND	0.455	"	54.0-123	**91.0**	24.0	**9.92**	
Ethylbenzene	"	0.500	ND	0.442	"	45.0-130	**88.4**	20.0	**7.03**	

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RETEC	Project:	Tosco Terminals Phase II/ Portland	Sampled: 9/17/97
1011 S.W. Klickitat Way, Suite 207	Project Number:	3-3333	Received: 9/18/97
Seattle, WA 98134	Project Manager:	Halah Voges	Reported: 10/16/97 18:10

Gasoline Hydrocarbons (Benzene to Naphthalene) and BTEX per Oregon DEQ TPH-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)	**0970490-MSD1**		**P709385-04**							
Xylenes (total)	9/19/97	1.50	ND	1.34	mg/kg	50.0-127	**89.3**	20.0	**5.29**	
Surrogate: a,a,a-TFT	"	*2.50*		*1.69*	"	*50.0-150*	*67.6*			
Batch: 1070265	**Date Prepared: 10/11/97**					**Extraction Method: MeOH Extraction**				
Blank	**1070265-BLK1**									
Methyl tert-butyl ether	10/12/97			**ND**	mg/kg	**0.0500**				
Benzene	"			**ND**	"	**0.0500**				
Toluene	"			**ND**	"	**0.0500**				
Ethylbenzene	"			**ND**	"	**0.0500**				
Xylenes (total)	"			**ND**	"	**0.0500**				
Gasoline Range Hydrocarbons	"			**ND**	"	**2.00**				
Surrogate: a,a,a-TFT	"	*2.50*		*1.32*	"	*50.0-150*	*52.8*			
LCS	**1070265-BS1**									
Gasoline Range Hydrocarbons	10/12/97	31.3		34.3	mg/kg	50.0-150	110			
Surrogate: a,a,a-TFT	"	*2.50*		*2.02*	"	*50.0-150*	*80.8*			
LCS	**1070265-BS2**									
Benzene	10/12/97	0.500		0.470	mg/kg	69.0-138	94.0			
Toluene	"	0.500		0.500	"	53.0-151	100			
Ethylbenzene	"	0.500		0.485	"	61.0-141	97.0			
Xylenes (total)	"	1.50		1.48	"	62.0-144	98.7			
Surrogate: a,a,a-TFT	"	*2.50*		*2.16*	"	*50.0-150*	*86.4*			
LCS	**1070265-BS3**									
Methyl tert-butyl ether	10/12/97	0.0200		0.0213	mg/kg	50.0-150	106			
Duplicate	**1070265-DUP1**		**P709352-04**							
Gasoline Range Hydrocarbons	10/13/97		ND	ND	mg/kg			50.0		
Surrogate: a,a,a-TFT	"	*2.50*		*1.06*	"	*50.0-150*	*42.4*			*1*
Duplicate	**1070265-DUP2**		**P709394-03**							
Gasoline Range Hydrocarbons	10/12/97		ND	ND	mg/kg			50.0		
Surrogate: a,a,a-TFT	"	*2.50*		*1.69*	"	*50.0-150*	*67.6*			
Duplicate	**1070265-DUP3**		**P709394-16**							
Gasoline Range Hydrocarbons	10/12/97		5.78	3.58	mg/kg			50.0	**47.0**	
Surrogate: a,a,a-TFT	"	*2.50*		*1.66*	"	*50.0-150*	*66.4*			

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

Philip Nerenberg, Laboratory Manager

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

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RETEC	Project:	Tosco Terminals Phase II/ Portland	Sampled: 9/17/97
1011 S.W. Klickitat Way, Suite 207	Project Number:	3-3333	Received: 9/18/97
Seattle, WA 98134	Project Manager:	Halah Voges	Reported: 10/16/97 18:10

Gasoline Hydrocarbons (Benzene to Naphthalene) and BTEX per Oregon DEQ TPH-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	**1070265-MS1**		**P709352-06**							
Benzene	10/12/97	0.500	ND	0.370	mg/kg	56.0-123	**74.0**			
Toluene	"	0.500	ND	0.385	"	54.0-123	**77.0**			
Ethylbenzene	"	0.500	ND	0.380	"	45.0-130	**76.0**			
Xylenes (total)	"	1.50	ND	1.18	"	50.0-127	**78.7**			
Surrogate: a,a,a-TFT	"	*2.50*		*1.75*	"	*50.0-150*	*70.0*			
Matrix Spike Dup	**1070265-MSD1**		**P709352-06**							
Benzene	10/12/97	0.500	ND	0.362	mg/kg	56.0-123	**72.4**	17.0	**3.53**	
Toluene	"	0.500	ND	0.368	"	54.0-123	**73.6**	24.0	**4.52**	
Ethylbenzene	"	0.500	ND	0.365	"	45.0-130	**73.0**	20.0	**4.03**	
Xylenes (total)	"	1.50	ND	1.12	"	50.0-127	**74.7**	20.0	**5.22**	
Surrogate: a,a,a-TFT	"	*2.50*		*1.46*	"	*50.0-150*	*58.4*			

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RETEC	Project:	Tosco Terminals Phase II/ Portland	Sampled: 9/17/97
1011 S.W. Klickitat Way, Suite 207	Project Number:	3-3333	Received: 9/18/97
Seattle, WA 98134	Project Manager:	Halah Voges	Reported: 10/16/97 18:10

Gasoline Hydrocarbons (Benzene to Naphthalene) and BTEX per EPA Method 8015 (modified) and 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: 0970460	**Date Prepared: 9/19/97**					**Extraction Method: EPA 5030**				
Blank	**0970460-BLK1**									
Methyl tert-butyl ether	9/19/97			**ND**	mg/m³ Air	**0.200**				
Benzene	"			**ND**	"	**0.0500**				
Toluene	"			**ND**	"	**0.0500**				
Ethylbenzene	"			**ND**	"	**0.0500**				
Xylenes (total)	"			**ND**	"	**0.100**				
Gasoline Range Hydrocarbons	"			**ND**	"	**8.00**				
Surrogate: 4-BFB	"	*50.0*		*46.6*	"	*50.0-150*	*93.2*			
LCS	**0970460-BS1**									
Gasoline Range Hydrocarbons	9/19/97	501		520	mg/m³ Air	50.0-150	104			
Surrogate: 4-BFB	"	*50.0*		*50.0*	"	*50.0-150*	*100*			
LCS	**0970460-BS2**									
Benzene	9/19/97	10.0		9.26	mg/m³ Air	50.0-115	92.6			
Toluene	"	10.0		8.94	"	50.0-115	89.4			
Ethylbenzene	"	10.0		8.04	"	50.0-115	80.4			
Xylenes (total)	"	30.0		23.0	"	50.0-115	76.7			
Surrogate: 4-BFB	"	*50.0*		*46.4*	"	*50.0-150*	*92.8*			
LCS	**0970460-BS3**									
Methyl tert-butyl ether	9/19/97	20.0		18.5	mg/m³ Air	50.0-115	92.5			
LCS Dup	**0970460-BSD2**									
Benzene	9/19/97	10.0		10.3	mg/m³ Air	50.0-115	103	35.0	10.6	
Toluene	"	10.0		9.69	"	50.0-115	96.9	35.0	8.05	
Ethylbenzene	"	10.0		9.21	"	50.0-115	92.1	35.0	13.6	
Xylenes (total)	"	30.0		25.9	"	50.0-115	86.3	35.0	11.8	
Surrogate: 4-BFB	"	*50.0*		*48.2*	"	*50.0-150*	*96.4*			
Duplicate	**0970460-DUP1**		**P709352-01**							
Gasoline Range Hydrocarbons	9/19/97		20400	19800	mg/m³ Air			50.0	**2.99**	
Surrogate: 4-BFB	"	*50.0*		*49.5*	"	*50.0-150*	*99.0*			

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RETEC	Project:	Tosco Terminals Phase II/ Portland	Sampled: 9/17/97
1011 S.W. Klickitat Way, Suite 207	Project Number:	3-3333	Received: 9/18/97
Seattle, WA 98134	Project Manager:	Halah Voges	Reported: 10/16/97 18:10

Diesel Hydrocarbons (C10-C28) and Heavy Oil (C28-C40) per Oregon DEQ Method TPH-D (modified)/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: 0970510	**Date Prepared: 9/22/97**					**Extraction Method: TPH-D Extraction**				
Blank	**0970510-BLK1**									
Diesel Range Hydrocarbons	9/23/97			**ND**	mg/kg	**25.0**				
Heavy Oil Range Hydrocarbons	"			**ND**	"	**50.0**				
Surrogate: 1-Chlorooctadecane	"	*5.00*		*3.51*	"	*50.0-150*	*70.2*			
LCS	**0970510-BS1**									
Diesel Range Hydrocarbons	9/23/97	125		112	mg/kg	50.0-150	89.6			
Surrogate: 1-Chlorooctadecane	"	*5.00*		*4.14*	"	*50.0-150*	*82.8*			
Duplicate	**0970510-DUP1**	**P709377-01**								
Diesel Range Hydrocarbons	9/23/97		ND	ND	mg/kg			50.0		
Heavy Oil Range Hydrocarbons	"		85.0	53.0	"			50.0	**46.4**	
Surrogate: 1-Chlorooctadecane	"	*5.00*		*3.61*	"	*50.0-150*	*72.2*			
Duplicate	**0970510-DUP2**	**P709396-02**								
Diesel Range Hydrocarbons	9/22/97		ND	ND	mg/kg			50.0		
Heavy Oil Range Hydrocarbons	"		ND	ND	"			50.0		
Surrogate: 1-Chlorooctadecane	"	*5.00*		*3.76*	"	*50.0-150*	*75.2*			
Duplicate	**0970510-DUP3**	**P709396-07**								
Diesel Range Hydrocarbons	9/22/97		ND	ND	mg/kg			50.0		
Heavy Oil Range Hydrocarbons	"		673	508	"			50.0	**27.9**	
Surrogate: 1-Chlorooctadecane	"	*5.00*		*4.95*	"	*50.0-150*	*99.0*			
Batch: 1070159	**Date Prepared: 10/7/97**					**Extraction Method: TPH-D Extraction**				
Blank	**1070159-BLK1**									
Diesel Range Hydrocarbons	10/7/97			**ND**	mg/kg	**25.0**				
Heavy Oil Range Hydrocarbons	"			**ND**	"	**50.0**				
Surrogate: 1-Chlorooctadecane	"	*5.00*		*3.90*	"	*50.0-150*	*78.0*			
LCS	**1070159-BS1**									
Diesel Range Hydrocarbons	10/7/97	125		93.5	mg/kg	50.0-150	74.8			
Surrogate: 1-Chlorooctadecane	"	*5.00*		*4.55*	"	*50.0-150*	*91.0*			
Duplicate	**1070159-DUP1**	**P709352-04**								
Diesel Range Hydrocarbons	10/7/97		5430	5080	mg/kg			50.0	**6.66**	
Heavy Oil Range Hydrocarbons	"		13500	14200	"			50.0	**5.05**	
Surrogate: 1-Chlorooctadecane	"	*5.00*		*ND*	"	*50.0-150*	*NR*			*6*

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RETEC	Project:	Tosco Terminals Phase II/ Portland	Sampled: 9/17/97
1011 S.W. Klickitat Way, Suite 207	Project Number:	3-3333	Received: 9/18/97
Seattle, WA 98134	Project Manager:	Halah Voges	Reported: 10/16/97 18:10

Diesel Hydrocarbons (C10-C28) and Heavy Oil (C28-C40) per Oregon DEQ Method TPH-D (modified)/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*
Duplicate	**1070159-DUP2**		**P709402-07**							
Diesel Range Hydrocarbons	10/7/97		ND	ND	mg/kg			50.0		
Heavy Oil Range Hydrocarbons	"		ND	ND	"			50.0		
Surrogate: 1-Chlorooctadecane	"	*5.00*		*4.03*	"	*50.0-150*	*80.6*			
Duplicate	**1070159-DUP3**		**P710110-02**							
Diesel Range Hydrocarbons	10/8/97		680	467	mg/kg			50.0	**37.1**	
Heavy Oil Range Hydrocarbons	"		1530	1030	"			50.0	**39.1**	
Surrogate: 1-Chlorooctadecane	"	*5.00*		*ND*	"	*50.0-150*	*NR*			*6*

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RETEC	Project:	Tosco Terminals Phase II/ Portland	Sampled: 9/17/97
1011 S.W. Klickitat Way, Suite 207	Project Number:	3-3333	Received: 9/18/97
Seattle, WA 98134	Project Manager:	Halah Voges	Reported: 10/16/97 18:10

Volatile Organic Compounds per EPA Method 8260A/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: 1070063	**Date Prepared: 9/30/97**				**Extraction Method: MeOH Extraction**					
Blank	**1070063-BLK1**									
Acetone	9/30/97			ND	ug/kg dry	1250				
Benzene	"			ND	"	50.0				
Bromobenzene	"			ND	"	50.0				
Bromochloromethane	"			ND	"	50.0				
Bromodichloromethane	"			ND	"	50.0				
Bromoform	"			ND	"	100				
Bromomethane	"			ND	"	500				
2-Butanone	"			ND	"	1250				
n-Butylbenzene	"			ND	"	50.0				
sec-Butylbenzene	"			ND	"	50.0				
tert-Butylbenzene	"			ND	"	50.0				
Carbon tetrachloride	"			ND	"	50.0				
Chlorobenzene	"			ND	"	50.0				
Chloroethane	"			ND	"	100				
Chloroform	"			ND	"	50.0				
Chloromethane	"			ND	"	250				
2-Chlorotoluene	"			ND	"	50.0				
4-Chlorotoluene	"			ND	"	50.0				
1,2-Dibromo-3-chloropropane	"			ND	"	250				
Dibromochloromethane	"			ND	"	50.0				
1,2-Dibromoethane	"			ND	"	50.0				
Dibromomethane	"			ND	"	50.0				
1,2-Dichlorobenzene	"			ND	"	50.0				
1,3-Dichlorobenzene	"			ND	"	50.0				
1,4-Dichlorobenzene	"			ND	"	50.0				
Dichlorodifluoromethane	"			ND	"	100				
1,1-Dichloroethane	"			ND	"	50.0				
1,2-Dichloroethane	"			ND	"	50.0				
1,1-Dichloroethene	"			ND	"	50.0				
cis-1,2-Dichloroethene	"			ND	"	50.0				
trans-1,2-Dichloroethene	"			ND	"	50.0				
1,2-Dichloropropane	"			ND	"	50.0				
1,3-Dichloropropane	"			ND	"	50.0				
2,2-Dichloropropane	"			ND	"	50.0				
1,1-Dichloropropene	"			ND	"	50.0				
cis-1,3-Dichloropropene	"			ND	"	50.0				
trans-1,3-Dichloropropene	"			ND	"	50.0				

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RETEC	Project:	Tosco Terminals Phase II/ Portland	Sampled: 9/17/97
1011 S.W. Klickitat Way, Suite 207	Project Number:	3-3333	Received: 9/18/97
Seattle, WA 98134	Project Manager:	Halah Voges	Reported: 10/16/97 18:10

Volatile Organic Compounds per EPA Method 8260A/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*
Blank (continued)	**1070063-BLK1**									
Ethylbenzene	9/30/97			ND	ug/kg dry	50.0				
Hexachlorobutadiene	"			ND	"	100				
2-Hexanone	"			ND	"	250				
Isopropylbenzene	"			ND	"	50.0				
p-Isopropyltoluene	"			ND	"	50.0				
4-Methyl-2-pentanone	"			ND	"	250				
Methylene chloride	"			ND	"	500				
Naphthalene	"			ND	"	100				
n-Propylbenzene	"			ND	"	50.0				
Styrene	"			ND	"	50.0				
1,1,1,2-Tetrachloroethane	"			ND	"	50.0				
1,1,2,2-Tetrachloroethane	"			ND	"	50.0				
Tetrachloroethene	"			ND	"	50.0				
Toluene	"			ND	"	50.0				
1,2,3-Trichlorobenzene	"			ND	"	50.0				
1,2,4-Trichlorobenzene	"			ND	"	50.0				
1,1,1-Trichloroethane	"			ND	"	50.0				
1,1,2-Trichloroethane	"			ND	"	50.0				
Trichloroethene	"			ND	"	50.0				
Trichlorofluoromethane	"			ND	"	50.0				
1,2,3-Trichloropropane	"			ND	"	50.0				
1,2,4-Trimethylbenzene	"			ND	"	50.0				
1,3,5-Trimethylbenzene	"			ND	"	50.0				
Vinyl chloride	"			ND	"	100				
o-Xylene	"			ND	"	50.0				
m,p-Xylene	"			ND	"	50.0				
Surrogate: 4-BFB	"	*25.0*		*29.7*	"	*65.0-130*	*119*			
Surrogate: Dibromofluoromethane	"	*25.0*		*29.3*	"	*65.0-130*	*117*			
Surrogate: Toluene-d8	"	*25.0*		*23.1*	"	*65.0-130*	*92.4*			
LCS	**1070063-BS1**									
Benzene	9/30/97	2500		2480	ug/kg dry	66.0-142	99.2			
Chlorobenzene	"	2500		2810	"	60.0-133	112			
1,1-Dichloroethene	"	2500		2090	"	59.0-172	83.6			
Toluene	"	2500		2300	"	59.0-139	92.0			
Trichloroethene	"	2500		2250	"	62.0-137	90.0			
Surrogate: 4-BFB	"	*25.0*		*26.8*	"	*65.0-130*	*107*			
Surrogate: Dibromofluoromethane	"	*25.0*		*26.0*	"	*65.0-130*	*104*			

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RETEC	Project:	Tosco Terminals Phase II/ Portland	Sampled: 9/17/97
1011 S.W. Klickitat Way, Suite 207	Project Number:	3-3333	Received: 9/18/97
Seattle, WA 98134	Project Manager:	Halah Voges	Reported: 10/16/97 18:10

Volatile Organic Compounds per EPA Method 8260A/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*
LCS (continued)	**1070063-BS1**									
Surrogate: Toluene-d8	*9/30/97*	*25.0*		*20.4*	*ug/kg dry*	*65.0-130*	*81.6*			
Matrix Spike	**1070063-MS1**		**P709380-01**							
Benzene	9/30/97	2880	ND	2720	ug/kg dry	66.0-142	**94.4**			
Chlorobenzene	"	2880	ND	3060	"	60.0-133	**106**			
1,1-Dichloroethene	"	2880	ND	2460	"	59.0-172	**85.4**			
Toluene	"	2880	ND	2540	"	59.0-139	**88.2**			
Trichloroethene	"	2880	ND	2530	"	62.0-137	**87.8**			
Surrogate: 4-BFB	"	*28.8*		*30.7*	"	*65.0-130*	*107*			
Surrogate: Dibromofluoromethane	"	*28.8*		*28.9*	"	*65.0-130*	*100*			
Surrogate: Toluene-d8	"	*28.8*		*23.2*	"	*65.0-130*	*80.6*			
Matrix Spike Dup	**1070063-MSD1**		**P709380-01**							
Benzene	9/30/97	2880	ND	2790	ug/kg dry	66.0-142	**96.9**	25.0	**2.61**	
Chlorobenzene	"	2880	ND	3140	"	60.0-133	**109**	25.0	**2.79**	
1,1-Dichloroethene	"	2880	ND	2520	"	59.0-172	**87.5**	25.0	**2.43**	
Toluene	"	2880	ND	2590	"	59.0-139	**89.9**	25.0	**1.91**	
Trichloroethene	"	2880	ND	2540	"	62.0-137	**88.2**	25.0	**0.455**	
Surrogate: 4-BFB	"	*28.8*		*31.0*	"	*65.0-130*	*108*			
Surrogate: Dibromofluoromethane	"	*28.8*		*29.1*	"	*65.0-130*	*101*			
Surrogate: Toluene-d8	"	*28.8*		*23.8*	"	*65.0-130*	*82.6*			

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Philip Nerenberg, Laboratory Manager

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RETEC	Project:	Tosco Terminals Phase II/ Portland	Sampled: 9/17/97
1011 S.W. Klickitat Way, Suite 207	Project Number:	3-3333	Received: 9/18/97
Seattle, WA 98134	Project Manager:	Halah Voges	Reported: 10/16/97 18:10

Notes and Definitions

#	Note
1	Surrogate recovery is outside control limits due to matrix interference.
2	MTBE result did not confirm by GC/MS.
3	This sample was extracted outside the recommended holding time.
4	Detected hydrocarbons in the diesel range appear to be due to overlap of heavy/oil range hydrocarbons.
5	This sample was analyzed outside the recommended holding time.
6	The surrogate recovery for this sample is not available due to sample dilution required from high analyte concentration and/or matrix interferences.
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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CHAIN OF CUSTODY REPORT

COPY

Work Order # P709352

REPORT TO:	INVOICE TO:
ATTENTION: Halah Voges	ATTENTION:
ADDRESS: 1011 S.W. Klickitat Way Suite 207 Seattle, WA. 98199	ADDRESS:
PHONE: (206)624-9349 FAX: (206) 624-2839	P.O. NUMBER: NCA QUOTE #:
PROJECT NAME: Tosco Terminals Phase II/ Portland	
PROJECT NUMBER: 3-3333	
SAMPLED BY: J. Henley	

TURNAROUND REQUEST in Business Days *

Organic & Inorganic Analyses: [X] Standard 10 | 7 | 5 | 4 | 3 | 2 | 1 | Same Day

Fuels & Hydrocarbon Analyses: [5] Standard | 3-4 | 2 | 1 | Same Day

OTHER Specify:

* Turnaround Requests less than standard may incur Rush Charges.

	CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	NCA SAMPLE ID (Laboratory Use Only)	Analysis Request: TPH GAS (+ BTEX, MTBE)	TPH Diesel - Extended	VOCs	MATRIX (W, S, A, O)	# OF CONTAINERS	COMMENTS
1.	TPOR-SG-5-12	9/17/1603		X			Air	1	
2.	TPOR-SG-3-11.5	9/17/1408		X			↓	↓	
3.	TPOR-SG-1-12	9/17/1451		X			↓		
4.	TPOR-GP-3-2.8	9/17/1320		(X)	(X)		S		Hold; Contact Dan Baker @ RETEC
5.	TPOR-GP-4-5	9/17/1648		X	X		↓		
6.	TPOR-GP-5-9	9/17/1550		(X)	(X)		↓		Hold; Contact Dan Baker @ Retec
7.	TPOR-HA-2-11.5	9/17/1510		X	X	(X)	↓	↓	Call Halah Voges @RETEC to confirm
8.									
9.									
10.									

RELINQUISHED BY (Signature): Jim Henley	DATE: 9/18	RECEIVED BY (Signature): Larry Spangler	DATE: 9-18-97
PRINT NAME: Jim Henley	FIRM: RETEC TIME: 7:00	PRINT NAME: Larry Spangler	FIRM: NCA TIME: 1305
RELINQUISHED BY (Signature): Larry Spangler	DATE: 9-18-97	RECEIVED BY (Signature): Kari Cline	DATE: 9/18/97
PRINT NAME: Larry Spangler	FIRM: NCA TIME: 1355	PRINT NAME: KARI CLINE	FIRM: NCA TIME: 1420

ADDITIONAL REMARKS:

PAGE | OF

COC Rev 8, 1/96

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Portland

RETEC	Project:	TOSCO Terminals Phase II/ ~~Coos Bay~~ JJH	Sampled: 9/27/97
1011 S.W. Klickitat Way, Suite 207	Project Number:	3-3333	Received: 9/29/97
Seattle, WA 98134	Project Manager:	Halah Voges	Reported: 10/17/97 10:36

ANALYTICAL REPORT FOR SAMPLES:

Sample Description	Laboratory Sample Number	Sample Matrix	Date Sampled
TPOR-HA-15-3	P709532-01	Soil	9/27/97
TPOR-HA-13-9	P709532-02	Soil	9/27/97
TPOR-HA-16-3.5	P709532-03	Soil	9/27/97
TPOR-HA-14-8	P709532-04	Soil	9/27/97
TPOR-HA-31-3	P709532-05	Soil	9/27/97

orth 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.

Philip Nerenberg, Laboratory Manager

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East 11115 Montgomery, Suite B, Spokane, WA 99206-4776
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Portland

RETEC	Project:	TOSCO Terminals Phase II/ ~~Coos Bay~~	Sampled: 9/27/97
1011 S.W. Klickitat Way, Suite 207	Project Number:	3-3333	Received: 9/29/97
Seattle, WA 98134	Project Manager:	Halah Voges	Reported: 10/17/97 10:36

Gasoline Hydrocarbons (Benzene to Naphthalene) and BTEX per Oregon DEQ TPH-G and EPA 8020A
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
TPOR-HA-15-3			**P709532-01**				**Soil**	
Methyl tert-butyl ether	0970716	9/29/97	10/4/97		0.100	ND	mg/kg	
Benzene	"	"	10/3/97		0.0500	ND	"	
Toluene	"	"	"		0.0500	ND	"	
Ethylbenzene	"	"	"		0.0500	ND	"	
Xylenes (total)	"	"	"		0.0500	ND	"	
Gasoline Range Hydrocarbons	"	"	"		2.00	ND	"	
Surrogate: a,a,a-TFT	"	"	"	*50.0-150*		*72.0*	%	
TPOR-HA-13-9			**P709532-02**				**Soil**	
Methyl tert-butyl ether	0970716	9/29/97	10/4/97		0.100	ND	mg/kg	
Benzene	"	"	10/3/97		0.0500	ND	"	
Toluene	"	"	"		0.0500	ND	"	
Ethylbenzene	"	"	"		0.0500	ND	"	
Xylenes (total)	"	"	"		0.0500	ND	"	
Gasoline Range Hydrocarbons	"	"	"		2.00	ND	"	
Surrogate: a,a,a-TFT	"	"	"	*50.0-150*		*64.4*	%	
TPOR-HA-16-3.5			**P709532-03**				**Soil**	
Methyl tert-butyl ether	0970716	9/29/97	10/4/97		0.100	ND	mg/kg	
Benzene	"	"	"		0.0500	ND	"	
Toluene	"	"	"		0.0500	ND	"	
Ethylbenzene	"	"	"		0.0500	ND	"	
Xylenes (total)	"	"	"		0.0500	ND	"	
Gasoline Range Hydrocarbons	"	"	"		2.00	ND	"	
Surrogate: a,a,a-TFT	"	"	"	*50.0-150*		*67.6*	%	
TPOR-HA-14-8			**P709532-04**				**Soil**	
Methyl tert-butyl ether	0970716	9/29/97	10/4/97		0.100	ND	mg/kg	
Benzene	"	"	"		0.0500	ND	"	
Toluene	"	"	"		0.0500	ND	"	
Ethylbenzene	"	"	"		0.0500	ND	"	
Xylenes (total)	"	"	"		0.0500	ND	"	
Gasoline Range Hydrocarbons	"	"	"		2.00	ND	"	
Surrogate: a,a,a-TFT	"	"	"	*50.0-150*		*72.8*	%	
TPOR-HA-31-3			**P709532-05**				**Soil**	
Methyl tert-butyl ether	0970716	9/29/97	10/4/97		0.100	ND	mg/kg	
Benzene	"	"	"		0.0500	ND	"	

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**Refer to end of report for text of notes and definitio*

Philip Nerenberg, Laboratory Manager

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Portland

RETEC	Project:	TOSCO Terminals Phase II/ ~~Coos Bay~~	Sampled:	9/27/97
1011 S.W. Klickitat Way, Suite 207	Project Number:	3-3333 JJH	Received:	9/29/97
Seattle, WA 98134	Project Manager:	Halah Voges	Reported:	10/17/97 10:36

Gasoline Hydrocarbons (Benzene to Naphthalene) and BTEX per Oregon DEQ TPH-G and EPA 8020A
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
TPOR-HA-31-3 (continued)			**P709532-05**				**Soil**	
Toluene	0970716	9/29/97	10/4/97		0.0500	ND	mg/kg	
Ethylbenzene	"	"	"		0.0500	ND	"	
Xylenes (total)	"	"	"		0.0500	ND	"	
Gasoline Range Hydrocarbons	"	"	"		2.00	ND	"	
Surrogate: a,a,a-TFT	"	"	"	*50.0-150*		*61.6*	%	

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Portland

RETEC	Project:	TOSCO Terminals Phase II/ ~~Coos Bay~~ SSH	Sampled: 9/27/97
1011 S.W. Klickitat Way, Suite 207	Project Number:	3-3333	Received: 9/29/97
Seattle, WA 98134	Project Manager:	Halah Voges	Reported: 10/17/97 10:36

Diesel Hydrocarbons (C10-C28) and Heavy Oil (C28-C40) per Oregon DEQ Method TPH-D (modified)
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
TPOR-HA-15-3			**P709532-01**				**Soil**	
Diesel Range Hydrocarbons	0970720	9/30/97	10/1/97		25.0	ND	mg/kg	
Heavy Oil Range Hydrocarbons	"	"	"		50.0	ND	"	
Surrogate: 1-Chlorooctadecane	"	"	"	*50.0-150*		*104*	*%*	
TPOR-HA-13-9			**P709532-02**				**Soil**	
Diesel Range Hydrocarbons	0970720	9/30/97	10/1/97		25.0	ND	mg/kg	
Heavy Oil Range Hydrocarbons	"	"	"		50.0	ND	"	
Surrogate: 1-Chlorooctadecane	"	"	"	*50.0-150*		*102*	*%*	
TPOR-HA-16-3.5			**P709532-03**				**Soil**	
Diesel Range Hydrocarbons	0970720	9/30/97	10/1/97		25.0	ND	mg/kg	
Heavy Oil Range Hydrocarbons	"	"	"		50.0	ND	"	
Surrogate: 1-Chlorooctadecane	"	"	"	*50.0-150*		*104*	*%*	
TPOR-HA-14-8			**P709532-04**				**Soil**	
Diesel Range Hydrocarbons	0970720	9/30/97	10/1/97		25.0	ND	mg/kg	
Heavy Oil Range Hydrocarbons	"	"	"		50.0	ND	"	
Surrogate: 1-Chlorooctadecane	"	"	"	*50.0-150*		*100*	*%*	
TPOR-HA-31-3			**P709532-05**				**Soil**	
Diesel Range Hydrocarbons	0970720	9/30/97	10/1/97		25.0	ND	mg/kg	
Heavy Oil Range Hydrocarbons	"	"	"		50.0	ND	"	
Surrogate: 1-Chlorooctadecane	"	"	"	*50.0-150*		*102*	*%*	

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Portland

RETEC	Project:	TOSCO Terminals Phase II/ ~~Coos Bay~~ JSH	Sampled: 9/27/97
1011 S.W. Klickitat Way, Suite 207	Project Number:	3-3333	Received: 9/29/97
Seattle, WA 98134	Project Manager:	Halah Voges	Reported: 10/17/97 10:36

Volatile Organic Compounds by EPA Method 8260A
North Creek Analytical - Bothell

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
TPOR-HA-15-3			**P709532-01**				**Soil**	
Acetone	1070174	10/8/97	10/8/97		2.00	ND	mg/kg dry	
Benzene	"	"	"		0.200	ND	"	
Bromobenzene	"	"	"		0.200	ND	"	
Bromochloromethane	"	"	"		0.200	ND	"	
Bromodichloromethane	"	"	"		0.200	ND	"	
Bromoform	"	"	"		0.200	ND	"	
Bromomethane	"	"	"		0.200	ND	"	
2-Butanone	"	"	"		2.00	ND	"	
n-Butylbenzene	"	"	"		0.200	ND	"	
sec-Butylbenzene	"	"	"		0.200	ND	"	
tert-Butylbenzene	"	"	"		0.200	ND	"	
Carbon disulfide	"	"	"		0.200	ND	"	
Carbon tetrachloride	"	"	"		0.200	ND	"	
Chlorobenzene	"	"	"		0.200	ND	"	
Chloroethane	"	"	"		0.200	ND	"	
Chloroform	"	"	"		0.200	ND	"	
Chloromethane	"	"	"		0.200	ND	"	
2-Chlorotoluene	"	"	"		0.200	ND	"	
4-Chlorotoluene	"	"	"		0.200	ND	"	
Dibromochloromethane	"	"	"		0.200	ND	"	
1,2-Dibromo-3-chloropropane	"	"	"		1.00	ND	"	
1,2-Dibromoethane	"	"	"		0.200	ND	"	
Dibromomethane	"	"	"		0.200	ND	"	
1,2-Dichlorobenzene	"	"	"		0.200	ND	"	
1,3-Dichlorobenzene	"	"	"		0.200	ND	"	
1,4-Dichlorobenzene	"	"	"		0.200	ND	"	
Dichlorodifluoromethane	"	"	"		0.200	ND	"	
1,1-Dichloroethane	"	"	"		0.200	ND	"	
1,2-Dichloroethane	"	"	"		0.200	ND	"	
1,1-Dichloroethene	"	"	"		0.200	ND	"	
cis-1,2-Dichloroethene	"	"	"		0.200	ND	"	
trans-1,2-Dichloroethene	"	"	"		0.200	ND	"	
1,2-Dichloropropane	"	"	"		0.200	ND	"	
1,3-Dichloropropane	"	"	"		0.200	ND	"	
2,2-Dichloropropane	"	"	"		0.200	ND	"	
1,1-Dichloropropene	"	"	"		0.200	ND	"	
cis-1,3-Dichloropropene	"	"	"		0.200	ND	"	
trans-1,3-Dichloropropene	"	"	"		0.200	ND	"	

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Portland

RETEC	Project:	TOSCO Terminals Phase II/ ~~Coos Bay~~ JS N	Sampled: 9/27/97
1011 S.W. Klickitat Way, Suite 207	Project Number:	3-3333	Received: 9/29/97
Seattle, WA 98134	Project Manager:	Halah Voges	Reported: 10/17/97 10:36

Volatile Organic Compounds by EPA Method 8260A
North Creek Analytical - Bothell

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
TPOR-HA-15-3 (continued)			**P709532-01**				**Soil**	
Ethylbenzene	1070174	10/8/97	10/8/97		0.200	ND	mg/kg dry	
Hexachlorobutadiene	"	"	"		0.200	ND	"	
2-Hexanone	"	"	"		2.00	ND	"	
Isopropylbenzene	"	"	"		0.200	ND	"	
p-Isopropyltoluene	"	"	"		0.200	ND	"	
Methylene chloride	"	"	"		1.00	ND	"	
4-Methyl-2-pentanone	"	"	"		2.00	ND	"	
Naphthalene	"	"	"		0.200	ND	"	
n-Propylbenzene	"	"	"		0.200	ND	"	
Styrene	"	"	"		0.200	ND	"	
1,1,1,2-Tetrachloroethane	"	"	"		0.200	ND	"	
1,1,2,2-Tetrachloroethane	"	"	"		0.200	ND	"	
Tetrachloroethene	"	"	"		0.200	ND	"	
Toluene	"	"	"		0.200	ND	"	
1,2,3-Trichlorobenzene	"	"	"		0.200	ND	"	
1,2,4-Trichlorobenzene	"	"	"		0.200	ND	"	
1,1,1-Trichloroethane	"	"	"		0.200	ND	"	
1,1,2-Trichloroethane	"	"	"		0.200	ND	"	
Trichloroethene	"	"	"		0.200	ND	"	
Trichlorofluoromethane	"	"	"		0.200	ND	"	
1,2,3-Trichloropropane	"	"	"		0.200	ND	"	
1,2,4-Trimethylbenzene	"	"	"		0.200	ND	"	
1,3,5-Trimethylbenzene	"	"	"		0.200	ND	"	
Vinyl chloride	"	"	"		0.200	ND	"	
o-Xylene	"	"	"		0.200	ND	"	
m,p-Xylene	"	"	"		0.200	ND	"	
Surrogate: 2-Bromopropene	"	"	"	*70.0-130*		*50.6*	%	*1*
Surrogate: 1,2-DCA-d4	"	"	"	*70.0-130*		*87.3*	"	
Surrogate: Toluene-d8	"	"	"	*70.0-130*		*91.1*	"	
Surrogate: 4-BFB	"	"	"	*70.0-130*		*95.4*	"	

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*Refer to end of report for text of notes and definiti

PN

Philip Nerenberg, Laboratory Manager

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Portland

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1011 S.W. Klickitat Way, Suite 207	Project Number:	3-3333	Received:	9/29/97
Seattle, WA 98134	Project Manager:	Halah Voges	Reported:	10/17/97 10:36

Volatile Organic Compounds by EPA Method 8260A
North Creek Analytical - Bothell

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
TPOR-HA-13-9			**P709532-02**				**Soil**	
Acetone	1070174	10/8/97	10/8/97		2.00	ND	mg/kg dry	
Benzene	"	"	"		0.200	ND	"	
Bromobenzene	"	"	"		0.200	ND	"	
Bromochloromethane	"	"	"		0.200	ND	"	
Bromodichloromethane	"	"	"		0.200	ND	"	
Bromoform	"	"	"		0.200	ND	"	
Bromomethane	"	"	"		0.200	ND	"	
2-Butanone	"	"	"		2.00	ND	"	
n-Butylbenzene	"	"	"		0.200	ND	"	
sec-Butylbenzene	"	"	"		0.200	ND	"	
tert-Butylbenzene	"	"	"		0.200	ND	"	
Carbon disulfide	"	"	"		0.200	ND	"	
Carbon tetrachloride	"	"	"		0.200	ND	"	
Chlorobenzene	"	"	"		0.200	ND	"	
Chloroethane	"	"	"		0.200	ND	"	
Chloroform	"	"	"		0.200	ND	"	
Chloromethane	"	"	"		0.200	ND	"	
2-Chlorotoluene	"	"	"		0.200	ND	"	
4-Chlorotoluene	"	"	"		0.200	ND	"	
Dibromochloromethane	"	"	"		0.200	ND	"	
1,2-Dibromo-3-chloropropane	"	"	"		1.00	ND	"	
1,2-Dibromoethane	"	"	"		0.200	ND	"	
Dibromomethane	"	"	"		0.200	ND	"	
1,2-Dichlorobenzene	"	"	"		0.200	ND	"	
1,3-Dichlorobenzene	"	"	"		0.200	ND	"	
1,4-Dichlorobenzene	"	"	"		0.200	ND	"	
Dichlorodifluoromethane	"	"	"		0.200	ND	"	
1,1-Dichloroethane	"	"	"		0.200	ND	"	
1,2-Dichloroethane	"	"	"		0.200	ND	"	
1,1-Dichloroethene	"	"	"		0.200	ND	"	
cis-1,2-Dichloroethene	"	"	"		0.200	ND	"	
trans-1,2-Dichloroethene	"	"	"		0.200	ND	"	
1,2-Dichloropropane	"	"	"		0.200	ND	"	
1,3-Dichloropropane	"	"	"		0.200	ND	"	
2,2-Dichloropropane	"	"	"		0.200	ND	"	
1,1-Dichloropropene	"	"	"		0.200	ND	"	
cis-1,3-Dichloropropene	"	"	"		0.200	ND	"	
trans-1,3-Dichloropropene	"	"	"		0.200	ND	"	

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Portland

RETEC	Project:	TOSCO Terminals Phase II/~~Coos Bay~~ JSR	Sampled:	9/27/97
1011 S.W. Klickitat Way, Suite 207	Project Number:	3-3333	Received:	9/29/97
Seattle, WA 98134	Project Manager:	Halah Voges	Reported:	10/17/97 10:36

Volatile Organic Compounds by EPA Method 8260A
North Creek Analytical - Bothell

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
TPOR-HA-13-9 (continued)			**P709532-02**				**Soil**	
Ethylbenzene	1070174	10/8/97	10/8/97		0.200	ND	mg/kg dry	
Hexachlorobutadiene	"	"	"		0.200	ND	"	
2-Hexanone	"	"	"		2.00	ND	"	
Isopropylbenzene	"	"	"		0.200	ND	"	
p-Isopropyltoluene	"	"	"		0.200	ND	"	
Methylene chloride	"	"	"		1.00	ND	"	
4-Methyl-2-pentanone	"	"	"		2.00	ND	"	
Naphthalene	"	"	"		0.200	ND	"	
n-Propylbenzene	"	"	"		0.200	ND	"	
Styrene	"	"	"		0.200	ND	"	
1,1,1,2-Tetrachloroethane	"	"	"		0.200	ND	"	
1,1,2,2-Tetrachloroethane	"	"	"		0.200	ND	"	
Tetrachloroethene	"	"	"		0.200	ND	"	
Toluene	"	"	"		0.200	ND	"	
1,2,3-Trichlorobenzene	"	"	"		0.200	ND	"	
1,2,4-Trichlorobenzene	"	"	"		0.200	ND	"	
1,1,1-Trichloroethane	"	"	"		0.200	ND	"	
1,1,2-Trichloroethane	"	"	"		0.200	ND	"	
Trichloroethene	"	"	"		0.200	ND	"	
Trichlorofluoromethane	"	"	"		0.200	ND	"	
1,2,3-Trichloropropane	"	"	"		0.200	ND	"	
1,2,4-Trimethylbenzene	"	"	"		0.200	ND	"	
1,3,5-Trimethylbenzene	"	"	"		0.200	ND	"	
Vinyl chloride	"	"	"		0.200	ND	"	
o-Xylene	"	"	"		0.200	ND	"	
m,p-Xylene	"	"	"		0.200	ND	"	
Surrogate: 2-Bromopropene	"	"	"	*70.0-130*		*83.3*	%	
Surrogate: 1,2-DCA-d4	"	"	"	*70.0-130*		*94.7*	"	
Surrogate: Toluene-d8	"	"	"	*70.0-130*		*93.5*	"	
Surrogate: 4-BFB	"	"	"	*70.0-130*		*93.1*	"	

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Portland

RETEC	Project:	TOSCO Terminals Phase II/ ~~Coos Bay~~	Sampled: 9/27/97
1011 S.W. Klickitat Way, Suite 207	Project Number:	3-3333	Received: 9/29/97
Seattle, WA 98134	Project Manager:	Halah Voges	Reported: 10/17/97 10:36

Volatile Organic Compounds by EPA Method 8260A
North Creek Analytical - Bothell

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
TPOR-HA-16-3.5			**P709532-03**				**Soil**	
Acetone	1070174	10/8/97	10/8/97		2.00	ND	mg/kg dry	
Benzene	"	"	"		0.200	ND	"	
Bromobenzene	"	"	"		0.200	ND	"	
Bromochloromethane	"	"	"		0.200	ND	"	
Bromodichloromethane	"	"	"		0.200	ND	"	
Bromoform	"	"	"		0.200	ND	"	
Bromomethane	"	"	"		0.200	ND	"	
2-Butanone	"	"	"		2.00	ND	"	
n-Butylbenzene	"	"	"		0.200	ND	"	
sec-Butylbenzene	"	"	"		0.200	ND	"	
tert-Butylbenzene	"	"	"		0.200	ND	"	
Carbon disulfide	"	"	"		0.200	ND	"	
Carbon tetrachloride	"	"	"		0.200	ND	"	
Chlorobenzene	"	"	"		0.200	ND	"	
Chloroethane	"	"	"		0.200	ND	"	
Chloroform	"	"	"		0.200	ND	"	
Chloromethane	"	"	"		0.200	ND	"	
2-Chlorotoluene	"	"	"		0.200	ND	"	
4-Chlorotoluene	"	"	"		0.200	ND	"	
Dibromochloromethane	"	"	"		0.200	ND	"	
1,2-Dibromo-3-chloropropane	"	"	"		1.00	ND	"	
1,2-Dibromoethane	"	"	"		0.200	ND	"	
Dibromomethane	"	"	"		0.200	ND	"	
1,2-Dichlorobenzene	"	"	"		0.200	ND	"	
1,3-Dichlorobenzene	"	"	"		0.200	ND	"	
1,4-Dichlorobenzene	"	"	"		0.200	ND	"	
Dichlorodifluoromethane	"	"	"		0.200	ND	"	
1,1-Dichloroethane	"	"	"		0.200	ND	"	
1,2-Dichloroethane	"	"	"		0.200	ND	"	
1,1-Dichloroethene	"	"	"		0.200	ND	"	
cis-1,2-Dichloroethene	"	"	"		0.200	ND	"	
trans-1,2-Dichloroethene	"	"	"		0.200	ND	"	
1,2-Dichloropropane	"	"	"		0.200	ND	"	
1,3-Dichloropropane	"	"	"		0.200	ND	"	
2,2-Dichloropropane	"	"	"		0.200	ND	"	
1,1-Dichloropropene	"	"	"		0.200	ND	"	
cis-1,3-Dichloropropene	"	"	"		0.200	ND	"	
trans-1,3-Dichloropropene	"	"	"		0.200	ND	"	

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

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Portland

RETEC	Project:	TOSCO Terminals Phase II/ ~~Coos Bay~~ JSH	Sampled:	9/27/97
1011 S.W. Klickitat Way, Suite 207	Project Number:	3-3333	Received:	9/29/97
Seattle, WA 98134	Project Manager:	Halah Voges	Reported:	10/17/97 10:36

Volatile Organic Compounds by EPA Method 8260A
North Creek Analytical - Bothell

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
TPOR-HA-16-3.5 (continued)			**P709532-03**				**Soil**	
Ethylbenzene	1070174	10/8/97	10/8/97		0.200	ND	mg/kg dry	
Hexachlorobutadiene	"	"	"		0.200	ND	"	
2-Hexanone	"	"	"		2.00	ND	"	
Isopropylbenzene	"	"	"		0.200	ND	"	
p-Isopropyltoluene	"	"	"		0.200	ND	"	
Methylene chloride	"	"	"		1.00	ND	"	
4-Methyl-2-pentanone	"	"	"		2.00	ND	"	
Naphthalene	"	"	"		0.200	ND	"	
n-Propylbenzene	"	"	"		0.200	ND	"	
Styrene	"	"	"		0.200	ND	"	
1,1,1,2-Tetrachloroethane	"	"	"		0.200	ND	"	
1,1,2,2-Tetrachloroethane	"	"	"		0.200	ND	"	
Tetrachloroethene	"	"	"		0.200	ND	"	
Toluene	"	"	"		0.200	ND	"	
1,2,3-Trichlorobenzene	"	"	"		0.200	ND	"	
1,2,4-Trichlorobenzene	"	"	"		0.200	ND	"	
1,1,1-Trichloroethane	"	"	"		0.200	ND	"	
1,1,2-Trichloroethane	"	"	"		0.200	ND	"	
Trichloroethene	"	"	"		0.200	ND	"	
Trichlorofluoromethane	"	"	"		0.200	ND	"	
1,2,3-Trichloropropane	"	"	"		0.200	ND	"	
1,2,4-Trimethylbenzene	"	"	"		0.200	ND	"	
1,3,5-Trimethylbenzene	"	"	"		0.200	ND	"	
Vinyl chloride	"	"	"		0.200	ND	"	
o-Xylene	"	"	"		0.200	ND	"	
m,p-Xylene	"	"	"		0.200	ND	"	
Surrogate: 2-Bromopropene	"	"	"	*70.0-130*		*75.8*	%	
Surrogate: 1,2-DCA-d4	"	"	"	*70.0-130*		*85.9*	"	
Surrogate: Toluene-d8	"	"	"	*70.0-130*		*90.6*	"	
Surrogate: 4-BFB	"	"	"	*70.0-130*		*91.8*	"	

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Portland

RETEC	Project:	TOSCO Terminals Phase II/~~Coos Bay~~ JJN	Sampled:	9/27/97
1011 S.W. Klickitat Way, Suite 207	Project Number:	3-3333	Received:	9/29/97
Seattle, WA 98134	Project Manager:	Halah Voges	Reported:	10/17/97 10:36

Volatile Organic Compounds by EPA Method 8260A
North Creek Analytical - Bothell

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
TPOR-HA-14-8			**P709532-04**				**Soil**	
Acetone	1070174	10/8/97	10/8/97		2.00	ND	mg/kg dry	
Benzene	"	"	"		0.200	ND	"	
Bromobenzene	"	"	"		0.200	ND	"	
Bromochloromethane	"	"	"		0.200	ND	"	
Bromodichloromethane	"	"	"		0.200	ND	"	
Bromoform	"	"	"		0.200	ND	"	
Bromomethane	"	"	"		0.200	ND	"	
2-Butanone	"	"	"		2.00	ND	"	
n-Butylbenzene	"	"	"		0.200	ND	"	
sec-Butylbenzene	"	"	"		0.200	ND	"	
tert-Butylbenzene	"	"	"		0.200	ND	"	
Carbon disulfide	"	"	"		0.200	ND	"	
Carbon tetrachloride	"	"	"		0.200	ND	"	
Chlorobenzene	"	"	"		0.200	ND	"	
Chloroethane	"	"	"		0.200	ND	"	
Chloroform	"	"	"		0.200	ND	"	
Chloromethane	"	"	"		0.200	ND	"	
2-Chlorotoluene	"	"	"		0.200	ND	"	
4-Chlorotoluene	"	"	"		0.200	ND	"	
Dibromochloromethane	"	"	"		0.200	ND	"	
1,2-Dibromo-3-chloropropane	"	"	"		1.00	ND	"	
1,2-Dibromoethane	"	"	"		0.200	ND	"	
Dibromomethane	"	"	"		0.200	ND	"	
1,2-Dichlorobenzene	"	"	"		0.200	ND	"	
1,3-Dichlorobenzene	"	"	"		0.200	ND	"	
1,4-Dichlorobenzene	"	"	"		0.200	ND	"	
Dichlorodifluoromethane	"	"	"		0.200	ND	"	
1,1-Dichloroethane	"	"	"		0.200	ND	"	
1,2-Dichloroethane	"	"	"		0.200	ND	"	
1,1-Dichloroethene	"	"	"		0.200	ND	"	
cis-1,2-Dichloroethene	"	"	"		0.200	ND	"	
trans-1,2-Dichloroethene	"	"	"		0.200	ND	"	
1,2-Dichloropropane	"	"	"		0.200	ND	"	
1,3-Dichloropropane	"	"	"		0.200	ND	"	
2,2-Dichloropropane	"	"	"		0.200	ND	"	
1,1-Dichloropropene	"	"	"		0.200	ND	"	
cis-1,3-Dichloropropene	"	"	"		0.200	ND	"	
trans-1,3-Dichloropropene	"	"	"		0.200	ND	"	

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Philip Nerenberg, Laboratory Manager

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RETEC	Project:	TOSCO Terminals Phase II/ ~~Coos Bay~~ JSH	Sampled: 9/27/97
1011 S.W. Klickitat Way, Suite 207	Project Number:	3-3333	Received: 9/29/97
Seattle, WA 98134	Project Manager:	Halah Voges	Reported: 10/17/97 10:36

Volatile Organic Compounds by EPA Method 8260A
North Creek Analytical - Bothell

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
TPOR-HA-14-8 (continued)			**P709532-04**				**Soil**	
Ethylbenzene	1070174	10/8/97	10/8/97		0.200	ND	mg/kg dry	
Hexachlorobutadiene	"	"	"		0.200	ND	"	
2-Hexanone	"	"	"		2.00	ND	"	
Isopropylbenzene	"	"	"		0.200	ND	"	
p-Isopropyltoluene	"	"	"		0.200	ND	"	
Methylene chloride	"	"	"		1.00	ND	"	
4-Methyl-2-pentanone	"	"	"		2.00	ND	"	
Naphthalene	"	"	"		0.200	ND	"	
n-Propylbenzene	"	"	"		0.200	ND	"	
Styrene	"	"	"		0.200	ND	"	
1,1,1,2-Tetrachloroethane	"	"	"		0.200	ND	"	
1,1,2,2-Tetrachloroethane	"	"	"		0.200	ND	"	
Tetrachloroethene	"	"	"		0.200	ND	"	
Toluene	"	"	"		0.200	ND	"	
1,2,3-Trichlorobenzene	"	"	"		0.200	ND	"	
1,2,4-Trichlorobenzene	"	"	"		0.200	ND	"	
1,1,1-Trichloroethane	"	"	"		0.200	ND	"	
1,1,2-Trichloroethane	"	"	"		0.200	ND	"	
Trichloroethene	"	"	"		0.200	ND	"	
Trichlorofluoromethane	"	"	"		0.200	ND	"	
1,2,3-Trichloropropane	"	"	"		0.200	ND	"	
1,2,4-Trimethylbenzene	"	"	"		0.200	ND	"	
1,3,5-Trimethylbenzene	"	"	"		0.200	ND	"	
Vinyl chloride	"	"	"		0.200	ND	"	
o-Xylene	"	"	"		0.200	ND	"	
m,p-Xylene	"	"	"		0.200	ND	"	
Surrogate: 2-Bromopropene	"	"	"	*70.0-130*		*88.6*	*%*	
Surrogate: 1,2-DCA-d4	"	"	"	*70.0-130*		*93.6*	"	
Surrogate: Toluene-d8	"	"	"	*70.0-130*		*97.7*	"	
Surrogate: 4-BFB	"	"	"	*70.0-130*		*101*	"	

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RETEC	Project:	TOSCO Terminals Phase II/ ~~Coos Bay~~	Sampled:	9/27/97
1011 S.W. Klickitat Way, Suite 207	Project Number:	3-3333	Received:	9/29/97
Seattle, WA 98134	Project Manager:	Halah Voges	Reported:	10/17/97 10:36

Dry Weight Determination
North Creek Analytical - Bothell

Sample Name	Lab ID	Matrix	Result	Units
TPOR-HA-15-3	P709532-01	Soil	84.5	%
TPOR-HA-13-9	P709532-02	Soil	81.2	%
TPOR-HA-16-3.5	P709532-03	Soil	78.1	%
TPOR-HA-14-8	P709532-04	Soil	90.8	%

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RETEC	Project:	TOSCO Terminals Phase II/ ~~Coos Bay~~	Sampled: 9/27/97
1011 S.W. Klickitat Way, Suite 207	Project Number:	3-3333	Received: 9/29/97
Seattle, WA 98134	Project Manager:	Halah Voges	Reported: 10/17/97 10:36

Gasoline Hydrocarbons (Benzene to Naphthalene) and BTEX per Oregon DEQ TPH-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: 0970716	**Date Prepared: 9/29/97**					**Extraction Method: EPA 5030**				
Blank	**0970716-BLK1**									
Methyl tert-butyl ether	10/4/97			**ND**	mg/kg	**0.100**				
Benzene	10/3/97			**ND**	"	**0.0500**				
Toluene	"			**ND**	"	**0.0500**				
Ethylbenzene	"			**ND**	"	**0.0500**				
Xylenes (total)	"			**ND**	"	**0.0500**				
Gasoline Range Hydrocarbons	"			**ND**	"	**2.00**				
Surrogate: a,a,a-TFT	"	*2.50*		*2.27*	"	*50.0-150*	*90.8*			
LCS	**0970716-BS1**									
Gasoline Range Hydrocarbons	10/3/97	31.3		32.3	mg/kg	50.0-150	103			
Surrogate: a,a,a-TFT	"	*2.50*		*2.21*	"	*50.0-150*	*88.4*			
LCS	**0970716-BS2**									
Methyl tert-butyl ether	10/4/97	0.500		0.460	mg/kg	76.0-126	92.0			
Benzene	10/3/97	0.500		0.490	"	69.0-138	98.0			
Toluene	"	0.500		0.515	"	53.0-151	103			
Ethylbenzene	"	0.500		0.515	"	61.0-141	103			
Xylenes (total)	"	1.50		1.58	"	62.0-144	105			
Surrogate: a,a,a-TFT	"	*2.50*		*2.24*	"	*50.0-150*	*89.6*			
Duplicate	**0970716-DUP1**		**P709532-01**							
Gasoline Range Hydrocarbons	10/3/97		ND	ND	mg/kg			50.0		
Surrogate: a,a,a-TFT	"	*2.50*		*1.70*	"	*50.0-150*	*68.0*			
Duplicate	**0970716-DUP2**		**P709541-03**							
Gasoline Range Hydrocarbons	10/3/97		ND	ND	mg/kg			50.0		
Surrogate: a,a,a-TFT	"	*2.50*		*1.75*	"	*50.0-150*	*70.0*			
Matrix Spike	**0970716-MS1**		**P709532-01**							
Benzene	10/3/97	0.500	ND	0.375	mg/kg	56.0-123	**75.0**			
Toluene	"	0.500	ND	0.395	"	54.0-123	**79.0**			
Ethylbenzene	"	0.500	ND	0.410	"	45.0-130	**82.0**			
Xylenes (total)	"	1.50	ND	1.25	"	50.0-127	**83.3**			
Surrogate: a,a,a-TFT	"	*2.50*		*1.82*	"	*50.0-150*	*72.8*			
Matrix Spike Dup	**0970716-MSD1**		**P709532-01**							
Benzene	10/3/97	0.500	ND	0.390	mg/kg	56.0-123	**78.0**	17.0	**3.92**	

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PJ

Philip Nerenberg, Laboratory Manager

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Portland

RETEC	Project:	TOSCO Terminals Phase II/ ~~Coos Bay~~ JSH	Sampled: 9/27/97
1011 S.W. Klickitat Way, Suite 207	Project Number:	3-3333	Received: 9/29/97
Seattle, WA 98134	Project Manager:	Halah Voges	Reported: 10/17/97 10:36

Gasoline Hydrocarbons (Benzene to Naphthalene) and BTEX per Oregon DEQ TPH-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)	**0970716-MSD1**		**P709532-01**							
Toluene	10/3/97	0.500	ND	0.407	mg/kg	54.0-123	**81.4**	24.0	**2.99**	
Ethylbenzene	"	0.500	ND	0.412	"	45.0-130	**82.4**	20.0	**0.487**	
Xylenes (total)	"	1.50	ND	1.27	"	50.0-127	**84.7**	20.0	**1.67**	
Surrogate: a,a,a-TFT	"	*2.50*		*1.79*	"	*50.0-150*	*71.6*			

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Portland

RETEC	Project:	TOSCO Terminals Phase II ~~Coos Bay~~ J34	Sampled: 9/27/97
1011 S.W. Klickitat Way, Suite 207	Project Number:	3-3333	Received: 9/29/97
Seattle, WA 98134	Project Manager:	Halah Voges	Reported: 10/17/97 10:36

Diesel Hydrocarbons (C10-C28) and Heavy Oil (C28-C40) per Oregon DEQ Method TPH-D (modified)/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: 0970720	**Date Prepared: 9/29/97**					**Extraction Method: TPH-D Extraction**				
Blank	**0970720-BLK1**									
Diesel Range Hydrocarbons	10/1/97			**ND**	mg/kg	**25.0**				
Heavy Oil Range Hydrocarbons	"			**ND**	"	**50.0**				
Surrogate: 1-Chlorooctadecane	"	*5.00*		*5.20*	"	*50.0-150*	*104*			
Blank	**0970720-BLK2**									
Diesel Range Hydrocarbons	9/30/97			**ND**	mg/kg	**25.0**				
Heavy Oil Range Hydrocarbons	"			**ND**	"	**50.0**				
Surrogate: 1-Chlorooctadecane	"	*5.00*		*4.86*	"	*50.0-150*	*97.2*			
LCS	**0970720-BS1**									
Diesel Range Hydrocarbons	10/1/97	125		109	mg/kg	50.0-150	87.2			
Surrogate: 1-Chlorooctadecane	"	*5.00*		*4.72*	"	*50.0-150*	*94.4*			
Duplicate	**0970720-DUP1**	**P709378-05**								
Diesel Range Hydrocarbons	9/30/97		ND	ND	mg/kg			50.0		
Heavy Oil Range Hydrocarbons	"		102	132	"			50.0	**25.6**	
Surrogate: 1-Chlorooctadecane	"	*5.00*		*3.67*	"	*50.0-150*	*73.4*			
Duplicate	**0970720-DUP2**	**P709437-02**								
Diesel Range Hydrocarbons	9/30/97		15000	16700	mg/kg			50.0	**10.7**	
Heavy Oil Range Hydrocarbons	"		ND	ND	"			50.0		
Surrogate: 1-Chlorooctadecane	"	*5.00*		*ND*	"	*50.0-150*	*NR*			*2*
Duplicate	**0970720-DUP3**	**P709529-01**								
Diesel Range Hydrocarbons	10/1/97		ND	ND	mg/kg			50.0		
Heavy Oil Range Hydrocarbons	"		ND	ND	"			50.0		
Surrogate: 1-Chlorooctadecane	"	*5.00*		*4.51*	"	*50.0-150*	*90.2*			

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Philip Nerenberg, Laboratory Manager

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

Portland

RETEC	Project:	TOSCO Terminals Phase II/ ~~Coos Bay~~	Sampled: 9/27/97
1011 S.W. Klickitat Way, Suite 207	Project Number:	3-3333	Received: 9/29/97
Seattle, WA 98134	Project Manager:	Halah Voges	Reported: 10/17/97 10:36

Volatile Organic Compounds by EPA Method 8260A/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: 1070174	**Date Prepared: 10/8/97**				**Extraction Method: EPA 5030 [MeOH]**					
Blank	**1070174-BLK1**									
Acetone	10/8/97			ND	mg/kg dry	2.00				
Benzene	"			ND	"	0.200				
Bromobenzene	"			ND	"	0.200				
Bromochloromethane	"			ND	"	0.200				
Bromodichloromethane	"			ND	"	0.200				
Bromoform	"			ND	"	0.200				
Bromomethane	"			ND	"	0.200				
2-Butanone	"			ND	"	2.00				
n-Butylbenzene	"			ND	"	0.200				
sec-Butylbenzene	"			ND	"	0.200				
tert-Butylbenzene	"			ND	"	0.200				
Carbon disulfide	"			ND	"	0.200				
Carbon tetrachloride	"			ND	"	0.200				
Chlorobenzene	"			ND	"	0.200				
Chloroethane	"			ND	"	0.200				
Chloroform	"			ND	"	0.200				
Chloromethane	"			ND	"	0.200				
2-Chlorotoluene	"			ND	"	0.200				
4-Chlorotoluene	"			ND	"	0.200				
Dibromochloromethane	"			ND	"	0.200				
1,2-Dibromo-3-chloropropane	"			ND	"	1.00				
1,2-Dibromoethane	"			ND	"	0.200				
Dibromomethane	"			ND	"	0.200				
1,2-Dichlorobenzene	"			ND	"	0.200				
1,3-Dichlorobenzene	"			ND	"	0.200				
1,4-Dichlorobenzene	"			ND	"	0.200				
Dichlorodifluoromethane	"			ND	"	0.200				
1,1-Dichloroethane	"			ND	"	0.200				
1,2-Dichloroethane	"			ND	"	0.200				
1,1-Dichloroethene	"			ND	"	0.200				
cis-1,2-Dichloroethene	"			ND	"	0.200				
trans-1,2-Dichloroethene	"			ND	"	0.200				
1,2-Dichloropropane	"			ND	"	0.200				
1,3-Dichloropropane	"			ND	"	0.200				
2,2-Dichloropropane	"			ND	"	0.200				
1,1-Dichloropropene	"			ND	"	0.200				
cis-1,3-Dichloropropene	"			ND	"	0.200				

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Portland

RETEC	Project:	TOSCO Terminals Phase II/~~Coos Bay~~	Sampled: 9/27/97
1011 S.W. Klickitat Way, Suite 207	Project Number:	3-3333	Received: 9/29/97
Seattle, WA 98134	Project Manager:	Halah Voges	Reported: 10/17/97 10:36

Volatile Organic Compounds by EPA Method 8260A/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*
Blank (continued)	**1070174-BLK1**									
trans-1,3-Dichloropropene	10/8/97			**ND**	mg/kg dry	**0.200**				
Ethylbenzene	"			**ND**	"	**0.200**				
Hexachlorobutadiene	"			**ND**	"	**0.200**				
2-Hexanone	"			**ND**	"	**2.00**				
Isopropylbenzene	"			**ND**	"	**0.200**				
p-Isopropyltoluene	"			**ND**	"	**0.200**				
Methylene chloride	"			**ND**	"	**1.00**				
4-Methyl-2-pentanone	"			**ND**	"	**2.00**				
Naphthalene	"			**ND**	"	**0.200**				
n-Propylbenzene	"			**ND**	"	**0.200**				
Styrene	"			**ND**	"	**0.200**				
1,1,1,2-Tetrachloroethane	"			**ND**	"	**0.200**				
1,1,2,2-Tetrachloroethane	"			**ND**	"	**0.200**				
Tetrachloroethene	"			**ND**	"	**0.200**				
Toluene	"			**ND**	"	**0.200**				
1,2,3-Trichlorobenzene	"			**ND**	"	**0.200**				
1,2,4-Trichlorobenzene	"			**ND**	"	**0.200**				
1,1,1-Trichloroethane	"			**ND**	"	**0.200**				
1,1,2-Trichloroethane	"			**ND**	"	**0.200**				
Trichloroethene	"			**ND**	"	**0.200**				
Trichlorofluoromethane	"			**ND**	"	**0.200**				
1,2,3-Trichloropropane	"			**ND**	"	**0.200**				
1,2,4-Trimethylbenzene	"			**ND**	"	**0.200**				
1,3,5-Trimethylbenzene	"			**ND**	"	**0.200**				
Vinyl chloride	"			**ND**	"	**0.200**				
o-Xylene	"			**ND**	"	**0.200**				
m,p-Xylene	"			**ND**	"	**0.200**				
Surrogate: 2-Bromopropene	"	*2.00*		*1.76*	"	*70.0-130*	*88.0*			
Surrogate: 1,2-DCA-d4	"	*2.00*		*1.71*	"	*70.0-130*	*85.5*			
Surrogate: Toluene-d8	"	*2.00*		*2.10*	"	*70.0-130*	*105*			
Surrogate: 4-BFB	"	*2.00*		*2.10*	"	*70.0-130*	*105*			
LCS	**1070174-BS1**									
Benzene	10/8/97	1.00		1.00	mg/kg dry	70.0-130	100			
Chlorobenzene	"	1.00		0.927	"	70.0-130	92.7			
1,1-Dichloroethene	"	1.00		0.712	"	70.0-130	71.2			
Toluene	"	1.00		0.956	"	70.0-130	95.6			
Trichloroethene	"	1.00		0.864	"	70.0-130	86.4			

North Creek Analytical, Inc.

*Refer to end of report for text of notes and definit

Philip Nerenberg, Laboratory Manager

COP0014465

NORTH CREEK ANALYTICAL
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PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

Portland

RETEC	Project:	TOSCO Terminals Phase II/~~Coos Bay~~ SJH	Sampled: 9/27/97
1011 S.W. Klickitat Way, Suite 207	Project Number:	3-3333	Received: 9/29/97
Seattle, WA 98134	Project Manager:	Halah Voges	Reported: 10/17/97 10:36

Volatile Organic Compounds by EPA Method 8260A/Quality Control
North Creek Analytical - Bothell

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit / Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
LCS (continued)	**1070174-BS1**									
Surrogate: 2-Bromopropene	*10/8/97*	*2.00*		*1.47*	*mg/kg dry*	*70.0-130*	*73.5*			
Surrogate: 1,2-DCA-d4	"	*2.00*		*1.95*	"	*70.0-130*	*97.5*			
Surrogate: Toluene-d8	"	*2.00*		*2.13*	"	*70.0-130*	*107*			
Surrogate: 4-BFB	"	*2.00*		*2.20*	"	*70.0-130*	*110*			
Matrix Spike	**1070174-MS1**		**B710115-03**							
Benzene	10/8/97	1.29	ND	1.12	mg/kg dry	70.0-130	**86.8**			
Chlorobenzene	"	1.29	ND	1.04	"	70.0-130	**80.6**			
1,1-Dichloroethene	"	1.29	ND	1.08	"	70.0-130	**83.7**			
Toluene	"	1.29	ND	1.11	"	70.0-130	**86.0**			
Trichloroethene	"	1.29	ND	0.961	"	70.0-130	**74.5**			
Surrogate: 2-Bromopropene	"	*2.57*		*1.81*	"	*70.0-130*	*70.4*			
Surrogate: 1,2-DCA-d4	"	*2.57*		*2.11*	"	*70.0-130*	*82.1*			
Surrogate: Toluene-d8	"	*2.57*		*2.34*	"	*70.0-130*	*91.1*			
Surrogate: 4-BFB	"	*2.57*		*2.41*	"	*70.0-130*	*93.8*			
Matrix Spike Dup	**1070174-MSD1**		**B710115-03**							
Benzene	10/8/97	1.29	ND	1.14	mg/kg dry	70.0-130	**88.4**	15.0	**1.83**	
Chlorobenzene	"	1.29	ND	1.05	"	70.0-130	**81.4**	15.0	**0.988**	
1,1-Dichloroethene	"	1.29	ND	1.12	"	70.0-130	**86.8**	15.0	**3.64**	
Toluene	"	1.29	ND	1.10	"	70.0-130	**85.3**	15.0	**0.817**	
Trichloroethene	"	1.29	ND	0.967	"	70.0-130	**75.0**	15.0	**0.669**	
Surrogate: 2-Bromopropene	"	*2.57*		*1.96*	"	*70.0-130*	*76.3*			
Surrogate: 1,2-DCA-d4	"	*2.57*		*2.16*	"	*70.0-130*	*84.0*			
Surrogate: Toluene-d8	"	*2.57*		*2.30*	"	*70.0-130*	*89.5*			
Surrogate: 4-BFB	"	*2.57*		*2.36*	"	*70.0-130*	*91.8*			

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Portland

RETEC	Project:	TOSCO Terminals Phase II/~~Coos Bay~~ JSH	Sampled: 9/27/97
1011 S.W. Klickitat Way, Suite 207	Project Number:	3-3333	Received: 9/29/97
Seattle, WA 98134	Project Manager:	Halah Voges	Reported: 10/17/97 10:36

Notes and Definitions

#	Note
1	The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
2	The surrogate recovery for this sample is not available due to sample dilution required from high analyte concentration and/or matrix interferences.
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.

Philip Nerenberg, Laboratory 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

COP0014467

1313

CHAIN OF CUSTODY RECORD

COPY

P709532

PROJ. NO.	PROJECT NAME	SEND RESULTS TO:
3-3333	Tosco Terminals Phase II / Portland	Halah Voges @ RETEC phone (206) 624-9349 fax: (206) 624-2839

SAMPLERS: J. Henley

RECEIVING LABORATORY: North Creek Analytical

LAB I.D. NO.	DATE	TIME	SAMPLE NO.	NO. OF CONTAINERS	TPH Gas/+ BTEX (MTBE)	TPH Diesel - Extended	8260 VOC					REMARKS
	9/27/97	1415	TPOR - HA - 15 - 3	1	X	X	X					
	↓	1150	TPOR - HA - 13 - 9	1	X	X	X					
		1055	TPOR - HA - 16 - 3.5	1	X	X	X					
		1240	TPOR - HA - 14 - 8	1	X	X	X					
		1610	TPOR - HA - 31 - 3	1	X	X						

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Jim Henley	9/27/97 1730	[signature]	[signature]	9-29-97 1000	

Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time
		Kari Cline	9/29/97 10:15

Shipper Information

REMEDIATION TECHNOLOGIES
1011 S.W. Klickitat Way
Suite 207
Seattle, WA 98134
(206) 624-9349

PINK COPY - Sampler YELLOW COPY - Laboratory WHITE COPY - ReTeC

PACIFIC
ENVIRONMENTAL
GROUP, INC.

AN ET COMPANY

AOC 0922
REPORTS

February 20, 1999
Project B15-007.1B

Mr. Loren Garner
Waste Management and Cleanup Division
Oregon Department of Environmental Quality
2020 Southwest Fourth Avenue, Suite 400
Portland, Oregon 97201-4987

Re: Follow-up to Notice of Noncompliance
NON-SP-98-005
Willbridge Storm Drain Outfall
Willbridge Terminals

Dear Mr. Garner:

On behalf of the Willbridge Terminal Responsible Parties (RPs), Pacific Environmental Group, Inc. (PEG), has completed a video survey of the 60-inch storm sewer. The video survey was conducted on September 30, 1998, to document the repair of the leaking joints in the storm sewer. In addition to the video survey, PEG collected soil samples along the riverfront for laboratory analyses from nine different locations near the outfall of the 60-inch storm sewer. Figure 1 shows the locations of the hand augered soil samples. These actions were undertaken per the requirements of the Notice of Non-Compliance (NON) received by the Willbridge Terminals Responsible Parties (RPs).

The video tape indicates that the joints no longer allow groundwater impacted with petroleum hydrocarbons to enter the storm sewer. The two repaired joints appear to be "sound" and there is no evidence of groundwater leaking into the 60 inch storm drain. Please find attached a tape copy of the video survey.

The attached tables present the laboratory results for the soil samples collected. As you can see from the tables, the laboratory results indicate that some soils near the storm sewer outfall do contain petroleum hydrocarbons. PEG recommends that the evaluation of the risk to humans and ecological receptors these soils might pose be handled under the existing Consent Order No. WMCSR-NWR-94-06 and be included in the ongoing Remedial Investigation/Feasibility Study (RI/FS) work being completed at the Terminals.

7233 SW Kable Lane, Suite 900, Bldg. F • Portland, Oregon 97224-7183 (503) 639-6305 FAX (503) 639-7482

On December 17, 1998, significant sheening was observed by Tosco personnel within the floating containment booms directly in front of the 60 inch outfall. The material causing the sheening appeared to be hydrocarbons, but the source was unknown. One possible source was thought to be the repaired joints and plans were made to video survey the joints, again. Coliwtz Clean Sweep was engaged by Tosco to remove the material within the boomed area and the U.S. Coast Guard and DEQ were notified of the sheening event. After the cleanup, no further sheening has occurred to date, so the video survey was cancelled. The source was not determined, but it is not believed to be the joints at this time. It is believed to be a one time excursion of an unknown source.

If you have any questions concerning the 60-inch storm sewer repair or the NON, please contact Martin Cramer of Tosco at (503) 248-1517, Gerald O'Regan of Chevron at (925) 842-3334, or myself.

Sincerely,

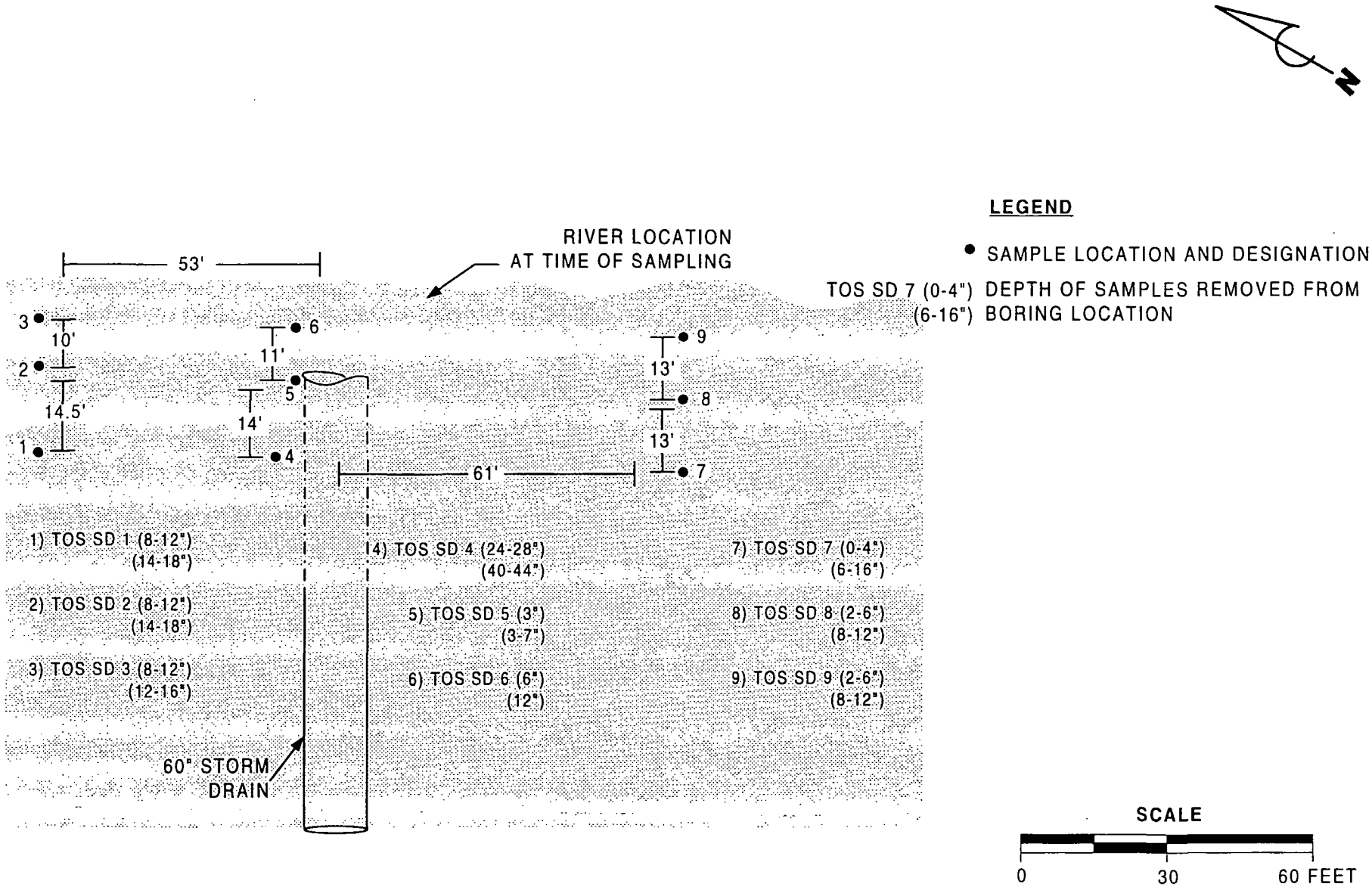
Pacific Environmental Group, Inc.

Lance D. Geselbracht, P.E.
Senior Engineer

Attachments: Table 1 - Soil Analytical Results (BTEX)
Table 2 - Soil Analytical Results (TPH-HCID)
Table 3 - Soil Analytical Results (PAHs)
Figure 1 - Sampling Points for 60-Inch Storm Sewer Outfall

cc: Mr. Martin Cramer, Tosco Marketing Company
Mr. Gerald O'Regan, Chevron Products Company (w\o Video Tape)
Mr. Irv Jenkins, Shell Oil Company (w\o Video Tape)
Mr. Eric Conard, GATX Terminals Corporation (w\o Video Tape)
Mr. Ron Schwab, Unocal Corporation (w\o Video Tape)
Ms. Jill Kiernan P.E., Oregon DEQ (w\o Video Tape)
Ms. Nanci Snyder, City of Portland, BES

COP0014470



PACIFIC ENVIRONMENTAL GROUP, INC.

WILLBRIDGE TOSCO
Portland, Oregon

SAMPLING POINTS FOR 60-INCH STORM SEWER OUTFALL

FIGURE: 1

PROJECT: B15-007.1B

COP0014471

Table 1
Soil Analytical Results

Willbridge Tosco 0608
Portland, Oregon

Sample Identification	Date Sampled	Benzene (ppm)	Toluene (ppm)	Ethyl-benzene (ppm)	Xylenes (ppm)
TOS SD 1 8-12	10/14/98	ND	ND	ND	ND
TOS SD 1 14-18	10/14/98	ND	ND	ND	ND
TOS SD 2 8-12	10/14/98	ND	ND	ND	ND
TOS SD 2 14-18	10/14/98	ND	ND	ND	ND
TOS SD 3 8-12	10/14/98	ND	ND	ND	ND
TOS SD 3 12-16	10/14/98	ND	ND	ND	ND
TOS SD 4 24-28	10/14/98	ND	ND	0.568	0.840
TOS SD 4 40-44	10/14/98	ND	ND	0.459	0.691
TOS SD 5 3	10/14/98	ND	ND	ND	ND
TOS SD 5 3-7	10/14/98	ND	ND	ND	ND
TOS SD 6 6	10/14/98	ND	ND	0.423	0.583
TOS SD 6 12	10/14/98	ND	ND	ND	ND
TOS SD 7 0-4	10/14/98	ND	ND	ND	ND
TOS SD 7 6-10	10/14/98	ND	ND	ND	ND
TOS SD 8 2-6	10/14/98	ND	ND	ND	ND
TOS SD 8 8-12	10/14/98	ND	ND	ND	ND
TOS SD 9 2-6	10/14/98	ND	ND	ND	ND
TOS SD 9 8-12	10/14/98	ND	ND	ND	ND

Notes:
ppm = Parts per million
ND = Not detected
BTEX by EPA Method 8020A

COP0014472

Table 2
Soil Analytical Results

Willbridge Tosco 0608
Portland Oregon

Sample Identification	Date Sampled	TPH-HCID (g, d, o)	TPH-G (ppm)	TPH-D (ppm)	TPH-Oil (ppm)
TOS SD 1 8-12	10/14/98	ND	-	-	-
TOS SD 1 14-18	10/14/98	ND	-	-	-
TOS SD 2 8-12	10/14/98	ND	-	-	-
TOS SD 2 14-18	10/14/98	ND	-	-	-
TOS SD 3 8-12	10/14/98	d	-	36.3	ND
TOS SD 3 12-16	10/14/98	ND	-	-	-
TOS SD 4 24-28	10/14/98	g,d	255	8,100	ND
TOS SD 4 40-44	10/14/98	g,d	177	8,140	ND
TOS SD 5 3	10/14/98	d	-	1,630	ND
TOS SD 5 3-7	10/14/98	g,d	36.8	21,000	ND
TOS SD 6 6	10/14/98	g,d	115	2,300	ND
TOS SD 6 12	10/14/98	d,o	-	765	54.5
TOS SD 7 0-4	10/14/98	ND	-	-	-
TOS SD 7 6-10	10/14/98	ND	-	-	-
TOS SD 8 2-6	10/14/98	d	-	69.0	ND
TOS SD 8 8-12	10/14/98	ND	-	-	-
TOS SD 9 2-6	10/14/98	d	-	68.5	ND
TOS SD 9 8-12	10/14/98	ND	-	-	-

Notes:
g = Gasoline detected, d = Diesel detected, o = Oil observed
- = Not applicable, not detected
ND = Not detected
Hydrocarbon Identification by DEQ Method TPH-HCID
TPH-G by Oregon Method TPH-G
TPH-D by Oregon Method TPH-D
TPH-Oil by Oregon Method TPH-D(modified)

Table 3
Soil Analytical Results - PAHs

Willbridge Tosco 0608
Portland, Oregon

Parameters	TOS SD 1 8-12 10/14/98 (ppb)	TOS SD 1 14-18 10/14/98 (ppb)	TOS SD 2 8 -12 10/14/98 (ppb)	TOS SD 2 14-18 10/14/98 (ppb)	TOS SD 3 8-12 10/14/98 (ppb)	TOS SD 3 12-16 10/14/98 (ppb)
Acenaphthene	ND	ND	ND	ND	ND	ND
Acenaphthylene	ND	ND	ND	ND	ND	ND
Anthracene	ND	ND	ND	ND	ND	ND
Benzo (a) anthracene	40.4	ND	ND	ND	ND	ND
Benzo (a) pyrene	38.3	ND	ND	ND	13.8	ND
Benzo (b) fluoranthene	44.5	ND	ND	ND	ND	ND
Benzo (g,h,i) perylene	52.4	ND	15.7	ND	18.4	ND
Benzo (k) flouranthene	35.5	ND	ND	ND	ND	ND
Chrysene	57.5	ND	ND	ND	ND	ND
Dibenzo (a,h) anthracene	ND	ND	ND	ND	ND	ND
Fluoranthene	103	ND	ND	ND	ND	ND
Fluorene	ND	ND	ND	ND	ND	ND
Indeno (1,2,3-cd) pyrene	38.5	ND	ND	ND	ND	ND
Naphthalene	ND	ND	ND	ND	ND	ND
Phenanthrene	ND	ND	ND	ND	ND	ND
Pyrene	142	ND	ND	ND	14.0	ND

Notes:
ppb = Parts per billion
PAHs by EPA Method 8270 SIMS

COP0014474

Table 3
Soil Analytical Results - PAHs

Willbridge Tosco 0608
Portland, Oregon

Parameters	TOS SD 4 24-28 10/14/98 (ppb)	TOS SD 4 40-44 10/14/98 (ppb)	TOS SD 5 3 10/14/98 (ppb)	TOS SD 5 3-7 10/14/98 (ppb)	TOS SD 6 6 10/14/98 (ppb)
Acenaphthene	ND	ND	ND	ND	ND
Acenaphthylene	ND	ND	ND	ND	ND
Anthracene	ND	ND	ND	ND	ND
Benzo (a) anthracene	ND	ND	ND	ND	69.5
Benzo (a) pyrene	ND	ND	ND	ND	74.0
Benzo (b) fluoranthene	ND	ND	ND	ND	ND
Benzo (g,h,i) perylene	ND	ND	ND	ND	ND
Benzo (k) flouranthene	ND	ND	ND	ND	ND
Chrysene	ND	ND	ND	ND	105
Dibenzo (a,h) anthracene	ND	ND	ND	ND	ND
Fluoranthene	ND	ND	173	ND	ND
Fluorene	2,370	2,920	ND	ND	ND
Indeno (1,2,3-cd) pyrene	ND	ND	ND	ND	ND
Naphthalene	ND	ND	ND	ND	ND
Phenanthrene	4,870	5,860	ND	3,680	ND
Pyrene	548	566	245	1,640	409

Notes:
ppb = Parts per billion
PAHs by EPA Method 8270 SIMS

COP0014475

Table 3
Soil Analytical Results - PAHs

Willbridge Tosco 0608
Portland, Oregon

Parameters	TOS SD 6 12 10/14/98 (ppb)	TOS SD 7 0-4 10/14/98 (ppb)	TOS SD 7 6-10 10/14/98 (ppb)	TOS SD 8 2-6 10/14/98 (ppb)	TOS SD 8 8 12 10/14/98 (ppb)	TOS SD 9 2-6 10/14/98 (ppb)	TOS SD 9 8-12 10/14/98 (ppb)
Acenaphthene	ND	ND	ND	ND	ND	ND	ND
Acenaphthylene	ND	ND	ND	ND	ND	ND	ND
Anthracene	ND	ND	ND	ND	ND	ND	ND
Benzo (a) anthracene	196	ND	ND	ND	ND	ND	ND
Benzo (a) pyrene	268	ND	ND	39.6	ND	ND	ND
Benzo (b) fluoranthene	243	ND	ND	ND	ND	ND	ND
Benzo (g,h,i) perylene	221	9.54	ND	46.4	ND	ND	ND
Benzo (k) flouranthene	200	ND	ND	ND	ND	ND	ND
Chrysene	240	7.03	ND	ND	ND	ND	ND
Dibenzo (a,h) anthracene	68.6	ND	ND	ND	ND	ND	ND
Fluoranthene	236	ND	ND	ND	ND	ND	ND
Fluorene	ND	ND	ND	ND	ND	ND	ND
Indeno (1,2,3-cd) pyrene	179	6.91	ND	ND	ND	ND	ND
Naphthalene	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	186	ND	ND	ND	ND	ND	ND
Pyrene	505	6.74	ND	44.8	ND	41.0	ND

Notes:
ppb = Parts per billion
PAHs by EPA Method 8270 SIMS

Rich Reis II ~~[illegible]~~

Gordon Rawall (E&E) Pete Geiger (E&E)

Kelly Kline IT Willbridge 7/29/99

Will Gala & Gerald O'Regan (Chevron)

Eric Conard - GATX

Frank Fossatti - Shell

Page 1 of 2

DEQ Comments

- Many of Jill's comments already addressed or were verbally agreed to previously → some new comments
- IT will prepare response letter to Jill & may need to make a few changes
- Will get draft response including revised pages in 2 weeks (August 12)

RI Fieldwork

- Completed except for sewer videos
- Thing we have defined locality
- Still need to finish beneficial use section
- Write conclusions & discussion
- Figs need finalizing
- Draft Report ready by Sept 1

Risk Assessment

- Sediments are below Cords screening levels for all but cadmium and one PAH
  - Rick Schwartz of EPA recently published paper w/ relatively high PAH toxicity numbers
- Surface Water - All below DEQ screening levels except for Barium + 1 lead
- River Front G.W. → Also high in Barium & could suggest facilities are source. Also had hits of PAH's, Semi-vols, & xylenes, and some metals
  → Used surface water screening values but should assume some dilution factor

COP0014477

IT WILLBRIDGE MTG. 7/29/99

G.W. (CONT.)

- WILL USE ARGUMENT THAT SURFACE WATER CONC ARE VERY LOW

* NEED TO LOOK ~~AT~~ BARIUM CONTENTS OF PRODUCTS AT FACILITY AND OTHER G.W. SAMPLES

* - E&E WILL CHECK INTO DILUTION FACTORS USED AT OTHER SITES

HUMAN HEALTH

- DEQ HAS AGREED RECREATIONAL ISSUES WERE NOT A FACTOR AT WILLBRIDGE → RIVER IS NOT AN ISSUE
- ARSENIC EXCEEDS 10^{-6} FOR ~~[illegible]~~ CASUAL WORKER & ONE PAH @ GATX
- TRENCH WORKER SCENARIO FOR INHALATION FROM G.W. EXCEED 10^{-6} FOR A FEW AREAS
- BENZENE IS DANGER & GENERALLY IS ASSOCIATED W/ FREE PRODUCT BEFORE IT EXCEEDS 10^{-6}

ANTHRACENE - PYROGENIC

BUDGET

KELLY SAID NEW BUDGET BASED ON 2-11 HANDOUT APPARENTLY ISSUED BY LANCE → DON'T RECALL

IT WILL PROVIDE COST ESTIMATE LETTER FOR ADDITIONAL COSTS DUE TO NORTH CREEK

IT WILL PREPARE DETAILED BUDGET SUMMARY EXPLAINING ADDITIONAL COSTS

- WILL CHECK W/ LANCE ON TRANSDUCER BUDGET & MORE UTILITY WORK

15055 SW Sequoia Parkway
Suite 140
Portland, OR 97224-7155
Tel. 503.624.7200
Fax. 503.620.7658

October 22, 1999
Project B15099.2A

Ms. Jill Kiernan, P.E.
Waste Management and Cleanup
Oregon Department of Environmental Quality
2020 SW Fourth Avenue, Suite 400
Portland, Oregon 97204

Re: Second Quarter (April - June 1999) Report
RI/FS Interim Action
Willbridge Bulk Fuel Facilities
Portland, Oregon
Consent Order WMCSR-NWR-94-06

Dear Ms. Kiernan:

IT Corporation is pleased to present the second quarter 1999 progress report for the remedial investigation/feasibility study (RI/FS) work being performed at the Chevron, GATX, and Tosco terminals which compose the Willbridge Bulk Fuel Facilities (Willbridge Facility) in Portland, Oregon (Figure 1). This letter presents a summary of the following:

- Second Quarter 1999 sampling, test results, and other data generated between April and June 1999.

This progress report fulfills the requirement of Section 7F of Oregon Department of Environmental Quality (DEQ) Consent Order WMCSR-NWR-94-06.

ACTIVITIES PERFORMED DURING SECOND QUARTER 1999

The following work was performed during April through June 1999:

- Performed quarterly groundwater sampling at the Chevron, GATX, and Tosco terminals. The groundwater sampling procedure is presented as Attachment A.
- Performed monthly separate-phase hydrocarbon (SPH) removal from wells located on the Chevron, GATX, and Tosco terminals.
- Second QUARTER 1999 Monitoring Analysis

Interim action monitoring activities performed during the second quarter included depth to groundwater and SPH thickness measurements for all wells, and groundwater sampling from selected wells.

Hydrogeological Analysis

Depth to groundwater measurements were performed in May 1999. Measurements were corrected for SPH where encountered. A groundwater table contour map using the May 1999 data is shown on Figure 2. The May 1999 groundwater elevation data are presented in Table 1. Water elevation and SPH recovery data for May 1999 and historic water elevation measurements are presented in Table 5.

During the second quarter (April to June 1999), water table elevations in the vicinity of the river generally decreased approximately 1.0 foot compared to the first quarter levels, while water table elevations in upgradient facility wells decreased by approximately 1.5 feet.

The direction of groundwater flow, inferred from the elevation contours, is generally toward the river, with a localized groundwater mound in the GATX south tank farm.

Hydrological Analysis

The Willamette River stage (measured at the Morrison Bridge river gauge and converted to City of Portland datum) ranged from a quarterly high of 15.36 feet on May 29, 1999 to a low of 8.29 feet on April 12, 1999. The river stage averaged approximately 12.48 feet between May 19 and May 28, 1999, the dates of the second quarter groundwater monitoring event. Precipitation and river stage data are shown on Figure 4.

Groundwater Analytical Results

Pursuant with the January 16, 1997 meeting with Jill Kiernan of the DEQ, groundwater samples were collected from selected facility monitoring wells between May 19 and May 28, 1999. The samples were analyzed for benzene, toluene, ethylbenzene, and xylenes (BTEX) compounds by EPA Method 8020A, polynuclear aromatic hydrocarbons (PAHs) by EPA Method 8270M-SIM, and total and dissolved RCRA Metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver) by EPA 6000/7000 Series Methods. The groundwater sampling protocol is presented as Attachment A.

The May 1999 BTEX results are presented in Table 2. The May 1999 PAH results are presented in Table 3. The metals results are presented in Tables 4A and 4B. Certified analytical results for the May 1999 sampling event are presented as Attachment A. Samples were not collected from wells containing SPH (as designated by NS/F in the tables).

Separate-Phase Hydrocarbon Analysis

Apparent SPH thicknesses were measured at selected wells on a monthly basis (Table 1). A map illustrating the distribution of SPH for May 1999 is shown on Figure 3.

The May 1999 SPH measurements generally indicate SPH thicknesses similar to previous quarter measurements in the riverfront area wells (Table 5). North of Front Avenue, SPH was measured in Tosco Wells B-4, EX-39, and B-40. South of Front Avenue, SPH was measured in Tosco Wells B-27, U-4, and U-5A. Separate-phase hydrocarbon thicknesses were also measured in Well CR-10 along the perimeter of the Chevron tank farm. Separate-phase hydrocarbon thicknesses were measured in Wells MW-6, MW-7, MW-19, MW-24, and MW-28 within the GATX terminal.

SEPARATE-PHASE HYDROCARBON RECOVERY

Monthly manual recovery of SPH at the facility was initiated in early February 1997. Approximately 572 gallons of SPH have been removed to date by manual recovery methods. Approximately 11.9 gallons were manually recovered during April through June 1999. If a well has historically had a measurable amount of SPH, it was gauged during the first month of the quarter. SPH was either manually pumped from the well or a hydrocarbon absorbent sock was installed to remove SPH. Although a well may not have contained SPH during the "Willbridge wide" quarterly gauging event, it is possible that the well did contain SPH during one of the other monthly gauging events and a measurable quantity of SPH may have been removed and summarized in Table 1.

Seep and Sheen Monitoring

Containment booms currently encompass the shoreline between the Chevron and Tosco docks, and from the south edge of the Tosco dock to the southern property line (beyond the new Doane Avenue storm sewer outfall). Additionally, secondary containment booms are located inside of the first boom around the new Doane Avenue outfall pipe. Terminal personnel monitor seeps and sheen events; significant sheens are reported to IT for further evaluation.

PROBLEMS ENCOUNTERED DURING SECOND QUARTER 1999

No problems were encountered during the second quarter 1999.

ACTIVITIES SCHEDULED FOR THIRD QUARTER 1999 (JULY 1999-SEPTEMBER 1999)

The following actions are scheduled for the Third Quarter 1999:

- Monthly SPH removal from identified wells.
- Gauging of water level elevations and SPH in all facility wells during the third quarter sampling event, scheduled for August 1999.

IT Corporation appreciates the opportunity to be of service on this project. If you have any questions regarding this letter, please call.

Sincerely,

IT Corporation

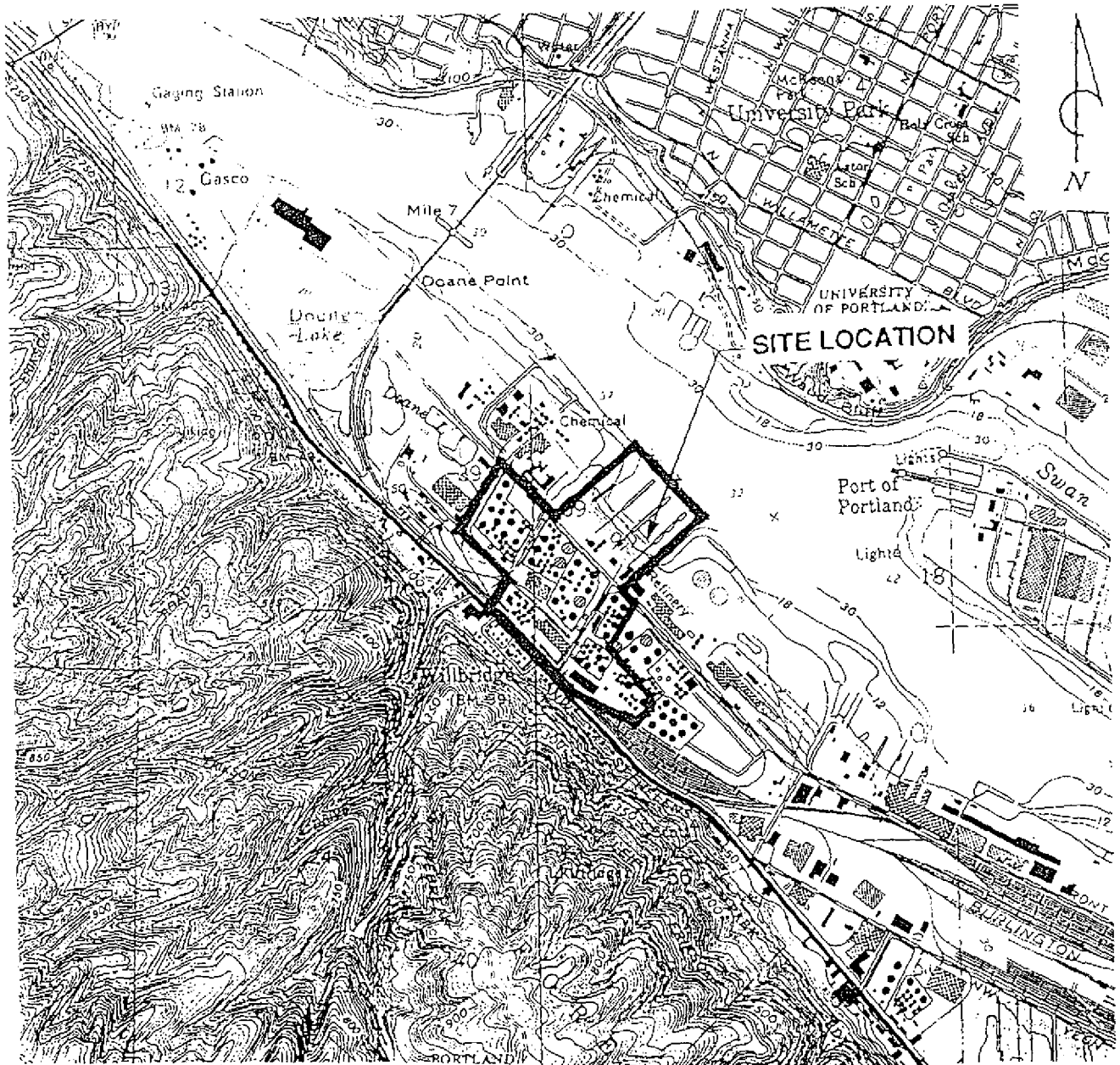
John J. Renda
Staff Geologist

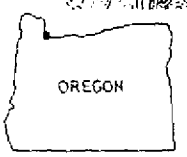
for Richard S. Reis, P.E.
Project Director

Attachments:

Figure 1- Site Location Map
Figure 2 - Groundwater Elevation Contour Map (May 1999)
Figure 3 - Separate-Phase Hydrocarbon Map (May 1999)
Figure 4 - Precipitation and River Stage Hydrograph (Second Quarter 1999)
Table 1 - Groundwater Elevation Data and SPH Recovery Data (May 1999)
Table 2 - Groundwater Analytical Results (BTEX July 1998 through May 1999)
Table 3 - Groundwater Analytical Results (PAHs July 1998 through May 1999)
Table 4A - Groundwater Analytical Results (Total Metals July 1998 through May 1999)
Table 4B - Groundwater Analytical Results (Dissolved Metals July 1998 through May 1999)
Table 5 - Groundwater Elevation and SPH Recovery Data (March 1995 to May 1999)
Attachment A -
Sampling Protocol, Certified Analytical Reports and Chain-of-Custody Documentation

cc: Mr. Eric Conard, GATX Terminals Corporation
Mr. Marty Cramer, Tosco Distribution Company
Mr. Frank Fossati, Shell Oil Products Company
Mr. Gerald O'Regan, Chevron Products Company





QUADRANGLE LOCATION

REFERENCES:

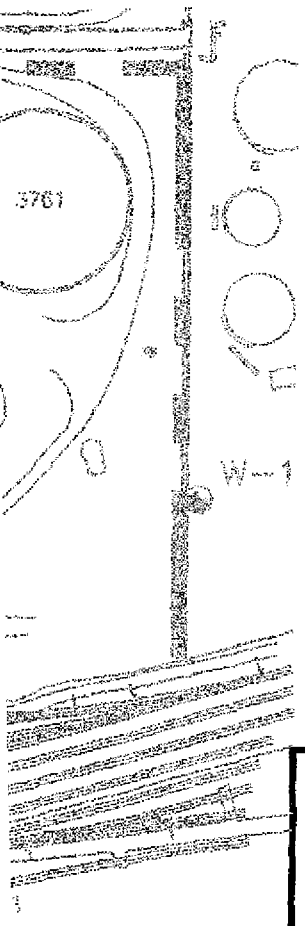
USGS 7.5 MIN TOPOGRAPHIC MAP
TITLED: PORTLAND, OREG-WASH
DATED: 1961 PHOTOREVISED: 1970-1977
TITLED: LINNTON, OREGON
DATED: 1990

SCALE IN FEET

2000 0 2000

the igroup	WILLBRIDGE FACILITY Portland, Oregon	FIGURE: 1
	SITE LOCATION MAP	PROJECT: 1115-099.2A

COP0014483



SCALE

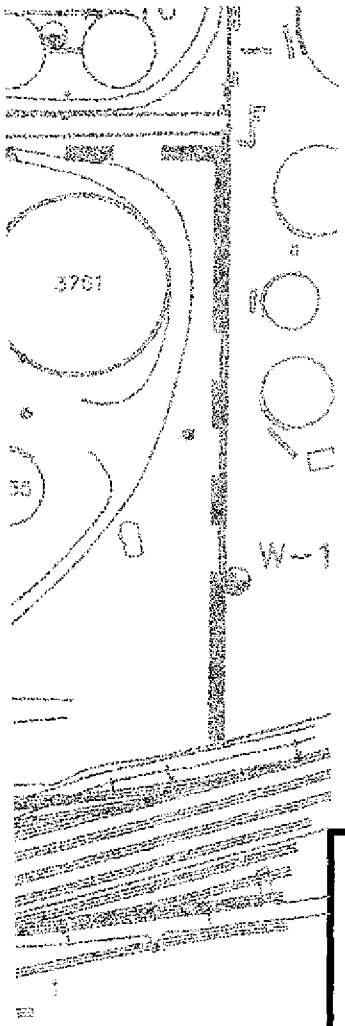
0 130 260 FEET

FIGURE 2

IT CORPORATION
15055 SW Sequoia Parkway
Suite 140
Portland, Oregon 97224
(503)624-7200 Fax(503)620-7658

SECOND QUARTER 1999 GROUNDWATER ELEVATION CONTOUR MAP

WILLBRIDGE FACILITY
QUARTERLY REPORT
PORTLAND, OREGON



MW-5 GS ROOFING WELL LOCATION AND DESIGNATION

0.01 SEPARATE PHASE HYDROCARBON THICKNESS IN FEET

SCALE

0 130 260 FEET

FIGURE 3

IT CORPORATION

IT CORPORATION
15055 SW Sequoia Parkway
Suite 140
Portland, Oregon 97224
(503)624-7200 Fax(503)620-7658

SECOND QUARTER 1999 SEPARATE PHASE HYDROCARBON THICKNESS MAY, 1999

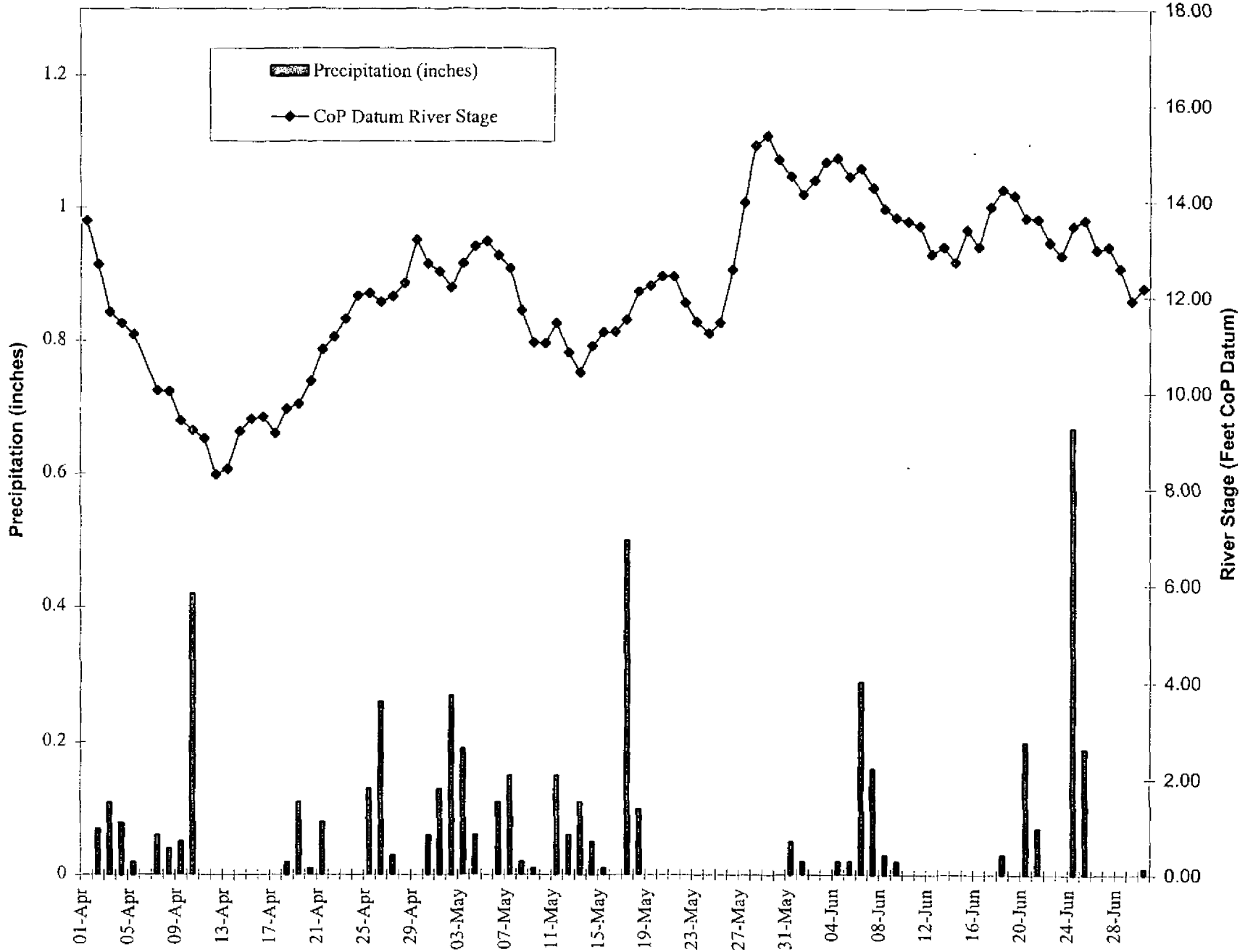
WILLBRIDGE FACILITY
PORTLAND, OREGON

Figure 4

Precipitation and River Stage Hydrograph

Second Quarter 1999

Willbridge Facility



J:/Remed/Jobs/Willbridge/1115099/2a/2Q99.xls/Chart2Q99

10/20/1999

COP0014486

Table 1
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				Chevron			
B-7	33.96	5/18/99	NP		18.08	15.88	0.1
B-8	34.14	5/18/99	NP		16.95	17.19	
B-9	33.90	5/20/99	NP		16.29	17.61	
B-10	34.76	5/20/99	NP		15.14	19.62	0.1
B-11	34.96	5/20/99	NP		14.95	20.01	
B-12	35.14	5/20/99	NP		15.41	19.73	
B-13	34.76	5/20/99	NP		15.47	19.29	
B-14	36.59	5/20/99	NP		17.27	19.32	
B-15	35.55	5/20/99	NP		16.44	19.11	
B-19	34.17	5/20/99	NP		15.93	18.24	
B-20	33.32	5/20/99	NP		16.30	17.02	0.1
B-21	34.79	5/20/99	NP		16.25	18.54	
B-24	34.70	5/20/99	NP		15.52	19.18	0.1
B-26	35.30	5/20/99	NP		15.56	19.74	
B-28	35.26	5/20/99	NP		13.20	22.06	
B-29	37.70	5/20/99	NP		14.97	22.73	
B-30	35.39	5/20/99	NP		14.73	20.66	
B-32	34.23	5/20/99	NP		16.46	17.77	
B-33	35.90	5/20/99	NP		15.98	19.92	
CR-1	22.08	5/20/99	NP		2.82	19.26	
CR-3	34.32	5/20/99	NP		14.10	20.22	
CR-4	37.14	5/20/99	NP		5.91	31.23	
CR-6	35.61	5/20/99	NP		11.93	23.68	0.1
CR-7	35.57	5/20/99	NP		9.88	25.69	0.2

COP0014487

Table 1 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				Chevron			
CR-8	.33.14	5/20/99	NP		6.02	27.12	
CR-9	35.72	5/20/99	NP		3.13	32.59	
CR-10	35.57	5/20/99	4.62	0.03	4.65	30.89	0.1
CR-11	34.43	5/20/99	NP		1.77	32.66	0.1
EX-1	34.15	5/20/99	NP		15.44	18.71	
					Total SPH Recovered this Quarter:		0.90

Notes:
SPH = Separate Phase Hydrocarbon
NP = No product observed this gauging date
NA = Not available
NM = Not measured
* = Groundwater elevation is corrected for the presence of SPH using:
GWE=TOC-(DTW-(SPH thickness x Specific gravity of SPH))
Specific Gravity of SPH set to 0.85 g/cc
** = SPH recovered represents total product recovered for entire quarter

Wells Surveyed Dec. 1998:

B-1	B-12	B-35	U-5
B-3	B-17	B-36	IT-E
B-4	B-18	B-37	MW-27
B-6	B-20	B-40	MW-31
B-8	B-21	B-41	
B-9	B-25	DW-1	
B-10	B-28	P-1	
B-11	B-30	P-2	

COP0014488

Table 1 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				GATX			
MW-1	35.43	5/26/99	NP		4.29	31.14	
MW-2	35.77	5/26/99	NP		6.43	29.34	
MW-3	36.02	5/26/99	NP		7.78	28.24	
MW-4	36.39	5/26/99	NP		7.23	29.16	
MW-5	33.52	5/26/99	NP		6.15	27.37	
MW-6	33.34	5/26/99	4.25	0.15	4.40	28.81	0.2
MW-7	34.12	5/26/99	8.61	0.15	8.76	25.23	3.75
MW-8	33.95	5/26/99	NP		7.73	26.22	
MW-9	36.53	5/26/99	NP		10.01	26.52	
MW-10	35.82	5/26/99	NP		9.25	26.57	
MW-11	36.47	5/26/99	NP		6.13	30.34	
MW-12	35.95	5/26/99	NP		6.14	29.81	
MW-13	37.89	5/26/99	NP		5.17	32.72	
MW-14	36.28	5/26/99	NP		4.24	32.04	
MW-15	37.50	5/26/99	NP		5.50	32.00	
MW-16	34.93	5/26/99	NP		4.46	30.47	
MW-17	36.05	5/26/99	NP		4.17	31.88	
MW-18	33.76	5/26/99	NP		2.14	31.62	
MW-19	33.39	5/26/99	3.62	0.02	3.64	29.73	0.25
MW-20	34.76	5/26/99	NP		9.87	24.89	
MW-21	34.33	5/26/99	NP		1.45	32.88	
MW-22	35.65	5/26/99	NP		3.61	32.04	
MW-23	36.06	5/26/99	NP		4.25	31.81	
MW-24	35.15	5/26/99	5.34	0.01	5.35	29.79	0.25
MW-25	34.73	5/26/99	NP		10.46	24.27	

COP0014489

Table 1 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				GATX			
MW-26	34.78	5/26/99	NP		10.84	23.94	0.2
MW-27	35.69	5/26/99	NP		4.92	30.77	
MW-28	34.39	5/26/99	4.55	0.01	4.56	29.82	0.2
MW-29	35.77	5/26/99	NP		13.17	22.60	
MW-30	36.39	5/26/99	NP		5.32	31.07	
MW-31	35.66	5/26/99	NP		6.44	29.22	
MW-32	37.01	5/26/99	NP		4.55	32.46	
MW-33		5/26/99	NP		19.95		
MW-34	39.67	5/26/99	NP		19.62	20.05	
MW-35	33.39	5/26/99	NP		2.99	30.40	
MW-36	34.88	5/26/99	NP		14.30	20.58	
MW-37	34.86	5/26/99	NP		13.90	20.96	
MW-38	37.50	5/26/99	NP		5.57	31.93	
MW-39	35.02	5/26/99	NP		13.29	21.73	
MW-40	33.65	5/26/99	NP		13.99	19.66	
					Total SPH Recovered this Quarter:		4.85

Notes:
SPH = Separate Phase Hydrocarbon
NP = No product observed this gauging date
NA = Not available
NM = Not measured
* = Groundwater elevation is corrected for the presence of SPH using:
GWE=TOC-(DTW-(SPH thickness x Specific gravity of SPH))
Specific Gravity of SPH set to 0.85 g/cc
** = SPH recovered represents total product recovered for entire quarter

Wells Surveyed Dec. 1998:

B-1	B-12	B-35	U-5
B-3	B-17	B-36	IT-E
B-4	B-18	B-37	MW-27
B-6	B-20	B-40	MW-31
B-8	B-21	B-41	
B-9	B-25	DW-1	
B-10	B-28	P-1	
B-11	B-30	P-2	

COP0014490

Table 1 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
			Tosco				
B-1	34.68	5/18/99	NP		16.79	17.89	
B-2	35.35	5/18/99	NP		16.64	18.71	
B-3	34.81	5/18/99	NP		18.01	16.80	
B-4	34.70	5/18/99	17.51	0.01	17.52	17.17	0.1
B-5	34.83	5/18/99	NP		18.17	16.66	
B-6	35.49	5/18/99	NP		16.48	19.01	
B-16	35.82	5/18/99	NP		16.77	19.05	
B-17	35.61	5/18/99	NP		16.76	18.85	
B-18	35.49	5/18/99	NP		18.38	17.11	0.1
B-22	35.83	5/18/99	NP		17.69	18.14	0.1
B-25	35.78	5/18/99	NP		18.02	17.76	
B-27	35.74	5/18/99	17.36	0.01	17.37	18.36	0.1
B-35	33.56	5/18/99	NP		15.68	17.88	
B-36	31.02	5/18/99	NP		14.23	16.79	
B-37	35.83	5/18/99	NP		18.56	17.27	
EX-39	33.09	5/18/99	16.81	0.46	17.27	15.43	3.5
B-40	34.70	5/18/99	17.10	0.14	17.24	17.34	1.2
B-41	34.63	5/18/99	NP		17.46	17.17	0.1
DW-1	35.93	5/18/99	NP		18.58	17.35	
DW-2	36.05	5/18/99	NP		18.65	17.40	
IF-2		5/18/99	NP		19.22		
IT-E	36.07	5/18/99	NP		18.78	17.29	
IT-W	35.99	5/18/99	NP		17.47	18.52	
OF-1		5/18/99	NP		18.40		

COP0014491

Table 1 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
			Tosco				
OF-2		5/18/99	NP		18.52		
P-1	18.24	5/18/99	NP		5.49	12.75	
P-2	17.85	5/18/99	NP		3.81	14.04	
RES-N	38.58	5/18/99	NP		20.64	17.94	
RES-O	36.03	5/18/99	NP		16.88	19.15	
U-2	35.02	5/18/99	NP		14.61	20.41	
U-3	35.25	5/18/99	NP		13.09	22.16	
U-4	34.46	5/18/99	15.37	0.02	15.39	19.05	0.5
U-5	34.13	5/18/99	NP		17.5	16.63	
U-5A	33.77	5/18/99	5.97	0.02	5.99	27.76	0.4
					Total SPH Recovered this Quarter:		6.10

Notes:
SPH = Separate Phase Hydrocarbon
NP = No product observed this gauging date
NA = Not available
NM = Not measured
* = Groundwater elevation is corrected for the presence of SPH using:
GWE=TOC-(DTW-(SPH thickness x Specific gravity of SPH))
Specific Gravity of SPH set to 0.85 g/cc
** = SPH recovered represents total product recovered for entire quarter

Wells Surveyed Dec. 1998:

B-1	B-12	B-35	U-5
B-3	B-17	B-36	IT-E
B-4	B-18	B-37	MW-27
B-6	B-20	B-40	MW-31
B-8	B-21	B-41	
B-9	B-25	DW-1	
B-10	B-28	P-1	
B-11	B-30	P-2	

COP0014492

Table 2
Groundwater Analytical Results - BTEX

Willbridge Terminal
Portland, Oregon

Sample Identification	Date Sampled	Water Elev (ft.)	Benzene (ppb)	Ethyl-benzene (ppb)	Toluene (ppb)	Xylenes (ppb)
			Chevron			
B-7						
	11/24/98	14.57	ND	ND	ND	ND
B-9						
	7/22/98	16.81	ND	0.872	ND	ND
	12/11/98	16.25	ND	ND	ND	ND
	2/25/99	18.67	ND	ND	ND	ND
	5/21/99	17.61	ND	ND	ND	ND
B-10						
	7/22/98	18.70	13.7	17.7	18.4	56.8
	11/24/98	17.17	98.5	16.9	3.45	31.7
	5/21/99	19.62	4.58	2.07	4.65	5.97
B-11						
	7/22/98	19.15	65.2	2.68	3.86	17.9
	11/23/98	18.40	29.4	ND	6.90	16.4
	2/25/99	21.15	87.5	6.4	6.81	12.8
	5/21/99	20.01	55.6	2.08	5.53	8.67
B-14						
	7/22/98	18.53	208	116	27.3	44.7
Duplicate	7/22/98	18.53	212	93.0	20.1	32.4
	11/25/98	17.89	301	130	26.5	18.2
	2/25/99	20.26	754	378	53.3	128
	5/21/99	19.32	900	441	37.3	97.5
B-28						
	7/22/98	19.23	ND	ND	ND	ND
	11/24/98	18.98	15.0	110	ND	79.2
	2/25/99	20.94	ND	ND	ND	ND
	5/20/99	22.06	ND	ND	ND	ND
B-30						
	7/22/98	19.68	42.1	1.68	5.74	9.72
	11/24/98	18.94	43.0	0.603	4.46	10.5
	2/25/99	21.65	76.4	3.07	8.96	17.1
	5/21/99	20.66	84.9	1.53	7.31	10.4
CR-8						
	7/22/98	26.08	ND	ND	ND	ND
	11/24/98	25.41	ND	ND	ND	ND

COP0014493

Table 2 (continued)
Groundwater Analytical Results - BTEX

Willbridge Terminal
Portland, Oregon

Sample Identification	Date Sampled	Water Elev (ft.)	Benzene (ppb)	Ethyl-benzene (ppb)	Toluene (ppb)	Xylenes (ppb)
			Chevron			
	2/25/99	28.01	ND	ND	ND	ND
	5/20/99	27.12	ND	ND	ND	ND
CR-9						
	7/22/98	32.28	ND	ND	ND	ND
	11/25/98	32.27	ND	ND	ND	ND
Duplicate	11/25/98	32.27	ND	ND	ND	ND
	2/25/99	33.09	ND	ND	ND	ND
	5/20/99	32.59	ND	ND	ND	ND
Duplicate	5/20/99	32.59	ND	ND	ND	ND
CR-11						
	7/22/98	31.58	46.8	5.10	ND	ND

Notes:
ppb = Parts per billion
ND = Not detected
BTEX by EPA 8020 Method

COP0014494

Table 2 (continued)
Groundwater Analytical Results - BTEX

Willbridge Terminal
Portland, Oregon

Sample Identification	Date Sampled	Water Elev (ft.)	Benzene (ppb)	Ethyl-benzene (ppb)	Toluene (ppb)	Xylenes (ppb)
			GATX			
MW-8						
	7/31/98	25.33	43.5	35.6	5.52	16.4
	12/10/98	24.44	45.4	40.6	ND	17.7
	3/2/99	28.27	11	2.98	1.61	ND
	5/27/99	26.22	10.4	4.78	2.58	4.13
MW-10						
	12/9/98	24.45	ND	ND	ND	ND
	3/2/99	34.28	8.16	ND	ND	ND
	5/27/99	26.57	2.14	ND	ND	ND
MW-11						
	7/31/98	29.08	5250	2710	2200	9620
	12/9/98	29.51	5870	2330	2590	9840
	3/2/99	32.28	6990	2820	3420	12000
	5/27/99	30.34	5000	2640	2500	10400
MW-13						
	7/31/98	31.45	ND	ND	ND	ND
	12/9/98	31.62	ND	ND	ND	ND
	3/2/99	34.64	ND	ND	ND	ND
Duplicate	3/2/99	34.64	ND	ND	ND	ND
	5/27/99	32.72	ND	ND	ND	ND
MW-15						
	7/31/98	29.74	ND	ND	2.92	4.29
	12/10/98	30.30	ND	ND	ND	ND
	3/2/99	34.63	1.23	ND	ND	ND
	5/28/99	32.00	ND	ND	ND	ND
MW-21						
	7/31/98	32.20	ND	ND	ND	ND
Duplicate	7/31/98	32.20	ND	ND	ND	ND
	12/8/98	32.47	ND	ND	ND	ND
	3/1/99	33.30	ND	ND	ND	ND
	5/27/99	32.88	ND	ND	ND	ND
MW-22						
	7/28/98	30.85	1830	4080	1800	11200
	12/9/98	30.32	2060	4860	2430	13800
Duplicate	12/9/98	30.32	1980	4710	2390	13300

COP0014495

Table 2 (continued)
Groundwater Analytical Results - BTEX

Willbridge Terminal
Portland, Oregon

Sample Identification	Date Sampled	Water Elev (ft.)	Benzene (ppb)	Ethyl-benzene (ppb)	Toluene (ppb)	Xylenes (ppb)
			GATX			
	5/27/99	32.04	1750	4130	1930	12100
MW-23						
	12/9/98	30.99	51.4	104	ND	61.7
	3/1/99	32.68	16	35.8	6.65	57
Duplicate	3/1/99	32.68	27.8	34.7	5.05	58
MW-26						
	7/28/98	22.98	8.92	7.38	8.80	10.1
	12/8/98	22.42	5.08	5.00	4.49	4.90
	5/28/99	23.94	1.36	4.06	1.7	10.4
MW-28						
	7/28/98	27.72	1.32	ND	ND	ND
MW-31						
	7/28/98	30.04	ND	ND	ND	ND
	12/8/98	27.28	ND	ND	ND	ND
	3/1/99	30.99	ND	ND	ND	ND
	5/27/99	29.22	ND	ND	ND	ND
MW-32						
	7/28/98	31.43	ND	ND	ND	ND
	12/8/98	30.67	ND	ND	ND	ND
	3/1/99	33.94	ND	ND	ND	ND
Duplicate	3/1/99	33.94	ND	ND	ND	ND
	5/27/99	32.46	ND	ND	ND	ND
Duplicate	5/27/99	32.46	ND	ND	ND	ND
MW-33						
	7/28/98	18.89	ND	ND	ND	ND
Duplicate	7/28/98	18.89	ND	ND	ND	ND
	12/11/98	18.41	ND	ND	ND	ND
	3/2/99	20.67	ND	ND	ND	ND
	5/28/99		ND	ND	ND	ND
MW-36						
	7/28/98	19.79	ND	ND	ND	ND
	12/10/98	19.29	ND	ND	ND	ND
Duplicate	12/10/98	19.29	ND	ND	ND	ND
	3/2/99	21.90	ND	ND	ND	ND
	5/27/99	20.58	ND	ND	ND	ND

COP0014496

Table 2 (continued)
Groundwater Analytical Results - BTEX

Willbridge Terminal
Portland, Oregon

Sample Identification	Date Sampled	Water Elev (ft.)	Benzene (ppb)	Ethyl-benzene (ppb)	Toluene (ppb)	Xylenes (ppb)
			GATX			
MW-37						
	7/28/98	19.15	640	ND	ND	ND
	12/10/98	18.62	196	ND	ND	ND
	3/1/99	21.39	17.3	ND	ND	ND
	5/26/99	20.96	208	ND	ND	ND
Duplicate	5/26/99	20.96	204	ND	ND	ND
MW-39						
	12/10/98	20.66	ND	0.862	ND	1.92
MW-40						
	7/28/98	18.95	ND	ND	ND	ND
	12/10/98	18.56	ND	ND	ND	ND
	3/2/99	21.09	ND	ND	ND	ND
	5/26/99	19.66	ND	ND	ND	ND

Notes:
ppb = Parts per billion
ND = Not detected
BTEX by EPA 8020 Method

COP0014497

Table 2 (continued)
Groundwater Analytical Results - BTEX

Willbridge Terminal
Portland, Oregon

Sample Identification	Date Sampled	Water Elev (ft.)	Benzene (ppb)	Ethyl-benzene (ppb)	Toluene (ppb)	Xylenes (ppb)
			Tosco			
B-6						
	11/18/98	17.70	140	299	23.0	180.61
B-17						
	8/4/98	18.05	698	ND	ND	ND
Duplicate	8/4/98	18.05	648	ND	ND	ND
	2/23/99	18.51	449	6.4	10.5	ND
	5/19/99	18.85	357	ND	7.75	ND
B-18						
	11/19/98	16.13	ND	ND	ND	ND
Duplicate	11/19/98	16.13	ND	ND	ND	ND
	2/24/99	17.61	ND	ND	ND	ND
	5/19/99	17.11	ND	ND	ND	ND
B-22						
	8/4/98	17.27	ND	4.00	1.02	9.06
	11/19/98	16.73	ND	1.26	ND	3.24
	5/20/99	18.14	0.972	3.4	0.758	13.6
Duplicate	5/20/99	18.14	ND	0.855	ND	4.96
B-25						
	5/19/99	17.76	ND	ND	ND	ND
B-35						
	8/4/98	17.27	17.8	19.8	45.8	31.5
	11/20/98	16.87	15.2	1.56	10.1	8.60
	2/23/99	18.48	15.9	ND	8.8	7.1
Duplicate	2/23/99	18.48	16.4	ND	9.1	6.9
	5/19/99	17.88	59.5	ND	ND	ND
B-36						
	8/5/98	12.90	ND	ND	ND	ND
	11/18/98	15.56	2.75	ND	1.16	ND
	2/23/99	17.90	ND	ND	ND	ND
	5/19/99	16.79	ND	ND	ND	ND
B-37						
	8/4/98	15.64	ND	ND	ND	ND
	11/19/98	15.60	ND	ND	ND	ND
	2/24/99	24.80	ND	ND	ND	ND
	5/19/99	17.27	ND	ND	ND	ND

COP0014498

Table 2 (continued)
Groundwater Analytical Results - BTEX

Willbridge Terminal
Portland, Oregon

Sample Identification	Date Sampled	Water Elev (ft.)	Benzene (ppb)	Ethyl-benzene (ppb)	Toluene (ppb)	Xylenes (ppb)
			Tosco			
U-2						
	11/16/98	18.31	ND	ND	ND	ND
	2/24/99	20.73	8.7	22.3	1.93	1.52
	5/19/99	20.41	7.64	11.6	2.79	9.63
U-3						
	8/5/98	21.18	ND	ND	ND	ND
	11/16/98	20.83	ND	ND	ND	ND
	2/24/99	22.36	3160	80.5	580	465
	5/19/99	22.16	1.89	ND	ND	ND
U-4						
	11/19/98	17.64	373	ND	ND	ND
U-5						
	8/4/98	14.56	ND	ND	ND	ND
	11/19/98	14.89	ND	ND	ND	ND
	2/24/99	17.29	4.16	ND	1.55	1.47
	5/19/99	16.63	2.62	ND	ND	ND

Notes:
ppb = Parts per billion
ND = Not detected
BTEX by EPA 8020 Method

COP0014499

Table 3
Groundwater Analytical Results - Polyaromatic Hydrocarbons

Willbridge Terminal
Portland, Oregon

Sample Identification	Date Sampled	Acenaphthene (ppb)	Acenaphthylene (ppb)	Fluorene (ppb)	Naphthalene (ppb)	Anthracene (ppb)	Fluoranthene (ppb)	Phenanthrene (ppb)	Benzo(a) anthracene (ppb)	Benzo(b) fluoranthene (ppb)	Benzo(k) fluoranthene (ppb)	Chrysene (ppb)	Pyrene (ppb)	Benzo(a) pyrene (ppb)	Dibenzo-(a,h)anthracene (ppb)	Indeno-(1,2,3,cd) pyrene (ppb)	Benzo-(ghi) perylene (ppb)
Number of Benzene Rings		2	2	2	2	3	3	3	4	4	4	4	4	5	5	5	6
Chevron																	
B-7																	
	11/24/98	ND	ND	34.3	ND	ND	ND	30.3	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-9																	
	7/22/98	3.72	ND	20.3	ND	ND	ND	6.48	ND	ND	ND	ND	0.956	ND	ND	ND	ND
	12/11/98	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	2/25/99	1.26	ND	4.83	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	5/21/99	3.02	ND	9.89	ND	ND	ND	2.01	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-10																	
	7/22/98	ND	ND	4.55	ND	ND	0.263	3.90	ND	ND	ND	ND	0.372	ND	ND	ND	ND
	11/24/98	ND	ND	40.3	ND	ND	ND	62.1	ND	ND	ND	ND	ND	ND	ND	ND	ND
	5/21/99	3.81	ND	13.8	ND	2.14	1.15	16.6	ND	ND	ND	ND	1.19	ND	ND	ND	ND
B-11																	
	7/22/98	ND	ND	2.38	ND	ND	ND	1.40	ND	ND	ND	ND	ND	ND	ND	ND	ND
	11/23/98	ND	ND	2.92	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	2/25/99	ND	ND	1.36	ND	ND	ND	0.633	ND	ND	ND	ND	0.109	ND	ND	ND	ND
	5/21/99	1.09	ND	1.85	ND	ND	ND	1.26	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-14																	
	7/22/98	ND	ND	ND	9.77	ND	0.643	1.50	ND	ND	ND	ND	ND	ND	ND	ND	ND

COP0014500

Table 3 (continued)
Groundwater Analytical Results - Polyaromatic Hydrocarbons

Willbridge Terminal
Portland, Oregon

Sample Identification	Date Sampled	Acenaphthene (ppb)	Acenaphthylene (ppb)	Fluorene (ppb)	Naphthalene (ppb)	Anthracene (ppb)	Fluoranthene (ppb)	Phenanthrene (ppb)	Benzo(a) anthracene (ppb)	Benzo(b) fluoranthene (ppb)	Benzo(k) fluoranthene (ppb)	Chrysene (ppb)	Pyrene (ppb)	Benzo(a) pyrene (ppb)	Dibenzo-(a,h)anthracene (ppb)	Indeno-(1,2,3,cd) pyrene (ppb)	Benzo-(ghi) perylene (ppb)
Number of Benzene Rings		2	2	2	2	3	3	3	4	4	4	4	4	5	5	5	6
Chevron																	
Duplicate	7/22/98	ND	ND	ND	9.19	0.190	0.891	1.78	ND	ND	ND	ND	1.01	ND	ND	ND	ND
	11/25/98	1.46	ND	2.46	19.5	ND	ND	2.16	ND	ND	ND	ND	ND	ND	ND	ND	ND
Duplicate	11/25/98	ND	ND	ND	26.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	2/25/99	ND	ND	ND	50	0.138	0.293	1.47	ND	ND	ND	ND	0.402	ND	ND	ND	ND
	5/21/99	1.08	ND	2.28	16	ND	ND	2.21	ND	ND	ND	ND	1.27	ND	ND	ND	ND
B-24																	
	11/23/98	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Duplicate	11/23/98	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-28																	
	7/22/98	ND	ND	0.178	ND	ND	ND	0.289	ND	ND	ND	ND	ND	ND	ND	ND	ND
	11/24/98	ND	ND	ND	42.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	2/25/99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	5/20/99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-30																	
	7/22/98	ND	ND	0.200	ND	ND	ND	0.212	ND	ND	ND	ND	0.159	ND	ND	ND	ND
	11/24/98	ND	ND	ND	ND	ND	ND	0.152	ND	ND	ND	ND	ND	ND	ND	ND	ND
	2/25/99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

COP0014501

Table 3 (continued)
Groundwater Analytical Results - Polyaromatic Hydrocarbons

Willbridge Terminal
Portland, Oregon

Sample Identification	Date Sampled	Acenaphthene (ppb)	Acenaphthylene (ppb)	Fluorene (ppb)	Naphthalene (ppb)	Anthracene (ppb)	Fluoranthene (ppb)	Phenanthrene (ppb)	Benzo(a) anthracene (ppb)	Benzo(b) fluoranthene (ppb)	Benzo(k) fluoranthene (ppb)	Chrysene (ppb)	Pyrene (ppb)	Benzo(a) pyrene (ppb)	Dibenzo-(a,h)anthracene (ppb)	Indeno-(1,2,3,cd) pyrene (ppb)	Benzo-(ghi) perylene (ppb)
Number of Benzene Rings		2	2	2	2	3	3	3	4	4	4	4	4	5	5	5	6
Chevron																	
	5/21/99	0.196	ND	0.264	ND	ND	ND	0.172	ND	ND	ND	ND	ND	ND	ND	ND	ND
CR-8																	
	7/22/98	ND	ND	ND	ND	ND	0.291	ND	0.190	0.170	0.155	0.258	0.514	0.290	ND	0.269	0.262
	11/24/98	ND	0.170	ND	ND	ND	0.413	ND	0.271	0.775	ND	0.338	0.673	0.745	ND	0.560	1.08
	2/25/99	ND	ND	ND	ND	ND	0.1	ND	ND	0.168	0.222	0.115	0.203	0.33	ND	0.257	0.442
	5/20/99	ND	ND	ND	ND	ND	1.25	ND	0.726	1.39	1.28	0.958	1.67	2.29	ND	1.74	2.6
CR-9																	
	7/22/98	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	11/25/98	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Duplicate	11/25/98	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	2/25/99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	5/20/99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Duplicate	5/20/99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CR-11																	
	7/22/98	ND	ND	9.97	ND	ND	ND	4.20	ND	ND	ND	ND	ND	ND	ND	ND	ND
EX-1																	
	11/25/98	ND	ND	9.67	ND	ND	0.222	2.16	ND	ND	ND	ND	0.398	ND	ND	ND	ND

COP0014502

Table 3 (continued)
Groundwater Analytical Results - Polyaromatic Hydrocarbons

Willbridge Terminal
Portland, Oregon

Sample Identification	Date Sampled	Acenaphthene (ppb)	Acenaphthylene (ppb)	Fluorene (ppb)	Naphthalene (ppb)	Anthracene (ppb)	Fluoranthene (ppb)	Phenanthrene (ppb)	Benzo(a) anthracene (ppb)	Benzo(b) fluoranthene (ppb)	Benzo(k) fluoranthene (ppb)	Chrysene (ppb)	Pyrene (ppb)	Benzo(a) pyrene (ppb)	Dibenzo-(a,h)anthracene (ppb)	Indeno-(1,2,3,cd) pyrene (ppb)	Benzo-(ghi) perylene (ppb)
Number of Benzene Rings		2	2	2	2	3	3	3	4	4	4	4	4	5	5	5	6

Chevron

Notes:
ppb = Parts per billion
ND = Not detected
NS = Not sampled
NS/F = Not sampled, floating product present
PAH by EPA Method 8270 SIM since 1st Quarter 1997
PAH by EPA Method 8310 before 1st Quarter 1997 and for 3rd Quarter 1997

COP0014503

Table 3 (continued)
Groundwater Analytical Results - Polyaromatic Hydrocarbons

Willbridge Terminal
Portland, Oregon

Sample Identification	Date Sampled	Acenaphthene (ppb)	Acenaphthylene (ppb)	Fluorene (ppb)	Naphthalene (ppb)	Anthracene (ppb)	Fluoranthene (ppb)	Phenanthrene (ppb)	Benzo(a) anthracene (ppb)	Benzo(b) fluoranthene (ppb)	Benzo(k) fluoranthene (ppb)	Chrysene (ppb)	Pyrene (ppb)	Benzo(a) pyrene (ppb)	Dibenzo-(a,h)anthracene (ppb)	Indeno-(1,2,3,cd) pyrene (ppb)	Benzo-(ghi) perylene (ppb)
Number of Benzene Rings		2	2	2	2	3	3	3	4	4	4	4	4	5	5	5	6
GATX																	
MW-4																	
	12/9/98	ND	ND	8.02	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Duplicate	12/9/98	ND	ND	7.95	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-8																	
	7/31/98	ND	ND	ND	8.45	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	12/10/98	0.215	ND	ND	16.5	ND	ND	0.130	ND	ND	ND	ND	0.109	ND	ND	ND	ND
	3/2/99	ND	ND	ND	4.08	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	5/27/99	ND	ND	ND	1.88	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-10																	
	7/31/98	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	12/9/98	0.215	ND	0.103	ND	ND	ND	0.234	ND	ND	ND	ND	0.144	ND	ND	ND	ND
	3/2/99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	5/27/99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-11																	
	7/31/98	ND	ND	ND	638	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	12/9/98	ND	ND	ND	548	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	3/2/99	ND	ND	0.179	466	ND	ND	0.138	ND	ND	ND	ND	ND	ND	ND	ND	ND
	5/27/99	ND	ND	ND	421	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

COP0014504

Table 3 (continued)
Groundwater Analytical Results - Polyaromatic Hydrocarbons

Willbridge Terminal
Portland, Oregon

Sample Identification	Date Sampled	Acenaphthene (ppb)	Acenaphthylene (ppb)	Fluorene (ppb)	Naphthalene (ppb)	Anthracene (ppb)	Fluoranthene (ppb)	Phenanthrene (ppb)	Benzo(a) anthracene (ppb)	Benzo(b) fluoranthene (ppb)	Benzo(k) fluoranthene (ppb)	Chrysene (ppb)	Pyrene (ppb)	Benzo(a) pyrene (ppb)	Dibenzo-(a,h)anthracene (ppb)	Indeno-(1,2,3,cd) pyrene (ppb)	Benzo-(ghi) perylene (ppb)
Number of Benzene Rings		2	2	2	2	3	3	3	4	4	4	4	4	5	5	5	6
GATX																	
MW-13																	
	7/31/98	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	12/9/98	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	3/2/99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Duplicate	3/2/99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	5/27/99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-15																	
	7/31/98	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	12/10/98	0.208	ND	0.105	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	3/2/99	0.114	ND	0.125	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	5/28/99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-21																	
	7/31/98	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Duplicate	7/31/98	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	12/8/98	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	3/1/99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	5/27/99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-22																	
	7/28/98	ND	ND	ND	359	ND	ND	0.279	ND	ND	ND	ND	ND	ND	ND	ND	ND

COP0014505

Table 3 (continued)
Groundwater Analytical Results - Polyaromatic Hydrocarbons

Willbridge Terminal
Portland, Oregon

Sample Identification	Date Sampled	Acenaphthene (ppb)	Acenaphthylene (ppb)	Fluorene (ppb)	Naphthalene (ppb)	Anthracene (ppb)	Fluoranthene (ppb)	Phenanthrene (ppb)	Benzo(a) anthracene (ppb)	Benzo(b) fluoranthene (ppb)	Benzo(k) fluoranthene (ppb)	Chrysene (ppb)	Pyrene (ppb)	Benzo(a) pyrene (ppb)	Dibenzo-(a,h)anthracene (ppb)	Indeno-(1,2,3,cd) pyrene (ppb)	Benzo-(ghi) perylene (ppb)
Number of Benzene Rings		2	2	2	2	3	3	3	4	4	4	4	4	5	5	5	6
								GATX									
	12/9/98	ND	ND	ND	424	ND	ND	0.406	ND	ND	ND	ND	ND	ND	ND	ND	ND
Duplicate	12/9/98	ND	ND	ND	414	ND	ND	0.313	ND	ND	ND	ND	ND	ND	ND	ND	ND
	5/27/99	ND	ND	ND	201	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-23																	
	12/9/98	2.10	ND	3.74	7.05	ND	ND	2.42	ND	ND	ND	ND	ND	ND	ND	ND	ND
	3/1/99	1.41	ND	3.29	ND	ND	ND	1.77	ND	ND	ND	ND	ND	ND	ND	ND	ND
Duplicate	3/1/99	ND	ND	1.79	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-26																	
	7/28/98	1.65	ND	1.51	ND	0.183	0.509	1.74	ND	ND	ND	ND	0.276	ND	ND	ND	ND
	12/8/98	1.42	ND	1.24	4.61	0.109	0.375	0.484	ND	ND	ND	ND	0.237	ND	ND	ND	ND
	5/28/99	1.88	ND	1.75	3.42	ND	ND	1.02	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-28																	
	7/28/98	0.452	ND	1.19	ND	ND	ND	0.332	ND	ND	ND	ND	0.272	ND	ND	ND	ND
MW-30																	
	12/8/98	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-31																	
	7/28/98	ND	ND	1.88	ND	ND	ND	1.13	ND	ND	ND	ND	ND	ND	ND	ND	ND
	12/8/98	ND	ND	ND	ND	ND	ND	0.268	ND	ND	ND	ND	ND	ND	ND	ND	ND
	3/1/99	ND	ND	0.853	ND	ND	ND	0.677	ND	ND	ND	ND	ND	ND	ND	ND	ND

COP0014506

Table 3 (continued)
Groundwater Analytical Results - Polyaromatic Hydrocarbons

Willbridge Terminal
Portland, Oregon

Sample Identification	Date Sampled	Acenaphthene (ppb)	Acenaphthylene (ppb)	Fluorene (ppb)	Naphthalene (ppb)	Anthracene (ppb)	Fluoranthene (ppb)	Phenanthrene (ppb)	Benzo(a)anthracene (ppb)	Benzo(b)fluoranthene (ppb)	Benzo(k)fluoranthene (ppb)	Chrysene (ppb)	Pyrene (ppb)	Benzo(a)pyrene (ppb)	Dibenzo-(a,h)anthracene (ppb)	Indeno-(1,2,3,cd)pyrene (ppb)	Benzo-(ghi)perylene (ppb)
Number of Benzene Rings		2	2	2	2	3	3	3	4	4	4	4	4	5	5	5	6
GATX																	
	5/27/99	ND	ND	1.5	ND	ND	ND	0.626	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-32																	
	7/28/98	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	12/8/98	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	3/1/99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Duplicate	3/1/99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	5/27/99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Duplicate	5/27/99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-33																	
	7/28/98	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Duplicate	7/28/98	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	12/11/98	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	3/2/99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	5/28/99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-36																	
	7/28/98	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	12/10/98	0.438	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Duplicate	12/10/98	0.501	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	3/2/99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

COP0014507

Table 3 (continued)
Groundwater Analytical Results - Polyaromatic Hydrocarbons

Willbridge Terminal
Portland, Oregon

Sample Identification	Date Sampled	Acenaphthene (ppb)	Acenaphthylene (ppb)	Fluorene (ppb)	Naphthalene (ppb)	Anthracene (ppb)	Fluoranthene (ppb)	Phenanthrene (ppb)	Benzo(a) anthracene (ppb)	Benzo(b) fluoranthene (ppb)	Benzo(k) fluoranthene (ppb)	Chrysene (ppb)	Pyrene (ppb)	Benzo(a) pyrene (ppb)	Dibenzo-(a,h)anthracene (ppb)	Indeno-(1,2,3,cd) pyrene (ppb)	Benzo-(ghi) perylene (ppb)
Number of Benzene Rings		2	2	2	2	3	3	3	4	4	4	4	4	5	5	5	6
								GATX									
	5/27/99	0.163	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-37																	
	7/28/98	0.558	ND	0.433	ND	ND	ND	0.190	ND	ND	ND	ND	0.116	ND	ND	ND	ND
	12/10/98	ND	ND	ND	ND	ND	0.202	0.242	ND	ND	ND	ND	0.251	ND	ND	ND	ND
	3/1/99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	5/26/99	ND	ND	4.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Duplicate	5/26/99	ND	ND	1.76	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-39																	
	12/10/98	5.60	ND	1.09	ND	0.208	0.468	1.94	ND	ND	ND	ND	0.503	ND	ND	ND	ND
MW-40																	
	7/28/98	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	12/10/98	0.178	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	3/2/99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	5/26/99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:
ppb = Parts per billion
ND = Not detected
NS = Not sampled
NS/F = Not sampled, floating product present
PAH by EPA Method 8270 SIM since 1st Quarter 1997
PAH by EPA Method 8310 before 1st Quarter 1997 and for 3rd Quarter 1997

COP0014508

Table 3 (continued)
Groundwater Analytical Results - Polyaromatic Hydrocarbons

Willbridge Terminal
Portland, Oregon

Sample Identification	Date Sampled	Acenaphthene (ppb)	Acenaphthylene (ppb)	Fluorene (ppb)	Naphthalene (ppb)	Anthracene (ppb)	Fluoranthene (ppb)	Phenanthrene (ppb)	Benzo(a) anthracene (ppb)	Benzo(b) fluoranthene (ppb)	Benzo(k) fluoranthene (ppb)	Chrysene (ppb)	Pyrene (ppb)	Benzo(a) pyrene (ppb)	Dibenzo-(a,h)anthracene (ppb)	Indeno-(1,2,3,cd) pyrene (ppb)	Benzo-(ghi) perylene (ppb)
Number of Benzene Rings		2	2	2	2	3	3	3	4	4	4	4	4	5	5	5	6
Tosco																	
B-6																	
	11/18/98	ND	ND	ND	72.9	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-17																	
	8/4/98	5.72	ND	38.1	ND	ND	ND	33.7	ND	ND	ND	ND	ND	ND	ND	ND	ND
Duplicate	8/4/98	ND	ND	29.5	ND	ND	ND	25.0	ND	ND	ND	ND	ND	ND	ND	ND	ND
	2/23/99	4.03	ND	12.8	ND	ND	ND	9.85	ND	ND	ND	ND	ND	ND	ND	ND	ND
	5/19/99	2.9	ND	9.77	ND	ND	ND	9.3	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-18																	
	11/19/98	ND	ND	1.93	ND	ND	ND	2.34	ND	ND	ND	ND	ND	ND	ND	ND	ND
Duplicate	11/19/98	ND	ND	1.87	ND	ND	ND	2.07	ND	ND	ND	ND	ND	ND	ND	ND	ND
	2/24/99	ND	ND	2.22	ND	ND	ND	2.44	ND	ND	ND	ND	ND	ND	ND	ND	ND
	5/19/99	2.76	ND	6.86	ND	ND	ND	6.79	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-22																	
	8/4/98	ND	ND	26.3	ND	ND	ND	26.5	ND	ND	ND	ND	ND	ND	ND	ND	ND
	11/19/98	ND	ND	ND	ND	ND	ND	19.9	ND	ND	ND	ND	1.48	ND	ND	ND	ND
	5/20/99	4.07	ND	8.67	4.27	1.22	ND	12.7	ND	ND	ND	ND	ND	ND	ND	ND	ND
Duplicate	5/20/99	ND	ND	25.7	ND	6.46	ND	48.2	ND	ND	ND	ND	3.42	ND	ND	ND	ND

COP0014509

Table 3 (continued)
Groundwater Analytical Results - Polyaromatic Hydrocarbons

Willbridge Terminal
Portland, Oregon

Sample Identification	Date Sampled	Acenaphthene (ppb)	Acenaphthylene (ppb)	Fluorene (ppb)	Naphthalene (ppb)	Anthracene (ppb)	Fluoranthene (ppb)	Phenanthrene (ppb)	Benzo(a) anthracene (ppb)	Benzo(b) fluoranthene (ppb)	Benzo(k) fluoranthene (ppb)	Chrysene (ppb)	Pyrene (ppb)	Benzo(a) pyrene (ppb)	Dibenzo-(a,h)anthracene (ppb)	Indeno-(1,2,3,cd) pyrene (ppb)	Benzo-(ghi) perylene (ppb)
Number of Benzene Rings		2	2	2	2	3	3	3	4	4	4	4	4	5	5	5	6
Tosco																	
B-25																	
	11/19/98	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	5/19/99	0.144	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-35																	
	8/4/98	46.3	ND	138	ND	29.3	137	358	27.4	7.49	ND	23.1	77.3	3.49	ND	ND	ND
	11/20/98	ND	ND	84.3	ND	31.5	95.0	242	16.8	3.69	ND	13.5	59.9	2.60	ND	ND	ND
	2/23/99	38.1	ND	127	ND	32.7	120	279	24	6.43	8.25	21.3	78.5	5.68	ND	ND	ND
Duplicate	2/23/99	49.5	ND	168	ND	49	154	365	28	8.5	8.6	24.8	88.3	6.83	ND	ND	ND
	5/19/99	8.94	ND	19	6.93	3.84	11.2	27.6	2.64	ND	ND	ND	7.38	ND	ND	ND	ND
B-36																	
	8/5/98	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	11/18/98	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	2/23/99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	5/19/99	0.119	ND	0.189	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-37																	
	8/4/98	0.103	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.164	ND	ND	ND	ND
	11/19/98	ND	ND	ND	ND	ND	ND	0.112	ND	ND	ND	ND	ND	ND	ND	ND	ND

COP0014510

Table 3 (continued)
Groundwater Analytical Results - Polyaromatic Hydrocarbons

Willbridge Terminal
Portland, Oregon

Sample Identification	Date Sampled	Acenaphthene (ppb)	Acenaphthylene (ppb)	Fluorene (ppb)	Naphthalene (ppb)	Anthracene (ppb)	Fluoranthene (ppb)	Phenanthrene (ppb)	Benzo(a) anthracene (ppb)	Benzo(b) fluoranthene (ppb)	Benzo(k) fluoranthene (ppb)	Chrysene (ppb)	Pyrene (ppb)	Benzo(a) pyrene (ppb)	Dibenzo-(a,h)anthracene (ppb)	Indeno-(1,2,3,cd) pyrene (ppb)	Benzo-(ghi) perylene (ppb)
Number of Benzene Rings		2	2	2	2	3	3	3	4	4	4	4	4	5	5	5	6
Tosco																	
	2/24/99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	5/19/99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
P-1																	
	11/20/98	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
U-2																	
	11/16/98	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	2/24/99	0.401	ND	0.452	4.47	ND	ND	0.187	ND	ND	ND	ND	ND	ND	ND	ND	ND
	5/19/99	0.345	ND	0.897	6.55	ND	0.163	0.161	ND	ND	ND	ND	0.182	ND	ND	ND	ND
U-3																	
	8/5/98	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	11/16/98	ND	ND	ND	ND	ND	0.919	ND	0.588	1.64	ND	0.739	0.962	0.986	ND	0.664	0.905
	2/24/99	ND	ND	ND	8.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	5/19/99	0.102	ND	0.108	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
U-4																	
	11/19/98	ND	ND	9.29	ND	ND	ND	9.48	ND	ND	ND	ND	0.517	ND	ND	ND	ND
U-5																	
	8/4/98	0.857	ND	2.51	ND	0.110	ND	0.826	ND	ND	ND	ND	0.130	ND	ND	ND	ND
	11/19/98	ND	ND	ND	ND	ND	ND	1.59	ND	ND	ND	ND	0.238	ND	ND	ND	ND

Thursday, August 19, 1999

COP0014511

Table 3 (continued)
Groundwater Analytical Results - Polyaromatic Hydrocarbons

Willbridge Terminal
Portland, Oregon

Sample Identification	Date Sampled	Acenaphthene (ppb)	Acenaphthylene (ppb)	Fluorene (ppb)	Naphthalene (ppb)	Anthracene (ppb)	Fluoranthene (ppb)	Phenanthrene (ppb)	Benzo(a) anthracene (ppb)	Benzo(b) fluoranthene (ppb)	Benzo(k) fluoranthene (ppb)	Chrysene (ppb)	Pyrene (ppb)	Benzo(a) pyrene (ppb)	Dibenzo-(a,h)anthracene (ppb)	Indeno-(1,2,3,cd) pyrene (ppb)	Benzo-(ghi) perylene (ppb)
Number of Benzene Rings		2	2	2	2	3	3	3	4	4	4	4	4	5	5	5	6
Tosco																	
	2/24/99	ND	ND	2.45	ND	ND	ND	1.27	ND	ND	ND	ND	ND	ND	ND	ND	ND
	5/19/99	0.968	ND	2.09	ND	ND	ND	0.478	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:
ppb = Parts per billion
ND = Not detected
NS = Not sampled
NS/F = Not sampled, floating product present
PAH by EPA Method 8270 SIM since 1st Quarter 1997
PAH by EPA Method 8310 before 1st Quarter 1997 and for 3rd Quarter 1997

COP0014512

Table 4A
Groundwater Analytical Results - Total Metals

Willbridge Terminal
Portland, Oregon

Sample Identification	Date Sampled	Arsenic (ppb)	Barium (ppb)	Cadmium (ppb)	Chromium (ppb)	Lead (ppb)	Mercury (ppb)	Selenium (ppb)	Silver (ppb)
				Chevron					
B-7									
	11/24/98	25	172	ND	15.5	6.5	0.77	ND	ND
B-9									
	7/22/98	20.8	159	ND	17.6	8.40	ND	ND	ND
	12/11/98	5.4	59.8	ND	5.1	3.6	0.31	ND	ND
	2/25/99	21.3	74	1.8	5.5	13.3	ND	ND	ND
	5/21/99	3.9	48.1	2.1	2.1	1.9	ND	ND	ND
B-10									
	7/22/98	36.8	114	ND	7.70	3.70	ND	ND	ND
	11/24/98	33.5	294	ND	37	16.5	ND	ND	ND
	5/21/99	32.1	79.9	ND	3	3	ND	ND	ND
B-11									
	7/22/98	29.3	184	1.00	19.2	11.2	ND	ND	ND
	11/23/98	32.5	259	ND	34.5	19.5	0.25	ND	ND
	2/25/99	26.5	118	1.9	7.2	6.8	ND	ND	ND
	5/21/99	39.5	188	2.4	17.9	15	ND	ND	ND

COP0014513

Table 4A (continued)
Groundwater Analytical Results - Total Metals

Willbridge Terminal
Portland, Oregon

Sample Identification	Date Sampled	Arsenic (ppb)	Barium (ppb)	Cadmium (ppb)	Chromium (ppb)	Lead (ppb)	Mercury (ppb)	Selenium (ppb)	Silver (ppb)
					Chevron				
B-14									
	7/22/98	35.5	109	ND	5.90	5.80	ND	ND	ND
Duplicate	7/22/98	34.8	111	ND	6.00	7.80	0.320	ND	ND
	11/25/98	31.4	117	ND	8.8	7.2	ND	ND	ND
	2/25/99	33.1	84.5	ND	2.2	9.3	0.22	1	ND
	5/21/99	34.9	116	ND	7.1	10.8	ND	ND	ND
Duplicate	5/21/99	36	121	ND	7.9	11.3	ND	ND	ND
B-28									
	7/22/98	3.30	87.5	ND	5.10	4.10	ND	1.10	ND
	11/24/98	15	880	ND	17.5	96.5	0.3	ND	ND
	2/25/99	6.1	222	3	23.9	37.7	ND	2.19	ND
	5/20/99	9.8	198	ND	16.1	15.6	ND	ND	ND
B-30									
	7/22/98	20.7	199	12.8	11.3	19.7	ND	ND	ND
	11/24/98	14.7	126	4.6	10.4	11.3	0.28	ND	ND
Duplicate	11/24/98	14.7	126	4.6	10.4	11.3	0.28	ND	ND

COP0014514

Table 4A (continued)
Groundwater Analytical Results - Total Metals

Willbridge Terminal
Portland, Oregon

Sample Identification	Date Sampled	Arsenic (ppb)	Barium (ppb)	Cadmium (ppb)	Chromium (ppb)	Lead (ppb)	Mercury (ppb)	Selenium (ppb)	Silver (ppb)
				Chevron					
	2/25/99	19.7	85.6	54.8	5.1	33.1	ND	ND	ND
	5/21/99	14.2	59.9	7.7	ND	3.6	ND	ND	ND
CR-8									
	7/22/98	27.7	61.7	ND	ND	6.00	ND	ND	ND
	11/24/98	31.3	83.7	1.3	5.2	6	0.29	ND	ND
	2/25/99	13.2	53.4	1.4	1.9	4.1	ND	1	ND
	5/20/99	18.2	91.9	1.3	5.8	11.6	ND	ND	ND
Duplicate	5/20/99						ND		
CR-9									
	7/22/98	ND	23.4	ND	ND	ND	ND	ND	ND
	11/25/98	ND	17.0	ND	ND	ND	ND	ND	ND
Duplicate	11/25/98	ND	18.1	ND	ND	ND	ND	ND	ND
	2/25/99	ND	21.5	ND	ND	ND	ND	ND	ND
	5/20/99	ND	16.1	ND	ND	ND	ND	ND	ND
Duplicate	5/20/99	ND	16.4	ND	ND	ND	ND	ND	ND

COP0014515

Table 4A (continued)
Groundwater Analytical Results - Total Metals

Willbridge Terminal
Portland, Oregon

Sample Identification	Date Sampled	Arsenic (ppb)	Barium (ppb)	Cadmium (ppb)	Chromium (ppb)	Lead (ppb)	Mercury (ppb)	Selenium (ppb)	Silver (ppb)
				Chevron					
CR-11	7/22/98	38.8	87.9	2.80	ND	4.10	0.260	1.20	ND
EX-1	11/25/98	22.6	50.8	ND	ND	1.5	0.39	ND	ND

Notes:
ppb = Parts per billion
ND = Not detected
NS = Not sampled
NS/F = Not sampled, floating product present
Total Metals by EPA 6000/7000 Series Methods

COP0014516

Table 4A (continued)
Groundwater Analytical Results - Total Metals

Willbridge Terminal
Portland, Oregon

Sample Identification	Date Sampled	Arsenic (ppb)	Barium (ppb)	Cadmium (ppb)	Chromium (ppb)	Lead (ppb)	Mercury (ppb)	Selenium (ppb)	Silver (ppb)
					GATX				
MW-4									
	12/9/98	32.6	22	ND	ND	ND	0.5	ND	ND
MW-8									
	7/31/98	6.80	15.6	ND	ND	ND	ND	ND	ND
	12/10/98	9	16.2	ND	ND	ND	ND	ND	ND
	3/2/99	2.2	27.5	ND	ND	ND	ND	ND	ND
	5/27/99	14.9	115	3.6	1.5	2.4	ND	ND	ND
MW-10									
	7/31/98	9.40	31.4	ND	ND	ND	ND	ND	ND
	12/9/98	21.8	78	ND	ND	ND	0.28	ND	ND
	3/2/99	7.3	48.8	ND	1.1	ND	ND	ND	ND
	5/27/99	21.7	117	ND	3.1	3.7	ND	ND	ND
MW-11									
	7/31/98	52.6	77.9	ND	2.00	23.3	0.400	ND	ND
	12/9/98	62.9	52.6	ND	1.3	39.1	0.63	1.4	ND
	3/2/99	49.1	63.5	ND	2.1	31.9	ND	1.3	ND

COP0014517

Table 4A (continued)
Groundwater Analytical Results - Total Metals

Willbridge Terminal
Portland, Oregon

Sample Identification	Date Sampled	Arsenic (ppb)	Barium (ppb)	Cadmium (ppb)	Chromium (ppb)	Lead (ppb)	Mercury (ppb)	Selenium (ppb)	Silver (ppb)
					GATX				
	5/27/99	55.3	133	ND	6.2	38.1	ND	ND	ND
MW-13									
	7/31/98	2.40	56.5	ND	2.60	2.70	ND	ND	ND
	12/9/98	1.1	35.7	ND	1.1	ND	ND	ND	ND
	3/2/99	2.6	74.3	ND	3.9	3.8	ND	ND	ND
Duplicate	3/2/99	2.4	73.3	ND	3.8	3.9	ND	ND	ND
	5/27/99	1.9	51.9	ND	2.4	2.2	ND	ND	ND
MW-15									
	7/31/98	1.60	86.9	ND	3.10	4.10	ND	ND	ND
	12/10/98	1	53.7	ND	ND	ND	ND	ND	ND
	3/2/99	ND	48	ND	ND	ND	ND	ND	ND
	5/28/99	ND	55.8	ND	ND	ND	ND	ND	ND
MW-21									
	7/31/98	3.70	200	1.30	ND	1.80	ND	ND	ND
Duplicate	7/31/98	4.30	224	2.40	ND	3.70	ND	ND	ND
	12/8/98	3.9	159	1.5	ND	1.4	ND	ND	ND

COP0014518

Table 4A (continued)
Groundwater Analytical Results - Total Metals

Willbridge Terminal
Portland, Oregon

Sample Identification	Date Sampled	Arsenic (ppb)	Barium (ppb)	Cadmium (ppb)	Chromium (ppb)	Lead (ppb)	Mercury (ppb)	Selenium (ppb)	Silver (ppb)
					GATX				
	3/1/99	1.7	142	ND	ND	ND	ND	ND	1.8
	5/27/99	5.8	222	2.3	1.2	4.4	ND	ND	ND
MW-22									
	7/28/98	93.5	217	ND	2.20	7.80	ND	ND	ND
	12/9/98	105	237	ND	1.6	7.1	ND	ND	ND
Duplicate	12/9/98	104	237	ND	1.3	7.2	ND	ND	ND
	5/27/99	102	174	ND	1.4	11.8	ND	ND	ND
MW-23									
	12/9/98	9	26	ND	1	3.2	ND	ND	ND
	3/1/99	2.6	11.1	ND	1	1.6	ND	ND	ND
Duplicate	3/1/99	1.2	9.9	ND	ND	1.3	ND	ND	ND
MW-26									
	7/28/98	43.5	54.6	ND	ND	ND	ND	ND	ND
	12/8/98	52.5	73.7	ND	ND	ND	ND	ND	ND
	5/28/99	38.2	54.1	1	ND	2	ND	ND	ND
Duplicate	5/28/99	42.9	60.5	1	ND	2		ND	ND

COP0014519

Table 4A (continued)
Groundwater Analytical Results - Total Metals

Willbridge Terminal
Portland, Oregon

Sample Identification	Date Sampled	Arsenic (ppb)	Barium (ppb)	Cadmium (ppb)	Chromium (ppb)	Lead (ppb)	Mercury (ppb)	Selenium (ppb)	Silver (ppb)
					GATX				
MW-28									
	7/28/98	1.40	23.0	ND	ND	1.20	ND	ND	ND
MW-30									
	12/8/98	8	15.4	ND	ND	ND	ND	ND	ND
MW-31									
	7/28/98	16.7	22.6	ND	ND	ND	ND	ND	ND
	12/8/98	6.4	18.9	ND	ND	ND	ND	ND	ND
	3/1/99	5.1	22.8	ND	ND	ND	ND	ND	ND
	5/27/99	6.8	22.7	ND	ND	ND	ND	ND	ND
MW-32									
	7/28/98	ND	15.9	ND	ND	ND	ND	ND	ND
	12/8/98	ND	6.8	ND	2.8	ND	ND	ND	ND
	3/1/99	ND	3.9	ND	3.8	ND	ND	ND	ND
Duplicate	3/1/99	ND	4.5	ND	3.3	ND	ND	ND	ND
	5/27/99	ND	12.1	ND	1.4	1.9	ND	ND	ND
Duplicate	5/27/99	ND	11	ND	1.2	ND	ND	ND	ND

COP0014520

Table 4A (continued)
Groundwater Analytical Results - Total Metals

Willbridge Terminal
Portland, Oregon

Sample Identification	Date Sampled	Arsenic (ppb)	Barium (ppb)	Cadmium (ppb)	Chromium (ppb)	Lead (ppb)	Mercury (ppb)	Selenium (ppb)	Silver (ppb)
					GATX				
MW-33									
	7/28/98	4.60	103	ND	ND	ND	ND	ND	ND
Duplicate	7/28/98	5.00	116	ND	ND	ND	ND	ND	ND
	12/11/98	11	124	ND	ND	ND	0.33	ND	ND
Duplicate	12/11/98	10	114	ND	ND	ND	0.38	ND	ND
	3/2/99	7.8	74.3	ND	ND	ND	ND	ND	ND
	5/28/99	3.9	32.6	ND	7.7	ND	ND	ND	ND
MW-36									
	7/28/98	1.40	23.2	ND	ND	ND	ND	ND	ND
	12/10/98	13.4	36.9	ND	ND	ND	0.79	ND	ND
Duplicate	12/10/98	13.4	36.9	ND	ND	ND	0.79	ND	ND
	3/2/99	1.3	23.6	ND	ND	ND	ND	ND	ND
	5/27/99	11.7	50.8	ND	ND	ND	ND	ND	ND
MW-37									
	7/28/98	24.4	42.3	ND	ND	ND	ND	ND	ND
	12/10/98	25.6	36.2	ND	ND	ND	0.73	ND	ND

COP0014521

Table 4A (continued)
Groundwater Analytical Results - Total Metals

Willbridge Terminal
Portland, Oregon

Sample Identification	Date Sampled	Arsenic (ppb)	Barium (ppb)	Cadmium (ppb)	Chromium (ppb)	Lead (ppb)	Mercury (ppb)	Selenium (ppb)	Silver (ppb)
					GATX				
	3/1/99	34.8	58.1	ND	1.5	1.7	ND	ND	ND
	5/26/99	22.1	46.7	ND	ND	1.4	ND	ND	ND
Duplicate	5/26/99	23.1	49.7	ND	ND	ND	ND	ND	ND
MW-39									
	12/10/98	23.6	40.5	ND	ND	ND	0.56	ND	ND
MW-40									
	7/28/98	20.6	162	ND	12.2	14.7	ND	ND	ND
	12/10/98	28.3	60.4	ND	1.2	1	0.5	ND	ND
	3/2/99	3.7	17.8	ND	ND	ND	ND	ND	ND
	5/26/99	73.1	225	ND	9	15.4	ND	ND	ND

Notes:
ppb = Parts per billion
ND = Not detected
NS = Not sampled
NS/F = Not sampled, floating product present
Total Metals by EPA 6000/7000 Series Methods

COP0014522

Table 4A (continued)
Groundwater Analytical Results - Total Metals

Willbridge Terminal
Portland, Oregon

Sample Identification	Date Sampled	Arsenic (ppb)	Barium (ppb)	Cadmium (ppb)	Chromium (ppb)	Lead (ppb)	Mercury (ppb)	Selenium (ppb)	Silver (ppb)
					Tosco				
B-6									
	11/18/98	28.1	139	ND	11	26.3	ND	ND	ND
B-17									
	8/4/98	60.7	410	ND	49.5	64.5	ND	ND	ND
Duplicate	8/4/98	63.2	509	ND	68.9	84.2	ND	1.10	ND
	2/23/99	38.7	144	ND	8.2	14.6	ND	ND	ND
	5/19/99	61.5	112	ND	1.1	7.9	ND	ND	ND
B-18									
	11/19/98	28.0	414	ND	71.3	49.2	0.67	1.6	ND
Duplicate	11/19/98	27.2	391	ND	60.8	44.8	0.31	1.2	ND
	2/24/99	17.5	142	ND	9.5	10	ND	ND	ND
	5/19/99	9	145	ND	5.5	ND	ND	ND	ND
B-22									
	8/4/98	28.3	128	ND	9.50	6.40	ND	ND	ND
	11/19/98	29.4	79	ND	4.8	4.6	ND	ND	ND
	5/20/99	20.6	76.2	ND	ND	ND	ND	ND	ND

COP0014523

Table 4A (continued)
Groundwater Analytical Results - Total Metals

Willbridge Terminal
Portland, Oregon

Sample Identification	Date Sampled	Arsenic (ppb)	Barium (ppb)	Cadmium (ppb)	Chromium (ppb)	Lead (ppb)	Mercury (ppb)	Selenium (ppb)	Silver (ppb)
					Tosco				
Duplicate	5/20/99	24.8	81.8	ND	2.7	4.2	ND	ND	ND
B-25									
	11/19/98	39.2	263	ND	40.9	29.2	0.29	1	ND
	5/19/99	135	76.3	ND	ND	ND	ND	ND	ND
B-35									
	8/4/98	66.0	348	ND	51.3	82.7	ND	1.00	ND
	11/20/98	1.1	77.7	ND	12.1	2.8	ND	ND	ND
	2/23/99	43	95.8	ND	2.9	6.4	ND	ND	1.6
Duplicate	2/23/99	56.8	113	ND	3.7	11.9	ND	ND	ND
	5/19/99	46.6	121	ND	3	8.7	ND	ND	ND
B-36									
	8/5/98	7.70	117	ND	6.20	4.40	ND	ND	ND
	11/18/98	12.5	197	ND	17.1	5.5	ND	ND	ND
	2/23/99	ND	34.9	ND	2.5	ND	ND	ND	ND
	5/19/99	4.8	48.4	ND	1.8	ND	ND	ND	ND

COP0014524

Table 4A (continued)
Groundwater Analytical Results - Total Metals

Willbridge Terminal
Portland, Oregon

Sample Identification	Date Sampled	Arsenic (ppb)	Barium (ppb)	Cadmium (ppb)	Chromium (ppb)	Lead (ppb)	Mercury (ppb)	Selenium (ppb)	Silver (ppb)
					Tosco				
B-37									
	8/4/98	220	446	ND	54.0	23.0	ND	1.70	ND
	11/19/98	228	43.3	ND	ND	ND	ND	ND	ND
	2/24/99	260	83.6	ND	3.6	2	ND	ND	ND
	5/19/99	237	61.3	ND	ND	ND	ND	ND	ND
P-1									
	11/20/98	ND	69	ND	10	ND	0.35	ND	ND
U-2									
	11/16/98	6.3	34.2	ND	ND	1.1	ND	ND	ND
	2/24/99	19.1	43.2	ND	2.4	2.1	ND	ND	ND
	5/19/99	23	30.7	ND	ND	ND	ND	ND	ND
U-3									
	8/5/98	35.6	102	ND	22.8	13.4	ND	1.10	ND
	11/16/98	40.3	187	ND	62.2	95.3	ND	1.7	ND
	2/24/99	7.2	37.6	ND	5.1	11.6	ND	ND	ND
	5/19/99	36.7	156	ND	12.5	25.5	ND	ND	ND

COP0014525

Table 4A (continued)
Groundwater Analytical Results - Total Metals

Willbridge Terminal
Portland, Oregon

Sample Identification	Date Sampled	Arsenic (ppb)	Barium (ppb)	Cadmium (ppb)	Chromium (ppb)	Lead (ppb)	Mercury (ppb)	Selenium (ppb)	Silver (ppb)
					Tosco				
U-4									
	11/19/98	21	95.9	ND	ND	ND	0.25	1	ND
U-5									
	8/4/98	25.7	483	3.80	59.1	105	ND	1.80	ND
	11/19/98	17.4	143	ND	8.5	20	0.31	ND	ND
	2/24/99	5.2	76.4	ND	1.5	1.7	ND	ND	ND
	5/19/99	6	121	ND	6.3	8.2	ND	ND	ND

Notes:
ppb = Parts per billion
ND = Not detected
NS = Not sampled
NS/F = Not sampled, floating product present
Total Metals by EPA 6000/7000 Series Methods

COP0014526

Table 4B
Groundwater Analytical Results - Dissolved Metals

Willbridge Terminal
Portland, Oregon

Sample Identification	Date Sampled	Arsenic (ppb)	Barium (ppb)	Cadmium (ppb)	Chromium (ppb)	Lead (ppb)	Mercury (ppb)	Selenium (ppb)	Silver (ppb)
					Chevron				
B-9									
	12/11/98	1.5	23.2	ND	ND	ND	ND	ND	ND
B-14									
	7/22/98	32.3	64.9	ND	ND	ND	ND	ND	ND
Duplicate	7/22/98	31.9	64.6	ND	ND	ND	ND	ND	ND
	11/25/98	30.7	65.2	ND	ND	1.1	0.23	ND	ND
	2/25/99	30.1	61.9	ND	ND	4.2	ND	ND	ND
	5/21/99	30.2	62.5	ND	ND	2.6	ND	ND	ND
Duplicate	5/21/99	31.9	65.7	ND	ND	2.3	ND	ND	ND
B-30									
	7/22/98	16.0	65.5	ND	ND	ND	ND	ND	ND
	11/24/98	13.8	56	ND	ND	ND	0.44	ND	ND
Duplicate	11/24/98	13.8	56	ND	ND	ND	0.44	ND	ND
	2/25/99	18.7	41.9	ND	ND	ND	ND	ND	ND
Duplicate	2/25/99	19	42.7	ND	ND	ND	ND	ND	ND
	5/21/99	18.7	52.2	ND	ND	ND	ND	ND	ND

COP0014527

Table 4B (continued)
Groundwater Analytical Results - Dissolved Metals

Willbridge Terminal
Portland, Oregon

Sample Identification	Date Sampled	Arsenic (ppb)	Barium (ppb)	Cadmium (ppb)	Chromium (ppb)	Lead (ppb)	Mercury (ppb)	Selenium (ppb)	Silver (ppb)
				Chevron					
CR-9									
	7/22/98	ND	20.7	ND	ND	ND	ND	ND	ND
	11/25/98	ND	12.8	ND	ND	ND	0.23	ND	ND
Duplicate	11/25/98	ND	12.8	ND	ND	ND	0.23	ND	ND
	2/25/99	ND	13	ND	ND	ND	ND	ND	ND
	5/20/99	ND	16.5	ND	ND	ND	ND	ND	ND
Duplicate	5/20/99	ND	20.3	ND	ND	ND	ND	ND	ND
EX-1									
	11/25/98	19.3	37.3	ND	ND	ND	0.41	ND	ND

Notes:
ppb = Parts per billion
ND = Not detected
NS = Not sampled
NS/F = Not sampled, floating product present
Total Metals by EPA 6000/7000 Series Methods

COP0014528

Table 4B (continued)
Groundwater Analytical Results - Dissolved Metals

Willbridge Terminal
Portland, Oregon

Sample Identification	Date Sampled	Arsenic (ppb)	Barium (ppb)	Cadmium (ppb)	Chromium (ppb)	Lead (ppb)	Mercury (ppb)	Selenium (ppb)	Silver (ppb)
					GATX				
MW-10									
	12/9/98	21.6	74.1	ND	ND	ND	0.36	ND	ND
Duplicate	12/9/98	22	72	ND	ND	ND	0.35	ND	ND
MW-13									
	7/31/98	ND	29.1	ND	ND	ND	ND	ND	ND
	12/9/98	ND	26.1	ND	ND	ND	0.42	ND	ND
	3/2/99	ND	27.7	ND	ND	ND	ND	ND	ND
	5/27/99	ND	26.9	ND	ND	ND	ND	ND	ND
MW-21									
	7/31/98	3.00	208	ND	ND	ND	ND	ND	ND
Duplicate	7/31/98	3.00	215	ND	ND	ND	ND	ND	ND
	12/8/98	2.2	122	ND	ND	ND	0.38	1.3	ND
	3/1/99	1.2	142	ND	ND	ND	ND	ND	1.1
	5/27/99	3	161	ND	ND	ND	0.376	1.5	ND
MW-33									
	7/28/98	1.70	41.9	ND	ND	ND	ND	ND	ND

COP0014529

Table 4B (continued)
Groundwater Analytical Results - Dissolved Metals

Willbridge Terminal
Portland, Oregon

Sample Identification	Date Sampled	Arsenic (ppb)	Barium (ppb)	Cadmium (ppb)	Chromium (ppb)	Lead (ppb)	Mercury (ppb)	Selenium (ppb)	Silver (ppb)
					GATX				
Duplicate	7/28/98	1.90	40.0	ND	ND	ND	ND	ND	ND
	12/11/98	1.4	37.4	ND	ND	ND	ND	ND	ND
	5/28/99	4	23.5	ND	ND	ND	ND	ND	ND
Duplicate	5/28/99	3.9	23.6	ND	ND	ND		ND	ND
MW-37									
	12/10/98	23.3	31.8	ND	ND	ND	0.61	ND	ND
MW-39									
	12/10/98	22	32.5	ND	ND	ND	0.4	ND	ND

Notes:
ppb = Parts per billion
ND = Not detected
NS = Not sampled
NS/F = Not sampled, floating product present
Total Metals by EPA 6000/7000 Series Methods

COP0014530

Table 4B (continued)
Groundwater Analytical Results - Dissolved Metals

Willbridge Terminal
Portland, Oregon

Sample Identification	Date Sampled	Arsenic (ppb)	Barium (ppb)	Cadmium (ppb)	Chromium (ppb)	Lead (ppb)	Mercury (ppb)	Selenium (ppb)	Silver (ppb)
				Tosco					
B-17									
	8/4/98	56.5	99.7	ND	ND	2.90	ND	ND	ND
Duplicate	8/4/98	56.2	99.1	ND	ND	2.90	ND	ND	ND
	2/23/99	42.4	86.9	ND	ND	3.5	0.255	ND	ND
	5/19/99	50.3	98.5	ND	ND	3.4	ND	ND	ND
U-3									
	8/5/98	35.4	80.4	ND	ND	ND	ND	ND	ND
	11/16/98	24.9	88	ND	ND	ND	0.4	1	ND
	2/24/99	5.6	25.2	ND	ND	ND	ND	ND	ND
	5/19/99	30.6	122	ND	ND	1.1	ND	ND	ND

Notes:
ppb = Parts per billion
ND = Not detected
NS = Not sampled
NS/F = Not sampled, floating product present
Total Metals by EPA 6000/7000 Series Methods

COP0014531

Table 5
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
			Chevron				
B-7	33.96	3/24/95	18.07	0.00	18.07	15.89	NA
		4/24/95	18.61	0.00	18.61	15.35	NA
		5/22/95	18.56	0.00	18.56	15.40	NA
		6/19/95	18.77	0.00	18.77	15.19	NA
		7/24/95	19.74	0.00	19.74	14.22	NA
		8/28/95	20.03	0.00	20.03	13.93	NA
		9/25/95	19.79	0.01	19.80	14.15	NA
		10/23/95	19.56	0.01	19.57	14.38	NA
		11/27/95	18.61	0.00	18.61	15.35	NA
		12/29/95	17.74	0.00	17.74	16.22	NA
		1/22/96	15.82	0.00	15.82	18.14	NA
		2/26/96	14.09	0.04	14.13	19.80	NA
		3/25/96	17.38	0.01	17.39	16.56	NA
		4/22/96	17.07	0.01	17.08	16.87	NA
		5/28/96	16.46	0.00	16.46	17.50	NA
		6/24/96	17.96	0.00	17.96	16.00	NA
		7/22/96	18.79	0.00	18.79	15.17	NA
		8/26/96	19.18	0.00	19.18	14.78	NA
		9/23/96	19.22	0.00	19.22	14.74	NA
		10/28/96	19.10	0.00	19.10	14.86	NA
		11/25/96	17.95	0.00	17.95	16.01	NA
		1/29/97	NP		17.24	16.72	--
		4/21/97	NP		17.45	16.51	--
		7/28/97	18.60	0.10	18.70	15.18	1.0
		10/15/97	NP		18.96	15.00	--
		1/19/98	NP		17.85	16.11	--
		4/20/98	NP		18.69	15.27	--
		7/21/98	19.07	0.01	19.08	14.87	0.1
		11/18/98	NP		19.39	14.57	--
		2/25/99	16.81	0.01	16.82	17.13	
		5/18/99	NP		18.08	15.88	0.1
Summary for Well B-7 (31 detail records)					**SPH Recovered to Date:**		**1.20**
B-8	35.90	1/29/97	NP		15.99	19.91	--

Wednesday, August 18, 1999

COP0014532

Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
			Chevron				
B-8	35.90	4/21/97	NP		16.67	19.23	--
		7/28/97	NP		17.30	18.60	--
		10/15/97	NP		17.73	18.17	--
		1/19/98	NP		16.67	19.23	--
		4/20/98	NP		17.30	18.60	--
		7/21/98	NP		17.85	18.05	--
	34.14	11/18/98	NP		18.25	15.89	--
		2/25/99	NP		15.94	18.20	
		5/18/99	NP		16.95	17.19	
Summary for Well B-8 (10 detail records)					**SPH Recovered to Date:**		
B-9	33.95	3/24/95	NA		16.01	17.94	NA
		4/24/95	NA		16.42	17.53	NA
		5/22/95	NA		16.54	17.41	NA
		6/19/95	NA		16.59	17.36	NA
		7/24/95	NA		17.45	16.50	NA
		8/28/95	NA		17.85	16.10	NA
		9/25/95	NA		17.85	16.10	NA
		10/23/95	NA		17.45	16.50	NA
		11/27/95	NA		16.51	17.44	NA
		12/29/95	NA		15.86	18.09	NA
		1/22/96	NA		15.31	18.64	NA
		1/29/96	NP		15.31	18.64	--
		2/26/96	NA		13.20	20.75	NA
		3/25/96	NA		15.49	18.46	NA
		4/22/96	NA		15.20	18.75	NA
		5/28/96	NA		15.47	18.48	NA
		6/24/96	NA		16.09	17.86	NA
		7/22/96	NA		16.61	17.34	NA
		8/26/96	NA		17.26	16.69	NA
		9/23/96	NA		17.14	16.81	NA
		10/28/96	NA		17.21	16.74	NA
		11/25/96	NA		16.35	17.60	NA
		1/29/97	NP		15.31	18.64	--

COP0014533

Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
			Chevron				
B-9	33.95	4/21/97	NP		15.82	18.13	--
		7/28/97	NP		16.60	17.35	--
		10/15/97	NP		17.21	16.74	--
		1/19/98	NP		16.11	17.84	--
		4/20/98	NP		16.70	17.25	--
		7/21/98	NP		17.14	16.81	--
	33.90	11/18/98	NP		17.65	16.25	--
		2/25/99	NP		15.23	18.67	
		5/20/99	NP		16.29	17.61	
Summary for Well B-9 (32 detail records)						SPH Recovered to Date:	
B-10	34.74	3/24/95	15.08	0.00	15.08	19.66	NA
		4/24/95	15.41	0.00	15.41	19.33	NA
		5/22/95	15.68	0.00	15.68	19.06	NA
		6/19/95	15.96	0.00	15.96	18.78	NA
		7/24/95	16.26	0.00	16.26	18.48	NA
		8/28/95	16.26	0.32	16.58	17.89	NA
		9/25/95	16.84	0.00	16.84	17.90	NA
		10/23/95	16.70	0.00	16.70	18.04	NA
		11/27/95	15.99	0.00	15.99	18.75	NA
		12/29/95	15.01	0.00	15.01	19.73	NA
		1/22/96	14.67	0.00	14.67	20.07	NA
		2/26/96	12.18	0.00	12.18	22.56	NA
		3/25/96	13.82	0.00	13.82	20.92	NA
		4/22/96	14.66	0.00	14.66	20.08	NA
		5/28/96	14.59	0.00	14.59	20.15	NA
		6/24/96	15.03	0.00	15.03	19.71	NA
		7/22/96	15.64	0.00	15.64	19.10	NA
		8/26/96	16.12	0.00	16.12	18.62	NA
		9/23/96	16.21	0.00	16.21	18.53	NA
		10/28/96	16.18	0.00	16.18	18.56	NA
		11/25/96	15.35	0.00	15.35	19.39	NA
		1/29/97	NP		13.80	20.94	--
		4/21/97	NP		14.85	19.89	--

COP0014534

Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				Chevron			
B-10	34.74	7/28/97	NP		15.43	19.31	--
		10/15/97	NP		16.12	18.62	--
		1/19/98	NP		15.07	19.67	--
		4/20/98	NP		15.38	19.36	--
		7/21/98	NP		16.04	18.70	--
	34.76	11/18/98	NP		17.59	17.17	--
		2/25/99	NP		14.94	19.82	
		5/20/99	NP		15.14	19.62	0.1
Summary for Well B-10 (31 detail records)					**SPH Recovered to Date:**		**0.10**
B-11	34.95	3/24/95	NA		15.22	19.73	NA
		7/24/95	NA		16.08	18.87	NA
		10/23/95	NA		16.64	18.31	NA
		1/22/96	NA		15.73	19.22	NA
		4/22/96	NA		14.44	20.51	NA
		5/28/96	NA		14.46	20.49	NA
		7/22/96	NA		15.40	19.55	NA
		8/26/96	NA		15.91	19.04	NA
		9/23/96	NA		16.08	18.87	NA
		10/28/96	NA		16.14	18.81	NA
		11/25/96	NA		15.53	19.42	NA
		1/29/97	NP		15.65	19.30	--
		4/21/97	NP		14.67	20.28	--
		7/28/97	NP		15.33	19.62	--
		10/15/97	NP		16.05	18.90	--
		1/19/98	NP		15.15	19.80	--
		4/20/98	NP		15.16	19.79	--
		7/21/98	NP		15.80	19.15	--
	34.96	11/18/98	NP		16.56	18.40	--
		2/25/99	NP		13.81	21.15	
		5/20/99	NP		14.95	20.01	
Summary for Well B-11 (21 detail records)					**SPH Recovered to Date:**		
B-12	35.11	8/26/96	NA		16.37	18.74	NA
		9/23/96	NA		16.53	18.58	NA

COP0014535

Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
			Chevron				
B-12	35.11	11/25/96	NA		16.07	19.04	NA
		1/29/97	NP		14.18	20.93	--
		4/21/97	NP		15.20	19.91	--
		10/15/97	NP		16.53	18.58	--
		1/19/98	NP		15.70	19.41	--
		4/20/98	NP		15.68	19.43	--
		7/21/98	NP		16.28	18.83	--
	35.14	11/18/98	NP		16.95	18.19	--
		2/25/99	NP		14.37	20.77	
		5/20/99	NP		15.41	19.73	
Summary for Well B-12 (12 detail records)					**SPH Recovered to Date:**		
B-13	34.76	8/26/96	NA		16.36	18.40	NA
		9/23/96	NA		16.51	18.25	NA
		10/28/96	NA		16.59	18.17	NA
		11/25/96	NA		16.14	18.62	NA
		1/29/97	NP		14.35	20.41	--
		4/21/97	NP		15.23	19.53	--
		7/28/97	NP		15.85	18.91	0.00
		10/15/97	NP		16.50	18.26	--
		1/19/98	NP		15.80	18.96	--
		4/20/98	NP		15.72	19.04	--
		7/21/98	NP		16.22	18.54	--
		11/18/98	NP		16.89	17.87	--
		2/25/99	NP		14.54	20.22	
		5/20/99	NP		15.47	19.29	
Summary for Well B-13 (14 detail records)					**SPH Recovered to Date:**		**0.00**
B-14	36.59	4/24/95	NA		17.59	19.00	NA
		7/24/95	NA		18.35	18.24	NA
		10/23/95	NA		18.84	17.75	NA
		1/22/96	NA		17.21	19.38	NA
		4/22/96	NA		15.80	20.79	NA
		5/28/96	NA		16.82	19.77	NA
		7/22/96	NA		17.70	18.89	NA

COP0014536

Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				Chevron			
B-14	36.59	8/26/96	NA		18.15	18.44	NA
		9/23/96	NA		18.31	18.28	NA
		10/28/96	NA		18.40	18.19	NA
		11/25/96	NA		17.94	18.65	NA
		1/29/97	NP		16.05	20.54	--
		4/21/97	NP		17.03	19.56	--
		7/28/97	NP		17.63	18.96	--
		10/15/97	NP		18.31	18.28	--
		1/19/98	NP		17.61	18.98	--
		4/20/98	NP		17.52	19.07	--
		7/21/98	NP		18.06	18.53	--
		11/18/98	NP		18.70	17.89	--
		2/25/99	NP		16.33	20.26	
		5/20/99	NP		17.27	19.32	
Summary for Well B-14 (21 detail records)					**SPH Recovered to Date:**		
B-15	35.55	8/26/96	NA		17.32	18.23	NA
		9/23/96	NA		17.47	18.08	NA
		10/28/96	NA		17.56	17.99	NA
		11/25/96	NA		17.08	18.47	NA
		1/29/97	NP		15.26	20.29	--
		4/21/97	NP		16.20	19.35	--
		7/28/97	NP		16.77	18.78	--
		10/15/97	NP		17.44	18.11	--
		1/19/98	NP		16.72	18.83	--
		4/20/98	NP		16.72	18.83	--
		7/21/98	NP		17.25	18.30	--
		11/18/98	NP		17.85	17.70	--
		2/25/99	NP		15.52	20.03	
		5/20/99	NP		16.44	19.11	
Summary for Well B-15 (14 detail records)					**SPH Recovered to Date:**		
B-19	34.71	3/24/95	NA		16.01	18.70	NA
		4/24/95	NA		16.21	18.50	NA
		5/22/95	NA		16.45	18.26	NA

COP0014537

Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
			Chevron				
B-19	34.71	6/19/95	NA		16.70	18.01	NA
		7/24/95	NA		17.09	17.62	NA
		8/28/95	NA		17.37	17.34	NA
		9/25/95	NA		17.56	17.15	NA
		10/23/95	NA		17.45	17.26	NA
		11/27/95	NA		16.86	17.85	NA
		12/29/95	NA		15.75	18.96	NA
		1/22/96	NA		15.54	19.17	NA
		2/26/96	NA		12.95	21.76	NA
		3/25/96	NA		14.80	19.91	NA
		4/22/96	NA		15.39	19.32	NA
		5/28/96	NA		15.31	19.40	NA
		6/24/96	NA		15.79	18.92	NA
		7/22/96	NA		16.35	18.36	NA
		8/26/96	NA		16.84	17.87	NA
		9/23/96	NA		16.97	17.74	NA
		10/28/96	NA		17.03	17.68	NA
		11/25/96	NA		16.43	18.28	NA
		1/29/97	NP		14.81	19.90	--
		4/21/97	NP		15.67	19.04	--
		7/28/97	NP		16.18	18.53	0.00
		10/15/97	NP		16.90	17.81	--
		1/19/98	NP		16.05	18.66	--
		4/20/98	NP		16.75	17.96	--
		7/21/98	NP		16.78	17.93	--
		11/18/98	NP		17.33	17.38	--
		2/25/99	NP		14.93	19.78	
	34.17	5/20/99	NP		15.93	18.24	
Summary for Well	B-19 (31 detail records)				SPH Recovered to Date:		0.00
B-20	33.40	3/24/95	16.55	0.00	16.55	16.85	NA
		4/24/95	16.93	0.00	16.93	16.47	NA
		5/22/95	16.96	0.00	16.96	16.44	NA
		6/19/95	17.20	0.00	17.20	16.20	NA

COP0014538

Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				Chevron			
B-20	33.40	7/24/95	17.95	0.19	18.14	15.10	NA
		8/28/95	18.30	0.37	18.67	14.42	NA
		9/25/95	18.26	0.01	18.27	15.12	NA
		10/23/95	18.04	0.00	18.04	15.36	NA
		11/27/95	17.11	0.01	17.12	16.27	NA
		12/29/95	16.17	0.01	16.18	17.21	NA
		1/22/96	15.20	0.00	15.20	18.20	NA
		2/26/96	13.55	0.01	13.56	19.83	NA
		3/25/96	15.99	0.00	15.99	17.41	NA
		4/22/96	15.88	0.00	15.88	17.52	NA
		5/28/96	15.59	0.00	15.59	17.81	NA
		6/24/96	16.29	0.00	16.29	17.11	NA
		7/22/96	17.13	0.00	17.13	16.27	NA
		8/26/96	17.62	0.00	17.62	15.78	NA
		9/23/96	17.59	1.05	18.64	13.87	NA
		10/28/96	17.50	0.43	17.93	15.10	NA
		11/25/96	16.57	0.05	16.62	16.74	NA
		1/29/97	NP		15.93	17.47	--
		4/21/97	NP		16.19	17.21	--
		7/28/97	16.89	0.02	16.91	16.47	1.0
		10/15/97	17.32	0.07	17.39	15.95	0.8
		1/19/98	NP		16.31	17.09	--
		4/20/98	NP		16.68	16.72	0.1
		7/21/98	NP		17.80	15.60	--
	33.32	11/18/98	NP		17.86	15.46	--
		2/25/99	NP		16.69	16.63	
		5/20/99	NP		16.30	17.02	0.1
Summary for Well B-20 (31 detail records)						**SPH Recovered to Date:**	**2.00**
B-21	34.79	3/24/95	NA		16.23	18.56	NA
		4/24/95	NA		16.42	18.37	NA
		5/22/95	NA		16.63	18.16	NA
		6/19/95	NA		16.83	17.96	NA
		7/24/95	NA		17.18	17.61	NA

COP0014539

Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
			Chevron				
B-21	34.79	8/28/95	NA		17.43	17.36	NA
		9/25/95	NA		17.58	17.21	NA
		10/23/95	NA		17.53	17.26	NA
		11/27/95	NA		17.09	17.70	NA
		12/29/95	NA		16.07	18.72	NA
		1/22/96	NA		15.91	18.88	NA
		2/26/96	NA		13.30	21.49	NA
		3/25/96	NA		15.08	19.71	NA
		4/22/96	NA		15.77	19.02	NA
		5/28/96	NA		15.61	19.18	NA
		6/24/96	NA		16.01	18.78	NA
		7/22/96	NA		16.53	18.26	NA
		8/26/96	NA		16.95	17.84	NA
		9/23/96	NA		17.11	17.68	NA
		10/28/96	NA		17.20	17.59	NA
		11/25/96	NA		16.71	18.08	NA
		1/29/97	NP		15.23	19.56	--
		4/21/97	NP		15.99	18.80	--
		7/28/97	NP		16.45	18.34	--
		10/15/97	NP		17.10	17.69	--
		1/19/98	NP		16.33	18.46	--
		4/20/98	NP		16.48	18.31	--
		7/21/98	NP		16.95	17.84	--
		11/18/98	NP		17.40	17.39	--
		2/25/99	NP		15.34	19.45	
		5/20/99	NP		16.25	18.54	
Summary for Well B-21 (31 detail records)						SPH Recovered to Date:	
B-24	34.70	3/24/95	15.87	0.01	15.88	18.81	NA
		4/24/95	15.96	0.03	15.99	18.68	NA
		5/22/95	16.17	0.01	16.18	18.51	NA
		6/19/95	16.39	0.02	16.41	18.27	NA
		7/24/95	16.56	0.04	16.60	18.07	0.01
		8/28/95	16.81	0.00	16.81	17.89	NA

COP0014540

Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				Chevron			
B-24	34.70	9/25/95	17.02	0.00	17.02	17.68	0.03
		10/23/95	17.05	0.00	17.05	17.65	NA
		11/27/95	16.75	0.00	16.75	17.95	NA
		12/29/95	15.90	0.00	15.90	18.80	NA
		1/22/96	15.71	0.00	15.71	18.99	NA
		2/26/96	13.98	0.00	13.98	20.72	NA
		3/25/96	14.62	0.00	14.62	20.08	NA
		4/22/96	15.28	0.00	15.28	19.42	NA
		5/28/96	15.25	0.00	15.25	19.45	NA
		6/24/96	15.57	0.00	15.57	19.13	NA
		7/22/96	15.95	0.00	15.95	18.75	NA
		8/26/96	16.35	0.00	16.35	18.35	NA
		9/23/96	16.51	0.01	16.52	18.17	NA
		10/28/96	16.54	0.00	16.54	18.16	NA
		1/29/97	NM		NM		--
		4/21/97	NP		15.29	19.41	--
		7/28/97	NP		16.00	18.70	0.00
		10/15/97	NP		16.66	18.04	--
		1/19/98	NM		NM		--
		4/20/98	NP		15.82	18.88	--
		7/21/98	NP		16.28	18.42	--
		11/18/98	16.91	0.01	16.92	17.77	--
		2/25/99	NP		14.89	19.81	
		5/20/99	NP		15.52	19.18	0.1
Summary for Well	B-24 (30 detail records)					**SPH Recovered to Date:**	**0.14**
B-26	37.04	3/12/95	NP		16.56	20.48	--
	35.3	4/24/95	NA		15.81	19.49	NA
		7/24/95	NA		16.69	18.61	NA
		10/23/95	NA		17.16	18.14	NA
		1/22/96	NA		15.23	20.07	NA
		4/22/96	NA		14.85	20.45	NA
		5/28/96	NA		14.95	20.35	NA
		7/22/96	NA		16.03	19.27	NA

COP0014541

Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				Chevron			
B-26	35.3	8/26/96	16.52	0.00	16.52	18.78	NA
		9/23/96	16.63	0.00	16.63	18.67	NA
		10/28/96	16.68	0.00	16.68	18.62	NA
		11/25/96	15.94	0.00	15.94	19.36	NA
	35.30	1/29/97	NP		14.36	20.94	NA
		4/21/97	15.28	0.01	15.29	20.00	0.4
		7/24/97	NP		15.80	19.50	--
		10/15/97	NP		16.58	18.72	--
		1/19/98	NP		15.64	19.66	--
		4/20/98	NP		15.77	19.53	--
		7/21/98	NP		16.41	18.89	--
		11/18/98	NP		17.05	18.25	--
		2/25/99	NP		14.41	20.89	
		5/20/99	NP		15.56	19.74	
Summary for Well	B-26 (22 detail records)				**SPH Recovered to Date:**		**0.40**
B-28	35.25	4/24/95	NA		15.02	20.23	NA
		7/24/95	NA		16.14	19.11	NA
		10/23/95	NA		16.40	18.85	NA
		1/22/96	NA		15.25	20.00	NA
		4/22/96	NA		14.62	20.63	NA
		5/28/96	NA		14.68	20.57	NA
		7/22/96	NA		15.51	19.74	NA
		10/28/96	NA		15.98	19.27	NA
		1/29/97	NP		14.36	20.89	NA
		4/21/97	14.99	0.01	15.00	20.24	0.3
		7/24/97	NP		15.25	20.00	--
		10/15/97	NP		16.11	19.14	--
		1/19/98	NP		15.47	19.78	--
		4/20/98	NP		15.60	19.65	--
		7/21/98	NP		16.02	19.23	--
	35.26	11/16/98	16.26	0.01	16.27	18.98	--
		2/25/99	NP		14.32	20.94	
		5/20/99	NP		13.20	22.06	

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Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
			Chevron				
Summary for Well B-28 (18 detail records)					**SPH Recovered to Date:**		0.30
B-29	37.70	1/29/97	NL		NL		--
		4/21/97	NP		14.61	23.09	--
		7/28/97	NP		15.40	22.30	--
		10/15/97	NP		16.10	21.60	--
		1/19/98	NP		15.54	22.16	--
		4/20/98	NP		15.37	22.33	--
		7/21/98	NP		15.97	21.73	--
		11/18/98	NP		16.78	20.92	--
		2/25/99	NP		14.00	23.70	
		5/20/99	NP		14.97	22.73	
Summary for Well B-29 (10 detail records)					**SPH Recovered to Date:**		
B-30	35.35	4/24/95	NA		15.60	19.75	NA
		6/19/95	NP		15.60	19.75	--
		7/24/95	NA		15.96	19.39	NA
		10/23/95	NA		16.51	18.84	NA
		1/22/96	NA		14.51	20.84	NA
		4/22/96	NA		14.12	21.23	NA
		5/28/96	NA		14.68	20.67	NA
		7/22/96	NA		15.22	20.13	NA
		10/28/96	NA		15.94	19.41	NA
		1/29/97	NP		13.48	21.87	--
		4/21/97	NP		14.50	20.85	--
		7/28/97	NP		15.07	20.28	--
		10/15/97	NP		15.96	19.39	--
		1/19/98	NP		15.02	20.33	--
		4/20/98	NP		15.01	20.34	--
		7/21/98	NP		15.67	19.68	--
	35.39	11/18/98	NP		16.45	18.94	--
		2/25/99	NP		13.74	21.65	
		5/20/99	NP		14.73	20.66	
Summary for Well B-30 (19 detail records)					**SPH Recovered to Date:**		
B-31	33.86	3/24/95	NA		14.49	19.37	NA

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Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				Chevron			
B-31	33.86	4/24/95	NA		15.30	18.56	NA
		5/22/95	NA		15.98	17.88	NA
		6/19/95	NA		16.74	17.12	NA
		7/24/95	NA		16.89	16.97	NA
		8/28/95	NA		17.15	16.71	NA
		9/25/95	NA		16.97	16.89	NA
		10/23/95	16.52	-0.08	16.44	17.49	NA
		11/27/95	16.63	-3.21	13.42	23.17	NA
		12/29/95	14.36	0.00	14.36	19.50	NA
		1/22/96	NA		15.73	18.13	NA
		2/26/96	NA		12.56	21.30	NA
		3/25/96	NA		16.06	17.80	NA
		4/22/96	NA		12.56	21.30	NA
		5/28/96	NA		14.61	19.25	NA
		6/24/96	NA		14.04	19.82	NA
		7/22/96	NA		15.84	18.02	NA
		8/26/96	NA		16.71	17.15	NA
		9/23/96	16.52	-0.05	16.47	17.43	NA
		10/28/96	NA		15.90	17.96	NA
		11/25/96	NA		14.47	19.39	NA
		1/29/97	NP		14.75	19.11	--
		4/21/97	14.35	0.02	14.37	19.47	0.2
		7/24/97	NP		15.89	17.97	--
		10/15/97	NP		16.30	17.56	--
		1/19/98	NP		14.25	19.61	--
		4/20/98	NP		16.01	17.85	--
		7/21/98	NP		16.65	17.21	--
		11/18/98	NP		15.95	17.91	--
Summary for Well B-31 (29 detail records)					**SPH Recovered to Date:**		**0.20**
B-32	34.23	3/24/95	16.03	0.00	16.03	18.20	NA
		4/24/95	16.31	0.26	16.57	17.44	NA
		5/22/95	16.76	0.00	16.76	17.47	NA
		6/19/95	17.10	0.00	17.10	17.13	NA

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Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				Chevron			
B-32	34.23	7/24/95	17.59	0.00	17.59	16.64	NA
		8/28/95	17.94	0.00	17.94	16.29	NA
		9/25/95	18.11	0.00	18.11	16.12	NA
		10/23/95	17.98	0.00	17.98	16.25	NA
		11/27/95	17.25	0.00	17.25	16.98	NA
		12/29/95	16.09	0.00	16.09	18.14	NA
		1/22/96	NA		15.73	18.50	NA
		2/26/96	NA		12.72	21.51	NA
		3/25/96	NA		15.45	18.78	NA
		4/22/96	NA		15.75	18.48	NA
		5/28/96	NA		15.37	18.86	NA
		6/24/96	NA		16.01	18.22	NA
		7/22/96	NA		16.86	17.37	NA
		8/26/96	NA		17.37	16.86	NA
		9/23/96	NA		17.61	16.62	NA
		10/28/96	NA		17.57	16.66	NA
		11/25/96	NA		16.61	17.62	NA
		1/29/97	NP		15.46	18.77	NA
		4/21/97	NP		15.89	18.34	NA
		7/28/97	NP		16.66	17.57	--
		10/15/97	NP		17.37	16.86	--
		1/19/98	NP		15.84	18.39	--
		4/20/98	NP		16.81	17.42	--
		7/21/98	NP		17.33	16.90	--
		11/18/98	NP		17.66	16.57	--
		2/25/99	NP		15.62	18.61	
		5/20/99	NP		16.46	17.77	
Summary for Well	B-32 (31 detail records)					**SPH Recovered to Date:**	
B-33	35.90	1/29/97	NP		14.86	21.04	--
		4/21/97	NP		15.70	20.20	--
		7/28/97	NP		16.24	19.66	--
		10/15/97	NP		16.93	18.97	--
		1/19/98	NP		16.00	19.90	--

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Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
			Chevron				
B-33	35.90	4/20/98	NP		16.31	19.59	--
		7/21/98	NP		17.07	18.83	--
		11/18/98	NP		17.37	18.53	--
		2/25/99	NP		14.79	21.11	
		5/20/99	NP		15.98	19.92	
Summary for Well B-33 (10 detail records)					**SPH Recovered to Date:**		
CR-1	22.08	1/29/96	NP		1.63	20.45	--
		1/29/97	NP		1.63	20.45	--
		4/21/97	NP		2.32	19.76	--
		10/15/97	NP		3.55	18.53	--
		1/19/98	NP		2.50	19.58	--
		4/20/98	NP		3.09	18.99	--
		7/21/98	NP		3.68	18.40	--
		11/18/98	NP		3.99	18.09	--
		2/25/99	NP		1.57	20.51	
		5/20/99	NP		2.82	19.26	
Summary for Well CR-1 (10 detail records)					**SPH Recovered to Date:**		
CR-3	34.32	4/24/95	NA		14.09	20.23	NA
		7/24/95	NA		15.25	19.07	NA
		10/23/95	NA		15.81	18.51	NA
		1/22/96	NA		10.42	23.90	NA
		1/29/96	NP		12.52	21.80	--
		4/22/96	NA		12.68	21.64	NA
		5/28/96	NA		13.61	20.71	NA
		7/22/96	NA		14.62	19.70	NA
		8/26/96	NA		15.13	19.19	NA
		9/23/96	NA		15.28	19.04	NA
		10/28/96	NA		14.79	19.53	NA
		11/25/96	NA		12.45	21.87	NA
		1/29/97	NP		12.52	21.80	--
		4/21/97	13.39	0.01	13.40	20.91	--
		7/28/97	NP		14.51	19.81	--
		10/15/97	NP		15.20	19.12	--

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Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
			Chevron				
CR-3	34.32	1/19/98	NP		11.61	22.71	--
		4/20/98	NP		14.32	20.00	--
		7/21/98	NP		14.98	19.34	--
		11/18/98	NP		15.69	18.63	--
		2/25/99	NP		10.83	23.49	
		5/20/99	NP		14.10	20.22	
Summary for Well CR-3 (22 detail records)					**SPH Recovered to Date:**		
CR-4	34.93	4/24/95	NA		5.13	29.80	NA
		7/24/95	NA		6.90	28.03	NA
		1/22/96	NA		4.70	30.23	NA
		5/28/96	NA		4.99	29.94	NA
		7/22/96	NA		6.48	28.45	NA
		10/28/96	NA		6.35	28.58	NA
	37.14	1/29/97	NP		4.99	32.15	--
	34.93	4/21/97	NP		5.09	29.84	--
	37.14	5/3/97	NP		6.78	30.36	--
		7/28/97	NP		6.31	30.83	--
		10/15/97	NP		5.95	31.19	--
		1/19/98	NP		4.92	32.22	--
		4/20/98	NP		7.32	29.82	--
		7/21/98	NP		6.72	30.42	--
		11/18/98	NP		5.65	31.49	--
		5/20/99	NP		5.91	31.23	
Summary for Well CR-4 (16 detail records)					**SPH Recovered to Date:**		
CR-6	35.61	3/24/95	12.07	0.01	12.08	23.52	NA
		4/24/95	12.03	0.01	12.04	23.56	NA
		5/22/95	12.51	0.01	12.52	23.08	NA
		6/19/95	10.16	0.00	10.16	25.45	NA
		7/24/95	14.86	0.01	14.87	20.73	0.02
		8/28/95	14.51	0.01	14.52	21.08	0.022
		9/25/95	15.46	0.01	15.47	20.13	0.054
		10/23/95	15.5	0.00	15.5	20.11	NA
		12/29/95	8.81	0.00	8.81	26.80	NA

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Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				Chevron			
CR-6	35.61	1/22/96	12.02	0.01	12.03	23.57	0.04
		2/26/96	10.71	0.00	10.71	24.90	NA
		3/25/96	11.28	0.00	11.28	24.33	NA
		5/28/96	11.49	0.00	11.49	24.12	NA
		6/24/96	11.35	0.00	11.35	24.26	NA
		7/22/96	12.57	0.01	12.58	23.02	0.01
		8/26/96	13.03	0.02	13.05	22.54	0.02
		9/23/96	13.05	0.03	13.08	22.50	NA
		10/28/96	12.85	0.04	12.89	22.69	NA
		11/25/96	12.55	0.02	12.57	23.02	NA
		1/29/97	NP		11.15	24.46	--
		4/21/97	NP		11.86	23.75	--
		7/28/97	12.74	0.01	12.75	22.85	1.0
		10/15/97	12.98	0.03	13.01	22.57	1.0
		1/19/98	NP		12.13	23.48	1.51
		4/20/98	12.21	0.01	12.22	23.38	0.3
		7/21/98	12.80	0.02	12.82	22.77	0.7
		11/18/98	NP		13.59	22.02	0.3
		5/20/99	NP		11.93	23.68	0.1
Summary for Well	CR-6 (28 detail records)				**SPH Recovered to Date:**		**5.08**
CR-7	35.57	3/24/95	10.01	0.48	10.49	24.67	NA
		4/24/95	10.19	0.57	10.76	24.33	NA
		5/22/95	10.76	0.75	11.51	23.42	NA
		6/19/95	11.25	0.15	11.40	24.04	NA
		7/24/95	11.80	0.01	11.81	23.75	0.13
		8/28/95	12.20	0.00	12.20	23.37	0.029
		9/25/95	12.48	0.00	12.48	23.09	0.03
		10/23/95	11.98	0.00	11.98	23.59	NA
		11/27/95	10.73	0.00	10.73	24.84	NA
		12/29/95	10.23	0.05	10.28	25.25	NA
		1/22/96	9.91	0.21	10.12	25.27	0.12
		2/26/96	8.50	0.50	9.00	26.15	0.15
		3/25/96	9.81	0.02	9.83	25.72	0.01

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Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				Chevron			
CR-7	35.57	4/22/96	10.21	0.12	10.33	25.14	NA
		5/28/96	9.82	0.31	10.13	25.18	0.38
		6/24/96	10.78	0.20	10.98	24.42	0.69
		7/22/96	11.35	0.22	11.57	23.81	0.45
		8/26/96	11.84	0.12	11.96	23.51	0.13
		9/23/96	11.94	0.03	11.97	23.57	NA
		10/28/96	11.51	0.02	11.53	24.02	NA
		11/25/96	10.80	0.00	10.80	24.77	NA
		1/29/97	NP		11.11	24.46	--
		4/21/97	10.60	0.11	10.71	24.77	9.6
		7/24/97	11.52	0.10	11.62	23.86	2.75
		10/15/97	NP		11.57	24.00	0.25
		1/19/98	10.45	0.01	10.46	25.10	0.5
		4/20/98	10.78	0.11	10.89	24.59	1.1
		8/6/98	11.57	0.12	11.69	23.78	2.1
		11/18/98	11.88	0.01	11.89	23.67	1.3
		2/25/99	NP		8.70	26.87	
		5/20/99	NP		9.88	25.69	0.2
Summary for Well	CR-7 (31 detail records)				**SPH Recovered to Date:**		**19.92**
CR-8	33.14	4/24/95	NA		6.41	26.73	NA
		7/24/95	NA		8.22	24.92	NA
		10/23/95	NA		8.08	25.06	NA
		1/22/96	NA		6.21	26.93	NA
		4/22/96	NA		6.47	26.67	NA
		5/28/96	NA		6.31	26.83	NA
		7/22/96	NA		7.08	26.06	NA
		10/28/96	NA		7.71	25.43	NA
		1/29/97	NP		5.94	27.20	--
		4/21/97	NP		6.41	26.73	--
		7/28/97	NP		7.30	25.84	--
		10/15/97	NP		7.36	25.78	--
		1/19/98	NP		5.78	27.36	--
		4/20/98	NP		6.44	26.70	--

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Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
			Chevron				
CR-8	33.14	7/21/98	NP		7.06	26.08	--
		11/18/98	NP		7.73	25.41	--
		2/25/99	NP		5.13	28.01	
		5/20/99	NP		6.02	27.12	
Summary for Well	CR-8 (18 detail records)				**SPH Recovered to Date:**		
CR-9	35.72	1/29/97	NP		4.56	31.16	--
		4/21/97	3.38	0.01	3.39	32.32	0.2
		7/24/97	NP		5.71	30.01	0.00
		10/15/97	NP		4.13	31.59	--
		1/19/98	NP		3.01	32.71	--
		4/20/98	NP		3.68	32.04	--
		7/21/98	NP		3.44	32.28	--
		11/18/98	NP		3.45	32.27	--
		2/25/99	NP		2.63	33.09	
		5/20/99	NP		3.13	32.59	
Summary for Well	CR-9 (10 detail records)				**SPH Recovered to Date:**		**0.20**
CR-10	35.57	3/24/95	5.34	0.03	5.37	30.17	NA
		4/24/95	4.27	0.08	4.35	31.15	NA
		5/22/95	5.31	0.09	5.40	30.09	NA
		6/19/95	6.30	0.08	6.38	29.12	NA
		7/24/95	9.22	0.00	9.22	26.35	NA
		8/28/95	10.15	0.00	10.15	25.42	0.4
		9/25/95	10.82	0.00	10.82	24.75	NA
		10/23/95	9.44	0.00	9.44	26.13	NA
		12/29/95	7.54	0.00	7.54	28.03	NA
		1/22/96	6.96	0.05	7.01	28.52	NA
		2/26/96	6.76	0.17	6.93	28.50	0.13
		3/25/96	7.62	0.00	7.62	27.95	5.16
		4/22/96	7.69	0.00	7.69	27.88	NA
		7/22/96	1.28	-0.05	1.23	34.38	NA
		11/25/96	2.35	0.00	2.35	33.22	NA
		1/29/97	NP		3.76	31.81	--
		4/21/97	4.26	0.16	4.42	31.01	6.4

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Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				Chevron			
CR-10	35.57	7/24/97	5.94	0.38	6.32	28.93	6.0
		10/15/97	5.70	0.32	6.02	29.28	3.0
		1/19/98	4.01	0.15	4.16	31.28	5.0
		4/20/98	4.82	0.08	4.90	30.60	4.5
		7/21/98	5.83	0.23	6.06	29.31	5.0
		11/18/98	6.66	0.52	7.18	27.95	6.0
		2/25/99	NP		3.50	32.07	
		5/20/99	4.62	0.03	4.65	30.89	0.1
Summary for Well	CR-10 (25 detail records)				**SPH Recovered to Date:**		**41.69**
CR-11	34.43	3/24/95	1.19	0.00	1.19	33.24	NA
		4/24/95	1.34	0.00	1.34	33.09	NA
		5/22/95	2.49	0.00	2.49	31.94	NA
		6/19/95	2.94	0.00	2.94	31.49	NA
		7/24/95	3.68	0.00	3.68	30.75	NA
		8/28/95	4.18	0.00	4.18	30.25	NA
		9/25/95	4.83	0.00	4.83	29.60	NA
		10/23/95	4.59	0.00	4.59	29.84	NA
		11/27/95	3.61	0.00	3.61	30.82	NA
		12/29/95	1.83	0.00	1.83	32.60	NA
		1/22/96	1.78	0.00	1.78	32.65	NA
		2/26/96	1.13	0.00	1.13	33.30	NA
		3/25/96	1.27	0.00	1.27	33.16	NA
		4/22/96	1.40	0.00	1.40	33.03	NA
		5/28/96	1.45	0.00	1.45	32.98	NA
		6/24/96	2.39	0.00	2.39	32.04	NA
		7/22/96	3.35	0.00	3.35	31.08	NA
		8/26/96	4.10	0.00	4.10	30.33	NA
		9/23/96	4.35	0.00	4.35	30.08	NA
		10/28/96	3.12	0.02	3.14	31.27	NA
		11/25/96	2.35	0.00	2.35	32.08	0.00
		1/29/97	NP		1.55	32.88	--
		4/21/97	NP		1.34	33.09	--
		7/24/97	NP		3.03	31.40	--

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Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				Chevron			
CR-11	34.43	10/15/97	NP		3.68	30.75	--
		1/19/98	NP		1.99	32.44	--
		4/20/98	NP		1.22	33.21	--
		7/21/98	NP		2.85	31.58	--
		11/18/98	3.98	0.17	4.15	30.14	0.2
		2/25/99	NP		1.33	33.10	
		5/20/99	NP		1.77	32.66	0.1
Summary for Well CR-11 (31 detail records)					**SPH Recovered to Date:**		**0.30**
EX-1	34.15	2/25/99	NP		14.38	19.77	
		5/20/99	NP		15.44	18.71	
Summary for Well EX-1 (2 detail records)					**SPH Recovered to Date:**		
					Total SPH Recovered (all wells)		71.52

Notes:
SPH = Separate Phase Hydrocarbon
NP = No product observed this gauging date
NA = Not available
NM = Not measured
* = Groundwater elevation is corrected for the presence of SPH using:
GWE=TOC-(DTW-(SPH thickness x Specific gravity of SPH))
Specific Gravity of SPH set to 0.85 g/cc
** = SPH recovered represents total product recovered for entire quarter
Negative numbers in SPH thickness field indicate possible data transcription error. Data is reported for completeness.

Wells Surveyed Dec. 1998:

B-1	B-12	B-35	U-5
B-3	B-17	B-36	IT-E
B-4	B-18	B-37	MW-27
B-6	B-20	B-40	MW-31
B-8	B-21	B-41	
B-9	B-25	DW-1	
B-10	B-28	P-1	
B-11	B-30	P-2	

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Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				GATX			
MW-1	35.43	4/24/95	NA		3.55	31.88	NA
		7/24/95	NA		6.26	29.17	NA
		10/23/95	NA		5.85	29.58	NA
		1/22/96	NA		2.92	32.51	NA
		4/22/96	NA		4.01	31.42	NA
		7/22/96	NA		6.92	28.51	NA
		10/28/96	NA		5.35	30.08	NA
		1/30/97	NP		3.92	31.51	--
		4/21/97	NP		3.63	31.80	--
		7/30/97	NP		6.69	28.74	--
		10/14/97	NP		5.18	30.25	--
		1/19/98	NP		3.09	32.34	--
		4/21/98	NP		4.40	31.03	--
		7/27/98	NP		6.36	29.07	--
		11/17/98	NP		6.28	29.15	--
		2/26/99	NP		2.69	32.74	
		5/26/99	NP		4.29	31.14	
Summary for Well	MW-1 (17 detail records)				SPH Recovered to Date:		
MW-2	35.77	1/30/97	NP		4.88	30.89	--
		4/21/97	NP		5.41	30.36	--
		7/30/97	NP		7.27	28.50	--
		10/14/97	NP		7.57	28.20	--
		1/19/98	NP		4.99	30.78	--
		4/21/98	NP		6.24	29.53	--
		7/27/98	NP		7.49	28.28	--
		11/17/98	NP		8.63	27.14	--
		2/26/99	NP		4.13	31.64	
		5/26/99	NP		6.43	29.34	
Summary for Well	MW-2 (10 detail records)				SPH Recovered to Date:		
MW-3	36.02	3/6/95	NA		6.79	29.23	NA
		3/27/95	NA		6.65	29.37	NA
		4/24/95	NA		6.98	29.04	NA
		7/24/95	NA		8.63	27.39	NA

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Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
			GATX				
MW-3	36.02	10/23/95	NA		9.62	26.40	NA
		1/22/96	8.96	0.00	8.96	27.06	NA
		4/22/96	NA		6.34	29.68	NA
		7/22/96	NA		8.47	27.55	NA
		10/28/96	NA		8.70	27.32	NA
		1/30/97	NP		6.40	29.62	--
		4/21/97	NP		6.93	29.09	--
		7/30/97	NP		8.54	27.48	--
		10/14/97	NP		8.79	27.23	--
		1/19/98	NP		7.54	28.48	--
		4/21/98	NP		7.62	28.40	--
		7/27/98	NP		8.79	27.23	--
		11/17/98	NP		9.77	26.25	--
		2/26/99	NP		5.66	30.36	
		5/26/99	NP		7.78	28.24	
Summary for Well	MW-3 (19 detail records)				**SPH Recovered to Date:**		
MW-4	36.39	4/24/95	NA		6.35	30.04	NA
		7/24/95	NA		8.17	28.22	NA
		10/23/95	NA		9.16	27.23	NA
		1/22/96	NA		5.20	31.19	NA
		4/22/96	NA		5.59	30.80	NA
		7/22/96	NA		7.97	28.42	NA
		10/28/96	NA		8.14	28.25	NA
		11/25/96	NA		6.10	30.29	NA
		1/30/97	NP		5.40	30.99	--
		4/21/97	NP		6.29	30.10	--
		7/30/97	NP		8.07	28.32	--
		10/14/97	NP		8.35	28.04	--
		1/19/98	NP		5.86	30.53	--
		4/21/98	NP		7.02	29.37	--
		7/27/98	NP		8.33	28.06	--
		11/17/98	NP		9.36	27.03	--
		2/26/99	NP		4.68	31.71	

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Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
			GATX				
MW-4	36.39	5/26/99	NP		7.23	29.16	
Summary for Well MW-4 (18 detail records)					SPH Recovered to Date:		
MW-5	33.52	3/27/95	NP		3.55	29.97	--
		4/24/95	NA		5.29	28.23	NA
		7/24/95	NA		7.12	26.40	NA
		10/23/95	NA		8.56	24.96	NA
		1/22/96	NA		4.32	29.20	NA
		4/22/96	NA		4.73	28.79	NA
		7/22/96	NA		6.98	26.54	NA
		10/28/96	NA		7.60	25.92	NA
		12/23/96	NA		2.35	31.17	NA
		1/30/97	NP		5.01	28.51	--
		4/21/97	NP		5.07	28.45	--
		7/30/97	NP		7.05	26.47	--
		10/14/97	NP		7.24	26.28	--
		1/19/98	NP		5.52	28.00	--
		4/21/98	NP		5.88	27.64	--
		7/27/98	NP		7.38	26.14	--
		11/17/98	NP		8.54	24.98	--
		2/26/99	NP		4.26	29.26	
		5/26/99	NP		6.15	27.37	
Summary for Well MW-5 (19 detail records)					SPH Recovered to Date:		
MW-6	33.34	3/6/95	3.34	0.20	3.54	29.63	NA
		3/27/95	3.05	0.68	3.73	29.03	NA
		4/24/95	3.29	0.89	4.18	28.40	NA
		5/22/95	3.80	0.03	3.83	29.48	1.5
		6/19/95	4.64	0.00	4.64	28.70	1.34
		7/24/95	5.15	0.00	5.15	28.19	NA
		8/28/95	5.90	0.00	5.90	27.44	NA
		9/25/95	6.50	0.00	6.50	26.84	NA
		10/23/95	6.22	0.00	6.22	27.12	NA
		11/27/95	4.37	0.00	4.37	28.97	NA
		12/29/95	3.76	0.19	3.95	29.23	NA

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Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
			GATX				
MW-6	33.34	1/22/96	2.50	0.35	2.85	30.19	NA
		2/26/96	2.07	0.01	2.08	31.25	NA
		3/25/96	3.34	0.00	3.34	30.00	0.18
		4/22/96	3.18	0.00	3.18	30.16	NA
		5/28/96	3.23	0.00	3.23	30.11	0.06
		6/24/96	4.35	0.00	4.35	28.99	NA
		7/22/96	5.08	0.00	5.08	28.26	NA
		8/26/96	5.89	0.00	5.89	27.45	NA
		9/23/96	5.54	0.00	5.54	27.80	NA
		10/28/96	5.19	0.00	5.19	28.15	NA
		11/25/96	3.28	0.00	3.28	30.06	NA
		12/23/96	2.98	0.43	3.41	29.56	NA
		1/30/97	NP		2.77	30.57	--
		4/21/97	NP		3.25	30.09	--
		7/30/97	5.10	0.13	5.23	28.00	0.25
		10/14/97	NP		5.40	27.94	--
		1/19/98	NP		3.07	30.27	--
		4/21/98	4.08	0.17	4.25	28.95	1.0
		7/27/98	NP		5.34	28.00	--
		11/17/98	NP		6.46	26.88	--
		2/26/99	NP		2.26	31.08	
		5/26/99	4.25	0.15	4.40	28.81	0.2
Summary for Well	MW-6 (33 detail records)				**SPH Recovered to Date:**		**4.53**
MW-7	34.12	3/6/95	7.96	0.04	8.00	26.09	NA
		3/27/95	7.88	0.06	7.94	26.13	NA
		4/24/95	8.18	0.00	8.18	25.94	NA
		5/22/95	8.51	0.34	8.85	24.98	NA
		6/19/95	8.93	0.39	9.32	24.47	NA
		7/24/95	9.35	0.15	9.50	24.49	0.06
		8/28/95	9.79	0.21	10.00	23.94	NA
		9/25/95	10.13	0.38	10.51	23.29	NA
		10/23/95	7.04	0.43	7.47	26.28	NA
		11/27/95	9.00	0.00	9.00	25.12	NA

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Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
			GATX				
MW-7	34.12	12/29/95	8.13	0.03	8.16	25.93	0.37
		1/22/96	7.44	0.00	7.44	26.68	0.08
		2/26/96	6.20	0.00	6.20	27.92	NA
		3/25/96	7.50	0.20	7.70	26.25	NA
		4/22/96	7.84	0.11	7.95	26.08	0.12
		5/28/96	7.70	0.10	7.80	26.23	0.12
		6/24/96	8.36	0.12	8.48	25.54	0.37
		7/22/96	8.98	0.30	9.28	24.59	NA
		8/26/96	9.52	0.30	9.82	24.05	NA
		9/23/96	9.55	0.38	9.93	23.87	NA
		10/28/96	9.30	0.48	9.78	23.93	NA
		11/25/96	8.23	0.68	8.91	24.63	NA
		12/23/96	7.52	1.98	9.50	22.94	NA
		1/30/97	7.13	3.11	10.24	21.24	70
		4/21/97	7.91	1.81	9.72	22.86	57
		7/24/97	8.91	1.05	9.96	23.27	22.0
		10/14/97	9.58	0.30	9.88	23.98	6.0
		1/19/98	7.92	1.76	9.68	22.94	20.0
		4/21/98	8.35	1.75	10.10	22.53	17.5
		7/27/98	9.34	1.27	10.61	22.43	20.0
		11/17/98	10.18	0.12	10.30	23.72	20.5
		2/26/99	6.98	0.05	7.03	27.05	3.2
		5/26/99	8.61	0.15	8.76	25.23	3.75
Summary for Well MW-7 (33 detail records)					**SPH Recovered to Date:**		**241.07**
MW-8	33.95	4/24/95	NA		7.27	26.68	NA
		7/24/95	NA		8.53	25.42	NA
		10/23/95	NA		9.45	24.50	NA
		1/22/96	NA		6.45	27.50	NA
		4/22/96	NA		6.99	26.96	NA
		7/22/96	NA		8.30	25.65	NA
		10/28/96	NA		8.76	25.19	NA
		1/30/97	NP		6.38	27.57	--
		4/21/97	NP		7.07	26.88	--

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Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
			GATX				
MW-8	33.95	7/30/97	NP		8.29	25.66	--
		10/14/97	NP		9.82	24.13	--
		1/19/98	NP		7.18	26.77	--
		4/21/98	NP		7.57	26.38	--
		7/27/98	NP		8.62	25.33	--
		11/17/98	NP		9.51	24.44	--
		2/26/99	NP		5.68	28.27	
		5/26/99	NP		7.73	26.22	
Summary for Well	MW-8 (17 detail records)				**SPH Recovered to Date:**		
MW-9	36.53	4/24/95	NA		9.67	26.86	NA
		7/24/95	NA		10.85	25.68	NA
		10/23/95	NA		11.86	24.67	NA
		1/22/96	NA		9.57	26.96	NA
		4/22/96	NA		9.47	27.06	NA
		7/22/96	NA		10.34	26.19	NA
		10/28/96	NA		11.32	25.21	NA
		1/30/97	NP		8-94		--
		4/21/97	9.51	0.01	9.52	27.00	0.1
		7/24/97	NP		10.28	26.25	--
		10/14/97	NP		11.23	25.30	--
		1/19/98	NP		10.28	26.25	--
		4/21/98	NP		9.86	26.67	--
		7/27/98	NP		10.77	25.76	--
		11/17/98	NP		11.65	24.88	--
		2/26/99	NP		8.69	27.84	
		5/26/99	NP		10.01	26.52	
Summary for Well	MW-9 (17 detail records)				**SPH Recovered to Date:**		**0.10**
MW-10	35.82	4/24/95	NA		8.54	27.28	NA
		7/24/95	NA		10.25	25.57	NA
		10/23/95	NA		11.20	24.62	NA
		1/22/96	NA		7.31	28.51	NA
		4/22/96	NA		8.09	27.73	NA
		7/22/96	NA		9.87	25.95	NA

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Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
			GATX				
MW-10	35.82	10/28/96	NA		10.22	25.60	NA
		1/30/97	NP		7.40	28.42	--
		4/21/97	NP		8.40	27.42	--
		7/30/97	NP		9.98	25.84	--
		10/14/97	NP		10.38	25.44	--
		1/19/98	NP		8.24	27.58	--
		4/21/98	NP		9.13	26.69	--
		7/27/98	NP		10.34	25.48	--
		11/17/98	NP		11.37	24.45	--
		2/26/99	NP		1.54	34.28	
		5/26/99	NP		9.25	26.57	
Summary for Well	MW-10 (17 detail records)				**SPH Recovered to Date:**		
MW-11	36.47	3/6/95	NA		5.09	31.38	NA
		3/27/95	5.25	0.00	5.25	31.22	NA
		4/24/95	5.36	0.00	5.36	31.11	NA
		5/22/95	6.11	0.00	6.11	30.36	NA
		6/19/95	6.52	0.00	6.52	29.95	NA
		7/24/95	7.10	0.00	7.10	29.37	NA
		8/28/95	8.00	0.00	8.00	28.47	NA
		9/25/95	8.12	0.00	8.12	28.35	NA
		10/23/95	7.39	0.00	7.39	29.08	NA
		11/27/95	5.25	0.00	5.25	31.22	NA
		12/29/95	5.65	0.00	5.65	30.82	NA
		1/22/96	4.50	0.00	4.50	31.97	NA
		1/30/96	NP		5.20	31.27	--
		2/26/96	3.69	0.00	3.69	32.78	NA
		3/25/96	5.50	0.00	5.50	30.97	NA
		4/22/96	5.15	0.00	5.15	31.32	NA
		5/28/96	5.29	0.00	5.29	31.18	NA
		6/24/96	6.27	0.00	6.27	30.20	NA
		7/22/96	7.04	0.00	7.04	29.43	NA
		8/26/96	7.86	0.00	7.86	28.61	NA
		9/23/96	7.20	0.00	7.20	29.27	NA

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Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
			GATX				
MW-11	36.47	10/28/96	6.33	0.00	6.33	30.14	NA
		11/25/96	4.94	0.00	4.94	31.53	NA
		12/23/96	NA		4.68	31.79	NA
		1/30/97	NP		5.20	31.27	--
		4/21/97	NP		5.41	31.06	--
		7/30/97	NP		7.05	29.42	--
		10/14/97	6.62	0.01	6.63	29.83	0.5
		1/19/98	NP		4.81	31.66	--
		4/21/98	NP		6.08	30.39	--
		7/27/98	NP		7.39	29.08	--
		11/17/98	NP		6.96	29.51	--
		2/26/99	NP		4.19	32.28	
		5/26/99	NP		6.13	30.34	
Summary for Well	MW-11 (34 detail records)				**SPH Recovered to Date:**		0.50
MW-12	35.95	4/24/95	NA		5.22	30.73	NA
		7/24/95	NA		7.30	28.65	NA
		10/23/95	NA		8.33	27.62	NA
		1/22/96	NA		3.83	32.12	NA
		4/22/96	NA		4.34	31.61	NA
		7/22/96	NA		7.15	28.80	NA
		10/28/96	NA		7.37	28.58	NA
		1/30/97	NP		4.26	31.69	--
		4/21/97	NP		5.05	30.90	--
		7/30/97	NP		7.27	28.68	--
		10/14/97	NP		7.46	28.49	--
		1/19/98	NP		4.43	31.52	--
		4/21/98	NP		5.93	30.02	--
		7/27/98	NP		7.56	28.39	--
		11/17/98	NP		8.58	27.37	--
		2/26/99	NP		3.30	32.65	
		5/26/99	NP		6.14	29.81	
Summary for Well	MW-12 (17 detail records)				**SPH Recovered to Date:**		
MW-13	37.89	4/24/95	NA		4.41	33.48	NA

COP0014560

Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
			GATX				
MW-13	37.89	7/24/95	NA		6.29	31.60	NA
		10/23/95	NA		6.67	31.22	NA
		1/22/96	NA		3.65	34.24	NA
		4/22/96	NA		4.18	33.71	NA
		7/22/96	NA		6.28	31.61	NA
		10/28/96	NA		5.61	32.28	NA
		1/30/97	NP		4.22	33.67	--
		4/21/97	NP		4.28	33.61	--
		7/30/97	NP		6.27	31.62	--
		10/14/97	NP		5.64	32.25	--
		1/19/98	NP		3.43	34.46	--
		4/21/98	NP		4.90	32.99	--
		7/27/98	NP		6.44	31.45	--
		11/17/98	NP		6.27	31.62	--
		2/26/99	NP		3.25	34.64	
		5/26/99	NP		5.17	32.72	
Summary for Well	MW-13 (17 detail records)					**SPH Recovered to Date:**	
MW-14	36.28	4/24/95	NA		3.33	32.95	NA
		7/24/95	NA		5.62	30.66	NA
		10/23/95	NA		5.96	30.32	NA
		1/22/96	NA		2.71	33.57	NA
		4/22/96	NA		3.25	33.03	NA
		7/22/96	NA		5.68	30.60	NA
		10/28/96	NA		5.30	30.98	NA
		1/30/97	NP		3.28	33.00	--
		4/21/97	NP		3.29	32.99	--
		7/30/97	NP		5.64	30.64	--
		10/14/97	NP		5.13	31.15	--
		1/19/98	NP		2.50	33.78	--
		4/21/98	NP		4.00	32.28	--
		7/27/98	NP		5.73	30.55	--
		11/17/98	NP		5.75	30.53	--
		2/26/99	NP		2.12	34.16	

COP0014561

Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
			GATX				
MW-14	36.28	5/26/99	NP		4.24	32.04	
Summary for Well	MW-14 (17 detail records)					**SPH Recovered to Date:**	
MW-15	37.50	1/30/97	NP		3.28	34.22	--
		4/21/97	NP		4.85	32.65	--
		7/30/97	NP		7.92	29.58	--
		10/14/97	NP		5.91	31.59	--
		1/19/98	NP		4.43	33.07	--
		4/21/98	NP		4.81	32.69	--
		7/27/98	NP		7.76	29.74	--
		11/17/98	NP		7.20	30.30	--
		2/26/99	NP		2.87	34.63	
		5/26/99	NP		5.50	32.00	
Summary for Well	MW-15 (10 detail records)					**SPH Recovered to Date:**	
MW-16	34.93	7/24/95	NA		5.78	29.15	NA
		10/23/95	NA		6.73	28.20	NA
		1/22/96	NA		2.44	32.49	NA
		4/22/96	NA		3.46	31.47	NA
		7/22/96	NA		5.63	29.30	NA
		10/28/96	NA		5.90	29.03	NA
		1/30/97	NP		3.15	31.78	--
		4/21/97	NP		3.44	31.49	--
		7/30/97	NP		5.65	29.28	--
		10/14/97	NP		5.80	29.13	--
		1/19/98	NP		2.90	32.03	--
		4/21/98	NP		4.31	30.62	--
		7/27/98	NP		5.88	29.05	--
		11/17/98	NP		6.95	27.98	--
		2/26/99	NP		2.00	32.93	
		5/26/99	NP		4.46	30.47	
Summary for Well	MW-16 (16 detail records)					**SPH Recovered to Date:**	
MW-17	36.05	1/30/97	NP		4.27	31.78	--
		4/21/97	NP		4.39	31.66	--
		7/30/97	NP		5.28	30.77	--

COP0014562

Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
			GATX				
MW-17	36.05	10/14/97	NP		5.21	30.84	--
		1/19/98	NP		4.12	31.93	--
		4/21/98	NP		4.70	31.35	--
		7/27/98	NP		5.37	30.68	--
		11/17/98	NP		5.84	30.21	--
		2/26/99	NP		3.79	32.26	
		5/26/99	NP		4.17	31.88	
Summary for Well MW-17 (10 detail records)					**SPH Recovered to Date:**		
MW-18	33.76	4/24/95	NA		1.66	32.10	NA
		7/24/95	NA		3.02	30.74	NA
		10/23/95	NA		3.43	30.33	NA
		1/22/96	NA		1.08	32.68	NA
		4/22/96	NA		0.89	32.87	NA
		7/22/96	NA		2.83	30.93	NA
		10/28/96	NA		2.48	31.28	NA
		1/30/97	NP		1.24	32.52	--
		4/21/97	NP		1.23	32.53	--
		7/30/97	NP		2.66	31.10	--
		10/14/97	NP		2.45	31.31	--
		1/19/98	NP		0.73	33.03	--
		4/21/98	NP		1.95	31.81	--
		7/27/98	NP		2.94	30.82	--
		11/17/98	NP		3.44	30.32	--
		2/26/99	NP		0.73	33.03	
		5/26/99	NP		2.14	31.62	
Summary for Well MW-18 (17 detail records)					**SPH Recovered to Date:**		
MW-19	33.39	3/6/95	2.77	0.49	3.26	29.71	NA
		3/27/95	2.57	0.51	3.08	29.88	NA
		4/24/95	2.79	0.54	3.33	29.60	NA
		5/22/95	3.19	0.51	3.70	29.26	NA
		6/19/95	3.87	0.61	4.48	28.39	NA
		7/24/95	4.41	0.01	4.42	28.96	0.31
		8/28/95	5.64	0.00	5.64	27.75	0.03

COP0014563

Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
			GATX				
MW-19	33.39	9/25/95	6.80	0.00	6.80	26.59	NA
		10/23/95	5.48	0.00	5.48	27.91	NA
		11/27/95	3.79	0.00	3.79	29.60	NA
		12/29/95	3.23	0.00	3.23	30.16	NA
		1/22/96	2.18	0.00	2.18	31.21	NA
		2/26/96	1.57	0.00	1.57	31.82	NA
		3/25/96	2.56	0.00	2.56	30.83	NA
		4/22/96	1.77	0.00	1.77	31.62	NA
		5/28/96	2.11	0.00	2.11	31.28	NA
		6/24/96	2.93	0.00	2.93	30.46	NA
		7/22/96	3.61	0.00	3.61	29.78	NA
		8/26/96	4.31	0.00	4.31	29.08	NA
		9/23/96	3.65	0.00	3.65	29.74	NA
		10/28/96	1.95	0.00	1.95	31.44	NA
		11/25/96	1.63	0.00	1.63	31.76	NA
		12/23/96	1.86	0.00	1.86	31.53	NA
		1/30/97	NP		1.86	31.53	--
		4/21/97	NP		2.23	31.16	--
		7/30/97	NP		3.79	29.60	--
		10/14/97	NP		3.63	29.76	--
		1/19/98	NP		1.31	32.08	--
		4/21/98	NP		2.84	30.55	--
		7/27/98	NP		4.08	29.31	--
		11/17/98	NP		4.88	28.51	--
		2/26/99	1.62	0.02	1.64	31.73	
		5/26/99	3.62	0.02	3.64	29.73	0.25
Summary for Well	MW-19 (33 detail records)					SPH Recovered to Date:	0.59
MW-20	34.76	4/24/95	NA		9.55	25.21	NA
		7/24/95	NA		10.73	24.03	NA
		10/23/95	NA		11.35	23.41	NA
		1/22/96	NA		8.50	26.26	NA
		4/22/96	NA		9.53	25.23	NA
		7/22/96	NA		10.41	24.35	NA

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Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
			GATX				
MW-20	34.76	9/23/96	11.08	0.00	11.08	23.68	NA
		10/28/96	NA		10.74	24.02	NA
		11/25/96	NA		9.19	25.57	NA
		12/23/96	NA		9.05	25.71	NA
		1/30/97	NP		8.03	26.73	--
		4/21/97	NP		9.35	25.41	--
		7/30/97	NP		10.45	24.31	--
		10/14/97	NP		10.58	24.18	--
		1/19/98	NP		9.07	25.69	--
		4/21/98	NP		9.87	24.89	--
		7/27/98	NP		10.74	24.02	--
		11/17/98	NP		11.26	23.50	--
		2/26/99	NP		7.97	26.79	
		5/26/99	NP		9.87	24.89	
Summary for Well MW-20 (20 detail records)					**SPH Recovered to Date:**		
MW-21	34.33	4/24/95	NA		1.48	32.85	NA
		7/24/95	NA		2.21	32.12	NA
		10/23/95	NA		2.04	32.29	NA
		1/22/96	NA		1.08	33.25	NA
		4/22/96	NA		0.78	33.55	NA
		7/22/96	NA		2.24	32.09	NA
		10/28/96	NA		1.97	32.36	NA
		1/30/97	NP		1.15	33.18	--
		4/21/97	NP		1.13	33.20	--
		7/30/97	NP		2.05	32.28	--
		10/14/97	NP		1.76	32.57	--
		1/19/98	NM		NM		--
		4/21/98	NP		1.62	32.71	--
		7/27/98	NP		2.13	32.20	--
		11/17/98	NP		1.86	32.47	--
		2/26/99	NP		1.03	33.30	
		5/26/99	NP		1.45	32.88	
Summary for Well MW-21 (17 detail records)					**SPH Recovered to Date:**		

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Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
			GATX				
MW-22	35.65	3/6/95	NA		3.32	32.33	NA
		3/27/95	3.23	0.00	3.23	32.42	NA
		4/24/95	3.25	0.00	3.25	32.40	NA
		5/22/95	3.93	0.00	3.93	31.72	NA
		6/19/95	4.34	0.00	4.34	31.31	NA
		7/24/95	4.83	0.00	4.83	30.82	NA
		8/28/95	5.35	0.00	5.35	30.30	NA
		9/25/95	5.94	0.00	5.94	29.71	NA
		10/23/95	5.24	0.00	5.24	30.41	NA
		11/27/95	4.04	0.00	4.04	31.61	NA
		12/28/95	3.26	0.00	3.26	32.39	NA
		1/22/96	2.77	0.00	2.77	32.88	NA
		2/26/96	2.42	0.00	2.42	33.23	NA
		3/25/96	3.47	0.00	3.47	32.18	NA
		4/22/96	3.32	0.00	3.32	32.33	NA
		5/28/96	3.06	0.00	3.06	32.59	NA
		6/24/96	3.93	0.00	3.93	31.72	NA
		7/22/96	4.55	0.00	4.55	31.10	NA
		8/26/96	6.85	0.00	6.85	28.80	NA
		9/23/96	5.66	0.00	5.66	29.99	NA
		10/28/96	4.80	0.00	4.80	30.85	NA
		11/25/96	3.96	0.00	3.96	31.69	NA
		12/23/96	3.20	0.00	3.20	32.45	NA
		1/30/97	NP		3.72	31.93	--
		4/21/97	NP		3.27	32.38	--
		7/30/97	NP		4.73	30.92	--
		10/14/97	NP		4.87	30.78	--
		1/19/98	NP		2.96	32.69	--
		4/21/98	NP		3.71	31.94	--
		7/27/98	NP		4.80	30.85	--
		11/17/98	NP		5.33	30.32	--
		2/26/99	NP		2.28	33.37	
		5/26/99	NP		3.61	32.04	

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Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
			GATX				
Summary for Well MW-22 (33 detail records)						**SPH Recovered to Date:**	
MW-23	36.06	3/27/95	9.42	0.00	9.42	26.64	NA
		4/24/95	3.97	0.00	3.97	32.09	NA
		5/22/95	4.50	0.00	4.50	31.56	NA
		6/26/95	4.75	0.00	4.75	31.31	NA
		7/24/95	5.07	0.00	5.07	30.99	NA
		8/28/95	5.44	0.11	5.55	30.42	NA
		10/23/95	5.15	0.00	5.15	30.91	NA
		11/27/95	3.56	0.00	3.56	32.50	NA
		12/28/95	4.27	0.00	4.27	31.79	NA
		1/22/96	NA		3.49	32.57	NA
		2/26/96	3.59	0.00	3.59	32.47	NA
		3/25/96	4.24	0.00	4.24	31.82	NA
		4/22/96	3.23	0.00	3.23	32.83	NA
		5/28/96	3.97	0.00	3.97	32.09	NA
		6/24/96	4.46	0.00	4.46	31.60	NA
		7/22/96	5.02	0.03	5.05	30.98	NA
		8/28/96	5.80	0.00	5.80	30.26	NA
		9/23/96	5.30	0.06	5.36	30.65	NA
		9/25/96	5.78	0.22	6.00	29.87	NA
		10/28/96	4.73	0.00	4.73	31.33	NA
		11/25/96	3.75	0.00	3.75	32.31	NA
		12/23/96	3.68	0.00	3.68	32.38	NA
		1/30/97	NP		3.46	32.60	--
		4/21/97	NP		3.89	32.17	--
		7/30/97	NP		5.15	30.91	--
		10/14/97	5.82	0.07	5.89	30.11	3.0
		1/19/98	NP		3.08	32.98	--
		4/21/98	NP		4.15	31.91	--
		7/27/98	4.71	0.01	4.72	31.33	2.1
		11/17/98	5.05	0.01	5.06	30.99	--
		2/26/99	NP		3.38	32.68	
		5/26/99	NP		4.25	31.81	

COP0014567

Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				GATX			
Summary for Well MW-23 (32 detail records)					SPH Recovered to Date:		5.10
MW-24	35.15	3/6/95	4.15	0.83	4.98	29.46	NA
		4/24/95	5.31	-0.94	4.37	31.58	NA
		5/22/95	4.96	-0.01	4.95	30.21	NA
		6/26/95	6.50	1.90	8.40	25.14	NA
		7/24/95	7.25	0.24	7.49	27.46	NA
		8/28/95	8.42	1.58	10.00	23.81	NA
		12/1/95	NM		NM		28.1
		3/27/96	4.28	0.90	5.18	29.20	NA
		12/1/96	NM		NM		1.2
		1/30/97	NP		5.10	30.05	--
		4/21/97	NP		4.89	30.26	--
		7/30/97	8.30	0.16	8.46	26.55	0.25
		10/14/97	NP		8.13	27.02	1.5
		1/19/98	4.02	0.01	4.03	31.11	0.75
		4/21/98	5.34	0.01	5.35	29.79	0.12
		7/27/98	6.98	0.02	7.00	28.13	3.1
		11/17/98	8.00	0.04	8.04	27.08	0.25
		2/26/99	3.94	0.01	3.95	31.19	
		5/26/99	5.34	0.01	5.35	29.79	0.25
Summary for Well MW-24 (19 detail records)					SPH Recovered to Date:		35.52
MW-25	34.73	4/22/96	10.00	0.24	10.24	24.29	NA
		9/23/96	11.69	0.00	11.69	23.04	NA
		10/28/96	NA		11.22	23.51	NA
		11/25/96	NA		9.95	24.78	NA
		12/23/96	NA		9.72	25.01	NA
		1/30/97	NP		9.37	25.36	--
		4/21/97	9.90	0.01	9.91	24.81	0.1
		7/24/97	NP		10.92	23.81	--
		10/14/97	NP		11.30	23.43	--
		1/19/98	NP		9.84	24.89	--
		4/21/98	NP		10.59	24.14	--
		7/27/98	NP		11.46	23.27	--

COP0014568

Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
			GATX				
MW-25	34.73	11/17/98	NP		11.97	22.76	--
		2/26/99	NP		9.71	25.02	
		5/26/99	NP		10.46	24.27	
Summary for Well MW-25 (15 detail records)					**SPH Recovered to Date:**		**0.10**
MW-26	34.78	7/22/96	11.39	0.43	11.82	22.59	NA
		9/11/96	10.00	0.24	10.24	24.34	NA
		9/23/96	11.85	0.25	12.10	22.47	NA
		10/28/96	11.38	0.03	11.41	23.34	NA
		11/25/96	10.36	0.00	10.36	24.42	NA
		12/23/96	10.39	0.00	10.39	24.39	NA
		1/30/97	NP		10.35	24.43	--
		4/21/97	NP		10.32	24.46	0.1
		7/30/97	11.42	0.01	11.43	23.34	0.1
		10/14/97	11.68	0.02	11.70	23.06	0.5
		1/19/98	NP		10.36	24.42	--
		4/21/98	NP		10.98	23.80	--
		7/27/98	NP		11.80	22.98	--
		11/17/98	NP		12.36	22.42	--
		2/26/99	NP		9.12	25.66	
		5/26/99	NP		10.84	23.94	0.2
Summary for Well MW-26 (16 detail records)					**SPH Recovered to Date:**		**0.90**
MW-27	35.67	2/26/96	3.94	0.00	3.94	31.73	NA
		3/25/96	4.73	0.00	4.73	30.94	NA
		4/22/96	3.71	0.00	3.71	31.96	NA
		5/28/96	4.54	0.00	4.54	31.13	NA
		6/24/96	5.34	0.00	5.34	30.33	NA
		7/22/96	5.73	0.00	5.73	29.94	NA
		8/26/96	5.96	0.00	5.96	29.71	NA
		9/23/96	6.81	0.00	6.81	28.86	NA
		10/28/96	5.35	0.00	5.35	30.32	NA
		11/25/96	3.34	0.00	3.34	32.33	NA
		12/23/96	4.04	0.00	4.04	31.63	NA
		1/30/97	NP		4.37	31.30	--

COP0014569

Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
			GATX				
MW-27	35.67	4/21/97	NP		4.44	31.23	--
		7/30/97	NP		5.69	29.98	--
		10/14/97	NP		5.29	30.38	--
		1/19/98	NP		3.81	31.86	--
		4/21/98	NP		4.90	30.77	--
		7/27/98	NP		5.66	30.01	--
	35.69	11/17/98	NP		5.70	29.99	--
		2/26/99	NP		3.50	32.19	
		5/26/99	NP		4.92	30.77	
Summary for Well	MW-27 (21 detail records)				**SPH Recovered to Date:**		
MW-28	34.39	3/6/95	NA		4.41	29.98	NA
		3/27/95	4.74	0.01	4.75	29.63	NA
		4/24/95	5.26	0.00	5.26	29.13	NA
		5/22/95	6.00	0.02	6.02	28.35	NA
		6/26/95	6.50	0.09	6.59	27.72	NA
		7/24/95	6.94	0.00	6.94	27.45	NA
		8/28/95	8.04	0.01	8.05	26.33	0.75
		10/23/95	7.60	0.00	7.60	26.79	NA
		11/27/95	4.04	0.00	4.04	30.35	0.03
		12/28/95	4.25	0.00	4.25	30.14	NA
		1/22/96	2.29	0.00	2.29	32.10	NA
		2/26/96	3.78	0.00	3.78	30.61	NA
		3/25/96	5.10	0.00	5.10	29.29	NA
		4/22/96	4.22	0.00	4.22	30.17	NA
		5/28/96	4.66	0.00	4.66	29.73	NA
		6/24/96	6.01	0.00	6.01	28.38	NA
		7/22/96	6.77	0.00	6.77	27.62	NA
		8/28/96	7.56	0.00	7.56	26.83	NA
		9/23/96	6.28	0.00	6.28	28.11	NA
		9/25/96	11.75	0.00	11.75	22.64	1.03
		10/28/96	5.03	0.00	5.03	29.36	NA
		11/25/96	2.50	0.00	2.50	31.89	NA
		12/23/96	4.38	0.01	4.39	29.99	NA

COP0014570

Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
			GATX				
MW-28	34.39	1/30/97	NP		3.71	30.68	--
		4/21/97	4.72	0.03	4.75	29.61	0.5
		7/30/97	NP		6.30	28.09	--
		10/14/97	5.87	0.02	5.89	28.48	1.0
		1/19/98	NP		4.01	30.38	--
		4/21/98	5.16	0.01	5.17	29.21	0.02
		7/27/98	NP		6.67	27.72	1.0
		11/17/98	NP		7.16	27.23	--
		2/26/99	NP		3.38	31.01	
		5/26/99	4.55	0.01	4.56	29.82	0.2
Summary for Well	MW-28 (33 detail records)				**SPH Recovered to Date:**		**4.53**
MW-29	35.77	4/24/95	NA		13.34	22.43	NA
		7/24/95	NA		14.20	21.57	NA
		10/23/95	NA		14.86	20.91	NA
		1/22/96	NA		12.70	23.07	NA
		4/22/96	NA		12.75	23.02	NA
		7/22/96	NA		13.64	22.13	NA
		10/28/96	NA		14.15	21.62	NA
		1/30/97	NP		13.41	22.36	--
		4/21/97	NP		12.89	22.88	--
		7/30/97	NP		13.58	22.19	--
		10/14/97	NP		14.17	21.60	--
		1/19/98	NP		13.13	22.64	--
		4/21/98	NP		13.32	22.45	--
		7/27/98	NP		14.01	21.76	--
		11/17/98	NP		14.63	21.14	--
		2/26/99	NP		12.22	23.55	
		5/26/99	NP		13.17	22.60	
Summary for Well	MW-29 (17 detail records)				**SPH Recovered to Date:**		
MW-30	36.39	1/30/97	NP		4.43	31.96	--
		4/21/97	NP		4.65	31.74	--
		7/30/97	NP		6.00	30.39	--
		10/14/97	NP		5.79	30.60	--

COP0014571

Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
			GATX				
MW-30	36.39	1/19/98	NP		3.85	32.54	--
		4/21/98	NP		5.22	31.17	--
		7/27/98	NP		6.23	30.16	--
		11/17/98	NP		6.99	29.40	--
		2/26/99	NP		3.76	32.63	
		5/26/99	NP		5.32	31.07	
Summary for Well MW-30 (10 detail records)					SPH Recovered to Date:		
MW-31	37.55	3/6/95	NA		5.64	31.91	NA
		3/27/95	5.75	0.01	5.76	31.78	NA
		4/24/95	6.09	0.00	6.09	31.46	NA
		5/22/95	6.70	0.00	6.70	30.85	NA
		6/26/95	7.26	0.00	7.26	30.29	NA
		7/24/95	7.74	0.00	7.74	29.81	NA
		8/28/95	8.41	0.00	8.41	29.14	NA
		10/23/95	8.56	0.00	8.56	28.99	NA
		11/27/95	6.33	0.00	6.33	31.22	NA
		12/28/95	5.90	0.00	5.90	31.65	NA
		1/22/96	4.62	0.00	4.62	32.93	NA
		2/26/96	4.92	0.00	4.92	32.63	NA
		3/25/96	6.02	0.00	6.02	31.53	NA
		4/22/96	5.57	0.00	5.57	31.98	NA
		5/28/96	5.73	0.00	5.73	31.82	NA
		6/24/96	6.72	0.00	6.72	30.83	NA
		7/22/96	7.38	0.00	7.38	30.17	NA
		8/28/96	8.02	0.00	8.02	29.53	NA
		9/23/96	7.48	0.00	7.48	30.07	NA
		9/25/96	8.96	0.00	8.96	28.59	NA
		10/28/96	6.68	0.00	6.68	30.87	NA
		11/25/96	4.92	0.00	4.92	32.63	NA
		12/23/96	5.08	0.00	5.08	32.47	NA
		1/30/97	NP		5.45	32.10	--
		4/21/97	NP		5.73	31.82	--
		7/30/97	NP		7.32	30.23	--

COP0014572

Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
			GATX				
MW-31	37.55	10/14/97	NP		7.19	30.36	--
		1/19/98	NP		4.79	32.76	--
		4/21/98	NP		6.31	31.24	--
		7/27/98	NP		7.51	30.04	--
	35.66	11/17/98	NP		8.38	27.28	--
		2/26/99	NP		4.67	30.99	
		5/26/99	NP		6.44	29.22	
Summary for Well	MW-31 (33 detail records)				**SPH Recovered to Date:**		
MW-32	37.01	4/24/95	NA		4.27	32.74	NA
		7/24/95	NA		5.75	31.26	NA
		10/23/95	NA		6.40	30.61	NA
		4/22/96	NA		3.89	33.12	NA
		7/22/96	NA		5.45	31.56	NA
		10/28/96	NA		5.59	31.42	NA
		1/30/97	NP		4.37	32.64	--
		4/21/97	NP		4.02	32.99	--
		7/30/97	NP		5.49	31.52	--
		10/14/97	NP		5.57	31.44	--
		1/19/98	NP		3.45	33.56	--
		4/21/98	NP		4.52	32.49	--
		7/27/98	NP		5.58	31.43	--
		11/17/98	NP		6.34	30.67	--
		2/26/99	NP		3.07	33.94	
		5/26/99	NP		4.55	32.46	
Summary for Well	MW-32 (16 detail records)				**SPH Recovered to Date:**		
MW-33	39.34	4/24/95	NA		19.93	19.41	NA
		7/24/95	NA		20.68	18.66	NA
		10/23/95	NA		21.05	18.29	NA
		1/22/96	NA		19.07	20.27	NA
		4/22/96	NA		19.48	19.86	NA
		7/22/96	NA		20.26	19.08	NA
		10/28/96	NA		20.58	18.76	NA
		1/30/97	NP		18.92	20.42	--

COP0014573

Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
			GATX				
MW-33	39.34	4/21/97	NP		19.61	19.73	--
		7/30/97	NP		20.03	19.31	--
		10/14/97	NP		20.54	18.80	--
		1/19/98	NP		19.40	19.94	--
		4/21/98	NP		19.99	19.35	--
		7/27/98	NP		20.45	18.89	--
		11/17/98	NP		20.93	18.41	--
		2/26/99	NP		18.67	20.67	
		5/26/99	NP		19.95		
Summary for Well	MW-33 (17 detail records)				SPH Recovered to Date:		
MW-34	39.67	4/24/95	NA		19.40	20.27	NA
		7/24/95	NA		19.99	19.68	NA
		10/23/95	NA		20.26	19.41	NA
		1/22/96	NA		18.71	20.96	NA
		4/22/96	NA		19.43	20.24	NA
		7/22/96	NA		19.74	19.93	NA
		10/28/96	NA		20.18	19.49	NA
		1/30/97	NP		18.78	20.89	--
		4/21/97	NP		19.41	20.26	--
		7/30/97	NP		19.76	19.91	--
		10/14/97	NP		20.04	19.63	--
		1/19/98	NP		19.92	19.75	--
		4/21/98	NP		19.60	20.07	--
		7/27/98	NP		20.03	19.64	--
		11/17/98	NP		20.26	19.41	--
		2/26/99	NP		18.54	21.13	
		5/26/99	NP		19.62	20.05	
Summary for Well	MW-34 (17 detail records)				SPH Recovered to Date:		
MW-35	33.39	1/30/97	NP		2.08	31.31	--
		4/21/97	NP		2.58	30.81	--
		10/14/97	NP		4.03	29.36	--
		1/19/98	NP		2.88	30.51	--
		4/21/98	NP		2.71	30.68	--

COP0014574

Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
			GATX				
MW-35	33.39	7/27/98	NP		3.82	29.57	--
		11/17/98	NP		5.09	28.30	--
		2/26/99	NP		1.57	31.82	
		5/26/99	NP		2.99	30.40	
Summary for Well	MW-35 (9 detail records)				**SPH Recovered to Date:**		
MW-36	34.88	4/24/95	NA		19.40	15.48	NA
		7/24/95	NA		19.99	14.89	NA
		10/23/95	NA		20.26	14.62	NA
		1/22/96	NA		13.74	21.14	NA
		4/22/96	NA		13.72	21.16	NA
		7/22/96	NA		14.90	19.98	NA
		10/28/96	NA		15.54	19.34	NA
		1/30/97	NP		13.02	21.86	--
		4/21/97	NP		13.98	20.90	--
		7/30/97	NP		14.51	20.37	--
		10/14/97	NP		15.15	19.73	--
		1/19/98	NP		14.13	20.75	--
		4/21/98	NP		14.33	20.55	--
		7/27/98	NP		15.09	19.79	--
		11/17/98	NP		15.59	19.29	--
		2/26/99	NP		12.98	21.90	
		5/26/99	NP		14.30	20.58	
Summary for Well	MW-36 (17 detail records)				**SPH Recovered to Date:**		
MW-37	34.86	4/24/95	NA		14.96	19.90	NA
		7/24/95	NA		15.88	18.98	NA
		10/23/95	NA		16.37	18.49	NA
		1/22/96	NA		14.22	20.64	NA
		4/22/96	NA		13.72	21.14	NA
		7/22/96	NA		15.28	19.58	NA
		10/28/96	NA		15.80	19.06	NA
		1/30/97	NP		13.44	21.42	NA
		4/21/97	NP		14.48	20.38	NA
		7/30/97	NP		15.15	19.71	--

COP0014575

Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
			GATX				
MW-37	34.86	10/14/97	NP		15.76	19.10	--
		1/19/98	NP		14.61	20.25	--
		4/21/98	NP		14.98	19.88	--
		7/27/98	NP		15.71	19.15	--
		11/17/98	NP		16.24	18.62	--
		2/26/99	NP		13.47	21.39	
		5/26/99	NP		13.90	20.96	
Summary for Well	MW-37 (17 detail records)				**SPH Recovered to Date:**		
MW-38	37.50	1/30/97	NP		3.98	33.52	--
		4/21/97	NP		4.84	32.66	--
		10/14/97	NP		7.39	30.11	--
		1/19/98	NP		4.76	32.74	--
		4/21/98	NP		5.27	32.23	--
		7/27/98	NP		6.89	30.61	--
		11/17/98	NP		7.98	29.52	--
		2/26/99	NP		5.68	31.82	
		5/26/99	NP		5.57	31.93	
Summary for Well	MW-38 (9 detail records)				**SPH Recovered to Date:**		
MW-39	35.02	6/24/96	13.01	0.00	13.01	22.01	NA
		7/22/96	13.45	0.00	13.45	21.57	NA
		8/26/96	13.90	0.00	13.90	21.12	NA
		9/23/96	14.08	0.00	14.08	20.94	NA
		10/28/96	14.00	0.00	14.00	21.02	NA
		11/25/96	13.54	0.00	13.54	21.48	NA
		12/23/96	12.77	0.00	12.77	22.25	NA
		1/30/97	NM		NM		--
		4/21/97	NM		NM		--
		10/14/97	NP		13.99	21.03	--
		1/19/98	NM		NM		--
		4/21/98	NM		NM		--
		7/27/98	NP		13.85	21.17	--
		11/17/98	NP		14.36	20.66	--
		2/26/99	NP		12.21	22.81	

COP0014576

Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
			GATX				
MW-39	35.02	5/26/99	NP		13.29	21.73	
Summary for Well	MW-39 (16 detail records)				**SPH Recovered to Date:**		
MW-40	33.65	6/24/96	13.81	0.00	13.81	19.84	NA
		7/22/96	14.32	0.00	14.32	19.33	NA
		8/26/96	14.77	0.00	14.77	18.88	NA
		9/23/96	14.83	0.00	14.83	18.82	NA
		10/28/96	14.63	0.00	14.63	19.02	NA
		11/25/96	13.78	0.00	13.78	19.87	NA
		12/23/96	13.37	0.00	13.37	20.28	NA
		1/30/97	NP		12.74	20.91	--
		4/21/97	NP		13.65	20.00	--
		7/30/97	NP		14.24	19.41	--
		10/14/97	NP		14.62	19.03	--
		1/19/98	NP		13.28	20.37	--
		4/21/98	NP		14.05	19.60	--
		7/27/98	NP		14.70	18.95	--
		11/17/98	NP		15.09	18.56	--
		2/26/99	NP		12.56	21.09	
		5/26/99	NP		13.99	19.66	
Summary for Well	MW-40 (17 detail records)				**SPH Recovered to Date:**		

COP0014577

Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
GATX							
					Total SPH Recovered (all wells)		292.94

Notes:
SPH = Separate Phase Hydrocarbon
NP = No product observed this gauging date
NA = Not available
NM = Not measured
* = Groundwater elevation is corrected for the presence of SPH using:
GWE=TOC-(DTW-(SPH thickness x Specific gravity of SPH))
Specific Gravity of SPH set to 0.85 g/cc
** = SPH recovered represents total product recovered for entire quarter
Negative numbers in SPH thickness field indicate possible data transcription error. Data is reported for completeness.

Wells Surveyed Dec. 1998:

B-1	B-12	B-35	U-5
B-3	B-17	B-36	IT-E
B-4	B-18	B-37	MW-27
B-6	B-20	B-40	MW-31
B-8	B-21	B-41	
B-9	B-25	DW-1	
B-10	B-28	P-1	
B-11	B-30	P-2	

COP0014578

Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
			Tosco				
B-1	34.79	4/24/95	17.42	0.49	17.91	16.46	NA
		5/22/95	17.57	0.47	18.04	16.35	NA
		6/26/95	17.75	0.48	18.23	16.15	NA
		7/24/95	17.98	0.02	18.00	16.77	0.002
		8/28/95	18.32	0.02	18.34	16.43	NA
		9/25/95	18.37	0.14	18.51	16.16	NA
		10/23/95	18.30	0.01	18.31	16.47	NA
		11/27/95	17.94	0.03	17.97	16.79	0.01
		12/28/95	16.75	0.16	16.91	17.74	0.85
		1/22/96	16.73	0.12	16.85	17.84	0.01
		2/26/96	13.40	0.02	13.42	21.35	0.08
		4/22/96	16.20	0.15	16.35	18.31	0.01
		5/28/96	16.21	0.00	16.21	18.58	NA
		6/24/96	16.68	0.01	16.69	18.09	NA
		7/22/96	17.20	0.02	17.22	17.55	NA
		8/23/96	17.49	0.03	17.52	17.24	NA
		9/23/96	17.72	0.01	17.73	17.05	NA
		10/28/96	17.18	0.01	17.19	17.59	NA
		1/31/97	15.94	0.16	16.10	18.55	NA
		4/21/97	16.87	0.12	16.99	17.70	NA
		7/28/97	17.15	0.65	17.80	16.44	NA
		10/14/97	17.68	0.62	18.30	15.96	0.5
		1/19/98	17.10	0.01	17.11	17.67	0.1
		4/20/98	NP		17.17	17.62	0.1
		7/29/98	17.44	0.01	17.45	17.33	0.1
	34.68	11/16/98	NP		17.89	16.79	--
		2/23/99	NP		16.19	18.49	
		5/18/99	NP		16.79	17.89	
Summary for Well B-1 (28 detail records)					**SPH Recovered to Date:**		1.76
B-2	35.35	3/28/95	NA		16.84	18.51	NA
		4/24/95	NA		17.02	18.33	NA
		5/22/95	NA		17.22	18.13	NA
		6/26/95	NA		17.48	17.87	NA

COP0014579

Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
			Tosco				
B-2	35.35	8/28/95	19.58	0.26	19.84	15.29	NA
		9/25/95	NA		18.18	17.17	NA
		10/23/95	NA		18.15	17.20	NA
		12/28/95	NA		16.56	18.79	NA
		1/22/96	16.48	0.02	16.50	18.83	NA
		4/22/96	NA		16.28	19.07	NA
		5/28/96	NA		16.14	19.21	NA
		6/24/96	NA		16.50	18.85	NA
		7/22/96	NA		16.99	18.36	NA
		8/23/96	NA		17.48	17.87	NA
		9/23/96	NA		17.50	17.85	NA
		10/28/96	NA		17.60	17.75	NA
		1/31/97	NP		15.69	19.66	--
		4/21/97	NP		16.52	18.83	--
		7/28/97	NP		16.94	18.41	0.00
		10/14/97	NP		17.57	17.78	--
		1/19/98	NP		16.87	18.48	--
		4/20/98	NP		16.93	18.42	--
		7/29/98	NP		17.52	17.83	--
		11/16/98	17.87	0.01	17.88	17.46	0
		2/23/99	NP		15.90	19.45	
		5/18/99	NP		16.64	18.71	
Summary for Well B-2 (26 detail records)					**SPH Recovered to Date:**		**0.00**
B-3	36.79	1/31/97	NP		17.26	19.53	--
		4/21/97	NP		18.48	18.31	--
		7/28/97	NP		18.83	17.96	--
		10/14/97	NP		19.38	17.41	--
		1/19/98	NP		18.25	18.54	--
		4/20/98	NP		18.86	17.93	--
		7/29/98	NP		18.84	17.95	--
	34.81	11/16/98	NP		19.24	15.57	--
		2/23/99	NP		17.21	17.60	
		5/18/99	NP		18.01	16.80	

COP0014580

Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
			Tosco				
Summary for Well B-3 (10 detail records)					**SPH Recovered to Date:**		
B-4	34.79	3/28/95	17.92	0.71	18.63	15.56	NA
		4/24/95	18.01	1.16	19.17	14.63	NA
		5/22/95	18.11	1.13	19.24	14.59	NA
		6/26/95	18.27	1.01	19.28	14.65	NA
		7/24/95	18.53	0.11	18.64	16.06	0.15
		8/28/95	18.62	0.01	18.63	16.15	NA
		9/25/95	18.82	0.13	18.95	15.73	NA
		10/23/95	18.83	0.02	18.85	15.92	NA
		11/27/95	18.56	0.06	18.62	16.12	0.37
		1/22/96	17.60	0.04	17.64	17.12	0.24
		2/26/96	NA		13.68	21.11	NA
		4/22/96	16.35	0.09	16.44	18.27	0.02
		5/28/96	16.35	0.07	16.42	18.31	0.02
		8/23/96	18.35	0.00	18.35	16.44	NA
		9/23/96	18.44	0.01	18.45	16.33	NA
		10/28/96	17.56	1.03	18.59	15.32	NA
		1/31/97	17.00	0.48	17.48	16.90	3.25
		4/21/97	NP		17.71	17.08	0.1
		7/28/97	18.50	0.02	18.52	16.25	0.1
		10/15/97	18.55	0.01	18.56	16.22	1.5
		1/19/98	17.91	0.06	17.97	16.77	1.5
		4/20/98	17.95	0.05	18.00	16.75	1.2
		7/29/98	18.13	0.01	18.14	16.64	1.3
	34.70	11/16/98	NP		18.49	16.21	--
		2/23/99	16.89	1.04	17.93	15.89	
		5/18/99	17.51	0.01	17.52	17.17	0.1
Summary for Well B-4 (26 detail records)					**SPH Recovered to Date:**		**9.85**
B-5	34.79	1/22/96	NA		16.18	18.61	NA
		2/26/96	NA		14.40	20.39	NA
		5/28/96	NA		15.59	19.20	NA
		6/24/96	DRY		DRY		DRY
		7/22/96	DRY		DRY		DRY

COP0014581

Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
			Tosco				
B-5	34.79	8/23/96	DRY		DRY		DRY
		9/23/96	NA		17.02	17.77	NA
		10/28/96	NA		17.10	17.69	NA
	34.83	1/31/97	NP		15.30	19.53	--
		4/21/97	NP		16.08	18.75	--
		7/28/97	NP		16.54	18.29	0.00
		10/14/97	NP		17.10	17.73	--
		1/19/98	NP		16.54	18.29	--
		4/20/98	NP		16.48	18.35	--
		7/29/98	NP		16.79	18.04	--
		11/16/98	NP		17.35	17.48	--
		2/23/99	NP		15.56	19.27	
		5/18/99	NP		18.17	16.66	
Summary for Well B-5 (18 detail records)					**SPH Recovered to Date:**		**0.00**
B-6	35.41	1/22/96	NP		16.44	18.97	NA
		2/26/96	NP		15.60	19.81	NA
		4/22/96	NA		16.15	19.26	NA
		5/28/96	NA		16.11	19.30	NA
		6/24/96	NA		16.47	18.94	NA
		7/22/96	NA		16.91	18.50	NA
		8/23/96	NA		17.99	17.42	NA
		9/23/96	NA		17.45	17.96	NA
		10/28/96	NA		17.34	18.07	NA
		1/31/97	NP		15.47	19.94	--
		4/21/97	NP		16.31	19.10	--
		7/28/97	NP		16.87	18.54	0.00
		10/14/97	NP		17.47	17.94	--
		1/19/98	NP		16.85	18.56	--
		4/20/98	NP		16.78	18.63	--
		7/29/98	NP		17.16	18.25	--
	35.49	11/16/98	NP		17.79	17.70	--
		2/23/99	NP		15.70	19.79	
		5/18/99	NP		16.48	19.01	

COP0014582

Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
			Tosco				
Summary for Well B-6 (19 detail records)					SPH Recovered to Date:		0.00
B-16	35.82	3/24/95	NA		16.99	18.83	NA
		4/24/95	NA		17.12	18.70	NA
		5/22/95	NA		17.37	18.45	NA
		6/19/95	NA		17.59	18.23	NA
		7/24/95	NA		17.89	17.93	NA
		8/28/95	NA		18.10	17.72	NA
		9/25/95	NA		18.35	17.47	NA
		10/23/95	NA		18.30	17.52	NA
		11/27/95	NA		17.90	17.92	NA
		1/22/96	NA		0.00		NA
		2/26/96	NA		13.30	22.52	NA
		4/22/96	NA		16.04	19.78	NA
		5/28/96	NA		16.39	19.43	NA
		6/24/96	NA		16.71	19.11	NA
		7/22/96	NA		17.19	18.63	NA
		9/23/96	NA		17.76	18.06	NA
		10/28/96	NA		17.82	18.00	NA
		1/31/97	NP		15.75	20.07	--
		4/21/97	NP		16.65	19.17	--
		7/28/97	NP		17.15	18.67	0.00
		10/14/97	NP		17.79	18.03	--
		1/19/98	NP		17.16	18.66	--
		4/20/98	NP		17.07	18.75	--
		7/29/98	NP		17.66	18.16	--
		11/16/98	NP		18.12	17.70	--
		2/23/99	NP		16.02	19.80	
		5/18/99	NP		16.77	19.05	
Summary for Well B-16 (27 detail records)					SPH Recovered to Date:		0.00
B-17	35.59	3/28/95	16.95	0.00	16.95	18.64	NA
		4/24/95	NA		17.15	18.44	NA
		5/22/95	17.36	0.00	17.36	18.23	NA
		6/26/95	17.61	0.00	17.61	17.98	NA

COP0014583

Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
			Tosco				
B-17	35.59	7/24/95	17.79	0.01	17.80	17.78	NA
		8/28/95	18.78	0.01	18.79	16.79	NA
		9/25/95	NA		18.23	17.36	NA
		10/23/95	NA		18.21	17.38	NA
		11/27/95	17.85	0.00	17.85	17.74	NA
		12/28/95	NA		16.85	18.74	NA
		1/22/96	NA		16.78	18.81	NA
		2/26/96	13.35	0.01	13.36	22.22	NA
		4/22/96	16.44	0.00	16.44	19.15	NA
		5/28/96	16.40	0.00	16.40	19.19	NA
		6/24/96	16.40	0.00	16.40	19.19	NA
		7/22/96	17.16	0.00	17.16	18.43	NA
		8/23/96	17.57	0.00	17.57	18.02	NA
		9/23/96	NA		17.68	17.91	NA
		10/28/96	NA		17.75	17.84	NA
		1/31/97	NP		15.86	19.73	--
		4/21/97	NP		16.66	18.93	--
		7/28/97	NP		17.15	18.44	0.00
		10/14/97	NP		17.74	17.85	--
		1/19/98	NP		17.17	18.42	--
		4/20/98	NP		17.06	18.53	--
		7/29/98	NP		17.54	18.05	--
	35.61	11/16/98	NP		18.02	17.59	0.2
		2/23/99	NP		17.10	18.51	
		5/18/99	NP		16.76	18.85	
Summary for Well	B-17 (29 detail records)				**SPH Recovered to Date:**		**0.20**
B-18	35.79	3/28/95	NA		19.28	16.51	NA
		4/24/95	NA		19.38	16.41	NA
		5/22/95	NA		19.44	16.35	NA
		6/26/95	NA		19.56	16.23	NA
		7/24/95	NA		19.74	16.05	NA
		8/28/95	NA		19.43	16.36	NA
		9/25/95	NA		20.02	15.77	NA

COP0014584

Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				Tosco			
B-18	35.79	10/23/95	NA		20.08	15.71	NA
		12/28/95	NA		18.66	17.13	NA
		1/22/96	0	0.00	18.20	2.12	NA
		2/26/96	0	0.00	18.38	1.79	NA
		4/22/96	NA		18.50	17.29	NA
		5/28/96	NA		17.84	17.95	NA
		6/24/96	NA		18.35	17.44	NA
		7/22/96	NA		18.97	16.82	NA
		8/23/96	NA		17.50	18.29	NA
		9/23/96	NA		19.43	16.36	NA
		10/28/96	NA		19.47	16.32	NA
		1/31/97	NP		18.09	17.70	--
		4/21/97	NP		18.94	16.85	--
		7/28/97	NP		19.14	16.65	--
		10/14/97	NP		19.64	16.15	--
		1/19/98	NP		19.03	16.76	--
		4/20/98	NP		18.92	16.87	--
		7/29/98	NP		19.04	16.75	--
	35.49	11/16/98	NP		19.36	16.13	--
		2/23/99	NP		17.88	17.61	
		5/18/99	NP		18.38	17.11	0.1
Summary for Well B-18 (28 detail records)						SPH Recovered to Date:	0.10
B-22	35.83	3/28/95	NA		18.50	17.33	NA
		4/24/95	NA		19.10	16.73	NA
		5/22/95	NA		19.09	16.74	NA
		6/26/95	NA		19.26	16.57	NA
		9/25/95	NA		20.50	15.33	NA
		10/23/95	NA		19.96	15.87	NA
		12/28/95	NA		18.59	17.24	0.02
		1/22/96	NA		18.88	16.95	NA
		2/26/96	NA		12.05	23.78	NA
		4/22/96	NA		17.75	18.08	NA
		5/28/96	NA		17.31	18.52	NA

COP0014585

Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
			Tosco				
B-22	35.83	6/24/96	NA		18.12	17.71	NA
		7/22/96	NA		19.09	16.74	NA
		8/23/96	NA		19.03	16.80	NA
		9/23/96	NA		19.79	16.04	NA
		10/28/96	NA		19.75	16.08	NA
		1/31/97	17.92	0.01	17.93	17.89	0.1
		4/21/97	NP		18.67	17.16	--
		7/28/97	18.89	2.26	21.15	12.76	1.0
		10/14/97	19.56	0.04	19.60	16.20	1.75
		1/19/98	18.55	1.35	19.90	14.78	4.0
		4/20/98	18.80	0.76	19.56	15.62	2.6
		7/29/98	NP		18.56	17.27	--
		11/16/98	NP		19.10	16.73	0.1
		2/23/99	NP		17.09	18.74	
		5/18/99	NP		17.69	18.14	0.1
Summary for Well	B-22 (26 detail records)				**SPH Recovered to Date:**		9.67
B-25	37.60	4/21/97	NP		15.29	22.31	--
		10/14/97	NP		19.75	17.85	--
		1/19/98	NP		19.05	18.55	--
		4/20/98	NP		19.08	18.52	--
		7/29/98	NP		19.02	18.58	--
	35.78	11/16/98	NP		19.50	16.28	--
		2/23/99	NP		17.49	18.29	
		5/18/99	NP		18.02	17.76	
Summary for Well	B-25 (8 detail records)				**SPH Recovered to Date:**		
B-27	35.74	3/28/95	17.25	0.27	17.52	17.99	NA
		4/24/95	17.70	0.31	18.01	17.47	NA
		5/22/95	17.85	0.32	18.17	17.30	NA
		6/26/95	17.91	1.12	19.03	15.76	NA
		7/24/95	18.11	1.14	19.25	15.52	NA
		8/28/95	18.75	0.50	19.25	16.07	NA
		9/25/95	18.50	1.10	19.60	15.21	NA
		10/23/95	18.59	1.10	19.69	15.12	NA

COP0014586

Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
			Tosco				
B-27	35.74	11/27/95	18.50	0.30	18.80	16.68	0.8
		1/22/96	17.44	0.43	17.87	17.50	0.78
		2/26/96	13.38	0.31	13.69	21.79	0.25
		4/22/96	16.68	0.27	16.95	18.56	0.12
		8/23/96	18.12	0.56	18.68	16.58	0.31
		9/23/96	18.34	0.36	18.70	16.73	NA
		10/28/96	18.58	0.11	18.69	16.96	NA
		1/31/97	16.43	2.20	18.63	15.24	4.0
		4/21/97	17.37	0.13	17.50	18.13	0.6
		7/25/97	NP		17.86	17.88	--
		10/15/97	18.52	0.01	18.53	17.20	0.75
		1/19/98	NP		17.94	17.80	6.0
		4/20/98	17.86	0.01	17.87	17.86	1.1
		7/29/98	18.19	0.02	18.21	17.51	0.2
		11/16/98	18.65	0.59	19.24	16.00	0.6
		2/23/99	16.63	1.55	18.18	16.24	
		5/18/99	17.36	0.01	17.37	18.36	0.1
Summary for Well	B-27 (25 detail records)				**SPH Recovered to Date:**		**15.61**
B-35	33.58	4/24/95	16.10	0.23	16.33	17.05	NA
		5/22/95	16.24	0.19	16.43	16.99	NA
		6/26/95	16.45	0.23	16.68	16.70	NA
		7/24/95	16.65	0.21	16.86	16.54	NA
		8/28/95	17.35	0.17	17.52	15.92	NA
		9/25/95	17.02	0.30	17.32	16.00	NA
		10/23/95	16.94	0.21	17.15	16.25	NA
		11/27/95	16.50	0.06	16.56	16.97	0.08
		12/28/95	15.60	0.01	15.61	17.96	0.02
		1/22/96	15.52	0.05	15.57	17.97	NA
		2/26/96	13.50	0.05	13.55	19.99	NA
		4/22/96	17.78	0.06	17.84	15.69	NA
		5/28/96	15.08	0.00	15.08	18.50	NA
		6/24/96	NA		15.54	18.04	NA
		7/22/96	NA		16.06	17.52	NA

COP0014587

Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
			Tosco				
B-35	33.58	8/23/96	NA		16.85	16.73	NA
		9/23/96	NA		16.60	16.98	NA
		10/28/96	16.85	0.06	16.91	16.62	NA
		1/31/97	NP		14.84	18.74	--
		4/21/97	NP		15.74	17.84	--
		7/28/97	NP		16.05	17.53	--
		10/14/97	NP		16.57	17.01	--
		1/19/98	NP		15.95	17.63	--
		4/20/98	NP		16.04	17.54	--
		7/29/98	NP		16.31	17.27	--
	33.56	11/16/98	NP		16.69	16.87	--
		2/23/99	NP		15.08	18.48	
		5/18/99	NP		15.68	17.88	
Summary for Well	B-35 (28 detail records)				**SPH Recovered to Date:**		0.10
B-36	30.97	3/28/95	NA		14.65	16.32	NA
		4/24/95	NA		14.95	16.02	NA
		5/22/95	NA		15.03	15.94	NA
		6/26/95	NA		15.24	15.73	NA
		7/24/95	NA		15.47	15.50	NA
		8/28/95	NA		15.35	15.62	NA
		9/25/95	NA		15.82	15.15	NA
		10/23/95	NA		15.60	15.37	NA
		12/28/95	NA		13.91	17.06	NA
		1/22/96	0	0.00	13.93	5.20	NA
		2/26/96	0	0.00	10.75	11.08	NA
		4/22/96	NA		14.10	16.87	NA
		5/28/96	NA		13.01	17.96	NA
		6/24/96	NA		13.84	17.13	NA
		7/22/96	NA		15.01	15.96	NA
		8/23/96	NA		15.81	15.16	NA
		9/23/96	NA		15.65	15.32	NA
		10/28/96	NA		15.55	15.42	NA
		1/31/97	NP		13.44	17.53	--

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Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
			Tosco				
B-36	30.97	4/21/97	NP		14.66	16.31	--
		7/28/97	NP		15.01	15.96	--
		10/14/97	NP		15.55	15.42	--
		1/19/98	NP		14.43	16.54	--
		4/20/98	NP		15.06	15.91	--
		7/29/98	NP		18.07	12.90	--
	31.02	11/16/98	NP		15.46	15.56	--
		2/23/99	NP		13.12	17.90	
		5/18/99	NP		14.23	16.79	
Summary for Well	B-36 (28 detail records)				**SPH Recovered to Date:**		
B-37	35.24	3/28/95	NA		18.51	16.73	NA
		4/24/95	NA		19.66	15.58	NA
		5/22/95	NA		19.62	15.62	NA
		6/26/95	NA		19.75	15.49	NA
		7/24/95	NA		20.08	15.16	NA
		8/28/95	NA		20.10	15.14	NA
		9/25/95	20.41	0.01	20.42	14.81	NA
		10/23/95	20.44	0.01	20.45	14.78	NA
		11/27/95	19.90	0.00	19.90	15.34	NA
		12/28/95	19.66	0.00	19.66	15.58	NA
		1/22/96	18.20	0.03	18.23	16.98	NA
		2/26/96	NA		14.15	21.09	NA
		4/22/96	NA		18.90	16.34	NA
		5/28/96	NA		17.94	17.30	NA
		6/24/96	NA		19.13	16.11	NA
		7/22/96	NA		20.13	15.11	NA
		8/23/96	NA		20.15	15.09	NA
		9/23/96	NA		20.76	14.48	NA
		10/28/96	NA		20.87	14.37	NA
		1/31/97	NP		19.29	15.95	2.0
		4/21/97	NP		19.98	15.26	0.0
		7/28/97	NP		20.30	14.94	--
		10/14/97	NP		20.86	14.38	--

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Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
			Tosco				
B-37	35.24	1/19/98	NP		19.95	15.29	--
		4/20/98	NP		20.22	15.02	--
		7/29/98	NP		19.60	15.64	--
	35.83	11/16/98	NP		20.23	15.60	--
		2/23/99	NP		11.03	24.80	
		5/18/99	NP		18.56	17.27	
Summary for Well B-37 (29 detail records)					**SPH Recovered to Date:**		**2.00**
B-38	34.75	3/28/95	18.95	1.95	20.90	12.19	NA
		4/24/95	19.17	1.51	20.68	12.79	NA
		5/22/95	19.13	1.45	20.58	12.94	NA
		6/26/95	19.30	1.16	20.46	13.30	NA
		7/24/95	19.75	0.17	19.92	14.69	0.2
		8/28/95	19.82	0.71	20.53	13.62	NA
		9/25/95	19.99	1.03	21.02	12.85	NA
		10/23/95	20.00	1.03	21.03	12.84	NA
		11/27/95	19.50	0.32	19.82	14.66	0.81
		1/22/96	18.89	0.14	19.03	15.60	0.45
		2/26/96	13.70	0.37	14.07	20.37	1.31
		4/22/96	18.63	0.25	18.88	15.66	NA
		7/22/96	19.59	1.25	20.84	12.85	NA
		8/23/96	18.70	0.03	18.73	15.99	NA
		9/23/96	20.18	0.78	20.96	13.13	NA
		10/28/96	20.18	0.70	20.88	13.28	NA
		1/31/97	18.80	0.45	19.25	15.12	2.0
		4/21/97	19.39	0.64	20.03	14.18	0.6
		7/25/97	19.78	0.21	19.99	14.58	0.75
		10/14/97	20.30	0.01	20.31	14.43	1.5
		1/19/98	NM		NM		--
Summary for Well B-38 (21 detail records)					**SPH Recovered to Date:**		**7.62**
EX-39	33.92	3/28/95	18.14	0.04	18.18	15.71	NA
		4/24/95	18.31	0.03	18.34	15.55	NA
		5/22/95	18.28	0.03	18.31	15.58	NA
		6/26/95	18.43	0.09	18.52	15.32	NA

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Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
			Tosco				
EX-39	33.92	7/24/95	18.73	0.13	18.86	14.95	NA
		8/28/95	18.95	0.11	19.06	14.77	NA
		9/25/95	19.08	0.14	19.22	14.58	NA
		10/23/95	19.09	0.20	19.29	14.46	NA
		11/27/95	19.55	0.07	19.62	14.24	0.11
		12/28/95	18.05	0.18	18.23	15.54	0.04
		1/22/96	17.03	0.07	17.10	16.76	0.01
		2/26/96	13.54	0.46	14.00	19.53	0.03
		4/22/96	18.65	0.08	18.73	15.12	0.9
		5/28/96	16.64	0.12	16.76	17.06	0.02
		6/24/96	17.67	0.72	18.39	14.92	0.03
		7/22/96	18.68	0.03	18.71	15.18	0.01
		8/23/96	19.18	0.87	20.05	13.13	0.4
		9/23/96	19.42	0.09	19.51	14.33	NA
		10/28/96	19.25	0.04	19.29	14.60	NA
		1/31/97	18.27	0.91	19.18	13.97	2.0
		4/21/97	18.43	0.10	18.53	15.31	0.4
		7/25/97	18.72	0.97	19.69	13.41	2.75
		10/15/97	19.45	0.76	20.21	13.06	3.3
		1/19/98	18.39	0.58	18.97	14.46	1.0
		4/20/98	18.51	2.15	20.66	11.43	3.5
	33.09	7/29/98	17.71	0.75	18.46	13.99	28.0
		11/16/98	NP		19.45	13.64	--
		2/23/99	16.79	0.09	16.88	16.13	
		5/18/99	16.81	0.46	17.27	15.43	3.5
Summary for Well	EX-39 (29 detail records)					**SPH Recovered to Date:**	**46.00**
B-40	33.19	3/28/95	17.55	0.09	17.64	15.47	NA
		4/24/95	17.84	0.12	17.96	15.13	NA
		5/22/95	17.75	0.11	17.86	15.24	NA
		6/26/95	17.95	0.11	18.06	15.04	NA
		8/28/95	18.40	0.01	18.41	14.77	NA
		9/25/95	NA		18.77	14.42	NA
		10/23/95	18.74	0.01	18.75	14.43	NA

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Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
			Tosco				
B-40	33.19	11/27/95	17.98	0.02	18.00	15.17	NA
		12/28/95	17.23	0.00	17.23	15.96	NA
		1/22/96	NA		16.40	16.79	NA
		2/26/96	NA		12.75	20.44	NA
		4/22/96	17.01	0.00	17.01	16.18	NA
		5/28/96	15.78	0.29	16.07	16.87	NA
		6/24/96	16.99	0.15	17.14	15.92	0.23
		7/22/96	18.32	0.12	18.44	14.65	0.01
		8/23/96	18.87	0.06	18.93	14.21	0.02
		9/23/96	19.06	0.06	19.12	14.02	NA
		10/28/96	NA		19.02	14.17	NA
		1/31/97	16.76	0.54	17.30	15.43	NA
		4/21/97	17.79	0.02	17.81	15.36	0.4
		7/25/97	18.86	0.04	18.90	14.26	1.5
		10/14/97	NP		19.89	13.30	0.25
		1/19/98	NP		17.53	15.66	--
		4/20/98	NP		18.45	14.74	--
		7/29/98	18.25	0.37	18.62	14.26	4.0
	34.70	11/16/98	18.55	1.14	19.69	14.04	3.0
		2/23/99	16.25	0.89	17.14	16.80	
		5/18/99	17.10	0.14	17.24	17.34	1.2
Summary for Well	B-40 (28 detail records)					**SPH Recovered to Date:**	**10.61**
B-41	34.85	3/28/95	18.80	0.08	18.88	15.90	NA
		4/24/95	18.93	0.06	18.99	15.81	NA
		5/22/95	18.95	0.07	19.02	15.77	NA
		6/26/95	19.11	0.06	19.17	15.63	NA
		8/28/95	18.55	0.70	19.25	15.01	NA
		9/25/95	19.73	0.20	19.93	14.75	NA
		10/23/95	19.70	0.60	20.30	14.04	NA
		11/27/95	18.50	0.15	18.65	16.07	0.23
		1/22/96	17.38	0.04	17.42	17.40	0.18
		2/26/96	13.40	0.41	13.81	20.69	NA
		4/22/96	12.75	0.23	12.98	21.67	NA

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Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
			Tosco				
B-41	34.85	9/23/96	19.38	0.02	19.40	15.43	0.06
		10/28/96	19.87	0.08	19.95	14.83	NA
		1/31/97	NP		18.31	16.54	--
		4/21/97	18.51	0.03	18.54	16.28	0.2
		7/25/97	18.13	0.70	18.83	15.43	0.1
		10/14/97	NP		19.40	15.45	--
		1/19/98	NM		NM		--
		4/20/98	18.52	0.11	18.63	16.13	1.5
		7/29/98	NP		18.32	16.53	--
	34.63	11/16/98	NP		18.79	15.84	--
		2/23/99	NP		16.92	17.71	
		5/18/99	NP		17.46	17.17	0.1
Summary for Well B-41 (23 detail records)					**SPH Recovered to Date:**		**2.37**
DW-1	35.93	1/26/98	NP		19.56	16.37	--
		7/29/98	NP		19.37	16.56	--
		2/23/99	NP		18.07	17.86	
		5/18/99	NP		18.58	17.35	
Summary for Well DW-1 (4 detail records)					**SPH Recovered to Date:**		
DW-2	36.05	1/27/98	NP		19.65	16.40	--
		7/29/98	NP		19.52	16.53	--
		2/23/99	NP		18.16	17.89	
		5/18/99	NP		18.65	17.40	
Summary for Well DW-2 (4 detail records)					**SPH Recovered to Date:**		
IF-1		2/23/99	NP		18.71		
Summary for Well IF-1 (1 detail record)					**SPH Recovered to Date:**		
IF-2		2/23/99	NP		18.76		
		5/18/99	NP		19.22		
Summary for Well IF-2 (2 detail records)					**SPH Recovered to Date:**		
IT-E	36.44	1/31/97	18.85	0.62	19.47	16.44	0.5
		4/21/97	19.69	0.63	20.32	15.58	0.3
		7/28/97	20.05	0.60	20.65	15.28	2.0
		10/14/97	20.69	0.03	20.72	15.69	0.8
		1/19/98	19.79	0.01	19.80	16.63	--

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Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
			Tosco				
IT-E	36.44	4/22/98	NP		19.83	16.61	--
		7/29/98	NP		19.70	16.74	--
	36.07	11/16/98	NP		20.13	15.94	--
		2/23/99	NP		18.20	17.87	
		5/18/99	NP		18.78	17.29	
Summary for Well IT-E (10 detail records)					**SPH Recovered to Date:**		3.60
IT-W	35.99	1/31/97	NP		16.65	19.34	--
		4/21/97	NP		17.44	18.55	--
		7/28/97	NP		17.81	18.18	--
		10/14/97	NP		18.33	17.66	--
		1/19/98	NP		17.72	18.27	--
		4/20/98	NP		17.81	18.18	--
		7/29/98	NP		18.08	17.91	--
		11/16/98	NP		18.49	17.50	--
		2/23/99	NP		16.85	19.14	
		5/18/99	NP		17.47	18.52	
Summary for Well IT-W (10 detail records)					**SPH Recovered to Date:**		
OF-1	-	2/23/99	NP		17.88		
		5/18/99	NP		18.40		
Summary for Well OF-1 (2 detail records)					**SPH Recovered to Date:**		
OF-2	-	2/23/99	NP		18.04		
		5/18/99	NP		18.52		
Summary for Well OF-2 (2 detail records)					**SPH Recovered to Date:**		
P-1	18.24	11/16/98	NP		9.43	8.81	
		2/23/99	NP		5.99	12.25	
		5/18/99	NP		5.49	12.75	
Summary for Well P-1 (3 detail records)					**SPH Recovered to Date:**		
P-2	17.85	11/16/98	NP		5.17	12.68	
		2/23/99	NP		3.78	14.07	
		5/18/99	NP		3.81	14.04	
Summary for Well P-2 (3 detail records)					**SPH Recovered to Date:**		
RES-N	38.58	3/28/95	23.14	0.76	23.90	14.03	NA
		4/24/95	23.17	1.74	24.91	12.19	NA

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Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
			Tosco				
RES-N	38.58	5/22/95	23.17	0.75	23.92	14.02	NA
		6/26/95	23.26	0.75	24.01	13.93	NA
		8/28/95	23.64	0.68	24.32	13.68	NA
		9/25/95	23.75	0.50	24.25	13.90	NA
		10/23/95	23.80	0.60	24.40	13.67	NA
		11/27/95	23.26	0.60	23.86	14.21	1.59
		12/28/95	22.59	0.02	22.61	15.95	1.21
		1/22/96	20.91	0.03	20.94	17.61	5.0
		2/26/96	23.34	0.76	24.10	13.83	41.25
		4/22/96	22.14	0.02	22.16	16.40	NA
		5/28/96	21.11	0.00	21.11	17.47	NA
		6/24/96	22.41	0.00	22.41	16.17	NA
		7/22/96	22.88	0.00	22.88	15.70	NA
		7/24/96	23.45	0.76	24.21	13.72	NA
		8/23/96	NA		22.21	16.37	NA
		9/23/96	23.74	0.02	23.76	14.80	NA
		10/28/96	NA		24.32	14.26	NA
		1/31/97	22.45	0.09	22.54	15.96	2.0
		4/21/97	23.00	0.01	23.01	15.56	NA
		7/28/97	23.46	0.02	23.48	15.08	0.1
		10/14/97	23.84	0.02	23.86	14.70	1.3
		1/19/98	NM		NM		--
		4/20/98	NP		21.65	16.93	--
		7/29/98	NP		21.41	17.17	--
		11/16/98	NP		21.98	16.60	--
		2/23/99	NP		20.15	18.43	
		5/18/99	NP		20.64	17.94	
Summary for Well	RES-N (29 detail records)					**SPH Recovered to Date:**	52.45
RES-O	36.03	3/28/95	17.61	0.04	17.65	18.35	NA
		4/24/95	17.78	0.02	17.80	18.21	NA
		5/22/95	17.99	0.02	18.01	18.00	NA
		6/26/95	18.26	0.02	18.28	17.73	NA
		8/28/95	17.30	0.25	17.55	18.27	NA

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Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				Tosco			
RES-O	36.03	9/25/95	18.60	0.61	19.21	16.30	NA
		10/23/95	18.90	0.14	19.04	16.87	NA
		11/27/95	19.25	0.01	19.26	16.76	0.01
		12/28/95	17.53	0.01	17.54	18.48	NA
		1/22/96	17.42	0.07	17.49	18.48	NA
		2/26/96	12.50	0.11	12.61	23.33	NA
		4/22/96	10.95	0.10	11.05	24.90	NA
		5/28/96	16.82	0.00	16.82	19.21	NA
		6/24/96	17.18	0.01	17.19	18.83	NA
		7/22/96	17.53	0.01	17.54	18.48	NA
		8/23/96	18.10	0.01	18.11	17.91	NA
		9/23/96	18.22	0.08	18.30	17.66	NA
		10/28/96	18.10	0.05	18.15	17.84	NA
		1/31/97	NP		16.20	19.83	--
		4/21/97	NP		17.00	19.03	--
		7/28/97	NP		17.65	18.38	--
		10/14/97	NP		18.39	17.64	--
		1/19/98	NP		17.60	18.43	--
		4/20/98	NP		17.38	18.65	--
		7/29/98	NP		17.91	18.12	--
		11/18/98	NP		18.52	17.51	--
		2/23/99	NP		16.22	19.81	
		5/18/99	NP		16.88	19.15	
Summary for Well	RES-O (28 detail records)				**SPH Recovered to Date:**		**0.01**
U-2	35.02	3/28/95	NA		14.88	20.14	NA
		4/24/95	NA		15.10	19.92	NA
		5/22/95	NA		15.25	19.77	NA
		6/26/95	NA		15.52	19.50	NA
		7/24/95	NA		15.75	19.27	NA
		8/28/95	NA		15.65	19.37	NA
		9/25/95	NA		15.20	19.82	NA
		10/23/95	NA		16.57	18.45	NA
		12/28/95	NA		15.06	19.96	NA

COP0014596

Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
			Tosco				
U-2	35.02	1/22/96	NA		16.44	18.58	NA
		2/26/96	NA		14.35	20.67	NA
		4/22/96	NA		15.01	20.01	NA
		5/28/96	NA		13.98	21.04	NA
		6/24/96	NA		14.36	20.66	NA
		7/22/96	NA		14.96	20.06	NA
		8/23/96	NA		15.10	19.92	NA
		9/23/96	NA		14.93	20.09	NA
		10/28/96	NA		14.85	20.17	NA
		1/31/97	NP		13.86	21.16	--
		4/21/97	NP		14.52	20.50	--
		7/28/97	NP		15.27	19.75	--
		10/15/97	NP		16.28	18.74	--
		1/19/98	NP		15.78	19.24	--
		4/20/98	NP		15.30	19.72	--
		7/29/98	NP		15.80	19.22	0.1
		11/16/98	NP		16.71	18.31	--
		2/23/99	NP		14.29	20.73	
		5/18/99	NP		14.61	20.41	
Summary for Well U-2 (28 detail records)					**SPH Recovered to Date:**		**0.10**
U-3	35.25	3/28/95	NA		12.72	22.53	NA
		4/24/95	NA		12.93	22.32	NA
		5/22/95	NA		13.55	21.70	NA
		6/26/95	13.89	0.01	13.90	21.34	NA
		7/24/95	NA		14.02	21.23	NA
		8/28/95	NA		19.65	15.60	NA
		9/25/95	NA		16.35	18.90	NA
		10/23/95	14.20	0.01	14.21	21.03	NA
		11/27/95	14.20	0.00	14.20	21.05	NA
		12/28/95	12.71	0.00	12.71	22.54	NA
		1/22/96	16.56	0.02	16.58	18.65	NA
		2/26/96	14.51	-0.36	14.15	21.41	NA
		4/22/96	NA		15.15	20.10	NA

COP0014597

Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
			Tosco				
U-3	35.25	5/28/96	NA		12.27	22.98	NA
		6/24/96	NA		12.69	22.56	NA
		7/22/96	NA		13.02	22.23	NA
		8/23/96	NA		13.15	22.10	NA
		9/23/96	NA		15.02	20.23	NA
		10/28/96	NA		17.90	17.35	NA
		1/31/97	NP		11.86	23.39	0.00
		4/21/97	NP		12.82	22.43	0.00
		7/28/97	NP		13.83	21.42	0.00
		10/15/97	NP		14.23	21.02	--
		1/19/98	NP		13.04	22.21	--
		4/20/98	NP		13.23	22.02	--
		7/29/98	NP		14.07	21.18	--
		11/16/98	NP		14.42	20.83	--
		2/23/99	NP		12.89	22.36	
		5/18/99	NP		13.09	22.16	
Summary for Well U-3 (29 detail records)					**SPH Recovered to Date:**		**0.00**
U-4	34.46	3/28/95	17.42	3.98	21.40	9.68	NA
		4/24/95	15.60	6.17	21.77	7.45	NA
		5/22/95	15.75	6.18	21.93	7.28	NA
		6/26/95	15.96	6.16	22.12	7.10	NA
		7/24/95	16.33	4.17	20.50	10.42	NA
		8/28/95	17.23	3.72	20.95	10.35	5.2
		9/25/95	18.60	0.25	18.85	15.40	NA
		10/23/95	17.35	3.90	21.25	9.89	NA
		11/27/95	16.40	2.40	18.80	13.62	1.22
		1/22/96	17.60	0.04	17.64	16.79	2.79
		2/26/96	12.85	0.30	13.15	21.06	0.98
		4/22/96	11.50	0.23	11.73	22.53	0.31
		8/23/96	16.31	0.16	16.47	17.85	0.25
		9/23/96	16.61	0.09	16.70	17.68	NA
		10/28/96	17.56	0.19	17.75	16.55	NA
		1/31/97	14.80	2.25	17.05	15.50	6.5

COP0014598

Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				Tosco			
U-4	34.46	4/21/97	15.26	0.09	15.35	19.03	NA
		7/25/97	15.85	0.01	15.86	18.59	0.1
		10/15/97	16.50	0.01	16.51	17.94	0.75
		1/19/98	15.97	0.03	16.00	18.43	2.0
		4/20/98	15.72	2.42	18.14	14.26	3.0
		7/29/98	16.22	0.01	16.23	18.22	0.3
		11/16/98	NP		16.82	17.64	--
		2/23/99	14.54	1.24	15.78	17.63	
		5/18/99	15.37	0.02	15.39	19.05	0.5
Summary for Well U-4 (25 detail records)					SPH Recovered to Date:		23.90
U-5	33.37	3/28/95	NA		18.21	15.16	NA
		4/24/95	NA		18.47	14.90	NA
		5/22/95	NA		18.33	15.04	NA
		6/26/95	NA		8.42	24.95	NA
		7/24/95	18.9	0.01	18.91	14.45	NA
		8/28/95	19.13	0.12	19.25	14.02	NA
		9/25/95	19.27	0.25	19.52	13.64	NA
		10/23/95	19.32	0.17	19.49	13.74	NA
		11/27/95	18.50	0.10	18.60	14.69	0.03
	34.2	12/28/95	18.43	0.05	18.48	15.68	0.07
		1/22/96	15.57	0.08	15.65	18.48	0.02
		2/26/96	13.55	0.15	13.70	20.37	NA
		4/22/96	17.82	0.08	17.90	16.23	0.02
		5/28/96	16.52	0.01	16.53	17.66	NA
		6/24/96	18.10	0.01	18.11	16.08	NA
		7/22/96	19.39	0.03	19.42	14.75	NA
		9/23/96	20.04	0.04	20.08	14.09	NA
		10/28/96	18.15	0.07	18.22	15.92	NA
		1/31/97	NP		18.01	16.19	0.00
	34.20	4/21/97	NP		18.61	15.59	0.00
		7/28/97	NP		19.38	14.82	0.00
		10/15/97	NP		19.87	14.33	--
		1/19/98	NM		NM		--

COP0014599

Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				Tosco			
U-5	34.20	4/20/98	NP		19.58	14.62	--
	33.38	7/29/98	NP		18.82	14.56	--
	34.13	11/16/98	NP		19.24	14.89	--
		2/23/99	NP		16.84	17.29	
		5/18/99	NP		17.5	16.63	
Summary for Well U-5 (28 detail records)					SPH Recovered to Date:		0.14
U-5A	33.77	3/28/95	4.73	1.47	6.20	26.32	NA
		4/24/95	6.02	0.39	6.41	27.03	NA
		5/22/95	6.52		NM		NA
		6/26/95	6.97		NM		0.5
		7/24/95	9.86	0.37	10.23	23.23	NA
		8/28/95	9.50	0.45	9.95	23.44	0.01
		9/25/95	NA		15.61	18.16	NA
		10/23/95	15.30	0.20	15.50	18.10	NA
		11/27/95	6.34	0.08	6.42	27.28	0.36
		12/28/95	5.97	0.42	6.39	27.02	0.25
		1/22/96	6.43	0.07	6.50	27.21	0.07
		2/26/96	8.50	0.03	8.53	25.21	0.08
		4/22/96	9.35	0.05	9.40	24.33	0.05
		6/24/96	5.79	0.32	6.11	27.39	0.15
		7/22/96	6.47	0.07	6.54	27.17	0.05
		8/23/96	7.21	0.89	8.10	24.91	0.32
		9/23/96	8.58	1.31	9.89	22.77	NA
		10/28/96	20.04	0.03	20.07	13.67	NA
		1/31/97	4.59	0.27	4.86	28.68	10.0
		4/21/97	5.33	0.04	5.37	28.37	NA
		7/25/97	6.89	0.06	6.95	26.77	1.1
		10/15/97	7.88	0.01	7.89	25.87	0.5
		1/19/98	NP		6.51	27.26	--
		4/20/98	6.43	0.05	6.48	27.25	2.7
		7/29/98	7.80	0.10	7.90	25.79	4.5
		11/16/98	NP		8.99	24.78	--
		2/23/99	NP		4.78	28.99	

COP0014600

Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				Tosco			
U-5A	33.77	5/18/99	5.97	0.02	5.99	27.76	0.4
Summary for Well U-5A (28 detail records)						**SPH Recovered to Date:**	**21.04**
						Total SPH Recovered (all wells)	207.13

Notes:
SPH = Separate Phase Hydrocarbon
NP = No product observed this gauging date
NA = Not available
NM = Not measured
* = Groundwater elevation is corrected for the presence of SPH using:
GWE=TOC-(DTW-(SPH thickness x Specific gravity of SPH))
Specific Gravity of SPH set to 0.85 g/cc
** = SPH recovered represents total product recovered for entire quarter
Negative numbers in SPH thickness field indicate possible data transcription error. Data is reported for completeness.

Wells Surveyed Dec. 1998:

B-1	B-12	B-35	U-5
B-3	B-17	B-36	IT-E
B-4	B-18	B-37	MW-27
B-6	B-20	B-40	MW-31
B-8	B-21	B-41	
B-9	B-25	DW-1	
B-10	B-28	P-1	
B-11	B-30	P-2	

COP0014601

ATTACHMENT A

SAMPLING PROTOCOL

CERTIFIED ANALYTICAL REPORTS

CHAIN-OF-CUSTODY DOCUMENTATION

ATTACHMENT A

Sampling Protocol

The groundwater sampling procedure employed by PEG consists of first measuring depth to water and separate-phase hydrocarbon level and thickness (if present) in each well equipped with a Keck KIR-89 oil/water interface probe. Each well scheduled for sampling was then purged of a minimum of three casing volumes of water (or until dry) by using a double diaphragm pump with a flexible polyvinyl chloride (PVC) hose "stinger" system. The stinger system was decontaminated prior to and between uses with an Alconox™-water wash and a water rinse. Groundwater samples were collected using single-use, disposable polyethylene (PE) bailers after the wells recovered to at least 60 percent of the pre-purge static water level. The samples were placed into appropriate EPA-approved containers, labeled, logged onto chain-of-custody documents, and transported at 4°C to the selected analytical laboratory. Dissolved metal samples were filtered in the field using a 0.45-micron filter capsule, disposable Tygon® tubing and a peristaltic pump. Purge water was disposed of using facility treatment systems.

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T Corp/PEG, Portland	Project:	GATX-WILLBRIDGE	Sampled: 5/26/99 to 5/27/99
7233 SW Kable Lane, Suite 900	Project Number:	B15-100.2A	Received: 5/27/99
Portland, OR 97224	Project Manager:	Stan Haskins	Reported: 7/7/99 16:24

ANALYTICAL REPORT FOR SAMPLES:

Sample Description	Laboratory Sample Number	Sample Matrix	Date Sampled
MW-40	P905534-01	Water	5/26/99
MW-37	P905534-02	Water	5/26/99
MW-37-D	P905534-03	Water	5/26/99
MW-36	P905534-04	Water	5/27/99
MW-8	P905534-05	Water	5/27/99
MW-10	P905534-06	Water	5/27/99
MW-11	P905534-07	Water	5/27/99
MW-21	P905534-08	Water	5/27/99
MW-22	P905534-09	Water	5/27/99
MW-13	P905534-10	Water	5/27/99
MW-32	P905534-11	Water	5/27/99
MW-32-D	P905534-12	Water	5/27/99
MW-31	P905534-13	Water	5/27/99
TB-LB	P905534-14	Water	5/26/99

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.

Crystal Burkholder, Project Manager

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T Corp/PEG, Portland	Project:	GATX-WILLBRIDGE	Sampled: 5/26/99 to 5/27/99
7233 SW Kable Lane, Suite 900	Project Number:	B15-100.2A	Received: 5/27/99
Portland, OR 97224	Project Manager:	Stan Haskins	Reported: 7/7/99 16:24

BTEX per EPA Method 8020A
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
MW-40			**P905534-01**				**Water**	
Benzene	0690043	6/2/99	6/2/99		0.500	ND	ug/l	
Toluene	"	"	"		0.500	ND	"	
Ethylbenzene	"	"	"		0.500	ND	"	
Xylenes (total)	"	"	"		1.00	ND	"	
Surrogate: 4-BFB	"	"	"	*75.0-120*		*95.8*	*%*	
MW-37			**P905534-02**				**Water**	
Benzene	0690070	6/3/99	6/3/99		1.00	**208**	ug/l	
Toluene	"	"	"		1.00	ND	"	
Ethylbenzene	"	"	"		1.00	ND	"	
Xylenes (total)	"	"	"		2.00	ND	"	
Surrogate: 4-BFB	"	"	"	*75.0-120*		*91.2*	*%*	
MW-37-D			**P905534-03**				**Water**	
Benzene	0690070	6/3/99	6/3/99		1.00	**204**	ug/l	
Toluene	"	"	"		1.00	ND	"	
Ethylbenzene	"	"	"		1.00	ND	"	
Xylenes (total)	"	"	"		2.00	ND	"	
Surrogate: 4-BFB	"	"	"	*75.0-120*		*94.2*	*%*	
MW-36			**P905534-04**				**Water**	
Benzene	0690043	6/2/99	6/2/99		0.500	ND	ug/l	
Toluene	"	"	"		0.500	ND	"	
Ethylbenzene	"	"	"		0.500	ND	"	
Xylenes (total)	"	"	"		1.00	ND	"	
Surrogate: 4-BFB	"	"	"	*75.0-120*		*99.2*	*%*	
MW-8			**P905534-05**				**Water**	
Benzene	0690043	6/2/99	6/2/99		0.500	**10.4**	ug/l	
Toluene	"	"	"		0.500	**2.58**	"	
Ethylbenzene	"	"	"		0.500	**4.78**	"	
Xylenes (total)	"	"	"		1.00	**4.13**	"	
Surrogate: 4-BFB	"	"	"	*75.0-120*		*103*	*%*	
MW-10			**P905534-06**				**Water**	
Benzene	0690043	6/2/99	6/2/99		0.500	**2.14**	ug/l	
Toluene	"	"	"		0.500	ND	"	
Ethylbenzene	"	"	"		0.500	ND	"	

North Creek Analytical - Portland

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

Crystal Burkholder, Project Manager

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GT Corp/PEG, Portland	Project:	GATX-WILLBRIDGE	Sampled: 5/26/99 to 5/27/99
7233 SW Kable Lane, Suite 900	Project Number:	B15-100.2A	Received: 5/27/99
Portland, OR 97224	Project Manager:	Stan Haskins	Reported: 7/7/99 16:24

BTEX per EPA Method 8020A
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
MW-10 (continued)			**P905534-06**				**Water**	
Xylenes (total)	0690043	6/2/99	6/2/99		1.00	ND	ug/l	
Surrogate: 4-BFB	"	"	"	*75.0-120*		*88.0*	%	
MW-11			**P905534-07**				**Water**	
Benzene	0690106	6/4/99	6/4/99		50.0	**5000**	ug/l	
Toluene	"	"	"		50.0	**2500**	"	
Ethylbenzene	"	"	"		50.0	**2640**	"	
Xylenes (total)	"	"	"		100	**10400**	"	
Surrogate: 4-BFB	"	"	"	*75.0-120*		*89.2*	%	
MW-21			**P905534-08**				**Water**	
Benzene	0690043	6/2/99	6/2/99		0.500	ND	ug/l	
Toluene	"	"	"		0.500	ND	"	
Ethylbenzene	"	"	"		0.500	ND	"	
Xylenes (total)	"	"	"		1.00	ND	"	
Surrogate: 4-BFB	"	"	"	*75.0-120*		*89.8*	%	
MW-22			**P905534-09**				**Water**	
Benzene	0690106	6/4/99	6/4/99		50.0	**1750**	ug/l	
Toluene	"	"	"		50.0	**1930**	"	
Ethylbenzene	"	"	"		50.0	**4130**	"	
Xylenes (total)	"	"	"		100	**12100**	"	
Surrogate: 4-BFB	"	"	"	*75.0-120*		*87.2*	%	
MW-13			**P905534-10**				**Water**	
Benzene	0690043	6/2/99	6/2/99		0.500	ND	ug/l	
Toluene	"	"	"		0.500	ND	"	
Ethylbenzene	"	"	"		0.500	ND	"	
Xylenes (total)	"	"	"		1.00	ND	"	
Surrogate: 4-BFB	"	"	"	*75.0-120*		*86.8*	%	
MW-32			**P905534-11**				**Water**	
Benzene	0690043	6/2/99	6/2/99		0.500	ND	ug/l	
Toluene	"	"	"		0.500	ND	"	
Ethylbenzene	"	"	"		0.500	ND	"	
Xylenes (total)	"	"	"		1.00	ND	"	
Surrogate: 4-BFB	"	"	"	*75.0-120*		*86.0*	%	

North Creek Analytical - Portland

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

Crystal Burkholder, Project Manager

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IT Corp/PEG, Portland	Project:	GATX-WILLBRIDGE	Sampled: 5/26/99 to 5/27/99
7233 SW Kable Lane, Suite 900	Project Number:	B15-100.2A	Received: 5/27/99
Portland, OR 97224	Project Manager:	Stan Haskins	Reported: 7/7/99 16:24

BTEX per EPA Method 8020A
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
MW-32-D			**P905534-12**				**Water**	
Benzene	0690043	6/2/99	6/2/99		0.500	ND	ug/l	
Toluene	"	"	"		0.500	ND	"	
Ethylbenzene	"	"	"		0.500	ND	"	
Xylenes (total)	"	"	"		1.00	ND	"	
Surrogate: 4-BFB	"	"	"	*75.0-120*		*94.8*	*%*	
MW-31			**P905534-13**				**Water**	
Benzene	0690070	6/3/99	6/3/99		0.500	ND	ug/l	
Toluene	"	"	"		0.500	ND	"	
Ethylbenzene	"	"	"		0.500	ND	"	
Xylenes (total)	"	"	"		1.00	ND	"	
Surrogate: 4-BFB	"	"	"	*75.0-120*		*86.4*	*%*	
TB-LB			**P905534-14**				**Water**	
Benzene	0690043	6/2/99	6/2/99		0.500	ND	ug/l	
Toluene	"	"	"		0.500	ND	"	
Ethylbenzene	"	"	"		0.500	ND	"	
Xylenes (total)	"	"	"		1.00	ND	"	
Surrogate: 4-BFB	"	"	"	*75.0-120*		*93.6*	*%*	

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T Corp/PEG, Portland	Project:	GATX-WILLBRIDGE	Sampled: 5/26/99 to 5/27/99
7233 SW Kable Lane, Suite 900	Project Number:	B15-100.2A	Received: 5/27/99
Portland, OR 97224	Project Manager:	Stan Haskins	Reported: 7/7/99 16:24

Total Metals per EPA 6000/7000 Series Methods
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Specific Method	Reporting Limit	Result	Units	Notes*
MW-40			P905534-01				Water	
Arsenic	0590812	5/28/99	6/1/99	EPA 6020	0.00100	**0.0731**	mg/l	
Barium	"	"	"	EPA 6020	0.00200	**0.225**	"	
Cadmium	"	"	"	EPA 6020	0.00100	ND	"	
Chromium	"	"	6/3/99	EPA 6020	0.00100	**0.00900**	"	
Lead	"	"	6/1/99	EPA 6020	0.00100	**0.0154**	"	
Selenium	"	"	"	EPA 6020	0.00100	ND	"	
Silver	"	"	"	EPA 6020	0.00100	ND	"	
Mercury	0690031	6/2/99	6/3/99	EPA 7470A	0.000200	ND	"	
MW-37			P905534-02				Water	
Arsenic	0590812	5/28/99	6/1/99	EPA 6020	0.00100	**0.0221**	mg/l	
Barium	"	"	"	EPA 6020	0.00200	**0.0467**	"	
Cadmium	"	"	"	EPA 6020	0.00100	ND	"	
Chromium	"	"	6/3/99	EPA 6020	0.00100	ND	"	
Lead	"	"	6/1/99	EPA 6020	0.00100	**0.00140**	"	
Selenium	"	"	"	EPA 6020	0.00100	ND	"	
Silver	"	"	"	EPA 6020	0.00100	ND	"	
Mercury	0690031	6/2/99	6/3/99	EPA 7470A	0.000200	ND	"	
MW-37-D			P905534-03				Water	
Arsenic	0590812	5/28/99	6/1/99	EPA 6020	0.00100	**0.0231**	mg/l	
Barium	"	"	"	EPA 6020	0.00200	**0.0497**	"	
Cadmium	"	"	"	EPA 6020	0.00100	ND	"	
Chromium	"	"	6/3/99	EPA 6020	0.00100	ND	"	
Lead	"	"	6/1/99	EPA 6020	0.00100	ND	"	
Selenium	"	"	"	EPA 6020	0.00100	ND	"	
Silver	"	"	"	EPA 6020	0.00100	ND	"	
Mercury	0690031	6/2/99	6/3/99	EPA 7470A	0.000200	ND	"	
MW-36			P905534-04				Water	
Arsenic	0590812	5/28/99	6/1/99	EPA 6020	0.00100	**0.0117**	mg/l	
Barium	"	"	"	EPA 6020	0.00200	**0.0508**	"	
Cadmium	"	"	"	EPA 6020	0.00100	ND	"	
Chromium	"	"	6/3/99	EPA 6020	0.00100	ND	"	
Lead	"	"	6/1/99	EPA 6020	0.00100	ND	"	
Selenium	"	"	"	EPA 6020	0.00100	ND	"	
Silver	"	"	"	EPA 6020	0.00100	ND	"	
Mercury	0690031	6/2/99	6/3/99	EPA 7470A	0.000200	ND	"	

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Crystal Burkholder, Project Manager

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T Corp/PEG, Portland	Project:	GATX-WILLBRIDGE	Sampled: 5/26/99 to 5/27/99
7233 SW Kable Lane, Suite 900	Project Number:	B15-100.2A	Received: 5/27/99
Portland, OR 97224	Project Manager:	Stan Haskins	Reported: 7/7/99 16:24

Total Metals per EPA 6000/7000 Series Methods
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Specific Method	Reporting Limit	Result	Units	Notes*
MW-8			**P905534-05**				**Water**	
Arsenic	0590812	5/28/99	6/1/99	EPA 6020	0.00100	**0.0149**	mg/l	
Barium	"	"	"	EPA 6020	0.00200	**0.115**	"	
Cadmium	"	"	"	EPA 6020	0.00100	**0.00360**	"	
Chromium	"	"	6/3/99	EPA 6020	0.00100	**0.00150**	"	
Lead	"	"	6/1/99	EPA 6020	0.00100	**0.00240**	"	
Selenium	"	"	"	EPA 6020	0.00100	ND	"	
Silver	"	"	"	EPA 6020	0.00100	ND	"	
Mercury	0690031	6/2/99	6/3/99	EPA 7470A	0.000200	ND	"	
MW-10			**P905534-06**				**Water**	
Arsenic	0590812	5/28/99	6/1/99	EPA 6020	0.00100	**0.0217**	mg/l	
Barium	"	"	"	EPA 6020	0.00200	**0.117**	"	
Cadmium	"	"	"	EPA 6020	0.00100	ND	"	
Chromium	"	"	6/3/99	EPA 6020	0.00100	**0.00310**	"	
Lead	"	"	6/1/99	EPA 6020	0.00100	**0.00370**	"	
Selenium	"	"	"	EPA 6020	0.00100	ND	"	
Silver	"	"	"	EPA 6020	0.00100	ND	"	
Mercury	0690031	6/2/99	6/3/99	EPA 7470A	0.000200	ND	"	
MW-11			**P905534-07**				**Water**	
Arsenic	0590812	5/28/99	6/1/99	EPA 6020	0.00100	**0.0553**	mg/l	
Barium	"	"	"	EPA 6020	0.00200	**0.133**	"	
Cadmium	"	"	"	EPA 6020	0.00100	ND	"	
Chromium	"	"	6/3/99	EPA 6020	0.00100	**0.00620**	"	
Lead	"	"	6/1/99	EPA 6020	0.00100	**0.0381**	"	
Selenium	"	"	"	EPA 6020	0.00100	ND	"	
Silver	"	"	"	EPA 6020	0.00100	ND	"	
Mercury	0690031	6/2/99	6/3/99	EPA 7470A	0.000200	ND	"	
MW-21			**P905534-08**				**Water**	
Arsenic	0590812	5/28/99	6/1/99	EPA 6020	0.00100	**0.00580**	mg/l	
Barium	"	"	"	EPA 6020	0.00200	**0.222**	"	
Cadmium	"	"	"	EPA 6020	0.00100	**0.00230**	"	
Chromium	"	"	6/3/99	EPA 6020	0.00100	**0.00120**	"	
Lead	"	"	6/1/99	EPA 6020	0.00100	**0.00440**	"	
Selenium	"	"	"	EPA 6020	0.00100	ND	"	
Silver	"	"	"	EPA 6020	0.00100	ND	"	
Mercury	0690031	6/2/99	6/3/99	EPA 7470A	0.000200	ND	"	

North Creek Analytical - Portland

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Crystal Burkholder, Project Manager

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f Corp/PEG, Portland	Project: GATX-WILLBRIDGE	Sampled:	5/26/99 to 5/27/99
7233 SW Kable Lane, Suite 900	Project Number: B15-100.2A	Received:	5/27/99
Portland, OR 97224	Project Manager: Stan Haskins	Reported:	7/7/99 16:24

Total Metals per EPA 6000/7000 Series Methods
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Specific Method	Reporting Limit	Result	Units	Notes*
MW-22			**P905534-09**				**Water**	
Arsenic	0590812	5/28/99	6/1/99	EPA 6020	0.00100	**0.102**	mg/l	
Barium	"	"	"	EPA 6020	0.00200	**0.174**	"	
Cadmium	"	"	"	EPA 6020	0.00100	ND	"	
Chromium	"	"	6/3/99	EPA 6020	0.00100	**0.00140**	"	
Lead	"	"	6/1/99	EPA 6020	0.00100	**0.0118**	"	
Selenium	"	"	"	EPA 6020	0.00100	ND	"	
Silver	"	"	"	EPA 6020	0.00100	ND	"	
Mercury	0690031	6/2/99	6/3/99	EPA 7470A	0.000200	ND	"	
MW-13			**P905534-10**				**Water**	
Arsenic	0590812	5/28/99	6/1/99	EPA 6020	0.00100	**0.00190**	mg/l	
Barium	"	"	"	EPA 6020	0.00200	**0.0519**	"	
Cadmium	"	"	"	EPA 6020	0.00100	ND	"	
Chromium	"	"	6/3/99	EPA 6020	0.00100	**0.00240**	"	
Lead	"	"	6/1/99	EPA 6020	0.00100	**0.00220**	"	
Selenium	"	"	"	EPA 6020	0.00100	ND	"	
Silver	"	"	"	EPA 6020	0.00100	ND	"	
Mercury	0690031	6/2/99	6/3/99	EPA 7470A	0.000200	ND	"	
MW-32			**P905534-11**				**Water**	
Arsenic	0590812	5/28/99	6/1/99	EPA 6020	0.00100	ND	mg/l	
Barium	"	"	"	EPA 6020	0.00200	**0.0121**	"	
Cadmium	"	"	"	EPA 6020	0.00100	ND	"	
Chromium	"	"	6/3/99	EPA 6020	0.00100	**0.00140**	"	
Lead	"	"	6/1/99	EPA 6020	0.00100	**0.00190**	"	
Selenium	"	"	"	EPA 6020	0.00100	ND	"	
Silver	"	"	"	EPA 6020	0.00100	ND	"	
Mercury	0690031	6/2/99	6/3/99	EPA 7470A	0.000200	ND	"	
MW-32-D			**P905534-12**				**Water**	
Arsenic	0590812	5/28/99	6/1/99	EPA 6020	0.00100	ND	mg/l	
Barium	"	"	"	EPA 6020	0.00200	**0.0110**	"	
Cadmium	"	"	"	EPA 6020	0.00100	ND	"	
Chromium	"	"	6/3/99	EPA 6020	0.00100	**0.00120**	"	
Lead	"	"	6/1/99	EPA 6020	0.00100	ND	"	
Selenium	"	"	"	EPA 6020	0.00100	ND	"	
Silver	"	"	"	EPA 6020	0.00100	ND	"	
Mercury	0690031	6/2/99	6/3/99	EPA 7470A	0.000200	ND	"	

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Crystal Burkholder, Project Manager

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T Corp/PEG, Portland	Project:	GATX-WILLBRIDGE	Sampled: 5/26/99 to 5/27/99
7233 SW Kable Lane, Suite 900	Project Number:	B15-100.2A	Received: 5/27/99
Portland, OR 97224	Project Manager:	Stan Haskins	Reported: 7/7/99 16:24

Total Metals per EPA 6000/7000 Series Methods
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Specific Method	Reporting Limit	Result	Units	Notes*
MW-31			**P905534-13**				**Water**	
Arsenic	0590812	5/28/99	6/1/99	EPA 6020	0.00100	**0.00680**	mg/l	
Barium	"	"	"	EPA 6020	0.00200	**0.0227**	"	
Cadmium	"	"	"	EPA 6020	0.00100	ND	"	
Chromium	"	"	6/3/99	EPA 6020	0.00100	ND	"	
Lead	"	"	6/1/99	EPA 6020	0.00100	ND	"	
Selenium	"	"	"	EPA 6020	0.00100	ND	"	
Silver	"	"	"	EPA 6020	0.00100	ND	"	
Mercury	0690031	6/2/99	6/3/99	EPA 7470A	0.000200	ND	"	

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T Corp/PEG, Portland	Project:	GATX-WILLBRIDGE	Sampled: 5/26/99 to 5/27/99
7233 SW Kable Lane, Suite 900	Project Number:	B15-100.2A	Received: 5/27/99
Portland, OR 97224	Project Manager:	Stan Haskins	Reported: 7/7/99 16:24

Dissolved Metals per EPA 6000/7000 Series Methods
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Specific Method	Reporting Limit	Result	Units	Notes*
MW-21			**P905534-08**				**Water**	
Arsenic	0590813	5/28/99	6/3/99	EPA 6020	0.00100	**0.00300**	mg/l	
Barium	"	"	"	EPA 6020	0.00200	**0.161**	"	
Cadmium	"	"	"	EPA 6020	0.00100	ND	"	
Chromium	"	"	"	EPA 6020	0.00100	ND	"	
Lead	"	"	6/8/99	EPA 6020	0.00100	ND	"	
Selenium	"	"	6/3/99	EPA 6020	0.00100	**0.00150**	"	
Silver	"	"	"	EPA 6020	0.00100	ND	"	
Mercury	0690030	6/2/99	"	EPA 7470A	0.000200	**0.000376**	"	
MW-13			**P905534-10**				**Water**	
Arsenic	0590813	5/28/99	6/3/99	EPA 6020	0.00100	ND	mg/l	
Barium	"	"	"	EPA 6020	0.00200	**0.0269**	"	
Cadmium	"	"	"	EPA 6020	0.00100	ND	"	
Chromium	"	"	"	EPA 6020	0.00100	ND	"	
Lead	"	"	6/8/99	EPA 6020	0.00100	ND	"	
Selenium	"	"	6/3/99	EPA 6020	0.00100	ND	"	
Silver	"	"	"	EPA 6020	0.00100	ND	"	
Mercury	0690030	6/2/99	"	EPA 7470A	0.000200	ND	"	

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T Corp/PEG, Portland	Project:	GATX-WILLBRIDGE	Sampled: 5/26/99 to 5/27/99
7233 SW Kable Lane, Suite 900	Project Number:	B15-100.2A	Received: 5/27/99
Portland, OR 97224	Project Manager:	Stan Haskins	Reported: 7/7/99 16:24

Polynuclear Aromatic Compounds per EPA 8270M-SIM
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
MW-40			**P905534-01**				**Water**	
Acenaphthene	0590815	5/28/99	6/2/99		0.100	ND	ug/l	
Acenaphthylene	"	"	"		0.100	ND	"	
Anthracene	"	"	"		0.100	ND	"	
Benzo (a) anthracene	"	"	"		0.100	ND	"	
Benzo (a) pyrene	"	"	"		0.100	ND	"	
Benzo (b) fluoranthene	"	"	"		0.100	ND	"	
Benzo (ghi) perylene	"	"	"		0.100	ND	"	
Benzo (k) fluoranthene	"	"	"		0.100	ND	"	
Chrysene	"	"	"		0.100	ND	"	
Dibenzo (a,h) anthracene	"	"	"		0.200	ND	"	
Fluoranthene	"	"	"		0.100	ND	"	
Fluorene	"	"	"		0.100	ND	"	
Indeno (1,2,3-cd) pyrene	"	"	"		0.100	ND	"	
Naphthalene	"	"	"		0.100	ND	"	
Phenanthrene	"	"	"		0.100	ND	"	
Pyrene	"	"	"		0.100	ND	"	
Surrogate: 2-Fluorobiphenyl	"	"	"	*37.0-135*		*54.2*	*%*	
Surrogate: Nitrobenzene-d5	"	"	"	*48.0-140*		*55.9*	"	
Surrogate: p-Terphenyl-d14	"	"	"	*25.0-147*		*53.8*	"	
MW-37			**P905534-02**				**Water**	1
Acenaphthene	0590815	5/28/99	6/3/99		25.0	ND	ug/l	2
Acenaphthylene	"	"	"		2.50	ND	"	
Anthracene	"	"	"		2.50	ND	"	
Benzo (a) anthracene	"	"	"		2.50	ND	"	
Benzo (a) pyrene	"	"	"		2.50	ND	"	
Benzo (b) fluoranthene	"	"	"		2.50	ND	"	
Benzo (ghi) perylene	"	"	"		2.50	ND	"	
Benzo (k) fluoranthene	"	"	"		2.50	ND	"	
Chrysene	"	"	"		2.50	ND	"	
Dibenzo (a,h) anthracene	"	"	"		5.00	ND	"	
Fluoranthene	"	"	"		2.50	ND	"	
Fluorene	"	"	"		2.50	**4.20**	"	
Indeno (1,2,3-cd) pyrene	"	"	"		2.50	ND	"	
Naphthalene	"	"	"		5.00	ND	"	2
Phenanthrene	"	"	"		2.50	ND	"	
Pyrene	"	"	"		2.50	ND	"	
Surrogate: 2-Fluorobiphenyl	"	"	"	*37.0-135*		*84.8*	*%*	

North Creek Analytical - Portland

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Crystal Burkholder, Project Manager

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T Corp/PEG, Portland	Project:	GATX-WILLBRIDGE	Sampled: 5/26/99 to 5/27/99
7233 SW Kable Lane, Suite 900	Project Number:	B15-100.2A	Received: 5/27/99
Portland, OR 97224	Project Manager:	Stan Haskins	Reported: 7/7/99 16:24

Polynuclear Aromatic Compounds per EPA 8270M-SIM
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
MW-37 (continued)			**P905534-02**				**Water**	**1**
Surrogate: Nitrobenzene-d5	*0590815*	*5/28/99*	*6/3/99*	*48.0-140*		*NR*	%	*3*
Surrogate: p-Terphenyl-d14	"	"	"	*25.0-147*		*84.8*	"	
MW-37-D			**P905534-03**				**Water**	**1**
Acenaphthene	0590815	5/28/99	6/3/99		1.00	ND	ug/l	
Acenaphthylene	"	"	"		1.00	ND	"	
Anthracene	"	"	"		1.00	ND	"	
Benzo (a) anthracene	"	"	"		1.00	ND	"	
Benzo (a) pyrene	"	"	"		1.00	ND	"	
Benzo (b) fluoranthene	"	"	"		1.00	ND	"	
Benzo (ghi) perylene	"	"	"		1.00	ND	"	
Benzo (k) fluoranthene	"	"	"		1.00	ND	"	
Chrysene	"	"	"		1.00	ND	"	
Dibenzo (a,h) anthracene	"	"	"		2.00	ND	"	
Fluoranthene	"	"	"		1.00	ND	"	
Fluorene	"	"	"		1.00	**1.76**	"	
Indeno (1,2,3-cd) pyrene	"	"	"		1.00	ND	"	
Naphthalene	"	"	"		10.0	ND	"	2
Phenanthrene	"	"	"		1.00	ND	"	
Pyrene	"	"	"		1.00	ND	"	
Surrogate: 2-Fluorobiphenyl	"	"	"	*37.0-135*		*52.8*	%	
Surrogate: Nitrobenzene-d5	"	"	"	*48.0-140*		*22.7*	"	*4*
Surrogate: p-Terphenyl-d14	"	"	"	*25.0-147*		*67.7*	"	
MW-36			**P905534-04**				**Water**	
Acenaphthene	0590815	5/28/99	6/3/99		0.100	**0.163**	ug/l	
Acenaphthylene	"	"	"		0.100	ND	"	
Anthracene	"	"	"		0.100	ND	"	
Benzo (a) anthracene	"	"	"		0.100	ND	"	
Benzo (a) pyrene	"	"	"		0.100	ND	"	
Benzo (b) fluoranthene	"	"	"		0.100	ND	"	
Benzo (ghi) perylene	"	"	"		0.100	ND	"	
Benzo (k) fluoranthene	"	"	"		0.100	ND	"	
Chrysene	"	"	"		0.100	ND	"	
Dibenzo (a,h) anthracene	"	"	"		0.200	ND	"	
Fluoranthene	"	"	"		0.100	ND	"	
Fluorene	"	"	"		0.100	ND	"	
Indeno (1,2,3-cd) pyrene	"	"	"		0.100	ND	"	

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Crystal Burkholder, Project Manager

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T Corp/PEG, Portland	Project:	GATX-WILLBRIDGE	Sampled: 5/26/99 to 5/27/99
7233 SW Kable Lane, Suite 900	Project Number:	B15-100.2A	Received: 5/27/99
Portland, OR 97224	Project Manager:	Stan Haskins	Reported: 7/7/99 16:24

Polynuclear Aromatic Compounds per EPA 8270M-SIM
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
MW-36 (continued)			**P905534-04**				**Water**	
Naphthalene	0590815	5/28/99	6/3/99		0.100	ND	ug/l	
Phenanthrene	"	"	"		0.100	ND	"	
Pyrene	"	"	"		0.100	ND	"	
Surrogate: 2-Fluorobiphenyl	"	"	"	*37.0-135*		*61.7*	*%*	
Surrogate: Nitrobenzene-d5	"	"	"	*48.0-140*		*66.2*	*"*	
Surrogate: p-Terphenyl-d14	"	"	"	*25.0-147*		*76.7*	*"*	
MW-8			**P905534-05**				**Water**	
Acenaphthene	0590815	5/28/99	6/2/99		0.100	ND	ug/l	
Acenaphthylene	"	"	"		0.100	ND	"	
Anthracene	"	"	"		0.100	ND	"	
Benzo (a) anthracene	"	"	"		0.100	ND	"	
Benzo (a) pyrene	"	"	"		0.100	ND	"	
Benzo (b) fluoranthene	"	"	"		0.100	ND	"	
Benzo (ghi) perylene	"	"	"		0.100	ND	"	
Benzo (k) fluoranthene	"	"	"		0.100	ND	"	
Chrysene	"	"	"		0.100	ND	"	
Dibenzo (a,h) anthracene	"	"	"		0.200	ND	"	
Fluoranthene	"	"	"		0.100	ND	"	
Fluorene	"	"	"		0.100	ND	"	
Indeno (1,2,3-cd) pyrene	"	"	"		0.100	ND	"	
Naphthalene	"	"	"		0.100	**1.88**	"	
Phenanthrene	"	"	"		0.100	ND	"	
Pyrene	"	"	"		0.100	ND	"	
Surrogate: 2-Fluorobiphenyl	"	"	"	*37.0-135*		*61.4*	*%*	
Surrogate: Nitrobenzene-d5	"	"	"	*48.0-140*		*67.4*	*"*	
Surrogate: p-Terphenyl-d14	"	"	"	*25.0-147*		*80.5*	*"*	
MW-10			**P905534-06**				**Water**	
Acenaphthene	0590815	5/28/99	6/2/99		0.100	ND	ug/l	
Acenaphthylene	"	"	"		0.100	ND	"	
Anthracene	"	"	"		0.100	ND	"	
Benzo (a) anthracene	"	"	"		0.100	ND	"	
Benzo (a) pyrene	"	"	"		0.100	ND	"	
Benzo (b) fluoranthene	"	"	"		0.100	ND	"	
Benzo (ghi) perylene	"	"	"		0.100	ND	"	
Benzo (k) fluoranthene	"	"	"		0.100	ND	"	
Chrysene	"	"	"		0.100	ND	"	

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Crystal Burkholder, Project Manager

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IT Corp/PEG, Portland	Project:	GATX-WILLBRIDGE	Sampled: 5/26/99 to 5/27/99
7233 SW Kable Lane, Suite 900	Project Number:	B15-100.2A	Received: 5/27/99
Portland, OR 97224	Project Manager:	Stan Haskins	Reported: 7/7/99 16:24

Polynuclear Aromatic Compounds per EPA 8270M-SIM
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
MW-10 (continued)			**P905534-06**				**Water**	
Dibenzo (a,h) anthracene	0590815	5/28/99	6/2/99		0.200	ND	ug/l	
Fluoranthene	"	"	"		0.100	ND	"	
Fluorene	"	"	"		0.100	ND	"	
Indeno (1,2,3-cd) pyrene	"	"	"		0.100	ND	"	
Naphthalene	"	"	"		1.00	ND	"	2
Phenanthrene	"	"	"		0.100	ND	"	
Pyrene	"	"	"		0.100	ND	"	
Surrogate: 2-Fluorobiphenyl	"	"	"	*37.0-135*		*60.6*	*%*	
Surrogate: Nitrobenzene-d5	"	"	"	*48.0-140*		*66.1*	"	
Surrogate: p-Terphenyl-d14	"	"	"	*25.0-147*		*84.3*	"	
MW-11			**P905534-07**				**Water**	**1**
Acenaphthene	0590815	5/28/99	6/3/99		10.0	ND	ug/l	
Acenaphthylene	"	"	"		10.0	ND	"	
Anthracene	"	"	"		10.0	ND	"	
Benzo (a) anthracene	"	"	"		10.0	ND	"	
Benzo (a) pyrene	"	"	"		10.0	ND	"	
Benzo (b) fluoranthene	"	"	"		10.0	ND	"	
Benzo (ghi) perylene	"	"	"		10.0	ND	"	
Benzo (k) fluoranthene	"	"	"		10.0	ND	"	
Chrysene	"	"	"		10.0	ND	"	
Dibenzo (a,h) anthracene	"	"	"		20.0	ND	"	
Fluoranthene	"	"	"		10.0	ND	"	
Fluorene	"	"	"		10.0	ND	"	
Indeno (1,2,3-cd) pyrene	"	"	"		10.0	ND	"	
Naphthalene	"	"	"		10.0	**421**	"	
Phenanthrene	"	"	"		10.0	ND	"	
Pyrene	"	"	"		10.0	ND	"	
Surrogate: 2-Fluorobiphenyl	"	"	"	*37.0-135*		*NR*	*%*	*5*
Surrogate: Nitrobenzene-d5	"	"	"	*48.0-140*		*NR*	"	*5*
Surrogate: p-Terphenyl-d14	"	"	"	*25.0-147*		*NR*	"	*5*
MW-21			**P905534-08**				**Water**	
Acenaphthene	0590815	5/28/99	6/2/99		0.100	ND	ug/l	
Acenaphthylene	"	"	"		0.100	ND	"	
Anthracene	"	"	"		0.100	ND	"	
Benzo (a) anthracene	"	"	"		0.100	ND	"	
Benzo (a) pyrene	"	"	"		0.100	ND	"	

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Crystal Burkholder, Project Manager

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T Corp/PEG, Portland	Project:	GATX-WILLBRIDGE	Sampled: 5/26/99 to 5/27/99
7233 SW Kable Lane, Suite 900	Project Number:	B15-100.2A	Received: 5/27/99
Portland, OR 97224	Project Manager:	Stan Haskins	Reported: 7/7/99 16:24

Polynuclear Aromatic Compounds per EPA 8270M-SIM
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
MW-21 (continued)			**P905534-08**				**Water**	
Benzo (b) fluoranthene	0590815	5/28/99	6/2/99		0.100	ND	ug/l	
Benzo (ghi) perylene	"	"	"		0.100	ND	"	
Benzo (k) fluoranthene	"	"	"		0.100	ND	"	
Chrysene	"	"	"		0.100	ND	"	
Dibenzo (a,h) anthracene	"	"	"		0.200	ND	"	
Fluoranthene	"	"	"		0.100	ND	"	
Fluorene	"	"	"		0.100	ND	"	
Indeno (1,2,3-cd) pyrene	"	"	"		0.100	ND	"	
Naphthalene	"	"	"		0.100	ND	"	
Phenanthrene	"	"	"		0.100	ND	"	
Pyrene	"	"	"		0.100	ND	"	
Surrogate: 2-Fluorobiphenyl	"	"	"	*37.0-135*		*47.2*	%	
Surrogate: Nitrobenzene-d5	"	"	"	*48.0-140*		*31.5*	"	*6*
Surrogate: p-Terphenyl-d14	"	"	"	*25.0-147*		*64.5*	"	
MW-22			**P905534-09**				**Water**	**1**
Acenaphthene	0590815	5/28/99	6/2/99		2.50	ND	ug/l	
Acenaphthylene	"	"	"		2.50	ND	"	
Anthracene	"	"	"		2.50	ND	"	
Benzo (a) anthracene	"	"	"		2.50	ND	"	
Benzo (a) pyrene	"	"	"		2.50	ND	"	
Benzo (b) fluoranthene	"	"	"		2.50	ND	"	
Benzo (ghi) perylene	"	"	"		2.50	ND	"	
Benzo (k) fluoranthene	"	"	"		2.50	ND	"	
Chrysene	"	"	"		2.50	ND	"	
Dibenzo (a,h) anthracene	"	"	"		5.00	ND	"	
Fluoranthene	"	"	"		2.50	ND	"	
Fluorene	"	"	"		2.50	ND	"	
Indeno (1,2,3-cd) pyrene	"	"	"		2.50	ND	"	
Naphthalene	"	"	"		2.50	**201**	"	
Phenanthrene	"	"	"		2.50	ND	"	
Pyrene	"	"	"		2.50	ND	"	
Surrogate: 2-Fluorobiphenyl	"	"	"	*37.0-135*		*58.1*	%	
Surrogate: Nitrobenzene-d5	"	"	"	*48.0-140*		*NR*	"	*3*
Surrogate: p-Terphenyl-d14	"	"	"	*25.0-147*		*52.1*	"	
MW-13			**P905534-10**				**Water**	
Acenaphthene	0590815	5/28/99	6/2/99		0.100	ND	ug/l	

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Crystal Burkholder, Project Manager

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T Corp/PEG, Portland	Project:	GATX-WILLBRIDGE	Sampled: 5/26/99 to 5/27/99
7233 SW Kable Lane, Suite 900	Project Number:	B15-100.2A	Received: 5/27/99
Portland, OR 97224	Project Manager:	Stan Haskins	Reported: 7/7/99 16:24

Polynuclear Aromatic Compounds per EPA 8270M-SIM
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
MW-13 (continued)			**P905534-10**				**Water**	
Acenaphthylene	0590815	5/28/99	6/2/99		0.100	ND	ug/l	
Anthracene	"	"	"		0.100	ND	"	
Benzo (a) anthracene	"	"	"		0.100	ND	"	
Benzo (a) pyrene	"	"	"		0.100	ND	"	
Benzo (b) fluoranthene	"	"	"		0.100	ND	"	
Benzo (ghi) perylene	"	"	"		0.100	ND	"	
Benzo (k) fluoranthene	"	"	"		0.100	ND	"	
Chrysene	"	"	"		0.100	ND	"	
Dibenzo (a,h) anthracene	"	"	"		0.200	ND	"	
Fluoranthene	"	"	"		0.100	ND	"	
Fluorene	"	"	"		0.100	ND	"	
Indeno (1,2,3-cd) pyrene	"	"	"		0.100	ND	"	
Naphthalene	"	"	"		0.100	ND	"	
Phenanthrene	"	"	"		0.100	ND	"	
Pyrene	"	"	"		0.100	ND	"	
Surrogate: 2-Fluorobiphenyl	"	"	"	*37.0-135*		*60.9*	*%*	
Surrogate: Nitrobenzene-d5	"	"	"	*48.0-140*		*72.4*	"	
Surrogate: p-Terphenyl-d14	"	"	"	*25.0-147*		*77.8*	"	
MW-32			**P905534-11**				**Water**	
Acenaphthene	0590815	5/28/99	6/2/99		0.100	ND	ug/l	
Acenaphthylene	"	"	"		0.100	ND	"	
Anthracene	"	"	"		0.100	ND	"	
Benzo (a) anthracene	"	"	"		0.100	ND	"	
Benzo (a) pyrene	"	"	"		0.100	ND	"	
Benzo (b) fluoranthene	"	"	"		0.100	ND	"	
Benzo (ghi) perylene	"	"	"		0.100	ND	"	
Benzo (k) fluoranthene	"	"	"		0.100	ND	"	
Chrysene	"	"	"		0.100	ND	"	
Dibenzo (a,h) anthracene	"	"	"		0.200	ND	"	
Fluoranthene	"	"	"		0.100	ND	"	
Fluorene	"	"	"		0.100	ND	"	
Indeno (1,2,3-cd) pyrene	"	"	"		0.100	ND	"	
Naphthalene	"	"	"		0.100	ND	"	
Phenanthrene	"	"	"		0.100	ND	"	
Pyrene	"	"	"		0.100	ND	"	
Surrogate: 2-Fluorobiphenyl	"	"	"	*37.0-135*		*60.9*	*%*	
Surrogate: Nitrobenzene-d5	"	"	"	*48.0-140*		*63.8*	"	

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Crystal Burkholder, Project Manager

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T Corp/PEG, Portland	Project: GATX-WILLBRIDGE	Sampled:	5/26/99 to 5/27/99
7233 SW Kable Lane, Suite 900	Project Number: B15-100.2A	Received:	5/27/99
Portland, OR 97224	Project Manager: Stan Haskins	Reported:	7/7/99 16:24

Polynuclear Aromatic Compounds per EPA 8270M-SIM
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
MW-32 (continued)			**P905534-11**				**Water**	
Surrogate: p-Terphenyl-d14	*0590815*	*5/28/99*	*6/2/99*	*25.0-147*		*75.3*	*%*	
MW-32-D			**P905534-12**				**Water**	
Acenaphthene	0590815	5/28/99	6/2/99		0.100	ND	ug/l	
Acenaphthylene	"	"	"		0.100	ND	"	
Anthracene	"	"	"		0.100	ND	"	
Benzo (a) anthracene	"	"	"		0.100	ND	"	
Benzo (a) pyrene	"	"	"		0.100	ND	"	
Benzo (b) fluoranthene	"	"	"		0.100	ND	"	
Benzo (ghi) perylene	"	"	"		0.100	ND	"	
Benzo (k) fluoranthene	"	"	"		0.100	ND	"	
Chrysene	"	"	"		0.100	ND	"	
Dibenzo (a,h) anthracene	"	"	"		0.200	ND	"	
Fluoranthene	"	"	"		0.100	ND	"	
Fluorene	"	"	"		0.100	ND	"	
Indeno (1,2,3-cd) pyrene	"	"	"		0.100	ND	"	
Naphthalene	"	"	"		1.00	ND	"	2
Phenanthrene	"	"	"		0.100	ND	"	
Pyrene	"	"	"		0.100	ND	"	
Surrogate: 2-Fluorobiphenyl	"	"	"	*37.0-135*		*53.5*	*%*	
Surrogate: Nitrobenzene-d5	"	"	"	*48.0-140*		*40.1*	"	*6*
Surrogate: p-Terphenyl-d14	"	"	"	*25.0-147*		*84.0*	"	
MW-31			**P905534-13**				**Water**	**1**
Acenaphthene	0590815	5/28/99	6/3/99		0.500	ND	ug/l	
Acenaphthylene	"	"	"		0.500	ND	"	
Anthracene	"	"	"		0.500	ND	"	
Benzo (a) anthracene	"	"	"		0.500	ND	"	
Benzo (a) pyrene	"	"	"		0.500	ND	"	
Benzo (b) fluoranthene	"	"	"		0.500	ND	"	
Benzo (ghi) perylene	"	"	"		0.500	ND	"	
Benzo (k) fluoranthene	"	"	"		0.500	ND	"	
Chrysene	"	"	"		0.500	ND	"	
Dibenzo (a,h) anthracene	"	"	"		1.00	ND	"	
Fluoranthene	"	"	"		0.500	ND	"	
Fluorene	"	"	"		0.500	**1.50**	"	
Indeno (1,2,3-cd) pyrene	"	"	"		0.500	ND	"	
Naphthalene	"	"	"		5.00	ND	"	2

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Crystal Burkholder, Project Manager

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T Corp/PEG, Portland	Project:	GATX-WILLBRIDGE	Sampled: 5/26/99 to 5/27/99
7233 SW Kable Lane, Suite 900	Project Number:	B15-100.2A	Received: 5/27/99
Portland, OR 97224	Project Manager:	Stan Haskins	Reported: 7/7/99 16:24

Polynuclear Aromatic Compounds per EPA 8270M-SIM
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
MW-31 (continued)			**P905534-13**				**Water**	**1**
Phenanthrene	0590815	5/28/99	6/3/99		0.500	**0.626**	ug/l	
Pyrene	"	"	"		0.500	ND	"	
Surrogate: 2-Fluorobiphenyl	"	"	"	*37.0-135*		*77.4*	*%*	
Surrogate: Nitrobenzene-d5	"	"	"	*48.0-140*		*67.9*	"	
Surrogate: p-Terphenyl-d14	"	"	"	*25.0-147*		*87.2*	"	

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T Corp/PEG, Portland	Project: GATX-WILLBRIDGE	Sampled:	5/26/99 to 5/27/99
7233 SW Kable Lane, Suite 900	Project Number: B15-100.2A	Received:	5/27/99
Portland, OR 97224	Project Manager: Stan Haskins	Reported:	7/7/99 16:24

BTEX per EPA Method 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: 0690043	**Date Prepared: 6/2/99**					**Extraction Method: EPA 5030**				
Blank	**0690043-BLK1**									
Benzene	6/2/99			**ND**	ug/l	**0.500**				
Toluene	"			**ND**	"	**0.500**				
Ethylbenzene	"			**ND**	"	**0.500**				
Xylenes (total)	"			**ND**	"	**1.00**				
Surrogate: 4-BFB	"	*50.0*		*49.6*	"	*75.0-120*	*99.2*			
LCS	**0690043-BS2**									
Benzene	6/2/99	20.0		17.7	ug/l	67.0-130	88.5			
Toluene	"	20.0		18.3	"	75.0-126	91.5			
Ethylbenzene	"	20.0		18.6	"	76.0-124	93.0			
Xylenes (total)	"	60.0		56.5	"	75.0-126	94.2			
Surrogate: 4-BFB	"	*50.0*		*49.5*	"	*75.0-120*	*99.0*			
Matrix Spike	**0690043-MS1**		**P905534-01**							
Benzene	6/2/99	20.0	ND	16.6	ug/l	67.0-130	**83.0**			
Toluene	"	20.0	ND	17.6	"	75.0-126	**88.0**			
Ethylbenzene	"	20.0	ND	17.5	"	76.0-124	**87.5**			
Xylenes (total)	"	60.0	ND	53.2	"	75.0-126	**88.7**			
Surrogate: 4-BFB	"	*50.0*		*49.9*	"	*75.0-120*	*99.8*			
Matrix Spike Dup	**0690043-MSD1**		**P905534-01**							
Benzene	6/2/99	20.0	ND	17.4	ug/l	67.0-130	**87.0**	13.0	**4.71**	
Toluene	"	20.0	ND	18.6	"	75.0-126	**93.0**	13.0	**5.52**	
Ethylbenzene	"	20.0	ND	19.0	"	76.0-124	**95.0**	15.0	**8.22**	
Xylenes (total)	"	60.0	ND	57.8	"	75.0-126	**96.3**	13.0	**8.22**	
Surrogate: 4-BFB	"	*50.0*		*50.8*	"	*75.0-120*	*102*			
Batch: 0690070	**Date Prepared: 6/3/99**					**Extraction Method: EPA 5030**				
Blank	**0690070-BLK1**									
Benzene	6/3/99			**ND**	ug/l	**0.500**				
Toluene	"			**ND**	"	**0.500**				
Ethylbenzene	"			**ND**	"	**0.500**				
Xylenes (total)	"			**ND**	"	**1.00**				
Surrogate: 4-BFB	"	*50.0*		*46.0*	"	*75.0-120*	*92.0*			
LCS	**0690070-BS2**									
Benzene	6/3/99	20.0		19.9	ug/l	67.0-130	99.5			

North Creek Analytical - Portland

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

Crystal Burkholder, Project Manager

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T Corp/PEG, Portland	Project:	GATX-WILLBRIDGE	Sampled: 5/26/99 to 5/27/99
7233 SW Kable Lane, Suite 900	Project Number:	B15-100.2A	Received: 5/27/99
Portland, OR 97224	Project Manager:	Stan Haskins	Reported: 7/7/99 16:24

BTEX per EPA Method 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*
LCS (continued)	**0690070-BS2**									
Toluene	6/3/99	20.0		20.7	ug/l	75.0-126	104			
Ethylbenzene	"	20.0		21.6	"	76.0-124	108			
Xylenes (total)	"	60.0		66.1	"	75.0-126	110			
Surrogate: 4-BFB	"	*50.0*		*47.8*	"	*75.0-120*	*95.6*			

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IT Corp/PEG, Portland	Project:	GATX-WILLBRIDGE	Sampled: 5/26/99 to 5/27/99
7233 SW Kable Lane, Suite 900	Project Number:	B15-100.2A	Received: 5/27/99
Portland, OR 97224	Project Manager:	Stan Haskins	Reported: 7/7/99 16:24

Total Metals per EPA 6000/7000 Series Methods/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: 0590812	**Date Prepared: 5/28/99**					**Extraction Method: EPA 200/3005**				
Blank	**0590812-BLK1**									
Arsenic	6/1/99			**ND**	mg/l	**0.00100**				
Barium	"			**ND**	"	**0.00200**				
Cadmium	"			**ND**	"	**0.00100**				
Chromium	"			**ND**	"	**0.00100**				
Lead	"			**ND**	"	**0.00100**				
Selenium	"			**ND**	"	**0.00100**				
Silver	"			**ND**	"	**0.00100**				
LCS	**0590812-BS1**									
Arsenic	6/1/99	0.100		0.106	mg/l	80.0-120	106			
Barium	"	0.100		0.102	"	80.0-120	102			
Cadmium	"	0.100		0.107	"	80.0-120	107			
Chromium	"	0.100		0.0998	"	80.0-120	99.8			
Lead	"	0.100		0.104	"	80.0-120	104			
Selenium	6/3/99	0.100		0.102	"	80.0-120	102			
Silver	6/1/99	0.0500		0.0498	"	80.0-120	99.6			
Duplicate	**0590812-DUP1**		**P905521-01**							
Arsenic	6/1/99		0.00510	0.00500	mg/l			20.0	**1.98**	
Barium	"		0.0629	0.0618	"			20.0	**1.76**	
Cadmium	"		ND	ND	"			20.0		
Chromium	"		ND	ND	"			20.0		
Lead	"		ND	ND	"			20.0		
Selenium	"		ND	ND	"			20.0		
Silver	"		ND	ND	"			20.0		
Matrix Spike	**0590812-MS1**		**P905521-01**							
Arsenic	6/1/99	0.100	0.00510	0.108	mg/l	75.0-125	**103**			
Barium	"	0.100	0.0629	0.151	"	75.0-125	**88.1**			
Cadmium	"	0.100	ND	0.102	"	75.0-125	**102**			
Chromium	"	0.100	ND	0.100	"	75.0-125	**100**			
Lead	"	0.100	ND	0.0956	"	75.0-125	**95.6**			
Selenium	"	0.100	ND	0.108	"	75.0-125	**108**			
Silver	"	0.0500	ND	0.0473	"	75.0-125	**94.6**			
Matrix Spike Dup	**0590812-MSD1**		**P905521-01**							
Arsenic	6/1/99	0.100	0.00510	0.109	mg/l	75.0-125	**104**	20.0	**0.966**	

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

Crystal Burkholder, Project Manager

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T Corp/PEG, Portland	Project:	GATX-WILLBRIDGE	Sampled: 5/26/99 to 5/27/99
7233 SW Kable Lane, Suite 900	Project Number:	B15-100.2A	Received: 5/27/99
Portland, OR 97224	Project Manager:	Stan Haskins	Reported: 7/7/99 16:24

Total Metals per EPA 6000/7000 Series Methods/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)	**0590812-MSD1**		**P905521-01**							
Barium	6/1/99	0.100	0.0629	0.151	mg/l	75.0-125	**88.1**	20.0	**0**	
Cadmium	"	0.100	ND	0.101	"	75.0-125	**101**	20.0	**0.985**	
Chromium	"	0.100	ND	0.101	"	75.0-125	**101**	20.0	**0.995**	
Lead	"	0.100	ND	0.0945	"	75.0-125	**94.5**	20.0	**1.16**	
Selenium	"	0.100	ND	0.108	"	75.0-125	**108**	20.0	**0**	
Silver	"	0.0500	ND	0.0474	"	75.0-125	**94.8**	20.0	**0.211**	
Batch: 0690031	**Date Prepared: 6/2/99**					**Extraction Method: Metals**				
Blank	**0690031-BLK1**									
Mercury	6/3/99			**ND**	mg/l	**0.000200**				
LCS	**0690031-BS1**									
Mercury	6/3/99	0.00500		0.00481	mg/l	80.0-120	96.2			
Duplicate	**0690031-DUP1**		**P905534-03**							
Mercury	6/3/99		ND	ND	mg/l			20.0		
Matrix Spike	**0690031-MS1**		**P906002-01**							
Mercury	6/3/99	0.00500	ND	0.00504	mg/l	75.0-125	**101**			
Matrix Spike	**0690031-MS2**		**P905534-03**							
Mercury	6/3/99	0.00500	ND	0.00513	mg/l	75.0-125	**103**			
Matrix Spike Dup	**0690031-MSD1**		**P906002-01**							
Mercury	6/3/99	0.00500	ND	0.00506	mg/l	75.0-125	**101**	20.0	**0**	

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T Corp/PEG, Portland	Project:	GATX-WILLBRIDGE	Sampled: 5/26/99 to 5/27/99
7233 SW Kable Lane, Suite 900	Project Number:	B15-100.2A	Received: 5/27/99
Portland, OR 97224	Project Manager:	Stan Haskins	Reported: 7/7/99 16:24

Dissolved Metals per EPA 6000/7000 Series Methods/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: 0590813	**Date Prepared: 5/28/99**					**Extraction Method: EPA 200/3005**				
Blank	**0590813-BLK1**									
Arsenic	6/3/99			**ND**	mg/l	**0.00100**				
Barium	"			**ND**	"	**0.00200**				
Cadmium	"			**ND**	"	**0.00100**				
Chromium	"			**ND**	"	**0.00100**				
Lead	"			**ND**	"	**0.00100**				
Selenium	"			**ND**	"	**0.00100**				
Silver	"			**ND**	"	**0.00100**				
LCS	**0590813-BS1**									
Arsenic	6/3/99	0.100		0.0989	mg/l	80.0-120	98.9			
Barium	"	0.100		0.0992	"	80.0-120	99.2			
Cadmium	"	0.100		0.0998	"	80.0-120	99.8			
Chromium	"	0.100		0.0953	"	80.0-120	95.3			
Lead	6/8/99	0.100		0.100	"	80.0-120	100			
Selenium	6/3/99	0.100		0.103	"	85.0-115	103			
Silver	"	0.0500		0.0481	"	80.0-120	96.2			
Duplicate	**0590813-DUP1**		**P905280-11**							
Arsenic	6/3/99		0.00920	0.00970	mg/l			20.0	**5.29**	
Barium	"		0.660	0.682	"			20.0	**3.28**	
Cadmium	"		ND	ND	"			20.0		
Chromium	"		ND	ND	"			20.0		
Lead	6/8/99		0.00110	0.00100	"			20.0	**9.52**	
Selenium	6/3/99		0.00300	0.00310	"			20.0	**3.28**	
Silver	"		ND	ND	"			20.0		
Matrix Spike	**0590813-MS1**		**P905280-11**							
Arsenic	6/3/99	0.100	0.00920	0.117	mg/l	75.0-125	**108**			
Barium	"	0.100	0.660	0.778	"	75.0-125	**118**			
Cadmium	"	0.100	ND	0.0977	"	75.0-125	**97.7**			
Chromium	"	0.100	ND	0.113	"	75.0-125	**113**			
Lead	6/8/99	0.100	0.00110	0.0940	"	75.0-125	**92.9**			
Selenium	6/3/99	0.100	0.00300	0.108	"	75.0-125	**105**			
Silver	"	0.0500	ND	0.0106	"	75.0-125	**21.2**			7

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T Corp/PEG, Portland	Project:	GATX-WILLBRIDGE	Sampled: 5/26/99 to 5/27/99
7233 SW Kable Lane, Suite 900	Project Number:	B15-100.2A	Received: 5/27/99
Portland, OR 97224	Project Manager:	Stan Haskins	Reported: 7/7/99 16:24

Dissolved Metals per EPA 6000/7000 Series Methods/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: 0690030	**Date Prepared: 6/2/99**					**Extraction Method: Metals**				
Blank	**0690030-BLK1**									
Mercury	6/3/99			**ND**	mg/l	**0.000200**				
LCS	**0690030-BS1**									
Mercury	6/3/99	0.00500		0.00468	mg/l	80.0-120	93.6			
Duplicate	**0690030-DUP1**		**P905567-03**							
Mercury	6/3/99		ND	ND	mg/l			20.0		
Matrix Spike	**0690030-MS1**		**P905567-03**							
Mercury	6/3/99	0.00500	ND	0.00520	mg/l	75.0-125	**104**			

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T Corp/PEG, Portland	Project: GATX-WILLBRIDGE	Sampled:	5/26/99 to 5/27/99
7233 SW Kable Lane, Suite 900	Project Number: B15-100.2A	Received:	5/27/99
Portland, OR 97224	Project Manager: Stan Haskins	Reported:	7/7/99 16:24

Polynuclear Aromatic Compounds per EPA 8270M-SIM/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: 0590815	**Date Prepared: 5/28/99**					**Extraction Method: EPA 3520/600 Series**				
Blank	**0590815-BLK1**									
Acenaphthene	6/4/99			ND	ug/l	0.100				
Acenaphthylene	"			ND	"	0.100				
Anthracene	"			ND	"	0.100				
Benzo (a) anthracene	"			ND	"	0.100				
Benzo (a) pyrene	"			ND	"	0.100				
Benzo (b) fluoranthene	"			ND	"	0.100				
Benzo (ghi) perylene	"			ND	"	0.100				
Benzo (k) fluoranthene	"			ND	"	0.100				
Chrysene	"			ND	"	0.100				
Dibenzo (a,h) anthracene	"			ND	"	0.200				
Fluoranthene	"			ND	"	0.100				
Fluorene	"			ND	"	0.100				
Indeno (1,2,3-cd) pyrene	"			ND	"	0.100				
Naphthalene	"			ND	"	0.100				
Phenanthrene	"			ND	"	0.100				
Pyrene	"			ND	"	0.100				
Surrogate: 2-Fluorobiphenyl	"	*2.50*		*1.28*	"	*37.0-135*	*51.2*			
Surrogate: Nitrobenzene-d5	"	*2.50*		*1.23*	"	*48.0-140*	*49.2*			
Surrogate: p-Terphenyl-d14	"	*2.50*		*1.81*	"	*25.0-147*	*72.4*			
LCS	**0590815-BS1**									
Acenaphthene	6/2/99	5.00		ND	ug/l	50.0-150	NR			8
Benzo (a) pyrene	"	5.00		ND	"	50.0-150	NR			8
Pyrene	"	5.00		ND	"	50.0-150	NR			8
Surrogate: 2-Fluorobiphenyl	"	*2.50*		*1.52*	"	*37.0-135*	*60.8*			
Surrogate: Nitrobenzene-d5	"	*2.50*		*1.49*	"	*48.0-140*	*59.6*			
Surrogate: p-Terphenyl-d14	"	*2.50*		*1.96*	"	*25.0-147*	*78.4*			
LCS Dup	**0590815-BSD1**									
Acenaphthene	6/2/99	5.00		3.57	ug/l	50.0-150	71.4	60.0	NR	9
Benzo (a) pyrene	"	5.00		6.08	"	50.0-150	122	60.0	NR	9
Pyrene	"	5.00		3.75	"	50.0-150	75.0	60.0	NR	9
Surrogate: 2-Fluorobiphenyl	"	*2.50*		*1.45*	"	*37.0-135*	*58.0*			
Surrogate: Nitrobenzene-d5	"	*2.50*		*1.52*	"	*48.0-140*	*60.8*			
Surrogate: p-Terphenyl-d14	"	*2.50*		*1.66*	"	*25.0-147*	*66.4*			

North Creek Analytical - Portland

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

Crystal Burkholder, Project Manager

North Creek Analytical, Inc.
Environmental Laboratory Network

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IT Corp/PEG, Portland	Project:	GATX-WILLBRIDGE	Sampled: 5/26/99 to 5/27/99
7233 SW Kable Lane, Suite 900	Project Number:	B15-100.2A	Received: 5/27/99
Portland, OR 97224	Project Manager:	Stan Haskins	Reported: 7/7/99 16:24

Notes and Definitions

#	Note
1	Reporting limits raised due to dilution necessary for analysis.
2	The reporting limit for this analyte was raised due to matrix interference.
3	The surrogate recovery for this sample cannot be accurately quantified due to interference from coeluting organic compounds present in the sample.
4	Surrogate recovery is outside control limits due to matrix interference.
5	The surrogate recovery for this sample is not available due to sample dilution required from high analyte concentration and/or matrix interferences.
6	The recovery for this parameter is outside acceptance limits. Associated target compounds may be biased low.
7	The spike recovery for this QC sample is outside of established control limits due to sample matrix interference.
8	Spike solution not added to the Laboratory Control Sample during extraction.
9	RPD out of spec since the spike solution was not added to the LCS.
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
Environmental Laboratory Services

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CHAIN OF CUSTODY REPORT

Work Order # P905534

REPORT TO: IT Corporation
ATTENTION: Stan Haskins
ADDRESS: 7233 SW Kable Ln, Ste 900-F
Portland OR 97224
PHONE: 503-639-6305 FAX: 503-639-7482
PROJECT NAME: GATX Willbridge
PROJECT NUMBER: B15-100.2A
SAMPLED BY: Nate Hemphill

INVOICE TO:
ATTENTION:
ADDRESS:
P.O. NUMBER: NCA QUOTE #:

TURNAROUND REQUEST in Business Days *
Organic & Inorganic Analyses: 10 (Standard) | 7 | 5 | 4 | 3 | 2 | 1 | Same Day
Fuels & Hydrocarbon Analyses: 5 (Standard) | 3-4 | 2 | 1 | Same Day
OTHER Specify:
* Turnaround Requests less than standard may incur Rush Charges.

Analysis Request:

	CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	NCA SAMPLE ID (Laboratory Use Only)	BTEX 8020 A	DAH 8270 M-Sim	RCRA 8 Total Metals	RCRA 8 Dissolved Metals						MATRIX (W, S, A, O)	# OF CONTAINERS	COMMENTS
1.	MW-40	5-26-99 / 15:50	1	X	X	X							W	4	
2.	MW-37	5-26-99 / 16:45		X	X	X							W	4	
3.	MW-37-D	5-26-99 / 16:45		X	X	X							W	4	
4.	MW-36	5-27-99 / 10:23		X	X	X							W	4	
5.	MW-8	5-27-99 / 11:00		X	X	X							W	4	
6.	MW-10	5-27-99 / 11:20		X	X	X							W	4	
7.	MW-11	5-27-99 / 11:40		X	X	X							W	4	
8.	MW-21	5-27-99 / 12:50		X	X	X	X						W	5	
9.	MW-22	5-27-99 / 13:10		X	✓	X							W	4	
10.	MW-13	5-27-99 / 13:45		X	X	X	X						W	5	

RELINQUISHED BY (Signature): [signature] DATE: 5-27-99
PRINT NAME: Nate Hemphill FIRM: IT Corp TIME: 17:20

RECEIVED BY (Signature): Jessica Roberts DATE: 5/27/99
PRINT NAME: JESSICA ROBERTS FIRM: NCA TIME: 17:20

RELINQUISHED BY (Signature): DATE:
PRINT NAME: FIRM: TIME:

RECEIVED BY (Signature): DATE:
PRINT NAME: FIRM: TIME:

ADDITIONAL REMARKS:

PAGE 1 OF 2

COC Rev 8, 1/96

COP0014629

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

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CHAIN OF CUSTODY REPORT

Work Order #

REPORT TO: IT Corporation
ATTENTION: Stan Haskins
ADDRESS: 7233 Sw Kable Ln, Ste 900-F
Portland OR 97224
PHONE: 503-639-6305 FAX: 503-639-7482
PROJECT NAME: Gatx, Willbridge
PROJECT NUMBER: B15-100.2A
SAMPLED BY: Nate Hemphill

INVOICE TO:
ATTENTION:
ADDRESS:
P.O. NUMBER: NCA QUOTE #:

TURNAROUND REQUEST in Business Days *
Organic & Inorganic Analyses: ~~10~~ Standard | 7 | 5 | 4 | 3 | 2 | 1 | Same Day
Fuels & Hydrocarbon Analyses: 5 Standard | 3-4 | 2 | 1 | Same Day
OTHER Specify:
* Turnaround Requests less than standard may incur Rush Charges.

Analysis Request:

	CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	NCA SAMPLE ID (Laboratory Use Only)	BTEX 8020A	DAH 8270M SIM	RCRA 8 Total metals	RCRA 8 Dissolved metals							MATRIX (W, S, A, O)	# OF CONTAINERS	COMMENTS
1.	MW-32	5-27-99/14:10		X	X	X								W	4	
2.	MW-32-D	5-27-99/14:10		X	X	X								W	4	
3.	MW-31	5-27-99/14:35		X	X	X								W	4	
4.	TB-LB	5-26-99/08:30		X										W	2	
5.																
6.																
7.																
8.																
9.																
10.																

RELINQUISHED BY (Signature): [signature] DATE: 5-27-99
PRINT NAME: Nate Hemphill FIRM: IT Corp TIME: 17:20
RELINQUISHED BY (Signature): DATE:
PRINT NAME: FIRM: TIME:

RECEIVED BY (Signature): Jessica Roberts DATE: 5/27/99
PRINT NAME: JESSICA ROBERTS FIRM: NCA TIME: 17:20
RECEIVED BY (Signature): DATE:
PRINT NAME: FIRM: TIME:

ADDITIONAL REMARKS:

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541.383.9310 fax 541.382.7588

T Corp/PEG, Portland	Project:	GATX-WILLBRIDGE	Sampled: 5/28/99
7233 SW Kable Lane, Suite 900	Project Number:	B15-100.2A	Received: 5/28/99
Portland, OR 97224	Project Manager:	Stan Haskins	Reported: 6/30/99 17:32

ANALYTICAL REPORT FOR SAMPLES:

Sample Description	Laboratory Sample Number	Sample Matrix	Date Sampled
MW-26	P906002-01	Water	5/28/99
MW-15	P906002-02	Water	5/28/99
MW-33	P906002-03	Water	5/28/99
TB-LB	P906002-04	Water	5/28/99

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.

Sandra Wright for
Crystal Burkholder, Project Manager

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IT Corp/PEG, Portland	Project:	GATX-WILLBRIDGE	Sampled: 5/28/99
7233 SW Kable Lane, Suite 900	Project Number:	B15-100.2A	Received: 5/28/99
Portland, OR 97224	Project Manager:	Stan Haskins	Reported: 6/30/99 17:32

BTEX per EPA Method 8020A
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
MW-26			**P906002-01**				**Water**	
Benzene	0690183	6/8/99	6/8/99		0.500	**1.36**	ug/l	
Toluene	"	"	"		0.500	**1.70**	"	
Ethylbenzene	"	"	"		0.500	**4.06**	"	
Xylenes (total)	"	"	"		1.00	**10.4**	"	
Surrogate: 4-BFB	"	"	"	*75.0-120*		*97.4*	%	
MW-15			**P906002-02**				**Water**	
Benzene	0690131	6/6/99	6/6/99		0.500	ND	ug/l	
Toluene	"	"	"		0.500	ND	"	
Ethylbenzene	"	"	"		0.500	ND	"	
Xylenes (total)	"	"	"		1.00	ND	"	
Surrogate: 4-BFB	"	"	"	*75.0-120*		*96.4*	%	
MW-33			**P906002-03**				**Water**	
Benzene	0690131	6/6/99	6/6/99		0.500	ND	ug/l	
Toluene	"	"	"		0.500	ND	"	
Ethylbenzene	"	"	"		0.500	ND	"	
Xylenes (total)	"	"	"		1.00	ND	"	
Surrogate: 4-BFB	"	"	"	*75.0-120*		*96.4*	%	
TB-LB			**P906002-04**				**Water**	
Benzene	0690131	6/6/99	6/6/99		0.500	ND	ug/l	
Toluene	"	"	"		0.500	ND	"	
Ethylbenzene	"	"	"		0.500	ND	"	
Xylenes (total)	"	"	"		1.00	ND	"	
Surrogate: 4-BFB	"	"	"	*75.0-120*		*99.4*	%	

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IT Corp/PEG, Portland	Project:	GATX-WILLBRIDGE	Sampled: 5/28/99
7233 SW Kable Lane, Suite 900	Project Number:	B15-100.2A	Received: 5/28/99
Portland, OR 97224	Project Manager:	Stan Haskins	Reported: 6/30/99 17:32

Total Metals per EPA 6000/7000 Series Methods
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Specific Method	Reporting Limit	Result	Units	Notes*
MW-26			**P906002-01**				**Water**	
Arsenic	0690210	6/7/99	6/8/99	EPA 6020	0.00100	**0.0382**	mg/l	
Barium	"	"	"	EPA 6020	0.00200	**0.0541**	"	
Cadmium	"	"	"	EPA 6020	0.00100	**0.00100**	"	
Chromium	"	"	"	EPA 6020	0.00100	ND	"	
Lead	"	"	"	EPA 6020	0.00100	**0.00200**	"	
Selenium	"	"	"	EPA 6020	0.00100	ND	"	
Silver	"	"	"	EPA 6020	0.00100	ND	"	
Mercury	0690031	6/2/99	6/3/99	EPA 7470A	0.000200	ND	"	
MW-15			**P906002-02**				**Water**	
Arsenic	0690210	6/7/99	6/8/99	EPA 6020	0.00100	ND	mg/l	
Barium	"	"	"	EPA 6020	0.00200	**0.0558**	"	
Cadmium	"	"	"	EPA 6020	0.00100	ND	"	
Chromium	"	"	"	EPA 6020	0.00100	ND	"	
Lead	"	"	"	EPA 6020	0.00100	ND	"	
Selenium	"	"	"	EPA 6020	0.00100	ND	"	
Silver	"	"	"	EPA 6020	0.00100	ND	"	
Mercury	0690031	6/2/99	6/3/99	EPA 7470A	0.000200	ND	"	
MW-33			**P906002-03**				**Water**	
Arsenic	0690210	6/7/99	6/8/99	EPA 6020	0.00100	**0.00390**	mg/l	
Barium	"	"	"	EPA 6020	0.00200	**0.0326**	"	
Cadmium	"	"	"	EPA 6020	0.00100	ND	"	
Chromium	"	"	"	EPA 6020	0.00100	**0.00770**	"	
Lead	"	"	"	EPA 6020	0.00100	ND	"	
Selenium	"	"	"	EPA 6020	0.00100	ND	"	
Silver	"	"	"	EPA 6020	0.00100	ND	"	
Mercury	0690031	6/2/99	6/3/99	EPA 7470A	0.000200	ND	"	

North Creek Analytical - Portland

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

Crystal Burkholder, Project Manager

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IT Corp/PEG, Portland	Project:	GATX-WILLBRIDGE	Sampled: 5/28/99
7233 SW Kable Lane, Suite 900	Project Number:	B15-100.2A	Received: 5/28/99
Portland, OR 97224	Project Manager:	Stan Haskins	Reported: 6/30/99 17:32

Dissolved Metals per EPA 6000/7000 Series Methods
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Specific Method	Reporting Limit	Result	Units	Notes*
MW-33			**P906002-03**				**Water**	
Arsenic	0690306	6/10/99	6/12/99	EPA 6020	0.00100	**0.00400**	mg/l	
Barium	"	"	"	EPA 6020	0.00200	**0.0235**	"	
Cadmium	"	"	"	EPA 6020	0.00100	ND	"	
Chromium	"	"	6/15/99	EPA 6020	0.00100	ND	"	
Lead	"	"	6/12/99	EPA 6020	0.00100	ND	"	
Selenium	"	"	"	EPA 6020	0.00100	ND	"	
Silver	"	"	"	EPA 6020	0.00100	ND	"	
Mercury	0690030	6/2/99	6/3/99	EPA 7470A	0.000200	ND	"	

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T Corp/PEG, Portland	Project:	GATX-WILLBRIDGE	Sampled: 5/28/99
7233 SW Kable Lane, Suite 900	Project Number:	B15-100.2A	Received: 5/28/99
Portland, OR 97224	Project Manager:	Stan Haskins	Reported: 6/30/99 17:32

Polynuclear Aromatic Compounds per EPA 8270M-SIM
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
MW-26			**P906002-01**				**Water**	1
Acenaphthene	0690023	6/1/99	6/3/99		1.00	**1.88**	ug/l	
Acenaphthylene	"	"	"		1.00	ND	"	
Anthracene	"	"	"		1.00	ND	"	
Benzo (a) anthracene	"	"	"		1.00	ND	"	
Benzo (a) pyrene	"	"	"		1.00	ND	"	
Benzo (b) fluoranthene	"	"	"		1.00	ND	"	
Benzo (ghi) perylene	"	"	"		1.00	ND	"	
Benzo (k) fluoranthene	"	"	"		1.00	ND	"	
Chrysene	"	"	"		1.00	ND	"	
Dibenzo (a,h) anthracene	"	"	"		2.00	ND	"	
Fluoranthene	"	"	"		1.00	ND	"	
Fluorene	"	"	"		1.00	**1.75**	"	
Indeno (1,2,3-cd) pyrene	"	"	"		1.00	ND	"	
Naphthalene	"	"	"		1.00	**3.42**	"	
Phenanthrene	"	"	"		1.00	**1.02**	"	
Pyrene	"	"	"		1.00	ND	"	
Surrogate: 2-Fluorobiphenyl	"	"	"	*37.0-135*		*70.8*	%	
Surrogate: Nitrobenzene-d5	"	"	"	*48.0-140*		*58.1*	"	
Surrogate: p-Terphenyl-d14	"	"	"	*25.0-147*		*80.1*	"	
MW-15			**P906002-02**				**Water**	
Acenaphthene	0690023	6/1/99	6/10/99		0.100	ND	ug/l	
Acenaphthylene	"	"	"		0.100	ND	"	
Anthracene	"	"	"		0.100	ND	"	
Benzo (a) anthracene	"	"	"		0.100	ND	"	
Benzo (a) pyrene	"	"	"		0.100	ND	"	
Benzo (b) fluoranthene	"	"	"		0.100	ND	"	
Benzo (ghi) perylene	"	"	"		0.100	ND	"	
Benzo (k) fluoranthene	"	"	"		0.100	ND	"	
Chrysene	"	"	"		0.100	ND	"	
Dibenzo (a,h) anthracene	"	"	"		0.200	ND	"	
Fluoranthene	"	"	"		0.100	ND	"	
Fluorene	"	"	"		0.100	ND	"	
Indeno (1,2,3-cd) pyrene	"	"	"		0.100	ND	"	
Naphthalene	"	"	"		0.100	ND	"	
Phenanthrene	"	"	"		0.100	ND	"	
Pyrene	"	"	"		0.100	ND	"	
Surrogate: 2-Fluorobiphenyl	"	"	"	*37.0-135*		*55.9*	%	

North Creek Analytical - Portland

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

Crystal Burkholder, Project Manager

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IT Corp/PEG, Portland	Project:	GATX-WILLBRIDGE	Sampled: 5/28/99
7233 SW Kable Lane, Suite 900	Project Number:	B15-100.2A	Received: 5/28/99
Portland, OR 97224	Project Manager:	Stan Haskins	Reported: 6/30/99 17:32

Polynuclear Aromatic Compounds per EPA 8270M-SIM
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
MW-15 (continued)			**P906002-02**				**Water**	
Surrogate: Nitrobenzene-d5	*0690023*	*6/1/99*	*6/10/99*	*48.0-140*		*61.4*	*%*	
Surrogate: p-Terphenyl-d14	"	"	"	*25.0-147*		*63.6*	"	
MW-33			**P906002-03**				**Water**	
Acenaphthene	0690023	6/1/99	6/4/99		0.100	ND	ug/l	
Acenaphthylene	"	"	"		0.100	ND	"	
Anthracene	"	"	"		0.100	ND	"	
Benzo (a) anthracene	"	"	"		0.100	ND	"	
Benzo (a) pyrene	"	"	"		0.100	ND	"	
Benzo (b) fluoranthene	"	"	"		0.100	ND	"	
Benzo (ghi) perylene	"	"	"		0.100	ND	"	
Benzo (k) fluoranthene	"	"	"		0.100	ND	"	
Chrysene	"	"	"		0.100	ND	"	
Dibenzo (a,h) anthracene	"	"	"		0.200	ND	"	
Fluoranthene	"	"	"		0.100	ND	"	
Fluorene	"	"	"		0.100	ND	"	
Indeno (1,2,3-cd) pyrene	"	"	"		0.100	ND	"	
Naphthalene	"	"	"		0.100	ND	"	
Phenanthrene	"	"	"		0.100	ND	"	
Pyrene	"	"	"		0.100	ND	"	
Surrogate: 2-Fluorobiphenyl	"	"	"	*37.0-135*		*57.2*	*%*	
Surrogate: Nitrobenzene-d5	"	"	"	*48.0-140*		*61.4*	"	
Surrogate: p-Terphenyl-d14	"	"	"	*25.0-147*		*75.8*	"	

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IT Corp/PEG, Portland	Project:	GATX-WILLBRIDGE	Sampled: 5/28/99
7233 SW Kable Lane, Suite 900	Project Number:	B15-100.2A	Received: 5/28/99
Portland, OR 97224	Project Manager:	Stan Haskins	Reported: 6/30/99 17:32

BTEX per EPA Method 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: 0690131	**Date Prepared: 6/6/99**					**Extraction Method: EPA 5030**				
Blank	**0690131-BLK1**									
Benzene	6/6/99			**ND**	ug/l	**0.500**				
Toluene	"			**ND**	"	**0.500**				
Ethylbenzene	"			**ND**	"	**0.500**				
Xylenes (total)	"			**ND**	"	**1.00**				
Surrogate: 4-BFB	"	*50.0*		*48.4*	"	*75.0-120*	*96.8*			
LCS	**0690131-BS2**									
Benzene	6/6/99	20.0		20.6	ug/l	67.0-130	103			
Toluene	"	20.0		20.2	"	75.0-126	101			
Ethylbenzene	"	20.0		20.9	"	76.0-124	104			
Xylenes (total)	"	60.0		72.0	"	75.0-126	120			
Surrogate: 4-BFB	"	*50.0*		*51.7*	"	*75.0-120*	*103*			
Matrix Spike	**0690131-MS1**		**P906002-02**							
Benzene	6/6/99	20.0	ND	18.8	ug/l	67.0-130	**94.0**			
Toluene	"	20.0	ND	19.2	"	75.0-126	**96.0**			
Ethylbenzene	"	20.0	ND	20.1	"	76.0-124	**101**			
Xylenes (total)	"	60.0	ND	61.9	"	75.0-126	**103**			
Surrogate: 4-BFB	"	*50.0*		*51.0*	"	*75.0-120*	*102*			
Matrix Spike Dup	**0690131-MSD1**		**P906002-02**							
Benzene	6/6/99	20.0	ND	18.8	ug/l	67.0-130	**94.0**	13.0	**0**	
Toluene	"	20.0	ND	19.5	"	75.0-126	**97.5**	13.0	**1.55**	
Ethylbenzene	"	20.0	ND	19.4	"	76.0-124	**97.0**	15.0	**4.04**	
Xylenes (total)	"	60.0	ND	59.8	"	75.0-126	**99.7**	13.0	**3.26**	
Surrogate: 4-BFB	"	*50.0*		*50.0*	"	*75.0-120*	*100*			
Batch: 0690183	**Date Prepared: 6/8/99**					**Extraction Method: EPA 5030**				
Blank	**0690183-BLK1**									
Benzene	6/8/99			**ND**	ug/l	**0.500**				
Toluene	"			**ND**	"	**0.500**				
Ethylbenzene	"			**ND**	"	**0.500**				
Xylenes (total)	"			**ND**	"	**1.00**				
Surrogate: 4-BFB	"	*50.0*		*38.0*	"	*75.0-120*	*76.0*			
LCS	**0690183-BS2**									
Benzene	6/8/99	20.0		17.2	ug/l	67.0-130	86.0			

North Creek Analytical - Portland

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

Crystal Burkholder, Project Manager

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541.383.9310 fax 541.382.7588

IT Corp/PEG, Portland	Project:	GATX-WILLBRIDGE	Sampled: 5/28/99
7233 SW Kable Lane, Suite 900	Project Number:	B15-100.2A	Received: 5/28/99
Portland, OR 97224	Project Manager:	Stan Haskins	Reported: 6/30/99 17:32

BTEX per EPA Method 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*
LCS (continued)	0690183-BS2									
Toluene	6/8/99	20.0		17.5	ug/l	75.0-126	87.5			
Ethylbenzene	"	20.0		18.2	"	76.0-124	91.0			
Xylenes (total)	"	60.0		55.1	"	75.0-126	91.8			
Surrogate: 4-BFB	"	*50.0*		*45.4*	"	*75.0-120*	*90.8*			

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T Corp/PEG, Portland	Project: GATX-WILLBRIDGE	Sampled:	5/28/99
233 SW Kable Lane, Suite 900	Project Number: B15-100.2A	Received:	5/28/99
Portland, OR 97224	Project Manager: Stan Haskins	Reported:	6/30/99 17:32

Total Metals per EPA 6000/7000 Series Methods/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: 0690031	**Date Prepared: 6/2/99**					**Extraction Method: Metals**				
Blank	**0690031-BLK1**									
Mercury	6/3/99			**ND**	mg/l	**0.000200**				
LCS	**0690031-BS1**									
Mercury	6/3/99	0.00500		0.00481	mg/l	80.0-120	96.2			
Duplicate	**0690031-DUP1**		**P905534-03**							
Mercury	6/3/99		ND	ND	mg/l			20.0		
Matrix Spike	**0690031-MS1**		**P906002-01**							
Mercury	6/3/99	0.00500	ND	0.00504	mg/l	75.0-125	**101**			
Matrix Spike	**0690031-MS2**		**P905534-03**							
Mercury	6/3/99	0.00500	ND	0.00513	mg/l	75.0-125	**103**			
Matrix Spike Dup	**0690031-MSD1**		**P906002-01**							
Mercury	6/3/99	0.00500	ND	0.00506	mg/l	75.0-125	**101**	20.0	**0**	
Batch: 0690210	**Date Prepared: 6/7/99**					**Extraction Method: EPA 200/3005**				
Blank	**0690210-BLK1**									
Arsenic	6/8/99			**ND**	mg/l	**0.00100**				
Barium	"			**ND**	"	**0.00200**				
Cadmium	"			**ND**	"	**0.00100**				
Chromium	"			**ND**	"	**0.00100**				
Lead	"			**ND**	"	**0.00100**				
Selenium	"			**ND**	"	**0.00100**				
Silver	"			**ND**	"	**0.00100**				
LCS	**0690210-BS1**									
Arsenic	6/15/99	0.100		0.0955	mg/l	80.0-120	95.5			
Barium	"	0.100		0.101	"	80.0-120	101			
Cadmium	"	0.100		0.0971	"	80.0-120	97.1			
Chromium	"	0.100		0.0967	"	80.0-120	96.7			
Lead	"	0.100		0.105	"	80.0-120	105			
Selenium	"	0.100		0.0909	"	80.0-120	90.9			
Silver	"	0.0500		0.0477	"	80.0-120	95.4			

North Creek Analytical - Portland

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

Crystal Burkholder, Project Manager

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[illegible] Corp/PEG, Portland	Project:	GATX-WILLBRIDGE	Sampled: 5/28/99
[illegible]233 SW Kable Lane, Suite 900	Project Number:	B15-100.2A	Received: 5/28/99
Portland, OR 97224	Project Manager:	Stan Haskins	Reported: 6/30/99 17:32

Total Metals per EPA 6000/7000 Series Methods/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*
Duplicate	0690210-DUP1		P906002-01							
[illegible]rsenic	6/8/99		0.0382	0.0429	mg/l			20.0	**11.6**	
Barium	"		0.0541	0.0605	"			20.0	**11.2**	
[illegible]admium	"		0.00100	0.00100	"			20.0	**0**	
[illegible]hromium	"		ND	ND	"			20.0		
[illegible]ead	"		0.00200	0.00200	"			20.0	**0**	
Selenium	"		ND	ND	"			20.0		
[illegible]ilver	"		ND	ND	"			20.0		
Matrix Spike	0690210-MS1		P906002-01							
[illegible]rsenic	6/12/99	0.100	0.0382	0.159	mg/l	75.0-125	**121**			
[illegible]arium	6/8/99	0.100	0.0541	0.159	"	75.0-125	**105**			
[illegible]admium	"	0.100	0.00100	0.0996	"	75.0-125	**98.6**			
Chromium	"	0.100	ND	0.101	"	75.0-125	**101**			
[illegible]ead	"	0.100	0.00200	0.0994	"	75.0-125	**97.4**			
[illegible]elenium	"	0.100	ND	0.0908	"	75.0-125	**90.8**			
Silver	"	0.0500	ND	0.0525	"	75.0-125	**105**			
Matrix Spike Dup	0690210-MSD1		P906002-01							
Arsenic	6/15/99	0.100	0.0382	0.149	mg/l	75.0-125	**111**	20.0	**8.62**	
Barium	6/8/99	0.100	0.0541	0.149	"	75.0-125	**94.9**	20.0	**10.1**	
[illegible]admium	"	0.100	0.00100	0.0934	"	75.0-125	**92.4**	20.0	**6.49**	
[illegible]hromium	"	0.100	ND	0.0927	"	75.0-125	**92.7**	20.0	**8.57**	
Lead	"	0.100	0.00200	0.0929	"	75.0-125	**90.9**	20.0	**6.90**	
[illegible]elenium	"	0.100	ND	0.0863	"	75.0-125	**86.3**	20.0	**5.08**	
[illegible]ilver	"	0.0500	ND	0.0493	"	75.0-125	**98.6**	20.0	**6.29**	

North Creek Analytical - Portland

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

Crystal Burkholder, Project Manager

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T Corp/PEG, Portland	Project:	GATX-WILLBRIDGE	Sampled: 5/28/99
233 SW Kable Lane, Suite 900	Project Number:	B15-100.2A	Received: 5/28/99
Portland, OR 97224	Project Manager:	Stan Haskins	Reported: 6/30/99 17:32

Dissolved Metals per EPA 6000/7000 Series Methods/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: 0690030	**Date Prepared: 6/2/99**					**Extraction Method: Metals**				
Blank	**0690030-BLK1**									
Mercury	6/3/99			ND	mg/l	**0.000200**				
LCS	**0690030-BS1**									
Mercury	6/3/99	0.00500		0.00468	mg/l	80.0-120	93.6			
Duplicate	**0690030-DUP1**		**P905567-03**							
Mercury	6/3/99		ND	ND	mg/l			20.0		
Matrix Spike	**0690030-MS1**		**P905567-03**							
Mercury	6/3/99	0.00500	ND	0.00520	mg/l	75.0-125	**104**			
Batch: 0690306	**Date Prepared: 6/10/99**					**Extraction Method: EPA 200/3005**				
Blank	**0690306-BLK1**									
Arsenic	6/12/99			ND	mg/l	**0.00100**				
Barium	6/13/99			ND	"	**0.00200**				
Cadmium	6/12/99			ND	"	**0.00100**				
Chromium	6/15/99			ND	"	**0.00100**				
Lead	6/12/99			ND	"	**0.00100**				
Selenium	"			ND	"	**0.00100**				
Silver	"			ND	"	**0.00100**				
LCS	**0690306-BS1**									
Arsenic	6/13/99	0.100		0.109	mg/l	80.0-120	109			
Barium	"	0.100		0.109	"	80.0-120	109			
Cadmium	6/12/99	0.100		0.0984	"	80.0-120	98.4			
Chromium	6/15/99	0.100		0.108	"	80.0-120	108			
Lead	6/12/99	0.100		0.103	"	80.0-120	103			
Selenium	6/15/99	0.100		0.0980	"	85.0-115	98.0			
Silver	6/12/99	0.0500		0.0514	"	80.0-120	103			
Duplicate	**0690306-DUP1**		**P906002-03**							
Arsenic	6/12/99		0.00400	0.00390	mg/l			20.0	**2.53**	
Barium	"		0.0235	0.0236	"			20.0	**0.425**	
Cadmium	"		ND	ND	"			20.0		
Chromium	6/15/99		ND	ND	"			20.0		
Lead	6/12/99		ND	ND	"			20.0		
Selenium	"		ND	ND	"			20.0		

North Creek Analytical - Portland

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Crystal Burkholder, Project Manager

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Corp/PEG, Portland	Project:	GATX-WILLBRIDGE	Sampled: 5/28/99
233 SW Kable Lane, Suite 900	Project Number:	B15-100.2A	Received: 5/28/99
Portland, OR 97224	Project Manager:	Stan Haskins	Reported: 6/30/99 17:32

Dissolved Metals per EPA 6000/7000 Series Methods/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*
Duplicate (continued)	**0690306-DUP1**		**P906002-03**							
Silver	6/12/99		ND	ND	mg/l			20.0		
Matrix Spike	**0690306-MS1**		**P906002-03**							
Arsenic	6/15/99	0.100	0.00400	0.104	mg/l	75.0-125	**100**			
Barium	"	0.100	0.0235	0.121	"	75.0-125	**97.5**			
Cadmium	6/12/99	0.100	ND	0.100	"	75.0-125	**100**			
Chromium	6/15/99	0.100	ND	0.0967	"	75.0-125	**96.7**			
Lead	6/12/99	0.100	ND	0.107	"	75.0-125	**107**			
Selenium	6/15/99	0.100	ND	0.103	"	75.0-125	**103**			
Silver	6/12/99	0.0500	ND	0.0529	"	75.0-125	**106**			
Matrix Spike	**0690306-MS2**		**P906204-07**							
Arsenic	6/13/99	0.100	ND	0.111	mg/l	75.0-125	**111**			
Barium	6/12/99	0.100	0.0206	0.128	"	75.0-125	**107**			
Cadmium	6/13/99	0.100	ND	0.109	"	75.0-125	**109**			
Chromium	6/12/99	0.100	ND	0.113	"	75.0-125	**113**			
Lead	"	0.100	ND	0.107	"	75.0-125	**107**			
Selenium	6/13/99	0.100	ND	0.112	"	75.0-125	**112**			
Silver	6/12/99	0.0500	ND	0.0509	"	75.0-125	**102**			

North Creek Analytical - Portland

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Crystal Burkholder, Project Manager

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T Corp/PEG, Portland	Project:	GATX-WILLBRIDGE	Sampled: 5/28/99
7233 SW Kable Lane, Suite 900	Project Number:	B15-100.2A	Received: 5/28/99
Portland, OR 97224	Project Manager:	Stan Haskins	Reported: 6/30/99 17:32

Polynuclear Aromatic Compounds per EPA 8270M-SIM/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: 0690023	**Date Prepared: 6/1/99**					**Extraction Method: EPA 3520/600 Series**				
Blank	**0690023-BLK1**									
Acenaphthene	6/4/99			ND	ug/l	0.100				
Acenaphthylene	"			ND	"	0.100				
Anthracene	"			ND	"	0.100				
Benzo (a) anthracene	"			ND	"	0.100				
Benzo (a) pyrene	"			ND	"	0.100				
Benzo (b) fluoranthene	"			ND	"	0.100				
Benzo (ghi) perylene	"			ND	"	0.100				
Benzo (k) fluoranthene	"			ND	"	0.100				
Chrysene	"			ND	"	0.100				
Dibenzo (a,h) anthracene	"			ND	"	0.200				
Fluoranthene	"			ND	"	0.100				
Fluorene	"			ND	"	0.100				
Indeno (1,2,3-cd) pyrene	"			ND	"	0.100				
Naphthalene	"			ND	"	0.100				
Phenanthrene	"			ND	"	0.100				
Pyrene	"			ND	"	0.100				
Surrogate: 2-Fluorobiphenyl	"	*2.50*		*1.40*	"	*37.0-135*	*56.0*			
Surrogate: Nitrobenzene-d5	"	*2.50*		*1.72*	"	*48.0-140*	*68.8*			
Surrogate: p-Terphenyl-d14	*6/3/99*	*2.50*		*2.10*	"	*25.0-147*	*84.0*			
LCS	**0690023-BS1**									
Acenaphthene	6/3/99	5.00		3.28	ug/l	50.0-150	65.6			
Benzo (a) pyrene	"	5.00		4.42	"	50.0-150	88.4			
Pyrene	"	5.00		3.45	"	50.0-150	69.0			
Surrogate: 2-Fluorobiphenyl	"	*2.50*		*1.58*	"	*37.0-135*	*63.2*			
Surrogate: Nitrobenzene-d5	"	*2.50*		*1.51*	"	*48.0-140*	*60.4*			
Surrogate: p-Terphenyl-d14	"	*2.50*		*1.65*	"	*25.0-147*	*66.0*			
LCS Dup	**0690023-BSD1**									
Acenaphthene	6/3/99	5.00		3.13	ug/l	50.0-150	62.6	60.0	4.68	
Benzo (a) pyrene	"	5.00		5.56	"	50.0-150	111	60.0	22.7	
Pyrene	"	5.00		3.55	"	50.0-150	71.0	60.0	2.86	
Surrogate: 2-Fluorobiphenyl	"	*2.50*		*1.60*	"	*37.0-135*	*64.0*			
Surrogate: Nitrobenzene-d5	"	*2.50*		*1.63*	"	*48.0-140*	*65.2*			
Surrogate: p-Terphenyl-d14	"	*2.50*		*1.84*	"	*25.0-147*	*73.6*			

North Creek Analytical - Portland

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

Crystal Burkholder, Project Manager

North Creek Analytical, Inc.
Environmental Laboratory Network

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C Corp/PEG, Portland	Project:	GATX-WILLBRIDGE	Sampled: 5/28/99
7233 SW Kable Lane, Suite 900	Project Number:	B15-100.2A	Received: 5/28/99
Portland, OR 97224	Project Manager:	Stan Haskins	Reported: 6/30/99 17:32

Notes and Definitions

Note	
J	Reporting limits raised due to dilution necessary for 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 - Portland

Crystal Burkholder, Project Manager

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NORTH CREEK ANALYTICAL
Environmental Laboratory Services

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CHAIN OF CUSTODY REPORT

Work Order # 105002

REPORT TO:	IT Corporation
ATTENTION:	STAN HASKINS
ADDRESS:	7233 SW Kable Ln Ste 900-F Portland OR 97224
PHONE:	503-639-6305 FAX: 503-639-7482
PROJECT NAME:	GATX Willbridge
PROJECT NUMBER:	B15-100.2A
SAMPLED BY:	Nate Hemphill

INVOICE TO:	Shell Oil Company
ATTENTION:	Irv Jenkins
ADDRESS:	PO Box 2099 Houston TX 77252-2099
P.O. NUMBER:	
NCA QUOTE #:	

TURNAROUND REQUEST in Business Days *

Organic & Inorganic Analyses: ~~10~~ Standard | 7 | 5 | 4 | 3 | 2 | 1 | Same Day

Fuels & Hydrocarbon Analyses: 5 Standard | 3-4 | 2 | 1 | Same Day

OTHER Specify:

** Turnaround Requests less than standard may incur Rush Charges.*

	CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	NCA SAMPLE ID (Laboratory Use Only)	BTEX 8020A	PAH 8270 SIM	PCBs 8270 SIM Soil Low Level	Dissolved Lead	MATRIX (W, S, A, O)	# OF CONTAINERS	COMMENTS
1.	MW-26	5-28-99 9:15		X	X	X		W	12	MS/MSD
2.	MW-15	5-28-99 10:25		X	X	X		W	4	
3.	MW-33	5-28-99 11:45		X	X	X	X	W	5	
4.	TB/LB	5-28-99 08:00		X	X	X		W	2	
5.										
6.										
7.										
8.										
9.										
10.										

TB/LB - per Nate 6/2/99 0909

RELINQUISHED BY (Signature):	DATE: 5-28-99	RECEIVED BY (Signature):	DATE: 5-28-99
PRINT NAME: Nate Hemphill	FIRM: IT Corp	TIME: 15:20	PRINT NAME: LASH	TIME: 1520
RELINQUISHED BY (Signature):	DATE: 5-28-99	RECEIVED BY (Signature):	DATE: 5/28/99
PRINT NAME: Larry Spyker	FIRM: NCA	TIME: 16:00	PRINT NAME: Ma	TIME: 16:00

ADDITIONAL REMARKS: MS/MSD Sample MW-26

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T Corp/PEG, Portland	Project:	CHEVRON #61001868, Portland, OR	Sampled: 5/20/99
7233 SW Kable Lane, Suite 900	Project Number:	B15-200.2A	Received: 5/21/99
Portland, OR 97224	Project Manager:	Kelly Kline	Reported: 6/4/99 14:45

ANALYTICAL REPORT FOR SAMPLES:

Sample Description	Laboratory Sample Number	Sample Matrix	Date Sampled
CR-8	P905441-01	Water	5/20/99
CR-9	P905441-02	Water	5/20/99
CR-9D	P905441-03	Water	5/20/99
B-28	P905441-04	Water	5/20/99

The results in this report apply to the samples analyzed in accordance with the chain of custody document.
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Crystal Burkholder, Project Manager

North Creek Analytical, Inc.
Environmental Laboratory Network

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503.906.9200 fax 503.906.9210
Bend 20354 Empire Avenue, Suite E-9, Bend, OR 97708-1883
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T Corp/PEG, Portland	Project:	CHEVRON #61001868, Portland, OR	Sampled: 5/20/99
7233 SW Kable Lane, Suite 900	Project Number:	B15-200.2A	Received: 5/21/99
Portland, OR 97224	Project Manager:	Kelly Kline	Reported: 6/4/99 14:45

BTEX per EPA Method 8020A
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
CR-8			**P905441-01**				**Water**	
Benzene	0590754	5/27/99	5/27/99		0.500	ND	ug/l	
Toluene	"	"	"		0.500	ND	"	
Ethylbenzene	"	"	"		0.500	ND	"	
Xylenes (total)	"	"	"		1.00	ND	"	
Surrogate: 4-BFB	"	"	"	*75.0-120*		*109*	*%*	
CR-9			**P905441-02**				**Water**	
Benzene	0590720	5/26/99	5/26/99		0.500	ND	ug/l	
Toluene	"	"	"		0.500	ND	"	
Ethylbenzene	"	"	"		0.500	ND	"	
Xylenes (total)	"	"	"		1.00	ND	"	
Surrogate: 4-BFB	"	"	"	*75.0-120*		*88.0*	*%*	
CR-9D			**P905441-03**				**Water**	
Benzene	0590720	5/26/99	5/26/99		0.500	ND	ug/l	
Toluene	"	"	"		0.500	ND	"	
Ethylbenzene	"	"	"		0.500	ND	"	
Xylenes (total)	"	"	"		1.00	ND	"	
Surrogate: 4-BFB	"	"	"	*75.0-120*		*83.6*	*%*	
B-28			**P905441-04**				**Water**	
Benzene	0590720	5/26/99	5/26/99		0.500	ND	ug/l	
Toluene	"	"	"		0.500	ND	"	
Ethylbenzene	"	"	"		0.500	ND	"	
Xylenes (total)	"	"	"		1.00	ND	"	
Surrogate: 4-BFB	"	"	"	*75.0-120*		*85.6*	*%*	

North Creek Analytical - Portland

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

Crystal Burkholder, Project Manager

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T Corp/PEG, Portland	Project:	CHEVRON #61001868, Portland, OR	Sampled: 5/20/99
7233 SW Kable Lane, Suite 900	Project Number:	B15-200.2A	Received: 5/21/99
Portland, OR 97224	Project Manager:	Kelly Kline	Reported: 6/4/99 14:45

Total Metals per EPA 6000/7000 Series Methods
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Specific Method	Reporting Limit	Result	Units	Notes*
CR-8			**P905441-01**				**Water**	
Arsenic	0590701	5/25/99	5/29/99	EPA 6020	0.00100	**0.0182**	mg/l	
Barium	"	"	"	EPA 6020	0.00200	**0.0919**	"	
Cadmium	"	"	"	EPA 6020	0.00100	**0.00130**	"	
Chromium	"	"	"	EPA 6020	0.00100	**0.00580**	"	
Lead	"	"	"	EPA 6020	0.00100	**0.0116**	"	
Selenium	"	"	"	EPA 6020	0.00100	ND	"	
Silver	"	"	"	EPA 6020	0.00100	ND	"	
Mercury	0590730	5/26/99	5/26/99	EPA 7470A	0.000200	ND	"	
CR-9			**P905441-02**				**Water**	
Arsenic	0590701	5/25/99	5/29/99	EPA 6020	0.00100	ND	mg/l	
Barium	"	"	"	EPA 6020	0.00200	**0.0161**	"	
Cadmium	"	"	"	EPA 6020	0.00100	ND	"	
Chromium	"	"	"	EPA 6020	0.00100	ND	"	
Lead	"	"	"	EPA 6020	0.00100	ND	"	
Selenium	"	"	"	EPA 6020	0.00100	ND	"	
Silver	"	"	"	EPA 6020	0.00100	ND	"	
Mercury	0590730	5/26/99	5/26/99	EPA 7470A	0.000200	ND	"	
CR-9D			**P905441-03**				**Water**	
Arsenic	0590701	5/25/99	5/29/99	EPA 6020	0.00100	ND	mg/l	
Barium	"	"	"	EPA 6020	0.00200	**0.0164**	"	
Cadmium	"	"	"	EPA 6020	0.00100	ND	"	
Chromium	"	"	"	EPA 6020	0.00100	ND	"	
Lead	"	"	"	EPA 6020	0.00100	ND	"	
Selenium	"	"	"	EPA 6020	0.00100	ND	"	
Silver	"	"	"	EPA 6020	0.00100	ND	"	
Mercury	0590730	5/26/99	5/26/99	EPA 7470A	0.000200	ND	"	
B-28			**P905441-04**				**Water**	
Arsenic	0590701	5/25/99	5/29/99	EPA 6020	0.00100	**0.00980**	mg/l	
Barium	"	"	"	EPA 6020	0.00200	**0.198**	"	
Cadmium	"	"	"	EPA 6020	0.00100	ND	"	
Chromium	"	"	"	EPA 6020	0.00100	**0.0161**	"	
Lead	"	"	"	EPA 6020	0.00100	**0.0156**	"	
Selenium	"	"	"	EPA 6020	0.00100	ND	"	
Silver	"	"	"	EPA 6020	0.00100	ND	"	
Mercury	0590730	5/26/99	5/26/99	EPA 7470A	0.000200	ND	"	

North Creek Analytical - Portland

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Crystal Burkholder, Project Manager

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T Corp/PEG, Portland	Project:	CHEVRON #61001868, Portland, OR	Sampled: 5/20/99
7233 SW Kable Lane, Suite 900	Project Number:	B15-200.2A	Received: 5/21/99
Portland, OR 97224	Project Manager:	Kelly Kline	Reported: 6/4/99 14:45

Dissolved Metals per EPA 6000/7000 Series Methods
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Specific Method	Reporting Limit	Result	Units	Notes*
ER-9			**P905441-02**				**Water**	
Arsenic	0590660	5/24/99	5/28/99	EPA 6020	0.00100	ND	mg/l	
Barium	"	"	"	EPA 6020	0.00200	**0.0165**	"	
Cadmium	"	"	"	EPA 6020	0.00100	ND	"	
Chromium	"	"	"	EPA 6020	0.00100	ND	"	
Lead	"	"	"	EPA 6020	0.00100	ND	"	
Selenium	"	"	"	EPA 6020	0.00100	ND	"	
Silver	"	"	"	EPA 6020	0.00100	ND	"	
Mercury	0590771	5/27/99	5/27/99	EPA 7470A	0.000200	ND	"	
ER-9D			**P905441-03**				**Water**	
Arsenic	0590660	5/24/99	5/28/99	EPA 6020	0.00100	ND	mg/l	
Barium	"	"	"	EPA 6020	0.00200	**0.0203**	"	
Cadmium	"	"	"	EPA 6020	0.00100	ND	"	
Chromium	"	"	"	EPA 6020	0.00100	ND	"	
Lead	"	"	"	EPA 6020	0.00100	ND	"	
Selenium	"	"	"	EPA 6020	0.00100	ND	"	
Silver	"	"	"	EPA 6020	0.00100	ND	"	
Mercury	0590771	5/27/99	5/27/99	EPA 7470A	0.000200	ND	"	

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T Corp/PEG, Portland	Project:	CHEVRON #61001868, Portland, OR	Sampled: 5/20/99
7233 SW Kable Lane, Suite 900	Project Number:	B15-200.2A	Received: 5/21/99
Portland, OR 97224	Project Manager:	Kelly Kline	Reported: 6/4/99 14:45

Polynuclear Aromatic Compounds per EPA 8270M-SIM
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
R-8			**P905441-01**				**Water**	**1**
cenaphthene	0590663	5/24/99	5/28/99		0.500	ND	ug/l	
Acenaphthylene	"	"	"		0.500	ND	"	
nthracene	"	"	"		0.500	ND	"	
enzo (a) anthracene	"	"	"		0.500	**0.726**	"	
Benzo (a) pyrene	"	"	"		0.500	**2.29**	"	
Benzo (b) fluoranthene	"	"	"		0.500	**1.39**	"	
enzo (ghi) perylene	"	"	"		0.500	**2.60**	"	
enzo (k) fluoranthene	"	"	"		0.500	**1.28**	"	
Chrysene	"	"	"		0.500	**0.958**	"	
ibenzo (a,h) anthracene	"	"	"		1.00	ND	"	
luoranthene	"	"	"		0.500	**1.25**	"	
Fluorene	"	"	"		0.500	ND	"	
ndeno (1,2,3-cd) pyrene	"	"	"		0.500	**1.74**	"	
aphthalene	"	"	"		0.500	ND	"	
henanthrene	"	"	"		0.500	ND	"	
Pyrene	"	"	"		0.500	**1.67**	"	
urrogate: 2-Fluorobiphenyl	"	"	"	*37.0-135*		*75.8*	*%*	
urrogate: Nitrobenzene-d5	"	"	"	*48.0-140*		*60.2*	"	
Surrogate: p-Terphenyl-d14	"	"	"	*25.0-147*		*90.3*	"	
R-9			**P905441-02**				**Water**	
Acenaphthene	0590663	5/24/99	5/26/99		0.100	ND	ug/l	
Acenaphthylene	"	"	"		0.100	ND	"	
nthracene	"	"	"		0.100	ND	"	
enzo (a) anthracene	"	"	"		0.100	ND	"	
Benzo (a) pyrene	"	"	"		0.100	ND	"	
enzo (b) fluoranthene	"	"	"		0.100	ND	"	
nzo (ghi) perylene	"	"	"		0.100	ND	"	
Benzo (k) fluoranthene	"	"	"		0.100	ND	"	
Chrysene	"	"	"		0.100	ND	"	
ibenzo (a,h) anthracene	"	"	"		0.200	ND	"	
luoranthene	"	"	"		0.100	ND	"	
Fluorene	"	"	"		0.100	ND	"	
ndeno (1,2,3-cd) pyrene	"	"	"		0.100	ND	"	
aphthalene	"	"	"		0.100	ND	"	
Phenanthrene	"	"	"		0.100	ND	"	
Pyrene	"	"	"		0.100	ND	"	
urrogate: 2-Fluorobiphenyl	"	"	"	*37.0-135*		*62.3*	*%*	

North Creek Analytical - Portland

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

Crystal Burkholder, Project Manager

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T Corp/PEG, Portland	Project:	CHEVRON #61001868, Portland, OR	Sampled: 5/20/99
7233 SW Kable Lane, Suite 900	Project Number:	B15-200.2A	Received: 5/21/99
Portland, OR 97224	Project Manager:	Kelly Kline	Reported: 6/4/99 14:45

Polynuclear Aromatic Compounds per EPA 8270M-SIM
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
CR-9 (continued)			**P905441-02**				**Water**	
Surrogate: Nitrobenzene-d5	*0590663*	*5/24/99*	*5/26/99*	*48.0-140*		*74.2*	*%*	
Surrogate: p-Terphenyl-d14	"	"	"	*25.0-147*		*75.8*	"	
R-9D			**P905441-03**				**Water**	
Acenaphthene	0590663	5/24/99	5/26/99		0.100	ND	ug/l	
Acenaphthylene	"	"	"		0.100	ND	"	
Anthracene	"	"	"		0.100	ND	"	
Benzo (a) anthracene	"	"	"		0.100	ND	"	
Benzo (a) pyrene	"	"	"		0.100	ND	"	
Benzo (b) fluoranthene	"	"	"		0.100	ND	"	
Benzo (ghi) perylene	"	"	"		0.100	ND	"	
Benzo (k) fluoranthene	"	"	"		0.100	ND	"	
Chrysene	"	"	"		0.100	ND	"	
Dibenzo (a,h) anthracene	"	"	"		0.200	ND	"	
Fluoranthene	"	"	"		0.100	ND	"	
Fluorene	"	"	"		0.100	ND	"	
Indeno (1,2,3-cd) pyrene	"	"	"		0.100	ND	"	
Naphthalene	"	"	"		0.100	ND	"	
Phenanthrene	"	"	"		0.100	ND	"	
Pyrene	"	"	"		0.100	ND	"	
Surrogate: 2-Fluorobiphenyl	"	"	"	*37.0-135*		*59.7*	*%*	
Surrogate: Nitrobenzene-d5	"	"	"	*48.0-140*		*69.1*	"	
Surrogate: p-Terphenyl-d14	"	"	"	*25.0-147*		*86.0*	"	
-28			**P905441-04**				**Water**	
Acenaphthene	0590663	5/24/99	5/26/99		0.100	ND	ug/l	
Acenaphthylene	"	"	"		0.100	ND	"	
Anthracene	"	"	"		0.100	ND	"	
Benzo (a) anthracene	"	"	"		0.100	ND	"	
Benzo (a) pyrene	"	"	"		0.100	ND	"	
Benzo (b) fluoranthene	"	"	"		0.100	ND	"	
Benzo (ghi) perylene	"	"	"		0.100	ND	"	
Benzo (k) fluoranthene	"	"	"		0.100	ND	"	
Chrysene	"	"	"		0.100	ND	"	
Dibenzo (a,h) anthracene	"	"	"		0.200	ND	"	
Fluoranthene	"	"	"		0.100	ND	"	
Fluorene	"	"	"		0.100	ND	"	
Indeno (1,2,3-cd) pyrene	"	"	"		0.100	ND	"	

North Creek Analytical - Portland

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

Crystal Burkholder, Project Manager

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T Corp/PEG, Portland	Project:	CHEVRON #61001868, Portland, OR	Sampled: 5/20/99
7233 SW Kable Lane, Suite 900	Project Number:	B15-200.2A	Received: 5/21/99
Portland, OR 97224	Project Manager:	Kelly Kline	Reported: 6/4/99 14:45

Polynuclear Aromatic Compounds per EPA 8270M-SIM
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
-28 (continued)			**P905441-04**				**Water**	
Naphthalene	0590663	5/24/99	5/26/99		0.100	ND	ug/l	
Phenanthrene	"	"	"		0.100	ND	"	
yrene	"	"	"		0.100	ND	"	
urrogate: 2-Fluorobiphenyl	"	"	"	*37.0-135*		*66.1*	*%*	
Surrogate: Nitrobenzene-d5	"	"	"	*48.0-140*		*75.0*	"	
urrogate: p-Terphenyl-d14	"	"	"	*25.0-147*		*86.9*	"	

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Corp/PEG, Portland	Project:	CHEVRON #61001868, Portland, OR	Sampled: 5/20/99
7233 SW Kable Lane, Suite 900	Project Number:	B15-200.2A	Received: 5/21/99
Portland, OR 97224	Project Manager:	Kelly Kline	Reported: 6/4/99 14:45

BTEX per EPA Method 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: 0590720	**Date Prepared: 5/26/99**					**Extraction Method: EPA 5030**				
Blank	**0590720-BLK1**									
Benzene	5/26/99			**ND**	ug/l	**0.500**				
Toluene	"			**ND**	"	**0.500**				
Ethylbenzene	"			**ND**	"	**0.500**				
Xylenes (total)	"			**ND**	"	**1.00**				
Surrogate: 4-BFB	"	*50.0*		*42.0*	"	*75.0-120*	*84.0*			
LCS	**0590720-BS2**									
Benzene	5/26/99	20.0		17.8	ug/l	67.0-130	89.0			
Toluene	"	20.0		18.6	"	75.0-126	93.0			
Ethylbenzene	"	20.0		18.5	"	76.0-124	92.5			
Xylenes (total)	"	60.0		56.4	"	75.0-126	94.0			
Surrogate: 4-BFB	"	*50.0*		*48.8*	"	*75.0-120*	*97.6*			
Matrix Spike	**0590720-MS1**		**P905446-03**							
Benzene	5/26/99	20.0	771	787	ug/l	67.0-130	**80.0**			
Toluene	"	20.0	69.3	87.3	"	75.0-126	**90.0**			
Ethylbenzene	"	20.0	6.49	382	"	76.0-124	**NR**			2
Xylenes (total)	"	60.0	195	246	"	75.0-126	**85.0**			
Surrogate: 4-BFB	"	*50.0*		*51.7*	"	*75.0-120*	*103*			
Matrix Spike Dup	**0590720-MSD1**		**P905446-03**							
Benzene	5/26/99	20.0	771	775	ug/l	67.0-130	**20.0**	13.0	**120**	2
Toluene	"	20.0	69.3	85.7	"	75.0-126	**82.0**	13.0	**9.30**	
Ethylbenzene	"	20.0	6.49	375	"	76.0-124	**NR**	15.0	**2.15**	2
Xylenes (total)	"	60.0	195	246	"	75.0-126	**85.0**	13.0	**0**	
Surrogate: 4-BFB	"	*50.0*		*50.2*	"	*75.0-120*	*100*			
Batch: 0590754	**Date Prepared: 5/27/99**					**Extraction Method: EPA 5030**				
Blank	**0590754-BLK1**									
Benzene	5/27/99			**ND**	ug/l	**0.500**				
Toluene	"			**ND**	"	**0.500**				
Ethylbenzene	"			**ND**	"	**0.500**				
Xylenes (total)	"			**ND**	"	**1.00**				
Surrogate: 4-BFB	"	*50.0*		*48.7*	"	*75.0-120*	*97.4*			
LCS	**0590754-BS2**									
Benzene	5/27/99	20.0		17.1	ug/l	67.0-130	85.5			

North Creek Analytical - Portland

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Crystal Burkholder, Project Manager

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T Corp/PEG, Portland	Project:	CHEVRON #61001868, Portland, OR	Sampled: 5/20/99
7233 SW Kable Lane, Suite 900	Project Number:	B15-200.2A	Received: 5/21/99
Portland, OR 97224	Project Manager:	Kelly Kline	Reported: 6/4/99 14:45

BTEX per EPA Method 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*
LCS (continued)	**0590754-BS2**									
Toluene	5/27/99	20.0		17.4	ug/l	75.0-126	87.0			
Ethylbenzene	"	20.0		17.6	"	76.0-124	88.0			
Xylenes (total)	"	60.0		54.0	"	75.0-126	90.0			
Surrogate: 4-BFB	"	*50.0*		*49.2*	"	*75.0-120*	*98.4*			

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Bend 20354 Empire Avenue, Suite E-9, Bend, OR 97708-1883
541.383.9310 fax 541.382.7588

T Corp/PEG, Portland	Project:	CHEVRON #61001868, Portland, OR	Sampled: 5/20/99
7233 SW Kable Lane, Suite 900	Project Number:	B15-200.2A	Received: 5/21/99
Portland, OR 97224	Project Manager:	Kelly Kline	Reported: 6/4/99 14:45

Total Metals per EPA 6000/7000 Series Methods/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: 0590701	**Date Prepared: 5/25/99**					**Extraction Method: EPA 200/3005**				
Blank	**0590701-BLK1**									
Arsenic	5/29/99			**ND**	mg/l	**0.00100**				
Barium	"			**ND**	"	**0.00200**				
Cadmium	"			**ND**	"	**0.00100**				
Chromium	"			**ND**	"	**0.00100**				
Lead	"			**ND**	"	**0.00100**				
Selenium	"			**ND**	"	**0.00100**				
Silver	"			**ND**	"	**0.00100**				
LCS	**0590701-BS1**									
Arsenic	5/29/99	0.100		0.102	mg/l	80.0-120	102			
Barium	"	0.100		0.101	"	80.0-120	101			
Cadmium	"	0.100		0.106	"	80.0-120	106			
Chromium	"	0.100		0.0950	"	80.0-120	95.0			
Lead	"	0.100		0.0999	"	80.0-120	99.9			
Selenium	6/1/99	0.100		0.114	"	80.0-120	114			
Silver	5/29/99	0.0500		0.0524	"	80.0-120	105			
Duplicate	**0590701-DUP1**		**P905434-01**							
Arsenic	5/29/99		ND	ND	mg/l			20.0		
Barium	"		0.183	0.185	"			20.0	**1.09**	
Cadmium	"		ND	ND	"			20.0		
Chromium	"		ND	ND	"			20.0		
Lead	"		0.0360	0.0365	"			20.0	**1.38**	
Selenium	"		ND	ND	"			20.0		
Silver	"		ND	ND	"			20.0		
Matrix Spike	**0590701-MS1**		**P905434-01**							
Arsenic	5/29/99	0.100	ND	0.0960	mg/l	75.0-125	**96.0**			
Barium	"	0.100	0.183	0.292	"	75.0-125	**109**			
Cadmium	"	0.100	ND	0.110	"	75.0-125	**110**			
Chromium	"	0.100	ND	0.0990	"	75.0-125	**99.0**			
Lead	"	0.100	0.0360	0.136	"	75.0-125	**100**			
Selenium	"	0.100	ND	0.0120	"	75.0-125	**12.0**			3
Silver	"	0.0500	ND	0.0230	"	75.0-125	**46.0**			3
Matrix Spike	**0590701-MS2**		**P905433-01**							
Arsenic	6/1/99	0.100	0.442	0.566	mg/l	75.0-125	**124**			

North Creek Analytical - Portland

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

Crystal Burkholder, Project Manager

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T Corp/PEG, Portland	Project:	CHEVRON #61001868, Portland, OR	Sampled: 5/20/99
7233 SW Kable Lane, Suite 900	Project Number:	B15-200.2A	Received: 5/21/99
Portland, OR 97224	Project Manager:	Kelly Kline	Reported: 6/4/99 14:45

Total Metals per EPA 6000/7000 Series Methods/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 (continued)	**0590701-MS2**		**P905433-01**							
Barium	5/29/99	0.100	0.120	0.226	mg/l	75.0-125	**106**			
Cadmium	"	0.100	ND	0.109	"	75.0-125	**109**			
Chromium	"	0.100	ND	0.104	"	75.0-125	**104**			
Lead	"	0.100	ND	0.0996	"	75.0-125	**99.6**			
Selenium	6/1/99	0.100	ND	0.114	"	75.0-125	**114**			
Silver	5/29/99	0.0500	ND	0.0332	"	75.0-125	**66.4**			3
Batch: 0590730	**Date Prepared: 5/26/99**					**Extraction Method: Metals**				
Blank	**0590730-BLK1**									
Mercury	5/26/99			**ND**	mg/l	**0.000200**				
LCS	**0590730-BS1**									
Mercury	5/26/99	0.00500		0.00475	mg/l	80.0-120	95.0			
Duplicate	**0590730-DUP1**		**P905441-01**							
Mercury	5/26/99		ND	ND	mg/l			20.0		
Duplicate	**0590730-DUP2**		**P904589-06**							
Mercury	5/26/99		0.00632	0.00628	mg/l			20.0	**0.635**	
Duplicate	**0590730-DUP3**		**P904590-01**							
Mercury	5/26/99		0.00306	0.00313	mg/l			20.0	**2.26**	
Matrix Spike	**0590730-MS1**		**P905441-01**							
Mercury	5/26/99	0.00500	ND	0.00485	mg/l	75.0-125	**97.0**			
Matrix Spike	**0590730-MS2**		**P905442-06**							
Mercury	5/26/99	0.00500	ND	0.00509	mg/l	75.0-125	**102**			

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T Corp/PEG, Portland	Project:	CHEVRON #61001868, Portland, OR	Sampled: 5/20/99
7233 SW Kable Lane, Suite 900	Project Number:	B15-200.2A	Received: 5/21/99
Portland, OR 97224	Project Manager:	Kelly Kline	Reported: 6/4/99 14:45

Dissolved Metals per EPA 6000/7000 Series Methods/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: 0590660	**Date Prepared: 5/24/99**					**Extraction Method: EPA 200/3005**				
Blank	**0590660-BLK1**									
Arsenic	5/25/99			**ND**	mg/l	**0.00100**				
Barium	"			**ND**	"	**0.00200**				
Cadmium	"			**ND**	"	**0.00100**				
Chromium	"			**ND**	"	**0.00100**				
Lead	"			**ND**	"	**0.00100**				
Selenium	"			**ND**	"	**0.00100**				
Silver	"			**ND**	"	**0.00100**				
LCS	**0590660-BS1**									
Arsenic	5/28/99	0.100		0.104	mg/l	80.0-120	104			
Barium	"	0.100		0.102	"	80.0-120	102			
Cadmium	"	0.100		0.107	"	80.0-120	107			
Chromium	"	0.100		0.0991	"	80.0-120	99.1			
Lead	"	0.100		0.101	"	80.0-120	101			
Selenium	6/1/99	0.100		0.110	"	85.0-115	110			
Silver	5/28/99	0.0500		0.0532	"	80.0-120	106			
Duplicate	**0590660-DUP1**		**P905446-03**							
Arsenic	5/28/99		0.0302	0.0319	mg/l			20.0	**5.48**	
Barium	"		0.0625	0.0657	"			20.0	**4.99**	
Cadmium	"		ND	ND	"			20.0		
Chromium	"		ND	ND	"			20.0		
Lead	"		0.00260	0.00230	"			20.0	**12.2**	
Selenium	"		ND	ND	"			20.0		
Silver	"		ND	ND	"			20.0		
Matrix Spike	**0590660-MS1**		**P905446-03**							
Arsenic	6/1/99	0.100	0.0302	0.146	mg/l	75.0-125	**116**			
Barium	5/28/99	0.100	0.0625	0.173	"	75.0-125	**110**			
Cadmium	"	0.100	ND	0.107	"	75.0-125	**107**			
Chromium	"	0.100	ND	0.105	"	75.0-125	**105**			
Lead	"	0.100	0.00260	0.104	"	75.0-125	**101**			
Selenium	"	0.100	ND	0.109	"	75.0-125	**109**			
Silver	"	0.0500	ND	0.0548	"	75.0-125	**110**			
Matrix Spike Dup	**0590660-MSD1**		**P905446-03**							
Arsenic	6/1/99	0.100	0.0302	0.144	mg/l	75.0-125	**114**	20.0	**1.74**	

North Creek Analytical - Portland

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

Crystal Burkholder, Project Manager

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T Corp/PEG, Portland	Project: CHEVRON #61001868, Portland, OR	Sampled:	5/20/99
7233 SW Kable Lane, Suite 900	Project Number: B15-200.2A	Received:	5/21/99
Portland, OR 97224	Project Manager: Kelly Kline	Reported:	6/4/99 14:45

Dissolved Metals per EPA 6000/7000 Series Methods/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)	**0590660-MSD1**		**P905446-03**							
Barium	5/28/99	0.100	0.0625	0.173	mg/l	75.0-125	**110**	20.0	**0**	
Cadmium	"	0.100	ND	0.107	"	75.0-125	**107**	20.0	**0**	
Chromium	"	0.100	ND	0.104	"	75.0-125	**104**	20.0	**0.957**	
Lead	"	0.100	0.00260	0.103	"	75.0-125	**100**	20.0	**0.995**	
Selenium	"	0.100	ND	0.108	"	75.0-125	**108**	20.0	**0.922**	
Silver	"	0.0500	ND	0.0546	"	75.0-125	**109**	20.0	**0.913**	
Batch: 0590771	**Date Prepared: 5/27/99**					**Extraction Method: Metals**				
Blank	**0590771-BLK1**									
Mercury	5/27/99			**ND**	mg/l	**0.000200**				
LCS	**0590771-BS1**									
Mercury	5/27/99	0.00500		0.00516	mg/l	80.0-120	103			
Duplicate	**0590771-DUP1**		**P905446-03**							
Mercury	5/27/99		ND	ND	mg/l			20.0		
Matrix Spike	**0590771-MS1**		**P905446-03**							
Mercury	5/27/99	0.00500	ND	0.00515	mg/l	75.0-125	**103**			
Matrix Spike Dup	**0590771-MSD1**		**P905446-03**							
Mercury	5/27/99	0.00500	ND	0.00516	mg/l	75.0-125	**103**	20.0	**0**	

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T Corp/PEG, Portland	Project: CHEVRON #61001868, Portland, OR	Sampled:	5/20/99
7233 SW Kable Lane, Suite 900	Project Number: B15-200.2A	Received:	5/21/99
Portland, OR 97224	Project Manager: Kelly Kline	Reported:	6/4/99 14:45

Polynuclear Aromatic Compounds per EPA 8270M-SIM/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: 0590663	**Date Prepared: 5/24/99**					**Extraction Method: EPA 3520/600 Series**				
Blank	**0590663-BLK1**									
Acenaphthene	5/26/99			ND	ug/l	**0.100**				
Acenaphthylene	"			ND	"	**0.100**				
Anthracene	"			ND	"	**0.100**				
Benzo (a) anthracene	"			ND	"	**0.100**				
Benzo (a) pyrene	"			ND	"	**0.100**				
Benzo (b) fluoranthene	"			ND	"	**0.100**				
Benzo (ghi) perylene	"			ND	"	**0.100**				
Benzo (k) fluoranthene	"			ND	"	**0.100**				
Chrysene	"			ND	"	**0.100**				
Dibenzo (a,h) anthracene	"			ND	"	**0.200**				
Fluoranthene	"			ND	"	**0.100**				
Fluorene	"			ND	"	**0.100**				
Indeno (1,2,3-cd) pyrene	"			ND	"	**0.100**				
Naphthalene	"			ND	"	**0.100**				
Phenanthrene	"			ND	"	**0.100**				
Pyrene	"			ND	"	**0.100**				
Surrogate: 2-Fluorobiphenyl	"	*2.50*		*1.60*	"	*37.0-135*	*64.0*			
Surrogate: Nitrobenzene-d5	"	*2.50*		*1.71*	"	*48.0-140*	*68.4*			
Surrogate: p-Terphenyl-d14	"	*2.50*		*2.07*	"	*25.0-147*	*82.8*			
LCS	**0590663-BS1**									
Acenaphthene	5/26/99	5.00		2.97	ug/l	50.0-150	59.4			
Benzo (a) pyrene	"	5.00		5.50	"	50.0-150	110			
Pyrene	"	5.00		3.31	"	50.0-150	66.2			
Surrogate: 2-Fluorobiphenyl	"	*2.50*		*1.35*	"	*37.0-135*	*54.0*			
Surrogate: Nitrobenzene-d5	"	*2.50*		*1.45*	"	*48.0-140*	*58.0*			
Surrogate: p-Terphenyl-d14	"	*2.50*		*1.91*	"	*25.0-147*	*76.4*			
LCS Dup	**0590663-BSD1**									
Acenaphthene	5/26/99	5.00		3.33	ug/l	50.0-150	66.6	60.0	11.4	
Benzo (a) pyrene	"	5.00		5.66	"	50.0-150	113	60.0	2.69	
Pyrene	"	5.00		3.25	"	50.0-150	65.0	60.0	1.83	
Surrogate: 2-Fluorobiphenyl	"	*2.50*		*1.60*	"	*37.0-135*	*64.0*			
Surrogate: Nitrobenzene-d5	"	*2.50*		*1.76*	"	*48.0-140*	*70.4*			
Surrogate: p-Terphenyl-d14	"	*2.50*		*1.93*	"	*25.0-147*	*77.2*			

North Creek Analytical - Portland

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

Crystal Burkholder, Project Manager

North Creek Analytical, Inc.
Environmental Laboratory Network

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T Corp/PEG, Portland	Project:	CHEVRON #61001868, Portland, OR	Sampled: 5/20/99
7233 SW Kable Lane, Suite 900	Project Number:	B15-200.2A	Received: 5/21/99
Portland, OR 97224	Project Manager:	Kelly Klinc	Reported: 6/4/99 14:45

Notes and Definitions

#	Note
1	Reporting limits raised due to dilution necessary for analysis.
2	The RPD and/or percent recovery for this QC spike sample cannot be accurately calculated due to the high concentration of analyte already present in the sample.
3	The spike recovery for this QC sample is outside of established control limits due to sample matrix interference.
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 - Portland

Crystal Burkholder, Project Manager

COP0014660

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

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CHEVRON U.S.A., Inc. CHAIN OF CUSTODY REPORT

COP0014661

CHEVRON INFORMATION

Facility Number: 6100 1868
Site Address: 5531 NW Doane Ave
City, State, ZIP: Portland OR 97210
Service Code:
Service Order:
Cost Element: 75100100
Chevron Project Manager:

- ☐ Site Assesment
- ☐ Remediation
- ☐ O & M
- ☐ GWM

CONSULTANT INFORMATION

Name: IT Corporation Project# 315-2000.2A
Address: 7233 SW Kable Ln, Suite 900, Bldg F
Portland OR 97224
Phone: 503-639-6305 Fax: 503-639-7482
Project Manager: Kelly Kline Airbill#:
Sample Collection by: Nate Haughell

Laboratory Turnaround Time

- ☐ 1 Business Day
- ☐ 3 Business Days
- ☐ 5 Business Days
- ☐ ~~10 Business Days~~
- ☐ 3 Day Air Samples (Please Select One)

☐ AK ☐ OR ☐ WA ☐ NW Series

SAMPLE INDENTIFICATION	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CON-TAINERS	TPH-HCID	TPH-Gas	BTEX Only ~~8020~~ EPA 8021 Mod.	TPH-Gas + BTEX	TPH-Diesel	TPH-Diesel Extended	TPH-Diesel-Ext. w/SG Cleanup	Halogen. Volatiles EPA 8021	Pesticides/PCBs or PCBs Only	GC/MS Volatiles EPA 8260	GC/MS SemiVols. EPA 8270	PAH's: 8270 SIM ~~8310~~	Lead: Total or Dissolved TCLP or RCRA	Metals (8) TOTAL RCRA Metals Dissolved					NCA SAMPLE NUMBER
1. CR-8	5-20-99 / 14:25	W	4			X									X		X					
2. CR9	5-20-99 / 14:45	W	5			X									X		X	X				
3. CR9-D	5-20-99 / 14:48	W	5			X									X		X	X				
4. B-28	5-20-99 / 15:30	W	4			X									X		X					
5.																						
6.																						
7.																						
8.																						
9.																						
10.																						

Relinquished by:	Firm:	Date & Time	Received by:	Firm:	Date & Time
1.	IT Corp.	5-21-99 0830		NCA	5-21-99 0830
2. NCA 5-21-99		5-21-99 1300	Sara McClay	NCA	5-21-99 1300
3.					

Additional Comments:

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T Corp/PEG, Portland	Project:	CHEVRON #61001868, Portland, OR	Sampled: 5/21/99
7233 SW Kable Lane, Suite 900	Project Number:	B15-200.2A	Received: 5/21/99
Portland, OR 97224	Project Manager:	Kelly Kline	Reported: 6/9/99 16:50

ANALYTICAL REPORT FOR SAMPLES:

ample Description	Laboratory Sample Number	Sample Matrix	Date Sampled
B-30	P905446-01	Water	5/21/99
-11	P905446-02	Water	5/21/99
-14	P905446-03	Water	5/21/99
B-9	P905446-04	Water	5/21/99
-10	P905446-05	Water	5/21/99
TB/LB	P905446-06	Water	5/21/99

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.

Crystal Burkholder, Project Manager

North Creek Analytical, Inc.
Environmental Laboratory Network

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T Corp/PEG, Portland	Project:	CHEVRON #61001868, Portland, OR	Sampled: 5/21/99
233 SW Kable Lane, Suite 900	Project Number:	B15-200.2A	Received: 5/21/99
Portland, OR 97224	Project Manager:	Kelly Kline	Reported: 6/9/99 16:50

BTEX per EPA Method 8020A
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
-30			**P905446-01**				**Water**	
Benzene	0590754	5/27/99	5/27/99		0.500	**84.9**	ug/l	
Toluene	"	"	"		0.500	**7.31**	"	
Ethylbenzene	"	"	"		0.500	**1.53**	"	
Xylenes (total)	"	"	"		1.00	**10.4**	"	
Surrogate: 4-BFB	"	"	"	*75.0-120*		*102*	%	
-11			**P905446-02**				**Water**	
Benzene	0590754	5/27/99	5/27/99		0.500	**55.6**	ug/l	
Toluene	"	"	"		0.500	**5.53**	"	
Ethylbenzene	"	"	"		0.500	**2.08**	"	
Xylenes (total)	"	"	"		1.00	**8.67**	"	
Surrogate: 4-BFB	"	"	"	*75.0-120*		*110*	%	
-14			**P905446-03**				**Water**	
Benzene	0590754	5/27/99	"		25.0	**900**	ug/l	
Toluene	"	"	"		25.0	**37.3**	"	
Ethylbenzene	"	"	"		25.0	**441**	"	
Xylenes (total)	"	"	"		50.0	**97.5**	"	
Surrogate: 4-BFB	"	"	"	*75.0-120*		*101*	%	
-9			**P905446-04**				**Water**	
Benzene	0590754	5/27/99	5/27/99		0.500	ND	ug/l	
Toluene	"	"	"		0.500	ND	"	
Ethylbenzene	"	"	"		0.500	ND	"	
Xylenes (total)	"	"	"		1.00	ND	"	
Surrogate: 4-BFB	"	"	"	*75.0-120*		*96.0*	%	
-10			**P905446-05**				**Water**	
Benzene	0590754	5/27/99	5/27/99		0.500	**4.58**	ug/l	
Toluene	"	"	"		0.500	**4.65**	"	
Ethylbenzene	"	"	"		0.500	**2.07**	"	
Xylenes (total)	"	"	"		1.00	**5.97**	"	
Surrogate: 4-BFB	"	"	"	*75.0-120*		*114*	%	

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

Crystal Burkholder, Project Manager

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IT Corp/PEG, Portland	Project:	CHEVRON #61001868, Portland, OR	Sampled: 5/21/99
7233 SW Kable Lane, Suite 900	Project Number:	B15-200.2A	Received: 5/21/99
Portland, OR 97224	Project Manager:	Kelly Kline	Reported: 6/9/99 16:50

BTEX per EPA Method 8020A
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
TB/LB			**P905446-06**				**Water**	
Benzene	0590720	5/26/99	5/27/99		0.500	ND	ug/l	
Toluene	"	"	"		0.500	ND	"	
Ethylbenzene	"	"	"		0.500	ND	"	
Xylenes (total)	"	"	"		1.00	ND	"	
Surrogate: 4-BFB	"	"	"	*75.0-120*		*83.0*	%	

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T Corp/PEG, Portland	Project:	CHEVRON #61001868, Portland, OR	Sampled: 5/21/99
233 SW Kable Lane, Suite 900	Project Number:	B15-200.2A	Received: 5/21/99
Portland, OR 97224	Project Manager:	Kelly Kline	Reported: 6/9/99 16:50

Total Metals per EPA 6000/7000 Series Methods
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Specific Method	Reporting Limit	Result	Units	Notes*
B-30			**P905446-01**				**Water**	
Arsenic	0590780	5/27/99	6/1/99	EPA 6020	0.00100	**0.0142**	mg/l	
Barium	"	"	"	EPA 6020	0.00200	**0.0599**	"	
Cadmium	"	"	"	EPA 6020	0.00100	**0.00770**	"	
Chromium	"	"	"	EPA 6020	0.00100	ND	"	
Lead	"	"	"	EPA 6020	0.00100	**0.00360**	"	
Selenium	"	"	"	EPA 6020	0.00100	ND	"	
Silver	"	"	"	EPA 6020	0.00100	ND	"	
Mercury	0590772	"	5/27/99	EPA 7470A	0.000200	ND	"	
B-11			**P905446-02**				**Water**	
Arsenic	0590780	5/27/99	6/1/99	EPA 6020	0.00100	**0.0395**	mg/l	
Barium	"	"	"	EPA 6020	0.00200	**0.188**	"	
Cadmium	"	"	"	EPA 6020	0.00100	**0.00240**	"	
Chromium	"	"	"	EPA 6020	0.00100	**0.0179**	"	
Lead	"	"	"	EPA 6020	0.00100	**0.0150**	"	
Selenium	"	"	"	EPA 6020	0.00100	ND	"	
Silver	"	"	"	EPA 6020	0.00100	ND	"	
Mercury	0590772	"	5/27/99	EPA 7470A	0.000200	ND	"	
B-14			**P905446-03**				**Water**	
Arsenic	0590780	5/27/99	6/1/99	EPA 6020	0.00100	**0.0349**	mg/l	
Barium	"	"	"	EPA 6020	0.00200	**0.116**	"	
Cadmium	"	"	"	EPA 6020	0.00100	ND	"	
Chromium	"	"	"	EPA 6020	0.00100	**0.00710**	"	
Lead	"	"	"	EPA 6020	0.00100	**0.0108**	"	
Selenium	"	"	"	EPA 6020	0.00100	ND	"	
Silver	"	"	"	EPA 6020	0.00100	ND	"	
Mercury	0590772	"	5/27/99	EPA 7470A	0.000200	ND	"	
B-9			**P905446-04**				**Water**	
Arsenic	0590780	5/27/99	6/1/99	EPA 6020	0.00100	**0.00390**	mg/l	
Barium	"	"	"	EPA 6020	0.00200	**0.0481**	"	
Cadmium	"	"	"	EPA 6020	0.00100	**0.00210**	"	
Chromium	"	"	"	EPA 6020	0.00100	**0.00210**	"	
Lead	"	"	"	EPA 6020	0.00100	**0.00190**	"	
Selenium	"	"	"	EPA 6020	0.00100	ND	"	
Silver	"	"	"	EPA 6020	0.00100	ND	"	
Mercury	0590772	"	5/27/99	EPA 7470A	0.000200	ND	"	

North Creek Analytical - Portland

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

Crystal Burkholder, Project Manager

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T Corp/PEG, Portland	Project:	CHEVRON #61001868, Portland, OR	Sampled: 5/21/99
233 SW Kable Lane, Suite 900	Project Number:	B15-200.2A	Received: 5/21/99
Portland, OR 97224	Project Manager:	Kelly Kline	Reported: 6/9/99 16:50

Total Metals per EPA 6000/7000 Series Methods
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Specific Method	Reporting Limit	Result	Units	Notes*
B-10			**P905446-05**				**Water**	
Arsenic	0590780	5/27/99	6/1/99	EPA 6020	0.00100	**0.0321**	mg/l	
Barium	"	"	"	EPA 6020	0.00200	**0.0799**	"	
Cadmium	"	"	"	EPA 6020	0.00100	ND	"	
Chromium	"	"	"	EPA 6020	0.00100	**0.00300**	"	
Lead	"	"	"	EPA 6020	0.00100	**0.00300**	"	
Selenium	"	"	"	EPA 6020	0.00100	ND	"	
Silver	"	"	"	EPA 6020	0.00100	ND	"	
Mercury	0590772	"	5/27/99	EPA 7470A	0.000200	ND	"	

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T Corp/PEG, Portland	Project:	CHEVRON #61001868, Portland, OR	Sampled: 5/21/99
7233 SW Kable Lane, Suite 900	Project Number:	B15-200.2A	Received: 5/21/99
Portland, OR 97224	Project Manager:	Kelly Kline	Reported: 6/9/99 16:50

Dissolved Metals per EPA 6000/7000 Series Methods
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Specific Method	Reporting Limit	Result	Units	Notes*
B-30			**P905446-01**				**Water**	
Arsenic	0590660	5/24/99	5/29/99	EPA 6020	0.00100	**0.0187**	mg/l	
Barium	"	"	"	EPA 6020	0.00200	**0.0522**	"	
Cadmium	"	"	"	EPA 6020	0.00100	ND	"	
Chromium	"	"	"	EPA 6020	0.00100	ND	"	
Lead	"	"	"	EPA 6020	0.00100	ND	"	
Selenium	"	"	"	EPA 6020	0.00100	ND	"	
Silver	"	"	"	EPA 6020	0.00100	ND	"	
Mercury	0590771	5/27/99	5/27/99	EPA 7470A	0.000200	ND	"	
B-14			**P905446-03**				**Water**	
Arsenic	0590660	5/24/99	5/28/99	EPA 6020	0.00100	**0.0302**	mg/l	
Barium	"	"	"	EPA 6020	0.00200	**0.0625**	"	
Cadmium	"	"	"	EPA 6020	0.00100	ND	"	
Chromium	"	"	"	EPA 6020	0.00100	ND	"	
Lead	"	"	"	EPA 6020	0.00100	**0.00260**	"	
Selenium	"	"	"	EPA 6020	0.00100	ND	"	
Silver	"	"	"	EPA 6020	0.00100	ND	"	
Mercury	0590771	5/27/99	5/27/99	EPA 7470A	0.000200	ND	"	

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IT Corp/PEG, Portland	Project:	CHEVRON #61001868, Portland, OR	Sampled: 5/21/99
7233 SW Kable Lane, Suite 900	Project Number:	B15-200.2A	Received: 5/21/99
Portland, OR 97224	Project Manager:	Kelly Kline	Reported: 6/9/99 16:50

Polynuclear Aromatic Compounds per EPA 8270M-SIM
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
B-30			P905446-01				Water	
Acenaphthene	0590736	5/26/99	6/1/99		0.100	**0.196**	ug/l	
Acenaphthylene	"	"	"		0.100	ND	"	
Anthracene	"	"	"		0.100	ND	"	
Benzo (a) anthracene	"	"	"		0.100	ND	"	
Benzo (a) pyrene	"	"	"		0.100	ND	"	
Benzo (b) fluoranthene	"	"	"		0.100	ND	"	
Benzo (ghi) perylene	"	"	"		0.100	ND	"	
Benzo (k) fluoranthene	"	"	"		0.100	ND	"	
Chrysene	"	"	"		0.100	ND	"	
Dibenzo (a,h) anthracene	"	"	"		0.200	ND	"	
Fluoranthene	"	"	"		0.100	ND	"	
Fluorene	"	"	"		0.100	**0.264**	"	
Indeno (1,2,3-cd) pyrene	"	"	"		0.100	ND	"	
Naphthalene	"	"	"		2.00	ND	"	1
Phenanthrene	"	"	"		0.100	**0.172**	"	
Pyrene	"	"	"		0.100	ND	"	
Surrogate: 2-Fluorobiphenyl	"	"	"	*37.0-135*		*74.6*	%	
Surrogate: Nitrobenzene-d5	"	"	"	*48.0-140*		*71.6*	"	
Surrogate: p-Terphenyl-d14	"	"	"	*25.0-147*		*87.7*	"	
B-11			P905446-02				Water	2
Acenaphthene	0590736	5/26/99	6/1/99		1.00	**1.09**	ug/l	
Acenaphthylene	"	"	"		1.00	ND	"	
Anthracene	"	"	"		1.00	ND	"	
Benzo (a) anthracene	"	"	"		1.00	ND	"	
Benzo (a) pyrene	"	"	"		1.00	ND	"	
Benzo (b) fluoranthene	"	"	"		1.00	ND	"	
Benzo (ghi) perylene	"	"	"		1.00	ND	"	
Benzo (k) fluoranthene	"	"	"		1.00	ND	"	
Chrysene	"	"	"		1.00	ND	"	
Dibenzo (a,h) anthracene	"	"	"		2.00	ND	"	
Fluoranthene	"	"	"		1.00	ND	"	
Fluorene	"	"	"		1.00	**1.85**	"	
Indeno (1,2,3-cd) pyrene	"	"	"		1.00	ND	"	
Naphthalene	"	"	"		10.0	ND	"	1
Phenanthrene	"	"	"		1.00	**1.26**	"	
Pyrene	"	"	"		1.00	ND	"	
Surrogate: 2-Fluorobiphenyl	"	"	"	*37.0-135*		*79.2*	%	

North Creek Analytical - Portland

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Crystal Burkholder, Project Manager

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IT Corp/PEG, Portland	Project:	CHEVRON #61001868, Portland, OR	Sampled: 5/21/99
7233 SW Kable Lane, Suite 900	Project Number:	B15-200.2A	Received: 5/21/99
Portland, OR 97224	Project Manager:	Kelly Kline	Reported: 6/9/99 16:50

Polynuclear Aromatic Compounds per EPA 8270M-SIM
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
B-11 (continued)			**P905446-02**				**Water**	**2**
Surrogate: Nitrobenzene-d5	*0590736*	*5/26/99*	*6/1/99*	*48.0-140*		*63.1*	*%*	
Surrogate: p-Terphenyl-d14	"	"	"	*25.0-147*		*88.6*	"	
B-14			**P905446-03**				**Water**	**2**
Acenaphthene	0590736	5/26/99	6/1/99		1.00	**1.08**	ug/l	
Acenaphthylene	"	"	"		1.00	ND	"	
Anthracene	"	"	"		1.00	ND	"	
Benzo (a) anthracene	"	"	"		1.00	ND	"	
Benzo (a) pyrene	"	"	"		1.00	ND	"	
Benzo (b) fluoranthene	"	"	"		1.00	ND	"	
Benzo (ghi) perylene	"	"	"		1.00	ND	"	
Benzo (k) fluoranthene	"	"	"		1.00	ND	"	
Chrysene	"	"	"		1.00	ND	"	
Dibenzo (a,h) anthracene	"	"	"		2.00	ND	"	
Fluoranthene	"	"	"		1.00	ND	"	
Fluorene	"	"	"		1.00	**2.28**	"	
Indeno (1,2,3-cd) pyrene	"	"	"		1.00	ND	"	
Naphthalene	"	"	"		1.00	**16.0**	"	
Phenanthrene	"	"	"		1.00	**2.21**	"	
Pyrene	"	"	"		1.00	**1.27**	"	
Surrogate: 2-Fluorobiphenyl	"	"	"	*37.0-135*		*68.2*	*%*	
Surrogate: Nitrobenzene-d5	"	"	"	*48.0-140*		*58.1*	"	
Surrogate: p-Terphenyl-d14	"	"	"	*25.0-147*		*83.9*	"	
B-9			**P905446-04**				**Water**	**2**
Acenaphthene	0590736	5/26/99	6/1/99		1.00	**3.02**	ug/l	
Acenaphthylene	"	"	"		1.00	ND	"	
Anthracene	"	"	"		1.00	ND	"	
Benzo (a) anthracene	"	"	"		1.00	ND	"	
Benzo (a) pyrene	"	"	"		1.00	ND	"	
Benzo (b) fluoranthene	"	"	"		1.00	ND	"	
Benzo (ghi) perylene	"	"	"		1.00	ND	"	
Benzo (k) fluoranthene	"	"	"		1.00	ND	"	
Chrysene	"	"	"		1.00	ND	"	
Dibenzo (a,h) anthracene	"	"	"		2.00	ND	"	
Fluoranthene	"	"	"		1.00	ND	"	
Fluorene	"	"	"		1.00	**9.89**	"	
Indeno (1,2,3-cd) pyrene	"	"	"		1.00	ND	"	

North Creek Analytical - Portland

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

Crystal Burkholder, Project Manager

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T Corp/PEG, Portland	Project:	CHEVRON #61001868, Portland, OR	Sampled: 5/21/99
7233 SW Kable Lane, Suite 900	Project Number:	B15-200.2A	Received: 5/21/99
Portland, OR 97224	Project Manager:	Kelly Kline	Reported: 6/9/99 16:50

Polynuclear Aromatic Compounds per EPA 8270M-SIM
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
B-9 (continued)			**P905446-04**				**Water**	**2**
Naphthalene	0590736	5/26/99	6/1/99		10.0	ND	ug/l	1
Phenanthrene	"	"	"		1.00	**2.01**	"	
Pyrene	"	"	"		1.00	ND	"	
Surrogate: 2-Fluorobiphenyl	"	"	"	*37.0-135*		*78.8*	%	
Surrogate: Nitrobenzene-d5	"	"	"	*48.0-140*		*54.7*	"	
Surrogate: p-Terphenyl-d14	"	"	"	*25.0-147*		*83.1*	"	
B-10			**P905446-05**				**Water**	**2**
Acenaphthene	0590736	5/26/99	6/1/99		1.00	**3.81**	ug/l	
Acenaphthylene	"	"	"		1.00	ND	"	
Anthracene	"	"	"		1.00	**2.14**	"	
Benzo (a) anthracene	"	"	"		1.00	ND	"	
Benzo (a) pyrene	"	"	"		1.00	ND	"	
Benzo (b) fluoranthene	"	"	"		1.00	ND	"	
Benzo (ghi) perylene	"	"	"		1.00	ND	"	
Benzo (k) fluoranthene	"	"	"		1.00	ND	"	
Chrysene	"	"	"		1.00	ND	"	
Dibenzo (a,h) anthracene	"	"	"		2.00	ND	"	
Fluoranthene	"	"	"		1.00	**1.15**	"	
Fluorene	"	"	"		1.00	**13.8**	"	
Indeno (1,2,3-cd) pyrene	"	"	"		1.00	ND	"	
Naphthalene	"	"	"		20.0	ND	"	1
Phenanthrene	"	"	"		1.00	**16.6**	"	
Pyrene	"	"	"		1.00	**1.19**	"	
Surrogate: 2-Fluorobiphenyl	"	"	"	*37.0-135*		*78.8*	%	
Surrogate: Nitrobenzene-d5	"	"	"	*48.0-140*		*NR*	"	3
Surrogate: p-Terphenyl-d14	"	"	"	*25.0-147*		*78.0*	"	

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T Corp/PEG, Portland	Project: CHEVRON #61001868, Portland, OR	Sampled:	5/21/99
7233 SW Kable Lane, Suite 900	Project Number: B15-200.2A	Received:	5/21/99
Portland, OR 97224	Project Manager: Kelly Kline	Reported:	6/9/99 16:50

BTEX per EPA Method 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: 0590720	**Date Prepared: 5/26/99**					**Extraction Method: EPA 5030**				
Blank	**0590720-BLK1**									
Benzene	5/26/99			**ND**	ug/l	**0.500**				
Toluene	"			**ND**	"	**0.500**				
Ethylbenzene	"			**ND**	"	**0.500**				
Xylenes (total)	"			**ND**	"	**1.00**				
Surrogate: 4-BFB	"	*50.0*		*42.0*	"	*75.0-120*	*84.0*			
LCS	**0590720-BS2**									
Benzene	5/26/99	20.0		17.8	ug/l	67.0-130	89.0			
Toluene	"	20.0		18.6	"	75.0-126	93.0			
Ethylbenzene	"	20.0		18.5	"	76.0-124	92.5			
Xylenes (total)	"	60.0		56.4	"	75.0-126	94.0			
Surrogate: 4-BFB	"	*50.0*		*48.8*	"	*75.0-120*	*97.6*			
Matrix Spike	**0590720-MS1**		**P905446-03**							
Benzene	5/26/99	20.0	771	787	ug/l	67.0-130	**80.0**			
Toluene	"	20.0	69.3	87.3	"	75.0-126	**90.0**			
Ethylbenzene	"	20.0	6.49	382	"	76.0-124	**NR**			4
Xylenes (total)	"	60.0	195	246	"	75.0-126	**85.0**			
Surrogate: 4-BFB	"	*50.0*		*51.7*	"	*75.0-120*	*103*			
Matrix Spike Dup	**0590720-MSD1**		**P905446-03**							
Benzene	5/26/99	20.0	771	775	ug/l	67.0-130	**20.0**	13.0	**120**	4
Toluene	"	20.0	69.3	85.7	"	75.0-126	**82.0**	13.0	**9.30**	
Ethylbenzene	"	20.0	6.49	375	"	76.0-124	**NR**	15.0	**NR**	4
Xylenes (total)	"	60.0	195	246	"	75.0-126	**85.0**	13.0	**0**	
Surrogate: 4-BFB	"	*50.0*		*50.2*	"	*75.0-120*	*100*			
Batch: 0590754	**Date Prepared: 5/27/99**					**Extraction Method: EPA 5030**				
Blank	**0590754-BLK1**									
Benzene	5/27/99			**ND**	ug/l	**0.500**				
Toluene	"			**ND**	"	**0.500**				
Ethylbenzene	"			**ND**	"	**0.500**				
Xylenes (total)	"			**ND**	"	**1.00**				
Surrogate: 4-BFB	"	*50.0*		*48.7*	"	*75.0-120*	*97.4*			
LCS	**0590754-BS2**									
Benzene	5/27/99	20.0		17.1	ug/l	67.0-130	85.5			

North Creek Analytical - Portland

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

Crystal Burkholder, Project Manager

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T Corp/PEG, Portland	Project:	CHEVRON #61001868, Portland, OR	Sampled: 5/21/99
7233 SW Kable Lane, Suite 900	Project Number:	B15-200.2A	Received: 5/21/99
Portland, OR 97224	Project Manager:	Kelly Kline	Reported: 6/9/99 16:50

BTEX per EPA Method 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*
LCS (continued)	**0590754-BS2**									
Toluene	5/27/99	20.0		17.4	ug/l	75.0-126	87.0			
Ethylbenzene	"	20.0		17.6	"	76.0-124	88.0			
Xylenes (total)	"	60.0		54.0	"	75.0-126	90.0			
Surrogate: 4-BFB	"	*50.0*		*49.2*	"	*75.0-120*	*98.4*			

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T Corp/PEG, Portland	Project: CHEVRON #61001868, Portland, OR	Sampled:	5/21/99
3233 SW Kable Lane, Suite 900	Project Number: B15-200.2A	Received:	5/21/99
Portland, OR 97224	Project Manager: Kelly Kline	Reported:	6/9/99 16:50

Total Metals per EPA 6000/7000 Series Methods/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: 0590772	**Date Prepared: 5/27/99**					**Extraction Method: Metals**				
Blank	**0590772-BLK1**									
Mercury	5/27/99			**ND**	mg/l	**0.000200**				
LCS	**0590772-BS1**									
Mercury	5/27/99	0.00500		0.00492	mg/l	80.0-120	98.4			
Duplicate	**0590772-DUP1**		**P905446-03**							
Mercury	5/27/99		ND	ND	mg/l			20.0		
Matrix Spike	**0590772-MS1**		**P905446-03**							
Mercury	5/27/99	0.00500	ND	0.00469	mg/l	75.0-125	**93.8**			
Matrix Spike Dup	**0590772-MSD1**		**P905446-03**							
Mercury	5/27/99	0.00500	ND	0.00445	mg/l	75.0-125	**89.0**	20.0	**5.25**	
Batch: 0590780	**Date Prepared: 5/27/99**					**Extraction Method: EPA 200/3005**				
Blank	**0590780-BLK1**									
Arsenic	6/1/99			**ND**	mg/l	**0.00100**				
Barium	"			**ND**	"	**0.00200**				
Cadmium	"			**ND**	"	**0.00100**				
Chromium	"			**ND**	"	**0.00100**				
Lead	"			**ND**	"	**0.00100**				
Selenium	"			**ND**	"	**0.00100**				
Silver	"			**ND**	"	**0.00100**				
LCS	**0590780-BS1**									
Arsenic	6/1/99	0.100		0.107	mg/l	80.0-120	107			
Barium	"	0.100		0.0998	"	80.0-120	99.8			
Cadmium	"	0.100		0.106	"	80.0-120	106			
Chromium	"	0.100		0.100	"	80.0-120	100			
Lead	"	0.100		0.101	"	80.0-120	101			
Selenium	6/3/99	0.100		0.102	"	80.0-120	102			
Silver	6/1/99	0.0500		0.0483	"	80.0-120	96.6			
Duplicate	**0590780-DUP1**		**P905446-03**							
Arsenic	6/1/99		0.0349	0.0360	mg/l			20.0	**3.10**	
Barium	"		0.116	0.121	"			20.0	**4.22**	
Cadmium	"		ND	ND	"			20.0		

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Crystal Burkholder, Project Manager

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Corp/PEG, Portland	Project:	CHEVRON #61001868, Portland, OR	Sampled: 5/21/99
233 SW Kable Lane, Suite 900	Project Number:	B15-200.2A	Received: 5/21/99
Portland, OR 97224	Project Manager:	Kelly Kline	Reported: 6/9/99 16:50

Total Metals per EPA 6000/7000 Series Methods/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*
Duplicate (continued)	**0590780-DUP1**		**P905446-03**							
Chromium	6/1/99		0.00710	0.00790	mg/l			20.0	**10.7**	
Lead	"		0.0108	0.0113	"			20.0	**4.52**	
Selenium	"		ND	ND	"			20.0		
Silver	"		ND	ND	"			20.0		
Matrix Spike	**0590780-MS1**		**P905446-03**							
Arsenic	6/3/99	0.100	0.0349	0.131	mg/l	75.0-125	**96.1**			
Barium	6/1/99	0.100	0.116	0.205	"	75.0-125	**89.0**			
Cadmium	"	0.100	ND	0.101	"	75.0-125	**101**			
Chromium	"	0.100	0.00710	0.105	"	75.0-125	**97.9**			
Lead	"	0.100	0.0108	0.105	"	75.0-125	**94.2**			
Selenium	"	0.100	ND	0.105	"	75.0-125	**105**			
Silver	"	0.0500	ND	0.0470	"	75.0-125	**94.0**			
Matrix Spike Dup	**0590780-MSD1**		**P905446-03**							
Arsenic	6/3/99	0.100	0.0349	0.131	mg/l	75.0-125	**96.1**	20.0	**0**	
Barium	6/1/99	0.100	0.116	0.208	"	75.0-125	**92.0**	20.0	**3.31**	
Cadmium	"	0.100	ND	0.101	"	75.0-125	**101**	20.0	**0**	
Chromium	"	0.100	0.00710	0.107	"	75.0-125	**99.9**	20.0	**2.02**	
Lead	"	0.100	0.0108	0.105	"	75.0-125	**94.2**	20.0	**0**	
Selenium	"	0.100	ND	0.106	"	75.0-125	**106**	20.0	**0.948**	
Silver	"	0.0500	ND	0.0472	"	75.0-125	**94.4**	20.0	**0.425**	

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T Corp/PEG, Portland	Project: CHEVRON #61001868, Portland, OR	Sampled:	5/21/99
7233 SW Kable Lane, Suite 900	Project Number: B15-200.2A	Received:	5/21/99
Portland, OR 97224	Project Manager: Kelly Kline	Reported:	6/9/99 16:50

Dissolved Metals per EPA 6000/7000 Series Methods/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: 0590660	**Date Prepared: 5/24/99**					**Extraction Method: EPA 200/3005**				
Blank	**0590660-BLK1**									
Arsenic	5/25/99			**ND**	mg/l	**0.00100**				
Barium	"			**ND**	"	**0.00200**				
Cadmium	"			**ND**	"	**0.00100**				
Chromium	"			**ND**	"	**0.00100**				
Lead	"			**ND**	"	**0.00100**				
Selenium	"			**ND**	"	**0.00100**				
Silver	"			**ND**	"	**0.00100**				
LCS	**0590660-BS1**									
Arsenic	5/28/99	0.100		0.104	mg/l	80.0-120	104			
Barium	"	0.100		0.102	"	80.0-120	102			
Cadmium	"	0.100		0.107	"	80.0-120	107			
Chromium	"	0.100		0.0991	"	80.0-120	99.1			
Lead	"	0.100		0.101	"	80.0-120	101			
Selenium	6/1/99	0.100		0.110	"	85.0-115	110			
Silver	5/28/99	0.0500		0.0532	"	80.0-120	106			
Duplicate	**0590660-DUP1**		**P905446-03**							
Arsenic	5/28/99		0.0302	0.0319	mg/l			20.0	**5.48**	
Barium	"		0.0625	0.0657	"			20.0	**4.99**	
Cadmium	"		ND	ND	"			20.0		
Chromium	"		ND	ND	"			20.0		
Lead	"		0.00260	0.00230	"			20.0	**12.2**	
Selenium	"		ND	ND	"			20.0		
Silver	"		ND	ND	"			20.0		
Matrix Spike	**0590660-MS1**		**P905446-03**							
Arsenic	6/1/99	0.100	0.0302	0.146	mg/l	75.0-125	**116**			
Barium	5/28/99	0.100	0.0625	0.173	"	75.0-125	**110**			
Cadmium	"	0.100	ND	0.107	"	75.0-125	**107**			
Chromium	"	0.100	ND	0.105	"	75.0-125	**105**			
Lead	"	0.100	0.00260	0.104	"	75.0-125	**101**			
Selenium	"	0.100	ND	0.109	"	75.0-125	**109**			
Silver	"	0.0500	ND	0.0548	"	75.0-125	**110**			
Matrix Spike Dup	**0590660-MSD1**		**P905446-03**							
Arsenic	6/1/99	0.100	0.0302	0.144	mg/l	75.0-125	**114**	20.0	**1.74**	

North Creek Analytical - Portland

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Crystal Burkholder, Project Manager

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T Corp/PEG, Portland	Project:	CHEVRON #61001868, Portland, OR	Sampled: 5/21/99
7233 SW Kable Lane, Suite 900	Project Number:	B15-200.2A	Received: 5/21/99
Portland, OR 97224	Project Manager:	Kelly Kline	Reported: 6/9/99 16:50

Dissolved Metals per EPA 6000/7000 Series Methods/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)	**0590660-MSD1**		**P905446-03**							
Barium	5/28/99	0.100	0.0625	0.173	mg/l	75.0-125	**110**	20.0	**0**	
Cadmium	"	0.100	ND	0.107	"	75.0-125	**107**	20.0	**0**	
Chromium	"	0.100	ND	0.104	"	75.0-125	**104**	20.0	**0.957**	
Lead	"	0.100	0.00260	0.103	"	75.0-125	**100**	20.0	**0.995**	
Selenium	"	0.100	ND	0.108	"	75.0-125	**108**	20.0	**0.922**	
Silver	"	0.0500	ND	0.0546	"	75.0-125	**109**	20.0	**0.913**	
Batch: 0590771	**Date Prepared: 5/27/99**					**Extraction Method: Metals**				
Blank	**0590771-BLK1**									
Mercury	5/27/99			**ND**	mg/l	**0.000200**				
LCS	**0590771-BS1**									
Mercury	5/27/99	0.00500		0.00516	mg/l	80.0-120	103			
Duplicate	**0590771-DUP1**		**P905446-03**							
Mercury	5/27/99		ND	ND	mg/l			20.0		
Matrix Spike	**0590771-MS1**		**P905446-03**							
Mercury	5/27/99	0.00500	ND	0.00515	mg/l	75.0-125	**103**			
Matrix Spike Dup	**0590771-MSD1**		**P905446-03**							
Mercury	5/27/99	0.00500	ND	0.00516	mg/l	75.0-125	**103**	20.0	**0**	

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T Corp/PEG, Portland	Project: CHEVRON #61001868, Portland, OR	Sampled:	5/21/99
233 SW Kable Lane, Suite 900	Project Number: B15-200.2A	Received:	5/21/99
Portland, OR 97224	Project Manager: Kelly Kline	Reported:	6/9/99 16:50

Polynuclear Aromatic Compounds per EPA 8270M-SIM/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: 0590736	**Date Prepared: 5/26/99**					**Extraction Method: EPA 3520/600 Series**				
Blank	**0590736-BLK1**									
Acenaphthene	6/1/99			**ND**	ug/l	**0.100**				
Acenaphthylene	"			**ND**	"	**0.100**				
Anthracene	"			**ND**	"	**0.100**				
Benzo (a) anthracene	"			**ND**	"	**0.100**				
Benzo (a) pyrene	"			**ND**	"	**0.100**				
Benzo (b) fluoranthene	"			**ND**	"	**0.100**				
Benzo (ghi) perylene	"			**ND**	"	**0.100**				
Benzo (k) fluoranthene	"			**ND**	"	**0.100**				
Chrysene	"			**ND**	"	**0.100**				
Dibenzo (a,h) anthracene	"			**ND**	"	**0.200**				
Fluoranthene	"			**ND**	"	**0.100**				
Fluorene	"			**ND**	"	**0.100**				
Indeno (1,2,3-cd) pyrene	"			**ND**	"	**0.100**				
Phenanthrene	"			**ND**	"	**0.100**				
Pyrene	"			**ND**	"	**0.100**				
Surrogate: 2-Fluorobiphenyl	"	*2.50*		*1.78*	"	*37.0-135*	*71.2*			
Surrogate: Nitrobenzene-d5	"	*2.50*		*1.80*	"	*48.0-140*	*72.0*			
Surrogate: p-Terphenyl-d14	"	*2.50*		*2.51*	"	*25.0-147*	*100*			
LCS	**0590736-BS1**									
Acenaphthene	6/1/99	5.00		3.56	ug/l	50.0-150	71.2			
Benzo (a) pyrene	"	5.00		5.65	"	50.0-150	113			
Pyrene	"	5.00		3.61	"	50.0-150	72.2			
Surrogate: 2-Fluorobiphenyl	"	*2.50*		*1.88*	"	*37.0-135*	*75.2*			
Surrogate: Nitrobenzene-d5	"	*2.50*		*1.88*	"	*48.0-140*	*75.2*			
Surrogate: p-Terphenyl-d14	"	*2.50*		*2.17*	"	*25.0-147*	*86.8*			
Matrix Spike	**0590736-MS1**		**P905446-03**							2
Acenaphthene	6/4/99	5.00	1.08	4.52	ug/l	50.0-150	**68.8**			
Benzo (a) pyrene	"	5.00	ND	3.76	"	50.0-150	**75.2**			
Pyrene	"	5.00	1.27	4.08	"	50.0-150	**56.2**			
Surrogate: 2-Fluorobiphenyl	"	*2.50*		*1.80*	"	*37.0-135*	*72.0*			
Surrogate: Nitrobenzene-d5	"	*2.50*		*1.69*	"	*48.0-140*	*67.6*			
Surrogate: p-Terphenyl-d14	"	*2.50*		*1.93*	"	*25.0-147*	*77.2*			
Matrix Spike Dup	**0590736-MSD1**		**P905446-03**							2
Acenaphthene	6/4/99	5.00	1.08	4.46	ug/l	50.0-150	**67.6**	60.0	**1.76**	

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T Corp/PEG, Portland	Project:	CHEVRON #61001868, Portland, OR	Sampled: 5/21/99
7233 SW Kable Lane, Suite 900	Project Number:	B15-200.2A	Received: 5/21/99
Portland, OR 97224	Project Manager:	Kelly Kline	Reported: 6/9/99 16:50

Polynuclear Aromatic Compounds per EPA 8270M-SIM/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)	**0590736-MSD1**		**P905446-03**							**2**
Benzo (a) pyrene	6/4/99	5.00	ND	3.79	ug/l	50.0-150	**75.8**	60.0	**0.795**	
Pyrene	"	5.00	1.27	4.45	"	50.0-150	**63.6**	60.0	**12.4**	
Surrogate: 2-Fluorobiphenyl	"	*2.50*		*1.76*	"	*37.0-135*	*70.4*			
Surrogate: Nitrobenzene-d5	"	*2.50*		*1.82*	"	*48.0-140*	*72.8*			
Surrogate: p-Terphenyl-d14	"	*2.50*		*2.02*	"	*25.0-147*	*80.8*			

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T Corp/PEG, Portland	Project:	CHEVRON #61001868, Portland, OR	Sampled: 5/21/99
7233 SW Kable Lane, Suite 900	Project Number:	B15-200.2A	Received: 5/21/99
Portland, OR 97224	Project Manager:	Kelly Kline	Reported: 6/9/99 16:50

Notes and Definitions

Note	
1	The reporting limit for this analyte was raised due to matrix interference.
2	Reporting limits raised due to dilution necessary for analysis.
3	The surrogate recovery for this sample cannot be accurately quantified due to interference from coeluting organic compounds present in the sample.
4	The RPD and/or percent recovery for this QC spike sample cannot be accurately calculated due to the high concentration of analyte already 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 - Portland

Crystal Burkholder, Project Manager

North Creek Analytical, Inc.
Environmental Laboratory Network

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NORTH CREEK ANALYTICAL
Environmental Laboratory Services

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CHEVRON U.S.A., Inc. CHAIN OF CUSTODY REPORT

CHEVRON INFORMATION

Facility Number: 6100 1868
Site Address: 5531 NW Doane Ave
City, State, ZIP: Portland Or 97210
Service Code:
Service Order:
Cost Element: 75100100
Chevron Project Manager: Gerald O'Regan

- ☐ Site Assesment
- ☐ Remediation
- ☐ O & M
- ☐ GWM

CONSULTANT INFORMATION

Name: I.T. Corp. Project# B15-200.2A
Address: 7233 SW Kable Ln, Suite 900, Bldg F, Portland Or 97224
Phone: 503-639-6305 Fax: 503-639-7482
Project Manager: Kelly Kline Airbill#:
Sample Collection by: Nate Hemphill

Laboratory Turnaround Time

- ☐ 1 Business Day
- ☐ 3 Business Days
- ☐ 5 Business Days
- ☐ 10 Business Days
- ☐ 3 Day Air Samples (Please Select One)

☐ AK ☐ OR ☐ WA ☑ NW Series

SAMPLE INDENTIFICATION	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CON-TAINERS	TPH-HCID	TPH-Gas	BTEX Only 8020A EPA 8021 Mod.	TPH-Gas + BTEX	TPH-Diesel	TPH-Diesel Extended	TPH-Diesel-Ext. w/SG Cleanup	Halogen. Volatiles EPA 8021	Pesticides/PCBs or PCBs Only	GC/MS Volatiles EPA 8260	GC/MS SemiVols. EPA 8270	PAH's 8270 SIM or 8310	Lead:	Total or Dissolved RCRA Metals (8) Total & Dissolved				
1. B-30	5-21-99 / 08:30	W	5			X									X		X	X			
2. B-11	5-21-99 / 09:45	W	4			X									X		X				
3. B-14	5-21-99 / 10:05	W	15			X									X		X	X		MS/MSD	
4. B-9	5-21-99 / 11:00	W	4			X									X		X				
5. B-10	5-21-99 / 11:20	W	4			X									X		X				
6. TB/LB	5-21-99 / 6:00	W	2			X															
7.																					
8.																					
9.																					
10.																					

P905446
NCA SAMPLE NUMBER

Relinquished by:	Firm:	Date & Time	Received by:	Firm:	Date & Time
1.	I.T. Corp.	5-21-99 15:15		NCA	5-21-99 1535
2.					
3.					

Additional Comments: B-14 = MS/MSD Sample

Chev CoC. Rev. 3.3, 10/97

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T Corp/PEG, Portland	Project:	TOSCO #0608, Portland, OR	Sampled: 5/19/99
7233 SW Kable Lane, Suite 900	Project Number:	B15-300.2A	Received: 5/21/99
Portland, OR 97224	Project Manager:	Kelly Kline	Reported: 6/14/99 15:18

ANALYTICAL REPORT FOR SAMPLES:

Sample Description	Laboratory Sample Number	Sample Matrix	Date Sampled
B-18	P905443-01	Water	5/19/99
TB/LB	P905443-02	Water	5/19/99

*

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.

Crystal Burkholder, Project Manager

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T Corp/PEG, Portland	Project:	TOSCO #0608, Portland, OR	Sampled: 5/19/99
1233 SW Kable Lane, Suite 900	Project Number:	B15-300.2A	Received: 5/21/99
Portland, OR 97224	Project Manager:	Kelly Kline	Reported: 6/14/99 15:18

BTEX per EPA Method 8020A
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
-18			**P905443-01**				**Water**	
Benzene	0590754	5/27/99	5/27/99		0.500	ND	ug/l	
Toluene	"	"	"		0.500	ND	"	
Ethylbenzene	"	"	"		0.500	ND	"	
Xylenes (total)	"	"	"		1.00	ND	"	
Surrogate: 4-BFB	"	"	"	*75.0-120*		*98.4*	*%*	
B/LB			**P905443-02**				**Water**	
Benzene	0590720	5/26/99	5/26/99		0.500	ND	ug/l	
Toluene	"	"	"		0.500	ND	"	
Ethylbenzene	"	"	"		0.500	ND	"	
Xylenes (total)	"	"	"		1.00	ND	"	
Surrogate: 4-BFB	"	"	"	*75.0-120*		*89.0*	*%*	

North Creek Analytical - Portland

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

Crystal Burkholder, Project Manager

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IT Corp/PEG, Portland	Project:	TOSCO #0608, Portland, OR	Sampled: 5/19/99
7233 SW Kable Lane, Suite 900	Project Number:	B15-300.2A	Received: 5/21/99
Portland, OR 97224	Project Manager:	Kelly Kline	Reported: 6/14/99 15:18

Total Metals per EPA 6000/7000 Series Methods
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Specific Method	Reporting Limit	Result	Units	Notes*
B-18			**P905443-01**				**Water**	
Arsenic	0590780	5/27/99	6/1/99	EPA 6020	0.00500	**0.00900**	mg/l	1
Barium	"	"	"	EPA 6020	0.0100	**0.145**	"	1
Cadmium	"	"	"	EPA 6020	0.00500	ND	"	1
Chromium	"	"	"	EPA 6020	0.00500	**0.00550**	"	1
Lead	"	"	"	EPA 6020	0.00500	ND	"	1
Selenium	"	"	"	EPA 6020	0.00500	ND	"	1
Silver	"	"	"	EPA 6020	0.00500	ND	"	1
Mercury	0590772	"	5/27/99	EPA 7470A	0.000200	ND	"	

North Creek Analytical - Portland

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T Corp/PEG, Portland	Project:	TOSCO #0608, Portland, OR	Sampled: 5/19/99
17233 SW Kable Lane, Suite 900	Project Number:	B15-300.2A	Received: 5/21/99
Portland, OR 97224	Project Manager:	Kelly Kline	Reported: 6/14/99 15:18

Polynuclear Aromatic Compounds per EPA 8270M-SIM
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
-18			P905443-01				Water	2
Acenaphthene	0590663	5/24/99	5/28/99		2.50	**2.76**	ug/l	
Acenaphthylene	"	"	"		2.50	ND	"	
nthracene	"	"	"		2.50	ND	"	
enzo (a) anthracene	"	"	"		2.50	ND	"	
Benzo (a) pyrene	"	"	"		2.50	ND	"	
enzo (b) fluoranthene	"	"	"		2.50	ND	"	
enzo (ghi) perylene	"	"	"		2.50	ND	"	
Benzo (k) fluoranthene	"	"	"		2.50	ND	"	
Chrysene	"	"	"		2.50	ND	"	
ibenzo (a,h) anthracene	"	"	"		5.00	ND	"	
luoranthene	"	"	"		2.50	ND	"	
Fluorene	"	"	"		2.50	**6.86**	"	
ndeno (1,2,3-cd) pyrene	"	"	"		2.50	ND	"	
laphthalene	"	"	"		12.5	ND	"	1
Phenanthrene	"	"	"		2.50	**6.79**	"	
Pyrene	"	"	"		2.50	ND	"	
urrogate: 2-Fluorobiphenyl	"	"	"	*37.0-135*		*104*	%	
urrogate: Nitrobenzene-d5	"	"	"	*48.0-140*		*NR*	"	3
Surrogate: p-Terphenyl-d14	"	"	"	*25.0-147*		*118*	"	

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Crystal Burkholder, Project Manager

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IT Corp/PEG, Portland	Project:	TOSCO #0608, Portland, OR	Sampled: 5/19/99
7233 SW Kable Lane, Suite 900	Project Number:	B15-300.2A	Received: 5/21/99
Portland, OR 97224	Project Manager:	Kelly Kline	Reported: 6/14/99 15:18

BTEX per EPA Method 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: 0590720	**Date Prepared: 5/26/99**					**Extraction Method: EPA 5030**				
Blank	**0590720-BLK1**									
Benzene	5/26/99			**ND**	ug/l	**0.500**				
Toluene	"			**ND**	"	**0.500**				
Ethylbenzene	"			**ND**	"	**0.500**				
Xylenes (total)	"			**ND**	"	**1.00**				
Surrogate: 4-BFB	"	*50.0*		*42.0*	"	*75.0-120*	*84.0*			
LCS	**0590720-BS2**									
Benzene	5/26/99	20.0		17.8	ug/l	67.0-130	89.0			
Toluene	"	20.0		18.6	"	75.0-126	93.0			
Ethylbenzene	"	20.0		18.5	"	76.0-124	92.5			
Xylenes (total)	"	60.0		56.4	"	75.0-126	94.0			
Surrogate: 4-BFB	"	*50.0*		*48.8*	"	*75.0-120*	*97.6*			
Matrix Spike	**0590720-MS1**		**P905446-03**							
Benzene	5/26/99	20.0	771	787	ug/l	67.0-130	**80.0**			
Toluene	"	20.0	69.3	87.3	"	75.0-126	**90.0**			
Ethylbenzene	"	20.0	6.49	382	"	76.0-124	**NR**			4
Xylenes (total)	"	60.0	195	246	"	75.0-126	**85.0**			
Surrogate: 4-BFB	"	*50.0*		*51.7*	"	*75.0-120*	*103*			
Matrix Spike Dup	**0590720-MSD1**		**P905446-03**							
Benzene	5/26/99	20.0	771	775	ug/l	67.0-130	**20.0**	13.0	**120**	4
Toluene	"	20.0	69.3	85.7	"	75.0-126	**82.0**	13.0	**9.30**	
Ethylbenzene	"	20.0	6.49	375	"	76.0-124	**NR**	15.0	**2.15**	4
Xylenes (total)	"	60.0	195	246	"	75.0-126	**85.0**	13.0	**0**	
Surrogate: 4-BFB	"	*50.0*		*50.2*	"	*75.0-120*	*100*			
Batch: 0590754	**Date Prepared: 5/27/99**					**Extraction Method: EPA 5030**				
Blank	**0590754-BLK1**									
Benzene	5/27/99			**ND**	ug/l	**0.500**				
Toluene	"			**ND**	"	**0.500**				
Ethylbenzene	"			**ND**	"	**0.500**				
Xylenes (total)	"			**ND**	"	**1.00**				
Surrogate: 4-BFB	"	*50.0*		*48.7*	"	*75.0-120*	*97.4*			
LCS	**0590754-BS2**									
Benzene	5/27/99	20.0		17.1	ug/l	67.0-130	85.5			

North Creek Analytical - Portland

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Crystal Burkholder, Project Manager

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T Corp/PEG, Portland	Project:	TOSCO #0608, Portland, OR	Sampled: 5/19/99
233 SW Kable Lane, Suite 900	Project Number:	B15-300.2A	Received: 5/21/99
Portland, OR 97224	Project Manager:	Kelly Kline	Reported: 6/14/99 15:18

BTEX per EPA Method 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*
LCS (continued)	**0590754-BS2**									
Toluene	5/27/99	20.0		17.4	ug/l	75.0-126	87.0			
Ethylbenzene	"	20.0		17.6	"	76.0-124	88.0			
Xylenes (total)	"	60.0		54.0	"	75.0-126	90.0			
Surrogate: 4-BFB	"	*50.0*		*49.2*	"	*75.0-120*	*98.4*			

North Creek Analytical - Portland

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Crystal Burkholder, Project Manager

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T Corp/PEG, Portland	Project:	TOSCO #0608, Portland, OR	Sampled: 5/19/99
233 SW Kable Lane, Suite 900	Project Number:	B15-300.2A	Received: 5/21/99
Portland, OR 97224	Project Manager:	Kelly Kline	Reported: 6/14/99 15:18

Total Metals per EPA 6000/7000 Series Methods/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: 0590772	**Date Prepared: 5/27/99**					**Extraction Method: Metals**				
Blank	**0590772-BLK1**									
Mercury	5/27/99			**ND**	mg/l	**0.000200**				
LCS	**0590772-BS1**									
Mercury	5/27/99	0.00500		0.00492	mg/l	80.0-120	98.4			
Duplicate	**0590772-DUP1**		**P905446-03**							
Mercury	5/27/99		ND	ND	mg/l			20.0		
Matrix Spike	**0590772-MS1**		**P905446-03**							
Mercury	5/27/99	0.00500	ND	0.00469	mg/l	75.0-125	**93.8**			
Matrix Spike Dup	**0590772-MSD1**		**P905446-03**							
Mercury	5/27/99	0.00500	ND	0.00445	mg/l	75.0-125	**89.0**	20.0	**5.25**	
Batch: 0590780	**Date Prepared: 5/27/99**					**Extraction Method: EPA 200/3005**				
Blank	**0590780-BLK1**									
Arsenic	6/1/99			**ND**	mg/l	**0.00100**				
Barium	"			**ND**	"	**0.00200**				
Cadmium	"			**ND**	"	**0.00100**				
Chromium	"			**ND**	"	**0.00100**				
Lead	"			**ND**	"	**0.00100**				
Selenium	"			**ND**	"	**0.00100**				
Silver	"			**ND**	"	**0.00100**				
LCS	**0590780-BS1**									
Arsenic	6/1/99	0.100		0.107	mg/l	80.0-120	107			
Barium	"	0.100		0.0998	"	80.0-120	99.8			
Cadmium	"	0.100		0.106	"	80.0-120	106			
Chromium	"	0.100		0.100	"	80.0-120	100			
Lead	"	0.100		0.101	"	80.0-120	101			
Selenium	6/3/99	0.100		0.102	"	80.0-120	102			
Silver	6/1/99	0.0500		0.0483	"	80.0-120	96.6			
Duplicate	**0590780-DUP1**		**P905446-03**							
Arsenic	6/1/99		0.0349	0.0360	mg/l			20.0	**3.10**	
Barium	"		0.116	0.121	"			20.0	**4.22**	
Cadmium	"		ND	ND	"			20.0		

North Creek Analytical - Portland

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

Crystal Burkholder, Project Manager

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T Corp/PEG, Portland	Project:	TOSCO #0608, Portland, OR	Sampled: 5/19/99
233 SW Kable Lane, Suite 900	Project Number:	B15-300.2A	Received: 5/21/99
Portland, OR 97224	Project Manager:	Kelly Kline	Reported: 6/14/99 15:18

Total Metals per EPA 6000/7000 Series Methods/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*
Duplicate (continued)	**0590780-DUP1**		**P905446-03**							
Chromium	6/1/99		0.00710	0.00790	mg/l			20.0	**10.7**	
Lead	"		0.0108	0.0113	"			20.0	**4.52**	
Selenium	"		ND	ND	"			20.0		
Silver	"		ND	ND	"			20.0		
Matrix Spike	**0590780-MS1**		**P905446-03**							
Arsenic	6/3/99	0.100	0.0349	0.131	mg/l	75.0-125	**96.1**			
Barium	6/1/99	0.100	0.116	0.205	"	75.0-125	**89.0**			
Cadmium	"	0.100	ND	0.101	"	75.0-125	**101**			
Chromium	"	0.100	0.00710	0.105	"	75.0-125	**97.9**			
Lead	"	0.100	0.0108	0.105	"	75.0-125	**94.2**			
Selenium	"	0.100	ND	0.105	"	75.0-125	**105**			
Silver	"	0.0500	ND	0.0470	"	75.0-125	**94.0**			
Matrix Spike Dup	**0590780-MSD1**		**P905446-03**							
Arsenic	6/3/99	0.100	0.0349	0.131	mg/l	75.0-125	**96.1**	20.0	**0**	
Barium	6/1/99	0.100	0.116	0.208	"	75.0-125	**92.0**	20.0	**3.31**	
Cadmium	"	0.100	ND	0.101	"	75.0-125	**101**	20.0	**0**	
Chromium	"	0.100	0.00710	0.107	"	75.0-125	**99.9**	20.0	**2.02**	
Lead	"	0.100	0.0108	0.105	"	75.0-125	**94.2**	20.0	**0**	
Selenium	"	0.100	ND	0.106	"	75.0-125	**106**	20.0	**0.948**	
Silver	"	0.0500	ND	0.0472	"	75.0-125	**94.4**	20.0	**0.425**	

North Creek Analytical - Portland

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

Crystal Burkholder, Project Manager

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T Corp/PEG, Portland	Project:	TOSCO #0608, Portland, OR	Sampled: 5/19/99
7233 SW Kable Lane, Suite 900	Project Number:	B15-300.2A	Received: 5/21/99
Portland, OR 97224	Project Manager:	Kelly Kline	Reported: 6/14/99 15:18

Polynuclear Aromatic Compounds per EPA 8270M-SIM/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: 0590663	**Date Prepared: 5/24/99**					**Extraction Method: EPA 3520/600 Series**				
Blank	**0590663-BLK1**									
Acenaphthene	5/26/99			ND	ug/l	0.100				
Acenaphthylene	"			ND	"	0.100				
Anthracene	"			ND	"	0.100				
Benzo (a) anthracene	"			ND	"	0.100				
Benzo (a) pyrene	"			ND	"	0.100				
Benzo (b) fluoranthene	"			ND	"	0.100				
Benzo (ghi) perylene	"			ND	"	0.100				
Benzo (k) fluoranthene	"			ND	"	0.100				
Chrysene	"			ND	"	0.100				
Dibenzo (a,h) anthracene	"			ND	"	0.200				
Fluoranthene	"			ND	"	0.100				
Fluorene	"			ND	"	0.100				
Indeno (1,2,3-cd) pyrene	"			ND	"	0.100				
Naphthalene	"			ND	"	0.100				
Phenanthrene	"			ND	"	0.100				
Pyrene	"			ND	"	0.100				
Surrogate: 2-Fluorobiphenyl	"	*2.50*		*1.60*	"	*37.0-135*	*64.0*			
Surrogate: Nitrobenzene-d5	"	*2.50*		*1.71*	"	*48.0-140*	*68.4*			
Surrogate: p-Terphenyl-d14	"	*2.50*		*2.07*	"	*25.0-147*	*82.8*			
LCS	**0590663-BS1**									
Acenaphthene	5/26/99	5.00		2.97	ug/l	50.0-150	59.4			
Benzo (a) pyrene	"	*5.00*		*5.50*	"	*50.0-150*	*110*			
Pyrene	"	5.00		3.31	"	50.0-150	66.2			
Surrogate: 2-Fluorobiphenyl	"	*2.50*		*1.35*	"	*37.0-135*	*54.0*			
Surrogate: Nitrobenzene-d5	"	*2.50*		*1.45*	"	*48.0-140*	*58.0*			
Surrogate: p-Terphenyl-d14	"	*2.50*		*1.91*	"	*25.0-147*	*76.4*			
LCS Dup	**0590663-BSD1**									
Acenaphthene	5/26/99	5.00		3.33	ug/l	50.0-150	66.6	60.0	11.4	
Benzo (a) pyrene	"	5.00		5.66	"	50.0-150	113	60.0	2.69	
Pyrene	"	5.00		3.25	"	50.0-150	65.0	60.0	1.83	
Surrogate: 2-Fluorobiphenyl	"	*2.50*		*1.60*	"	*37.0-135*	*64.0*			
Surrogate: Nitrobenzene-d5	"	*2.50*		*1.76*	"	*48.0-140*	*70.4*			
Surrogate: p-Terphenyl-d14	"	*2.50*		*1.93*	"	*25.0-147*	*77.2*			

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

Crystal Burkholder, Project Manager

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T Corp/PEG, Portland	Project:	TOSCO #0608, Portland, OR	Sampled: 5/19/99
7233 SW Kable Lane, Suite 900	Project Number:	B15-300.2A	Received: 5/21/99
Portland, OR 97224	Project Manager:	Kelly Kline	Reported: 6/14/99 15:18

Notes and Definitions

	Note
1	The reporting limit for this analyte was raised due to matrix interference.
2	Reporting limits raised due to dilution necessary for analysis.
3	The surrogate recovery for this sample cannot be accurately quantified due to interference from coeluting organic compounds present in the sample.
4	The RPD and/or percent recovery for this QC spike sample cannot be accurately calculated due to the high concentration of analyte already 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 - Portland

Crystal Burkholder, Project Manager

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UNOCAL CHAIN OF CUSTODY REPORT

UNOCAL INFORMATION

Facility Number: 0608
Site Address: 5528 NW Doane Ave
City, State, ZIP: Portland OR 97210
Site Release Number:
Unocal Manager: Marty Cramer
CERT INFO: (check one) ☐ Evaluation ☐ Remediation
☐ Detection ☐ Demolition ☐ Closure ☐ Miscellaneous

CONSULTANT INFORMATION

Firm: IT Corp. Project# B15-300.2A
Address: 7233 Kable Ln Suite 900, Bldg F
Portland OR 97224.
Phone: 503-639-6305 Fax: 503 639-7482
Project Manager: Kelly Kline
Sample Collection by: Mike Hengll

Chain of Custody Record #: P10S443
Quality Assurance Data Level: [A] [B]
A: Standard Summary
B: Standard + Chromatograms
Laboratory Turnaround Days: [10] [5] [3] [2] [1]

○ OR ○ WA ○ AK ○ NW Series

SAMPLE INDENTIFICATION	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CON-TAINERS	TPH-HCID	TPH-Gas	BTEX EPA 8021 Mod. 8020A	TPH-Gas + BTEX	TPH-Diesel	TPH-Diesel Extended	TPH-Diesel-Ext. w/SG Cleanup	Halogen. Volatiles EPA 8021	Pesticides/PCBs or PCBs Only	GC/MS Volatiles EPA 8260	GC/MS SemiVols. EPA 8270	PAH's: 8270 SIM ~~8310~~	Lead: Total or Dissolved	TCLP or RCRA Metals (8) Total	NCA SAMPLE NUMBER
1. B-18	5-19-99/16:30	W	4			X									X		X	
2. TB/LB	5-19-99/10:00	W	2			X												
3.																		
4.																		
5.																		
6.																		
7.																		
8.																		
9.																		
10.																		

Relinquished by:	Firm:	Date & Time	Received by:	Firm:	Date & Time
1. [signature]	IT Corp.	5-21-99 0830	[signature]	NCA	5-21-99 0830
2. [signature]	AKA 5-21-99				
3.					

Final Report Approval
Were all requested results provided? [yes] [no] Define
Were results within requested turnaround? [yes] [no] "No"
Final Approval Signature: on back
Firm: Date:

Page 2 of 2
Rev. UNO3.3, 2/99

Comments:

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f Corp/PEG, Portland	Project:	TOSCO #0608, Portland, OR	Sampled: 5/19/99 to 5/20/99
7233 SW Kable Lane, Suite 900	Project Number:	B15-300.2A	Received: 5/21/99
Portland, OR 97224	Project Manager:	Kelly Kline	Reported: 6/10/99 11:04

ANALYTICAL REPORT FOR SAMPLES:

ample Description	Laboratory Sample Number	Sample Matrix	Date Sampled
U-3	P905442-01	Water	5/19/99
-2	P905442-02	Water	5/19/99
-25	P905442-03	Water	5/19/99
U-5	P905442-04	Water	5/19/99
-37	P905442-05	Water	5/19/99
B-36	P905442-06	Water	5/19/99
-35	P905442-07	Water	5/19/99
-17	P905442-08	Water	5/19/99
B-22	P905442-09	Water	5/20/99
-22 Dup	P905442-10	Water	5/20/99

North Creek Analytical - Portland

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.

Crystal Burkholder, Project Manager

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7233 SW Kable Lane, Suite 900	Project Number:	B15-300.2A	Received: 5/21/99
Portland, OR 97224	Project Manager:	Kelly Kline	Reported: 6/10/99 11:04

BTEX per EPA Method 8020A
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
U-3			P905442-01				Water	
Benzene	0590681	5/25/99	5/25/99		0.500	**1.89**	ug/l	
Toluene	"	"	"		0.500	ND	"	
Ethylbenzene	"	"	"		0.500	ND	"	
Xylenes (total)	"	"	"		1.00	ND	"	
Surrogate: 4-BFB	"	"	"	*75.0-120*		*81.8*	%	
U-2			P905442-02				Water	
Benzene	0590717	5/26/99	5/26/99		0.500	**7.64**	ug/l	
Toluene	"	"	"		0.500	**2.79**	"	
Ethylbenzene	"	"	"		0.500	**11.6**	"	
Xylenes (total)	"	"	"		1.00	**9.63**	"	
Surrogate: 4-BFB	"	"	"	*75.0-120*		*101*	%	
B-25			P905442-03				Water	
Benzene	0590681	5/25/99	5/25/99		0.500	ND	ug/l	
Toluene	"	"	"		0.500	ND	"	
Ethylbenzene	"	"	"		0.500	ND	"	
Xylenes (total)	"	"	"		1.00	ND	"	
Surrogate: 4-BFB	"	"	"	*75.0-120*		*87.2*	%	
U-5			P905442-04				Water	
Benzene	0590681	5/25/99	5/25/99		0.500	**2.62**	ug/l	
Toluene	"	"	"		0.500	ND	"	
Ethylbenzene	"	"	"		0.500	ND	"	
Xylenes (total)	"	"	"		1.00	ND	"	
Surrogate: 4-BFB	"	"	"	*75.0-120*		*85.8*	%	
B-37			P905442-05				Water	
Benzene	0590717	5/26/99	5/26/99		0.500	ND	ug/l	
Toluene	"	"	"		0.500	ND	"	
Ethylbenzene	"	"	"		0.500	ND	"	
Xylenes (total)	"	"	"		1.00	ND	"	
Surrogate: 4-BFB	"	"	"	*75.0-120*		*87.8*	%	
B-36			P905442-06				Water	
Benzene	0590681	5/25/99	5/25/99		0.500	ND	ug/l	
Toluene	"	"	"		0.500	ND	"	
Ethylbenzene	"	"	"		0.500	ND	"	

North Creek Analytical - Portland

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

Crystal Burkholder, Project Manager

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T Corp/PEG, Portland	Project:	TOSCO #0608, Portland, OR	Sampled: 5/19/99 to 5/20/99
7233 SW Kable Lane, Suite 900	Project Number:	B15-300.2A	Received: 5/21/99
Portland, OR 97224	Project Manager:	Kelly Kline	Reported: 6/10/99 11:04

BTEX per EPA Method 8020A
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
B-36 (continued)			**P905442-06**				**Water**	
Xylenes (total)	0590681	5/25/99	5/25/99		1.00	ND	ug/l	
Surrogate: 4-BFB	"	"	"	*75.0-120*		*82.0*	*%*	
B-35			**P905442-07**				**Water**	
Benzene	0590754	5/27/99	5/27/99		2.50	**59.5**	ug/l	
Toluene	"	"	"		2.50	ND	"	
Ethylbenzene	"	"	"		2.50	ND	"	
Xylenes (total)	"	"	"		5.00	ND	"	
Surrogate: 4-BFB	"	"	"	*75.0-120*		*90.8*	*%*	
B-17			**P905442-08**				**Water**	
Benzene	0590717	5/26/99	5/26/99		2.50	**357**	ug/l	
Toluene	"	"	"		2.50	**7.75**	"	
Ethylbenzene	"	"	"		2.50	ND	"	
Xylenes (total)	"	"	"		5.00	ND	"	
Surrogate: 4-BFB	"	"	"	*75.0-120*		*85.8*	*%*	
B-22			**P905442-09**				**Water**	
Benzene	0590717	5/26/99	5/26/99		0.500	**0.972**	ug/l	
Toluene	"	"	"		0.500	**0.758**	"	
Ethylbenzene	"	"	"		0.500	**3.40**	"	
Xylenes (total)	"	"	"		1.00	**13.6**	"	
Surrogate: 4-BFB	"	"	"	*75.0-120*		*101*	*%*	
B-22 Dup			**P905442-10**				**Water**	
Benzene	0590754	5/27/99	5/27/99		0.500	ND	ug/l	
Toluene	"	"	"		0.500	ND	"	
Ethylbenzene	"	"	"		0.500	**0.855**	"	
Xylenes (total)	"	"	"		1.00	**4.96**	"	
Surrogate: 4-BFB	"	"	"	*75.0-120*		*104*	*%*	

North Creek Analytical - Portland

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

Crystal Burkholder, Project Manager

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T Corp/PEG, Portland	Project:	TOSCO #0608, Portland, OR	Sampled: 5/19/99 to 5/20/99
7233 SW Kable Lane, Suite 900	Project Number:	B15-300.2A	Received: 5/21/99
Portland, OR 97224	Project Manager:	Kelly Kline	Reported: 6/10/99 11:04

Total Metals per EPA 6000/7000 Series Methods
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Specific Method	Reporting Limit	Result	Units	Notes*
U-3			P905442-01				Water	
Arsenic	0590780	5/27/99	6/1/99	EPA 6020	0.00100	**0.0367**	mg/l	
Barium	"	"	"	EPA 6020	0.00200	**0.156**	"	
Cadmium	"	"	"	EPA 6020	0.00100	ND	"	
Chromium	"	"	"	EPA 6020	0.00100	**0.0125**	"	
Lead	"	"	"	EPA 6020	0.00100	**0.0255**	"	
Selenium	"	"	"	EPA 6020	0.00100	ND	"	
Silver	"	"	"	EPA 6020	0.00100	ND	"	
Mercury	0590730	5/26/99	5/26/99	EPA 7470A	0.000200	ND	"	
U-2			P905442-02				Water	
Arsenic	0590780	5/27/99	6/1/99	EPA 6020	0.00100	**0.0230**	mg/l	
Barium	"	"	"	EPA 6020	0.00200	**0.0307**	"	
Cadmium	"	"	"	EPA 6020	0.00100	ND	"	
Chromium	"	"	"	EPA 6020	0.00100	ND	"	
Lead	"	"	"	EPA 6020	0.00100	ND	"	
Selenium	"	"	"	EPA 6020	0.00100	ND	"	
Silver	"	"	"	EPA 6020	0.00100	ND	"	
Mercury	0590730	5/26/99	5/26/99	EPA 7470A	0.000200	ND	"	
B-25			P905442-03				Water	
Arsenic	0590780	5/27/99	6/3/99	EPA 6020	0.0100	**0.135**	mg/l	
Barium	"	"	6/1/99	EPA 6020	0.00200	**0.0763**	"	
Cadmium	"	"	"	EPA 6020	0.00100	ND	"	
Chromium	"	"	"	EPA 6020	0.00100	ND	"	
Lead	"	"	"	EPA 6020	0.00100	ND	"	
Selenium	"	"	"	EPA 6020	0.00100	ND	"	
Silver	"	"	"	EPA 6020	0.00100	ND	"	
Mercury	0590730	5/26/99	5/26/99	EPA 7470A	0.000200	ND	"	
U-5			P905442-04				Water	
Arsenic	0590780	5/27/99	6/1/99	EPA 6020	0.00100	**0.00600**	mg/l	
Barium	"	"	"	EPA 6020	0.00200	**0.121**	"	
Cadmium	"	"	"	EPA 6020	0.00100	ND	"	
Chromium	"	"	"	EPA 6020	0.00100	**0.00630**	"	
Lead	"	"	"	EPA 6020	0.00100	**0.00820**	"	
Selenium	"	"	"	EPA 6020	0.00100	ND	"	
Silver	"	"	"	EPA 6020	0.00100	ND	"	
Mercury	0590730	5/26/99	5/26/99	EPA 7470A	0.000200	ND	"	

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T Corp/PEG, Portland	Project:	TOSCO #0608, Portland, OR	Sampled: 5/19/99 to 5/20/99
7233 SW Kable Lane, Suite 900	Project Number:	B15-300.2A	Received: 5/21/99
Portland, OR 97224	Project Manager:	Kelly Kline	Reported: 6/10/99 11:04

Total Metals per EPA 6000/7000 Series Methods
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Specific Method	Reporting Limit	Result	Units	Notes*
B-37			P905442-05				Water	
Arsenic	0590780	5/27/99	6/3/99	EPA 6020	0.0100	0.237	mg/l	
Barium	"	"	6/1/99	EPA 6020	0.00200	0.0613	"	
Cadmium	"	"	"	EPA 6020	0.00100	ND	"	
Chromium	"	"	"	EPA 6020	0.00100	ND	"	
Lead	"	"	"	EPA 6020	0.00100	ND	"	
Selenium	"	"	"	EPA 6020	0.00100	ND	"	
Silver	"	"	"	EPA 6020	0.00100	ND	"	
Mercury	0590730	5/26/99	5/26/99	EPA 7470A	0.000200	ND	"	
B-36			P905442-06				Water	
Arsenic	0590780	5/27/99	6/1/99	EPA 6020	0.00100	0.00480	mg/l	
Barium	"	"	"	EPA 6020	0.00200	0.0484	"	
Cadmium	"	"	"	EPA 6020	0.00100	ND	"	
Chromium	"	"	"	EPA 6020	0.00100	0.00180	"	
Lead	"	"	"	EPA 6020	0.00100	ND	"	
Selenium	"	"	"	EPA 6020	0.00100	ND	"	
Silver	"	"	"	EPA 6020	0.00100	ND	"	
Mercury	0590730	5/26/99	5/26/99	EPA 7470A	0.000200	ND	"	
B-35			P905442-07				Water	
Arsenic	0590780	5/27/99	6/1/99	EPA 6020	0.00100	0.0466	mg/l	
Barium	"	"	"	EPA 6020	0.00200	0.121	"	
Cadmium	"	"	"	EPA 6020	0.00100	ND	"	
Chromium	"	"	"	EPA 6020	0.00100	0.00300	"	
Lead	"	"	"	EPA 6020	0.00100	0.00870	"	
Selenium	"	"	"	EPA 6020	0.00100	ND	"	
Silver	"	"	"	EPA 6020	0.00100	ND	"	
Mercury	0590730	5/26/99	5/26/99	EPA 7470A	0.000200	ND	"	
B-17			P905442-08				Water	
Arsenic	0590780	5/27/99	6/1/99	EPA 6020	0.00100	0.0615	mg/l	
Barium	"	"	"	EPA 6020	0.00200	0.112	"	
Cadmium	"	"	"	EPA 6020	0.00100	ND	"	
Chromium	"	"	"	EPA 6020	0.00100	0.00110	"	
Lead	"	"	"	EPA 6020	0.00100	0.00790	"	
Selenium	"	"	"	EPA 6020	0.00100	ND	"	
Silver	"	"	"	EPA 6020	0.00100	ND	"	
Mercury	0590730	5/26/99	5/26/99	EPA 7470A	0.000200	ND	"	

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Crystal Burkholder, Project Manager

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T Corp/PEG, Portland	Project:	TOSCO #0608, Portland, OR	Sampled: 5/19/99 to 5/20/99
7233 SW Kable Lane, Suite 900	Project Number:	B15-300.2A	Received: 5/21/99
Portland, OR 97224	Project Manager:	Kelly Kline	Reported: 6/10/99 11:04

Total Metals per EPA 6000/7000 Series Methods
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Specific Method	Reporting Limit	Result	Units	Notes*
B-22			P905442-09				Water	
Arsenic	0590780	5/27/99	6/1/99	EPA 6020	0.00100	**0.0206**	mg/l	
Barium	"	"	"	EPA 6020	0.00200	**0.0762**	"	
Cadmium	"	"	"	EPA 6020	0.00100	ND	"	
Chromium	"	"	"	EPA 6020	0.00100	ND	"	
Lead	"	"	"	EPA 6020	0.00100	ND	"	
Selenium	"	"	"	EPA 6020	0.00100	ND	"	
Silver	"	"	"	EPA 6020	0.00100	ND	"	
Mercury	0590730	5/26/99	5/26/99	EPA 7470A	0.000400	ND	"	I
B-22 Dup			P905442-10				Water	
Arsenic	0590780	5/27/99	6/1/99	EPA 6020	0.00100	**0.0248**	mg/l	
Barium	"	"	"	EPA 6020	0.00200	**0.0818**	"	
Cadmium	"	"	"	EPA 6020	0.00100	ND	"	
Chromium	"	"	"	EPA 6020	0.00100	**0.00270**	"	
Lead	"	"	"	EPA 6020	0.00100	**0.00420**	"	
Selenium	"	"	"	EPA 6020	0.00100	ND	"	
Silver	"	"	"	EPA 6020	0.00100	ND	"	
Mercury	0590730	5/26/99	5/26/99	EPA 7470A	0.000200	ND	"	

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T Corp/PEG, Portland	Project:	TOSCO #0608, Portland, OR	Sampled: 5/19/99 to 5/20/99
7233 SW Kable Lane, Suite 900	Project Number:	B15-300.2A	Received: 5/21/99
Portland, OR 97224	Project Manager:	Kelly Kline	Reported: 6/10/99 11:04

Dissolved Metals per EPA 6000/7000 Series Methods
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Specific Method	Reporting Limit	Result	Units	Notes*
U-3			**P905442-01**				**Water**	
Arsenic	0590660	5/24/99	5/29/99	EPA 6020	0.00100	**0.0306**	mg/l	
Barium	"	"	"	EPA 6020	0.00200	**0.122**	"	
Cadmium	"	"	"	EPA 6020	0.00100	ND	"	
Chromium	"	"	"	EPA 6020	0.00100	ND	"	
Lead	"	"	"	EPA 6020	0.00100	**0.00110**	"	
Selenium	"	"	"	EPA 6020	0.00100	ND	"	
Silver	"	"	"	EPA 6020	0.00100	ND	"	
Mercury	0590771	5/27/99	5/27/99	EPA 7470A	0.000200	ND	"	
B-17			**P905442-08**				**Water**	
Arsenic	0590660	5/24/99	5/29/99	EPA 6020	0.00100	**0.0503**	mg/l	
Barium	"	"	"	EPA 6020	0.00200	**0.0985**	"	
Cadmium	"	"	"	EPA 6020	0.00100	ND	"	
Chromium	"	"	"	EPA 6020	0.00100	ND	"	
Lead	"	"	"	EPA 6020	0.00100	**0.00340**	"	
Selenium	"	"	"	EPA 6020	0.00100	ND	"	
Silver	"	"	"	EPA 6020	0.00100	ND	"	
Mercury	0590771	5/27/99	5/27/99	EPA 7470A	0.000200	ND	"	

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T Corp/PEG, Portland	Project:	TOSCO #0608, Portland, OR	Sampled: 5/19/99 to 5/20/99
7233 SW Kable Lane, Suite 900	Project Number:	B15-300.2A	Received: 5/21/99
Portland, OR 97224	Project Manager:	Kelly Kline	Reported: 6/10/99 11:04

Polynuclear Aromatic Compounds per EPA 8270M-SIM
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
U-3			**P905442-01**				**Water**	
Acenaphthene	0590663	5/24/99	5/28/99		0.100	**0.102**	ug/l	
Acenaphthylene	"	"	"		0.100	ND	"	
Anthracene	"	"	"		0.100	ND	"	
Benzo (a) anthracene	"	"	"		0.100	ND	"	
Benzo (a) pyrene	"	"	"		0.100	ND	"	
Benzo (b) fluoranthene	"	"	"		0.100	ND	"	
Benzo (ghi) perylene	"	"	"		0.100	ND	"	
Benzo (k) fluoranthene	"	"	"		0.100	ND	"	
Chrysene	"	"	"		0.100	ND	"	
Dibenzo (a,h) anthracene	"	"	"		0.200	ND	"	
Fluoranthene	"	"	"		0.100	ND	"	
Fluorene	"	"	"		0.100	**0.108**	"	
Indeno (1,2,3-cd) pyrene	"	"	"		0.100	ND	"	
Naphthalene	"	"	"		1.00	ND	"	1
Phenanthrene	"	"	"		0.100	ND	"	
Pyrene	"	"	"		0.100	ND	"	
Surrogate: 2-Fluorobiphenyl	"	"	"	*37.0-135*		*65.3*	*%*	
Surrogate: Nitrobenzene-d5	"	"	"	*48.0-140*		*58.9*	"	
Surrogate: p-Terphenyl-d14	"	"	"	*25.0-147*		*76.3*	"	
U-2			**P905442-02**				**Water**	
Acenaphthene	0590663	5/24/99	5/28/99		0.100	**0.345**	ug/l	
Acenaphthylene	"	"	"		0.100	ND	"	
Anthracene	"	"	"		0.100	ND	"	
Benzo (a) anthracene	"	"	"		0.100	ND	"	
Benzo (a) pyrene	"	"	"		0.100	ND	"	
Benzo (b) fluoranthene	"	"	"		0.100	ND	"	
Benzo (ghi) perylene	"	"	"		0.100	ND	"	
Benzo (k) fluoranthene	"	"	"		0.100	ND	"	
Chrysene	"	"	"		0.100	ND	"	
Dibenzo (a,h) anthracene	"	"	"		0.200	ND	"	
Fluoranthene	"	"	"		0.100	**0.163**	"	
Fluorene	"	"	"		0.100	**0.897**	"	
Indeno (1,2,3-cd) pyrene	"	"	"		0.100	ND	"	
Naphthalene	"	"	"		0.100	**6.55**	"	
Phenanthrene	"	"	"		0.100	**0.161**	"	
Pyrene	"	"	"		0.100	**0.182**	"	
Surrogate: 2-Fluorobiphenyl	"	"	"	*37.0-135*		*68.6*	*%*	

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Crystal Burkholder, Project Manager

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T Corp/PEG, Portland	Project:	TOSCO #0608, Portland, OR	Sampled: 5/19/99 to 5/20/99
7233 SW Kable Lane, Suite 900	Project Number:	B15-300.2A	Received: 5/21/99
Portland, OR 97224	Project Manager:	Kelly Kline	Reported: 6/10/99 11:04

Polynuclear Aromatic Compounds per EPA 8270M-SIM
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
U-2 (continued)			**P905442-02**				**Water**	
Surrogate: Nitrobenzene-d5	*0590663*	*5/24/99*	*5/28/99*	*48.0-140*		*61.4*	*%*	
Surrogate: p-Terphenyl-d14	"	"	"	*25.0-147*		*87.7*	"	
B-25			**P905442-03**				**Water**	
Acenaphthene	0590663	5/24/99	5/28/99		0.100	**0.144**	ug/l	
Acenaphthylene	"	"	"		0.100	ND	"	
Anthracene	"	"	"		0.100	ND	"	
Benzo (a) anthracene	"	"	"		0.100	ND	"	
Benzo (a) pyrene	"	"	"		0.100	ND	"	
Benzo (b) fluoranthene	"	"	"		0.100	ND	"	
Benzo (ghi) perylene	"	"	"		0.100	ND	"	
Benzo (k) fluoranthene	"	"	"		0.100	ND	"	
Chrysene	"	"	"		0.100	ND	"	
Dibenzo (a,h) anthracene	"	"	"		0.200	ND	"	
Fluoranthene	"	"	"		0.100	ND	"	
Fluorene	"	"	"		0.100	ND	"	
Indeno (1,2,3-cd) pyrene	"	"	"		0.100	ND	"	
Naphthalene	"	"	"		0.100	ND	"	
Phenanthrene	"	"	"		0.100	ND	"	
Pyrene	"	"	"		0.100	ND	"	
Surrogate: 2-Fluorobiphenyl	"	"	"	*37.0-135*		*75.4*	*%*	
Surrogate: Nitrobenzene-d5	"	"	"	*48.0-140*		*73.3*	"	
Surrogate: p-Terphenyl-d14	"	"	"	*25.0-147*		*85.6*	"	
U-5			**P905442-04**				**Water**	
Acenaphthene	0590663	5/24/99	5/28/99		0.100	**0.968**	ug/l	
Acenaphthylene	"	"	"		0.100	ND	"	
Anthracene	"	"	"		0.100	ND	"	
Benzo (a) anthracene	"	"	"		0.100	ND	"	
Benzo (a) pyrene	"	"	"		0.100	ND	"	
Benzo (b) fluoranthene	"	"	"		0.100	ND	"	
Benzo (ghi) perylene	"	"	"		0.100	ND	"	
Benzo (k) fluoranthene	"	"	"		0.100	ND	"	
Chrysene	"	"	"		0.100	ND	"	
Dibenzo (a,h) anthracene	"	"	"		0.200	ND	"	
Fluoranthene	"	"	"		0.100	ND	"	
Fluorene	"	"	"		0.100	**2.09**	"	
Indeno (1,2,3-cd) pyrene	"	"	"		0.100	ND	"	

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Crystal Burkholder, Project Manager

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T Corp/PEG, Portland	Project:	TOSCO #0608, Portland, OR	Sampled: 5/19/99 to 5/20/99
7233 SW Kable Lane, Suite 900	Project Number:	B15-300.2A	Received: 5/21/99
Portland, OR 97224	Project Manager:	Kelly Kline	Reported: 6/10/99 11:04

Polynuclear Aromatic Compounds per EPA 8270M-SIM
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
U-5 (continued)			**P905442-04**				**Water**	
Naphthalene	0590663	5/24/99	5/28/99		2.00	ND	ug/l	1
Phenanthrene	"	"	"		0.100	**0.478**	"	
Pyrene	"	"	"		0.100	ND	"	
Surrogate: 2-Fluorobiphenyl	"	"	"	*37.0-135*		*70.8*	*%*	
Surrogate: Nitrobenzene-d5	"	"	"	*48.0-140*		*63.6*	"	
Surrogate: p-Terphenyl-d14	"	"	"	*25.0-147*		*82.2*	"	
B-37			**P905442-05**				**Water**	
Acenaphthene	0590663	5/24/99	5/28/99		0.100	ND	ug/l	
Acenaphthylene	"	"	"		0.100	ND	"	
Anthracene	"	"	"		0.100	ND	"	
Benzo (a) anthracene	"	"	"		0.100	ND	"	
Benzo (a) pyrene	"	"	"		0.100	ND	"	
Benzo (b) fluoranthene	"	"	"		0.100	ND	"	
Benzo (ghi) perylene	"	"	"		0.100	ND	"	
Benzo (k) fluoranthene	"	"	"		0.100	ND	"	
Chrysene	"	"	"		0.100	ND	"	
Dibenzo (a,h) anthracene	"	"	"		0.200	ND	"	
Fluoranthene	"	"	"		0.100	ND	"	
Fluorene	"	"	"		0.100	ND	"	
Indeno (1,2,3-cd) pyrene	"	"	"		0.100	ND	"	
Naphthalene	"	"	"		1.00	ND	"	1
Phenanthrene	"	"	"		0.100	ND	"	
Pyrene	"	"	"		0.100	ND	"	
Surrogate: 2-Fluorobiphenyl	"	"	"	*37.0-135*		*78.0*	*%*	
Surrogate: Nitrobenzene-d5	"	"	"	*48.0-140*		*76.7*	"	
Surrogate: p-Terphenyl-d14	"	"	"	*25.0-147*		*90.3*	"	
B-36			**P905442-06**				**Water**	
Acenaphthene	0590663	5/24/99	5/28/99		0.100	**0.119**	ug/l	
Acenaphthylene	"	"	"		0.100	ND	"	
Anthracene	"	"	"		0.100	ND	"	
Benzo (a) anthracene	"	"	"		0.100	ND	"	
Benzo (a) pyrene	"	"	"		0.100	ND	"	
Benzo (b) fluoranthene	"	"	"		0.100	ND	"	
Benzo (ghi) perylene	"	"	"		0.100	ND	"	
Benzo (k) fluoranthene	"	"	"		0.100	ND	"	
Chrysene	"	"	"		0.100	ND	"	

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

Crystal Burkholder, Project Manager

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T Corp/PEG, Portland	Project:	TOSCO #0608, Portland, OR	Sampled: 5/19/99 to 5/20/99
7233 SW Kable Lane, Suite 900	Project Number:	B15-300.2A	Received: 5/21/99
Portland, OR 97224	Project Manager:	Kelly Kline	Reported: 6/10/99 11:04

Polynuclear Aromatic Compounds per EPA 8270M-SIM
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
B-36 (continued)			**P905442-06**				**Water**	
Dibenzo (a,h) anthracene	0590663	5/24/99	5/28/99		0.200	ND	ug/l	
Fluoranthene	"	"	"		0.100	ND	"	
Fluorene	"	"	"		0.100	**0.189**	"	
Indeno (1,2,3-cd) pyrene	"	"	"		0.100	ND	"	
Naphthalene	"	"	"		1.00	ND	"	1
Phenanthrene	"	"	"		0.100	ND	"	
Pyrene	"	"	"		0.100	ND	"	
Surrogate: 2-Fluorobiphenyl	"	"	"	*37.0-135*		*70.3*	*%*	
Surrogate: Nitrobenzene-d5	"	"	"	*48.0-140*		*69.1*	"	
Surrogate: p-Terphenyl-d14	"	"	"	*25.0-147*		*86.9*	"	
B-35			**P905442-07**				**Water**	2
Acenaphthene	0590663	5/24/99	5/26/99		2.50	**8.94**	ug/l	
Acenaphthylene	"	"	"		2.50	ND	"	
Anthracene	"	"	"		2.50	**3.84**	"	
Benzo (a) anthracene	"	"	"		2.50	**2.64**	"	
Benzo (a) pyrene	"	"	"		2.50	ND	"	
Benzo (b) fluoranthene	"	"	"		2.50	ND	"	
Benzo (ghi) perylene	"	"	"		2.50	ND	"	
Benzo (k) fluoranthene	"	"	"		2.50	ND	"	
Chrysene	"	"	"		2.50	ND	"	
Dibenzo (a,h) anthracene	"	"	"		5.00	ND	"	
Fluoranthene	"	"	"		2.50	**11.2**	"	
Fluorene	"	"	"		2.50	**19.0**	"	
Indeno (1,2,3-cd) pyrene	"	"	"		2.50	ND	"	
Naphthalene	"	"	"		2.50	**6.93**	"	
Phenanthrene	"	"	"		2.50	**27.6**	"	
Pyrene	"	"	"		2.50	**7.38**	"	
Surrogate: 2-Fluorobiphenyl	"	"	"	*37.0-135*		*87.3*	*%*	
Surrogate: Nitrobenzene-d5	"	"	"	*48.0-140*		*NR*	"	3
Surrogate: p-Terphenyl-d14	"	"	"	*25.0-147*		*90.7*	"	
B-17			**P905442-08**				**Water**	2
Acenaphthene	0590663	5/24/99	5/26/99		1.00	**2.90**	ug/l	
Acenaphthylene	"	"	"		1.00	ND	"	
Anthracene	"	"	"		1.00	ND	"	
Benzo (a) anthracene	"	"	"		1.00	ND	"	
Benzo (a) pyrene	"	"	"		1.00	ND	"	

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Crystal Burkholder, Project Manager

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7233 SW Kable Lane, Suite 900	Project Number:	B15-300.2A	Received: 5/21/99
Portland, OR 97224	Project Manager:	Kelly Kline	Reported: 6/10/99 11:04

Polynuclear Aromatic Compounds per EPA 8270M-SIM
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
B-17 (continued)			**P905442-08**				**Water**	**2**
Benzo (b) fluoranthene	0590663	5/24/99	5/26/99		1.00	ND	ug/l	
Benzo (ghi) perylene	"	"	"		1.00	ND	"	
Benzo (k) fluoranthene	"	"	"		1.00	ND	"	
Chrysene	"	"	"		1.00	ND	"	
Dibenzo (a,h) anthracene	"	"	"		2.00	ND	"	
Fluoranthene	"	"	"		1.00	ND	"	
Fluorene	"	"	"		1.00	**9.77**	"	
Indeno (1,2,3-cd) pyrene	"	"	"		1.00	ND	"	
Naphthalene	"	"	"		10.0	ND	"	1
Phenanthrene	"	"	"		1.00	**9.30**	"	
Pyrene	"	"	"		1.00	ND	"	
Surrogate: 2-Fluorobiphenyl	"	"	"	*37.0-135*		*76.3*	*%*	
Surrogate: Nitrobenzene-d5	"	"	"	*48.0-140*		*NR*	"	*3*
Surrogate: p-Terphenyl-d14	"	"	"	*25.0-147*		*71.6*	"	
B-22			**P905442-09**				**Water**	**2**
Acenaphthene	0590663	5/24/99	5/26/99		1.00	**4.07**	ug/l	
Acenaphthylene	"	"	"		1.00	ND	"	
Anthracene	"	"	"		1.00	**1.22**	"	
Benzo (a) anthracene	"	"	"		1.00	ND	"	
Benzo (a) pyrene	"	"	"		1.00	ND	"	
Benzo (b) fluoranthene	"	"	"		1.00	ND	"	
Benzo (ghi) perylene	"	"	"		1.00	ND	"	
Benzo (k) fluoranthene	"	"	"		1.00	ND	"	
Chrysene	"	"	"		1.00	ND	"	
Dibenzo (a,h) anthracene	"	"	"		2.00	ND	"	
Fluoranthene	"	"	"		1.00	ND	"	
Fluorene	"	"	"		1.00	**8.67**	"	
Indeno (1,2,3-cd) pyrene	"	"	"		1.00	ND	"	
Naphthalene	"	"	"		1.00	**4.27**	"	
Phenanthrene	"	"	"		1.00	**12.7**	"	
Pyrene	"	"	"		1.00	ND	"	
Surrogate: 2-Fluorobiphenyl	"	"	"	*37.0-135*		*76.3*	*%*	
Surrogate: Nitrobenzene-d5	"	"	"	*48.0-140*		*NR*	"	*3*
Surrogate: p-Terphenyl-d14	"	"	"	*25.0-147*		*70.3*	"	
B-22 Dup			**P905442-10**				**Water**	**2,4**
Acenaphthene	0590663	5/24/99	5/26/99		50.0	ND	ug/l	1

North Creek Analytical - Portland

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Crystal Burkholder, Project Manager

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IT Corp/PEG, Portland	Project:	TOSCO #0608, Portland, OR	Sampled: 5/19/99 to 5/20/99
7233 SW Kable Lane, Suite 900	Project Number:	B15-300.2A	Received: 5/21/99
Portland, OR 97224	Project Manager:	Kelly Kline	Reported: 6/10/99 11:04

Polynuclear Aromatic Compounds per EPA 8270M-SIM
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
B-22 Dup (continued)			**P905442-10**				**Water**	**2,4**
Acenaphthylene	0590663	5/24/99	5/26/99		2.50	ND	ug/l	
Anthracene	"	"	"		2.50	**6.46**	"	
Benzo (a) anthracene	"	"	"		2.50	ND	"	
Benzo (a) pyrene	"	"	"		2.50	ND	"	
Benzo (b) fluoranthene	"	"	"		2.50	ND	"	
Benzo (ghi) perylene	"	"	"		2.50	ND	"	
Benzo (k) fluoranthene	"	"	"		2.50	ND	"	
Chrysene	"	"	"		2.50	ND	"	
Dibenzo (a,h) anthracene	"	"	"		5.00	ND	"	
Fluoranthene	"	"	"		2.50	ND	"	
Fluorene	"	"	"		2.50	**25.7**	"	
Indeno (1,2,3-cd) pyrene	"	"	"		2.50	ND	"	
Naphthalene	"	"	"		50.0	ND	"	1
Phenanthrene	"	"	"		2.50	**48.2**	"	
Pyrene	"	"	"		2.50	**3.42**	"	
Surrogate: 2-Fluorobiphenyl	"	"	"	*37.0-135*		*86.4*	*%*	
Surrogate: Nitrobenzene-d5	"	"	"	*48.0-140*		*NR*	"	*3*
Surrogate: p-Terphenyl-d14	"	"	"	*25.0-147*		*89.0*	"	

North Creek Analytical - Portland

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

Crystal Burkholder, Project Manager

North Creek Analytical, Inc.
Environmental Laboratory Network

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T Corp/PEG, Portland	Project: TOSCO #0608, Portland, OR	Sampled:	5/19/99 to 5/20/99
7233 SW Kable Lane, Suite 900	Project Number: B15-300.2A	Received:	5/21/99
Portland, OR 97224	Project Manager: Kelly Kline	Reported:	6/10/99 11:04

BTEX per EPA Method 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: 0590681	**Date Prepared: 5/25/99**					**Extraction Method: EPA 5030**				
Blank	**0590681-BLK1**									
Benzene	5/25/99			**ND**	ug/l	**0.500**				
Toluene	"			**ND**	"	**0.500**				
Ethylbenzene	"			**ND**	"	**0.500**				
Xylenes (total)	"			**ND**	"	**1.00**				
Surrogate: 4-BFB	"	*50.0*		*46.0*	"	*75.0-120*	*92.0*			
LCS	**0590681-BS2**									
Benzene	5/25/99	20.0		19.6	ug/l	67.0-130	98.0			
Toluene	"	20.0		20.2	"	75.0-126	101			
Ethylbenzene	"	20.0		20.4	"	76.0-124	102			
Xylenes (total)	"	60.0		62.9	"	75.0-126	105			
Surrogate: 4-BFB	"	*50.0*		*46.0*	"	*75.0-120*	*92.0*			
Matrix Spike	**0590681-MS1**		**P905442-01**							
Benzene	5/25/99	20.0	1.89	21.9	ug/l	67.0-130	**100**			
Toluene	"	20.0	ND	21.5	"	75.0-126	**108**			
Ethylbenzene	"	20.0	ND	21.4	"	76.0-124	**107**			
Xylenes (total)	"	60.0	ND	64.2	"	75.0-126	**107**			
Surrogate: 4-BFB	"	*50.0*		*47.4*	"	*75.0-120*	*94.8*			
Matrix Spike Dup	**0590681-MSD1**		**P905442-01**							
Benzene	5/25/99	20.0	1.89	22.0	ug/l	67.0-130	**101**	13.0	**0.995**	
Toluene	"	20.0	ND	21.7	"	75.0-126	**109**	13.0	**0.922**	
Ethylbenzene	"	20.0	ND	21.4	"	76.0-124	**107**	15.0	**0**	
Xylenes (total)	"	60.0	ND	64.5	"	75.0-126	**108**	13.0	**0.930**	
Surrogate: 4-BFB	"	*50.0*		*43.8*	"	*75.0-120*	*87.6*			
Batch: 0590717	**Date Prepared: 5/26/99**					**Extraction Method: EPA 5030**				
Blank	**0590717-BLK1**									
Benzene	5/26/99			**ND**	ug/l	**0.500**				
Toluene	"			**ND**	"	**0.500**				
Ethylbenzene	"			**ND**	"	**0.500**				
Xylenes (total)	"			**ND**	"	**1.00**				
Surrogate: 4-BFB	"	*50.0*		*42.0*	"	*75.0-120*	*84.0*			
LCS	**0590717-BS2**									
Benzene	5/26/99	20.0		17.8	ug/l	67.0-130	89.0			

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Crystal Burkholder, Project Manager

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IT Corp/PEG, Portland	Project:	TOSCO #0608, Portland, OR	Sampled: 5/19/99 to 5/20/99
7233 SW Kable Lane, Suite 900	Project Number:	B15-300.2A	Received: 5/21/99
Portland, OR 97224	Project Manager:	Kelly Kline	Reported: 6/10/99 11:04

BTEX per EPA Method 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*
LCS (continued)	**0590717-BS2**									
Toluene	5/26/99	20.0		18.6	ug/l	75.0-126	93.0			
Ethylbenzene	"	20.0		18.5	"	76.0-124	92.5			
Xylenes (total)	"	60.0		56.4	"	75.0-126	94.0			
Surrogate: 4-BFB	"	*50.0*		*48.8*	"	*75.0-120*	*97.6*			
Batch: 0590754	**Date Prepared: 5/27/99**					**Extraction Method: EPA 5030**				
Blank	**0590754-BLK1**									
Benzene	5/27/99			**ND**	ug/l	**0.500**				
Toluene	"			**ND**	"	**0.500**				
Ethylbenzene	"			**ND**	"	**0.500**				
Xylenes (total)	"			**ND**	"	**1.00**				
Surrogate: 4-BFB	"	*50.0*		*48.7*	"	*75.0-120*	*97.4*			
LCS	**0590754-BS2**									
Benzene	5/27/99	20.0		17.1	ug/l	67.0-130	85.5			
Toluene	"	20.0		17.4	"	75.0-126	87.0			
Ethylbenzene	"	20.0		17.6	"	76.0-124	88.0			
Xylenes (total)	"	60.0		54.0	"	75.0-126	90.0			
Surrogate: 4-BFB	"	*50.0*		*49.2*	"	*75.0-120*	*98.4*			

North Creek Analytical - Portland

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Crystal Burkholder, Project Manager

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T Corp/PEG, Portland	Project:	TOSCO #0608, Portland, OR	Sampled: 5/19/99 to 5/20/99
7233 SW Kable Lane, Suite 900	Project Number:	B15-300.2A	Received: 5/21/99
Portland, OR 97224	Project Manager:	Kelly Kline	Reported: 6/10/99 11:04

Total Metals per EPA 6000/7000 Series Methods/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: 0590730	**Date Prepared: 5/26/99**					**Extraction Method: Metals**				
Blank	**0590730-BLK1**									
Mercury	5/26/99			ND	mg/l	**0.000200**				
LCS	**0590730-BS1**									
Mercury	5/26/99	0.00500		0.00475	mg/l	80.0-120	95.0			
Duplicate	**0590730-DUP1**		**P905441-01**							
Mercury	5/26/99		ND	ND	mg/l			20.0		
Duplicate	**0590730-DUP2**		**P904589-06**							
Mercury	5/26/99		0.00632	0.00628	mg/l			20.0	**0.635**	
Duplicate	**0590730-DUP3**		**P904590-01**							
Mercury	5/26/99		0.00306	0.00313	mg/l			20.0	**2.26**	
Matrix Spike	**0590730-MS1**		**P905441-01**							
Mercury	5/26/99	0.00500	ND	0.00485	mg/l	75.0-125	**97.0**			
Matrix Spike	**0590730-MS2**		**P905442-06**							
Mercury	5/26/99	0.00500	ND	0.00509	mg/l	75.0-125	**102**			
Batch: 0590780	**Date Prepared: 5/27/99**					**Extraction Method: EPA 200/3005**				
Blank	**0590780-BLK1**									
Arsenic	6/1/99			**ND**	mg/l	**0.00100**				
Barium	"			**ND**	"	**0.00200**				
Cadmium	"			**ND**	"	**0.00100**				
Chromium	"			**ND**	"	**0.00100**				
Lead	"			**ND**	"	**0.00100**				
Selenium	"			**ND**	"	**0.00100**				
Silver	"			**ND**	"	**0.00100**				
LCS	**0590780-BS1**									
Arsenic	6/1/99	0.100		0.107	mg/l	80.0-120	107			
Barium	"	0.100		0.0998	"	80.0-120	99.8			
Cadmium	"	0.100		0.106	"	80.0-120	106			
Chromium	"	0.100		0.100	"	80.0-120	100			
Lead	"	0.100		0.101	"	80.0-120	101			
Selenium	6/3/99	0.100		0.102	"	80.0-120	102			

North Creek Analytical - Portland

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Crystal Burkholder, Project Manager

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T Corp/PEG, Portland	Project:	TOSCO #0608, Portland, OR	Sampled: 5/19/99 to 5/20/99
7233 SW Kable Lane, Suite 900	Project Number:	B15-300.2A	Received: 5/21/99
Portland, OR 97224	Project Manager:	Kelly Kline	Reported: 6/10/99 11:04

Total Metals per EPA 6000/7000 Series Methods/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*
LCS (continued)	**0590780-BS1**									
Silver	6/1/99	0.0500		0.0483	mg/l	80.0-120	96.6			
Duplicate	**0590780-DUP1**		**P905446-03**							
Arsenic	6/1/99		0.0349	0.0360	mg/l			20.0	**3.10**	
Barium	"		0.116	0.121	"			20.0	**4.22**	
Cadmium	"		ND	ND	"			20.0		
Chromium	"		0.00710	0.00790	"			20.0	**10.7**	
Lead	"		0.0108	0.0113	"			20.0	**4.52**	
Selenium	"		ND	ND	"			20.0		
Silver	"		ND	ND	"			20.0		
Matrix Spike	**0590780-MS1**		**P905446-03**							
Arsenic	6/3/99	0.100	0.0349	0.131	mg/l	75.0-125	**96.1**			
Barium	6/1/99	0.100	0.116	0.205	"	75.0-125	**89.0**			
Cadmium	"	0.100	ND	0.101	"	75.0-125	**101**			
Chromium	"	0.100	0.00710	0.105	"	75.0-125	**97.9**			
Lead	"	0.100	0.0108	0.105	"	75.0-125	**94.2**			
Selenium	"	0.100	ND	0.105	"	75.0-125	**105**			
Silver	"	0.0500	ND	0.0470	"	75.0-125	**94.0**			
Matrix Spike Dup	**0590780-MSD1**		**P905446-03**							
Arsenic	6/3/99	0.100	0.0349	0.131	mg/l	75.0-125	**96.1**	20.0	**0**	
Barium	6/1/99	0.100	0.116	0.208	"	75.0-125	**92.0**	20.0	**3.31**	
Cadmium	"	0.100	ND	0.101	"	75.0-125	**101**	20.0	**0**	
Chromium	"	0.100	0.00710	0.107	"	75.0-125	**99.9**	20.0	**2.02**	
Lead	"	0.100	0.0108	0.105	"	75.0-125	**94.2**	20.0	**0**	
Selenium	"	0.100	ND	0.106	"	75.0-125	**106**	20.0	**0.948**	
Silver	"	0.0500	ND	0.0472	"	75.0-125	**94.4**	20.0	**0.425**	

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IT Corp/PEG, Portland	Project:	TOSCO #0608, Portland, OR	Sampled: 5/19/99 to 5/20/99
7233 SW Kable Lane, Suite 900	Project Number:	B15-300.2A	Received: 5/21/99
Portland, OR 97224	Project Manager:	Kelly Kline	Reported: 6/10/99 11:04

Dissolved Metals per EPA 6000/7000 Series Methods/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: 0590660	**Date Prepared: 5/24/99**					**Extraction Method: EPA 200/3005**				
Blank	**0590660-BLK1**									
Arsenic	5/25/99			**ND**	mg/l	**0.00100**				
Barium	"			**ND**	"	**0.00200**				
Cadmium	"			**ND**	"	**0.00100**				
Chromium	"			**ND**	"	**0.00100**				
Lead	"			**ND**	"	**0.00100**				
Selenium	"			**ND**	"	**0.00100**				
Silver	"			**ND**	"	**0.00100**				
LCS	**0590660-BS1**									
Arsenic	5/28/99	0.100		0.104	mg/l	80.0-120	104			
Barium	"	0.100		0.102	"	80.0-120	102			
Cadmium	"	0.100		0.107	"	80.0-120	107			
Chromium	"	0.100		0.0991	"	80.0-120	99.1			
Lead	"	0.100		0.101	"	80.0-120	101			
Selenium	6/1/99	0.100		0.110	"	85.0-115	110			
Silver	5/28/99	0.0500		0.0532	"	80.0-120	106			
Duplicate	**0590660-DUP1**		**P905446-03**							
Arsenic	5/28/99		0.0302	0.0319	mg/l			20.0	**5.48**	
Barium	"		0.0625	0.0657	"			20.0	**4.99**	
Cadmium	"		ND	ND	"			20.0		
Chromium	"		ND	ND	"			20.0		
Lead	"		0.00260	0.00230	"			20.0	**12.2**	
Selenium	"		ND	ND	"			20.0		
Silver	"		ND	ND	"			20.0		
Matrix Spike	**0590660-MS1**		**P905446-03**							
Arsenic	6/1/99	0.100	0.0302	0.146	mg/l	75.0-125	**116**			
Barium	5/28/99	0.100	0.0625	0.173	"	75.0-125	**110**			
Cadmium	"	0.100	ND	0.107	"	75.0-125	**107**			
Chromium	"	0.100	ND	0.105	"	75.0-125	**105**			
Lead	"	0.100	0.00260	0.104	"	75.0-125	**101**			
Selenium	"	0.100	ND	0.109	"	75.0-125	**109**			
Silver	"	0.0500	ND	0.0548	"	75.0-125	**110**			
Matrix Spike Dup	**0590660-MSD1**		**P905446-03**							
Arsenic	6/1/99	0.100	0.0302	0.144	mg/l	75.0-125	**114**	20.0	**1.74**	

North Creek Analytical - Portland

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Crystal Burkholder, Project Manager

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IT Corp/PEG, Portland	Project:	TOSCO #0608, Portland, OR	Sampled: 5/19/99 to 5/20/99
7233 SW Kable Lane, Suite 900	Project Number:	B15-300.2A	Received: 5/21/99
Portland, OR 97224	Project Manager:	Kelly Kline	Reported: 6/10/99 11:04

Dissolved Metals per EPA 6000/7000 Series Methods/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)	**0590660-MSD1**		**P905446-03**							
Barium	5/28/99	0.100	0.0625	0.173	mg/l	75.0-125	**110**	20.0	**0**	
Cadmium	"	0.100	ND	0.107	"	75.0-125	**107**	20.0	**0**	
Chromium	"	0.100	ND	0.104	"	75.0-125	**104**	20.0	**0.957**	
Lead	"	0.100	0.00260	0.103	"	75.0-125	**100**	20.0	**0.995**	
Selenium	"	0.100	ND	0.108	"	75.0-125	**108**	20.0	**0.922**	
Silver	"	0.0500	ND	0.0546	"	75.0-125	**109**	20.0	**0.913**	
Batch: 0590771	**Date Prepared: 5/27/99**					**Extraction Method: Metals**				
Blank	**0590771-BLK1**									
Mercury	5/27/99			**ND**	mg/l	**0.000200**				
LCS	**0590771-BS1**									
Mercury	5/27/99	0.00500		0.00516	mg/l	80.0-120	103			
Duplicate	**0590771-DUP1**		**P905446-03**							
Mercury	5/27/99		ND	ND	mg/l			20.0		
Matrix Spike	**0590771-MS1**		**P905446-03**							
Mercury	5/27/99	0.00500	ND	0.00515	mg/l	75.0-125	**103**			
Matrix Spike Dup	**0590771-MSD1**		**P905446-03**							
Mercury	5/27/99	0.00500	ND	0.00516	mg/l	75.0-125	**103**	20.0	**0**	

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503.906.9200 fax 503.906.9210
Bend 20354 Empire Avenue, Suite E-9, Bend, OR 97708-1883
541.383.9310 fax 541.382.7588

IT Corp/PEG, Portland	Project: TOSCO #0608, Portland, OR	Sampled:	5/19/99 to 5/20/99
7233 SW Kable Lane, Suite 900	Project Number: B15-300.2A	Received:	5/21/99
Portland, OR 97224	Project Manager: Kelly Kline	Reported:	6/10/99 11:04

Polynuclear Aromatic Compounds per EPA 8270M-SIM/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: 0590663	**Date Prepared: 5/24/99**					**Extraction Method: EPA 3520/600 Series**				
Blank	**0590663-BLK1**									
Acenaphthene	5/26/99			ND	ug/l	0.100				
Acenaphthylene	"			ND	"	0.100				
Anthracene	"			ND	"	0.100				
Benzo (a) anthracene	"			ND	"	0.100				
Benzo (a) pyrene	"			ND	"	0.100				
Benzo (b) fluoranthene	"			ND	"	0.100				
Benzo (ghi) perylene	"			ND	"	0.100				
Benzo (k) fluoranthene	"			ND	"	0.100				
Chrysene	"			ND	"	0.100				
Dibenzo (a,h) anthracene	"			ND	"	0.200				
Fluoranthene	"			ND	"	0.100				
Fluorene	"			ND	"	0.100				
Indeno (1,2,3-cd) pyrene	"			ND	"	0.100				
Naphthalene	"			ND	"	0.100				
Phenanthrene	"			ND	"	0.100				
Pyrene	"			ND	"	0.100				
Surrogate: 2-Fluorobiphenyl	"	*2.50*		*1.60*	"	*37.0-135*	*64.0*			
Surrogate: Nitrobenzene-d5	"	*2.50*		*1.71*	"	*48.0-140*	*68.4*			
Surrogate: p-Terphenyl-d14	"	*2.50*		*2.07*	"	*25.0-147*	*82.8*			
LCS	**0590663-BS1**									
Acenaphthene	5/26/99	5.00		2.97	ug/l	50.0-150	59.4			
Benzo (a) pyrene	"	5.00		5.50	"	50.0-150	110			
Pyrene	"	5.00		3.31	"	50.0-150	66.2			
Surrogate: 2-Fluorobiphenyl	"	*2.50*		*1.35*	"	*37.0-135*	*54.0*			
Surrogate: Nitrobenzene-d5	"	*2.50*		*1.45*	"	*48.0-140*	*58.0*			
Surrogate: p-Terphenyl-d14	"	*2.50*		*1.91*	"	*25.0-147*	*76.4*			
LCS Dup	**0590663-BSD1**									
Acenaphthene	5/26/99	5.00		3.33	ug/l	50.0-150	66.6	60.0	11.4	
Benzo (a) pyrene	"	5.00		5.66	"	50.0-150	113	60.0	2.69	
Pyrene	"	5.00		3.25	"	50.0-150	65.0	60.0	1.83	
Surrogate: 2-Fluorobiphenyl	"	*2.50*		*1.60*	"	*37.0-135*	*64.0*			
Surrogate: Nitrobenzene-d5	"	*2.50*		*1.76*	"	*48.0-140*	*70.4*			
Surrogate: p-Terphenyl-d14	"	*2.50*		*1.93*	"	*25.0-147*	*77.2*			

North Creek Analytical - Portland

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

Crystal Burkholder, Project Manager

North Creek Analytical, Inc.
Environmental Laboratory Network

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T Corp/PEG, Portland	Project:	TOSCO #0608, Portland, OR	Sampled: 5/19/99 to 5/20/99
7233 SW Kable Lane, Suite 900	Project Number:	B15-300.2A	Received: 5/21/99
Portland, OR 97224	Project Manager:	Kelly Kline	Reported: 6/10/99 11:04

Notes and Definitions

	Note
	The reporting limit for this analyte was raised due to matrix interference.
	Reporting limits raised due to dilution necessary for analysis.
	The surrogate recovery for this sample cannot be accurately quantified due to interference from coeluting organic compounds present in the sample.
4	B22-Dup extract was darker in color than B-22.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
ry	Sample results reported on a dry weight basis
Recov.	Recovery
PD	Relative Percent Difference

North Creek Analytical - Portland

Crystal Burkholder, Project Manager

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Ray 3.4 Dgi 0.7

UNOCAL CHAIN OF CUSTODY REPORT

UNOCAL INFORMATION

Facility Number: 0608
Site Address: 5528 NW Doane Ave
City, State, ZIP: Portland OR 97210
Site Release Number:
Unocal Manager: Marty Cramer
CERT INFO: (check one) ☐ Evaluation ☐ Remediation ☐ Detection ☐ Demolition ☐ Closure ☐ Miscellaneous

CONSULTANT INFORMATION

Firm: IT Corp Project# B15-300.2A
Address: 7233 SW Kable Lane Suite 900, Bldg F, Portland OR 97224
Phone: 639-6305 Fax: 639-7482
Project Manager: Kelly Kline
Sample Collection by: Nate Hemphill

Chain of Custody Record #: P905442
Quality Assurance Data Level: A B
A: Standard Summary
B: Standard + Chromatograms
Laboratory Turnaround Days: ~~10~~ 5 3 2 1

○ OR ○ WA ○ AK ☑ NW Series

	SAMPLE INDENTIFICATION	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CON-TAINERS	TPH-HCID	TPH-Gas	BTEX 8020A ~~EPA 8021 Mod.~~	TPH-Gas + BTEX	TPH-Diesel	TPH-Diesel Extended	TPH-Diesel-Ext. w/SG Cleanup	Halogen. Volatiles EPA 8021	Pesticides/PCBs or PCBs Only	GC/MS Volatiles EPA 8260	GC/MS SemiVols. EPA 8270	PAH's: 8270 SIM or 8310	Lead: Total or Dissolved	~~TCLP~~ or RCRA Metals (8)	RCRA 8 Metal Dissolved					NCA SAMPLE NUMBER
1.	U-3	5-19-99	W	5			X									X		X	X					
2.	U-2	5-19-99 / 10:50		4			X									X		X						
3.	B-25	5-19-99 / 13:10		4			X									X		X						
4.	U-5	5-19-99 / 14:10		4			X									X		X						
5.	B-37	5-19-99 / 13:55		4			X									X		X						
6.	B-36	5-19-99 / 14:25		4			X									X		X						
7.	B-35	5-19-99 / 15:15		4			X									X		X						
8.	B-17	5-19-99 / 15:50		5			X									X		X	X					
9.	B-22	5-20-99 / 08:30		4			X									X		X						
10.	B-22 Dup	5-20-99 / 0830		4			X									X		X						

	Relinquished by:	Firm:	Date & Time	Received by:	Firm:	Date & Time
1.	[signature]	ITCrp	5-21-99 0830	[signature]	NCA	5-21-99 0830
2.	[signature]	NCA 5-21-99	5-21-99 1300	Sara McClurg	NCA	5-21-99 1300
3.						

Final Report Approval

Were all requested results provided? yes no Define
Were results within requested turnaround? yes no "No"
Final Approval Signature: on back
Firm: Date:

Page 1 of 2
Rev. UNO3.3, 10/97

Comments:

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FAX

To:	Nate Hemphill	**Date:**	7/26/99
Company:	Emcon LIT Corp.	**Pages:**	2
Fax:	620-7658	**Email:**	cburkholder@ncalabs.com
Phone:		**From:**	Crystal Burkholder
Re:		**Phone:**	(503) 906-9233

☐ Urgent ☐ For Review * ☐ Please Comment ☐ Please Reply ☐ Please Recycle

• **Comments:**

Here's some info about the PAH compounds you asked about. I don't know what Kent has gotten together, but he did go on vacation until Thurs.

A good reference that he uses alot is www.chemfinder.com

Hopefully this will help a little.

Thanks,

Crystal

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North Creek Analytical, Inc.
Environmental Laboratory Network

FROM :NORTH CREEK ANALYTICAL TO : 503 620 7658 1999.07-26 03:56PM #724 P.01/02

COP0014714

PAH Compound	# of benzene rings	Molecular weight
Naphthalene	2	128.17
Acenaphthylene	2	152.20
Acenaphthene	2	154.21
Fluorene	2	166.22
Anthracene	3	178.23
Phenanthrene	3	178.23
Fluoranthrene	3	202.26
Pyrene	4	202.26
Chrysene	4	228.29
Benzo(a)anthracene	4	228.29
Benzo(b)fluoranthene	4	252.31
Benzo(a)pyrene	5	252.31
Benzo(k)fluoranthene	4	252.31
Indeno(1,2,3-cd)pyrene	5	276.34
Benzo(ghi)perylene	6	276.34
Dibenzo(a,h)anthracene	5	278.35

FROM :NORTH CREEK ANALYTICAL TO : 502 620 7658 1999-07-26 03:58PM #724 P.02

COP0014715

NORTH CREEK ANALYTICAL
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UNOCAL CHAIN OF CUSTODY REPORT

UNOCAL INFORMATION

Facility Number: 0608
Site Address: 5528 NW Doane Ave
City, State, ZIP: Portland OR 97210
Site Release Number:
Unocal Manager: Marty Cramer
CERT INFO: (check one) [ ] Evaluation [ ] Remediation [ ] Detection [ ] Demolition [ ] Closure [ ] Miscellaneous

CONSULTANT INFORMATION

Firm: IT Corp Project# B15-300.2A
Address: 7233 SW Kable Lane
Suite 900, Bldg F.
Portland OR 97224
Phone: 639-6305 Fax: 639-7482
Project Manager: Kelly Kline
Sample Collection by: Nate Hemphill

Chain of Custody Record #:

Quality Assurance Data Level: A B
A: Standard Summary
B: Standard + Chromatograms
Laboratory Turnaround Days: 10 5 3 2 1

○ OR ○ WA ○ AK ✓ NW Series

SAMPLE INDENTIFICATION	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CON-TAINERS	TPH-HCID	TPH-Gas	BTEX 8020A ~~EPA 8021 Mod.~~	TPH-Gas + BTEX	TPH-Diesel	TPH-Diesel Extended	TPH-Diesel-Ext. w/SG Cleanup	Halogen. Volatiles EPA 8021	Pesticides/PCBs or PCBs Only	GC/MS Volatiles EPA 8260	GC/MS SemiVols. EPA 8270	PAH's: 8270 SIM or 8310	Lead: Total or Dissolved	TCLP or RCRA Metals (8)	RCRA Metal Dissolved					NCA SAMPLE NUMBER
1. U-3	5-19-99 /	W	5			X									X		X	X					
2. U-2	5-19-99 / 10:50		4			X									X		X						
3. B-25	5-19-99 / 13:10		4			X									X		X						
4. U-5	5-19-99 / 14:10		4			X									X		X						
5. B-37	5-19-99 / 13:55		4			X									X		X						
6. B-36	5-19-99 / 14:25		4			X									X		X						
7. B-35	5-19-99 / 15:15		4			X									X		X						
8. B-17	5-19-99 / 15:50		5			X									X		X	X					
9. B-22	5-19-99 / 08:30		4			X									X		X						
10. B-22 Dup	5-20-99 / 0830		4			X									X		X						

	Relinquished by:	Firm:	Date & Time	Received by:	Firm:	Date & Time
1.	[signature]	IT Corp	5-21-99 0830	[signature]	N/A	5-21-99 0830
2.						
3.						

Final Report Approval

Were all requested results provided? yes no Define
Were results within requested turnaround? yes no "No"
Final Approval Signature: on back

Firm: Date:

Page 1 of 2

Comments:

[redacted] UNO[redacted]

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UNOCAL CHAIN OF CUSTODY REPORT

UNOCAL INFORMATION

Facility Number: 0608
Site Address: 5528 NW Doane Ave
City, State, ZIP: Portland OR 97210
Site Release Number:
Unocal Manager: Marty Cramer
CERT INFO: (check one) ☐ Evaluation ☐ Remediation
☐ Detection ☐ Demolition ☐ Closure ☐ Miscellaneous

CONSULTANT INFORMATION

Firm: IT Corp. Project# 315-300.2A
Address: 7233 Kable Ln Suite 900, Bldg F
Portland OR 97224.
Phone: 503-639-6305 Fax: 503 639-7482
Project Manager: Kelly Kleint
Sample Collection by: Dale Hemphill

Chain of Custody Record #:

Quality Assurance Data Level: [A] [B]
A: Standard Summary
B: Standard + Chromatograms

Laboratory Turnaround Days: [OK] 5 3 2 1

○ OR ○ WA ○ AK ○ NW Series

SAMPLE INDENTIFICATION	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CON-TAINERS	TPH-HCID	TPH-Gas	BTEX 8020A ~~EPA 802~~ Mod.	TPH-Gas + BTEX	TPH-Diesel	TPH-Diesel Extended	TPH Diesel-Ext. w/SG Cleanup	Halogen. Volatiles EPA 8021	Pesticides/PCBs or PCBs Only	GC/MS Volatiles EPA 8260	GC/MS SemiVols. EPA 8270	PAH's: 8270 SIM ~~or 8310~~	Lead: Total or Dissolved	~~TCLP or~~ RCRA Metals (8) TCLP	NCA SAMPLE NUMBER
1. B-18	5-19-99/16:30	W	4			X									X		X	
2. TB/LB	5-19-99/10:00	W	2			X												
3.																		
4.																		
5.																		
6.																		
7.																		
8.																		
9.																		
10.																		

Relinquished by:	Firm:	Date & Time	Received by:	Firm:	Date & Time
1. [signature]	IT Corp.	5-19-99 0830	[signature]	ANA	5-21-99 0830
2.					
3.					

Final Report Approval

Were all requested results provided? [yes] [no] Define
Were results within requested turnaround? [yes] [no] "No"
Final Approval Signature: on back

Firm [redacted] Date [redacted]

Page 2 of 2
Comments: [redacted]

Rev. UNO3.3, 2/99

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CHEVRON U.S.A., Inc. CHAIN OF CUSTODY REPORT

CHEVRON INFORMATION

Facility Number: 6100 1868
Site Address: 5531 NW Doane Ave
City, State, ZIP: Portland Or 97210
Service Code: ☐ Site Assesment
Service Order: ☐ Remediation
Cost Element: 75100100 ☐ O & M
Chevron Project Manager: Gerald O'Regan ☐ GWM

CONSULTANT INFORMATION

Name: I.T. Corp. Project# B15-200.2A
Address: 7233 SW Kable Ln, Suite 900, Bldg F. Portland Or 97224
Phone: 503-639-6305 Fax: 503-639-7482
Project Manager: Kelly Kline Airbill#:
Sample Collection by: Nate Hemphill

Laboratory Turnaround Time

☐ 1 Business Day
☐ 3 Business Days
☐ 5 Business Days
☑ 10 Business Days
☐ 3 Day Air Samples (Please Select One)

☐ AK ☐ OR ☐ WA ☑ NW Series

SAMPLE INDENTIFICATION	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CON-TAINERS	TPH-HCID	TPH-Gas	BTEX Only 8020A EPA 8021 Mod.	TPH-Gas + BTEX	TPH-Diesel	TPH-Diesel Extended	TPH-Diesel-Ext. w/SG Cleanup	Halogen. Volatiles EPA 8021	Pesticides/PCBs or PCBs Only	GC/MS Volatiles EPA 8260	GC/MS SemiVols. EPA 8270	PAH's: 8270 SIM on 8310	Lead: Total or Dissolved	TCLP or RCRA Metals (8) Total	RCRA 8 Metals Dissolved				NCA SAMPLE NUMBER
1. B-30	5-21-99/08:30	W	5			X									X		X	X				
2. B-11	5-21-99/09:45	W	4			X									X		X					
3. B-14	5-21-99/10:05	W	15			X									X		X	X		MS/MSD		
4. B-9	5-21-99/11:00	W	4			X									X		X					
5. B-10	5-21-99/11:20	W	4			X									X		X					
6. TB/LB	5-21-99/0800	W	2			X																
7.																						
8.																						
9.																						
10.																						

	Relinquished by:	Firm:	Date & Time	Received by:	Firm:	Date & Time
1.	[signature]	I.T. Corp.	5-21-99 15:15	[signature]	NCA	5-21-99 15:15
2.						
3.						

Additional Comments: B-14 = MS/MSD Sample

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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 #

REPORT TO: IT Corporation
ATTENTION: STAN HASKINS
ADDRESS: 7733 SW Kable Ln Ste 900-F
Portland OR 97224
PHONE: 503-639-6305 FAX: 503-639-7482
PROJECT NAME: GATX Willbridge
PROJECT NUMBER: B15-100.2A
SAMPLED BY: Nate Hemphill

INVOICE TO: Shell Oil Company
ATTENTION: Irv Jenkins
ADDRESS: PO BOX 2099
Houston TX 77252-2099
P.O. NUMBER:
NCA QUOTE #:

TURNAROUND REQUEST in Business Days *
Organic & Inorganic Analyses: ~~10~~ (Standard) | 7 | 5 | 4 | 3 | 2 | 1 | Same Day
Fuels & Hydrocarbon Analyses: 5 (Standard) | 3-4 | 2 | 1 | Same Day
OTHER Specify:
* Turnaround Requests less than standard may incur Rush Charges.

Analysis Request:

	CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	NCA SAMPLE ID (Laboratory Use Only)	BTEX 8020A	PAH 8270 m-Sim	RCRA 8 Toxic Metals	RCRA 8 Dissolved Metals							MATRIX (W, S, A, O)	# OF CONTAINERS	COMMENTS
1.	MW-26	5-28-99 9:15		X	X	X								W	12	MS/MSD
2.	MW-15	5-28-99 10:25		X	X	X								W	4	
3.	MW-33	5-28-99 11:15		X	X	X	X							W	5	
4.	TB/LB	5-28-99 08:00		X	X	X								W	2	
5.																
6.																
7.																
8.																
9.																
10.																

RELINQUISHED BY (Signature): [signature] DATE: 5-28-99
PRINT NAME: Nate Hemphill FIRM: IT Corp TIME: 15:20

RECEIVED BY (Signature): [signature] DATE: 5-28-99
PRINT NAME: Larry Spangler FIRM: NCA TIME: 1520

RELINQUISHED BY (Signature): DATE:
PRINT NAME: FIRM: TIME:

RECEIVED BY (Signature): DATE:
PRINT NAME: FIRM: TIME:

ADDITIONAL REMARKS: MS/MSD Sample MW-26

PAGE 1 OF 1

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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 #

REPORT TO:	IT Corporation
ATTENTION:	Stan Haskins
ADDRESS:	7233 SW Kable Ln, Ste 900 Portland OR 97224
PHONE:	503-639-6304 FAX: 503-639-7482
PROJECT NAME:	Gatx, Willbridge
PROJECT NUMBER:	B15-100.2A
SAMPLED BY:	Nate Hemphill

INVOICE TO:	
ATTENTION:	
ADDRESS:	
P.O. NUMBER:	NCA QUOTE #:

TURNAROUND REQUEST in Business Days *

Organic & Inorganic Analyses: [X] 10 Standard | 7 | 5 | 4 | 3 | 2 | 1 | Same Day

Fuels & Hydrocarbon Analyses: [5] Standard | 3-4 | 2 | 1 | Same Day

OTHER Specify:

* Turnaround Requests less than standard may incur Rush Charges.

Analysis Request: BTEX 8020A; TPH 8270M SIM PCP/PAH 8270M SIM; Methanol

	CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	NCA SAMPLE ID (Laboratory Use Only)	MATRIX (W, S, A, O)	# OF CONTAINERS	COMMENTS
1.	MW-32	5-27-99/11:10		W	4	
2.	MW-32-D	5-27-99/14:10		W	4	
3.	MW-31	5-27-99/14:35		W	4	
4.	TB-LB	5-26-99/08:30		W	2	
5.						
6.						
7.						
8.						
9.						
10.						

RELINQUISHED BY (Signature):	DATE: 5-27-99	RECEIVED BY (Signature): Jessica Roberts	DATE: 5/27/99
PRINT NAME: Nate Hemphill	FIRM: ITCorp TIME: 17:20	PRINT NAME: JESSICA ROBERTS	FIRM: NCA TIME: 17:20
RELINQUISHED BY (Signature):	DATE:	RECEIVED BY (Signature):	DATE:
PRINT NAME:	FIRM: TIME:	PRINT NAME:	FIRM: TIME:

ADDITIONAL REMARKS:

COP0014721

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

18939 120th Avenue N.E., Suite 101. Bothell, WA 98011-9508 (206) 481-9200 FAX 485-2992
East 11115 Montgomery, Suite B. Spokane, WA 99206-4779 (509) 924-9200 FAX 924-9290
9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132 (503) 643-9200 FAX 644-2202

CHAIN OF CUSTODY REPORT

Work Order #

REPORT TO:	IT Corporation
ATTENTION:	Stan Haskins
ADDRESS:	7233 SW Koble Ln. Ste 900-F Portland OR 97224
PHONE:	503-639-6305 FAX: 503-639-7482
PROJECT NAME:	SATX Willbridge
PROJECT NUMBER:	315-100.2A
SAMPLED BY:	Nate Hemphill
INVOICE TO:	
ATTENTION:	
ADDRESS:	
P.O. NUMBER:	NCA QUOTE #:

TURNAROUND REQUEST in Business Days *

Organic & Inorganic Analyses: **10** Standard | 7 | 5 | 4 | 3 | 2 | 1 | Same Day

Fuels & Hydrocarbon Analyses: **5** Standard | 3-4 | 2 | 1 | Same Day

OTHER Specify:

** Turnaround Requests less than standard may incur Rush Charges.*

	CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	NCA SAMPLE ID (Laboratory Use Only)	BTEX 8020A	DAH 8270	M-S-in RCRA & TOTAL	M-Hg RCRA	Dissolved RCRA 8 Metals	MATRIX (W, S, A, O)	# OF CONTAINERS	COMMENTS
1.	MW-40	5-26-99 / 15:52	1-	X	X	X			W	4	
2.	MW-37	5-26-99 / 15:55		X	X	X			W	4	
3.	MW-37-D	5-26-99 / 16:45		X	X	X			W	4	
4.	MW-36	5-27-99 / 10:13		X	X	X			W	4	
5.	MW-8	5-27-99 / 11:20		X	X	X			W	4	
6.	MW-10	5-27-99 / 11:20		X	X	X			W	4	
7.	MW-11	5-27-99 / 11:40		X	X	X			W	4	
8.	MW-21	5-27-99 / 12:50		X	X	X	X		W	5	
9.	MW-22	5-27-99 / 13:10		X	X	X			W	4	
10.	MW-13	5-27-99 / 13:45		X	X	X	X		W	5	

RELINQUISHED BY (Signature):		DATE: 5-27-99	RECEIVED BY (Signature): Jessica Roberts DATE: 5/27/99
PRINT NAME: Nate Hemphill	FIRM: IT Corp	TIME: 17:20	PRINT NAME: JESSICA ROBERTS FIRM: NCA TIME: 17:20
RELINQUISHED BY (Signature):		DATE:	RECEIVED BY (Signature): DATE:
PRINT NAME:	FIRM:	TIME:	PRINT NAME: FIRM: TIME:

ADDITIONAL REMARKS:

PAGE 1 OF 2

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

18939 120th Avenue N.E., Suite 101, Bothell, WA 98011-9508 (425) 481-9200 FAX 485-2992
East 11115 Montgomery, Suite B, Spokane, WA 98206-4779 (509) 924-9200 FAX 924-9290
9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132 (503) 906-9200 FAX 906-2202

CHEVRON U.S.A., Inc. CHAIN OF CUSTODY REPORT

CHEVRON INFORMATION

Facility Number: 6100 1868
Site Address: 5531 NW Doane Ave
City, State, ZIP: Portland OR 97210
Service Code: ☐ Site Assesment
Service Order: ☐ Remediation
Cost Element: 75100100 ☐ O & M
Chevron Project Manager: ☐ GWM

CONSULTANT INFORMATION

Name: IT Corporation Project# B15-2002A
Address: 7233 SW Kable Ln, Suite 900, Bldg F Portland OR 97224
Phone: 503-639-6305 Fax: 503-634-7482
Project Manager: Kelly Kline Airbill#:
Sample Collection by: Nate Haughill

Laboratory Turnaround Time

☐ 1 Business Day
☐ 3 Business Days
☐ 5 Business Days
☑ 10 Business Days
☐ 3 Day Air Samples (Please Select One)

☐ AK ☐ OR ☐ WA ☐ NW Series

SAMPLE INDENTIFICATION	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CON-TAINERS	TPH-HCID	TPH-Gas	BTEX Only 8020A EPA 8021 Mod.	TPH-Gas + BTEX	TPH-Diesel	TPH-Diesel Extended	TPH-Diesel-Ext. w/SG Cleanup	Halogen. Volatiles EPA 8021	Pesticides/PCBs or PCBs Only	GC/MS Volatiles EPA 8260	GC/MS SemiVols. EPA 8270	PAH's: 8270 SIM or 8310	Lead: Total or Dissolved	TCLP or RCRA Metals (8) Total	RCRA? Metals Dissolved					NCA SAMPLE NUMBER
1. CR-8	5-20-99/14:25	W	4			X									X		X						
2. CR9	5-20-99/14:45	W	5			X									X		X	X					
3. CR9-D	5-20-99/14:45	W	5			X									X		X	X					
4. B-28	5-20-99/15:30	W	4			X									X		X						
5.																							
6.																							
7.																							
8.																							
9.																							
10.																							

	Relinquished by:	Firm:	Date & Time	Received by:	Firm:	Date & Time
1.	[signature]	ITCorp.	5-21-99 0830	[signature]	NCA	5-21-99 0830
2.						
3.						

Additional Comments:

Chev CoC. Rev. 3.3. 10/97

COP0014722

15055 SW Sequoia Parkway
Suite 140
Portland, OR 97224-7155
Tel. 503.624.7200
Fax. 503.620.7658

November 3, 1999
Project B15099.2A

Ms. Jill Kiernan, P.E.
Waste Management and Cleanup
Oregon Department of Environmental Quality
2020 SW Fourth Avenue, Suite 400
Portland, Oregon 97204

Re: Third Quarter (July - September 1999) Report
RI/FS Interim Action
Willbridge Bulk Fuel Facilities
Portland, Oregon
Consent Order WMCSR-NWR-94-06

Dear Ms. Kiernan:

IT Corporation is pleased to present the third quarter 1999 progress report for the remedial investigation/feasibility study (RI/FS) work being performed at the Chevron, GATX, and Tosco terminals which compose the Willbridge Bulk Fuel Facilities (Willbridge Facility) in Portland, Oregon (Figure 1). This letter presents a summary of the following:

- Third Quarter 1999 sampling, test results, and other data generated between July and September 1999.

This progress report fulfills the requirement of Section 7F of Oregon Department of Environmental Quality (DEQ) Consent Order WMCSR-NWR-94-06.

ACTIVITIES PERFORMED DURING THIRD QUARTER 1999

The following work was performed during July through September 1999:

- Performed quarterly groundwater sampling at the Chevron, GATX, and Tosco terminals. The groundwater sampling procedure is presented as Attachment A.
- Performed monthly separate-phase hydrocarbon (SPH) removal from wells located on the Chevron, GATX, and Tosco terminals.

COP0014723

THIRD QUARTER 1999 MONITORING ANALYSIS

Interim action monitoring activities performed during the third quarter included depth to groundwater and SPH thickness measurements for all wells, and groundwater sampling from selected wells.

Hydrogeological Analysis

Depth to groundwater measurements were performed in August 1999. Measurements were corrected for SPH where encountered. A groundwater table contour map using the August 1999 data is shown on Figure 2. The August 1999 groundwater elevation data are presented in Table 1. Water elevation and SPH recovery data for August 1999 and historic water elevation measurements are presented in Table 5.

During the third quarter (July to September 1999), water table elevations in the vicinity of the river generally decreased approximately 1.0 foot compared to the second quarter levels, while water table elevations in upgradient facility wells generally decreased by approximately 2.0 feet.

The direction of groundwater flow, inferred from the elevation contours, is generally toward the river, with a localized groundwater mound in the GATX south tank farm.

Hydrological Analysis

The Willamette River stage (measured at the Morrison Bridge river gauge and converted to City of Portland datum) ranged from a quarterly high of 12.38 feet on July 1, 1999 to a low of 5.06 feet September 20, 1999. The river stage averaged approximately 7.11 feet between August 24 and September 14, 1999, the dates of the third quarter groundwater monitoring event. Precipitation and river stage data are shown on Figure 4.

Groundwater Analytical Results

Pursuant with the January 16, 1997 meeting with Jill Kiernan of the DEQ, groundwater samples were collected from selected facility monitoring wells between August 24 and September 14, 1999. The samples were analyzed for benzene, toluene, ethylbenzene, and xylenes (BTEX) compounds by EPA Method 8020A, polynuclear aromatic hydrocarbons (PAHs) by EPA Method 8270M-SIM, and total and dissolved RCRA Metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver) by EPA 6000/7000 Series Methods. The groundwater sampling protocol is presented as Attachment A.

COP0014724

The August-September 1999 BTEX results are presented in Table 2. The August-September 1999 PAH results are presented in Table 3. The metals results are presented in Tables 4A and 4B. Certified analytical results for the August-September 1999 sampling event are presented as Attachment A. Samples were not collected from wells containing SPH (as designated by NS/F in the tables).

Separate-Phase Hydrocarbon Analysis

Apparent SPH thicknesses were measured at selected wells on a monthly basis (Table 1). A map illustrating the distribution of SPH for August 1999 is shown on Figure 3.

The August 1999 SPH measurements generally indicate SPH thicknesses similar to previous quarter measurements in the riverfront area wells (Table 5). North of Front Avenue, SPH was measured in Tosco wells EX-39 and B-40. Separate-phase hydrocarbon thicknesses were also measured in wells B-20 and CR-10 along the perimeter of the Chevron tank farm. Separate-phase hydrocarbon thicknesses were measured in wells MW-7 and MW-23 within the GATX terminal.

SEPARATE-PHASE HYDROCARBON RECOVERY

Monthly manual recovery of SPH at the facility was initiated in early February 1997. Approximately 574.4 gallons of SPH have been removed to date by manual recovery methods. Approximately 2.8 gallons were manually recovered during July through September 1999. If a well has historically had a measurable amount of SPH, it was gauged during the first month of the quarter. SPH was either manually pumped from the well or a hydrocarbon absorbent sock was installed to remove SPH. Although a well may not have contained SPH during the "Willbridge wide" quarterly gauging event, it is possible that the well did contain SPH during one of the other monthly gauging events and a measurable quantity of SPH may have been removed and summarized in Table 1.

Seep and Sheen Monitoring

Containment booms currently encompass the shoreline between the Chevron and Tosco docks, and from the south edge of the Tosco dock to the southern property line (beyond the new Doane Avenue storm sewer outfall). Additionally, secondary containment booms are located inside of the first boom around the new Doane Avenue outfall pipe. Terminal personnel monitor seeps and sheen events; significant sheens are reported to IT for further evaluation.

PROBLEMS ENCOUNTERED DURING THIRD QUARTER 1999

No problems were encountered during the Third Quarter 1999.

ACTIVITIES SCHEDULED FOR FOURTH QUARTER 1999 (OCTOBER 1999-DECEMBER 1999)

The following actions are scheduled for Fourth Quarter 1999:

- Monthly SPH removal from identified wells.
- Gauging of water level elevations and SPH in all facility wells during the third quarter sampling event, scheduled for November 1999.

IT Corporation appreciates the opportunity to be of service. If you have any questions regarding this letter, please call.

Sincerely,

IT CORPORATION

John J. Renda
Staff Geologist

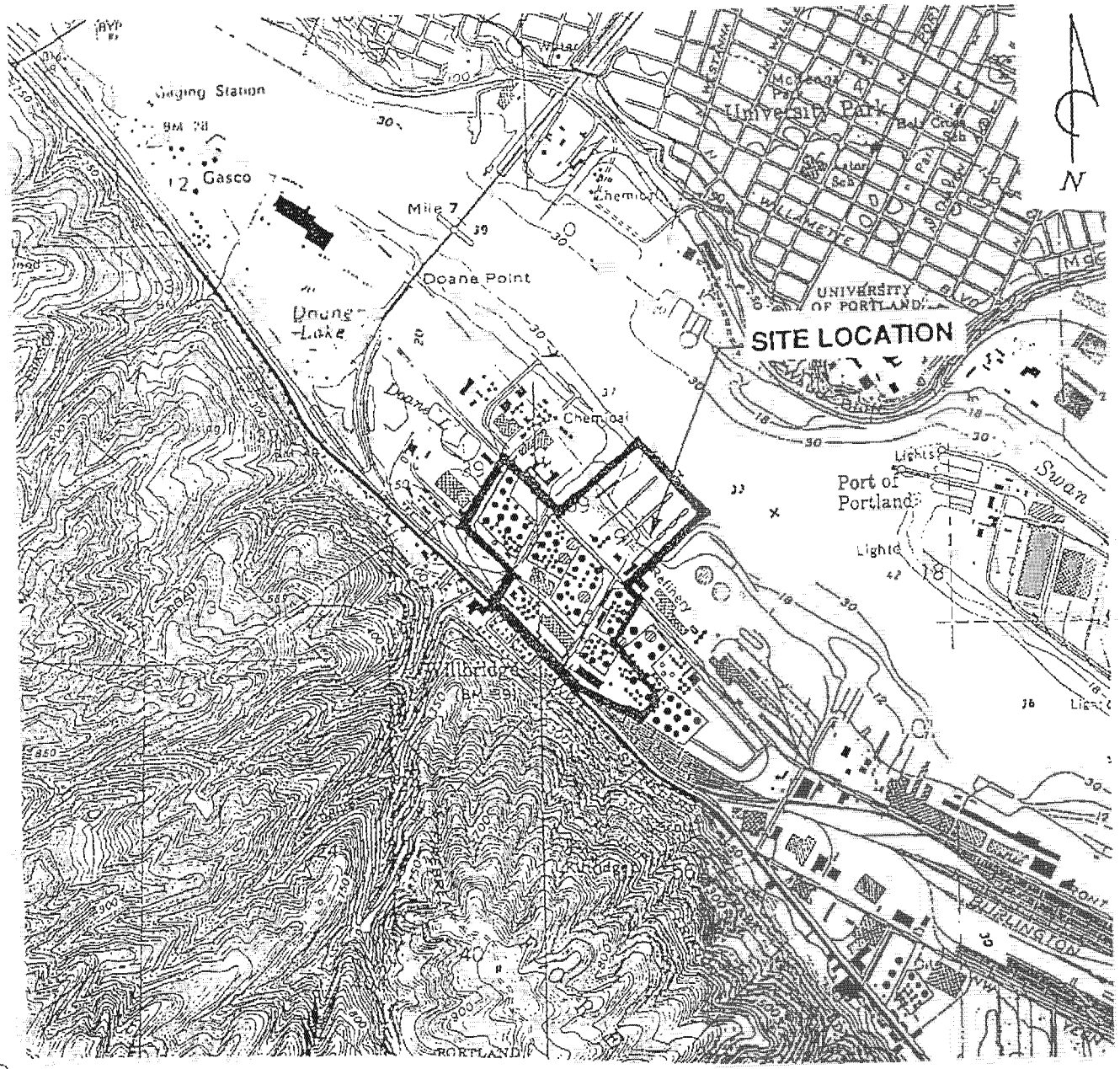
Richard S. Reis, P.E.
Project Director

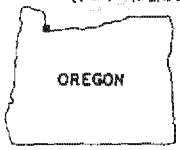
Attachments: Figure 1- Site Location Map
Figure 2 - Groundwater Elevation Contour Map (August 1999)
Figure 3 - Separate-Phase Hydrocarbon Map (August 1999)
Figure 4 - Precipitation and River Stage Hydrograph (Third Quarter 1999)
Table 1 - Groundwater Elevation Data and SPH Recovery Data (August 1999)
Table 2 - Groundwater Analytical Results (BTEX July 1998 through September 1999)
Table 3 - Groundwater Analytical Results (PAHs July 1998 through September 1999)
Table 4A - Groundwater Analytical Results (Total Metals July 1998 through September 1999)
Table 4B - Groundwater Analytical Results (Dissolved Metals July 1998 through September 1999)
Table 5 - Groundwater Elevation and SPH Recovery Data (March 1995 to September 1999)

COP0014726

Attachment A - Sampling Protocol, Certified Analytical Reports and Chain-of-Custody Documentation

cc: Mr. Eric Conard, GATX Terminals Corporation
Mr. Marty Cramer, Tosco Distribution Company
Mr. Frank Fossati, Shell Oil Products Company
Mr. Gerald O'Regan, Chevron Products Company





QUADRANGLE LOCATION

REFERENCES:

USGS 7.5 MIN TOPOGRAPHIC MAP
TITLED: PORTLAND, OREG-WASH
DATED: 1961 PHOTOREVISED: 1970-1977
TITLED: LINNTON, OREGON
DATED: 1990

SCALE IN FEET

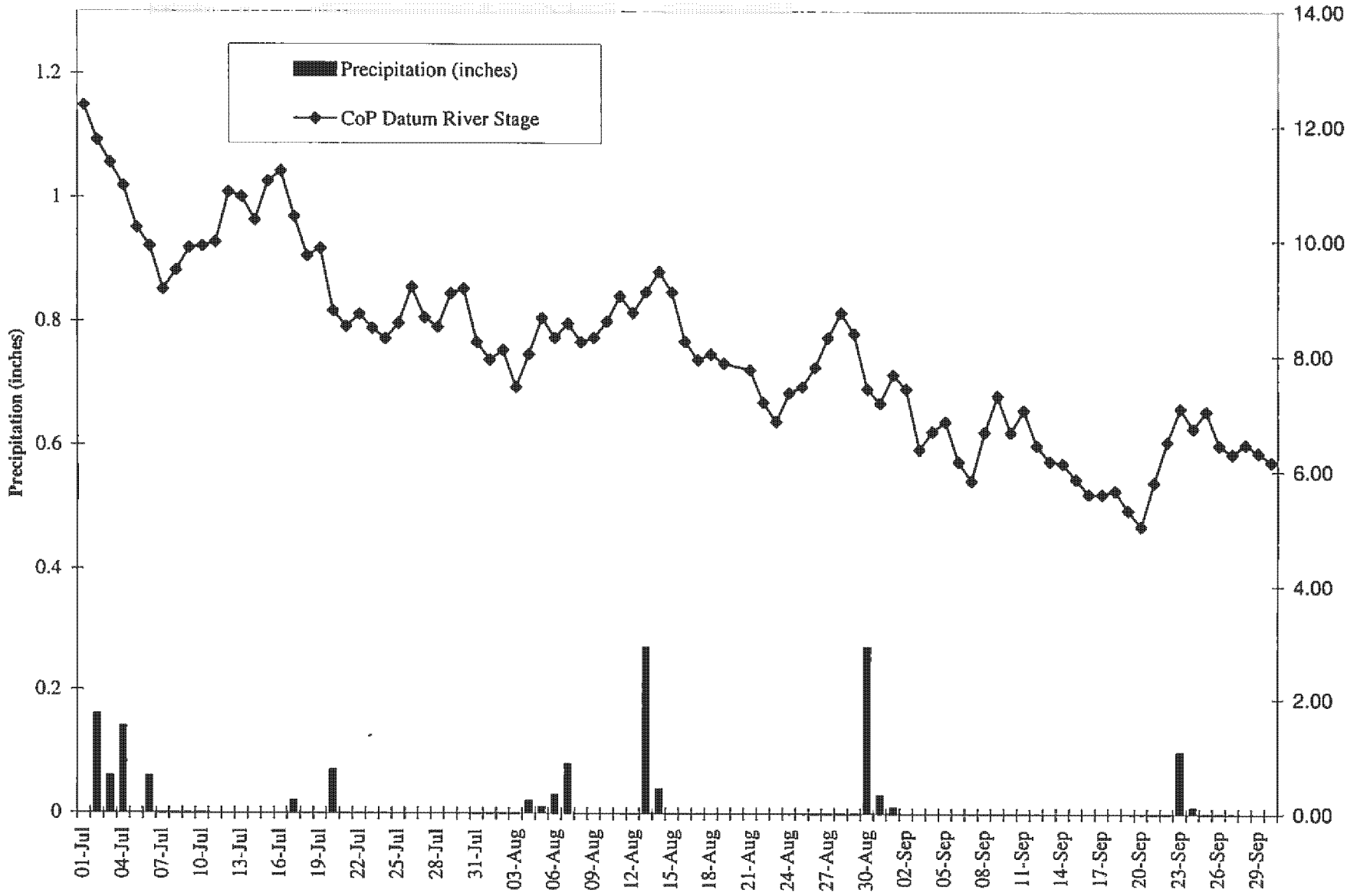
2000 0 2000

the group	WILLBRIDGE FACILITY Portland, Oregon	FIGURE: 1
	SITE LOCATION MAP	PROJECT: 1115-099.2A

COP001472

Figure 4

Precipitation and River Stage Hydrograph
Third Quarter 1999
Willbridge Facility



J:/Remed/Jobs/Willbridge/1115099/2a/3Q99.xls/Chart3Q99

11/19/1999

COP0014729

Table 1
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				Chevron			
B-7	35.73	8/18/99	NP		19.15	16.58	
B-8	34.14	8/18/99	NP		17.87	16.27	
B-9	35.57	8/18/99	NP		17.23	18.34	
B-10	34.76	8/18/99	NP		16.33	18.43	
B-11	34.96	8/18/99	NP		15.97	18.99	
B-12	35.14	8/18/99	NP		16.35	18.79	
B-13	34.76	8/18/99	NP		16.33	18.43	
B-14	36.59	8/18/99	NP		18.17	18.42	
B-15	35.55	8/18/99	NP		17.38	18.17	
B-19	34.17	8/18/99	NP		16.90	17.27	
B-20	33.32	8/18/99	17.56	0.56	18.12	14.72	0.15
B-21	34.79	8/18/99	NP		17.02	17.77	
B-24	34.70	8/18/99	NP		16.30	18.40	
B-26	35.3	8/18/99	NP		16.56	18.74	
B-28	35.26	8/18/99	NP		16.02	19.24	
B-29	37.7	8/18/99	NP		16.03	21.67	
B-30	35.39	8/18/99	NP		15.88	19.51	
B-31	33.86	8/18/99	NP		16.69	17.17	
B-32	34.23	8/18/99	NP		17.43	16.80	
B-33	35.90	8/18/99	NP		16.98	18.92	
CR-1	22.08	8/18/99	NP		3.85	18.23	
CR-3	34.32	8/18/99	NP		15.15	19.17	
CR-4	37.14	8/16/99	NP		6.20	30.94	
CR-6	35.61	8/16/99	NP		13.94	21.67	

COP0014730

Table 1
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				Chevron			
CR-7	35.57	8/16/99	NP		11.19	24.38	0.01
CR-8	33.14	8/16/99	NP		7.23	25.91	
CR-9	35.72	8/16/99	NP		5.70	30.02	
CR-10	35.57	8/16/99	6.37	0.17	6.54	28.89	0.5
CR-11	34.43	8/16/99	NP		3.72	30.71	
EX-1	34.15	8/18/99	NP		16.42	17.73	

COP0014731

Table 1
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				GATX			
MW-1	35.43	8/20/99	NP		7.09	28.34	
MW-2	35.77	8/20/99	NP		8.17	27.60	
MW-3	36.02	8/20/99	NP		9.35	26.67	
MW-4	36.39	8/20/99	NP		8.94	27.45	
MW-5	33.52	8/20/99	NP		8.05	25.47	
MW-6	33.34	8/20/99	NP		6.05	27.29	
MW-7	34.12	8/20/99	9.78	0.10	9.88	24.24	0.4
MW-8	33.95	8/20/99	NP		9.03	24.92	
MW-9	36.53	8/20/99	NP		11.15	25.38	
MW-10	35.82	8/20/99	NP		10.92	24.90	
MW-11	36.47	8/20/99	NP		7.87	28.60	
MW-12	35.95	8/20/99	NP		8.34	27.61	
MW-13	37.89	8/20/99	NP		7.06	30.83	
MW-14	36.28	8/20/99	NP		6.59	29.69	
MW-15	37.5	8/20/99	NP		8.84	28.66	
MW-16	34.93	8/20/99	NP		6.62	28.31	
MW-17	36.05	8/20/99	NP		5.84	30.21	
MW-18	33.76	8/20/99	NP		3.53	30.23	
MW-19	33.39	8/20/99	NP		5.39	28.00	
MW-20	34.76	8/20/99	NP		11.19	23.57	
MW-21	34.33	8/20/99	NP		2.57	31.76	
MW-22	35.65	8/20/99	NP		5.20	30.45	
MW-23	36.06	8/20/99	5.27	0.14	5.41	30.53	0.06
MW-24	35.15	8/20/99	NP		7.62	27.53	

COP0014732

Table 1
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				GATX			
MW-26	34.78	8/20/99	NP		12.17	22.61	
MW-27	35.69	8/20/99	NP		5.96	29.73	
MW-28	34.39	8/20/99	NP		7.19	27.20	0.08
MW-29	35.77	8/20/99	NP		14.22	21.55	
MW-30	36.39	8/20/99	NP		6.74	29.65	
MW-31	35.66	8/20/99	NP		8.12	27.54	
MW-32	37.01	8/20/99	NP		6.08	30.93	
MW-33		8/20/99	NP		20.69		
MW-34	39.67	8/20/99	NP		20.13	19.54	
MW-35	33.39	8/20/99	NP		4.60	28.79	
MW-36	34.88	8/20/99	NP		15.24	19.64	
MW-37	34.86	8/20/99	NP		15.88	18.98	
MW-38	37.5	8/20/99	NP		7.67	29.83	
MW-39	35.02	8/20/99	NP		14.04	20.98	
MW-40	33.65	8/20/99	NP		14.79	18.86	

COP0014733

Table 1
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				Tosco			
B-1	34.68	8/17/99	NP		17.37	17.31	
B-2	35.35	8/17/99	NP		17.45	17.90	
B-3	34.81	8/17/99	NP		18.79	16.02	
B-4	34.7	8/17/99	NP		18.04	16.66	
B-5	34.83	8/17/99	NP		16.93	17.90	
B-6	35.49	8/17/99	NP		17.35	18.14	
B-16	35.82	8/17/99	NP		17.62	18.20	
B-17	35.61	8/17/99	NP		17.55	18.06	
B-18	35.49	8/17/99	NP		18.90	16.59	
B-22	35.83	8/17/99	NP		18.35	17.48	
B-25	35.78	8/17/99	NP		18.78	17.00	
B-27	35.74	8/17/99	NP		17.98	17.76	
B-35	33.56	8/17/99	NP		16.23	17.33	
B-36	31.02	8/17/99	NP		15.01	16.01	
B-37	35.83	8/17/99	NP		19.41	16.42	
EX-39	33.09	8/17/99	17.60	0.43	18.03	14.69	0.6
B-40	34.7	8/17/99	17.92	1.08	19.00	14.78	1.0
B-41	34.63	8/17/99	NP		18.20	16.43	
DW-1	35.93	8/17/99	NP		19.23	16.70	
DW-2	36.05	8/17/99	NP		19.31	16.74	
IF-1		8/17/99	NP		19.93		
IF-2		8/17/99	NP		19.98		
IT-E	36.07	8/17/99	NP		19.70	16.37	
IT-W	35.99	8/17/99	NP		18.05	17.94	

Table 1
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				Tosco			
OF-1		8/17/99	NP		19.11		
OF-2		8/17/99	NP		19.25		
RES-N	38.58	8/17/99	NP		21.3	17.28	
RES-O	36.03	8/17/99	NP		17.79	18.24	
U-2	35.02	8/17/99	NP		15.65	19.37	
U-3	35.25	8/17/99	NP		14.16	21.09	
U-4	34.46	8/17/99	NP		16.22	18.24	
U-5	34.13	8/17/99	NP		18.60	15.53	
U-5A	33.77	8/17/99	NP		7.74	26.03	
					Total SPH Recovered this Quarter:		2.80

Notes:
SPH = Separate Phase Hydrocarbon
NP = No product observed this gauging date
NA = Not available
NM = Not measured
* = Groundwater elevation is corrected for the presence of SPH using:
GWE=TOC-(DTW-(SPH thickness x Specific gravity of SPH))
Specific Gravity of SPH set to 0.85 g/cc
** = SPH recovered represents total product recovered for entire quarter

Wells Surveyed Dec. 1998:

B-1	B-12	B-35	U-5
B-3	B-17	B-36	IT-E
B-4	B-18	B-37	MW-27
B-6	B-20	B-40	MW-31
B-8	B-21	B-41	
B-9	B-25	DW-1	
B-10	B-28	P-1	
B-11	B-30	P-2	

COP0014735

Table 2
Groundwater Analytical Results - BTEX

Willbridge Terminal
Portland, Oregon

Sample Identification	Date Sampled	Benzene (ppb)	Ethyl-benzene (ppb)	Toluene (ppb)	Xylenes (ppb)
			Chevron		
B-7	11/24/98	ND	ND	ND	ND
B-7	8/26/99	0.285	1.49	0.272	0.44
B-9	12/11/98	ND	ND	ND	ND
B-9	2/25/99	ND	ND	ND	ND
B-9	5/21/99	ND	ND	ND	ND
B-10	11/24/98	98.5	16.9	3.45	31.7
B-10	5/21/99	4.58	2.07	4.65	5.97
B-10	8/30/99	4.63	11.9	2.93	14.9
B-11	11/23/98	29.4	ND	6.90	16.4
B-11	2/25/99	87.5	6.4	6.81	12.8
B-11	5/21/99	55.6	2.08	5.53	8.67
B-11	8/27/99	9.16	0.382	3.7	3.2
B-14	11/25/98	301	130	26.5	18.2
B-14	2/25/99	754	378	53.3	128
B-14	5/21/99	900	441	37.3	97.5
B-14	8/26/99	170	89.8	12.3	17
B-28	11/24/98	15.0	110	ND	79.2
B-28	2/25/99	ND	ND	ND	ND
B-28	5/20/99	ND	ND	ND	ND
B-28	8/27/99	ND	ND	ND	ND
B-30	11/24/98	43.0	0.603	4.46	10.5
B-30	2/25/99	76.4	3.07	8.96	17.1
B-30	5/21/99	84.9	1.53	7.31	10.4
B-30	8/27/99	55.1	0.385	3.32	4.85
CR-8	11/24/98	ND	ND	ND	ND
CR-8	2/25/99	ND	ND	ND	ND
CR-8	5/20/99	ND	ND	ND	ND
CR-8	8/27/99	ND	ND	ND	ND
CR-9	11/25/98	ND	ND	ND	ND
CR-9 Dup	11/25/98	ND	ND	ND	ND
CR-9	2/25/99	ND	ND	ND	ND

COP0014736

Table 2
Groundwater Analytical Results - BTEX

Willbridge Terminal
Portland, Oregon

Sample Identification	Date Sampled	Benzene (ppb)	Ethyl-benzene (ppb)	Toluene (ppb)	Xylenes (ppb)
			Chevron		
CR-9	5/20/99	ND	ND	ND	ND
CR-9 Dup	5/20/99	ND	ND	ND	ND
CR-9	8/27/99	ND	ND	ND	ND
CR-11	8/30/99	69.8	1.49	1.43	3.39
EX-1	11/25/98	ND	ND	ND	ND

COP0014737

Table 2
Groundwater Analytical Results - BTEX

Willbridge Terminal
Portland, Oregon

Sample Identification	Date Sampled	Benzene (ppb)	Ethyl-benzene (ppb)	Toluene (ppb)	Xylenes (ppb)
			GATX		
MW-8	12/10/98	45.4	40.6	ND	17.7
MW-8	3/2/99	11	2.98	1.61	ND
MW-8	5/27/99	10.4	4.78	2.58	4.13
MW-8	9/2/99	22.6	52	16.2	97.1
MW-10	12/9/98	ND	ND	ND	ND
MW-10	3/2/99	8.16	ND	ND	ND
MW-10	5/27/99	2.14	ND	ND	ND
MW-10	9/2/99	1.22	ND	ND	ND
MW-11	12/9/98	5870	2330	2590	9840
MW-11	3/2/99	6990	2820	3420	12000
MW-11	5/27/99	5000	2640	2500	10400
MW-11	9/2/99	3200	2280	1120	7510
MW-13	12/9/98	ND	ND	ND	ND
MW-13	3/2/99	ND	ND	ND	ND
MW-13 Dup	3/2/99	ND	ND	ND	ND
MW-13	5/27/99	ND	ND	ND	ND
MW-13	9/2/99	ND	ND	ND	ND
MW-15	12/10/98	ND	ND	ND	ND
MW-15	3/2/99	1.23	ND	ND	ND
MW-15	5/28/99	ND	ND	ND	ND
MW-15	9/2/99	ND	ND	ND	ND
MW-21	12/8/98	ND	ND	ND	ND
MW-21	3/1/99	ND	ND	ND	ND
MW-21	5/27/99	ND	ND	ND	ND
MW-21	9/1/99	ND	ND	ND	ND
MW-22	12/9/98	2060	4860	2430	13800
MW-22 Dup	12/9/98	1980	4710	2390	13300
MW-22	5/27/99	1750	4130	1930	12100
MW-22	9/1/99	1990	4630	1770	10600
MW-23	12/9/98	51.4	104	ND	61.7
MW-23	3/1/99	16	35.8	6.65	57

COP0014738

Table 2
Groundwater Analytical Results - BTEX

Willbridge Terminal
Portland, Oregon

Sample Identification		Date Sampled	Benzene (ppb)	Ethyl-benzene (ppb)	Toluene (ppb)	Xylenes (ppb)
				GATX		
MW-23	Dup	3/1/99	27.8	34.7	5.05	58
MW-26		12/8/98	5.08	5.00	4.49	4.90
MW-26		5/26/99	1.36	4.06	1.7	10.4
MW-26		9/1/99	ND	10.6	9.09	6.34
MW-28		9/1/99	1.41	3.21	0.872	2.11
MW-31		12/8/98	ND	ND	ND	ND
MW-31		3/1/99	ND	ND	ND	ND
MW-31		5/27/99	ND	ND	ND	ND
MW-31		9/1/99	ND	ND	ND	ND
MW-32		12/8/98	ND	ND	ND	ND
MW-32		3/1/99	ND	ND	ND	ND
MW-32	Dup	3/1/99	ND	ND	ND	ND
MW-32		5/27/99	ND	ND	ND	ND
MW-32	Dup	5/27/99	ND	ND	ND	ND
MW-32		9/1/99	ND	ND	ND	ND
MW-33		12/11/98	ND	ND	ND	ND
MW-33		3/2/99	ND	ND	ND	ND
MW-33		5/28/99	ND	ND	ND	ND
MW-33		9/2/99	ND	ND	ND	ND
MW-36		12/10/98	ND	ND	ND	ND
MW-36	Dup	12/10/98	ND	ND	ND	ND
MW-36		3/2/99	ND	ND	ND	ND
MW-36		5/27/99	ND	ND	ND	ND
MW-36		9/2/99	0.487	ND	ND	ND
MW-37		12/10/98	196	ND	ND	ND
MW-37		3/1/99	17.3	ND	ND	ND
MW-37		5/26/99	208	ND	ND	ND
MW-37	Dup	5/26/99	204	ND	ND	ND
MW-37		9/2/99	1640	ND	ND	ND
MW-39		12/10/98	ND	0.862	ND	1.92
MW-40		12/10/98	ND	ND	ND	ND

COP0014739

Table 2
Groundwater Analytical Results - BTEX

Willbridge Terminal
Portland, Oregon

Sample Identification	Date Sampled	Benzene (ppb)	Ethyl-benzene (ppb)	Toluene (ppb)	Xylenes (ppb)
			GATX		
MW-40	3/2/99	ND	ND	ND	ND
MW-40	5/26/99	ND	ND	ND	ND
MW-40	9/2/99	ND	ND	ND	ND

COP0014740

Table 2
Groundwater Analytical Results - BTEX

Willbridge Terminal
Portland, Oregon

Sample Identification		Date Sampled	Benzene (ppb)	Ethyl-benzene (ppb)	Toluene (ppb)	Xylenes (ppb)
			Tosco			
B-6		11/18/98	140	299	23.0	180.61
B-17		2/23/99	449	6.4	10.5	ND
B-17		5/19/99	357	ND	7.75	ND
B-18		11/19/98	ND	ND	ND	ND
B-18	Dup	11/19/98	ND	ND	ND	ND
B-18		2/24/99	ND	ND	ND	ND
B-18		5/19/99	ND	ND	ND	ND
B-22		11/19/98	ND	1.26	ND	3.24
B-22		5/20/99	0.972	3.4	0.758	13.6
B-22	Dup	5/20/99	ND	0.855	ND	4.96
B-25		5/19/99	ND	ND	ND	ND
B-35		11/20/98	15.2	1.56	10.1	8.60
B-35		2/23/99	15.9	ND	6.8	7.1
B-35	Dup	2/23/99	16.4	ND	9.1	6.9
B-35		5/19/99	59.5	ND	ND	ND
B-36		11/18/98	2.75	ND	1.16	ND
B-36		2/23/99	ND	ND	ND	ND
B-36		5/19/99	ND	ND	ND	ND
B-37		11/19/98	ND	ND	ND	ND
B-37		2/24/99	ND	ND	ND	ND
B-37		5/19/99	ND	ND	ND	ND
U-2		11/16/98	ND	ND	ND	ND
U-2		2/24/99	8.7	22.3	1.93	1.52
U-2		5/19/99	7.64	11.6	2.79	9.63
U-3		11/16/98	ND	ND	ND	ND
U-3		2/24/99	3160	80.5	580	465
U-3		5/19/99	1.89	ND	ND	ND
U-4		11/19/98	373	ND	ND	ND
U-5		11/19/98	ND	ND	ND	ND

COP0014741

Table 2
Groundwater Analytical Results - BTEX

Willbridge Terminal
Portland, Oregon

Sample Identification	Date Sampled	Benzene (ppb)	Ethyl-benzene (ppb)	Toluene (ppb)	Xylenes (ppb)
			Tosco		
U-5	2/24/99	4.16	ND	1.55	1.47
U-5	5/19/99	2.62	ND	ND	ND

Notes:
ppb = Parts per billion
ND = Not detected
BTEX by EPA 8020 Method

COP0014742

Table 3
Groundwater Analytical Results - Polyaromatic Hydrocarbons

Willbridge Terminal
Portland, Oregon

Sample Identification	Date Sampled	Acenaphthene (ppb)	Acenaphthylene (ppb)	Fluorene (ppb)	Naphthalene (ppb)	Anthracene (ppb)	Fluoranthene (ppb)	Phenanthrene (ppb)	Benzo(a) anthracene (ppb)	Benzo(b) fluoranthene (ppb)	Benzo(k) fluoranthene (ppb)	Chrysene (ppb)	Pyrene (ppb)	Benzo(a) pyrene (ppb)	Dibenzo-(a,h)anthracene (ppb)	Indeno-(1,2,3,cd) pyrene (ppb)	Benzo-(ghi) perylene (ppb)
Number of Benzene Rings		2	2	2	2	3	3	3	4	4	4	4	4	5	5	5	6
								Chevron									
B-7	11/24/98	ND	ND	34.3	ND	ND	ND	30.3	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-7	8/26/99	3.02	ND	10.4	ND	0.542	ND	7.51	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-9	12/11/98	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-9	2/25/99	1.26	ND	4.83	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-9	5/21/99	3.02	ND	9.89	ND	ND	ND	2.01	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-10	11/24/98	ND	ND	40.3	ND	ND	ND	62.1	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-10	5/21/99	3.81	ND	13.8	ND	2.14	1.15	16.6	ND	ND	ND	ND	1.19	ND	ND	ND	ND
B-10	8/30/99	3.79	ND	13.2	ND	1.39	0.798	17.4	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-11	11/23/98	ND	ND	2.92	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-11	2/25/99	ND	ND	1.36	ND	ND	ND	0.633	ND	ND	ND	ND	0.109	ND	ND	ND	ND
B-11	5/21/99	1.09	ND	1.85	ND	ND	ND	1.26	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-11	8/27/99	0.882	ND	1.58	ND	0.128	0.1	1.25	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-14	11/25/98	1.46	ND	2.46	19.5	ND	ND	2.16	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-14 Du	11/25/98	ND	ND	ND	26.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-14	2/25/99	ND	ND	ND	50	0.138	0.293	1.47	ND	ND	ND	ND	0.402	ND	ND	ND	ND
B-14	5/21/99	1.08	ND	2.28	16	ND	ND	2.21	ND	ND	ND	ND	1.27	ND	ND	ND	ND
B-14	8/26/99	1	ND	1.49	5.05	0.222	0.55	1.52	ND	ND	ND	ND	0.63	ND	ND	ND	ND

COP0014743

Table 3 (continued)
Groundwater Analytical Results - Polyaromatic Hydrocarbons

Willbridge Terminal
Portland, Oregon

Sample Identification	Date Sampled	Acenaphthene (ppb)	Acenaphthylene (ppb)	Fluorene (ppb)	Naphthalene (ppb)	Anthracene (ppb)	Fluoranthene (ppb)	Phenanthrene (ppb)	Benzo(a) anthracene (ppb)	Benzo(b) fluoranthene (ppb)	Benzo(k) fluoranthene (ppb)	Chrysene (ppb)	Pyrene (ppb)	Benzo(a) pyrene (ppb)	Dibenzo-(a,h)anthracene (ppb)	Indeno-(1,2,3,cd) pyrene (ppb)	Benzo-(ghi) perylene (ppb)
Number of Benzene Rings		2	2	2	2	3	3	3	4	4	4	4	4	5	5	5	6
								Chevron									
B-24	11/23/98	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-24 Du	11/23/98	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-28	11/24/98	ND	ND	ND	42.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-28	2/25/99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-28	5/20/99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-28	8/27/99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-30	11/24/98	ND	ND	ND	ND	ND	ND	0.152	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-30	2/25/99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-30	5/21/99	0.196	ND	0.264	ND	ND	ND	0.172	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-30	8/27/99	ND	ND	ND	ND	ND	0.0589	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CR-8	11/24/98	ND	0.170	ND	ND	ND	0.413	ND	0.271	0.775	ND	0.338	0.673	0.745	ND	0.560	1.08
CR-8	2/25/99	ND	ND	ND	ND	ND	0.1	ND	ND	0.168	0.222	0.115	0.203	0.33	ND	0.257	0.442
CR-8	5/20/99	ND	ND	ND	ND	ND	1.25	ND	0.726	1.39	1.28	0.958	1.67	2.29	ND	1.74	2.6
CR-8	8/27/99	ND	0.176	ND	ND	0.0711	0.254	ND	0.0617	0.245	0.129	0.21	0.379	0.385	ND	0.324	0.515
CR-9	11/25/98	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CR-9 Du	11/25/98	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CR-9	2/25/99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

COP0014744

Table 3 (continued)
Groundwater Analytical Results - Polyaromatic Hydrocarbons

Willbridge Terminal
Portland, Oregon

Sample Identification	Date Sampled	Acenaphthene (ppb)	Acenaphthylene (ppb)	Fluorene (ppb)	Naphthalene (ppb)	Anthracene (ppb)	Fluoranthene (ppb)	Phenanthrene (ppb)	Benzo(a) anthracene (ppb)	Benzo(b) fluoranthene (ppb)	Benzo(k) fluoranthene (ppb)	Chrysene (ppb)	Pyrene (ppb)	Benzo(a) pyrene (ppb)	Dibenzo-(a,h)anthracene (ppb)	Indeno-(1,2,3,cd) pyrene (ppb)	Benzo-(ghi) perylene (ppb)
Number of Benzene Rings		2	2	2	2	3	3	3	4	4	4	4	4	5	5	5	6
								Chevron									
CR-9	5/20/99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CR-9 Du	5/20/99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CR-9	8/27/99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
CR-11	8/30/99	2.75	ND	5.42	ND	0.534	ND	4.28	ND	ND	ND	ND	ND	ND	ND	ND	ND
EX-1	11/25/98	ND	ND	9.67	ND	ND	0.222	2.16	ND	ND	ND	ND	0.398	ND	ND	ND	ND

COP0014745

Table 3 (continued)
Groundwater Analytical Results - Polyaromatic Hydrocarbons

Willbridge Terminal
Portland, Oregon

Sample Identification	Date Sampled	Acenaphthene (ppb)	Acenaphthylene (ppb)	Fluorene (ppb)	Naphthalene (ppb)	Anthracene (ppb)	Fluoranthene (ppb)	Phenanthrene (ppb)	Benzo(a) anthracene (ppb)	Benzo(b) fluoranthene (ppb)	Benzo(k) fluoranthene (ppb)	Chrysene (ppb)	Pyrene (ppb)	Benzo(a) pyrene (ppb)	Dibenzo-(a,h)anthracene (ppb)	Indeno-(1,2,3,cd) pyrene (ppb)	Benzo-(ghi) perylene (ppb)
Number of Benzene Rings		2	2	2	2	3	3	3	4	4	4	4	4	5	5	5	6
								GATX									
G-HP 1	11/5/98	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
G-HP 1 Du	11/5/98	1.59	ND	3.27	ND	ND	ND	2.51	ND	ND	ND	ND	1.59	ND	ND	ND	ND
G-HP 3	11/5/98	ND	ND	ND	2.55	ND	ND	ND	ND	ND	ND	ND	0.244	ND	ND	ND	ND
G-HP 4	11/4/98	ND	ND	ND	ND	ND	ND	0.183	ND	ND	ND	ND	0.157	ND	ND	ND	ND
G-HP 5	11/2/98	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
G-HP 6	11/2/98	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
G-HP 7	11/4/98	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
G-HP 8	11/2/98	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
G-HP 9	11/3/98	ND	ND	ND	2.31	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
G-HP 10	11/5/98	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	6.91	ND	ND	ND	ND
MW-4	12/9/98	ND	ND	8.02	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-4 Du	12/9/98	ND	ND	7.95	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-8	12/10/98	0.215	ND	ND	16.5	ND	ND	0.130	ND	ND	ND	ND	0.109	ND	ND	ND	ND
MW-8	3/2/99	ND	ND	ND	4.08	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-8	5/27/99	ND	ND	ND	1.88	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-8	9/2/99	2.29	ND	0.981	ND	ND	0.991	1.08	ND	ND	ND	ND	0.623	ND	ND	ND	ND
MW-10	12/9/98	0.215	ND	0.103	ND	ND	ND	0.234	ND	ND	ND	ND	0.144	ND	ND	ND	ND

COP0014746

Table 3 (continued)
Groundwater Analytical Results - Polyaromatic Hydrocarbons

Willbridge Terminal
Portland, Oregon

Sample Identification	Date Sampled	Acenaphthene (ppb)	Acenaphthylene (ppb)	Fluorene (ppb)	Naphthalene (ppb)	Anthracene (ppb)	Fluoranthene (ppb)	Phenanthrene (ppb)	Benzo(a) anthracene (ppb)	Benzo(b) fluoranthene (ppb)	Benzo(k) fluoranthene (ppb)	Chrysene (ppb)	Pyrene (ppb)	Benzo(a) pyrene (ppb)	Dibenzo-(a,h)anthracene (ppb)	Indeno-(1,2,3,cd) pyrene (ppb)	Benzo-(ghi) perylene (ppb)
Number of Benzene Rings		2	2	2	2	3	3	3	4	4	4	4	4	5	5	5	6
								GATX									
MW-10	3/2/99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-10	5/27/99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-10	9/2/99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.115	ND	ND	ND	0.0689
MW-11	12/9/98	ND	ND	ND	548	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-11	3/2/99	ND	ND	0.179	466	ND	ND	0.138	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-11	5/27/99	ND	ND	ND	421	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-11	9/2/99	ND	ND	ND	393	0.0755	ND	0.184	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-13	12/9/98	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-13	3/2/99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-13 Du	3/2/99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-13	5/27/99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-13	9/2/99	ND	ND	ND	0.201	0.0509	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-15	12/10/98	0.208	ND	0.105	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-15	3/2/99	0.114	ND	0.125	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-15	5/28/99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-15	9/2/99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-21	12/8/98	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

COP0014747

Table 3 (continued)
Groundwater Analytical Results - Polyaromatic Hydrocarbons

Willbridge Terminal
Portland, Oregon

Sample Identification	Date Sampled	Acenaphthene (ppb)	Acenaphthylene (ppb)	Fluorene (ppb)	Naphthalene (ppb)	Anthracene (ppb)	Fluoranthene (ppb)	Phenanthrene (ppb)	Benzo(a)anthracene (ppb)	Benzo(b)fluoranthene (ppb)	Benzo(k)fluoranthene (ppb)	Chrysene (ppb)	Pyrene (ppb)	Benzo(a)pyrene (ppb)	Dibenzo-(a,h)anthracene (ppb)	Indeno-(1,2,3,cd)pyrene (ppb)	Benzo-(ghi)perylene (ppb)
Number of Benzene Rings		2	2	2	2	3	3	3	4	4	4	4	4	5	5	5	6
								GATX									
MW-21	3/1/99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-21	5/27/99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-21	9/1/99	ND	ND	ND	ND	0.0619	0.0543	ND	ND	ND	ND	0.0552	0.0505	ND	ND	ND	0.0514
MW-22	12/9/98	ND	ND	ND	424	ND	ND	0.406	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-22 Du	12/9/98	ND	ND	ND	414	ND	ND	0.313	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-22	5/27/99	ND	ND	ND	201	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-22	9/1/99	ND	ND	ND	347	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-23	12/9/98	2.10	ND	3.74	7.05	ND	ND	2.42	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-23	3/1/99	1.41	ND	3.29	ND	ND	ND	1.77	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-23 Du	3/1/99	ND	ND	1.79	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-26	12/8/98	1.42	ND	1.24	4.61	0.109	0.375	0.484	ND	ND	ND	ND	0.237	ND	ND	ND	ND
MW-26	5/28/99	1.88	ND	1.75	3.42	ND	ND	1.02	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-26	9/1/99	ND	ND	0.913	ND	ND	0.825	0.816	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-28	9/1/99	ND	ND	11.8	ND	ND	ND	8.03	0.673	ND	ND	2.08	3.38	ND	ND	ND	ND
MW-30	12/8/98	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-31	12/8/98	ND	ND	ND	ND	ND	ND	0.268	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-31	3/1/99	ND	ND	0.853	ND	ND	ND	0.677	ND	ND	ND	ND	ND	ND	ND	ND	ND

COP0014748

Table 3 (continued)
Groundwater Analytical Results - Polyaromatic Hydrocarbons

Willbridge Terminal
Portland, Oregon

Sample Identification	Date Sampled	Acenaphthene (ppb)	Acenaphthylene (ppb)	Fluorene (ppb)	Naphthalene (ppb)	Anthracene (ppb)	Fluoranthene (ppb)	Phenanthrene (ppb)	Benzo(a) anthracene (ppb)	Benzo(b) fluoranthene (ppb)	Benzo(k) fluoranthene (ppb)	Chrysene (ppb)	Pyrene (ppb)	Benzo(a) pyrene (ppb)	Dibenzo-(a,h)anthracene (ppb)	Indeno-(1,2,3,cd) pyrene (ppb)	Benzo-(ghi) perylene (ppb)
Number of Benzene Rings		2	2	2	2	3	3	3	4	4	4	4	4	5	5	5	6
								GATX									
MW-31	5/27/99	ND	ND	1.5	ND	ND	ND	0.626	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-31	9/1/99	ND	ND	1.31	ND	ND	ND	0.935	ND	ND	ND	0.0757	0.38	ND	ND	ND	ND
MW-32	12/8/98	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-32	3/1/99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-32 Du	3/1/99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-32	5/27/99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-32 Du	5/27/99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-32	9/1/99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-33	12/11/98	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-33	3/2/99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-33	5/28/99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-33	9/2/99	ND	ND	ND	0.0528	ND	ND	ND	ND	ND	ND	ND	0.0528	ND	ND	ND	ND
MW-36	12/10/98	0.438	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-36 Du	12/10/98	0.501	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-36	3/2/99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-36	5/27/99	0.163	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-36	9/2/99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.113	ND	ND	ND	ND

COP0014749

Table 3 (continued)
Groundwater Analytical Results - Polyaromatic Hydrocarbons

Willbridge Terminal
Portland, Oregon

Sample Identification	Date Sampled	Acenaphthene (ppb)	Acenaphthylene (ppb)	Fluorene (ppb)	Naphthalene (ppb)	Anthracene (ppb)	Fluoranthene (ppb)	Phenanthrene (ppb)	Benzo(a) anthracene (ppb)	Benzo(b) fluoranthene (ppb)	Benzo(k) fluoranthene (ppb)	Chrysene (ppb)	Pyrene (ppb)	Benzo(a) pyrene (ppb)	Dibenzo-(a,h)anthracene (ppb)	Indeno-(1,2,3,cd) pyrene (ppb)	Benzo-(ghi) perylene (ppb)
Number of Benzene Rings		2	2	2	2	3	3	3	4	4	4	4	4	5	5	5	6
								GATX									
MW-37	12/10/98	ND	ND	ND	ND	ND	0.202	0.242	ND	ND	ND	ND	0.251	ND	ND	ND	ND
MW-37	3/1/99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-37	5/26/99	ND	ND	4.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-37 Du	5/26/99	ND	ND	1.76	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-37	9/2/99	ND	ND	ND	ND	ND	ND	ND	0.111	0.0775	0.0961	0.154	0.315	0.127	ND	0.0941	0.105
MW-39	12/10/98	5.60	ND	1.09	ND	0.208	0.468	1.94	ND	ND	ND	ND	0.503	ND	ND	ND	ND
MW-40	12/10/98	0.178	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-40	3/2/99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-40	5/26/99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-40	9/2/99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

COP0014750

Table 3 (continued)
Groundwater Analytical Results - Polyaromatic Hydrocarbons

Willbridge Terminal
Portland, Oregon

Sample Identification	Date Sampled	Acenaphthene (ppb)	Acenaphthylene (ppb)	Fluorene (ppb)	Naphthalene (ppb)	Anthracene (ppb)	Fluoranthene (ppb)	Phenanthrene (ppb)	Benzo(a) anthracene (ppb)	Benzo(b) fluoranthene (ppb)	Benzo(k) fluoranthene (ppb)	Chrysene (ppb)	Pyrene (ppb)	Benzo(a) pyrene (ppb)	Dibenzo-(a,h)anthracene (ppb)	Indeno-(1,2,3,cd) pyrene (ppb)	Benzo-(ghi) perylene (ppb)
Number of Benzene Rings		2	2	2	2	3	3	3	4	4	4	4	4	5	5	5	6
Tosco																	
B-6	11/18/98	ND	ND	ND	72.9	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-17	2/23/99	4.03	ND	12.8	ND	ND	ND	9.85	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-17	5/19/99	2.9	ND	9.77	ND	ND	ND	9.3	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-18	11/19/98	ND	ND	1.93	ND	ND	ND	2.34	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-18 Du	11/19/98	ND	ND	1.87	ND	ND	ND	2.07	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-18	2/24/99	ND	ND	2.22	ND	ND	ND	2.44	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-18	5/19/99	2.76	ND	6.86	ND	ND	ND	6.79	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-22	11/19/98	ND	ND	ND	ND	ND	ND	19.9	ND	ND	ND	ND	1.48	ND	ND	ND	ND
B-22	5/20/99	4.07	ND	8.67	4.27	1.22	ND	12.7	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-22 Du	5/20/99	ND	ND	25.7	ND	6.46	ND	48.2	ND	ND	ND	ND	3.42	ND	ND	ND	ND
B-25	11/19/98	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-25	5/19/99	0.144	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-35	11/20/98	ND	ND	84.3	ND	31.5	95.0	242	16.8	3.69	ND	13.5	59.9	2.60	ND	ND	ND
B-35	2/23/99	38.1	ND	127	ND	32.7	120	279	24	6.43	8.25	21.3	78.5	5.68	ND	ND	ND
B-35 Du	2/23/99	49.5	ND	168	ND	49	154	365	28	8.5	8.6	24.8	88.3	6.83	ND	ND	ND
B-35	5/19/99	6.94	ND	19	6.93	3.84	11.2	27.6	2.64	ND	ND	ND	7.38	ND	ND	ND	ND
B-36	11/18/98	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

COP0014751

Table 3 (continued)
Groundwater Analytical Results - Polyaromatic Hydrocarbons

Willbridge Terminal
Portland, Oregon

Sample Identification	Date Sampled	Acenaphthene (ppb)	Acenaphthylene (ppb)	Fluorene (ppb)	Naphthalene (ppb)	Anthracene (ppb)	Fluoranthene (ppb)	Phenanthrene (ppb)	Benzo(a) anthracene (ppb)	Benzo(b) fluoranthene (ppb)	Benzo(k) fluoranthene (ppb)	Chrysene (ppb)	Pyrene (ppb)	Benzo(a) pyrene (ppb)	Dibenzo-(a,h)anthracene (ppb)	Indeno-(1,2,3,cd) pyrene (ppb)	Benzo-(ghi) perylene (ppb)
Number of Benzene Rings		2	2	2	2	3	3	3	4	4	4	4	4	5	5	5	6
Tosco																	
B-36	2/23/99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-36	5/19/99	0.119	ND	0.189	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-37	11/19/98	ND	ND	ND	ND	ND	ND	0.112	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-37	2/24/99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-37	5/19/99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
P-1	11/20/98	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
T-HP 1	11/3/98				ND												
T-HP 1	11/3/98	0.492	ND	0.706		0.126	ND	1.39	ND	ND	ND	ND	0.140	ND	ND	ND	ND
T-HP 2	11/3/98				ND												
T-HP 2	11/3/98	0.249	ND	0.534		ND	0.124	0.686	ND	ND	ND	ND	0.221	ND	ND	ND	ND
T-HP 3	11/4/98	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
T-HP 4	11/3/98				ND												
T-HP 4	11/3/98	ND	ND	ND		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
T-HP 4 Du	11/3/98	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
U-2	11/16/98	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
U-2	2/24/99	0.401	ND	0.452	4.47	ND	ND	0.187	ND	ND	ND	ND	ND	ND	ND	ND	ND
U-2	5/19/99	0.345	ND	0.897	6.55	ND	0.163	0.161	ND	ND	ND	ND	0.182	ND	ND	ND	ND

COP0014752

Table 3 (continued)
Groundwater Analytical Results - Polyaromatic Hydrocarbons

Willbridge Terminal
Portland, Oregon

Sample Identification	Date Sampled	Acenaphthene (ppb)	Acenaphthylene (ppb)	Fluorene (ppb)	Naphthalene (ppb)	Anthracene (ppb)	Fluoranthene (ppb)	Phenanthrene (ppb)	Benzo(a) anthracene (ppb)	Benzo(b) fluoranthene (ppb)	Benzo(k) fluoranthene (ppb)	Chrysene (ppb)	Pyrene (ppb)	Benzo(a) pyrene (ppb)	Dibenzo-(a,h)anthracene (ppb)	Indeno-(1,2,3,cd) pyrene (ppb)	Benzo-(ghi) perylene (ppb)
Number of Benzene Rings		2	2	2	2	3	3	3	4	4	4	4	4	5	5	5	6
								Tosco									
U-3	11/16/98	ND	ND	ND	ND	ND	0.919	ND	0.588	1.64	ND	0.739	0.962	0.986	ND	0.664	0.905
U-3	2/24/99	ND	ND	ND	8.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
U-3	5/19/99	0.102	ND	0.108	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
U-4	11/19/98	ND	ND	9.29	ND	ND	ND	9.48	ND	ND	ND	ND	0.517	ND	ND	ND	ND
U-5	11/19/98	ND	ND	ND	ND	ND	ND	1.59	ND	ND	ND	ND	0.238	ND	ND	ND	ND
U-5	2/24/99	ND	ND	2.45	ND	ND	ND	1.27	ND	ND	ND	ND	ND	ND	ND	ND	ND
U-5	5/19/99	0.968	ND	2.09	ND	ND	ND	0.478	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:
ppb = Parts per billion
ND = Not detected
NS = Not sampled
NS/F = Not sampled, floating product present
PAH by EPA Method 8270 SIM since 1st Quarter 1997
PAH by EPA Method 8310 before 1st Quarter 1997 and for 3rd Quarter 1997

COP0014753

Table 4a
Groundwater Analytical Results - Total Metals

Willbridge Terminal
Portland, Oregon

Sample Identification	Date Sampled	Arsenic (ppb)	Barium (ppb)	Cadmium (ppb)	Copper (ppb)	Chromium (ppb)	Lead (ppb)	Mercury (ppb)	Selenium (ppb)	Silver (ppb)	Zinc (ppb)
					Chevron						
B-7	11/24/98	25	172	ND	28.5	15.5	6.5	0.77	ND	ND	66
B-7	8/26/99	24.2	144	0.46	21.1	12.5	5.08	0.149	ND	0.21	37.4
B-9	12/11/98	5.4	59.8	ND	11.9	5.1	3.6	0.31	ND	ND	28.5
B-9	2/25/99	21.3	74	1.8		5.5	13.3	ND	ND	ND	
B-9	5/21/99	3.9	48.1	2.1		2.1	1.9	ND	ND	ND	
B-10	11/24/98	33.5	294	ND	61.5	37	16.5	ND	ND	ND	101
B-10	5/21/99	32.1	79.9	ND		3	3	ND	ND	ND	
B-10	8/30/99	33.4	228	0.48	42.9	28.6	13.8	ND	ND	0.21	69.2
B-11	11/23/98	32.5	259	ND	50.5	34.5	19.5	0.25	ND	ND	100
B-11	2/25/99	26.5	118	1.9		7.2	6.8	ND	ND	ND	
B-11	5/21/99	39.5	188	2.4		17.9	15	ND	ND	ND	
B-11	8/27/99	26.3	228	1.22	36.3	28.2	15.2	0.299	ND	0.2	67.2
B-14	11/25/98	31.4	117	ND	15.4	8.8	7.2	ND	ND	ND	28.8
B-14	2/25/99	33.1	84.5	ND		2.2	9.3	0.22	1	ND	
B-14	5/21/99	34.9	116	ND		7.1	10.8	ND	ND	ND	

COP0014754

Table 4a (continued)
Groundwater Analytical Results - Total Metals

Willbridge Terminal
Portland, Oregon

Sample Identification		Date Sampled	Arsenic (ppb)	Barium (ppb)	Cadmium (ppb)	Copper (ppb)	Chromium (ppb)	Lead (ppb)	Mercury (ppb)	Selenium (ppb)	Silver (ppb)	Zinc (ppb)
						Chevron						
B-14	Duplicate	5/21/99	36	121	ND		7.9	11.3	ND	ND	ND	
B-14		8/26/99	29.2	102	ND	12.9	8.09	6.15	0.112	ND	0.18	18.3
B-28		11/24/98	15	880	ND	242	17.5	96.5	0.3	ND	ND	428
B-28		2/25/99	6.1	222	3		23.9	37.7	ND	2.19	ND	
B-28		5/20/99	9.8	198	ND		16.1	15.6	ND	ND	ND	
B-28		8/27/99	8.45	190	0.48	28.3	17.3	11.8	0.21	ND	0.23	58
B-28	Duplicate	8/27/99							0.212			
B-30		11/24/98	14.7	126	4.6	26.4	10.4	11.3	0.28	ND	ND	60.1
B-30	Duplicate	11/24/98	14.7	126	4.6	26.4	10.4	11.3	0.28	ND	ND	60.1
B-30		2/25/99	19.7	85.6	54.8		5.1	33.1	ND	ND	ND	
B-30		5/21/99	14.2	59.9	7.7		ND	3.6	ND	ND	ND	
B-30		8/27/99	16.3	125	15.7	37.4	10.1	33.8	1.79	ND	0.26	104
CR-8		11/24/98	31.3	83.7	1.3	16.8	5.2	6	0.29	ND	ND	32
CR-8		2/25/99	13.2	53.4	1.4		1.9	4.1	ND	1	ND	
CR-8		5/20/99	18.2	91.9	1.3		5.8	11.6	ND	ND	ND	
CR-8	Duplicate	5/20/99							ND			
CR-8		8/27/99	72.6	863	5.4	180	76.9	84.2	0.538	ND	1.15	456

COP0014755

Table 4a (continued)
Groundwater Analytical Results - Total Metals

Willbridge Terminal
Portland, Oregon

Sample Identification		Date Sampled	Arsenic (ppb)	Barium (ppb)	Cadmium (ppb)	Copper (ppb)	Chromium (ppb)	Lead (ppb)	Mercury (ppb)	Selenium (ppb)	Silver (ppb)	Zinc (ppb)
						Chevron						
CR-9		11/25/98	ND	17.0	ND	ND	ND	ND	ND	ND	ND	10.2
CR-9	Duplicate	11/25/98	ND	18.1	ND	ND	ND	ND	ND	ND	ND	10.2
CR-9		2/25/99	ND	21.5	ND		ND	ND	ND	ND	ND	
CR-9		5/20/99	ND	16.1	ND		ND	ND	ND	ND	ND	
CR-9	Duplicate	5/20/99	ND	16.4	ND		ND	ND	ND	ND	ND	
CR-9		8/27/99	27	185	0.33	16.6	12.5	8.71	0.18	ND	0.29	45.3
CR-11		8/30/99	93.4	1190	78.9	226	109	116	1.29	ND	1.45	541
EX-1		11/25/98	22.6	50.8	ND	2.2	ND	1.5	0.39	ND	ND	6.5

COP0014756

Table 4a (continued)
Groundwater Analytical Results - Total Metals

Willbridge Terminal
Portland, Oregon

Sample Identification	Date Sampled	Arsenic (ppb)	Barium (ppb)	Cadmium (ppb)	Copper (ppb)	Chromium (ppb)	Lead (ppb)	Mercury (ppb)	Selenium (ppb)	Silver (ppb)	Zinc (ppb)
					GATX						
G-HP 1	11/5/98	41	700	ND	154	83	77	0.31	ND	ND	463
G-HP 3	11/5/98	18	168	ND	28.8	19.9	15.9	ND	ND	ND	70.9
MW-4	12/9/98	32.6	22	ND	ND	ND	ND	0.5	ND	ND	22.8
MW-8	12/10/98	9	16.2	ND	ND	ND	ND	ND	ND	ND	27.4
MW-8	3/2/99	2.2	27.5	ND		ND	ND	ND	ND	ND	
MW-8	5/27/99	14.9	115	3.6		1.5	2.4	ND	ND	ND	
MW-8	9/2/99	11.8	263	2.2	21.1	29	28.4	ND	0.86	0.68	125
MW-10	12/9/98	21.8	78	ND	ND	ND	ND	0.28	ND	ND	12.1
MW-10	3/2/99	7.3	48.8	ND		1.1	ND	ND	ND	ND	
MW-10	5/27/99	21.7	117	ND		3.1	3.7	ND	ND	ND	
MW-10	9/2/99	32.2	656	0.21	84.2	60.7	80.5	0.239	1.7	0.67	236
MW-11	12/9/98	62.9	52.6	ND	2.4	1.3	39.1	0.63	1.4	ND	16.7
MW-11	3/2/99	49.1	63.5	ND		2.1	31.9	ND	1.3	ND	
MW-11	5/27/99	55.3	133	ND		6.2	38.1	ND	ND	ND	
MW-11	9/2/99	102	1420	0.1	237	101	119	ND	3.9	1.5	632

COP0014757

Table 4a (continued)
Groundwater Analytical Results - Total Metals

Willbridge Terminal
Portland, Oregon

Sample Identification		Date Sampled	Arsenic (ppb)	Barium (ppb)	Cadmium (ppb)	Copper (ppb)	Chromium (ppb)	Lead (ppb)	Mercury (ppb)	Selenium (ppb)	Silver (ppb)	Zinc (ppb)
						GATX						
MW-13		12/9/98	1.1	35.7	ND	2.3	1.1	ND	ND	ND	ND	10.2
MW-13		3/2/99	2.6	74.3	ND		3.9	3.8	ND	ND	ND	
MW-13	Duplicate	3/2/99	2.4	73.3	ND		3.8	3.9	ND	ND	ND	
MW-13		5/27/99	1.9	51.9	ND		2.4	2.2	ND	ND	ND	
MW-13		9/2/99	73	1780	ND	221	131	108	ND	5.35	1.35	589
MW-15		12/10/98	1	53.7	ND	ND	ND	ND	ND	ND	ND	15.2
MW-15		3/2/99	ND	48	ND		ND	ND	ND	ND	ND	
MW-15		5/28/99	ND	55.8	ND		ND	ND	ND	ND	ND	
MW-15		9/2/99	8.5	1020	1.7	121	133	56	ND	3.65	ND	383
MW-21		12/8/98	3.9	159	1.5	ND	ND	1.4	ND	ND	ND	27.5
MW-21		3/1/99	1.7	142	ND		ND	ND	ND	ND	1.8	
MW-21		5/27/99	5.8	222	2.3		1.2	4.4	ND	ND	ND	
MW-21		9/1/99	6.5	359	13.5	27.5	23.9	27.8	ND	0.51	0.29	180
MW-21	Duplicate	9/1/99	6.6	360	13.5	29.9	24.8	28.3		0.4	0.26	190
MW-22		12/9/98	105	237	ND	ND	1.6	7.1	ND	ND	ND	21.2
MW-22	Duplicate	12/9/98	104	237	ND	ND	1.3	7.2	ND	ND	ND	21.2

COP0014758

Table 4a (continued)
Groundwater Analytical Results - Total Metals

Willbridge Terminal
Portland, Oregon

Sample Identification		Date Sampled	Arsenic (ppb)	Barium (ppb)	Cadmium (ppb)	Copper (ppb)	Chromium (ppb)	Lead (ppb)	Mercury (ppb)	Selenium (ppb)	Silver (ppb)	Zinc (ppb)
						GATX						
MW-22		5/27/99	102	174	ND		1.4	11.8	ND	ND	ND	
MW-22		9/1/99	90.6	238	0.39	12.1	12.5	22.7	ND	ND	0.31	52
MW-23		12/9/98	9	26	ND	6	1	3.2	ND	ND	ND	5
MW-23		3/1/99	2.6	11.1	ND		1	1.6	ND	ND	ND	
MW-23	Duplicate	3/1/99	1.2	9.9	ND		ND	1.3	ND	ND	ND	
MW-26		12/8/98	52.5	73.7	ND	ND	ND	ND	ND	ND	ND	ND
MW-26		5/28/99	38.2	54.1	1		ND	2	ND	ND	ND	
MW-26	Duplicate	5/28/99	42.9	60.5	1		ND	2		ND	ND	
MW-26		9/1/99	49.6	169	0.64	14.5	12.7	21.2	ND	ND	0.21	70
MW-28		9/1/99	2.2	42.2	0.59	34.8	3.2	23.6	ND	0.42	0.43	52.5
MW-30		12/8/98	8	15.4	ND	ND	ND	ND	ND	ND	ND	7.5
MW-31		12/8/98	6.4	18.9	ND	ND	ND	ND	ND	ND	ND	ND
MW-31		3/1/99	5.1	22.8	ND		ND	ND	ND	ND	ND	
MW-31		5/27/99	6.8	22.7	ND		ND	ND	ND	ND	ND	
MW-31		9/1/99	19.1	38.1	0.28	8	3.2	3.9	ND	0.45	0.14	24

COP0014759

Table 4a (continued)
Groundwater Analytical Results - Total Metals

Willbridge Terminal
Portland, Oregon

Sample Identification		Date Sampled	Arsenic (ppb)	Barium (ppb)	Cadmium (ppb)	Copper (ppb)	Chromium (ppb)	Lead (ppb)	Mercury (ppb)	Selenium (ppb)	Silver (ppb)	Zinc (ppb)
						GATX						
MW-32		12/8/98	ND	6.8	ND	ND	2.8	ND	ND	ND	ND	ND
MW-32		3/1/99	ND	3.9	ND		3.8	ND	ND	ND	ND	
MW-32	Duplicate	3/1/99	ND	4.5	ND		3.3	ND	ND	ND	ND	
MW-32		5/27/99	ND	12.1	ND		1.4	1.9	ND	ND	ND	
MW-32	Duplicate	5/27/99	ND	11	ND		1.2	ND	ND	ND	ND	
MW-32		9/1/99	ND	13.8	0.18	1.7	1	0.18	ND	ND	0.14	2.9
MW-33		12/11/98	11	124	ND	2.2	ND	ND	0.33	ND	ND	6.3
MW-33	Duplicate	12/11/98	10	114	ND	2.2	ND	ND	0.38	ND	ND	6.3
MW-33		3/2/99	7.8	74.3	ND		ND	ND	ND	ND	ND	
MW-33		5/26/99	3.9	32.6	ND		7.7	ND	ND	ND	ND	
MW-33		9/2/99	58.7	531	0.11	9.7	5.1	3.9	ND	ND	0.16	20.9
MW-36		12/10/98	13.4	36.9	ND	5	ND	ND	0.79	ND	ND	6.2
MW-36	Duplicate	12/10/98	13.4	36.9	ND	5	ND	ND	0.79	ND	ND	6.2
MW-36		3/2/99	1.3	23.6	ND		ND	ND	ND	ND	ND	
MW-36		5/27/99	11.7	50.8	ND		ND	ND	ND	ND	ND	
MW-36		9/2/99	37.8	242	0.09	30.9	24.7	17.2	ND	0.39	0.19	59.5

COP0014760

Table 4a (continued)
Groundwater Analytical Results - Total Metals

Willbridge Terminal
Portland, Oregon

Sample Identification		Date Sampled	Arsenic (ppb)	Barium (ppb)	Cadmium (ppb)	Copper (ppb)	Chromium (ppb)	Lead (ppb)	Mercury (ppb)	Selenium (ppb)	Silver (ppb)	Zinc (ppb)
						GATX						
MW-37		12/10/98	25.6	36.2	ND	ND	ND	ND	0.73	ND	ND	ND
MW-37		3/1/99	34.8	58.1	ND		1.5	1.7	ND	ND	ND	
MW-37		5/26/99	22.1	46.7	ND		ND	1.4	ND	ND	ND	
MW-37	Duplicate	5/26/99	23.1	49.7	ND		ND	ND	ND	ND	ND	
MW-37		9/2/99	24	196	0.59	33.5	22.3	17	ND	ND	0.18	60.6
MW-39		12/10/98	23.6	40.5	ND	2	ND	ND	0.56	ND	ND	6.5
MW-40		12/10/98	28.3	60.4	ND	2.3	1.2	1	0.5	ND	ND	6.3
MW-40		3/2/99	3.7	17.8	ND		ND	ND	ND	ND	ND	
MW-40		5/26/99	73.1	225	ND		9	15.4	ND	ND	ND	
MW-40		9/2/99	45	1260	0.7	231	178	198	0.982	2.1	1.5	533

COP0014761

Table 4a (continued)
Groundwater Analytical Results - Total Metals

Willbridge Terminal
Portland, Oregon

Sample Identification		Date Sampled	Arsenic (ppb)	Barium (ppb)	Cadmium (ppb)	Copper (ppb)	Chromium (ppb)	Lead (ppb)	Mercury (ppb)	Selenium (ppb)	Silver (ppb)	Zinc (ppb)
						Tosco						
B-6		11/18/98	28.1	139	ND	29.4	11	26.3	ND	ND	ND	152
B-17		2/23/99	38.7	144	ND		8.2	14.6	ND	ND	ND	
B-17		5/19/99	61.5	112	ND		1.1	7.9	ND	ND	ND	
B-18		11/19/98	28.0	414	ND	86.1	71.3	49.2	0.67	1.6	ND	278
B-18	Duplicate	11/19/98	27.2	391	ND	86.1	60.8	44.8	0.31	1.2	ND	278
B-18		2/24/99	17.5	142	ND		9.5	10	ND	ND	ND	
B-18		5/19/99	9	145	ND		5.5	ND	ND	ND	ND	
B-22		11/19/98	29.4	79	ND	11.2	4.8	4.6	ND	ND	ND	78.6
B-22		5/20/99	20.6	76.2	ND		ND	ND	ND	ND	ND	
B-22	Duplicate	5/20/99	24.8	81.8	ND		2.7	4.2	ND	ND	ND	
B-25		11/19/98	39.2	263	ND	65.7	40.9	29.2	0.29	1	ND	252
B-25		5/19/99	135	76.3	ND		ND	ND	ND	ND	ND	
B-35		11/20/98	1.1	77.7	ND	15.2	12.1	2.8	ND	ND	ND	30.1
B-35		2/23/99	43	95.8	ND		2.9	6.4	ND	ND	1.6	
B-35	Duplicate	2/23/99	56.8	113	ND		3.7	11.9	ND	ND	ND	

COP0014762

Table 4a (continued)
Groundwater Analytical Results - Total Metals

Willbridge Terminal
Portland, Oregon

Sample Identification	Date Sampled	Arsenic (ppb)	Barium (ppb)	Cadmium (ppb)	Copper (ppb)	Chromium (ppb)	Lead (ppb)	Mercury (ppb)	Selenium (ppb)	Silver (ppb)	Zinc (ppb)
					Tosco						
B-35	5/19/99	46.6	121	ND		3	8.7	ND	ND	ND	
B-36	11/18/98	12.5	197	ND	27	17.1	5.5	ND	ND	ND	52.6
B-36	2/23/99	ND	34.9	ND		2.5	ND	ND	ND	ND	
B-36	5/19/99	4.8	48.4	ND		1.8	ND	ND	ND	ND	
B-37	11/19/98	228	43.3	ND	2.1	ND	ND	ND	ND	ND	ND
B-37	2/24/99	260	83.6	ND		3.6	2	ND	ND	ND	
B-37	5/19/99	237	61.3	ND		ND	ND	ND	ND	ND	
P-1	11/20/98	ND	69	ND	13	10	ND	0.35	ND	ND	ND

Notes:
ppb = Parts per billion
ND = Not detected
NS = Not sampled
Blank Spaces = Not analyzed
Metals by EPA 6000/7000 Series Methods

COP0014763

Table 4b
Groundwater Analytical Results - Dissolved Metals

Willbridge Terminal
Portland, Oregon

Sample Identification		Date Sampled	Arsenic (ppb)	Barium (ppb)	Cadmium (ppb)	Copper (ppb)	Chromium (ppb)	Lead (ppb)	Mercury (ppb)	Selenium (ppb)	Silver (ppb)	Zinc (ppb)
						Chevron						
B-9		12/11/98	1.5	23.2	ND	ND	ND	ND	ND	ND	ND	19
B-14		11/25/98	30.7	65.2	ND	ND	ND	1.1	0.23	ND	ND	10.5
B-14		2/25/99	30.1	61.9	ND		ND	4.2	ND	ND	ND	
B-14		5/21/99	30.2	62.5	ND		ND	2.6	ND	ND	ND	
B-14	Duplicate	5/21/99	31.9	65.7	ND		ND	2.3	ND	ND	ND	
B-14		8/26/99	3.52	9.23	0.22	1.15	0.99	0.96	ND	1.04	0.26	2.6
B-14	Duplicate	8/26/99	3	8.21	0.03	1.97	0.63	0.92	ND	0.97	0.15	2.36
B-30		11/24/98	13.8	56	ND	ND	ND	ND	0.44	ND	ND	15
B-30	Duplicate	11/24/98	13.8	56	ND	ND	ND	ND	0.44	ND	ND	15
B-30		2/25/99	18.7	41.9	ND		ND	ND	ND	ND	ND	
B-30	Duplicate	2/25/99	19	42.7	ND		ND	ND	ND	ND	ND	
B-30		5/21/99	18.7	52.2	ND		ND	ND	ND	ND	ND	
B-30		8/27/99	5.81	20.9	0.77	1.79	2	0.49	ND	2.09	0.39	8.41
CR-9		11/25/98	ND	12.8	ND	ND	ND	ND	0.23	ND	ND	11.5
CR-9	Duplicate	11/25/98	ND	12.8	ND	ND	ND	ND	0.23	ND	ND	11.5
CR-9		2/25/99	ND	13	ND		ND	ND	ND	ND	ND	

COP0014764

Table 4b (continued)
Groundwater Analytical Results - Dissolved Metals

Willbridge Terminal
Portland, Oregon

Sample Identification		Date Sampled	Arsenic (ppb)	Barium (ppb)	Cadmium (ppb)	Copper (ppb)	Chromium (ppb)	Lead (ppb)	Mercury (ppb)	Selenium (ppb)	Silver (ppb)	Zinc (ppb)
						Chevron						
CR-9		5/20/99	ND	16.5	ND		ND	ND	ND	ND	ND	
CR-9	Duplicate	5/20/99	ND	20.3	ND		ND	ND	ND	ND	ND	
CR-9		8/27/99	0.32	24.3	0.11	1.17	0.96	0.08	ND	1.52	0.2	6.6
EX-1		11/25/98	19.3	37.3	ND	ND	ND	ND	0.41	ND	ND	6.3

COP0014765

Table 4b (continued)
Groundwater Analytical Results - Dissolved Metals

Willbridge Terminal
Portland, Oregon

Sample Identification		Date Sampled	Arsenic (ppb)	Barium (ppb)	Cadmium (ppb)	Copper (ppb)	Chromium (ppb)	Lead (ppb)	Mercury (ppb)	Selenium (ppb)	Silver (ppb)	Zinc (ppb)
						GATX						
G-HP 1		11/5/98	17.4	37.7	ND	4.7	1.4	2.3	ND	ND	ND	337
G-HP 3		11/5/98	15.8	37.6	ND	4.8	3.6	3.7	ND	ND	ND	530
MW-10		12/9/98	21.6	74.1	ND	ND	ND	ND	0.36	ND	ND	30.9
MW-10	Duplicate	12/9/98	22	72	ND	ND	ND	ND	0.35	ND	ND	30.9
MW-13		12/9/98	ND	26.1	ND	ND	ND	ND	0.42	ND	ND	24.3
MW-13		3/2/99	ND	27.7	ND		ND	ND	ND	ND	ND	
MW-13		5/27/99	ND	26.9	ND		ND	ND	ND	ND	ND	
MW-13		9/2/99	0.19	21.2	0.09	2.27	1	0.19	ND	ND	0.18	1.98
MW-21		12/8/98	2.2	122	ND	ND	ND	ND	0.38	1.3	ND	17.6
MW-21		3/1/99	1.2	142	ND		ND	ND	ND	ND	1.1	
MW-21		5/27/99	3	161	ND		ND	ND	0.376	1.5	ND	
MW-21		9/1/99	0.05	59.7	0.06	1.2	0.64	0.04	ND	1.12	0.15	4.61
MW-33		12/11/98	1.4	37.4	ND	ND	ND	ND	ND	ND	ND	ND
MW-33		5/28/99	4	23.5	ND		ND	ND	ND	ND	ND	
MW-33	Duplicate	5/28/99	3.9	23.6	ND		ND	ND		ND	ND	

COP0014766

Table 4b (continued)
Groundwater Analytical Results - Dissolved Metals

Willbridge Terminal
Portland, Oregon

Sample Identification	Date Sampled	Arsenic (ppb)	Barium (ppb)	Cadmium (ppb)	Copper (ppb)	Chromium (ppb)	Lead (ppb)	Mercury (ppb)	Selenium (ppb)	Silver (ppb)	Zinc (ppb)
					GATX						
MW-33	9/2/99	0.36	26.6	0.04	1.55	0.73	0.09	ND	1.2	0.32	4.06
MW-37	12/10/98	23.3	31.8	ND	ND	ND	ND	0.61	ND	ND	19.3
MW-39	12/10/98	22	32.5	ND	ND	ND	ND	0.4	ND	ND	16.8

COP00147

Table 4b (continued)
Groundwater Analytical Results - Dissolved Metals

Willbridge Terminal
Portland, Oregon

Sample Identification	Date Sampled	Arsenic (ppb)	Barium (ppb)	Cadmium (ppb)	Copper (ppb)	Chromium (ppb)	Lead (ppb)	Mercury (ppb)	Selenium (ppb)	Silver (ppb)	Zinc (ppb)
					Tosco						
B-17	2/23/99	42.4	86.9	ND		ND	3.5	0.255	ND	ND	
B-17	5/19/99	50.3	98.5	ND		ND	3.4	ND	ND	ND	

Notes:
ppb = Parts per billion
ND = Not detected
NS = Not sampled
Blank Spaces = Not analyzed
Metals by EPA 6000/7000 Series Methods

COP0014768

Table 5
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				Chevron			
B-7	33.96	3/24/95	18.07	0.00	18.07	15.89	NA
		4/24/95	18.61	0.00	18.61	15.35	NA
		5/22/95	18.56	0.00	18.56	15.40	NA
		6/19/95	18.77	0.00	18.77	15.19	NA
		7/24/95	19.74	0.00	19.74	14.22	NA
		8/28/95	20.03	0.00	20.03	13.93	NA
		9/25/95	19.79	0.01	19.80	14.15	NA
		10/23/95	19.56	0.01	19.57	14.38	NA
		11/27/95	18.61	0.00	18.61	15.35	NA
		12/29/95	17.74	0.00	17.74	16.22	NA
		1/22/96	15.82	0.00	15.82	18.14	NA
		2/26/96	14.09	0.04	14.13	19.80	NA
		3/25/96	17.38	0.01	17.39	16.56	NA
		4/22/96	17.07	0.01	17.08	16.87	NA
		5/28/96	16.46	0.00	16.46	17.50	NA
		6/24/96	17.96	0.00	17.96	16.00	NA
		7/22/96	18.79	0.00	18.79	15.17	NA
		8/26/96	19.18	0.00	19.18	14.78	NA
		9/23/96	19.22	0.00	19.22	14.74	NA
		10/28/96	19.10	0.00	19.10	14.86	NA
		11/25/96	17.95	0.00	17.95	16.01	NA
		1/29/97	NP		17.24	16.72	--
		4/21/97	NP		17.45	16.51	--
		7/28/97	18.60	0.10	18.70	15.18	1.0
		10/15/97	NP		18.96	15.00	--
		1/19/98	NP		17.85	16.11	--
		4/20/98	NP		18.69	15.27	--
		7/21/98	19.07	0.01	19.08	14.87	0.1
		11/18/98	NP		19.39	14.57	--
		2/25/99	16.81	0.01	16.82	17.13	
		5/18/99	NP		18.08	15.88	0.1
	35.73	8/18/99	NP		19.15	16.58	

COP0014769

Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
			Chevron				
Summary for Well B-7 (32 detail records)					**SPH Recovered to Date:**		**1.20**
B-8	35.90	1/29/97	NP		15.99	19.91	–
		4/21/97	NP		16.67	19.23	–
		7/28/97	NP		17.30	18.60	–
		10/15/97	NP		17.73	18.17	–
		1/19/98	NP		16.67	19.23	–
		4/20/98	NP		17.30	18.60	–
		7/21/98	NP		17.85	18.05	–
	34.14	11/18/98	NP		18.25	15.89	–
		2/25/99	NP		15.94	18.20	
		5/18/99	NP		16.95	17.19	
		8/18/99	NP		17.87	16.27	
Summary for Well B-8 (11 detail records)					**SPH Recovered to Date:**		
B-9	33.95	3/24/95	NA		16.01	17.94	NA
		4/24/95	NA		16.42	17.53	NA
		5/22/95	NA		16.54	17.41	NA
		6/19/95	NA		16.59	17.36	NA
		7/24/95	NA		17.45	16.50	NA
		8/28/95	NA		17.85	16.10	NA
		9/25/95	NA		17.85	16.10	NA
		10/23/95	NA		17.45	16.50	NA
		11/27/95	NA		16.51	17.44	NA
		12/29/95	NA		15.86	18.09	NA
		1/22/96	NA		15.31	18.64	NA
		1/29/96	NP		15.31	18.64	–
		2/26/96	NA		13.20	20.75	NA
		3/25/96	NA		15.49	18.46	NA
		4/22/96	NA		15.20	18.75	NA
		5/28/96	NA		15.47	18.48	NA
		6/24/96	NA		16.09	17.86	NA
		7/22/96	NA		16.61	17.34	NA
		8/26/96	NA		17.26	16.69	NA

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Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				Chevron			
B-9	33.95	9/23/96	NA		17.14	16.81	NA
		10/28/96	NA		17.21	16.74	NA
		11/25/96	NA		16.35	17.60	NA
		1/29/97	NP		15.31	18.64	--
		4/21/97	NP		15.82	18.13	--
		7/28/97	NP		16.60	17.35	--
		10/15/97	NP		17.21	16.74	--
		1/19/98	NP		16.11	17.84	--
		4/20/98	NP		16.70	17.25	--
		7/21/98	NP		17.14	16.81	--
	33.90	11/18/98	NP		17.65	16.25	--
		2/25/99	NP		15.23	18.67	
	33.9	5/20/99	NP		16.29	17.61	
	35.57	8/18/99	NP		17.23	18.34	
Summary for Well B-9 (33 detail records)					SPH Recovered to Date:		
B-10	34.74	3/24/95	15.08	0.00	15.08	19.66	NA
		4/24/95	15.41	0.00	15.41	19.33	NA
		5/22/95	15.68	0.00	15.68	19.06	NA
		6/19/95	15.96	0.00	15.96	18.78	NA
		7/24/95	16.26	0.00	16.26	18.48	NA
		8/28/95	16.26	0.32	16.58	17.89	NA
		9/25/95	16.84	0.00	16.84	17.90	NA
		10/23/95	16.70	0.00	16.70	18.04	NA
		11/27/95	15.99	0.00	15.99	18.75	NA
		12/29/95	15.01	0.00	15.01	19.73	NA
		1/22/96	14.67	0.00	14.67	20.07	NA
		2/26/96	12.18	0.00	12.18	22.56	NA
		3/25/96	13.82	0.00	13.82	20.92	NA
		4/22/96	14.66	0.00	14.66	20.08	NA
		5/28/96	14.59	0.00	14.59	20.15	NA
		6/24/96	15.03	0.00	15.03	19.71	NA
		7/22/96	15.64	0.00	15.64	19.10	NA

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Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				Chevron			
B-10	34.74	8/26/96	16.12	0.00	16.12	18.62	NA
		9/23/96	16.21	0.00	16.21	18.53	NA
		10/28/96	16.18	0.00	16.18	18.56	NA
		11/25/96	15.35	0.00	15.35	19.39	NA
		1/29/97	NP		13.80	20.94	--
		4/21/97	NP		14.85	19.89	--
		7/28/97	NP		15.43	19.31	--
		10/15/97	NP		16.12	18.62	--
		1/19/98	NP		15.07	19.67	--
		4/20/98	NP		15.38	19.36	--
		7/21/98	NP		16.04	18.70	--
	34.76	11/18/98	NP		17.59	17.17	--
		2/25/99	NP		14.94	19.82	
		5/20/99	NP		15.14	19.62	0.1
		8/18/99	NP		15.33	18.43	
Summary for Well B-10 (32 detail records)					SPH Recovered to Date:		0.10
B-11	34.95	3/24/95	NA		15.22	19.73	NA
		7/24/95	NA		16.08	18.87	NA
		10/23/95	NA		16.64	18.31	NA
		1/22/96	NA		15.73	19.22	NA
		4/22/96	NA		14.44	20.51	NA
		5/28/96	NA		14.46	20.49	NA
		7/22/96	NA		15.40	19.55	NA
		8/26/96	NA		15.91	19.04	NA
		9/23/96	NA		16.08	18.87	NA
		10/28/96	NA		16.14	18.81	NA
		11/25/96	NA		15.53	19.42	NA
		1/29/97	NP		15.65	19.30	--
		4/21/97	NP		14.67	20.28	--
		7/28/97	NP		15.33	19.62	--
		10/15/97	NP		16.05	18.90	--
		1/19/98	NP		15.15	19.80	--

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Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				Chevron			
B-11	34.95	4/20/98	NP		15.16	19.79	--
		7/21/98	NP		15.80	19.15	--
	34.96	11/18/98	NP		16.56	18.40	--
		2/25/99	NP		13.81	21.15	
		5/20/99	NP		14.95	20.01	
		8/18/99	NP		15.97	18.99	
Summary for Well B-11 (22 detail records)					SPH Recovered to Date:		
B-12	35.11	8/26/96	NA		16.37	18.74	NA
		9/23/96	NA		16.53	18.58	NA
		11/25/96	NA		16.07	19.04	NA
		1/29/97	NP		14.18	20.93	--
		4/21/97	NP		15.20	19.91	--
		10/15/97	NP		16.53	18.58	--
		1/19/98	NP		15.70	19.41	--
		4/20/98	NP		15.68	19.43	--
		7/21/98	NP		16.28	18.83	--
	35.14	11/18/98	NP		16.95	18.19	--
		2/25/99	NP		14.37	20.77	
		5/20/99	NP		15.41	19.73	
		8/18/99	NP		16.35	18.79	
Summary for Well B-12 (13 detail records)					SPH Recovered to Date:		
B-13	34.76	8/26/96	NA		16.36	18.40	NA
		9/23/96	NA		16.51	18.25	NA
		10/26/96	NA		16.59	18.17	NA
		11/25/96	NA		16.14	18.62	NA
		1/29/97	NP		14.35	20.41	--
		4/21/97	NP		15.23	19.53	--
		7/28/97	NP		15.85	18.91	0.00
		10/15/97	NP		16.50	18.26	--
		1/19/98	NP		15.80	18.96	--
		4/20/98	NP		15.72	19.04	--
		7/21/98	NP		16.22	18.54	--

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Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				Chevron			
B-13	34.76	11/18/98	NP		16.89	17.87	--
		2/25/99	NP		14.54	20.22	
		5/20/99	NP		15.47	19.29	
		8/18/99	NP		16.33	18.43	
Summary for Well B-13 (15 detail records)					SPH Recovered to Date:		0.00
B-14	36.59	4/24/95	NA		17.59	19.00	NA
		7/24/95	NA		18.35	18.24	NA
		10/23/95	NA		18.84	17.75	NA
		1/22/96	NA		17.21	19.38	NA
		4/22/96	NA		15.80	20.79	NA
		5/28/96	NA		16.82	19.77	NA
		7/22/96	NA		17.70	18.89	NA
		8/26/96	NA		18.15	18.44	NA
		9/23/96	NA		18.31	18.28	NA
		10/28/96	NA		18.40	18.19	NA
		11/25/96	NA		17.94	18.65	NA
		1/29/97	NP		16.05	20.54	--
		4/21/97	NP		17.03	19.56	--
		7/28/97	NP		17.63	18.96	--
		10/15/97	NP		18.31	18.28	--
		1/19/98	NP		17.61	18.98	--
		4/20/98	NP		17.52	19.07	--
		7/21/98	NP		18.06	18.53	--
		11/18/98	NP		18.70	17.89	--
		2/25/99	NP		16.33	20.26	
		5/20/99	NP		17.27	19.32	
		8/18/99	NP		18.17	18.42	
Summary for Well B-14 (22 detail records)					SPH Recovered to Date:		
B-15	35.55	8/26/96	NA		17.32	18.23	NA
		9/23/96	NA		17.47	18.08	NA
		10/28/96	NA		17.56	17.99	NA
		11/25/96	NA		17.08	18.47	NA

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Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				Chevron			
B-15	35.55	1/29/97	NP		15.26	20.29	--
		4/21/97	NP		16.20	19.35	--
		7/28/97	NP		16.77	18.78	--
		10/15/97	NP		17.44	18.11	--
		1/19/98	NP		16.72	18.83	--
		4/20/98	NP		16.72	18.83	--
		7/21/98	NP		17.25	18.30	--
		11/18/98	NP		17.85	17.70	--
		2/25/99	NP		15.52	20.03	
		5/20/99	NP		16.44	19.11	
		8/18/99	NP		17.38	18.17	
Summary for Well B-15 (15 detail records)					SPH Recovered to Date:		
B-19	34.71	3/24/95	NA		16.01	18.70	NA
		4/24/95	NA		16.21	18.50	NA
		5/22/95	NA		16.45	18.26	NA
		6/19/95	NA		16.70	18.01	NA
		7/24/95	NA		17.09	17.62	NA
		8/28/95	NA		17.37	17.34	NA
		9/25/95	NA		17.56	17.15	NA
		10/23/95	NA		17.45	17.26	NA
		11/27/95	NA		16.86	17.85	NA
		12/29/95	NA		15.75	18.96	NA
		1/22/96	NA		15.54	19.17	NA
		2/26/96	NA		12.95	21.76	NA
		3/25/96	NA		14.80	19.91	NA
		4/22/96	NA		15.39	19.32	NA
		5/28/96	NA		15.31	19.40	NA
		6/24/96	NA		15.79	18.92	NA
		7/22/96	NA		16.35	18.36	NA
		8/26/96	NA		16.84	17.87	NA
		9/23/96	NA		16.97	17.74	NA
		10/28/96	NA		17.03	17.68	NA

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Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				Chevron			
B-19	34.71	11/25/96	NA		16.43	18.28	NA
		1/29/97	NP		14.81	19.90	--
		4/21/97	NP		15.67	19.04	--
		7/28/97	NP		16.18	18.53	0.00
		10/15/97	NP		16.90	17.81	--
		1/19/98	NP		16.05	18.66	--
		4/20/98	NP		16.75	17.96	--
		7/21/98	NP		16.78	17.93	--
		11/18/98	NP		17.33	17.38	--
		2/25/99	NP		14.93	19.78	
	34.17	5/20/99	NP		15.93	18.24	
		8/18/99	NP		16.90	17.27	
Summary for Well	B-19 (32 detail records)				SPH Recovered to Date:		0.00
B-20	33.40	3/24/95	16.55	0.00	16.55	16.85	NA
		4/24/95	16.93	0.00	16.93	16.47	NA
		5/22/95	16.96	0.00	16.96	16.44	NA
		6/19/95	17.20	0.00	17.20	16.20	NA
		7/24/95	17.95	0.19	18.14	15.10	NA
		8/28/95	18.30	0.37	18.67	14.42	NA
		9/25/95	18.26	0.01	18.27	15.12	NA
		10/23/95	18.04	0.00	18.04	15.36	NA
		11/27/95	17.11	0.01	17.12	16.27	NA
		12/29/95	16.17	0.01	16.18	17.21	NA
		1/22/96	15.20	0.00	15.20	18.20	NA
		2/26/96	13.55	0.01	13.56	19.83	NA
		3/25/96	15.99	0.00	15.99	17.41	NA
		4/22/96	15.88	0.00	15.88	17.52	NA
		5/28/96	15.59	0.00	15.59	17.81	NA
		6/24/96	16.29	0.00	16.29	17.11	NA
		7/22/96	17.13	0.00	17.13	16.27	NA
		8/26/96	17.62	0.00	17.62	15.78	NA
		9/23/96	17.59	1.05	18.64	13.87	NA

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Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				Chevron			
B-20	33.40	10/28/96	17.50	0.43	17.93	15.10	NA
		11/25/96	16.57	0.05	16.62	16.74	NA
		1/29/97	NP		15.93	17.47	--
		4/21/97	NP		16.19	17.21	--
		7/28/97	16.89	0.02	16.91	16.47	1.0
		10/15/97	17.32	0.07	17.39	15.95	0.8
		1/19/98	NP		16.31	17.09	--
		4/20/98	NP		16.68	16.72	0.1
		7/21/98	NP		17.80	15.60	--
	33.32	11/18/98	NP		17.86	15.46	--
		2/25/99	NP		16.69	16.63	
		5/20/99	NP		16.30	17.02	0.1
		8/18/99	17.56	0.56	18.12	14.72	0.15
Summary for Well	B-20 (32 detail records)				**SPH Recovered to Date:**		**2.15**
B-21	34.79	3/24/95	NA		16.23	18.56	NA
		4/24/95	NA		16.42	18.37	NA
		5/22/95	NA		16.63	18.16	NA
		6/19/95	NA		16.83	17.96	NA
		7/24/95	NA		17.18	17.61	NA
		8/28/95	NA		17.43	17.36	NA
		9/25/95	NA		17.58	17.21	NA
		10/23/95	NA		17.53	17.26	NA
		11/27/95	NA		17.09	17.70	NA
		12/29/95	NA		16.07	18.72	NA
		1/22/96	NA		15.91	18.88	NA
		2/26/96	NA		13.30	21.49	NA
		3/25/96	NA		15.08	19.71	NA
		4/22/96	NA		15.77	19.02	NA
		5/28/96	NA		15.61	19.18	NA
		6/24/96	NA		16.01	18.78	NA
		7/22/96	NA		16.53	18.26	NA
		8/26/96	NA		16.95	17.84	NA

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Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				Chevron			
B-21	34.79	9/23/96	NA		17.11	17.68	NA
		10/28/96	NA		17.20	17.59	NA
		11/25/96	NA		16.71	18.08	NA
		1/29/97	NP		15.23	19.56	--
		4/21/97	NP		15.99	18.80	--
		7/28/97	NP		16.45	18.34	--
		10/15/97	NP		17.10	17.69	--
		1/19/98	NP		16.33	18.46	--
		4/20/98	NP		16.48	18.31	--
		7/21/98	NP		16.95	17.84	--
		11/18/98	NP		17.40	17.39	--
		2/25/99	NP		15.34	19.45	
		5/20/99	NP		16.25	18.54	
		8/18/99	NP		17.02	17.77	
Summary for Well	B-21 (32 detail records)				SPH Recovered to Date:		
B-24	34.70	3/24/95	15.87	0.01	15.88	18.81	NA
		4/24/95	15.96	0.03	15.99	18.68	NA
		5/22/95	16.17	0.01	16.18	18.51	NA
		6/19/95	16.39	0.02	16.41	18.27	NA
		7/24/95	16.56	0.04	16.60	18.07	0.01
		8/28/95	16.81	0.00	16.81	17.89	NA
		9/25/95	17.02	0.00	17.02	17.68	0.03
		10/23/95	17.05	0.00	17.05	17.65	NA
		11/27/95	16.75	0.00	16.75	17.95	NA
		12/29/95	15.90	0.00	15.90	18.80	NA
		1/22/96	15.71	0.00	15.71	18.99	NA
		2/26/96	13.98	0.00	13.98	20.72	NA
		3/25/96	14.62	0.00	14.62	20.08	NA
		4/22/96	15.28	0.00	15.28	19.42	NA
		5/28/96	15.25	0.00	15.25	19.45	NA
		6/24/96	15.57	0.00	15.57	19.13	NA
		7/22/96	15.95	0.00	15.95	18.75	NA

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Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				Chevron			
B-24	34.70	8/26/96	16.35	0.00	16.35	18.35	NA
		9/23/96	16.51	0.01	16.52	18.17	NA
		10/28/96	16.54	0.00	16.54	18.16	NA
		1/29/97	NM		NM		–
		4/21/97	NP		15.29	19.41	–
		7/28/97	NP		16.00	18.70	0.00
		10/15/97	NP		16.66	18.04	
		1/19/98	NM		NM		–
		4/20/98	NP		15.82	18.88	–
		7/21/98	NP		16.28	18.42	–
		11/18/98	16.91	0.01	16.92	17.77	–
		2/25/99	NP		14.89	19.81	
		5/20/99	NP		15.52	19.18	0.1
		8/18/99	NP		16.30	18.40	
Summary for Well B-24 (31 detail records)					SPH Recovered to Date:		0.14
B-26	37.04	3/12/95	NP		16.56	20.48	–
	35.3	4/24/95	NA		15.81	19.49	NA
		7/24/95	NA		16.69	18.61	NA
		10/23/95	NA		17.16	18.14	NA
		1/22/96	NA		15.23	20.07	NA
		4/22/96	NA		14.85	20.45	NA
		5/28/96	NA		14.95	20.35	NA
		7/22/96	NA		16.03	19.27	NA
		8/26/96	16.52	0.00	16.52	18.78	NA
		9/23/96	16.63	0.00	16.63	18.67	NA
		10/28/96	16.68	0.00	16.68	18.62	NA
		11/25/96	15.94	0.00	15.94	19.36	NA
	35.30	1/29/97	NP		14.36	20.94	NA
		4/21/97	15.28	0.01	15.29	20.00	0.4
		7/24/97	NP		15.80	19.50	–
		10/15/97	NP		16.58	18.72	–
		1/19/98	NP		15.64	19.66	–

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Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				Chevron			
B-26	35.30	4/20/98	NP		15.77	19.53	--
		7/21/98	NP		16.41	18.89	--
		11/18/98	NP		17.05	18.25	--
		2/25/99	NP		14.41	20.89	
	35.3	5/20/99	NP		15.56	19.74	
		8/18/99	NP		16.56	18.74	
Summary for Well B-26 (23 detail records)					**SPH Recovered to Date:**		**0.40**
B-28	35.25	4/24/95	NA		15.02	20.23	NA
		7/24/95	NA		16.14	19.11	NA
		10/23/95	NA		16.40	18.85	NA
		1/22/96	NA		15.25	20.00	NA
		4/22/96	NA		14.62	20.63	NA
		5/28/96	NA		14.68	20.57	NA
		7/22/96	NA		15.51	19.74	NA
		10/28/96	NA		15.98	19.27	NA
		1/29/97	NP		14.36	20.89	NA
		4/21/97	14.99	0.01	15.00	20.24	0.3
		7/24/97	NP		15.25	20.00	--
		10/15/97	NP		16.11	19.14	--
		1/19/98	NP		15.47	19.78	--
		4/20/98	NP		15.60	19.65	--
		7/21/98	NP		16.02	19.23	--
	35.26	11/16/98	16.26	0.01	16.27	18.98	--
		2/25/99	NP		14.32	20.94	
		5/20/99	NP		13.20	22.06	
		8/18/99	NP		16.02	19.24	
Summary for Well B-28 (19 detail records)					**SPH Recovered to Date:**		**0.30**
B-29	37.70	1/29/97	NL		NL		--
		4/21/97	NP		14.61	23.09	--
		7/28/97	NP		15.40	22.30	--
		10/15/97	NP		16.10	21.60	--
		1/19/98	NP		15.54	22.16	--

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Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
			Chevron				
B-29	37.70	4/20/98	NP		15.37	22.33	--
		7/21/98	NP		15.97	21.73	--
		11/18/98	NP		16.78	20.92	--
		2/25/99	NP		14.00	23.70	
	37.7	5/20/99	NP		14.97	22.73	
		8/18/99	NP		16.03	21.67	
Summary for Well B-29 (11 detail records)					**SPH Recovered to Date:**		
B-30	35.35	4/24/95	NA		15.60	19.75	NA
		6/19/95	NP		15.60	19.75	--
		7/24/95	NA		15.96	19.39	NA
		10/23/95	NA		16.51	18.84	NA
		1/22/96	NA		14.51	20.84	NA
		4/22/96	NA		14.12	21.23	NA
		5/28/96	NA		14.68	20.67	NA
		7/22/96	NA		15.22	20.13	NA
		10/28/96	NA		15.94	19.41	NA
		1/29/97	NP		13.48	21.87	--
		4/21/97	NP		14.50	20.85	--
		7/28/97	NP		15.07	20.28	--
		10/15/97	NP		15.96	19.39	--
		1/19/98	NP		15.02	20.33	--
		4/20/98	NP		15.01	20.34	--
		7/21/98	NP		15.67	19.68	--
	35.39	11/18/98	NP		16.45	18.94	--
		2/25/99	NP		13.74	21.65	
		5/20/99	NP		14.73	20.66	
		8/18/99	NP		15.88	19.51	
Summary for Well B-30 (20 detail records)					**SPH Recovered to Date:**		
B-31	33.86	3/24/95	NA		14.49	19.37	NA
		4/24/95	NA		15.30	18.56	NA
		5/22/95	NA		15.98	17.88	NA
		6/19/95	NA		16.74	17.12	NA

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Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				Chevron			
B-31	33.86	7/24/95	NA		16.89	16.97	NA
		8/28/95	NA		17.15	16.71	NA
		9/25/95	NA		16.97	16.89	NA
		10/23/95	16.52	-0.08	16.44	17.49	NA
		11/27/95	16.63	-3.21	13.42	23.17	NA
		12/29/95	14.36	0.00	14.36	19.50	NA
		1/22/96	NA		15.73	18.13	NA
		2/26/96	NA		12.56	21.30	NA
		3/25/96	NA		16.06	17.80	NA
		4/22/96	NA		12.56	21.30	NA
		5/28/96	NA		14.61	19.25	NA
		6/24/96	NA		14.04	19.82	NA
		7/22/96	NA		15.84	18.02	NA
		8/26/96	NA		16.71	17.15	NA
		9/23/96	16.52	-0.05	16.47	17.43	NA
		10/28/96	NA		15.90	17.96	NA
		11/25/96	NA		14.47	19.39	NA
		1/29/97	NP		14.75	19.11	--
		4/21/97	14.35	0.02	14.37	19.47	0.2
		7/24/97	NP		15.89	17.97	--
		10/15/97	NP		16.30	17.56	--
		1/19/98	NP		14.25	19.61	--
		4/20/98	NP		16.01	17.85	--
		7/21/98	NP		16.65	17.21	--
		11/18/98	NP		15.95	17.91	--
		8/18/99	NP		16.69	17.17	
Summary for Well	B-31 (30 detail records)				SPH Recovered to Date:		0.20
B-32	34.23	3/24/95	16.03	0.00	16.03	18.20	NA
		4/24/95	16.31	0.26	16.57	17.44	NA
		5/22/95	16.76	0.00	16.76	17.47	NA
		6/19/95	17.10	0.00	17.10	17.13	NA
		7/24/95	17.59	0.00	17.59	16.64	NA

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Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				Chevron			
B-32	34.23	8/28/95	17.94	0.00	17.94	16.29	NA
		9/25/95	18.11	0.00	18.11	16.12	NA
		10/23/95	17.98	0.00	17.98	16.25	NA
		11/27/95	17.25	0.00	17.25	16.98	NA
		12/29/95	16.09	0.00	16.09	18.14	NA
		1/22/96	NA		15.73	18.50	NA
		2/26/96	NA		12.72	21.51	NA
		3/25/96	NA		15.45	18.78	NA
		4/22/96	NA		15.75	18.48	NA
		5/28/96	NA		15.37	18.86	NA
		6/24/96	NA		16.01	18.22	NA
		7/22/96	NA		16.86	17.37	NA
		8/26/96	NA		17.37	16.86	NA
		9/23/96	NA		17.61	16.62	NA
		10/28/96	NA		17.57	16.66	NA
		11/25/96	NA		16.61	17.62	NA
		1/29/97	NP		15.46	18.77	NA
		4/21/97	NP		15.89	18.34	NA
		7/28/97	NP		16.66	17.57	--
		10/15/97	NP		17.37	16.86	--
		1/19/98	NP		15.84	18.39	--
		4/20/98	NP		16.81	17.42	--
		7/21/98	NP		17.33	16.90	--
		11/18/98	NP		17.66	16.57	--
		2/25/99	NP		15.62	18.61	
		5/20/99	NP		16.46	17.77	
		8/18/99	NP		17.43	16.80	
Summary for Well	B-32 (32 detail records)				SPH Recovered to Date:		
B-33	35.90	1/29/97	NP		14.86	21.04	--
		4/21/97	NP		15.70	20.20	--
		7/28/97	NP		16.24	19.66	--
		10/15/97	NP		16.93	18.97	--

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Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				Chevron			
B-33	35.90	1/19/98	NP		16.00	19.90	--
		4/20/98	NP		16.31	19.59	--
		7/21/98	NP		17.07	18.83	--
		11/18/98	NP		17.37	18.53	--
		2/25/99	NP		14.79	21.11	
		5/20/99	NP		15.98	19.92	
		8/18/99	NP		16.98	18.92	
Summary for Well	B-33 (11 detail records)				**SPH Recovered to Date:**		
CR-1	22.08	1/29/96	NP		1.63	20.45	--
		1/29/97	NP		1.63	20.45	--
		4/21/97	NP		2.32	19.76	--
		10/15/97	NP		3.55	18.53	--
		1/19/98	NP		2.50	19.58	--
		4/20/98	NP		3.09	18.99	--
		7/21/98	NP		3.68	18.40	--
		11/18/98	NP		3.99	18.09	--
		2/25/99	NP		1.57	20.51	
		5/20/99	NP		2.82	19.26	
		8/18/99	NP		3.85	18.23	
Summary for Well	CR-1 (11 detail records)				**SPH Recovered to Date:**		
CR-3	34.32	4/24/95	NA		14.09	20.23	NA
		7/24/95	NA		15.25	19.07	NA
		10/23/95	NA		15.81	18.51	NA
		1/22/96	NA		10.42	23.90	NA
		1/29/96	NP		12.52	21.80	--
		4/22/96	NA		12.68	21.64	NA
		5/28/96	NA		13.61	20.71	NA
		7/22/96	NA		14.62	19.70	NA
		8/26/96	NA		15.13	19.19	NA
		9/23/96	NA		15.28	19.04	NA
		10/28/96	NA		14.79	19.53	NA
		11/25/96	NA		12.45	21.87	NA

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Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				Chevron			
CR-3	34.32	1/29/97	NP		12.52	21.80	--
		4/21/97	13.39	0.01	13.40	20.91	--
		7/28/97	NP		14.51	19.81	--
		10/15/97	NP		15.20	19.12	--
		1/19/98	NP		11.61	22.71	--
		4/20/98	NP		14.32	20.00	--
		7/21/98	NP		14.98	19.34	--
		11/18/98	NP		15.69	18.63	--
		2/25/99	NP		10.83	23.49	
		5/20/99	NP		14.10	20.22	
		8/18/99	NP		15.15	19.17	
Summary for Well	CR-3 (23 detail records)				SPH Recovered to Date:		
CR-4	34.93	4/24/95	NA		5.13	29.80	NA
		7/24/95	NA		6.90	28.03	NA
		1/22/96	NA		4.70	30.23	NA
		5/28/96	NA		4.99	29.94	NA
		7/22/96	NA		6.48	28.45	NA
		10/28/96	NA		6.35	28.58	NA
	37.14	1/29/97	NP		4.99	32.15	--
	34.93	4/21/97	NP		5.09	29.84	--
	37.14	5/3/97	NP		6.78	30.36	--
		7/28/97	NP		6.31	30.83	--
		10/15/97	NP		5.95	31.19	--
		1/19/98	NP		4.92	32.22	--
		4/20/98	NP		7.32	29.82	--
		7/21/98	NP		6.72	30.42	--
		11/18/98	NP		5.65	31.49	--
		5/20/99	NP		5.91	31.23	
		8/16/99	NP		6.20	30.94	
Summary for Well	CR-4 (17 detail records)				SPH Recovered to Date:		
CR-6	35.61	3/24/95	12.07	0.01	12.08	23.52	NA
		4/24/95	12.03	0.01	12.04	23.56	NA

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Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				Chevron			
CR-6	35.61	5/22/95	12.51	0.01	12.52	23.08	NA
		6/19/95	10.16	0.00	10.16	25.45	NA
		7/24/95	14.86	0.01	14.87	20.73	0.02
		8/28/95	14.51	0.01	14.52	21.08	0.022
		9/25/95	15.46	0.01	15.47	20.13	0.054
		10/23/95	15.5	0.00	15.5	20.11	NA
		12/29/95	8.81	0.00	8.81	26.80	NA
		1/22/96	12.02	0.01	12.03	23.57	0.04
		2/26/96	10.71	0.00	10.71	24.90	NA
		3/25/96	11.28	0.00	11.28	24.33	NA
		5/28/96	11.49	0.00	11.49	24.12	NA
		6/24/96	11.35	0.00	11.35	24.26	NA
		7/22/96	12.57	0.01	12.58	23.02	0.01
		8/26/96	13.03	0.02	13.05	22.54	0.02
		9/23/96	13.05	0.03	13.08	22.50	NA
		10/28/96	12.85	0.04	12.89	22.69	NA
		11/25/96	12.55	0.02	12.57	23.02	NA
		1/29/97	NP		11.15	24.46	--
		4/21/97	NP		11.86	23.75	--
		7/28/97	12.74	0.01	12.75	22.85	1.0
		10/15/97	12.98	0.03	13.01	22.57	1.0
		1/19/98	NP		12.13	23.48	1.51
		4/20/98	12.21	0.01	12.22	23.38	0.3
		7/21/98	12.80	0.02	12.82	22.77	0.7
		11/18/98	NP		13.59	22.02	0.3
		5/20/99	NP		11.93	23.68	0.1
		8/16/99	NP		13.94	21.67	
Summary for Well	CR-6 (29 detail records)				SPH Recovered to Date:		5.08
CR-7	35.57	3/24/95	10.01	0.48	10.49	24.67	NA
		4/24/95	10.19	0.57	10.76	24.33	NA
		5/22/95	10.76	0.75	11.51	23.42	NA
		6/19/95	11.25	0.15	11.40	24.04	NA

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Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				Chevron			
CR-7	35.57	7/24/95	11.80	0.01	11.81	23.75	0.13
		8/28/95	12.20	0.00	12.20	23.37	0.029
		9/25/95	12.48	0.00	12.48	23.09	0.03
		10/23/95	11.98	0.00	11.98	23.59	NA
		11/27/95	10.73	0.00	10.73	24.84	NA
		12/29/95	10.23	0.05	10.28	25.25	NA
		1/22/96	9.91	0.21	10.12	25.27	0.12
		2/26/96	8.50	0.50	9.00	26.15	0.15
		3/25/96	9.81	0.02	9.83	25.72	0.01
		4/22/96	10.21	0.12	10.33	25.14	NA
		5/28/96	9.82	0.31	10.13	25.18	0.38
		6/24/96	10.78	0.20	10.98	24.42	0.69
		7/22/96	11.35	0.22	11.57	23.81	0.45
		8/26/96	11.84	0.12	11.96	23.51	0.13
		9/23/96	11.94	0.03	11.97	23.57	NA
		10/28/96	11.51	0.02	11.53	24.02	NA
		11/25/96	10.80	0.00	10.80	24.77	NA
		1/29/97	NP		11.11	24.46	--
		4/21/97	10.60	0.11	10.71	24.77	9.6
		7/24/97	11.52	0.10	11.62	23.86	2.75
		10/15/97	NP		11.57	24.00	0.25
		1/19/98	10.45	0.01	10.46	25.10	0.5
		4/20/98	10.78	0.11	10.89	24.59	1.1
		8/6/98	11.57	0.12	11.69	23.78	2.1
		11/18/98	11.88	0.01	11.89	23.67	1.3
		2/25/99	NP		8.70	26.87	
		5/20/99	NP		9.88	25.69	0.2
		8/16/99	NP		11.19	24.38	0.01
Summary for Well CR-7 (32 detail records)					SPH Recovered to Date:		19.93
CR-8	33.14	4/24/95	NA		6.41	26.73	NA
		7/24/95	NA		8.22	24.92	NA
		10/23/95	NA		8.08	25.06	NA

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Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				Chevron			
CR-8	33.14	1/22/96	NA		6.21	26.93	NA
		4/22/96	NA		6.47	26.67	NA
		5/28/96	NA		6.31	26.83	NA
		7/22/96	NA		7.08	26.06	NA
		10/28/96	NA		7.71	25.43	NA
		1/29/97	NP		5.94	27.20	–
		4/21/97	NP		6.41	26.73	–
		7/28/97	NP		7.30	25.84	–
		10/15/97	NP		7.36	25.78	–
		1/19/98	NP		5.78	27.36	–
		4/20/98	NP		6.44	26.70	–
		7/21/98	NP		7.06	26.08	–
		11/18/98	NP		7.73	25.41	–
		2/25/99	NP		5.13	28.01	
		5/20/99	NP		6.02	27.12	
		8/16/99	NP		7.23	25.91	
Summary for Well	CR-8 (19 detail records)				**SPH Recovered to Date:**		
CR-9	35.72	1/29/97	NP		4.56	31.16	–
		4/21/97	3.38	0.01	3.39	32.32	0.2
		7/24/97	NP		5.71	30.01	0.00
		10/15/97	NP		4.13	31.59	–
		1/19/98	NP		3.01	32.71	–
		4/20/98	NP		3.68	32.04	–
		7/21/98	NP		3.44	32.28	–
		11/18/98	NP		3.45	32.27	–
		2/25/99	NP		2.63	33.09	
		5/20/99	NP		3.13	32.59	
		8/16/99	NP		5.70	30.02	
Summary for Well	CR-9 (11 detail records)				**SPH Recovered to Date:**		**0.20**
CR-10	35.57	3/24/95	5.34	0.03	5.37	30.17	NA
		4/24/95	4.27	0.08	4.35	31.15	NA
		5/22/95	5.31	0.09	5.40	30.09	NA

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Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				Chevron			
CR-10	35.57	6/19/95	6.30	0.08	6.38	29.12	NA
		7/24/95	9.22	0.00	9.22	26.35	NA
		8/28/95	10.15	0.00	10.15	25.42	0.4
		9/25/95	10.82	0.00	10.82	24.75	NA
		10/23/95	9.44	0.00	9.44	26.13	NA
		12/29/95	7.54	0.00	7.54	28.03	NA
		1/22/96	6.96	0.05	7.01	28.52	NA
		2/26/96	6.76	0.17	6.93	28.50	0.13
		3/25/96	7.62	0.00	7.62	27.95	5.16
		4/22/96	7.69	0.00	7.69	27.88	NA
		7/22/96	1.28	-0.05	1.23	34.38	NA
		11/25/96	2.35	0.00	2.35	33.22	NA
		1/29/97	NP		3.76	31.81	–
		4/21/97	4.26	0.16	4.42	31.01	6.4
		7/24/97	5.94	0.38	6.32	28.93	6.0
		10/15/97	5.70	0.32	6.02	29.28	3.0
		1/19/98	4.01	0.15	4.16	31.28	5.0
		4/20/98	4.82	0.08	4.90	30.60	4.5
		7/21/98	5.83	0.23	6.06	29.31	5.0
		11/18/98	6.66	0.52	7.18	27.95	6.0
		2/25/99	NP		3.50	32.07	
		5/20/99	4.62	0.03	4.65	30.89	0.1
		8/16/99	6.37	0.17	6.54	28.89	0.5
Summary for Well	CR-10 (26 detail records)				SPH Recovered to Date:		42.19
CR-11	34.43	3/24/95	1.19	0.00	1.19	33.24	NA
		4/24/95	1.34	0.00	1.34	33.09	NA
		5/22/95	2.49	0.00	2.49	31.94	NA
		6/19/95	2.94	0.00	2.94	31.49	NA
		7/24/95	3.68	0.00	3.68	30.75	NA
		8/28/95	4.18	0.00	4.18	30.25	NA
		9/25/95	4.83	0.00	4.83	29.60	NA
		10/23/95	4.59	0.00	4.59	29.84	NA

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Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				Chevron			
CR-11	34.43	11/27/95	3.61	0.00	3.61	30.82	NA
		12/29/95	1.83	0.00	1.83	32.60	NA
		1/22/96	1.78	0.00	1.78	32.65	NA
		2/26/96	1.13	0.00	1.13	33.30	NA
		3/25/96	1.27	0.00	1.27	33.16	NA
		4/22/96	1.40	0.00	1.40	33.03	NA
		5/28/96	1.45	0.00	1.45	32.98	NA
		6/24/96	2.39	0.00	2.39	32.04	NA
		7/22/96	3.35	0.00	3.35	31.08	NA
		8/26/96	4.10	0.00	4.10	30.33	NA
		9/23/96	4.35	0.00	4.35	30.08	NA
		10/28/96	3.12	0.02	3.14	31.27	NA
		11/25/96	2.35	0.00	2.35	32.08	0.00
		1/29/97	NP		1.55	32.88	–
		4/21/97	NP		1.34	33.09	–
		7/24/97	NP		3.03	31.40	–
		10/15/97	NP		3.68	30.75	–
		1/19/98	NP		1.99	32.44	–
		4/20/98	NP		1.22	33.21	–
		7/21/98	NP		2.85	31.58	–
		11/18/98	3.98	0.17	4.15	30.14	0.2
		2/25/99	NP		1.33	33.10	
		5/20/99	NP		1.77	32.66	0.1
		8/16/99	NP		3.72	30.71	
Summary for Well	CR-11 (32 detail records)				**SPH Recovered to Date:**		**0.30**
EX-1	34.15	2/25/99	NP		14.38	19.77	
		5/20/99	NP		15.44	18.71	
		8/18/99	NP		16.42	17.73	
Summary for Well	EX-1 (3 detail records)				**SPH Recovered to Date:**		

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Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				GATX			
MW-1	35.43	4/24/95	NA		3.55	31.88	NA
		7/24/95	NA		6.26	29.17	NA
		10/23/95	NA		5.85	29.58	NA
		1/22/96	NA		2.92	32.51	NA
		4/22/96	NA		4.01	31.42	NA
		7/22/96	NA		6.92	28.51	NA
		10/28/96	NA		5.35	30.08	NA
		1/30/97	NP		3.92	31.51	–
		4/21/97	NP		3.63	31.80	–
		7/30/97	NP		6.69	28.74	–
		10/14/97	NP		5.18	30.25	–
		1/19/98	NP		3.09	32.34	–
		4/21/98	NP		4.40	31.03	–
		7/27/98	NP		6.36	29.07	–
		11/17/98	NP		6.28	29.15	–
		2/26/99	NP		2.69	32.74	
		5/26/99	NP		4.29	31.14	
		8/20/99	NP		7.09	28.34	
Summary for Well	MW-1 (18 detail records)				SPH Recovered to Date:		
MW-2	35.77	1/30/97	NP		4.88	30.89	–
		4/21/97	NP		5.41	30.36	–
		7/30/97	NP		7.27	28.50	–
		10/14/97	NP		7.57	28.20	–
		1/19/98	NP		4.99	30.78	–
		4/21/98	NP		6.24	29.53	–
		7/27/98	NP		7.49	28.28	–
		11/17/98	NP		8.63	27.14	–
		2/26/99	NP		4.13	31.64	
		5/26/99	NP		6.43	29.34	
		8/20/99	NP		8.17	27.60	
Summary for Well	MW-2 (11 detail records)				SPH Recovered to Date:		
MW-3	36.02	3/6/95	NA		6.79	29.23	NA

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Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				GATX			
MW-3	36.02	3/27/95	NA		6.65	29.37	NA
		4/24/95	NA		6.98	29.04	NA
		7/24/95	NA		8.63	27.39	NA
		10/23/95	NA		9.62	26.40	NA
		1/22/96	8.96	0.00	8.96	27.06	NA
		4/22/96	NA		6.34	29.68	NA
		7/22/96	NA		8.47	27.55	NA
		10/28/96	NA		8.70	27.32	NA
		1/30/97	NP		6.40	29.62	–
		4/21/97	NP		6.93	29.09	–
		7/30/97	NP		8.54	27.48	–
		10/14/97	NP		8.79	27.23	–
		1/19/98	NP		7.54	28.48	–
		4/21/98	NP		7.62	28.40	–
		7/27/98	NP		8.79	27.23	–
		11/17/98	NP		9.77	26.25	–
		2/26/99	NP		5.66	30.36	
		5/26/99	NP		7.78	28.24	
		8/20/99	NP		9.35	26.67	
Summary for Well	MW-3 (20 detail records)				SPH Recovered to Date:		
MW-4	36.39	4/24/95	NA		6.35	30.04	NA
		7/24/95	NA		8.17	28.22	NA
		10/23/95	NA		9.16	27.23	NA
		1/22/96	NA		5.20	31.19	NA
		4/22/96	NA		5.59	30.80	NA
		7/22/96	NA		7.97	28.42	NA
		10/28/96	NA		8.14	28.25	NA
		11/25/96	NA		6.10	30.29	NA
		1/30/97	NP		5.40	30.99	–
		4/21/97	NP		6.29	30.10	–
		7/30/97	NP		8.07	28.32	–
		10/14/97	NP		8.35	28.04	–

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Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				GATX			
MW-4	36.39	1/19/98	NP		5.86	30.53	--
		4/21/98	NP		7.02	29.37	--
		7/27/98	NP		8.33	28.06	--
		11/17/98	NP		9.36	27.03	--
		2/26/99	NP		4.68	31.71	
		5/26/99	NP		7.23	29.16	
		8/20/99	NP		8.94	27.45	
Summary for Well MW-4 (19 detail records)					SPH Recovered to Date:		
MW-5	33.52	3/27/95	NP		3.55	29.97	--
		4/24/95	NA		5.29	28.23	NA
		7/24/95	NA		7.12	26.40	NA
		10/23/95	NA		8.56	24.96	NA
		1/22/96	NA		4.32	29.20	NA
		4/22/96	NA		4.73	28.79	NA
		7/22/96	NA		6.98	26.54	NA
		10/28/96	NA		7.60	25.92	NA
		12/23/96	NA		2.35	31.17	NA
		1/30/97	NP		5.01	28.51	--
		4/21/97	NP		5.07	28.45	--
		7/30/97	NP		7.05	26.47	--
		10/14/97	NP		7.24	26.28	--
		1/19/98	NP		5.52	28.00	--
		4/21/98	NP		5.88	27.64	--
		7/27/98	NP		7.38	26.14	--
		11/17/98	NP		8.54	24.98	--
		2/26/99	NP		4.26	29.26	
		5/26/99	NP		6.15	27.37	
		8/20/99	NP		8.05	25.47	
Summary for Well MW-5 (20 detail records)					SPH Recovered to Date:		
MW-6	33.34	3/6/95	3.34	0.20	3.54	29.63	NA
		3/27/95	3.05	0.68	3.73	29.03	NA
		4/24/95	3.29	0.89	4.18	28.40	NA

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Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				GATX			
MW-6	33.34	5/22/95	3.80	0.03	3.83	29.48	1.5
		6/19/95	4.64	0.00	4.64	28.70	1.34
		7/24/95	5.15	0.00	5.15	28.19	NA
		8/28/95	5.90	0.00	5.90	27.44	NA
		9/25/95	6.50	0.00	6.50	26.84	NA
		10/23/95	6.22	0.00	6.22	27.12	NA
		11/27/95	4.37	0.00	4.37	28.97	NA
		12/29/95	3.76	0.19	3.95	29.23	NA
		1/22/96	2.50	0.35	2.85	30.19	NA
		2/26/96	2.07	0.01	2.08	31.25	NA
		3/25/96	3.34	0.00	3.34	30.00	0.18
		4/22/96	3.18	0.00	3.18	30.16	NA
		5/28/96	3.23	0.00	3.23	30.11	0.06
		6/24/96	4.35	0.00	4.35	28.99	NA
		7/22/96	5.08	0.00	5.08	28.26	NA
		8/26/96	5.89	0.00	5.89	27.45	NA
		9/23/96	5.54	0.00	5.54	27.80	NA
		10/28/96	5.19	0.00	5.19	28.15	NA
		11/25/96	3.28	0.00	3.28	30.06	NA
		12/23/96	2.98	0.43	3.41	29.56	NA
		1/30/97	NP		2.77	30.57	--
		4/21/97	NP		3.25	30.09	--
		7/30/97	5.10	0.13	5.23	28.00	0.25
		10/14/97	NP		5.40	27.94	--
		1/19/98	NP		3.07	30.27	--
		4/21/98	4.08	0.17	4.25	28.95	1.0
		7/27/98	NP		5.34	28.00	--
		11/17/98	NP		6.46	26.88	--
		2/26/99	NP		2.26	31.08	
		5/26/99	4.25	0.15	4.4	28.81	0.2
		8/20/99	NP		6.05	27.29	
Summary for Well MW-6 (34 detail records)					SPH Recovered to Date:		4.53

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Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				GATX			
MW-7	34.12	3/6/95	7.96	0.04	8.00	26.086	NA
		3/27/95	7.88	0.06	7.94	26.129	NA
		4/24/95	8.18	0.00	8.18	25.94	NA
		5/22/95	8.51	0.34	8.85	24.981	NA
		6/19/95	8.93	0.39	9.32	24.4685	NA
		7/24/95	9.35	0.15	9.50	24.4925	0.06
		8/28/95	9.79	0.21	10.00	23.9415	NA
		9/25/95	10.13	0.38	10.51	23.287	NA
		10/23/95	7.04	0.43	7.47	26.2845	NA
		11/27/95	9.00	0.00	9.00	25.12	NA
		12/29/95	8.13	0.03	8.16	25.9345	0.37
		1/22/96	7.44	0.00	7.44	26.68	0.08
		2/26/96	6.20	0.00	6.20	27.92	NA
		3/25/96	7.50	0.20	7.70	26.25	NA
		4/22/96	7.84	0.11	7.95	26.0765	0.12
		5/28/96	7.70	0.10	7.80	26.235	0.12
		6/24/96	8.36	0.12	8.48	25.538	0.37
		7/22/96	8.98	0.30	9.28	24.585	NA
		8/26/96	9.52	0.30	9.82	24.045	NA
		9/23/96	9.55	0.38	9.93	23.867	NA
		10/28/96	9.30	0.48	9.78	23.932	NA
		11/25/96	8.23	0.68	8.91	24.632	NA
		12/23/96	7.52	1.98	9.50	22.937	NA
		1/30/97	7.13	3.11	10.24	21.2365	70
		4/21/97	7.91	1.81	9.72	22.8615	57
		7/24/97	8.91	1.05	9.96	23.2675	22.0
		10/14/97	9.58	0.30	9.88	23.985	6.0
		1/19/98	7.92	1.76	9.68	22.944	20.0
		4/21/98	8.35	1.75	10.10	22.5325	17.5
		7/27/98	9.34	1.27	10.61	22.4305	20.0
		11/17/98	10.18	0.12	10.30	23.718	20.5
		2/26/99	6.98	0.05	7.03	27.0475	3.2
		5/26/99	8.61	0.15	8.76	25.2325	3.75

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Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				GATX			
MW-7	34.12	8/20/99	NP		9.88	24.24	0.4
Summary for Well MW-7 (34 detail records)					SPH Recovered to Date:		238.27
MW-8	33.95	4/24/95	NA		7.27	26.68	NA
		7/24/95	NA		8.53	25.42	NA
		10/23/95	NA		9.45	24.50	NA
		1/22/96	NA		6.45	27.50	NA
		4/22/96	NA		6.99	26.96	NA
		7/22/96	NA		8.30	25.65	NA
		10/28/96	NA		8.76	25.19	NA
		1/30/97	NP		6.38	27.57	–
		4/21/97	NP		7.07	26.88	–
		7/30/97	NP		8.29	25.66	–
		10/14/97	NP		9.82	24.13	–
		1/19/98	NP		7.18	26.77	–
		4/21/98	NP		7.57	26.38	–
		7/27/98	NP		8.62	25.33	–
		11/17/98	NP		9.51	24.44	–
		2/26/99	NP		5.68	28.27	
		5/26/99	NP		7.73	26.22	
		8/20/99	NP		9.03	24.92	
Summary for Well MW-8 (18 detail records)					SPH Recovered to Date:		
MW-9	36.53	4/24/95	NA		9.67	26.86	NA
		7/24/95	NA		10.85	25.68	NA
		10/23/95	NA		11.86	24.67	NA
		1/22/96	NA		9.57	26.96	NA
		4/22/96	NA		9.47	27.06	NA
		7/22/96	NA		10.34	26.19	NA
		10/28/96	NA		11.32	25.21	NA
		1/30/97	NP		8-94		–
		4/21/97	9.51	0.01	9.52	27.00	0.1
		7/24/97	NP		10.28	26.25	–
		10/14/97	NP		11.23	25.30	–

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Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				GATX			
MW-9	36.53	1/19/98	NP		10.28	26.25	–
		4/21/98	NP		9.86	26.67	–
		7/27/98	NP		10.77	25.76	–
		11/17/98	NP		11.65	24.88	–
		2/26/99	NP		8.69	27.84	
		5/26/99	NP		10.01	26.52	
		8/20/99	NP		11.15	25.38	
Summary for Well	MW-9 (18 detail records)				SPH Recovered to Date:		0.10
MW-10	35.82	4/24/95	NA		8.54	27.28	NA
		7/24/95	NA		10.25	25.57	NA
		10/23/95	NA		11.20	24.62	NA
		1/22/96	NA		7.31	28.51	NA
		4/22/96	NA		8.09	27.73	NA
		7/22/96	NA		9.87	25.95	NA
		10/28/96	NA		10.22	25.60	NA
		1/30/97	NP		7.40	28.42	–
		4/21/97	NP		8.40	27.42	–
		7/30/97	NP		9.98	25.84	–
		10/14/97	NP		10.38	25.44	–
		1/19/98	NP		8.24	27.58	–
		4/21/98	NP		9.13	26.69	–
		7/27/98	NP		10.34	25.48	–
		11/17/98	NP		11.37	24.45	–
		2/26/99	NP		1.54	34.28	
		5/26/99	NP		9.25	26.57	
		8/20/99	NP		10.92	24.90	
Summary for Well	MW-10 (18 detail records)				SPH Recovered to Date:		
MW-11	36.47	3/6/95	NA		5.09	31.38	NA
		3/27/95	5.25	0.00	5.25	31.22	NA
		4/24/95	5.36	0.00	5.36	31.11	NA
		5/22/95	6.11	0.00	6.11	30.36	NA
		6/19/95	6.52	0.00	6.52	29.95	NA

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Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				GATX			
MW-11	36.47	7/24/95	7.10	0.00	7.10	29.37	NA
		8/28/95	8.00	0.00	8.00	28.47	NA
		9/25/95	8.12	0.00	8.12	28.35	NA
		10/23/95	7.39	0.00	7.39	29.08	NA
		11/27/95	5.25	0.00	5.25	31.22	NA
		12/29/95	5.65	0.00	5.65	30.82	NA
		1/22/96	4.50	0.00	4.50	31.97	NA
		1/30/96	NP		5.20	31.27	--
		2/26/96	3.69	0.00	3.69	32.78	NA
		3/25/96	5.50	0.00	5.50	30.97	NA
		4/22/96	5.15	0.00	5.15	31.32	NA
		5/28/96	5.29	0.00	5.29	31.18	NA
		6/24/96	6.27	0.00	6.27	30.20	NA
		7/22/96	7.04	0.00	7.04	29.43	NA
		8/26/96	7.86	0.00	7.86	28.61	NA
		9/23/96	7.20	0.00	7.20	29.27	NA
		10/28/96	6.33	0.00	6.33	30.14	NA
		11/25/96	4.94	0.00	4.94	31.53	NA
		12/23/96	NA		4.68	31.79	NA
		1/30/97	NP		5.20	31.27	--
		4/21/97	NP		5.41	31.06	--
		7/30/97	NP		7.05	29.42	--
		10/14/97	6.62	0.01	6.63	29.83	0.5
		1/19/98	NP		4.81	31.66	--
		4/21/98	NP		6.08	30.39	--
		7/27/98	NP		7.39	29.08	--
		11/17/98	NP		6.96	29.51	--
		2/26/99	NP		4.19	32.28	
		5/26/99	NP		6.13	30.34	
		8/20/99	NP		7.87	28.60	
Summary for Well	MW-11 (35 detail records)				SPH Recovered to Date:		0.50
MW-12	35.95	4/24/95	NA		5.22	30.73	NA

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Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				GATX			
MW-12	35.95	7/24/95	NA		7.30	28.65	NA
		10/23/95	NA		8.33	27.62	NA
		1/22/96	NA		3.83	32.12	NA
		4/22/96	NA		4.34	31.61	NA
		7/22/96	NA		7.15	28.80	NA
		10/28/96	NA		7.37	28.58	NA
		1/30/97	NP		4.26	31.69	--
		4/21/97	NP		5.05	30.90	--
		7/30/97	NP		7.27	28.68	--
		10/14/97	NP		7.46	28.49	--
		1/19/98	NP		4.43	31.52	--
		4/21/98	NP		5.93	30.02	--
		7/27/98	NP		7.56	28.39	--
		11/17/98	NP		8.58	27.37	--
		2/26/99	NP		3.30	32.65	
		5/26/99	NP		6.14	29.81	
		8/20/99	NP		8.34	27.61	
Summary for Well	MW-12 (18 detail records)				SPH Recovered to Date:		
MW-13	37.89	4/24/95	NA		4.41	33.48	NA
		7/24/95	NA		6.29	31.60	NA
		10/23/95	NA		6.67	31.22	NA
		1/22/96	NA		3.65	34.24	NA
		4/22/96	NA		4.18	33.71	NA
		7/22/96	NA		6.28	31.61	NA
		10/28/96	NA		5.61	32.28	NA
		1/30/97	NP		4.22	33.67	--
		4/21/97	NP		4.28	33.61	--
		7/30/97	NP		6.27	31.62	--
		10/14/97	NP		5.64	32.25	--
		1/19/98	NP		3.43	34.46	--
		4/21/98	NP		4.90	32.99	--
		7/27/98	NP		6.44	31.45	--

COP0014799

Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				GATX			
MW-13	37.89	11/17/98	NP		6.27	31.62	--
		2/26/99	NP		3.25	34.64	
		5/26/99	NP		5.17	32.72	
		8/20/99	NP		7.06	30.83	
Summary for Well	MW-13 (18 detail records)				**SPH Recovered to Date:**		
MW-14	36.28	4/24/95	NA		3.33	32.95	NA
		7/24/95	NA		5.62	30.66	NA
		10/23/95	NA		5.96	30.32	NA
		1/22/96	NA		2.71	33.57	NA
		4/22/96	NA		3.25	33.03	NA
		7/22/96	NA		5.68	30.60	NA
		10/28/96	NA		5.30	30.98	NA
		1/30/97	NP		3.28	33.00	--
		4/21/97	NP		3.29	32.99	--
		7/30/97	NP		5.64	30.64	--
		10/14/97	NP		5.13	31.15	--
		1/19/98	NP		2.50	33.78	--
		4/21/98	NP		4.00	32.28	--
		7/27/98	NP		5.73	30.55	--
		11/17/98	NP		5.75	30.53	--
		2/26/99	NP		2.12	34.16	
		5/26/99	NP		4.24	32.04	
		8/20/99	NP		6.59	29.69	
Summary for Well	MW-14 (18 detail records)				**SPH Recovered to Date:**		
MW-15	37.50	1/30/97	NP		3.28	34.22	--
		4/21/97	NP		4.85	32.65	--
		7/30/97	NP		7.92	29.58	--
		10/14/97	NP		5.91	31.59	--
		1/19/98	NP		4.43	33.07	--
		4/21/98	NP		4.81	32.69	--
		7/27/98	NP		7.76	29.74	--
		11/17/98	NP		7.20	30.30	--

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Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				GATX			
MW-15	37.50	2/26/99	NP		2.87	34.63	
	37.5	5/26/99	NP		5.5	32.00	
		8/20/99	NP		8.84	28.66	
Summary for Well	MW-15 (11 detail records)				SPH Recovered to Date:		
MW-16	34.93	7/24/95	NA		5.78	29.15	NA
		10/23/95	NA		6.73	28.20	NA
		1/22/96	NA		2.44	32.49	NA
		4/22/96	NA		3.46	31.47	NA
		7/22/96	NA		5.63	29.30	NA
		10/28/96	NA		5.90	29.03	NA
		1/30/97	NP		3.15	31.78	--
		4/21/97	NP		3.44	31.49	--
		7/30/97	NP		5.65	29.28	--
		10/14/97	NP		5.80	29.13	--
		1/19/98	NP		2.90	32.03	--
		4/21/98	NP		4.31	30.62	--
		7/27/98	NP		5.88	29.05	--
		11/17/98	NP		6.95	27.98	--
		2/26/99	NP		2.00	32.93	
		5/26/99	NP		4.46	30.47	
		8/20/99	NP		6.62	28.31	
Summary for Well	MW-16 (17 detail records)				SPH Recovered to Date:		
MW-17	36.05	1/30/97	NP		4.27	31.78	--
		4/21/97	NP		4.39	31.66	--
		7/30/97	NP		5.28	30.77	--
		10/14/97	NP		5.21	30.84	--
		1/19/98	NP		4.12	31.93	--
		4/21/98	NP		4.70	31.35	--
		7/27/98	NP		5.37	30.68	--
		11/17/98	NP		5.84	30.21	--
		2/26/99	NP		3.79	32.26	
		5/26/99	NP		4.17	31.88	

COP0014801

Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
			GATX				
MW-17	36.05	8/20/99	NP		5.84	30.21	
Summary for Well MW-17 (11 detail records)					SPH Recovered to Date:		
MW-18	33.76	4/24/95	NA		1.66	32.10	NA
		7/24/95	NA		3.02	30.74	NA
		10/23/95	NA		3.43	30.33	NA
		1/22/96	NA		1.08	32.68	NA
		4/22/96	NA		0.89	32.87	NA
		7/22/96	NA		2.83	30.93	NA
		10/28/96	NA		2.48	31.28	NA
		1/30/97	NP		1.24	32.52	--
		4/21/97	NP		1.23	32.53	--
		7/30/97	NP		2.66	31.10	--
		10/14/97	NP		2.45	31.31	--
		1/19/98	NP		0.73	33.03	--
		4/21/98	NP		1.95	31.81	--
		7/27/98	NP		2.94	30.82	--
		11/17/98	NP		3.44	30.32	--
		2/26/99	NP		0.73	33.03	
		5/26/99	NP		2.14	31.62	
		8/20/99	NP		3.53	30.23	
Summary for Well MW-18 (18 detail records)					SPH Recovered to Date:		
MW-19	33.39	3/6/95	2.77	0.49	3.26	29.71	NA
		3/27/95	2.57	0.51	3.08	29.88	NA
		4/24/95	2.79	0.54	3.33	29.60	NA
		5/22/95	3.19	0.51	3.70	29.26	NA
		6/19/95	3.87	0.61	4.48	28.39	NA
		7/24/95	4.41	0.01	4.42	28.96	0.31
		8/28/95	5.64	0.00	5.64	27.75	0.03
		9/25/95	6.80	0.00	6.80	26.59	NA
		10/23/95	5.48	0.00	5.48	27.91	NA
		11/27/95	3.79	0.00	3.79	29.60	NA
		12/29/95	3.23	0.00	3.23	30.16	NA

COP0014802

Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				GATX			
MW-19	33.39	1/22/96	2.18	0.00	2.18	31.21	NA
		2/26/96	1.57	0.00	1.57	31.82	NA
		3/25/96	2.56	0.00	2.56	30.83	NA
		4/22/96	1.77	0.00	1.77	31.62	NA
		5/28/96	2.11	0.00	2.11	31.28	NA
		6/24/96	2.93	0.00	2.93	30.46	NA
		7/22/96	3.61	0.00	3.61	29.78	NA
		8/26/96	4.31	0.00	4.31	29.08	NA
		9/23/96	3.65	0.00	3.65	29.74	NA
		10/28/96	1.95	0.00	1.95	31.44	NA
		11/25/96	1.63	0.00	1.63	31.76	NA
		12/23/96	1.86	0.00	1.86	31.53	NA
		1/30/97	NP		1.86	31.53	--
		4/21/97	NP		2.23	31.16	--
		7/30/97	NP		3.79	29.60	--
		10/14/97	NP		3.63	29.76	--
		1/19/98	NP		1.31	32.08	--
		4/21/98	NP		2.84	30.55	--
		7/27/98	NP		4.08	29.31	--
		11/17/98	NP		4.88	28.51	--
		2/26/99	1.62	0.02	1.64	31.73	
		5/26/99	3.62	0.02	3.64	29.73	0.25
		8/20/99	NP		5.39	28.00	
Summary for Well	MW-19 (34 detail records)				SPH Recovered to Date:		0.59
MW-20	34.76	4/24/95	NA		9.55	25.21	NA
		7/24/95	NA		10.73	24.03	NA
		10/23/95	NA		11.35	23.41	NA
		1/22/96	NA		8.50	26.26	NA
		4/22/96	NA		9.53	25.23	NA
		7/22/96	NA		10.41	24.35	NA
		9/23/96	11.08	0.00	11.08	23.68	NA
		10/28/96	NA		10.74	24.02	NA

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Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				GATX			
MW-20	34.76	11/25/96	NA		9.19	25.57	NA
		12/23/96	NA		9.05	25.71	NA
		1/30/97	NP		8.03	26.73	--
		4/21/97	NP		9.35	25.41	--
		7/30/97	NP		10.45	24.31	--
		10/14/97	NP		10.58	24.18	--
		1/19/98	NP		9.07	25.69	--
		4/21/98	NP		9.87	24.89	--
		7/27/98	NP		10.74	24.02	--
		11/17/98	NP		11.26	23.50	--
		2/26/99	NP		7.97	26.79	
		5/26/99	NP		9.87	24.89	
		8/20/99	NP		11.19	23.57	
Summary for Well MW-20 (21 detail records)					SPH Recovered to Date:		
MW-21	34.33	4/24/95	NA		1.48	32.85	NA
		7/24/95	NA		2.21	32.12	NA
		10/23/95	NA		2.04	32.29	NA
		1/22/96	NA		1.08	33.25	NA
		4/22/96	NA		0.78	33.55	NA
		7/22/96	NA		2.24	32.09	NA
		10/28/96	NA		1.97	32.36	NA
		1/30/97	NP		1.15	33.18	--
		4/21/97	NP		1.13	33.20	--
		7/30/97	NP		2.05	32.28	--
		10/14/97	NP		1.76	32.57	--
		1/19/98	NM		NM		--
		4/21/98	NP		1.62	32.71	--
		7/27/98	NP		2.13	32.20	--
		11/17/98	NP		1.86	32.47	--
		2/26/99	NP		1.03	33.30	
		5/26/99	NP		1.45	32.88	
		8/20/99	NP		2.57	31.76	

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Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				GATX			
Summary for Well MW-21 (18 detail records)					SPH Recovered to Date:		
MW-22	35.65	3/6/95	NA		3.32	32.33	NA
		3/27/95	3.23	0.00	3.23	32.42	NA
		4/24/95	3.25	0.00	3.25	32.40	NA
		5/22/95	3.93	0.00	3.93	31.72	NA
		6/19/95	4.34	0.00	4.34	31.31	NA
		7/24/95	4.83	0.00	4.83	30.82	NA
		8/28/95	5.35	0.00	5.35	30.30	NA
		9/25/95	5.94	0.00	5.94	29.71	NA
		10/23/95	5.24	0.00	5.24	30.41	NA
		11/27/95	4.04	0.00	4.04	31.61	NA
		12/28/95	3.26	0.00	3.26	32.39	NA
		1/22/96	2.77	0.00	2.77	32.88	NA
		2/26/96	2.42	0.00	2.42	33.23	NA
		3/25/96	3.47	0.00	3.47	32.18	NA
		4/22/96	3.32	0.00	3.32	32.33	NA
		5/28/96	3.06	0.00	3.06	32.59	NA
		6/24/96	3.93	0.00	3.93	31.72	NA
		7/22/96	4.55	0.00	4.55	31.10	NA
		8/26/96	6.85	0.00	6.85	28.80	NA
		9/23/96	5.66	0.00	5.66	29.99	NA
		10/28/96	4.80	0.00	4.80	30.85	NA
		11/25/96	3.96	0.00	3.96	31.69	NA
		12/23/96	3.20	0.00	3.20	32.45	NA
		1/30/97	NP		3.72	31.93	--
		4/21/97	NP		3.27	32.38	--
		7/30/97	NP		4.73	30.92	--
		10/14/97	NP		4.87	30.78	--
		1/19/98	NP		2.96	32.69	--
		4/21/98	NP		3.71	31.94	--
		7/27/98	NP		4.80	30.85	--
		11/17/98	NP		5.33	30.32	--

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Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				GATX			
MW-22	35.65	2/26/99	NP		2.28	33.37	
		5/26/99	NP		3.61	32.04	
		8/20/99	NP		5.20	30.45	
Summary for Well	MW-22 (34 detail records)				SPH Recovered to Date:		
MW-23	36.06	3/27/95	9.42	0.00	9.42	26.64	NA
		4/24/95	3.97	0.00	3.97	32.09	NA
		5/22/95	4.50	0.00	4.50	31.56	NA
		6/26/95	4.75	0.00	4.75	31.31	NA
		7/24/95	5.07	0.00	5.07	30.99	NA
		8/28/95	5.44	0.11	5.55	30.42	NA
		10/23/95	5.15	0.00	5.15	30.91	NA
		11/27/95	3.56	0.00	3.56	32.50	NA
		12/28/95	4.27	0.00	4.27	31.79	NA
		1/22/96	NA		3.49	32.57	NA
		2/26/96	3.59	0.00	3.59	32.47	NA
		3/25/96	4.24	0.00	4.24	31.82	NA
		4/22/96	3.23	0.00	3.23	32.83	NA
		5/28/96	3.97	0.00	3.97	32.09	NA
		6/24/96	4.46	0.00	4.46	31.60	NA
		7/22/96	5.02	0.03	5.05	30.98	NA
		8/28/96	5.80	0.00	5.80	30.26	NA
		9/23/96	5.30	0.06	5.36	30.65	NA
		9/25/96	5.78	0.22	6.00	29.87	NA
		10/28/96	4.73	0.00	4.73	31.33	NA
		11/25/96	3.75	0.00	3.75	32.31	NA
		12/23/96	3.68	0.00	3.68	32.38	NA
		1/30/97	NP		3.46	32.60	–
		4/21/97	NP		3.89	32.17	–
		7/30/97	NP		5.15	30.91	–
		10/14/97	5.82	0.07	5.89	30.11	3.0
		1/19/98	NP		3.08	32.98	–
		4/21/98	NP		4.15	31.91	–

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Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				GATX			
MW-23	36.06	7/27/98	4.71	0.01	4.72	31.33	2.1
		11/17/98	5.05	0.01	5.06	30.99	--
		2/26/99	NP		3.38	32.68	
		5/26/99	NP		4.25	31.81	
		8/20/99	5.27	0.14	5.41	30.53	0.06
Summary for Well MW-23 (33 detail records)					**SPH Recovered to Date:**		**5.16**
MW-24	35.15	3/6/95	4.15	0.83	4.98	29.46	NA
		4/24/95	5.31	-0.94	4.37	31.58	NA
		5/22/95	4.96	-0.01	4.95	30.21	NA
		6/26/95	6.50	1.90	8.40	25.14	NA
		7/24/95	7.25	0.24	7.49	27.46	NA
		8/28/95	8.42	1.58	10.00	23.81	NA
		12/1/95	NM		NM		28.1
		3/27/96	4.28	0.90	5.18	29.20	NA
		12/1/96	NM		NM		1.2
		1/30/97	NP		5.10	30.05	--
		4/21/97	NP		4.89	30.26	--
		7/30/97	8.30	0.16	8.46	26.55	0.25
		10/14/97	NP		8.13	27.02	1.5
		1/19/98	4.02	0.01	4.03	31.11	0.75
		4/21/98	5.34	0.01	5.35	29.79	0.12
		7/27/98	6.98	0.02	7.00	28.13	3.1
		11/17/98	8.00	0.04	8.04	27.08	0.25
		2/26/99	3.94	0.01	3.95	31.19	
		5/26/99	5.34	0.01	5.35	29.79	0.25
		8/20/99	NP		7.62	27.53	
Summary for Well MW-24 (20 detail records)					**SPH Recovered to Date:**		**35.52**
MW-25	34.73	4/22/96	10.00	0.24	10.24	24.29	NA
		9/23/96	11.69	0.00	11.69	23.04	NA
		10/28/96	NA		11.22	23.51	NA
		11/25/96	NA		9.95	24.78	NA
		12/23/96	NA		9.72	25.01	NA

COP0014807

Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				GATX			
MW-25	34.73	1/30/97	NP		9.37	25.36	--
		4/21/97	9.90	0.01	9.91	24.81	0.1
		7/24/97	NP		10.92	23.81	--
		10/14/97	NP		11.30	23.43	--
		1/19/98	NP		9.84	24.89	--
		4/21/98	NP		10.59	24.14	--
		7/27/98	NP		11.46	23.27	--
		11/17/98	NP		11.97	22.76	--
		2/26/99	NP		9.71	25.02	
		5/26/99	NP		10.46	24.27	
Summary for Well	MW-25 (15 detail records)				SPH Recovered to Date:		0.10
MW-26	34.78	7/22/96	11.39	0.43	11.82	22.59	NA
		9/11/96	10.00	0.24	10.24	24.34	NA
		9/23/96	11.85	0.25	12.10	22.47	NA
		10/28/96	11.38	0.03	11.41	23.34	NA
		11/25/96	10.36	0.00	10.36	24.42	NA
		12/23/96	10.39	0.00	10.39	24.39	NA
		1/30/97	NP		10.35	24.43	--
		4/21/97	NP		10.32	24.46	0.1
		7/30/97	11.42	0.01	11.43	23.34	0.1
		10/14/97	11.68	0.02	11.70	23.06	0.5
		1/19/98	NP		10.36	24.42	--
		4/21/98	NP		10.98	23.80	--
		7/27/98	NP		11.80	22.98	--
		11/17/98	NP		12.36	22.42	--
		2/26/99	NP		9.12	25.66	
		5/26/99	NP		10.84	23.94	0.2
		8/20/99	NP		12.17	22.61	
Summary for Well	MW-26 (17 detail records)				SPH Recovered to Date:		0.90
MW-27	35.67	2/26/96	3.94	0.00	3.94	31.73	NA
		3/25/96	4.73	0.00	4.73	30.94	NA
		4/22/96	3.71	0.00	3.71	31.96	NA

COP0014808

Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				GATX			
MW-27	35.67	5/28/96	4.54	0.00	4.54	31.13	NA
		6/24/96	5.34	0.00	5.34	30.33	NA
		7/22/96	5.73	0.00	5.73	29.94	NA
		8/26/96	5.96	0.00	5.96	29.71	NA
		9/23/96	6.81	0.00	6.81	28.86	NA
		10/28/96	5.35	0.00	5.35	30.32	NA
		11/25/96	3.34	0.00	3.34	32.33	NA
		12/23/96	4.04	0.00	4.04	31.63	NA
		1/30/97	NP		4.37	31.30	--
		4/21/97	NP		4.44	31.23	--
		7/30/97	NP		5.69	29.98	--
		10/14/97	NP		5.29	30.38	--
		1/19/98	NP		3.81	31.86	--
		4/21/98	NP		4.90	30.77	--
		7/27/98	NP		5.66	30.01	--
	35.69	11/17/98	NP		5.70	29.99	--
		2/26/99	NP		3.50	32.19	
		5/26/99	NP		4.92	30.77	
		8/20/99	NP		5.96	29.73	
Summary for Well MW-27 (22 detail records)					SPH Recovered to Date:		
MW-28	34.39	3/6/95	NA		4.41	29.98	NA
		3/27/95	4.74	0.01	4.75	29.63	NA
		4/24/95	5.26	0.00	5.26	29.13	NA
		5/22/95	6.00	0.02	6.02	28.35	NA
		6/26/95	6.50	0.09	6.59	27.72	NA
		7/24/95	6.94	0.00	6.94	27.45	NA
		8/28/95	8.04	0.01	8.05	26.33	0.75
		10/23/95	7.60	0.00	7.60	26.79	NA
		11/27/95	4.04	0.00	4.04	30.35	0.03
		12/28/95	4.25	0.00	4.25	30.14	NA
		1/22/96	2.29	0.00	2.29	32.10	NA
		2/26/96	3.78	0.00	3.78	30.61	NA

COP0014809

Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				GATX			
MW-28	34.39	3/25/96	5.10	0.00	5.10	29.29	NA
		4/22/96	4.22	0.00	4.22	30.17	NA
		5/28/96	4.66	0.00	4.66	29.73	NA
		6/24/96	6.01	0.00	6.01	28.38	NA
		7/22/96	6.77	0.00	6.77	27.62	NA
		8/28/96	7.56	0.00	7.56	26.83	NA
		9/23/96	6.28	0.00	6.28	28.11	NA
		9/25/96	11.75	0.00	11.75	22.64	1.03
		10/28/96	5.03	0.00	5.03	29.36	NA
		11/25/96	2.50	0.00	2.50	31.89	NA
		12/23/96	4.38	0.01	4.39	29.99	NA
		1/30/97	NP		3.71	30.68	--
		4/21/97	4.72	0.03	4.75	29.61	0.5
		7/30/97	NP		6.30	28.09	--
		10/14/97	5.87	0.02	5.89	28.48	1.0
		1/19/98	NP		4.01	30.38	--
		4/21/98	5.16	0.01	5.17	29.21	0.02
		7/27/98	NP		6.67	27.72	1.0
		11/17/98	NP		7.16	27.23	--
		2/26/99	NP		3.38	31.01	
		5/26/99	4.55	0.01	4.56	29.82	0.2
		8/20/99	NP		7.19	27.20	0.08
Summary for Well	MW-28 (34 detail records)				SPH Recovered to Date:		4.61
MW-29	35.77	4/24/95	NA		13.34	22.43	NA
		7/24/95	NA		14.20	21.57	NA
		10/23/95	NA		14.86	20.91	NA
		1/22/96	NA		12.70	23.07	NA
		4/22/96	NA		12.75	23.02	NA
		7/22/96	NA		13.64	22.13	NA
		10/28/96	NA		14.15	21.62	NA
		1/30/97	NP		13.41	22.36	--
		4/21/97	NP		12.89	22.88	--

COP0014810

Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				GATX			
MW-29	35.77	7/30/97	NP		13.58	22.19	--
		10/14/97	NP		14.17	21.60	--
		1/19/98	NP		13.13	22.64	--
		4/21/98	NP		13.32	22.45	--
		7/27/98	NP		14.01	21.76	--
		11/17/98	NP		14.63	21.14	--
		2/26/99	NP		12.22	23.55	
		5/26/99	NP		13.17	22.60	
		8/20/99	NP		14.22	21.55	
Summary for Well MW-29 (18 detail records)					SPH Recovered to Date:		
MW-30	36.39	1/30/97	NP		4.43	31.96	--
		4/21/97	NP		4.65	31.74	--
		7/30/97	NP		6.00	30.39	--
		10/14/97	NP		5.79	30.60	--
		1/19/98	NP		3.85	32.54	--
		4/21/98	NP		5.22	31.17	--
		7/27/98	NP		6.23	30.16	--
		11/17/98	NP		6.99	29.40	--
		2/26/99	NP		3.76	32.63	
		5/26/99	NP		5.32	31.07	
		8/20/99	NP		6.74	29.65	
Summary for Well MW-30 (11 detail records)					SPH Recovered to Date:		
MW-31	37.55	3/6/95	NA		5.64	31.91	NA
		3/27/95	5.75	0.01	5.76	31.78	NA
		4/24/95	6.09	0.00	6.09	31.46	NA
		5/22/95	6.70	0.00	6.70	30.85	NA
		6/26/95	7.26	0.00	7.26	30.29	NA
		7/24/95	7.74	0.00	7.74	29.81	NA
		8/28/95	8.41	0.00	8.41	29.14	NA
		10/23/95	8.56	0.00	8.56	28.99	NA
		11/27/95	6.33	0.00	6.33	31.22	NA
		12/28/95	5.90	0.00	5.90	31.65	NA

COP0014811

Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				GATX			
MW-31	37.55	1/22/96	4.62	0.00	4.62	32.93	NA
		2/26/96	4.92	0.00	4.92	32.63	NA
		3/25/96	6.02	0.00	6.02	31.53	NA
		4/22/96	5.57	0.00	5.57	31.98	NA
		5/28/96	5.73	0.00	5.73	31.82	NA
		6/24/96	6.72	0.00	6.72	30.83	NA
		7/22/96	7.38	0.00	7.38	30.17	NA
		8/28/96	8.02	0.00	8.02	29.53	NA
		9/23/96	7.48	0.00	7.48	30.07	NA
		9/25/96	8.96	0.00	8.96	28.59	NA
		10/28/96	6.68	0.00	6.68	30.87	NA
		11/25/96	4.92	0.00	4.92	32.63	NA
		12/23/96	5.08	0.00	5.08	32.47	NA
		1/30/97	NP		5.45	32.10	--
		4/21/97	NP		5.73	31.82	--
		7/30/97	NP		7.32	30.23	--
		10/14/97	NP		7.19	30.36	--
		1/19/98	NP		4.79	32.76	--
		4/21/98	NP		6.31	31.24	--
		7/27/98	NP		7.51	30.04	--
	35.66	11/17/98	NP		8.38	27.28	--
		2/26/99	NP		4.67	30.99	
		5/26/99	NP		6.44	29.22	
		8/20/99	NP		8.12	27.54	
Summary for Well	MW-31 (34 detail records)				**SPH Recovered to Date:**		
MW-32	37.01	4/24/95	NA		4.27	32.74	NA
		7/24/95	NA		5.75	31.26	NA
		10/23/95	NA		6.40	30.61	NA
		4/22/96	NA		3.89	33.12	NA
		7/22/96	NA		5.45	31.56	NA
		10/28/96	NA		5.59	31.42	NA
		1/30/97	NP		4.37	32.64	--

COP0014812

Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				GATX			
MW-32	37.01	4/21/97	NP		4.02	32.99	–
		7/30/97	NP		5.49	31.52	–
		10/14/97	NP		5.57	31.44	–
		1/19/98	NP		3.45	33.56	–
		4/21/98	NP		4.52	32.49	–
		7/27/98	NP		5.58	31.43	–
		11/17/98	NP		6.34	30.67	–
		2/26/99	NP		3.07	33.94	
		5/26/99	NP		4.55	32.46	
		8/20/99	NP		6.08	30.93	
Summary for Well MW-32 (17 detail records)					SPH Recovered to Date:		
MW-33	39.34	4/24/95	NA		19.93	19.41	NA
		7/24/95	NA		20.68	18.66	NA
		10/23/95	NA		21.05	18.29	NA
		1/22/96	NA		19.07	20.27	NA
		4/22/96	NA		19.48	19.86	NA
		7/22/96	NA		20.26	19.08	NA
		10/28/96	NA		20.58	18.76	NA
		1/30/97	NP		18.92	20.42	–
		4/21/97	NP		19.61	19.73	–
		7/30/97	NP		20.03	19.31	–
		10/14/97	NP		20.54	18.80	–
		1/19/98	NP		19.40	19.94	–
		4/21/98	NP		19.99	19.35	–
		7/27/98	NP		20.45	18.89	–
		11/17/98	NP		20.93	18.41	–
		2/26/99	NP		18.67	20.67	
		5/26/99	NP		19.95		
		8/20/99	NP		20.69		
Summary for Well MW-33 (18 detail records)					SPH Recovered to Date:		
MW-34	39.67	4/24/95	NA		19.40	20.27	NA
		7/24/95	NA		19.99	19.68	NA

COP0014813

Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				GATX			
MW-34	39.67	10/23/95	NA		20.26	19.41	NA
		1/22/96	NA		18.71	20.96	NA
		4/22/96	NA		19.43	20.24	NA
		7/22/96	NA		19.74	19.93	NA
		10/28/96	NA		20.18	19.49	NA
		1/30/97	NP		18.78	20.89	--
		4/21/97	NP		19.41	20.26	--
		7/30/97	NP		19.76	19.91	--
		10/14/97	NP		20.04	19.63	--
		1/19/98	NP		19.92	19.75	--
		4/21/98	NP		19.60	20.07	--
		7/27/98	NP		20.03	19.64	--
		11/17/98	NP		20.26	19.41	--
		2/26/99	NP		18.54	21.13	
		5/26/99	NP		19.62	20.05	
		8/20/99	NP		20.13	19.54	
Summary for Well	MW-34 (18 detail records)				SPH Recovered to Date:		
MW-35	33.39	1/30/97	NP		2.08	31.31	--
		4/21/97	NP		2.58	30.81	--
		10/14/97	NP		4.03	29.36	--
		1/19/98	NP		2.88	30.51	--
		4/21/98	NP		2.71	30.68	--
		7/27/98	NP		3.82	29.57	--
		11/17/98	NP		5.09	28.30	--
		2/26/99	NP		1.57	31.82	
		5/26/99	NP		2.99	30.40	
		8/20/99	NP		4.60	28.79	
Summary for Well	MW-35 (10 detail records)				SPH Recovered to Date:		
MW-36	34.88	4/24/95	NA		19.40	15.48	NA
		7/24/95	NA		19.99	14.89	NA
		10/23/95	NA		20.26	14.62	NA
		1/22/96	NA		13.74	21.14	NA

COP0014814

Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				GATX			
MW-36	34.88	4/22/96	NA		13.72	21.16	NA
		7/22/96	NA		14.90	19.98	NA
		10/28/96	NA		15.54	19.34	NA
		1/30/97	NP		13.02	21.86	--
		4/21/97	NP		13.98	20.90	--
		7/30/97	NP		14.51	20.37	--
		10/14/97	NP		15.15	19.73	--
		1/19/98	NP		14.13	20.75	--
		4/21/98	NP		14.33	20.55	--
		7/27/98	NP		15.09	19.79	--
		11/17/98	NP		15.59	19.29	--
		2/26/99	NP		12.98	21.90	
		5/26/99	NP		14.30	20.58	
		8/20/99	NP		15.24	19.64	
Summary for Well	MW-36 (18 detail records)				SPH Recovered to Date:		
MW-37	34.86	4/24/95	NA		14.96	19.90	NA
		7/24/95	NA		15.88	18.98	NA
		10/23/95	NA		16.37	18.49	NA
		1/22/96	NA		14.22	20.64	NA
		4/22/96	NA		13.72	21.14	NA
		7/22/96	NA		15.28	19.58	NA
		10/28/96	NA		15.80	19.06	NA
		1/30/97	NP		13.44	21.42	NA
		4/21/97	NP		14.48	20.38	NA
		7/30/97	NP		15.15	19.71	--
		10/14/97	NP		15.76	19.10	--
		1/19/98	NP		14.61	20.25	--
		4/21/98	NP		14.98	19.88	--
		7/27/98	NP		15.71	19.15	--
		11/17/98	NP		16.24	18.62	--
		2/26/99	NP		13.47	21.39	
		5/26/99	NP		13.90	20.96	

COP0014815

Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
			GATX				
MW-37	34.86	8/20/99	NP		15.88	18.98	
Summary for Well	MW-37 (18 detail records)				SPH Recovered to Date:		
MW-38	37.50	1/30/97	NP		3.98	33.52	--
		4/21/97	NP		4.84	32.66	--
		10/14/97	NP		7.39	30.11	--
		1/19/98	NP		4.76	32.74	--
		4/21/98	NP		5.27	32.23	--
		7/27/98	NP		6.89	30.61	--
		11/17/98	NP		7.98	29.52	--
		2/26/99	NP		5.68	31.82	
	37.5	5/26/99	NP		5.57	31.93	
		8/20/99	NP		7.67	29.83	
Summary for Well	MW-38 (10 detail records)				SPH Recovered to Date:		
MW-39	35.02	6/24/96	13.01	0.00	13.01	22.01	NA
		7/22/96	13.45	0.00	13.45	21.57	NA
		8/26/96	13.90	0.00	13.90	21.12	NA
		9/23/96	14.08	0.00	14.08	20.94	NA
		10/28/96	14.00	0.00	14.00	21.02	NA
		11/25/96	13.54	0.00	13.54	21.48	NA
		12/23/96	12.77	0.00	12.77	22.25	NA
		1/30/97	NM		NM		--
		4/21/97	NM		NM		--
		10/14/97	NP		13.99	21.03	--
		1/19/98	NM		NM		--
		4/21/98	NM		NM		--
		7/27/98	NP		13.85	21.17	--
		11/17/98	NP		14.36	20.66	--
		2/26/99	NP		12.21	22.81	
		5/26/99	NP		13.29	21.73	
		8/20/99	NP		14.04	20.98	
Summary for Well	MW-39 (17 detail records)				SPH Recovered to Date:		

COP0014816

Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				GATX			
MW-40	33.65	6/24/96	13.81	0.00	13.81	19.84	NA
		7/22/96	14.32	0.00	14.32	19.33	NA
		8/26/96	14.77	0.00	14.77	18.88	NA
		9/23/96	14.83	0.00	14.83	18.82	NA
		10/28/96	14.63	0.00	14.63	19.02	NA
		11/25/96	13.78	0.00	13.78	19.87	NA
		12/23/96	13.37	0.00	13.37	20.28	NA
		1/30/97	NP		12.74	20.91	–
		4/21/97	NP		13.65	20.00	–
		7/30/97	NP		14.24	19.41	–
		10/14/97	NP		14.62	19.03	–
		1/19/98	NP		13.28	20.37	–
		4/21/98	NP		14.05	19.60	–
		7/27/98	NP		14.70	18.95	–
		11/17/98	NP		15.09	18.56	–
		2/26/99	NP		12.56	21.09	
		5/26/99	NP		13.99	19.66	
		8/20/99	NP		14.79	18.86	
Summary for Well MW-40 (18 detail records)					SPH Recovered to Date:		

COP0014817

Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				Tosco			
B-1	34.79	4/24/95	17.42	0.49	17.91	16.46	NA
		5/22/95	17.57	0.47	18.04	16.35	NA
		6/26/95	17.75	0.48	18.23	16.15	NA
		7/24/95	17.98	0.02	18.00	16.77	0.002
		8/28/95	18.32	0.02	18.34	16.43	NA
		9/25/95	18.37	0.14	18.51	16.16	NA
		10/23/95	18.30	0.01	18.31	16.47	NA
		11/27/95	17.94	0.03	17.97	16.79	0.01
		12/28/95	16.75	0.16	16.91	17.74	0.85
		1/22/96	16.73	0.12	16.85	17.84	0.01
		2/26/96	13.40	0.02	13.42	21.35	0.08
		4/22/96	16.20	0.15	16.35	18.31	0.01
		5/28/96	16.21	0.00	16.21	18.58	NA
		6/24/96	16.68	0.01	16.69	18.09	NA
		7/22/96	17.20	0.02	17.22	17.55	NA
		8/23/96	17.49	0.03	17.52	17.24	NA
		9/23/96	17.72	0.01	17.73	17.05	NA
		10/28/96	17.18	0.01	17.19	17.59	NA
		1/31/97	15.94	0.16	16.10	18.55	NA
		4/21/97	16.87	0.12	16.99	17.70	NA
		7/28/97	17.15	0.65	17.80	16.44	NA
		10/14/97	17.68	0.62	18.30	15.96	0.5
		1/19/98	17.10	0.01	17.11	17.67	0.1
		4/20/98	NP		17.17	17.62	0.1
		7/29/98	17.44	0.01	17.45	17.33	0.1
	34.68	11/16/98	NP		17.89	16.79	–
		2/23/99	NP		16.19	18.49	
		5/18/99	NP		16.79	17.89	
		8/17/99	NP		17.37	17.31	
Summary for Well B-1 (29 detail records)					SPH Recovered to Date:		1.76
B-2	35.35	3/28/95	NA		16.84	18.51	NA
		4/24/95	NA		17.02	18.33	NA

COP0014818

Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				Tosco			
B-2	35.35	5/22/95	NA		17.22	18.13	NA
		6/26/95	NA		17.48	17.87	NA
		8/28/95	19.58	0.26	19.84	15.29	NA
		9/25/95	NA		18.18	17.17	NA
		10/23/95	NA		18.15	17.20	NA
		12/28/95	NA		16.56	18.79	NA
		1/22/96	16.48	0.02	16.50	18.83	NA
		4/22/96	NA		16.28	19.07	NA
		5/28/96	NA		16.14	19.21	NA
		6/24/96	NA		16.50	18.85	NA
		7/22/96	NA		16.99	18.36	NA
		8/23/96	NA		17.48	17.87	NA
		9/23/96	NA		17.50	17.85	NA
		10/28/96	NA		17.60	17.75	NA
		1/31/97	NP		15.69	19.66	--
		4/21/97	NP		16.52	18.83	--
		7/28/97	NP		16.94	18.41	0.00
		10/14/97	NP		17.57	17.78	--
		1/19/98	NP		16.87	18.48	--
		4/20/98	NP		16.93	18.42	--
		7/29/98	NP		17.52	17.83	--
		11/16/98	17.87	0.01	17.88	17.46	0
		2/23/99	NP		15.90	19.45	
		5/18/99	NP		16.64	18.71	
		8/17/99	NP		17.45	17.90	
Summary for Well	B-2 (27 detail records)				SPH Recovered to Date:		0.00
B-3	36.79	1/31/97	NP		17.26	19.53	--
		4/21/97	NP		18.48	18.31	--
		7/28/97	NP		18.83	17.96	--
		10/14/97	NP		19.38	17.41	--
		1/19/98	NP		18.25	18.54	--
		4/20/98	NP		18.86	17.93	--

COP0014819

Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				Tosco			
B-3	36.79	7/29/98	NP		18.84	17.95	–
	34.81	11/16/98	NP		19.24	15.57	–
		2/23/99	NP		17.21	17.60	
		5/18/99	NP		18.01	16.80	
		8/17/99	NP		18.79	16.02	
Summary for Well B-3 (11 detail records)					**SPH Recovered to Date:**		
B-4	34.79	3/28/95	17.92	0.71	18.63	15.56	NA
		4/24/95	18.01	1.16	19.17	14.63	NA
		5/22/95	18.11	1.13	19.24	14.59	NA
		6/26/95	18.27	1.01	19.28	14.65	NA
		7/24/95	18.53	0.11	18.64	16.06	0.15
		8/28/95	18.62	0.01	18.63	16.15	NA
		9/25/95	18.82	0.13	18.95	15.73	NA
		10/23/95	18.83	0.02	18.85	15.92	NA
		11/27/95	18.56	0.06	18.62	16.12	0.37
		1/22/96	17.60	0.04	17.64	17.12	0.24
		2/26/96	NA		13.68	21.11	NA
		4/22/96	16.35	0.09	16.44	18.27	0.02
		5/28/96	16.35	0.07	16.42	18.31	0.02
		8/23/96	18.35	0.00	18.35	16.44	NA
		9/23/96	18.44	0.01	18.45	16.33	NA
		10/28/96	17.56	1.03	18.59	15.32	NA
		1/31/97	17.00	0.48	17.48	16.90	3.25
		4/21/97	NP		17.71	17.08	0.1
		7/28/97	18.50	0.02	18.52	16.25	0.1
		10/15/97	18.55	0.01	18.56	16.22	1.5
		1/19/98	17.91	0.06	17.97	16.77	1.5
		4/20/98	17.95	0.05	18.00	16.75	1.2
		7/29/98	18.13	0.01	18.14	16.64	1.3
	34.70	11/16/98	NP		18.49	16.21	–
		2/23/99	16.89	1.04	17.93	15.89	
		5/18/99	17.51	0.01	17.52	17.17	0.1

COP0014820

Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				Tosco			
B-4	34.7	8/17/99	NP		18.04	16.66	
Summary for Well	B-4 (27 detail records)				SPH Recovered to Date:		9.85
B-5	34.79	1/22/96	NA		16.18	18.61	NA
		2/26/96	NA		14.40	20.39	NA
		5/28/96	NA		15.59	19.20	NA
		6/24/96	DRY		DRY		DRY
		7/22/96	DRY		DRY		DRY
		8/23/96	DRY		DRY		DRY
		9/23/96	NA		17.02	17.77	NA
		10/28/96	NA		17.10	17.69	NA
	34.83	1/31/97	NP		15.30	19.53	–
		4/21/97	NP		16.08	18.75	–
		7/28/97	NP		16.54	18.29	0.00
		10/14/97	NP		17.10	17.73	–
		1/19/98	NP		16.54	18.29	–
		4/20/98	NP		16.48	18.35	–
		7/29/98	NP		16.79	18.04	–
		11/16/98	NP		17.35	17.48	–
		2/23/99	NP		15.56	19.27	
		5/18/99	NP		18.17	16.66	
		8/17/99	NP		16.93	17.90	
Summary for Well	B-5 (19 detail records)				SPH Recovered to Date:		0.00
B-6	35.41	1/22/96	NP		16.44	18.97	NA
		2/26/96	NP		15.60	19.81	NA
		4/22/96	NA		16.15	19.26	NA
		5/28/96	NA		16.11	19.30	NA
		6/24/96	NA		16.47	18.94	NA
		7/22/96	NA		16.91	18.50	NA
		8/23/96	NA		17.99	17.42	NA
		9/23/96	NA		17.45	17.96	NA
		10/28/96	NA		17.34	18.07	NA
		1/31/97	NP		15.47	19.94	–

COP0014821

Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				Tosco			
B-6	35.41	4/21/97	NP		16.31	19.10	--
		7/28/97	NP		16.87	18.54	0.00
		10/14/97	NP		17.47	17.94	--
		1/19/98	NP		16.85	18.56	--
		4/20/98	NP		16.78	18.63	--
		7/29/98	NP		17.16	18.25	--
	35.49	11/16/98	NP		17.79	17.70	--
		2/23/99	NP		15.70	19.79	
		5/18/99	NP		16.48	19.01	
		8/17/99	NP		17.35	18.14	
Summary for Well B-6 (20 detail records)					**SPH Recovered to Date:**		**0.00**
B-16	35.82	3/24/95	NA		16.99	18.83	NA
		4/24/95	NA		17.12	18.70	NA
		5/22/95	NA		17.37	18.45	NA
		6/19/95	NA		17.59	18.23	NA
		7/24/95	NA		17.89	17.93	NA
		8/28/95	NA		18.10	17.72	NA
		9/25/95	NA		18.35	17.47	NA
		10/23/95	NA		18.30	17.52	NA
		11/27/95	NA		17.90	17.92	NA
		1/22/96	NA		0.00		NA
		2/26/96	NA		13.30	22.52	NA
		4/22/96	NA		16.04	19.78	NA
		5/28/96	NA		16.39	19.43	NA
		6/24/96	NA		16.71	19.11	NA
		7/22/96	NA		17.19	18.63	NA
		9/23/96	NA		17.76	18.06	NA
		10/28/96	NA		17.82	18.00	NA
		1/31/97	NP		15.75	20.07	--
		4/21/97	NP		16.65	19.17	--
		7/28/97	NP		17.15	18.67	0.00
		10/14/97	NP		17.79	18.03	--

COP0014822

Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				Tosco			
B-16	35.82	1/19/98	NP		17.16	18.66	--
		4/20/98	NP		17.07	18.75	--
		7/29/98	NP		17.66	18.16	--
		11/16/98	NP		18.12	17.70	--
		2/23/99	NP		16.02	19.80	
		5/18/99	NP		16.77	19.05	
		8/17/99	NP		17.62	18.20	
Summary for Well	B-16 (28 detail records)				SPH Recovered to Date:		0.00
B-17	35.59	3/28/95	16.95	0.00	16.95	18.64	NA
		4/24/95	NA		17.15	18.44	NA
		5/22/95	17.36	0.00	17.36	18.23	NA
		6/26/95	17.61	0.00	17.61	17.98	NA
		7/24/95	17.79	0.01	17.80	17.78	NA
		8/28/95	18.78	0.01	18.79	16.79	NA
		9/25/95	NA		18.23	17.36	NA
		10/23/95	NA		18.21	17.38	NA
		11/27/95	17.85	0.00	17.85	17.74	NA
		12/28/95	NA		16.85	18.74	NA
		1/22/96	NA		16.78	18.81	NA
		2/26/96	13.35	0.01	13.36	22.22	NA
		4/22/96	16.44	0.00	16.44	19.15	NA
		5/28/96	16.40	0.00	16.40	19.19	NA
		6/24/96	16.40	0.00	16.40	19.19	NA
		7/22/96	17.16	0.00	17.16	18.43	NA
		8/23/96	17.57	0.00	17.57	18.02	NA
		9/23/96	NA		17.68	17.91	NA
		10/28/96	NA		17.75	17.84	NA
		1/31/97	NP		15.86	19.73	--
		4/21/97	NP		16.66	18.93	--
		7/28/97	NP		17.15	18.44	0.00
		10/14/97	NP		17.74	17.85	--
		1/19/98	NP		17.17	18.42	--

COP0014823

Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				Tosco			
B-17	35.59	4/20/98	NP		17.06	18.53	–
		7/29/98	NP		17.54	18.05	–
	35.61	11/16/98	NP		18.02	17.59	0.2
		2/23/99	NP		17.10	18.51	
		5/18/99	NP		16.76	18.85	
		8/17/99	NP		17.55	18.06	
Summary for Well	B-17 (30 detail records)				**SPH Recovered to Date:**		**0.20**
B-18	35.79	3/28/95	NA		19.28	16.51	NA
		4/24/95	NA		19.38	16.41	NA
		5/22/95	NA		19.44	16.35	NA
		6/26/95	NA		19.56	16.23	NA
		7/24/95	NA		19.74	16.05	NA
		8/28/95	NA		19.43	16.36	NA
		9/25/95	NA		20.02	15.77	NA
		10/23/95	NA		20.08	15.71	NA
		12/28/95	NA		18.66	17.13	NA
		1/22/96	0	0.00	18.20	2.12	NA
		2/26/96	0	0.00	18.38	1.79	NA
		4/22/96	NA		18.50	17.29	NA
		5/28/96	NA		17.84	17.95	NA
		6/24/96	NA		18.35	17.44	NA
		7/22/96	NA		18.97	16.82	NA
		8/23/96	NA		17.50	18.29	NA
		9/23/96	NA		19.43	16.36	NA
		10/28/96	NA		19.47	16.32	NA
		1/31/97	NP		18.09	17.70	–
		4/21/97	NP		18.94	16.85	–
		7/28/97	NP		19.14	16.65	–
		10/14/97	NP		19.64	16.15	–
		1/19/98	NP		19.03	16.76	–
		4/20/98	NP		18.92	16.87	–
		7/29/98	NP		19.04	16.75	–

COP0014824

Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				Tosco			
B-18	35.49	11/16/98	NP		19.36	16.13	--
		2/23/99	NP		17.88	17.61	
		5/18/99	NP		18.38	17.11	0.1
		8/17/99	NP		18.90	16.59	
Summary for Well	B-18 (29 detail records)				SPH Recovered to Date:		0.10
B-22	35.83	3/28/95	NA		18.50	17.33	NA
		4/24/95	NA		19.10	16.73	NA
		5/22/95	NA		19.09	16.74	NA
		6/26/95	NA		19.26	16.57	NA
		9/25/95	NA		20.50	15.33	NA
		10/23/95	NA		19.96	15.87	NA
		12/28/95	NA		18.59	17.24	0.02
		1/22/96	NA		18.88	16.95	NA
		2/26/96	NA		12.05	23.78	NA
		4/22/96	NA		17.75	18.08	NA
		5/28/96	NA		17.31	18.52	NA
		6/24/96	NA		18.12	17.71	NA
		7/22/96	NA		19.09	16.74	NA
		8/23/96	NA		19.03	16.80	NA
		9/23/96	NA		19.79	16.04	NA
		10/28/96	NA		19.75	16.08	NA
		1/31/97	17.92	0.01	17.93	17.89	0.1
		4/21/97	NP		18.67	17.16	--
		7/28/97	18.89	2.26	21.15	12.76	1.0
		10/14/97	19.56	0.04	19.60	16.20	1.75
		1/19/98	18.55	1.35	19.90	14.78	4.0
		4/20/98	18.80	0.76	19.56	15.62	2.6
		7/29/98	NP		18.56	17.27	--
		11/16/98	NP		19.10	16.73	0.1
		2/23/99	NP		17.09	18.74	
		5/18/99	NP		17.69	18.14	0.1
		8/17/99	NP		18.35	17.48	

COP0014825

Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				Tosco			
Summary for Well B-22 (27 detail records)					SPH Recovered to Date:		9.67
B-25	37.60	4/21/97	NP		15.29	22.31	–
		10/14/97	NP		19.75	17.85	–
		1/19/98	NP		19.05	18.55	–
		4/20/98	NP		19.08	18.52	–
		7/29/98	NP		19.02	18.58	–
	35.78	11/16/98	NP		19.50	16.28	–
		2/23/99	NP		17.49	18.29	
		5/18/99	NP		18.02	17.76	
		8/17/99	NP		18.78	17.00	
Summary for Well B-25 (9 detail records)					SPH Recovered to Date:		
B-27	35.74	3/28/95	17.25	0.27	17.52	17.99	NA
		4/24/95	17.70	0.31	18.01	17.47	NA
		5/22/95	17.85	0.32	18.17	17.30	NA
		6/26/95	17.91	1.12	19.03	15.76	NA
		7/24/95	18.11	1.14	19.25	15.52	NA
		8/28/95	18.75	0.50	19.25	16.07	NA
		9/25/95	18.50	1.10	19.60	15.21	NA
		10/23/95	18.59	1.10	19.69	15.12	NA
		11/27/95	18.50	0.30	18.80	16.68	0.8
		1/22/96	17.44	0.43	17.87	17.50	0.78
		2/26/96	13.38	0.31	13.69	21.79	0.25
		4/22/96	16.68	0.27	16.95	18.56	0.12
		8/23/96	18.12	0.56	18.68	16.58	0.31
		9/23/96	18.34	0.36	18.70	16.73	NA
		10/28/96	18.58	0.11	18.69	16.96	NA
		1/31/97	16.43	2.20	18.63	15.24	4.0
		4/21/97	17.37	0.13	17.50	18.13	0.6
		7/25/97	NP		17.86	17.88	–
		10/15/97	18.52	0.01	18.53	17.20	0.75
		1/19/98	NP		17.94	17.80	6.0
		4/20/98	17.86	0.01	17.87	17.86	1.1

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Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				Tosco			
B-27	35.74	7/29/98	18.19	0.02	18.21	17.51	0.2
		11/16/98	18.65	0.59	19.24	16.00	0.6
		2/23/99	16.63	1.55	18.18	16.24	
		5/18/99	17.36	0.01	17.37	18.36	0.1
		8/17/99	NP		17.98	17.76	
Summary for Well B-27 (26 detail records)					**SPH Recovered to Date:**		**15.61**
B-35	33.58	4/24/95	16.10	0.23	16.33	17.05	NA
		5/22/95	16.24	0.19	16.43	16.99	NA
		6/26/95	16.45	0.23	16.68	16.70	NA
		7/24/95	16.65	0.21	16.86	16.54	NA
		8/28/95	17.35	0.17	17.52	15.92	NA
		9/25/95	17.02	0.30	17.32	16.00	NA
		10/23/95	16.94	0.21	17.15	16.25	NA
		11/27/95	16.50	0.06	16.56	16.97	0.08
		12/28/95	15.60	0.01	15.61	17.96	0.02
		1/22/96	15.52	0.05	15.57	17.97	NA
		2/26/96	13.50	0.05	13.55	19.99	NA
		4/22/96	17.78	0.06	17.84	15.69	NA
		5/28/96	15.08	0.00	15.08	18.50	NA
		6/24/96	NA		15.54	18.04	NA
		7/22/96	NA		16.06	17.52	NA
		8/23/96	NA		16.85	16.73	NA
		9/23/96	NA		16.60	16.98	NA
		10/28/96	16.85	0.06	16.91	16.62	NA
		1/31/97	NP		14.84	18.74	--
		4/21/97	NP		15.74	17.84	--
		7/28/97	NP		16.05	17.53	--
		10/14/97	NP		16.57	17.01	--
		1/19/98	NP		15.95	17.63	--
		4/20/98	NP		16.04	17.54	--
		7/29/98	NP		16.31	17.27	--
	33.56	11/16/98	NP		16.69	16.87	--

COP0014827

Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				Tosco			
B-35	33.56	2/23/99	NP		15.08	18.48	
		5/18/99	NP		15.68	17.88	
		8/17/99	NP		16.23	17.33	
Summary for Well	B-35 (29 detail records)				SPH Recovered to Date:		0.10
B-36	30.97	3/28/95	NA		14.65	16.32	NA
		4/24/95	NA		14.95	16.02	NA
		5/22/95	NA		15.03	15.94	NA
		6/26/95	NA		15.24	15.73	NA
		7/24/95	NA		15.47	15.50	NA
		8/28/95	NA		15.35	15.62	NA
		9/25/95	NA		15.82	15.15	NA
		10/23/95	NA		15.60	15.37	NA
		12/28/95	NA		13.91	17.06	NA
		1/22/96	0	0.00	13.93	5.20	NA
		2/26/96	0	0.00	10.75	11.08	NA
		4/22/96	NA		14.10	16.87	NA
		5/28/96	NA		13.01	17.96	NA
		6/24/96	NA		13.84	17.13	NA
		7/22/96	NA		15.01	15.96	NA
		8/23/96	NA		15.81	15.16	NA
		9/23/96	NA		15.65	15.32	NA
		10/28/96	NA		15.55	15.42	NA
		1/31/97	NP		13.44	17.53	--
		4/21/97	NP		14.66	16.31	--
		7/28/97	NP		15.01	15.96	--
		10/14/97	NP		15.55	15.42	--
		1/19/98	NP		14.43	16.54	--
		4/20/98	NP		15.06	15.91	--
		7/29/98	NP		18.07	12.90	--
	31.02	11/16/98	NP		15.46	15.56	--
		2/23/99	NP		13.12	17.90	
		5/18/99	NP		14.23	16.79	

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Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				Tosco			
B-36	31.02	8/17/99	NP		15.01	16.01	
Summary for Well	B-36 (29 detail records)				SPH Recovered to Date:		
B-37	35.24	3/28/95	NA		18.51	16.73	NA
		4/24/95	NA		19.66	15.58	NA
		5/22/95	NA		19.62	15.62	NA
		6/26/95	NA		19.75	15.49	NA
		7/24/95	NA		20.08	15.16	NA
		8/28/95	NA		20.10	15.14	NA
		9/25/95	20.41	0.01	20.42	14.81	NA
		10/23/95	20.44	0.01	20.45	14.78	NA
		11/27/95	19.90	0.00	19.90	15.34	NA
		12/28/95	19.66	0.00	19.66	15.58	NA
		1/22/96	18.20	0.03	18.23	16.98	NA
		2/26/96	NA		14.15	21.09	NA
		4/22/96	NA		18.90	16.34	NA
		5/28/96	NA		17.94	17.30	NA
		6/24/96	NA		19.13	16.11	NA
		7/22/96	NA		20.13	15.11	NA
		8/23/96	NA		20.15	15.09	NA
		9/23/96	NA		20.76	14.48	NA
		10/28/96	NA		20.87	14.37	NA
		1/31/97	NP		19.29	15.95	2.0
		4/21/97	NP		19.98	15.26	0.0
		7/28/97	NP		20.30	14.94	--
		10/14/97	NP		20.86	14.38	--
		1/19/98	NP		19.95	15.29	--
		4/20/98	NP		20.22	15.02	--
		7/29/98	NP		19.60	15.64	--
	35.83	11/16/98	NP		20.23	15.60	--
		2/23/99	NP		11.03	24.80	
		5/18/99	NP		18.56	17.27	
		8/17/99	NP		19.41	16.42	

COP0014829

Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				Tosco			
Summary for Well B-37 (30 detail records)					SPH Recovered to Date:		2.00
B-38	34.75	3/28/95	18.95	1.95	20.90	12.19	NA
		4/24/95	19.17	1.51	20.68	12.79	NA
		5/22/95	19.13	1.45	20.58	12.94	NA
		6/26/95	19.30	1.16	20.46	13.30	NA
		7/24/95	19.75	0.17	19.92	14.69	0.2
		8/28/95	19.82	0.71	20.53	13.62	NA
		9/25/95	19.99	1.03	21.02	12.85	NA
		10/23/95	20.00	1.03	21.03	12.84	NA
		11/27/95	19.50	0.32	19.82	14.66	0.81
		1/22/96	18.89	0.14	19.03	15.60	0.45
		2/26/96	13.70	0.37	14.07	20.37	1.31
		4/22/96	18.63	0.25	18.88	15.66	NA
		7/22/96	19.59	1.25	20.84	12.85	NA
		8/23/96	18.70	0.03	18.73	15.99	NA
		9/23/96	20.18	0.78	20.96	13.13	NA
		10/28/96	20.18	0.70	20.88	13.28	NA
		1/31/97	18.80	0.45	19.25	15.12	2.0
		4/21/97	19.39	0.64	20.03	14.18	0.6
		7/25/97	19.78	0.21	19.99	14.58	0.75
		10/14/97	20.30	0.01	20.31	14.43	1.5
		1/19/98	NM		NM		--
Summary for Well B-38 (21 detail records)					SPH Recovered to Date:		7.62
EX-39	33.92	3/28/95	18.14	0.04	18.18	15.71	NA
		4/24/95	18.31	0.03	18.34	15.55	NA
		5/22/95	18.28	0.03	18.31	15.58	NA
		6/26/95	18.43	0.09	18.52	15.32	NA
		7/24/95	18.73	0.13	18.86	14.95	NA
		8/28/95	18.95	0.11	19.06	14.77	NA
		9/25/95	19.08	0.14	19.22	14.58	NA
		10/23/95	19.09	0.20	19.29	14.46	NA
		11/27/95	19.55	0.07	19.62	14.24	0.11

COP0014830

Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				Tosco			
EX-39	33.92	12/28/95	18.05	0.18	18.23	15.54	0.04
		1/22/96	17.03	0.07	17.10	16.76	0.01
		2/26/96	13.54	0.46	14.00	19.53	0.03
		4/22/96	18.65	0.08	18.73	15.12	0.9
		5/28/96	16.64	0.12	16.76	17.06	0.02
		6/24/96	17.67	0.72	18.39	14.92	0.03
		7/22/96	18.68	0.03	18.71	15.18	0.01
		8/23/96	19.16	0.87	20.05	13.13	0.4
		9/23/96	19.42	0.09	19.51	14.33	NA
		10/28/96	19.25	0.04	19.29	14.60	NA
		1/31/97	18.27	0.91	19.18	13.97	2.0
		4/21/97	18.43	0.10	18.53	15.31	0.4
		7/25/97	18.72	0.97	19.69	13.41	2.75
		10/15/97	19.45	0.76	20.21	13.06	3.3
		1/19/98	18.39	0.58	18.97	14.46	1.0
		4/20/98	18.51	2.15	20.66	11.43	3.5
	33.09	7/29/98	17.71	0.75	18.46	13.99	28.0
		11/16/98	NP		19.45	13.64	--
		2/23/99	16.79	0.09	16.88	16.13	
		5/18/99	16.81	0.46	17.27	15.43	3.5
		8/17/99	17.60	0.43	18.03	14.69	0.6
Summary for Well	EX-39 (30 detail records)				**SPH Recovered to Date:**		**46.60**
B-40	33.19	3/28/95	17.55	0.09	17.64	15.47	NA
		4/24/95	17.84	0.12	17.96	15.13	NA
		5/22/95	17.75	0.11	17.86	15.24	NA
		6/26/95	17.95	0.11	18.06	15.04	NA
		8/28/95	18.40	0.01	18.41	14.77	NA
		9/25/95	NA		18.77	14.42	NA
		10/23/95	18.74	0.01	18.75	14.43	NA
		11/27/95	17.98	0.02	18.00	15.17	NA
		12/28/95	17.23	0.00	17.23	15.96	NA
		1/22/96	NA		16.40	16.79	NA

COP0014831

Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				Tosco			
B-40	33.19	2/26/96	NA		12.75	20.44	NA
		4/22/96	17.01	0.00	17.01	16.18	NA
		5/28/96	15.78	0.29	16.07	16.87	NA
		6/24/96	16.99	0.15	17.14	15.92	0.23
		7/22/96	18.32	0.12	18.44	14.65	0.01
		8/23/96	18.87	0.06	18.93	14.21	0.02
		9/23/96	19.06	0.06	19.12	14.02	NA
		10/28/96	NA		19.02	14.17	NA
		1/31/97	16.76	0.54	17.30	15.43	NA
		4/21/97	17.79	0.02	17.81	15.36	0.4
		7/25/97	18.86	0.04	18.90	14.26	1.5
		10/14/97	NP		19.89	13.30	0.25
		1/19/98	NP		17.53	15.66	–
		4/20/98	NP		18.45	14.74	–
		7/29/98	18.25	0.37	18.62	14.26	4.0
	34.70	11/16/98	18.55	1.14	19.69	14.04	3.0
		2/23/99	16.25	0.89	17.14	16.80	
		5/18/99	17.10	0.14	17.24	17.34	1.2
	34.7	8/17/99	17.92	1.08	19.00	14.78	1.0
Summary for Well	B-40 (29 detail records)				SPH Recovered to Date:		11.61
B-41	34.85	3/28/95	18.80	0.08	18.88	15.90	NA
		4/24/95	18.93	0.06	18.99	15.81	NA
		5/22/95	18.95	0.07	19.02	15.77	NA
		6/26/95	19.11	0.06	19.17	15.63	NA
		8/28/95	18.55	0.70	19.25	15.01	NA
		9/25/95	19.73	0.20	19.93	14.75	NA
		10/23/95	19.70	0.60	20.30	14.04	NA
		11/27/95	18.50	0.15	18.65	16.07	0.23
		1/22/96	17.38	0.04	17.42	17.40	0.18
		2/26/96	13.40	0.41	13.81	20.69	NA
		4/22/96	12.75	0.23	12.98	21.67	NA
		9/23/96	19.38	0.02	19.40	15.43	0.06

COP0014832

Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				Tosco			
B-41	34.85	10/28/96	19.87	0.08	19.95	14.83	NA
		1/31/97	NP		18.31	16.54	--
		4/21/97	18.51	0.03	18.54	16.28	0.2
		7/25/97	18.13	0.70	18.83	15.43	0.1
		10/14/97	NP		19.40	15.45	--
		1/19/98	NM		NM		--
		4/20/98	18.52	0.11	18.63	16.13	1.5
		7/29/98	NP		18.32	16.53	--
	34.63	11/16/98	NP		18.79	15.84	--
		2/23/99	NP		16.92	17.71	
		5/18/99	NP		17.46	17.17	0.1
		8/17/99	NP		18.20	16.43	
Summary for Well B-41 (24 detail records)					**SPH Recovered to Date:**		**2.37**
DW-1	35.93	1/26/98	NP		19.56	16.37	--
		7/29/98	NP		19.37	16.56	--
		2/23/99	NP		18.07	17.86	
		5/18/99	NP		18.58	17.35	
		8/17/99	NP		19.23	16.70	
Summary for Well DW-1 (5 detail records)					**SPH Recovered to Date:**		
DW-2	36.05	1/27/98	NP		19.65	16.40	--
		7/29/98	NP		19.52	16.53	--
		2/23/99	NP		18.16	17.89	
		5/18/99	NP		18.65	17.40	
		8/17/99	NP		19.31	16.74	
Summary for Well DW-2 (5 detail records)					**SPH Recovered to Date:**		
IF-1		2/23/99	NP		18.71		
		8/17/99	NP		19.93		
Summary for Well IF-1 (2 detail records)					**SPH Recovered to Date:**		
IF-2		2/23/99	NP		18.76		
		5/18/99	NP		19.22		

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Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
			Tosco				
IF-2		8/17/99	NP		19.98		
Summary for Well IF-2 (3 detail records)					SPH Recovered to Date:		
IT-E	36.44	1/31/97	18.85	0.62	19.47	16.44	0.5
		4/21/97	19.69	0.63	20.32	15.58	0.3
		7/28/97	20.05	0.60	20.65	15.28	2.0
		10/14/97	20.69	0.03	20.72	15.69	0.8
		1/19/98	19.79	0.01	19.80	16.63	--
		4/22/98	NP		19.83	16.61	--
		7/29/98	NP		19.70	16.74	--
	36.07	11/16/98	NP		20.13	15.94	--
		2/23/99	NP		18.20	17.87	
		5/18/99	NP		18.78	17.29	
		8/17/99	NP		19.70	16.37	
Summary for Well IT-E (11 detail records)					SPH Recovered to Date:		3.60
IT-W	35.99	1/31/97	NP		16.65	19.34	--
		4/21/97	NP		17.44	18.55	--
		7/28/97	NP		17.81	18.18	--
		10/14/97	NP		18.33	17.66	--
		1/19/98	NP		17.72	18.27	--
		4/20/98	NP		17.81	18.18	--
		7/29/98	NP		18.08	17.91	--
		11/16/98	NP		18.49	17.50	--
		2/23/99	NP		16.85	19.14	
		5/18/99	NP		17.47	18.52	
		8/17/99	NP		18.05	17.94	
Summary for Well IT-W (11 detail records)					SPH Recovered to Date:		
OF-1	-	2/23/99	NP		17.88		
		5/18/99	NP		18.40		
		8/17/99	NP		19.11		
Summary for Well OF-1 (3 detail records)					SPH Recovered to Date:		

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Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
			Tosco				
OF-2	-	2/23/99	NP		18.04		
		5/18/99	NP		18.52		
		8/17/99	NP		19.25		
Summary for Well OF-2 (3 detail records)					**SPH Recovered to Date:**		
P-1	18.24	11/16/98	NP		9.43	8.81	
		2/23/99	NP		5.99	12.25	
		5/18/99	NP		5.49	12.75	
Summary for Well P-1 (3 detail records)					**SPH Recovered to Date:**		
P-2	17.85	11/16/98	NP		5.17	12.68	
		2/23/99	NP		3.78	14.07	
		5/18/99	NP		3.81	14.04	
Summary for Well P-2 (3 detail records)					**SPH Recovered to Date:**		
RES-N	38.58	3/28/95	23.14	0.76	23.90	14.03	NA
		4/24/95	23.17	1.74	24.91	12.19	NA
		5/22/95	23.17	0.75	23.92	14.02	NA
		6/26/95	23.26	0.75	24.01	13.93	NA
		8/28/95	23.64	0.68	24.32	13.68	NA
		9/25/95	23.75	0.50	24.25	13.90	NA
		10/23/95	23.80	0.60	24.40	13.67	NA
		11/27/95	23.26	0.60	23.86	14.21	1.59
		12/28/95	22.59	0.02	22.61	15.95	1.21
		1/22/96	20.91	0.03	20.94	17.61	5.0
		2/26/96	23.34	0.76	24.10	13.83	41.25
		4/22/96	22.14	0.02	22.16	16.40	NA
		5/28/96	21.11	0.00	21.11	17.47	NA
		6/24/96	22.41	0.00	22.41	16.17	NA
		7/22/96	22.88	0.00	22.88	15.70	NA
		7/24/96	23.45	0.76	24.21	13.72	NA
		8/23/96	NA		22.21	16.37	NA
		9/23/96	23.74	0.02	23.76	14.80	NA
		10/28/96	NA		24.32	14.26	NA

COP0014835

Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				Tosco			
RES-N	38.58	1/31/97	22.45	0.09	22.54	15.96	2.0
		4/21/97	23.00	0.01	23.01	15.56	NA
		7/28/97	23.46	0.02	23.48	15.08	0.1
		10/14/97	23.84	0.02	23.86	14.70	1.3
		1/19/98	NM		NM		--
		4/20/98	NP		21.65	16.93	--
		7/29/98	NP		21.41	17.17	--
		11/16/98	NP		21.98	16.60	--
		2/23/99	NP		20.15	18.43	
		5/18/99	NP		20.64	17.94	
		8/17/99	NP		21.3	17.28	
Summary for Well	RES-N (30 detail records)				SPH Recovered to Date:		52.45
RES-O	36.03	3/28/95	17.61	0.04	17.65	18.35	NA
		4/24/95	17.78	0.02	17.80	18.21	NA
		5/22/95	17.99	0.02	18.01	18.00	NA
		6/26/95	18.26	0.02	18.28	17.73	NA
		8/28/95	17.30	0.25	17.55	18.27	NA
		9/25/95	18.60	0.61	19.21	16.30	NA
		10/23/95	18.90	0.14	19.04	16.87	NA
		11/27/95	19.25	0.01	19.26	16.76	0.01
		12/28/95	17.53	0.01	17.54	18.48	NA
		1/22/96	17.42	0.07	17.49	18.48	NA
		2/26/96	12.50	0.11	12.61	23.33	NA
		4/22/96	10.95	0.10	11.05	24.90	NA
		5/28/96	16.82	0.00	16.82	19.21	NA
		6/24/96	17.18	0.01	17.19	18.83	NA
		7/22/96	17.53	0.01	17.54	18.48	NA
		8/23/96	18.10	0.01	18.11	17.91	NA
		9/23/96	18.22	0.08	18.30	17.66	NA
		10/28/96	18.10	0.05	18.15	17.84	NA
		1/31/97	NP		16.20	19.83	--
		4/21/97	NP		17.00	19.03	--

COP0014836

Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				Tosco			
RES-O	36.03	7/28/97	NP		17.65	18.38	–
		10/14/97	NP		18.39	17.64	–
		1/19/98	NP		17.60	18.43	–
		4/20/98	NP		17.38	18.65	–
		7/29/98	NP		17.91	18.12	–
		11/18/98	NP		18.52	17.51	–
		2/23/99	NP		16.22	19.81	
		5/18/99	NP		16.88	19.15	
		8/17/99	NP		17.79	18.24	
Summary for Well RES-O (29 detail records)					SPH Recovered to Date:		0.01
U-2	35.02	3/28/95	NA		14.88	20.14	NA
		4/24/95	NA		15.10	19.92	NA
		5/22/95	NA		15.25	19.77	NA
		6/26/95	NA		15.52	19.50	NA
		7/24/95	NA		15.75	19.27	NA
		8/28/95	NA		15.65	19.37	NA
		9/25/95	NA		15.20	19.82	NA
		10/23/95	NA		16.57	18.45	NA
		12/28/95	NA		15.06	19.96	NA
		1/22/96	NA		16.44	18.58	NA
		2/26/96	NA		14.35	20.67	NA
		4/22/96	NA		15.01	20.01	NA
		5/28/96	NA		13.98	21.04	NA
		6/24/96	NA		14.36	20.66	NA
		7/22/96	NA		14.96	20.06	NA
		8/23/96	NA		15.10	19.92	NA
		9/23/96	NA		14.93	20.09	NA
		10/28/96	NA		14.85	20.17	NA
		1/31/97	NP		13.86	21.16	–
		4/21/97	NP		14.52	20.50	–
		7/28/97	NP		15.27	19.75	–
		10/15/97	NP		16.28	18.74	–

COP0014837

Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				Tosco			
U-2	35.02	1/19/98	NP		15.78	19.24	--
		4/20/98	NP		15.30	19.72	--
		7/29/98	NP		15.80	19.22	0.1
		11/16/98	NP		16.71	18.31	--
		2/23/99	NP		14.29	20.73	
		5/18/99	NP		14.61	20.41	
		8/17/99	NP		15.65	19.37	
Summary for Well U-2 (29 detail records)					**SPH Recovered to Date:**		0.10
U-3	35.25	3/28/95	NA		12.72	22.53	NA
		4/24/95	NA		12.93	22.32	NA
		5/22/95	NA		13.55	21.70	NA
		6/26/95	13.89	0.01	13.90	21.34	NA
		7/24/95	NA		14.02	21.23	NA
		8/28/95	NA		19.65	15.60	NA
		9/25/95	NA		16.35	18.90	NA
		10/23/95	14.20	0.01	14.21	21.03	NA
		11/27/95	14.20	0.00	14.20	21.05	NA
		12/28/95	12.71	0.00	12.71	22.54	NA
		1/22/96	16.56	0.02	16.58	18.65	NA
		2/26/96	14.51	-0.36	14.15	21.41	NA
		4/22/96	NA		15.15	20.10	NA
		5/28/96	NA		12.27	22.98	NA
		6/24/96	NA		12.69	22.56	NA
		7/22/96	NA		13.02	22.23	NA
		8/23/96	NA		13.15	22.10	NA
		9/23/96	NA		15.02	20.23	NA
		10/28/96	NA		17.90	17.35	NA
		1/31/97	NP		11.86	23.39	0.00
		4/21/97	NP		12.82	22.43	0.00
		7/28/97	NP		13.83	21.42	0.00
		10/15/97	NP		14.23	21.02	--
		1/19/98	NP		13.04	22.21	--

COP0014838

Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				Tosco			
U-3	35.25	4/20/98	NP		13.23	22.02	--
		7/29/98	NP		14.07	21.18	--
		11/16/98	NP		14.42	20.83	--
		2/23/99	NP		12.89	22.36	
		5/18/99	NP		13.09	22.16	
		8/17/99	NP		14.16	21.09	
Summary for Well	U-3 (30 detail records)				**SPH Recovered to Date:**		**0.00**
U-4	34.46	3/28/95	17.42	3.98	21.40	9.68	NA
		4/24/95	15.60	6.17	21.77	7.45	NA
		5/22/95	15.75	6.18	21.93	7.28	NA
		6/26/95	15.96	6.16	22.12	7.10	NA
		7/24/95	16.33	4.17	20.50	10.42	NA
		8/28/95	17.23	3.72	20.95	10.35	5.2
		9/25/95	18.60	0.25	18.85	15.40	NA
		10/23/95	17.35	3.90	21.25	9.89	NA
		11/27/95	16.40	2.40	18.80	13.62	1.22
		1/22/96	17.60	0.04	17.64	16.79	2.79
		2/26/96	12.85	0.30	13.15	21.06	0.98
		4/22/96	11.50	0.23	11.73	22.53	0.31
		8/23/96	16.31	0.16	16.47	17.85	0.25
		9/23/96	16.61	0.09	16.70	17.68	NA
		10/28/96	17.56	0.19	17.75	16.55	NA
		1/31/97	14.80	2.25	17.05	15.50	6.5
		4/21/97	15.26	0.09	15.35	19.03	NA
		7/25/97	15.85	0.01	15.86	18.59	0.1
		10/15/97	16.50	0.01	16.51	17.94	0.75
		1/19/98	15.97	0.03	16.00	18.43	2.0
		4/20/98	15.72	2.42	18.14	14.26	3.0
		7/29/98	16.22	0.01	16.23	18.22	0.3
		11/16/98	NP		16.82	17.64	--
		2/23/99	14.54	1.24	15.78	17.63	
		5/18/99	15.37	0.02	15.39	19.05	0.5

COP0014839

Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				Tosco			
U-4	34.46	8/17/99	NP		16.22	18.24	
Summary for Well U-4 (26 detail records)					SPH Recovered to Date:		23.90
U-5	33.37	3/28/95	NA		18.21	15.16	NA
		4/24/95	NA		18.47	14.90	NA
		5/22/95	NA		18.33	15.04	NA
		6/26/95	NA		8.42	24.95	NA
		7/24/95	18.9	0.01	18.91	14.45	NA
		8/28/95	19.13	0.12	19.25	14.02	NA
		9/25/95	19.27	0.25	19.52	13.64	NA
		10/23/95	19.32	0.17	19.49	13.74	NA
		11/27/95	18.50	0.10	18.60	14.69	0.03
	34.2	12/28/95	18.43	0.05	18.48	15.68	0.07
		1/22/96	15.57	0.08	15.65	18.48	0.02
		2/26/96	13.55	0.15	13.70	20.37	NA
		4/22/96	17.82	0.08	17.90	16.23	0.02
		5/28/96	16.52	0.01	16.53	17.66	NA
		6/24/96	18.10	0.01	18.11	16.08	NA
		7/22/96	19.39	0.03	19.42	14.75	NA
		9/23/96	20.04	0.04	20.08	14.09	NA
		10/28/96	18.15	0.07	18.22	15.92	NA
		1/31/97	NP		18.01	16.19	0.00
	34.20	4/21/97	NP		18.61	15.59	0.00
		7/28/97	NP		19.38	14.82	0.00
		10/15/97	NP		19.87	14.33	--
		1/19/98	NM		NM		--
		4/20/98	NP		19.58	14.62	--
	33.38	7/29/98	NP		18.82	14.56	--
	34.13	11/16/98	NP		19.24	14.89	--
		2/23/99	NP		16.84	17.29	
		5/18/99	NP		17.5	16.63	
		8/17/99	NP		18.60	15.53	
Summary for Well U-5 (29 detail records)					SPH Recovered to Date:		0.14

COP0014840

Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
				Tosco			
U-5A	33.77	3/28/95	4.73	1.47	6.20	26.32	NA
		4/24/95	6.02	0.39	6.41	27.03	NA
		5/22/95	6.52		NM		NA
		6/26/95	6.97		NM		0.5
		7/24/95	9.86	0.37	10.23	23.23	NA
		8/28/95	9.50	0.45	9.95	23.44	0.01
		9/25/95	NA		15.61	18.16	NA
		10/23/95	15.30	0.20	15.50	18.10	NA
		11/27/95	6.34	0.08	6.42	27.28	0.36
		12/28/95	5.97	0.42	6.39	27.02	0.25
		1/22/96	6.43	0.07	6.50	27.21	0.07
		2/26/96	8.50	0.03	8.53	25.21	0.08
		4/22/96	9.35	0.05	9.40	24.33	0.05
		6/24/96	5.79	0.32	6.11	27.39	0.15
		7/22/96	6.47	0.07	6.54	27.17	0.05
		8/23/96	7.21	0.89	8.10	24.91	0.32
		9/23/96	8.58	1.31	9.89	22.77	NA
		10/28/96	20.04	0.03	20.07	13.67	NA
		1/31/97	4.59	0.27	4.86	28.68	10.0
		4/21/97	5.33	0.04	5.37	28.37	NA
		7/25/97	6.89	0.06	6.95	26.77	1.1
		10/15/97	7.88	0.01	7.89	25.87	0.5
		1/19/98	NP		6.51	27.26	–
		4/20/98	6.43	0.05	6.48	27.25	2.7
		7/29/98	7.80	0.10	7.90	25.79	4.5
		11/16/98	NP		8.99	24.78	–
		2/23/99	NP		4.78	28.99	
		5/18/99	5.97	0.02	5.99	27.76	0.4
		8/17/99	NP		7.74	26.03	
Summary for Well U-5A (29 detail records)					**SPH Recovered to Date:**		**21.04**

COP0014841

Table 5 (continued)
Groundwater Elevation and SPH Recovery Data

Willbridge Terminal
Portland, Oregon

Well Identification	Top of Casing	Date Gauged	Depth to SPH (feet)	SPH Thickness (feet)	Depth to Groundwater (feet)	Groundwater Elevation* (feet)	SPH Recovered** (gallons)
					Total SPH Recovered (all wells)		574.40

Notes:
SPH = Separate Phase Hydrocarbon
NP = No product observed this gauging date
NA = Not available
NM = Not measured
* = Groundwater elevation is corrected for the presence of SPH using:
GWE=TOC-(DTW-(SPH thickness x Specific gravity of SPH))
Specific Gravity of SPH set to 0.85 g/cc
** = SPH recovered represents total product recovered for entire quarter
Negative numbers in SPH thickness field indicate possible data transcription error. Data is reported for completeness.

Wells Surveyed Dec. 1998:

B-1	B-12	B-35	U-5
B-3	B-17	B-36	IT-E
B-4	B-18	B-37	MW-27
B-6	B-20	B-40	MW-31
B-8	B-21	B-41	
B-9	B-25	DW-1	
B-10	B-28	P-1	
B-11	B-30	P-2	

COP0014842

ATTACHMENT A

SAMPLING PROTOCOL

CERTIFIED ANALYTICAL REPORTS

CHAIN-OF-CUSTODY DOCUMENTATION

ATTACHMENT A

Sampling Protocol

The groundwater sampling procedure employed by PEG consists of first measuring depth to water and separate-phase hydrocarbon level and thickness (if present) in each well equipped with a Keck KIR-89 oil/water interface probe. Each well scheduled for sampling was then purged of a minimum of three casing volumes of water (or until dry) by using a double diaphragm pump with a flexible polyvinyl chloride (PVC) hose "stinger" system. The stinger system was decontaminated prior to and between uses with an Alconox™-water wash and a water rinse. Groundwater samples were collected using single-use, disposable polyethylene (PE) bailers after the wells recovered to at least 60 percent of the pre-purge static water level. The samples were placed into appropriate EPA-approved containers, labeled, logged onto chain-of-custody documents, and transported at 4°C to the selected analytical laboratory. Dissolved metal samples were filtered in the field using a 0.45-micron filter capsule, disposable Tygon® tubing and a peristaltic pump. Purge water was disposed of using facility treatment systems.

COP0014844

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IT Corp./EMCON	Project:	Willbridge (TOSCO)	Sampled: 8/24/99
P.O. Box 231269	Project Number:	B153002A-002	Received: 8/25/99
Portland, OR 97224	Project Manager:	Tim Stone	Reported: 9/13/99 09:16

ANALYTICAL REPORT FOR SAMPLES:

Sample Description	Laboratory Sample Number	Sample Matrix	Date Sampled
TC-082499-1 U-2	P908462-01	Water	8/24/99
TC-082499-2 U-3	P908462-02	Water	8/24/99
TC-082499-3 B-37	P908462-03	Water	8/24/99
TC-082499-4 U-5	P908462-04	Water	8/24/99
TC-082499-5 B-22	P908462-05	Water	8/24/99
TC-082499-6 B-18	P908462-06	Water	8/24/99
TC-082499-7 B-36	P908462-07	Water	8/24/99
TC-082499-8 B-35	P908462-08	Water	8/24/99
TC-082499-9 B-17	P908462-09	Water	8/24/99
TC-082499-10 B-4	P908462-10	Water	8/24/99
TC-082499-11 U-4	P908462-11	Water	8/24/99

North Creek Analytical - Portland

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.

Crystal Burkholder, Project Manager

North Creek Analytical, Inc.
Environmental Laboratory Network

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Bend 20332 Empire Avenue, Suite F-1, Bend, OR 97701-5711
541.383.9310 fax 541.382.7588

IT Corp./EMCON	Project:	Willbridge (TOSCO)	Sampled: 8/24/99
P.O. Box 231269	Project Number:	B153002A-002	Received: 8/25/99
Portland, OR 97224	Project Manager:	Tim Stone	Reported: 9/13/99 09:16

BTEX per EPA Method 8021B
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
TC-082499-1			P908462-01				Water	
Benzene	0890713	8/26/99	8/26/99		0.500	ND	ug/l	
Toluene	"	"	"		0.500	ND	"	
Ethylbenzene	"	"	"		0.500	ND	"	
Xylenes (total)	"	"	"		1.00	ND	"	
Surrogate: 4-BFB (PID)	"	"	"	*75.0-120*		*95.8*	%	
TC-082499-2			P908462-02				Water	
Benzene	0890713	8/26/99	8/26/99		0.500	ND	ug/l	
Toluene	"	"	"		0.500	1.25	"	
Ethylbenzene	"	"	"		0.500	0.692	"	
Xylenes (total)	"	"	"		1.00	ND	"	
Surrogate: 4-BFB (PID)	"	"	"	*75.0-120*		*95.0*	%	
TC-082499-3			P908462-03				Water	
Benzene	0890713	8/26/99	8/26/99		0.500	ND	ug/l	
Toluene	"	"	"		0.500	ND	"	
Ethylbenzene	"	"	"		0.500	ND	"	
Xylenes (total)	"	"	"		1.00	ND	"	
Surrogate: 4-BFB (PID)	"	"	"	*75.0-120*		*95.2*	%	
TC-082499-4			P908462-04				Water	
Benzene	0890713	8/26/99	8/26/99		0.500	2.75	ug/l	
Toluene	"	"	"		0.500	ND	"	
Ethylbenzene	"	"	"		0.500	ND	"	
Xylenes (total)	"	"	"		1.00	ND	"	
Surrogate: 4-BFB (PID)	"	"	"	*75.0-120*		*94.0*	%	
TC-082499-5			P908462-05				Water	
Benzene	0890797	8/30/99	8/30/99		0.500	ND	ug/l	
Toluene	"	"	"		0.500	ND	"	
Ethylbenzene	"	"	"		0.500	1.63	"	
Xylenes (total)	"	"	"		1.00	3.76	"	
Surrogate: 4-BFB (PID)	"	"	"	*75.0-120*		*110*	%	
TC-082499-6			P908462-06				Water	
Benzene	0890713	8/26/99	8/26/99		0.500	ND	ug/l	
Toluene	"	"	"		0.500	ND	"	
Ethylbenzene	"	"	"		0.500	3.12	"	

North Creek Analytical - Portland

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

Crystal Burkholder, Project Manager

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IT Corp./EMCON	Project:	Willbridge (TOSCO)	Sampled: 8/24/99
P.O. Box 231269	Project Number:	B153002A-002	Received: 8/25/99
Portland, OR 97224	Project Manager:	Tim Stone	Reported: 9/13/99 09:16

BTEX per EPA Method 8021B
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
TC-082499-6 (continued)			**P908462-06**				**Water**	
Xylenes (total)	0890713	8/26/99	8/26/99		1.00	5.92	ug/l	
Surrogate: 4-BFB (PID)	"	"	"	*75.0-120*		*98.4*	%	
TC-082499-7			**P908462-07**				**Water**	
Benzene	0890713	8/26/99	8/26/99		0.500	0.584	ug/l	
Toluene	"	"	"		0.500	ND	"	
Ethylbenzene	"	"	"		0.500	ND	"	
Xylenes (total)	"	"	"		1.00	ND	"	
Surrogate: 4-BFB (PID)	"	"	"	*75.0-120*		*93.0*	%	
TC-082499-8			**P908462-08**				**Water**	
Benzene	0890745	8/27/99	8/27/99		0.500	71.4	ug/l	
Toluene	"	"	"		0.500	36.0	"	
Ethylbenzene	"	"	"		0.500	34.7	"	
Xylenes (total)	"	"	"		1.00	58.4	"	
Surrogate: 4-BFB (PID)	"	"	"	*75.0-120*		*146*	%	*1*
TC-082499-9			**P908462-09**				**Water**	
Benzene	0890745	8/27/99	8/27/99		5.00	382	ug/l	
Toluene	"	"	"		5.00	21.6	"	
Ethylbenzene	"	"	"		5.00	7.55	"	
Xylenes (total)	"	"	"		10.0	13.0	"	
Surrogate: 4-BFB (PID)	"	"	"	*75.0-120*		*99.0*	%	
TC-082499-10			**P908462-10**				**Water**	
Benzene	0890745	8/27/99	8/27/99		0.500	46.3	ug/l	
Toluene	"	"	"		0.500	14.1	"	
Ethylbenzene	"	"	"		0.500	63.0	"	
Xylenes (total)	"	"	"		1.00	106	"	
Surrogate: 4-BFB (PID)	"	"	"	*75.0-120*		*NR*	%	*1*
TC-082499-11			**P908462-11**				**Water**	
Benzene	0890713	8/26/99	8/26/99		5.00	148	ug/l	
Surrogate: 4-BFB (PID)	"	"	"	*75.0-120*		*94.2*	%	
Toluene	0890797	8/30/99	8/30/99		0.500	ND	ug/l	
Ethylbenzene	"	"	"		0.500	ND	"	
Xylenes (total)	"	"	"		1.00	ND	"	
Surrogate: 4-BFB (PID)	"	"	"	*75.0-120*		*100*	%	

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IT Corp./EMCON	Project:	Willbridge (TOSCO)	Sampled: 8/24/99
P.O. Box 231269	Project Number:	B153002A-002	Received: 8/25/99
Portland, OR 97224	Project Manager:	Tim Stone	Reported: 9/13/99 09:16

Total Metals per EPA 6000/7000 Series Methods
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Specific Method	Reporting Limit	Result	Units	Notes*
TC-082499-1			P908462-01				Water	
Arsenic	0990077	9/2/99	9/2/99	EPA 6020	0.00100	0.00870	mg/l	
Barium	"	"	9/3/99	EPA 6020	0.00200	0.0408	"	
Cadmium	"	"	9/2/99	EPA 6020	0.00100	ND	"	
Chromium	"	"	"	EPA 6020	0.00100	0.00140	"	
Copper	"	"	"	EPA 6020	0.00200	0.00310	"	
Lead	"	"	"	EPA 6020	0.00100	0.00120	"	
Selenium	"	"	9/3/99	EPA 6020	0.00100	ND	"	
Silver	"	"	9/2/99	EPA 6020	0.00100	ND	"	
Zinc	"	"	"	EPA 6020	0.00500	0.00770	"	
Mercury	0890822	8/30/99	8/31/99	EPA 7470A	0.000200	ND	"	
TC-082499-2			P908462-02				Water	2
Arsenic	0990077	9/2/99	9/2/99	EPA 6020	0.00500	0.124	mg/l	
Barium	"	"	9/3/99	EPA 6020	0.0100	0.526	"	
Cadmium	"	"	9/2/99	EPA 6020	0.00500	ND	"	
Chromium	"	"	"	EPA 6020	0.00500	0.340	"	
Copper	"	"	"	EPA 6020	0.0100	0.133	"	
Lead	"	"	"	EPA 6020	0.00500	0.250	"	
Selenium	"	"	9/3/99	EPA 6020	0.00500	ND	"	
Silver	"	"	9/2/99	EPA 6020	0.00500	ND	"	
Zinc	"	"	"	EPA 6020	0.0250	0.912	"	
Mercury	0890822	8/30/99	8/31/99	EPA 7470A	0.000200	0.000684	"	
TC-082499-3			P908462-03				Water	
Arsenic	0990077	9/2/99	9/2/99	EPA 6020	0.00534	0.301	mg/l	
Barium	"	"	9/3/99	EPA 6020	0.00200	0.256	"	
Cadmium	"	"	9/2/99	EPA 6020	0.00100	ND	"	
Chromium	"	"	"	EPA 6020	0.00100	0.0292	"	
Copper	"	"	"	EPA 6020	0.00200	0.0690	"	
Lead	"	"	"	EPA 6020	0.00100	0.0109	"	
Selenium	"	"	9/3/99	EPA 6020	0.00100	ND	"	
Silver	"	"	9/2/99	EPA 6020	0.00100	ND	"	
Zinc	"	"	"	EPA 6020	0.00500	0.0891	"	
Mercury	0890822	8/30/99	8/31/99	EPA 7470A	0.000200	ND	"	2
TC-082499-4			P908462-04				Water	2
Arsenic	0990077	9/2/99	9/3/99	EPA 6020	0.00500	0.0390	mg/l	
Barium	"	"	"	EPA 6020	0.0100	1.05	"	

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IT Corp./EMCON	Project:	Willbridge (TOSCO)	Sampled: 8/24/99
P.O. Box 231269	Project Number:	B153002A-002	Received: 8/25/99
Portland, OR 97224	Project Manager:	Tim Stone	Reported: 9/13/99 09:16

Total Metals per EPA 6000/7000 Series Methods
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Specific Method	Reporting Limit	Result	Units	Notes*
TC-082499-4 (continued)			P908462-04				Water	2
Cadmium	0990077	9/2/99	9/3/99	EPA 6020	0.00500	0.00950	mg/l	
Chromium	"	"	"	EPA 6020	0.00500	0.115	"	
Copper	"	"	9/8/99	EPA 6020	0.0100	0.340	"	
Lead	"	"	"	EPA 6020	0.00500	0.137	"	
Selenium	"	"	9/3/99	EPA 6020	0.00500	ND	"	
Silver	"	"	9/8/99	EPA 6020	0.00500	ND	"	
Zinc	"	"	"	EPA 6020	0.163	15.4	"	
Mercury	0890822	8/30/99	8/31/99	EPA 7470A	0.000200	ND	"	
TC-082499-5			P908462-05				Water	
Arsenic	0990077	9/2/99	9/3/99	EPA 6020	0.00100	0.0233	mg/l	
Barium	"	"	"	EPA 6020	0.00200	0.243	"	
Cadmium	"	"	"	EPA 6020	0.00100	ND	"	
Chromium	"	"	"	EPA 6020	0.00100	0.0324	"	
Copper	"	"	9/8/99	EPA 6020	0.00200	0.0588	"	
Lead	"	"	"	EPA 6020	0.00100	0.0183	"	
Selenium	"	"	9/3/99	EPA 6020	0.00100	ND	"	
Silver	"	"	9/8/99	EPA 6020	0.00100	ND	"	
Zinc	"	"	"	EPA 6020	0.00500	0.106	"	
Mercury	0890822	8/30/99	8/31/99	EPA 7470A	0.000200	ND	"	2
TC-082499-6			P908462-06				Water	2
Arsenic	0990077	9/2/99	9/3/99	EPA 6020	0.00500	0.0305	mg/l	
Barium	"	"	"	EPA 6020	0.0100	1.03	"	
Cadmium	"	"	"	EPA 6020	0.00500	ND	"	
Chromium	"	"	"	EPA 6020	0.00500	0.159	"	
Copper	"	"	9/8/99	EPA 6020	0.0100	0.220	"	
Lead	"	"	"	EPA 6020	0.00500	0.0720	"	
Selenium	"	"	9/3/99	EPA 6020	0.00500	ND	"	
Silver	"	"	9/8/99	EPA 6020	0.00500	ND	"	
Zinc	"	"	"	EPA 6020	0.0250	0.381	"	
Mercury	0890822	8/30/99	8/31/99	EPA 7470A	0.000200	ND	"	
TC-082499-7			P908462-07				Water	
Arsenic	0990077	9/2/99	9/3/99	EPA 6020	0.00100	0.0119	mg/l	
Barium	"	"	"	EPA 6020	0.00200	0.105	"	
Cadmium	"	"	"	EPA 6020	0.00100	ND	"	
Chromium	"	"	"	EPA 6020	0.00100	0.00660	"	

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IT Corp./EMCON	Project:	Willbridge (TOSCO)	Sampled: 8/24/99
P.O. Box 231269	Project Number:	B153002A-002	Received: 8/25/99
Portland, OR 97224	Project Manager:	Tim Stone	Reported: 9/13/99 09:16

Total Metals per EPA 6000/7000 Series Methods
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Specific Method	Reporting Limit	Result	Units	Notes*
TC-082499-7 (continued)			P908462-07				Water	
Copper	0990077	9/2/99	9/8/99	EPA 6020	0.00200	0.0110	mg/l	
Lead	"	"	"	EPA 6020	0.00100	0.00230	"	
Selenium	"	"	9/3/99	EPA 6020	0.00100	ND	"	
Silver	"	"	9/8/99	EPA 6020	0.00100	ND	"	
Zinc	"	"	"	EPA 6020	0.00500	0.0198	"	
Mercury	0890822	8/30/99	8/31/99	EPA 7470A	0.000200	ND	"	
TC-082499-8			P908462-08				Water	2
Arsenic	0990077	9/2/99	9/3/99	EPA 6020	0.00500	0.0890	mg/l	
Barium	"	"	"	EPA 6020	0.0100	0.893	"	
Cadmium	"	"	"	EPA 6020	0.00500	ND	"	
Chromium	"	"	"	EPA 6020	0.00500	0.158	"	
Copper	"	"	9/8/99	EPA 6020	0.0100	0.243	"	
Lead	"	"	"	EPA 6020	0.00500	0.218	"	
Selenium	"	"	9/3/99	EPA 6020	0.00500	ND	"	
Silver	"	"	9/8/99	EPA 6020	0.00500	ND	"	
Zinc	"	"	"	EPA 6020	0.0250	0.718	"	
Mercury	0890822	8/30/99	8/31/99	EPA 7470A	0.000200	ND	"	
TC-082499-9			P908462-09				Water	
Arsenic	0990077	9/2/99	9/3/99	EPA 6020	0.00100	0.0498	mg/l	
Barium	"	"	"	EPA 6020	0.00200	0.332	"	
Cadmium	"	"	"	EPA 6020	0.00100	ND	"	
Chromium	"	"	"	EPA 6020	0.00100	0.0437	"	
Copper	"	"	9/8/99	EPA 6020	0.00200	0.0874	"	
Lead	"	"	"	EPA 6020	0.00100	0.0510	"	
Selenium	"	"	9/3/99	EPA 6020	0.00100	ND	"	
Silver	"	"	9/8/99	EPA 6020	0.00100	ND	"	
Zinc	"	"	"	EPA 6020	0.00500	0.113	"	
Mercury	0890822	8/30/99	8/31/99	EPA 7470A	0.000200	ND	"	2
TC-082499-10			P908462-10				Water	2
Arsenic	0990077	9/2/99	9/3/99	EPA 6020	0.00500	0.0370	mg/l	
Barium	"	"	"	EPA 6020	0.0100	0.393	"	
Cadmium	"	"	"	EPA 6020	0.00500	ND	"	
Chromium	"	"	"	EPA 6020	0.00500	0.0545	"	
Copper	"	"	9/8/99	EPA 6020	0.0100	0.0825	"	
Lead	"	"	"	EPA 6020	0.00500	0.0270	"	

North Creek Analytical - Portland

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

Crystal Burkholder, Project Manager

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IT Corp./EMCON	Project:	Willbridge (TOSCO)	Sampled: 8/24/99
P.O. Box 231269	Project Number:	B153002A-002	Received: 8/25/99
Portland, OR 97224	Project Manager:	Tim Stone	Reported: 9/13/99 09:16

Total Metals per EPA 6000/7000 Series Methods
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Specific Method	Reporting Limit	Result	Units	Notes*
TC-082499-10 (continued)			P908462-10				Water	2
Selenium	0990077	9/2/99	9/3/99	EPA 6020	0.00500	ND	mg/l	
Silver	"	"	9/8/99	EPA 6020	0.00500	ND	"	
Zinc	"	"	"	EPA 6020	0.0250	0.145	"	
Mercury	0890822	8/30/99	8/31/99	EPA 7470A	0.000200	ND	"	
TC-082499-11			P908462-11				Water	
Arsenic	0990077	9/2/99	9/3/99	EPA 6020	0.00100	0.0208	mg/l	
Barium	"	"	"	EPA 6020	0.00200	0.205	"	
Cadmium	"	"	"	EPA 6020	0.00100	ND	"	
Chromium	"	"	"	EPA 6020	0.00100	0.0223	"	
Copper	"	"	9/8/99	EPA 6020	0.00200	0.0420	"	
Lead	"	"	"	EPA 6020	0.00100	0.0178	"	
Selenium	"	"	9/3/99	EPA 6020	0.00100	ND	"	
Silver	"	"	9/8/99	EPA 6020	0.00100	ND	"	
Zinc	"	"	"	EPA 6020	0.00500	0.0881	"	
Mercury	0890822	8/30/99	8/31/99	EPA 7470A	0.000200	ND	"	2

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IT Corp./EMCON	Project:	Willbridge (TOSCO)	Sampled: 8/24/99
P.O. Box 231269	Project Number:	B153002A-002	Received: 8/25/99
Portland, OR 97224	Project Manager:	Tim Stone	Reported: 9/13/99 09:16

Dissolved Metals per EPA 6000/7000 Series Methods
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Specific Method	Reporting Limit	Result	Units	Notes*
TC-082499-2			P908462-02				Water	
Arsenic	0990075	9/2/99	9/3/99	EPA 6020	0.00100	ND	mg/l	
Barium	"	"	9/2/99	EPA 6020	0.00200	0.0283	"	
Cadmium	"	"	"	EPA 6020	0.00100	ND	"	
Chromium	"	"	"	EPA 6020	0.00100	ND	"	
Copper	"	"	"	EPA 6020	0.00200	0.00300	"	
Lead	"	"	"	EPA 6020	0.00100	ND	"	
Selenium	"	"	9/3/99	EPA 6020	0.00100	ND	"	
Silver	"	"	9/2/99	EPA 6020	0.00100	ND	"	
Zinc	"	"	"	EPA 6020	0.00500	0.0110	"	
Mercury	0890839	9/7/99	9/7/99	EPA 7470A	0.000200	ND	"	
TC-082499-9			P908462-09				Water	
Arsenic	0990075	9/2/99	9/3/99	EPA 6020	0.00100	0.00240	mg/l	
Barium	"	"	9/2/99	EPA 6020	0.00200	0.0310	"	
Cadmium	"	"	"	EPA 6020	0.00100	ND	"	
Chromium	"	"	"	EPA 6020	0.00100	ND	"	
Copper	"	"	"	EPA 6020	0.00200	ND	"	
Lead	"	"	"	EPA 6020	0.00100	0.00230	"	
Selenium	"	"	9/3/99	EPA 6020	0.00100	ND	"	
Silver	"	"	9/2/99	EPA 6020	0.00100	ND	"	
Zinc	"	"	"	EPA 6020	0.00500	0.00500	"	
Mercury	0890839	9/7/99	9/7/99	EPA 7470A	0.000200	ND	"	

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IT Corp./EMCON	Project:	Willbridge (TOSCO)	Sampled: 8/24/99
P.O. Box 231269	Project Number:	B153002A-002	Received: 8/25/99
Portland, OR 97224	Project Manager:	Tim Stone	Reported: 9/13/99 09:16

BTEX per EPA Method 8021B/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: 0890713	**Date Prepared: 8/26/99**					**Extraction Method: EPA 5030**				
Blank	0890713-BLK1									
Benzene	8/26/99			ND	ug/l	0.500				
Toluene	"			ND	"	0.500				
Ethylbenzene	"			ND	"	0.500				
Xylenes (total)	"			ND	"	1.00				
Surrogate: 4-BFB (PID)	"	*50.0*		*50.1*	"	*75.0-120*	*100*			
LCS	0890713-BS2									
Benzene	8/26/99	20.0		20.4	ug/l	67.0-130	102			
Toluene	"	20.0		18.9	"	75.0-126	94.5			
Ethylbenzene	"	20.0		19.0	"	76.0-124	95.0			
Xylenes (total)	"	60.0		58.1	"	75.0-126	96.8			
Surrogate: 4-BFB (PID)	"	*50.0*		*51.1*	"	*75.0-120*	*102*			
Matrix Spike	0890713-MS1		P908462-01							
Benzene	8/26/99	20.0	ND	20.1	ug/l	67.0-130	101			
Toluene	"	20.0	ND	18.6	"	75.0-126	93.0			
Ethylbenzene	"	20.0	ND	18.8	"	76.0-124	94.0			
Xylenes (total)	"	60.0	ND	55.9	"	75.0-126	93.2			
Surrogate: 4-BFB (PID)	"	*50.0*		*44.3*	"	*75.0-120*	*88.6*			
Matrix Spike Dup	0890713-MSD1		P908462-01							
Benzene	8/26/99	20.0	ND	21.8	ug/l	67.0-130	109	13.0	7.62	
Toluene	"	20.0	ND	20.3	"	75.0-126	101	13.0	8.25	
Ethylbenzene	"	20.0	ND	20.1	"	76.0-124	101	15.0	7.18	
Xylenes (total)	"	60.0	ND	60.0	"	75.0-126	100	13.0	7.04	
Surrogate: 4-BFB (PID)	"	*50.0*		*46.0*	"	*75.0-120*	*92.0*			
Batch: 0890745	**Date Prepared: 8/27/99**					**Extraction Method: EPA 5030**				
Blank	0890745-BLK1									
Benzene	8/27/99			ND	ug/l	0.500				
Toluene	"			ND	"	0.500				
Ethylbenzene	"			ND	"	0.500				
Xylenes (total)	"			ND	"	1.00				
Surrogate: 4-BFB (PID)	"	*50.0*		*42.4*	"	*75.0-120*	*84.8*			
LCS	0890745-BS2									
Benzene	8/27/99	20.0		17.6	ug/l	67.0-130	88.0			

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IT Corp./EMCON	Project:	Willbridge (TOSCO)	Sampled: 8/24/99
P.O. Box 231269	Project Number:	B153002A-002	Received: 8/25/99
Portland, OR 97224	Project Manager:	Tim Stone	Reported: 9/13/99 09:16

BTEX per EPA Method 8021B/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*
LCS (continued)	0890745-BS2									
Toluene	8/27/99	20.0		17.6	ug/l	75.0-126	88.0			
Ethylbenzene	"	20.0		18.1	"	76.0-124	90.5			
Xylenes (total)	"	60.0		55.1	"	75.0-126	91.8			
Surrogate: 4-BFB (PID)	"	*50.0*		*48.3*	"	*75.0-120*	*96.6*			
Batch: 0890797	Date Prepared: 8/30/99					Extraction Method: EPA 5030				
Blank	0890797-BLK1									
Benzene	8/30/99			ND	ug/l	0.500				
Toluene	"			ND	"	0.500				
Ethylbenzene	"			ND	"	0.500				
Xylenes (total)	"			ND	"	1.00				
Surrogate: 4-BFB (PID)	"	*50.0*		*45.4*	"	*75.0-120*	*90.8*			
LCS	0890797-BS2									
Benzene	8/30/99	20.0		18.2	ug/l	67.0-130	91.0			
Toluene	"	20.0		19.2	"	75.0-126	96.0			
Ethylbenzene	"	20.0		18.4	"	76.0-124	92.0			
Xylenes (total)	"	60.0		56.0	"	75.0-126	93.3			
Surrogate: 4-BFB (PID)	"	*50.0*		*49.8*	"	*75.0-120*	*99.6*			

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IT Corp./EMCON	Project:	Willbridge (TOSCO)	Sampled: 8/24/99
P.O. Box 231269	Project Number:	B153002A-002	Received: 8/25/99
Portland, OR 97224	Project Manager:	Tim Stone	Reported: 9/13/99 09:16

Total Metals per EPA 6000/7000 Series Methods/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: 0890822	**Date Prepared: 8/30/99**					**Extraction Method: Metals**				
Blank	**0890822-BLK1**									
Mercury	8/31/99			ND	mg/l	0.000200				
LCS	**0890822-BS1**									
Mercury	8/31/99	0.00500		0.00508	mg/l	80.0-120	102			
Duplicate	**0890822-DUP1**		**P908187-01**							
Mercury	8/31/99		0.000315	ND	mg/l			20.0		
Matrix Spike	**0890822-MS1**		**P908187-01**							
Mercury	8/31/99	0.00500	0.000315	0.00498	mg/l	75.0-125	93.3			
Matrix Spike	**0890822-MS2**		**P908462-01**							
Mercury	8/31/99	0.00500	ND	0.00432	mg/l	75.0-125	86.4			
Batch: 0990077	**Date Prepared: 9/2/99**					**Extraction Method: EPA 200/3005**				
Blank	**0990077-BLK1**									
Arsenic	9/3/99			ND	mg/l	0.00100				
Barium	9/2/99			ND	"	0.00200				
Cadmium	"			ND	"	0.00100				
Chromium	"			ND	"	0.00100				
Copper	"			ND	"	0.00200				
Lead	"			ND	"	0.00100				
Selenium	9/3/99			ND	"	0.00100				
Silver	9/2/99			ND	"	0.00100				
Zinc	"			ND	"	0.00500				
LCS	**0990077-BS1**									
Arsenic	9/3/99	0.100		0.0913	mg/l	80.0-120	91.3			
Barium	9/2/99	0.100		0.0927	"	80.0-120	92.7			
Cadmium	"	0.100		0.0926	"	80.0-120	92.6			
Chromium	"	0.100		0.0925	"	80.0-120	92.5			
Copper	"	0.100		0.0951	"	80.0-120	95.1			
Lead	"	0.100		0.0889	"	80.0-120	88.9			
Selenium	9/3/99	0.100		0.0881	"	80.0-120	88.1			
Silver	9/2/99	0.0500		0.0414	"	80.0-120	82.8			
Zinc	"	0.100		0.0960	"	80.0-120	96.0			

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IT Corp./EMCON	Project:	Willbridge (TOSCO)	Sampled: 8/24/99
P.O. Box 231269	Project Number:	B153002A-002	Received: 8/25/99
Portland, OR 97224	Project Manager:	Tim Stone	Reported: 9/13/99 09:16

Total Metals per EPA 6000/7000 Series Methods/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*
Duplicate	0990077-DUP1		P908580-02							
Arsenic	9/3/99		0.00310	0.00260	mg/l			20.0	17.5	
Barium	9/2/99		0.0170	0.0180	"			20.0	5.71	
Cadmium	"		ND	ND	"			20.0		
Chromium	"		0.00110	ND	"			20.0		
Copper	"		0.0261	0.0276	"			20.0	5.59	
Lead	"		0.00180	0.00170	"			20.0	5.71	
Selenium	9/3/99		ND	ND	"			20.0		
Silver	9/2/99		ND	ND	"			20.0		
Zinc	"		0.288	0.303	"			20.0	5.08	
Matrix Spike	0990077-MS1		P908580-02							
Arsenic	9/3/99	0.100	0.00310	0.106	mg/l	75.0-125	103			
Barium	9/2/99	0.100	0.0170	0.125	"	75.0-125	108			
Cadmium	"	0.100	ND	0.105	"	75.0-125	105			
Chromium	"	0.100	0.00110	0.102	"	75.0-125	101			
Copper	"	0.100	0.0261	0.135	"	75.0-125	109			
Lead	"	0.100	0.00180	0.0992	"	75.0-125	97.4			
Selenium	9/3/99	0.100	ND	0.107	"	75.0-125	107			
Silver	9/2/99	0.0500	ND	0.0443	"	75.0-125	88.6			
Zinc	"	0.100	0.288	0.435	"	75.0-125	147			3
Matrix Spike Dup	0990077-MSD1		P908580-02							
Arsenic	9/2/99	0.100	0.00310	0.108	mg/l	75.0-125	105	20.0	1.92	
Barium	9/3/99	0.100	0.0170	0.112	"	75.0-125	95.0	20.0	12.8	
Cadmium	9/2/99	0.100	ND	0.102	"	75.0-125	102	20.0	2.90	
Chromium	"	0.100	0.00110	0.0964	"	75.0-125	95.3	20.0	5.81	
Copper	"	0.100	0.0261	0.127	"	75.0-125	101	20.0	7.62	
Lead	"	0.100	0.00180	0.0948	"	75.0-125	93.0	20.0	4.62	
Selenium	9/3/99	0.100	ND	0.106	"	75.0-125	106	20.0	0.939	
Silver	9/2/99	0.0500	ND	0.0429	"	75.0-125	85.8	20.0	3.21	
Zinc	"	0.100	0.288	0.397	"	75.0-125	109	20.0	29.7	3

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IT Corp./EMCON	Project:	Willbridge (TOSCO)	Sampled: 8/24/99
P.O. Box 231269	Project Number:	B153002A-002	Received: 8/25/99
Portland, OR 97224	Project Manager:	Tim Stone	Reported: 9/13/99 09:16

Dissolved Metals per EPA 6000/7000 Series Methods/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: 0890839	**Date Prepared: 9/7/99**				**Extraction Method: Metals**					
Blank	0890839-BLK1									
Mercury	9/7/99			ND	mg/l	0.000200				
LCS	0890839-BS1									
Mercury	9/7/99	0.00500		0.00484	mg/l	80.0-120	96.8			
Duplicate	0890839-DUP1		P908534-02							
Mercury	9/7/99		ND	ND	mg/l			20.0		
Matrix Spike	0890839-MS1		P908534-02							
Mercury	9/7/99	0.00500	ND	0.00456	mg/l	75.0-125	91.2			
Batch: 0990075	**Date Prepared: 9/2/99**				**Extraction Method: EPA 200/3005**					
Blank	0990075-BLK1									
Arsenic	9/3/99			ND	mg/l	0.00100				
Barium	9/2/99			ND	"	0.00200				
Cadmium	"			ND	"	0.00100				
Chromium	"			ND	"	0.00100				
Copper	"			ND	"	0.00200				
Lead	"			ND	"	0.00100				
Selenium	"			ND	"	0.00100				
Silver	"			ND	"	0.00100				
Zinc	"			ND	"	0.00500				
LCS	0990075-BS1									
Arsenic	9/8/99	0.100		0.101	mg/l	80.0-120	101			
Barium	9/2/99	0.100		0.0930	"	80.0-120	93.0			
Cadmium	"	0.100		0.0938	"	80.0-120	93.8			
Chromium	"	0.100		0.0940	"	80.0-120	94.0			
Copper	"	0.100		0.0960	"	80.0-120	96.0			
Lead	"	0.100		0.0916	"	80.0-120	91.6			
Selenium	"	0.100		0.0926	"	85.0-115	92.6			
Silver	"	0.0500		0.0421	"	80.0-120	84.2			
Zinc	"	0.100		0.0943	"	80.0-120	94.3			
Duplicate	0990075-DUP1		P908444-01							
Arsenic	9/3/99		ND	ND	mg/l			20.0		
Barium	9/2/99		0.0410	0.0428	"			20.0	4.30	

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IT Corp./EMCON	Project:	Willbridge (TOSCO)	Sampled: 8/24/99
P.O. Box 231269	Project Number:	B153002A-002	Received: 8/25/99
Portland, OR 97224	Project Manager:	Tim Stone	Reported: 9/13/99 09:16

Dissolved Metals per EPA 6000/7000 Series Methods/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*
Duplicate (continued)	0990075-DUP1		P908444-01							
Cadmium	9/2/99		ND	ND	mg/l			20.0		
Chromium	"		0.00510	0.00510	"			20.0	0	
Copper	"		ND	ND	"			20.0		
Lead	"		ND	ND	"			20.0		
Selenium	"		ND	ND	"			20.0		
Silver	"		ND	ND	"			20.0		
Zinc	"		0.0161	0.0218	"			20.0	30.1	4
Matrix Spike	0990075-MS1		P908444-01							
Arsenic	9/3/99	0.100	ND	0.0845	mg/l	75.0-125	84.5			
Barium	9/2/99	0.100	0.0410	0.133	"	75.0-125	92.0			
Cadmium	"	0.100	ND	0.0886	"	75.0-125	88.6			
Chromium	"	0.100	0.00510	0.0976	"	75.0-125	92.5			
Copper	"	0.100	ND	0.0972	"	75.0-125	97.2			
Lead	"	0.100	ND	0.0857	"	75.0-125	85.7			
Selenium	"	0.100	ND	0.0859	"	75.0-125	85.9			
Silver	"	0.0500	ND	0.0406	"	75.0-125	81.2			
Zinc	"	0.100	0.0161	0.105	"	75.0-125	88.9			

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IT Corp./EMCON	Project:	Willbridge (TOSCO)	Sampled: 8/24/99
P.O. Box 231269	Project Number:	B153002A-002	Received: 8/25/99
Portland, OR 97224	Project Manager:	Tim Stone	Reported: 9/13/99 09:16

Notes and Definitions

#	Note
1	The surrogate recovery for this sample cannot be accurately quantified due to interference from coeluting organic compounds present in the sample.
2	The reporting limit was raised due to matrix interference.
3	The RPD and/or percent recovery for this QC spike sample cannot be accurately calculated due to the high concentration of analyte already present in the sample.
4	Analyses are not controlled on RPD values from sample concentrations less than 5 times the reporting limit.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
Recov.	Recovery
RPD	Relative Percent Difference

North Creek Analytical - Portland

Crystal Burkholder, Project Manager

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CHAIN OF CUSTODY REPORT

Work Order #: P908462

CLIENT: Willbridge (Tosco)
REPORT TO: Tim Stone
ADDRESS: 15055 SW Sequoia Pkwy Suite 160 Pfld OR 97224
PHONE: (503) 624-7200 FAX (503) 620-7658

INVOICE TO: IT PDX ←
P.O. NUMBER: B153002A-002

PROJECT NAME: Willbridge
PROJECT NUMBER:
SAMPLED BY: Cory LaVelle

TURNAROUND REQUEST in Business Days*
Organic & Inorganic Analyses: 10 | 7 | 5 | 4 | 3 | 2 | 1 | <1
STD. Petroleum Hydrocarbon Analyses: 5 | 4 | 3 | 2 | 1 | <1
STD. OTHER Please Specify
*Turnaround Requests less than standard may incur Rush Charges.

CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	BTEX	PAH's	RCRA 8 W. Metals	RCRA 8 Dsolved M	MATRIX (W, S, O)	# OF CONT.	COMMENTS	NCA ID
1. TC-082499-1	8-24-99 / 0940	X	X	X		W	5		
2. TC-082499-2	8-24-99 / 1010	X	X	X	X		6		
3. TC-082499-3	8-24-99 / 1130	X	X	X			5		
4. TC-082499-4	8-24-99 / 1150	X	X	X			5		
5. TC-082499-5	8-24-99 / 1215	X	X	X			5		
6. TC-082499-6	8-24-99 / 1245	X	X	X			5		
7. TC-082499-7	8-24-99 / 1309	X	X	X			5		
8. TC-082499-8	8-24-99 / 1340	X	X	X			5		
9. TC-082499-9	8-24-99 / 1425	X	X	X	X		6		
10. TC-082499-10	8-24-99 / 1510	X	X	X			4	only 2 VOA's	
11. TC-082499-11	8-24-99 / 1600	X	X	X			5		
12.									
13.									
14.									
15.									

RELINQUISHED BY: Cory LaVelle — DATE: 8-25-99 — RECEIVED BY: Bob Falstad — DATE: 8/25/99
PRINT NAME: Cory LaVelle — FIRM: IT — TIME: 0922 — PRINT NAME: Bob Falstad — FIRM: NCA — TIME: 950

RELINQUISHED BY: — DATE: — RECEIVED BY: — DATE:
PRINT NAME: — FIRM: — TIME: — PRINT NAME: — FIRM: — TIME:

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RECEIVED

IT Corp./EMCON	Project:	GATX-Willbridge	Sampled: 9/1/99 to 9/2/99
P.O. Box 231269	Project Number:	B15-100-2A	Received: 9/2/99
Portland, OR 97224	Project Manager:	David Weymann	Reported: 9/30/99 16:05

ANALYTICAL REPORT FOR SAMPLES:

Sample Description	Laboratory Sample Number	Sample Matrix	Date Sampled
MW 21	P909091-01	Water	9/1/99
MW 22	P909091-02	Water	9/1/99
MW 32	P909091-03	Water	9/1/99
MW 31	P909091-04	Water	9/1/99
MW 28	P909091-05	Water	9/1/99
MW 26	P909091-06	Water	9/1/99
MW 36	P909091-07	Water	9/2/99
MW 33	P909091-08	Water	9/2/99
MW 40	P909091-09	Water	9/2/99
MW 37	P909091-10	Water	9/2/99
MW 10	P909091-11	Water	9/2/99
MW 8	P909091-12	Water	9/2/99
MW 13	P909091-13	Water	9/2/99
MW 11	P909091-14	Water	9/2/99
MW 15	P909091-15	Water	9/2/99

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IT Corp./EMCON	Project:	GATX-Willbridge	Sampled: 9/1/99 to 9/2/99
P.O. Box 231269	Project Number:	B15-100-2A	Received: 9/2/99
Portland, OR 97224	Project Manager:	David Weymann	Reported: 9/30/99 16:05

BTEX per EPA Method 8021B
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
MW 21			P909091-01				Water	
Benzene	0990239	9/9/99	9/9/99		0.500	ND	ug/l	
Toluene	"	"	"		0.500	ND	"	
Ethylbenzene	"	"	"		0.500	ND	"	
Xylenes (total)	"	"	"		1.00	ND	"	
Surrogate: 4-BFB (PID)	"	"	"	*75.0-120*		*92.6*	%	
MW 22			P909091-02				Water	
Benzene	0990375	9/14/99	9/14/99		25.0	1990	ug/l	
Toluene	"	"	"		25.0	1770	"	
Ethylbenzene	"	"	"		25.0	4630	"	
Xylenes (total)	"	"	"		50.0	10600	"	
Surrogate: 4-BFB (PID)	"	"	"	*75.0-120*		*123*	%	*1*
MW 32			P909091-03				Water	
Benzene	0990375	9/14/99	9/14/99		0.500	ND	ug/l	
Toluene	"	"	"		0.500	ND	"	
Ethylbenzene	"	"	"		0.500	ND	"	
Xylenes (total)	"	"	"		1.00	ND	"	
Surrogate: 4-BFB (PID)	"	"	"	*75.0-120*		*115*	%	
MW 31			P909091-04				Water	
Benzene	0990375	9/14/99	9/14/99		0.500	ND	ug/l	
Toluene	"	"	"		0.500	ND	"	
Ethylbenzene	"	"	"		0.500	ND	"	
Xylenes (total)	"	"	"		1.00	ND	"	
Surrogate: 4-BFB (PID)	"	"	"	*75.0-120*		*116*	%	
MW 28			P909091-05				Water	
Benzene	0990375	9/14/99	9/14/99		0.500	1.41	ug/l	
Toluene	"	"	"		0.500	0.872	"	
Ethylbenzene	"	"	"		0.500	3.21	"	
Xylenes (total)	"	"	"		1.00	2.11	"	
Surrogate: 4-BFB (PID)	"	"	"	*75.0-120*		*119*	%	
MW 26			P909091-06				Water	
Benzene	0990375	9/14/99	9/14/99		0.500	ND	ug/l	
Toluene	"	"	"		0.500	9.09	"	
Ethylbenzene	"	"	"		0.500	10.6	"	

North Creek Analytical - Portland

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

Crystal Burkholder, Project Manager

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IT Corp./EMCON	Project:	GATX-Willbridge	Sampled: 9/1/99 to 9/2/99
P.O. Box 231269	Project Number:	B15-100-2A	Received: 9/2/99
Portland, OR 97224	Project Manager:	David Weymann	Reported: 9/30/99 16:05

BTEX per EPA Method 8021B
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
MW 26 (continued)			P909091-06				Water	
Xylenes (total)	0990375	9/14/99	9/14/99		1.00	6.34	ug/l	
Surrogate: 4-BFB (PID)	"	"	"	*75.0-120*		*125*	%	1
MW 36			P909091-07				Water	
Benzene	0990375	9/14/99	9/14/99		0.500	ND	ug/l	
Toluene	"	"	"		0.500	ND	"	
Ethylbenzene	"	"	"		0.500	ND	"	
Xylenes (total)	"	"	"		1.00	ND	"	
Surrogate: 4-BFB (PID)	"	"	"	*75.0-120*		*113*	%	
MW 33			P909091-08				Water	
Benzene	0990375	9/14/99	9/14/99		0.500	ND	ug/l	
Toluene	"	"	"		0.500	ND	"	
Ethylbenzene	"	"	"		0.500	ND	"	
Xylenes (total)	"	"	"		1.00	ND	"	
Surrogate: 4-BFB (PID)	"	"	"	*75.0-120*		*119*	%	
MW 40			P909091-09				Water	
Benzene	0990375	9/14/99	9/14/99		0.500	ND	ug/l	
Toluene	"	"	"		0.500	ND	"	
Ethylbenzene	"	"	"		0.500	ND	"	
Xylenes (total)	"	"	"		1.00	ND	"	
Surrogate: 4-BFB (PID)	"	"	"	*75.0-120*		*118*	%	
MW 37			P909091-10				Water	
Benzene	0990375	9/14/99	9/14/99		12.5	1640	ug/l	
Toluene	"	"	"		12.5	ND	"	
Ethylbenzene	"	"	"		12.5	ND	"	
Xylenes (total)	"	"	"		25.0	ND	"	
Surrogate: 4-BFB (PID)	"	"	"	*75.0-120*		*115*	%	
MW 10			P909091-11				Water	
Benzene	0990375	9/14/99	9/14/99		0.500	1.22	ug/l	
Toluene	"	"	"		0.500	ND	"	
Ethylbenzene	"	"	"		0.500	ND	"	
Xylenes (total)	"	"	"		1.00	ND	"	
Surrogate: 4-BFB (PID)	"	"	"	*75.0-120*		*117*	%	

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IT Corp./EMCON	Project:	GATX-Willbridge	Sampled: 9/1/99 to 9/2/99
P.O. Box 231269	Project Number:	B15-100-2A	Received: 9/2/99
Portland, OR 97224	Project Manager:	David Weymann	Reported: 9/30/99 16:05

BTEX per EPA Method 8021B
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
MW 8			P909091-12				Water	
Benzene	0990239	9/9/99	9/9/99		0.500	22.6	ug/l	
Toluene	"	"	"		0.500	16.2	"	
Ethylbenzene	"	"	"		0.500	52.0	"	
Xylenes (total)	"	"	"		1.00	97.1	"	
Surrogate: 4-BFB (PID)	"	"	"	*75.0-120*		*105*	%	
MW 13			P909091-13				Water	
Benzene	0990375	9/14/99	9/14/99		0.500	ND	ug/l	
Toluene	"	"	"		0.500	ND	"	
Ethylbenzene	"	"	"		0.500	ND	"	
Xylenes (total)	"	"	"		1.00	ND	"	
Surrogate: 4-BFB (PID)	"	"	"	*75.0-120*		*115*	%	
MW 11			P909091-14				Water	
Benzene	0990375	9/14/99	9/14/99		50.0	3200	ug/l	
Toluene	"	"	"		50.0	1120	"	
Ethylbenzene	"	"	"		50.0	2280	"	
Xylenes (total)	"	"	"		100	7510	"	
Surrogate: 4-BFB (PID)	"	"	"	*75.0-120*		*119*	%	
MW 15			P909091-15				Water	
Benzene	0990375	9/14/99	9/14/99		0.500	ND	ug/l	
Toluene	"	"	"		0.500	ND	"	
Ethylbenzene	"	"	"		0.500	ND	"	
Xylenes (total)	"	"	"		1.00	ND	"	
Surrogate: 4-BFB (PID)	"	"	"	*75.0-120*		*116*	%	

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IT Corp./EMCON	Project:	GATX-Willbridge	Sampled: 9/1/99 to 9/2/99
P.O. Box 231269	Project Number:	B15-100-2A	Received: 9/2/99
Portland, OR 97224	Project Manager:	David Weymann	Reported: 9/30/99 16:05

Total Metals per EPA 6000/7000 Series Methods
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Specific Method	Reporting Limit	Result	Units	Notes*
MW 21			P909091-01				Water	
Arsenic	0990400	9/14/99	9/14/99	EPA 6020	0.00100	0.00650	mg/l	
Barium	"	"	"	EPA 6020	0.00200	0.359	"	
Cadmium	"	"	"	EPA 6020	0.00100	0.0135	"	
Chromium	"	"	"	EPA 6020	0.00100	0.0239	"	
Copper	"	"	"	EPA 6020	0.00200	0.0275	"	
Lead	"	"	"	EPA 6020	0.00100	0.0278	"	
Selenium	"	"	"	EPA 6020	0.00100	ND	"	
Silver	"	"	9/16/99	EPA 6020	0.00100	ND	"	
Zinc	"	"	"	EPA 6020	0.00500	0.180	"	
Mercury	0990252	9/9/99	9/9/99	EPA 7470A	0.000200	ND	"	
MW 22			P909091-02				Water	
Arsenic	0990400	9/14/99	9/14/99	EPA 6020	0.00100	0.0906	mg/l	
Barium	"	"	"	EPA 6020	0.00200	0.238	"	
Cadmium	"	"	"	EPA 6020	0.00100	ND	"	
Chromium	"	"	"	EPA 6020	0.00100	0.0125	"	
Copper	"	"	"	EPA 6020	0.00200	0.0121	"	
Lead	"	"	"	EPA 6020	0.00100	0.0227	"	
Selenium	"	"	"	EPA 6020	0.00100	ND	"	
Silver	"	"	9/16/99	EPA 6020	0.00100	ND	"	
Zinc	"	"	"	EPA 6020	0.00500	0.0520	"	
Mercury	0990252	9/9/99	9/9/99	EPA 7470A	0.000200	ND	"	
MW 32			P909091-03				Water	
Arsenic	0990400	9/14/99	9/14/99	EPA 6020	0.00100	ND	mg/l	
Barium	"	"	"	EPA 6020	0.00200	0.0138	"	
Cadmium	"	"	"	EPA 6020	0.00100	ND	"	
Chromium	"	"	9/16/99	EPA 6020	0.00100	0.00100	"	
Copper	"	"	9/14/99	EPA 6020	0.00200	ND	"	
Lead	"	"	"	EPA 6020	0.00100	ND	"	
Selenium	"	"	"	EPA 6020	0.00100	ND	"	
Silver	"	"	9/16/99	EPA 6020	0.00100	ND	"	
Zinc	"	"	9/14/99	EPA 6020	0.00500	ND	"	
Mercury	0990252	9/9/99	9/9/99	EPA 7470A	0.000200	ND	"	
MW 31			P909091-04				Water	
Arsenic	0990400	9/14/99	9/14/99	EPA 6020	0.00100	0.0191	mg/l	
Barium	"	"	"	EPA 6020	0.00200	0.0381	"	

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IT Corp./EMCON	Project:	GATX-Willbridge	Sampled: 9/1/99 to 9/2/99
P.O. Box 231269	Project Number:	B15-100-2A	Received: 9/2/99
Portland, OR 97224	Project Manager:	David Weymann	Reported: 9/30/99 16:05

Total Metals per EPA 6000/7000 Series Methods
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Specific Method	Reporting Limit	Result	Units	Notes*
MW 31 (continued)			P909091-04				Water	
Cadmium	0990400	9/14/99	9/14/99	EPA 6020	0.00100	ND	mg/l	
Chromium	"	"	9/16/99	EPA 6020	0.00100	0.00320	"	
Copper	"	"	9/14/99	EPA 6020	0.00200	0.00800	"	
Lead	"	"	"	EPA 6020	0.00100	0.00390	"	
Selenium	"	"	"	EPA 6020	0.00100	ND	"	
Silver	"	"	9/16/99	EPA 6020	0.00100	ND	"	
Zinc	"	"	9/14/99	EPA 6020	0.00500	0.0240	"	
Mercury	0990252	9/9/99	9/9/99	EPA 7470A	0.000200	ND	"	
MW 28			P909091-05				Water	
Arsenic	0990400	9/14/99	9/14/99	EPA 6020	0.00100	0.00220	mg/l	
Barium	"	"	"	EPA 6020	0.00200	0.0422	"	
Cadmium	"	"	"	EPA 6020	0.00100	ND	"	
Chromium	"	"	9/16/99	EPA 6020	0.00100	0.00320	"	
Copper	"	"	9/14/99	EPA 6020	0.00200	0.0348	"	
Lead	"	"	"	EPA 6020	0.00100	0.0236	"	
Selenium	"	"	"	EPA 6020	0.00100	ND	"	
Silver	"	"	9/16/99	EPA 6020	0.00100	ND	"	
Zinc	"	"	9/14/99	EPA 6020	0.00500	0.0525	"	
Mercury	0990252	9/9/99	9/10/99	EPA 7470A	0.000200	ND	"	
MW 26			P909091-06				Water	
Arsenic	0990400	9/14/99	9/14/99	EPA 6020	0.00100	0.0496	mg/l	
Barium	"	"	"	EPA 6020	0.00200	0.169	"	
Cadmium	"	"	"	EPA 6020	0.00100	ND	"	
Chromium	"	"	9/16/99	EPA 6020	0.00100	0.0127	"	
Copper	"	"	9/14/99	EPA 6020	0.00200	0.0145	"	
Lead	"	"	"	EPA 6020	0.00100	0.0212	"	
Selenium	"	"	"	EPA 6020	0.00100	ND	"	
Silver	"	"	9/16/99	EPA 6020	0.00100	ND	"	
Zinc	"	"	9/14/99	EPA 6020	0.00500	0.0700	"	
Mercury	0990252	9/9/99	9/10/99	EPA 7470A	0.000200	ND	"	
MW 36			P909091-07				Water	
Arsenic	0990400	9/14/99	9/15/99	EPA 6020	0.00100	0.0378	mg/l	
Barium	"	"	"	EPA 6020	0.00200	0.242	"	
Cadmium	"	"	"	EPA 6020	0.00100	ND	"	
Chromium	"	"	9/16/99	EPA 6020	0.00100	0.0247	"	

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IT Corp./EMCON	Project:	GATX-Willbridge	Sampled: 9/1/99 to 9/2/99
P.O. Box 231269	Project Number:	B15-100-2A	Received: 9/2/99
Portland, OR 97224	Project Manager:	David Weymann	Reported: 9/30/99 16:05

Total Metals per EPA 6000/7000 Series Methods
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Specific Method	Reporting Limit	Result	Units	Notes*
MW 36 (continued)			P909091-07				Water	
Copper	0990400	9/14/99	9/15/99	EPA 6020	0.00200	0.0309	mg/l	
Lead	"	"	"	EPA 6020	0.00100	0.0172	"	
Selenium	"	"	"	EPA 6020	0.00100	ND	"	
Silver	"	"	9/16/99	EPA 6020	0.00100	ND	"	
Zinc	"	"	9/15/99	EPA 6020	0.00500	0.0595	"	
Mercury	0990252	9/9/99	9/10/99	EPA 7470A	0.000200	ND	"	
MW 33			P909091-08				Water	
Arsenic	0990400	9/14/99	9/15/99	EPA 6020	0.00100	0.0587	mg/l	
Barium	"	"	"	EPA 6020	0.00200	0.531	"	
Cadmium	"	"	"	EPA 6020	0.00100	ND	"	
Chromium	"	"	"	EPA 6020	0.00100	0.00510	"	
Copper	"	"	"	EPA 6020	0.00200	0.00970	"	
Lead	"	"	"	EPA 6020	0.00100	0.00390	"	
Selenium	"	"	"	EPA 6020	0.00100	ND	"	
Silver	"	"	9/16/99	EPA 6020	0.00100	ND	"	
Zinc	"	"	9/15/99	EPA 6020	0.00500	0.0209	"	
Mercury	0990252	9/9/99	9/10/99	EPA 7470A	0.000200	ND	"	
MW 40			P909091-09				Water	
Arsenic	0990400	9/14/99	9/15/99	EPA 6020	0.00500	0.0450	mg/l	
Barium	"	"	"	EPA 6020	0.0100	1.26	"	
Cadmium	"	"	"	EPA 6020	0.00500	ND	"	
Chromium	"	"	9/16/99	EPA 6020	0.00500	0.178	"	
Copper	"	"	9/15/99	EPA 6020	0.0100	0.231	"	
Lead	"	"	"	EPA 6020	0.00500	0.198	"	
Selenium	"	"	"	EPA 6020	0.00500	ND	"	
Silver	"	"	9/16/99	EPA 6020	0.00500	ND	"	
Zinc	"	"	9/15/99	EPA 6020	0.0250	0.533	"	
Mercury	0990252	9/9/99	9/10/99	EPA 7470A	0.000400	0.000982	"	
MW 37			P909091-10				Water	
Arsenic	0990400	9/14/99	9/15/99	EPA 6020	0.00100	0.0240	mg/l	
Barium	"	"	"	EPA 6020	0.00200	0.196	"	
Cadmium	"	"	"	EPA 6020	0.00100	ND	"	
Chromium	"	"	9/16/99	EPA 6020	0.00100	0.0223	"	
Copper	"	"	9/15/99	EPA 6020	0.00200	0.0335	"	
Lead	"	"	"	EPA 6020	0.00100	0.0170	"	

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IT Corp./EMCON	Project:	GATX-Willbridge	Sampled: 9/1/99 to 9/2/99
P.O. Box 231269	Project Number:	B15-100-2A	Received: 9/2/99
Portland, OR 97224	Project Manager:	David Weymann	Reported: 9/30/99 16:05

Total Metals per EPA 6000/7000 Series Methods
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Specific Method	Reporting Limit	Result	Units	Notes*
MW 37 (continued)			P909091-10				Water	
Selenium	0990400	9/14/99	9/15/99	EPA 6020	0.00100	ND	mg/l	
Silver	"	"	9/16/99	EPA 6020	0.00100	ND	"	
Zinc	"	"	9/15/99	EPA 6020	0.00500	0.0606	"	
Mercury	0990252	9/9/99	9/10/99	EPA 7470A	0.000200	ND	"	
MW 10			P909091-11				Water	
Arsenic	0990400	9/14/99	9/15/99	EPA 6020	0.00100	0.0322	mg/l	
Barium	"	"	9/20/99	EPA 6020	0.0200	0.656	"	
Cadmium	"	"	9/15/99	EPA 6020	0.00100	ND	"	
Chromium	"	"	9/16/99	EPA 6020	0.00100	0.0607	"	
Copper	"	"	9/15/99	EPA 6020	0.00200	0.0842	"	
Lead	"	"	"	EPA 6020	0.00100	0.0805	"	
Selenium	"	"	"	EPA 6020	0.00100	0.00170	"	
Silver	"	"	9/16/99	EPA 6020	0.00100	ND	"	
Zinc	"	"	9/15/99	EPA 6020	0.00500	0.236	"	
Mercury	0990252	9/9/99	9/10/99	EPA 7470A	0.000200	0.000239	"	
MW 8			P909091-12				Water	
Arsenic	0990400	9/14/99	9/15/99	EPA 6020	0.00100	0.0118	mg/l	
Barium	"	"	9/20/99	EPA 6020	0.0200	0.263	"	
Cadmium	"	"	9/15/99	EPA 6020	0.00100	0.00220	"	
Chromium	"	"	9/16/99	EPA 6020	0.00100	0.0290	"	
Copper	"	"	9/15/99	EPA 6020	0.00200	0.0211	"	
Lead	"	"	"	EPA 6020	0.00100	0.0284	"	
Selenium	"	"	"	EPA 6020	0.00100	ND	"	
Silver	"	"	9/16/99	EPA 6020	0.00100	ND	"	
Zinc	"	"	9/15/99	EPA 6020	0.00500	0.125	"	
Mercury	0990252	9/9/99	9/10/99	EPA 7470A	0.000200	ND	"	
MW 13			P909091-13				Water	
Arsenic	0990400	9/14/99	9/15/99	EPA 6020	0.00500	0.0730	mg/l	
Barium	"	"	9/20/99	EPA 6020	0.100	1.78	"	
Cadmium	"	"	9/15/99	EPA 6020	0.00500	ND	"	
Chromium	"	"	"	EPA 6020	0.00500	0.131	"	
Copper	"	"	"	EPA 6020	0.0100	0.221	"	
Lead	"	"	"	EPA 6020	0.00500	0.108	"	
Selenium	"	"	"	EPA 6020	0.00500	0.00535	"	
Silver	"	"	9/16/99	EPA 6020	0.00500	ND	"	

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IT Corp./EMCON	Project:	GATX-Willbridge	Sampled: 9/1/99 to 9/2/99
P.O. Box 231269	Project Number:	B15-100-2A	Received: 9/2/99
Portland, OR 97224	Project Manager:	David Weymann	Reported: 9/30/99 16:05

Total Metals per EPA 6000/7000 Series Methods
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Specific Method	Reporting Limit	Result	Units	Notes*
MW 13 (continued)			P909091-13				Water	
Zinc	0990400	9/14/99	9/15/99	EPA 6020	0.0250	0.589	mg/l	
Mercury	0990252	9/9/99	9/10/99	EPA 7470A	0.000400	ND	"	
MW 11			P909091-14				Water	
Arsenic	0990400	9/14/99	9/15/99	EPA 6020	0.00500	0.102	mg/l	
Barium	"	"	9/20/99	EPA 6020	0.100	1.42	"	
Cadmium	"	"	9/15/99	EPA 6020	0.00500	ND	"	
Chromium	"	"	9/16/99	EPA 6020	0.00500	0.101	"	
Copper	"	"	9/15/99	EPA 6020	0.0100	0.237	"	
Lead	"	"	"	EPA 6020	0.00500	0.119	"	
Selenium	"	"	"	EPA 6020	0.00500	ND	"	
Silver	"	"	9/20/99	EPA 6020	0.0500	ND	"	
Zinc	"	"	9/15/99	EPA 6020	0.00500	0.632	"	
Mercury	0990252	9/9/99	9/10/99	EPA 7470A	0.000400	ND	"	
MW 15			P909091-15				Water	
Arsenic	0990400	9/14/99	9/15/99	EPA 6020	0.00500	0.00850	mg/l	
Barium	"	"	9/20/99	EPA 6020	0.100	1.02	"	
Cadmium	"	"	9/15/99	EPA 6020	0.00500	ND	"	
Chromium	"	"	9/16/99	EPA 6020	0.00500	0.133	"	
Copper	"	"	9/15/99	EPA 6020	0.0100	0.121	"	
Lead	"	"	"	EPA 6020	0.00500	0.0560	"	
Selenium	"	"	"	EPA 6020	0.00500	ND	"	
Silver	"	"	9/20/99	EPA 6020	0.0500	ND	"	
Zinc	"	"	9/15/99	EPA 6020	0.0250	0.383	"	
Mercury	0990252	9/9/99	9/10/99	EPA 7470A	0.000400	ND	"	

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IT Corp./EMCON	Project:	GATX-Willbridge	Sampled: 9/1/99 to 9/2/99
P.O. Box 231269	Project Number:	B15-100-2A	Received: 9/2/99
Portland, OR 97224	Project Manager:	David Weymann	Reported: 9/30/99 16:05

Dissolved Metals per EPA 6000/7000 Series Methods
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Specific Method	Reporting Limit	Result	Units	Notes*
MW 21			**P909091-01**				**Water**	
Arsenic	0990216	9/8/99	9/9/99	EPA 6020	0.00100	ND	mg/l	
Barium	"	"	"	EPA 6020	0.00200	0.0597	"	
Cadmium	"	"	"	EPA 6020	0.00100	ND	"	
Chromium	"	"	"	EPA 6020	0.00100	ND	"	
Copper	"	"	9/10/99	EPA 6020	0.00200	ND	"	
Lead	"	"	"	EPA 6020	0.00100	ND	"	
Selenium	"	"	"	EPA 6020	0.00100	0.00112	"	
Silver	"	"	9/9/99	EPA 6020	0.00100	ND	"	
Zinc	"	"	"	EPA 6020	0.00500	ND	"	
Mercury	0890839	9/7/99	9/7/99	EPA 7470A	0.000200	ND	"	
MW 33			**P909091-08**				**Water**	
Arsenic	0990216	9/8/99	9/9/99	EPA 6020	0.00100	ND	mg/l	
Barium	"	"	"	EPA 6020	0.00200	0.0266	"	
Cadmium	"	"	"	EPA 6020	0.00100	ND	"	
Chromium	"	"	"	EPA 6020	0.00100	ND	"	
Copper	"	"	"	EPA 6020	0.00200	ND	"	
Lead	"	"	9/10/99	EPA 6020	0.00100	ND	"	
Selenium	"	"	"	EPA 6020	0.00100	0.00120	"	
Silver	"	"	9/9/99	EPA 6020	0.00100	ND	"	
Zinc	"	"	"	EPA 6020	0.00500	ND	"	
Mercury	0890839	9/7/99	9/7/99	EPA 7470A	0.000200	ND	"	
MW 13			**P909091-13**				**Water**	
Arsenic	0990216	9/8/99	9/9/99	EPA 6020	0.00100	ND	mg/l	
Barium	"	"	"	EPA 6020	0.00200	0.0212	"	
Cadmium	"	"	"	EPA 6020	0.00100	ND	"	
Chromium	"	"	"	EPA 6020	0.00100	0.00100	"	
Copper	"	"	"	EPA 6020	0.00200	0.00227	"	
Lead	"	"	"	EPA 6020	0.00100	ND	"	
Selenium	"	"	9/10/99	EPA 6020	0.00100	ND	"	
Silver	"	"	9/9/99	EPA 6020	0.00100	ND	"	
Zinc	"	"	9/10/99	EPA 6020	0.00500	ND	"	
Mercury	0890839	9/7/99	9/7/99	EPA 7470A	0.000200	ND	"	

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IT Corp./EMCON	Project:	GATX-Willbridge	Sampled: 9/1/99 to 9/2/99
P.O. Box 231269	Project Number:	B15-100-2A	Received: 9/2/99
Portland, OR 97224	Project Manager:	David Weymann	Reported: 9/30/99 16:05

Polynuclear Aromatic Compounds per EPA 8270M-SIM
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
MW 21			P909091-01				Water	
Acenaphthene	0990151	9/7/99	9/10/99		0.100	ND	ug/l	
Acenaphthylene	"	"	"		0.100	ND	"	
Anthracene	"	"	"		0.100	ND	"	
Benzo (a) anthracene	"	"	"		0.100	ND	"	
Benzo (a) pyrene	"	"	"		0.100	ND	"	
Benzo (b) fluoranthene	"	"	"		0.100	ND	"	
Benzo (ghi) perylene	"	"	"		0.100	ND	"	
Benzo (k) fluoranthene	"	"	"		0.100	ND	"	
Chrysene	"	"	"		0.100	ND	"	
Dibenzo (a,h) anthracene	"	"	"		0.200	ND	"	
Fluoranthene	"	"	"		0.100	ND	"	
Fluorene	"	"	"		0.100	ND	"	
Indeno (1,2,3-cd) pyrene	"	"	"		0.100	ND	"	
Naphthalene	"	"	"		0.100	ND	"	
Phenanthrene	"	"	"		0.100	ND	"	
Pyrene	"	"	"		0.100	ND	"	
Surrogate: 2-Fluorobiphenyl	"	"	"	*37.0-135*		*115*	*%*	
Surrogate: Nitrobenzene-d5	"	"	"	*48.0-140*		*93.3*	"	
Surrogate: p-Terphenyl-d14	"	"	"	*25.0-147*		*101*	"	
MW 22			P909091-02				Water	3
Acenaphthene	0990151	9/7/99	9/13/99		25.0	ND	ug/l	
Acenaphthylene	"	"	"		25.0	ND	"	
Anthracene	"	"	"		25.0	ND	"	
Benzo (a) anthracene	"	"	"		25.0	ND	"	
Benzo (a) pyrene	"	"	"		25.0	ND	"	
Benzo (b) fluoranthene	"	"	"		25.0	ND	"	
Benzo (ghi) perylene	"	"	"		25.0	ND	"	
Benzo (k) fluoranthene	"	"	"		25.0	ND	"	
Chrysene	"	"	"		25.0	ND	"	
Dibenzo (a,h) anthracene	"	"	"		50.0	ND	"	
Fluoranthene	"	"	"		25.0	ND	"	
Fluorene	"	"	"		25.0	ND	"	
Indeno (1,2,3-cd) pyrene	"	"	"		25.0	ND	"	
Naphthalene	"	"	"		25.0	347	"	
Phenanthrene	"	"	"		25.0	ND	"	
Pyrene	"	"	"		25.0	ND	"	
Surrogate: 2-Fluorobiphenyl	"	"	"	*37.0-135*		*NR*	*%*	*4*

North Creek Analytical - Portland

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

Crystal Burkholder, Project Manager

COP0014871

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P.O. Box 231269	Project Number:	B15-100-2A	Received: 9/2/99
Portland, OR 97224	Project Manager:	David Weymann	Reported: 9/30/99 16:05

Polynuclear Aromatic Compounds per EPA 8270M-SIM
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
MW 22 (continued)			P909091-02				Water	3
Surrogate: Nitrobenzene-d5	*0990151*	*9/7/99*	*9/13/99*	*48.0-140*		*NR*	*%*	*4*
Surrogate: p-Terphenyl-d14	"	"	"	*25.0-147*		*NR*	"	*4*
MW 32			P909091-03				Water	
Acenaphthene	0990151	9/7/99	9/10/99		0.100	ND	ug/l	
Acenaphthylene	"	"	"		0.100	ND	"	
Anthracene	"	"	"		0.100	ND	"	
Benzo (a) anthracene	"	"	"		0.100	ND	"	
Benzo (a) pyrene	"	"	"		0.100	ND	"	
Benzo (b) fluoranthene	"	"	"		0.100	ND	"	
Benzo (ghi) perylene	"	"	"		0.100	ND	"	
Benzo (k) fluoranthene	"	"	"		0.100	ND	"	
Chrysene	"	"	"		0.100	ND	"	
Dibenzo (a,h) anthracene	"	"	"		0.200	ND	"	
Fluoranthene	"	"	"		0.100	ND	"	
Fluorene	"	"	"		0.100	ND	"	
Indeno (1,2,3-cd) pyrene	"	"	"		0.100	ND	"	
Naphthalene	"	"	"		0.100	ND	"	
Phenanthrene	"	"	"		0.100	ND	"	
Pyrene	"	"	"		0.100	ND	"	
Surrogate: 2-Fluorobiphenyl	"	"	"	*37.0-135*		*116*	*%*	
Surrogate: Nitrobenzene-d5	"	"	"	*48.0-140*		*94.7*	"	
Surrogate: p-Terphenyl-d14	"	"	"	*25.0-147*		*109*	"	
MW 31			P909091-04				Water	
Acenaphthene	0990151	9/7/99	9/13/99		10.0	ND	ug/l	2,3
Acenaphthylene	"	"	"		1.00	ND	"	3
Anthracene	"	"	"		1.00	ND	"	3
Benzo (a) anthracene	"	"	9/10/99		0.100	ND	"	
Benzo (a) pyrene	"	"	"		0.100	ND	"	
Benzo (b) fluoranthene	"	"	"		0.100	ND	"	
Benzo (ghi) perylene	"	"	"		0.100	ND	"	
Benzo (k) fluoranthene	"	"	"		0.100	ND	"	
Chrysene	"	"	"		0.100	ND	"	
Dibenzo (a,h) anthracene	"	"	"		0.200	ND	"	
Fluoranthene	"	"	9/13/99		1.00	ND	"	3
Fluorene	"	"	"		1.00	1.31	"	3
Indeno (1,2,3-cd) pyrene	"	"	9/10/99		0.100	ND	"	

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IT Corp./EMCON	Project:	GATX-Willbridge	Sampled: 9/1/99 to 9/2/99
P.O. Box 231269	Project Number:	B15-100-2A	Received: 9/2/99
Portland, OR 97224	Project Manager:	David Weymann	Reported: 9/30/99 16:05

Polynuclear Aromatic Compounds per EPA 8270M-SIM
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
MW 31 (continued)			P909091-04				Water	
Naphthalene	0990151	9/7/99	9/13/99		1.00	ND	ug/l	3
Phenanthrene	"	"	9/10/99		0.100	0.935	"	
Pyrene	"	"	"		0.100	0.380	"	
Surrogate: 2-Fluorobiphenyl	"	"	*9/13/99*	*37.0-135*		*82.3*	*%*	
Surrogate: Nitrobenzene-d5	"	"	*9/10/99*	*48.0-140*		*90.9*	"	
Surrogate: p-Terphenyl-d14	"	"	"	*25.0-147*		*118*	"	
MW 28			P909091-05				Water	3
Acenaphthene	0990151	9/7/99	9/13/99		5.00	ND	ug/l	2
Acenaphthylene	"	"	"		5.00	ND	"	2
Anthracene	"	"	"		5.00	ND	"	2
Benzo (a) anthracene	"	"	9/21/99		1.00	ND	"	
Benzo (a) pyrene	"	"	"		1.00	ND	"	
Benzo (b) fluoranthene	"	"	"		1.00	ND	"	
Benzo (ghi) perylene	"	"	"		1.00	ND	"	
Benzo (k) fluoranthene	"	"	"		1.00	ND	"	
Chrysene	"	"	"		1.00	2.08	"	
Dibenzo (a,h) anthracene	"	"	"		2.00	ND	"	
Fluoranthene	"	"	9/13/99		5.00	ND	"	2
Fluorene	"	"	"		5.00	11.8	"	2
Indeno (1,2,3-cd) pyrene	"	"	9/21/99		1.00	ND	"	
Naphthalene	"	"	9/13/99		50.0	ND	"	2
Phenanthrene	"	"	9/21/99		1.00	8.03	"	
Pyrene	"	"	"		1.00	3.38	"	
Surrogate: 2-Fluorobiphenyl	"	"	*9/13/99*	*37.0-135*		*NR*	*%*	*4*
Surrogate: Nitrobenzene-d5	"	"	*9/21/99*	*48.0-140*		*NR*	"	*4*
Surrogate: p-Terphenyl-d14	"	"	"	*25.0-147*		*95.4*	"	
MW 26			P909091-06				Water	3
Acenaphthene	0990151	9/7/99	9/21/99		10.0	ND	ug/l	2
Acenaphthylene	"	"	9/28/99		1.00	ND	"	
Anthracene	"	"	"		1.00	ND	"	
Benzo (a) anthracene	"	"	"		1.00	ND	"	
Benzo (a) pyrene	"	"	"		1.00	ND	"	
Benzo (b) fluoranthene	"	"	"		1.00	ND	"	
Benzo (ghi) perylene	"	"	"		1.00	ND	"	
Benzo (k) fluoranthene	"	"	"		1.00	ND	"	
Chrysene	"	"	"		1.00	ND	"	

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Portland, OR 97224	Project Manager:	David Weymann	Reported: 9/30/99 16:05

Polynuclear Aromatic Compounds per EPA 8270M-SIM
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
MW 26 (continued)			P909091-06				Water	3
Dibenzo (a,h) anthracene	0990151	9/7/99	9/28/99		2.00	ND	ug/l	
Fluoranthene	"	"	"		1.00	ND	"	
Fluorene	"	"	"		1.00	ND	"	
Indeno (1,2,3-cd) pyrene	"	"	"		1.00	ND	"	
Naphthalene	"	"	9/21/99		10.0	ND	"	2
Phenanthrene	"	"	9/28/99		1.00	ND	"	
Pyrene	"	"	"		1.00	ND	"	
Surrogate: 2-Fluorobiphenyl	"	"	"	*37.0-135*		*46.1*	%	*5*
Surrogate: Nitrobenzene-d5	"	"	"	*48.0-140*		*NR*	"	*1*
Surrogate: p-Terphenyl-d14	"	"	"	*25.0-147*		*67.9*	"	
MW 36			P909091-07				Water	
Acenaphthene	0990151	9/7/99	9/10/99		1.00	ND	ug/l	2
Acenaphthylene	"	"	"		0.100	ND	"	
Anthracene	"	"	"		0.100	ND	"	
Benzo (a) anthracene	"	"	"		0.100	ND	"	
Benzo (a) pyrene	"	"	"		0.100	ND	"	
Benzo (b) fluoranthene	"	"	"		0.100	ND	"	
Benzo (ghi) perylene	"	"	"		0.100	ND	"	
Benzo (k) fluoranthene	"	"	"		0.100	ND	"	
Chrysene	"	"	"		0.100	ND	"	
Dibenzo (a,h) anthracene	"	"	"		0.200	ND	"	
Fluoranthene	"	"	"		0.100	ND	"	
Fluorene	"	"	"		0.100	ND	"	
Indeno (1,2,3-cd) pyrene	"	"	"		0.100	ND	"	
Naphthalene	"	"	"		1.00	ND	"	2
Phenanthrene	"	"	"		0.100	ND	"	2
Pyrene	"	"	"		0.100	0.113	"	
Surrogate: 2-Fluorobiphenyl	"	"	"	*37.0-135*		*107*	%	
Surrogate: Nitrobenzene-d5	"	"	"	*48.0-140*		*98.4*	"	
Surrogate: p-Terphenyl-d14	"	"	"	*25.0-147*		*93.4*	"	
MW 33			P909091-08				Water	
Acenaphthene	0990151	9/7/99	9/10/99		0.100	ND	ug/l	
Acenaphthylene	"	"	"		0.100	ND	"	
Anthracene	"	"	"		0.100	ND	"	
Benzo (a) anthracene	"	"	"		0.100	ND	"	
Benzo (a) pyrene	"	"	"		0.100	ND	"	

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P.O. Box 231269	Project Number:	B15-100-2A	Received: 9/2/99
Portland, OR 97224	Project Manager:	David Weymann	Reported: 9/30/99 16:05

Polynuclear Aromatic Compounds per EPA 8270M-SIM
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
MW 33 (continued)			**P909091-08**				**Water**	
Benzo (b) fluoranthene	0990151	9/7/99	9/10/99		0.100	ND	ug/l	
Benzo (ghi) perylene	"	"	"		0.100	ND	"	
Benzo (k) fluoranthene	"	"	"		0.100	ND	"	
Chrysene	"	"	"		0.100	ND	"	
Dibenzo (a,h) anthracene	"	"	"		0.200	ND	"	
Fluoranthene	"	"	"		0.100	ND	"	
Fluorene	"	"	"		0.100	ND	"	
Indeno (1,2,3-cd) pyrene	"	"	"		0.100	ND	"	
Naphthalene	"	"	"		0.100	ND	"	
Phenanthrene	"	"	"		0.100	ND	"	
Pyrene	"	"	"		0.100	ND	"	
Surrogate: 2-Fluorobiphenyl	"	"	"	*37.0-135*		*117*	%	
Surrogate: Nitrobenzene-d5	"	"	"	*48.0-140*		*100*	"	
Surrogate: p-Terphenyl-d14	"	"	"	*25.0-147*		*101*	"	
MW 40			**P909091-09**				**Water**	**3**
Acenaphthene	0990151	9/7/99	9/10/99		1.00	ND	ug/l	
Acenaphthylene	"	"	"		1.00	ND	"	
Anthracene	"	"	"		1.00	ND	"	
Benzo (a) anthracene	"	"	"		1.00	ND	"	
Benzo (a) pyrene	"	"	"		1.00	ND	"	
Benzo (b) fluoranthene	"	"	"		1.00	ND	"	
Benzo (ghi) perylene	"	"	"		1.00	ND	"	
Benzo (k) fluoranthene	"	"	"		1.00	ND	"	
Chrysene	"	"	"		1.00	ND	"	
Dibenzo (a,h) anthracene	"	"	"		2.00	ND	"	
Fluoranthene	"	"	"		1.00	ND	"	
Fluorene	"	"	"		1.00	ND	"	
Indeno (1,2,3-cd) pyrene	"	"	"		1.00	ND	"	
Naphthalene	"	"	9/13/99		5.00	ND	"	2
Phenanthrene	"	"	9/10/99		1.00	ND	"	
Pyrene	"	"	"		1.00	ND	"	
Surrogate: 2-Fluorobiphenyl	"	"	"	*37.0-135*		*129*	%	
Surrogate: Nitrobenzene-d5	"	"	*9/13/99*	*48.0-140*		*NR*	"	*4*
Surrogate: p-Terphenyl-d14	"	"	*9/10/99*	*25.0-147*		*95.9*	"	
MW 37			**P909091-10**				**Water**	
Acenaphthene	0990151	9/7/99	9/13/99		50.0	ND	ug/l	3

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IT Corp./EMCON	Project:	GATX-Willbridge	Sampled: 9/1/99 to 9/2/99
P.O. Box 231269	Project Number:	B15-100-2A	Received: 9/2/99
Portland, OR 97224	Project Manager:	David Weymann	Reported: 9/30/99 16:05

Polynuclear Aromatic Compounds per EPA 8270M-SIM
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
MW 37 (continued)			P909091-10				Water	
Acenaphthylene	0990151	9/7/99	9/13/99		50.0	ND	ug/l	3
Anthracene	"	"	"		50.0	ND	"	3
Benzo (a) anthracene	"	"	9/10/99		0.100	0.111	"	
Benzo (a) pyrene	"	"	"		0.100	0.127	"	
Benzo (b) fluoranthene	"	"	"		0.100	ND	"	
Benzo (ghi) perylene	"	"	"		0.100	0.105	"	
Benzo (k) fluoranthene	"	"	"		0.100	ND	"	
Chrysene	"	"	"		0.100	0.154	"	
Dibenzo (a,h) anthracene	"	"	"		0.200	ND	"	
Fluoranthene	"	"	9/13/99		50.0	ND	"	3
Fluorene	"	"	"		50.0	ND	"	3
Indeno (1,2,3-cd) pyrene	"	"	9/10/99		0.100	ND	"	
Naphthalene	"	"	9/13/99		50.0	ND	"	3
Phenanthrene	"	"	"		50.0	ND	"	3
Pyrene	"	"	9/10/99		0.100	0.315	"	
Surrogate: 2-Fluorobiphenyl	"	"	*9/13/99*	*37.0-135*		*NR*	%	*3,4*
Surrogate: Nitrobenzene-d5	"	"	"	*48.0-140*		*NR*	"	*3,4*
Surrogate: p-Terphenyl-d14	"	"	*9/10/99*	*25.0-147*		*75.1*	"	
MW 10			P909091-11				Water	
Acenaphthene	0990151	9/7/99	9/10/99		0.100	ND	ug/l	
Acenaphthylene	"	"	"		0.100	ND	"	
Anthracene	"	"	"		0.100	ND	"	
Benzo (a) anthracene	"	"	"		0.100	ND	"	
Benzo (a) pyrene	"	"	"		0.100	ND	"	
Benzo (b) fluoranthene	"	"	"		0.100	ND	"	
Benzo (ghi) perylene	"	"	"		0.100	ND	"	
Benzo (k) fluoranthene	"	"	"		0.100	ND	"	
Chrysene	"	"	"		0.100	ND	"	
Dibenzo (a,h) anthracene	"	"	"		0.200	ND	"	
Fluoranthene	"	"	"		0.100	ND	"	
Fluorene	"	"	"		0.100	ND	"	
Indeno (1,2,3-cd) pyrene	"	"	"		0.100	ND	"	
Naphthalene	"	"	"		1.00	ND	"	2
Phenanthrene	"	"	"		0.100	ND	"	
Pyrene	"	"	"		0.100	0.115	"	
Surrogate: 2-Fluorobiphenyl	"	"	"	*37.0-135*		*105*	%	
Surrogate: Nitrobenzene-d5	"	"	"	*48.0-140*		*87.7*	"	

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IT Corp./EMCON	Project:	GATX-Willbridge	Sampled: 9/1/99 to 9/2/99
P.O. Box 231269	Project Number:	B15-100-2A	Received: 9/2/99
Portland, OR 97224	Project Manager:	David Weymann	Reported: 9/30/99 16:05

Polynuclear Aromatic Compounds per EPA 8270M-SIM
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
MW 10 (continued)			P909091-11				Water	
Surrogate: p-Terphenyl-d14	*0990151*	*9/7/99*	*9/10/99*	*25.0-147*		*89.4*	*%*	
MW 8			P909091-12				Water	3
Acenaphthene	0990151	9/7/99	9/10/99		1.00	2.29	ug/l	
Acenaphthylene	"	"	"		1.00	ND	"	
Anthracene	"	"	"		1.00	ND	"	
Benzo (a) anthracene	"	"	"		1.00	ND	"	
Benzo (a) pyrene	"	"	"		1.00	ND	"	
Benzo (b) fluoranthene	"	"	"		1.00	ND	"	
Benzo (ghi) perylene	"	"	"		1.00	ND	"	
Benzo (k) fluoranthene	"	"	"		1.00	ND	"	
Chrysene	"	"	"		1.00	ND	"	
Dibenzo (a,h) anthracene	"	"	"		2.00	ND	"	
Fluoranthene	"	"	"		1.00	ND	"	
Fluorene	"	"	"		1.00	ND	"	
Indeno (1,2,3-cd) pyrene	"	"	"		1.00	ND	"	
Naphthalene	"	"	"		10.0	ND	"	2
Phenanthrene	"	"	"		1.00	1.08	"	
Pyrene	"	"	"		1.00	ND	"	
Surrogate: 2-Fluorobiphenyl	"	"	"	*37.0-135*		*94.9*	*%*	
Surrogate: Nitrobenzene-d5	"	"	"	*48.0-140*		*74.2*	"	
Surrogate: p-Terphenyl-d14	"	"	"	*25.0-147*		*81.8*	"	
MW 13			P909091-13				Water	
Acenaphthene	0990151	9/7/99	9/13/99		0.100	ND	ug/l	
Acenaphthylene	"	"	"		0.100	ND	"	
Anthracene	"	"	"		0.100	ND	"	
Benzo (a) anthracene	"	"	"		0.100	ND	"	
Benzo (a) pyrene	"	"	"		0.100	ND	"	
Benzo (b) fluoranthene	"	"	"		0.100	ND	"	
Benzo (ghi) perylene	"	"	"		0.100	ND	"	
Benzo (k) fluoranthene	"	"	"		0.100	ND	"	
Chrysene	"	"	"		0.100	ND	"	
Dibenzo (a,h) anthracene	"	"	"		0.200	ND	"	
Fluoranthene	"	"	"		0.100	ND	"	
Fluorene	"	"	"		0.100	ND	"	
Indeno (1,2,3-cd) pyrene	"	"	"		0.100	ND	"	
Naphthalene	"	"	"		0.100	0.201	"	

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

Crystal Burkholder, Project Manager

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IT Corp./EMCON	Project: GATX-Willbridge	Sampled:	9/1/99 to 9/2/99
P.O. Box 231269	Project Number: B15-100-2A	Received:	9/2/99
Portland, OR 97224	Project Manager: David Weymann	Reported:	9/30/99 16:05

Polynuclear Aromatic Compounds per EPA 8270M-SIM
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
MW 13 (continued)			**P909091-13**				**Water**	
Phenanthrene	0990151	9/7/99	9/13/99		0.100	ND	ug/l	
Pyrene	"	"	"		0.100	ND	"	
Surrogate: 2-Fluorobiphenyl	"	"	"	*37.0-135*		*106*	%	
Surrogate: Nitrobenzene-d5	"	"	"	*48.0-140*		*108*	"	
Surrogate: p-Terphenyl-d14	"	"	"	*25.0-147*		*100*	"	
MW 11			**P909091-14**				**Water**	
Acenaphthene	0990151	9/7/99	9/13/99		50.0	ND	ug/l	3
Acenaphthylene	"	"	"		50.0	ND	"	3
Anthracene	"	"	9/10/99		0.100	ND	"	
Benzo (a) anthracene	"	"	"		0.100	ND	"	
Benzo (a) pyrene	"	"	"		0.100	ND	"	
Benzo (b) fluoranthene	"	"	"		0.100	ND	"	
Benzo (ghi) perylene	"	"	"		0.100	ND	"	
Benzo (k) fluoranthene	"	"	"		0.100	ND	"	
Chrysene	"	"	"		0.100	ND	"	
Dibenzo (a,h) anthracene	"	"	"		0.200	ND	"	
Fluoranthene	"	"	"		0.100	ND	"	
Fluorene	"	"	9/13/99		50.0	ND	"	3
Indeno (1,2,3-cd) pyrene	"	"	9/10/99		0.100	ND	"	
Naphthalene	"	"	9/13/99		50.0	393	"	3
Phenanthrene	"	"	9/10/99		0.100	0.184	"	
Pyrene	"	"	"		0.100	ND	"	
Surrogate: 2-Fluorobiphenyl	"	"	*9/13/99*	*37.0-135*		*NR*	%	*3,4*
Surrogate: Nitrobenzene-d5	"	"	"	*48.0-140*		*NR*	"	*3,4*
Surrogate: p-Terphenyl-d14	"	"	*9/10/99*	*25.0-147*		*82.6*	"	
MW 15			**P909091-15**				**Water**	
Acenaphthene	0990151	9/7/99	9/10/99		0.100	ND	ug/l	
Acenaphthylene	"	"	"		0.100	ND	"	
Anthracene	"	"	"		0.100	ND	"	
Benzo (a) anthracene	"	"	"		0.100	ND	"	
Benzo (a) pyrene	"	"	"		0.100	ND	"	
Benzo (b) fluoranthene	"	"	"		0.100	ND	"	
Benzo (ghi) perylene	"	"	"		0.100	ND	"	
Benzo (k) fluoranthene	"	"	"		0.100	ND	"	
Chrysene	"	"	"		0.100	ND	"	
Dibenzo (a,h) anthracene	"	"	"		0.200	ND	"	

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IT Corp./EMCON	Project:	GATX-Willbridge	Sampled: 9/1/99 to 9/2/99
P.O. Box 231269	Project Number:	B15-100-2A	Received: 9/2/99
Portland, OR 97224	Project Manager:	David Weymann	Reported: 9/30/99 16:05

Polynuclear Aromatic Compounds per EPA 8270M-SIM
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
MW 15 (continued)			P909091-15				Water	
Fluoranthene	0990151	9/7/99	9/10/99		0.100	ND	ug/l	
Fluorene	"	"	"		0.100	ND	"	
Indeno (1,2,3-cd) pyrene	"	"	"		0.100	ND	"	
Naphthalene	"	"	"		0.100	ND	"	
Phenanthrene	"	"	"		0.100	ND	"	
Pyrene	"	"	"		0.100	ND	"	
Surrogate: 2-Fluorobiphenyl	"	"	"	*37.0-135*		*106*	%	
Surrogate: Nitrobenzene-d5	"	"	"	*48.0-140*		*88.8*	"	
Surrogate: p-Terphenyl-d14	"	"	"	*25.0-147*		*87.1*	"	

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IT Corp./EMCON	Project:	GATX-Willbridge	Sampled: 9/1/99 to 9/2/99
P.O. Box 231269	Project Number:	B15-100-2A	Received: 9/2/99
Portland, OR 97224	Project Manager:	David Weymann	Reported: 9/30/99 16:05

BTEX per EPA Method 8021B/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: 0990239	**Date Prepared: 9/9/99**					**Extraction Method: EPA 5030**				
Blank	0990239-BLK1									
Benzene	9/9/99			ND	ug/l	0.500				
Toluene	"			ND	"	0.500				
Ethylbenzene	"			ND	"	0.500				
Xylenes (total)	"			ND	"	1.00				
Surrogate: 4-BFB (PID)	"	*50.0*		*49.9*	"	*75.0-120*	*99.8*			
LCS	0990239-BS2									
Benzene	9/9/99	20.0		20.2	ug/l	67.0-130	101			
Toluene	"	20.0		20.7	"	75.0-126	104			
Ethylbenzene	"	20.0		21.0	"	76.0-124	105			
Xylenes (total)	"	60.0		64.2	"	75.0-126	107			
Surrogate: 4-BFB (PID)	"	*50.0*		*56.0*	"	*75.0-120*	*112*			
Matrix Spike	0990239-MS1		P909091-01							
Benzene	9/9/99	20.0	ND	21.0	ug/l	67.0-130	105			
Toluene	"	20.0	ND	21.7	"	75.0-126	109			
Ethylbenzene	"	20.0	ND	20.7	"	76.0-124	104			
Xylenes (total)	"	60.0	ND	67.0	"	75.0-126	112			
Surrogate: 4-BFB (PID)	"	*50.0*		*52.6*	"	*75.0-120*	*105*			
Matrix Spike Dup	0990239-MSD1		P909091-01							
Benzene	9/9/99	20.0	ND	23.0	ug/l	67.0-130	115	13.0	9.09	
Toluene	"	20.0	ND	23.5	"	75.0-126	118	13.0	7.93	
Ethylbenzene	"	20.0	ND	23.6	"	76.0-124	118	15.0	12.6	
Xylenes (total)	"	60.0	ND	72.4	"	75.0-126	121	13.0	7.73	
Surrogate: 4-BFB (PID)	"	*50.0*		*53.8*	"	*75.0-120*	*108*			
Batch: 0990375	**Date Prepared: 9/14/99**					**Extraction Method: EPA 5030**				
Blank	0990375-BLK1									
Benzene	9/14/99			ND	ug/l	0.500				
Toluene	"			ND	"	0.500				
Ethylbenzene	"			ND	"	0.500				
Xylenes (total)	"			ND	"	1.00				
Surrogate: 4-BFB (PID)	"	*50.0*		*53.3*	"	*75.0-120*	*107*			
LCS	0990375-BS2									
Benzene	9/14/99	20.0		19.9	ug/l	67.0-130	99.5			

North Creek Analytical - Portland

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

Crystal Burkholder, Project Manager

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IT Corp./EMCON	Project:	GATX-Willbridge	Sampled: 9/1/99 to 9/2/99
P.O. Box 231269	Project Number:	B15-100-2A	Received: 9/2/99
Portland, OR 97224	Project Manager:	David Weymann	Reported: 9/30/99 16:05

BTEX per EPA Method 8021B/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*
LCS (continued)	0990375-BS2									
Toluene	9/14/99	20.0		20.1	ug/l	75.0-126	101			
Ethylbenzene	"	20.0		21.0	"	76.0-124	105			
Xylenes (total)	"	60.0		66.1	"	75.0-126	110			
Surrogate: 4-BFB (PID)	"	*50.0*		*56.7*	"	*75.0-120*	*113*			

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IT Corp./EMCON	Project:	GATX-Willbridge	Sampled: 9/1/99 to 9/2/99
P.O. Box 231269	Project Number:	B15-100-2A	Received: 9/2/99
Portland, OR 97224	Project Manager:	David Weymann	Reported: 9/30/99 16:05

Total Metals per EPA 6000/7000 Series Methods/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: 0990252	**Date Prepared: 9/9/99**					**Extraction Method: Metals**				
Blank	0990252-BLK1									
Mercury	9/9/99			ND	mg/l	0.000200				
LCS	0990252-BS1									
Mercury	9/9/99	0.00400		0.00345	mg/l	80.0-120	86.2			
Duplicate	0990252-DUP1		P909041-01							
Mercury	9/9/99		ND	ND	mg/l			20.0		
Matrix Spike	0990252-MS1		P909041-01							
Mercury	9/9/99	0.00400	ND	0.00379	mg/l	75.0-125	94.7			
Matrix Spike	0990252-MS2		P909091-03							
Mercury	9/9/99	0.00400	ND	0.00412	mg/l	75.0-125	103			
Batch: 0990400	**Date Prepared: 9/14/99**					**Extraction Method: EPA 200/3005**				
Blank	0990400-BLK1									
Arsenic	9/16/99			ND	mg/l	0.00100				
Barium	9/14/99			ND	"	0.00200				
Cadmium	"			ND	"	0.00100				
Chromium	"			ND	"	0.00100				
Copper	"			ND	"	0.00200				
Lead	"			ND	"	0.00100				
Selenium	"			ND	"	0.00100				
Silver	9/16/99			ND	"	0.00100				
Zinc	"			ND	"	0.00500				
LCS	0990400-BS1									
Arsenic	9/14/99	0.100		0.0896	mg/l	80.0-120	89.6			
Barium	"	0.100		0.0905	"	80.0-120	90.5			
Cadmium	"	0.100		0.0950	"	80.0-120	95.0			
Chromium	"	0.100		0.101	"	80.0-120	101			
Copper	"	0.100		0.0919	"	80.0-120	91.9			
Lead	"	0.100		0.0955	"	80.0-120	95.5			
Selenium	"	0.100		0.0911	"	80.0-120	91.1			
Silver	9/16/99	0.0500		0.0497	"	80.0-120	99.4			
Zinc	9/14/99	0.100		0.0834	"	80.0-120	83.4			

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IT Corp./EMCON	Project:	GATX-Willbridge	Sampled: 9/1/99 to 9/2/99
P.O. Box 231269	Project Number:	B15-100-2A	Received: 9/2/99
Portland, OR 97224	Project Manager:	David Weymann	Reported: 9/30/99 16:05

Total Metals per EPA 6000/7000 Series Methods/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*
Duplicate	0990400-DUP1		P909091-01							
Arsenic	9/14/99		0.00650	0.00660	mg/l			20.0	1.53	
Barium	"		0.359	0.360	"			20.0	0.278	
Cadmium	"		0.0135	0.0135	"			20.0	0	
Chromium	"		0.0239	0.0248	"			20.0	3.70	
Copper	"		0.0275	0.0299	"			20.0	8.36	
Lead	"		0.0278	0.0283	"			20.0	1.78	
Selenium	"		ND	ND	"			20.0		
Silver	9/16/99		ND	ND	"			20.0		
Zinc	"		0.180	0.190	"			20.0	5.41	
Matrix Spike	0990400-MS1		P909091-01							
Arsenic	9/14/99	0.100	0.00650	0.0889	mg/l	75.0-125	82.4			
Barium	"	0.100	0.359	0.440	"	75.0-125	81.0			
Cadmium	"	0.100	0.0135	0.102	"	75.0-125	88.5			
Chromium	"	0.100	0.0239	0.121	"	75.0-125	97.1			
Copper	"	0.100	0.0275	0.117	"	75.0-125	89.5			
Lead	"	0.100	0.0278	0.115	"	75.0-125	87.2			
Selenium	"	0.100	ND	0.0774	"	75.0-125	77.4			
Silver	9/16/99	0.0500	ND	0.0400	"	75.0-125	80.0			
Zinc	"	0.100	0.180	0.243	"	75.0-125	63.0			6
Matrix Spike	0990400-MS2		P909091-11							
Arsenic	9/16/99	0.100	0.0322	0.110	mg/l	75.0-125	77.8			
Barium	9/20/99	0.100	0.656	0.690	"	75.0-125	34.0			6
Cadmium	9/15/99	0.100	ND	0.0870	"	75.0-125	87.0			
Chromium	9/16/99	0.100	0.0607	0.138	"	75.0-125	77.3			
Copper	9/15/99	0.100	0.0842	0.169	"	75.0-125	84.8			
Lead	"	0.100	0.0805	0.157	"	75.0-125	76.5			
Selenium	"	0.100	0.00170	0.0980	"	75.0-125	96.3			
Silver	9/16/99	0.0500	ND	0.0400	"	75.0-125	80.0			
Zinc	9/15/99	0.100	0.236	0.272	"	75.0-125	36.0			6

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IT Corp./EMCON	Project:	GATX-Willbridge	Sampled: 9/1/99 to 9/2/99
P.O. Box 231269	Project Number:	B15-100-2A	Received: 9/2/99
Portland, OR 97224	Project Manager:	David Weymann	Reported: 9/30/99 16:05

Dissolved Metals per EPA 6000/7000 Series Methods/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: 0890839	**Date Prepared: 9/7/99**				**Extraction Method: Metals**					
Blank	0890839-BLK1									
Mercury	9/7/99			ND	mg/l	0.000200				
LCS	0890839-BS1									
Mercury	9/7/99	0.00500		0.00484	mg/l	80.0-120	96.8			
Duplicate	0890839-DUP1		P908534-02							
Mercury	9/7/99		ND	ND	mg/l			20.0		
Matrix Spike	0890839-MS1		P908534-02							
Mercury	9/7/99	0.00500	ND	0.00456	mg/l	75.0-125	91.2			
Batch: 0990216	**Date Prepared: 9/8/99**				**Extraction Method: EPA 200/3005**					
Blank	0990216-BLK1									
Arsenic	9/9/99			ND	mg/l	0.00100				
Barium	"			ND	"	0.00200				
Cadmium	"			ND	"	0.00100				
Chromium	"			ND	"	0.00100				
Copper	9/10/99			ND	"	0.00200				
Lead	"			ND	"	0.00100				
Selenium	"			ND	"	0.00100				
Silver	9/9/99			ND	"	0.00100				
Zinc	"			ND	"	0.00500				
LCS	0990216-BS1									
Arsenic	9/9/99	0.100		0.0998	mg/l	80.0-120	99.8			
Barium	"	0.100		0.0946	"	80.0-120	94.6			
Cadmium	"	0.100		0.103	"	80.0-120	103			
Chromium	"	0.100		0.103	"	80.0-120	103			
Copper	9/10/99	0.100		0.0987	"	80.0-120	98.7			
Lead	"	0.100		0.0948	"	80.0-120	94.8			
Selenium	"	0.100		0.0953	"	85.0-115	95.3			
Silver	9/9/99	0.0500		0.0428	"	80.0-120	85.6			
Zinc	"	0.100		0.103	"	80.0-120	103			
Duplicate	0990216-DUP1		P908534-02							
Arsenic	9/9/99		0.00352	0.00300	mg/l			20.0	16.0	
Barium	"		0.00923	0.00821	"			20.0	11.7	

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IT Corp./EMCON	Project:	GATX-Willbridge	Sampled: 9/1/99 to 9/2/99
P.O. Box 231269	Project Number:	B15-100-2A	Received: 9/2/99
Portland, OR 97224	Project Manager:	David Weymann	Reported: 9/30/99 16:05

Dissolved Metals per EPA 6000/7000 Series Methods/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*
Duplicate (continued)	0990216-DUP1		P908534-02							
Cadmium	9/9/99		ND	ND	mg/l			20.0		7
Chromium	"		ND	ND	"			20.0		7
Copper	"		ND	ND	"			20.0		7
Lead	"		ND	ND	"			20.0		
Selenium	"		0.00104	ND	"			20.0		
Silver	"		ND	ND	"			20.0		7
Zinc	"		ND	ND	"			20.0		
Matrix Spike	0990216-MS1		P908534-02							
Arsenic	9/9/99	0.100	0.00352	0.0927	mg/l	75.0-125	89.2			
Barium	"	0.100	0.00923	0.0924	"	75.0-125	83.2			
Cadmium	"	0.100	ND	0.0889	"	75.0-125	88.9			
Chromium	"	0.100	ND	0.0978	"	75.0-125	97.8			
Copper	"	0.100	ND	0.0934	"	75.0-125	93.4			
Lead	"	0.100	ND	0.0838	"	75.0-125	83.8			
Selenium	"	0.100	0.00104	0.0827	"	75.0-125	81.7			
Silver	"	0.0500	ND	0.0381	"	75.0-125	76.2			
Zinc	"	0.100	ND	0.0914	"	75.0-125	91.4			

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IT Corp./EMCON	Project:	GATX-Willbridge	Sampled: 9/1/99 to 9/2/99
P.O. Box 231269	Project Number:	B15-100-2A	Received: 9/2/99
Portland, OR 97224	Project Manager:	David Weymann	Reported: 9/30/99 16:05

Polynuclear Aromatic Compounds per EPA 8270M-SIM/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: 0990151	**Date Prepared: 9/7/99**					**Extraction Method: EPA 3520/600 Series**				
Blank	**0990151-BLK1**									
Acenaphthene	9/10/99			ND	ug/l	0.100				
Acenaphthylene	"			ND	"	0.100				
Anthracene	"			ND	"	0.100				
Benzo (a) anthracene	"			ND	"	0.100				
Benzo (a) pyrene	"			ND	"	0.100				
Benzo (b) fluoranthene	"			ND	"	0.100				
Benzo (ghi) perylene	"			ND	"	0.100				
Benzo (k) fluoranthene	"			ND	"	0.100				
Chrysene	"			ND	"	0.100				
Dibenzo (a,h) anthracene	"			ND	"	0.200				
Fluoranthene	"			ND	"	0.100				
Fluorene	"			ND	"	0.100				
Indeno (1,2,3-cd) pyrene	"			ND	"	0.100				
Naphthalene	"			ND	"	0.100				
Phenanthrene	"			ND	"	0.100				
Pyrene	"			ND	"	0.100				
Surrogate: 2-Fluorobiphenyl	"	*2.50*		*3.39*	"	*37.0-135*	*136*			*8*
Surrogate: Nitrobenzene-d5	"	*2.50*		*2.77*	"	*48.0-140*	*111*			
Surrogate: p-Terphenyl-d14	"	*2.50*		*3.19*	"	*25.0-147*	*128*			
LCS	**0990151-BS1**									
Acenaphthene	9/10/99	5.00		4.94	ug/l	50.0-150	98.8			
Benzo (a) pyrene	"	5.00		5.51	"	50.0-150	110			
Pyrene	"	5.00		5.34	"	50.0-150	107			
Surrogate: 2-Fluorobiphenyl	"	*2.50*		*3.08*	"	*37.0-135*	*123*			
Surrogate: Nitrobenzene-d5	"	*2.50*		*2.67*	"	*48.0-140*	*107*			
Surrogate: p-Terphenyl-d14	"	*2.50*		*2.82*	"	*25.0-147*	*113*			
LCS Dup	**0990151-BSD1**									
Acenaphthene	9/10/99	5.00		5.13	ug/l	50.0-150	103	60.0	4.16	
Benzo (a) pyrene	"	5.00		5.56	"	50.0-150	111	60.0	0.905	
Pyrene	"	5.00		5.46	"	50.0-150	109	60.0	1.85	
Surrogate: 2-Fluorobiphenyl	"	*2.50*		*2.67*	"	*37.0-135*	*107*			
Surrogate: Nitrobenzene-d5	"	*2.50*		*2.42*	"	*48.0-140*	*96.8*			
Surrogate: p-Terphenyl-d14	"	*2.50*		*2.55*	"	*25.0-147*	*102*			

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IT Corp./EMCON	Project:	GATX-Willbridge	Sampled: 9/1/99 to 9/2/99
P.O. Box 231269	Project Number:	B15-100-2A	Received: 9/2/99
Portland, OR 97224	Project Manager:	David Weymann	Reported: 9/30/99 16:05

Notes and Definitions

#	Note
1	The surrogate recovery for this sample cannot be accurately quantified due to interference from coeluting organic compounds present in the sample.
2	The reporting limit for this analyte was raised due to matrix interference.
3	Reporting limits raised due to dilution necessary for analysis.
4	The surrogate recovery for this sample is not available due to sample dilution required from high analyte concentration and/or matrix interferences.
5	Estimated concentration. Daily calibration check standard recovery for this analyte was 47%. Results are flagged when the standard recovery is below 80% for any compound.
6	The RPD and/or percent recovery for this QC spike sample cannot be accurately calculated due to the high concentration of analyte already present in the sample.
7	Analyses are not controlled on RPD values from sample concentrations less than 5 times the reporting limit.
8	Surrogate recovery is outside control limits. Recovery out of spec 1% high. Integrity of batch not invalidated.
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 - Portland

Crystal Burkholder, Project Manager

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Ret. U.O.C.

CHAIN OF CUSTODY REPORT

Work Order #: P909091

CLIENT: Willbridge (GATX)
REPORT TO: Tim Stone, IT
ADDRESS: 15055 SW Sequoia Pkwy Suite 140 Ptld OR 97224
PHONE: (503) 624-2200 FAX: (503) 620-2658

INVOICE TO: IT, PDX
P.O. NUMBER:

PROJECT NAME: Willbridge (GATX)
PROJECT NUMBER: B15-100-2A
SAMPLED BY: Cory Lavelle

TURNAROUND REQUEST in Business Days*
Organic & Inorganic Analyses: 10 | 7 | 5 | 4 | 3 | 2 | 1 | <1
STD.
Petroleum Hydrocarbon Analyses: 5 | 4 | 3 | 2 | 1 | <1
STD.
OTHER Please Specify
*Turnaround Requests less than standard may incur Rush Charges.

REQUESTED ANALYSES

CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	BTEX	PAHs	Metals	Dissolved M	MATRIX (W, S, O)	# OF CONT.	COMMENTS	NCA ID
1. MW 21	9-1-99/ 1010	X	X	X	X	W	5		
2. MW 22	9-1-99/ 1050	X	X	X			4		
3. MW 32	9-1-99/ 1130	X	X	X					
4. MW 31	9-1-99/ 1210	X	X	X					
5. MW 28	9-1-99/ 1235	X	X	X					
6. MW 26	9-1-99/ 1310	X	X	X					
7. MW 36	9-2-99/ 1010	X	X	X					
8. MW 33	9-2-99/ 1045	X	X	X	X		5		
9. MW 40	9-2-99/ 1120	X	X	X			4		
10. MW 37	9-2-99/ 1210	X	X	X					
11. MW 10	9-2-99/ 1245	X	X	X					
12. MW 8	9-2-99/ 1325	X	X	X					
13. MW 13	9-2-99/ 1400	X	X	X	X		5		
14. MW 11	9-2-99/ 1440	X	X	X			4		
15. MW 15	9-2-99/ 1515	X	X	X			4		

RELINQUISHED BY: Cory Lavelle		DATE: 9-2-99	RECEIVED BY: Bob Fahsholz		DATE: 9/2/99
PRINT NAME: Cory Lavelle	FIRM: IT	TIME: 1700	PRINT NAME: Bob Fahsholz	FIRM: NCA	TIME: 1706
RELINQUISHED BY:		DATE:	RECEIVED BY:		DATE:
PRINT NAME:	FIRM:	TIME:	PRINT NAME:	FIRM:	TIME:

ADDITIONAL REMARKS:

TEMP:

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IT Corp./EMCON	Project:	Willbridge (Chevron)	Sampled: 8/30/99
P.O. Box 231269	Project Number:	B15.200.2A	Received: 8/30/99
Portland, OR 97224	Project Manager:	David Weymann	Reported: 9/30/99 10:02

ANALYTICAL REPORT FOR SAMPLES:

Sample Description	Laboratory Sample Number	Sample Matrix	Date Sampled
B-10	P908552-01	Water	8/30/99
CR-11	P908552-02	Water	8/30/99

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IT Corp./EMCON	Project:	Willbridge (Chevron)	Sampled: 8/30/99
P.O. Box 231269	Project Number:	B15.200.2A	Received: 8/30/99
Portland, OR 97224	Project Manager:	David Weymann	Reported: 9/30/99 10:02

BTEX per EPA Method 8021B
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
B-10			P908552-01				Water	
Benzene	0990002	9/1/99	9/1/99		0.500	4.63	ug/l	
Toluene	"	"	"		0.500	2.93	"	
Ethylbenzene	"	"	"		0.500	11.9	"	
Xylenes (total)	"	"	"		1.00	14.9	"	
Surrogate: 4-BFB (PID)	"	"	"	*75.0-120*		*105*	%	
CR-11			P908552-02				Water	
Benzene	0890830	8/31/99	8/31/99		0.500	69.8	ug/l	
Toluene	"	"	"		0.500	1.43	"	
Ethylbenzene	"	"	"		0.500	1.49	"	
Xylenes (total)	"	"	"		1.00	3.39	"	
Surrogate: 4-BFB (PID)	"	"	"	*75.0-120*		*118*	%	

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IT Corp./EMCON	Project:	Willbridge (Chevron)	Sampled: 8/30/99
P.O. Box 231269	Project Number:	B15.200.2A	Received: 8/30/99
Portland, OR 97224	Project Manager:	David Weymann	Reported: 9/30/99 10:02

Total Metals per EPA 6000/7000 Series Methods
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Specific Method	Reporting Limit	Result	Units	Notes*
B-10			P908552-01				Water	
Arsenic	0990264	9/9/99	9/9/99	EPA 6020	0.00100	0.0334	mg/l	
Barium	"	"	"	EPA 6020	0.00200	0.228	"	
Cadmium	"	"	"	EPA 6020	0.00100	ND	"	
Chromium	"	"	"	EPA 6020	0.00100	0.0286	"	
Copper	"	"	9/29/99	EPA 6020	0.00200	0.0429	"	
Lead	"	"	9/9/99	EPA 6020	0.00100	0.0138	"	
Selenium	"	"	9/13/99	EPA 6020	0.00100	ND	"	
Silver	"	"	9/9/99	EPA 6020	0.00100	ND	"	
Zinc	"	"	9/29/99	EPA 6020	0.00500	0.0692	"	
Mercury	0890824	8/31/99	8/31/99	EPA 7470A	0.000400	ND	"	I
CR-11			P908552-02				Water	
Arsenic	0990264	9/9/99	9/9/99	EPA 6020	0.00500	0.0934	mg/l	
Barium	"	"	"	EPA 6020	0.0100	1.19	"	
Cadmium	"	"	"	EPA 6020	0.00500	0.0789	"	
Chromium	"	"	"	EPA 6020	0.00500	0.109	"	
Copper	"	"	9/29/99	EPA 6020	0.0100	0.226	"	
Lead	"	"	9/9/99	EPA 6020	0.00500	0.116	"	
Selenium	"	"	9/13/99	EPA 6020	0.00500	ND	"	
Silver	"	"	9/9/99	EPA 6020	0.00500	ND	"	
Zinc	"	"	9/29/99	EPA 6020	0.0250	0.541	"	
Mercury	0890824	8/31/99	8/31/99	EPA 7470A	0.000400	0.00129	"	I

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IT Corp./EMCON	Project:	Willbridge (Chevron)	Sampled: 8/30/99
P.O. Box 231269	Project Number:	B15.200.2A	Received: 8/30/99
Portland, OR 97224	Project Manager:	David Weymann	Reported: 9/30/99 10:02

Polynuclear Aromatic Compounds per EPA 8270M-SIM
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
B-10			P908552-01				Water	2
Acenaphthene	0890844	8/31/99	9/7/99		1.00	3.79	ug/l	
Acenaphthylene	"	"	"		1.00	ND	"	
Anthracene	"	"	"		1.00	1.39	"	
Benzo (a) anthracene	"	"	"		1.00	ND	"	
Benzo (a) pyrene	"	"	"		1.00	ND	"	
Benzo (b) fluoranthene	"	"	"		1.00	ND	"	
Benzo (ghi) perylene	"	"	"		1.00	ND	"	
Benzo (k) fluoranthene	"	"	"		1.00	ND	"	
Chrysene	"	"	"		1.00	ND	"	
Dibenzo (a,h) anthracene	"	"	"		2.00	ND	"	
Fluoranthene	"	"	"		1.00	ND	"	
Fluorene	"	"	"		1.00	13.2	"	
Indeno (1,2,3-cd) pyrene	"	"	"		1.00	ND	"	
Naphthalene	"	"	"		1.00	ND	"	
Phenanthrene	"	"	"		1.00	17.4	"	
Pyrene	"	"	"		1.00	ND	"	
Surrogate: 2-Fluorobiphenyl	"	"	"	*37.0-135*		*88.6*	*%*	
Surrogate: Nitrobenzene-d5	"	"	"	*48.0-140*		*NR*	"	3
Surrogate: p-Terphenyl-d14	"	"	"	*25.0-147*		*42.0*	"	
CR-11			P908552-02				Water	2
Acenaphthene	0890844	8/31/99	9/7/99		1.00	2.75	ug/l	
Acenaphthylene	"	"	"		1.00	ND	"	
Anthracene	"	"	"		1.00	ND	"	
Benzo (a) anthracene	"	"	"		1.00	ND	"	
Benzo (a) pyrene	"	"	"		1.00	ND	"	
Benzo (b) fluoranthene	"	"	"		1.00	ND	"	
Benzo (ghi) perylene	"	"	"		1.00	ND	"	
Benzo (k) fluoranthene	"	"	"		1.00	ND	"	
Chrysene	"	"	"		1.00	ND	"	
Dibenzo (a,h) anthracene	"	"	"		2.00	ND	"	
Fluoranthene	"	"	"		1.00	ND	"	
Fluorene	"	"	"		1.00	5.42	"	
Indeno (1,2,3-cd) pyrene	"	"	"		1.00	ND	"	
Naphthalene	"	"	"		10.0	ND	"	
Phenanthrene	"	"	"		1.00	4.28	"	
Pyrene	"	"	"		1.00	ND	"	
Surrogate: 2-Fluorobiphenyl	"	"	"	*37.0-135*		*91.5*	*%*	

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

Crystal Burkholder, Project Manager

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IT Corp./EMCON	Project:	Willbridge (Chevron)	Sampled: 8/30/99
P.O. Box 231269	Project Number:	B15.200.2A	Received: 8/30/99
Portland, OR 97224	Project Manager:	David Weymann	Reported: 9/30/99 10:02

Polynuclear Aromatic Compounds per EPA 8270M-SIM
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
CR-11 (continued)			P908552-02				Water	2
Surrogate: Nitrobenzene-d5	*0890844*	*8/31/99*	*9/7/99*	*48.0-140*		*NR*	*%*	*3*
Surrogate: p-Terphenyl-d14	*"*	*"*	*"*	*25.0-147*		*30.0*	*"*	

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IT Corp./EMCON	Project:	Willbridge (Chevron)	Sampled: 8/30/99
P.O. Box 231269	Project Number:	B15.200.2A	Received: 8/30/99
Portland, OR 97224	Project Manager:	David Weymann	Reported: 9/30/99 10:02

BTEX per EPA Method 8021B/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: 0890830	**Date Prepared: 8/31/99**					**Extraction Method: EPA 5030**				
Blank	**0890830-BLK1**									
Benzene	8/31/99			ND	ug/l	0.500				
Toluene	"			ND	"	0.500				
Ethylbenzene	"			ND	"	0.500				
Xylenes (total)	"			ND	"	1.00				
Surrogate: 4-BFB (PID)	"	*50.0*		*47.6*	"	*75.0-120*	*95.2*			
LCS	**0890830-BS2**									
Benzene	8/31/99	20.0		17.6	ug/l	67.0-130	88.0			
Toluene	"	20.0		18.8	"	75.0-126	94.0			
Ethylbenzene	"	20.0		17.8	"	76.0-124	89.0			
Xylenes (total)	"	60.0		53.7	"	75.0-126	89.5			
Surrogate: 4-BFB (PID)	"	*50.0*		*50.0*	"	*75.0-120*	*100*			
Matrix Spike	**0890830-MS1**		**P908534-01**							
Benzene	8/31/99	200	ND	197	ug/l	67.0-130	98.5			
Toluene	"	200	ND	213	"	75.0-126	107			
Ethylbenzene	"	200	ND	201	"	76.0-124	101			
Xylenes (total)	"	600	ND	611	"	75.0-126	102			
Surrogate: 4-BFB (PID)	"	*50.0*		*54.3*	"	*75.0-120*	*109*			
Matrix Spike Dup	**0890830-MSD1**		**P908534-01**							
Benzene	8/31/99	200	ND	193	ug/l	67.0-130	96.5	13.0	2.05	
Toluene	"	200	ND	215	"	75.0-126	108	13.0	0.930	
Ethylbenzene	"	200	ND	209	"	76.0-124	105	15.0	3.88	
Xylenes (total)	"	600	ND	629	"	75.0-126	105	13.0	2.90	
Surrogate: 4-BFB (PID)	"	*50.0*		*54.9*	"	*75.0-120*	*110*			
Batch: 0990002	**Date Prepared: 9/1/99**					**Extraction Method: EPA 5030**				
Blank	**0990002-BLK1**									
Benzene	9/1/99			ND	ug/l	0.500				
Toluene	"			ND	"	0.500				
Ethylbenzene	"			ND	"	0.500				
Xylenes (total)	"			ND	"	1.00				
Surrogate: 4-BFB (PID)	"	*50.0*		*46.3*	"	*75.0-120*	*92.6*			
LCS	**0990002-BS2**									
Benzene	9/1/99	20.0		18.9	ug/l	67.0-130	94.5			

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

Crystal Burkholder, Project Manager

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IT Corp./EMCON	Project:	Willbridge (Chevron)	Sampled: 8/30/99
P.O. Box 231269	Project Number:	B15.200.2A	Received: 8/30/99
Portland, OR 97224	Project Manager:	David Weymann	Reported: 9/30/99 10:02

BTEX per EPA Method 8021B/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*
LCS (continued)	0990002-BS2									
Toluene	9/1/99	20.0		17.4	ug/l	75.0-126	87.0			
Ethylbenzene	"	20.0		17.5	"	76.0-124	87.5			
Xylenes (total)	"	60.0		52.7	"	75.0-126	87.8			
Surrogate: 4-BFB (PID)	"	*50.0*		*45.6*	"	*75.0-120*	*91.2*			

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IT Corp./EMCON	Project:	Willbridge (Chevron)	Sampled: 8/30/99
P.O. Box 231269	Project Number:	B15.200.2A	Received: 8/30/99
Portland, OR 97224	Project Manager:	David Weymann	Reported: 9/30/99 10:02

Total Metals per EPA 6000/7000 Series Methods/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: 0890824	**Date Prepared: 8/31/99**					**Extraction Method: Metals**				
Blank	**0890824-BLK1**									
Mercury	8/31/99			ND	mg/l	0.000200				
LCS	**0890824-BS1**									
Mercury	8/31/99	0.00500		0.00502	mg/l	80.0-120	100			
Duplicate	**0890824-DUP1**		**P908534-04**							
Mercury	8/31/99		0.000210	0.000212	mg/l			20.0	0.948	
Matrix Spike	**0890824-MS1**		**P908534-04**							
Mercury	8/31/99	0.00500	0.000210	0.00531	mg/l	75.0-125	102			
Batch: 0990264	**Date Prepared: 9/9/99**					**Extraction Method: EPA 200/3005**				
Blank	**0990264-BLK1**									
Arsenic	9/9/99			ND	mg/l	0.00100				
Barium	"			ND	"	0.00200				
Cadmium	"			ND	"	0.00100				
Chromium	"			ND	"	0.00100				
Copper	"			ND	"	0.00200				
Lead	"			ND	"	0.00100				
Selenium	9/13/99			ND	"	0.00100				
Silver	9/9/99			ND	"	0.00100				
Zinc	"			ND	"	0.00500				
LCS	**0990264-BS1**									
Arsenic	9/9/99	0.100		0.0935	mg/l	80.0-120	93.5			
Barium	"	0.100		0.0979	"	80.0-120	97.9			
Cadmium	"	0.100		0.0931	"	80.0-120	93.1			
Chromium	"	0.100		0.0945	"	80.0-120	94.5			
Copper	"	0.100		0.0955	"	80.0-120	95.5			
Lead	"	0.100		0.0916	"	80.0-120	91.6			
Selenium	9/13/99	0.100		0.0964	"	80.0-120	96.4			
Silver	9/15/99	0.0500		0.0411	"	80.0-120	82.2			
Zinc	9/9/99	0.100		0.0923	"	80.0-120	92.3			
Duplicate	**0990264-DUP1**		**P908398-01**							
Arsenic	9/9/99		0.00539	0.00533	mg/l			20.0	1.12	
Barium	"		0.0164	0.0161	"			20.0	1.85	

North Creek Analytical - Portland

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

Crystal Burkholder, Project Manager

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P.O. Box 231269	Project Number:	B15.200.2A	Received: 8/30/99
Portland, OR 97224	Project Manager:	David Weymann	Reported: 9/30/99 10:02

Total Metals per EPA 6000/7000 Series Methods/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*
Duplicate (continued)	0990264-DUP1		P908398-01							
Cadmium	9/9/99		ND	ND	mg/l			20.0		
Chromium	"		0.00571	0.00558	"			20.0	2.30	
Copper	"		ND	ND	"			20.0		
Lead	"		ND	ND	"			20.0		4
Selenium	9/13/99		ND	ND	"			20.0		
Silver	9/9/99		ND	ND	"			20.0		
Zinc	"		0.0390	0.0383	"			20.0	1.81	
Matrix Spike	0990264-MS1		P908398-01							
Arsenic	9/9/99	0.100	0.00539	0.101	mg/l	75.0-125	95.6			
Barium	"	0.100	0.0164	0.113	"	75.0-125	96.6			
Cadmium	"	0.100	ND	0.0941	"	75.0-125	94.1			
Chromium	"	0.100	0.00571	0.102	"	75.0-125	96.3			
Copper	"	0.100	ND	0.0957	"	75.0-125	95.7			
Lead	"	0.100	ND	0.0892	"	75.0-125	89.2			
Selenium	9/13/99	0.100	ND	0.0963	"	75.0-125	96.3			
Silver	9/9/99	0.0500	ND	0.0409	"	75.0-125	81.8			
Zinc	"	0.100	0.0390	0.129	"	75.0-125	90.0			
Matrix Spike	0990264-MS2		P908534-07							
Arsenic	9/9/99	0.100	0.0270	0.116	mg/l	75.0-125	89.0			
Barium	"	0.100	0.185	0.277	"	75.0-125	92.0			
Cadmium	"	0.100	ND	0.0966	"	75.0-125	96.6			
Chromium	"	0.100	0.0125	0.109	"	75.0-125	96.5			
Copper	"	0.100	0.0166	0.110	"	75.0-125	93.4			
Lead	"	0.100	0.00871	0.0988	"	75.0-125	90.1			
Selenium	9/15/99	0.100	ND	0.0873	"	75.0-125	87.3			
Silver	9/9/99	0.0500	ND	0.0410	"	75.0-125	82.0			
Zinc	"	0.100	0.0453	0.131	"	75.0-125	85.7			

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P.O. Box 231269	Project Number:	B15.200.2A	Received: 8/30/99
Portland, OR 97224	Project Manager:	David Weymann	Reported: 9/30/99 10:02

Polynuclear Aromatic Compounds per EPA 8270M-SIM/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: 0890844	**Date Prepared: 8/31/99**					**Extraction Method: EPA 3520/600 Series**				
Blank	**0890844-BLK1**									
Acenaphthene	9/22/99			ND	ug/l	0.100				
Acenaphthylene	"			ND	"	0.100				
Anthracene	"			ND	"	0.100				
Benzo (a) anthracene	"			ND	"	0.100				
Benzo (a) pyrene	"			ND	"	0.100				
Benzo (b) fluoranthene	"			ND	"	0.100				
Benzo (ghi) perylene	"			ND	"	0.100				
Benzo (k) fluoranthene	"			ND	"	0.100				
Chrysene	"			ND	"	0.100				
Dibenzo (a,h) anthracene	"			ND	"	0.200				
Fluoranthene	"			ND	"	0.100				
Fluorene	"			ND	"	0.100				
Indeno (1,2,3-cd) pyrene	"			ND	"	0.100				
Naphthalene	"			ND	"	0.100				
Phenanthrene	"			ND	"	0.100				
Pyrene	"			ND	"	0.100				
Surrogate: 2-Fluorobiphenyl	"	*2.50*		*0.890*	"	*37.0-135*	*35.6*			*5,6*
Surrogate: Nitrobenzene-d5	"	*2.50*		*2.00*	"	*48.0-140*	*80.0*			
Surrogate: p-Terphenyl-d14	"	*2.50*		*2.05*	"	*25.0-147*	*82.0*			
LCS	**0890844-BS1**									
Acenaphthene	9/2/99	5.00		4.60	ug/l	50.0-150	92.0			
Benzo (a) pyrene	"	5.00		5.80	"	50.0-150	116			
Pyrene	"	5.00		5.24	"	50.0-150	105			
Surrogate: 2-Fluorobiphenyl	"	*2.50*		*1.92*	"	*37.0-135*	*76.8*			
Surrogate: Nitrobenzene-d5	"	*2.50*		*2.24*	"	*48.0-140*	*89.6*			
Surrogate: p-Terphenyl-d14	"	*2.50*		*2.08*	"	*25.0-147*	*83.2*			*7*
LCS Dup	**0890844-BSD1**									
Acenaphthene	9/2/99	5.00		4.33	ug/l	50.0-150	86.6	60.0	6.05	
Benzo (a) pyrene	"	5.00		5.35	"	50.0-150	107	60.0	8.07	
Pyrene	"	5.00		5.35	"	50.0-150	107	60.0	1.89	
Surrogate: 2-Fluorobiphenyl	"	*2.50*		*1.91*	"	*37.0-135*	*76.4*			
Surrogate: Nitrobenzene-d5	"	*2.50*		*2.33*	"	*48.0-140*	*93.2*			
Surrogate: p-Terphenyl-d14	"	*2.50*		*2.32*	"	*25.0-147*	*92.8*			*7*

North Creek Analytical - Portland

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

Crystal Burkholder, Project Manager

North Creek Analytical, Inc.
Environmental Laboratory Network

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IT Corp./EMCON	Project:	Willbridge (Chevron)	Sampled: 8/30/99
P.O. Box 231269	Project Number:	B15.200.2A	Received: 8/30/99
Portland, OR 97224	Project Manager:	David Weymann	Reported: 9/30/99 10:02

Notes and Definitions

#	Note
1	The reporting limit for this analyte was raised due to matrix interference.
2	Reporting limits raised due to dilution necessary for analysis.
3	The surrogate recovery for this sample cannot be accurately quantified due to interference from coeluting organic compounds present in the sample.
4	Analyses are not controlled on RPD values from sample concentrations less than 5 times the reporting limit.
5	Surrogate out due to negative calibration bias.
6	Estimated concentration. Daily calibration check standard recovery for this analyte was 48%. Results are flagged when the standard recovery is below 80% for any compound.
7	Estimated concentration. Daily calibration check standard recovery for this analyte was 74%. Results are flagged when the standard recovery is below 80% for any compound.
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 - Portland

Crystal Burkholder, Project Manager

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20332 Empire Avenue, Suite F-1, Bend, OR 97701-5711 (541) 383-9310 FAX 382-7588

CHAIN OF CUSTODY REPORT

Work Order #: 908552

CLIENT: Willbridge (Chevron)
REPORT TO: Tim Stone
ADDRESS: IT 15055 SW Sequoia Pkwy Suite 140 Portland 97224
PHONE: (503) 624-7200 FAX: (503) 620-7258

INVOICE TO: IT PDX
P.O. NUMBER:

PROJECT NAME: Willbridge
PROJECT NUMBER: 315 2002A
SAMPLED BY: Cory LaVelle

TURNAROUND REQUEST in Business Days*
Organic & Inorganic Analyses: ~~10~~ STD. | 7 | 5 | 4 | 3 | 2 | 1 | <1
Petroleum Hydrocarbon Analyses: 5 STD. | 4 | 3 | 2 | 1 | <1
OTHER — Please Specify
*Turnaround Requests less than standard may incur Rush Charges.

	CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	BTEX	PAH's	Metals	MATRIX (W, S, O)	# OF CONT.	COMMENTS	NCA ID
1.	B70	8-30-99/1230	X	X	X	W	5		
2.	CR-11	8-30-99/1330	X	X	X	W	5		
3.									
4.									
5.									
6.									
7.									
8.									
9.									
10.									
11.									
12.									
13.									
14.									
15.									

RELINQUISHED BY: Cory LaVelle — DATE: 8-30-99 — TIME: 1500
PRINT NAME: Cory LaVelle — FIRM: IT
RECEIVED BY: Evie Morgan — DATE: 14:40 — TIME: 8/30
PRINT NAME: Evie Morgan — FIRM: NCA

RELINQUISHED BY: — DATE: — TIME:
PRINT NAME: — FIRM:
RECEIVED BY: — DATE: — TIME:
PRINT NAME: — FIRM:

ADDITIONAL REMARKS:

TEMP:

PAGE OF

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IT Corp./EMCON	Project:	Willbridge (Chevron)	Sampled: 8/26/99 to 8/27/99
P.O. Box 231269	Project Number:	B15.200.2A	Received: 8/27/99
Portland, OR 97224	Project Manager:	David Weymann	Reported: 9/29/99 15:21

ANALYTICAL REPORT FOR SAMPLES:

Sample Description	Laboratory Sample Number	Sample Matrix	Date Sampled
B7	P908534-01	Water	8/26/99
B14	P908534-02	Water	8/26/99
B11	P908534-03	Water	8/27/99
B28	P908534-04	Water	8/27/99
B30	P908534-05	Water	8/27/99
CR8	P908534-06	Water	8/27/99
CR9	P908534-07	Water	8/27/99

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.

Crystal Burkholder, Project Manager

North Creek Analytical, Inc.
Environmental Laboratory Network

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P.O. Box 231269	Project Number:	B15.200.2A	Received: 8/27/99
Portland, OR 97224	Project Manager:	David Weymann	Reported: 9/29/99 15:21

BTEX per EPA Method 8021B
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
B7			P908534-01				Water	
Benzene	0990002	9/1/99	9/1/99		0.500	ND	ug/l	
Toluene	"	"	"		0.500	ND	"	
Ethylbenzene	"	"	"		0.500	1.49	"	
Xylenes (total)	"	"	"		1.00	ND	"	
Surrogate: 4-BFB (PID)	"	"	"	*75.0-120*		*100*	%	
B14			P908534-02				Water	
Benzene	0990002	9/1/99	9/1/99		2.50	170	ug/l	
Toluene	"	"	"		2.50	12.3	"	
Ethylbenzene	"	"	"		2.50	89.8	"	
Xylenes (total)	"	"	"		5.00	17.0	"	
Surrogate: 4-BFB (PID)	"	"	"	*75.0-120*		*99.2*	%	
B11			P908534-03				Water	
Benzene	0890830	8/31/99	8/31/99		0.500	9.16	ug/l	
Toluene	"	"	"		0.500	3.70	"	
Ethylbenzene	"	"	"		0.500	ND	"	
Xylenes (total)	"	"	"		1.00	3.20	"	
Surrogate: 4-BFB (PID)	"	"	"	*75.0-120*		*117*	%	
B28			P908534-04				Water	
Benzene	0890830	8/31/99	8/31/99		0.500	ND	ug/l	
Toluene	"	"	"		0.500	ND	"	
Ethylbenzene	"	"	"		0.500	ND	"	
Xylenes (total)	"	"	"		1.00	ND	"	
Surrogate: 4-BFB (PID)	"	"	"	*75.0-120*		*94.0*	%	
B30			P908534-05				Water	
Benzene	0890830	8/31/99	8/31/99		0.500	55.1	ug/l	
Toluene	"	"	"		0.500	3.32	"	
Ethylbenzene	"	"	"		0.500	ND	"	
Xylenes (total)	"	"	"		1.00	4.85	"	
Surrogate: 4-BFB (PID)	"	"	"	*75.0-120*		*106*	%	

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IT Corp./EMCON	Project:	Willbridge (Chevron)	Sampled: 8/26/99 to 8/27/99
P.O. Box 231269	Project Number:	B15.200.2A	Received: 8/27/99
Portland, OR 97224	Project Manager:	David Weymann	Reported: 9/29/99 15:21

BTEX per EPA Method 8021B
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
CR8			**P908534-06**				**Water**	
Benzene	0890830	8/31/99	8/31/99		0.500	ND	ug/l	
Toluene	"	"	"		0.500	ND	"	
Ethylbenzene	"	"	"		0.500	ND	"	
Xylenes (total)	"	"	"		1.00	ND	"	
Surrogate: 4-BFB (PID)	"	"	"	*75.0-120*		*101*	*%*	
CR9			**P908534-07**				**Water**	
Benzene	0890830	8/31/99	8/31/99		0.500	ND	ug/l	
Toluene	"	"	"		0.500	ND	"	
Ethylbenzene	"	"	"		0.500	ND	"	
Xylenes (total)	"	"	"		1.00	ND	"	
Surrogate: 4-BFB (PID)	"	"	"	*75.0-120*		*101*	*%*	

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P.O. Box 231269	Project Number:	B15.200.2A	Received: 8/27/99
Portland, OR 97224	Project Manager:	David Weymann	Reported: 9/29/99 15:21

Total Metals per EPA 6000/7000 Series Methods
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Specific Method	Reporting Limit	Result	Units	Notes*
B7			P908534-01				Water	
Arsenic	0990264	9/9/99	9/9/99	EPA 6020	0.00100	0.0242	mg/l	
Barium	"	"	"	EPA 6020	0.00200	0.144	"	
Cadmium	"	"	"	EPA 6020	0.00100	ND	"	
Chromium	"	"	"	EPA 6020	0.00100	0.0125	"	
Copper	"	"	"	EPA 6020	0.00200	0.0211	"	
Lead	"	"	"	EPA 6020	0.00100	0.00508	"	
Selenium	"	"	9/13/99	EPA 6020	0.00100	ND	"	
Silver	"	"	9/9/99	EPA 6020	0.00100	ND	"	
Zinc	"	"	"	EPA 6020	0.00500	0.0374	"	
Mercury	0890824	8/31/99	8/31/99	EPA 7470A	0.000200	ND	"	
B14			P908534-02				Water	
Arsenic	0990264	9/9/99	9/9/99	EPA 6020	0.00100	0.0292	mg/l	
Barium	"	"	"	EPA 6020	0.00200	0.102	"	
Cadmium	"	"	"	EPA 6020	0.00100	ND	"	
Chromium	"	"	"	EPA 6020	0.00100	0.00809	"	
Copper	"	"	"	EPA 6020	0.00200	0.0129	"	
Lead	"	"	"	EPA 6020	0.00100	0.00615	"	
Selenium	"	"	9/13/99	EPA 6020	0.00100	ND	"	
Silver	"	"	9/9/99	EPA 6020	0.00100	ND	"	
Zinc	"	"	"	EPA 6020	0.00500	0.0183	"	
Mercury	0890824	8/31/99	8/31/99	EPA 7470A	0.000200	ND	"	
B11			P908534-03				Water	
Arsenic	0990264	9/9/99	9/9/99	EPA 6020	0.00100	0.0263	mg/l	
Barium	"	"	"	EPA 6020	0.00200	0.228	"	
Cadmium	"	"	"	EPA 6020	0.00100	0.00122	"	
Chromium	"	"	"	EPA 6020	0.00100	0.0282	"	
Copper	"	"	"	EPA 6020	0.00200	0.0363	"	
Lead	"	"	"	EPA 6020	0.00100	0.0152	"	
Selenium	"	"	9/13/99	EPA 6020	0.00100	ND	"	
Silver	"	"	9/9/99	EPA 6020	0.00100	ND	"	
Zinc	"	"	"	EPA 6020	0.00500	0.0672	"	
Mercury	0890824	8/31/99	8/31/99	EPA 7470A	0.000200	0.000299	"	
B28			P908534-04				Water	
Arsenic	0990264	9/9/99	9/9/99	EPA 6020	0.00100	0.00845	mg/l	
Barium	"	"	"	EPA 6020	0.00200	0.190	"	

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P.O. Box 231269	Project Number:	B15.200.2A	Received: 8/27/99
Portland, OR 97224	Project Manager:	David Weymann	Reported: 9/29/99 15:21

Total Metals per EPA 6000/7000 Series Methods
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Specific Method	Reporting Limit	Result	Units	Notes*
B28 (continued)			P908534-04				Water	
Cadmium	0990264	9/9/99	9/9/99	EPA 6020	0.00100	ND	mg/l	
Chromium	"	"	"	EPA 6020	0.00100	0.0173	"	
Copper	"	"	"	EPA 6020	0.00200	0.0283	"	
Lead	"	"	"	EPA 6020	0.00100	0.0118	"	
Selenium	"	"	9/13/99	EPA 6020	0.00100	ND	"	
Silver	"	"	9/9/99	EPA 6020	0.00100	ND	"	
Zinc	"	"	"	EPA 6020	0.00500	0.0580	"	
Mercury	0890824	8/31/99	8/31/99	EPA 7470A	0.000200	0.000210	"	
B30			P908534-05				Water	
Arsenic	0990264	9/9/99	9/9/99	EPA 6020	0.00100	0.0163	mg/l	
Barium	"	"	"	EPA 6020	0.00200	0.125	"	
Cadmium	"	"	"	EPA 6020	0.00100	0.0157	"	
Chromium	"	"	"	EPA 6020	0.00100	0.0101	"	
Copper	"	"	"	EPA 6020	0.00200	0.0374	"	
Lead	"	"	"	EPA 6020	0.00100	0.0338	"	
Selenium	"	"	9/13/99	EPA 6020	0.00100	ND	"	
Silver	"	"	9/9/99	EPA 6020	0.00100	ND	"	
Zinc	"	"	"	EPA 6020	0.00500	0.104	"	
Mercury	0890824	8/31/99	8/31/99	EPA 7470A	0.000200	0.00179	"	
CR8			P908534-06				Water	
Arsenic	0990264	9/9/99	9/9/99	EPA 6020	0.00500	0.0726	mg/l	
Barium	"	"	"	EPA 6020	0.0100	0.863	"	
Cadmium	"	"	"	EPA 6020	0.00500	0.00540	"	
Chromium	"	"	"	EPA 6020	0.00500	0.0769	"	
Copper	"	"	"	EPA 6020	0.0100	0.180	"	
Lead	"	"	"	EPA 6020	0.00500	0.0842	"	
Selenium	"	"	9/13/99	EPA 6020	0.00500	ND	"	
Silver	"	"	9/9/99	EPA 6020	0.00500	ND	"	
Zinc	"	"	"	EPA 6020	0.0250	0.456	"	
Mercury	0890824	8/31/99	8/31/99	EPA 7470A	0.000400	0.000538	"	1
CR9			P908534-07				Water	
Arsenic	0990264	9/9/99	9/9/99	EPA 6020	0.00100	0.0270	mg/l	
Barium	"	"	"	EPA 6020	0.00200	0.185	"	
Cadmium	"	"	"	EPA 6020	0.00100	ND	"	
Chromium	"	"	"	EPA 6020	0.00100	0.0125	"	

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P.O. Box 231269	Project Number:	B15.200.2A	Received: 8/27/99
Portland, OR 97224	Project Manager:	David Weymann	Reported: 9/29/99 15:21

Total Metals per EPA 6000/7000 Series Methods
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Specific Method	Reporting Limit	Result	Units	Notes*
CR9 (continued)			P908534-07				Water	
Copper	0990264	9/9/99	9/9/99	EPA 6020	0.00200	0.0166	mg/l	
Lead	"	"	"	EPA 6020	0.00100	0.00871	"	
Selenium	"	"	9/13/99	EPA 6020	0.00100	ND	"	
Silver	"	"	9/9/99	EPA 6020	0.00100	ND	"	
Zinc	"	"	"	EPA 6020	0.00500	0.0453	"	
Mercury	0890824	8/31/99	8/31/99	EPA 7470A	0.000200	ND	"	

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IT Corp./EMCON	Project:	Willbridge (Chevron)	Sampled: 8/26/99 to 8/27/99
P.O. Box 231269	Project Number:	B15.200.2A	Received: 8/27/99
Portland, OR 97224	Project Manager:	David Weymann	Reported: 9/29/99 15:21

Dissolved Metals per EPA 6000/7000 Series Methods
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Specific Method	Reporting Limit	Result	Units	Notes*
B14			P908534-02				Water	
Arsenic	0990216	9/8/99	9/9/99	EPA 6020	0.00100	0.00352	mg/l	
Barium	"	"	"	EPA 6020	0.00200	0.00923	"	
Cadmium	"	"	"	EPA 6020	0.00100	ND	"	
Chromium	"	"	"	EPA 6020	0.00100	ND	"	
Copper	"	"	9/10/99	EPA 6020	0.00200	ND	"	
Lead	"	"	"	EPA 6020	0.00100	ND	"	
Selenium	"	"	"	EPA 6020	0.00100	0.00104	"	
Silver	"	"	9/9/99	EPA 6020	0.00100	ND	"	
Zinc	"	"	"	EPA 6020	0.00500	ND	"	
Mercury	0890839	9/7/99	9/7/99	EPA 7470A	0.000200	ND	"	
B30			P908534-05				Water	
Arsenic	0990216	9/8/99	9/9/99	EPA 6020	0.00100	0.00581	mg/l	
Barium	"	"	"	EPA 6020	0.00200	0.0209	"	
Cadmium	"	"	"	EPA 6020	0.00100	ND	"	
Chromium	"	"	"	EPA 6020	0.00100	0.00200	"	
Copper	"	"	9/10/99	EPA 6020	0.00200	ND	"	
Lead	"	"	"	EPA 6020	0.00100	ND	"	
Selenium	"	"	"	EPA 6020	0.00100	0.00209	"	
Silver	"	"	9/9/99	EPA 6020	0.00100	ND	"	
Zinc	"	"	"	EPA 6020	0.00500	0.00841	"	
Mercury	0890839	9/7/99	9/7/99	EPA 7470A	0.000200	ND	"	
CR9			P908534-07				Water	
Arsenic	0990216	9/8/99	9/9/99	EPA 6020	0.00100	ND	mg/l	
Barium	"	"	"	EPA 6020	0.00200	0.0243	"	
Cadmium	"	"	"	EPA 6020	0.00100	ND	"	
Chromium	"	"	"	EPA 6020	0.00100	ND	"	
Copper	"	"	9/10/99	EPA 6020	0.00200	ND	"	
Lead	"	"	"	EPA 6020	0.00100	ND	"	
Selenium	"	"	"	EPA 6020	0.00100	0.00152	"	
Silver	"	"	9/9/99	EPA 6020	0.00100	ND	"	
Zinc	"	"	"	EPA 6020	0.00500	0.00660	"	
Mercury	0890839	9/7/99	9/7/99	EPA 7470A	0.000200	ND	"	

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P.O. Box 231269	Project Number:	B15.200.2A	Received: 8/27/99
Portland, OR 97224	Project Manager:	David Weymann	Reported: 9/29/99 15:21

Polynuclear Aromatic Compounds per EPA 8270M-SIM
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
B7			P908534-01				Water	
Acenaphthene	0890844	8/31/99	9/3/99		0.100	3.02	ug/l	
Acenaphthylene	"	"	"		1.00	ND	"	1
Anthracene	"	"	"		0.100	0.542	"	
Benzo (a) anthracene	"	"	"		0.100	ND	"	
Benzo (a) pyrene	"	"	"		0.100	ND	"	
Benzo (b) fluoranthene	"	"	"		0.100	ND	"	
Benzo (ghi) perylene	"	"	"		0.100	ND	"	
Benzo (k) fluoranthene	"	"	"		0.100	ND	"	
Chrysene	"	"	"		0.100	ND	"	
Dibenzo (a,h) anthracene	"	"	"		0.200	ND	"	
Fluoranthene	"	"	"		0.500	ND	"	1
Fluorene	"	"	"		0.100	10.4	"	
Indeno (1,2,3-cd) pyrene	"	"	"		0.100	ND	"	
Naphthalene	"	"	"		1.00	ND	"	1
Phenanthrene	"	"	"		0.100	7.51	"	
Pyrene	"	"	"		0.500	ND	"	1
Surrogate: 2-Fluorobiphenyl	"	"	"	*37.0-135*		*72.5*	%	
Surrogate: Nitrobenzene-d5	"	"	"	*48.0-140*		*98.3*	"	
Surrogate: p-Terphenyl-d14	"	"	"	*25.0-147*		*60.6*	"	*2*
B14			P908534-02				Water	
Acenaphthene	0890844	8/31/99	9/3/99		0.100	1.00	ug/l	
Acenaphthylene	"	"	"		0.100	ND	"	
Anthracene	"	"	"		0.100	0.222	"	
Benzo (a) anthracene	"	"	"		0.100	ND	"	
Benzo (a) pyrene	"	"	"		0.100	ND	"	
Benzo (b) fluoranthene	"	"	"		0.100	ND	"	
Benzo (ghi) perylene	"	"	"		0.100	ND	"	
Benzo (k) fluoranthene	"	"	"		0.100	ND	"	
Chrysene	"	"	"		0.100	ND	"	
Dibenzo (a,h) anthracene	"	"	"		0.200	ND	"	
Fluoranthene	"	"	"		0.100	0.550	"	
Fluorene	"	"	"		0.100	1.49	"	
Indeno (1,2,3-cd) pyrene	"	"	"		0.100	ND	"	
Naphthalene	"	"	"		0.100	5.05	"	
Phenanthrene	"	"	"		0.100	1.52	"	
Pyrene	"	"	"		0.100	0.630	"	
Surrogate: 2-Fluorobiphenyl	"	"	"	*37.0-135*		*65.7*	%	

North Creek Analytical - Portland

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

Crystal Burkholder, Project Manager

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IT Corp./EMCON	Project:	Willbridge (Chevron)	Sampled: 8/26/99 to 8/27/99
P.O. Box 231269	Project Number:	B15.200.2A	Received: 8/27/99
Portland, OR 97224	Project Manager:	David Weymann	Reported: 9/29/99 15:21

Polynuclear Aromatic Compounds per EPA 8270M-SIM
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
B14 (continued)			P908534-02				Water	
Surrogate: Nitrobenzene-d5	*0890844*	*8/31/99*	*9/3/99*	*48.0-140*		*64.4*	%	
Surrogate: p-Terphenyl-d14	"	"	"	*25.0-147*		*64.0*	"	*2*
B11			P908534-03				Water	
Acenaphthene	0890844	8/31/99	9/3/99		0.100	0.882	ug/l	
Acenaphthylene	"	"	"		0.100	ND	"	
Anthracene	"	"	"		0.100	0.128	"	
Benzo (a) anthracene	"	"	"		0.100	ND	"	
Benzo (a) pyrene	"	"	"		0.100	ND	"	
Benzo (b) fluoranthene	"	"	"		0.100	ND	"	
Benzo (ghi) perylene	"	"	"		0.100	ND	"	
Benzo (k) fluoranthene	"	"	"		0.100	ND	"	
Chrysene	"	"	"		0.100	ND	"	
Dibenzo (a,h) anthracene	"	"	"		0.200	ND	"	
Fluoranthene	"	"	"		0.100	0.100	"	
Fluorene	"	"	"		0.100	1.58	"	
Indeno (1,2,3-cd) pyrene	"	"	"		0.100	ND	"	
Naphthalene	"	"	"		1.00	ND	"	1
Phenanthrene	"	"	"		0.100	1.25	"	
Pyrene	"	"	"		0.100	ND	"	
Surrogate: 2-Fluorobiphenyl	"	"	"	*37.0-135*		*63.1*	%	
Surrogate: Nitrobenzene-d5	"	"	"	*48.0-140*		*82.2*	"	
Surrogate: p-Terphenyl-d14	"	"	"	*25.0-147*		*71.2*	"	*2*
B28			P908534-04				Water	
Acenaphthene	0890844	8/31/99	9/3/99		0.100	ND	ug/l	
Acenaphthylene	"	"	"		0.100	ND	"	
Anthracene	"	"	"		0.100	ND	"	
Benzo (a) anthracene	"	"	"		0.100	ND	"	
Benzo (a) pyrene	"	"	"		0.100	ND	"	
Benzo (b) fluoranthene	"	"	"		0.100	ND	"	
Benzo (ghi) perylene	"	"	"		0.100	ND	"	
Benzo (k) fluoranthene	"	"	"		0.100	ND	"	
Chrysene	"	"	"		0.100	ND	"	
Dibenzo (a,h) anthracene	"	"	"		0.200	ND	"	
Fluoranthene	"	"	"		0.100	ND	"	
Fluorene	"	"	"		0.100	ND	"	
Indeno (1,2,3-cd) pyrene	"	"	"		0.100	ND	"	

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IT Corp./EMCON	Project:	Willbridge (Chevron)	Sampled: 8/26/99 to 8/27/99
P.O. Box 231269	Project Number:	B15.200.2A	Received: 8/27/99
Portland, OR 97224	Project Manager:	David Weymann	Reported: 9/29/99 15:21

Polynuclear Aromatic Compounds per EPA 8270M-SIM
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
B28 (continued)			P908534-04				Water	
Naphthalene	0890844	8/31/99	9/3/99		0.100	ND	ug/l	
Phenanthrene	"	"	"		0.100	ND	"	
Pyrene	"	"	"		0.100	ND	"	
Surrogate: 2-Fluorobiphenyl	"	"	"	*37.0-135*		*65.3*	*%*	
Surrogate: Nitrobenzene-d5	"	"	"	*48.0-140*		*75.8*	"	
Surrogate: p-Terphenyl-d14	"	"	"	*25.0-147*		*75.0*	"	*2*
B30			P908534-05				Water	
Acenaphthene	0890844	8/31/99	9/3/99		0.100	ND	ug/l	
Acenaphthylene	"	"	"		0.100	ND	"	
Anthracene	"	"	"		0.100	ND	"	
Benzo (a) anthracene	"	"	"		0.100	ND	"	
Benzo (a) pyrene	"	"	"		0.100	ND	"	
Benzo (b) fluoranthene	"	"	"		0.100	ND	"	
Benzo (ghi) perylene	"	"	"		0.100	ND	"	
Benzo (k) fluoranthene	"	"	"		0.100	ND	"	
Chrysene	"	"	"		0.100	ND	"	
Dibenzo (a,h) anthracene	"	"	"		0.200	ND	"	
Fluoranthene	"	"	"		0.100	ND	"	
Fluorene	"	"	"		0.100	ND	"	
Indeno (1,2,3-cd) pyrene	"	"	"		0.100	ND	"	
Naphthalene	"	"	"		0.100	ND	"	
Phenanthrene	"	"	"		0.100	ND	"	
Pyrene	"	"	"		0.100	ND	"	
Surrogate: 2-Fluorobiphenyl	"	"	"	*37.0-135*		*69.6*	*%*	
Surrogate: Nitrobenzene-d5	"	"	"	*48.0-140*		*78.7*	"	
Surrogate: p-Terphenyl-d14	"	"	"	*25.0-147*		*71.1*	"	*2*
CR8			P908534-06				Water	
Acenaphthene	0890844	8/31/99	9/3/99		0.100	ND	ug/l	
Acenaphthylene	"	"	"		0.100	0.176	"	
Anthracene	"	"	"		0.100	ND	"	
Benzo (a) anthracene	"	"	"		0.100	ND	"	
Benzo (a) pyrene	"	"	"		0.100	0.385	"	
Benzo (b) fluoranthene	"	"	"		0.100	0.245	"	
Benzo (ghi) perylene	"	"	"		0.100	0.515	"	
Benzo (k) fluoranthene	"	"	"		0.100	0.129	"	
Chrysene	"	"	"		0.100	0.210	"	

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IT Corp./EMCON	Project:	Willbridge (Chevron)	Sampled: 8/26/99 to 8/27/99
P.O. Box 231269	Project Number:	B15.200.2A	Received: 8/27/99
Portland, OR 97224	Project Manager:	David Weymann	Reported: 9/29/99 15:21

Polynuclear Aromatic Compounds per EPA 8270M-SIM
North Creek Analytical - Portland

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
CR8 (continued)			P908534-06				Water	
Dibenzo (a,h) anthracene	0890844	8/31/99	9/3/99		0.200	ND	ug/l	
Fluoranthene	"	"	"		0.100	0.254	"	
Fluorene	"	"	"		0.100	ND	"	
Indeno (1,2,3-cd) pyrene	"	"	"		0.100	0.324	"	
Naphthalene	"	"	"		0.100	ND	"	
Phenanthrene	"	"	"		0.100	ND	"	
Pyrene	"	"	"		0.100	0.379	"	
Surrogate: 2-Fluorobiphenyl	"	"	"	*37.0-135*		*72.5*	*%*	
Surrogate: Nitrobenzene-d5	"	"	"	*48.0-140*		*85.6*	"	
Surrogate: p-Terphenyl-d14	"	"	"	*25.0-147*		*74.2*	"	*2*
CR9			P908534-07				Water	
Acenaphthene	0890844	8/31/99	9/3/99		0.100	ND	ug/l	
Acenaphthylene	"	"	"		0.100	ND	"	
Anthracene	"	"	"		0.100	ND	"	
Benzo (a) anthracene	"	"	"		0.100	ND	"	
Benzo (a) pyrene	"	"	"		0.100	ND	"	
Benzo (b) fluoranthene	"	"	"		0.100	ND	"	
Benzo (ghi) perylene	"	"	"		0.100	ND	"	
Benzo (k) fluoranthene	"	"	"		0.100	ND	"	
Chrysene	"	"	"		0.100	ND	"	
Dibenzo (a,h) anthracene	"	"	"		0.200	ND	"	
Fluoranthene	"	"	"		0.100	ND	"	
Fluorene	"	"	"		0.100	ND	"	
Indeno (1,2,3-cd) pyrene	"	"	"		0.100	ND	"	
Naphthalene	"	"	"		0.100	ND	"	
Phenanthrene	"	"	"		0.100	ND	"	
Pyrene	"	"	"		0.100	ND	"	
Surrogate: 2-Fluorobiphenyl	"	"	"	*37.0-135*		*67.9*	*%*	
Surrogate: Nitrobenzene-d5	"	"	"	*48.0-140*		*78.3*	"	
Surrogate: p-Terphenyl-d14	"	"	"	*25.0-147*		*71.2*	"	*2*

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IT Corp./EMCON	Project:	Willbridge (Chevron)	Sampled: 8/26/99 to 8/27/99
P.O. Box 231269	Project Number:	B15.200.2A	Received: 8/27/99
Portland, OR 97224	Project Manager:	David Weymann	Reported: 9/29/99 15:21

BTEX per EPA Method 8021B/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: 0890830	**Date Prepared: 8/31/99**					**Extraction Method: EPA 5030**				
Blank	**0890830-BLK1**									
Benzene	8/31/99			ND	ug/l	0.500				
Toluene	"			ND	"	0.500				
Ethylbenzene	"			ND	"	0.500				
Xylenes (total)	"			ND	"	1.00				
Surrogate: 4-BFB (PID)	"	*50.0*		*47.6*	"	*75.0-120*	*95.2*			
LCS	**0890830-BS2**									
Benzene	8/31/99	20.0		17.6	ug/l	67.0-130	88.0			
Toluene	"	20.0		18.8	"	75.0-126	94.0			
Ethylbenzene	"	20.0		17.8	"	76.0-124	89.0			
Xylenes (total)	"	60.0		53.7	"	75.0-126	89.5			
Surrogate: 4-BFB (PID)	"	*50.0*		*50.0*	"	*75.0-120*	*100*			
Matrix Spike	**0890830-MS1**		**P908534-01**							
Benzene	8/31/99	200	ND	197	ug/l	67.0-130	98.5			
Toluene	"	200	ND	213	"	75.0-126	107			
Ethylbenzene	"	200	ND	201	"	76.0-124	101			
Xylenes (total)	"	600	ND	611	"	75.0-126	102			
Surrogate: 4-BFB (PID)	"	*50.0*		*54.3*	"	*75.0-120*	*109*			
Matrix Spike Dup	**0890830-MSD1**		**P908534-01**							
Benzene	8/31/99	200	ND	193	ug/l	67.0-130	96.5	13.0	2.05	
Toluene	"	200	ND	215	"	75.0-126	108	13.0	0.930	
Ethylbenzene	"	200	ND	209	"	76.0-124	105	15.0	3.88	
Xylenes (total)	"	600	ND	629	"	75.0-126	105	13.0	2.90	
Surrogate: 4-BFB (PID)	"	*50.0*		*54.9*	"	*75.0-120*	*110*			
Batch: 0990002	**Date Prepared: 9/1/99**					**Extraction Method: EPA 5030**				
Blank	**0990002-BLK1**									
Benzene	9/1/99			ND	ug/l	0.500				
Toluene	"			ND	"	0.500				
Ethylbenzene	"			ND	"	0.500				
Xylenes (total)	"			ND	"	1.00				
Surrogate: 4-BFB (PID)	"	*50.0*		*46.3*	"	*75.0-120*	*92.6*			
LCS	**0990002-BS2**									
Benzene	9/1/99	20.0		18.9	ug/l	67.0-130	94.5			

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IT Corp./EMCON	Project:	Willbridge (Chevron)	Sampled: 8/26/99 to 8/27/99
P.O. Box 231269	Project Number:	B15.200.2A	Received: 8/27/99
Portland, OR 97224	Project Manager:	David Weymann	Reported: 9/29/99 15:21

BTEX per EPA Method 8021B/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*
LCS (continued)	0990002-BS2									
Toluene	9/1/99	20.0		17.4	ug/l	75.0-126	87.0			
Ethylbenzene	"	20.0		17.5	"	76.0-124	87.5			
Xylenes (total)	"	60.0		52.7	"	75.0-126	87.8			
Surrogate: 4-BFB (PID)	"	*50.0*		*45.6*	"	*75.0-120*	*91.2*			

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IT Corp./EMCON	Project:	Willbridge (Chevron)	Sampled: 8/26/99 to 8/27/99
P.O. Box 231269	Project Number:	B15.200.2A	Received: 8/27/99
Portland, OR 97224	Project Manager:	David Weymann	Reported: 9/29/99 15:21

Total Metals per EPA 6000/7000 Series Methods/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: 0890824	Date Prepared: 8/31/99				Extraction Method: Metals					
Blank	0890824-BLK1									
Mercury	8/31/99			ND	mg/l	0.000200				
LCS	0890824-BS1									
Mercury	8/31/99	0.00500		0.00502	mg/l	80.0-120	100			
Duplicate	0890824-DUP1		P908534-04							
Mercury	8/31/99		0.000210	0.000212	mg/l			20.0	0.948	
Matrix Spike	0890824-MS1		P908534-04							
Mercury	8/31/99	0.00500	0.000210	0.00531	mg/l	75.0-125	102			
Batch: 0990264	Date Prepared: 9/9/99				Extraction Method: EPA 200/3005					
Blank	0990264-BLK1									
Arsenic	9/9/99			ND	mg/l	0.00100				
Barium	"			ND	"	0.00200				
Cadmium	"			ND	"	0.00100				
Chromium	"			ND	"	0.00100				
Copper	"			ND	"	0.00200				
Lead	"			ND	"	0.00100				
Selenium	9/13/99			ND	"	0.00100				
Silver	9/9/99			ND	"	0.00100				
Zinc	"			ND	"	0.00500				
LCS	0990264-BS1									
Arsenic	9/9/99	0.100		0.0935	mg/l	80.0-120	93.5			
Barium	"	0.100		0.0979	"	80.0-120	97.9			
Cadmium	"	0.100		0.0931	"	80.0-120	93.1			
Chromium	"	0.100		0.0945	"	80.0-120	94.5			
Copper	"	0.100		0.0955	"	80.0-120	95.5			
Lead	"	0.100		0.0916	"	80.0-120	91.6			
Selenium	9/13/99	0.100		0.0964	"	80.0-120	96.4			
Silver	9/15/99	0.0500		0.0411	"	80.0-120	82.2			
Zinc	9/9/99	0.100		0.0923	"	80.0-120	92.3			
Duplicate	0990264-DUP1		P908398-01							
Arsenic	9/9/99		0.00539	0.00533	mg/l			20.0	1.12	
Barium	"		0.0164	0.0161	"			20.0	1.85	

North Creek Analytical - Portland

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

Crystal Burkholder, Project Manager

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IT Corp./EMCON	Project:	Willbridge (Chevron)	Sampled: 8/26/99 to 8/27/99
P.O. Box 231269	Project Number:	B15.200.2A	Received: 8/27/99
Portland, OR 97224	Project Manager:	David Weymann	Reported: 9/29/99 15:21

Total Metals per EPA 6000/7000 Series Methods/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*
Duplicate (continued)	0990264-DUP1		P908398-01							
Cadmium	9/9/99		ND	ND	mg/l			20.0		
Chromium	"		0.00571	0.00558	"			20.0	2.30	
Copper	"		ND	ND	"			20.0		
Lead	"		ND	ND	"			20.0		3
Selenium	9/13/99		ND	ND	"			20.0		
Silver	9/9/99		ND	ND	"			20.0		
Zinc	"		0.0390	0.0383	"			20.0	1.81	
Matrix Spike	0990264-MS1		P908398-01							
Arsenic	9/9/99	0.100	0.00539	0.101	mg/l	75.0-125	95.6			
Barium	"	0.100	0.0164	0.113	"	75.0-125	96.6			
Cadmium	"	0.100	ND	0.0941	"	75.0-125	94.1			
Chromium	"	0.100	0.00571	0.102	"	75.0-125	96.3			
Copper	"	0.100	ND	0.0957	"	75.0-125	95.7			
Lead	"	0.100	ND	0.0892	"	75.0-125	89.2			
Selenium	9/13/99	0.100	ND	0.0963	"	75.0-125	96.3			
Silver	9/9/99	0.0500	ND	0.0409	"	75.0-125	81.8			
Zinc	"	0.100	0.0390	0.129	"	75.0-125	90.0			
Matrix Spike	0990264-MS2		P908534-07							
Arsenic	9/9/99	0.100	0.0270	0.116	mg/l	75.0-125	89.0			
Barium	"	0.100	0.185	0.277	"	75.0-125	92.0			
Cadmium	"	0.100	ND	0.0966	"	75.0-125	96.6			
Chromium	"	0.100	0.0125	0.109	"	75.0-125	96.5			
Copper	"	0.100	0.0166	0.110	"	75.0-125	93.4			
Lead	"	0.100	0.00871	0.0988	"	75.0-125	90.1			
Selenium	9/15/99	0.100	ND	0.0873	"	75.0-125	87.3			
Silver	9/9/99	0.0500	ND	0.0410	"	75.0-125	82.0			
Zinc	"	0.100	0.0453	0.131	"	75.0-125	85.7			

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IT Corp./EMCON	Project:	Willbridge (Chevron)	Sampled: 8/26/99 to 8/27/99
P.O. Box 231269	Project Number:	B15.200.2A	Received: 8/27/99
Portland, OR 97224	Project Manager:	David Weymann	Reported: 9/29/99 15:21

Dissolved Metals per EPA 6000/7000 Series Methods/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: 0890839	Date Prepared: 9/7/99				Extraction Method: Metals					
Blank	0890839-BLK1									
Mercury	9/7/99			ND	mg/l	0.000200				
LCS	0890839-BS1									
Mercury	9/7/99	0.00500		0.00484	mg/l	80.0-120	96.8			
Duplicate	0890839-DUP1		P908534-02							
Mercury	9/7/99		ND	ND	mg/l			20.0		
Matrix Spike	0890839-MS1		P908534-02							
Mercury	9/7/99	0.00500	ND	0.00456	mg/l	75.0-125	91.2			
Batch: 0990216	Date Prepared: 9/8/99				Extraction Method: EPA 200/3005					
Blank	0990216-BLK1									
Arsenic	9/9/99			ND	mg/l	0.00100				
Barium	"			ND	"	0.00200				
Cadmium	"			ND	"	0.00100				
Chromium	"			ND	"	0.00100				
Copper	9/10/99			ND	"	0.00200				
Lead	"			ND	"	0.00100				
Selenium	"			ND	"	0.00100				
Silver	9/9/99			ND	"	0.00100				
Zinc	"			ND	"	0.00500				
LCS	0990216-BS1									
Arsenic	9/9/99	0.100		0.0998	mg/l	80.0-120	99.8			
Barium	"	0.100		0.0946	"	80.0-120	94.6			
Cadmium	"	0.100		0.103	"	80.0-120	103			
Chromium	"	0.100		0.103	"	80.0-120	103			
Copper	9/10/99	0.100		0.0987	"	80.0-120	98.7			
Lead	"	0.100		0.0948	"	80.0-120	94.8			
Selenium	"	0.100		0.0953	"	85.0-115	95.3			
Silver	9/9/99	0.0500		0.0428	"	80.0-120	85.6			
Zinc	"	0.100		0.103	"	80.0-120	103			
Duplicate	0990216-DUP1		P908534-02							
Arsenic	9/9/99		0.00352	0.00300	mg/l			20.0	16.0	
Barium	"		0.00923	0.00821	"			20.0	11.7	

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IT Corp./EMCON	Project:	Willbridge (Chevron)	Sampled: 8/26/99 to 8/27/99
P.O. Box 231269	Project Number:	B15.200.2A	Received: 8/27/99
Portland, OR 97224	Project Manager:	David Weymann	Reported: 9/29/99 15:21

Dissolved Metals per EPA 6000/7000 Series Methods/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*
Duplicate (continued)	0990216-DUP1		P908534-02							
Cadmium	9/9/99		ND	ND	mg/l			20.0		3
Chromium	"		ND	ND	"			20.0		3
Copper	"		ND	ND	"			20.0		3
Lead	"		ND	ND	"			20.0		
Selenium	"		0.00104	ND	"			20.0		
Silver	"		ND	ND	"			20.0		3
Zinc	"		ND	ND	"			20.0		
Matrix Spike	0990216-MS1		P908534-02							
Arsenic	9/9/99	0.100	0.00352	0.0927	mg/l	75.0-125	89.2			
Barium	"	0.100	0.00923	0.0924	"	75.0-125	83.2			
Cadmium	"	0.100	ND	0.0889	"	75.0-125	88.9			
Chromium	"	0.100	ND	0.0978	"	75.0-125	97.8			
Copper	"	0.100	ND	0.0934	"	75.0-125	93.4			
Lead	"	0.100	ND	0.0838	"	75.0-125	83.8			
Selenium	"	0.100	0.00104	0.0827	"	75.0-125	81.7			
Silver	"	0.0500	ND	0.0381	"	75.0-125	76.2			
Zinc	"	0.100	ND	0.0914	"	75.0-125	91.4			

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IT Corp./EMCON	Project:	Willbridge (Chevron)	Sampled: 8/26/99 to 8/27/99
P.O. Box 231269	Project Number:	B15.200.2A	Received: 8/27/99
Portland, OR 97224	Project Manager:	David Weymann	Reported: 9/29/99 15:21

Polynuclear Aromatic Compounds per EPA 8270M-SIM/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: 0890844	**Date Prepared: 8/31/99**					**Extraction Method: EPA 3520/600 Series**				
Blank	**0890844-BLK1**									
Acenaphthene	9/22/99			ND	ug/l	0.100				
Acenaphthylene	"			ND	"	0.100				
Anthracene	"			ND	"	0.100				
Benzo (a) anthracene	"			ND	"	0.100				
Benzo (a) pyrene	"			ND	"	0.100				
Benzo (b) fluoranthene	"			ND	"	0.100				
Benzo (ghi) perylene	"			ND	"	0.100				
Benzo (k) fluoranthene	"			ND	"	0.100				
Chrysene	"			ND	"	0.100				
Dibenzo (a,h) anthracene	"			ND	"	0.200				
Fluoranthene	"			ND	"	0.100				
Fluorene	"			ND	"	0.100				
Indeno (1,2,3-cd) pyrene	"			ND	"	0.100				
Naphthalene	"			ND	"	0.100				
Phenanthrene	"			ND	"	0.100				
Pyrene	"			ND	"	0.100				
Surrogate: 2-Fluorobiphenyl	"	*2.50*		*0.890*	"	*37.0-135*	*35.6*			*4,5*
Surrogate: Nitrobenzene-d5	"	*2.50*		*2.00*	"	*48.0-140*	*80.0*			
Surrogate: p-Terphenyl-d14	"	*2.50*		*2.05*	"	*25.0-147*	*82.0*			
LCS	**0890844-BS1**									
Acenaphthene	9/2/99	5.00		4.60	ug/l	50.0-150	92.0			
Benzo (a) pyrene	"	5.00		5.80	"	50.0-150	116			
Pyrene	"	5.00		5.24	"	50.0-150	105			
Surrogate: 2-Fluorobiphenyl	"	*2.50*		*1.92*	"	*37.0-135*	*76.8*			
Surrogate: Nitrobenzene-d5	"	*2.50*		*2.24*	"	*48.0-140*	*89.6*			
Surrogate: p-Terphenyl-d14	"	*2.50*		*2.08*	"	*25.0-147*	*83.2*			*2*
LCS Dup	**0890844-BSD1**									
Acenaphthene	9/2/99	5.00		4.33	ug/l	50.0-150	86.6	60.0	6.05	
Benzo (a) pyrene	"	5.00		5.35	"	50.0-150	107	60.0	8.07	
Pyrene	"	5.00		5.35	"	50.0-150	107	60.0	1.89	
Surrogate: 2-Fluorobiphenyl	"	*2.50*		*1.91*	"	*37.0-135*	*76.4*			
Surrogate: Nitrobenzene-d5	"	*2.50*		*2.33*	"	*48.0-140*	*93.2*			
Surrogate: p-Terphenyl-d14	"	*2.50*		*2.32*	"	*25.0-147*	*92.8*			*2*

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IT Corp./EMCON	Project:	Willbridge (Chevron)	Sampled: 8/26/99 to 8/27/99
P.O. Box 231269	Project Number:	B15.200.2A	Received: 8/27/99
Portland, OR 97224	Project Manager:	David Weymann	Reported: 9/29/99 15:21

Notes and Definitions

#	Note
1	The reporting limit for this analyte was raised due to matrix interference.
2	Estimated concentration. Daily calibration check standard recovery for this analyte was 74%. Results are flagged when the standard recovery is below 80% for any compound.
3	Analyses are not controlled on RPD values from sample concentrations less than 5 times the reporting limit.
4	Surrogate out due to negative calibration bias.
5	Estimated concentration. Daily calibration check standard recovery for this analyte was 48%. Results are flagged when the standard recovery is below 80% for any compound.
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

Crystal Burkholder, Project Manager

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15.34

CHAIN OF CUSTODY REPORT

Work Order #:

CLIENT:

REPORT TO: Tim Stone, IT

ADDRESS: 15055 SW Sequoia Pkwy Pitdale 97224

PHONE: (503) 624-7200 FAX (503) 620-7658

PROJECT NAME: Willbridge

PROJECT NUMBER:

SAMPLED BY: Cory LaVelle

INVOICE TO: IT PDX

P.O. NUMBER:

TURNAROUND REQUEST in Business Days*

Organic & Inorganic Analyses: ~~10~~ 7 5 4 3 2 1 <1 (STD.)

Petroleum Hydrocarbon Analyses: 5 4 3 2 1 <1 (STD.)

OTHER Please Specify

*Turnaround Requests less than standard may incur Rush Charges.

REQUESTED ANALYSES

	CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	BTEX	PAH's	Metals	Dss lvd M									MATRIX (W, S, O)	# OF CONT.	COMMENTS	NCA ID
1.	B7	8-26-99/1025	X	X	X										W	4		
2.	B14	8-26-99/1110	X	X	X	X										5		
3.	B11	8-27-99/0930	X	X	X											4		
4.	B28	8-27-99/1010	X	X	X											4		
5.	B30	8-27-99/1055	X	X	X	X										5		
6.	CR8	8-27-99/1130	X	X	X											4		
7.	CR9	8-27-99/1215	X	X	X	X										5		
8.																		
9.																		
10.																		
11.							Use same P.O. #											
12.							as Last											
13.																		
14.																		
15.																		

RELINQUISHED BY: Cory LaVelle DATE: 8-27-99
PRINT NAME: Cory LaVelle FIRM: IT TIME:

RECEIVED BY: Evie Morgan DATE: 14:50
PRINT NAME: Evie Morgan FIRM: NCA TIME: 8/27/99

RELINQUISHED BY: DATE:
PRINT NAME: FIRM: TIME:

RECEIVED BY: DATE:
PRINT NAME: FIRM: TIME:

ADDITIONAL REMARKS:

TEMP:

COP0014920